Intended for

Zeon Chemicals Europe Limited

Date

September, 2016

Project Number

UK15-21370_SSCR

ZEON CHEMICALS EUROPE LIMITED

SURRENDER SITE CONDITION REPORT

RAMBOLL ENVIRON

ZEON CHEMICALS EUROPE LIMITED
SURRENDER SITE CONDITION REPORT

Project No.	**UK15-21370**
Issue No.	**04**
Date	**29/09/2016**
Made by	**LC**
Checked by	**MR**
Approved by	**MR**

Made by:

Checked/Approved by:

This report has been prepared by Ramboll Environ with all reasonable skill, care and diligence, and taking account of the Services and the Terms agreed between Ramboll Environ and the Client. This report is confidential to the Client, and Ramboll Environ accepts no responsibility whatsoever to third parties to whom this report, or any part thereof, is made known, unless formally agreed by Ramboll Environ beforehand. Any such party relies upon the report at their own risk.
Ramboll Environ disclaims any responsibility to the Client and others in respect of any matters outside the agreed scope of the Services.

Version Control Log

Revision	Date	Made by	Checked by	Approved by	Description
1	23/08/16	LC	MR	MR	First Client Issue
2	31/08/16	LC	MR	MR	Second Client Issue
3	23/09/16	LC	MR	MR	Third Client Issue
4	29/09/16	LC	MR	MR	Fourth Client Issue

Ramboll Environ
8 Village Way
Tongwynlais
Cardiff
CF15 7NE
United Kingdom
T +44 292 054 3550
www.ramboll-environ.com

CONTENTS

TABLES

APPENDICES

Appendix 1

Figures

Appendix 2

Statement of Reference DAta (URS, 2006)

Appendix 3

Tank Inventory

Appendix 4

SPMP Analytical Certificates of Analysis

Appendix 5

Site Closure Plan

Appendix 6

ETP Sludge Waste Classification Report

Appendix 7

Drainage Systems Review

Appendix 8

Phase II Environmental Assessment for Permit Surrender

Appendix 9

Ramboll Environ Soil and Groundwater Sampling Protocols

Appendix 10

Laboratory QA/QC Procedures/ Proficiecy Schemes & Laboratory Accreditation DAta

Appendix 11

Inventory of Hazardous Waste Removal

REPORT DEFINITIONS KEY

ACM – Asbestos Containing Material

AN - Acrylonitrile

AOD – Above Ordnance Datum

AST – Above Ground Storage Tank

BGS – British Geological Survey

BTEX – Benzene, Toluene, Ethylbenzene and Xylenes

BN - Butadiene

COMAH – Control of Major Accident Hazards

DNAPL – Dense Non-Aqueous Phase Liquid

DQRA – Detailed Quantitative Risk Assessment

EA – Environment Agency

EP – Environmental Permit

EMS – Environmental Management System

EPR – Environmental Permitting Regulations

EQS – Environmental Quality Standard

ETP – Effluent Treatment Plant

HCL – Hydrochloric Acid

IBC – Intermediate Bulk Container

IPPC – Integrated Pollution Prevention and Control

LNAPL – Light Non-Aqueous Phase Liquid

ND – No Detection

MCERT – Environment Agency Monitoring Certification Scheme

MRL – Method Reporting Limit

MTBE – Methyl Tert-Butyl Ether

NRW – Natural Resources Wales

OMA – Operator Monitoring Assessment

PAH – Polycyclic Aromatic Hydrocarbon

PCB – Polychlorinated Biphenyl

SPMP – Site Protection and Monitoring Programme

SSCR – Surrender Site Condition Report

SSTL – Site Specific Target Level

SVOC – Semi-Volatile Organic Compound

TDM – Tertiary Dodecyl Mercaptan

TPH – Total Petroleum Hydrocarbon

UKAS – United Kingdom Accreditation Service

UST - Underground Storage Tank

VOC – Volatile Organic Compound

INTRODUCTION

Ramboll Environ UK Limited ("Ramboll Environ") was commissioned by Zeon Chemicals Europe Limited ("Zeon" or the "Client"), to prepare a Surrender Site Condition Report (SSCR) for the Zeon facility located at Hayes Road, Sully, South Wales (the "Site") in relation to their Environmental Permit (EP) (ref: EPR/UP3836SS) issued by Natural Resources Wales (NRW) (effective from 12th December 2006).

The original Application for an Authorisation under the Integrated Pollution Control (IPC) regime was made by Zeon in 1994 for the manufacture of nitrile rubber compounds. Variations were made in 1998 (addition of a thermal oxidiser and scrubber), 2002 (upgrades to the Effluent Treatment Plant) and 2005 (ZSC Plant, manufacture of a confidential product).

As a requirement of the Integrated Pollution Prevention and Control (IPPC) Directive, an updated Permit Application was made in May 2006 and the Permit was duly issued to Zeon Chemicals Europe Limited on 12th December 2006. The installation boundary for the Permit is shown on Figure 2, Appendix 1 (the "Installation").

An Environment Agency (EA) (now NRW) led Permit Variation was made in March 2012 in order to:

- review emissions to air and to water from the installation to better protect the environment;
- to amend errors in the original Permit and review conditions; and
- to update all conditions in line with the most recent template.

The variation was issued as a Consolidated Permit on 17th May 2012.

The Permitted activities are summarised as follows:

Table A: Permitted Activities

Activity Reference	Description	Limits of Specified Activity
A1	Producing organic chemicals such as synthetic rubber.	From receipt of raw materials to production, storage and despatch of final product including un-reacted monomer for re-use, disposal of waste and emission of exhaust gases and effluent.
A2	Disposal of non-hazardous waste in a facility with a capacity of more than 50 tonnes per day, physio-chemical treatment.	From receipt and treatment of effluent, storage and disposal of sludge, to discharge of treated effluent to Hexion lagoon.

An Application Site Report (ASR) was compiled by URS on behalf of Zeon as part of its application to the EA for a Permit to operate under Regulation 10 of the Pollution Prevention and Control (England and Wales) Regulations 2000. Baseline or 'Reference Data' on soil and groundwater was required to support the Permit application and this was collected by URS on behalf of Zeon in 2006. The First Phase Reporting of the Site Protection and Monitoring Programme (SPMP) was reported to the EA in September 2007 and presents the Reference Data for the Installation (or the Site 'baseline'). The report provides a 'Statement of Reference Data' which documents the land condition at the commencement of the EP.

The EP is being surrendered due to the closure of the Installation and cessation of all permitted activities. All production operations at the Installation ceased in March 2016 and all plant, equipment and hazardous materials had been decommissioned and removed from the Site by May 2016.

Ramboll Environ subsequently carried out an intrusive investigation to collect data on soil and groundwater for comparison with Reference Data. It should be noted that the investigation had two objectives:

1. to collect EP Surrender Data on soil and groundwater for comparison with Reference Data to support the Permit Surrender; and
2. to investigate potential areas of concern (both historical and recent) at the Site in order to consider potential liabilities with respect to surrender of the relevant Site leases.

Accordingly, some of the soil and groundwater data is not directly relevant to EP surrender since Ramboll Environ investigated areas of the Site for which there is no Reference Data for comparison.

Zeon intends to demolish all buildings on-site and to break up the remaining concrete surfacing in advance of surrendering its lease back to the landlord. Considering the site location, future use is considered likely to be limited to commercial / industrial activities.

This Surrender Site Condition Report (SSCR) has been produced in accordance with NRW Guidance Document: Site Condition Report Template, October 2014, Version 3. The SSCR details the condition of the land at the EP application stage, operational phase and at the EP surrender stage. The purpose of this SSCR is to identify whether the condition of the land has deteriorated during the lifetime of the EP and to demonstrate that the Installation has been returned to a 'satisfactory state' at surrender.

Prior to formal submission of the surrender application, Zeon and Ramboll Environ have undertaken pre-application telephone discussion with Matt Llewhellin and Andi Kemp of NRW.

The SSCR is structured as follows:

- Sections 1 to 3 of the SSCR summarise the information provided in the Application Site Report (submitted with the EP application);
- Sections 4 to 7 relate to the operational phase of the Installation: and
- Sections 8 to 10 present the information required for surrender of the EP, including evidence to show that the site has been left in a 'satisfactory state' at surrender.

1. SITE DETAILS

Table 1.1: Site Details

Name of the Applicant	Zeon Chemicals Europe Limited
Activity Address	Hayes Road, Sully, Vale of Glamorgan, CF64 5ZE
National Grid Reference	314070, 168090
Permit Number	EPR/UP3836SS

Table 1.2: Site Condition Report Documents

Date	Document Title and Reference
January 2006	Application Site Report (ASR), PPC Application, URS (ref: 44382645/FR584) Note: the ASR includes a review of previous investigations carried out at the Installation in 1999 and 2002.
September 2007	First Phase Reporting of the Site Protection and Monitoring Programme (SPMP), URS (ref: 44382745/CRRP0002). Note: this report provides a tabulated statement of Reference Data documenting soil and groundwater conditions at the start of the Permit.

Table 1.3: Site Plans and Appendices to SSCR

Appendix 1	Figure 1: Site Location Plan Figure 2: Installation Boundary Figure 3: Site Zones for Permitted Activities Figure 4: Drainage Plan Figure 5: Potential Areas of Concern (identified in Phase I ESA) Figure 6: Borehole Location Plan
Appendix 2	Appendix E of the URS First Phase Reporting of the SPMP – Statement of Reference Data.
Appendix 3	Tank Inventory
Appendix 4	SPMP Analytical Certificates of Analysis
Appendix 5	Site Closure Plan
Appendix 6	ETP Sludge Waste Classification
Appendix 7	Drainage Systems Review, Ramboll Environ Ref: UK15-21370_01_Drainage, April 2016
Appendix 8	Phase II Environmental Assessment for Permit Surrender, Ramboll Environ Ref: UK15-21370_02_Ph II Permit Surrender, August 2016
Appendix 9	Ramboll Environ Soil and Groundwater Sampling Protocols
Appendix 10	Laboratory QA/QC Procedures and Proficiency Schemes and Laboratory Accreditation Data
Appendix 11	Inventory of Hazardous Waste Removal

1.1 Site Location and Description

The Site is located approximately 3.36 km to the north-east of Barry town centre and 400m north of Sully Bay (the Severn Estuary) at National Grid Reference 314070,168090 (see Figure 1, Appendix 1).

The Site lies at an approximate elevation of 6m above Ordnance Datum (m AOD) and is generally flat, irregular in shape and occupies an area of approximately 8.84 hectares in total.

The land and immediate surrounds are owned by Associated British Ports (ABP). The long leasehold agreement for the Site is held by St. Modwen. Zeon leases the Site from St Modwen and intends to surrender the lease agreement in order to exit the Site. There are three distinct plots of land as follows and shown on Figure 2, Appendix 1:

- Plot A - the manufacturing site or the 'Installation', sub-lease contract from St Modwen until 2044;
- Plot B – storage warehouse (also part of the 'Installation'), sub-lease contract from St. Modwen until 2039; and
- Plot C – undeveloped, overgrown land, sub-lease contract until 2044.

Plots A and B collectively make up the 'Installation' referred to in the Site's EP. Accordingly, this Surrender SCR only relates to Plots A and B.

Surrounding land uses are detailed in Table 1.4 below.

Table 1.4: Surrounding Land Uses

Direction	Description	Distance
To the North	River Cadoxton. Phenolic resin manufacturing plant operated by Hexion Chemical UK Ltd. (Upper Tier COMAH site). Former Polyvinylchloride manufacturing plant operated by INEOS Vinyls UK Ltd.	Adjacent (N) Adjacent (NE) 160m (NE)
	Silicones manufacturing plant operated by Dow Corning Ltd. (Upper Tier COMAH site).	40 m
To the East	Phenolic resin manufacturing plant operated by Hexion Chemical UK Ltd. (Upper Tier COMAH site).	Adjacent
	Agricultural land.	520m
	The town of Sully.	850m
To the South	An area of overgrown open land.	Adjacent
	A former polystyrene manufacturing plant operated by Dow Chemicals – no longer operational. Remediation work has been carried out at this site; however, no further details are available.	Adjacent (SE)
	A bulk chemical storage facility operated by Vopak (Upper Tier COMAH site).	Adjacent (SW)
To the West	River Cadoxton.	Adjacent
	Warehouse.	110m

1.2 Installation Areas

The ASR (URS report ref: 44382645/FR584) divided the Installation into Zones A to L in accordance with the locations of potentially polluting substances. The zones are shown on Figure 3, Appendix 1 and are described in Table 1.5 below.

Table 1.5: Site Zones

Zone	Description	Reason for Delineation
A	Rail car transfer - storage and offloading area (not in use since 2000)	Location of external bulk raw material storage and offloading activities (not in use since 2000)
B	Monomer pipeline and recovery system	Bulk raw material transfer in above ground pipelines
C	Bulk raw material storage	Bulk raw material storage in tanks
D	Non-bulk raw material storage	Internal non-bulk storage of raw materials in warehouses
E	Production areas	Location of bulk synthetic rubber production
F	Nitrile monomer recovery room	Location of non-bulk acrylonitrile recovery
G	Laboratories	Location of non-bulk additive and reactant storage
H	Solvent stores	Location of non-bulk solvent storage
I	Oil storage	Location of non-bulk oil storage
J	Effluent Treatment Plant (ETP)	Location of Bulk wastewater and additive storage
K	Waste storage areas	Location of bulk hazardous and non-hazardous waste storage
L	Area of perceived Low Environmental Risk	Finished product storage warehouse and associated areas of hardstanding or vegetation with no bulk or non-bulk storage of substances of concern.

Part of the Installation was also formerly registered as a lower tier Control of Major Accident Hazards (COMAH) facility due to the volumes of chemicals stored (acrylonitrile, butadiene, tertiary dodecylmercaptan (TDM) and ammonia). The Installation was de-notified as a COMAH facility during decommissioning. The former COMAH designated areas are shown on Figure 5, Appendix 1.

1.3 Emissions and Monitoring Points

Schedule 3 of the Permit detailed 23 No. point source emissions to air, the majority of which had stipulated emissions limits and monitoring frequencies. Monitoring frequencies ranged from continuous to annual; however, the majority of points were monitored quarterly.

Ambient air was measured continuously for butadiene and acrylonitrile and the results were reported to NRW quarterly.

There were also point source emission limits from the Effluent Treatment Plant (ETP) which were monitored daily.

Measures were required under the Permit to prevent pollution from the emissions of substances not controlled by emission limits (excluding odour), e.g. secondary containment measures. A programme of continuous improvement was maintained in this respect during the Installation's operation which was reviewed by NRW approximately every two years.

Odour, noise and vibration management plans were in place in the event that NRW encountered pollution beyond the Site boundaries.

1.4 Site Drainage

A drainage survey was commissioned by Zeon in March 2016. A drainage layout plan is presented on Figure 4, Appendix 1.

The drainage survey identified numerous drainage systems on-site including foul/septic waste systems, surface water drains and process drainage. The survey confirmed that the drainage systems on-site are 'closed' (i.e. there are no recorded inflows or pipes from outside the Site, and no outfalls into public sewers or nearby watercourses).

The foul drainage systems terminate in septic tanks or pits, which were emptied as required by tanker. *The septic pits are intended to be emptied and cleaned prior to demolition.*

The surface water and process drainage systems are ultimately directed to a balancing tank and ETP in the eastern portion of the Site. From the ETP, discharge is pumped through an above ground pipeline to the north, and off-site into a lagoon on the neighbouring Hexion facility. *The ETP is no longer in operation; however, rainwater collects in the remaining effluent pits (N55 and N159). This is currently pumped intermittently (manually) directly to the Hexion lagoon. Ramboll Environ understands that this process will need to be continued by the appointed demolition contractor in due course.*

The CCTV survey has shown that the existing drains are generally in a poor condition, with numerous blockages, cracks, root ingress and latex ingress. Parts of the system are unlikely to have been operating efficiently for some time. The foul drains appeared to be in slightly better condition than the surface water and process drainage systems, however the CCTV survey identified remedial actions for each system.

In one specific location, manhole SW60, through misconnection or otherwise, a pipe run was identified that was discharging direct to ground. *This potential source of ground contamination was targeted in Ramboll Environ's Phase II Environmental Site Assessment (ESA) for Permit Surrender Section 9).*

Ramboll Environ has advised Zeon that during demolition, surface water will need to be drained from the Site, and fine particles from demolition material are to be prevented from being washed off-site in the form of silt. Specifically, mitigation measures will be required to ensure that the Hexion lagoon does not receive any silt during demolition.

1.5 Site Surfacing

At the time of writing, the Site was vacant; however, all structures remained in-situ. The Site surface between the buildings is predominantly concrete hardstanding. There are several areas of the Site where the ground is unsurfaced, namely in the vicinity of the ETP and underlying some of the above-ground storage tanks.

Demolition is intended to include the excavation and break up of remaining concrete slabs when all buildings have been removed. As such, the aforementioned drainage systems, tanks and pits will also be removed and the Site will be left unsurfaced. Infiltration tests will be carried out by the demolition contractor to determine whether future rainfall could then be directed straight to ground and would not increase flood risk elsewhere. Alternatively, runoff could be directed into the existing vegetated land to the south of the Site.

In terms of the Site surface upon completion of demolition, levels will be graded to follow the levels of adjacent areas, and ideally to retain rainfall within the Site, whilst avoiding steep drops.

2. CONDITION OF THE LAND AT PERMIT ISSUE

2.1 Environmental Setting

The following section provides a description of the Site's environmental setting, using information contained in the ASR and the First Phase Reporting of the SPMP. This has been supplemented by Ramboll Environ using publicly available information sources.

Table 2.1: Environmental Setting

Conditions	Source	Description
Geology		
Geological Conditions	British Geological Survey (BGS) soil and drift sheet EA/ NRW Website Publically available environmental database ASR, URS 2006 First Phase Reporting of the SPMP, URS, 2007	The western region of the Site (approximately 30% of the Site area) is underlain by Tidal Flat Deposits, generally comprising clay, silt and sand. The north-eastern corner of the Site (approximately 10% of the total area) is underlain by Alluvium, generally comprising clay, silt, sand and gravel. No superficial deposits are recorded at the remainder of the Site. The majority of the Site is further underlain by the solid geology of the Mercia Mudstone Group (marginal Facies) typically consisting of conglomerate of local rock comprising finer-grained rock fragments or, less commonly, siltstone, sandstone or micritic limestone. However the north-western corner of the Site (approximately 5% of the Site area) is underlain by the Mercia Mudstone Group which comprises mudstones and subordinate siltstones with thick halite-bearing units in some basinal areas.
Hydrogeology		
Groundwater Levels and Presumed Groundwater Flow Direction	ASR, URS 2006 First Phase Reporting of the SPMP, URS, 2007 Complex Hydrogeological Groundwater Study, URS, 2002	The Site is underlain by Secondary Aquifers in the west and north-east (Tidal Flat Deposits and Alluvium) and the central and southern regions of the Site are immediately underlain by a Principal Aquifer (Mercia Mudstone Group - Marginal Facies). URS borehole records identified groundwater within the Mercia Mudstone bedrock at depths of between 0.6m and 2.6m below ground level (bgl). Resting groundwater levels ranged from 0.1m to 1.5m bgl. Groundwater flow within the bedrock was implied in a broadly north-north-easterly direction. The groundwater contours also indicated a possible easterly groundwater flow from the south-eastern area of the Site. Groundwater was

		interpreted (by URS) as being at least partially confined by the overlying Made Ground and / or alluvium at the Site. A hydrogeological groundwater study for the wider area by URS identified an overall groundwater flow to the west in the direction of the Cadoxton River and to the south towards the Severn Estuary (approximately 600m distant) from a groundwater level 'mound' located in the central northern area of the Site, coinciding with an area where no shallow aquifer exists.
Groundwater Supply Wells and Surface Water Abstractions	Landmark Envirocheck database (March 2015)	No groundwater abstraction wells are present on-site. There are two groundwater abstractions within 2 km of the Site; the closest of which is located 1.6 km north and is utilised for public water supply (and was also used by the Site as process water when operational). The Site is not located within a groundwater Source Protection Zone (SPZ).
Hydrology		
Nearest Surface Water Body	Landmark Envirocheck database (March 2015) Visual observations	The nearest surface water feature is the Cadoxton River which borders the Site to the north and flows in a westerly direction. The Cadoxton River has 'good' chemical quality and 'moderate' ecological quality. The Sully Brook is located approximately 200m to the north-east of the Site boundary, flowing in a westerly direction to join the Cadoxton River approximately 50m north-east of the centre of the Site. There are three surface water abstractions within 2km of the Site, the closest is located 80m north and none are for sensitive use.
Flood Plain	EA website (accessed March 2015) Facility personnel	Approximately 50% of the Site in the north is located within an area at risk of flooding. The north of the Site is located within Flood Zone 3 (High Probability); the central region is located within Flood Zone 2 (Medium Probability); and the remainder of the Site is located in Flood Zone 1 (Low Probability). Facility personnel reported that a major flood occurred in December 2012. The Site access roads were flooded; however the production buildings were not affected.

		NRW has subsequently cleared the channel of the Sully Brook, located approximately 200m north-east of the Site and significant flooding has not occurred since. Hayes Road, located adjacent to the southern Site boundary, is also reported to flood periodically (approximately once in two years).
Ecology and Protected Habitats		
Designated Ecological Sites	Landmark Envirocheck database	There are no ecologically sensitive areas within 1km of the Site.

2.2 Pollution History

2.2.1 Historical Land Uses

The Site was largely undeveloped until 1920 when an anchor patent fuel works with associated railway tracks was constructed in the north-east. Gravel pits were also present in the north, south and south-east and a pond was marked in the centre of the Site. By 1947 the anchor patent fuel works and railway tracks had been cleared and the Sully Brook, previously located in the north-west of the Site, appeared to have been infilled with unknown materials prior to the construction of a depot.

Further smaller units had also been constructed in the central and eastern areas and multiple railway tracks were present in the north and east. At this point, all gravel pits on site had been infilled with unknown materials. By 1975 a chemical works had been constructed in the north-east of the Site and comprised approximately nine units, at least 18 tanks, an electrical sub-station, two coolers, a ventilator and a pipeline which crossed the north-eastern region of the Site.

According to the ASR, the Distillers Company Ltd. commenced nitrile rubber production at the site in the late 1950s. Subsequently, BP Chemicals (BPC) acquired operations in the late 1960s and in 1989 sold the operations to Zeon Chemical Europe Ltd. The principal raw materials stored and used at the Site throughout its history are understood to be acrylonitrile and butadiene. Styrene was also used as a raw material between the 1960s and 1970s.

Potential contaminants from the chemical works include solvents, polycyclic hydrocarbons, phenols, oils and metals. Other potential contaminants from previous use include oils, solvents and putrescible materials related to unknown infill materials in the gravel pits, former stream channel and pond.

The ASR reported that no incidents with the potential to cause pollution to land or groundwater had occurred within the installation.

2.2.2 Known Pollution Incidents (Before Permit Issue)

Between April 1989 and September 1992, several spillage incidents were known to have occurred in the vicinity of the Tank Farm and ETP.

Acrylonitrile was lost to ground over a period of time where below ground pipework transferring solution to a sump failed and the solution was found to be flowing into a soakaway towards the Dow Chemicals site (south-east). The issue was detected when Dow Chemicals identified acrylonitrile in

their effluent. The volume of loss was not recorded. Remediation was reportedly undertaken internally by excavating a trench in the affected area and allowing water to collect and be pumped out and sampled for analysis. The excavated soil was 'washed' on-site and replaced. According to the Site contact, the concentrations of acrylonitrile reduced from 200,000ppm to below 20ppm over the sampling period.

2.3 Previous Site Investigations

The following historic intrusive investigations and environmental assessments have been undertaken at the Site and are reviewed in the ASR:

- Soil and Groundwater Investigation Works, Dames and Moore Report (Ref: 43931-002/DR007/C0043/CAR), November 1999; and
- Barry Chemical Complex Hydrogeological Groundwater Study, URS Ref: 48760-002-785/FR1108, December 2002.

2.3.1 Soil and Groundwater Investigation, Dames and Moore, 1999

The objective of the investigation was to install a series of monitoring wells which would permit future monitoring of groundwater elevations and contaminant concentrations at the Site. The scope of work comprised the drilling of eight boreholes to depths of between 7m and 10m below ground level (bgl), (ZC201 to ZC208). Soil analysis was carried out on-site at Zeon's own laboratory.

Elevated concentrations of acrylonitrile were detected within five out of the nine shallow soil samples taken. Maximum concentrations were detected near the former drum storage area (exact location not stipulated) and north of the refrigerant plant.

Elevated total petroleum hydrocarbons (TPH) were detected in all nine shallow soil samples (up to 2,563mg/kg). The maximum concentrations were recorded near the acrylonitrile and butadiene storage tanks.

Total polycyclic aromatic hydrocarbons (PAHs) were detected at elevated concentrations in six out of the eight shallow soil samples. The maximum concentration was detected to the east of the effluent pit (which of the effluent pits this refers to is not stipulated).

No groundwater analysis was reported.

2.3.2 Complex Hydrogeological Groundwater Study, 2002

URS was commissioned by the Environmental Care Group of the Barry Chemical Complex to undertake a hydrogeological study of the wider industrial area. The aim was to understand the groundwater flow of the industrial complex without the constraint of site boundaries. Zeon was a participant in these works.

The study comprised collection of level monitoring data on a quarterly basis for one year and subsequent interpretative reporting.

The report concluded that no shallow aquifer was present under the Zeon Site apart from beneath a small section close to the River Cadoxton at the north of the Site. Groundwater flow in the deep aquifer (i.e. the Mercia Mudstone) was implied to be to the south-west, towards the coast and to the north, discharging to the River Cadoxton, immediately downstream of the River/ Sully Brook confluence i.e. a groundwater level 'mound' near the central northern area of the manufacturing area was identified. This groundwater level 'mound' was reported to coincide with the area of limited

superficial deposits, with the increased inflow into the conglomerate interpreted as accounting for the 'mound' feature.

2.3.3 Assessment of Land Pollution Potential

The ASR lists substances that were used, stored and manufactured on-site (or waste by-products from the manufacturing process). An assessment of their pollution potential was made based upon their properties, toxicity, volume stored, used or manufactured. Those substances identified as being potentially polluting were assessed further in terms of their pollution preventative measures. The overall assessment identified relevant activities where there is a reasonable possibility of current or future pollution of the land from the installation.

URS recommended that Reference Data is collected from the zones relating to those activities where a reasonable possibility of pollution was identified, as follows:

- Zone A - rail car and tanker transfer, storage and offloading area (no secondary containment in place);
- Zone B – above ground monomer pipeline recovery system (no secondary containment in place);
- Zone C – tank farm (no secondary containment in place at some tank locations);
- Zone I - oil stores (no secondary containment in place at some tank locations); and
- Zone J – ETP (no secondary containment in place at some tank locations and transfer lines from effluent pits to the ETP).

2.4 Baseline Soil and Groundwater Reference Data

2.4.1 SPMP

The First Phase Reporting of the Site Protection and Monitoring Programme (SPMP) was prepared by URS on behalf of Zeon in September 2007. The report provides the Reference Data as required by the Installation's IPPC Permit (Ref: UP3836SS), dated December 2006.

The investigation strategy was developed from the information presented in the ASR describing Potentially Polluting Substances and an Assessment of the Likelihood of Pollution.

The scope of work comprised the installation of five groundwater monitoring wells (ZC210 to ZC214) across the Installation to obtain soil and groundwater reference data and to provide additional groundwater monitoring infrastructure for the ongoing environmental monitoring programme required under the SPMP. The borehole locations are shown on Figure 6, Appendix 1.

The report does not stipulate the criteria used to determine whether determinands were detected at elevated concentrations. However, a confirmed source of contamination was descried as hydrocarbons in soil and groundwater in the vicinity of the oil stores.

The statement of Reference Data is presented in Appendix E of the report and is replicated in Appendix 2 of this report.

The tabulated Reference Data only refers to data collected during the 2006 investigation; however, groundwater samples were collected from the aforementioned 1999 boreholes (ZC201 to ZC208), the results of which are also presented in the Reference Data. *It is noted that soil analysis results from ZC201 to ZC208 are not presented in the statement of Reference Data; however, Ramboll Environ has included the soil analysis data (where available) for comparison with the recent (2016) soil analysis results (see Sections 2.4.4 below and Section 9).*

The following tables (Table 2.2, Soil and Table 2.3, Groundwater) summarise the exploratory locations and determinands for which Reference Data has been collected. The analytical results are summarised below.

Table 2.2: Soil Reference Data Collection

Borehole Reference	Date Sampled	Determinands (number of soil samples collected)						
		Metals	pH	Acrylonitrile	Catechol	Formaldehyde	TPH	VOCs
ZC1	2007	1	1	0	0	0	1	1
ZC210	2007	3	3	3	3	0	0	0
ZC211	2007	2	2	2	0	0	0	0
ZC212	2007	1	1	1	1	1	0	1
ZC213	2007	3	3	3	0	0	0	0
ZC214	2007	3	3	0	0	0	3	3

Table 2.3: Groundwater Reference Data Collection

Borehole Reference	Date Sampled	Determinands (number of soil samples collected)									
		Metals	pH	Alkylphenols	Methanol	Acrylonitrile	Catechol	Formaldehyde	Anionic Surfactants	SVOCs	VOCs	TPH
ZC201	2007	1	1	0	0	0	0	1	0	0	1	0
ZC203	2007	1	1	0	1	0	0	0	1	0	0	0
ZC204	2007	1	1	0	0	1	1	0	0	0	0	0
ZC205	2007	1	1	1	0	0	0	0	0	1	0	0
ZC206	2007	1	1	0	0	1	0	0	0	0	0	0
ZC207	2007	1	1	0	0	1	1	0	0	0	0	0
ZC208	2007	1	1	0	0	1	1	0	0	0	0	0
ZC210	2007	1	1	0	0	1	1	0	0	0	0	0
ZC211	2007	1	1	1	0	0	0	0	0	0	0	0
ZC212	2007	1	1	0	0	1	1	1	0	0	0	0
ZC213	2007	1	1	0	0	1	0	0	0	0	0	0
ZC214	2007	1	1	0	0	0	0	0	0	0	1	1

2.4.2 Summary of Soil Reference Data

- No elevated concentrations of metals were detected in soil.
- pH values were within the range pH 7.9 to pH 10.6.
- TPH was only analysed for Reference Data in soil from one location, ZC214 (located between the European Technical Services Laboratory (ETSL) and the Oil Storage Area). Three samples were collected from depths of 0.9m, 1.8m and 3.6m bgl. TPH was detected at 270mg/kg, 400mg/kg and 1,500mg/kg respectively.
- VOCs were only analysed for Reference Data in soil from two locations, ZC212 (adjacent, south of the external drum storage area); and ZC214 (located between the ETSL and the Oil Storage Area). No VOCs were detected above laboratory detection limits.
- Formaldehyde was only analysed for in Reference Data in soil from one location, ZC212 (adjacent, south of the external drum storage area). Formaldehyde was not detected above the laboratory detection limit.
- Acrylonitrile was not recorded above the laboratory limits of detection in any of the tested samples.
- Catechol was analysed in soils from two locations, ZC210 in the effluent treatment plant and ZC212 adjacent to external drum storage. Catechol was not recorded above the laboratory limit of detection in these samples.
- Total Organic Carbon (TOC) was reported for three borehole locations within the Reference Data and ranged from 0.92% to 14%.

2.4.3 Summary of Groundwater Reference Data

- No elevated concentrations of metals were detected in groundwater.
- Sulphate ranged from not detected above the laboratory detection limit to 82mg/l.
- Chloride ranged from 40mg/l to 1,340mg/l.
- A trace concentration (1µg/l) of the VOC isopropylbenzene was identified at one sampling location (ZC214).
- TPH was only analysed for Reference Data in groundwater from one location, ZC214 (located between the ETSL and the Oil Storage Area). Total TPH was detected at 1.98mg/l.

It is noted that the Reference Data did not include analysis of soil or groundwater samples for PAH. However, PAHs were detected at several sample locations across the Site during the 1999 investigation. PAHs were subsequently analysed in groundwater under the SPMP (Section 7, Soil, Gas and Water Quality Monitoring).

2.4.4 Summary of Dames and Moore Soil Analysis Data, 1999

The following analytical results have not been included in URS' 'Statement of Reference Data'; however, are included herein for information. One shallow soil sample was collected from each of the eight boreholes installed (ZC201 to ZC208). Samples were analysis for TPH and total PAH. The results are summarised as follows:

- TPH concentrations ranged from 53mg/kg in ZC202 (0.4m bgl) to 2,563mg/kg in ZC208 (0.3m bgl), (located to the north of the Tank Farm). A slightly elevated concentration of TPH was also recorded in ZC207 at 0.3m bgl: 1,188mg/kg, located to the west of the Tank Farm.

- Total PAH concentrations ranged from below the laboratory limits of detection to 26mg/kg in ZC204 at 0.4m bgl. None of the concentrations detected were considered to be elevated.

3. PERMITTED ACTIVITIES

3.1 Operational Activities

In accordance with the Environmental Permitting (England & Wales) Regulations (EPR) 2010 (as amended), which transposes the EU Industrial Emissions Directive (2010/75/EU), the Site holds an integrated Part A(1) Environmental Permit (Ref. EPR/UP3836SS) for the production of organic chemicals. The original Application for an Authorisation under the Integrated Pollution Control (IPC) regime was made by Zeon in 1994. Variations were made in 1998 (addition of a thermal oxidiser and scrubber), 2002 (upgrades to the Effluent Treatment Plant) and 2005 (ZSC Plant, manufacture of a confidential product in Building N71).

As a requirement of the Integrated Pollution Prevention and Control (IPPC) Directive, an updated Permit Application was made in May 2006 and the Permit was duly issued to Zeon Chemicals Europe Limited on 12th December 2006.

An Environment Agency led Permit Variation was made in March 2012 in order to:

- review emissions to air and to water from the Installation to better protect the environment;
- to amend errors in the original Permit and review conditions; and
- to update all conditions in line with the most recent template.

The variation was issued as a Consolidated Permit on 17th May 2012.

The Permitted activities are summarised as follows:

Table 3.1: Permitted Activities

Activity Reference	Description	Limits of Specified Activity
A1	Producing organic chemicals such as synthetic rubber.	From receipt of raw materials to production, storage and despatch of final product including un-reacted monomer for re-use, disposal of waste and emission of exhaust gases and effluent.
A2	Disposal of non-hazardous waste in a facility with a capacity of more than 50 tonnes per day, physio-chemical treatment.	From receipt and treatment of effluent, storage and disposal of sludge, to discharge of treated effluent to Hexion lagoon.

Full details relating to the operations of the Installation are documented in the main Permit Application made in May 2006 by Zeon. In summary, permitted processes at the Installation involved the following (as summarised in the ASR produced by URS as supporting documentation):

Receipt of Principal Raw Materials:

- Acrylonitrile received as a liquid by means of a railway tanker. The practice ceased in 2000 and thereafter delivery was by road tanker.
- Butadiene delivered by road tanker to the tank farm (transfer to tanks via above ground pipes). Butadiene contains an inhibitor (tertiary butyl catechol) to limit its reactivity. The inhibitor was removed in the wash plant (N51) prior to reaction.

Polymerisation

- Acrylonitrile and butadiene was delivered to one of eight reactors (each 12,500 litres capacity) together with a soap solution and small quantities of ionic salts.
- Polymerisation was carried out at temperatures ranging from 9ºC to 30ºC depending on the polymer specification.
- The exothermic reactions were contained within the reactor until conversion of between 80% and 95% of the monomer was achieved.
- Cooling was provided by a refrigeration plant (N54) in which a methanol-water mixture or water was cooled by evaporation of ammonia and circulated to each rector's cooling coils.
- The reaction was terminated by dropping the charge onto a short stop in the corresponding blowdown vessel.
- Residual monomers were removed batch wise under vacuum and subsequently further stripped to remove free monomer.
- The product of the polymerisation process was a liquid latex, which was either transferred to the coagulation and drying process to produce a solid rubber or transported to storage for sale as a liquid product.

Coagulation and Drying

- To convert latex to solid form, liquid latex was added to a dilute calcium chloride solution or acid and salt solution which rendered the soap insoluble. The rubber particles coagulated to form a solid rubber crumb. The pH was then increased as the soap was washed from the rubber.
- Rubber crumb was dried by squeezing the product in a cage screw press followed by fluid bed drying. The dried particles were then compressed to produce a 25kg or 20kg bale, wrapped in polythene and crated.
- The coagulation of black nitrile rubber compound ('Polyblack') was similar, with carbon black being added prior to coagulation. The manufacture of Polyblack ceased in approximately 2004. The main dying process was previously carried out in Building N160; and the coagulation process in Building N99.
- Polyblack was formerly dried by centrifuge, coated with china clay and dried within a fluid bed. The dried material was sieved, blended and packed in polythene sacks.

The finished product comprised 20kg and 25kg bales of Nitrile Butadiene Rubber which were stored in metal crates in the main Storage Warehouse (Plot B). Approximately 2% of the finished product comprised latex, which was stored in designated stock tanks within Building N71.

3.2 Control of Major Accident Hazards (COMAH)

Part of the Site was also registered as a Lower Tier COMAH installation. The classification was based on the storage volumes of acrylonitrile, butadiene, tertiary dodecylmercaptan (TDM) and anhydrous ammonia. The former COMAH designated areas are shown on Figure 5, Appendix 1. The Installation has been de-notified as a COMAH facility.

3.3 Non-Permitted Activities

The Installation boundary encompassed the manufacturing Site and the storage warehouse (Building S75) located in the south-west, as shown on Figure 2, Appendix 1. However, the entire Site leased

by Zeon incorporates a plot of undeveloped, overgrown land in the south. Zeon has confirmed that no activities (permitted or otherwise) have taken place in this area during their occupation.

Permitted activities including manufacturing and material storage were only carried out within the Installation boundary.

3.4 Improvement Programme

An improvement programme was stipulated in the Permit and is summarised below:

Table 3.2: Improvement Programme

Reference	Requirement	Date Required by	Completed (Y/N)
IP1	Improve operation of the thermal oxidiser to achieve 97% availability – submit a written plan to the EA for approval.	01/10/12	Y
IP2	Reduce acrylonitrile and butadiene emissions to below Air Quality Standard Limits - submit a written plan to the EA for approval.	01/10/12	Y
IP3	Report on an investigation of installing on-line metering equipment to continuously monitor emissions from the installation at emissions point S1 - submit a report to the EA for approval.	01/02/13	Y
IP4	Measures to improve site infrastructure and containment measures to meet emission requirements stipulated in the guidance note - submit a written plan to the EA for approval.	01/09/13	Y
IP5	Plan detailing how the ETP will be optimised to meet the benchmarks given in Annex 1 of the Sector Guidance Note for the Speciality Organic Chemicals Sector EPR 4.02 – submit a written plan to the EA for approval.	01/09/15	N

The Installation was subject to regular audits which were carried out by NRW. It has been confirmed by Zeon that no major non-compliance issues were identified during the lifetime of the EP that had the potential to have caused pollution to soil or groundwater.

3.5 Potentially Polluting Substances

There are 180 Above Ground Storage Tanks (ASTs) within the Installation. A tank inventory showing their individual capacities and former contents prior to the site closure is provided in Appendix 3.

Since the closure of the facility, all potentially polluting substances have been removed and all plant, equipment and storage vessels have been decommissioned. Tanks and storage vessels have been emptied and cleaned as far as practicable. Where applicable, tanks have been labelled with decontamination certificates.

4. CHANGES TO THE ACTIVITY

4.1 Changes to the Installation Boundary

There have been no changes to the Installation boundary over the lifetime of the EP.

4.2 Changes to the Permitted Activities

The original Application for an Authorisation under the Integrated Pollution Control (IPC) regime was made by Zeon in 1994. Variations were made in 1998 (addition of a thermal oxidiser and scrubber), 2002 (upgrades to the ETP) and 2005 (ZSC Plant, manufacture of a confidential product in Building N71). However, since the most recent EP issue (12th December 2006), only one Permit Variation has been made in March 2012 (Variation Notice Number: EPR/UP3836SS/V002). The Permit Variation was required in order to:

- review emissions to air and to water from the installation to better protect the environment (Schedule 3 of the Permit details the point source emissions to air, emission limits and monitoring frequencies);
- to amend errors in the original Permit and review conditions; and
- to update all conditions in line with the most recent template.

The variation was issued as a Consolidated Permit on 17th May 2012.

Zeon has confirmed that whilst the Installation was operational, there were no other major changes to activities since the issue of the EP in 2006.

4.3 Dangerous Substances Related to Permitted Activities

The following dangerous substances have been produced at the installation as a result of Permitted Activities (in addition to those already documented in the ASR:

- Zinc Methacrylate

5. MEASURES TAKEN TO PROTECT LAND

During the lifetime of the EP, environmental and infrastructure monitoring programmes were in place in order to protect the land. The facility was a lower tier COMAH site and as such had on-site emergency response plans in place and implemented risk reduction techniques.

5.1 Site Protection Measures

Site protection measures are described in the PPC Application and within Zeon's Environmental Management System (EMS). In summary, these included the following:

5.1.1 Bulk Storage

Storage and process vessels were constructed of suitable materials and contained within bunds. Vessels storing hazardous chemicals or substances at pressure were built to a suitable design code such as BS5500.

Methods adopted for the prevention of overfilling tanks included batch metering, level control, high level alarms and/or trips with automatic or manual shut down.

Dedicated areas were provided for flammables, waste products, raw materials and final product. Packaged raw materials and final product were stored in dedicated areas in the main warehouse.

Procedures were also in place for loading and unloading of bulk and packed goods in order to ensure safe operations took place.

5.1.2 Bunds

All storage vessels with the potential to harm the environment were bunded. The bunds were built so that where possible, pipework was routed within the bunded area and designed to catch leaks from tanks, fitting and fill points. The bunds had no direct outlet but could be discharged via pumps manually.

5.1.3 Drainage

The drainage systems on-site are 'closed' (i.e. there are no recorded inflows or pipes from outside the Site, and no outfalls into public sewers or nearby watercourses).

The foul drainage systems terminate in septic tanks or pits, which were emptied as required by tanker. *The septic pits have been emptied and cleaned during decommissioning.*

The surface water and process drainage systems were ultimately directed to a balancing tank and the ETP. From the ETP, discharge was pumped through an above ground carbon steel pipeline to the north and off-site into the lagoon on the neighbouring Hexion facility. Hexion's lagoon is not part of the Zeon Installation and was therefore not regulated under the Permit. However, emission limits and monitoring requirements were stipulated in the EP and daily measurements were required to be reported to NRW on a quarterly basis.

5.2 Infrastructure Monitoring Programme

The objective of the infrastructure monitoring programme was to demonstrate the effectiveness of pollution prevention measures at the Installation throughout the lifetime of the EP.

The following measures were in place at the Installation whilst it was operational:

- Regular inspection of impervious surfacing and containment kerbs.
- Weekly bund inspections were scheduled through the planned maintenance programme. When necessary, the bunds were cleared of debris and drained of rainwater or other liquid. The bunds were also inspected and hydraulically tested on a programmed basis.
- Programmed visual inspection of above ground tanks and associated pipework took place.

The Installation's monitoring regime was audited under the Operator Monitoring Assessment (OMA) Scheme by NRW. This scheme looked at attributes such as competency of personnel, fitness for purpose, maintenance and calibration of monitoring equipment, quality assurance and quality control.

5.3 Routine Maintenance Programmes

Routine maintenance programmes were in place to ensure that equipment at the Installation continued to perform to its original design capability and that the safety and integrity of plant systems were maintained. Planned and reactive maintenance took place at the Installation using both in-house planned maintenance programmes and external contracts with specialist support services.

A maintenance plan was in place at the Installation for the type and frequency of inspection, maintenance and/or replacement of equipment. The maintenance schedules were periodically reviewed to ensure that frequencies remained relevant and appropriate. Results of maintenance inspections, etc. were logged/ recorded using planned maintenance software, PEMAC 5.

Procedures in place to prevent contamination during maintenance included the use of a permit to work system, inspection of maintenance work by a competent person and insurance inspections.

5.4 Emergency Response Procedures

As part of Zeon's COMAH requirements, an on-site emergency response plan was in place.

Emergency response procedures which were in place at the Installation included:

- In the event of a spillage, the material was contained within the area, drains isolated or covered and spillage washed down to effluent treatment or pumped to IBCs/drums, dependant on the nature of the spillage material.
- Dedicated spillage equipment was stored at the Installation. Spill kits were used to clean up any contaminated spilt material, this was subsequently disposed off-site to a licensed disposal facility.
- In the event that a spillage entered the on-site drains, flow through the ETP was stopped and discharge to Hexion's Lagoon inhibited until the quality of the discharge was confirmed. Where necessary contaminated effluent could be diverted to a "Calamity Tank" for further treatment or off-site disposal. (The likelihood of a spillage entering the Cadoxton River was considered very low due to its location compared to any storage tanks and processing areas).
- Whilst operational, there were pH alarms on N159 pit and the final Treated Effluent Tank that inhibited transfer. Monomer spills would be detected by the VOC detectors around the Site which were programmed to set off alarms.

5.5 Environmental Monitoring Programme

A Site Protection and Monitoring Programme (SPMP) was prepared by Zeon in 2006. Under the EP, the SPMP was required to be reviewed every four years. A review was carried out by Zeon in 2011 considering operations and data on ground conditions and infrastructure.

Changes to operations were described as: the decommissioning of the methanol tank; discontinued operation of the Polyblack plant; and the re-routing of the path of Surplus Activated Sludge (SAS) from the ETP via the aeration tank (i.e. no longer transferred via land drain).

By 2007, there were 14 No. SPMP boreholes (shown on Figure 6, Appendix 1), monitored by Zeon on an annual basis for TPH and PAH. The results were reported to the EA (later NRW) on an annual basis and are discussed in Section 7.

Containment bunds were described as being inspected, checked and cleared as necessary on a weekly basis. A programme of bund and hard standing improvement was referenced, as required under the Permit (Improvement Programme item No.4, IP4).

A contractor was employed in 2008 to undertake a drainage condition survey, after which a number of repairs were carried out. Ramboll Environ understands that an on-going programme of drainage maintenance was in place during the operational phase of the Installation.

6. POLLUTION INCIDENTS THAT MAY HAVE HAD AN IMPACT ON LAND

6.1 Leak and Spillage Incidents

Table 6.1 below lists the leak and spillage incidents which are known to have occurred at the Installation during the lifetime of the EP. Figure 5, Appendix 1 shows the approximate location of these incidents, i.e. 'potential areas of concern' (PAOC).

Table 6.1: Leak and Spillage Incidents (During Lifetime of the EP)

Date	Location	Description
2009	Tank Farm	A pump seal failure occurred allowing acrylonitrile to leak into the ground. *The volume of loss was not recorded.* The pump was replaced and remediation was undertaken by excavating a trench along the boundary lines with Hexion Chemicals (north-east) and the former Dow Chemicals site (south-east) to stop acrylonitrile migrating off-site. Accumulated water was pumped out into the Zeon ETP. According to the Site contact, the excavated soil was 'washed' on-site before backfilling.
2009, 2011, 2013	Methanol tank pump (adjacent to building N54)	On three separate recorded occasions, the tank pump has failed and a loss to unsurfaced ground has occurred. No investigation or remediation has been undertaken in this area. The 2011 incident was reported to the EA.
Several occasions – no specified dates	EMAL (sodium alkyl sulphate) (soap) tank (south of N55)	During delivery by tanker, the tank was reported to have overflowed on several occasions onto unsurfaced ground. Leakage is also known to have occurred from the agitator apparatus. The adjacent monitoring well (ZC211) has been recorded as containing petroleum hydrocarbons (in the range C10 to C12) in groundwater (maximum concentration detected 43,200µg/l TPH in 2009). *Periodic monitoring of ZC211 by Zeon has demonstrated a significant decrease in concentrations since remedial works were carried out (Section 7.1.2)*
Several occasions – no specified dates	ETP	There has been several incidents of sludge release to unsurfaced ground. The sludge comprises a non-hazardous biomass. On one occasion, the sludge overflowed to the adjacent off-site land to the east. All of the site drainage is eventually returned to the ETP, so sludge that entered the drains would have theoretically circulated back to the treatment area (depending on the integrity of the drains). Subsequently, a wall was constructed in order to prevent sludge overflow onto adjacent land.

Ramboll Environ's Phase II ESA for Permit Surrender was designed to target the aforementioned areas in order to determine whether or no ground and groundwater has been impacted by the various spillages and leakages (Section 9).

7. SOIL, GAS AND WATER QUALITY MONITORING

7.1 Monitoring Requirements Under the Permit

7.1.1 Emissions Monitoring

Schedule 3 of the Permit details 23 No. point source emissions to air, the majority of which had stipulated emissions limits and monitoring frequencies. Monitoring frequencies ranged from continuous to annual; however, the majority of points were monitored quarterly while the installation was operational. Process monitoring requirements were also detailed within the schedule.

Ambient air was measured continuously for butadiene and acrylonitrile and the results were reported to NRW quarterly.

There were also point source emission limits from the ETP which were monitored daily.

Measures were required under the Permit to prevent pollution from the emissions of substances not controlled by emission limits (excluding odour), e.g. secondary containment measures. A programme of continuous improvement was maintained in this respect which was reviewed by NRW approximately every two years.

Odour, noise and vibration management plans were required to be in place in the event that NRW encountered pollution beyond the Site boundaries.

Schedule 4 of the Permit details the reporting requirements and frequencies for the aforementioned emissions monitoring.

7.1.2 Groundwater Monitoring

Annual groundwater monitoring was carried out by Zeon between 2008 and 2014 from 14 No. SPMP boreholes. The borehole locations are shown on Figure 6, Appendix 1. The samples were collected internally and have been analysed by various laboratories including Northumbrian Water Scientific Services, ALS Global and Severn Trent Laboratories Ltd. Groundwater was analysed for TPH and PAH.

The results have been provided to Ramboll Environ as laboratory certificates of analysis; however, there are no corresponding factual interpretative reports, with the exception of a brief 'Borehole Analysis Summary' as part of the SPMP review in 2011 compiled by Zeon. The analytical certificates of analysis are presented in Appendix 4 and the results are summarised in Section 7.1.3 below.

Zeon's Borehole Analysis Summary identified that elevated TPH was detected in ZC211 as a consequence of an overflow incident in 2008 from the EMAL soap tank. Remediation (carried out by Zeon) comprised dilution with water and pumping to the effluent treatment plant (ETP). The results *(including Ramboll Environ's recent (2016) monitoring)* have indicated an overall decrease in concentrations since.

Elevated TPH concentrations in groundwater were also consistently recorded in the vicinity of the ETP. Elevated concentrations of acrylonitrile (up to 760µg/l) had been detected in the boreholes near the tank farm as a result of a spillage incident in 2009*; however, acrylonitrile was not detected in any of these boreholes during Ramboll Environ's recent (2016) monitoring. Acrylonitrile is a volatile with a very short half-life. As such, the compound would not be expected to persist with the soil and/ or groundwater environment for a significant length of time.*

Occasional elevated concentrations of PAHs (up to 24µg/l naphthalene) were also identified at discrete locations across the Installation, albeit at low frequency.

The results of SPMP monitoring in the vicinity of effluent pits at Building N55 and N160 reportedly indicated potential loss of integrity. No formal inspection of the pits had been undertaken in at least four years at the time of writing (2011). An inspection and maintenance programme was reportedly put in place for August 2011. This included the brine UST.

7.1.3 SPMP Trends in Groundwater Concentrations

Ramboll Environ has tabulated the factual SPMP groundwater monitoring data collected over time in order to identify trends in concentrations. For each location, the last monitoring round was carried out by Ramboll Environ in 2016 as part of the Phase II ESA investigation. All previous monitoring was carried out by Zeon.

For context, concentrations have been compared with Ramboll Environ GAC for Controlled Waters, i.e. Environmental Quality Standards (EQS) and where unavailable, UK Drinking Water Standards (UK DWS). The results are presented in Tables 7.1 to 7.11 below.

Table 7.1: ZC202 – TPH & PAH Concentrations 2008 to 2016

ZC202 Area of Low Risk (south of L179 QA Lab)													
Date Sampled	**TPH >C6-C40 (µg/l)**	**Acenaphthene (µg/l)**	**Acenaphthylene (µg/l)**	**Anthracene (µg/l)**	**Benzo[a]pyrene (µg/l)**	**Dibenzo[a,h] anthracene (µg/l)**	**Fluoranthene (µg/l)**	**Fluorene (µg/l)**	**Indeno[1,2,3-cd] pyrene (µg/l)**	**Naphthalene (µg/l)**	**Phenanthrene (µg/l)**	**Pyrene (µg/l)**	**Total PAHs (µg/l)**
REH GAC	10	400	NC	0.1	0.05	0.002	0.12	220	0.002	2	5	87	NC
18/09/2008	<50	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
30/06/2011	**14**	0.16	0.069	0.014	<0.01	**0.018**	0.014	0.439	**0.018**	0.072	0.047	0.033	0.898
18/11/2011	**69**	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
17/05/2016	**120**	0.131	0.06	0.036	<0.010	<0.010	0.018	0.28	<0.010	0.034	0.041	0.042	0.642

NA – Not Analysed
NC – Not Calculated
Bold text indicates exceedance of Ramboll Environ GAC

- TPH concentrations are increasing; and exceed the conservative UK DWS of 10µg/l. There is no obvious source of TPH at this location; however, the concentration is not considered significantly elevated considering the industrial location and that the UK DWS is conservative since the

groundwater is not abstracted for drinking. *There is no Reference data for ZC202, i.e. no TPH groundwater data presented for 1999 or 2006 at this location.*

- PAH concentrations have generally decreased; none exceeded the respective GAC in the most recent monitoring round.

Table 7.2: ZC203 – TPH & PAH Concentrations 2008 to 2016

ZC203 – Northern Installation Boundary													
Date Sampled	**TPH >C6-C40 (µg/l)**	**Acenaphthene (µg/l)**	**Acenaphthylene (µg/l)**	**Anthracene (µg/l)**	**Benzo[a]pyrene (µg/l)**	**Dibenzo[a,h] anthracene (µg/l)**	**Fluoranthene (µg/l)**	**Fluorene (µg/l)**	**Indeno[1,2,3-cd] pyrene (µg/l)**	**Naphthalene (µg/l)**	**Phenanthrene (µg/l)**	**Pyrene (µg/l)**	**Total PAHs (µg/l)**
REH GAC	10	400	NC	0.1	0.05	0.002	0.12	220	0.002	2	5	87	NC
18/09/2008	**55**	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
30/06/2011	**59**	0.112	0.043	<0.01	<0.01	<0.01	0.01	0.219	<0.01	0.145	0.095	<0.01	0.625
18/11/2011	**29**	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
14/06/2012	NA	0.048	0.011	<0.01	<0.01	<0.01	<0.01	0.053	<0.01	<0.01	<0.01	<0.01	0.112
21/11/2012	**30**	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
18/05/2016	**100**	0.18	0.065	0.024	<0.010	<0.010	0.033	0.351	<0.010	0.083	0.035	0.04	0.811

NA – Not Analysed
NC – Not Calculated
Bold text indicates exceedance of Ramboll Environ GAC

- TPH concentrations are increasing; and exceed the conservative UK DWS of 10µg/l. There is no obvious source of TPH at this location; however, the concentration is not considered significantly elevated considering the industrial location and that the UK DWS is conservative since the groundwater is not abstracted for drinking. *There is no Reference data for ZC203, i.e. no TPH groundwater data presented for 1999 or 2006 at this location.*
- Whereas some PAH compounds have increased in concentration; all are below the relevant GAC for Controlled Waters.

Table 7.3: ZC204 – TPH & PAH Concentrations 2008 to 2016

ZC204 - Northern Portion of the Installation (east of N55 Effluent Pit)													
Date Sampled	**TPH >C6-C40 (µg/l)**	**Acenaphthene (µg/l)**	**Acenaphthylene (µg/l)**	**Anthracene (µg/l)**	**Benzo[a]pyrene (µg/l)**	**Dibenzo[a,h] anthracene (µg/l)**	**Fluoranthene (µg/l)**	**Fluorene (µg/l)**	**Indeno[1,2,3-cd] pyrene (µg/l)**	**Naphthalene (µg/l)**	**Phenanthrene (µg/l)**	**Pyrene (µg/l)**	**Total PAHs (µg/l)**
REH GAC	10	400	NC	0.1	0.05	0.002	0.12	220	0.002	2	5	87	NC
18/09/2008	**24**	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
27/10/2010	**125**	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
18/05/2016	**36**	0.416	0.048	0.027	<0.010	<0.010	0.032	0.061	<0.010	0.032	<0.010	0.023	0.639

NA – Not Analysed

NC – Not Calculated

Bold text indicates exceedance of Ramboll Environ GAC

- TPH has decreased since the 2010 monitoring round and is not considered significantly elevated. *There is no Reference data for ZC204, i.e. no TPH groundwater data presented for 1999 or 2006 at this location.*
- Whereas some PAH compounds have increased in concentration; all are below the relevant GAC for Controlled Waters.

Table 7.4: ZC205 - TPH & PAH Concentrations 2008 to 2016

ZC205 - North of N159 Coagulant Building													
Date Sampled	**TPH >C6-C40 (µg/l)**	**Acenaphthene (µg/l)**	**Acenaphthylene (µg/l)**	**Anthracene (µg/l)**	**Benzo[a]pyrene (µg/l)**	**Dibenzo[a,h] anthracene (µg/l)**	**Fluoranthene (µg/l)**	**Fluorene (µg/l)**	**Indeno[1,2,3-cd] pyrene (µg/l)**	**Naphthalene (µg/l)**	**Phenanthrene (µg/l)**	**Pyrene (µg/l)**	**Total PAHs (µg/l)**
REH GAC	10	400	NC	0.1	0.05	0.002	0.12	220	0.002	2	5	87	NC
29/01/2008	**61**	<0.01	<0.01	<0.01	0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	0.01

ZC205 - North of N159 Coagulant Building													
Date Sampled	**TPH >C6-C40 (µg/l)**	**Acenaphthene (µg/l)**	**Acenaphthylene (µg/l)**	**Anthracene (µg/l)**	**Benzo[a]pyrene (µg/l)**	**Dibenzo[a,h] anthracene (µg/l)**	**Fluoranthene (µg/l)**	**Fluorene (µg/l)**	**Indeno[1,2,3-cd] pyrene (µg/l)**	**Naphthalene (µg/l)**	**Phenanthrene (µg/l)**	**Pyrene (µg/l)**	**Total PAHs (µg/l)**
REH GAC	10	400	NC	0.1	0.05	0.002	0.12	220	0.002	2	5	87	NC
25/03/2009	**4850**	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
27/10/2010	**252**	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
03/03/2011	**89**	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
14/06/2012	NA	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
21/11/2012	**102**	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
04/11/2013	**79**	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
18/05/2016	**142**	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	0.024	<0.010	<0.010	0.024

NA – Not Analysed

NC – Not Calculated

Bold text indicates exceedance of Ramboll Environ GAC

- TPH has decreased and the most recent concentration (142µg/l) is significantly less than the maximum detected in 2009 (4,850µg/l). However, the concentrations continue to exceed the conservative UK DWS of 10µg/l (considered to be conservative since the groundwater is not abstracted for drinking). *There is no Reference data for ZC205, i.e. no TPH groundwater data presented for 1999 or 2006 at this location.*
- PAH concentrations have not exceeded the respective GAC for Controlled Waters over the monitoring period.

Table 7.5: ZC206 - TPH & PAH Concentrations 2008 to 2016

ZC206 - ETP													
Date Sampled	**TPH >C6-C40 (µg/l)**	**Acenaphthene (µg/l)**	**Acenaphthylene (µg/l)**	**Anthracene (µg/l)**	**Benzo[a]pyrene (µg/l)**	**Dibenzo[a,h] anthracene (µg/l)**	**Fluoranthene (µg/l)**	**Fluorene (µg/l)**	**Indeno[1,2,3-cd] pyrene (µg/l)**	**Naphthalene (µg/l)**	**Phenanthrene (µg/l)**	**Pyrene (µg/l)**	**Total PAHs (µg/l)**
REH GAC	10	400	NC	0.1	0.05	0.002	0.12	220	0.002	2	5	87	NC
29/01/2008	**400**	<0.01	<0.01	<0.01	<0.01	<0.01	0.08	<0.01	<0.01	0.03	<0.01	0.08	0.19
27/03/2009	**97**	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
09/12/2009	**32**	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
14/06/2012	NA	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
30/06/2011	**86**	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
21/11/2012	**57**	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
04/11/2013	**44**	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
27/03/2014	**166**	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
18/05/2016	**207**	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.020	0.01	<0.010	0.01

NA – Not Analysed

NC – Not Calculated

Bold text indicates exceedance of Ramboll Environ GAC

- Overall TPH concentrations have decreased since the 2008 monitoring round where a concentration of 400µg/l was detected. However, concentrations continue to exceed the conservative UK DWS of 10µg/l (considered to be conservative since the groundwater is not abstracted for drinking). *There is no Reference data for ZC206, i.e. no TPH groundwater data presented for 1999 or 2006 at this location.*
- PAH concentrations have not exceeded the respective GAC for Controlled Waters over the monitoring period.

Table 7.6: ZC207 - TPH & PAH Concentrations 2008 to 2016

ZC207 – South of Tank Farm													
Date Sampled	**TPH >C6-C40 (µg/l)**	**Acenaphthene (µg/l)**	**Acenaphthylene (µg/l)**	**Anthracene (µg/l)**	**Benzo[a]pyrene (µg/l)**	**Dibenzo[a,h] anthracene (µg/l)**	**Fluoranthene (µg/l)**	**Fluorene (µg/l)**	**Indeno[1,2,3-cd] pyrene (µg/l)**	**Naphthalene (µg/l)**	**Phenanthrene (µg/l)**	**Pyrene (µg/l)**	**Total PAHs (µg/l)**
REH GAC	10	400	NC	0.1	0.05	0.002	0.12	220	0.002	2	5	87	NC
29/01/2008	**2770**	0.01	<0.01	0.02	<0.01	<0.01	0.02	0.01	<0.01	**13.0**	<0.01	0.02	13.1
08/08/2008	**1940**	<0.01	<0.01	0.01	<0.01	<0.01	<0.01	<0.01	<0.01	0.61	<0.01	<0.01	0.62
19/09/2008	**476**	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
25/03/2009	**492**	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
14/04/2010	**936**	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
27/10/2010	**535**	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	0.207	<0.01	0.28	0.253
03/03/2011	**873**	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
04/11/2013	**351**	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
27/03/2014	**1610**	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
18/05/2016	**1119**	0.034	<0.010	0.019	<0.010	<0.010	0.062	0.02	<0.010	**4.17**	0.029	0.047	4.381

NA – Not Analysed

NC – Not Calculated

Bold text indicates exceedance of Ramboll Environ GAC

- Overall TPH concentrations have decreased since the 2008 monitoring round where a concentration of 2,770µg/l was detected. However, concentrations continue to exceed the conservative UK DWS of 10µg/l (considered to be conservative since the groundwater is not abstracted for drinking). *There is no Reference data for ZC207, i.e. no TPH groundwater data presented for 1999 or 2006 at this location. However, the Dames and Moore investigation carried out in 1999 identified TPH at 1,188mg/kg in shallow soil at this location. Ramboll Environ has carried out DQRA to assess the risk to Controlled Waters from the most recent detected*

concentration in groundwater. The concentration was found to be below the developed remedial target and as such, theoretically no further action is required to protect receptors; however, Ramboll Environ has proposed localised soil and groundwater remediation at this location to support surrender of Site leases.

- Of the PAH compounds detected, naphthalene has been found to exceed the GAC of 2µg/l on two occasions: 2008 (13µg/l) and 2016 (4.17µ/l). The most recent concentration has decreased since 2008; however, does slightly exceed the Controlled Waters screening criteria. *The aforementioned DQRA carried out by Ramboll Environ included naphthalene and the concentration was found to be below the developed remedial target; however, as mentioned above, localised soil and groundwater remediation is proposed at this location to support surrender of Site leases.*

Table 7.7: ZC208 - TPH & PAH Concentrations 2008 to 2016

ZC208 - Northern Installation Boundary and North of Tank Farm													
Date Sampled	**TPH >C6-C40 (µg/l)**	**Acenaphthene (µg/l)**	**Acenaphthylene (µg/l)**	**Anthracene (µg/l)**	**Benzo[a]pyrene (µg/l)**	**Dibenzo[a,h] anthracene (µg/l)**	**Fluoranthene (µg/l)**	**Fluorene (µg/l)**	**Indeno[1,2,3-cd] pyrene (µg/l)**	**Naphthalene (µg/l)**	**Phenanthrene (µg/l)**	**Pyrene (µg/l)**	**Total PAHs (µg/l)**
REH GAC	10	400	NC	0.1	0.05	0.002	0.12	220	0.002	2	5	87	NC
09/12/2009	<10	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
14/04/2010	<10	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
27/10/2010	**107**	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
30/06/2011	<10	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
14/06/2012	NA	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
21/11/2012	<10	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
27/03/2014	**120**	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
18/05/2016	**247**	0.013	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	0.064	<0.010	<0.010	0.077
NA – Not Analysed NC – Not Calculated													

ZC208 - Northern Installation Boundary and North of Tank Farm													
Date Sampled	**TPH >C6-C40 (µg/l)**	**Acenaphthene (µg/l)**	**Acenaphthylene (µg/l)**	**Anthracene (µg/l)**	**Benzo[a]pyrene (µg/l)**	**Dibenzo[a,h] anthracene (µg/l)**	**Fluoranthene (µg/l)**	**Fluorene (µg/l)**	**Indeno[1,2,3-cd] pyrene (µg/l)**	**Naphthalene (µg/l)**	**Phenanthrene (µg/l)**	**Pyrene (µg/l)**	**Total PAHs (µg/l)**
REH GAC	10	400	NC	0.1	0.05	0.002	0.12	220	0.002	2	5	87	NC
Bold text indicates exceedance of Ramboll Environ GAC													

- TPH concentrations have generally increased; and exceed the conservative UK DWS of 10µg/l. There is no obvious source of TPH at this location; however, the concentration is not considered significantly elevated considering the industrial location and that the UK DWS is conservative since the groundwater is not abstracted for drinking. *There is no Reference data for ZC208, i.e. no TPH groundwater data presented for 1999 or 2006 at this location. However, soil analysis from ZC208 (sample at 0.3m bgl) carried out by Dames and Moore in 1999 recorded a TPH concentration of 2,563mg/kg.*
- Whereas some PAH compounds have increased in concentration; all are below the relevant GAC for Controlled Waters.

Table 7.8: ZC210 - TPH & PAH Concentrations 2008 to 2016

ZC210 – North-West of the Tank Farm													
Date Sampled	**TPH >C6-C40 (µg/l)**	**Acenaphthene (µg/l)**	**Acenaphthylene (µg/l)**	**Anthracene (µg/l)**	**Benzo[a]pyrene (µg/l)**	**Dibenzo[a,h] anthracene (µg/l)**	**Fluoranthene (µg/l)**	**Fluorene (µg/l)**	**Indeno[1,2,3-cd] pyrene (µg/l)**	**Naphthalene (µg/l)**	**Phenanthrene (µg/l)**	**Pyrene (µg/l)**	**Total PAHs (µg/l)**
REH GAC	10	400	NC	0.1	0.05	0.002	0.12	220	0.002	2	5	87	NC
29/01/2008	**151**	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
27/10/2010	**87**	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01

30/06/2011	**31**	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
19/05/2016	**74**	0.284	0.097	0.018	<0.010	<0.010	0.033	0.025	<0.010	0.093	0.028	0.03	0.608

NA – Not Analysed

NC – Not Calculated

Bold text indicates exceedance of Ramboll Environ GAC

- Overall TPH concentrations have decreased since the 2008 monitoring round where a concentration of 151µg/l was detected. However, concentrations continue to exceed the conservative UK DWS of 10µg/l (considered to be conservative since the groundwater is not abstracted for drinking). *There is no Reference data for ZC210, i.e. no TPH groundwater data presented for 1999 or 2006 at this location.*
- PAH concentrations have not exceeded the respective GAC for Controlled Waters over the monitoring period.

Table 7.9: ZC211 - TPH & PAH Concentrations 2008 to 2016

ZC211 – North of the Polyblack Effluent Pit													
Date Sampled	**TPH >C6-C40 (µg/l)**	**Acenaphthene (µg/l)**	**Acenaphthylene (µg/l)**	**Anthracene (µg/l)**	**Benzo[a]pyrene (µg/l)**	**Dibenzo[a,h] anthracene (µg/l)**	**Fluoranthene (µg/l)**	**Fluorene (µg/l)**	**Indeno[1,2,3-cd] pyrene (µg/l)**	**Naphthalene (µg/l)**	**Phenanthrene (µg/l)**	**Pyrene (µg/l)**	**Total PAHs (µg/l)**
REH GAC	10	400	NC	0.1	0.05	0.002	0.12	220	0.002	2	5	87	NC
29/01/2008	**9260**	0.02	0.02	<0.02	<0.02	<0.02	<0.02	0.07	<0.02	2.15	<0.02	<0.02	2.26
07/08/2008	**40700**	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	3.96	<0.20	<0.20	3.96
18/09/2008	**236000**	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
24/11/2008	**25700**	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
24/11/2008	**108000**	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
24/11/2008	**339000**	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
24/11/2008	**192000**	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

ZC211 – North of the Polyblack Effluent Pit													
Date Sampled	**TPH >C6-C40 (µg/l)**	**Acenaphthene (µg/l)**	**Acenaphthylene (µg/l)**	**Anthracene (µg/l)**	**Benzo[a]pyrene (µg/l)**	**Dibenzo[a,h] anthracene (µg/l)**	**Fluoranthene (µg/l)**	**Fluorene (µg/l)**	**Indeno[1,2,3-cd] pyrene (µg/l)**	**Naphthalene (µg/l)**	**Phenanthrene (µg/l)**	**Pyrene (µg/l)**	**Total PAHs (µg/l)**
REH GAC	10	400	NC	0.1	0.05	0.002	0.12	220	0.002	2	5	87	NC
26/03/2009	**35100**	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
08/05/2009	**43200**	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
08/05/2009	**35500**	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
09/12/2009	**5760**	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
14/04/2010	**4290**	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
27/10/2010	**2940**	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	0.68	<0.01	0.475	0.543
03/03/2011	**3350**	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
30/06/2011	**19300**	<0.01	<0.01	<0.01	<0.01	<0.36	<0.01	<0.01	<0.36	<1.40	0.334	<0.10	0.334
18/11/2011	**346000**	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
14/06/2012	**9470**	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	0.172	<0.10	<0.10	0.172
21/11/2012	**39700**	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	0.489	<0.02	<0.02	0.489
04/11/2013	**3450**	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
27/03/2014	**354**	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
19/05/2016	**99**	0.047	<0.010	<0.010	<0.010	<0.010	<0.010	0.028	<0.010	0.635	<0.010	<0.010	0.71
NA – Not Analysed NC – Not Calculated													

ZC211 – North of the Polyblack Effluent Pit													
Date Sampled	**TPH >C6-C40 (µg/l)**	**Acenaphthene (µg/l)**	**Acenaphthylene (µg/l)**	**Anthracene (µg/l)**	**Benzo[a]pyrene (µg/l)**	**Dibenzo[a,h] anthracene (µg/l)**	**Fluoranthene (µg/l)**	**Fluorene (µg/l)**	**Indeno[1,2,3-cd] pyrene (µg/l)**	**Naphthalene (µg/l)**	**Phenanthrene (µg/l)**	**Pyrene (µg/l)**	**Total PAHs (µg/l)**
REH GAC	10	400	NC	0.1	0.05	0.002	0.12	220	0.002	2	5	87	NC
Bold text indicates exceedance of Ramboll Environ GAC													

- Overall TPH concentrations have decreased since the 2011 monitoring round where a concentration of 346,000µg/l was detected as a result of an overflow incident from the EMAL soap tank. Remediation (carried out by Zeon) comprised dilution with water and pumping to the effluent treatment plant (ETP). The results (including Ramboll Environ's recent (2016) monitoring) have indicated an overall decrease in concentrations since. However, concentrations continue to exceed the conservative UK DWS of 10µg/l (considered to be conservative since the groundwater is not abstracted for drinking). Very low concentrations were detected in the individual carbon bands, mostly in the aromatic range C16 to C21. The residual concentrations detected in groundwater are considered likely to be surfactants (soaps). *There is no Reference data for ZC211, i.e. no TPH groundwater data presented for 1999 or 2006 at this location. It should be noted that monitoring was first carried out in 2009, and the first set of results identified an elevated TPH concentration of 43,200µg/l. Given that the most recent concentration detected in 2016 is the lowest recorded to date (99µg/l), and that the results demonstrate a gradual decrease in concentrations over time, no further action is proposed at this location.*
- PAH concentrations have not exceeded the respective GAC for Controlled Waters over the monitoring period.

Table 7.10: ZC213 - TPH & PAH Concentrations 2008 to 2016

ZC213 - South-east of ETP, at the Installation Boundary													
Date Sampled	**TPH >C6-C40 (µg/l)**	**Acenaphthene (µg/l)**	**Acenaphthylene (µg/l)**	**Anthracene (µg/l)**	**Benzo[a]pyrene (µg/l)**	**Dibenzo[a,h] anthracene (µg/l)**	**Fluoranthene (µg/l)**	**Fluorene (µg/l)**	**Indeno[1,2,3-cd] pyrene (µg/l)**	**Naphthalene (µg/l)**	**Phenanthrene (µg/l)**	**Pyrene (µg/l)**	**Total PAHs (µg/l)**
REH GAC	10	400	NC	0.1	0.05	0.002	0.12	220	0.002	2	5	87	NC
19/09/2008	**44**	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
03/03/2011	**51**	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
21/11/2012	**25**	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
19/05/2016	**20**	0.029	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.020	<0.010	<0.010	0.029
NA – Not Analysed NC – Not Calculated **Bold text indicates exceedance of Ramboll Environ GAC**													

- Overall TPH concentrations have decreased since the 2011 monitoring round where a concentration of 51µg/l was detected. However, concentrations continue to slightly exceed the conservative UK DWS of 10µg/l. *There is no Reference data for ZC213, i.e. no TPH groundwater data presented for 1999 or 2006 at this location.*
- PAH concentrations have not exceeded the respective GAC for Controlled Waters over the monitoring period.

Table 7.11: ZC214 - TPH & PAH Concentrations 2008 to 2016

ZC214 – Oil Storage Area													
Date Sampled	**TPH >C6-C40 (µg/l)**	**Acenaphthene (µg/l)**	**Acenaphthylene (µg/l)**	**Anthracene (µg/l)**	**Benzo[a]pyrene (µg/l)**	**Dibenzo[a,h] anthracene (µg/l)**	**Fluoranthene (µg/l)**	**Fluorene (µg/l)**	**Indeno[1,2,3-cd] pyrene (µg/l)**	**Naphthalene (µg/l)**	**Phenanthrene (µg/l)**	**Pyrene (µg/l)**	**Total PAHs (µg/l)**
REH GAC	10	400	NC	0.1	0.05	0.002	0.12	220	0.002	2	5	87	NC
01/07/2006	**1980**	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
29/01/2008	**1120**	0.41	0.23	0.03	<0.01	<0.01	0.04	1.09	<0.01	0.39	0.3	0.04	2.53
07/08/2008	**412**	0.26	0.24	<0.10	<0.10	<0.10	<0.10	1.09	<0.10	0.75	0.31	<0.10	2.65
26/03/2009	**222**	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
09/12/2009	**17**	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
14/04/2010	**56**	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
27/10/2010	**95**	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
30/06/2011	**33**	0.498	0.214	<0.01	<0.04	<0.08	<0.09	1.25	<0.01	<0.22	0.253	0.016	2.24
18/11/2011	**126**	0.236	0.129	<0.10	<0.10	<0.30	<0.10	0.578	<0.27	<0.10	0.156	<0.10	1.1
14/06/2012	<40	0.182	<0.10	<0.10	<0.10	<0.10	<0.10	0.397	<0.10	<0.10	<0.10	<0.10	0.579
21/11/2012	**23**	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
27/03/2014	**64**	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
19/05/2016	**1194**	0.494	0.197	0.052	<0.010	<0.010	0.014	1.28	<0.010	0.176	0.376	0.036	2.625
NA- Not Analysed													

- Overall TPH concentrations have decreased since the 2011 monitoring round where a concentration of 1,980µg/l was detected. However, concentrations have continued to exceed the

conservative UK DWS of 10µg/l over the monitoring period. Furthermore, a significant increase in concentration has been detected since the 2014 monitoring round (from 64µg/l in 2014 to 1,194µg/l in 2016). *Reference data was collected for groundwater at ZC214 and the concentrations detected in 2016 of various TPH fractions are all less than Reference Data. As such, no further action is considered necessary at this location to return the ground conditions to baseline. However, Ramboll Environ has carried out DQRA to assess the risk to Controlled Waters from the most recent detected concentration of TPH. The concentration was found to be below the developed remedial target and as such, theoretically no further action is required to protect receptors; however, Ramboll Environ has proposed localised soil and groundwater remediation at this location to support surrender of Site leases.*

- PAH concentrations have not exceeded the respective GAC for Controlled Waters over the monitoring period.

Where TPH and or PAH compounds were found to exceed Controlled Waters screening criteria in the most recent round of monitoring, Ramboll Environ has carried out Detailed Quantitative Risk Assessment (DQRA) to further assess the risk to environmental receptors (Section 9). However, it is noted that the SPMP data presented above does not represent Installation baseline Reference Data (collected in 2006 and some limited data from 1999). It is therefore not possible to determine whether the concentrations detected have arisen from historical or EP related activities. The objective of Ramboll Environ's DQRA was to support Zeon's surrender of the lease back to the landlord.

Prior to commencement of the Controlled Waters DQRA the general physical and chemical input parameters to be utilised were submitted to Natural Resources Wales (NRW) to provide an opportunity for informal comment. However, NRW confirmed in correspondence dated 22nd July 2016 that following initial review of the Phase II ESA a DQRA was not required for the purposes of the surrender of the Environmental Permit associated with the ZCEL facility and therefore the DQRA has solely been produced to support surrender of Site leases. The source areas investigated further by DQRA are discussed in Section 9.

8. DECOMMISSIONING AND REMOVAL OF POLLUTION RISK

As a requirement of the EP, a Site Closure Plan has been maintained during the lifetime of the EP. Following the announcement of cessation of operations at the facility, the Site Closure Plan was updated and re-issued to NRW in November 2015 (Zeon Ref: ZDcmP 11.001). The Site Closure Plan is provided in Appendix 5.

8.1 Schedule of Steps

Table 8.1 below summarises the steps which were undertaken at the Installation during site closure, in accordance with the Site Closure Plan.

Table 8.1: Site Closure Schedule of Steps

Step	Date	Comment
Closure of the facility is announced.	March 2015	De-notification as COMAH facility (31/1/16)
Production operations are scaled down. Plant decommissioning commences.	December 2015 to January 2016	Purging and cleaning of storage tanks and associated equipment.
Site Closure Plan updated and issued to NRW.	Nov 2015	Following the inclusion of comments from NRW the Site Closure Plan for the Installation was approved.
Refurbishment and Demolition (R&D) asbestos survey.	January 2016	An R&D asbestos survey is undertaken for all buildings at the Installation.
Drainage survey and drainage strategy plan.	January to April 2016	Full CCTV drainage survey of the underground effluent, foul and surface water drainage system, sumps and interceptor across the Installation by Lanes for Drains. Drainage Systems Review by Ramboll Environ for the purpose of supporting decommissioning and demolition proposals.
Formal cessation of permitted operations. Plant decommissioning.	January to May 2016	Production in the remaining operating areas cease. Plant in these areas is subsequently decontaminated as far as practicable. Decontamination certificates are attached to tanks and vessels that have been cleaned.
Decommissioning of the ETP	March to May 2016	Last area to be decommissioned due to the need to treat effluent from decommissioning upstream processes as well as any contaminated rainwater.
Intrusive site investigation.	May to June 2016	Intrusive investigation in order to establish the site condition. The site investigation was designed to target

Step	Date	Comment
		identified potential areas of concern (PAOC), both historical and during the lifetime of the EP. The site investigation Included: 31 x 'shallow' window sample locations 9 x 'deep' boreholes 55 x soil samples 31 x groundwater samples (newly installed borehole and existing SPMP boreholes) 1 x ground gas monitoring round
Waste disposal.	January to July 2016	Residual waste disposal including: historical waste; waste raw materials purged from plant equipment; material cleaned from ETP and plant equipment; residual raw materials that cannot be returned to suppliers; oil emptied from plant equipment.
Post Decommissioning Hazardous Substance Survey.	July 2016.	Update of the initial Hazardous Substance survey documenting residual chemicals, redundant plant and waste remaining on-site for the provision to the Demolition Contractor.
Nesting bird survey.	July 2016	Potential nesting birds were identified as pigeons and seagulls. In order to avoid delaying demolition progress, bird scaring techniques are deployed to avoid birds nesting on the roof of buildings intended for demolition.
Decommissioning of Laboratory/ office systems.	March to June 2016	Air conditioning units decommissioned; laboratory equipment transferred to sister companies; removal of documentation; transfer of laboratory equipment.
Septic pit cleaning.	August 2016	Empty and clean the two septic pits prior to demolition.
Discontinuation/ disconnection of utilities	April to August/ September 2016	To be undertaken by Hexion appointed technicians. Final electrical disconnection prior to demolition. Includes electric, steam, gas, effluent, nitrogen.
Prior Notice of Demolition	May 2016	Prior Notice for Demolition approved by the Vale of Glamorgan Council. Letter Ref: P/DC/CR/2016/00089/PND, 18th May 2016. To be carried out in accordance with the Demolition Environmental Management Plan (DEMP), prepared by Ramboll Environ Ref. UK15-21370_3_DEMP, April 2016.

Step	Date	Comment
Planning permission for demolition and 'grubbing up' of foundations is granted	June 2016	Planning permission to carry out demolition is granted conditionally by the Vale of Glamorgan Council (planning ref: 2016/00475/FUL - Zeon Chemicals Europe Ltd., Sully Moors Road)
Lease surrender related remediation	TBC	Remediation to address the lease surrender related contamination where necessary – *TBC*. To be carried out by a specialist contractor and overseen by Ramboll Environ.
EP surrender application	September 2016	This EP Surrender Site Condition Report is submitted to NRW.

8.2 Site Closure and Decommissioning Operations

In accordance with the Site Closure Plan, site management carried out a number of activities during closure (as described below) to avoid pollution risk and return the Installation area to a satisfactory state.

8.2.1 Hazardous Chemicals

All hazardous chemicals were purged from vessels and pipework by the end of March 2016. Where possible the residual levels of hazardous chemicals in vessels and pipework was tested to ensure they were below hazardous levels.

- Acrylonitrile: atmospheric levels in vessels and levels in final flush water were tested using a gas chromatograph calibrated for Acrylonitrile. Some atmospheric levels were also tested using a Drager x-am 5000 gas detector calibrated for Acrylonitrile. Flushing of vessels and lines was continued until the acrylonitrile level in the flush water was < 50ppm. Entry into vessels is not allowed with atmospheric levels > 2ppm.
- Butadiene: atmospheric levels in vessels were tested using a gas chromatograph calibrated for Butadiene or a Drager x-am 5000 gas detector calibrated for Butadiene. Entry into vessels is not allowed with atmospheric levels above 10ppm.
- Acids and Alkalis: tanks and lines were flushed until the pH came into the range pH 6 to pH 10.
- Ammonia: systems were drained and purged until no trace of ammonia was seen by contractors.
- Methanol: systems were drained and then thoroughly flushed.
- Other chemicals: all chemicals were safely drained from tanks and lines. The tanks and lines were then thoroughly flushed with water to remove residuals and drained. Tanks were finally visually checked and lines left either open or broken.

8.2.2 Vessel Cleaning

All vessels containing hazardous chemicals have been thoroughly flushed with water. Vessels with solid material or residue have been cleaned to an 'acceptable level'. An 'acceptable level' was deemed as a level where the material is not hazardous and the remaining levels can easily be identified. In practice this means that some vessels are left with a skin or residue of material. Most cleaning involved removing coagulated rubber from vessels. It is possible that large amounts of coagulated rubber could contain levels of unreacted acrylonitrile and butadiene so these were

cleaned out. Harder, thin and older layers of rubber are unlikely to contain unreacted material. This cleaning was complete by the end of April 2016.

It was decided not to clean vessels with Carbon Black residues due to the detrimental impact it would have had on the effluent plant. These residues will be addressed by the demolition contractor and the requirements are stipulated in the Demolition Environmental Management Plan (DEMP), Ref: UK15-21370_3_DEMP, April 2016.

8.2.3 Effluent Treatment Plant

The ETP was the last area of the installation to be emptied. The solid material was either dug out using mechanical diggers or sucked out using a vacuum tanker. All waste was tested and classified for disposal purposes and has since been removed from the Site.

During the emptying of the balance tank, a water and sludge mixture was released, resulting in an accumulation of sludge on the ground in the vicinity. The sludge mixture flowed into some of the drains within the ETP area; however, these lead back to the effluent pits, where the sludge was retained prior to disposal.

Ramboll Environ carried out analysis of the sludge material on behalf of Zeon in order to determine whether the release could have caused a deterioration in the site condition and also to classify the sludge for disposal purposes.

The results are presented in a letter report Ref: UK15-21370_ETP_02, April 2016 (presented in Appendix 6) and are summarised below.

The TPH concentrations detected in the solid sludge material were found to exceed human health screening criteria considering a commercial / industrial site use; however, the hydrocarbon fractions detected at elevated concentrations (C12-C18 saturated and C18 unsaturated) are organic fatty acids (i.e. rather than petroleum hydrocarbons which would present more of a risk to human health and the environment). Furthermore, based on the drainage configuration, whereby sludge that has entered the drains is returned to the effluent pits, there are minimal pathways where the material could have entered the sub-surface ground and cause deterioration of conditions.

Although the organic saturated and unsaturated fatty acids are not in themselves considered to represent a significant risk to human health, Ramboll Environ recommended that site workers should reduce their risk of exposure to sludge material during cleaning of the ETP through the use of appropriate PPE and risk assessment. Sludge material and surface soil was subsequently removed from the ground surface and disposed of as hazardous waste.

The TPH concentrations in sludge water samples were not significantly elevated. Although the concentrations exceeded the UK DWS, these screening criteria are considered to be conservative given the industrial setting and that the water is not intended for drinking. No visual or olfactory evidence of hydrocarbon contamination (e.g. oily sheen, odour) was observed in the sludge water during sampling, and the hydrocarbons are considered more likely to be associated with organic saturated and unsaturated fatty acids rather than petroleum hydrocarbons.

8.2.4 Foul and Surface Water Systems

Site drains were cleaned as far as practicable and were surveyed by Lanes for Drains. Drains and gullies around the ETP were also cleaned out as far as practicable; however, inevitably some material will remain in the drains due to restricted accessibility.

The foul drainage systems terminate in septic tanks or pits, which were emptied as required by tanker. The septic pits have been emptied and cleaned during decommissioning.

Ramboll Environ carried out a Drainage Systems Review in April 2016 (Ref: UK15-21370_01_Drainage) based on the findings of the CCTV survey (presented in Appendix 7). The CCTV survey showed that the existing drains are generally in a poor condition, with numerous blockages, cracks, root ingress and latex ingress. Ramboll Environ observed that parts of the system are unlikely to have been operating efficiently for some time. The foul drains were found to be in slightly better condition than the surface water and process drainage systems, however the CCTV survey identified remedial actions for each system.

In one specific location, manhole SW60, through misconnection or otherwise, a pipe run was identified that has been discharging direct to ground. Also during cleaning, the effluent pit adjacent to Building N159 (Coagulation) was found to have a crack in the base. *Both locations were targeted during the Phase II Site Surrender Investigation (Section 9).*

Demolition is intended to include the excavation and break up of remaining concrete slabs when all buildings have been removed. As such, the drainage system will also be removed and the Site will be left unsurfaced.

8.2.5 Oil Removal

During decommissioning, oil was drained out of all gearboxes and machinery. However, the possibility of minor volumes of residual oil being present in machinery that remains on-site cannot be ruled out. A number of pumps used ethylene glycol as a barrier fluid on the seals, which was also drained accordingly.

8.2.6 Waste Removal

During decommissioning, all waste generated was stored in the waste storage area located in the south-east of the Installation. The waste was stored in appropriate containers and was classified by a specialist contractor (Forward Waste) prior to collection and disposal. The following waste streams were generated:

- unused raw materials;
- finished goods that could not be sold;
- contaminated flush water from purging;
- material cleaned out of tanks and vessels;
- effluent plant solids;
- waste solids from the calamity tank; and
- oil.

An inventory of hazardous waste removed from Site in 2016 is presented in Appendix 11.

Although the majority of waste was removed from Site during decommissioning, some minor areas of waste materials remain, which will be disposed of appropriately by the demolition contractor. In summary, residual waste items are as follows:

- Externally adjacent to S75 Storage warehouse: there is a significant amount of scrap material: wooden pallets, steel pipes, various sizes of metal storage cabinets and containers and steel frames.

- Externally adjacent to M72: various waste items comprising polythene wrapping on wooden pallets, ducting, steel cabinets, batteries, some WEEE and wood pallets.
- A single general waste skip and a paper recycling skip will remain on-site in the waste storage area until demolition commences.

Where residual minor volumes of oils remain in machinery, the demolition contractor will be responsible for collection and disposal. Ramboll Environ has produced a Demolition Environmental Management Plan (DEMP) (Ref: UK15-21370_DEMP_01, June 2016), which stipulates procedures for dealing with residual potentially hazardous waste items, specifically for use by the appointed demolition contractor.

8.3 Potential Sources of Pollution Risk

The following potential sources of pollution risk were identified during decommissioning:

- A pipe run located at manhole SW60, was identified that has been discharging direct to ground.
- Adjacent to Building N159 (Coagulation), the effluent collection below-ground pit was found to have a crack in the base which may have resulted in some seepage to ground.
- An overflow of organic sludge material in the ETP which occurred during cleaning.
- A minor spillage was identified adjacent to an above ground diesel storage tank (which has since been removed from site), located externally to the N99 Warehouse.

The decommissioning process itself followed the Site Closure Plan for the Installation and did not create an adverse impact on the land. However, all of the above potential areas of contamination/ pollution risk, were targeted during the Phase II Site Surrender Investigation (Section 9).

The potential sources of pollution which may have occurred during the lifetime of the EP and during decommissioning are considered in Section 9.5 of this report. This includes the potential sources of pollution risk which were identified at the Installation following a review of the drainage survey and visual evidence of potential pollution observed during the Phase I Environmental Site Assessment (September 2015).

All former process areas, plant and equipment have now been decommissioned and removed from Site and no potential operational sources of contamination remain.

9. REFERENCE DATA FOR SURRENDER

9.1 Phase II Environmental Site Assessment for Permit Surrender

Ramboll Environ was commissioned by Zeon to collect Environmental Permit Surrender Data on soil and groundwater for comparison with Baseline Reference Data to support the proposed Permit Surrender. The report (Ref: UK15-21370_Phase II ESA Permit Surrender, August 2016), is presented in Appendix 8.

A secondary objective of the investigation was to investigate potential areas of concern (not necessarily associated with the activities relating to the Environmental Permit) with respect to the proposed surrender of the Site lease back to the landlord. The data relevant to Permit Surrender are summarised in the following sections.

9.1.1 Scope of Work

The scope of work comprised drilling exploratory locations within each of the zones outlined in the ASR in order to obtain Permit surrender data and also included the investigation of potential areas of concern (PAOC) identified in Ramboll Environ's Phase I report (Ref: UK15-21370_Phase I Environmental Review, September 2015).

Where historical soil data exist for the Installation, soil samples were collected from exploratory locations positioned in close proximity to these locations so that comparison in soil substance concentrations could be made. Groundwater samples were collected from the 14 existing monitoring wells (where accessible) and compared against existing Reference and SPMP monitoring data.

A summary of the scope of the investigation undertaken at the Site is presented in Table 9.1 below. Exploratory locations are shown on Figure 6, Appendix 1.

Table 9.1: Summary of Intrusive Works

Item	No.	Comments
Service Location Survey	Item	Prior to intrusive works a specialist service location contractor, Geotechnical Engineering Ltd, was used to confirm that proposed exploratory positions were clear of underground services.
UXO Clearance	Item	UXO clearance was undertaken at each exploratory location by a specialist contractor (BACTEC International Limited) appointed by Bilfinger GVA Ltd.
Borehole Locations	9 No.	A Comacchio 305 rotary drilling rig was used to advance nine boreholes (BH101-BH106 and BH7-BH9) to maximum depths of 6.0m bgl. All of the above locations were installed with 50mm diameter gas and groundwater monitoring wells. Wells were of appropriate construction for the ground conditions encountered. The well designs are detailed within the borehole logs presented in Appendix 2.

Item	No.	Comments
Window Sample Locations	31 No.	A Dando Terrier window sampling rig was used to advance 31 window sample boreholes (WS1-WS31) to depths of up to 4.0m bgl. Thirteen of the above locations were installed with 50mm diameter gas and groundwater monitoring wells. Wells were of appropriate construction for the ground conditions encountered. The well designs are detailed within the borehole logs presented in Appendix 2.
Soil Sampling and Analysis	55 No.	During the site investigation, soil samples were recovered from each exploratory hole location and screened on-site using a hand held photo-ionisation detector (PID) for the presence of volatile organic compounds. Samples were collected in accordance with BS BS10175:2011 and were stored within appropriate sample containers and forwarded to an independent Ramboll Environ approved MCERTS accredited analytical laboratory (ESG). Selected soil samples were analysed for a predetermined suite of contaminants, designed to be reflective of the Site's current and historic uses.
Groundwater Sampling and Analysis	31 No.	Groundwater was encountered in all nine of the Ramboll Environ boreholes (monitoring wells BH101-BH106 and BH7-BH9) and the thirteen available existing monitoring wells installed by others (ZC201-ZC211, ZC213 and ZC214). Groundwater was also encountered in nine of the shallower window sampling boreholes. Resting groundwater levels were monitored and the wells were purged until water quality parameters such as temperature and conductivity stabilised. After which, groundwater samples were collected for laboratory analysis using a low flow technique (peristaltic pump). The purging and groundwater sampling was undertaken using dedicated clean disposable sampling equipment. All samples were stored within appropriate containers and forwarded to a UKAS accredited independent analytical laboratory (ESG). Samples were analysed for a suite of contaminants designed to be reflective of the Site's historic uses.
Gas Monitoring	Item	The newly installed wells were monitored on one occasion for the presence of ground gases (including carbon dioxide, methane, oxygen and flow rates).
Topographical Survey	Item	Prior to completion of the exploratory locations a topographical survey was undertaken by Geotechnical Engineering Ltd to determine the ground elevation (m AOD) of the exploratory locations to be installed with monitoring wells and all available existing monitoring wells at the Site.

9.1.2 Sample Location Rationale

The rationale for positioning the sampling locations is described in Tables 9.2 below. Overall, sample locations were selected specifically to assess current soil and groundwater data in comparison with Reference Data collected in 2006; however, additional exploratory locations were positioned in areas where potential for pollution had been identified during decommissioning.

Ramboll Environ has referred to 'likely up-hydraulic and down-hydraulic gradient' locations based on the findings of a previous third party report (Application Site Report, URS, 2006).

Table 9.2: Exploratory Hole Positioning Rationale for Comparison of Reference Data

Borehole Ref.	Reference Data Borehole Ref.	Rationale	Depth (m bgl)
BH101	NA	To determine groundwater conditions at the south-west site boundary, down-hydraulic gradient of the Installation.	6.00
BH102	NA	To determine groundwater conditions in the vicinity of historical decommissioned vinyl chloride tanks (never used by Zeon).	6.00
BH103	ZC201	Located directly adjacent to ZC201, Reference Data borehole for the comparison of soil and groundwater concentrations. Located adjacent to the former latex stock tanks (empty).	6.00
BH104	NA	To determine groundwater conditions in the vicinity of the former bulk material storage area, including methanol. All vessels are empty. Installation Zone C – Bulk Material Storage.	6.00
BH105	NA	To determine groundwater conditions adjacent to the effluent collection below-ground pit. Installation Zone J – ETP.	6.00
BH106	NA	To determine groundwater conditions adjacent (south-east) of the Tank Farm. All vessels are empty. Installation Zone C – Bulk Material Storage.	6.00
WS1	ZC209	Located directly adjacent to ZC209, Reference Data borehole for the comparison of soil concentrations. Located in the south-west of the Installation, adjacent (west) to the Storage Warehouse.	4.00
WS2	NA	To determine soil conditions in the vicinity of the historical decommissioned vinyl chloride tanks.	2.45
WS3	NA	To determine soil conditions external to the European Technical Services Laboratory (ETSL), located in the far west of the Installation. Installation Zone G – Laboratories	4.00
WS4	ZC214	Located directly adjacent to ZC214, Reference Data borehole for the comparison of soil concentrations. Located between the ETSL and the Oil Storage Area. Installation Zone I – Oil Stores.	3.00
WS5	ZC202	Located directly adjacent to ZC202, Reference Data borehole for the comparison of soil concentrations. Located in Installation Zone L – Area of Perceived Low Environmental Risk.	2.20

Borehole Ref.	Reference Data Borehole Ref.	Rationale	Depth (m bgl)
WS6	NA	To determine soil conditions adjacent (west) of the former bulk raw material storage area (including methanol). All vessels are empty. Installation Zone C – Bulk Material Storage.	2.50
WS7	ZC203	Located directly adjacent to ZC203, Reference Data borehole for the comparison of soil concentrations. Located adjacent (north) of in Installation Zone C – Bulk Material Storage. All vessels are empty.	1.70
WS8	NA	To determine soil conditions at the centre of Installation Zone C – Bulk Material Storage. All vessels are empty.	0.90
WS9	ZC204	Located directly adjacent to ZC204, Reference Data borehole for the comparison of soil concentrations. Located between the N55 effluent pit and Installation Zone F – Nitrile Monomer Recovery System.	1.70
WS10	ZC212	Located directly adjacent to ZC212, Reference Data borehole for the comparison of soil concentrations. Located adjacent (south) of the external drum storage area.	0.40
WS11 WS12	NA	To determine shallow soil and groundwater (if present) conditions in the vicinity of an above ground diesel storage tank. Minor staining was observed on the surrounding concrete floor. The tank has since been removed from Site.	0.68, 0.40
WS13	ZC211	Located directly adjacent to ZC211, Reference Data borehole for the comparison of soil concentrations. Located to the north of the Polyblack effluent pits.	1.05
WS14	ZC205	Located directly adjacent to ZC205, Reference Data borehole for the comparison of soil concentrations. Located between the Polyblack Crumb Plant and the external bulk storage tanks associated with the Coagulant Building. All vessels are empty.	2.50
WS15	NA	To determine shallow soil conditions in the former acrylonitrile rail off-loading area. Rail transfer of acrylonitrile ceased on 2000. Also, the recent drainage survey identified significant cracks in the drainage near this location.	1.30
WS16	ZC207	Located directly adjacent to ZC207, Reference Data borehole for the comparison of soil concentrations. Located to the south-west of the Tank Farm and directly adjacent (north) to the ETP. Also, the recent drainage survey identified significant cracks in the drainage near this location.	1.50

Borehole Ref.	Reference Data Borehole Ref.	Rationale	Depth (m bgl)
WS17	NA	To determine shallow soil conditions in the north of the ETP. Installation Zone J – ETP.	1.50
WS18	NA	To determine shallow soil conditions adjacent (north) of the waste storage area located in the southern corner of the Installation. Installation Zone K – Waste Storage Area.	1.85
WS19	ZC206	Located directly adjacent to ZC206, Reference Data borehole for the comparison of soil concentrations. Located within Installation Zone J – ETP.	1.60
WS20	ZC213	Located directly adjacent to ZC213, Reference Data borehole for the comparison of soil concentrations. Located within Installation Zone J – ETP, in the far south-east corner of the Installation.	2.55
WS21	NA	To determine shallow soil conditions between ETP tanks within Installation Zone J – ETP. All tanks are empty.	2.15
WS22	ZC210	Located directly adjacent to ZC210, Reference Data borehole for the comparison of soil concentrations. Located directly adjacent (west) of the Tank Farm. Installation Zone C – Bulk Material Storage.	1.20
WS23	ZC208	Located directly adjacent to ZC208, Reference Data borehole for the comparison of soil concentrations. Located directly adjacent (south) of the Tank Farm. Installation Zone C – Bulk Material Storage.	2.75
Notes Cells shaded in blue indicate borehole locations that drilled specifically for the comparison of Reference data for soil and groundwater. NA – not applicable			

9.1.3 Sampling Techniques and Protocols

Detailed descriptions of Ramboll Environ's soil and groundwater sampling protocols are presented in Appendix 9 and are summarised below.

Collection of Soil Samples

Soil samples were recovered from the boreholes located adjacent to Reference Data boreholes at the same depths at which Reference Data samples were collected 2006 where applicable.

In the remaining exploratory locations, soil samples were recovered from depths based on visual and/or olfactory evidence of contamination and at regular intervals and/or changes of strata.

Selected samples were placed in containers supplied by the laboratory appropriate to the type of analysis being undertaken and stored in cool boxes with ice packs. All samples were dispatched accompanied by chain of custody documentation to Environmental Scientifics Group Ltd (ESG).

Selected soil samples were tested on-site for the presence of volatile organic compounds (VOCs) using a photo-ionisation detector (PID), calibrated in accordance with Ramboll Environ's Quality Management procedures. Each soil sample tested was placed into a sealed plastic bag and agitated. The PID was then inserted into the headspace and the total VOC reading recorded. The PID screens for a wide range of VOCs but does not indicate a specific compound; therefore, the results of the PID screening provide a semi-quantitative indication of the concentration of VOCs present in soil pore spaces.

Collection of Groundwater Samples

Prior to the sampling of the groundwater wells, the resting groundwater level; base of the monitoring wells; and the presence of non-aqueous phase liquid (NAPL (free phase product)) were measured using an electronic oil/water interface probe.

On-site measurements of temperature, pH, electrical conductivity, salinity and dissolved oxygen were taken using a calibrated Hanna Instruments multi-parameter portable water meter. Groundwater samples were obtained in accordance with the methodology detailed within the 2006 URS Site Investigation Report, including the use of a low flow peristaltic pump and dedicated disposable silicone and polythene tubing to prevent cross contamination between monitoring wells. Samples were collected when water quality parameters such as temperature and conductivity had stabilised.

The recovered samples were placed in containers supplied by the laboratory appropriate to the type of analysis being undertaken and stored in cool boxes maintained at a low temperature. All samples were dispatched accompanied by chain of custody documentation to a Ramboll Environ approved MCERTs and UKAS accredited laboratory (ESG) for analysis of the range of determinands previously analysed by URS in 2006 for direct comparison.

9.1.4 Analytical Strategy

Table 9.3 shows the analytical schedule for soil and groundwater samples together with the rationale for analysis.

Table 9.3: Analytical Strategy

Analysis	Rationale	Number of soil samples submitted	Number of groundwater samples submitted
pH	Analysed in soil & groundwater Reference Data. Increased or decreased pH can be associated with Made Ground, or be indicative of chemical contamination.	55	30
Metals (As, Cd, Cr, Cu, Pb, Ni, Hg, Se, Zn, V, Be, B)	Analysed in soil & groundwater Reference Data. Often encountered in Made Ground and common industrial contaminants.	55	30
Alkalinity	Analysed in groundwater Reference Data.		30

Analysis	Rationale	Number of soil samples submitted	Number of groundwater samples submitted
Total phenols, cyanide & sulphate	Analysed in groundwater Reference Data (selected locations). Typically associated with industrial sites and processes.	55	30
Ammonia	Historically and recently stored in bulk storage areas within the installation.	7	-
Chloride and nitrate	Analysed in groundwater Reference Data.	0	14
Volatile Organic Compounds (VOCs) & Tentatively Identified Compounds (TICs)	Analysed in soil & groundwater Reference Data. The VOC analysis suite includes methacrylic acid and acrylonitrile which would be detected as TICs if present.	59	33
Semi-Volatile Organic Compounds (SVOCs) & TICs	Analysed in groundwater Reference Data.	35	11
Alcohol suite	Includes methanol, historically and recently stored in bulk on-site	11	4
Formaldehyde	Analysed in soil & groundwater Reference Data (selected locations).	1	1
Catechol	Analysed in soil & groundwater Reference Data (selected locations).	4	4
Total Petroleum Hydrocarbons Carbon Working Group (TPH CWG) including BTEX	Analysed in soil & groundwater Reference Data (selected locations). Typically associated with fuels and oils.	55	32
Polycyclic Aromatic Hydrocarbons (PAH)	Typically associated with fuels and oils.	55	30
Polychlorinated biphenyls (PCBs)	Analysis in the vicinity of transformers.	1	0
Total Organic Content (TOC)	Analysed in soil Reference Data. Used to identify organic rich material to understand the potential leaching or contaminants (if present) and to identify potential areas of concern regarding ground gases.	16	0

Analysis	Rationale	Number of soil samples submitted	Number of groundwater samples submitted
Asbestos screen and identification	Typically associated with Made Ground	19	0
Chemical Oxygen Demand (COD) & Biological Oxygen Demand (BOD)	Analysed in groundwater Reference Data	0	14
Notes Cells shaded in blue indicate analysis for direct comparison with Reference Data.			

9.1.5 Data Quality Assurance

The laboratory selected to perform the analysis is accredited by UKAS to ISO 17025 and MCerts standards. Internal quality assurance checks are carried out by the laboratory data prior to the laboratory certificates being issued. A detailed description of the laboratories Quality Assurance/ Quality Control (QA/QC) procedures and proficiency schemes is presented in Appendix 10.

Measures adopted in the field to reduce external influences on the quality of the samples and provide reliable laboratory data included:

- field based procedures such as clean sampling methodologies and decontamination between sample locations; and
- submission of duplicate samples of soil and groundwater to the laboratory, which provide an indication of the precision of the analytical results i.e. the repeatability of the laboratory analytical process and comparison of results.

The results of the duplicate analyses were compared with the original sample data. If the results of the sample and duplicate analyses are similar (i.e. within ± 25%), it is generally considered that an acceptable standard of repeatability has been maintained in the sampling and analytical process. The results of the comparison indicate a good match between the duplicate and the original groundwater sample (greater than 95% of the duplicate results were similar to the original result).

9.2 Site Investigation Findings

A detailed description of the geology and hydrogeology encountered is presented in Sections 4.1 and 4.2 of the Phase II ESA Report, along with the corresponding logs (Appendix 2 of the Phase II ESA).

9.2.1 Field Evidence of Contamination

Soil

The following visual and olfactory observations were recorded during sampling:

- A strong hydrocarbon odour and an oily sheen were recorded within Made Ground and underlying superficial deposits in WS6; located adjacent north-west of the ammonia compressor house (Building N251).
- Black staining and a slight hydrocarbon odour were observed between approximately 2.00m bgl and the base of the window sample borehole at 4.00m bgl in WS4; located adjacent to reference borehole ZC214, within the former oil storage area.

- To a lesser degree, localised black staining and a slight hydrocarbon odour was also observed in WS3; located north of WS4 and ZC214, adjacent to the northern Site boundary. The staining and odour were observed within superficial deposits between 1.80m bgl and the base of the window sample borehole at 4.00m bgl.
- A moderate hydrocarbon odour was observed throughout WS17; located in the north of the effluent treatment plant. Occasional black staining was observed, along with a sticky substance that was noted to form white strands when soil was parted. WS17 terminated at 1.50m bgl on suspected bedrock.
- A slight hydrocarbon odour and a slight oily sheen were noted within Made Ground and the upper strata of the superficial deposits in WS21; located in the west of the effluent treatment plant.
- A slight hydrocarbon odour was noted within Made Ground in WS19; located in the south of the effluent treatment plant.
- A moderate hydrocarbon odour and oily sheen was recorded in WS18; located within the waste storage area. The hydrocarbon odour was restricted to the natural soil strata, located between a layer of ashy Made Ground and suspected bedrock at 1.85m bgl.
- Black staining and a slight hydrocarbon odour were noted within the base of the Made Ground, between 0.50m and 0.60m bgl, in WS22; located adjacent to reference borehole ZC210 in a former bulk storage area.
- Evidence of contamination present as ash and fragments of clinker, brick and metal in the Made Ground at numerous locations across the Site. Asbestos containing material was visibly identified within ashy Made Ground in BH102; located in the north of the Site.

Soil headspace screening for volatile organic compounds was recorded using a photo-ionisation detector (PID) for selected soil samples. Significant detections of volatile organic compounds were encountered in association with areas of hydrocarbon odour in WS4 (up to 152.4ppm), WS6 (up to 116.6ppm) and WS17 (up to 55.5ppm). To a lesser degree, readings of up to 9.0ppm were recorded in WS3.

Groundwater

During groundwater sampling a strong hydrocarbon odour and oily sheen was noted in window sample borehole WS6; whilst free phase hydrocarbons were not detected as a distinct layer of product, small globules of a yellow oily substance were noted in upper groundwater.

Furthermore, slight hydrocarbon odours were noted during sampling of boreholes ZC202, ZC214 and WS17. In addition, other odours were noted during sampling of BH103 (rubber-type odour); WS17 (soap-type odour); and WS30 (landfill-type odour).

The groundwater samples collected from BH104 were noted to be dark brown in colour and on-site water quality measurements recorded an elevated pH value of 12.54.

9.3 Comparison of Soil Analytical Results with Reference Data

The soil analytical results have been compared with the statement of Reference Data for soil collected by URS in 2006; and where available, earlier soil analysis data collected by Dames and Moore in 1999. For consistency, sample depths have also been kept the same, except in circumstances where poor recovery of soil occurred, in which case the nearest soil sample was collected.

The results are summarised below and are presented in Tables 9.4 and 9.5 below.

9.3.1 Comparison with Statement of Reference Data (URS 2006)

- No significant increases in metal concentrations have been identified. Some concentrations are marginally higher than those detected in 2006; however, given that all concentrations are in the same order of magnitude, these are considered likely to be due to natural variation in soil. *All concentrations are significantly lower than Ramboll Environ's generic assessment criteria (GAC) for commercial site use.*
- pH values are comparable with Reference Data, within the range pH 7.6 to pH 9.2.
- TPH was only analysed for Reference Data in soil from one location, ZC214 (located between the ETSL and the Oil Storage Area). Three samples were collected from depths between 0.9m and 3.6m bgl. The corresponding TPH concentrations from soil samples collected from the same depths in WS4 were all less than the Reference Data concentrations. The maximum total TPH concentration detected was 169mg/kg in the sample from 2.5m bgl.
- VOCs were only analysed for Reference Data in soil from two locations, ZC212 (adjacent, south of the external drum storage area); and ZC214 (located between the ETSL and the Oil Storage Area). No VOCs were detected in any of the soil samples collected for Reference Data; however, trace concentrations of benzene and toluene were detected in Ramboll Environ WS4 (next to ZC214) at 0.9m bgl. *The concentrations are significantly lower than Ramboll Environ's respective GACs for these compounds considering commercial site use.*
- Formaldehyde was only analysed for in Reference Data in soil from one location, ZC212 (adjacent, south of the external drum storage area). Formaldehyde was not detected in Reference Data, or in the recent corresponding soil sample (taken from WS10 at the same depth).
- Acrylonitrile was not recorded above the laboratory limits of detection in any of the tested samples, which is consistent with the Reference Data. Acrylonitrile was analysed in samples from four locations associated with bulk storage and effluent processes.
- Catechol was analysed in soils from two locations, ZC210 in the Tank Farm and ZC212 adjacent to external drum storage, within the Reference Data. Catechol was not recorded above the laboratory limit of detection in these samples, nor was it detected in the associated Ramboll Environ soil samples.
- Total Organic Carbon (TOC) was reported for three borehole locations within the Reference Data; whilst TOC is not a direct measure of soil contamination, Ramboll Environ analysis results are broadly comparable to the Reference Data.

Table 9.4: Comparison of Soil Reference Data (2006) with Ramboll Environ Data (May 2016)

Location	ZC210	WS22	ZC210	WS22	ZC210	WS22	ZC211	WS13	ZC211	WS13	ZC212	WS10	ZC213	WS20
Date	**2006**	**2016**	**2006**	**2016**	**2006**	**2016**	**2006**	**2016**	**2006**	**2016**	**2006**	**2016**	**2006**	**2016**
Depth (m)	**0.5**	**0.6**	**1.0**	**1.0**	**1.4**	**1.2**	**0.3**	**0.3**	**0.8**	**0.8**	**0.2**	**0.2**	**0.3**	**0.3**
Inorganics (mg/kg)														
Arsenic	8.2	**13**	9.3	**10.4**	18	10.6	4.1	**9**	6.1	**13.3**	8.9	**15**	21	10.3
Barium	160	103.0	45	**64.1**	48	**59.4**	24	**83.9**	36	**170**	91	**209**	460	303
Cadmium	ND	**0.46**	ND	ND	ND	ND	ND	**0.33**	ND	**0.96**	ND	**1.2**	0.63	0.55
Chromium	20	**41.4**	31	**45.8**	32	**43.5**	12	**27**	21	**39**	19	**42.7**	72	34.4
Copper	32	19.5	17	17	45	16	8	**16.1**	11	**32.7**	23	**33**	140	53.1
Iron	15000	**34400**	32000	**38000**	28000	**35400**	4900	**23400**	7000	**29900**	15000	**36100**	2900	**25800**
Lead	40	55	30	30.3	60	31.7	ND	29.3	14	56.4	25	50.8	93	109.9
Mercury	0.28	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.5	ND	1.9	**2.26**
Selenium	0.37	**0.5**	ND	**0.6**	ND	ND	ND	**0.6**	ND	**0.7**	ND	**0.9**	ND	ND
Zinc	67	**149.8**	92	**129.8**	97	**117.1**	18	**85.5**	31	**191.4**	79	**202.8**	190	**263.2**
pH (pH units)	9.2	7.6	8.6	7.7	8.6	7.9	9.3	7.9	10.6	7.6	8.6	7.9	8.7	8.1
Total petroleum Hydrocarbons (mg/kg)														
Total EPH (>C5-C44)	NT	NA	NT	NA	NT	NA	NT	NA	NT	NA	NT	NA	NT	NA
Total Aliphatics (>C5-C44)	NT	NA	NT	NA	NT	NA	NT	NA	NT	NA	NT	NA	NT	NA
Total Aromatics (>C5-C44)	NT	NA	NT	NA	NT	NA	NT	NA	NT	NA	NT	NA	NT	NA
Volatile Organic Compounds (µg/kg) Only VOCs detected above laboratory detection are summarised														
Benzene	NT	NA	NT	NA	NT	NA	NT	NA	NT	NA	ND	ND	NT	NA

Location	**ZC210**	**WS22**	**ZC210**	**WS22**	**ZC210**	**WS22**	**ZC211**	**WS13**	**ZC211**	**WS13**	**ZC212**	**WS10**	**ZC213**	**WS20**
Date	**2006**	**2016**	**2006**	**2016**	**2006**	**2016**	**2006**	**2016**	**2006**	**2016**	**2006**	**2016**	**2006**	**2016**
Depth (m)	**0.5**	**0.6**	**1.0**	**1.0**	**1.4**	**1.2**	**0.3**	**0.3**	**0.8**	**0.8**	**0.2**	**0.2**	**0.3**	**0.3**
Toluene	NT	NA	NT	NA	NT	NA	NT	NA	NT	NA	ND	ND	NT	NA
Miscellaneous Compounds														
Formaldehyde	NT	NA	NT	NA	NT	NA	NT	NA	NT	NA	ND	ND	NT	NA
Acrylonitrile	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Catechol	ND	ND	ND	ND	ND	ND	NT	NA	NT	NA	ND	ND	NT	NA
Total Organic Carbon (%)	10	2.37	0.92	0.73	NT	NA	7.2	2.47	NT	NA	NT	NA	NT	NA

Notes:

NT – Not Tested

ND – Not Detected

NA – Not Applicable

Concentrations in bold print indicate where concentrations have increased since Reference Data collection; however, increases in soil are likely due to natural variation since significant increases have not been identified, i.e. concentrations are within the same order of magnitude.

Table 9.4: Comparison of Soil Reference Data (2006) with Ramboll Environ Data (May 2016) *(Cont.)*

Location	ZC213	WS20	ZC213	WS20	ZC213	WS20	ZC214	WS4	ZC214	WS4	ZC214	WS4
Date	**2006**	**2016**	**2006**	**2016**	**2006**	**2016**	**2006**	**2016**	**2006**	**2016**	**2006**	**2016**
Depth (m)	**1.2**	**1.2**	**1.8**	**1.8**	**2.6**	**2.5**	**0.9**	**0.9**	**1.8**	**1.8**	**3.6**	**2.5**
Inorganics (mg/kg)												
Arsenic	NT	NA	9.2	4.5	9.2	4.55	21	**85.8**	13	**15.1**	7.9	**9.9**
Barium	NT	NA	64	23.8	19	**28.1**	460	372	110	108	37	**52.9**
Cadmium	NT	NA	ND	<0.2	ND	**0.283**	0.63	**0.7**	0.53	**0.78**	ND	ND
Chromium	NT	NA	69	21.1	15	13.65	72	16.7	35	32	30	31.4
Copper	NT	NA	35	13.6	11	7.78	140	**168**	30	27.6	18	14.9
Iron	NT	NA	23000	17500	10000	8500	29000	26000	33000	32200	25000	**32800**
Lead	NT	NA	47	13.6	ND	**13.24**	62	**67.9**	64	**79.2**	25	**25.4**
Mercury	NT	NA	0.3	ND	ND	ND	0.33	ND	ND	ND	ND	ND
Selenium	NT	NA	ND	ND	ND	**0.51**	ND	**0.7**	ND	**0.7**	ND	ND
Zinc	NT	NA	100	90	49	**62.28**	150	119.1	130	**202.5**	84	**102.7**
pH (pH units)	NT	NA	7.9	8.3	8.6	8.6	8.3	8.1	7.9	7.9	8.1	7.9
Total petroleum Hydrocarbons (mg/kg)												
Total EPH (>C5-C44)	NT	NA	NT	NA	NT	NA	270	ND	400	ND	1500	169
Total Aliphatics (>C5-C44)	NT	NA	NT	NA	NT	NA	140	ND	320	ND	1300	106
Total Aromatics (>C5-C44)	NT	NA	NT	NA	NT	NA	120	ND	81	ND	270	63
Volatile Organic Compounds (µg/kg) Only VOCs detected above laboratory detection are summarised												
Benzene	NT	NA	NT	NA	NT	NA	ND	**4**	ND	ND	ND	ND
Toluene	NT	NA	NT	NA	NT	NA	ND	**10**	ND	ND	ND	ND
Miscellaneous Compounds												

Location	**ZC213**	**WS20**	**ZC213**	**WS20**	**ZC213**	**WS20**	**ZC214**	**WS4**	**ZC214**	**WS4**	**ZC214**	**WS4**
Date	**2006**	**2016**	**2006**	**2016**	**2006**	**2016**	**2006**	**2016**	**2006**	**2016**	**2006**	**2016**
Depth (m)	**1.2**	**1.2**	**1.8**	**1.8**	**2.6**	**2.5**	**0.9**	**0.9**	**1.8**	**1.8**	**3.6**	**2.5**
Formaldehyde	NT	NA	NT	NA	NT	NA	NT	NA	NT	NA	NT	NA
Acrylonitrile	NT	NA	ND	ND	ND	ND	NT	NA	NT	NA	NT	NA
Catechol	NT	NA	NT	NA	NT	NA	NT	NA	NT	NA	NT	NA
Total Organic Carbon (%)	14	2.95	NT	NA	NT	NA	NT	NA	NT	NA	NT	NA

Notes:
NT – Not Tested
ND – Not Detected
NA – Not Applicable
Concentrations in bold print indicate where concentrations have increased since Reference Data collection; however, increases in soil are likely due to natural variation since significant increases have not been identified, i.e. concentrations are within the same order of magnitude.

9.3.2 Comparison with Earlier Soil Analysis Data (Dames and Moore 1999)

Table 9.5 below summarises the soil analysis results from Dames and Moore's investigation in 1999. A single soil sample was collected from each borehole and was tested for TPH and total PAH (individual PAH compounds were not tested). This data was not included in the Statement of Reference Data presented by URS in 2006 to support the Permit application.

Ramboll Environ has compared the soil analysis data from the 2016 Permit surrender investigation with the Dames and Moore results from 1999. The following increases in concentrations were detected:

- ZC202/ WS5 – the shallow soil sample from ZC202 collected in 1999 had a TPH concentration of 53mg/kg. The shallow soil sample from the adjacent borehole, WS5 (drilled in 2016), had a TPH concentration of 95.3mg/kg. The concentration is within the same order of magnitude and is not considered to be significantly elevated.
- ZC206/WS19 – the sample collected from 2m bgl in 1999 had a TPH concentration of 163mg/kg. The nearest soil sample collected during 2016 for comparison was from WS19, at 0.65m bgl. The concentration of TPH was found to be elevated at a concentration of 21,010mg/kg, coinciding with localised visual evidence of hydrocarbons in soil. *Ramboll Environ has carried out a DQRA considering the concentrations detected and the maximum*

concentration detected was below the developed remedial target for hydrocarbons in soil. As such, no further action was considered necessary to protect receptors; however, Ramboll Environ has recommended localised soil remediation at this location in order to support surrender of Site leases.

Table 9.5: Comparison of Soil Data with Dames and Moore Results, 1999

Location	**ZC201**	**BH103**	**ZC202**	**WS5**	**ZC203**	**WS7**	**ZC204**	**WS9**	**ZC205**	**WS14**	**ZC206**	**WS19**	**ZC207**	**WS16**	**ZC208**	**WS23**
Date	**1999**	**2016**	**1999**	**2016**	**1999**	**2016**	**1999**	**2016**	**1999**	**2016**	**1999**	**2016**	**1999**	**2016**	**1999**	**2016**
Depth (m)	**0.2**	**0.4**	**0.4**	**0.9**	**0.4**	**0.3**	**0.4**	**0.3**	**0.3**	**1.5**	**2.0**	**0.65**	**0.3**	**0.3**	**0.3**	**0.5**
TPH (mg/kg)	66	ND	53	**95.3**	281	43.6	644	143	316	ND	163	**21,010**	1,188	18.1	2,563	ND
PAH (mg/kg)	3	ND	3	2.77*	<2	1.48*	26	1.49*	12	ND	3	ND	<10	0.18*	13	ND

Notes:
NT – Not Tested
ND – Not Detected
NA – Not Applicable
*maximum concentration of individual PAH compound detected (where analysis results show total PAH to be less than method detection limit)
Concentrations in bold print indicate where concentrations have increased since the collection of soil samples in 1999.

9.4 Groundwater Analytical Results Compared with Reference Data

Groundwater was collected from the Reference Data boreholes for comparison with concentrations recorded in the Statement of Reference Data, 2006.

The results are summarised below and are presented in Table 9.6.

- Significant increases in the concentration of metals has not been identified. Magnesium had increased in 7 No. locations; however, all were in the same order of magnitude. *There is no environmental quality standard (EQS) or drinking water standard (DWS) for magnesium; however, it occurs naturally in drinking water.*
- Sulphate concentrations had increased at three sampling locations, although in each case detected in the same order of magnitude as the Reference Data. *All concentrations are below the EQS of 400mg/l.*
- Chloride concentrations had increased at eight sampling locations, although in each case detected in the same order of magnitude. There is no EQS for chloride; however, the UK DWS stipulates a maximum concentration of 250mg/l as an indicator parameter for consumer's taps. *This concentration was only exceeded at one location (ZC204) at 1,300mg/l and the groundwater is not abstracted for drinking water in the near vicinity. As such, the increases in chloride are not considered significant*.
- A trace concentration of the VOC isopropylbenzene was identified at one sampling location (ZC214); this was also detected as a trace concentration in the 2006 Reference Data. *The concentration 0.003mg/l is lower than the international World Health Organisation (WHO) guideline value of 0.39mg/ (used in the absence of UK criteria).*
- TPH was only analysed for EP Reference Data in groundwater from one location, ZC214 (located between the ETSL and the Oil Storage Area). Total TPH was detected at 1.98mg/l in 2006; whereas the concentration detected in 2016 was 1.19mg/l, i.e. less than Reference Data.

Table 9.6: Comparison of Groundwater Reference Data with Ramboll Environ Data, May 2016

Location	ZC201		ZC203		ZC204		ZC205		ZC206		ZC207	
Date	**2006**	**2016**	**2006**	**2016**	**2006**	**2016**	**2006**	**2016**	**2006**	**2016**	**2006**	**2016**
TPH CWG (µg/l)												
C10-C16	NT	NA	NT	NA	NT	NA	NT	NA	NT	NA	NT	NA
C16-C24	NT	NA	NT	NA	NT	NA	NT	NA	NT	NA	NT	NA
C24-C40	NT	NA	NT	NA	NT	NA	NT	NA	NT	NA	NT	NA
C6-C40	NT	NA	NT	NA	NT	NA	NT	NA	NT	NA	NT	NA
C6-C8	NT	NA	NT	NA	NT	NA	NT	NA	NT	NA	NT	NA
C8-C10	NT	NA	NT	NA	NT	NA	NT	NA	NT	NA	NT	NA
VOCs (µg/l)												
Isopropylbenzene	ND	ND	NT	NA	NT	NA	NT	NA	NT	NA	NT	NA
Sec-Butylbenzene	ND	ND	NT	NA	NT	NA	NT	NA	NT	NA	NT	NA
SVOCs (µg/l)	NT	NA	NT	NA	NT	NA	ND	ND	NT	NA	NT	NA
Metals												
Arsenic	16	14	12	1	11	5	15	9	19	**21**	62	30
Barium	52	**80**	110	**1590**	23	**190**	43	**60**	88	60	140	60
Cadmium	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Calcium	38000	**54100**	16000	**258000**	50000	**279000**	67000	**124000**	157000	141000	78000	68400
Chromium	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Copper	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Iron	410	**520**	140	**780**	950	**5690**	1910	**10200**	2130	**2520**	10010	4710
Lead	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Magnesium	4400	**6600**	16000	**110000**	11000	**57400**	6900	**12000**	21000	19400	26000	20300

Location	**ZC201**		**ZC203**		**ZC204**		**ZC205**		**ZC206**		**ZC207**	
Mercury	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Potassium	1700	NT	9700	**31500**	3000	**10400**	4400	**5900**	10000	4000	8200	6000
Selenium	4	ND	5	2	3	**18**	1	ND	3	ND	2	ND
Sodium	462000	74400	1060000	**3363000**	103000	**315000**	22000	**70500**	177000	134000	72000	**80700**
Zinc	11	4	7	ND	5	ND	19	ND	17	ND	8	ND
Miscellaneous Analysis												
Formaldehyde	400	ND	NT	NA	NT	NA	NT	NA	NT	NA	NT	NA
Acrylonitrile	NT	NA	NT	NA	ND	ND	NT	NA	ND	ND	ND	ND
Catechol	NT	NA	NT	NA	ND	ND	NT	NA	NT	NA	ND	ND
pH	8.2	7.8	9.4	7	8.2	7	7.9	7.3	7.6	7.1	7.5	7.2
Alkalinity	286000	263000	562000	230000	322000	189000	163000	**475000**	301000	301000	352000	327000
BOD+ATU (5 day)	56000	18300	10000	4200	2000	ND	3000	**3700**	42000	3700	9000	2000
Chloride as Cl	129000	56000	1340000	**5870000**	79000	**1300000**	40000	**43000**	289000	278000	96000	**108000**
COD (total)	469000	75000	115000	34000	31000	22000	40000	**47000**	371000	39000	43000	16000
Nitrate as N	ND	ND	ND	ND	ND	ND	1300	50	900	ND	900	ND
nonyl phenol	NT	NA	NT	NA	NT	NA	1	ND	NT	NA	NT	NA
octyl phenol	NT	NA	NT	NA	NT	NA	ND	ND	NT	NA	NT	NA
sulphate as SO4	15000	**21900**	ND	**7000**	ND	ND	20000	9300	26000	24000	ND	ND
Detergents, ammonic as NaLS	NT	NA	2000	ND	NT	NA	NT	NA	NT	NA	NT	NA
Methanol	NT	NA	ND	ND	NT	NA	NT	NA	NT	NA	NT	NA

Notes: NT – Not Tested; ND – Not Detected; NA – Not Applicable

Concentrations in bold print indicate where concentrations have increased since Reference Data collection; however, slight increases (i.e. within the same order of magnitude) are likely due to natural variation within groundwater and do not necessarily indicate a source of contamination.

Table 9.6: Comparison of Groundwater Reference Data with Ramboll Environ Data, May 2016 *(cont.)*

Location	ZC208		ZC210		ZC211		ZC212*		ZC213		ZC214	
Sample Date	**2006**	**2016**	**2006**	**2016**	**2006**	**2016**	**2006**	**2016**	**2006**	**2016**	**2006**	**2016**
TPH CWG (µg/l)												
C10-C16	NT	NA	NT	NA	NT	NA	NT	-	NT	NA	969	578
C16-C24	NT	NA	NT	NA	NT	NA	NT	-	NT	NA	878	446
C24-C40	NT	NA	NT	NA	NT	NA	NT	-	NT	NA	122	155
C6-C40	NT	NA	NT	NA	NT	NA	NT	-	NT	NA	1980	1194
C6-C8	NT	NA	NT	NA	NT	NA	NT	-	NT	NA	ND	ND
C8-C10	NT	NA	NT	NA	NT	NA	NT	-	NT	NA	13	ND
VOCs												
Isopropylbenzene	NT	NA	NT	NA	NT	NA	ND	-	NT	NA	1	**3**
Sec-Butylbenzene	NT	NA	NT	NA	NT	NA	ND	-	NT	NA	1	ND
SVOCs	NT	NA	NT	NA	NT	NA	NT	-	NT	NA	NT	NA
Metals												
Arsenic	10	**11**	4	**11**	21	10	7	-	10	2	21	13
Barium	240	**260**	52	**60**	75	50	210	-	42	50	120	90
Cadmium	ND	ND	ND	ND	0.6	ND	ND	-	0.7	**1.4**	0.6	ND
Calcium	47000	**49600**	39000	**68100**	71000	**86100**	96000	-	154000	134000	126000	105000
Chromium	ND	ND	ND	ND	ND	ND	ND	-	ND	ND	ND	ND
Copper	ND	ND	ND	ND	ND	ND	11	-	ND	19	8	ND
Iron	850	140	60	**9670**	6490	2750	330	-	2240	700	6540	2960
Lead	ND	ND	ND	ND	ND	ND	ND	-	ND	**8**	ND	ND
Magnesium	31000	30100	4800	**11500**	6400	**6900**	17000	-	30000	19500	16000	**17000**
Mercury	ND	ND	ND	ND	ND	ND	ND	-	ND	ND	ND	ND

Location	ZC208		ZC210		ZC211		ZC212*		ZC213		ZC214	
Potassium	9000	6900	2900	**4800**	12000	7300	6100	-	7300	**8200**	7500	7400
Selenium	2	ND	1	ND	ND	ND	12	-	2	ND	7	ND
Sodium	78000	67900	13000	**87600**	41000	**67300**	51000	-	131000	89500	46000	23100
Zinc	16	ND	13	ND	18	ND	11	-	22	**159**	19	ND
Miscellaneous Analysis												
Formaldehyde	NT	NA	NT	NA	NT	NA	3710	-	NT	NA	NT	NA
Acrylonitrile	ND	ND	ND	ND	ND	ND	ND	-	ND	ND	NT	NA
Catechol	ND	ND	ND	ND	NT	NA	ND	-	NT	NA	NT	NA
pH	7.8	7.3	8.3	7.2	7.6	6.8	7.5	-	7.6	7	7.2	7
Alkalinity	302000	272000	498000	424000	282000	**345000**	391000	-	287000	**357000**	392000	369000
BOD+ATU (5 day)	3000	ND	ND	ND	58000	**68100**	2000	-	2000	ND	4000	ND
Chloride as Cl	103000	**110000**	28000	**119000**	17000	**39000**	52000	-	299000	170000	29000	**34000**
COD (total)	41000	11000	36000	13000	254000	205000	140000	-	71000	45000	94000	13000
Nitrate as N	600	ND	1000	ND	ND	ND	700	-	400	ND	ND	ND
nonyl phenol	NT	NA	NT	NA	NT	NA	NT	-	NT	NA	NT	NA
octyl phenol	NT	NA	NT	NA	NT	NA	NT	-	NT	NA	NT	NA
sulphate as SO4	ND	ND	6000	ND	5000	**5600**	64000	-	82000	37000	14000	ND
Detergents, ammonic as NaLS	NT	NA	NT	NA	NT	NA	NT	-	NT	NA	NT	NA
Methanol	NT	NA	NT	NA	NT	NA	NT	-	NT	NA	NT	NA

Notes: NT – Not Tested; ND – Not Detected; NA – Not Applicable
Concentrations in bold print indicate where concentrations have increased since Reference Data collection; however, slight increases (i.e. within the same order of magnitude) are likely due to natural variation within groundwater and do not necessarily indicate a source of contamination.
* ZC212 no longer present; damaged or destroyed.

9.5 Investigation of Potential Contamination Identified During Decommissioning

During site closure and decommissioning, several potential areas of contamination were identified and were targeted during the Phase II Site Surrender Report, namely:

- A pipe run located at manhole SW60, was identified that has been discharging direct to ground.
- The effluent collection below-ground pit adjacent to Building N159 (Coagulation) was found to have a crack in the base which may have resulted in some seepage to ground.
- An overflow of organic sludge material in the ETP which occurred during cleaning.
- A minor spillage was identified adjacent to an above ground diesel storage tank (which has since been removed from site), located externally to the N99 Warehouse.

Table 9.7 below presents the results of analysis from the exploratory locations positioned specifically to target the aforementioned potential areas of contamination.

Table 9.7: Contamination Identified During Decommissioning

Exploratory Location No.	Potential Area of Contamination Targeted	Results
WS16 & WS17	WS16 & WS17 were positioned down-hydraulic gradient of a pipe run (manhole ref: SW60) which was identified as discharging directly to ground during the drainage survey.	In WS17, a hydrocarbon odour and visual observations were of hydrocarbons were present in soil between 0.8m and 1.5m bgl in soil. The maximum TPH concentration was 8,608mg/kg at 0.3m bgl. The concentration does not exceed human health screening criteria; however, was considered elevated by Ramboll Environ in terms of risk to Controlled Waters through leaching. *Subsequent DQRA has identified that concentrations are below remedial targets and as such, no further actions are required to protect Controlled Waters receptors.* In groundwater, TPH was detected at 1.22mg/l, i.e. above the UK DWS of 0.01mg/l. The contamination was found to be localised, i.e. not detected in exploratory locations positioned further down-gradient.
BH105	Positioned adjacent to the south-east of the ETP pit which was found to be cracked in the base during cleaning.	In groundwater, TPH was detected at 0.11mg/l; and phenol at 0.0094mg/l, both slightly exceeding Controlled Waters screening criteria. The contamination was found to be localised, i.e. not detected in exploratory locations positioned down-gradient.
WS19, WS20 & WS21 (existing boreholes ZC206 and ZC213)	Positioned within the ETP area where organic sludge overflowed onto the ground surface during cleaning of the balance tank.	In soil, elevated TPH was detected in WS19 at 0.65mg/kg (21,010mg/kg) coinciding with a hydrocarbon odour detected during sampling. The adjacent existing borehole (ZC206) detected TPH in groundwater at 0.21mg/l, i.e. above the UKDWS of 0.01mg/l. The contamination was found to be localised, i.e. elevated concentrations were not detected in WS20 and WS21. However, this contamination is not considered likely to be associated with the sludge overflow

Exploratory Location No.	Potential Area of Contamination Targeted	Results
		since a sample of sludge material had different elevated hydrocarbon fractions: C12-C18 saturated and C18 unsaturated organic fatty acids. The hydrocarbons detected in soil from WS19 were predominantly in the range C21 to C35 (aliphatic). Furthermore, the sludge overflow occurred at the location of WS21, where no elevated concentrations were detected.
WS11 & WS12	Either side of the above ground diesel tank where staining was observed on the concrete hard standing. *Tank removed during decommissioning.*	No elevated concentrations detected. The contamination observed appeared to be confined to minor surface staining of the concrete hardstanding.

9.6 Historical Sources of Contamination

Ramboll Environ's Phase II ESA also targeted potential areas of concern based on the historical use of the Site. *It should be noted that there was no Reference Data for these locations for comparison of data.* Several localised areas of potential contamination were identified which are assessed in the Phase II ESA (Appendix 8). The key findings are summarised below.

- WS6: adjacent to the ammonia compressor pumps which are known to have failed in the past resulting in hydraulic oil leakage. Localised soil and groundwater impact with hydrocarbons consistent with hydraulic oil.
- BH104: Near the sulphonic acid tank and tanker off-loading point. Localised elevated concentrations of polycyclic aromatic hydrocarbons (PAHs) and slightly elevated total petroleum hydrocarbons (TPH) in groundwater. Whereas the sulphonic acid tank is not considered to be a likely source of elevated PAHs, concentrations may have resulted from historical spillages near the tanker off-loading point which previously did not have concrete containment.
- ZC214/ WS4: Oil Storage Area, localised hydrocarbon odour in soil and elevated TPH concentrations; and elevated TPH in groundwater. Several potential sources in the oil storage area.
- WS28: Polyblack Crumb Plant (internal). Localised visual dark staining in shallow soil; and minor localised TPH exceedance in groundwater.
- ZC209: West of S75 Warehouse, VOC's vinyl chloride and 1,1-dichloroethane detected in groundwater.

The following determinands were found to exceed Controlled Waters screening criteria at one or more location: TPH (various fractions), PAH compounds, VOCs (vinyl chloride and 1,1-dichloroethane), SVOCs (phenol and 1-methylnaphthalene).

Soil concentrations did not exceed human health screening criteria considering a commercial / industrial site use at any locations; however, some hydrocarbon concentrations were considered to be elevated in terms of the potential risk to Controlled Waters, i.e. due to the potential for leaching to groundwater.

Ramboll Environ subsequently carried out a DQRA to determine whether or not the aforementioned source areas represent a risk to Controlled Waters receptors. Two source areas were found to have concentrations of determinands in excess of the developed groundwater remediation criteria:

- WS6: various TPH fractions in soil and groundwater; and
- ZC209: vinyl chloride in groundwater only.

Ramboll Environ has recommended that localised remediation in these areas is carried out in order to mitigate the risk to Controlled Waters receptors. It is noted that the source areas where unacceptable risks were identified are attributed to likely historical sources of contamination.

9.7 Lines of Evidence Approach

The results of Ramboll Environ's Phase II ESA have not identified any significant increases in soil or groundwater concentrations when compared directly with Reference Data collection in 2006. However, localised areas of potential contamination have been identified across the Site in areas where no Reference Data exists for comparison.

Given the historical use of the Site as an anchor patent fuel works since the 1920s, and a chemical works since the 1950s, together with the presence of substances in groundwater which were not used by Zeon during the lifetime of the EP (namely vinyl chloride), it is evident that some of the localised potential contamination at the Site arose from 'historical' activities, rather than a direct result of activities which took place during the lifetime of the EP.

A 'lines of evidence' approach was adopted in order to establish which areas of soil and groundwater may have deteriorated during the lifetime of the EP and which are likely to be due to historical site activities.

Table 9.8: Lines of Evidence Approach

'Lines of Evidence' Step	Description
Stage 1: Groundwater Quality	Comparison of the 'baseline' groundwater Reference Data obtained in 2006 with the pre-EP surrender groundwater data collected in 2016. The results of this comparison has been summarised in Section 9.4 above. No significant increases in concentrations were identified. However, investigation of additional potential areas of concern (PAOC) identified localised groundwater contamination in several areas of the Site.
Stage 2: Substance	Identify whether contaminants identified in groundwater at Stage 1 were stored or used by Zeon during the lifetime of the EP (see Section 9.8, below).
Stage 3: Infrastructure	Determine the integrity of the tanks, bunds, sumps and drains used during the lifetime of the EP. The details of the drainage survey and subsequent drain and sump risk assessment which was used as part of the 'lines of evidence' is summarised in Section 8 of this report. For example, could there have been a release of the contaminants of concern during the lifetime of the EP?
Stage 4: Spill Event	Review of management records for leaks and spillages at the site and subsequent clean-up. Section 6 of this report provides

	details of leaks and spillages which have occurred during the lifetime of the EP.

In summary, the lines of evidence approach confirmed that there are no significantly elevated concentrations in soil or groundwater compared with Reference Data collected at the start of the EP.

Based on these results, no further investigation or remediation is considered necessary to achieve a 'satisfactory state' with respect to the Installation, i.e. to return the ground conditions to the 'baseline' recorded in 2006.

However, localised areas of contamination have been identified in soil and groundwater at locations not previously investigated. Ramboll Environ has recommended for assessment and where appropriate, remediation of these areas in order to reduce residual risks to environmental receptors and ultimately to support Zeon's surrender of its lease back to the landlord (discussed further in Section 9.8. below).

9.8 Identified Key Issues

From the information collected from the lines of evidence approach and from the results of the 2016 site investigation, a number of areas were identified where Ramboll Environ considers that further assessment and/or remediation should be carried out to reduce residual risks to environmental receptors.

It should be noted that these actions are recommended in order to satisfy the landlord and the surrender of the lease. These recommendations are not considered to be relevant to Permit Surrender since there is no Reference Data for comparison for the locations that require further assessment; and furthermore, the contamination may be related to historical activities at the Site, i.e. not attributable to Zeon.

These areas are summarised in Table 9.9 below and a graphical conceptual site model which presents the key issues is presented on Figure 7 of Ramboll Environ's Phase II ESA (Appendix 8).

Table 9.9: Identified Key Issues

Identified Key Issues	Identified Source of Contamination?
WS6: adjacent to the ammonia compressor pumps which are known to have failed in the past resulting in hydraulic oil leakage. Localised soil and groundwater impact with hydrocarbons consistent with hydraulic oil.	There is no Reference Data for this location and as such, contamination may be attributable to historical or EP activities.
BH104: Near the sulphonic acid tank and tanker off-loading point. Localised elevated concentrations of polycyclic aromatic hydrocarbons (PAHs) and slightly elevated total petroleum hydrocarbons (TPH) in groundwater.	Localised contamination likely to have resulted from historical spillages near the tanker off-loading point which previously did not have concrete containment. There is no Reference Data for this location.
ZC214/ WS4: Oil Storage Area, localised hydrocarbon odour in soil and elevated TPH concentrations; and elevated TPH in groundwater.	The only Reference Data for comparison is ZC214. Hydrocarbons were identified in both soil and groundwater at this location and the Reference Data concentrations were greater than the recent concentrations detected, in all three soil samples taken from the same depths; and in groundwater collected from ZC214. TPH

Identified Key Issues	Identified Source of Contamination?
	in groundwater was 1.98mg/l in 2006; and 1.19mg/l in 2016. The exact source of contamination has not been defined as there are several potential sources in the oil storage area, both historical and recent.
ZC207/ WS17: North of effluent treatment plant (ETP). In close proximity to a badly cracked drain which may have leaked. Localised hydrocarbon odour and visual observations in soil; and elevated TPH in groundwater.	Groundwater from ZC207 was not analysed for hydrocarbons during the collection of Reference Data in 2006. However, Ramboll Environ's recent analysis identified localised elevated hydrocarbons in soil and groundwater. The concentrations may have resulted from a cracked drain; however, this could have occurred historically or during the EP lifetime.
WS19: West ETP area. Localised visual evidence of hydrocarbons in soil.	Elevated TPH concentrations in soil coinciding with a hydrocarbon odour detected during sampling. The adjacent existing borehole (ZC206) detected slightly elevated TPH in groundwater. The contamination is not considered likely to be associated with recent sludge overflow from the ETP since a sample of sludge material had different elevated hydrocarbon fractions: C12-C18 organic fatty acids. The hydrocarbons detected in soil from WS19 were predominantly in the range C21 to C35 (aliphatic). Furthermore, the sludge overflow occurred at the location of WS21, where no elevated concentrations were detected. In the absence of Reference Data from this location, it is not possible to confirm whether the contamination is historical or EP related.
WS28: Polyblack Crumb Plant (internal). Localised visual dark staining in shallow soil; and minor localised TPH exceedance in groundwater.	The Polyblack Crumb Plant has not been in use since 2004, i.e. before the collection of Reference Data in 2006. The concentrations detected were not significantly elevated.
ZC209: West of S75 Warehouse, VOC's vinyl chloride and 1,1-dichloroethane detected in groundwater	Zeon has confirmed that vinyl chloride has never been used on-site for their manufacturing process. A historical source is considered likely.

9.9 Conclusion – Reference Data Comparison

Where historical soil data exist for the Installation (i.e. Reference Data, 2006), soil samples were collected from exploratory locations positioned in close proximity to these locations so that direct comparison in soil substance concentrations could be made. Groundwater samples were collected from the 14 existing monitoring wells (where accessible) and compared against existing Reference and SPMP monitoring data.

No significant increases in concentrations were identified in soil samples collected from comparable depths to Reference Data. Minor increases in certain metal concentrations were identified; however, given that all concentrations are in the same order of magnitude, these are considered likely to be

due to natural variation in soil. Furthermore, concentrations were found to be similar at shallow and deeper depths, i.e. not only associated with Made Ground.

The TPH concentrations recorded in soil samples were all lower than those detected during Reference Data collection in 2006.

VOCs were only analysed for EP Reference Data in soil from two locations and no VOCs were detected. However, trace concentrations of benzene and toluene were detected in one soil sample collected by Ramboll Environ. The concentrations detected were low and do not exceed the relevant human health screening criteria.

In groundwater, no significant increases were identified when compared with Reference Data. TPH concentrations (where analysed) were less than those detected in Reference Data. Slight increases in magnesium were detected at several locations; however, all were in the same order of magnitude as Reference Data. Similarly, chloride was found to have increased at several locations; however, was not detected at significantly elevated concentrations above the conservative UK DWS (used for comparison in the absence of an EQS).

A trace concentration of the VOC isopropylbenzene was identified at one location; however, this was also detected as trace concentration in 2006.

Overall, no significant increases in concentrations have been detected in soil or groundwater based on a direct comparison with the Statement of Reference Data. SPMP monitoring has identified some increasing trends in PAH and TPH concentrations over the years since the Permit commenced. The concentrations, despite occasionally increasing, are generally below Controlled Waters screening criteria, however TPH concentrations exceed the conservative UK DWS at the majority of locations. Given that groundwater at the Installation is not intended for drinking water, the UK DWS is considered overly conservative for an industrial setting; however, Ramboll Environ has carried out further assessment by DQRA where significant exceedances were identified (Section 9.10, below).

Based on the results, Ramboll Environ considers that Permit Surrender can be achieved without further assessment or remediation given that no significant increases in concentrations have been identified since the collection of Reference Data, i.e. no deterioration has been identified from the Installation's 'baseline'. However, Ramboll Environ has carried out some further assessment (DQRA) and has recommended remediation where localised contamination has been identified in areas where there is no Reference Data for comparison in order to support the surrender of Site leases.

9.10 Conclusions – Lease Surrender

Exploratory locations have been positioned to investigate potential areas of concern at the Site (both historical and recent), based on the findings of the Phase I Environmental Site Assessment (ESA) carried out by Ramboll Environ in September 2015. **It should be noted that there was no Reference Data for these locations for comparison of data.**

Evidence of soil and/ or groundwater contamination has been identified in several localised areas, namely: near the ammonia compressor pumps; the former tanker off-loading point; the Oil Storage Area; in the vicinity of the Effluent Treatment Plant (ETP); the Polyblack Crumb Plant; and in the far west of the Site external to the storage warehouse.

The following determinands were found to exceed Controlled Waters screening criteria at one or more location: TPH (various fractions), several PAH compounds, VOCs (vinyl chloride and 1,1-dichloroethane), semi-volatile organic compounds (phenol and 1-methylnaphthalene).

Soil concentrations did not exceed human health screening criteria considering a commercial / industrial site use at any locations; however, some hydrocarbon concentrations were considered to be elevated in terms of the risk to Controlled Waters, i.e. due to the potential for leaching to groundwater and potentially migrating towards the river to the north of the Site.

Where concentrations were found to exceed Controlled Waters and/ or human health screening criteria (considering commercial/ industrial site use), a DQRA has been carried out to determine whether or not the identified source areas represent a risk to Controlled Waters. The DQRA identified potential risks to identified Controlled Waters receptors (principally modelled as the River Cadoxton) with respect to two source areas: soil and groundwater impacted with petroleum hydrocarbons at WS6; and vinyl chloride in groundwater at ZC209. Both locations are in relatively close proximity to the River Cadoxton and concentrations were found to be in excess of the respective Site specific detailed remedial targets developed in the DQRA.

Ramboll Environ has recommended localised remediation of the aforementioned source areas where unacceptable risks have been identified and accordingly, a Remediation Strategy has been prepared (Ref: UK15-21370_01_RS). The overall objective of the Remediation Strategy is to return the Site to a satisfactory condition for the landlord, considering the intended on-going use of the Site for commercial/ industrial purposes.

The recommendation to undertake localised remediation at the areas where unacceptable risks from contamination have been identified, is over and above the requirement to satisfy Environmental Permit Surrender. Predominantly due to the fact that contamination may be historical and therefore not related to Zeon's activities; and there is no Reference Data for these areas for comparison.

10. SITE CONDITION AT PERMIT SURRENDER

Current NRW guidance (Regulatory Guidance Note 9) and DEFRA Core Guidance identifies that NRW will accept an application to surrender an EP if it is satisfied that the necessary measures have been taken:

- to avoid a pollution risk resulting from the operation of the regulated facility; and
- to return the site of the regulated facility to a satisfactory state, having regard to the state of the site before the facility was put into operation.

10.1 Statement of Site Condition

As of May 2016, all permitted activities carried out at the Site had stopped.

Following the closure of the Site in July 2016:

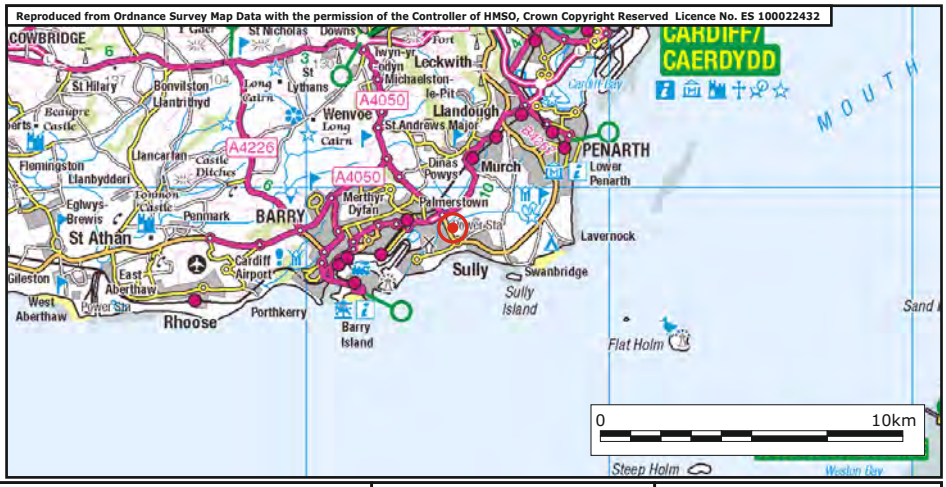
- All plant and equipment was drained down and decommissioned in accordance with the Site Closure Plan, in consultation with NRW.
- Hazardous waste materials have been removed from Site.
- A detailed site investigation has been performed to characterise soil and groundwater condition at the Installation for comparison with Reference Data, collected in 2006 to determine the Installation 'baseline'.
- Direct comparison of soil and groundwater data against Reference Data collected in 2006 has not identified any significant increases in concentrations.
- Site drainage has been surveyed and a risk based approach used to identify sections of drainage which may have allowed contamination (if present) to enter soil.
- A 'lines of evidence' approach has been used to identify areas of the Installation where a potential for pollution to have occurred during the lifetime of the EP could not be discounted. This included comparison of substances in soil and groundwater against substances used during the EP, records of spills and information on the monitoring and management of containment systems.
- The lines of evidence approach has identified that when compared directly with Reference Data, the soil and groundwater conditions at the Installation have not deteriorated during the lifetime of the EP.
- Several localised areas of contamination have been identified which are considered likely to be related to historical activities. Although the potential for contamination to have occurred during the lifetime of the EP cannot be entirely ruled out, in the absence of Reference Data from these locations for comparison, they cannot be solely attributed to Permitted activities.
  - The following determinands in groundwater were found to exceed Controlled Waters screening criteria at one or more location: TPH (various fractions), PAH compounds, VOCs (vinyl chloride and 1,1-dichloroethane), SVOCs (phenol and 1-methylnaphthalene).
  - Soil concentrations did not exceed human health screening criteria considering a commercial / industrial site use at any locations.
- Where contaminants were found to be present at concentrations above human health and Controlled Waters screening criteria, detailed quantitative risk assessments for groundwater and human health in the context of future land use have been completed. ***Although this is over and above the requirement to satisfy Environmental Permit Surrender.***

Overall, Ramboll Environ considers that the Installation meets the requirements of ‘satisfactory state’ as defined by the EA RGN 9 and DEFRA Core Guidance.

Soil concentrations did not exceed human health screening criteria considering a commercial / industrial site use at any locations and as such, the Site is also considered suitable for use in the context of future commercial and/or industrial use. However, Ramboll Environ considers that some hydrocarbon concentrations are elevated in terms of the potential risk to Controlled Waters, i.e. due to the potential for leaching to groundwater. Remediation of localised contamination ‘hot spots’ is therefore recommended to support the surrender of the leases back to the landlord.

Should the intended land use change, any residual historical contamination remaining at the Site will need to be re-assessed in the context of the future land use and within the planning process.

APPENDIX 1
FIGURES



Title: Figure 1: Site Location	Site: Land off Hayes Road, Sully, Vale of Glamorgan	Date: August 2016	RAMBOLL ENVIRON
		Scale: As shown	
Project No.: UK15-21370	Client: Zeon Chemicals Europe Limited	Issue: 1 Drawn by: RH	

Key

- Plot A Boundary - Manufacturing Site
- Plot B Boundary - Storage Warehouse
- Plot C Boundary - Undeveloped Overgrown Land
- Installation Boundary for Environmental Permit

Cadoxton River

Pipeline

Depot

Plot B Boundary - Storage Warehouse

Drain

Windmill (disused)

HAYES ROA

6m

13m

9m

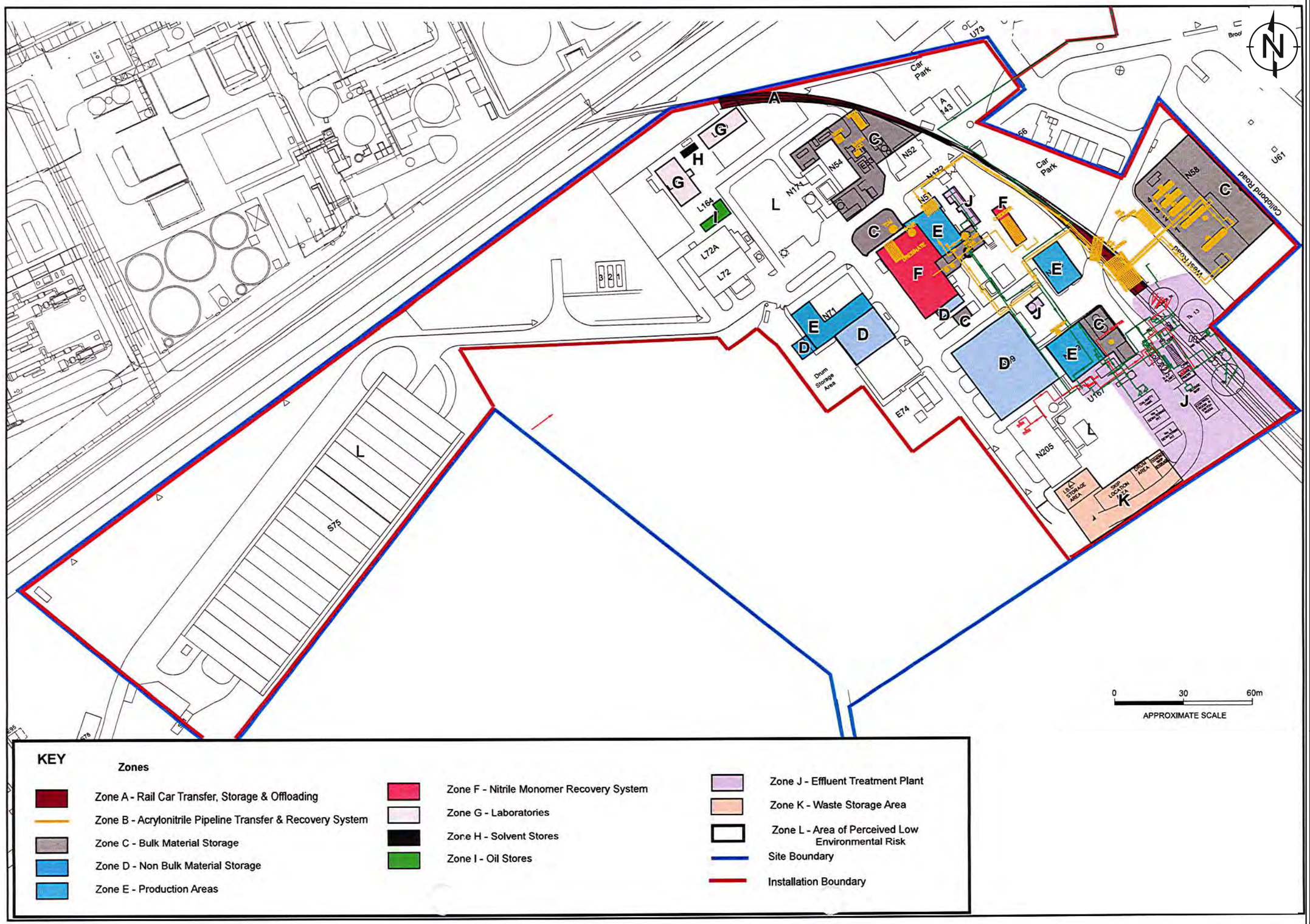
Path

Coed-yr-Hayes

0 100m

Title	Figure 2: Installation Boundary
Project No.	UK15-21370
Site	Land off Hayes Road, Sully, Vale of Glamorgan
Client	Zeon Chemicals Europe Limited
Date	August 2016
Scale	NTS
Issue	1
Drawn by	RH

RAMBOLL ENVIRON



KEY

Zones

- Zone A - Rail Car Transfer, Storage & Offloading
- Zone B - Acrylonitrile Pipeline Transfer & Recovery System
- Zone C - Bulk Material Storage
- Zone D - Non Bulk Material Storage
- Zone E - Production Areas
- Zone F - Nitrile Monomer Recovery System
- Zone G - Laboratories
- Zone H - Solvent Stores
- Zone I - Oil Stores
- Zone J - Effluent Treatment Plant
- Zone K - Waste Storage Area
- Zone L - Area of Perceived Low Environmental Risk
- Site Boundary
- Installation Boundary

Based on Figure: EM/LCH/CDF, November 2005, URS.

Title	Figure 3: Site Zones for Permitted Activities
Project No.	UK15-21370
Site	Land off Hayes Road, Sully, Vale of Glamorgan
Client	Zeon Chemicals Europe Limited
Date	August 2016
Scale	See Scale Bar
Issue	1
Drawn by	RH

RAMBOLL
ENVIRON

G/F =GROUND FLOOR
1ST/F =1ST FLOOR
2ND/F=2ND FLOOR

KEY

- SEPTIC WASTE DRAIN
- RAIN / STORM WATER DRAIN
- PROCESS DRAIN
- PROCESS RAIN / STORM WATERDRAIN

L157
L179
L164
N251
N252
N171
N54
E53
M72
PUMP
N2 PLANT
N52
A 145
PUMP
N172
PIT
N51
N71 LATEX STOCK TANKS
LATEX BLEND TANKS
N55 POLY SECTION
N55 MONOMER RECOVERY ROOM
ZSC PLANT
ZSC FINISHED GOODS WAREHOUSE
SEPTIC TANK
A71
E74
N166
N160 POLYBLACK CRUMB PLANT
N99 POLYBLACK SECTION
N99 WAREHOUSE
N159 COAG. BUILDING
N209
N205
U56
U217
N58 TANK FARM
U167 EFFLUENT PLANT
U167 CONTROL ROOM & SWITCH ROOM
SEPTIC TANK
GAS BOTTLE STORAGE CAGE

ISSUE	DATE	REMARKS	DR	CH
15	MAY -13	SITE EARTHING UPDATED	JSS	PKS
14	SEP -11	HAZARDOUS MATERIALS ADDED	JSS	ADL
13	OCT -09	ZONED AREA'S UPDATED	JSS	
12	SEP -09	OFFLOADING AREA LAYER ADDED	JSS	GEP
11	MAR -07	IBC MANAGEMENT LAYER	JSS	ADL

ZEON CHEMICALS EUROPE LIMITED
Sully, South Glamorgan, CF64 5ZE, UNITED KINGDOM.

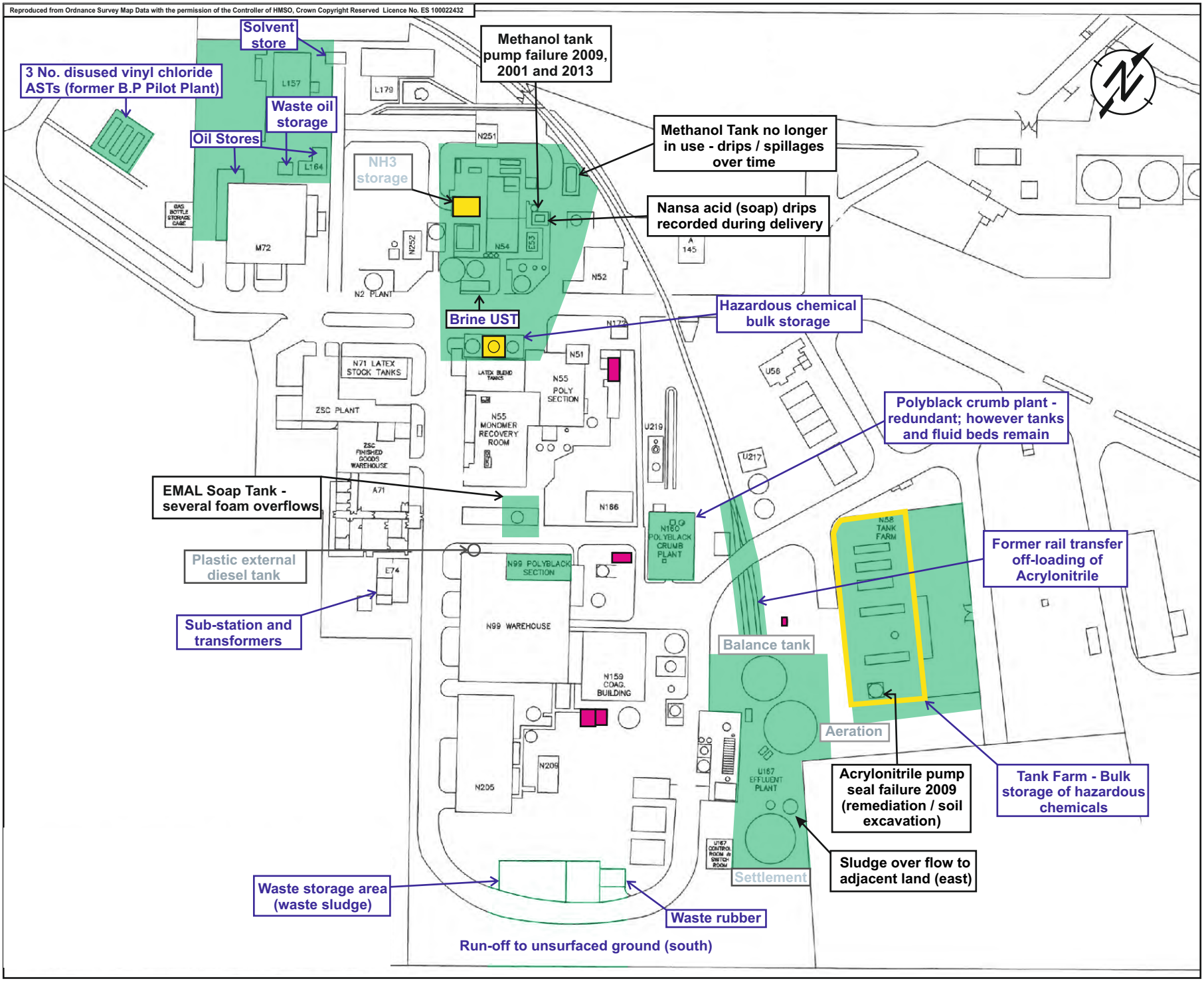
PROJECT	ZEON CHEMICALS. BARRY SITE MAP. HAZARDOUS AREA CLASSIFICATION. ENVIRONMENTAL MAP.
LOCATION	
JOB No.	DRAWING No. ZCEL SITE MAP ZSM0001 — ISSUE 15
SCALE 1:500 (AT A1 SIZE)	

Key

Based on Figure: ZCEL Site Map ZSM0001/15

Title	Figure 4: Drainage Layout
Project No.	UK15-21370
Site	Land off Hayes Road, Sully, Vale of Glamorgan
Client	Zeon Chemicals Europe Limited
Date	August 2016
Scale	NTS
Issue	1
Drawn by	RH

RAMBOLL ENVIRON



Key

- Known Spillage / Leakage Incidents
- Effluent Pits
- COMAH Areas
- Potential Areas of Concern

Title: Figure 5: Potential Areas of Concern (identified in Phase I ESA)

Project No. UK15-21370

Site: Land off Hayes Road, Sully, Vale of Glamorgan

Client: Zeon Chemicals Europe Limited

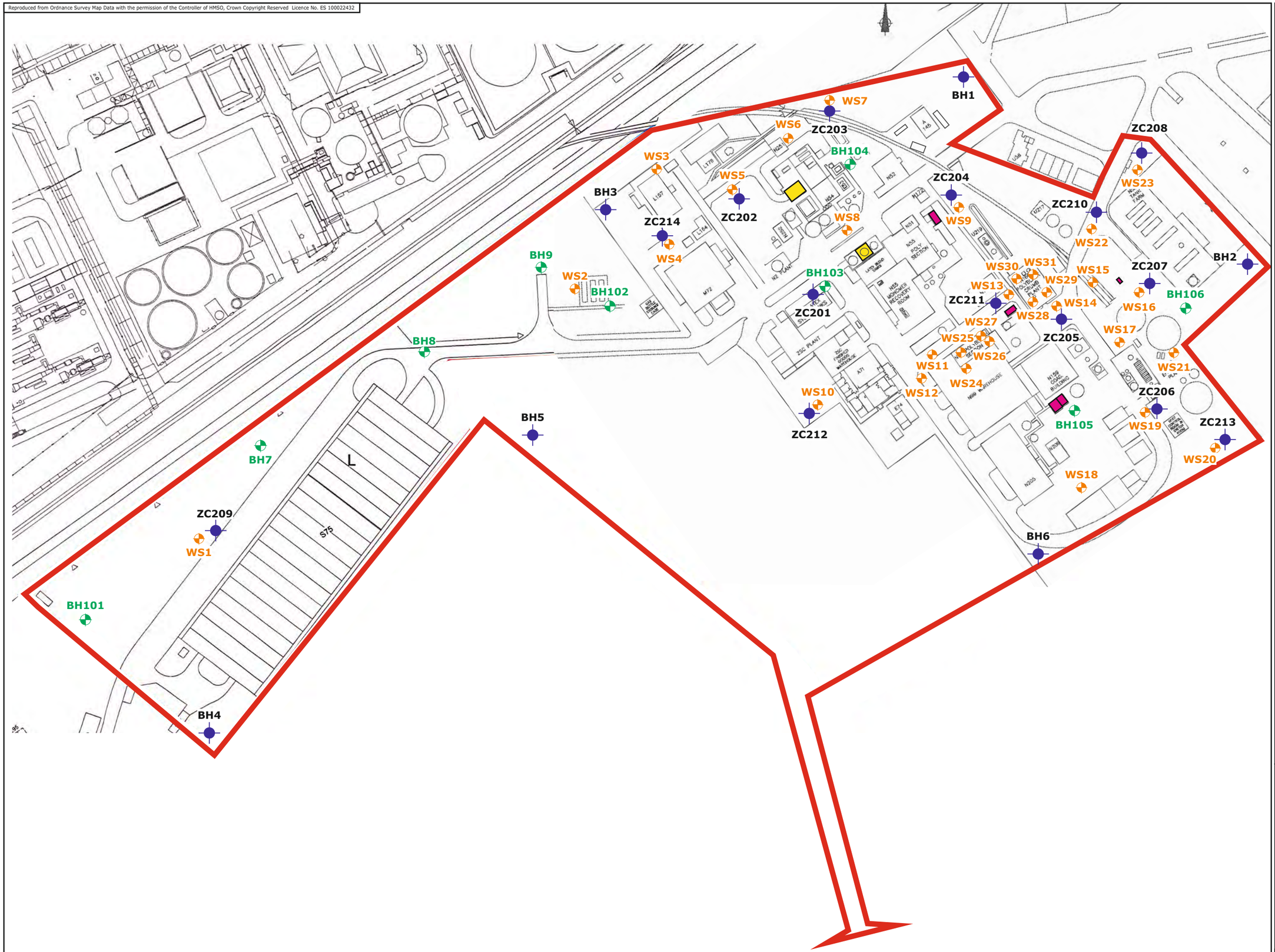
Date: June 2015

Scale: NTS

Issue: 1

Drawn by: EB

RAMBOLL ENVIRON



Key

- Site Boundary
- Effluent Pits
- COMAH Areas
- Existing Monitoring Well
- Borehole Location (Deep)
- Window Sample Location (Shallow)

Title	Figure 6: Borehole Locations
Project No.	UK15-21370
Site	Land off Hayes Road, Sully, Vale of Glamorgan
Client	Zeon Chemicals Europe Limited
Date	August 2016
Scale	See scale bar
Issue	1
Drawn by	RH

RAMBOLL ENVIRON

APPENDIX 2
STATEMENT OF REFERENCE DATA (URS, 2006)

Table 1 Total Petroleum Hydrocarbon Concentrations in Soil

Matrix	SOIL
Chem_Class	TPH

		Analyte																	
Sample_ID	Depth	>C10 TO C12 ALIPHATICS	>C10 TO C12 AROMATICS	>C12 TO C16 ALIPHATICS	>C12 TO C16 AROMATICS	>C16 TO C21 AROMATICS	>C16 TO C35 ALIPHATICS	>C21 TO C35 AROMATICS	>C35 TO C44 ALIPHATICS	>C35 TO C44 AROMATICS	>C5 TO C6 ALIPHATICS	>C5 TO C7 AROMATICS	>C6 TO C8 ALIPHATICS	>C7 TO C8 AROMATICS	>C8 TO C10 ALIPHATICS	>C8 TO C10 AROMATICS	EPH TOTAL (>C5-C44)	TOTAL ALIPHATICS (>C5-C44)	TOTAL AROMATICS (>C5-C44)
ZC1	0.3	6.3	7.2	11	13	35	110	110	14	28	2.1	0.12	18	45	2.1	14	410	160	250
ZC214	0.9	*ND*	*ND*	22	12	30	110	63	9.5	20	*ND*	0.054	0.3	0.28	0.2	0.16	270	140	120
	1.8	50	4.6	120	27	36	150	12	*ND*	*ND*	0.13	*ND*	0.28	*ND*	1.1	*ND*	400	320	81
	3.6	210	8	470	80	130	570	51	*ND*	*ND*	0.19	*ND*	0.36	*ND*	2	*ND*	1500	1300	270

ND = Non-detect, below the limit of detection
NA = Not Anaylsed
Concentrations in mg/kg

Table 2 Volatile Organic Compound Concentrations in Soil

Matrix	SOIL
Chem_Class	VOC

Sample_ID	Depth	1,1,1,2-TETRACHLOROETHANE	1,1,1-TRICHLOROETHANE	1,1,2,2-TETRACHLOROETHANE	1,1,2-TRICHLOROETHANE	1,1-DICHLOROETHANE	1,1-DICHLOROETHENE	1,1-DICHLOROPROPENE	1,2,3-TRICHLOROBENZENE	1,2,3-TRICHLOROPROPANE	1,2,4-TRICHLOROBENZENE	1,2,4-TRIMETHYLBENZENE	1,2-DIBROMO-3-CHLOROPROPANE	1,2-DIBROMOETHANE	1,2-DICHLOROBENZENE	1,2-DICHLOROETHANE	1,2-DICHLOROPROPANE	1,3,5-TRIMETHYLBENZENE	1,3-DICHLOROBENZENE	1,3-DICHLOROPROPANE	1,4-DICHLOROBENZENE	2,2-DICHLOROPROPANE	2-CHLOROTOLUENE	4-CHLOROTOLUENE	BENZENE	BROMOBENZENE	BROMOCHLOROMETHANE	BROMODICHLOROMETHANE	BROMOFORM	BROMOMETHANE	CARBON TETRACHLORIDE	CHLOROBENZENE	CHLOROETHANE	CHLOROFORM	CHLOROMETHANE	CISND,2-DICHLOROETHENE	CISND,3-DICHLOROPROPENE	DIBROMOCHLOROMETHANE	DIBROMOMETHANE	DICHLORODIFLUOROMETHANE	DICHLOROMETHANE	ETHYLBENZENE	HEXACHLOROBUTADIENE	ISOPROPYLBENZENE	M,P-XYLENE	NAPHTHALENE	N-BUTYLBENZENE	N-PROPYLBENZENE	O-XYLENE	P-ISOPROPYLTOLUENE	SEC-BUTYLBENZENE	STYRENE	TERT-BUTYLBENZENE	TETRACHLOROETHENE	TOLUENE	TRANSND,2-DICHLOROETHENE	TRANSND,3-DICHLOROPROPENE	TRICHLOROETHENE	TRICHLOROFLUOROMETHANE	VINYL CHLORIDE	VOC	VOC WITH TICS
ZC1	0.3	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
ZC212	0.2	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
ZC214	0.9	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
	1.8	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
	3.6	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND

ND = Non-detect, below the limit of detection
NA = Not Anaylsed
Concentrations in mg/kg

Table 3 Metal Concentrations in Soil

Matrix	SOIL
Chem_Class	METALTOT

		Analyte									
Sample_ID	Depth	ARSENIC AS AS, DRY WEIGHT	BARIUM AS BA, DRY WT	CADMIUM AS CD, DRY WEIGHT	CHROMIUM AS CR, DRY WEIGHT	COPPER AS CU, DRY WEIGHT	IRON AS FE, DRY WEIGHT	LEAD AS PB, DRY WEIGHT	MERCURY AS HG, DRY WEIGHT	SELENIUM AS SE, DRY WEIGHT	ZINC AS ZN, DRY WEIGHT
ZC1	0.3	4.9	240	0.67	57	39	6700	54	0.35	*ND*	240
ZC210	0.5	8.2	160	*ND*	20	32	15000	40	0.28	0.37	67
	1	9.3	45	*ND*	31	17	32000	30	*ND*	*ND*	92
	1.4	18	48	*ND*	32	45	28000	60	*ND*	*ND*	97
ZC211	0.3	4.1	24	*ND*	12	8	4900	*ND*	*ND*	*ND*	18
	0.8	6.1	36	*ND*	21	11	7000	14	*ND*	*ND*	31
ZC212	0.2	8.9	91	*ND*	19	23	15000	25	0.5	*ND*	79
ZC213	0.3	8.7	240	0.62	37	110	20000	93	1.9	*ND*	190
	1.8	9.2	64	*ND*	69	35	23000	47	0.3	*ND*	100
	2.6	4.1	19	*ND*	15	11	10000	*ND*	*ND*	*ND*	49
ZC214	0.9	21	460	0.63	72	140	29000	62	0.33	*ND*	150
	1.8	13	110	0.53	35	30	33000	64	*ND*	*ND*	130
	3.6	7.9	37	*ND*	30	18	25000	25	*ND*	*ND*	84

ND = Non-detect, below the limit of detection
NA = Not Anaylsed
Concentrations in mg/kg

Table 4 Pesticide and Polychlorinated Biphenyl Concentrations in Soil

Matrix	SOIL
Chem_Class	PEST/PCB

		Analyte
Sample_ID	Depth	FORMALDEHYDE
ZC212	0.2	*ND*

ND = Non-detect, below the limit of detection
NA = Not Anaylsed
Concentrations in mg/kg

Table 5 Non-classified Analyte Concentrations in Soil

Matrix	SOIL
Chem_Class	MISC

		Analyte					
Sample_ID	Depth	% Stones BG 2.6/3.0	Acrylonitrile	CATECHOL	MOISTURE CONTENT AT 30 C	PH	TOC BY IGNITION IN OXYGEN
ZC1	0.3	*NA*	*NA*	*NA*	*NA*	9.2	*NA*
ZC210	0.5	36	*ND*	*ND*	9	9.2	10
	1	24	*ND*	*ND*	4.5	8.6	0.92
	1.4	11	*ND*	*ND*	8.2	8.6	*NA*
ZC211	0.3	15	*ND*	*NA*	8.6	9.3	7.2
	0.8	12	*ND*	*NA*	21	10.6	*NA*
ZC212	0.2	25	*ND*	*ND*	11	8.6	*NA*
ZC213	0.3	7.6	*ND*	*NA*	8	8.7	*NA*
	1.2	0	*NA*	*NA*	15	*NA*	14
	1.8	9.1	*ND*	*NA*	26	7.9	*NA*
	2.6	13	*ND*	*NA*	8.2	8.6	*NA*
ZC214	0.9	22	*NA*	*NA*	17	8.3	*NA*
	1.8	18	*NA*	*NA*	8.3	7.9	*NA*
	3.6	8.8	*NA*	*NA*	14	8.1	*NA*

ND = Non-detect, below the limit of detection
NA = Not Anaylsed
Concentrations in mg/kg

Table 6 Particle Size Distribution in Soil

Location	Depth (m)	Description	Classification	% of each
ZC210	0.5	Grey silty sandy GRAVEL	Clay	3
			Silt	13
			Sand	19
			Gravel	65
			Cobbles	0
			Boulders	0
ZC210	1	Brown slightly sandy SILT	Clay	34
			Silt	63
			Sand	3
			Gravel	0
			Cobbles	0
			Boulders	0
ZC211	0.3	Brown silty sandy GRAVEL	Clay	4
			Silt	16
			Sand	23
			Gravel	57
			Cobbles	0
			Boulders	0
ZC213	1.2	Dark brown very gravelly very sandy SILT	Clay	10
			Silt	35
			Sand	30
			Gravel	25
			Cobbles	0
			Boulders	0

Table 7 Total Petroleum Hydrocarbon Concentrations in Water

Matrix	WATER
Chem_Class	TPH

		Analyte					
Sample_ID	Depth	TPH >C10-C16	TPH >C16-C24	TPH >C24-C40	TPH >C6-C40	TPH >C6-C8	TPH >C8-C10
ZC214	W	969	878	122	1980	*ND*	13

ND = Non-detect, below the limit of detection
NA = Not Anaylsed
Concentrations in µg/l

Table 8 Volatile Organic Compound Concentrations in Water

Matrix	WATER
Chem_Class	VOC

		Analyte																																																										
Sample_ID	Depth	1,1,1,2-TETRACHLOROETHANE	1,1,1-TRICHLOROETHANE	1,1,2,2-TETRACHLOROETHANE	1,1,2-TRICHLOROETHANE	1,1-DICHLOROETHANE	1,1-DICHLOROETHENE	1,1-DICHLOROPROPENE	1,2,3-TRICHLOROBENZENE	1,2,3-TRICHLOROPROPANE	1,2,4-TRICHLOROBENZENE	1,2,4-TRIMETHYLBENZENE	1,2-DIBROMO-3-CHLOROPROPANE	1,2-DIBROMOETHANE	1,2-DICHLOROBENZENE	1,2-DICHLOROETHANE	1,2-DICHLOROPROPANE	1,3,5-TRIMETHYLBENZENE	1,3-DICHLOROBENZENE	1,3-DICHLOROPROPANE	1,4-DICHLOROBENZENE	2,2-DICHLOROPROPANE	2-CHLOROTOLUENE	4-CHLOROTOLUENE	BENZENE	BROMOBENZENE	BROMOCHLOROMETHANE	BROMODICHLOROMETHANE	BROMOFORM	BROMOMETHANE	CARBON TETRACHLORIDE	CHLOROBENZENE	CHLOROETHANE	CHLOROFORM	CHLOROMETHANE	CISND,2-DICHLOROETHENE	CISND,3-DICHLOROPROPENE	DIBROMOCHLOROMETHANE	DIBROMOMETHANE	DICHLOROMETHANE	HEXACHLOROBUTADIENE	ISOPROPYLBENZENE	M,P-XYLENE	NAPHTHALENE	N-BUTYLBENZENE	N-PROPYLBENZENE	O-XYLENE	P-ISOPROPYLTOLUENE	SEC-BUTYLBENZENE	STYRENE	TERT-BUTYLBENZENE	TETRACHLOROETHENE	TOLUENE	TRANSND,2-DICHLOROETHENE	TRANSND,3-DICHLOROPROPENE	TRICHLOROETHENE	TRICHLOROFLUOROMETHANE	VINYL CHLORIDE	VOC WITH TICS	ETHYL BENZENE	MTBE
ZC201	W	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
ZC212	W	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
ZC214	W	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	1	ND	ND	ND	ND	ND	ND	2	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND

ND = Non-detect, below the limit of detection
NA = Not Anaylsed
Concentrations in µg/l

Table 9 Semi-volatile Organic Compounds in Water

Matrix	WATER
Chem_Class	SVOC

		Analyte																								
Sample_ID	Depth	1,2,4-TRICHLOROBENZENE	HEXACHLOROBUTADIENE	NAPHTHALENE	1,2 DICHLOROBENZENE	1,3 DICHLOROBENZENE	1,4 DICHLOROBENZENE	2,4,5-TRICHLOROPHENOL	2,4,6-TRICHLOROPHENOL	2,4-DICHLOROPHENOL	2,4-DIMETHYLPHENOL	2,4-DINITROTOLUENE	2,6-DINITROTOLUENE	2-CHLORONAPHTHALENE	2-CHLOROPHENOL	2-METHYLNAPHTHALENE	2-METHYLPHENOL	2-NITROPHENOL	4-BROMOPHENYL PHENYL ETHER	4-CHLORO-3-METHYLPHENOL	4-CHLOROPHENYL PHENYL ETHER	4-METHYLPHENOL	4-NITROPHENOL	ACENAPHTHENE	ACENAPHTHYLENE	ANTHRACENE
ZC205	W	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND

		Analyte																														
Sample_ID	Depth	BENZO(A)ANTHRACENE	BENZO(A)PYRENE	BENZO(B)FLUORANTHENE	BENZO(G,H,I)PERYLENE	BENZO(K)FLUORANTHENE	BIS(2-CHLOROETHOXY)METHANE	BIS(2-CHLOROETHYL)ETHER	BIS(2-CHLOROISOPROPYL)ETHER	BIS(2-ETHYLHEXYL)PHTHALATE	BUTYLBENZYLPHTHALATE	CHRYSENE	DI-N-BUTYLPHTHALATE	DI-N-OCTYLPHTHALATE	DIBENZ(A,H)ANTHRACENE	DIBENZOFURAN	DIETHYLPHTHALATE	DIMETHYLPHTHALATE	FLUORANTHENE	FLUORENE	HEXACHLOROBENZENE	HEXACHLOROETHANE	INDENO(1,2,3-CD)PYRENE	ISOPHORONE	N-NITROSO-DI-N-PROPYLAMINE	N-NITROSODIPHENYLAMINE	NITROBENZENE	PENTACHLOROPHENOL	PHENANTHRENE	PHENOL	PYRENE	SVOC WITH TICS
ZC205	W	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND

ND = Non-detect, below the limit of detection
NA = Not Anaylsed
Concentrations in µg/l

Table 10 Metal Concentrations in Water

Matrix	WATER
Chem_Class	METALTOT

		Analyte													
Sample_ID	Depth	Arsenic (T) ICPMS	BARIUM	CADMIUM	CALCIUM TOTAL AS CA	CHROMIUM	COPPER	IRON , TOTAL AS FE	LEAD	MAGNESIUM AS MG	MERCURY	POTASSIUM TOTAL AS K	SELENIUM	SODIUM, TOTAL AS NA	ZINC
ZC201	W	16	52	*ND*	38000	*ND*	*ND*	410	*ND*	4400	*ND*	1700	4	162000	11
ZC203	W	12	110	*ND*	16000	*ND*	*ND*	140	*ND*	16000	*ND*	9700	5	1060000	7
ZC204	W	11	23	*ND*	50000	*ND*	*ND*	950	*ND*	11000	*ND*	3000	3	103000	5
ZC205	W	15	43	*ND*	67000	*ND*	*ND*	1910	*ND*	6900	*ND*	4400	1	22000	19
ZC206	W	19	88	*ND*	157000	*ND*	*ND*	2130	*ND*	21000	*ND*	10000	3	177000	17
ZC207	W	62	140	*ND*	78000	*ND*	*ND*	10010	*ND*	26000	*ND*	8200	2	72000	8
ZC208	W	10	240	*ND*	47000	*ND*	*ND*	850	*ND*	31000	*ND*	9000	2	78000	16
ZC210	W	4	52	*ND*	39000	*ND*	*ND*	60	*ND*	4800	*ND*	2900	1	13000	13
ZC211	W	21	75	0.6	71000	*ND*	*ND*	6490	7	6400	*ND*	12000	*ND*	41000	18
ZC212	W	7	210	*ND*	96000	*ND*	11	330	*ND*	17000	*ND*	6100	12	51000	11
ZC213	W	10	42	0.7	154000	*ND*	*ND*	2240	8	30000	*ND*	7300	2	131000	22
ZC214	W	21	120	0.6	126000	*ND*	8	6540	6	16000	*ND*	7500	7	46000	19

ND = Non-detect, below the limit of detection
NA = Not Anaylsed
Concentrations in µg/l

Table 11 Pesticide and Polychlorinated Biphenyl Concentrations in Water

Matrix	WATER
Chem_Class	PEST/PCB

		Analyte
Sample_ID	Depth	FORMALDEHYDE
ZC201	W	400
ZC212	W	3710

ND = Non-detect, below the limit of detection
NA = Not Anaylsed
Concentrations in µg/l

Table 12 Non-classified Analyte Concentrations in Water

Matrix	WATER
Chem_Class	MISC

		Analyte													
Sample_ID	Depth	Acrylonitrile	CATECHOL	PH	ALKALINITY AS CAC03	BOD + ATU (5 day)	CARBONATE ALKALINITY	CHLORIDE AS CL	COD (TOTAL)	NITRATE AS N	Nonyl phenol	Octyl phenol	SULPHATE AS SO4	Detergents, anionic as NaLS	Methanol
ZC201	W	NA	NA	8.2	286000	56000	ND	129000	469000	ND	NA	NA	15000	NA	NA
ZC203	W	NA	NA	9.4	562000	10000	198000	1340000	115000	ND	NA	NA	ND	2000	ND
ZC204	W	ND	ND	8.2	322000	2000	ND	79000	31000	ND	NA	NA	ND	NA	NA
ZC205	W	NA	NA	7.9	163000	3000	ND	40000	40000	1300	1	ND	20000	NA	NA
ZC206	W	ND	NA	7.6	301000	42000	ND	289000	371000	900	NA	NA	26000	NA	NA
ZC207	W	ND	ND	7.5	352000	9000	ND	96000	43000	900	NA	NA	ND	NA	NA
ZC208	W	ND	ND	7.8	302000	3000	ND	103000	41000	600	NA	NA	ND	NA	NA
ZC210	W	ND	ND	8.3	498000	ND	ND	28000	36000	1000	NA	NA	6000	NA	NA
ZC211	W	ND	NA	7.6	282000	58000	ND	17000	254000	ND	NA	NA	5000	NA	NA
ZC212	W	ND	ND	7.5	391000	2000	ND	52000	140000	700	NA	NA	64000	NA	NA
ZC213	W	ND	NA	7.6	287000	2000	ND	299000	71000	400	NA	NA	82000	NA	NA
ZC214	W	NA	NA	7.2	392000	4000	ND	29000	94000	ND	NA	NA	14000	NA	NA

ND = Non-detect, below the limit of detection
NA = Not Anaylsed
Concentrations in µg/l

CLR 7 MADE GROUND SOIL STATISTICS

		Location	ZC1	ZC210	ZC211	ZC212	ZC213	ZC214
		Material	made	made	made	made	made	made
		Depth	0.3	0.5	0.3	0.2	0.3	0.9
Analyte	MDL	HALF MDL						
PH	NA	NA	9.2	9.2	9.3	8.6	8.7	8.3
TOTAL_ARSENIC	1	0.5	4.9	8.2	4.1	8.9	8.7	21
TOTAL_BARIUM	6.39	3.195	240	160	24	91	240	460
TOTAL_CADMIUM	0.5	0.25	0.67	ND	ND	ND	0.62	0.63
TOTAL_CHROMIUM	3	1.5	57	20	12	19	37	72
TOTAL_COPPER	3.546	1.773	39	32	8	23	110	140
TOTAL_LEAD	5.349	2.6745	54	40	ND	25	93	62
TOTAL_MERCURY	0.218	0.109	0.35	0.28	ND	0.5	1.9	0.33
TOTAL_SELENIUM	0.3	0.15	ND	0.37	ND	ND	ND	ND
TOTAL_ZINC	9.2	4.6	240	67	18	79	190	150

AvgND
8.88
9.30
202.50
0.64
36.17
58.67
54.80
0.67
0.37
124.00

		Location	ZC1	ZC210	ZC211	ZC212	ZC213	ZC214
		Material	made	made	made	made	made	made
		Depth	0.3	0.5	0.3	0.2	0.3	0.9
Analyte	MDL	HALF MDL						
PH	NA	NA	9.2	9.2	9.3	8.6	8.7	8.3
TOTAL_ARSENIC	1	0.5	4.9	8.2	4.1	8.9	8.7	21
TOTAL_BARIUM	6.39	3.195	240	160	24	91	240	460
TOTAL_CADMIUM	0.5	0.25	0.67	0.25	0.25	0.25	0.62	0.63
TOTAL_CHROMIUM	3	1.5	57	20	12	19	37	72
TOTAL_COPPER	3.546	1.773	39	32	8	23	110	140
TOTAL_LEAD	5.349	2.6745	54	40	2.6745	25	93	62
TOTAL_MERCURY	0.218	0.109	0.35	0.28	0.109	0.5	1.9	0.33
TOTAL_SELENIUM	0.3	0.15	0.15	0.37	0.15	0.15	0.15	0.15
TOTAL_ZINC	9.2	4.6	240	67	18	79	190	150

N	Min	Max	Average	Stdev	Analyte
6	8.300	9.300	8.883	0.407	PH
6	4.100	21.000	9.300	6.083	TOTAL_ARSENIC
6	24.000	460.000	202.500	151.802	TOTAL_BARIUM
6	0.250	0.670	0.445	0.214	TOTAL_CADMIUM
6	12.000	72.000	36.167	23.912	TOTAL_CHROMIUM
6	8.000	140.000	58.667	53.268	TOTAL_COPPER
6	2.675	93.000	46.112	31.251	TOTAL_LEAD
6	0.109	1.900	0.578	0.660	TOTAL_MERCURY
6	0.150	0.370	0.187	0.090	TOTAL_SELENIUM
6	18.000	240.000	124.000	83.664	TOTAL_ZINC

log		Location	ZC1	ZC210	ZC211	ZC212	ZC213	ZC214
		Material	made	made	made	made	made	made
		Depth	0.3	0.5	0.3	0.2	0.3	0.9
Analyte	MDL	HALF MDL						
PH	NA	NA	0.9638	0.9638	0.9685	0.9345	0.9395	0.9191
TOTAL_ARSENIC	1	0.5	0.6902	0.9138	0.6128	0.9494	0.9395	1.3222
TOTAL_BARIUM	6.39	3.195	2.3802	2.2041	1.3802	1.959	2.3802	2.6628
TOTAL_CADMIUM	0.5	0.25	-0.174	-0.602	-0.602	-0.602	-0.208	-0.201
TOTAL_CHROMIUM	3	1.5	1.7559	1.301	1.0792	1.2788	1.5682	1.8573
TOTAL_COPPER	3.546	1.773	1.5911	1.5051	0.9031	1.3617	2.0414	2.1461
TOTAL_LEAD	5.349	2.6745	1.7324	1.6021	0.4272	1.3979	1.9685	1.7924
TOTAL_MERCURY	0.218	0.109	-0.456	-0.553	-0.963	-0.301	0.2788	-0.481
TOTAL_SELENIUM	0.3	0.15	-0.824	-0.432	-0.824	-0.824	-0.824	-0.824
TOTAL_ZINC	9.2	4.6	2.3802	1.8261	1.2553	1.8976	2.2788	2.1761

N	Min	Max	Average	Stdev	T Crit 5%	T Crit 10%	Exceeds	T
6	0.919	0.968	0.948	0.020	1.82	1.73	n	1.0124
6	0.613	1.322	0.905	0.249	1.82	1.73	n	1.6801
6	1.380	2.663	2.161	0.447	1.82	1.73	n	1.1217
6	-0.602	-0.174	-0.398	0.224	1.82	1.73	n	1.0017
6	1.079	1.857	1.473	0.303	1.82	1.73	n	1.2669
6	0.903	2.146	1.591	0.457	1.82	1.73	n	1.2138
6	0.427	1.968	1.487	0.553	1.82	1.73	n	0.871
6	-0.963	0.279	-0.413	0.405	1.82	1.73	n	1.7078
6	-0.824	-0.432	-0.759	0.160	1.82	1.73	y	2.0412
6	1.255	2.380	1.969	0.411	1.82	1.73	n	1.0015

CLR 7 ALLUVIAL SOIL
STATISTICS

		Location	ZC210	ZC210	ZC211	ZC213	ZC213	ZC214	ZC214
		Material	alluvial	alluvial	alluvial	alluvial	alluvial	alluvial	alluvial
		Depth	1	1.4	0.8	1.8	2.6	1.8	3.6
Analyte	MDL	HALF MDL							
PH	NA	NA	8.6	8.6	10.6	7.9	8.6	7.9	8.1
TOTAL_ARSENIC	1	0.5	9.3	18	6.1	9.2	4.1	13	7.9
TOTAL_BARIUM	6.39	3.195	45	48	36	64	19	110	37
TOTAL_CADMIUM	0.5	0.25	ND	ND	ND	ND	ND	0.53	ND
TOTAL_CHROMIUM	3	1.5	31	32	21	69	15	35	30
TOTAL_COPPER	3.546	1.773	17	45	11	35	11	30	18
TOTAL_LEAD	5.349	2.6745	30	60	14	47	ND	64	25
TOTAL_MERCURY	0.218	0.109	ND	ND	ND	0.3	ND	ND	ND
TOTAL_ZINC	9.2	4.6	92	97	31	100	49	130	84

AvgND
8.88
9.3
202.5
0.64
36.17
58.67
54.8
0.67
124

		Location	ZC210	ZC210	ZC211	ZC213	ZC213	ZC214	ZC214
		Material	alluvial	alluvial	alluvial	alluvial	alluvial	alluvial	alluvial
		Depth	1	1.4	0.8	1.8	2.6	1.8	3.6
Analyte	MDL	HALF MDL							
PH	NA	NA	8.6	8.6	10.6	7.9	8.6	7.9	8.1
TOTAL_ARSENIC	1	0.5	9.3	18	6.1	9.2	4.1	13	7.9
TOTAL_BARIUM	6.39	3.195	45	48	36	64	19	110	37
TOTAL_CADMIUM	0.5	0.25	0.25	0.25	0.25	0.25	0.25	0.53	0.25
TOTAL_CHROMIUM	3	1.5	31	32	21	69	15	35	30
TOTAL_COPPER	3.546	1.773	17	45	11	35	11	30	18
TOTAL_LEAD	5.349	2.6745	30	60	14	47	2.6745	64	25
TOTAL_MERCURY	0.218	0.109	0.109	0.109	0.109	0.3	0.109	0.109	0.109
TOTAL_ZINC	9.2	4.6	92	97	31	100	49	130	84

N	Min	Max	Avg	StDev	US 95	Analyte
7	7.900	10.600	8.614	0.934	9.300	PH
7	4.100	18.000	9.657	4.614	13.046	TOTAL_ARSENIC
7	19.000	110.000	51.286	29.267	72.779	TOTAL_BARIUM
7	0.250	0.530	0.290	0.106	0.368	TOTAL_CADMIUM
7	15.000	69.000	33.286	17.231	45.940	TOTAL_CHROMIUM
7	11.000	45.000	23.857	13.044	33.436	TOTAL_COPPER
7	2.675	64.000	34.668	23.167	51.681	TOTAL_LEAD
7	0.109	0.300	0.136	0.072	0.189	TOTAL_MERCURY
7	31.000	130.000	83.286	33.255	107.708	TOTAL_ZINC

log		Location	A1	A1	B1	B1	B2	C2	C3
		Material	alluvial	alluvial	alluvial	alluvial	alluvial	alluvial	alluvial
		Depth	4.4	8.4	2.2	8.5	4.8	3.8	6.9
Analyte	MDL	HALF MDL							
PH	NA	NA	0.934498	0.934498	1.025306	0.897627	0.934498	0.897627	0.908485
TOTAL_ARSENIC	1	0.5	0.968483	1.255273	0.78533	0.963788	0.612784	1.113943	0.897627
TOTAL_BARIUM	6.39	3.195	1.653213	1.681241	1.556303	1.80618	1.278754	2.041393	1.568202
TOTAL_CADMIUM	0.5	0.25	-0.60206	-0.60206	-0.60206	-0.60206	-0.60206	-0.27572	-0.60206
TOTAL_CHROMIUM	3	1.5	1.491362	1.50515	1.322219	1.838849	1.176091	1.544068	1.477121
TOTAL_COPPER	3.546	1.773	1.230449	1.653213	1.041393	1.544068	1.041393	1.477121	1.255273
TOTAL_LEAD	5.349	2.6745	1.477121	1.778151	1.146128	1.672098	0.427243	1.80618	1.39794
TOTAL_MERCURY	0.218	0.109	-0.96257	-0.96257	-0.96257	-0.52288	-0.96257	-0.96257	-0.96257
TOTAL_ZINC	9.2	4.6	1.963788	1.986772	1.491362	2	1.690196	2.113943	1.924279

N	Min	Max	Avg	StDev	log US 95	T crit 5%	T crit 10%	Exceeds	T
7	0.898	1.025	0.933	0.044	0.966	1.94	1.83	y	2.09157762
7	0.613	1.255	0.942	0.210	1.096	1.94	1.83	n	1.491901671
7	1.279	2.041	1.655	0.235	1.828	1.94	1.83	n	1.643225988
7	-0.602	-0.276	-0.555	0.123	-0.465	1.94	1.83	y	2.267786838
7	1.176	1.839	1.479	0.204	1.629	1.94	1.83	n	1.758433096
7	1.041	1.653	1.320	0.243	1.499	1.94	1.83	n	1.371312582
7	0.427	1.806	1.386	0.483	1.741	1.94	1.83	n	0.869821933
7	-0.963	-0.523	-0.900	0.166	-0.778	1.94	1.83	y	2.267786838
7	1.491	2.114	1.881	0.215	2.039	1.94	1.83	n	1.082779946

unlogged lead US95 55.05779874

Analyte	MDL	0.5*MDL	ZC201 WATER Bedrock	ZC203 WATER Bedrock	ZC204 WATER Bedrock	ZC205 WATER Bedrock	ZC206 WATER Bedrock	ZC207 WATER Bedrock	ZC208 WATER Bedrock	ZC210 WATER Bedrock	ZC211 WATER Bedrock	ZC212 WATER Bedrock	ZC213 WATER Bedrock	ZC214 WATER Bedrock	Avg ND
ALKALINITY AS CAC03	2288	1144	286000	562000	322000	163000	301000	352000	302000	498000	282000	391000	287000	392000	344833.333
Arsenic (T) ICPMS	0.2	0.1	16	12	11	15	19	62	10	4	21	7	10	21	17.333
BARIUM	4	2	52	110	23	43	88	140	240	52	75	210	42	120	99.583
BOD + ATU (5 day)	880	440	56000	10000	2000	3000	42000	9000	3000	ND	58000	2000	2000	4000	13000
CADMIUM	0.4	0.2	ND	ND	ND	ND	ND	ND	ND	ND	0.6	ND	0.7	0.6	0.63
CALCIUM TOTAL AS CA	43	21.5	38000	16000	50000	67000	157000	78000	47000	39000	71000	96000	154000	126000	78250
CARBONATE ALKALINITY	2288	1144	ND	198000	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	198000
CHLORIDE AS CL	1300	650	129000	1340000	79000	40000	289000	96000	103000	28000	17000	52000	299000	29000	208416.667
COD (TOTAL)	11000	5500	469000	115000	31000	40000	371000	43000	41000	36000	254000	140000	71000	94000	142083.333
COPPER	3	1.5	ND	ND	ND	ND	ND	ND	ND	ND	ND	11	ND	8	9.5
IRON , TOTAL AS FE	50	25	410	140	950	1910	2130	10010	850	60	6490	330	2240	6540	2671.667
LEAD	4	2	ND	ND	ND	ND	ND	ND	ND	ND	7	ND	8	6	7
MAGNESIUM AS MG	10	5	4400	16000	11000	6900	21000	26000	31000	4800	6400	17000	30000	16000	15875
NITRATE AS N	260	130	ND	ND	ND	1300	900	900	600	1000	ND	700	400	130	720
PH	NA	NA	8.2	9.4	8.2	7.9	7.6	7.5	7.8	8.3	7.6	7.5	7.6	7.2	7.9
POTASSIUM TOTAL AS K	10	5	1700	9700	3000	4400	10000	8200	9000	2900	12000	6100	7300	7500	6816.667
SELENIUM	0.7	0.35	4	5	3	1	3	2	2	1	ND	12	2	7	4.33
SODIUM, TOTAL AS NA	150	75	162000	1060000	103000	22000	177000	72000	78000	13000	41000	51000	131000	46000	163000
SULPHATE AS SO4	5000	2500	15000	ND	ND	20000	26000	ND	ND	6000	5000	64000	82000	14000	34200
ZINC	1	0.5	11	7	5	19	17	8	16	13	18	11	22	19	13.833

Analyte	MDL	0.5*MDL	ZC201 WATER Bedrock	ZC203 WATER Bedrock	ZC204 WATER Bedrock	ZC205 WATER Bedrock	ZC206 WATER Bedrock	ZC207 WATER Bedrock	ZC208 WATER Bedrock	ZC210 WATER Bedrock	ZC211 WATER Bedrock	ZC212 WATER Bedrock	ZC213 WATER Bedrock	ZC214 WATER Bedrock	N	Min	Max	Average	Sdev	Analyte
ALKALINITY AS CAC03	2288	1144	286000	562000	322000	163000	301000	352000	302000	498000	282000	391000	287000	392000	12	163000.000	562000.000	344833.333	105797.262	ALKALINITY AS CAC03
Arsenic (T) ICPMS	0.2	0.1	16	12	11	15	19	62	10	4	21	7	10	21	12	4.000	62.000	17.333	15.053	Arsenic (T) ICPMS
BARIUM	4	2	52	110	23	43	88	140	240	52	75	210	42	120	12	23.000	240.000	99.583	68.568	BARIUM
BOD + ATU (5 day)	880	440	56000	10000	2000	3000	42000	9000	3000	440	58000	2000	2000	4000	12	440.000	58000.000	15953.333	22232.424	BOD + ATU (5 day)
CADMIUM	0.4	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.6	0.2	0.7	0.6	12	0.200	0.700	0.308	0.198	CADMIUM
CALCIUM TOTAL AS CA	43	21.5	38000	16000	50000	67000	157000	78000	47000	39000	71000	96000	154000	126000	12	16000.000	157000.000	78250.000	46244.656	CALCIUM TOTAL AS CA
CARBONATE ALKALINITY	2288	1144	1144	198000	1144	1144	1144	1144	1144	1144	1144	1144	1144	1144	12	1144.000	198000.000	17548.667	56827.432	CARBONATE ALKALINITY
CHLORIDE AS CL	1300	650	129000	1340000	79000	40000	289000	96000	103000	28000	17000	52000	299000	29000	12	17000.000	1340000.000	208416.667	368806.049	CHLORIDE AS CL
COD (TOTAL)	11000	5500	469000	115000	31000	40000	371000	43000	41000	36000	254000	140000	71000	94000	12	31000.000	469000.000	142083.333	145837.680	COD (TOTAL)
COPPER	3	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	11	1.5	8	12	1.500	11.000	2.833	3.179	COPPER
IRON , TOTAL AS FE	50	25	410	140	950	1910	2130	10010	850	60	6490	330	2240	6540	12	60.000	10010.000	2671.667	3227.242	IRON , TOTAL AS FE
LEAD	4	2	2	2	2	2	2	2	2	2	7	2	8	6	12	2.000	8.000	3.250	2.301	LEAD
MAGNESIUM AS MG	10	5	4400	16000	11000	6900	21000	26000	31000	4800	6400	17000	30000	16000	12	4400.000	31000.000	15875.000	9566.906	MAGNESIUM AS MG
NITRATE AS N	260	130	130	130	130	1300	900	900	600	1000	130	700	400	130	12	130.000	1300.000	537.500	419.700	NITRATE AS N
PH	NA	NA	8.2	9.4	8.2	7.9	7.6	7.5	7.8	8.3	7.6	7.5	7.6	7.2	12	7.200	9.400	7.900	0.578	PH
POTASSIUM TOTAL AS K	10	5	1700	9700	3000	4400	10000	8200	9000	2900	12000	6100	7300	7500	12	1700.000	12000.000	6816.667	3235.270	POTASSIUM TOTAL AS K
SELENIUM	0.7	0.35	4	5	3	1	3	2	2	1	0.35	12	2	7	12	0.350	12.000	3.529	3.257	SELENIUM
SODIUM, TOTAL AS NA	150	75	162000	1060000	103000	22000	177000	72000	78000	13000	41000	51000	131000	46000	12	13000.000	1060000.000	163000.000	287375.902	SODIUM, TOTAL AS NA
SULPHATE AS SO4	5000	2500	15000	2500	2500	20000	26000	2500	2500	6000	5000	64000	82000	14000	12	2500.000	82000.000	20166.667	26151.076	SULPHATE AS SO4
ZINC	1	0.5	11	7	5	19	17	8	16	13	18	11	22	19	12	5.000	22.000	13.833	5.458	ZINC

log

Analyte	MDL	0.5*MDL	ZC201	ZC203	ZC204	ZC205	ZC206	ZC207	ZC208	ZC210	ZC211	ZC212	ZC213	ZC214	N	Min	Max	Average	Sdev	T Max Value	T crit 5%	T crit 10%	Exceeds
ALKALINITY AS CAC03	2288	1144	5.456366033	5.749736316	5.507855872	5.212187604	5.478566496	5.546542663	5.480006943	5.697229343	5.450249108	5.592176757	5.457881897	5.593286067	12	5.212	5.750	5.519	0.137	1.688	2.29	2.13	n
Arsenic (T) ICPMS	0.2	0.1	1.204119983	1.079181246	1.041392685	1.176091259	1.278753601	1.792391689	1	0.602059991	1.322219295	0.84509804	1	1.322219295	12	0.602	1.792	1.139	0.293	2.230	2.29	2.13	n
BARIUM	4	2	1.716003344	2.041392685	1.361727836	1.633468456	1.944482672	2.146128036	2.380211242	1.716003344	1.875061263	2.322219295	1.62324929	2.079181246	12	1.362	2.380	1.903	0.306	1.559	2.29	2.13	n
BOD + ATU (5 day)	880	440	4.748188027	4	3.301029996	3.477121255	4.62324929	3.954242509	3.477121255	2.643452676	4.763427994	3.301029996	3.301029996	3.602059991	12	2.643	4.763	3.766	0.667	1.496	2.29	2.13	n
CADMIUM	0.4	0.2	-0.698970004	-0.698970004	-0.698970004	-0.698970004	-0.698970004	-0.698970004	-0.698970004	-0.698970004	-0.22184875	-0.698970004	-0.15490196	-0.22184875	12	-0.699	-0.155	-0.574	0.226	1.851	2.29	2.13	n
CALCIUM TOTAL AS CA	43	21.5	4.579783597	4.204119983	4.698970004	4.826074803	5.195899652	4.892094603	4.672097858	4.591064607	4.851258349	4.982271233	5.187520721	5.100370545	12	4.204	5.196	4.815	0.288	1.322	2.29	2.13	n
CARBONATE ALKALINITY	2288	1144	3.058426024	5.29666519	3.058426024	3.058426024	3.058426024	3.058426024	3.058426024	3.058426024	3.058426024	3.058426024	3.058426024	3.058426024	12	3.058	5.297	3.245	0.646	3.175	2.29	2.13	y
CHLORIDE AS CL	1300	650	5.11058971	6.127104798	4.897627091	4.602059991	5.460897843	4.982271233	5.012837225	4.447158031	4.230448921	4.716003344	5.475671188	4.462397998	12	4.230	6.127	4.960	0.534	2.184	2.29	2.13	n
COD (TOTAL)	11000	5500	5.671172843	5.06069784	4.491361694	4.602059991	5.56937391	4.633468456	4.612783857	4.556302501	5.404833717	5.146128036	4.851258349	4.973127854	12	4.491	5.671	4.964	0.412	1.714	2.29	2.13	n
COPPER	3	1.5	0.176091259	0.176091259	0.176091259	0.176091259	0.176091259	0.176091259	0.176091259	0.176091259	0.176091259	1.041392685	0.176091259	0.903089987	12	0.176	1.041	0.309	0.311	2.353	2.29	2.13	y
IRON , TOTAL AS FE	50	25	2.612783857	2.146128036	2.977723605	3.281033367	3.328379603	4.000434077	2.929418926	1.77815125	3.812244697	2.51851394	3.350248018	3.815577748	12	1.778	4.000	3.046	0.689	1.386	2.29	2.13	n
LEAD	4	2	0.301029996	0.301029996	0.301029996	0.301029996	0.301029996	0.301029996	0.301029996	0.301029996	0.84509804	0.301029996	0.903089987	0.77815125	12	0.301	0.903	0.436	0.246	1.896	2.29	2.13	n
MAGNESIUM AS MG	10	5	3.643452676	4.204119983	4.041392685	3.838849091	4.322219295	4.414973348	4.491361694	3.681241237	3.806179974	4.230448921	4.477121255	4.204119983	12	3.643	4.491	4.113	0.305	1.241	2.29	2.13	n
NITRATE AS N	260	130	2.113943352	2.113943352	2.113943352	3.113943352	2.954242509	2.954242509	2.77815125	3	2.113943352	2.84509804	2.602059991	2.113943352	12	2.114	3.114	2.568	0.420	1.301	2.29	2.13	n
PH	NA	NA	0.913813852	0.973127854	0.913813852	0.897627091	0.880813592	0.875061263	0.892094603	0.919078092	0.880813592	0.875061263	0.880813592	0.857332496	12	0.857	0.973	0.897	0.030	2.513	2.29	2.13	y
POTASSIUM TOTAL AS K	10	5	3.230448921	3.986771734	3.477121255	3.643452676	4	3.913813852	3.954242509	3.462397998	4.079181246	3.785329835	3.86332286	3.875061263	12	3.230	4.079	3.773	0.262	1.168	2.29	2.13	n
SELENIUM	0.7	0.35	0.602059991	0.698970004	0.477121255	0	0.477121255	0.301029996	0.301029996	0	-0.455931956	1.079181246	0.301029996	0.84509804	12	-0.456	1.079	0.386	0.414	1.677	2.29	2.13	n
SODIUM, TOTAL AS NA	150	75	5.209515015	6.025305865	5.012837225	4.342422681	5.247973266	4.857332496	4.892094603	4.113943352	4.612783857	4.707570176	5.117271296	4.662757832	12	4.114	6.025	4.900	0.491	2.293	2.29	2.13	y
SULPHATE AS SO4	5000	2500	4.176091259	3.397940009	3.397940009	4.301029996	4.414973348	3.397940009	3.397940009	3.77815125	3.698970004	4.806179974	4.913813852	4.146128036	12	3.398	4.914	3.986	0.555	1.673	2.29	2.13	n
ZINC	1	0.5	1.041392685	0.84509804	0.698970004	1.278753601	1.230448921	0.903089987	1.204119983	1.113943352	1.255272505	1.041392685	1.342422681	1.278753601	12	0.699	1.342	1.103	0.201	1.190	2.29	2.13	n

APPENDIX 3
TANK INVENTORY

Bulk Storage Tanks at ZCEL

Area	Material	Material of Construction	No. of Tanks	Tank Volume (M3)	SG	Max Inventory (tes)	Year built	Secondary Containment?	Spills Occurred?	Last Inspection	Next Inspection	Statutory?	Comments
N58	No.1 Acrylonitrile	Steel	1	91	0.81	62.6	1957 / 1956	**Yes**		06/03/2014	06/03/2019	No	
	No.5 Acrylonitrile	Steel	1	91				**Yes**		05/04/2015	05/04/2020	No	
	Recovered Acrylonitrile	Steel	1	27.9	0.81	20.3	No Record	**Yes**	Yes	30/07/2013	06/08/2020	No	
	BN Vapour KO Pot	Steel	1	0.3		N/A	1957	**No**		23/07/2013	06/10/2015	Yes	
	Deluge tank (round)	Steel	2	150	1		1998	**No**				No	
	Deluge tank	Steel	1	300 (est)	1		202 (est)	**No**				No	
	No. 2 Butadiene	Steel	1	70				**No**		23/10/2014	20/11/2018	Yes	
	No. 3 Butadiene	Steel	1	70				**No**		07/04/2014	20/05/2018	Yes	
	No. 4 Butadiene	Steel	3	70	0.65	38.7	1954 / 1955	**No**		24/10/2013	18/12/2017	Yes	
N54	~~NH3 Evaporator (base)~~	~~Steel~~	~~2~~		0.6 / 0.7	6							Heat Exchanger
	~~NH3 Evaporator (Top)~~	~~Steel~~	~~2~~										Expansion Pot
	NH3 Receiver	Steel	1	4.73			2014?	**No**			05/08/2015	Yes	
	Caustic (20%) storage	Steel	1	55	1.22	54	1966	**Yes**				No	Transferred from Resins plant
	Sulphonic Acid	Steel	1	14.4	1.06	11.5	1962	**Yes**		28/07/2014	28/07/2015	No	
	30% Methanol	Steel	1	30.8		25	1957	**No**				No	
	Methanol (redundant)	Steel	1	21	N/A			**Yes**				No	
	28% HCl	Plastic	1	10	1.15	8	2000	**Yes**				No	
	Raw Water Tank	Plastic	1		1		1996	**No**				No	
	Soft Water Tank	Steel	1	100	1		1966	**No**				No	
	Dealkalisation columns	Plastic	2	1.4	1		1996	**No**				No	
	Softening columns	Plastic	2		1		1996	**No**				No	
	Caustic day tank	Plastic	1		1.22		1996	**No**				No	
	Caustic (20%) small	Plastic	1		1.22		1996	**Yes**				No	
	Brine day tank	Plastic	1		1.202		1996	**No**				No	
	Drewgard	Plastic	1		1.35			**No**					
	Air Receiver (old)	Steel	1	N/A	N/A			**No**				No	Redundant
	Mask Air receiver	Steel	1		N/A		1998	**No**		10/07/2013	10/09/2015	Yes	
	Salt saturator large	Plastic	1	50	1.202	60		**No**				No	
	Salt saturator small	Plastic	1	25 (est)	1.202	30		**No**				No	
	Brine Pit	Concrete	1		1.202			**No**				No	
	Process Pond	Concrete	1		1			**No**				No	
	Air Receiver (new)	Steel	1		N/A			**No**					
	Degasser	Plastic	1		N/A		1996	**No**				No	
N51	Washed BN tank	Steel	1	9.1	0.65	4.7	1957	**No**		21/07/2014	21/09/2016	Yes	
	BN Decanter	Steel	1	2.0	0.65	1.5	2007	**No**		22/07/2014	22/09/2016	Yes	
	BN KO Tank	Steel	1	0.7	0.65	0.455	1993	**No**		21/07/2014	21/09/2016	Yes	
	New Spent Caustic tank	Steel	1	2.83	1.12	1.05	2014	**No**				No	
	HP Blaster head tank	Steel	1		1			**No**				No	
N55	CaCl2 tank	Steel	1	44.25	1.42	50		**Yes**				No	
	Potassium Oleate Tank	Steel	1	30	1.0	24	1990	**Yes**				No	
	Tertiary Dodecyl Mercaptan	Steel	1	30	0.86	23.5	1990	**Yes**				No	
	TDM Tank (Polyfloor)	Steel	1	0.3	0.86	0.21	2006	**No**		22/07/2014	22/09/2016	Yes	
	Bulk soap tanks	Concrete	2	50	1	40		**No**				No	
	Potassium Rosinate	Concrete	1	50	1.1	40		**No**				No	
	Retanal	Concrete	1	60	1.19	48		**No**				No	
	Bulk soap make-up tank	Steel	1		~1.0		1959	**No**		23/07/2013	23/07/2015	No	
	NBR Latex (4 B/Tk)	Concrete	1	50	1	40		**No**				No	
	Poly 1	Glass lined steel	1	12.55	Variable	~11.42	1957	**No**		26/09/2013	03/12/2015	Yes	
	2		1	12.55		~11.42	1971	**No**		03/06/2014	30/08/2016	Yes	
	3		1	12.55		~11.42	1971	**No**		23/10/2014	20/01/2017	Yes	
	4		1	12.55		~11.42	1960	**No**		09/10/2012	12/01/2015	Yes	
	5		1	12.55		~11.42	1966	**No**		21/07/2014	07/10/2016	Yes	
	6		1	12.55		~11.42	1957	**No**		20/11/2014	18/02/2017	Yes	
	7		1	12.55		~11.42	1957	**No**		18/12/2014	15/03/2017	Yes	
	8		1	12.55		~11.42	1957	**No**		15/01/2015	27/03/2017	Yes	
	Blowdown 1	Glass lined steel	1	22.73	~1	~12	1964	**No**		26/09/2013	03/12/2015	Yes	
	2		1	22.73	~1	~12	1970	**No**		03/06/2014	30/08/2016	Yes	
	3		1	22.73	~1	~12	1961	**No**		23/10/2014	20/01/2017	Yes	
	4		1	22.73	~1	~12	1958	**No**		16/04/2014	28/06/2016	Yes	
	5		1	22.73	~1	~12	No Record	**No**		21/07/2014	07/10/2016	Yes	
	6		1	22.73	~1	~12	1964	**No**		20/11/2014	18/02/2017	Yes	
	7		1	22.73	~1	~12	1964	**No**		18/12/2014	15/03/2017	Yes	
	8		1	22.73	~1	~12	1964	**No**		04/07/2013	04/09/2015	Yes	
	Emergency HAS bottles	Steel	8	0.1	~1	0.1	1993	**No**				No	
	KCl make-up tank	Plastic	1					**No**				No	
	TDME Make-up tank	Steel	1				1990	**No**				No	
	HAS Make-up tank	Steel	1	1.37	N/A		1959	**No**		28/07/2004	20/08/2017	No	Calculated
	Redundant Superlite tank	Steel	1	1.37				**No**				No	Calculated
	Amm. Per. Tank	Steel	1	0.46	1	0.37		**Yes**				No	Calculated
	DMA Tank	Steel	1	0.24	1	0.2		**Yes**				No	Calculated
	Quench tank	Steel	1	60.4	N/A	N/A	2003	**No**		05/08/2014	05/10/2016	Yes	
	Column feed tank	Steel	1	8	~1	6.4	1988	**No**		24/07/2012	20/08/2017	No	Calculated
	BN Modules	Steel	2		0.65		1988	**No**		25/07/2013	06/10/2015	Yes	
	EMAL tank	Steel	1	42	1.065	36	1996	**No**				No	
	Batch soap tank	Steel	1					**No**				No	
	Weigh Tank	Steel	1	1.64	Variable	1.4	1960	**No**		23/07/2013	06/10/2015	Yes	
	Recovered AN decanter	Steel	1				1988	**No**		31/07/2013	06/10/2015	Yes	
	MBS Tank	Steel		1.5	N/A		1959	**No**				No	estimated
	Ammonia Solution	Steel	1	1.5	N/A		1957	**No**				No	Calculated
	Redundant tank (mid floor)	Steel	1	0.34	N/A	0.27	1958	**No**				No	
	"Big Bertha" KO Pot	Steel	1	16.74	N/A	N/A	1988	**No**		30/07/2012	20/08/2017	No	Calculated
	"Little Ethel" KO Pot	Steel	1	1.47	N/A	N/A	1988	**No**		31/07/2013	06/08/2015	No	Calculated
	Latex strip KO Pot	Steel	1	0.98	N/A	N/A	1988	**No**		31/07/2013	06/08/2015	No	Calculated
	Vac. Pump Separator	Steel	4				1988	**No**		24/07/2012	20/08/2017	No	
	Vac. Pump Separator (103B)	Steel	1				1994	**No**		24/07/2012	20/08/2017	No	
	BN Comp Separator (K107)	Steel	1	0.19	N/A	N/A	2006	**No**		25/07/2013	06/10/2015	Yes	
	BN Comp Separator (K108)	Steel	1	0.13	N/A	N/A	2007	**No**		25/07/2013	06/10/2015	Yes	
	A'foam M/Up tk	Steel	1	1			2006	**No**				No	
	A'Foam Press. Tk	Steel	1					**No**				No	
	DEHA tank	Steel	1	0.5	0.9	0.4		**No**				No	
	PMHP tank	Steel	1	0.5	0.93	0.35	1991	**Yes**		22/07/2014	22/09/2016	Yes	
	TIBM tank	Steel	1	1.0	N/A			**Yes**				No	
	TBC Tank	Steel		0.35	1.04	0.28	2014	**Yes**		05/08/2014	05/08/2016	No	
	Activator M/Up tank	Steel	1	0.5	~1.2	1.0	1989	**No**				No	
	No. 1 Oil Duraseal tank	Steel	1	0.16				**No**				No	Calculated
	No. 2 Oil Duraseal tank	Steel	1	0.16				**No**				No	Calculated
	No. 3 Oil Duraseal tank	Steel	1	0.16				**No**				No	Calculated
	Activator tank Press. Tank	Steel	1	0.75	~1.2	0.6	2006	**No**		22/07/2014	22/09/2016	Yes	
N71	NBR Latex	Concrete	6	50	~1	40		**No**				No	
	Drumming Off tank	Steel	1					**No**				No	
	Water Bath	Steel	1	1.71	1	1.5	2004	**No**				No	Calculated
	Methacrylic Acid tank	Steel	1	0.27	1.02	0.22	2004	**Yes**				No	
M72	Redundant tanks	Steel	3					**No**					
	Redundant Tank (Poly?)	Steel	1					**No**					
N99	Diesel Storage tank	Plastic	1	2.54	0.9	2.54		**Yes**				No	
	NBR Latex	Concrete	2	50	1	40		**No**				No	Currently used for effluent
	Coagulator	Steel	1	9.0	N/A			**No**				No	
	Weigh Head Tank	Steel	1	5 (est)	N/A			**No**				No	
	Antifoam Tanks	Steel	2	6.4	~1.0			**No**				No	Calculated
N159	Water Break tank	Steel	1	3.4	1.0			**No**				No	Calculated
	Weigh Head Tank	Steel	1	5.7	1.0	4.5	1996	**No**				No	Calculated
	Coagulator	Steel	1	~10	1.0			**No**		25/07/2013	25/07/2015	No	
	Holding Tank	Steel	1	~10	1.0			**No**		25/07/2013	25/07/2015	No	
	Wash Tank	Steel	1	~10	1.0			**No**				No	
	Colloidal Sulphur tank	Plastic	1	3.64	1.3		1996	**No**				No	
	Redundant AO tank	Steel	1	8.75			1969	**No**				No	Estimate
	Redundant AO tanks	Steel	2	3.3	N/A			**Yes**				No	
	Recycle Effluent Tank	Steel	1	4.2	1	4.2	1991	**No**				No	Ex Speswhite tank
	NBR Latex 8 - 12 B/tks)	Concrete	5	50	1	40		**No**				No	
	NBR Latex (14 B/Tk)	Steel	1	200	1	160		**No**				No	
	NBR Latex (15 B/tk)	Steel	1	100	1	80		**No**				No	
	6% HCl tank	Plastic	1	25	1.04	20	1978	**Yes**				No	
	Hot Water Tank	Steel	1	17	1	17	1970	**No**		31/07/2013	31/07/2015	No	
N160	Black Make-up tank	Steel	1	3.5	N/A		1969	**No**				No	Calculated
	Recycle effluent tank	Steel	1		N/A		1974	**No**				No	
	Nauta Blender	Steel	1		N/A		1974	**No**				No	
	Silos	Steel	2		N/A		1974	**No**				No	
N205	Slurry Tank	Steel	1	60	1	50	1978	**No**				No	Estimate
	Recycle Effluent Tank	Steel	1	13.7	1	13.7	1978	**No**				No	Calculated
	D102 Oil Tank	Steel	1					**No**					
	Baler Oil Tank	Steel	1					**No**					
U167	Recycle Effluent Tank	Steel	1	219	1	200	2000	**No**				No	
	Calamity Tank	Steel	1	194	1	Variable	1993	**No**				No	
	Balance Tank	Concrete	1	1043	1		2002	**No**				No	
	Aeration Tank	Concrete	1	1588			2002	**No**				No	
	Sludge Tank	Concrete	1	89.04			2002	**No**				No	
	28% HCl	Plastic	1	10	1.15	8		**Yes**				No	
	Poly Make-up tanks	Plastic	2	3.18				**No**				No	
	Partial Treament Tanks	Plastic	1	7.18				**No**				No	
	White Water tank	Steel	1	0.72	1	0.75		**No**		07/08/2014	30/07/2016	Yes	
	DAF Unit	Steel	1	34.55				**No**				No	
	Bubble trap tank							**No**				No	
	20% Caustic tank	Plastic	1	10	1.22	9.75		**Yes**				No	
	Poly Aluminium Chloride tk	Plastic	1	22.04	1.235	19.75	2001	**Yes**				No	Was FeCl3 tank
	Small sludge tank	Plastic	1	2.0				**No**				No	
	Settlement tank	Concrete	1	629			2002	**No**				No	
	Final effluent tank	Plastic	1	15.39				**No**				No	
	Neat Poly tank		1				2002	**No**				No	
	Poly Make-up tank	Plastic	1					**No**				No	
	Pressurisation tank	Plastic	1				2002	**No**				No	

APPENDIX 4
SPMP ANALYTICAL CERTIFICATES OF ANALYSIS

Report Summary

1314
0897
1229
1510

SEVERN TRENT ENVIRONMENTAL LEADERSHIP STL

Mr Graham Pearce
Zeon Chemicals

Sully
Vale Of Glamorgan
CF64 5ZE

Report Number : TH/489488/2008 *Issue* 2

Job Description : General Analysis.

Number of Samples included in report **6**

Job Received : **31 January 2008**

Number of Test Results included in report **138**

Analysis Commenced : **03 February 2008**

Signed : JFell

Name : **J. Fell** Date : 28 March 2008

Title : **Production Manager**

STL was not responsible for sampling unless otherwise stated. Sampling is not covered by our UKAS accreditation.
Information on the methods of analysis and performance characteristics are available on request
Opinions and interpretations expressed herein are outside the scope of UKAS accreditation
Tests marked 'Not UKAS Accredited' in this Report/Certificate are not included in the UKAS Accreditation Schedule for our laboratory

Severn Trent Laboratories Ltd
STL Business Centre, Torrington Avenue, Coventry CV4 9GU Tel : 02476 421213 Fax : 02476 856575

Certificate of Analysis

1314
0897
1229
1510

Sample 1 of 6 Laboratory Number : **10395690**
Report Number : **TH /489488/2008** **Issue 2**

Sample Source : **Zeon Chemicals**
Sample Point Description : **Zeon Chemicals**
Sample Description : **214 (Oil store)**

Sample Date : **29 January 2008** Sample Received : **31 January 2008** Analysis Complete : **12 February 2008**

Test Description	Result	Units		Accreditation	Method
TPH >C6-C40	1120	ug/l		C	GEO35
TPH >C6-C8	31	ug/l	*	C	GEO35
TPH >C8-C10	<10	ug/l	*	C	GEO35
TPH >C16-C24	384	ug/l	*	C	GEO35
TPH >C24-C40	66	ug/l	*	C	GEO35
TPH >C10-C16	644	ug/l	*	C	GEO35
Acenaphthene	0.41	ug/l		C	GEO19
Acenaphthylene	0.23	ug/l		C	GEO19
Anthracene	0.03	ug/l		C	GEO19
Benzo-a-anthracene	<0.01	ug/l		C	GEO19
Benzo-g,h,i perylene	<0.01	ug/l		C	GEO19
Benzo-a-pyrene	<0.01	ug/l		C	GEO19
Benzo-b-fluoranthene	<0.01	ug/l		C	GEO19
Benzo-k-fluoranthene	<0.01	ug/l		C	GEO19
Chrysene	<0.01	ug/l		C	GEO19
Dibenz-a-h-anthracene	<0.01	ug/l		C	GEO19
Fluoranthene	0.04	ug/l		C	GEO19
Fluorene	1.09	ug/l		C	GEO19
Indeno 1,2,3-cd pyrene	<0.01	ug/l		C	GEO19
Naphthalene	0.39	ug/l		C	GEO19
Phenanthrene	0.30	ug/l		C	GEO19
Pyrene	0.04	ug/l		C	GEO19
PAH,Total	2.53	ug/l		C	GEO19

Accreditation Codes : * = Not UKAS accredited, B = Analysed at STL Bridgend, C = Analysed at STL Coventry, R = Analysed at STL Runcorn, L = Analysed at STL Midlands, S = Sub-contracted

For Microbiological determinands 0 or ND = Not Detected, DET = Detected, For Legionella ND=Not detected in volume of sample filtered. I/S = Insufficient sample

Severn Trent Laboratories Ltd
STL Business Centre, Torrington Avenue, Coventry CV4 9GU Tel : 02476 421213 Fax : 02476 856575

Certificate of Analysis

1314
0897
1229
1510

SEVERN TRENT ENVIRONMENTAL LEADERSHIP

STL

Sample 2 of 6 Laboratory Number : 10395691
Report Number : TH /489488/2008 Issue 2

Sample Source : **Zeon Chemicals**
Sample Point Description : **Zeon Chemicals**
Sample Description : **BN Offloading 210**

Sample Date : **29 January 2008** Sample Received : **31 January 2008** Analysis Complete : **12 February 2008**

Test Description	Result	Units	Accreditation	Method
TPH >C6-C40	151	ug/l	C	GEO35
TPH >C6-C8	<10	ug/l	* C	GEO35
TPH >C8-C10	<10	ug/l	* C	GEO35
TPH >C16-C24	38	ug/l	* C	GEO35
TPH >C24-C40	70	ug/l	* C	GEO35
TPH >C10-C16	43	ug/l	* C	GEO35
Acenaphthene	<0.01	ug/l	C	GEO19
Acenaphthylene	<0.01	ug/l	C	GEO19
Anthracene	<0.01	ug/l	C	GEO19
Benzo-a-anthracene	<0.01	ug/l	C	GEO19
Benzo-g,h,i perylene	<0.01	ug/l	C	GEO19
Benzo-a-pyrene	<0.01	ug/l	C	GEO19
Benzo-b-fluoranthene	<0.01	ug/l	C	GEO19
Benzo-k-fluoranthene	<0.01	ug/l	C	GEO19
Chrysene	<0.01	ug/l	C	GEO19
Dibenz-a-h-anthracene	<0.01	ug/l	C	GEO19
Fluoranthene	<0.01	ug/l	C	GEO19
Fluorene	<0.01	ug/l	C	GEO19
Indeno 1,2,3-cd pyrene	<0.01	ug/l	C	GEO19
Naphthalene	<0.01	ug/l	C	GEO19
Phenanthrene	<0.01	ug/l	C	GEO19
Pyrene	<0.01	ug/l	C	GEO19
PAH,Total	<0.01	ug/l	C	GEO19

Accreditation Codes : * = Not UKAS accredited, B = Analysed at STL Bridgend, C = Analysed at STL Coventry, R = Analysed at STL Runcorn, L = Analysed at STL Midlands, S = Sub-contracted

For Microbiological determinands 0 or ND = Not Detected, DET = Detected, For Legionella ND=Not detected in volume of sample filtered. I/S = Insufficient sample

Severn Trent Laboratories Ltd
STL Business Centre, Torrington Avenue, Coventry CV4 9GU Tel : 02476 421213 Fax : 02476 856575

Certificate of Analysis

1314
0897
1229
1510

SEVERN TRENT ENVIRONMENTAL LEADERSHIP

STL

Sample 3 of 6 Laboratory Number : **10395692**
Report Number : **TH /489488/2008** **Issue 2**

Sample Source : **Zeon Chemicals**
Sample Point Description : **Zeon Chemicals**
Sample Description : **207 Land Drain**

Sample Date : **29 January 2008** Sample Received : **31 January 2008** Analysis Complete : **12 February 2008**

Test Description	Result	Units		Accreditation	Method
TPH >C6-C40	2770	ug/l		C	GEO35
TPH >C6-C8	25	ug/l	*	C	GEO35
TPH >C8-C10	1660	ug/l	*	C	GEO35
TPH >C16-C24	129	ug/l	*	C	GEO35
TPH >C24-C40	50	ug/l	*	C	GEO35
TPH >C10-C16	906	ug/l	*	C	GEO35
Acenaphthene	0.01	ug/l		C	GEO19
Acenaphthylene	<0.01	ug/l		C	GEO19
Anthracene	0.02	ug/l		C	GEO19
Benzo-a-anthracene	<0.01	ug/l		C	GEO19
Benzo-g,h,i perylene	<0.01	ug/l		C	GEO19
Benzo-a-pyrene	<0.01	ug/l		C	GEO19
Benzo-b-fluoranthene	<0.01	ug/l		C	GEO19
Benzo-k-fluoranthene	<0.01	ug/l		C	GEO19
Chrysene	<0.01	ug/l		C	GEO19
Dibenz-a-h-anthracene	<0.01	ug/l		C	GEO19
Fluoranthene	0.02	ug/l		C	GEO19
Fluorene	0.01	ug/l		C	GEO19
Indeno 1,2,3-cd pyrene	<0.01	ug/l		C	GEO19
Naphthalene	13.0	ug/l		C	GEO19
Phenanthrene	<0.01	ug/l		C	GEO19
Pyrene	0.02	ug/l		C	GEO19
PAH,Total	13.1	ug/l		C	GEO19

Analyst Comment for 10395692 : A dilution was performed for the following PAH compounds: Naphthalene. As these results are above the validated calibration range of the method, they maybe an underestimate as the extraction efficiencies at these levels are unknown.

Accreditation Codes : * = Not UKAS accredited, B = Analysed at STL Bridgend, C = Analysed at STL Coventry, R = Analysed at STL Runcorn, L = Analysed at STL Midlands, S = Sub-contracted

For Microbiological determinands 0 or ND = Not Detected, DET = Detected, For Legionella ND=Not detected in volume of sample filtered. I/S = Insufficient sample

Severn Trent Laboratories Ltd
STL Business Centre, Torrington Avenue, Coventry CV4 9GU Tel : 02476 421213 Fax : 02476 856575

Certificate of Analysis

1314
0897
1229
1510

SEVERN TRENT ENVIRONMENTAL LEADERSHIP STL

Sample 4 of 6 Laboratory Number : **10395693**
Report Number : **TH /489488/2008** **Issue 2**

Sample Source : **Zeon Chemicals**
Sample Point Description : **Zeon Chemicals**
Sample Description : **206 Effluent**

Sample Date : **29 January 2008** Sample Received : **31 January 2008** Analysis Complete : **12 February 2008**

Test Description	Result	Units	Accreditation		Method
TPH >C6-C40	400	ug/l		C	GEO35
TPH >C6-C8	<10	ug/l	*	C	GEO35
TPH >C8-C10	<10	ug/l	*	C	GEO35
TPH >C16-C24	186	ug/l	*	C	GEO35
TPH >C24-C40	130	ug/l	*	C	GEO35
TPH >C10-C16	84	ug/l	*	C	GEO35
Acenaphthene	<0.01	ug/l		C	GEO19
Acenaphthylene	<0.01	ug/l		C	GEO19
Anthracene	<0.01	ug/l		C	GEO19
Benzo-a-anthracene	<0.01	ug/l		C	GEO19
Benzo-g,h,i perylene	<0.01	ug/l		C	GEO19
Benzo-a-pyrene	<0.01	ug/l		C	GEO19
Benzo-b-fluoranthene	<0.01	ug/l		C	GEO19
Benzo-k-fluoranthene	<0.01	ug/l		C	GEO19
Chrysene	<0.01	ug/l		C	GEO19
Dibenz-a-h-anthracene	<0.01	ug/l		C	GEO19
Fluoranthene	0.08	ug/l		C	GEO19
Fluorene	<0.01	ug/l		C	GEO19
Indeno 1,2,3-cd pyrene	<0.01	ug/l		C	GEO19
Naphthalene	0.03	ug/l		C	GEO19
Phenanthrene	<0.01	ug/l		C	GEO19
Pyrene	0.08	ug/l		C	GEO19
PAH,Total	0.19	ug/l		C	GEO19

Accreditation Codes : * = Not UKAS accredited, B = Analysed at STL Bridgend, C = Analysed at STL Coventry, R = Analysed at STL Runcorn, L = Analysed at STL Midlands, S = Sub-contracted

For Microbiological determinands 0 or ND = Not Detected, DET = Detected, For Legionella ND=Not detected in volume of sample filtered. I/S = Insufficient sample

Severn Trent Laboratories Ltd
STL Business Centre, Torrington Avenue, Coventry CV4 9GU Tel : 02476 421213 Fax : 02476 856575

Certificate of Analysis

1314
0897
1229
1510

SEVERN TRENT ENVIRONMENTAL LEADERSHIP

STL

Sample 5 of 6 Laboratory Number : **10395694**
Report Number : **TH /489488/2008** **Issue 2**

Sample Source : **Zeon Chemicals**
Sample Point Description : **Zeon Chemicals**
Sample Description : **205 14 BTK**

Sample Date : **29 January 2008** Sample Received : **31 January 2008** Analysis Complete : **12 February 2008**

Test Description	Result	Units	Accreditation		Method
TPH >C6-C40	61	ug/l		C	GEO35
TPH >C6-C8	<10	ug/l	*	C	GEO35
TPH >C8-C10	<10	ug/l	*	C	GEO35
TPH >C16-C24	32	ug/l	*	C	GEO35
TPH >C24-C40	<50	ug/l	*	C	GEO35
TPH >C10-C16	29	ug/l	*	C	GEO35
Acenaphthene	<0.01	ug/l		C	GEO19
Acenaphthylene	<0.01	ug/l		C	GEO19
Anthracene	<0.01	ug/l		C	GEO19
Benzo-a-anthracene	<0.01	ug/l		C	GEO19
Benzo-g,h,i perylene	<0.01	ug/l		C	GEO19
Benzo-a-pyrene	0.01	ug/l		C	GEO19
Benzo-b-fluoranthene	<0.01	ug/l		C	GEO19
Benzo-k-fluoranthene	<0.01	ug/l		C	GEO19
Chrysene	<0.01	ug/l		C	GEO19
Dibenz-a-h-anthracene	<0.01	ug/l		C	GEO19
Fluoranthene	<0.01	ug/l		C	GEO19
Fluorene	<0.01	ug/l		C	GEO19
Indeno 1,2,3-cd pyrene	<0.01	ug/l		C	GEO19
Naphthalene	<0.01	ug/l		C	GEO19
Phenanthrene	<0.01	ug/l		C	GEO19
Pyrene	<0.01	ug/l		C	GEO19
PAH,Total	0.01	ug/l		C	GEO19

Accreditation Codes : * = Not UKAS accredited. B = Analysed at STL Bridgend, C = Analysed at STL Coventry, R = Analysed at STL Runcorn, L = Analysed at STL Midlands. S = Sub-contracted

For Microbiological determinands 0 or ND = Not Detected. DET = Detected. For Legionella ND=Not detected in volume of sample filtered. I/S = Insufficient sample

Severn Trent Laboratories Ltd
STL Business Centre, Torrington Avenue, Coventry CV4 9GU Tel : 02476 421213 Fax : 02476 856575

Certificate of Analysis

1314
0897
1229
1510

SEVERN TRENT ENVIRONMENTAL LEADERSHIP STL

Sample 6 of 6 Laboratory Number : 10395695
Report Number : TH /489488/2008 Issue 2

Sample Source : **Zeon Chemicals**
Sample Point Description : **Zeon Chemicals**
Sample Description : **N166 Polyblack-pit 211**

Sample Date : **29 January 2008** Sample Received : **31 January 2008** Analysis Complete : **12 February 2008**

Test Description	Result	Units		Accreditation	Method
TPH >C6-C40	9260	ug/l		C	GEO35
TPH >C6-C8	90	ug/l	*	C	GEO35
TPH >C8-C10	<20	ug/l	*	C	GEO35
TPH >C16-C24	2810	ug/l	*	C	GEO35
TPH >C24-C40	283	ug/l	*	C	GEO35
TPH >C10-C16	6080	ug/l	*	C	GEO35
Acenaphthene	0.02	ug/l		C	GEO19
Acenaphthylene	0.02	ug/l		C	GEO19
Anthracene	<0.02	ug/l		C	GEO19
Benzo-a-anthracene	<0.02	ug/l		C	GEO19
Benzo-g,h,i perylene	<0.02	ug/l		C	GEO19
Benzo-a-pyrene	<0.02	ug/l		C	GEO19
Benzo-b-fluoranthene	<0.02	ug/l		C	GEO19
Benzo-k-fluoranthene	<0.02	ug/l		C	GEO19
Chrysene	<0.02	ug/l		C	GEO19
Dibenz-a-h-anthracene	<0.02	ug/l		C	GEO19
Fluoranthene	<0.02	ug/l		C	GEO19
Fluorene	0.07	ug/l		C	GEO19
Indeno 1,2,3-cd pyrene	<0.02	ug/l		C	GEO19
Naphthalene	2.15	ug/l		C	GEO19
Phenanthrene	<0.02	ug/l		C	GEO19
Pyrene	<0.02	ug/l		C	GEO19
PAH,Total	2.26	ug/l		C	GEO19

Accreditation Codes : * = Not UKAS accredited, B = Analysed at STL Bridgend, C = Analysed at STL Coventry, R = Analysed at STL Runcorn, L = Analysed at STL Midlands, S = Sub-contracted
For Microbiological determinands 0 or ND = Not Detected, DET = Detected. For Legionella ND=Not detected in volume of sample filtered. I/S = Insufficient sample

Signed : JFell Name : **J. Fell** Date : 28 March 2008
Title : **Production Manager**

Severn Trent Laboratories Ltd
STL Business Centre, Torrington Avenue, Coventry CV4 9GU Tel : 02476 421213 Fax : 02476 856575

Report Summary

UKAS
1314
0897
1229
1510

SEVERN TRENT
ENVIRONMENTAL LEADERSHIP

STL

Mr Graham Pearce
Zeon Chemicals

Sully
Vale Of Glamorgan
CF64 5ZE

Report Number : T11/07891/2008 Issue 1

Job Description : General Analysis.

Number of Samples included in report: 6

Job Received : **11 April 2008**

Number of Test Results included in report: 141

Analysis Commenced : **15 April 2008**

Signed : J Fell

Name : **J. Fell** Date : 16 May 2008

Title : **Production Manager**

STL was not responsible for sampling unless otherwise stated. Sampling is not covered by our UKAS accreditation.
Information on the methods of analysis and performance characteristics are available on request
Opinions and interpretations expressed herein are outside the scope of UKAS accreditation
Tests marked 'Not UKAS Accredited' in this Report/Certificate are not included in the UKAS Accreditation Schedule for our laboratory

Severn Trent Laboratories Ltd
STL Business Centre, Torrington Avenue, Coventry CV4 9GU Tel : 02476 421213 Fax : 02476 856575

Certificate of Analysis

1314
0897
1229
1510

Sample 1 of 6 Laboratory Number : 10519552
Report Number : TH/5078/1/2008 Issue 1

Sample Source : Zeon Chemicals
Sample Point Description : Zeon Chemicals
Sample Description : 205
Sample Date : 10 April 2008 Sample Received : 11 April 2008 Analysis Complete : 30 April 2008

Test Description	Result	Units	Accreditation	Method
Alkalinity as CaCO3	167	mg/l	C	WAS025

Accreditation Codes : * = Not UKAS accredited, B = Analysed at STL Bridgend, C = Analysed at STL Coventry, R = Analysed at STL Runcorn, L = Analysed at STL Midlands, S = Sub-contracted
For Microbiological determinands 0 or ND = Not Detected, DET = Detected, For Legionella ND=Not detected in volume of sample filtered. I/S = Insufficient sample

Severn Trent Laboratories Ltd
STL Business Centre, Torrington Avenue, Coventry CV4 9GU Tel : 02476 421213 Fax : 02476 856575

Certificate of Analysis

1314
0897
1229
1510

SEVERN TRENT ENVIRONMENTAL LEADERSHIP STL

Sample 2 of 6 Laboratory Number : 10519553
Report Number : TH/507831/2008 Issue 1

Sample Source : Zeon Chemicals
Sample Point Description : Zeon Chemicals
Sample Description : 206

Sample Date : 10 April 2008 Sample Received : 11 April 2008 Analysis Complete : 30 April 2008

Test Description	Result	Units	Accreditation	Method
Alkalinity as CaCO3	250	mg/l	C	WAS025
Phenol	Analyst Comment	ug/l	C	GEO40
Bis(2-chloroethyl) ether	<1.0	ug/l	C	GEO40
2-chlorophenol	<1.0	ug/l	C	GEO40
1,3 Dichlorobenzene	<1.0	ug/l	C	GEO40
1,4 Dichlorobenzene	<1.0	ug/l	C	GEO40
2-Methylphenol	<1.0	ug/l	C	GEO40
4-Methylphenol	<1.0	ug/l	C	GEO40
Dibenzofuran	<1.0	ug/l	C	GEO40
1,2 Dichlorobenzene	<1.0	ug/l	C	GEO40
bis(2-chloroisopropyl)ether	<1.0	ug/l	C	GEO40
N-nitrosodi-n-propylamine	<1.0	ug/l	C	GEO40
Hexachloroethane	<1.0	ug/l	C	GEO40
Nitrobenzene	<1.0	ug/l	C	GEO40
Isophorone	<1.0	ug/l	C	GEO40
2,4-Dimethylphenol	<2.0	ug/l	C	GEO40
2-Nitrophenol	<1.0	ug/l	C	GEO40
bis(2-chloroethoxy)methane	<1.0	ug/l	C	GEO40
2,4-Dichlorophenol	<1.0	ug/l	C	GEO40
1,2,4-Trichlorobenzene	<1.0	ug/l	C	GEO40
Naphthalene	<1.0	ug/l	C	GEO40
Hexachlorobutadiene	<1.0	ug/l	C	GEO40
4-Chloro-3-MethylPhenol	<1.0	ug/l	C	GEO40
2-Methylnaphthalene	<1.0	ug/l	C	GEO40
2,4,6-Trichlorophenol	<1.0	ug/l	C	GEO40
2,4,5-Trichlorophenol	<1.0	ug/l	C	GEO40
2-Chloronaphthalene	<1.0	ug/l	C	GEO40
Dimethyl phthalate	<1.0	ug/l	C	GEO40
2,6-Dinitrotoluene	<1.0	ug/l	C	GEO40
Acenaphthylene	<1.0	ug/l	C	GEO40
Acenaphthene	<1.0	ug/l	C	GEO40
2,4-Dinitrotoluene	<1.0	ug/l	C	GEO40
Diethyl phthalate	<3.0	ug/l	C	GEO40
4-Nitrophenol	<5.0	ug/l	C	GEO40
4-Chlorophenyl phenylether	<1.0	ug/l	C	GEO40
Fluorene	<1.0	ug/l	C	GEO40
Diiphenylamine	<1.0	ug/l	C	GEO40
4-Bromophenyl phenyl ether	<1.0	ug/l	C	GEO40
Hexachlorobenzene	<1.0	ug/l	C	GEO40
Pentachlorophenol	<5.0	ug/l	C	GEO40

Severn Trent Laboratories Ltd
STL Business Centre, Torrington Avenue, Coventry CV4 9GU Tel : 02476 421213 Fax : 02476 856575

Certificate of Analysis

1314
0897
1229
1510

SEVERN TRENT ENVIRONMENTAL LEADERSHIP STL

Sample 2 of 6 Laboratory Number : 10519553
Report Number : TH/50783 1/2008 Issue 1

Sample Source : Zeon Chemicals
Sample Point Description : Zeon Chemicals
Sample Description : 206

Sample Date : 10 April 2008 Sample Received : 11 April 2008 Analysis Complete : 30 April 2008

Test Description	Result	Units		Accreditation	Method
Phenanthrene	<1.0	ug/l		C	GEO40
Anthracene	<1.0	ug/l		C	GEO40
di-n-Butyl phthalate	<10.0	ug/l		C	GEO40
Fluoranthene	<1.0	ug/l		C	GEO40
Pyrene	<1.0	ug/l		C	GEO40
Butyl benzyl phthalate	<1.0	ug/l		C	GEO40
Benzo(a)anthracene	<1.0	ug/l		C	GEO40
Chrysene	<1.0	ug/l		C	GEO40
bis(2-ethylhexyl)phthalate	<10.0	ug/l		C	GEO40
di-n-octyl phthalate	<1.0	ug/l		C	GEO40
Benzo(b)fluoranthene	<1.0	ug/l		C	GEO40
Benzo(k)fluoranthene	<1.0	ug/l		C	GEO40
Benzo(a)pyrene	<1.0	ug/l		C	GEO40
Indeno(1,2,3-cd)pyrene	<1.0	ug/l		C	GEO40
Dibenz(a,h)anthracene	<1.0	ug/l		C	GEO40
Benzo(ghi)perylene	<1.0	ug/l		C	GEO40
2-Fluorophenol	58.1	%Recovery	*	C	GEO40
Phenol-d6	30.8	%Recovery	*	C	GEO40
Nitrobenzene-d5	79.6	%Recovery	*	C	GEO40
2-Fluorobiphenyl	80.4	%Recovery	*	C	GEO40
2,4,6-Tribromophenol	80.8	%Recovery	*	C	GEO40
Terphenyl-d14	94.6	%Recovery	*	C	GEO40

Analyst Comment for 10519553 : Result for phenol not available due to interference, indication result of <2.0 ug/L given. Please see attached report for SVOC-TIC results.

Accreditation Codes * = Not UKAS accredited, R = Analysed at STL Bridgend, C = Analysed at STL Coventry, R = Analysed at STL Runcorn, L = Analysed at STL Midlands, S = Sub-contracted

For Microbiological determinands 0 or ND = Not Detected, DET = Detected, For Legionella ND=Not detected in volume of sample filtered. I/S = Insufficient sample

Severn Trent Laboratories Ltd
STL Business Centre, Torrington Avenue, Coventry CV4 9GU Tel : 02476 421213 Fax : 02476 856575

Certificate of Analysis

1314
0897
1229
1510

SEVERN TRENT ENVIRONMENTAL LEADERSHIP STL

Sample 3 of 6 Laboratory Number : 10519554
Report Number : TH /507891/2008 Issue 1

Sample Source : Zeon Chemicals
Sample Point Description : Zeon Chemicals
Sample Description : 207

Sample Date : 10 April 2008 Sample Received : 11 April 2008 Analysis Complete : 30 April 2008

Test Description	Result	Units		Accreditation	Method
Alkalinity as CaCO3	330	mg/l		C	WAS025
Nonyl phenol	<1.0	ug/l	*	C	N/A
Octyl phenol	<1.0	ug/l	*	C	
Nonyl phenolethoxylate (E01)	<1.0	ug/l	*	C	
Nonyl phenolethoxylate (E02)	<1.0	ug/l	*	C	
Nonyl Phenolethoxylate (E03-5)	<5.0	ug/l	*	C	
Octyl phenolethoxylate (E01)	<1.0	ug/l	*	C	
Octyl phenolethoxylate (E02)	<1.0	ug/l	*	C	
Octylphenolethoxlate (E03-5)	<1.0	ug/l	*	C	

Accreditation Codes : * = Not UKAS accredited, B = Analysed at STL Bridgend, C = Analysed at STL Coventry, R = Analysed at STL Runcorn, L = Analysed at STL Midlands, S = Sub-contracted

For Microbiological determinands 0 or ND = Not Detected, DET = Detected, For Legionella ND=Not detected in volume of sample filtered, I/S = Insufficient sample

Severn Trent Laboratories Ltd
STL Business Centre, Torrington Avenue, Coventry CV4 9GU Tel : 02476 421213 Fax : 02476 856575

Certificate of Analysis

1314
0887
1229
1510

SEVERN TRENT ENVIRONMENTAL LEADERSHIP STL

Sample 4 Laboratory Number : 10519555

of 6 Report Number : TH/507891/2008 Issue 1

Sample Source : **Zeon Chemicals**

Sample Point Description : **Zeon Chemicals**

Sample Description : **210**

Sample Date : **10 April 2008** Sample Received : **11 April 2008** Analysis Complete : **30 April 2008**

Test Description	Result	Units		Accreditation	Method
Alkalinity as CaCO3	236	mg/l		C	WAS025
Acrylonitrile	<1	mg/l	*	C	SOL1
Catechol BG 2.6/3.0	<0.50	ug/l	*	L	PHOHBG2.4

Accreditation Codes * = Not UKAS accredited, B = Analysed at STL Bridgend, C = Analysed at STL Coventry, R = Analysed at STL Runcorn, L = Analysed at STL Midlands, S = Sub-contracted

For Microbiological determinands 0 or ND = Not Detected, DET = Detected, For Legionella ND=Not detected in volume of sample filtered. I/S = Insufficient sample

Severn Trent Laboratories Ltd
STL Business Centre, Torrington Avenue, Coventry CV4 9GU Tel : 02476 421213 Fax : 02476 856575

Certificate of Analysis

1314
0897
1229
1510

SEVERN TRENT ENVIRONMENTAL LEADERSHIP STL

Sample 5 Laboratory Number : 10519556
of 6 Report Number : TH /507891/2008 Issue 1

Sample Source : Zeon Chemicals
Sample Point Description : Zeon Chemicals
Sample Description : 211

Sample Date : 10 April 2008 Sample Received : 11 April 2008 Analysis Complete : 30 April 2008

Test Description	Result	Units		Accreditation	Method
Alkalinity as CaCO3	139	mg/l		C	WAS025
Acrylonitrile	<1	mg/l	*	C	SOL1
Catechol BG 2:6/3.0	<0.50	ug/l	*	L	PHOHBG2.4
Phenol	Analyst Comment	ug/l		C	GEO40
Bis(2-chloroethyl) ether	<15.0	ug/l		C	GEO40
2-chlorophenol	<15.0	ug/l		C	GEO40
1,3 Dichlorobenzene	<15.0	ug/l		C	GEO40
1,4 Dichlorobenzene	<15.0	ug/l		C	GEO40
2-Methylphenol	<15.0	ug/l		C	GEO40
4-Methylphenol	<15.0	ug/l		C	GEO40
Dibenzofuran	<15.0	ug/l		C	GEO40
1,2 Dichlorobenzene	<15.0	ug/l		C	GEO40
bis(2-chloroisopropyl)ether	<15.0	ug/l		C	GEO40
N-nitrosodi-n-propylamine	<15.0	ug/l		C	GEO40
Hexachloroethane	<15.0	ug/l		C	GEO40
Nitrobenzene	<15.0	ug/l		C	GEO40
Isophorone	<15.0	ug/l		C	GEO40
2,4-Dimethylphenol	<30.0	ug/l		C	GEO40
2-Nitrophenol	<15.0	ug/l		C	GEO40
bis(2-chloroethoxy)methane	<15.0	ug/l		C	GEO40
2,4-Dichlorophenol	<15.0	ug/l		C	GEO40
1,2,4-Trichlorobenzene	<15.0	ug/l		C	GEO40
Naphthalene	<15.0	ug/l		C	GEO40
Hexachlorobutadiene	<15.0	ug/l		C	GEO40
4-Chloro-3-MethylPhenol	<15.0	ug/l		C	GEO40
2-Methylnaphthalene	<15.0	ug/l		C	GEO40
2,4,6-Trichlorophenol	<15.0	ug/l		C	GEO40
2,4,5-Trichlorophenol	<15.0	ug/l		C	GEO40
2-Chloronaphthalene	<15.0	ug/l		C	GEO40
Dimethyl phthalate	<15.0	ug/l		C	GEO40
2,6-Dinitrotoluene	<15.0	ug/l		C	GEO40
Acenaphthylene	<15.0	ug/l		C	GEO40
Acenaphthene	<15.0	ug/l		C	GEO40
2,4-Dinitrotoluene	<15.0	ug/l		C	GEO40
Diethyl phthalate	48.8	ug/l		C	GEO40
4-Nitrophenol	<75.0	ug/l		C	GEO40
4-Chlorophenyl phenylether	<15.0	ug/l		C	GEO40
Fluorene	<15.0	ug/l		C	GEO40
Diiphenylamine	<15.0	ug/l		C	GEO40
4-Bromophenyl phenyl ether	<15.0	ug/l		C	GEO40

Certificate of Analysis

1314
0897
1229
1510

SEVERN TRENT ENVIRONMENTAL LEADERSHIP STL

Sample 5 Laboratory Number : 10519556

of 6 Report Number : TH/5078 91/2008 Issue 1

Sample Source : Zeon Chemicals
Sample Point Description : Zeon Chemicals
Sample Description : 211

Sample Date : 10 April 2008 Sample Received : 11 April 2008 Analysis Complete : 30 April 2008

Test Description	Result	Units		Accreditation	Method
Hexachlorobenzene	<15.0	ug/l		C	GEO40
Pentachlorophenol	<75.0	ug/l		C	GEO40
Phenanthrene	<15.0	ug/l		C	GEO40
Anthracene	<15.0	ug/l		C	GEO40
di-n-Butyl phthalate	<150	ug/l		C	GEO40
Fluoranthene	<15.0	ug/l		C	GEO40
Pyrene	<15.0	ug/l		C	GEO40
Butyl benzyl phthalate	<15.0	ug/l		C	GEO40
Benzo(a)anthracene	<15.0	ug/l		C	GEO40
Chrysene	<15.0	ug/l		C	GEO40
bis(2-ethylhexyl)phthalate	<150	ug/l		C	GEO40
di-n-octyl phthalate	<15.0	ug/l		C	GEO40
Benzo(b)fluoranthene	<15.0	ug/l		C	GEO40
Benzo(k)fluoranthene	<15.0	ug/l		C	GEO40
Benzo(a)pyrene	<15.0	ug/l		C	GEO40
Indeno(1,2,3-cd)pyrene	<15.0	ug/l		C	GEO40
Dibenz(a,h)anthracene	<15.0	ug/l		C	GEO40
Benzo(ghi)perylene	<15.0	ug/l		C	GEO40
2-Fluorophenol	42.5	%Recovery	*	C	GEO40
Phenol-d6	42.6	%Recovery	*	C	GEO40
Nitrobenzene-d5	55.2	%Recovery	*	C	GEO40
2-Fluorobiphenyl	53.6	%Recovery	*	C	GEO40
2,4,6-Tribromophenol	63.3	%Recovery	*	C	GEO40
Terphenyl-d14	54.0	%Recovery	*	C	GEO40

Analyst Comment for 10519556 : Result for phenol not available due to interference, indication result of 13.0 ug/L given. Please see attached report for SVOC-TIC results.

Accreditation Codes : * = Not UKAS accredited, B = Analysed at STL Bridgend C = Analysed at STL Coventry, R = Analysed at STL Runcorn, L = Analysed at STL Midlands S = Sub-contracted

For Microbiological determinands 0 or ND = Not Detected, DET = Detected, For Legionella ND=Not detected in volume of sample filtered. I/S = Insufficient sample

Severn Trent Laboratories Ltd
STL Business Centre, Torrington Avenue, Coventry CV4 9GU Tel : 02476 421213 Fax : 02476 856575

Certificate of Analysis

1314
0897
1229
1510

SEVERN TRENT ENVIRONMENTAL LEADERSHIP STL

Sample 6 of 6 Laboratory Number : 10519557
Report Number : TH/5078/91/2008 Issue 1

Sample Source : Zeon Chemicals
Sample Point Description : Zeon Chemicals
Sample Description : 214

Sample Date : 10 April 2008 Sample Received : 11 April 2008 Analysis Complete : 30 April 2008

Test Description	Result	Units	Accreditation		Method
Alkalinity as CaCO3	313	mg/l		C	WAS025
Acrylonitrile	<1	mg/l	*	C	SOL1

Accreditation Codes : * = Not UKAS accredited, B = Analysed at STL Bridgend, C = Analysed at STL Coventry, R = Analysed at STL Runcorn, I. = Analysed at STL Midlands, S = Sub-contracted
For Microbiological determinands 0 or ND = Not Detected, DET = Detected, For Legionella ND=Not detected in volume of sample filtered. I/S = Insufficient sample

Signed : J Fell Name : J. Fell Date : 16 May 2008
Title : Production Manager

Severn Trent Laboratories Ltd
STL Business Centre, Torrington Avenue, Coventry CV4 9GU Tel : 02476 421213 Fax : 02476 856575

LSCBB_GENERIC.txt

Tentatively Identified Compound (LSC) Summary Report

Operator ID: TJ Date Acquired: 30 Apr 2008 3:03 am
Data File: C:\msdchem\1\DATA\msd-m data\Apr08\SV290408\SVOC_23.D
Name: 10519556
Misc: 211
Method: C:\msdchem\1\METHODS\LSCBB_GENERIC.M (RTE Integrator)
Title: EPA Method 8270 SVOC's
Library Searched: N:\MSD-B.NET\CDRIVE\DATABASE\WILEY275.L

Compound name	CAS No.	Est.Conc	Quality
CAPRYLIC ACID	000124-07-2	744 µg/L	94
Decanal	000112-31-2	239 µg/L	91
Cyclooctane	000292-64-8	13800 µg/L	93
DECANOIC ACID	000334-48-5	10500 µg/L	99
Isolongifolene	001135-66-6	81 µg/L	96
Not known		114 µg/L	-
2-(2-NITROPHENYL)BENZIMIDAZOLE	002208-58-4	145 µg/L	52
1'-Hydroxy-6',8'dimethoxy-3'-methyl-2'-ace tonaphtho	022649-07-6	195 µg/L	90
1,4a.beta.-Dimethyl-7-isopropyl-1,2,3,4,4a ,9,10,10a	019407-18-2	4660 µg/L	91
s-Indacene-1,7-dione, 2,3,5,6-tetrahydro-3 ,3,5,5-te 9,10-hexa	055591-17-8	91 µg/L	62
10-Methoxybenz[a]azulen-1,4-dione	076319-77-2	71 µg/L	90
Decanoic acid, decyl ester	001654-86-0	119 µg/L	52
Not Known		122 µg/L	-
DEHYDROABIETIC ACID	001740-19-8	108 µg/L	98
(+-)-cis-3,4,6,9-tetrahydro-8,10-dihydroxy -7-methox	124917-65-3	100 µg/L	83
Phenol, 4-[1-methyl-1-(4-phenoxyphenyl)eth yl]-	127619-35-6	315 µg/L	90
benzo[c]fluorenone	099707-87-6	1100 µg/L	91
1-Phenanthrenecarboxylic acid, 1,2,3,4,4a, 9,10,10a-	001740-19-8	3370 µg/L	99

C:\msdchem\1\DATA\msd-m data\Apr08\SV290408\SVOC_23.D

SEVERN TRENT STL
ENVIRONMENTAL LEADERSHIP

Tentatively Identified Compound (LSC) Summary Report

Operator ID: TJ Date Acquired: 30 Apr 2008 2:36 am
Data File: C:\msdchem\1\DATA\msd-m data\Apr08\SV290408\SVOC_22.D
Name: 10519553
Misc: 206
Method: C:\msdchem\1\METHODS\LSCBB_GENERIC.M (RTE Integrator)
Title: EPA Method 8270 SVOC's
Library Searched: N:\MSD-B.NET\CDRIVE\DATABASE\WILEY275.L

Compound name	CAS No.	Est.Conc	Quality
1,6-methano[12]annulene	052954-75-3	5 µg/L	78

C:\msdchem\1\DATA\msd-m data\Apr08\SV290408\SVOC_22.D

00492374915713

SEVERN TRENT ENVIRONMENTAL LEADERSHIP STL

SEVERN TRENT STL

Mr Pearce
Zeon Chemicals
Sully CF64 5ZE
Vale Of Glamorgan

21 August 2008

Test Report: COV/537270/2008

Dear Mr Pearce

Analysis of your sample(s) submitted on 07 August 2008 is now complete and we have pleasure in enclosing the appropriate test report(s).

An invoice for the analysis carried out will be sent under separate cover.

Should you have any queries regarding this report(s) or any part of our service, please contact Customer Services on +44 (0)24 7642 1213 who will be happy to discuss your requirements.

If you would like to arrange any further analysis, please contact Customer Services. To arrange container delivery or sample collection, please call the Couriers Department directly on 024 7685 6562.

Thank you for using STL and we look forward to receiving your next samples.

Yours Sincerely,

Signed: L. Ellis

Name: L. Ellis

Title: Team Leader

Report Summary

1314
0897
1229
1510

SEVERN TRENT STL

Mr Graham Pearce
Zeon Chemicals
Sully
Vale Of Glamorgan
CF64 5ZE

Date of Issue: **21 August 2008**

Report Number: **COV/537270/2008** Issue **1**

Job Description: General Analysis.

Job Location: Sully Moors Road, Sully CF64 5ZE

Number of Samples included in this report **3**

Job Received: **07 August 2008**

Number of Test Results included in this report **69**

Analysis Commenced: **07 August 2008**

Signed: L. Ellis

Name: **L. Ellis** Date: **21 August 2008**

Title: **Team Leader**

STL was not responsible for sampling unless otherwise stated. Sampling is not covered by our UKAS accreditation.

Information on the methods of analysis and performance characteristics are available on request.
Opinions and interpretations expressed herein are outside the scope of UKAS accreditation.
Tests marked 'Not UKAS Accredited' in this Report/Certificate are not included in the UKAS Accreditation Schedule for our laboratory.

Certificate of Analysis

UKAS TESTING
1314
0897
1229
1510

SEVERN TRENT STL

Report Number: **COV/537270/2008** Issue **1**
Laboratory Number: **10711246** Sample **1** of **3**

Sample Source: **Zeon Chemicals**
Sample Point Description: **Zeon Chemicals**
Sample Description: **207**

Sample Date: **07 August 2008** Sample Received **07 August 2008** Analysis Complete: **14 August 2008**

Test Description	Result	Units	Accreditation		Method
TPH >C6-C40	1940	ug/l	Y	Cov	GEO35
TPH >C6-C8	<10	ug/l	N	Cov	GEO35
TPH >C8-C10	144	ug/l	N	Cov	GEO35
TPH >C16-C24	115	ug/l	N	Cov	GEO35
TPH >C24-C40	<50	ug/l	N	Cov	GEO35
TPH >C10-C16	1680	ug/l	N	Cov	GEO35
Acenaphthene	<0.01	ug/l	Y	Cov	GEO19
Acenaphthylene	<0.01	ug/l	Y	Cov	GEO19
Anthracene	0.01	ug/l	Y	Cov	GEO19
Benzo (a) anthracene	<0.01	ug/l	Y	Cov	GEO19
Benzo (g,h,i) perylene	<0.01	ug/l	Y	Cov	GEO19
Benzo (a) pyrene	<0.01	ug/l	Y	Cov	GEO19
Benzo (b) fluoranthene	<0.01	ug/l	Y	Cov	GEO19
Benzo (k) fluoranthene	<0.01	ug/l	Y	Cov	GEO19
Chrysene	<0.01	ug/l	Y	Cov	GEO19
Dibenz (a,h) anthracene	<0.01	ug/l	Y	Cov	GEO19
Fluoranthene	<0.01	ug/l	Y	Cov	GEO19
Fluorene	<0.01	ug/l	Y	Cov	GEO19
Indeno (1,2,3) cd pyrene	<0.01	ug/l	Y	Cov	GEO19
Naphthalene	0.61	ug/l	Y	Cov	GEO19
Phenanthrene	<0.01	ug/l	Y	Cov	GEO19
Pyrene	<0.01	ug/l	Y	Cov	GEO19
PAH, Total	0.62	ug/l	N	Cov	GEO19

Analyst Comments for 10711246: No Analyst Comment

Accreditation Codes: Y = UKAS Accredited, N = Not UKAS Accredited, M = MCERTS, S = Sub-contracted.
Analysed at: Bri = STL Bridgend, Cov = STL Coventry, Mid = STL Midlands, Rea = STL Reading, Run = STL Runcorn.
For Microbiological determinands 0 or ND=Not Detected, For Legionella ND=Not Detected in volume of sample filtered. I/S=Insufficient sample

Certificate of Analysis

UKAS TESTING
1314
0897
1229
1510

SEVERN TRENT STL

Report Number: **COV/537270/2008** Issue **1**
Laboratory Number: **10711247** Sample **2** of **3**

Sample Source: **Zeon Chemicals**
Sample Point Description: **Zeon Chemicals**
Sample Description: **211**

Sample Date: **07 August 2008** Sample Received **07 August 2008** Analysis Complete: **14 August 2008**

Test Description	Result	Units	Accreditation		Method
TPH >C6-C40	40700	ug/l	Y	Cov	GEO35
TPH >C6-C8	<200	ug/l	N	Cov	GEO35
TPH >C8-C10	<200	ug/l	N	Cov	GEO35
TPH >C16-C24	4520	ug/l	N	Cov	GEO35
TPH >C24-C40	<1000	ug/l	N	Cov	GEO35
TPH >C10-C16	36200	ug/l	N	Cov	GEO35
Acenaphthene	<0.20	ug/l	Y	Cov	GEO19
Acenaphthylene	<0.20	ug/l	Y	Cov	GEO19
Anthracene	<0.20	ug/l	Y	Cov	GEO19
Benzo (a) anthracene	<0.20	ug/l	Y	Cov	GEO19
Benzo (g,h,i) perylene	<0.20	ug/l	Y	Cov	GEO19
Benzo (a) pyrene	<0.20	ug/l	Y	Cov	GEO19
Benzo (b) fluoranthene	<0.20	ug/l	Y	Cov	GEO19
Benzo (k) fluoranthene	<0.20	ug/l	Y	Cov	GEO19
Chrysene	<0.20	ug/l	Y	Cov	GEO19
Dibenz (a,h) anthracene	<0.20	ug/l	Y	Cov	GEO19
Fluoranthene	<0.20	ug/l	Y	Cov	GEO19
Fluorene	<0.20	ug/l	Y	Cov	GEO19
Indeno (1,2,3) cd pyrene	<0.20	ug/l	Y	Cov	GEO19
Naphthalene	3.96	ug/l	Y	Cov	GEO19
Phenanthrene	<0.20	ug/l	Y	Cov	GEO19
Pyrene	<0.20	ug/l	Y	Cov	GEO19
PAH, Total	3.96	ug/l	N	Cov	GEO19

Analyst Comments for 10711247: No Analyst Comment

Accreditation Codes: Y = UKAS Accredited, N = Not UKAS Accredited, M = MCERTS, S = Sub-contracted.
Analysed at: Bri = STL Bridgend, Cov = STL Coventry, Mid = STL Midlands, Rea = STL Reading, Run = STL Runcorn.
For Microbiological determinands 0 or ND=Not Detected, For Legionella ND=Not Detected in volume of sample filtered. I/S=Insufficient sample

Certificate of Analysis

UKAS TESTING
1314
0897
1229
1510

SEVERN TRENT STL

Report Number: **COV/537270/2008** Issue **1**
Laboratory Number: **10711248** Sample **3** of **3**

Sample Source: **Zeon Chemicals**
Sample Point Description: **Zeon Chemicals**
Sample Description: **214**

Sample Date: **07 August 2008** Sample Received **07 August 2008** Analysis Complete: **14 August 2008**

Test Description	Result	Units	Accreditation		Method
TPH >C6-C40	412	ug/l	Y	Cov	GEO35
TPH >C6-C8	<100	ug/l	N	Cov	GEO35
TPH >C8-C10	<100	ug/l	N	Cov	GEO35
TPH >C16-C24	<200	ug/l	N	Cov	GEO35
TPH >C24-C40	<500	ug/l	N	Cov	GEO35
TPH >C10-C16	412	ug/l	N	Cov	GEO35
Acenaphthene	0.26	ug/l	Y	Cov	GEO19
Acenaphthylene	0.24	ug/l	Y	Cov	GEO19
Anthracene	<0.10	ug/l	Y	Cov	GEO19
Benzo (a) anthracene	<0.10	ug/l	Y	Cov	GEO19
Benzo (g,h,i) perylene	<0.10	ug/l	Y	Cov	GEO19
Benzo (a) pyrene	<0.10	ug/l	Y	Cov	GEO19
Benzo (b) fluoranthene	<0.10	ug/l	Y	Cov	GEO19
Benzo (k) fluoranthene	<0.10	ug/l	Y	Cov	GEO19
Chrysene	<0.10	ug/l	Y	Cov	GEO19
Dibenz (a,h) anthracene	<0.10	ug/l	Y	Cov	GEO19
Fluoranthene	<0.10	ug/l	Y	Cov	GEO19
Fluorene	1.09	ug/l	Y	Cov	GEO19
Indeno (1,2,3) cd pyrene	<0.10	ug/l	Y	Cov	GEO19
Naphthalene	0.75	ug/l	Y	Cov	GEO19
Phenanthrene	0.31	ug/l	Y	Cov	GEO19
Pyrene	<0.10	ug/l	Y	Cov	GEO19
PAH, Total	2.65	ug/l	N	Cov	GEO19

Analyst Comments for 10711248: No Analyst Comment

Accreditation Codes: Y = UKAS Accredited, N = Not UKAS Accredited, M = MCERTS, S = Sub-contracted.
Analysed at: Bri = STL Bridgend, Cov = STL Coventry, Mid = STL Midlands, Rea = STL Reading, Run = STL Runcorn.
For Microbiological determinands 0 or ND=Not Detected, For Legionella ND=Not Detected in volume of sample filtered. I/S=Insufficient sample

Signed: L. Ellis Name: **L. Ellis** Date: **21 August 2008**
Title: **Team Leader**

SEVERN TRENT STL

Mr Pearce
Zeon Chemicals
Sully Moors Road
Sully
Barry CF64 5ZE
Glamorgan

02 October 2008

Test Report: COV/548122/2008

Dear Mr Pearce

Analysis of your sample(s) submitted on 19 September 2008 is now complete and we have pleasure in enclosing the appropriate test report(s).

An invoice for the analysis carried out will be sent under separate cover.

Should you have any queries regarding this report(s) or any part of our service, please contact Customer Services on +44 (0)24 7642 1213 who will be happy to discuss your requirements.

If you would like to arrange any further analysis, please contact Customer Services. To arrange container delivery or sample collection, please call the Couriers Department directly on 024 7685 6562.

Thank you for using STL and we look forward to receiving your next samples.

Yours Sincerely,

Signed:

Name: J. Fell

Title: Production Manager

Report Summary

UKAS TESTING
1314
0897
1229
1510

SEVERN TRENT STL

Mr Graham Pearce
Zeon Chemicals
Sully Moors Road
Sully
Barry
Glamorgan
CF64 5ZE

Date of Issue: **02 October 2008**

Report Number: **COV/548122/2008** Issue **1**

Job Description: Quote 346

Job Location: Quote 346

Number of Samples included in this report **6**

Job Received: **19 September 2008**

Number of Test Results included in this report **36**

Analysis Commenced: **20 September 2008**

Signed: JFell

Name: **J. Fell** Date: **02 October 2008**

Title: **Production Manager**

STL was not responsible for sampling unless otherwise stated. Sampling is not covered by our UKAS accreditation.

Information on the methods of analysis and performance characteristics are available on request.
Opinions and interpretations expressed herein are outside the scope of UKAS accreditation.
Tests marked 'Not UKAS Accredited' in this Report/Certificate are not included in the UKAS Accreditation Schedule for our laboratory.

Certificate of Analysis

UKAS TESTING
1314
0897
1229
1510

SEVERN TRENT STL

Report Number: **COV/548122/2008** Issue **1**
Laboratory Number: **10799929** Sample **1** of **6**

Sample Source: **Zeon Chemicals**
Sample Point Description: **Zeon**
Sample Description: **202**

Sample Date: **18 September 2008** Sample Received **19 September 2008** Analysis Complete: **02 October 2008**

Test Description	Result	Units	Accreditation		Method
TPH >C6-C40	<50	ug/l	Y	Cov	GEO35
TPH >C6-C8	<10	ug/l	N	Cov	GEO35
TPH >C8-C10	<10	ug/l	N	Cov	GEO35
TPH >C16-C24	<20	ug/l	N	Cov	GEO35
TPH >C24-C40	<50	ug/l	N	Cov	GEO35
TPH >C10-C16	<20	ug/l	N	Cov	GEO35

Analyst Comments for 10799929: No Analyst Comment

Accreditation Codes: Y = UKAS Accredited, N = Not UKAS Accredited, M = MCERTS, S = Sub-contracted.
Analysed at: Bri = STL Bridgend, Cov = STL Coventry, Mid = STL Midlands, Rea = STL Reading, Run = STL Runcorn.
For Microbiological determinands 0 or ND=Not Detected, For Legionella ND=Not Detected in volume of sample filtered. I/S=Insufficient sample

Certificate of Analysis

UKAS TESTING
1314
0897
1229
1510

SEVERN TRENT STL

Report Number: **COV/548122/2008** Issue **1**
Laboratory Number: **10799933** Sample **5** of **6**

Sample Source: **Zeon Chemicals**
Sample Point Description: **Zeon**
Sample Description: **211**

Sample Date: **18 September 2008** Sample Received **19 September 2008** Analysis Complete: **02 October 2008**

Test Description	Result	Units	Accreditation		Method
TPH >C6-C40	236000	ug/l	Y	Cov	GEO35
TPH >C6-C8	120	ug/l	N	Cov	GEO35
TPH >C8-C10	152	ug/l	N	Cov	GEO35
TPH >C16-C24	10500	ug/l	N	Cov	GEO35
TPH >C24-C40	7960	ug/l	N	Cov	GEO35
TPH >C10-C16	218000	ug/l	N	Cov	GEO35

Analyst Comments for 10799933: High TPH surrogate due to interferences from sample matrix.

Accreditation Codes: Y = UKAS Accredited, N = Not UKAS Accredited, M = MCERTS, S = Sub-contracted.
Analysed at: Bri = STL Bridgend, Cov = STL Coventry, Mid = STL Midlands, Rea = STL Reading, Run = STL Runcorn.
For Microbiological determinands 0 or ND=Not Detected, For Legionella ND=Not Detected in volume of sample filtered. I/S=Insufficient sample

Certificate of Analysis

UKAS TESTING
1314
0897
1229
1510

SEVERN TRENT STL

Report Number: **COV/548122/2008** Issue **1**
Laboratory Number: **10799930** Sample **2** of **6**

Sample Source: **Zeon Chemicals**
Sample Point Description: **Zeon**
Sample Description: **203**

Sample Date: **18 September 2008** Sample Received **19 September 2008** Analysis Complete: **02 October 2008**

Test Description	Result	Units	Accreditation		Method
TPH >C6-C40	55	ug/l	Y	Cov	GEO35
TPH >C6-C8	<10	ug/l	N	Cov	GEO35
TPH >C8-C10	<10	ug/l	N	Cov	GEO35
TPH >C16-C24	<20	ug/l	N	Cov	GEO35
TPH >C24-C40	<50	ug/l	N	Cov	GEO35
TPH >C10-C16	55	ug/l	N	Cov	GEO35

Analyst Comments for 10799930: No Analyst Comment

Accreditation Codes: Y = UKAS Accredited, N = Not UKAS Accredited, M = MCERTS, S = Sub-contracted.
Analysed at: Bri = STL Bridgend, Cov = STL Coventry, Mid = STL Midlands, Rea = STL Reading, Run = STL Runcorn.
For Microbiological determinands 0 or ND=Not Detected, For Legionella ND=Not Detected in volume of sample filtered. I/S=Insufficient sample

Certificate of Analysis

UKAS TESTING
1314
0897
1229
1510

SEVERN TRENT STL

Report Number: **COV/548122/2008** Issue **1**
Laboratory Number: **10799931** Sample **3** of **6**

Sample Source: **Zeon Chemicals**
Sample Point Description: **Zeon**
Sample Description: **204**

Sample Date: **18 September 2008** Sample Received **19 September 2008** Analysis Complete: **02 October 2008**

Test Description	Result	Units	Accreditation		Method
TPH >C6-C40	24	ug/l	Y	Cov	GEO35
TPH >C6-C8	<10	ug/l	N	Cov	GEO35
TPH >C8-C10	<10	ug/l	N	Cov	GEO35
TPH >C16-C24	<20	ug/l	N	Cov	GEO35
TPH >C24-C40	<50	ug/l	N	Cov	GEO35
TPH >C10-C16	24	ug/l	N	Cov	GEO35

Analyst Comments for 10799931: Low TPH surrogate at 36.0%.

Accreditation Codes: Y = UKAS Accredited, N = Not UKAS Accredited, M = MCERTS, S = Sub-contracted.
Analysed at: Bri = STL Bridgend, Cov = STL Coventry, Mid = STL Midlands, Rea = STL Reading, Run = STL Runcorn.
For Microbiological determinands 0 or ND=Not Detected, For Legionella ND=Not Detected in volume of sample filtered. I/S=Insufficient sample

Certificate of Analysis

1314
0897
1229
1510

SEVERN TRENT STL

Report Number: **COV/548122/2008** Issue **1**
Laboratory Number: **10799932** Sample **4** of **6**

Sample Source: **Zeon Chemicals**
Sample Point Description: **Zeon**
Sample Description: **207**

Sample Date: **18 September 2008** Sample Received **19 September 2008** Analysis Complete: **02 October 2008**

Test Description	Result	Units	Accreditation		Method
TPH >C6-C40	476	ug/l	Y	Cov	GEO35
TPH >C6-C8	<10	ug/l	N	Cov	GEO35
TPH >C8-C10	32	ug/l	N	Cov	GEO35
TPH >C16-C24	51	ug/l	N	Cov	GEO35
TPH >C24-C40	<50	ug/l	N	Cov	GEO35
TPH >C10-C16	393	ug/l	N	Cov	GEO35

Analyst Comments for 10799932: Low TPH surrogate at 47.5%.

Accreditation Codes: Y = UKAS Accredited, N = Not UKAS Accredited, M = MCERTS, S = Sub-contracted.
Analysed at: Bri = STL Bridgend, Cov = STL Coventry, Mid = STL Midlands, Rea = STL Reading, Run = STL Runcorn.
For Microbiological determinands 0 or ND=Not Detected, For Legionella ND=Not Detected in volume of sample filtered. I/S=Insufficient sample

Certificate of Analysis

1314
0897
1229
1510

SEVERN TRENT STL

Report Number: **COV/548122/2008** Issue **1**
Laboratory Number: **10799934** Sample **6** of **6**

Sample Source: **Zeon Chemicals**
Sample Point Description: **Zeon**
Sample Description: **213**

Sample Date: **18 September 2008** Sample Received **19 September 2008** Analysis Complete: **02 October 2008**

Test Description	Result	Units	Accreditation		Method
TPH >C6-C40	44	ug/l	Y	Cov	GEO35
TPH >C6-C8	<10	ug/l	N	Cov	GEO35
TPH >C8-C10	<10	ug/l	N	Cov	GEO35
TPH >C16-C24	<20	ug/l	N	Cov	GEO35
TPH >C24-C40	<50	ug/l	N	Cov	GEO35
TPH >C10-C16	44	ug/l	N	Cov	GEO35

Analyst Comments for 10799934: Low TPH surrogate at 43.9%.

Accreditation Codes: Y = UKAS Accredited, N = Not UKAS Accredited, M = MCERTS, S = Sub-contracted.
Analysed at: Bri = STL Bridgend, Cov = STL Coventry, Mid = STL Midlands, Rea = STL Reading, Run = STL Runcorn.
For Microbiological determinands 0 or ND=Not Detected, For Legionella ND=Not Detected in volume of sample filtered. I/S=Insufficient sample

Signed: J Fell Name: **J. Fell** Date: **02 October 2008**
Title: **Production Manager**

SEVERN TRENT STL

Mr Pearce
Zeon Chemicals
Sully Moors Road
Sully
Barry CF64 5ZE
Glamorgan

17 December 2008

Test Report: COV/564719/2008

Dear Mr Pearce

Analysis of your sample(s) submitted on 24 November 2008 is now complete and we have pleasure in enclosing the appropriate test report(s).

An invoice for the analysis carried out will be sent under separate cover.

Should you have any queries regarding this report(s) or any part of our service, please contact Customer Services on +44 (0)24 7642 1213 who will be happy to discuss your requirements.

If you would like to arrange any further analysis, please contact Customer Services. To arrange container delivery or sample collection, please call the Couriers Department directly on 024 7685 6562.

Thank you for using STL and we look forward to receiving your next samples.

Yours Sincerely,

Signed:

Name: J. Fell

Title: Production Manager

Report Summary

UKAS TESTING
1314
0897
1229
1510

SEVERN TRENT STL

Mr Graham Pearce
Zeon Chemicals
Sully Moors Road
Sully
Barry
Glamorgan
CF64 5ZE

Date of Issue: **17 December 2008**

Report Number: **COV/564719/2008** Issue **1**

Job Description: Quote 346

Job Location: Quote 346

Number of Samples included in this report **5**

Job Received: **24 November 2008**

Number of Test Results included in this report **30**

Analysis Commenced: **25 November 2008**

Signed: JFell

Name: **J. Fell**

Title: **Production Manager**

Date: **17 December 2008**

STL was not responsible for sampling unless otherwise stated. Sampling is not covered by our UKAS accreditation.

Information on the methods of analysis and performance characteristics are available on request.
Opinions and interpretations expressed herein are outside the scope of UKAS accreditation.
Tests marked 'Not UKAS Accredited' in this Report/Certificate are not included in the UKAS Accreditation Schedule for our laboratory.

SEVERN TRENT STL

Mr Pearce
Zeon Chemicals
Sully Moors Road
Sully
Barry
Glamorgan
CF64 5ZE

26 Nov 2008

Job Reference: **TH 564719/2008**
Samples Received: 5

Dear Mr Pearce

The samples submitted on 24 Nov 2008 are being processed.

Please check your registration details carefully on the other sheets in this workbook. We shall assume we have registered your requirements correctly unless we hear from you within 48 hours of the above date.

Should you have any queries on the above samples, please contact me on 024 7685 6517 referring to the above STL Job reference.

Yours sincerely

Keerti Chauhan
Project Manager

Severn Trent Laboratories Ltd
STL Business Centre, Torrington Avenue, Coventry CV4 9GU Tel:024 7642 1213 Fax:024 7685 6575

Certificate of Analysis

UKAS TESTING
1314
0897
1229
1510

SEVERN TRENT STL

Report Number: **COV/564719/2008** Issue **1**
Laboratory Number: **10928191** Sample **4** of **5**

Sample Source: **Zeon Chemicals**
Sample Point Description: **Zeon**
Sample Description: **211/120**

Sample Date: **24 November 2008** Sample Received **24 November 2008** Analysis Complete: **03 December 2008**

Test Description	Result	Units	Accreditation	Method
TPH >C6-C40	257000	ug/l	Y COV	GEO35
TPH >C6-C8	<10	ug/l	N COV	GEO35
TPH >C8-C10	13	ug/l	N COV	GEO35
TPH >C16-C24	3270	ug/l	N COV	GEO35
TPH >C24-C40	120	ug/l	N COV	GEO35
TPH >C10-C16	254000	ug/l	N COV	GEO35

Analyst Comments for 10928191: Reporting limits raised for TPH due to sample matrix.

Accreditation Codes: Y = UKAS Accredited, N = Not UKAS Accredited, M = MCERTS, S = Sub-contracted.
Analysed at: Bri = STL Bridgend, Cov = STL Coventry, Mid = STL Midlands, Rea = STL Reading, Run = STL Runcorn.
For Microbiological determinands 0 or ND=Not Detected, For Legionella ND=Not Detected in volume of sample filtered. Relating to Legionella volume analysed 1g is approximately equivalent to 1ml.
I/S=Insufficient sample

Certificate of Analysis

UKAS TESTING
1314
0897
1229
1510

SEVERN TRENT STL

Report Number: **COV/564719/2008** Issue **1**
Laboratory Number: **10928190** Sample **3** of **5**

Sample Source: **Zeon Chemicals**
Sample Point Description: **Zeon**
Sample Description: **211/90**

Sample Date: **24 November 2008** Sample Received **24 November 2008** Analysis Complete: **03 December 2008**

Test Description	Result	Units	Accreditation	Method
TPH >C6-C40	108000	ug/l	Y COV	GEO35
TPH >C6-C8	<10	ug/l	N COV	GEO35
TPH >C8-C10	27	ug/l	N COV	GEO35
TPH >C16-C24	714	ug/l	N COV	GEO35
TPH >C24-C40	2270	ug/l	N COV	GEO35
TPH >C10-C16	105000	ug/l	N COV	GEO35

Analyst Comments for 10928190: Reporting limits raised for TPH due to sample matrix.

Accreditation Codes: Y = UKAS Accredited, N = Not UKAS Accredited, M = MCERTS, S = Sub-contracted.
Analysed at: Bri = STL Bridgend, Cov = STL Coventry, Mid = STL Midlands, Rea = STL Reading, Run = STL Runcorn.
For Microbiological determinands 0 or ND=Not Detected, For Legionella ND=Not Detected in volume of sample filtered. Relating to Legionella volume analysed 1g is approximately equivalent to 1ml.
I/S=Insufficient sample

Certificate of Analysis

UKAS TESTING
1314
0897
1229
1510

SEVERN TRENT STL

Report Number: **COV/564719/2008** Issue **1**
Laboratory Number: **10928188** Sample **1** of **5**

Sample Source: **Zeon Chemicals**
Sample Point Description: **Zeon**
Sample Description: **211/30**

Sample Date: **24 November 2008** Sample Received **24 November 2008** Analysis Complete: **03 December 2008**

Test Description	Result	Units	Accreditation	Method
TPH >C6-C40	339000	ug/l	Y COV	GEO35
TPH >C6-C8	<10	ug/l	N COV	GEO35
TPH >C8-C10	<10	ug/l	N COV	GEO35
TPH >C16-C24	2300	ug/l	N COV	GEO35
TPH >C24-C40	1440	ug/l	N COV	GEO35
TPH >C10-C16	335000	ug/l	N COV	GEO35

Analyst Comments for 10928188: Reporting limits raised for TPH due to sample matrix.

Accreditation Codes: Y = UKAS Accredited, N = Not UKAS Accredited, M = MCERTS, S = Sub-contracted.
Analysed at: Bri = STL Bridgend, Cov = STL Coventry, Mid = STL Midlands, Rea = STL Reading, Run = STL Runcorn.
For Microbiological determinands 0 or ND=Not Detected. For Legionella ND=Not Detected in volume of sample filtered. Relating to Legionella volume analysed 1g is approximately equivalent to 1ml.
I/S=Insufficient sample

Certificate of Analysis

UKAS TESTING
1314
0897
1229
1510

SEVERN TRENT STL

Report Number: **COV/564719/2008** Issue **1**
Laboratory Number: **10928189** Sample **2** of **5**

Sample Source: **Zeon Chemicals**
Sample Point Description: **Zeon**
Sample Description: **211/60**

Sample Date: **24 November 2008** Sample Received **24 November 2008** Analysis Complete: **03 December 2008**

Test Description	Result	Units	Accreditation		Method
TPH >C6-C40	192000	ug/l	Y	COV	GEO35
TPH >C6-C8	10	ug/l	N	COV	GEO35
TPH >C8-C10	25	ug/l	N	COV	GEO35
TPH >C16-C24	991	ug/l	N	COV	GEO35
TPH >C24-C40	2740	ug/l	N	COV	GEO35
TPH >C10-C16	188000	ug/l	N	COV	GEO35

Analyst Comments for 10928189: Reporting limits raised for TPH due to sample matrix.

Accreditation Codes: Y = UKAS Accredited, N = Not UKAS Accredited, M = MCERTS, S = Sub-contracted.
Analysed at: Bri = STL Bridgend, Cov = STL Coventry, Mid = STL Midlands, Rea = STL Reading, Run = STL Runcorn.
For Microbiological determinands 0 or ND=Not Detected. For Legionella ND=Not Detected in volume of sample filtered. Relating to Legionella volume analysed 1g is approximately equivalent to 1ml.
I/S=Insufficient sample

Certificate of Analysis

UKAS TESTING
1314
0897
1229
1510

SEVERN TRENT STL

Report Number: **COV/564719/2008** Issue **1**
Laboratory Number: **10928192** Sample **5** of **5**

Sample Source: **Zeon Chemicals**
Sample Point Description: **Zeon**
Sample Description: **CONTROL**

Sample Date: **24 November 2008** Sample Received **24 November 2008** Analysis Complete: **03 December 2008**

Test Description	Result	Units	Accreditation	Method
TPH >C6-C40	19800	ug/l	Y COV	GEO35
TPH >C6-C8	24	ug/l	N COV	GEO35
TPH >C8-C10	84	ug/l	N COV	GEO35
TPH >C16-C24	639	ug/l	N COV	GEO35
TPH >C24-C40	134	ug/l	N COV	GEO35
TPH >C10-C16	19000	ug/l	N COV	GEO35

Analyst Comments for 10928192: No Analyst Comment

Accreditation Codes: Y = UKAS Accredited, N = Not UKAS Accredited, M = MCERTS, S = Sub-contracted.
Analysed at: Bri = STL Bridgend, Cov = STL Coventry, Mid = STL Midlands, Rea = STL Reading, Run = STL Runcorn.
For Microbiological determinands 0 or ND=Not Detected, For Legionella ND=Not Detected in volume of sample filtered. Relating to Legionella volume analysed 1g is approximately equivalent to 1ml
I/S=Insufficient sample

Signed: J Fell Name: **J. Fell** Date: **17 December 2008**
Title: **Production Manager**

SEVERN TRENT STL

Mr Pearce
Zeon Chemicals
Sully Moors Road
Sully
Barry CF64 5ZE
Glamorgan

07 January 2010

Test Report: COV/658427/2009

Dear Mr Pearce

Analysis of your sample(s) submitted on 09 December 2009 is now complete and we have pleasure in enclosing the appropriate test report(s).

An invoice for the analysis carried out will be sent under separate cover.

Should you have any queries regarding this report(s) or any part of our service, please contact Customer Services on +44 (0)24 7642 1213 who will be happy to discuss your requirements.

If you would like to arrange any further analysis, please contact Customer Services. To arrange container delivery or sample collection, please call the Couriers Department directly on 024 7685 6562.

Thank you for using STL and we look forward to receiving your next samples.

Yours Sincerely,

Signed:

Name: J. Fell

Title: Production Manager

Report Summary

UKAS TESTING
1314
0897
1229
1510

SEVERN TRENT STL

Mr Graham Pearce
Zeon Chemicals
Sully Moors Road
Sully
Barry
Glamorgan
CF64 5ZE

Date of Issue: **07 January 2010**

Report Number: **COV/658427/2009** Issue **1**

Job Description: Quote 9559

Job Location: Quote 9559

Number of Samples included in this report **4**

Job Received: **09 December 2009**

Number of Test Results included in this report **24**

Analysis Commenced: **11 December 2009**

Signed:

Name: **J. Fell** Date: **07 January 2010**

Title: **Production Manager**

STL was not responsible for sampling unless otherwise stated. Sampling is not covered by our UKAS accreditation.

Information on the methods of analysis and performance characteristics are available on request.
Opinions and interpretations expressed herein are outside the scope of UKAS accreditation. The results relate only to the items tested.
Tests marked 'Not UKAS Accredited' in this Report/Certificate are not included in the UKAS Accreditation Schedule for our laboratory.

Certificate of Analysis

UKAS TESTING
1314
0897
1229
1510

SEVERN TRENT STL

Report Number: **COV/658427/2009** Issue **1**
Laboratory Number: **11526692** Sample **1** of **4**

Sample Source: **Zeon Chemicals**
Sample Point Description: **Zeon**
Sample Description: **206**
Sample Matrix: **Not Specified**

Sample Date: **09 December 2009** Sample Received **09 December 2009** Analysis Complete: **21 December 2009**

Test Description	Result	Units	Accreditation		Method
TPH >C6-C40	32	ug/l	Y	Cov	GEO35
TPH >C6-C8	<10	ug/l	N	Cov	GEO35
TPH >C8-C10	<10	ug/l	N	Cov	GEO35
TPH >C16-C24	14	ug/l	N	Cov	GEO35
TPH >C24-C40	<10	ug/l	N	Cov	GEO35
TPH >C10-C16	18	ug/l	N	Cov	GEO35

Analyst Comments for 11526692: No Analyst Comment

Accreditation Codes: Y = UKAS Accredited, N = Not UKAS Accredited, M = MCERTS.
Analysed at: Brd = STL Bridgend, Cov = STL Coventry, Mid = STL Midlands, Rea = STL Reading, Run = STL Runcorn, S = Subcontracted.
For Microbiological determinands 0 or ND=Not Detected, For Legionella ND=Not Detected in volume of sample filtered. Relating to Legionella volume analysed 1g is approximately equivalent to 1ml.
I/S=Insufficient sample

Certificate of Analysis

UKAS TESTING
1314
0897
1229
1510

SEVERN TRENT STL

Report Number: **COV/658427/2009** Issue **1**
Laboratory Number: **11526693** Sample **2** of **4**

Sample Source: **Zeon Chemicals**
Sample Point Description: **Zeon**
Sample Description: **208**
Sample Matrix: **Not Specified**

Sample Date: **09 December 2009** Sample Received **09 December 2009** Analysis Complete: **21 December 2009**

Test Description	Result	Units	Accreditation		Method
TPH >C6-C40	<10	ug/l	Y	Cov	GEO35
TPH >C6-C8	<10	ug/l	N	Cov	GEO35
TPH >C8-C10	<10	ug/l	N	Cov	GEO35
TPH >C16-C24	<10	ug/l	N	Cov	GEO35
TPH >C24-C40	<10	ug/l	N	Cov	GEO35
TPH >C10-C16	<10	ug/l	N	Cov	GEO35

Analyst Comments for 11526693: No Analyst Comment

Accreditation Codes: Y = UKAS Accredited, N = Not UKAS Accredited, M = MCERTS.
Analysed at: Brd = STL Bridgend, Cov = STL Coventry, Mid = STL Midlands, Rea = STL Reading, Run = STL Runcorn, S = Subcontracted.
For Microbiological determinands 0 or ND=Not Detected, For Legionella ND=Not Detected in volume of sample filtered. Relating to Legionella volume analysed 1g is approximately equivalent to 1ml.
I/S=Insufficient sample

Certificate of Analysis

UKAS TESTING
1314
0897
1229
1510

SEVERN TRENT STL

Report Number: **COV/658427/2009** Issue **1**
Laboratory Number: **11526694** Sample **3** of **4**

Sample Source: **Zeon Chemicals**
Sample Point Description: **Zeon**
Sample Description: **211**
Sample Matrix: **Not Specified**

Sample Date: **09 December 2009** Sample Received **09 December 2009** Analysis Complete: **21 December 2009**

Test Description	Result	Units	Accreditation		Method
TPH >C6-C40	5760	ug/l	Y	Cov	GEO35
TPH >C6-C8	<10	ug/l	N	Cov	GEO35
TPH >C8-C10	<10	ug/l	N	Cov	GEO35
TPH >C16-C24	487	ug/l	N	Cov	GEO35
TPH >C24-C40	1010	ug/l	N	Cov	GEO35
TPH >C10-C16	4260	ug/l	N	Cov	GEO35

Analyst Comments for 11526694: No Analyst Comment

Accreditation Codes: Y = UKAS Accredited, N = Not UKAS Accredited, M = MCERTS.
Analysed at: Brd = STL Bridgend, Cov = STL Coventry, Mid = STL Midlands, Rea = STL Reading, Run = STL Runcorn, S = Subcontracted.
For Microbiological determinands 0 or ND=Not Detected, For Legionella ND=Not Detected in volume of sample filtered. Relating to Legionella volume analysed 1g is approximately equivalent to 1ml.
I/S=Insufficient sample

Certificate of Analysis

UKAS TESTING
1314
0897
1229
1510

SEVERN TRENT STL

Report Number: **COV/658427/2009** Issue **1**
Laboratory Number: **11526695** Sample **4** of **4**

Sample Source: **Zeon Chemicals**
Sample Point Description: **Zeon**
Sample Description: **214**
Sample Matrix: **Not Specified**

Sample Date: **09 December 2009** Sample Received **09 December 2009** Analysis Complete: **21 December 2009**

Test Description	Result	Units	Accreditation		Method
TPH >C6-C40	17	ug/l	Y	Cov	GEO35
TPH >C6-C8	<10	ug/l	N	Cov	GEO35
TPH >C8-C10	<10	ug/l	N	Cov	GEO35
TPH >C16-C24	<10	ug/l	N	Cov	GEO35
TPH >C24-C40	<10	ug/l	N	Cov	GEO35
TPH >C10-C16	17	ug/l	N	Cov	GEO35

Analyst Comments for 11526695: No Analyst Comment

Accreditation Codes: Y = UKAS Accredited, N = Not UKAS Accredited, M = MCERTS.
Analysed at: Brd = STL Bridgend, Cov = STL Coventry, Mid = STL Midlands, Rea = STL Reading, Run = STL Runcorn, S = Subcontracted.
For Microbiological determinands 0 or ND=Not Detected, For Legionella ND=Not Detected in volume of sample filtered. Relating to Legionella volume analysed 1g is approximately equivalent to 1ml.
I/S=Insufficient sample

Signed: J Fell Name: **J. Fell** Date: **07 January 2010**
Title: **Production Manager**

SEVERN TRENT STL

Mr Pearce
Zeon Chemicals
Sully CF64 5ZE
Vale Of Glamorgan

19 May 2009

Test Report: COV/603628/2009

Dear Mr Pearce

Analysis of your sample(s) submitted on 08 May 2009 is now complete and we have pleasure in enclosing the appropriate test report(s).

An invoice for the analysis carried out will be sent under separate cover.

Should you have any queries regarding this report(s) or any part of our service, please contact Customer Services on +44 (0)24 7642 1213 who will be happy to discuss your requirements.

If you would like to arrange any further analysis, please contact Customer Services. To arrange container delivery or sample collection, please call the Couriers Department directly on 024 7685 6562.

Thank you for using STL and we look forward to receiving your next samples.

Yours Sincerely,

Signed:

Name: J. Fell

Title: Production Manager

Report Summary

1314
0897
1229
1510

SEVERN TRENT STL

Mr Graham Pearce
Zeon Chemicals
Sully
Vale Of Glamorgan
CF64 5ZE

Date of Issue: **19 May 2009**

Report Number: **COV/603628/2009** Issue **1**

Job Description: General Analysis.

Number of Samples included in this report **2**

Job Received: **08 May 2009**

Number of Test Results included in this report **12**

Analysis Commenced: **08 May 2009**

Signed:

Name: **J. Fell** Date: **19 May 2009**

Title: **Production Manager**

STL was not responsible for sampling unless otherwise stated. Sampling is not covered by our UKAS accreditation.

Information on the methods of analysis and performance characteristics are available on request.
Opinions and interpretations expressed herein are outside the scope of UKAS accreditation.
Tests marked 'Not UKAS Accredited' in this Report/Certificate are not included in the UKAS Accreditation Schedule for our laboratory.

Certificate of Analysis

UKAS TESTING
1314
0897
1229
1510

SEVERN TRENT STL

Report Number: **COV/603628/2009** Issue **1**
Laboratory Number: **11177349** Sample **1** of **2**

Sample Source: **Zeon Chemicals**
Sample Point Description: **Zeon Chemicals**
Sample Description: **211/1**
Sample Matrix: **Groundwater**

Sample Date: Sample Received **08 May 2009** Analysis Complete: **19 May 2009**

Test Description	Result	Units	Accreditation		Method
TPH >C6-C40	43200	ug/l	Y	Cov	GEO35
TPH >C6-C8	<40	ug/l	N	Cov	GEO35
TPH >C8-C10	<40	ug/l	N	Cov	GEO35
TPH >C16-C24	1540	ug/l	N	Cov	GEO35
TPH >C24-C40	199	ug/l	N	Cov	GEO35
TPH >C10-C16	41400	ug/l	N	Cov	GEO35

Analyst Comments for 11177349: Reporting limits raised for TPH due to sample matrix. Low TPH surrogate recovery at 43.0% due to interference from the sample matrix.

Accreditation Codes: Y = UKAS Accredited, N = Not UKAS Accredited, M = MCERTS, S = Sub-contracted.
Analysed at: Bri = STL Bridgend, Cov = STL Coventry, Mid = STL Midlands, Rea = STL Reading, Run = STL Runcorn.
For Microbiological determinands 0 or ND=Not Detected, For Legionella ND=Not Detected in volume of sample filtered. Relating to Legionella volume analysed 1g is approximately equivalent to 1ml.
I/S=Insufficient sample

Certificate of Analysis

UKAS TESTING
1314
0897
1229
1510

SEVERN TRENT STL

Report Number: **COV/603628/2009** Issue **1**
Laboratory Number: **11177350** Sample **2** of **2**

Sample Source: **Zeon Chemicals**
Sample Point Description: **Zeon Chemicals**
Sample Description: **211/2**
Sample Matrix: **Groundwater**

Sample Date: Sample Received **08 May 2009** Analysis Complete: **19 May 2009**

Test Description	Result	Units	Accreditation		Method
TPH >C6-C40	35500	ug/l	Y	Cov	GEO35
TPH >C6-C8	<40	ug/l	N	Cov	GEO35
TPH >C8-C10	<40	ug/l	N	Cov	GEO35
TPH >C16-C24	1520	ug/l	N	Cov	GEO35
TPH >C24-C40	145	ug/l	N	Cov	GEO35
TPH >C10-C16	33900	ug/l	N	Cov	GEO35

Analyst Comments for 11177350: Reporting limits raised for TPH due to sample matrix. Low TPH surrogate recovery at 46.5% due to interference from the sample matrix.

Accreditation Codes: Y = UKAS Accredited, N = Not UKAS Accredited, M = MCERTS, S = Sub-contracted.
Analysed at: Bri = STL Bridgend, Cov = STL Coventry, Mid = STL Midlands, Rea = STL Reading, Run = STL Runcorn.
For Microbiological determinands 0 or ND=Not Detected, For Legionella ND=Not Detected in volume of sample filtered. Relating to Legionella volume analysed 1g is approximately equivalent to 1ml.
I/S=Insufficient sample

Signed: J Fell Name: **J. Fell** Date: **19 May 2009**
Title: **Production Manager**

Certificate of Analysis

UKAS TESTING
1314
0897
1229
1510

SEVERN TRENT STL

Report Number: **COV/594188/2009** Issue **1**
Laboratory Number: **11115190** Sample **5** of **5**

Sample Source: **Zeon Chemicals**
Sample Point Description: **Zeon Chemicals**
Sample Description: **214**

Sample Date: **26 March 2009** Sample Received **30 March 2009** Analysis Complete: **08 April 2009**

Test Description	Result	Units	Accreditation	Method
TPH >C6-C40	222	ug/l	Y Cov	GEO35
TPH >C6-C8	<10	ug/l	N Cov	GEO35
TPH >C8-C10	<10	ug/l	N Cov	GEO35
TPH >C16-C24	36	ug/l	N Cov	GEO35
TPH >C24-C40	<50	ug/l	N Cov	GEO35
TPH >C10-C16	186	ug/l	N Cov	GEO35

Analyst Comments for 11115190: No Analyst Comment

Accreditation Codes: Y = UKAS Accredited, N = Not UKAS Accredited, M = MCERTS, S = Sub-contracted.
Analysed at: Bri = STL Bridgend, Cov = STL Coventry, Mid = STL Midlands, Rea = STL Reading, Run = STL Runcorn.
For Microbiological determinands 0 or ND=Not Detected, For Legionella ND=Not Detected in volume of sample filtered. Relating to Legionella volume analysed 1g is approximately equivalent to 1ml.
I/S=Insufficient sample

Signed: J Fell

Name: **J. Fell** Date: **08 April 2009**

Title: **Production Manager**

Certificate of Analysis

1314
0897
1229
1510

SEVERN TRENT STL

Report Number: **COV/594188/2009** Issue **1**
Laboratory Number: **11115189** Sample **4** of **5**

Sample Source: **Zeon Chemicals**
Sample Point Description: **Zeon Chemicals**
Sample Description: **211**

Sample Date: **26 March 2009** Sample Received **30 March 2009** Analysis Complete: **08 April 2009**

Test Description	Result	Units	Accreditation		Method
TPH >C6-C40	Analyst Comment	ug/l	Y	Cov	GEO35
TPH >C6-C8	498	ug/l	N	Cov	GEO35
TPH >C8-C10	180	ug/l	N	Cov	GEO35
TPH >C16-C24	630	ug/l	N	Cov	GEO35
TPH >C24-C40	1030	ug/l	N	Cov	GEO35
TPH >C10-C16	Analyst Comment	ug/l	N	Cov	GEO35

Analyst Comments for 11115189: Results for C10-C16 at 32700ug\l and C6-C40 at 35100ug/l are indicative due to levels being above the calibration range.

Accreditation Codes: Y = UKAS Accredited, N = Not UKAS Accredited, M = MCERTS, S = Sub-contracted.
Analysed at: Bri = STL Bridgend, Cov = STL Coventry, Mid = STL Midlands, Rea = STL Reading, Run = STL Runcorn.
For Microbiological determinands 0 or ND=Not Detected, For Legionella ND=Not Detected in volume of sample filtered. Relating to Legionella volume analysed 1g is approximately equivalent to 1ml.
I/S=Insufficient sample

Certificate of Analysis

1314
0897
1229
1510

SEVERN TRENT STL

Report Number: **COV/594188/2009** Issue **1**
Laboratory Number: **11115188** Sample **3** of **5**

Sample Source: **Zeon Chemicals**
Sample Point Description: **Zeon Chemicals**
Sample Description: **207**

Sample Date: **25 March 2009** Sample Received **30 March 2009** Analysis Complete: **08 April 2009**

Test Description	Result	Units	Accreditation		Method
TPH >C6-C40	492	ug/l	Y	Cov	GEO35
TPH >C6-C8	<10	ug/l	N	Cov	GEO35
TPH >C8-C10	30	ug/l	N	Cov	GEO35
TPH >C16-C24	58	ug/l	N	Cov	GEO35
TPH >C24-C40	<50	ug/l	N	Cov	GEO35
TPH >C10-C16	404	ug/l	N	Cov	GEO35

Analyst Comments for 11115188: No Analyst Comment

Accreditation Codes: Y = UKAS Accredited, N = Not UKAS Accredited, M = MCERTS, S = Sub-contracted.
Analysed at: Bri = STL Bridgend, Cov = STL Coventry, Mid = STL Midlands, Rea = STL Reading, Run = STL Runcorn.
For Microbiological determinands 0 or ND=Not Detected, For Legionella ND=Not Detected in volume of sample filtered. Relating to Legionella volume analysed 1g is approximately equivalent to 1ml.
I/S=Insufficient sample

Certificate of Analysis

1314
0897
1229
1510

Report Number: **COV/594188/2009** Issue **1**
Laboratory Number: **11115187** Sample **2** of **5**

Sample Source: **Zeon Chemicals**
Sample Point Description: **Zeon Chemicals**
Sample Description: **206**

Sample Date: **27 March 2009** Sample Received **30 March 2009** Analysis Complete: **08 April 2009**

Test Description	Result	Units	Accreditation		Method
TPH >C6-C40	97	ug/l	Y	Cov	GEO35
TPH >C6-C8	<10	ug/l	N	Cov	GEO35
TPH >C8-C10	13	ug/l	N	Cov	GEO35
TPH >C16-C24	50	ug/l	N	Cov	GEO35
TPH >C24-C40	<50	ug/l	N	Cov	GEO35
TPH >C10-C16	34	ug/l	N	Cov	GEO35

Analyst Comments for 11115187: No Analyst Comment

Accreditation Codes: Y = UKAS Accredited, N = Not UKAS Accredited, M = MCERTS, S = Sub-contracted.
Analysed at: Bri = STL Bridgend, Cov = STL Coventry, Mid = STL Midlands, Rea = STL Reading, Run = STL Runcorn.
For Microbiological determinands 0 or ND=Not Detected, For Legionella ND=Not Detected in volume of sample filtered. Relating to Legionella volume analysed 1g is approximately equivalent to 1ml.
I/S=Insufficient sample

Certificate of Analysis

UKAS TESTING
1314
0897
1229
1510

SEVERN TRENT STL

Report Number: **COV/594188/2009** Issue **1**
Laboratory Number: **11115186** Sample **1** of **5**

Sample Source: **Zeon Chemicals**
Sample Point Description: **Zeon Chemicals**
Sample Description: **205**

Sample Date: **25 March 2009** Sample Received **30 March 2009** Analysis Complete: **08 April 2009**

Test Description	Result	Units	Accreditation	Method
TPH >C6-C40	4850	ug/l	Y Cov	GEO35
TPH >C6-C8	<10	ug/l	N Cov	GEO35
TPH >C8-C10	25	ug/l	N Cov	GEO35
TPH >C16-C24	2750	ug/l	N Cov	GEO35
TPH >C24-C40	2030	ug/l	N Cov	GEO35
TPH >C10-C16	38	ug/l	N Cov	GEO35

Analyst Comments for 11115186: No Analyst Comment

Accreditation Codes: Y = UKAS Accredited, N = Not UKAS Accredited, M = MCERTS, S = Sub-contracted.
Analysed at: Bri = STL Bridgend, Cov = STL Coventry, Mid = STL Midlands, Rea = STL Reading, Run = STL Runcorn.
For Microbiological determinands 0 or ND=Not Detected, For Legionella ND=Not Detected in volume of sample filtered. Relating to Legionella volume analysed 1g is approximately equivalent to 1ml.
I/S=Insufficient sample

Report Summary

UKAS TESTING
1314
0897
1229
1510

SEVERN TRENT STL

Mr Graham Pearce
Zeon Chemicals
Sully
Vale Of Glamorgan
CF64 5ZE

Date of Issue: **08 April 2009**

Report Number: **COV/594188/2009** Issue **1**

Job Description: General Analysis.

Number of Samples included in this report **5**

Job Received: **30 March 2009**

Number of Test Results included in this report **30**

Analysis Commenced: **31 March 2009**

Signed:

Name: **J. Fell** Date: **08 April 2009**

Title: **Production Manager**

STL was not responsible for sampling unless otherwise stated. Sampling is not covered by our UKAS accreditation.

Information on the methods of analysis and performance characteristics are available on request.
Opinions and interpretations expressed herein are outside the scope of UKAS accreditation.
Tests marked 'Not UKAS Accredited' in this Report/Certificate are not included in the UKAS Accreditation Schedule for our laboratory.

SEVERN TRENT STL

Mr Pearce
Zeon Chemicals
Sully CF64 5ZE
Vale Of Glamorgan

08 April 2009

Test Report: COV/594188/2009

Dear Mr Pearce

Analysis of your sample(s) submitted on 30 March 2009 is now complete and we have pleasure in enclosing the appropriate test report(s).

An invoice for the analysis carried out will be sent under separate cover.

Should you have any queries regarding this report(s) or any part of our service, please contact Customer Services on +44 (0)24 7642 1213 who will be happy to discuss your requirements.

If you would like to arrange any further analysis, please contact Customer Services. To arrange container delivery or sample collection, please call the Couriers Department directly on 024 7685 6562.

Thank you for using STL and we look forward to receiving your next samples.

Yours Sincerely,

Signed:

Name: J. Fell

Title: Production Manager

SEVERN TRENT STL

Mr Pearce
Zeon Chemicals
Sully Moors Road
Sully
Barry CF64 5ZE
Glamorgan

26 April 2010

Test Report: COV/686445/2010

Dear Mr Pearce

Analysis of your sample(s) submitted on 14 April 2010 is now complete and we have pleasure in enclosing the appropriate test report(s).

An invoice for the analysis carried out will be sent under separate cover.

Should you have any queries regarding this report(s) or any part of our service, please contact Customer Services on +44 (0)24 7642 1213 who will be happy to discuss your requirements.

If you would like to arrange any further analysis, please contact Customer Services. To arrange container delivery or sample collection, please call the Couriers Department directly on 024 7685 6562.

Thank you for using STL and we look forward to receiving your next samples.

Yours Sincerely,

Signed:

Name: J. Fell

Title: Chemistry Operations Manager

Report Summary

1314
0897
1229
1510

SEVERN TRENT STL

Mr Graham Pearce
Zeon Chemicals
Sully Moors Road
Sully
Barry
Glamorgan
CF64 5ZE

Date of Issue: **26 April 2010**

Report Number: **COV/686445/2010** Issue **1**

Job Description: TPH in Groundwater

Number of Samples included in this report **4**

Job Received: **14 April 2010**

Number of Test Results included in this report **24**

Analysis Commenced: **15 April 2010**

Signed:

Name: **J. Fell** Date: **26 April 2010**

Title: **Chemistry Operations Manager**

STL was not responsible for sampling unless otherwise stated. Sampling is not covered by our UKAS accreditation.

Information on the methods of analysis and performance characteristics are available on request.
Opinions and interpretations expressed herein are outside the scope of UKAS accreditation. The results relate only to the items tested.
Tests marked 'Not UKAS Accredited' in this Report/Certificate are not included in the UKAS Accreditation Schedule for our laboratory.

Certificate of Analysis

UKAS TESTING
1314
0897
1229
1510

SEVERN TRENT STL

Report Number: **COV/686445/2010** Issue **1**
Laboratory Number: **11703144** Sample **4** of **4**

Sample Source: **Zeon Chemicals**
Sample Point Description: **Zeon**
Sample Description: **214**
Sample Matrix: **Ground waters**

Sample Date: Sample Received **14 April 2010** Analysis Complete: **26 April 2010**

Test Description	Result	Units	Accreditation		Method
TPH >C6-C40	56	ug/l	Y	Cov	GEO35
TPH >C6-C8	<10	ug/l	N	Cov	GEO35
TPH >C8-C10	<10	ug/l	N	Cov	GEO35
TPH >C16-C24	16	ug/l	N	Cov	GEO35
TPH >C24-C40	<10	ug/l	N	Cov	GEO35
TPH >C10-C16	39	ug/l	N	Cov	GEO35

Analyst Comments for 11703144: No Analyst Comment

Accreditation Codes: Y = UKAS Accredited, N = Not UKAS Accredited, M = MCERTS.
Analysed at: Brd = STL Bridgend, Cov = STL Coventry, Mid = STL Midlands, Rea = STL Reading, Run = STL Runcorn, S = Subcontracted.
For Microbiological determinands 0 or ND=Not Detected, For Legionella ND=Not Detected in volume of sample filtered. Relating to Legionella volume analysed 1g is approximately equivalent to 1ml.
I/S=Insufficient sample

Signed: J Fell Name: **J. Fell** Date: **26 April 2010**
Title: **Chemistry Operations Manager**

Certificate of Analysis

1314
0897
1229
1510

SEVERN TRENT STL

Report Number: **COV/686445/2010** Issue **1**
Laboratory Number: **11703141** Sample **1** of **4**

Sample Source: **Zeon Chemicals**
Sample Point Description: **Zeon**
Sample Description: **207**
Sample Matrix: **Ground waters**

Sample Date: Sample Received **14 April 2010** Analysis Complete: **26 April 2010**

Test Description	Result	Units	Accreditation		Method
TPH >C6-C40	936	ug/l	Y	Cov	GEO35
TPH >C6-C8	<10	ug/l	N	Cov	GEO35
TPH >C8-C10	66	ug/l	N	Cov	GEO35
TPH >C16-C24	61	ug/l	N	Cov	GEO35
TPH >C24-C40	<10	ug/l	N	Cov	GEO35
TPH >C10-C16	809	ug/l	N	Cov	GEO35

Analyst Comments for 11703141: No Analyst Comment

Accreditation Codes: Y = UKAS Accredited, N = Not UKAS Accredited, M = MCERTS.
Analysed at: Brd = STL Bridgend, Cov = STL Coventry, Mid = STL Midlands, Rea = STL Reading, Run = STL Runcorn, S = Subcontracted.
For Microbiological determinands 0 or ND=Not Detected, For Legionella ND=Not Detected in volume of sample filtered. Relating to Legionella volume analysed 1g is approximately equivalent to 1ml.
I/S=Insufficient sample

Certificate of Analysis

UKAS TESTING
1314
0897
1229
1510

SEVERN TRENT STL

Report Number: **COV/686445/2010** Issue **1**
Laboratory Number: **11703142** Sample **2** of **4**

Sample Source: **Zeon Chemicals**
Sample Point Description: **Zeon**
Sample Description: **208**
Sample Matrix: **Ground waters**

Sample Date: Sample Received **14 April 2010** Analysis Complete: **26 April 2010**

Test Description	Result	Units	Accreditation		Method
TPH >C6-C40	<10	ug/l	Y	Cov	GEO35
TPH >C6-C8	<10	ug/l	N	Cov	GEO35
TPH >C8-C10	<10	ug/l	N	Cov	GEO35
TPH >C16-C24	<10	ug/l	N	Cov	GEO35
TPH >C24-C40	<10	ug/l	N	Cov	GEO35
TPH >C10-C16	<10	ug/l	N	Cov	GEO35

Analyst Comments for 11703142: No Analyst Comment

Accreditation Codes: Y = UKAS Accredited, N = Not UKAS Accredited, M = MCERTS.
Analysed at: Brd = STL Bridgend, Cov = STL Coventry, Mid = STL Midlands, Rea = STL Reading, Run = STL Runcorn, S = Subcontracted.
For Microbiological determinands 0 or ND=Not Detected, For Legionella ND=Not Detected in volume of sample filtered. Relating to Legionella volume analysed 1g is approximately equivalent to 1ml.
I/S=Insufficient sample

Certificate of Analysis

1314
0897
1229
1510

Report Number: **COV/686445/2010** Issue **1**
Laboratory Number: **11703143** Sample **3** of **4**

Sample Source: **Zeon Chemicals**
Sample Point Description: **Zeon**
Sample Description: **211**
Sample Matrix: **Ground waters**

Sample Date: Sample Received **14 April 2010** Analysis Complete: **26 April 2010**

Test Description	Result	Units	Accreditation		Method
TPH >C6-C40	4290	ug/l	Y	Cov	GEO35
TPH >C6-C8	<10	ug/l	N	Cov	GEO35
TPH >C8-C10	<10	ug/l	N	Cov	GEO35
TPH >C16-C24	555	ug/l	N	Cov	GEO35
TPH >C24-C40	741	ug/l	N	Cov	GEO35
TPH >C10-C16	3000	ug/l	N	Cov	GEO35

Analyst Comments for 11703143: No Analyst Comment

Accreditation Codes: Y = UKAS Accredited, N = Not UKAS Accredited, M = MCERTS.
Analysed at: Brd = STL Bridgend, Cov = STL Coventry, Mid = STL Midlands, Rea = STL Reading, Run = STL Runcorn, S = Subcontracted.
For Microbiological determinands 0 or ND=Not Detected, For Legionella ND=Not Detected in volume of sample filtered. Relating to Legionella volume analysed 1g is approximalely equivalent to 1ml.
I/S=Insufficient sample

SEVERN TRENT SERVICES

Analytical Services
Torrington Avenue,
Coventry, CV4 9GU

T: +44 (0)24 7642 1213
F: +44 (0)24 7685 6575

www.stsanalytical.com

Mr Pearce
Zeon Chemicals
Sully Moors Road
Sully
Barry CF64 5ZE
Glamorgan

25 August 2010

Test Report: COV/717153/2010

Dear Mr Pearce

Analysis of your sample(s) submitted on 17 August 2010 is now complete and we have pleasure in enclosing the appropriate test report(s).

An invoice for the analysis carried out will be sent under separate cover.

Should you have any queries regarding this report(s) or any part of our service, please contact Customer Services on +44 (0)24 7642 1213 who will be happy to discuss your requirements.

If you would like to arrange any further analysis, please contact Customer Services. To arrange container delivery or sample collection, please call the Couriers Department directly on 024 7685 6562.

Thank you for using Severn Trent Services and we look forward to receiving your next samples.

Yours Sincerely,

Signed:

Name: J. Fell

Title: Chemistry Operations Manager

Report Summary

UKAS TESTING
1314
1229
0897
4409

SEVERN TRENT SERVICES

Mr Graham Pearce
Zeon Chemicals
Sully Moors Road
Sully
Barry
Glamorgan
CF64 5ZE

Date of Issue: **25 August 2010**

Report Number: **COV/717153/2010** Issue **1**

Job Description: Effluent Water

Number of Samples included in this report **1**

Number of Test Results included in this report **2**

Job Received: **17 August 2010**

Analysis Commenced: **17 August 2010**

Signed:

Name: **J. Fell** Date: **25 August 2010**

Title: **Chemistry Operations Manager**

Severn Trent Services was not responsible for sampling unless otherwise stated. Sampling is not covered by our UKAS accreditation.

Information on the methods of analysis and performance characteristics are available on request.
Opinions and interpretations expressed herein are outside the scope of UKAS accreditation. The results relate only to the items tested.
Tests marked 'Not UKAS Accredited' in this Report/Certificate are not included in the UKAS Accreditation Schedule for our laboratory.

Certificate of Analysis

UKAS TESTING
1314
1229
0897
4409

SEVERN TRENT SERVICES

Report Number: **COV/734540/2010** Issue **3**
Laboratory Number: **12059835** Sample **4** of **9**

Sample Source: **Zeon Chemicals**
Sample Point Description: **Zeon**
Sample Description: **208**
Sample Matrix: **Ground waters**

Sample Date: **27 October 2010** Sample Received **28 October 2010** Analysis Complete: **22 November 2010**

Test Description	Result	Units	Accreditation		Method
TPH >C6-C40	107	ug/l	Y	Cov	GEO35
TPH >C6-C8	18	ug/l	N	Cov	GEO35
TPH >C8-C10	<10	ug/l	N	Cov	GEO35
TPH >C16-C24	45	ug/l	N	Cov	GEO35
TPH >C24-C40	19	ug/l	N	Cov	GEO35
TPH >C10-C16	25	ug/l	N	Cov	GEO35
Acenaphthene	<0.01	ug/l	Y	Cov	GEO19
Acenaphthylene	<0.01	ug/l	Y	Cov	GEO19
Anthracene	<0.01	ug/l	Y	Cov	GEO19
Benzo (a) anthracene	<0.01	ug/l	Y	Cov	GEO19
Benzo (g,h,i) perylene	<0.01	ug/l	Y	Cov	GEO19
Benzo (a) pyrene	<0.01	ug/l	Y	Cov	GEO19
Benzo (b) fluoranthene	<0.01	ug/l	Y	Cov	GEO19
Benzo (k) fluoranthene	<0.01	ug/l	Y	Cov	GEO19
Chrysene	<0.01	ug/l	Y	Cov	GEO19
Dibenz (a,h) anthracene	<0.01	ug/l	Y	Cov	GEO19
Fluoranthene	<0.01	ug/l	Y	Cov	GEO19
Fluorene	<0.01	ug/l	Y	Cov	GEO19
Indeno (1,2,3) cd pyrene	<0.01	ug/l	Y	Cov	GEO19
Naphthalene	<0.01	ug/l	Y	Cov	GEO19
Phenanthrene	<0.01	ug/l	Y	Cov	GEO19
Pyrene	<0.01	ug/l	Y	Cov	GEO19
PAH, Total	<0.01	ug/l	N	Cov	GEO19

Analyst Comments for 12059835: No Analyst Comment

Accreditation Codes: Y = UKAS Accredited, N = Not UKAS Accredited, M = MCERTS.
Analysed at: Brd = Bridgend, Cov = Coventry, Rea = Reading, Run = Runcorn, S = Subcontracted, Wak = Wakefield.
For Microbiological determinands 0 or ND=Not Detected, For Legionella ND=Not Detected in volume of sample filtered. Relating to Legionella volume analysed 1g is approximately equivalent to 1ml.
I/S=Insufficient sample

Certificate of Analysis

UKAS TESTING
1314
1229
0897
4409

SEVERN TRENT SERVICES

Report Number: **COV/734540/2010** Issue **3**
Laboratory Number: **12059836** Sample **5** of **9**

Sample Source: **Zeon Chemicals**
Sample Point Description: **Zeon**
Sample Description: **210**
Sample Matrix: **Ground waters**

Sample Date: **27 October 2010** Sample Received **28 October 2010** Analysis Complete: **22 November 2010**

Test Description	Result	Units	Accreditation	Method
TPH >C6-C40	87	ug/l	Y Cov	GEO35
TPH >C6-C8	<10	ug/l	N Cov	GEO35
TPH >C8-C10	<10	ug/l	N Cov	GEO35
TPH >C16-C24	42	ug/l	N Cov	GEO35
TPH >C24-C40	16	ug/l	N Cov	GEO35
TPH >C10-C16	30	ug/l	N Cov	GEO35
Acenaphthene	<0.01	ug/l	Y Cov	GEO19
Acenaphthylene	<0.01	ug/l	Y Cov	GEO19
Anthracene	<0.01	ug/l	Y Cov	GEO19
Benzo (a) anthracene	<0.01	ug/l	Y Cov	GEO19
Benzo (g,h,i) perylene	<0.01	ug/l	Y Cov	GEO19
Benzo (a) pyrene	<0.01	ug/l	Y Cov	GEO19
Benzo (b) fluoranthene	<0.01	ug/l	Y Cov	GEO19
Benzo (k) fluoranthene	<0.01	ug/l	Y Cov	GEO19
Chrysene	<0.01	ug/l	Y Cov	GEO19
Dibenz (a,h) anthracene	<0.01	ug/l	Y Cov	GEO19
Fluoranthene	<0.01	ug/l	Y Cov	GEO19
Fluorene	<0.01	ug/l	Y Cov	GEO19
Indeno (1,2,3) cd pyrene	<0.01	ug/l	Y Cov	GEO19
Naphthalene	<0.01	ug/l	Y Cov	GEO19
Phenanthrene	<0.01	ug/l	Y Cov	GEO19
Pyrene	<0.01	ug/l	Y Cov	GEO19
PAH, Total	<0.01	ug/l	N Cov	GEO19

Analyst Comments for 12059836: No Analyst Comment

Accreditation Codes: Y = UKAS Accredited, N = Not UKAS Accredited, M = MCERTS.
Analysed at: Brd = Bridgend, Cov = Coventry, Rea = Reading, Run = Runcorn, S = Subcontracted, Wak = Wakefield.
For Microbiological determinands 0 or ND=Not Detected, For Legionella ND=Not Detected in volume of sample filtered. Relating to Legionella volume analysed 1g is approximately equivalent to 1ml.
I/S=Insufficient sample

Certificate of Analysis

UKAS TESTING
1314
1229
0897
4409

SEVERN TRENT SERVICES

Report Number: **COV/734540/2010** Issue **3**
Laboratory Number: **12059837** Sample **6** of **9**

Sample Source: **Zeon Chemicals**
Sample Point Description: **Zeon**
Sample Description: **211**
Sample Matrix: **Ground waters**

Sample Date: **27 October 2010** Sample Received **28 October 2010** Analysis Complete: **22 November 2010**

Test Description	Result	Units	Accreditation	Method
TPH >C6-C40	2940	ug/l	Y Cov	GEO35
TPH >C6-C8	<10	ug/l	N Cov	GEO35
TPH >C8-C10	<10	ug/l	N Cov	GEO35
TPH >C16-C24	445	ug/l	N Cov	GEO35
TPH >C24-C40	1120	ug/l	N Cov	GEO35
TPH >C10-C16	1370	ug/l	N Cov	GEO35
Acenaphthene	<0.01	ug/l	Y Cov	GEO19
Acenaphthylene	<0.01	ug/l	Y Cov	GEO19
Anthracene	<0.01	ug/l	Y Cov	GEO19
Benzo (a) anthracene	<0.01	ug/l	Y Cov	GEO19
Benzo (g,h,i) perylene	<0.01	ug/l	Y Cov	GEO19
Benzo (a) pyrene	<0.01	ug/l	Y Cov	GEO19
Benzo (b) fluoranthene	<0.01	ug/l	Y Cov	GEO19
Benzo (k) fluoranthene	<0.01	ug/l	Y Cov	GEO19
Chrysene	<0.01	ug/l	Y Cov	GEO19
Dibenz (a,h) anthracene	<0.01	ug/l	Y Cov	GEO19
Fluoranthene	<0.01	ug/l	Y Cov	GEO19
Fluorene	<0.01	ug/l	Y Cov	GEO19
Indeno (1,2,3) cd pyrene	<0.01	ug/l	Y Cov	GEO19
Naphthalene	0.068	ug/l	Y Cov	GEO19
Phenanthrene	<0.01	ug/l	Y Cov	GEO19
Pyrene	0.475	ug/l	Y Cov	GEO19
PAH, Total	0.543	ug/l	N Cov	GEO19

Analyst Comments for 12059837: No Analyst Comment

Accreditation Codes: Y = UKAS Accredited, N = Not UKAS Accredited, M = MCERTS.
Analysed at: Brd = Bridgend, Cov = Coventry, Rea = Reading, Run = Runcorn, S = Subcontracted, Wak = Wakefield.
For Microbiological determinands 0 or ND=Not Detected, For Legionella ND=Not Detected in volume of sample filtered. Relating to Legionella volume analysed 1g is approximately equivalent to 1ml.
I/S=Insufficient sample

Certificate of Analysis

UKAS TESTING
1314
1229
0897
4409

SEVERN TRENT SERVICES

Report Number: **COV/734540/2010** Issue **3**
Laboratory Number: **12059838** Sample **7** of **9**

Sample Source: **Zeon Chemicals**
Sample Point Description: **Zeon**
Sample Description: **212**
Sample Matrix: **Ground waters**

Sample Date: **27 October 2010** Sample Received **28 October 2010** Analysis Complete: **22 November 2010**

Test Description	Result	Units	Accreditation	Method
Sample Not Received	No Test		N Cov	N/A

Analyst Comments for 12059838: No Analyst Comment

Accreditation Codes: Y = UKAS Accredited, N = Not UKAS Accredited, M = MCERTS.
Analysed at: Brd = Bridgend, Cov = Coventry, Rea = Reading, Run = Runcorn, S = Subcontracted, Wak = Wakefield.
For Microbiological determinands 0 or ND=Not Detected, For Legionella ND=Not Detected in volume of sample filtered. Relating to Legionella volume analysed 1g is approximately equivalent to 1ml.
I/S=Insufficient sample

Certificate of Analysis

UKAS TESTING
1314
1229
0897
4409

SEVERN TRENT SERVICES

Report Number: **COV/734540/2010** Issue **3**
Laboratory Number: **12059839** Sample **8** of **9**

Sample Source: **Zeon Chemicals**
Sample Point Description: **Zeon**
Sample Description: **214**
Sample Matrix: **Ground waters**

Sample Date: **27 October 2010** Sample Received **28 October 2010** Analysis Complete: **22 November 2010**

Test Description	Result	Units	Accreditation		Method
TPH >C6-C40	95	ug/l	Y	Cov	GEO35
TPH >C6-C8	<10	ug/l	N	Cov	GEO35
TPH >C8-C10	<10	ug/l	N	Cov	GEO35
TPH >C16-C24	23	ug/l	N	Cov	GEO35
TPH >C24-C40	<10	ug/l	N	Cov	GEO35
TPH >C10-C16	72	ug/l	N	Cov	GEO35
Acenaphthene	<0.01	ug/l	Y	Cov	GEO19
Acenaphthylene	<0.01	ug/l	Y	Cov	GEO19
Anthracene	<0.01	ug/l	Y	Cov	GEO19
Benzo (a) anthracene	<0.01	ug/l	Y	Cov	GEO19
Benzo (g,h,i) perylene	<0.01	ug/l	Y	Cov	GEO19
Benzo (a) pyrene	<0.01	ug/l	Y	Cov	GEO19
Benzo (b) fluoranthene	<0.01	ug/l	Y	Cov	GEO19
Benzo (k) fluoranthene	<0.01	ug/l	Y	Cov	GEO19
Chrysene	<0.01	ug/l	Y	Cov	GEO19
Dibenz (a,h) anthracene	<0.01	ug/l	Y	Cov	GEO19
Fluoranthene	<0.01	ug/l	Y	Cov	GEO19
Fluorene	<0.01	ug/l	Y	Cov	GEO19
Indeno (1,2,3) cd pyrene	<0.01	ug/l	Y	Cov	GEO19
Naphthalene	<0.01	ug/l	Y	Cov	GEO19
Phenanthrene	<0.01	ug/l	Y	Cov	GEO19
Pyrene	<0.01	ug/l	Y	Cov	GEO19
PAH, Total	<0.01	ug/l	N	Cov	GEO19

Analyst Comments for 12059839: No Analyst Comment

Accreditation Codes: Y = UKAS Accredited, N = Not UKAS Accredited, M = MCERTS.
Analysed at: Brd = Bridgend, Cov = Coventry, Rea = Reading, Run = Runcorn, S = Subcontracted, Wak = Wakefield.
For Microbiological determinands 0 or ND=Not Detected, For Legionella ND=Not Detected in volume of sample filtered. Relating to Legionella volume analysed 1g is approximately equivalent to 1ml.
I/S=Insufficient sample

Certificate of Analysis

UKAS TESTING
1314
1229
0897
4409

SEVERN TRENT SERVICES

Report Number: **COV/734540/2010** Issue **3**
Laboratory Number: **12059840** Sample **9** of **9**

Sample Source: **Zeon Chemicals**
Sample Point Description: **Zeon**
Sample Description: **Effluent Sample**
Sample Matrix: **Ground waters**

Sample Date: Sample Received **28 October 2010** Analysis Complete: **22 November 2010**

Test Description	Result	Units	Accreditation	Method
Methacrylic acid	<10	mg/l	Y Cov	CON17
Acrylonitrile	<1	mg/l	N Cov	SOL1

Analyst Comments for 12059840: No Analyst Comment

Accreditation Codes: Y = UKAS Accredited, N = Not UKAS Accredited, M = MCERTS.
Analysed at: Brd = Bridgend, Cov = Coventry, Rea = Reading, Run = Runcorn, S = Subcontracted, Wak = Wakefield.
For Microbiological determinands 0 or ND=Not Detected, For Legionella ND=Not Detected in volume of sample filtered. Relating to Legionella volume analysed 1g is approximately equivalent to 1ml.
I/S=Insufficient sample

Signed: L. Ellis Name: **L. Ellis** Date: **22 November 2010**
Title: **Inorganics Operations Manager**

SEVERN TRENT SERVICES

Analytical Services
Torrington Avenue,
Coventry, CV4 9GU

T: +44 (0)24 7642 1213
F: +44 (0)24 7685 6575

www.stsanalytical.com

Mr Pearce
Zeon Chemicals
Sully Moors Road
Sully
Barry CF64 5ZE
Glamorgan

22 November 2010

Test Report: COV/734540/2010

Dear Mr Pearce

Analysis of your sample(s) submitted on 28 October 2010 is now complete and we have pleasure in enclosing the appropriate test report(s).

An invoice for the analysis carried out will be sent under separate cover.

Should you have any queries regarding this report(s) or any part of our service, please contact Customer Services on +44 (0)24 7642 1213 who will be happy to discuss your requirements.

If you would like to arrange any further analysis, please contact Customer Services. To arrange container delivery or sample collection, please call the Couriers Department directly on 024 7685 6562.

Thank you for using Severn Trent Services and we look forward to receiving your next samples.

Yours Sincerely,

Signed: L. Ellis

Name: L. Ellis

Title: Inorganics Operations Manager

Report Summary

UKAS TESTING
1314
1229
0897
4409

SEVERN TRENT SERVICES

Mr Graham Pearce
Zeon Chemicals
Sully Moors Road
Sully
Barry
Glamorgan
CF64 5ZE

Date of Issue: **22 November 2010**

Report Number: **COV/734540/2010** Issue **3**

Job Description: Groundwater Analysis

Job Location: Groundwater Analysis

Number of Samples included in this report **9**

Job Received: **28 October 2010**

Number of Test Results included in this report **164**

Analysis Commenced: **29 October 2010**

Signed: K. Ellis

Name: **L. Ellis** Date: **22 November 2010**

Title: **Inorganics Operations Manager**

Severn Trent Services was not responsible for sampling unless otherwise stated. Sampling is not covered by our UKAS accreditation.

Information on the methods of analysis and performance characteristics are available on request.
Opinions and interpretations expressed herein are outside the scope of UKAS accreditation. The results relate only to the items tested.
Tests marked 'Not UKAS Accredited' in this Report/Certificate are not included in the UKAS Accreditation Schedule for our laboratory.

Certificate of Analysis

UKAS TESTING
1314
1229
0897
4409

SEVERN TRENT SERVICES

Report Number: **COV/734540/2010** Issue **3**
Laboratory Number: **12059833** Sample **2** of **9**

Sample Source: **Zeon Chemicals**
Sample Point Description: **Zeon**
Sample Description: **205**
Sample Matrix: **Ground waters**

Sample Date: **27 October 2010** Sample Received **28 October 2010** Analysis Complete: **22 November 2010**

Test Description	Result	Units	Accreditation	Method
TPH >C6-C40	252	ug/l	Y Cov	GEO35
TPH >C6-C8	<10	ug/l	N Cov	GEO35
TPH >C8-C10	138	ug/l	N Cov	GEO35
TPH >C16-C24	46	ug/l	N Cov	GEO35
TPH >C24-C40	27	ug/l	N Cov	GEO35
TPH >C10-C16	41	ug/l	N Cov	GEO35
Acenaphthene	<0.01	ug/l	Y Cov	GEO19
Acenaphthylene	<0.01	ug/l	Y Cov	GEO19
Anthracene	<0.01	ug/l	Y Cov	GEO19
Benzo (a) anthracene	<0.01	ug/l	Y Cov	GEO19
Benzo (g,h,i) perylene	<0.01	ug/l	Y Cov	GEO19
Benzo (a) pyrene	<0.01	ug/l	Y Cov	GEO19
Benzo (b) fluoranthene	<0.01	ug/l	Y Cov	GEO19
Benzo (k) fluoranthene	<0.01	ug/l	Y Cov	GEO19
Chrysene	<0.01	ug/l	Y Cov	GEO19
Dibenz (a,h) anthracene	<0.01	ug/l	Y Cov	GEO19
Fluoranthene	<0.01	ug/l	Y Cov	GEO19
Fluorene	<0.01	ug/l	Y Cov	GEO19
Indeno (1,2,3) cd pyrene	<0.01	ug/l	Y Cov	GEO19
Naphthalene	<0.01	ug/l	Y Cov	GEO19
Phenanthrene	<0.01	ug/l	Y Cov	GEO19
Pyrene	<0.01	ug/l	Y Cov	GEO19
PAH, Total	<0.01	ug/l	N Cov	GEO19

Analyst Comments for 12059833: No Analyst Comment

Accreditation Codes: Y = UKAS Accredited, N = Not UKAS Accredited, M = MCERTS.
Analysed at: Brd = Bridgend, Cov = Coventry, Rea = Reading, Run = Runcorn, S = Subcontracted, Wak = Wakefield.
For Microbiological determinands 0 or ND=Not Detected, For Legionella ND=Not Detected in volume of sample filtered. Relating to Legionella volume analysed 1g is approximately equivalent to 1ml.
I/S=Insufficient sample

Certificate of Analysis

UKAS TESTING
1314
1229
0897
4409

SEVERN TRENT SERVICES

Report Number: **COV/734540/2010** Issue **3**
Laboratory Number: **12059832** Sample **1** of **9**

Sample Source: **Zeon Chemicals**
Sample Point Description: **Zeon**
Sample Description: **204**
Sample Matrix: **Ground waters**

Sample Date: **27 October 2010** Sample Received **28 October 2010** Analysis Complete: **22 November 2010**

Test Description	Result	Units	Accreditation		Method
TPH >C6-C40	125	ug/l	Y	Cov	GEO35
TPH >C6-C8	<10	ug/l	N	Cov	GEO35
TPH >C8-C10	<10	ug/l	N	Cov	GEO35
TPH >C16-C24	60	ug/l	N	Cov	GEO35
TPH >C24-C40	25	ug/l	N	Cov	GEO35
TPH >C10-C16	40	ug/l	N	Cov	GEO35
Acenaphthene	<0.01	ug/l	Y	Cov	GEO19
Acenaphthylene	<0.01	ug/l	Y	Cov	GEO19
Anthracene	<0.01	ug/l	Y	Cov	GEO19
Benzo (a) anthracene	<0.01	ug/l	Y	Cov	GEO19
Benzo (g,h,i) perylene	<0.01	ug/l	Y	Cov	GEO19
Benzo (a) pyrene	<0.01	ug/l	Y	Cov	GEO19
Benzo (b) fluoranthene	<0.01	ug/l	Y	Cov	GEO19
Benzo (k) fluoranthene	<0.01	ug/l	Y	Cov	GEO19
Chrysene	<0.01	ug/l	Y	Cov	GEO19
Dibenz (a,h) anthracene	<0.01	ug/l	Y	Cov	GEO19
Fluoranthene	<0.01	ug/l	Y	Cov	GEO19
Fluorene	<0.01	ug/l	Y	Cov	GEO19
Indeno (1,2,3) cd pyrene	<0.01	ug/l	Y	Cov	GEO19
Naphthalene	<0.01	ug/l	Y	Cov	GEO19
Phenanthrene	<0.01	ug/l	Y	Cov	GEO19
Pyrene	<0.01	ug/l	Y	Cov	GEO19
PAH, Total	<0.01	ug/l	N	Cov	GEO19

Analyst Comments for 12059832: No Analyst Comment

Accreditation Codes: Y = UKAS Accredited, N = Not UKAS Accredited, M = MCERTS.
Analysed at: Brd = Bridgend, Cov = Coventry, Rea = Reading, Run = Runcorn, S = Subcontracted, Wak = Wakefield.
For Microbiological determinands 0 or ND=Not Detected, For Legionella ND=Not Detected in volume of sample filtered. Relating to Legionella volume analysed 1g is approximately equivalent to 1ml.
I/S=Insufficient sample

Certificate of Analysis

UKAS TESTING
1314
1229
0897
4409

SEVERN TRENT SERVICES

Report Number: **COV/734540/2010** Issue **3**
Laboratory Number: **12059834** Sample **3** of **9**

Sample Source: **Zeon Chemicals**
Sample Point Description: **Zeon**
Sample Description: **207**
Sample Matrix: **Ground waters**

Sample Date: **27 October 2010** Sample Received **28 October 2010** Analysis Complete: **22 November 2010**

Test Description	Result	Units	Accreditation		Method
TPH >C6-C40	535	ug/l	Y	Cov	GEO35
TPH >C6-C8	<10	ug/l	N	Cov	GEO35
TPH >C8-C10	<10	ug/l	N	Cov	GEO35
TPH >C16-C24	123	ug/l	N	Cov	GEO35
TPH >C24-C40	211	ug/l	N	Cov	GEO35
TPH >C10-C16	201	ug/l	N	Cov	GEO35
Acenaphthene	<0.01	ug/l	Y	Cov	GEO19
Acenaphthylene	<0.01	ug/l	Y	Cov	GEO19
Anthracene	<0.01	ug/l	Y	Cov	GEO19
Benzo (a) anthracene	<0.01	ug/l	Y	Cov	GEO19
Benzo (g,h,i) perylene	<0.01	ug/l	Y	Cov	GEO19
Benzo (a) pyrene	<0.01	ug/l	Y	Cov	GEO19
Benzo (b) fluoranthene	<0.01	ug/l	Y	Cov	GEO19
Benzo (k) fluoranthene	<0.01	ug/l	Y	Cov	GEO19
Chrysene	<0.01	ug/l	Y	Cov	GEO19
Dibenz (a,h) anthracene	<0.01	ug/l	Y	Cov	GEO19
Fluoranthene	<0.01	ug/l	Y	Cov	GEO19
Fluorene	<0.01	ug/l	Y	Cov	GEO19
Indeno (1,2,3) cd pyrene	<0.01	ug/l	Y	Cov	GEO19
Naphthalene	0.207	ug/l	Y	Cov	GEO19
Phenanthrene	<0.01	ug/l	Y	Cov	GEO19
Pyrene	0.028	ug/l	Y	Cov	GEO19
PAH, Total	0.235	ug/l	N	Cov	GEO19

Analyst Comments for 12059834: No Analyst Comment

Accreditation Codes: Y = UKAS Accredited, N = Not UKAS Accredited, M = MCERTS.
Analysed at: Brd = Bridgend, Cov = Coventry, Rea = Reading, Run = Runcorn, S = Subcontracted, Wak = Wakefield.
For Microbiological determinands 0 or ND=Not Detected, For Legionella ND=Not Detected in volume of sample filtered. Relating to Legionella volume analysed 1g is approximately equivalent to 1ml.
I/S=Insufficient sample

Analytical Services
Torrington Avenue,
Coventry, CV4 9GU

T: +44 (0)24 7642 1213
F: +44 (0)24 7685 6575

www.stsanalytical.com

Mr Pearce
Zeon Chemicals
Sully Moors Road
Sully
Barry CF64 5ZE
Glamorgan

16 March 2011

Test Report: COV/762010/2011

Dear Mr Pearce

Analysis of your sample(s) submitted on 03 March 2011 is now complete and we have pleasure in enclosing the appropriate test report(s).

An invoice for the analysis carried out will be sent under separate cover.

Should you have any queries regarding this report(s) or any part of our service, please contact Customer Services on +44 (0)24 7642 1213 who will be happy to discuss your requirements.

If you would like to arrange any further analysis, please contact Customer Services. To arrange container delivery or sample collection, please call the Couriers Department directly on 024 7685 6562.

Thank you for using Severn Trent Services and we look forward to receiving your next samples.

Yours Sincerely,

Signed:

Name: J. Fell

Title: Chemistry Operations Manager

Report Summary

Mr Graham Pearce
Zeon Chemicals
Sully Moors Road
Sully
Barry
Glamorgan
CF64 5ZE

UKAS TESTING
1314
1229
0897
4409

SEVERN TRENT SERVICES

Date of Issue **16 March 2011**

Report Number: **COV/762010/2011** Issue **1**

Number of Samples included in this report **4**	Site Name: **Groundwater samples for TPH**
Number of Test Results included in this report **24**	Sample Date:
	Job Received: **03 March 2011**
	Analysis Commenced: **04 March 2011**

Signed: JRell Name: **J. Fell** Date: **16 March 2011**

Title: **Chemistry Operations Manager**

Severn Trent Services was not responsible for sampling unless otherwise stated. Sampling is not covered by our UKAS accreditation.

Information on the methods of analysis and performance characteristics are available on request.
Opinions and interpretations expressed herein are outside the scope of UKAS accreditation. The results relate only to the items tested.
Tests marked 'Not UKAS Accredited' in this Report/Certificate are not included in the UKAS Accreditation Schedule for our laboratory.

Certificate of Analysis

UKAS TESTING
1314
1229
0897
4409

SEVERN TRENT SERVICES.

Site Name: **Groundwater samples for TPH**
Sample Source: **Zeon Chemicals**
Order No: **142158**

Report Number: **COV/762010/2011** Issue **1**
Samples Received: **03 March 2011**
Analysis Complete: **16 March 2011**

Sample	Sample Date	Sample Description	Test Description	Unit	Result	Accred.	Method
12265114		205	TPH >C6-C40	ug/l	89	Y Cov	GEO35
			TPH >C6-C8	ug/l	<10	N Cov	GEO35
			TPH >C8-C10	ug/l	41	N Cov	GEO35
			TPH >C16-C24	ug/l	22	N Cov	GEO35
			TPH >C24-C40	ug/l	<10	N Cov	GEO35
			TPH >C10-C16	ug/l	27	N Cov	GEO35

Sample Matrix for 12265114: Ground waters

Analyst Comments for 12265114: TPH subbed from plastic bottle.

12265115		207	TPH >C6-C40	ug/l	873	Y Cov	GEO35
			TPH >C6-C8	ug/l	<40	N Cov	GEO35
			TPH >C8-C10	ug/l	170	N Cov	GEO35
			TPH >C16-C24	ug/l	51	N Cov	GEO35
			TPH >C24-C40	ug/l	<40	N Cov	GEO35
			TPH >C10-C16	ug/l	652	N Cov	GEO35

Sample Matrix for 12265115: Ground waters

Analyst Comments for 12265115: Reporting limits raised for TPH due to sample matrix.

12265116		211	TPH >C6-C40	ug/l	3350	Y Cov	GEO35
			TPH >C6-C8	ug/l	<40	N Cov	GEO35
			TPH >C8-C10	ug/l	<40	N Cov	GEO35
			TPH >C16-C24	ug/l	404	N Cov	GEO35
			TPH >C24-C40	ug/l	44	N Cov	GEO35

Accreditation Codes: Y = UKAS Accredited, N = Not UKAS Accredited, M = MCERTS.
Analysed at: Brd = Bridgend, Cov = Coventry, Rea = Reading, Run = Runcorn, S = Subcontracted, Wak = Wakefield.
For Microbiological determinands 0 or ND=Not Detected, For Legionella ND=Not Detected in volume of sample filtered. Relating to Legionella volume analysed 1g is approximately equivalent to 1ml. I/S=Insufficient sample

Certificate of Analysis

UKAS TESTING
1314
1229
0897
4409

SEVERN TRENT SERVICES

Site Name: **Groundwater samples for TPH**
Sample Source: **Zeon Chemicals**
Order No: **142158**

Report Number: **COV/762010/2011** Issue **1**
Samples Received: **03 March 2011**
Analysis Complete: **16 March 2011**

Sample	Sample Date	Sample Description	Test Description	Unit	Result	Accred.	Method
12265116		211	TPH >C10-C16	ug/l	2900	N Cov	GEO35

Sample Matrix for 12265116: Ground waters

Analyst Comments for 12265116: Low surrogate recovery at 25.9% for TPH due to interference from the sample matrix.
Reporting limits raised for TPH due to the sample matrix.

12265117		213	TPH >C6-C40	ug/l	51	Y Cov	GEO35
			TPH >C6-C8	ug/l	<10	N Cov	GEO35
			TPH >C8-C10	ug/l	<10	N Cov	GEO35
			TPH >C16-C24	ug/l	27	N Cov	GEO35
			TPH >C24-C40	ug/l	<10	N Cov	GEO35
			TPH >C10-C16	ug/l	24	N Cov	GEO35

Sample Matrix for 12265117: Ground waters

Analyst Comments for 12265117: No Analyst Comment

Signed: JFell

Name: **J. Fell** Date: **16 March 2011**

Title: **Chemistry Operations Manager**

Accreditation Codes: Y = UKAS Accredited, N = Not UKAS Accredited, M = MCERTS.
Analysed at: Brd = Bridgend, Cov = Coventry, Rea = Reading, Run = Runcorn, S = Subcontracted, Wak = Wakefield.
For Microbiological determinands 0 or ND=Not Detected, For Legionella ND=Not Detected in volume of sample filtered. Relating to Legionella volume analysed 1g is approximately equivalent to 1ml. I/S=Insufficient sample

Severn Trent Services

Analytical Services, Torrington Avenue, Coventry, CV4 9GU Tel:+44 (0)24 7642 1213 Fax:+44 (0)24 7685 6575

Analytical Services
Torrington Avenue,
Coventry, CV4 9GU

T: +44 (0)24 7642 1213
F: +44 (0)24 7685 6575

www.stsanalytical.com

Mr Pearce
Zeon Chemicals
Sully Moors Road
Sully
Barry CF64 5ZE
Glamorgan

25 July 2011

Test Report: COV/788755/2011

Dear Mr Pearce

Analysis of your sample(s) submitted on 30 June 2011 is now complete and we have pleasure in enclosing the appropriate test report(s).

An invoice for the analysis carried out will be sent under separate cover.

Should you have any queries regarding this report(s) or any part of our service, please contact Customer Services on +44 (0)24 7642 1213 who will be happy to discuss your requirements.

If you would like to arrange any further analysis, please contact Customer Services. To arrange container delivery or sample collection, please call the Couriers Department directly on 024 7685 6562.

Thank you for using Severn Trent Services and we look forward to receiving your next samples.

Yours Sincerely,

Signed:

Name: J. Fell

Title: Chemistry Operations Manager

No. 1314
No. 4398

Certificate No. GB97/10269
Environmental Management Systems

Certificate No. FS 67435

Certificate No. OHS 542058

Report Summary

UKAS TESTING
1314
1229
0897
4409

SEVERN TRENT SERVICES

Mr Graham Pearce
Zeon Chemicals
Sully Moors Road
Sully
Barry
Glamorgan
CF64 5ZE

Date of Issue: **25 July 2011**

Report Number: **COV/788755/2011** Issue **2**

Job Description: Groundwater Analysis

Job Location: Groundwater Analysis

Number of Samples included in this report **7**

Job Received: **30 June 2011**

Number of Test Results included in this report **161**

Analysis Commenced: **01 July 2011**

Signed: JFell

Name: **J. Fell** Date: **25 July 2011**

Title: **Chemistry Operations Manager**

Severn Trent Services was not responsible for sampling unless otherwise stated. Sampling is not covered by our UKAS accreditation.

Information on the methods of analysis and performance characteristics are available on request.
Opinions and interpretations expressed herein are outside the scope of UKAS accreditation. The results relate only to the items tested.
Tests marked 'Not UKAS Accredited' in this Report/Certificate are not included in the UKAS Accreditation Schedule for our laboratory.

Certificate of Analysis

UKAS TESTING
1314
1229
0897
4409

SEVERN TRENT SERVICES

Report Number: **COV/788755/2011** Issue **2**
Laboratory Number: **12466698** Sample **1** of **7**

Sample Source: **Zeon Chemicals**
Sample Point Description: **Zeon**
Sample Description: **202**
Sample Matrix: **Not Specified**
Sample Date/Time:
Sample Received: **30 June 2011**
Analysis Complete: **25 July 2011**

Test Description	Result	Units	Accreditation	Method
TPH >C6-C40	14	ug/l	Y Cov	GEO35
TPH >C6-C8	<10	ug/l	N Cov	GEO35
TPH >C8-C10	<10	ug/l	N Cov	GEO35
TPH >C16-C24	<10	ug/l	N Cov	GEO35
TPH >C24-C40	<10	ug/l	N Cov	GEO35
TPH >C10-C16	14	ug/l	N Cov	GEO35
Acenaphthene	0.160	ug/l	Y Cov	GEO19
Acenaphthylene	0.069	ug/l	Y Cov	GEO19
Anthracene	0.014	ug/l	Y Cov	GEO19
Benzo (a) anthracene	<0.01	ug/l	Y Cov	GEO19
Benzo (g,h,i) perylene	0.014	ug/l	Y Cov	GEO19
Benzo (a) pyrene	<0.01	ug/l	Y Cov	GEO19
Benzo (b) fluoranthene	<0.01	ug/l	Y Cov	GEO19
Benzo (k) fluoranthene	<0.01	ug/l	Y Cov	GEO19
Chrysene	<0.01	ug/l	Y Cov	GEO19
Dibenz (a,h) anthracene	0.018	ug/l	Y Cov	GEO19
Fluoranthene	0.014	ug/l	Y Cov	GEO19
Fluorene	0.439	ug/l	Y Cov	GEO19
Indeno (1,2,3) cd pyrene	0.018	ug/l	Y Cov	GEO19
Naphthalene	0.072	ug/l	Y Cov	GEO19
Phenanthrene	0.047	ug/l	Y Cov	GEO19
Pyrene	0.033	ug/l	Y Cov	GEO19
PAH, Total	0.896	ug/l	N Cov	GEO19

Analyst Comments for 12466698: PAH subbed from 1L amber bottle.

Accreditation Codes: Y = UKAS Accredited, N = Not UKAS Accredited, M = MCERTS.
Analysed at: Brd = Bridgend, Cov = Coventry, Rea = Reading, Run = Runcorn, S = Subcontracted, Wak = Wakefield.
For Microbiological determinands 0 or ND=Not Detected, For Legionella ND=Not Detected in volume of sample filtered. Relating to Legionella volume analysed 1g is approximately equivalent to 1ml.
I/S=Insufficient sample

Signed: J Fell	Name: **J. Fell**	Date: **25 July 2011**
	Title: **Chemistry Operations Manager**	

Certificate of Analysis

UKAS TESTING
1314
1229
0897
4409

SEVERN TRENT SERVICES

Report Number: **COV/788755/2011** Issue **2**
Laboratory Number: **12466699** Sample **2** of **7**

Sample Source: **Zeon Chemicals**
Sample Point Description: **Zeon**
Sample Description: **203**
Sample Matrix: **Not Specified**
Sample Date/Time:
Sample Received: **30 June 2011**
Analysis Complete: **25 July 2011**

Test Description	Result	Units	Accreditation	Method
TPH >C6-C40	59	ug/l	Y Cov	GEO35
TPH >C6-C8	<10	ug/l	N Cov	GEO35
TPH >C8-C10	<10	ug/l	N Cov	GEO35
TPH >C16-C24	14	ug/l	N Cov	GEO35
TPH >C24-C40	<10	ug/l	N Cov	GEO35
TPH >C10-C16	45	ug/l	N Cov	GEO35
Acenaphthene	0.112	ug/l	Y Cov	GEO19
Acenaphthylene	0.043	ug/l	Y Cov	GEO19
Anthracene	<0.01	ug/l	Y Cov	GEO19
Benzo (a) anthracene	<0.01	ug/l	Y Cov	GEO19
Benzo (g,h,i) perylene	<0.01	ug/l	Y Cov	GEO19
Benzo (a) pyrene	<0.01	ug/l	Y Cov	GEO19
Benzo (b) fluoranthene	<0.01	ug/l	Y Cov	GEO19
Benzo (k) fluoranthene	<0.01	ug/l	Y Cov	GEO19
Chrysene	<0.01	ug/l	Y Cov	GEO19
Dibenz (a,h) anthracene	<0.01	ug/l	Y Cov	GEO19
Fluoranthene	0.010	ug/l	Y Cov	GEO19
Fluorene	0.219	ug/l	Y Cov	GEO19
Indeno (1,2,3) cd pyrene	<0.01	ug/l	Y Cov	GEO19
Naphthalene	0.145	ug/l	Y Cov	GEO19
Phenanthrene	0.095	ug/l	Y Cov	GEO19
Pyrene	<0.01	ug/l	Y Cov	GEO19
PAH, Total	0.625	ug/l	N Cov	GEO19

Analyst Comments for 12466699: PAH subbed from 1L amber bottle.

Accreditation Codes: Y = UKAS Accredited, N = Not UKAS Accredited, M = MCERTS.
Analysed at: Brd = Bridgend, Cov = Coventry, Rea = Reading, Run = Runcorn, S = Subcontracted, Wak = Wakefield.
For Microbiological determinands 0 or ND=Not Detected, For Legionella ND=Not Detected in volume of sample filtered. Relating to Legionella volume analysed 1g is approximately equivalent to 1ml.
I/S=Insufficient sample

Signed:	Name: **J. Fell**	Date: **25 July 2011**
	Title: **Chemistry Operations Manager**	

Certificate of Analysis

UKAS TESTING
1314
1229
0897
4409

SEVERN TRENT SERVICES

Report Number: **COV/788755/2011** Issue **2**
Laboratory Number: **12466700** Sample **3** of **7**

Sample Source: **Zeon Chemicals**
Sample Point Description: **Zeon**
Sample Description: **206**
Sample Matrix: **Not Specified**
Sample Date/Time:
Sample Received: **30 June 2011**
Analysis Complete: **25 July 2011**

Test Description	Result	Units	Accreditation	Method
TPH >C6-C40	86	ug/l	Y Cov	GEO35
TPH >C6-C8	<10	ug/l	N Cov	GEO35
TPH >C8-C10	<10	ug/l	N Cov	GEO35
TPH >C16-C24	30	ug/l	N Cov	GEO35
TPH >C24-C40	18	ug/l	N Cov	GEO35
TPH >C10-C16	38	ug/l	N Cov	GEO35
Acenaphthene	<0.01	ug/l	Y Cov	GEO19
Acenaphthylene	<0.01	ug/l	Y Cov	GEO19
Anthracene	<0.01	ug/l	Y Cov	GEO19
Benzo (a) anthracene	<0.01	ug/l	Y Cov	GEO19
Benzo (g,h,i) perylene	<0.01	ug/l	Y Cov	GEO19
Benzo (a) pyrene	<0.01	ug/l	Y Cov	GEO19
Benzo (b) fluoranthene	<0.01	ug/l	Y Cov	GEO19
Benzo (k) fluoranthene	<0.01	ug/l	Y Cov	GEO19
Chrysene	<0.01	ug/l	Y Cov	GEO19
Dibenz (a,h) anthracene	<0.01	ug/l	Y Cov	GEO19
Fluoranthene	<0.01	ug/l	Y Cov	GEO19
Fluorene	<0.01	ug/l	Y Cov	GEO19
Indeno (1,2,3) cd pyrene	<0.01	ug/l	Y Cov	GEO19
Naphthalene	<0.01	ug/l	Y Cov	GEO19
Phenanthrene	<0.01	ug/l	Y Cov	GEO19
Pyrene	<0.01	ug/l	Y Cov	GEO19
PAH, Total	<0.01	ug/l	N Cov	GEO19

Analyst Comments for 12466700: PAH subbed from 1L amber bottle.

Accreditation Codes: Y = UKAS Accredited, N = Not UKAS Accredited, M = MCERTS.
Analysed at: Brd = Bridgend, Cov = Coventry, Rea = Reading, Run = Runcorn, S = Subcontracted, Wak = Wakefield.
For Microbiological determinands 0 or ND=Not Detected, For Legionella ND=Not Detected in volume of sample filtered. Relating to Legionella volume analysed 1g is approximately equivalent to 1ml.
I/S=Insufficient sample

Signed:	Name: **J. Fell**	Date: **25 July 2011**
	Title: **Chemistry Operations Manager**	

Certificate of Analysis

UKAS TESTING
1314
1229
0897
4409

SEVERN TRENT SERVICES

Report Number: **COV/788755/2011** Issue **2**
Laboratory Number: **12466701** Sample **4** of **7**

Sample Source: **Zeon Chemicals**
Sample Point Description: **Zeon**
Sample Description: **208**
Sample Matrix: **Not Specified**
Sample Date/Time:
Sample Received: **30 June 2011**
Analysis Complete: **25 July 2011**

Test Description	Result	Units	Accreditation	Method
TPH >C6-C40	<10	ug/l	Y Cov	GEO35
TPH >C6-C8	<10	ug/l	N Cov	GEO35
TPH >C8-C10	<10	ug/l	N Cov	GEO35
TPH >C16-C24	<10	ug/l	N Cov	GEO35
TPH >C24-C40	<10	ug/l	N Cov	GEO35
TPH >C10-C16	<10	ug/l	N Cov	GEO35
Acenaphthene	<0.01	ug/l	Y Cov	GEO19
Acenaphthylene	<0.01	ug/l	Y Cov	GEO19
Anthracene	<0.01	ug/l	Y Cov	GEO19
Benzo (a) anthracene	<0.01	ug/l	Y Cov	GEO19
Benzo (g,h,i) perylene	<0.01	ug/l	Y Cov	GEO19
Benzo (a) pyrene	<0.01	ug/l	Y Cov	GEO19
Benzo (b) fluoranthene	<0.01	ug/l	Y Cov	GEO19
Benzo (k) fluoranthene	<0.01	ug/l	Y Cov	GEO19
Chrysene	<0.01	ug/l	Y Cov	GEO19
Dibenz (a,h) anthracene	<0.01	ug/l	Y Cov	GEO19
Fluoranthene	<0.01	ug/l	Y Cov	GEO19
Fluorene	<0.01	ug/l	Y Cov	GEO19
Indeno (1,2,3) cd pyrene	<0.01	ug/l	Y Cov	GEO19
Naphthalene	<0.01	ug/l	Y Cov	GEO19
Phenanthrene	<0.01	ug/l	Y Cov	GEO19
Pyrene	<0.01	ug/l	Y Cov	GEO19
PAH, Total	<0.01	ug/l	N Cov	GEO19

Analyst Comments for 12466701: PAH subbed from 1L amber bottle.

Accreditation Codes: Y = UKAS Accredited, N = Not UKAS Accredited, M = MCERTS.
Analysed at: Brd = Bridgend, Cov = Coventry, Rea = Reading, Run = Runcorn, S = Subcontracted, Wak = Wakefield.
For Microbiological determinands 0 or ND=Not Detected, For Legionella ND=Not Detected in volume of sample filtered. Relating to Legionella volume analysed 1g is approximately equivalent to 1ml.
I/S=Insufficient sample

Signed:	Name: **J. Fell**	Date: **25 July 2011**
	Title: **Chemistry Operations Manager**	

Certificate of Analysis

UKAS TESTING
1314
1229
0897
4409

SEVERN TRENT SERVICES

Report Number: **COV/788755/2011** Issue **2**
Laboratory Number: **12466702** Sample **5** of **7**

Sample Source: **Zeon Chemicals**
Sample Point Description: **Zeon**
Sample Description: **210**
Sample Matrix: **Not Specified**
Sample Date/Time:
Sample Received: **30 June 2011**
Analysis Complete: **25 July 2011**

Test Description	Result	Units	Accreditation	Method
TPH >C6-C40	31	ug/l	Y Cov	GEO35
TPH >C6-C8	<10	ug/l	N Cov	GEO35
TPH >C8-C10	<10	ug/l	N Cov	GEO35
TPH >C16-C24	<10	ug/l	N Cov	GEO35
TPH >C24-C40	21	ug/l	N Cov	GEO35
TPH >C10-C16	10	ug/l	N Cov	GEO35
Acenaphthene	<0.01	ug/l	Y Cov	GEO19
Acenaphthylene	<0.01	ug/l	Y Cov	GEO19
Anthracene	<0.01	ug/l	Y Cov	GEO19
Benzo (a) anthracene	<0.01	ug/l	Y Cov	GEO19
Benzo (g,h,i) perylene	<0.01	ug/l	Y Cov	GEO19
Benzo (a) pyrene	<0.01	ug/l	Y Cov	GEO19
Benzo (b) fluoranthene	<0.01	ug/l	Y Cov	GEO19
Benzo (k) fluoranthene	<0.01	ug/l	Y Cov	GEO19
Chrysene	<0.01	ug/l	Y Cov	GEO19
Dibenz (a,h) anthracene	<0.01	ug/l	Y Cov	GEO19
Fluoranthene	<0.01	ug/l	Y Cov	GEO19
Fluorene	<0.01	ug/l	Y Cov	GEO19
Indeno (1,2,3) cd pyrene	<0.01	ug/l	Y Cov	GEO19
Naphthalene	<0.01	ug/l	Y Cov	GEO19
Phenanthrene	<0.01	ug/l	Y Cov	GEO19
Pyrene	<0.01	ug/l	Y Cov	GEO19
PAH, Total	<0.01	ug/l	N Cov	GEO19

Analyst Comments for 12466702: No Analyst Comment

Accreditation Codes: Y = UKAS Accredited, N = Not UKAS Accredited, M = MCERTS.
Analysed at: Brd = Bridgend, Cov = Coventry, Rea = Reading, Run = Runcorn, S = Subcontracted, Wak = Wakefield.
For Microbiological determinands 0 or ND=Not Detected, For Legionella ND=Not Detected in volume of sample filtered. Relating to Legionella volume analysed 1g is approximately equivalent to 1ml.
I/S=Insufficient sample

Signed:	Name: **J. Fell**	Date: **25 July 2011**
	Title: **Chemistry Operations Manager**	

Certificate of Analysis

UKAS TESTING
1314
1229
0897
4409

SEVERN TRENT SERVICES

Report Number: **COV/788755/2011** Issue **2**
Laboratory Number: **12466703** Sample **6** of **7**

Sample Source: **Zeon Chemicals**
Sample Point Description: **Zeon**
Sample Description: **211**
Sample Matrix: **Not Specified**
Sample Date/Time:
Sample Received: **30 June 2011**
Analysis Complete: **25 July 2011**

Test Description	Result	Units	Accreditation	Method
TPH >C6-C40	19300	ug/l	Y Cov	GEO35
TPH >C6-C8	<10	ug/l	N Cov	GEO35
TPH >C8-C10	<10	ug/l	N Cov	GEO35
TPH >C16-C24	1240	ug/l	N Cov	GEO35
TPH >C24-C40	664	ug/l	N Cov	GEO35
TPH >C10-C16	17400	ug/l	N Cov	GEO35
Acenaphthene	<0.10	ug/l	Y Cov	GEO19
Acenaphthylene	<0.10	ug/l	Y Cov	GEO19
Anthracene	<0.10	ug/l	Y Cov	GEO19
Benzo (a) anthracene	<0.10	ug/l	Y Cov	GEO19
Benzo (g,h,i) perylene	<0.29	ug/l	Y Cov	GEO19
Benzo (a) pyrene	<0.10	ug/l	Y Cov	GEO19
Benzo (b) fluoranthene	<0.10	ug/l	Y Cov	GEO19
Benzo (k) fluoranthene	<0.10	ug/l	Y Cov	GEO19
Chrysene	<0.10	ug/l	Y Cov	GEO19
Dibenz (a,h) anthracene	<0.36	ug/l	Y Cov	GEO19
Fluoranthene	<0.10	ug/l	Y Cov	GEO19
Fluorene	<0.10	ug/l	Y Cov	GEO19
Indeno (1,2,3) cd pyrene	<0.36	ug/l	Y Cov	GEO19
Naphthalene	<1.40	ug/l	Y Cov	GEO19
Phenanthrene	0.334	ug/l	Y Cov	GEO19
Pyrene	<0.10	ug/l	Y Cov	GEO19
PAH, Total	0.334	ug/l	N Cov	GEO19

Analyst Comments for 12466703: The total PAH does not include Naphthalene, Indeno(123cd)pyrene, Dibenzo(ah)anthracene, Benzo(ghi) perylene as the reporting limits for these compounds have been raised due to interference.

Accreditation Codes: Y = UKAS Accredited, N = Not UKAS Accredited, M = MCERTS.
Analysed at: Brd = Bridgend, Cov = Coventry, Rea = Reading, Run = Runcorn, S = Subcontracted, Wak = Wakefield.
For Microbiological determinands 0 or ND=Not Detected, For Legionella ND=Not Detected in volume of sample filtered. Relating to Legionella volume analysed 1g is approximately equivalent to 1ml.
I/S=Insufficient sample

Signed:	Name: **J. Fell**	Date: **25 July 2011**
	Title: **Chemistry Operations Manager**	

Certificate of Analysis

1314
1229
0897
4409

SEVERN TRENT SERVICES

Report Number: **COV/788755/2011** Issue **2**
Laboratory Number: **12466704** Sample **7** of **7**

Sample Source: **Zeon Chemicals**
Sample Point Description: **Zeon**
Sample Description: **214**
Sample Matrix: **Not Specified**
Sample Date/Time:
Sample Received: **30 June 2011**
Analysis Complete: **25 July 2011**

Test Description	Result	Units	Accreditation	Method
TPH >C6-C40	33	ug/l	Y Cov	GEO35
TPH >C6-C8	<10	ug/l	N Cov	GEO35
TPH >C8-C10	<10	ug/l	N Cov	GEO35
TPH >C16-C24	15	ug/l	N Cov	GEO35
TPH >C24-C40	<10	ug/l	N Cov	GEO35
TPH >C10-C16	18	ug/l	N Cov	GEO35
Acenaphthene	0.498	ug/l	Y Cov	GEO19
Acenaphthylene	0.214	ug/l	Y Cov	GEO19
Anthracene	<0.01	ug/l	Y Cov	GEO19
Benzo (a) anthracene	<0.01	ug/l	Y Cov	GEO19
Benzo (g,h,i) perylene	<0.01	ug/l	Y Cov	GEO19
Benzo (a) pyrene	<0.01	ug/l	Y Cov	GEO19
Benzo (b) fluoranthene	<0.01	ug/l	Y Cov	GEO19
Benzo (k) fluoranthene	<0.01	ug/l	Y Cov	GEO19
Chrysene	<0.01	ug/l	Y Cov	GEO19
Dibenz (a,h) anthracene	<0.01	ug/l	Y Cov	GEO19
Fluoranthene	<0.01	ug/l	Y Cov	GEO19
Fluorene	1.25	ug/l	Y Cov	GEO19
Indeno (1,2,3) cd pyrene	<0.01	ug/l	Y Cov	GEO19
Naphthalene	<0.22	ug/l	Y Cov	GEO19
Phenanthrene	0.253	ug/l	Y Cov	GEO19
Pyrene	0.016	ug/l	Y Cov	GEO19
PAH, Total	2.24	ug/l	N Cov	GEO19

Analyst Comments for 12466704: The total PAH does not include Naphthalene as the reporting limits for these compounds have been raised due to interference.

Accreditation Codes: Y = UKAS Accredited, N = Not UKAS Accredited, M = MCERTS.
Analysed at: Brd = Bridgend, Cov = Coventry, Rea = Reading, Run = Runcorn, S = Subcontracted, Wak = Wakefield.
For Microbiological determinands 0 or ND=Not Detected, For Legionella ND=Not Detected in volume of sample filtered. Relating to Legionella volume analysed 1g is approximately equivalent to 1ml.
I/S=Insufficient sample

Signed:	Name: **J. Fell**	Date: **25 July 2011**
	Title: **Chemistry Operations Manager**	

Analytical Services
Torrington Avenue,
Coventry, CV4 9GU

T: +44 (0)24 7642 1213
F: +44 (0)24 7685 6575

www.stsanalytical.com

Mr Pearce
Zeon Chemicals
Sully Moors Road
Sully
Barry CF64 5ZE
Glamorgan

07 December 2011

Test Report: COV/822063/2011

Dear Mr Pearce

Analysis of your sample(s) submitted on 18 November 2011 is now complete and we have pleasure in enclosing the appropriate test report(s).

An invoice for the analysis carried out is included with this report.

Should you have any queries regarding this report(s) or any part of our service, please contact Customer Services on +44 (0)24 7642 1213 who will be happy to discuss your requirements.

If you would like to arrange any further analysis, please contact Customer Services. To arrange container delivery or sample collection, please call the Couriers Department directly on 024 7685 6562.

Thank you for using Severn Trent Services and we look forward to receiving your next samples.

Yours Sincerely,

Signed:

Name: J. Fell

Title: Chemistry Operations Manager

No. 1314
No. 4398

Certificate No. GB97/10269
Environmental Management Systems

Certificate No. FS 67435

Certificate No. OHS 542058

Report Summary

UKAS TESTING
1314
1229
0897
4409

SEVERN TRENT SERVICES

Mr Graham Pearce
Zeon Chemicals
Sully Moors Road
Sully
Barry
Glamorgan
CF64 5ZE

Date of Issue: **07 December 2011**

Report Number: **COV/822063/2011** Issue **1**

Job Description: Analysis of Groundwater

Number of Samples included in this report **4**

Number of Test Results included in this report **41**

Job Received: **18 November 2011**

Analysis Commenced: **21 November 2011**

Signed:

Name: **J. Fell** Date: **07 December 2011**

Title: **Chemistry Operations Manager**

Severn Trent Services was not responsible for sampling unless otherwise stated. Sampling is not covered by our UKAS accreditation.

Information on the methods of analysis and performance characteristics are available on request.
Opinions and interpretations expressed herein are outside the scope of UKAS accreditation. The results relate only to the items tested.
Tests marked 'Not UKAS Accredited' in this Report/Certificate are not included in the UKAS Accreditation Schedule for our laboratory.

Certificate of Analysis

UKAS TESTING
1314
1229
0897
4409

SEVERN TRENT SERVICES

Report Number: **COV/822063/2011** Issue **1**
Laboratory Number: **12720699** Sample **2** of **4**

Sample Source: **Zeon Chemicals**
Sample Point Description:
Sample Description: **203**
Sample Matrix: **Not Specified**
Sample Date/Time:
Sample Received: **18 November 2011**
Analysis Complete: **02 December 2011**

Test Description	Result	Units	Accreditation		Method
EH >C6 - C40	29	ug/l	Y	Cov	GEO35
EH >C6 - C8	<10	ug/l	N	Cov	GEO35
EH >C8 - C10	<10	ug/l	N	Cov	GEO35
EH >C16 - C24	15	ug/l	N	Cov	GEO35
EH >C24 - C40	<10	ug/l	N	Cov	GEO35
EH >C10 - C16	15	ug/l	N	Cov	GEO35

Analyst Comments for 12720699: The date of sampling has not been provided and therefore sample stability times cannot be assessed. It is therefore possible that the results provided may be compromised.

Accreditation Codes: Y = UKAS Accredited, N = Not UKAS Accredited, M = MCERTS.
Analysed at: Brd = Bridgend, Cov = Coventry, Rea = Reading, Run = Runcorn, S = Subcontracted, Wak = Wakefield.
For Microbiological determinands 0 or ND=Not Detected, For Legionella ND=Not Detected in volume of sample filtered. The LOD for the Legionella analysis will increase where the volume analysed is <1000g (1g is approximately equivalent to 1ml for sample volume analysed).
I/S=Insufficient sample

Signed: J Fell

Name: **J. Fell** Date: **07 December 2011**

Title: **Chemistry Operations Manager**

Certificate of Analysis

UKAS TESTING
1314
1229
0897
4409

SEVERN TRENT SERVICES

Report Number: **COV/822063/2011** Issue **1**
Laboratory Number: **12720698** Sample **1** of **4**

Sample Source: **Zeon Chemicals**
Sample Point Description:
Sample Description: **202**
Sample Matrix: **Not Specified**
Sample Date/Time:
Sample Received: **18 November 2011**
Analysis Complete: **02 December 2011**

Test Description	Result	Units	Accreditation	Method
EH >C6 - C40	69	ug/l	Y Cov	GEO35
EH >C6 - C8	<10	ug/l	N Cov	GEO35
EH >C8 - C10	<10	ug/l	N Cov	GEO35
EH >C16 - C24	27	ug/l	N Cov	GEO35
EH >C24 - C40	<10	ug/l	N Cov	GEO35
EH >C10 - C16	42	ug/l	N Cov	GEO35

Analyst Comments for 12720698: The date of sampling has not been provided and therefore sample stability times cannot be assessed. It is therefore possible that the results provided may be compromised.

Accreditation Codes: Y = UKAS Accredited, N = Not UKAS Accredited, M = MCERTS.
Analysed at: Brd = Bridgend, Cov = Coventry, Rea = Reading, Run = Runcorn, S = Subcontracted, Wak = Wakefield.
For Microbiological determinands 0 or ND=Not Detected, For Legionella ND=Not Detected in volume of sample filtered. The LOD for the Legionella analysis will increase where the volume analysed is <1000g (1g is approximately equivalent to 1ml for sample volume analysed).
I/S=Insufficient sample

Signed: J Fell

Name: **J. Fell** Date: **07 December 2011**
Title: **Chemistry Operations Manager**

Certificate of Analysis

UKAS TESTING
1314
1229
0897
4409

SEVERN TRENT SERVICES

Report Number: **COV/822063/2011** Issue **1**
Laboratory Number: **12720700** Sample **3** of **4**

Sample Source: **Zeon Chemicals**
Sample Point Description:
Sample Description: **211**
Sample Matrix: **Not Specified**
Sample Date/Time:
Sample Received: **18 November 2011**
Analysis Complete: **02 December 2011**

Test Description	Result	Units	Accreditation		Method
EH >C6 - C40	346000	ug/l	Y	Cov	GEO35
EH >C6 - C8	<100	ug/l	N	Cov	GEO35
EH >C8 - C10	<100	ug/l	N	Cov	GEO35
EH >C16 - C24	1450	ug/l	N	Cov	GEO35
EH >C24 - C40	362	ug/l	N	Cov	GEO35
EH >C10 - C16	344000	ug/l	N	Cov	GEO35

Analyst Comments for 12720700: The date of sampling has not been provided and therefore sample stability times cannot be assessed. It is therefore possible that the results provided may be compromised. Reporting limits raised for EH due to sample matrix.

Accreditation Codes: Y = UKAS Accredited, N = Not UKAS Accredited, M = MCERTS.
Analysed at: Brd = Bridgend, Cov = Coventry, Rea = Reading, Run = Runcorn, S = Subcontracted, Wak = Wakefield.
For Microbiological determinands 0 or ND=Not Detected, For Legionella ND=Not Detected in volume of sample filtered. The LOD for the Legionella analysis will increase where the volume analysed is <1000g (1g is approximately equivalent to 1ml for sample volume analysed).
I/S=Insufficient sample

Signed: JFell Name: **J. Fell** Date: **07 December 2011**
Title: **Chemistry Operations Manager**

Certificate of Analysis

1314
1229
0897
4409

SEVERN TRENT SERVICES

Report Number: **COV/822063/2011** Issue **1**
Laboratory Number: **12720701** Sample **4** of **4**

Sample Source: **Zeon Chemicals**
Sample Point Description:
Sample Description: **214**
Sample Matrix: **Not Specified**
Sample Date/Time:
Sample Received: **18 November 2011**
Analysis Complete: **02 December 2011**

Test Description	Result	Units	Accreditation	Method
EH >C6 - C40	126	ug/l	Y Cov	GEO35
EH >C6 - C8	<100	ug/l	N Cov	GEO35
EH >C8 - C10	<100	ug/l	N Cov	GEO35
EH >C16 - C24	<100	ug/l	N Cov	GEO35
EH >C24 - C40	<100	ug/l	N Cov	GEO35
EH >C10 - C16	126	ug/l	N Cov	GEO35
Acenaphthene	0.236	ug/l	Y Cov	GEO19
Acenaphthylene	0.129	ug/l	Y Cov	GEO19
Anthracene	<0.10	ug/l	Y Cov	GEO19
Benzo (a) anthracene	<0.10	ug/l	Y Cov	GEO19
Benzo (g,h,i) perylene	<0.23	ug/l	Y Cov	GEO19
Benzo (a) pyrene	<0.10	ug/l	Y Cov	GEO19
Benzo (b) fluoranthene	<0.10	ug/l	Y Cov	GEO19
Benzo (k) fluoranthene	<0.10	ug/l	Y Cov	GEO19
Chrysene	<0.10	ug/l	Y Cov	GEO19
Dibenz (a,h) anthracene	<0.30	ug/l	Y Cov	GEO19
Fluoranthene	<0.10	ug/l	Y Cov	GEO19
Fluorene	0.578	ug/l	Y Cov	GEO19
Indeno (1,2,3) cd pyrene	<0.27	ug/l	Y Cov	GEO19
Naphthalene	<0.10	ug/l	Y Cov	GEO19
Phenanthrene	0.156	ug/l	Y Cov	GEO19
Pyrene	<0.10	ug/l	Y Cov	GEO19
PAH, Total	1.10	ug/l	N Cov	GEO19

Analyst Comments for 12720701:

The date of sampling has not been provided and therefore sample stability times cannot be assessed. It is therefore possible that the results provided may be compromised. The total PAH does not include Indeno (123cd)pyrene, Dibenzo(ah)anthracene, Benzo(ghi)perylene as the reporting limits for these compounds have been raised due to interference. The reporting limits for the rest of PAH compounds also have been raised due to the nature of sample matrix.
Reporting limits raised for EH due to sample matrix. Low EH surrogate recovery at 47.3% due to interference from the sample matrix.

Accreditation Codes: Y = UKAS Accredited, N = Not UKAS Accredited, M = MCERTS.
Analysed at: Brd = Bridgend, Cov = Coventry, Rea = Reading, Run = Runcorn, S = Subcontracted, Wak = Wakefield.
For Microbilogical determinands 0 or ND=Not Detected, For Legionella ND=Not Detected in volume of sample filtered. The LOD for the Legionella analysis will increase where the volume analysed is <1000g (1g is approximately equivalent to 1ml for sample volume analysed).
I/S=Insufficient sample

Signed:	Name: **J. Fell**	Date: **07 December 2011**
	Title: **Chemistry Operations Manager**	

Report Summary

UKAS TESTING
1314
1229
0897
4409

SEVERN TRENT SERVICES

Mr Graham Pearce
Zeon Chemicals
Sully Moors Road
Sully
Barry
Glamorgan
CF64 5ZE

Date of Issue: **10 July 2012**

Report Number: **COV/865692/2012** Issue **1**

Job Description: Quote 50114 - Groundwater Analysis

Number of Samples included in this report **6**

Number of Test Results included in this report **138**

Job Received: **18 June 2012**

Analysis Commenced: **18 June 2012**

Signed: GCoiley

Name: **G. Coiley** Date: **10 July 2012**

Title: **Inorganics Operations Manager**

Severn Trent Services was not responsible for sampling unless otherwise stated. Sampling is not covered by our UKAS accreditation.

Information on the methods of analysis and performance characteristics are available on request.
Opinions and interpretations expressed herein are outside the scope of UKAS accreditation. The results relate only to the items tested.
Tests marked 'Not UKAS Accredited' in this Report/Certificate are not included in the UKAS Accreditation Schedule for our laboratory.

£30.00

quotes@STSanalytical.com

DS 150 872
DS 12015705

SEVERN TRENT SERVICES

Analytical Services
Torrington Avenue,
Coventry, CV4 9GU

T: +44 (0)24 7642 1213
F: +44 (0)24 7685 6575

www.stsanalytical.com

Mr Pearce
Zeon Chemicals
Sully Moors Road
Sully
Barry CF64 5ZE
Glamorgan

10 July 2012

Test Report: COV/865692/2012

Dear Mr Pearce

Analysis of your sample(s) submitted on 18 June 2012 is now complete and we have pleasure in enclosing the appropriate test report(s).

An invoice for the analysis carried out will be sent under separate cover.

Should you have any queries regarding this report(s) or any part of our service, please contact Customer Services on +44 (0)24 7642 1213 who will be happy to discuss your requirements.

If you would like to arrange any further analysis, please contact Customer Services. To arrange container delivery or sample collection, please call the Couriers Department directly on 024 7685 6562.

Thank you for using Severn Trent Services and we look forward to receiving your next samples.

Yours Sincerely,

Signed: GCoiley

Name: G. Coiley

Title: Inorganics Operations Manager

Certificate of Analysis

UKAS TESTING
1314
1229
0897
4409

SEVERN TRENT SERVICES

Report Number: **COV/865692/2012** Issue **1**
Laboratory Number: **13050364** Sample **1** of **6**

Sample Source: **Zeon Chemicals**
Sample Point Description: **Zeon**
Sample Description: **203**
Sample Matrix: **Not Specified**
Sample Date/Time: **14 June 2012**
Sample Received: **18 June 2012**
Analysis Complete: **10 July 2012**

Test Description	Result	Units	Accreditation	Method
EH >C6 - C40	Analyst Comment	ug/l	Y Cov	GEO35
EH >C6 - C8	Analyst Comment	ug/l	N Cov	GEO35
EH >C8 - C10	Analyst Comment	ug/l	N Cov	GEO35
EH >C16 - C24	Analyst Comment	ug/l	N Cov	GEO35
EH >C24 - C40	Analyst Comment	ug/l	N Cov	GEO35
EH >C10 - C16	Analyst Comment	ug/l	N Cov	GEO35
Acenaphthene	0.048	ug/l	Y Cov	GEO19
Acenaphthylene	0.011	ug/l	Y Cov	GEO19
Anthracene	<0.01	ug/l	Y Cov	GEO19
Benzo (a) anthracene	<0.01	ug/l	Y Cov	GEO19
Benzo (g,h,i) perylene	<0.01	ug/l	Y Cov	GEO19
Benzo (a) pyrene	<0.01	ug/l	Y Cov	GEO19
Benzo (b) fluoranthene	<0.01	ug/l	Y Cov	GEO19
Benzo (k) fluoranthene	<0.01	ug/l	Y Cov	GEO19
Chrysene	<0.01	ug/l	Y Cov	GEO19
Dibenz (a,h) anthracene	<0.01	ug/l	Y Cov	GEO19
Fluoranthene	<0.01	ug/l	Y Cov	GEO19
Fluorene	0.053	ug/l	Y Cov	GEO19
Indeno (1,2,3) cd pyrene	<0.01	ug/l	Y Cov	GEO19
Naphthalene	<0.01	ug/l	Y Cov	GEO19
Phenanthrene	<0.01	ug/l	Y Cov	GEO19
Pyrene	<0.01	ug/l	Y Cov	GEO19
PAH, Total	0.112	ug/l	N Cov	GEO19

Analyst Comments for 13050364: Unable to report EH results due to quality failure, insufficient sample to re-extract.

Accreditation Codes: Y = UKAS Accredited, N = Not UKAS Accredited, M = MCERTS.
Analysed at: Brd = Bridgend, Cov = Coventry, Rea = Reading, Run = Runcorn, S = Subcontracted, Wak = Wakefield.
For Microbiological determinands 0 or ND=Not Detected, For Legionella ND=Not Detected in volume of sample filtered. The LOD for the Legionella analysis will increase where the volume analysed is <1000g (1g is approximately equivalent to 1ml for sample volume analysed).
I/S=Insufficient sample

Signed: G Coiley	Name: **G. Coiley**	Date: **10 July 2012**
	Title: **Inorganics Operations Manager**	

Certificate of Analysis

UKAS TESTING
1314
1229
0897
4409

SEVERN TRENT SERVICES

Report Number: **COV/865692/2012** Issue **1**
Laboratory Number: **13050366** Sample **3** of **6**

Sample Source: **Zeon Chemicals**
Sample Point Description: **Zeon**
Sample Description: **206**
Sample Matrix: **Not Specified**
Sample Date/Time: **14 June 2012**
Sample Received: **18 June 2012**
Analysis Complete: **10 July 2012**

Test Description	Result	Units	Accreditation	Method
EH >C6 - C40	Analyst Comment	ug/l	Y Cov	GEO35
EH >C6 - C8	Analyst Comment	ug/l	N Cov	GEO35
EH >C8 - C10	Analyst Comment	ug/l	N Cov	GEO35
EH >C16 - C24	Analyst Comment	ug/l	N Cov	GEO35
EH >C24 - C40	Analyst Comment	ug/l	N Cov	GEO35
EH >C10 - C16	Analyst Comment	ug/l	N Cov	GEO35
Acenaphthene	<0.01	ug/l	Y Cov	GEO19
Acenaphthylene	<0.01	ug/l	Y Cov	GEO19
Anthracene	<0.01	ug/l	Y Cov	GEO19
Benzo (a) anthracene	<0.01	ug/l	Y Cov	GEO19
Benzo (g,h,i) perylene	<0.01	ug/l	Y Cov	GEO19
Benzo (a) pyrene	<0.01	ug/l	Y Cov	GEO19
Benzo (b) fluoranthene	<0.01	ug/l	Y Cov	GEO19
Benzo (k) fluoranthene	<0.01	ug/l	Y Cov	GEO19
Chrysene	<0.01	ug/l	Y Cov	GEO19
Dibenz (a,h) anthracene	<0.01	ug/l	Y Cov	GEO19
Fluoranthene	<0.01	ug/l	Y Cov	GEO19
Fluorene	<0.01	ug/l	Y Cov	GEO19
Indeno (1,2,3) cd pyrene	<0.01	ug/l	Y Cov	GEO19
Naphthalene	<0.01	ug/l	Y Cov	GEO19
Phenanthrene	<0.01	ug/l	Y Cov	GEO19
Pyrene	<0.01	ug/l	Y Cov	GEO19
PAH, Total	<0.01	ug/l	N Cov	GEO19

Analyst Comments for 13050366: Unable to report EH results due to quality failure, insufficient sample to re-extract.

Accreditation Codes: Y = UKAS Accredited, N = Not UKAS Accredited, M = MCERTS.
Analysed at: Brd = Bridgend, Cov = Coventry, Rea = Reading, Run = Runcorn, S = Subcontracted, Wak = Wakefield.
For Microbiological determinands 0 or ND=Not Detected, For Legionella ND=Not Detected in volume of sample filtered. The LOD for the Legionella analysis will increase where the volume analysed is <1000g (1g is approximately equivalent to 1ml for sample volume analysed).
I/S=Insufficient sample

Signed: G Coiley	Name: **G. Coiley**	Date: **10 July 2012**
	Title: **Inorganics Operations Manager**	

Certificate of Analysis

UKAS TESTING
1314
1229
0897
4409

SEVERN TRENT SERVICES

Report Number: **COV/865692/2012** Issue **1**
Laboratory Number: **13050365** Sample **2** of **6**

Sample Source: **Zeon Chemicals**
Sample Point Description: **Zeon**
Sample Description: **205**
Sample Matrix: **Not Specified**
Sample Date/Time: **14 June 2012**
Sample Received: **18 June 2012**
Analysis Complete: **10 July 2012**

Test Description	Result	Units	Accreditation	Method
EH >C6 - C40	Analyst Comment	ug/l	Y Cov	GEO35
EH >C6 - C8	Analyst Comment	ug/l	N Cov	GEO35
EH >C8 - C10	Analyst Comment	ug/l	N Cov	GEO35
EH >C16 - C24	Analyst Comment	ug/l	N Cov	GEO35
EH >C24 - C40	Analyst Comment	ug/l	N Cov	GEO35
EH >C10 - C16	Analyst Comment	ug/l	N Cov	GEO35
Acenaphthene	<0.01	ug/l	Y Cov	GEO19
Acenaphthylene	<0.01	ug/l	Y Cov	GEO19
Anthracene	<0.01	ug/l	Y Cov	GEO19
Benzo (a) anthracene	<0.01	ug/l	Y Cov	GEO19
Benzo (g,h,i) perylene	<0.01	ug/l	Y Cov	GEO19
Benzo (a) pyrene	<0.01	ug/l	Y Cov	GEO19
Benzo (b) fluoranthene	<0.01	ug/l	Y Cov	GEO19
Benzo (k) fluoranthene	<0.01	ug/l	Y Cov	GEO19
Chrysene	<0.01	ug/l	Y Cov	GEO19
Dibenz (a,h) anthracene	<0.01	ug/l	Y Cov	GEO19
Fluoranthene	<0.01	ug/l	Y Cov	GEO19
Fluorene	<0.01	ug/l	Y Cov	GEO19
Indeno (1,2,3) cd pyrene	<0.01	ug/l	Y Cov	GEO19
Naphthalene	<0.01	ug/l	Y Cov	GEO19
Phenanthrene	<0.01	ug/l	Y Cov	GEO19
Pyrene	<0.01	ug/l	Y Cov	GEO19
PAH, Total	<0.01	ug/l	N Cov	GEO19

Analyst Comments for 13050365: Unable to report EH results due to quality failure, insufficient sample to re-extract.

Accreditation Codes: Y = UKAS Accredited, N = Not UKAS Accredited, M = MCERTS.
Analysed at: Brd = Bridgend, Cov = Coventry, Rea = Reading, Run = Runcorn, S = Subcontracted, Wak = Wakefield.
For Microbiological determinands 0 or ND=Not Detected, For Legionella ND=Not Detected in volume of sample filtered. The LOD for the Legionella analysis will increase where the volume analysed is <1000g (1g is approximately equivalent to 1ml for sample volume analysed).
I/S=Insufficient sample

Signed: G Coiley	Name: **G. Coiley**	Date: **10 July 2012**
	Title: **Inorganics Operations Manager**	

Certificate of Analysis

UKAS TESTING
1314
1229
0897
4409

SEVERN TRENT SERVICES

Report Number: **COV/865692/2012** Issue **1**
Laboratory Number: **13050367** Sample **4** of **6**

Sample Source: **Zeon Chemicals**
Sample Point Description: **Zeon**
Sample Description: **208**
Sample Matrix: **Not Specified**
Sample Date/Time: **14 June 2012**
Sample Received: **18 June 2012**
Analysis Complete: **10 July 2012**

Test Description	Result	Units	Accreditation	Method
EH >C6 - C40	Analyst Comment	ug/l	Y Cov	GEO35
EH >C6 - C8	Analyst Comment	ug/l	N Cov	GEO35
EH >C8 - C10	Analyst Comment	ug/l	N Cov	GEO35
EH >C16 - C24	Analyst Comment	ug/l	N Cov	GEO35
EH >C24 - C40	Analyst Comment	ug/l	N Cov	GEO35
EH >C10 - C16	Analyst Comment	ug/l	N Cov	GEO35
Acenaphthene	<0.01	ug/l	Y Cov	GEO19
Acenaphthylene	<0.01	ug/l	Y Cov	GEO19
Anthracene	<0.01	ug/l	Y Cov	GEO19
Benzo (a) anthracene	<0.01	ug/l	Y Cov	GEO19
Benzo (g,h,i) perylene	<0.01	ug/l	Y Cov	GEO19
Benzo (a) pyrene	<0.01	ug/l	Y Cov	GEO19
Benzo (b) fluoranthene	<0.01	ug/l	Y Cov	GEO19
Benzo (k) fluoranthene	<0.01	ug/l	Y Cov	GEO19
Chrysene	<0.01	ug/l	Y Cov	GEO19
Dibenz (a,h) anthracene	<0.01	ug/l	Y Cov	GEO19
Fluoranthene	<0.01	ug/l	Y Cov	GEO19
Fluorene	<0.01	ug/l	Y Cov	GEO19
Indeno (1,2,3) cd pyrene	<0.01	ug/l	Y Cov	GEO19
Naphthalene	<0.01	ug/l	Y Cov	GEO19
Phenanthrene	<0.01	ug/l	Y Cov	GEO19
Pyrene	<0.01	ug/l	Y Cov	GEO19
PAH, Total	<0.01	ug/l	N Cov	GEO19

Analyst Comments for 13050367: Unable to report EH results due to quality failure, insufficient sample to re-extract.

Accreditation Codes: Y = UKAS Accredited, N = Not UKAS Accredited, M = MCERTS.
Analysed at: Brd = Bridgend, Cov = Coventry, Rea = Reading, Run = Runcorn, S = Subcontracted, Wak = Wakefield.
For Microbiological determinands 0 or ND=Not Detected, For Legionella ND=Not Detected in volume of sample filtered. The LOD for the Legionella analysis will increase where the volume analysed is <1000g (1g is approximately equivalent to 1ml for sample volume analysed).
I/S=Insufficient sample

Signed: G Coiley	Name: **G. Coiley**	Date: **10 July 2012**
	Title: **Inorganics Operations Manager**	

Certificate of Analysis

UKAS TESTING
1314
1229
0897
4409

SEVERN TRENT SERVICES

Report Number: **COV/865692/2012** Issue **1**
Laboratory Number: **13050368** Sample **5** of **6**

Sample Source: **Zeon Chemicals**
Sample Point Description: **Zeon**
Sample Description: **211**
Sample Matrix: **Not Specified**
Sample Date/Time: **14 June 2012**
Sample Received: **18 June 2012**
Analysis Complete: **10 July 2012**

Test Description	Result	Units	Accreditation	Method
EH >C6 - C40	9470	ug/l	Y Cov	GEO35
EH >C6 - C8	<100	ug/l	N Cov	GEO35
EH >C8 - C10	<100	ug/l	N Cov	GEO35
EH >C16 - C24	525	ug/l	N Cov	GEO35
EH >C24 - C40	164	ug/l	N Cov	GEO35
EH >C10 - C16	8780	ug/l	N Cov	GEO35
Acenaphthene	<0.10	ug/l	Y Cov	GEO19
Acenaphthylene	<0.10	ug/l	Y Cov	GEO19
Anthracene	<0.10	ug/l	Y Cov	GEO19
Benzo (a) anthracene	<0.10	ug/l	Y Cov	GEO19
Benzo (g,h,i) perylene	<0.10	ug/l	Y Cov	GEO19
Benzo (a) pyrene	<0.10	ug/l	Y Cov	GEO19
Benzo (b) fluoranthene	<0.10	ug/l	Y Cov	GEO19
Benzo (k) fluoranthene	<0.10	ug/l	Y Cov	GEO19
Chrysene	<0.10	ug/l	Y Cov	GEO19
Dibenz (a,h) anthracene	<0.10	ug/l	Y Cov	GEO19
Fluoranthene	<0.10	ug/l	Y Cov	GEO19
Fluorene	<0.10	ug/l	Y Cov	GEO19
Indeno (1,2,3) cd pyrene	<0.10	ug/l	Y Cov	GEO19
Naphthalene	0.172	ug/l	Y Cov	GEO19
Phenanthrene	<0.10	ug/l	Y Cov	GEO19
Pyrene	<0.10	ug/l	Y Cov	GEO19
PAH, Total	0.172	ug/l	N Cov	GEO19

Analyst Comments for 13050368: Reporting limits raised for EH analysis due to nature of sample matrix.

Accreditation Codes: Y = UKAS Accredited, N = Not UKAS Accredited, M = MCERTS.
Analysed at: Brd = Bridgend, Cov = Coventry, Rea = Reading, Run = Runcorn, S = Subcontracted, Wak = Wakefield.
For Microbiological determinands 0 or ND=Not Detected, For Legionella ND=Not Detected in volume of sample filtered. The LOD for the Legionella analysis will increase where the volume analysed is <1000g (1g is approximately equivalent to 1ml for sample volume analysed).
I/S=Insufficient sample

Signed: G Coiley	Name: **G. Coiley**	Date: **10 July 2012**
	Title: **Inorganics Operations Manager**	

Certificate of Analysis

UKAS TESTING
1314
1229
0897
4409

SEVERN TRENT SERVICES

Report Number: **COV/865692/2012** Issue **1**
Laboratory Number: **13050369** Sample **6** of **6**

Sample Source: **Zeon Chemicals**
Sample Point Description: **Zeon**
Sample Description: **214**
Sample Matrix: **Not Specified**
Sample Date/Time: **14 June 2012**
Sample Received: **18 June 2012**
Analysis Complete: **10 July 2012**

Test Description	Result	Units	Accreditation	Method
EH >C6 - C40	<40	ug/l	Y Cov	GEO35
EH >C6 - C8	<40	ug/l	N Cov	GEO35
EH >C8 - C10	<40	ug/l	N Cov	GEO35
EH >C16 - C24	<40	ug/l	N Cov	GEO35
EH >C24 - C40	<40	ug/l	N Cov	GEO35
EH >C10 - C16	<40	ug/l	N Cov	GEO35
Acenaphthene	0.182	ug/l	Y Cov	GEO19
Acenaphthylene	<0.10	ug/l	Y Cov	GEO19
Anthracene	<0.10	ug/l	Y Cov	GEO19
Benzo (a) anthracene	<0.10	ug/l	Y Cov	GEO19
Benzo (g,h,i) perylene	<0.10	ug/l	Y Cov	GEO19
Benzo (a) pyrene	<0.10	ug/l	Y Cov	GEO19
Benzo (b) fluoranthene	<0.10	ug/l	Y Cov	GEO19
Benzo (k) fluoranthene	<0.10	ug/l	Y Cov	GEO19
Chrysene	<0.10	ug/l	Y Cov	GEO19
Dibenz (a,h) anthracene	<0.10	ug/l	Y Cov	GEO19
Fluoranthene	<0.10	ug/l	Y Cov	GEO19
Fluorene	0.397	ug/l	Y Cov	GEO19
Indeno (1,2,3) cd pyrene	<0.10	ug/l	Y Cov	GEO19
Naphthalene	<0.10	ug/l	Y Cov	GEO19
Phenanthrene	<0.10	ug/l	Y Cov	GEO19
Pyrene	<0.10	ug/l	Y Cov	GEO19
PAH, Total	0.579	ug/l	N Cov	GEO19

Analyst Comments for 13050369: Reporting limits raised for EH analysis due to nature of sample matrix.

Accreditation Codes: Y = UKAS Accredited, N = Not UKAS Accredited, M = MCERTS.
Analysed at: Brd = Bridgend, Cov = Coventry, Rea = Reading, Run = Runcorn, S = Subcontracted, Wak = Wakefield.
For Microbiological determinands 0 or ND=Not Detected, For Legionella ND=Not Detected in volume of sample filtered. The LOD for the Legionella analysis will increase where the volume analysed is <1000g (1g is approximately equivalent to 1ml for sample volume analysed).
I/S=Insufficient sample

Signed: G Coiley	Name: **G. Coiley**	Date: **10 July 2012**
	Title: **Inorganics Operations Manager**	

Analytical Services
Torrington Avenue,
Coventry, CV4 9GU

T: +44 (0)24 7642 1213
F: +44 (0)24 7685 6575

www.stsanalytical.com

Mr Pearce
Zeon Chemicals
Sully Moors Road
Sully
Barry CF64 5ZE
Glamorgan

14 December 2012

Test Report: COV/899700/2012

Dear Mr Pearce

Analysis of your sample(s) submitted on 22 November 2012 is now complete and we have pleasure in enclosing the appropriate test report(s).

An invoice for the analysis carried out is included with this report.

Should you have any queries regarding this report(s) or any part of our service, please contact Customer Services on +44 (0)24 7642 1213 who will be happy to discuss your requirements.

If you would like to arrange any further analysis, please contact Customer Services. To arrange container delivery or sample collection, please call the Couriers Department directly on 024 7685 6562.

Thank you for using Severn Trent Services and we look forward to receiving your next samples.

Yours Sincerely,

Signed: A I Horobin

Name: A. Horobin

Title: Organic Operations Manager

rcf. 323338

Report Summary

UKAS TESTING
1314
1229
0897
4409

SEVERN TRENT SERVICES

Mr Graham Pearce
Zeon Chemicals
Sully Moors Road
Sully
Barry
Glamorgan
CF64 5ZE

Date of Issue: **14 December 2012**

Report Number: **COV/899700/2012** Issue **1**

Job Description: TPH & PAH on Groundwaters

Job Location: TPH & PAH on Groundwaters

Number of Samples included in this report **7**

Job Received: **22 November 2012**

Number of Test Results included in this report **161**

Analysis Commenced: **22 November 2012**

Signed: A I Horobin

Name: **A. Horobin** Date: **14 December 2012**

Title: **Organic Operations Manager**

Severn Trent Services was not responsible for sampling unless otherwise stated. Sampling is not covered by our UKAS accreditation.

Information on the methods of analysis and performance characteristics are available on request.
Opinions and interpretations expressed herein are outside the scope of UKAS accreditation. The results relate only to the items tested.
Tests marked 'Not UKAS Accredited' in this Report/Certificate are not included in the UKAS Accreditation Schedule for our laboratory.

Severn Trent Services Analytical Services is a trading name of Severn Trent Laboratories Limited. This communication has been sent to you by Severn Trent Laboratories Limited. Registered in England and Wales. Registration No. 2148934. Registered Office: Severn Trent Centre, 2 St. John's Street, Coventry, CV1 2LZ

Certificate of Analysis

UKAS TESTING
1314
1229
0897
4409

SEVERN TRENT SERVICES

Report Number: **COV/899700/2012** Issue **1**
Laboratory Number: **13287455** Sample **1** of **7**

Sample Source: **Zeon Chemicals**
Sample Point Description: **Zeon**
Sample Description: **205**
Sample Matrix: **Ground waters**
Sample Date/Time: **21 November 2012**
Sample Received: **22 November 2012**
Analysis Complete: **05 December 2012**

Test Description	Result	Units	Accreditation	Method
EH >C6 - C40	102	ug/l	Y Cov	GEO35
EH >C6 - C8	<10	ug/l	N Cov	GEO35
EH >C8 - C10	31	ug/l	N Cov	GEO35
EH >C16 - C24	29	ug/l	N Cov	GEO35
EH >C24 - C40	<10	ug/l	N Cov	GEO35
EH >C10 - C16	42	ug/l	N Cov	GEO35
Acenaphthene	<0.01	ug/l	Y Cov	GEO19
Acenaphthylene	<0.01	ug/l	Y Cov	GEO19
Anthracene	<0.01	ug/l	Y Cov	GEO19
Benzo (a) anthracene	<0.01	ug/l	Y Cov	GEO19
Benzo (g,h,i) perylene	<0.01	ug/l	Y Cov	GEO19
Benzo (a) pyrene	<0.01	ug/l	Y Cov	GEO19
Benzo (b) fluoranthene	<0.01	ug/l	Y Cov	GEO19
Benzo (k) fluoranthene	<0.01	ug/l	Y Cov	GEO19
Chrysene	<0.01	ug/l	Y Cov	GEO19
Dibenz (a,h) anthracene	<0.01	ug/l	Y Cov	GEO19
Fluoranthene	<0.01	ug/l	Y Cov	GEO19
Fluorene	<0.01	ug/l	Y Cov	GEO19
Indeno (1,2,3) cd pyrene	<0.01	ug/l	Y Cov	GEO19
Naphthalene	<0.01	ug/l	Y Cov	GEO19
Phenanthrene	<0.01	ug/l	Y Cov	GEO19
Pyrene	<0.01	ug/l	Y Cov	GEO19
PAH, Total	<0.01	ug/l	N Cov	GEO19

Analyst Comments for 13287455: This sample has been analysed for PAH Waters method GEO19, EH Waters method GEO35 outside recommended stability times. It is therefore possible that the results provided may be compromised.

Accreditation Codes: Y = UKAS Accredited, N = Not UKAS Accredited, M = MCERTS.
Analysed at: Brd = Bridgend, Cov = Coventry, Rea = Reading, Run = Runcorn, S = Subcontracted, Wak = Wakefield.
For Microbiological determinands 0 or ND=Not Detected, For Legionella ND=Not Detected in volume of sample filtered. The LOD for the Legionella analysis will increase where the volume analysed is <1000g (1g is approximately equivalent to 1ml for sample volume analysed).
I/S=Insufficient sample

Signed: A I Horobin	Name: **A. Horobin**	Date: **14 December 2012**
	Title: **Organic Operations Manager**	

Certificate of Analysis

UKAS TESTING
1314
1229
0897
4409

SEVERN TRENT SERVICES

Report Number: **COV/899700/2012** Issue **1**
Laboratory Number: **13287456** Sample **2** of **7**

Sample Source: **Zeon Chemicals**
Sample Point Description: **Zeon**
Sample Description: **203**
Sample Matrix: **Ground waters**
Sample Date/Time: **21 November 2012**
Sample Received: **22 November 2012**
Analysis Complete: **05 December 2012**

Test Description	Result	Units	Accreditation	Method
EH >C6 - C40	30	ug/l	Y Cov	GEO35
EH >C6 - C8	<10	ug/l	N Cov	GEO35
EH >C8 - C10	<10	ug/l	N Cov	GEO35
EH >C16 - C24	15	ug/l	N Cov	GEO35
EH >C24 - C40	<10	ug/l	N Cov	GEO35
EH >C10 - C16	15	ug/l	N Cov	GEO35
Acenaphthene	<0.01	ug/l	Y Cov	GEO19
Acenaphthylene	<0.01	ug/l	Y Cov	GEO19
Anthracene	<0.01	ug/l	Y Cov	GEO19
Benzo (a) anthracene	<0.01	ug/l	Y Cov	GEO19
Benzo (g,h,i) perylene	<0.01	ug/l	Y Cov	GEO19
Benzo (a) pyrene	<0.01	ug/l	Y Cov	GEO19
Benzo (b) fluoranthene	<0.01	ug/l	Y Cov	GEO19
Benzo (k) fluoranthene	<0.01	ug/l	Y Cov	GEO19
Chrysene	<0.01	ug/l	Y Cov	GEO19
Dibenz (a,h) anthracene	<0.01	ug/l	Y Cov	GEO19
Fluoranthene	<0.01	ug/l	Y Cov	GEO19
Fluorene	<0.01	ug/l	Y Cov	GEO19
Indeno (1,2,3) cd pyrene	<0.01	ug/l	Y Cov	GEO19
Naphthalene	<0.01	ug/l	Y Cov	GEO19
Phenanthrene	<0.01	ug/l	Y Cov	GEO19
Pyrene	<0.01	ug/l	Y Cov	GEO19
PAH, Total	<0.01	ug/l	N Cov	GEO19

Analyst Comments for 13287456: This sample has been analysed for PAH Waters method GEO19, EH Waters method GEO35 outside recommended stability times. It is therefore possible that the results provided may be compromised.

Accreditation Codes: Y = UKAS Accredited, N = Not UKAS Accredited, M = MCERTS.
Analysed at: Brd = Bridgend, Cov = Coventry, Rea = Reading, Run = Runcorn, S = Subcontracted, Wak = Wakefield.
For Microbiological determinands 0 or ND=Not Detected, For Legionella ND=Not Detected in volume of sample filtered. The LOD for the Legionella analysis will increase where the volume analysed is <1000g (1g is approximately equivalent to 1ml for sample volume analysed).
I/S=Insufficient sample

Signed: A I Horobin	Name: **A. Horobin**	Date: **14 December 2012**
	Title: **Organic Operations Manager**	

Certificate of Analysis

1314
1229
0897
4409

SEVERN TRENT SERVICES

Report Number: **COV/899700/2012** Issue **1**
Laboratory Number: **13287457** Sample **3** of **7**

Sample Source: **Zeon Chemicals**
Sample Point Description: **Zeon**
Sample Description: **206**
Sample Matrix: **Ground waters**
Sample Date/Time: **21 November 2012**
Sample Received: **22 November 2012**
Analysis Complete: **05 December 2012**

Test Description	Result	Units	Accreditation	Method
EH >C6 - C40	57	ug/l	Y Cov	GEO35
EH >C6 - C8	<10	ug/l	N Cov	GEO35
EH >C8 - C10	<10	ug/l	N Cov	GEO35
EH >C16 - C24	27	ug/l	N Cov	GEO35
EH >C24 - C40	<10	ug/l	N Cov	GEO35
EH >C10 - C16	30	ug/l	N Cov	GEO35
Acenaphthene	<0.01	ug/l	Y Cov	GEO19
Acenaphthylene	<0.01	ug/l	Y Cov	GEO19
Anthracene	<0.01	ug/l	Y Cov	GEO19
Benzo (a) anthracene	<0.01	ug/l	Y Cov	GEO19
Benzo (g,h,i) perylene	<0.01	ug/l	Y Cov	GEO19
Benzo (a) pyrene	<0.01	ug/l	Y Cov	GEO19
Benzo (b) fluoranthene	<0.01	ug/l	Y Cov	GEO19
Benzo (k) fluoranthene	<0.01	ug/l	Y Cov	GEO19
Chrysene	<0.01	ug/l	Y Cov	GEO19
Dibenz (a,h) anthracene	<0.01	ug/l	Y Cov	GEO19
Fluoranthene	<0.01	ug/l	Y Cov	GEO19
Fluorene	<0.01	ug/l	Y Cov	GEO19
Indeno (1,2,3) cd pyrene	<0.01	ug/l	Y Cov	GEO19
Naphthalene	<0.01	ug/l	Y Cov	GEO19
Phenanthrene	<0.01	ug/l	Y Cov	GEO19
Pyrene	<0.01	ug/l	Y Cov	GEO19
PAH, Total	<0.01	ug/l	N Cov	GEO19

Analyst Comments for 13287457: This sample has been analysed for PAH Waters method GEO19, EH Waters method GEO35 outside recommended stability times. It is therefore possible that the results provided may be compromised.

Accreditation Codes: Y = UKAS Accredited, N = Not UKAS Accredited, M = MCERTS.
Analysed at: Brd = Bridgend, Cov = Coventry, Rea = Reading, Run = Runcorn, S = Subcontracted, Wak = Wakefield.
For Microbiological determinands 0 or ND=Not Detected, For Legionella ND=Not Detected in volume of sample filtered. The LOD for the Legionella analysis will increase where the volume analysed is <1000g (1g is approximately equivalent to 1ml for sample volume analysed).
I/S=Insufficient sample

Signed: A I Horobin	Name: **A. Horobin**	Date: **14 December 2012**
	Title: **Organic Operations Manager**	

Certificate of Analysis

UKAS TESTING
1314
1229
0897
4409

SEVERN TRENT SERVICES

Report Number: **COV/899700/2012** Issue **1**
Laboratory Number: **13287458** Sample **4** of **7**

Sample Source: **Zeon Chemicals**
Sample Point Description: **Zeon**
Sample Description: **208**
Sample Matrix: **Ground waters**
Sample Date/Time: **21 November 2012**
Sample Received: **22 November 2012**
Analysis Complete: **05 December 2012**

Test Description	Result	Units	Accreditation	Method
EH >C6 - C40	<10	ug/l	Y Cov	GEO35
EH >C6 - C8	<10	ug/l	N Cov	GEO35
EH >C8 - C10	<10	ug/l	N Cov	GEO35
EH >C16 - C24	<10	ug/l	N Cov	GEO35
EH >C24 - C40	<10	ug/l	N Cov	GEO35
EH >C10 - C16	<10	ug/l	N Cov	GEO35
Acenaphthene	<0.01	ug/l	Y Cov	GEO19
Acenaphthylene	<0.01	ug/l	Y Cov	GEO19
Anthracene	<0.01	ug/l	Y Cov	GEO19
Benzo (a) anthracene	<0.01	ug/l	Y Cov	GEO19
Benzo (g,h,i) perylene	<0.01	ug/l	Y Cov	GEO19
Benzo (a) pyrene	<0.01	ug/l	Y Cov	GEO19
Benzo (b) fluoranthene	<0.01	ug/l	Y Cov	GEO19
Benzo (k) fluoranthene	<0.01	ug/l	Y Cov	GEO19
Chrysene	<0.01	ug/l	Y Cov	GEO19
Dibenz (a,h) anthracene	<0.01	ug/l	Y Cov	GEO19
Fluoranthene	<0.01	ug/l	Y Cov	GEO19
Fluorene	<0.01	ug/l	Y Cov	GEO19
Indeno (1,2,3) cd pyrene	<0.01	ug/l	Y Cov	GEO19
Naphthalene	<0.01	ug/l	Y Cov	GEO19
Phenanthrene	<0.01	ug/l	Y Cov	GEO19
Pyrene	<0.01	ug/l	Y Cov	GEO19
PAH, Total	<0.01	ug/l	N Cov	GEO19

Analyst Comments for 13287458: This sample has been analysed for PAH Waters method GEO19, EH Waters method GEO35 outside recommended stability times. It is therefore possible that the results provided may be compromised.

Accreditation Codes: Y = UKAS Accredited, N = Not UKAS Accredited, M = MCERTS.
Analysed at: Brd = Bridgend, Cov = Coventry, Rea = Reading, Run = Runcorn, S = Subcontracted, Wak = Wakefield.
For Microbiological determinands 0 or ND=Not Detected, For Legionella ND=Not Detected in volume of sample filtered. The LOD for the Legionella analysis will increase where the volume analysed is <1000g (1g is approximately equivalent to 1ml for sample volume analysed).
I/S=Insufficient sample

Signed: A I Horobin	Name: **A. Horobin**	Date: **14 December 2012**
	Title: **Organic Operations Manager**	

Certificate of Analysis

UKAS TESTING
1314
1229
0897
4409

SEVERN TRENT SERVICES

Report Number: **COV/899700/2012** Issue **1**
Laboratory Number: **13287459** Sample **5** of **7**

Sample Source: **Zeon Chemicals**
Sample Point Description: **Zeon**
Sample Description: **211**
Sample Matrix: **Ground waters**
Sample Date/Time: **21 November 2012**
Sample Received: **22 November 2012**
Analysis Complete: **05 December 2012**

Test Description	Result	Units	Accreditation	Method
EH >C6 - C40	39700	ug/l	Y Cov	GEO35
EH >C6 - C8	<20	ug/l	N Cov	GEO35
EH >C8 - C10	<20	ug/l	N Cov	GEO35
EH >C16 - C24	405	ug/l	N Cov	GEO35
EH >C24 - C40	43	ug/l	N Cov	GEO35
EH >C10 - C16	39200	ug/l	N Cov	GEO35
Acenaphthene	<0.02	ug/l	Y Cov	GEO19
Acenaphthylene	<0.02	ug/l	Y Cov	GEO19
Anthracene	<0.02	ug/l	Y Cov	GEO19
Benzo (a) anthracene	<0.02	ug/l	Y Cov	GEO19
Benzo (g,h,i) perylene	<0.02	ug/l	Y Cov	GEO19
Benzo (a) pyrene	<0.02	ug/l	Y Cov	GEO19
Benzo (b) fluoranthene	<0.02	ug/l	Y Cov	GEO19
Benzo (k) fluoranthene	<0.02	ug/l	Y Cov	GEO19
Chrysene	<0.02	ug/l	Y Cov	GEO19
Dibenz (a,h) anthracene	<0.02	ug/l	Y Cov	GEO19
Fluoranthene	<0.02	ug/l	Y Cov	GEO19
Fluorene	<0.02	ug/l	Y Cov	GEO19
Indeno (1,2,3) cd pyrene	<0.02	ug/l	Y Cov	GEO19
Naphthalene	0.489	ug/l	Y Cov	GEO19
Phenanthrene	<0.02	ug/l	Y Cov	GEO19
Pyrene	<0.02	ug/l	Y Cov	GEO19
PAH, Total	0.489	ug/l	N Cov	GEO19

Analyst Comments for 13287459: This sample has been analysed for PAH Waters method GEO19, EH Waters method GEO35 outside recommended stability times. It is therefore possible that the results provided may be compromised.
Reporting limits raised for PAH due to nature of sample matrix.
Reporting limits raised for EH analysis due to nature of sample matrix.

Accreditation Codes: Y = UKAS Accredited, N = Not UKAS Accredited, M = MCERTS.
Analysed at: Brd = Bridgend, Cov = Coventry, Rea = Reading, Run = Runcorn, S = Subcontracted, Wak = Wakefield.
For Microbiological determinands 0 or ND=Not Detected, For Legionella ND=Not Detected in volume of sample filtered. The LOD for the Legionella analysis will increase where the volume analysed is <1000g (1g is approximately equivalent to 1ml for sample volume analysed).
I/S=Insufficient sample

Signed: A I Horobin	Name: **A. Horobin**	Date: **14 December 2012**
	Title: **Organic Operations Manager**	

Certificate of Analysis

UKAS TESTING
1314
1229
0897
4409

SEVERN TRENT SERVICES

Report Number: **COV/899700/2012** Issue **1**
Laboratory Number: **13287460** Sample **6** of **7**

Sample Source: **Zeon Chemicals**
Sample Point Description: **Zeon**
Sample Description: **213**
Sample Matrix: **Ground waters**
Sample Date/Time: **21 November 2012**
Sample Received: **22 November 2012**
Analysis Complete: **05 December 2012**

Test Description	Result	Units	Accreditation	Method
EH >C6 - C40	25	ug/l	Y Cov	GEO35
EH >C6 - C8	<10	ug/l	N Cov	GEO35
EH >C8 - C10	<10	ug/l	N Cov	GEO35
EH >C16 - C24	13	ug/l	N Cov	GEO35
EH >C24 - C40	<10	ug/l	N Cov	GEO35
EH >C10 - C16	12	ug/l	N Cov	GEO35
Acenaphthene	<0.01	ug/l	Y Cov	GEO19
Acenaphthylene	<0.01	ug/l	Y Cov	GEO19
Anthracene	<0.01	ug/l	Y Cov	GEO19
Benzo (a) anthracene	<0.01	ug/l	Y Cov	GEO19
Benzo (g,h,i) perylene	<0.01	ug/l	Y Cov	GEO19
Benzo (a) pyrene	<0.01	ug/l	Y Cov	GEO19
Benzo (b) fluoranthene	<0.01	ug/l	Y Cov	GEO19
Benzo (k) fluoranthene	<0.01	ug/l	Y Cov	GEO19
Chrysene	<0.01	ug/l	Y Cov	GEO19
Dibenz (a,h) anthracene	<0.01	ug/l	Y Cov	GEO19
Fluoranthene	<0.01	ug/l	Y Cov	GEO19
Fluorene	<0.01	ug/l	Y Cov	GEO19
Indeno (1,2,3) cd pyrene	<0.01	ug/l	Y Cov	GEO19
Naphthalene	<0.01	ug/l	Y Cov	GEO19
Phenanthrene	<0.01	ug/l	Y Cov	GEO19
Pyrene	<0.01	ug/l	Y Cov	GEO19
PAH, Total	<0.01	ug/l	N Cov	GEO19

Analyst Comments for 13287460: This sample has been analysed for PAH Waters method GEO19, EH Waters method GEO35 outside recommended stability times. It is therefore possible that the results provided may be compromised.

Accreditation Codes: Y = UKAS Accredited, N = Not UKAS Accredited, M = MCERTS.
Analysed at: Brd = Bridgend, Cov = Coventry, Rea = Reading, Run = Runcorn, S = Subcontracted, Wak = Wakefield.
For Microbiological determinands 0 or ND=Not Detected, For Legionella ND=Not Detected in volume of sample filtered. The LOD for the Legionella analysis will increase where the volume analysed is <1000g (1g is approximately equivalent to 1ml for sample volume analysed).
I/S=Insufficient sample

Signed: A I Horobin	Name: **A. Horobin**	Date: **14 December 2012**
	Title: **Organic Operations Manager**	

Certificate of Analysis

UKAS TESTING
1314
1229
0897
4409

SEVERN TRENT SERVICES

Report Number: **COV/899700/2012** Issue **1**
Laboratory Number: **13287461** Sample **7** of **7**

Sample Source: **Zeon Chemicals**
Sample Point Description: **Zeon**
Sample Description: **214**
Sample Matrix: **Ground waters**
Sample Date/Time: **21 November 2012**
Sample Received: **22 November 2012**
Analysis Complete: **05 December 2012**

Test Description	Result	Units	Accreditation	Method
EH >C6 - C40	23	ug/l	Y Cov	GEO35
EH >C6 - C8	<10	ug/l	N Cov	GEO35
EH >C8 - C10	<10	ug/l	N Cov	GEO35
EH >C16 - C24	11	ug/l	N Cov	GEO35
EH >C24 - C40	<10	ug/l	N Cov	GEO35
EH >C10 - C16	12	ug/l	N Cov	GEO35
Acenaphthene	<0.01	ug/l	Y Cov	GEO19
Acenaphthylene	<0.01	ug/l	Y Cov	GEO19
Anthracene	<0.01	ug/l	Y Cov	GEO19
Benzo (a) anthracene	<0.01	ug/l	Y Cov	GEO19
Benzo (g,h,i) perylene	<0.01	ug/l	Y Cov	GEO19
Benzo (a) pyrene	<0.01	ug/l	Y Cov	GEO19
Benzo (b) fluoranthene	<0.01	ug/l	Y Cov	GEO19
Benzo (k) fluoranthene	<0.01	ug/l	Y Cov	GEO19
Chrysene	<0.01	ug/l	Y Cov	GEO19
Dibenz (a,h) anthracene	<0.01	ug/l	Y Cov	GEO19
Fluoranthene	<0.01	ug/l	Y Cov	GEO19
Fluorene	<0.01	ug/l	Y Cov	GEO19
Indeno (1,2,3) cd pyrene	<0.01	ug/l	Y Cov	GEO19
Naphthalene	<0.01	ug/l	Y Cov	GEO19
Phenanthrene	<0.01	ug/l	Y Cov	GEO19
Pyrene	<0.01	ug/l	Y Cov	GEO19
PAH, Total	<0.01	ug/l	N Cov	GEO19

Analyst Comments for 13287461: This sample has been analysed for PAH Waters method GEO19, EH Waters method GEO35 outside recommended stability times. It is therefore possible that the results provided may be compromised.

Accreditation Codes: Y = UKAS Accredited, N = Not UKAS Accredited, M = MCERTS.
Analysed at: Brd = Bridgend, Cov = Coventry, Rea = Reading, Run = Runcorn, S = Subcontracted, Wak = Wakefield.
For Microbiological determinands 0 or ND=Not Detected, For Legionella ND=Not Detected in volume of sample filtered. The LOD for the Legionella analysis will increase where the volume analysed is <1000g (1g is approximately equivalent to 1ml for sample volume analysed).
I/S=Insufficient sample

Signed: A I Horobin	Name: **A. Horobin**	Date: **14 December 2012**
	Title: **Organic Operations Manager**	

45 samples

ALS Environmental Ltd
Torrington Avenue,
Coventry, CV4 9GU

T: +44 (0)24 7642 1213
F: +44 (0)24 7685 6575

www.als-testing.co.uk

Mr Pearce
Zeon Chemicals
Sully Moors Road
Sully
Barry CF64 5ZE
Glamorgan

19 February 2013

Test Report: COV/914979/2013

Dear Mr Pearce

Analysis of your sample(s) submitted on 12 February 2013 is now complete and we have pleasure in enclosing the appropriate test report(s).

An invoice for the analysis carried out will be sent under separate cover.

Should you have any queries regarding this report(s) or any part of our service, please contact Customer Services on +44 (0)24 7642 1213 who will be happy to discuss your requirements.

If you would like to arrange any further analysis, please contact Customer Services. To arrange container delivery or sample collection, please call the Couriers Department directly on 024 7685 6562.

Thank you for using ALS Environmental Ltd and we look forward to receiving your next samples.

9-2 24th

Yours Sincerely,

63983
45.42 £0

Signed: A I Horobin

Name: A. Horobin

Madara.Zvirgzda@alsglobal.com

Title: Organic Operations Manager

Report Summary

UKAS TESTING
1314
1229
0897
4409

ALS Environmental

Mr Graham Pearce
Zeon Chemicals
Sully Moors Road
Sully
Barry
Glamorgan
CF64 5ZE

Date of Issue: **19 February 2013**

Report Number: **COV/914979/2013** Issue **1**

Job Description: TPH & PAH on Groundwaters

Job Location: TPH & PAH on Groundwaters

Number of Samples included in this report **4**

Job Received: **12 February 2013**

Number of Test Results included in this report **92**

Analysis Commenced: **13 February 2013**

Signed: A I Horobin

Name: **A. Horobin** Date: **19 February 2013**

Title: **Organic Operations Manager**

ALS Environmental Ltd was not responsible for sampling unless otherwise stated. Sampling is not covered by our UKAS accreditation.

Information on the methods of analysis and performance characteristics are available on request.
Opinions and interpretations expressed herein are outside the scope of UKAS accreditation. The results relate only to the items tested.
Tests marked 'Not UKAS Accredited' in this Report/Certificate are not included in the UKAS Accreditation Schedule for our laboratory.

ALS Environmental Ltd
Torrington Avenue
Coventry
CV4 9GU

T: +44 (0)24 7642 1213
F: +44 (0)24 7685 6575
www.alsenvironmental.co.uk

Mr Pearce
Zeon Chemicals
Sully Moors Road
Sully
Barry CF64 5ZE
Glamorgan

14 November 2013

Test Report: COV/966569/2013

Dear Mr Pearce

Analysis of your sample(s) submitted on 07 November 2013 is now complete and we have pleasure in enclosing the appropriate test report(s).

An invoice for the analysis carried out will be sent under separate cover.

Should you have any queries regarding this report(s) or any part of our service, please contact Customer Services on +44 (0)24 7642 1213 who will be happy to discuss your requirements.

If you would like to arrange any further analysis, please contact Customer Services. To arrange container delivery or sample collection, please call the Couriers Department directly on 024 7685 6562.

Thank you for using ALS Environmental Ltd and we look forward to receiving your next samples.

Yours Sincerely,

Signed:

Name: C. Law

Title: Inorganics Operations Manager

1314
4398

Certificate No. GB97/10269
Environmental Management Systems

OHS 542058

FS 67435

Report Summary

UKAS TESTING
1314
0897
4409

ALS Environmental

Mr Graham Pearce
Zeon Chemicals
Sully Moors Road
Sully
Barry
Glamorgan
CF64 5ZE

Date of Issue: **14 November 2013**

Report Number: **COV/966569/2013** Issue **1**

Job Description: Extractable Hydrocarbons Analysis.

Number of Samples included in this report **4**

Number of Test Results included in this report **24**

Job Received: **07 November 2013**

Analysis Commenced: **08 November 2013**

Signed:

Name: **C. Law** Date: **14 November 2013**

Title: **Inorganics Operations Manager**

ALS Environmental Ltd was not responsible for sampling unless otherwise stated. Sampling is not covered by our UKAS accreditation.

Information on the methods of analysis and performance characteristics are available on request.
Opinions and interpretations expressed herein are outside the scope of UKAS accreditation. The results relate only to the items tested.
Tests marked 'Not UKAS Accredited' in this Report/Certificate are not included in the UKAS Accreditation Schedule for our laboratory.

Certificate of Analysis

UKAS TESTING
1314
0897
4409

ALS Environmental

Report Number: **COV/966569/2013** Issue **1**
Laboratory Number: **13777160** Sample **4** of **4**

Sample Source: **Zeon Chemicals**
Sample Point Description:
Sample Description: **205**
Sample Matrix: **Not Specified**
Sample Date/Time: **04 November 2013**
Sample Received: **07 November 2013**
Analysis Complete: **11 November 2013**

Test Description	Result	Units	Accreditation		Method
EH >C6 - C40	79	ug/l	Y	Cov	GEO35
EH >C6 - C8	<10	ug/l	N	Cov	GEO35
EH >C8 - C10	42	ug/l	N	Cov	GEO35
EH >C16 - C24	18	ug/l	N	Cov	GEO35
EH >C24 - C40	<10	ug/l	N	Cov	GEO35
EH >C10 - C16	19	ug/l	N	Cov	GEO35

Analyst Comments for 13777160: No Analyst Comment

Accreditation Codes: Y = UKAS / ISO17025 Accredited, N = Not UKAS / ISO17025 Accredited, M = MCERTS.
Analysed at: Cov = Coventry(CV4 9GU), Run = Runcorn(WA7 1SL), S = Subcontracted, Trb = Subcontracted to Trowbridge(BA14 0XD), Wak = Wakefield(WF5 9TG).
For Microbiological determinands 0 or ND=Not Detected, For Legionella ND=Not Detected in volume of sample filtered. The LOD for the Legionella analysis will increase where the volume analysed is <1000g (1g is approximately equivalent to 1ml for sample volume analysed).
I/S=Insufficient sample For soil/sludge samples: AR=As received, DW=Dry weight.

Signed:

Name: **C. Law** Date: **14 November 2013**
Title: **Inorganics Operations Manager**

Certificate of Analysis

UKAS TESTING
1314
0897
4409

ALS Environmental

Report Number: **COV/966569/2013** Issue **1**
Laboratory Number: **13777159** Sample **3** of **4**

Sample Source: **Zeon Chemicals**
Sample Point Description:
Sample Description: **206**
Sample Matrix: **Not Specified**
Sample Date/Time: **04 November 2013**
Sample Received: **07 November 2013**
Analysis Complete: **11 November 2013**

Test Description	Result	Units	Accreditation		Method
EH >C6 - C40	44	ug/l	Y	Cov	GEO35
EH >C6 - C8	<10	ug/l	N	Cov	GEO35
EH >C8 - C10	11	ug/l	N	Cov	GEO35
EH >C16 - C24	13	ug/l	N	Cov	GEO35
EH >C24 - C40	<10	ug/l	N	Cov	GEO35
EH >C10 - C16	20	ug/l	N	Cov	GEO35

Analyst Comments for 13777159: No Analyst Comment

Accreditation Codes: Y = UKAS / ISO17025 Accredited, N = Not UKAS / ISO17025 Accredited, M = MCERTS.
Analysed at: Cov = Coventry(CV4 9GU), Run = Runcorn(WA7 1SL), S = Subcontracted, Trb = Subcontracted to Trowbridge(BA14 0XD), Wak = Wakefield(WF5 9TG).
For Microbiological determinands 0 or ND=Not Detected, For Legionella ND=Not Detected in volume of sample filtered. The LOD for the Legionella analysis will increase where the volume analysed is <1000g (1g is approximately equivalent to 1ml for sample volume analysed).
I/S=Insufficient sample For soil/sludge samples: AR=As received, DW=Dry weight.

Signed: Name: **C. Law** Date: **14 November 2013**
Title: **Inorganics Operations Manager**

Certificate of Analysis

UKAS TESTING
1314
0897
4409

ALS Environmental

Report Number: **COV/966569/2013** Issue **1**
Laboratory Number: **13777157** Sample **1** of **4**

Sample Source: **Zeon Chemicals**
Sample Point Description:
Sample Description: **211**
Sample Matrix: **Not Specified**
Sample Date/Time: **04 November 2013**
Sample Received: **07 November 2013**
Analysis Complete: **11 November 2013**

Test Description	Result	Units	Accreditation		Method
EH >C6 - C40	3450	ug/l	Y	Cov	GEO35
EH >C6 - C8	<10	ug/l	N	Cov	GEO35
EH >C8 - C10	<10	ug/l	N	Cov	GEO35
EH >C16 - C24	313	ug/l	N	Cov	GEO35
EH >C24 - C40	40	ug/l	N	Cov	GEO35
EH >C10 - C16	3100	ug/l	N	Cov	GEO35

Analyst Comments for 13777157: No Analyst Comment

Accreditation Codes: Y = UKAS / ISO17025 Accredited, N = Not UKAS / ISO17025 Accredited, M = MCERTS.
Analysed at: Cov = Coventry(CV4 9GU), Run = Runcorn(WA7 1SL), S = Subcontracted, Trb = Subcontracted to Trowbridge(BA14 0XD), Wak = Wakefield(WF5 9TG).
For Microbiological determinands 0 or ND=Not Detected, For Legionella ND=Not Detected in volume of sample filtered. The LOD for the Legionella analysis will increase where the volume analysed is <1000g (1g is approximately equivalent to 1ml for sample volume analysed).
I/S=Insufficient sample For soil/sludge samples: AR=As received, DW=Dry weight.

Signed:

Name: **C. Law** Date: **14 November 2013**
Title: **Inorganics Operations Manager**

Certificate of Analysis

UKAS TESTING
1314
0897
4409

ALS Environmental

Report Number: **COV/966569/2013** Issue **1**
Laboratory Number: **13777158** Sample **2** of **4**

Sample Source: **Zeon Chemicals**
Sample Point Description:
Sample Description: **207**
Sample Matrix: **Not Specified**
Sample Date/Time: **04 November 2013**
Sample Received: **07 November 2013**
Analysis Complete: **11 November 2013**

Test Description	Result	Units	Accreditation		Method
EH >C6 - C40	351	ug/l	Y	Cov	GEO35
EH >C6 - C8	<10	ug/l	N	Cov	GEO35
EH >C8 - C10	14	ug/l	N	Cov	GEO35
EH >C16 - C24	32	ug/l	N	Cov	GEO35
EH >C24 - C40	<10	ug/l	N	Cov	GEO35
EH >C10 - C16	306	ug/l	N	Cov	GEO35

Analyst Comments for 13777158: No Analyst Comment

Accreditation Codes: Y = UKAS / ISO17025 Accredited, N = Not UKAS / ISO17025 Accredited, M = MCERTS.
Analysed at: Cov = Coventry(CV4 9GU), Run = Runcorn(WA7 1SL), S = Subcontracted, Trb = Subcontracted to Trowbridge(BA14 0XD), Wak = Wakefield(WF5 9TG).
For Microbiological determinands 0 or ND=Not Detected, For Legionella ND=Not Detected in volume of sample filtered. The LOD for the Legionella analysis will increase where the volume analysed is <1000g (1g is approximately equivalent to 1ml for sample volume analysed).
I/S=Insufficient sample For soil/sludge samples: AR=As received, DW=Dry weight.

Signed: C Law

Name: **C. Law** Date: **14 November 2013**
Title: **Inorganics Operations Manager**

ALS Environmental Ltd
Torrington Avenue
Coventry
CV4 9GU

T: +44 (0)24 7642 1213
F: +44 (0)24 7685 6575
www.alsenvironmental.co.uk

Mr Pearce
Zeon Chemicals
Sully Moors Road
Sully
Barry CF64 5ZE
Glamorgan

04 April 2014

Test Report: COV/1102363/2014

Dear Mr Pearce

Analysis of your sample(s) submitted on 27 March 2014 is now complete and we have pleasure in enclosing the appropriate test report(s).

An invoice for the analysis carried out will be sent under separate cover.

Should you have any queries regarding this report(s) or any part of our service, please contact Customer Services on +44 (0)24 7642 1213 who will be happy to discuss your requirements.

If you would like to arrange any further analysis, please contact Customer Services. To arrange container delivery or sample collection, please call the Couriers Department directly on 024 7685 6562.

Thank you for using ALS Environmental Ltd and we look forward to receiving your next samples.

Yours Sincerely,

Signed: G Coiley

Name: G. Coiley

Title: Coventry Operations Manager

Report Summary

UKAS TESTING
1314
0897
4409

ALS Environmental

Mr Graham Pearce
Zeon Chemicals
Sully Moors Road
Sully
Barry
Glamorgan
CF64 5ZE

Date of Issue: **04 April 2014**

Report Number: **COV/1102363/2014** Issue **1**

Job Description: Extractable Hydrocarbons Analysis.

Number of Samples included in this report **5**

Number of Test Results included in this report **30**

Job Received: **27 March 2014**

Analysis Commenced: **31 March 2014**

Signed: CACoiley

Name: **G. Coiley** Date: **04 April 2014**

Title: **Coventry Operations Manager**

ALS Environmental Ltd was not responsible for sampling unless otherwise stated. Sampling is not covered by our UKAS accreditation.

Information on the methods of analysis and performance characteristics are available on request.
Opinions and interpretations expressed herein are outside the scope of UKAS accreditation. The results relate only to the items tested.
Tests marked 'Not UKAS Accredited' in this Report/Certificate are not included in the UKAS Accreditation Schedule for our laboratory.

Certificate of Analysis

UKAS TESTING
1314
0897
4409

ALS Environmental

Report Number: **COV/1102363/2014** Issue **1**
Laboratory Number: **13977695** Sample **1** of **5**

Sample Source: **Zeon Chemicals**
Sample Point Description:
Sample Description: **Sample 1 206**
Sample Matrix: **Not In Project**
Sample Date/Time: **27 March 2014**
Sample Received: **27 March 2014**
Analysis Complete: **04 April 2014**

Test Description	Result	Units	Analysis Date	Accreditation		Method
EH >C6 - C40	166	ug/l	04/04/2014	Y	Cov	GEO35
EH >C6 - C8	<10	ug/l	04/04/2014	N	Cov	GEO35
EH >C8 - C10	<10	ug/l	04/04/2014	N	Cov	GEO35
EH >C16 - C24	53	ug/l	04/04/2014	N	Cov	GEO35
EH >C24 - C40	19	ug/l	04/04/2014	N	Cov	GEO35
EH >C10 - C16	94	ug/l	04/04/2014	N	Cov	GEO35

Analyst Comments for 13977695: No Analyst Comment

Accreditation Codes: Y = UKAS / ISO17025 Accredited, N = Not UKAS / ISO17025 Accredited, M = MCERTS.
Analysed at: Cov = Coventry(CV4 9GU), Run = Runcorn(WA7 1SL), S = Subcontracted, Trb = Subcontracted to Trowbridge(BA14 0XD), Wak = Wakefield(WF5 9TG).
For Microbiological determinands 0 or ND=Not Detected, For Legionella ND=Not Detected in volume of sample filtered. The LOD for the Legionella analysis will increase where the volume analysed is <1000g (1g is approximately equivalent to 1ml for sample volume analysed).
I/S=Insufficient sample For soil/sludge samples: AR=As received, DW=Dry weight.

Signed: CACoiley
Name: **G. Coiley** Date: **04 April 2014**
Title: **Coventry Operations Manager**

Certificate of Analysis

UKAS TESTING
1314
0897
4409

ALS Environmental

Report Number: **COV/1102363/2014** Issue **1**
Laboratory Number: **13977696** Sample **2** of **5**

Sample Source: **Zeon Chemicals**
Sample Point Description:
Sample Description: **Sample 2 207**
Sample Matrix: **Not In Project**
Sample Date/Time: **27 March 2014**
Sample Received: **27 March 2014**
Analysis Complete: **04 April 2014**

Test Description	Result	Units	Analysis Date	Accreditation		Method
EH >C6 - C40	1610	ug/l	01/04/2014	Y	Cov	GEO35
EH >C6 - C8	<10	ug/l	01/04/2014	N	Cov	GEO35
EH >C8 - C10	789	ug/l	01/04/2014	N	Cov	GEO35
EH >C16 - C24	93	ug/l	01/04/2014	N	Cov	GEO35
EH >C24 - C40	<10	ug/l	01/04/2014	N	Cov	GEO35
EH >C10 - C16	729	ug/l	01/04/2014	N	Cov	GEO35

Analyst Comments for 13977696: No Analyst Comment

Accreditation Codes: Y = UKAS / ISO17025 Accredited, N = Not UKAS / ISO17025 Accredited, M = MCERTS.
Analysed at: Cov = Coventry(CV4 9GU), Run = Runcorn(WA7 1SL), S = Subcontracted, Trb = Subcontracted to Trowbridge(BA14 0XD), Wak = Wakefield(WF5 9TG).
For Microbiological determinands 0 or ND=Not Detected, For Legionella ND=Not Detected in volume of sample filtered. The LOD for the Legionella analysis will increase where the volume analysed is <1000g (1g is approximately equivalent to 1ml for sample volume analysed).
I/S=Insufficient sample For soil/sludge samples: AR=As received, DW=Dry weight.

Signed: G Coiley

Name: **G. Coiley** Date: **04 April 2014**
Title: **Coventry Operations Manager**

Certificate of Analysis

UKAS TESTING
1314
0897
4409

ALS Environmental

Report Number: **COV/1102363/2014** Issue **1**
Laboratory Number: **13977697** Sample **3** of **5**

Sample Source: **Zeon Chemicals**
Sample Point Description:
Sample Description: **Sample 3 208**
Sample Matrix: **Not In Project**
Sample Date/Time: **27 March 2014**
Sample Received: **27 March 2014**
Analysis Complete: **04 April 2014**

Test Description	Result	Units	Analysis Date	Accreditation		Method
EH >C6 - C40	120	ug/l	01/04/2014	Y	Cov	GEO35
EH >C6 - C8	100	ug/l	01/04/2014	N	Cov	GEO35
EH >C8 - C10	<10	ug/l	01/04/2014	N	Cov	GEO35
EH >C16 - C24	<10	ug/l	01/04/2014	N	Cov	GEO35
EH >C24 - C40	<10	ug/l	01/04/2014	N	Cov	GEO35
EH >C10 - C16	20	ug/l	01/04/2014	N	Cov	GEO35

Analyst Comments for 13977697: No Analyst Comment

Accreditation Codes: Y = UKAS / ISO17025 Accredited, N = Not UKAS / ISO17025 Accredited, M = MCERTS.
Analysed at: Cov = Coventry(CV4 9GU), Run = Runcorn(WA7 1SL), S = Subcontracted, Trb = Subcontracted to Trowbridge(BA14 0XD), Wak = Wakefield(WF5 9TG).
For Microbiological determinands 0 or ND=Not Detected, For Legionella ND=Not Detected in volume of sample filtered. The LOD for the Legionella analysis will increase where the volume analysed is <1000g (1g is approximately equivalent to 1ml for sample volume analysed).
I/S=Insufficient sample For soil/sludge samples: AR=As received, DW=Dry weight.

Signed: CACoiley

Name: **G. Coiley** Date: **04 April 2014**

Title: **Coventry Operations Manager**

Certificate of Analysis

UKAS TESTING
1314
0897
4409

ALS Environmental

Report Number: **COV/1102363/2014** Issue **1**
Laboratory Number: **13977698** Sample **4** of **5**

Sample Source: **Zeon Chemicals**
Sample Point Description:
Sample Description: **Sample 4 211**
Sample Matrix: **Not In Project**
Sample Date/Time: **27 March 2014**
Sample Received: **27 March 2014**
Analysis Complete: **04 April 2014**

Test Description	Result	Units	Analysis Date	Accreditation	Method
EH >C6 - C40	354	ug/l	01/04/2014	Y Cov	GEO35
EH >C6 - C8	<40	ug/l	01/04/2014	N Cov	GEO35
EH >C8 - C10	<40	ug/l	01/04/2014	N Cov	GEO35
EH >C16 - C24	104	ug/l	01/04/2014	N Cov	GEO35
EH >C24 - C40	<40	ug/l	01/04/2014	N Cov	GEO35
EH >C10 - C16	250	ug/l	01/04/2014	N Cov	GEO35

Analyst Comments for 13977698: Reporting limits raised for EH analysis due to nature of sample matrix.

Accreditation Codes: Y = UKAS / ISO17025 Accredited, N = Not UKAS / ISO17025 Accredited, M = MCERTS.
Analysed at: Cov = Coventry(CV4 9GU), Run = Runcorn(WA7 1SL), S = Subcontracted, Trb = Subcontracted to Trowbridge(BA14 0XD), Wak = Wakefield(WF5 9TG).
For Microbiological determinands 0 or ND=Not Detected, For Legionella ND=Not Detected in volume of sample filtered. The LOD for the Legionella analysis will increase where the volume analysed is <1000g (1g is approximately equivalent to 1ml for sample volume analysed).
I/S=Insufficient sample For soil/sludge samples: AR=As received, DW=Dry weight.

Signed: CACoiley

Name: **G. Coiley** Date: **04 April 2014**

Title: **Coventry Operations Manager**

Certificate of Analysis

UKAS TESTING
1314
0897
4409

ALS Environmental

Report Number: **COV/1102363/2014** Issue **1**
Laboratory Number: **13977699** Sample **5** of **5**

Sample Source: **Zeon Chemicals**
Sample Point Description:
Sample Description: **Sample 5 214**
Sample Matrix: **Not In Project**
Sample Date/Time: **27 March 2014**
Sample Received: **27 March 2014**
Analysis Complete: **04 April 2014**

Test Description	Result	Units	Analysis Date	Accreditation		Method
EH >C6 - C40	64	ug/l	01/04/2014	Y	Cov	GEO35
EH >C6 - C8	<40	ug/l	01/04/2014	N	Cov	GEO35
EH >C8 - C10	<40	ug/l	01/04/2014	N	Cov	GEO35
EH >C16 - C24	<40	ug/l	01/04/2014	N	Cov	GEO35
EH >C24 - C40	<40	ug/l	01/04/2014	N	Cov	GEO35
EH >C10 - C16	64	ug/l	01/04/2014	N	Cov	GEO35

Analyst Comments for 13977699: Reporting limits raised for EH analysis due to nature of sample matrix.

Accreditation Codes: Y = UKAS / ISO17025 Accredited, N = Not UKAS / ISO17025 Accredited, M = MCERTS.
Analysed at: Cov = Coventry(CV4 9GU), Run = Runcorn(WA7 1SL), S = Subcontracted, Trb = Subcontracted to Trowbridge(BA14 0XD), Wak = Wakefield(WF5 9TG).
For Microbiological determinands 0 or ND=Not Detected, For Legionella ND=Not Detected in volume of sample filtered. The LOD for the Legionella analysis will increase where the volume analysed is <1000g (1g is approximately equivalent to 1ml for sample volume analysed).
I/S=Insufficient sample For soil/sludge samples: AR=As received, DW=Dry weight.

Signed: CACoiley

Name: **G. Coiley** Date: **04 April 2014**

Title: **Coventry Operations Manager**

APPENDIX 5
SITE CLOSURE PLAN

ZDcmP 11.001

Zeon Chemicals Europe Ltd

Site Closure Plan

Revision 3: 30/11/15

Contents

Appendices

1. Introduction:

Zeon Chemicals Europe Ltd (ZCEL) produces Nitrile Rubber and Latex, and ZSC (Zeon Special Composite) at its facility in Barry, South Wales.

As required by “the Environmental Permitting (England and Wales) Regulations 2010” Article 3, ZCEL must “take the necessary measures upon definitive cessation of activities to avoid any pollution risk and return the site of operation to a satisfactory state”.

This document describes how this requirement will be met, in the event the ZCEL production facility discontinues its operation.

2. Organisation and Responsibilities

Responsibilities are described in ZDcmP: 1.010, Plant Purging and Preparation Protocol. During the time of plant closure it is anticipated that some staff will leave and that some of those may be in key positions. A “Risk List” will be prepared with contingencies set out for each employee should they leave. It is the Directors responsibility to ensure that all key positions are fully covered and if necessary personnel encouraged to stay throughout the decommissioning process. If any management positions become vacant their responsibilities must be covered by their seniors. If necessary specific help may be requested from sister companies in Japan and the USA. Lower grade positions can be covered by contract labour although it must be ensured that full induction and suitable training is provided to ensure they are competent before they start work on site.

Before the Decommissioning Period starts a two day induction and refresher training session will take place for all operations personnel to inform them of the extra hazards involved and update their competencies in non-routine activities (e.g. confined space, high pressure water jetting).

3. Emergency Response

ZDmcP: 1.020, Guidance in the event of an Emergency, has been produced to take into account the reduction in numbers of staff on site out of normal day hours. Managers will be available to provide advice and to attend site as required.

4. Process Outline:

The facility uses two main raw materials, Acrylonitrile (AN) and Butadiene (BN), both of which are COMAH materials. Two other COMAH listed materials, Tertiary Dodecyl Mercaptan (TDM), and Anhydrous Ammonia are also used. The site is classed as a Lower-Tier COMAH site.

AN and BN are delivered by road tanker and offloaded into storage tanks in N58 tank farm. TDM is delivered by road tanker and offloaded into a storage tank alongside N55 Polymerisation building. Ammonia is used as a refrigerant, and delivery of this material is infrequent.

AN, BN and TDM are transferred into one of eight Polymerisation vessels (polys), together with additional materials such as emulsifiers, catalysts and water, where a reaction takes place. The raw materials are converted into rubber latex before being transferred into a blowdown vessel, where the reaction is terminated with the addition of a stopping agent.

Residual AN and BN from the reaction are removed in the Blowdown, recovered and reused in the process. After the monomers have been stripped from the latex, the latex is transferred into intermediate storage tanks (Blend tanks).

A Thermal Oxidiser is installed to destroy AN / BN vented from the process.

From the blend tanks, the latex is transferred to a continuous coagulation section, where it is converted into rubber “crumb” using a Salt as a coagulant. The crumb is then washed with water before transferring into a drying section.

The drying plant consists of 2 mechanical driers and 2 air driers. The mechanical driers squeeze water from the crumb from approximately 50% water down to approximately 5% water. The material then passes into 2 fluid bed driers where it is dried to <0.8% moisture using hot air.

The dried material passes into a baler, where it is compressed into 20 / 25 Kg bales before packing into steel crates using a Robot packer. The crates are then transferred to S75 Finished Goods warehouse prior to despatch to the customer.

A small volume of Sales Latex is also produced. The process is similar to the first stage described above, but after transfer to Stock Tanks, the material is then transferred into 1 te, Polythene lined, cardboard IBC’s, and shipped to the customer.

ZSC production is subject to a confidentiality agreement with Natural Resources Wales, and therefore the process description has not been included in this document.

5. Emptying and Draining of Storage Tanks:

Emptying and draining of storage tanks will be covered by specific procedures or, if these do not exist, by creating Method Statements, but the following tanks will be emptied and purged of contents:

Raw Materials – See Appendix 2

In Process Storage (Raw Materials) – See Appendix 3

All procedures and method statements will be designed to purge all chemicals and waste from plant equipment to a safe level in a safe and environmentally responsible manner. They will attempt to minimise any releases to the atmosphere, air or water. If any releases occur, or have the potential to occur, beyond the permit limits then NRW should be contacted at the earliest opportunity. If the release is to water then Hexion must also be contacted to protect their consent to discharge.

5.1 Raw Materials:

The following sequence should be adopted:

- Determine production requirements up to closure deadline
- Assess individual Raw Material requirements and order sufficient to ensure minimal residual stock of each raw material. This could involve using smaller containers (e.g. Bulk to IBC or drum) for delivery. Management of Change procedures must be used to ensure the transfer of materials from the alternative containers can be done safely and without risk of spillage.
- Convert the maximum quantities of raw materials into product, even if producing “off-specification” product (e.g. use of higher levels of recovered monomers). Recipes and methods to produce this “off-specification” product must be checked by the Technical Group to ensure the reaction will run in a controlled manner and the products produced will be non-hazardous.
- Where possible return unused raw materials to suppliers.
- In the case of Butadiene, remove as much BN from the tanks as possible. Purge any residual BN through the Thermal Oxidiser
- In the case of Acrylonitrile & Recovered Acrylonitrile, remove as much as possible from the tanks. An outside contractor will be used to remove any remaining AN and dispose of through a licensed disposal site.
- Where residual raw materials can be disposed of through the effluent system without causing any damage to the Biomass or causing any exceedance of permitted consent levels this should be done.
- For other raw material residuals, these will be transferred into suitable containers for subsequent disposal via licensed waste disposal company. These containers must be stored in contained areas where any leaks or spillages cannot pollute the soil or ground water.

5.2 In Process Raw Material Storage:

The following sequence should be adopted:

- Transfer the minimum quantity required for production into the tank
- In the case of “make-ups”, make up the minimum quantity required to meet the planned production volume
- Where possible, transfer any residual material back to the main feed tank
- Recovered monomer storage will need to be carefully controlled to minimise the residual monomers remaining.
- In the case of the Recovered BN Storage Tanks, any residual BN will be gradually removed via the Thermal Oxidiser
- Where residual raw materials can be disposed of through the effluent system without causing any damage to the Biomass or causing any exceedance of permitted consent levels this should be done.
- For other raw material residuals, these will be transferred into suitable containers for subsequent disposal via licensed waste disposal

companies. These containers must be stored in contained areas where any leaks or spillages cannot contaminate the soil or ground water.

6. Purging and Cleaning of Storage Tanks and Associated Equipment:

Purging and cleaning of storage tanks & associated equipment will be covered by specific procedures or, if these do not exist, by creating Method Statements, but the following systems will require careful purging / cleaning, and confirmation they have been fully decontaminated:

- Fresh BN, including offloading and transfer systems
- Fresh AN, including offloading & transfer systems
- Incremental AN charging system
- Recovered AN charging & recovery systems
- BN Wash plant, including main & incremental charging systems
- Recovered BN system, including recycle and transfer systems
- Anhydrous Ammonia
- TDM storage tank, weigh tank and associated pumps / pipework
- TBC tank and associated pump & pipework
- PMHP tank and associated pump / pipework

In the case of AN and BN systems, the relevant procedures will state the acceptable residual levels allowable in the systems.

7. Emptying & Draining of Process Vessels:

Emptying and draining of Process vessels will be covered by specific procedures or, if these do not exist, by creating Method Statements, but vessels / tanks in the following areas will be emptied (See Appendix 4):

- Polymerisation Section)
- Coagulation & Drying Section) See Appendix 4
- Sales Latex section)
- Effluent Plant)
- Other areas See Appendix 5

8. Purging and Cleaning of Process Vessels and Associated Equipment:

Purging and cleaning of Process vessels & associated equipment will be covered by specific procedures or, if these do not exist, by creating Method Statements. As with section 4 above, the following systems will require confirmation they have been fully decontaminated:

- Monomer Recovery Vessels
- Monomer Recovery pipework
- Monomer recovery Vacuum pumps

9. Decommissioning of Plant/Equipment Containing Hazardous Materials:

Any breaking of containment cannot be carried out until section 4 has been completed.

Breaking of containment is covered by specific procedures, and these procedures must be strictly followed to prevent any exposure to hazardous materials. Any residual materials must be contained to ensure no contamination of the environment.

Following disconnection, plant / pipework / equipment will be further tested to ensure decontamination is satisfactory. If residual materials are present, further decontamination must be carried out.

Where necessary, decontaminated plant & equipment should be labelled and relocated to a designated area.

10. Decommissioning of Plant/Equipment Containing Non-Hazardous Materials:

Any breaking of containment cannot be carried out until section 4 has been completed.

As in section 7, breaking of containment is covered by procedure.

For Non-Hazardous materials, a container or absorbent must be positioned to catch any potential spillage to prevent potential land contamination.

Following disconnection, plant / equipment must be thoroughly flushed to ensure minimal residual material remains.

Where necessary, decontaminated plant & equipment should be labelled and relocated to a designated area.

11. Dealing with Asbestos Containing Materials (ACM's):

All decommissioning work carried out must comply with the "Control of Asbestos Regulations 2006".

Before any plant, equipment, pipework, building materials, etc. are removed, reference must be made to the site Asbestos Register.

If the presence of Asbestos is suspected, work must cease immediately and the area cordoned off. The suspect material must be analysed by an approved laboratory to confirm if Asbestos is present. If Asbestos is confirmed, any action taken (e.g. removal) must be in accordance with the above regulations.

A full refurbishment and demolition survey will be carried out on all areas of plant before the scope of demolition work is established.

12. Disposal of Residual Raw Materials/Finished Goods/Stores Items:

12.1 Raw Materials:

Where residual raw materials cannot be returned to the supplier or processed on site, they will be suitably packaged and disposed of as waste using a licensed waste disposal contractor. Any packaging must be stored in contained areas where any leaks or spillages cannot contaminate the soil or ground water.

12.2 Finished Goods:

Disposal of Finished Goods will be determined by the Sales department. The following categories will be involved:

- ZCEL NBR – Prime A grade
- ZCEL NBR – Off grade
- ZCEL ZSC
- ZCEL Latex
- ZCEL Sister company products

Any Finished Goods that cannot be sold will be disposed of as waste using a licensed waste contractor.

12.3 Stores Items:

The following options will be considered before disposal via licensed waste contractor, in accordance with statutory requirements:

- Return materials back to the supplier
- Offer for sale through dedicated journals / web sites
- Offer to Employees (Sale or gratis)
- Offer to charitable organisations
- Sell to approved vendors or contractors.

13. Removal & Relocation of Specified Plant to other Zeon sites:

A list of Plant & Equipment which is to be transferred inter company should be prepared before decommissioning starts. This is to ensure that the correct procedures are taken to fully decontaminate and protect the equipment during decommissioning.

Plant / equipment for relocation must be labelled with the necessary information and placed in a dedicated temporary storage facility prior to shipment.

Where possible, the relevant design and maintenance documentation should be collated for the equipment concerned and passed on to the recipient of the equipment.

14. Decommissioning of the Effluent Treatment Plant:

The effluent treatment plant will be the last area to be decommissioned, due to the need to treat effluent from decommissioning of upstream processes as well as any contaminated rain water (rain water drains feed into the effluent system). During decommissioning of upstream processes the same level of sampling will be maintained throughout the system as specified in the Environmental Permit. During certain operations this will be increased to ensure consent. If there is potential for the discharge to go out of consent the following actions will be taken:

- The plant will be put on recycle until the discharge levels are in consent.
- If levels are still high permission will be sought from Hexion to discharge to their lagoon, ensuring their discharge consent is not exceeded.
- If this cannot be done NRW will be contacted and permission sought to slowly discharge with appropriate dilution.

The decommissioning will be covered by a separate procedure, but must include:

- Ensuring that all Raw Material and Process vessels, pipework and equipment have been emptied, purged and cleaned to a satisfactory standard.
- Ensuring that all upstream feeder pits and associated inlet and outlet pipework / channels have been cleaned and decontaminated to a satisfactory standard.
- Where possible avoid exceedances in effluent quality during the decommissioning of the effluent plant. Any exceedances or potential for exceedance should be immediately communicated to NRW.
- Tanks containing raw materials for effluent treatment are emptied and cleaned to a satisfactory standard.
- All vessels containing effluent and sludge are emptied and cleaned to a satisfactory standard.
- Biomass is removed from the system and disposed of.
- During cleaning of effluent pits and tanks an amount of solid waste may need to be transferred or temporarily stored. The area where the transfer takes place and location of the temporary storage must be contained areas where any spillages or run off cannot contaminate the soil or ground water. Rain water falling onto this material must be directed to the Effluent Treatment Plant.
- Any odours arising during tank cleaning should be monitored and communication maintained with local sites and the community to avoid any offence or inconvenience.

15. Waste Disposal

During the decommissioning period a large amount of waste will need to be disposed of. This waste will mainly consist of:

- Historical waste remaining on site.
- Waste raw materials purged from plant equipment
- Material cleaned from plant equipment and effluent collection/treatment tanks.
- Remaining raw materials or finished goods that cannot be sold or returned to suppliers.
- Oil emptied from plant equipment.

All waste must be categorised in line with the Hazardous Waste Regulations 2005 and disposed of by a registered waste disposal company.

16. Decommissioning of Laboratory / Office Systems:

The following issues must be taken into account:

- Air conditioning units must be decommissioned degassed by a Licensed Contractor
- Office & Laboratory Electrical / Computer equipment should be transferred to Sister Companies, where feasible, or sold. If this is not possible it must be disposed of via a licensed waste contractor (WEEE regulations).
- No residual documentation must be left on site to ensure compliance with data protection regulations.
- If laboratory raw materials (including samples) cannot be returned to suppliers or transferred within the company, they must be disposed of by licensed waste contractor.
- Laboratory equipment, where practical, should be transferred within the company. If this is not an option, it should be sold or disposed of by licensed waste contractor.

17. Discontinuation / Disconnection of Utilities:

17.1 Electricity:

It will not be feasible to implement a total power outage due to the need to run some plant (e.g. Effluent Plant) during the decommissioning process.

Items will only be isolated as required to:

- Allow full and safe decommissioning of plant.
- Allow safe breaking of containment.
- Allow equipment to be safely removed (e.g. for sale).

This must be done by a suitably competent ZCEL Electrical Technician.

When Electricity is no longer required, Hexion must be contacted to isolate ZCEL's 2 X 11KV cables on their site

17.2 Steam:

The Steam supply can only be isolated when:

- All intended production has been completed
- All Purging and Decommissioning has been completed
- All non-plant steam demands are no longer required
- The effluent plant is no longer required (Winter months only)

When steam is no longer required, Hexion must be contacted to isolate the steam main to ZCEL on their site.

17.3 Water:

The water supply to the Process can only be isolated when:

- All intended production has been completed
- All Purging and Decommissioning has been completed

Water may still be required for Fire purposes during the plant dismantling process.

When Water is no longer required, Hexion must be contacted to isolate both Biglis and Towns water supplies on their site.

17.4 Gas:

When the Thermal Oxidiser is no longer required and the QA and ETSL Laboratories and the Administration Buildings have been vacated Hexion must be contacted to isolate the gas supply. A competent Gas Safe engineer must purge the lines to ensure they are free of gas before demolition can begin.

17.5 Effluent:

When all plant and equipment has been fully decommissioned, there will be no requirement for effluent transfer to Hexion's lagoon.

However, until N55, N58, N99 and N159 receptor pits have been disconnected from the drainage system, there will still be a requirement to dispose of rainwater collecting in these pits.

The Decommissioning contractor will be instructed to put a water management plan in place to deal with rain water and any water waste produced during demolition. This may involve, with consent, continued transfer to Hexion's Lagoon.

17.6 Nitrogen:

The Nitrogen facility is leased from BOC. When Nitrogen is no longer required, BOC will be contacted to transfer the residual Nitrogen into a tanker. BOC will be responsible for removing the storage facility and associated vapourisers.

18. Vehicles:

See Appendix 6 for list of vehicles and disposal routes.

19. Ancillary equipment brought to site for decommissioning:

It is likely that ancillary equipment will be brought onto site to aid decommissioning and plant cleaning (e.g. pumps and high pressure blaster units). These are likely to be powered by diesel fuel. Care should be taken to ensure that these are placed on solid ground and that any potential fuel spills are contained. Procedures will be put in place to quickly and safely deal with any spills to minimise any impact on the environment or effluent plant operation.

20. Contractors:

All contractors working on site during the decommissioning period will be inducted in accordance with the CDM regulations 2015. They will be reminded of their responsibility towards Health, Safety and the Environment. Any releases to any media must be reported to the ZCEL Shift Supervisor. ZCEL Management will inspect the working methods and equipment used by all contractors to ensure they are compliant with this plan.

21. Security During Decommissioning Process:

Basic security is provided by Hexion, and is mainly concerned with site access through the main entrance to the site.

With reduced / no manning, at night / weekends, the necessity for additional security will be considered during decommissioning to avoid:

- Intruders removing valuable items
- Access control with potential increased contractor numbers
- Control of contraband materials (lighters, etc)
- Vehicle access to site

22. Manning during Decommissioning Process:

It is essential that ZCEL employees are involved in the decommissioning of the process, due to knowledge and experience of the materials & equipment involved.

Supervisory presence will be critical for Permitry.

During the early stages of decommissioning, it may be necessary to have 24-hour manning, for emptying and purging the various systems. Latterly, this may reduce to day, or extended day operation, depending on activities being carried out.

23. Closure of Permits / Contracts under PPC, CCL, Packaging Waste, etc:

The HSE Manager will contact Natural Resources Wales (NRW) to inform them of the intended closure of the facility, in accordance with the relevant permit requirements.

Additionally, CIABATA will be informed of the discontinuation of involvement with the Climate Change Agreement

VALPAK will be informed of the facility closure in order to discontinue obligations under the Packaging Waste Regulations.

St Modwen, as owners of the Head Lease (3 plots) will be informed of the decision to cease operation. Discussions will be necessary with St Modwen to ensure the terms of the lease are adhered to.

24. Determination of any necessary Remediation Work:

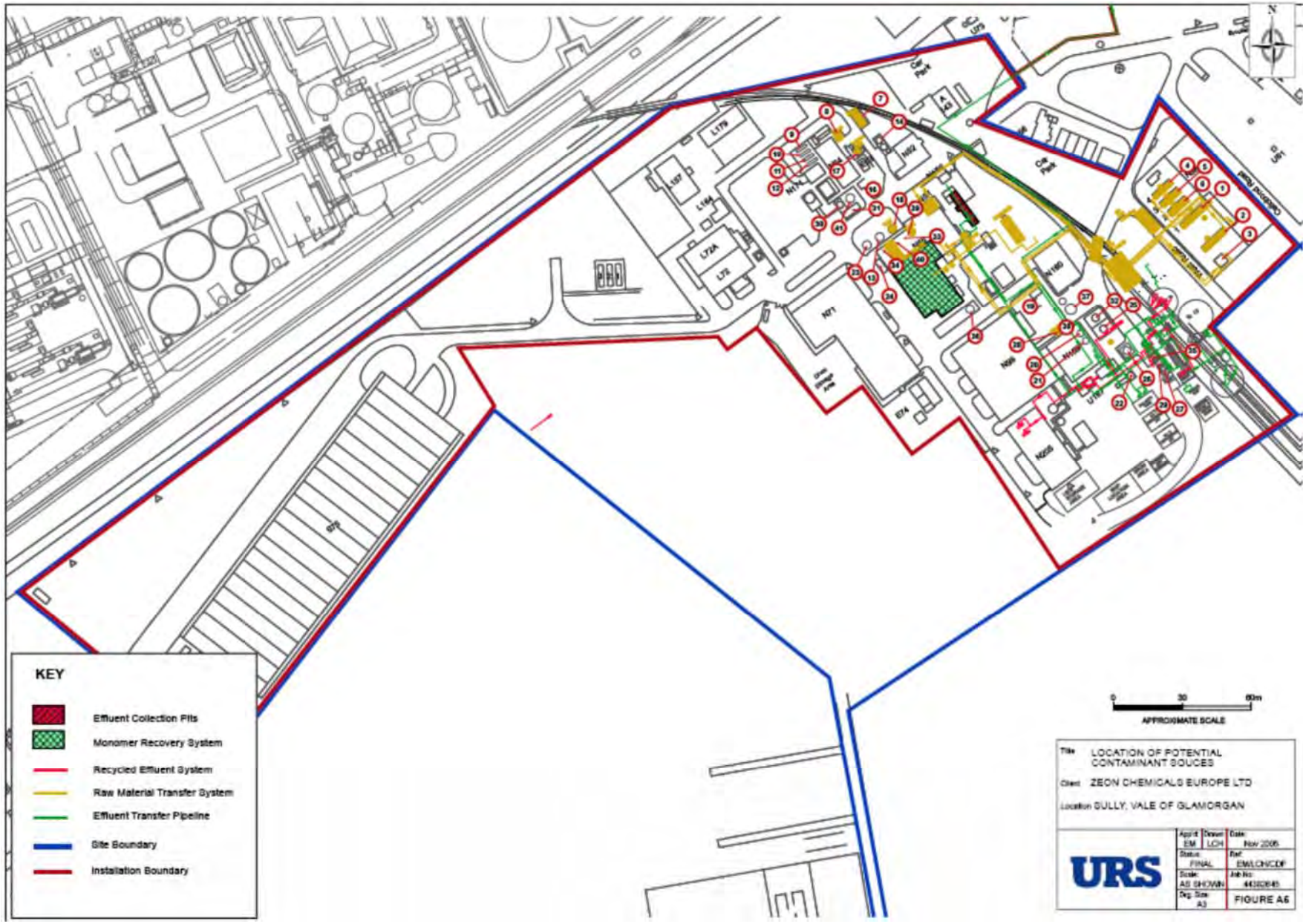
ZCEL will ensure compliance with the Environmental Protection Act 1990 and the Environment Act 1995 (Part 2A) with regard to dealing with any potential contaminated land issues.

With this in mind, the following will be informed of the closure of the facilities:

- Natural Resources Wales
- Vale of Glamorgan Local Authority
- St Modwen (Lease surrender)
- Associated British Ports (Land Owner)

Any remediation necessary will be based on the requirements for Permit Surrender agreed with NRW and any further requirements for lease surrender.

Appendix 1 – Site Layout



Appendix 2 – Raw Material Storage Tanks

Area	Material	Tank No.	Procedure / MS?	Comments
N58	Acrylonitrile	2	ZOP 1.605/679a	
	Recovered Acrylonitrile	1	ZOP 4.783	
	Butadiene	3	ZOP 1.648	
N54	20% Caustic	1	ZDcmP 1.012	
	Sulphonic Acid	1	ZDcmP 1.004	
	28% HCl	1	No	Controlled by Permit
	Salt Saturators	2	No	Controlled by Permit
	Nitrogen	1	MS	By Contractor (BOC)
N55	Calcium Chloride	1	No	Controlled by Permit
	Potassium Oleate	1	ZDcmP 1.002	
	TDM	1	ZEnvP 3.240	MS:TDM/Prep/2015 being prepared
	Potassium Rosinate	1	ZDcmP 1.003	
	Retanal	1	ZDcmP 1.005	
	Emal	1	ZDcmP 1.001	
	DEHA	1	ZOP 4.727	Flammable; irritant; Toxic to aquatic life
	TBC	1	ZDcmP 1.006	Flammable; Toxic; Corrosive; V. Toxic to aquatic life
	TIBM	1	Redundant	Also TMPT. Check empty. Not suitable for effluent
	PMHP	1	MS 3.140	
N71	Methacrylic Acid	1	No	Controlled by Permit
N159	Colloidal Sulphur	1	ZDcmP 1.009	
	6% HCl	1	ZDcmP 1.011	
	28% HCl	1	No	Controlled by Permit
	Redundant AO	2	Unnecessary	Need to confirm both tanks are empty.
U167	20% Caustic Tank	1	ZOP 6.680	
	Poly Aluminium Chloride	1	ZOP 6.680	

Appendix 3 – In-Process Raw Material Tanks

Area	Material	Tank No.	Procedure / MS?	Comments
N54	Anhydrous Ammonia	3	MS	By contractor
	30% Methanol	1	ZDcmP 3.850	Feed into Effluent system?
	Softening Columns	2	No	Controlled by Permit
	De-alk Columns	2	No	Controlled by Permit
	20% Caustic	2	ZDcmP 1.012	
	Brine day	1	No	Controlled by Permit
	Drewgard	1	No	By Contractor
	Brine Pit	1	No	Controlled by Permit
N51	BN Decanter	1	ZOP 1.679	
	BN KO Pot	1		
	Washed BN tank	1		
N55	TDM (Polyfloor)	1	ZOP 3.771	
	TDME	1	ZOP 3.704	TDM system
	KCl	1	No	Controlled by Permit
	Emergency HAS	8	No	Part of polymeriser preparation
	Amm. Per	1	ZOP 3.707	Emptied after each use
	DMA	1	ZOP 3.707	
	HAS Make-up	1	No	Part of polymeriser preparation
	Redundant tanks	4	Unnecessary	
	BN Modules	2	ZOP 4.728	
	Weigh Tank	1	ZOP 3.745	MS 3.800 also
	Quench Tank	1	ZOP 3.745	
	Column feed tank	1	ZOP 4.727	
	C101 distillation column	1		
	RECAN decanter	1	ZOP 4.746	
	Antifoam	3	No	Controlled by Permit
	Activator	2	ZMS 3.160	
N99	Antifoam	1	No	Controlled by Permit
U167	Poly Make-up	3	ZDcmP: 1.003	
	Neat Poly tank	1	ZDcmP: 1.003	

Appendix 4 –Process Materials Tanks / Systems

Area	Tank / System	Tank No.	Procedure / MS?	Comments
N55	Polymeriser	8	ZOP 3.745	
	Blowdown	8	ZOP 3.745	
	NMR KO vessels	3	ZOP 4.727	Based on draining system to RECAN tank
	NMR Vacuum pumps	5		
	Recovery pipework			
N71	Latex Stock Tanks	6	No	Cleaning controlled by Permit
	Drumming off tank	1	No	Cleaning controlled by Permit
N99	Blend Tanks	2	No	Cleaning controlled by Permit
	Polyblack system	3	No	Empty for several years
	Antifoam tank	1	No	Cleaning controlled by Permit
	Spare tank	1	No	No need
N159	Weigh head tank	1	No	Redundant
	Coagulator	1	No	Cleaning controlled by Permit
	Holding Tank	1	No	Cleaning controlled by Permit
	Wash Tank	1	No	Cleaning controlled by Permit
	Blend tanks	7	No	Cleaning controlled by Permit
	Recycle effluent tank	1	No	Cleaning controlled by Permit
N160	Black make-up tank	1	Unnecessary. System check only	
	Recycle effluent tank	1		
	Nauta blender	1		
	Silos	2		
N205	Slurry Tank	1	No	Cleaning controlled by Permit
	Recycle effluent tank	1	No	Cleaning controlled by Permit
U167	Recycle effluent tank	1	ZDcmP: 1.003	
	Calamity tank	1		
	Balance tank	1		
	Aeration tank	1		
	Sludge tank	1		
	Settlement tank	1		
	DAF unit	1		
	Small sludge tank	1		
	Final effluent tank	1		
	Treated effluent tank	1		
	White Water Tank	1		

Appendix 5 – Other Tanks / Systems

Area	Tank / System	Tank No.	Procedure / MS?	Comments
N55	Duraseal tank / system	3	No	Oil drained under permit
E74	Transformer Oil	2	No	To be left for Demolition Contractor
N99	Diesel	1	No	Tank to be sold.
N205	D102 Hydraulic Tank / System	1	No	Oil drained under permit
	Baler Hydraulic Tank / system	1	No	Oil drained under permit
Air Conditioning	A72, L179, L157, N71, N166, ICT room,		MS	By contractor
Chillers	D102 / Baler		MS	By contractor

Appendix 6 – Vehicles

Vehicle	Number	Rented / ZCEL	Disposal
Fork Lift Truck	6	Rented	Return to supplier
Tractor	1	Rented	Return to supplier
Van	1	ZCEL	Sale / Scrap
Digger	1	ZCEL	Sale / Scrap
Trailer	1	ZCEL	Sale / Scrap
Sweeper	1	ZCEL	Sale / Scrap

APPENDIX 6
ETP SLUDGE WASTE CLASSIFICATION REPORT

RAMBOLL ENVIRON

ENVIRONMENT
& HEALTH

James Hooper
Zeon Chemicals Europe Ltd
Sully
Vale of Glamorgan
CF64 5ZE

Dear James

EFFLUENT TREATMENT PLANT: SLUDGE WASTE CLASSIFICATION

Date 29/04/2016

Ramboll Environ
8 Village Way
Tongwynlais
Cardiff
CF15 7NE
United Kingdom

T +44 292 054 3550
www.ramboll-environ.com

Ref LUK15-21370_ETP_02

Ramboll Environ UK Limited ("Ramboll Environ") was instructed by Zeon Chemicals Europe Limited ('Zeon') to undertake sampling, analysis and classification of sludge material associated with the site's effluent treatment plant (ETP) that was observed to have flowed onto the ground during the decommissioning process. The analysis was requested by Natural Resources Wales (NRW) in order to demonstrate that the material is not likely to have caused a deterioration in the site condition.

Classification of the materials was also required by Zeon to determine the appropriate waste category for disposal purposes. Ramboll Environ understands that the solid sludge material removed from the ETP is currently stockpiled on-site awaiting disposal.

Background

Ramboll Environ understands that a single drainage system is in place at the installation, collecting all chemical and surface water drainage. The drainage system directs effluent to four effluent pits (U167, N55, N159 and the PolyBlack effluent pit) prior to discharge to the on-site ETP via below ground pipes. Effluent is then discharged via an above ground carbon steel pipeline to an effluent lagoon on the neighbouring Hexion Chemical site.

During decommissioning works at the site, water and sludge was released from one of the ETP balance tanks resulting in an accumulation of water and sludge on the ground in the vicinity. Ramboll Environ understands that the sludge will be returned to the ETP via underground drainage pipes and will be cleaned out in due course. Analysis was required by NRW in order to demonstrate that the sludge material is not likely to have resulted in a deterioration of ground conditions in the affected areas.

Ramboll Environ UK Limited
Registered in England
Company No: 2331163
Registered Office:
Artillery House
11-19 Artillery Row
London
SW1P 1RT

Scope of Work

Sample Collection

Samples of the released material were collected by Ramboll Environ on 7th April 2016 as described in Table 1, below.

Table 1: Sample Location and Description

Sample Reference	Waste Material	Description	Notes
ETP1	Water	Pale grey, silty	Collected from the ground adjacent to the release point (balance tank)
ETP2	Water	Pale grey, silty	Collected from the ground approximately 5m from the release point (balance tank)
ETP3	Sludge (solid)	Very soft, dark grey silt with fragments of synthetic rubber crumb	Collected from the ground where sludge had accumulated during recent release of material – not currently under water
ETP4	Sludge (solid)	Soft, dark brown, sandy silt with fragments of synthetic rubber crumb and other undetermined debris	Collected from stockpiled material removed from effluent pits across the site
ETP5	Sludge (solid)	Very soft light grey silt with a mousse-like texture	Collected from ground beneath a small-scale release from an above ground line

Analysis

The two samples of water and two of the sludge samples (ETP3 and ETP4) were analysed for a suite of inorganic and organic determinands comprising:

- metals (As, Ba, Be, Cd, Cr, Cu, Hg, Ni, Pb, Se, Vn and Zn);
- pH;
- total petroleum hydrocarbons (TPH);
- water soluble sulphate;
- total organic carbon; and
- volatile organic compounds (VOCs) with tentatively identified compounds (TICs).

Additionally, one solid sludge sample (ETP4) was analysed for a waste acceptance criteria (WAC) suite.

Results

Human Health

For screening purposes, the water and sludge analytical results have been screened against the Ramboll Environ generic assessment criteria (GAC) for human health, considering a commercial site use. Many of the determinands that were analysed were not detected at concentrations above the laboratory limit

of detection (LOD). All detected concentrations were below the relevant Ramboll Environ GAC, where available; with the exception of:

- total petroleum hydrocarbons (TPH), which exceeded the Ramboll Environ GAC of 5,000mg/kg with recorded concentrations of 23,600mg/kg (ETP3) and 36,100mg/kg (ETP4); and
- vinyl chloride, which exceeded the Ramboll Environ GAC of 40.3µg/kg with a recorded concentration of 417µg/kg (ETP4).

Zeon has confirmed that the hydrocarbons present in the sludge have originated from polymerised nitrile rubber and insoluble metallic soaps. Specifically, Potassium Oleate (C12-C18 saturated and C18 unsaturated fatty acids) are the likely main constituents making up the 'total' hydrocarbon concentration.

Water Environment

The water analytical results have also been compared with commonly accepted UK guidelines, i.e. Environmental Quality Standards for freshwater (EQS), and where these are unavailable, reference is made to a hierarchy of international guidance in accordance with UK regulatory guidance.

TPH were recorded at concentrations of 1.14mg/l (ETP1) and 0.93mg/l (ETP2), which are in excess of the Water Supply (Water Quality) (Wales) Regulations 2001 (known as the Drinking Water Standards, or DWS) standard value of 0.01mg/l. All other determinands were recorded below the relevant assessment criteria, where available.

Hexane was recorded at a concentration of 6µg/l in sample ETP2; whilst there is no available standard value for concentrations of hexane in water, the recorded value was only slightly above the LOD (<5µg/l) and is not considered to be significantly elevated.

The analytical certificates are presented in full in Appendix 1.

Classification

The following procedure has been used to classify the solid sludge material (samples ETP3 and ETP4) in accordance with NRW's Technical Guidance WM3 entitled 'Guidance on the Assessment and Classification of Waste' (1st Edition 2015)'. A summary of the steps used is provided below:

Step 1: Check if the waste needs to be classified

Yes – the 'sludge' waste generated during decommissioning of the ETP is intended to be discarded and meets the definition of 'waste' under the Legal Definition of Waste Guidance (August 2012).

Step 2: Identify the code or codes that may apply to the waste

Under Appendix A, List of Waste (LoW), the following codes are applicable:

Chapter 07 02 – wastes from the manufacture, formulation, supply and use (MFSU) of plastics, synthetic rubber and man-made fibres

07 02 11* - *sludges from on-site effluent treatment containing hazardous substances; or*

07 02 12 - *sludges from on-site effluent treatment other than those mentioned in 07 02 11*

Step 3: Identify the assessment needed to select the correct code(s)

The above codes are 'mirror hazardous' (07 02 11) and 'mirror non-hazardous' (07 02 12). Waste holders have a duty to determine if a 'mirror entry' waste is hazardous or non-hazardous. As such, an assessment of hazardous properties is required.*

Step 4: Determine the chemical composition of the waste

Ramboll Environ has determined the waste composition by sampling and analysing two samples of the solid sludge material from the ETP (ETP3 and ETP4). The samples were analysed by Environmental Scientifics Group Ltd (ESG Ltd). The samples were analysed for a broad suite of inorganic and organic as detailed above. The likely constituents of the sludge were stipulated by Zeon site representatives. The laboratory results are presented in Table 3 and the certificates of analysis are attached in Appendix 1.

Step 5: identify if the substances in the waste are 'hazardous substances' or 'persistent organic pollutants'.

The substances listed below are identified as having hazardous properties (HP) that may contribute to the overall classification of the material:

- *Total Petroleum Hydrocarbons (TPH) C6 to C40*

HP7: Carcinogenic (waste which induces cancer or increases its incidence)

HP11: Mutagenic (may cause a mutation that is a permanent change in the amount or structure of the genetic material in a cell)

HP14 (ETP4 only, due to concentration), (waste which presents or may present immediate or delayed risks for one or more sectors of the environment)

- *Ethylbenzene*
- *Toluene*
- *Benzene (ETP4 only)*
- *TPH C6 to C40*
- *Xylene*
- *1,2,4-trimethylbenzene*
- *Tert-butyl methyl ether (ETP4 only)*
- *1,1-dichloroethane and 1,2-dichloroethane (combined, ETP4 only)*
- *Cumene (propylbenzene)*
- *Styrene*
- *Vinyl chloride (ETP4 only)*

HP3: Flammable (flammable liquid waste: liquid waste having a flash point below 60°C or waste gas oil, diesel and light heating oils having a flash point >55°C and <=75°C.

Step 6: Assess the Hazard Properties of the waste

Table 2 below presents the results of the chemical analysis for the two sludge samples (ETP3 and ETP4). Comments are provided to explain Ramboll Environ's interpretation of the analytical results using a

waste classification tool 'HazWasteOnline'. The rows shaded pink indicate determinands that exhibit hazardous properties.

Table 2: ETP Sludge Waste Classification Results

Determinand	Concentration (mg/kg unless otherwise stated)		Hazardous Properties (HP) (defined in Annex III of the Waste Framework Directive 2008/98/EC) at the concentrations detected
	ETP3	ETP4	
Arsenic	1.4	6.6	None at concentration detected
Barium	97	216	None at concentration detected
Beryllium	<0.1	0.110	None at concentration detected
Boron	0.6	<0.5	None at concentration detected
Cadmium	<0.19	1.0	None at concentration detected
Chromium	22.7	92.6	None at concentration detected
Copper	16.2	75.1	None at concentration detected
Lead	17.0	89.2	None at concentration detected
Mercury	<0.48	2.66	None at concentration detected
Nickel	13.2	28.6	None at concentration detected
Selenium	<0.5	<0.5	None at concentration detected
Zinc	204.2	708.2	None at concentration detected
Selenium	1.32	61-98	None at concentration recorded
pH	7.2	10.4	None at pH recorded
Sulphate	404	521	None at concentration recorded
Total Petroleum Hydrocarbons (C6-C40)	23,600	35,600	**HP7:** Carcinogenic – waste which induces cancer or increases its incidence **HP14:** Ecotoxic – may present risks to one or more sectors of the environment due to the presence of TPH C8 to C40 diesel petroleum group **HP11:** Mutagenic – may cause a mutation that is a permanent change in the amount or structure of the genetic material in a cell. Potential hazardous properties (substances considered hazardous until shown otherwise): **HP 3(i):** Flammable - flammable liquid waste: liquid waste having a flash point below 60°C or waste gas oil, diesel and light heating oils having a flash point > 55°C and <= 75°C.
VOCs *(only VOCs recorded above the laboratory detection limit are shown)*			
Chloroform	0.027	0.088	None at concentration recorded

Table 2: ETP Sludge Waste Classification Results			
Determinand	**Concentration (mg/kg unless otherwise stated)**		**Hazardous Properties (HP) (defined in Annex III of the Waste Framework Directive 2008/98/EC) at the concentrations detected**
	ETP3	**ETP4**	
Chloroethane	<0.007	0.023	None at concentration recorded
Vinyl chloride	<0.003	0.417	**HP 3(i):** Flammable
Toluene	2.630	0.270	**HP 3(i):** Flammable
Ethylbenzene	0.216	2.680	**HP 3(i):** Flammable
O-xylene	0.063	0.293	None at concentration recorded
M and p xylene	0.399	1.380	**HP 3(i):** Flammable
Styrene	0.013	0.255	**HP 3(i):** Flammable
Iso-propylbenzene	0.136	0.136	**HP 3(i):** Flammable
1,2,4-trimethylbenzene	0.053	0.538	**HP 3(i):** Flammable
Trichloroethene	<0.003	0.013	None at concentration recorded
1,1-dichloroethane	<0.003	0.030	**HP 3(i):** Flammable
Tert-butyl methyl ether	<0.003	0.018	**HP 3(i):** Flammable
Naphthalene	3.750	1.200	None at concentration recorded
1,1,1-trichloroethane	0.027	0.126	None at concentration recorded
Benzene	<0.003	0.020	**HP 3(i):** Flammable
The determinands shaded in pink exhibit hazardous properties (HazWasteOnline) NA - Not applicable to the classification			

Step 7: assign the classification code and describe the hazardous properties

The sludge samples ETP3 and ETP4 are both is classified as **Hazardous Waste 07 02 11*** due to the following hazardous properties:

- HP3: Flammable
- HP7: Carcinogenic
- HP11: Mutagenic
- HP14: Ecotoxic

Waste Acceptance Criteria Testing

One sample (ETP4) was subject to Waste Acceptance Criteria Testing (WAC testing). The concentration of TPH, pH value and total organic carbon (TOC) exceeded the Landfill Waste Acceptance Criteria Limit Values for the disposal at a "stable non-reactive waste in a non-hazardous landfill". The WAC analysis results should be provided to Zeon's waste broker to determine where this material can be accepted.

Conclusion

Analysis has confirmed that the solid sludge material originating from the ETP is classified as **Hazardous Waste**, predominantly due to the elevated concentrations of TPH; however various VOCs were also detected which contribute to the classification. WAC analysis has been carried out on the

stockpiled solid sludge material and the results should be presented to Zeon's waste broker to determine the most appropriate disposal route. Hazardous Waste is required to be pre-treated prior to disposal.

The TPH concentrations detected in the solid sludge material significantly exceed human health screening criteria considering a commercial site use; however, Zeon has confirmed that that the hydrocarbons comprise organic fractions C12-C18 saturated and C18 unsaturated fatty acids (i.e. rather than petroleum hydrocarbons which would present more of a risk to human health and the environment). Furthermore, based on the drainage configuration, whereby sludge that has entered the drains is returned to the effluent pits, there are minimal pathways where the material can enter the sub-surface ground and cause deterioration of conditions.

Although the organic saturated and unsaturated fatty acids are not in themselves considered to represent a significant risk to human health, it would be good practice to reduce exposure to the sludge material through the use of appropriate PPE and risk assessment.

The TPH concentrations in sludge water samples were not significantly elevated. Although the concentrations exceeded the UK DWS, these screening criteria are considered to be conservative given the industrial setting and water is not intended for drinking. No visual or olfactory evidence of hydrocarbon contamination (e.g. oily sheen, odour) was observed in the sludge water during sampling, and the hydrocarbons are considered more likely to be associated with organic saturated and unsaturated fatty acids rather than petroleum hydrocarbons.

Vinyl chloride also exceeded the Ramboll Environ GAC for human health in one solid sludge sample; however, was not detected above the laboratory limit of detection in the water samples.

Please do not hesitate to contact us if there is anything further you wish to discuss.

Yours sincerely

Lucy Cleverley
Manager

D +44 2920 543557
M +44 7713 311202
lcleverley@ramboll.com

Encl. Appendix 1, Laboratory Certificates of Analysis

RAMBOLL ENVIRON

Appendix 1

Laboratory Certificates of Analysis

Our Ref: EFS/162827M (Ver. 1)
Your Ref: UK15-21370

April 18, 2016

Environmental Chemistry
ESG
Bretby Business Park
Ashby Road
Burton-on-Trent
Staffordshire
DE15 0YZ

Telephone: 01283 554400
Facsimile: 01283 554422

Lucy Cleverley
Ramboll Environ
8 Village Way
Cardiff
CF15 2NE

For the attention of Lucy Cleverley

Dear Lucy Cleverley

Sample Analysis - Zeon Chemicals ESA

Samples from the above site have been analysed in accordance with the schedule supplied.
The sample details and the results of analyses for these samples are given in the appended report.

An invoice for this work will follow under a separate cover.

Where appropriate the samples will be kept until 23/05/16 when they will be discarded. Please call 01283 554547 for an extension of this date.
Please be aware that our policy for the retention of paper based laboratory records and analysis reports is 6 years.

The work was carried out in accordance with Environmental Scientifics Group Ltd (Laboratory and Analytical) Standard Terms and Conditions of Contract.

If I can be of any further assistance please do not hesitate to contact me.

Yours sincerely

for ESG

JMColbourne

J Colbourne
Project Co-ordinator
01283 554547

Environmental Chemistry, ESG, P.O. Box 100, Burton-upon-trent, DE15 0XD Tel: 01283 554400 Fax: 01283 554422
Environmental Scientifics Group Limited.
Registered No: 2880501

TEST REPORT

1252

Report No. EFS/162827M (Ver. 1)

Ramboll Environ
8 Village Way
Cardiff
CF15 2NE

Site: Zeon Chemicals ESA

The 2 samples described in this report were registered for analysis by ESG on 11-Apr-2016. This report supersedes any versions previously issued by the laboratory.
The analysis was completed by: 18-Apr-2016

Tests where the accreditation is set to N or No, and any individual data items marked with a * are not UKAS or MCERTS accredited. Any opinions or interpretations expressed herein are outside the scope of any UKAS accreditation held by ESG.

The following tables are contained in this report:

On behalf of
ESG :
Declan Burns

Managing Director
Multi-Sector Services

Date of Issue: 18-Apr-2016

Accreditation Codes: **N** (Not Accredited), **U** (UKAS), **UM** (UKAS & MCERTS)
Tests marked '^' have been subcontracted to another laboratory.
(NVM) - denotes the sample matrix is dissimilar to matrices upon which the MCERTS validation was based, and is therefore not accredited for MCERTS.
All results are reported on a dry weight basis at 105^{o}C unless otherwise stated. (except QC samples)
ESG accepts no responsibility for any sampling not carried out by our personnel.

Where individual results are flagged see report notes for status.

Units :			mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	pH Units	%	mg/kg
Method Codes :			ICPBOR	ICPMSS	ICPMSS	ICPMSS	ICPMSS	ICPMSS	ICPMSS	ICPMSS	ICPMSS	ICPMSS	ICPSOIL	ICPSOIL	ICPWSS	PHSOIL	TMSS	TPHFIDUS
Method Reporting Limits :			0.5	0.3	0.2	1.2	1.6	0.7	0.5	2	0.5	16	1	0.1	10		0.2	10
LAB ID Number CL/	**Client Sample Description**	**Sample Date**	**Boron (H20 Soluble)**	**Arsenic (MS)**	**Cadmium (MS)**	**Chromium (MS)**	**Copper (MS)**	**Lead (MS)**	**Mercury (MS)**	**Nickel (MS)**	**Selenium (MS)**	**Zinc (MS)**	**Barium.**	**Beryllium.**	**SO4-- (H2O sol) mg/l**	**pH units (AR)**	**Tot.Moisture @ 105C**	**TPH Band (>C10-C40)**
1612028	ETP3 (NVM)	**07-Apr-16**	0.6	1.4	<0.19	22.7	16.2	17.0	<0.48	13.2	<0.5	204.2	97	<0.1	404	7.2	69.9	
1612029	ETP4 (NVM)	**07-Apr-16**	<0.5	6.6	1.0	92.6	75.1	89.2	2.66	28.6	<0.5	708.2	216	0.110	521	10.4	60.4	35600

ESG

Bretby Business Park, Ashby Road

Burton-on-Trent, Staffordshire, DE15 0YZ

Tel +44 (0) 1283 554400

Fax +44 (0) 1283 554422

Client Name **Ramboll Environ**

Contact Lucy Cleverley

Zeon Chemicals ESA

Sample Analysis

Date Printed	**18-Apr-2016**
Report Number	**EFS/162827M**
Table Number	**1**

Where individual results are flagged see report notes for status.
Results corrected to dry weight at 105°C where appropriate, in accordance with the MCERTS standard.

Units :			mg/kg	µg/kg	Mol/kg	mg/kg	%	µg/kg	% M/M	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	mg/kg	
Method Codes :			TPHFIDUS	VOCHSAS	ANC	ICPMSS	LOI(%MM)	PCBUSECDAR	WSLM59	BTEXHSA	BTEXHSA	BTEXHSA	BTEXHSA	BTEXHSA	BTEXHSA	BTEXHSA	PAHMSUS	
Method Reporting Limits :			10		0.04	0.6	0.2		0.04	10	10	10	30	20	20	10		
LAB ID Number CL/	**Client Sample Description**	**Sample Date**	**TPH by GCFID (AR)**	**VOC + TICs HSA-GCMS**	**Acid Neut. Capacity**	**Vanadium (MS)**	**L.O.I. % @ 450C**	**PCB-7 Congeners Analysis**	**Total Organic Carbon**	**Benzene**	**Toluene**	**Ethyl Benzene**	**Xylenes**	**MTBE**	**m/p Xylenes**	**o Xylene**	**PAH (17) by GCMS**	
1612028	ETP3 (NVM)	**07-Apr-16**	23600	Req		1.2			>24									
1612029	ETP4 (NVM)	**07-Apr-16**	36100	Req	3.81	6	$$	Req	>27	<25	258	1080	884	<51	652	232	Req	

Bretby Business Park, Ashby Road

Burton-on-Trent, Staffordshire, DE15 0YZ

Tel +44 (0) 1283 554400

Fax +44 (0) 1283 554422

Client Name **Ramboll Environ**

Contact Lucy Cleverley

Zeon Chemicals ESA

Sample Analysis

Date Printed	**18-Apr-2016**
Report Number	**EFS/162827M**
Table Number	**1**

Where individual results are flagged see report notes for status.
Results corrected to dry weight at 105°C where appropriate, in accordance with the MCERTS standard.

Polycyclic Aromatic Hydrocarbons
GC/MS (SIM)

Customer and Site Details:	Ramboll Environ: Zeon Chemicals ESA		
Sample Details:	ETP4 (NVM)	**Job Number:**	S16_2827M
LIMS ID Number:	CL1612029	**Date Booked in:**	11-Apr-16
QC Batch Number:	160425	**Date Extracted:**	14-Apr-16
Quantitation File:	Initial Calibration	**Date Analysed:**	15-Apr-16
Directory:	1416PAHMS20\	**Matrix:**	Soil
Dilution:	1.0	**Ext Method:**	Ultrasonic

Accredited?: No

Target Compounds	CAS #	R.T. (min)	Concentration mg/kg	% Fit	Accr. code
Naphthalene	91-20-3	3.21	4.17	94	**N**
Acenaphthylene	208-96-8	-	< 0.20	-	N
Acenaphthene	83-32-9	4.37	0.80	86	N
Fluorene	86-73-7	4.74	0.81	89	N
Phenanthrene	85-01-8	5.56	2.98	86	N
Anthracene	120-12-7	5.61	0.56	75	N
Fluoranthene	206-44-0	6.88	3.43	98	N
Pyrene	129-00-0	7.16	3.13	98	N
Benzo[a]anthracene	56-55-3	8.83	1.72	92	N
Chrysene	218-01-9	8.88	1.67	96	N
Benzo[b]fluoranthene	205-99-2	10.36	1.79	91	N
Benzo[k]fluoranthene	207-08-9	10.39	0.66	90	N
Benzo[a]pyrene	50-32-8	10.78	1.24	90	N
Indeno[1,2,3-cd]pyrene	193-39-5	12.16	1.04	99	N
Dibenzo[a,h]anthracene	53-70-3	-	< 0.20	-	N
Benzo[g,h,i]perylene	191-24-2	12.46	1.00	94	N
Coronene	191-07-1	14.46	0.23	59	N
Total (USEPA16) PAHs	-	-	< 25.35	-	N

* Denotes compound is not UKAS accredited

"M" denotes that % fit has been manually interpreted

Internal Standards	% Area
1,4-Dichlorobenzene-d4	NA
Naphthalene-d8	90
Acenaphthene-d10	90
Phenanthrene-d10	97
Chrysene-d12	120
Perylene-d12	151

Surrogates	% Rec
Nitrobenzene-d5	NA
2-Fluorobiphenyl	104
Terphenyl-d14	87

Concentrations are reported on a dry weight basis.

The Total PAH result is the sum of non-rounded individual PAH results and therefore may differ to the sum of the rounded individual PAH results printed above. By convention, where any one or more result is a "less than", the total is expressed as a "less than" and includes the "less than" concentration within the total.

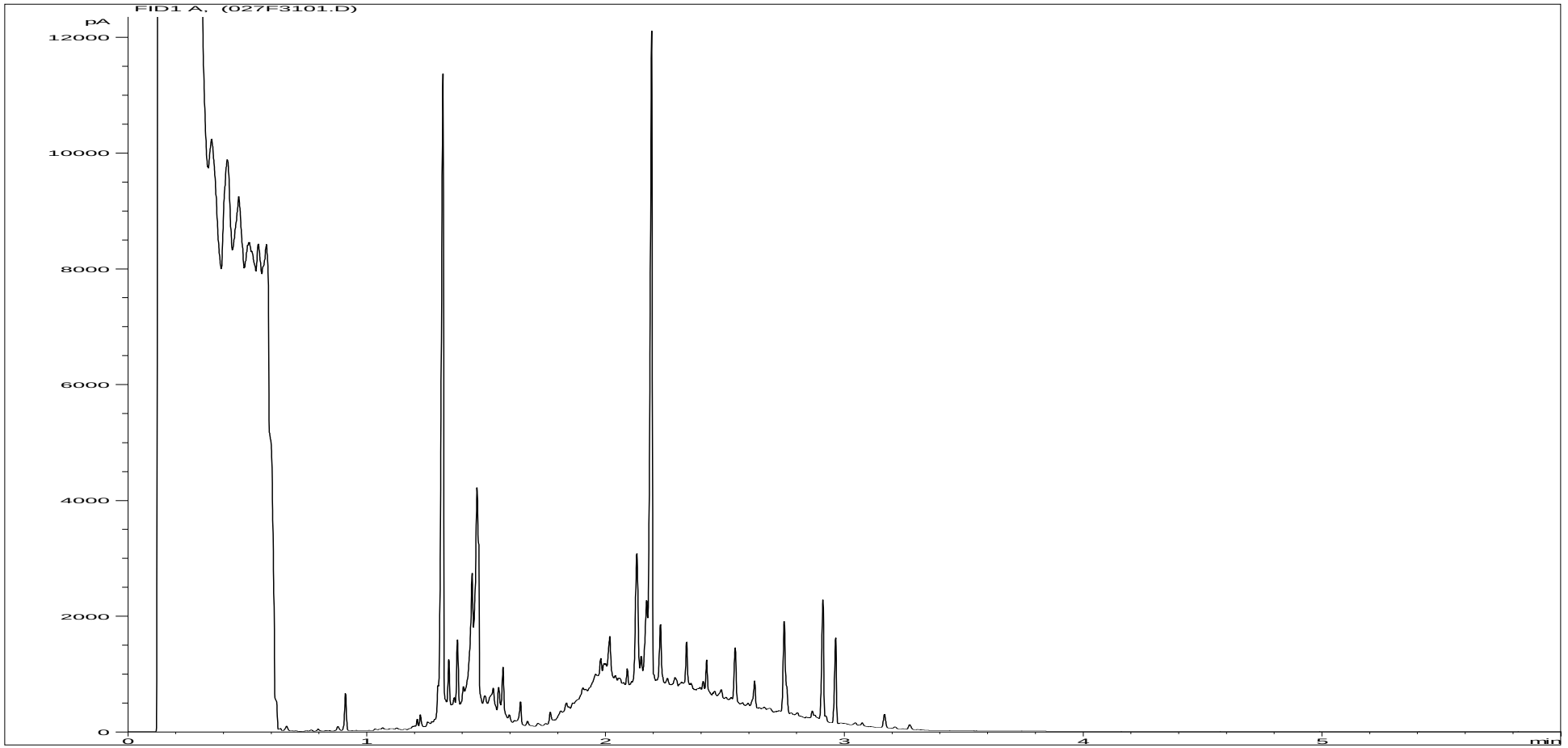
Polychlorinated Biphenyls (congeners)

Customer and Site Details:	Ramboll Environ: Zeon Chemicals ESA	**Matrix:**	SOIL
Job Number:	S16_2827M	**Date Booked in:**	11-Apr-16
QC Batch Number:	160425	**Date Extracted:**	13-Apr-16
Directory:	0413PCB.GC8	**Date Analysed:**	14-Apr-16
Method:	Ultrasonic		
Accreditation code:	N		

			Concentration, (µg/kg)						
	Sample ID	**Customer ID**	**PCB28**	**PCB52**	**PCB101**	**PCB118**	**PCB153**	**PCB138**	**PCB180**
*	CL1612029	ETP4 (NVM)	<12.6	<12.6	<12.6	<12.6	17.2	14.4	22.2

Where individual results are flagged see report notes for status.
Results corrected to dry weight at 105°C where appropriate, in accordance with the MCERTS standard.

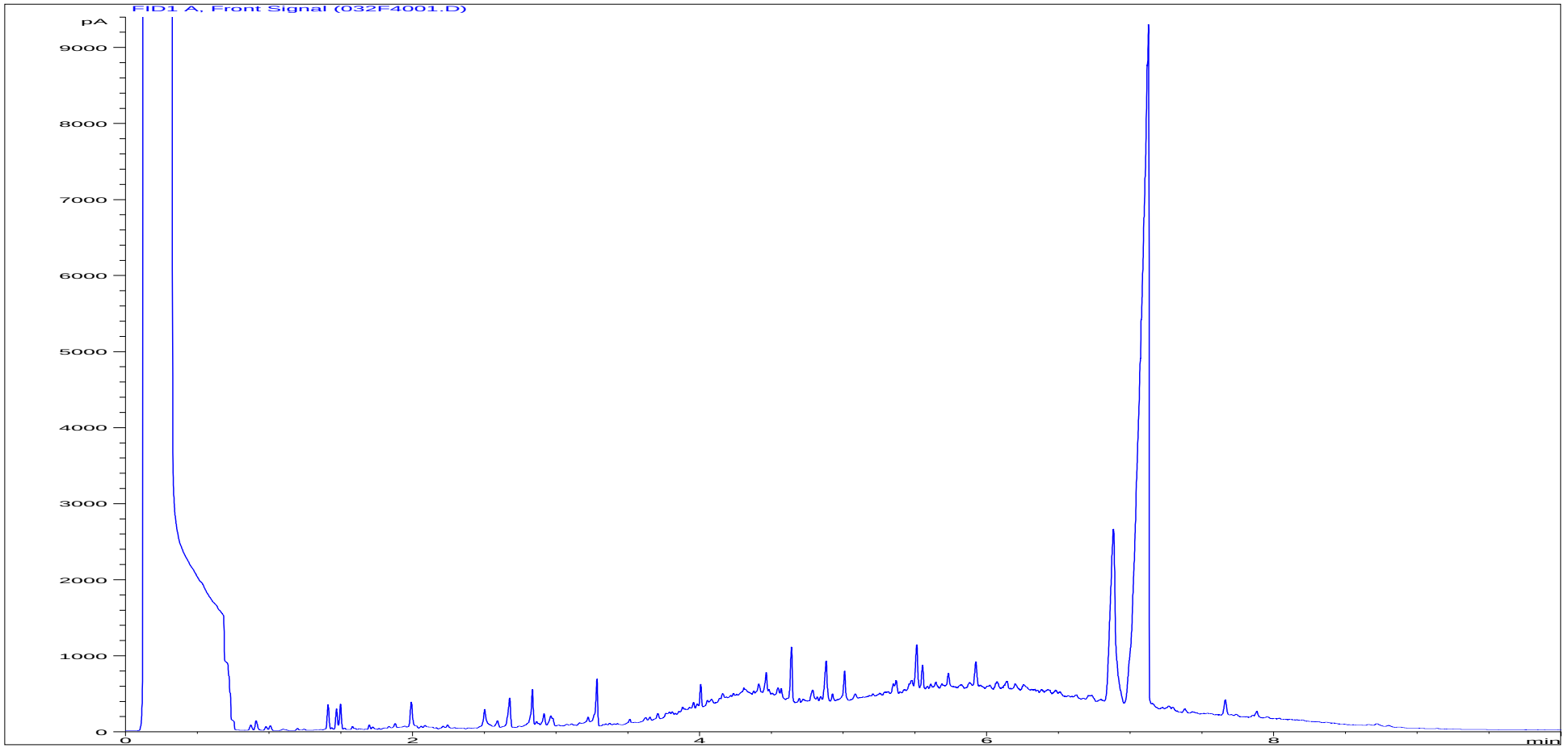
Petroleum Hydrocarbons (C8 to C40) by GC/FID



Sample ID:	CL1612028	**Job Number:**	S16_2827M
Multiplier:	8	**Client:**	Ramboll Environ
Dilution:	1	**Site:**	Zeon Chemicals ESA
Acquisition Method:	5UL_RUNF.M	**Client Sample Ref:**	ETP3 (NVM)
Acquisition Date/Time:	14-Apr-16, 17:55:14		
Datafile:	D:\TES\DATA\Y2016\041416TPH_GC4\041416 2016-04-14 11-00-15\027F3101.D		

Where individual results are flagged see report notes for status.
Results corrected to dry weight at 105°C where appropriate, in accordance with the MCERTS standard.

Petroleum Hydrocarbons (C8 to C40) by GC/FID



Sample ID:	CL1612029	**Job Number:**	s16_2827M
Multiplier:	8	**Client:**	Ramboll Environ
Dilution:	1	**Site:**	Zeon Chemicals ESA
Acquisition Method:	TPH_RUNF.M	**Client Sample Ref:**	ETP4 (NVM)
Acquisition Date/Time:	13-Apr-16, 23:54:31		
Datafile:	D:\TES\DATA\Y2016\041316TPH_GC17\041316 2016-04-13 09-38-57\032F4001.D		

Where individual results are flagged see report notes for status.
Results corrected to dry weight at 105°C where appropriate, in accordance with the MCERTS standard.

Volatile Organic Compounds by HSA-GCMS

Accredited?: No

Customer and Site Details: Ramboll Environ: Zeon Chemicals ESA
Sample Details: ETP3 (NVM)
LIMS ID Number: CL1612028
Job Number: S16_2827M

Directory/Quant file: 413VOC.MS19\ Initial Calibration
Date Booked in: 11-Apr-16
Date Analysed: 14-Apr-16
Operator: TP

Matrix: Soil
Method: Headspace
Multiplier: 0.99
Position: 4

Target Compounds	CAS #	R.T. (min.)	Concentration µg/kg	% Fit	Accr. code
Dichlorodifluoromethane	75-71-8	-	< 3	-	N
Chloromethane	74-87-3	-	< 10	-	N
Vinyl Chloride	75-01-4	-	< 3	-	N
Bromomethane	74-83-9	-	< 3	-	N
Chloroethane	75-00-3	-	< 7	-	N
Trichlorofluoromethane	75-69-4	-	< 3	-	N
1,1-Dichloroethene	75-35-48	-	< 3	-	N
trans 1,2-Dichloroethene	156-60-5	-	< 3	-	N
1,1-Dichloroethane	75-34-3	-	< 3	-	N
MTBE	1634-04-4	-	< 3	-	N
2,2-Dichloropropane	594-20-7	-	< 3	-	N
cis 1,2-Dichloroethene	156-59-2	-	< 17	-	N
Bromochloromethane	74-97-5	-	< 3	-	N
Chloroform	67-66-3	3.98	27	0	N
1,1,1-Trichloroethane	71-55-6	-	< 3	-	N
Carbon Tetrachloride	56-23-5	-	< 3	-	N
1,1-Dichloropropene	563-58-6	-	< 3	-	N
Benzene	71-43-2	-	< 3	-	N
1,2-Dichloroethane	107-06-2	-	< 3	-	N
Trichloroethene	79-01-6	-	< 3	-	N
1,2-Dichloropropane	78-87-5	-	< 3	-	N
Dibromomethane	74-95-3	-	< 3	-	N
Bromodichloromethane	75-27-4	-	< 3	-	N
cis 1,3-Dichloropropene	10061-01-5	-	< 3	-	N
Toluene	108-88-3	4.99	2630	97	N
trans 1,3-Dichloropropene	10061-02-6	-	< 3	-	N
1,1,2-Trichloroethane	79-00-5	-	< 3	-	N
Tetrachloroethene	127-18-4	-	< 10	-	N
1,3-Dichloropropane	142-28-9	-	< 3	-	N
Dibromochloromethane	124-48-1	-	< 3	-	N
1,2-Dibromoethane	106-93-4	-	< 3	-	N
Chlorobenzene	108-90-7	-	< 3	-	N
Ethylbenzene	100-41-4	5.51	216	82	N
1,1,1,2-Tetrachloroethane	630-20-6	-	< 3	-	N
m and p-Xylene	108-38-3/106-42-3	5.55	399	86	N

Target Compounds	CAS #	R.T. (min.)	Concentration µg/kg	% Fit	Accr. code
o-Xylene	95-47-6	5.70	63	0	N
Styrene	100-42-5	5.70	13	0	N
Bromoform	75-25-2	-	< 3	-	N
iso-Propylbenzene	98-82-8	5.81	136	58	N
1,1,2,2-Tetrachloroethane	79-34-5 **	-	< 3	-	N
Propylbenzene	103-65-1	-	< 3	-	N
Bromobenzene	108-86-1	-	< 3	-	N
1,2,3-Trichloropropane	96-18-4	-	< 3	-	N
2-Chlorotoluene	95-49-8	-	< 3	-	N
1,3,5-Trimethylbenzene	108-67-8	-	< 3	-	N
4-Chlorotoluene	106-43-4	-	< 3	-	N
tert-Butylbenzene	98-06-6	-	< 3	-	N
1,2,4-Trimethylbenzene	95-63-6	6.13	53	0	N
sec-Butylbenzene	135-98-8	-	< 3	-	N
p-Isopropyltoluene	99-87-6	6.22	113	54	N
1,3-Dichlorobenzene	541-73-1	-	< 3	-	N
1,4-Dichlorobenzene	106-46-7	-	< 3	-	N
n-Butylbenzene	104-51-8 *	-	< 3	-	N
1,2-Dichlorobenzene	95-50-1	-	< 3	-	N
1,2-Dibromo-3-chloropropane	96-12-8	-	< 3	-	N
1,2,4-Trichlorobenzene	120-82-1 *	-	< 10	-	N
Hexachlorobutadiene	87-68-3 **	-	< 7	-	N
Naphthalene	91-20-3	7.14	3750	79	N
1,2,3-Trichlorobenzene	87-61-6	-	< 10	-	N

Concentrations are reported on a dry weight basis
Compounds marked ** are not UKAS or Mcerts accredited
"M" denotes that % fit has been manually interpreted
This analysis was conducted on an 'As Received' basis.

Internal standards	R.T.	Area %	Surrogates	% Rec
Pentafluorobenzene	4.04	73	Dibromofluoromethane	74
1,4-Difluorobenzene	4.39	55	Toluene-d8	74
Chlorobenzene-d5	5.49	25		
Bromofluorobenzene	5.89	19		
1,4-Dichlorobenzene-d4	6.29	9		
Naphthalene-d8	7.12	3		

Note: Volatile compounds degrade with time, and this may affect the integrity of the data depending on the timescale between sampling and analysis. It is recommended that analysis takes place within 7 days of sampling.

Where individual results are flagged see report notes for status.
Results corrected to dry weight at 105°C where appropriate, in accordance with the MCERTS standard.

Volatile Organic Compounds by HSA-GCMS

Accredited?: No

Customer and Site Details:	Ramboll Environ: Zeon Chemicals ESA	**Directory/Quant file:**	413VOC.MS19\ Initial Calibration	**Matrix:**	Soil
Sample Details:	ETP4 (NVM)	**Date Booked in:**	11-Apr-16	**Method:**	Headspace
LIMS ID Number:	CL1612029	**Date Analysed:**	14-Apr-16	**Multiplier:**	0.92
Job Number:	S16_2827M	**Operator:**	TP	**Position:**	5

Target Compounds	CAS #	R.T. (min.)	Concentration µg/kg	% Fit	Accr. code
Dichlorodifluoromethane	75-71-8	-	< 3	-	N
Chloromethane	74-87-3	-	< 8	-	N
Vinyl Chloride	75-01-4	1.36	417	52	N
Bromomethane	74-83-9	-	< 3	-	N
Chloroethane	75-00-3	1.79	23	M	N
Trichlorofluoromethane	75-69-4	2.04	5	M	N
1,1-Dichloroethene	75-35-48	-	< 3	-	N
trans 1,2-Dichloroethene	156-60-5	-	< 3	-	N
1,1-Dichloroethane	75-34-3	3.48	30	M	N
MTBE	1634-04-4	3.19	18	M	N
2,2-Dichloropropane	594-20-7	-	< 3	-	N
cis 1,2-Dichloroethene	156-59-2	-	< 13	-	N
Bromochloromethane	74-97-5	-	< 3	-	N
Chloroform	67-66-3	3.98	88	84	N
1,1,1-Trichloroethane	71-55-6	4.06	126	79	N
Carbon Tetrachloride	56-23-5	-	< 3	-	N
1,1-Dichloropropene	563-58-6	-	< 3	-	N
Benzene	71-43-2	4.23	20	M	N
1,2-Dichloroethane	107-06-2	-	< 3	-	N
Trichloroethene	79-01-6	4.50	13	M	N
1,2-Dichloropropane	78-87-5	-	< 3	-	N
Dibromomethane	74-95-3	-	< 3	-	N
Bromodichloromethane	75-27-4	-	< 3	-	N
cis 1,3-Dichloropropene	10061-01-5	-	< 3	-	N
Toluene	108-88-3	4.99	270	95	N
trans 1,3-Dichloropropene	10061-02-6	-	< 3	-	N
1,1,2-Trichloroethane	79-00-5	-	< 3	-	N
Tetrachloroethene	127-18-4	-	< 8	-	N
1,3-Dichloropropane	142-28-9	-	< 3	-	N
Dibromochloromethane	124-48-1	-	< 3	-	N
1,2-Dibromoethane	106-93-4	-	< 3	-	N
Chlorobenzene	108-90-7	-	< 3	-	N
Ethylbenzene	100-41-4	5.51	2680	94	N
1,1,1,2-Tetrachloroethane	630-20-6	-	< 3	-	N
m and p-Xylene	108-38-3/106-42-3	5.55	1380	94	N

Target Compounds	CAS #	R.T. (min.)	Concentration µg/kg	% Fit	Accr. code
o-Xylene	95-47-6	5.70	293	77	N
Styrene	100-42-5	5.70	225	52	N
Bromoform	75-25-2	-	< 3	-	N
iso-Propylbenzene	98-82-8	5.81	136	58	N
1,1,2,2-Tetrachloroethane	79-34-5 **	-	< 3	-	N
Propylbenzene	103-65-1	-	< 3	-	N
Bromobenzene	108-86-1	-	< 3	-	N
1,2,3-Trichloropropane	96-18-4	-	< 3	-	N
2-Chlorotoluene	95-49-8	-	< 3	-	N
1,3,5-Trimethylbenzene	108-67-8	6.00	187	M	N
4-Chlorotoluene	106-43-4	-	< 3	-	N
tert-Butylbenzene	98-06-6	-	< 3	-	N
1,2,4-Trimethylbenzene	95-63-6	6.13	538	88	N
sec-Butylbenzene	135-98-8	6.18	83	66	N
p-Isopropyltoluene	99-87-6	6.22	475	90	N
1,3-Dichlorobenzene	541-73-1	-	< 3	-	N
1,4-Dichlorobenzene	106-46-7	-	< 3	-	N
n-Butylbenzene	104-51-8 *	-	< 3	-	N
1,2-Dichlorobenzene	95-50-1	-	< 3	-	N
1,2-Dibromo-3-chloropropane	96-12-8	-	< 3	-	N
1,2,4-Trichlorobenzene	120-82-1 *	-	< 8	-	N
Hexachlorobutadiene	87-68-3 **	-	< 5	-	N
Naphthalene	91-20-3	7.14	1200	M	N
1,2,3-Trichlorobenzene	87-61-6	-	< 8	-	N

Concentrations are reported on a dry weight basis
Compounds marked ** are not UKAS or Mcerts accredited
"M" denotes that % fit has been manually interpreted
This analysis was conducted on an 'As Received' basis.

Internal standards	R.T.	Area %	Surrogates	% Rec
Pentafluorobenzene	4.04	44	Dibromofluoromethane	65
1,4-Difluorobenzene	4.39	31	Toluene-d8	68
Chlorobenzene-d5	5.49	12		
Bromofluorobenzene	5.90	15		
1,4-Dichlorobenzene-d4	6.29	4		
Naphthalene-d8	7.12	1		

Note: Volatile compounds degrade with time, and this may affect the integrity of the data depending on the timescale between sampling and analysis. It is recommended that analysis takes place within 7 days of sampling.

Where individual results are flagged see report notes for status.
Results corrected to dry weight at 105°C where appropriate, in accordance with the MCERTS standard.

TICs by HSA-GCMS

Accredited?: No

Customer and Site Details:	Ramboll Environ: Zeon Chemicals ESA		**Date Booked in:**	11-Apr-16
Sample Details:	ETP3 (NVM)		**Date Analysed:**	14-Apr-16
LIMS ID Number:	CL1612028		**Matrix:**	Soil
Job Number:	S16_2827		**Ext Method:**	Headspace
Directory/Quant file:	413VOC.MS19\	Initial Calibration	**Dilution:**	0.99
Operator:	TP		**Position:**	4

Tentatively Identified Compounds	CAS No	R.T. (min.)	Concentration µg/kg	% Fit	Accr. code
Decane	000124-18-5	5.95	822	97	N
Tetradecane	000629-59-4	7.56	800	93	N
Decanal	000112-31-2	6.97	457	87	N
1,3,5-Trichlorobenzene	108-70-3	-	<17	-	N
Carbon Disulphide	75-15-0	-	<17	-	N
Dichloromethane (Methylene Chloride)	75-09-2	-	<17	-	N

The compounds listed above have been tentatively identified by a computer based library search.
Compounds identified in the sample are not reported if they also occur in the method blank.
The % fit is an indication of the reliability of the compound assignment.
Due to the similarity between mass spectra of some isomeric compounds, assignments may not be correct.
Other compounds may also be present but identification was not possible.
Concentrations are semi-quantitative, assume a response factor of 1 and use the nearest internal standard.

Compounds marked ** are not UKAS or Mcerts accredited
"M" denotes that % fit has been manually interpreted

Where individual results are flagged see report notes for status.
Results corrected to dry weight at 105°C where appropriate, in accordance with the MCERTS standard.

TICs by HSA-GCMS

Accredited?: No

Customer and Site Details:	Ramboll Environ: Zeon Chemicals ESA		**Date Booked in:**	11-Apr-16
Sample Details:	ETP4 (NVM)		**Date Analysed:**	14-Apr-16
LIMS ID Number:	CL1612029		**Matrix:**	Soil
Job Number:	S16_2827		**Ext Method:**	Headspace
Directory/Quant file:	413VOC.MS19\	Initial Calibration	**Dilution:**	0.92
Operator:	TP		**Position:**	5

Tentatively Identified Compounds	CAS No	R.T. (min.)	Concentration µg/kg	% Fit	Accr. code
1-Propene, 2-methyl-	000115-11-7	1.51	3981	83	N
Cyclohexene, 4-ethenyl-	000100-40-3	5.32	2422	96	N
Cyclohexane, methyl-	000108-87-2	4.56	1808	80	N
Acetic acid, methyl ester	000079-20-9	2.91	693	64	N
Tetradecane	000629-59-4	7.56	692	93	N
Unidentifed Peak	-	8.25	591	-	N
Undecane	001120-21-4	6.34	581	81	N
Unidentifed Peak	-	4.70	578	-	N
Unidentifed Peak	-	7.98	555	-	N
Unidentifed Peak	-	8.20	467	-	N
Unidentifed Peak	-	6.76	394	-	N
Unidentifed Peak	-	6.98	323	-	N
Unidentifed Peak	-	6.82	323	-	N
Carbon disulfide	000075-15-0	2.74	303	M	N
Unidentifed Peak	-	2.67	289	-	N
Unidentifed Peak	-	7.45	273	-	N
Unidentifed Peak	-	7.37	256	-	N
Unidentifed Peak	-	7.24	250	-	N
Hexane	000110-54-3	3.35	190	59	N
Dichloromethane (Methylene Chloride)	75-09-2	3.00	71	65	N
1,3,5-Trichlorobenzene	108-70-3	-	<13	-	N

The compounds listed above have been tentatively identified by a computer based library search.
Compounds identified in the sample are not reported if they also occur in the method blank.
The % fit is an indication of the reliability of the compound assignment.
Due to the similarity between mass spectra of some isomeric compounds, assignments may not be correct.
Other compounds may also be present but identification was not possible.
Concentrations are semi-quantitative, assume a response factor of 1 and use the nearest internal standard.

Compounds marked ** are not UKAS or Mcerts accredited
"M" denotes that % fit has been manually interpreted

Where individual results are flagged see report notes for status.
Results corrected to dry weight at 105°C where appropriate, in accordance with the MCERTS standard.

WASTE ACCEPTANCE CRITERIA TESTING
BSEN 12457/3

Client	Ramboll Environ				**Leaching Data**	
					Weight of sample (kg)	0.662
Contact	Lucy Cleverley				Moisture content @ 105°C (% of Wet Weight)	60.4
					Equivalent Weight based on drying at 105°C (kg)	0.225
Site	Zeon Chemicals ESA				Volume of water required to carry out 2:1 stage (litres)	0.013
					Fraction of sample above 4 mm %	0.000
Sample Description		**Report No**	**Sample No**	**Issue Date**	Fraction of non-crushable material %	0.000
ETP4		S16_2827M	CL/1612029	18-Apr-16	Volume to undertake analysis (2:1 Stage) (litres)	0.260
					Weight of Deionised water to carry out 8:1 stage (kg)	1.610

Note: The >4mm fraction is crushed using a disc mill

Accreditation	Method Code	Solid Waste Analysis (Dry Basis)	Concentration in Solid (Dry Weight Basis)	Landfill Waste Acceptance Criteria Limit Values		
				Inert Waste Landfill	Stable Non-reactive Hazardous Waste in Non-Hazardous Landfill	Hazardous Waste Landfill
N	WSLM59	Total Organic Carbon (% M/M)	>27	3	5	6
N	LOI450	Loss on Ignition (%)	$$			10
N	BTEXHSA	Sum of BTEX (mg/kg)	<2.251	6		
N	PCBUSECD	Sum of 7 Congener PCB's (mg/kg)	<0.0431	1		
N	TPHFIDUS	Mineral Oil (mg/kg)	35600	500		
N	PAHMSUS	PAH Sum of 17 (mg/kg)	<25.58	100		
N	PHSOIL	pH (pH units)	10.4		>6	
N	ANC	Acid Neutralisation Capacity (mol/kg) @pH 7	3.81		To be evaluated	To be evaluated

Accreditation	Method Code	Leachate Analysis	2:1 Leachate	8:1 Leachate	Calculated amount leached @ 2:1	Calculated cumulative amount leached @ 10:1	Landfill Waste Acceptance Criteria Limit Values for BSEN 12457/3 @ L/S 10 litre kg-1 mg/kg (dry weight)		
			mg/l except oo		mg/kg (dry weight)				
U	WSLM3	pH (pH units) oo	10.9	11.1	Calculated data not UKAS Accredited				
U	WSLM2	Conductivity (µs/cm) oo	9080	1910					
U	ICPMSW	Arsenic	0.012	0.045	0.024	0.41	0.5	2	25
U	ICPWATVAR	Barium	0.25	0.17	0.5	1.8	20	100	300
U	ICPMSW	Cadmium	<0.0001	0.0045	<0.0002	<0.04	0.04	1	5
U	ICPMSW	Chromium	0.005	0.082	0.01	0.73	0.5	10	70
U	ICPMSW	Copper	0.16	0.519	0.32	4.78	2	50	100
U	ICPMSW	Mercury	0.0004	0.0016	0.0008	0.015	0.01	0.2	2
U	ICPMSW	Molybdenum	0.338	0.04	0.676	0.74	0.5	10	30
U	ICPMSW	Nickel	0.096	0.056	0.192	0.61	0.4	10	40
U	ICPMSW	Lead	0.022	0.52	0.044	4.62	0.5	10	50
U	ICPMSW	Antimony	0.085	0.137	0.17	1.31	0.06	0.7	5
U	ICPMSW	Selenium	0.014	0.002	0.028	0.03	0.1	0.5	7
U	ICPMSW	Zinc	0.118	3.602	0.236	31.99	4	50	200
U	KONENS	Chloride	3680	412	7360	7896	800	15000	25000
U	ISEF	Fluoride	0.1	<2.0	0.2	<18	10	150	500
U	ICPWATVAR	Sulphate as SO4	264	149	528	1623	1000	20000	50000
N	WSLM27	Total Dissolved Solids	7090	1490	14180	21371	4000	60000	100000
U	SFAPI	Phenol Index	0.51	<0.05	1.02	<1	1		
N	WSLM13	Dissolved Organic Carbon	440	580	880	5638	500	800	1000

Template Ver. 1

Landfill Waste Acceptance Criteria limit values correct as of 11th March 2009.

Tests where the accreditation is set to U are UKAS accredited, those where the accreditation is set to N are not UKAS accredited

Where individual results are flagged see report notes for status.
Results corrected to dry weight at 105°C where appropriate, in accordance with the MCERTS standard.

Analytical and Deviating Sample Overview

Customer Ramboll Environ
Site Zeon Chemicals ESA
Report No S162827M

Consignment No S55050
Date Logged 11-Apr-2016

Report Due 18-Apr-2016

ID Number	Description	MethodID	ANC	BTEXHSA		CEN Leachate		CustServ	ICPBOR	ICPMSS										ICPSOIL		ICPWSS	LOI(%MM)	MCertS	PAHMSUS	PCBUSEDAR	PHSOIL
		Sampled	Acid Neut. Capacity	BTEX-HSA + MTBE analysis	MTBE (µg/kg)	CEN Leac(P)1	CEN Leac(P)2	REPORT A	Boron (H20 Soluble)	Arsenic (MS)	Cadmium (MS)	Chromium (MS)	Copper (MS)	Lead (MS)	Mercury (MS)	Nickel (MS)	Selenium (MS)	Vanadium (MS)	Zinc (MS)	Barium.	Beryllium.	SO4-- (H2O sol) mg/l	L.O.I. % @ 450C	MCertS Analysis	PAH (17) by GCMS	PCB-7 Congeners Analysis	pH units (AR)
CL/1612028	ETP3	07/04/16																									
CL/1612029	ETP4	07/04/16																									

Note: For analysis where the scheduled turnaround is greater than the holding time we will do our utmost to prioritise these samples. However, it is possible that samples could become deviant whilst being processed in the laboratory.

In this instance please contact the laboratory immediately should you wish to discuss how you would like us to proceed. If you do not respond within 24 hours, we will proceed as originally requested.

Deviating Sample Key

A	The sample was received in an inappropriate container for this analysis
B	The sample was received without the correct preservation for this analysis
C	Headspace present in the sample container
D	The sampling date was not supplied so holding time may be compromised - applicable to all analysis
E	Sample processing did not commence within the appropriate holding time
F	Sample processing did not commence within the appropriate handling time

Requested Analysis Key

	Analysis Required
	Analysis dependant upon trigger result - **Note: due date may be affected if triggered**
	No analysis scheduled
^	Analysis Subcontracted - **Note: due date may vary**

Where individual results are flagged see report notes for status.
The integrity of data for samples/analysis that have been categorised as Deviating may be compromised. Data may not be representative of the sample at the time of sampling.

Analytical and Deviating Sample Overview

Customer Ramboll Environ
Site Zeon Chemicals ESA
Report No S162827M

Consignment No S55050
Date Logged 11-Apr-2016

Report Due 18-Apr-2016

ID Number	Description	MethodID	TMSS	TPHFIDUS		VOCHSAS	WSLM59
		Sampled	Tot.Moisture @ 105C	TPH Band (>C10-C40)	TPH by GCFID (AR)	VOC + TICs HSA-GCMS	Total Organic Carbon
CL/1612028	ETP3	07/04/16					
CL/1612029	ETP4	07/04/16					

Note: For analysis where the scheduled turnaround is greater than the holding time we will do our utmost to prioritise these samples. However, it is possible that samples could become deviant whilst being processed in the laboratory.

In this instance please contact the laboratory immediately should you wish to discuss how you would like us to proceed. If you do not respond within 24 hours, we will proceed as originally requested.

Deviating Sample Key	
A	The sample was received in an inappropriate container for this analysis
B	The sample was received without the correct preservation for this analysis
C	Headspace present in the sample container
D	The sampling date was not supplied so holding time may be compromised - applicable to all analysis
E	Sample processing did not commence within the appropriate holding time
F	Sample processing did not commence within the appropriate handling time

Requested Analysis Key	
	Analysis Required
	Analysis dependant upon trigger result - **Note: due date may be affected if triggered**
	No analysis scheduled
^	Analysis Subcontracted - **Note: due date may vary**

Where individual results are flagged see report notes for status.
The integrity of data for samples/analysis that have been categorised as Deviating may be compromised. Data may not be representative of the sample at the time of sampling.

Report Number : EFS/162827

Additional Report Notes

Method Code	Sample ID	The following information should be taken into consideration when using the data contained within this report
ANC	1612029	Due to the nature of the sample it was not possible to dry and grind prior to analysis. Analysis was therefore carried out on an As Received (AR) aliquot and as such the result should be used for information purposes only.
LOI(%MM)	1612029	Due to the nature of the sample it was not possible to dry and grind prior to analysis. As a result the sample has been marked as non amenable.
VOCHSAS	CL/1612028 CL/1612029	Due to matrix interference, the Internal Standard recovery for this Test is below the required QMS specification. All other Laboratory Process Controls meet the requirements of the QMS. These circumstances should be taken into consideration when utilising the data.

Method Descriptions

Matrix	MethodID	Analysis Basis	Method Description
Soil	ANC	Oven Dried @ < 35°C	Quantitative digestion with Hydrochloric Acid back titration with 1M Sodium Hydroxide to pH 7
Soil	BTEXHSA	As Received	Determination of Benzene, Toluene, Ethyl benzene and Xylenes (BTEX) by Headspace GCFID
Soil	ICPBOR	Oven Dried @ < 35°C	Determination of Boron in soil samples by hot water extraction followed by ICPOES detection
Soil	ICPMSS	Oven Dried @ < 35°C	Determination of Metals in soil samples by aqua regia digestion followed by ICPMS
Soil	ICPSOIL	Oven Dried @ < 35°C	Determination of Metals in soil samples by aqua regia digestion followed by ICPOES detection
Soil	ICPWSS	Oven Dried @ < 35°C	Determination of Water Soluble Sulphate in soil samples by water extraction followed by ICPOES detection
Soil	LOI(%MM)	Oven Dried @ < 35°C	Determination of loss on ignition for soil samples at specified temperature by gravimetry
Soil	PAHMSUS	As Received	Determination of Polycyclic Aromatic Hydrocarbons (PAH) by hexane/acetone extraction followed by GCMS detection
Soil	PCBUSECDAR	As Received	Determination of Polychlorinated Biphenyl (PCB) congeners/aroclors by hexane/acetone extraction followed by GCECD detection
Soil	PHSOIL	As Received	Determination of pH of 2.5:1 deionised water to soil extracts using pH probe.
Soil	TMSS	As Received	Determination of the Total Moisture content at 105ºC by loss on oven drying gravimetric analysis (% based upon wet weight)
Soil	TPHFIDUS	As Received	Determination of hexane/acetone extractable Hydrocarbons in soil with GCFID detection.
Soil	VOCHSAS	As Received	Determination of Volatile Organic Compounds (VOC) by Headspace GCMS
Soil	WSLM59	Oven Dried @ < 35°C	Determination of Organic Carbon in soil using sulphurous Acid digestion followed by high temperature combustion and IR detection
Water	ICPMSW	As Received	Direct quantitative determination of Metals in water samples using ICPMS
Water	ICPWATVAR	As Received	Direct determination of Metals and Sulphate in water samples using ICPOES
Water	ISEF	As Received	Determination of Fluoride in water samples by Ion Selective Electrode (ISE)
Water	KONENS	As Received	Direct analysis using discrete colorimetric analysis
Water	SFAPI	As Received	Segmented flow analysis with colorimetric detection
Water	WSLM13	As Received	Instrumental analysis using acid/persulphate digestion and non-dispersive IR detection

Method Descriptions

Matrix	MethodID	Analysis Basis	Method Description
Water	WSLM2	As Received	Determination of the Electrical Conductivity (µS/cm) by electrical conductivity probe.
Water	WSLM27	As Received	Gravimetric Determination
Water	WSLM3	As Received	Determination of the pH of water samples by pH probe

Where individual results are flagged see report notes for status.

Report Notes

Generic Notes

Soil/Solid Analysis

Unless stated otherwise,
- Results expressed as mg/kg have been calculated on the basis indicated in the Method Description table.
  All results on MCERTS reports are reported on a 105ºC dry weight basis with the exception of pH and conductivity.
- Sulphate analysis not conducted in accordance with BS1377
- Water Soluble Sulphate is on a 2:1 water:soil extract

Waters Analysis

Unless stated otherwise results are expressed as mg/l

Nil: Where "Nil" has been entered against Total Alkalinity or Total Acidity this indicates that a measurement was not required due to the inherent pH of the sample.

Oil analysis specific

Unless stated otherwise,
- Results are expressed as mg/kg
- SG is expressed as g/cm^3@ 15^{o}C

Gas (Tedlar bag) Analysis

Unless stated otherwise, results are expressed as ug/l

Asbestos Analysis

CH Denotes Chrysotile **TR** Denotes Tremolite
CR Denotes Crocidolite **AC** Denotes Actinolite
AM Denotes Amosite **AN** Denotes Anthophylite
NAIIS No Asbestos Identified in Sample
NADIS No Asbestos Detected In Sample

Symbol Reference

^ Sub-contracted analysis.
$$ Unable to analyse due to the nature of the sample
¶ Samples submitted for this analyte were not preserved on site in accordance with laboratory protocols. This may have resulted in deterioration of the sample(s) during transit to the laboratory. Consequently the reported data may not represent the concentration of the target analyte present in the sample at the time of sampling
¥ Results for guidance only due to possible interference
& Blank corrected result
I.S Insufficient sample to complete requested analysis
I.S(g) Insufficient sample to re-analyse, results for guidance only
Intf Unable to analyse due to interferences
N.D Not determined **N.Det** Not detected
N.F No Flow
NS Information Not Supplied
Req Analysis requested, see attached sheets for results
Þ Raised detection limit due to nature of the sample
***** All accreditation has been removed by the laboratory for this result
‡ MCERTS accreditation has been removed for this result
§ accreditation has been removed for this result as it is a non-accredited matrix

Note: The Laboratory may only claim that data is accredited when all of the requirements of our Quality System have been met. Where these requirements have not been met the laboratory may elect to include the data in its final report and remove the accreditation from individual data items if it believes that the validity of the data has not been affected. If further details are required of the circumstances which have led to the removal of accreditation then please do not hesitate to contact the laboratory.

Sample Descriptions

Client : Ramboll Environ

Site : Zeon Chemicals ESA

Report Number : S16_2827

Note: major constituent in upper case

Lab ID Number	Client ID	Description
CL/1612028	ETP3 (NVM)	Grey SLUDGE
CL/1612029	ETP4 (NVM)	Grey FRAG WASTE

Our Ref: EXR/217815 (Ver. 1)
Your Ref: UK15-21370

April 15, 2016

Environmental Chemistry
ESG
Bretby Business Park
Ashby Road
Burton-on-Trent
Staffordshire
DE15 0YZ

Telephone: 01283 554400
Facsimile: 01283 554422

Lucy Cleverley
Ramboll Environ
8 Village Way
Cardiff
CF15 2NE

For the attention of Lucy Cleverley

Dear Lucy Cleverley

Sample Analysis - Zeon Chemicals ESA

Samples from the above site have been analysed in accordance with the schedule supplied.
The sample details and the results of analyses for these samples are given in the appended report.

An invoice for this work will follow under a separate cover.

Please be aware that our policy for the retention of paper based laboratory records and analysis reports is 6 years.

The work was carried out in accordance with Environmental Scientifics Group Ltd (Multi-Sector Services) Standard Terms and Conditions of Contract.

If I can be of any further assistance please do not hesitate to contact me.

Yours sincerely

for ESG

JNColbourne

J Colbourne
Project Co-ordinator
01283 554547

TEST REPORT

1252

Report No. EXR/217815 (Ver. 1)

Ramboll Environ
8 Village Way
Cardiff
CF15 2NE

Site: Zeon Chemicals ESA

The 2 samples described in this report were registered for analysis by ESG on 08-Apr-2016. This report supersedes any versions previously issued by the laboratory.

The analysis was completed by: 15-Apr-2016

Tests where the accreditation is set to N or No, and any individual data items marked with a * are not UKAS accredited. Opinions and interpretations expressed herein are outside the scope of UKAS accreditation.

The following tables are contained in this report:

On behalf of
ESG :
Declan Burns

Managing Director
Multi-Sector Services

Date of Issue: 15-Apr-2016

Tests marked '^' have been subcontracted to another laboratory.
Where samples have been flagged as deviant on the Analytical and Deviating Sample Overview, for any reason, the data may not be representative of the sample at the point of sampling and the validity of the data may be affected. ESG accepts no responsibility for any sampling not carried out by our personnel.

Where individual results are flagged see report notes for status.

Units :			pH units	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l
Method Codes :			WSLM3	ICPWATVAR	ICPWATVAR	ICPMSW	ICPMSW	ICPMSW	ICPMSW	ICPMSW	ICPMSW	ICPMSW	ICPWATVAR	ICPMSW	ICPMSW	ICPMSW	WSLM13	TPHFID
Method Reporting Limits :				3	0.01	0.001	0.001	0.0001	0.001	0.001	0.002	0.001	0.01	0.0001	0.001	0.001	0.2	0.01
UKAS Accredited :			Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
LAB ID Number EX/	**Client Sample Description**	**Sample Date**	**pH units w**	**Total Sulphur as SO4 (Dissolved) a**	**Barium as Ba (Dissolved) a**	**Nickel as Ni (Dissolved)**	**Chromium as Cr (Dissolved)**	**Cadmium as Cd (Dissolved)**	**Copper as Cu (Dissolved)**	**Lead as Pb (Dissolved)**	**Zinc as Zn (Dissolved)**	**Arsenic as As (Dissolved)**	**Boron as B (Dissolved) a**	**Mercury as Hg (Dissolved)**	**Selenium as Se (Dissolved)**	**Vanadium as V (Dissolved)**	**Total Organic Carbon w**	**TPH GC**
1680037	ETP1	**07-Apr-16**	6.7	131	0.15	0.008	<0.001	<0.0001	<0.001	0.001	0.03	<0.001	0.06	<0.0001	<0.001	<0.001	150	1.14
1680038	ETP2	**07-Apr-16**	6.6	134	0.15	0.008	<0.001	<0.0001	<0.001	0.001	0.027	<0.001	0.06	<0.0001	<0.001	<0.001	150	0.93

ESG

Bretby Business Park, Ashby Road

Burton-on-Trent, Staffordshire, DE15 0YZ

Tel +44 (0) 1283 554400

Fax +44 (0) 1283 554422

Client Name	**Ramboll Environ**
Contact	Lucy Cleverley

Zeon Chemicals ESA

Sample Analysis

Date Printed	**14-Apr-2016**
Report Number	**EXR/217815**
Table Number	**1**

Where individual results are flagged see report notes for status.

		Units :	µg/l	mg/l															
		Method Codes :	VOCHSAW	ICPWATVAR															
		Method Reporting Limits :	1	0.01															
		UKAS Accredited :	Yes	No															
LAB ID Number EX/	**Client Sample Description**	**Sample Date**	**VOC + TICS HSA-GCMS o**	**Beryllium as Be (Dissolved) a**															
1680037	ETP1	**07-Apr-16**	Req	<0.01															
1680038	ETP2	**07-Apr-16**	Req	<0.01															

ESG

Bretby Business Park, Ashby Road

Burton-on-Trent, Staffordshire, DE15 0YZ

Tel +44 (0) 1283 554400

Fax +44 (0) 1283 554422

Client Name	**Ramboll Environ**
Contact	Lucy Cleverley

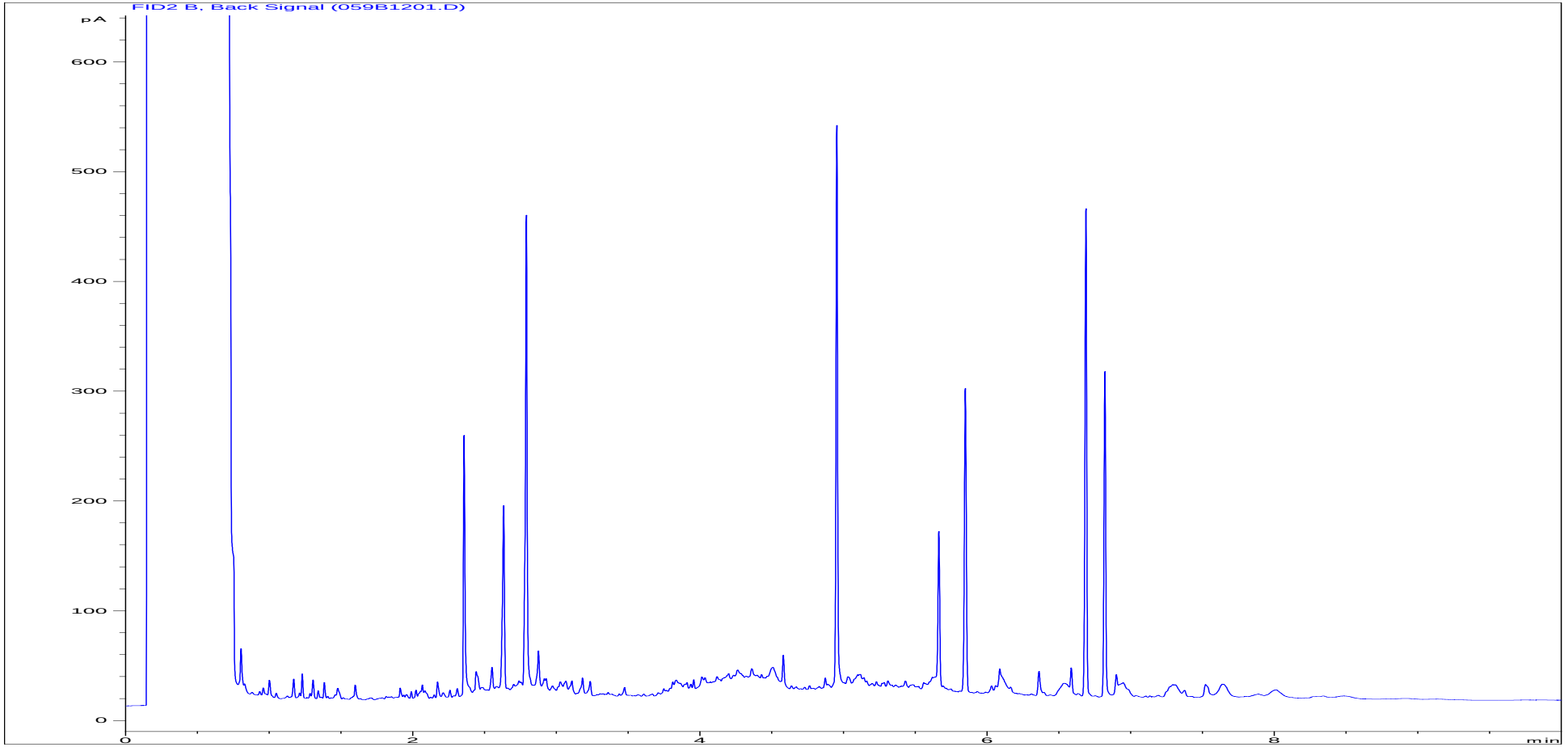
Zeon Chemicals ESA

Sample Analysis

Date Printed	**14-Apr-2016**
Report Number	**EXR/217815**
Table Number	**1**

Where individual results are flagged see report notes for status.

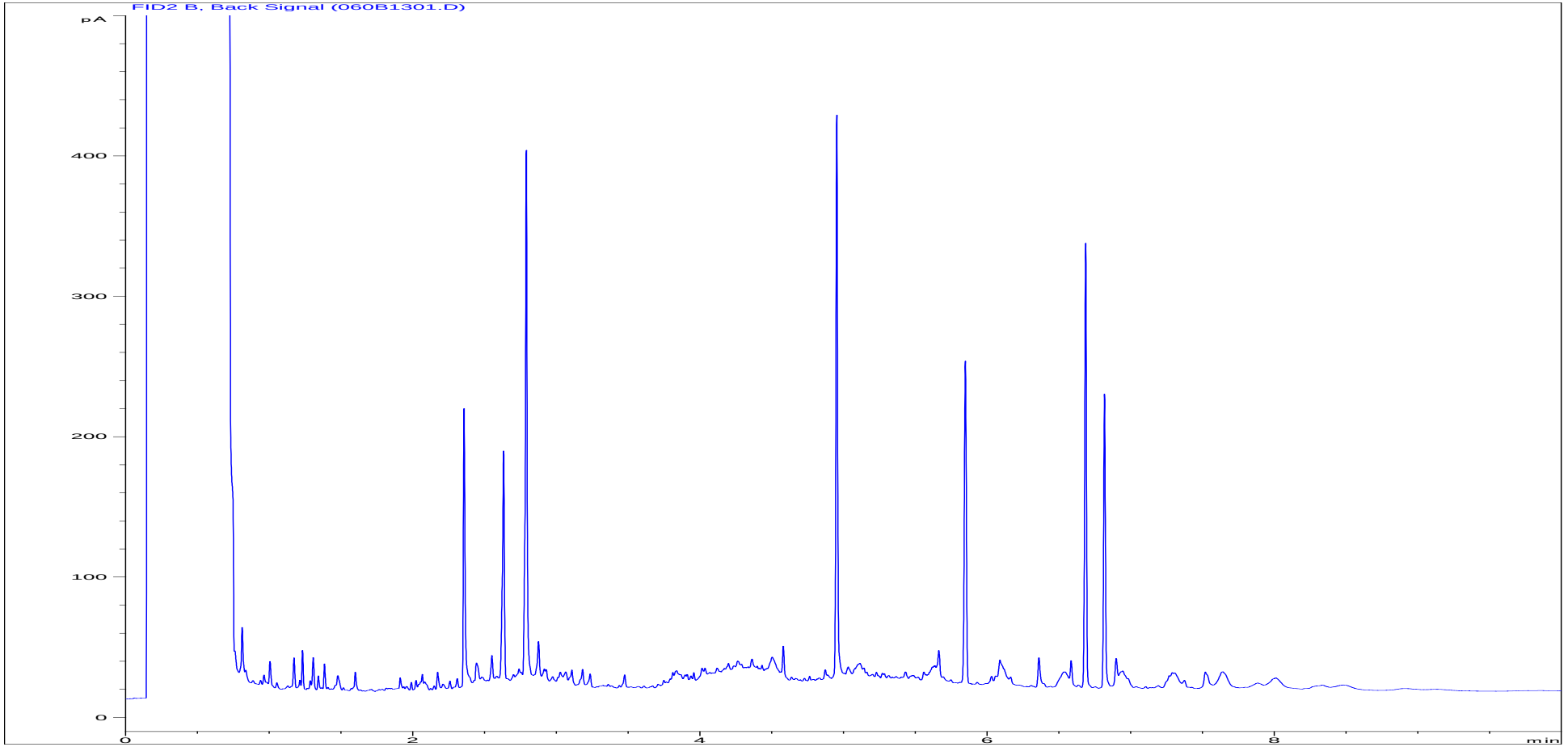
Petroleum Hydrocarbons (C8 to C40) by GC/FID



Sample ID:	EX1680037	**Job Number:**	W21_7815
Multiplier:	0.005	**Client:**	Ramboll Environ
Dilution:	4	**Site:**	Zeon Chemicals ESA
Acquisition Method:	TPH_RUNF.M	**Client Sample Ref:**	ETP1
Acquisition Date/Time:	13-Apr-16, 20:16:50		
Datafile:	D:\TES\DATA\Y2016\041316TPH_GC15\041316 2016-04-13 17-07-35\059B1201.D		

Where individual results are flagged see report notes for status.

Petroleum Hydrocarbons (C8 to C40) by GC/FID



Sample ID:	EX1680038	**Job Number:**	W21_7815
Multiplier:	0.005	**Client:**	Ramboll Environ
Dilution:	4	**Site:**	Zeon Chemicals ESA
Acquisition Method:	TPH_RUNF.M	**Client Sample Ref:**	ETP2
Acquisition Date/Time:	13-Apr-16, 20:33:54		
Datafile:	D:\TES\DATA\Y2016\041316TPH_GC15\041316 2016-04-13 17-07-35\060B1301.D		

Where individual results are flagged see report notes for status.

Volatile Organic Compounds by HSA-GCMS

UKAS accredited?: Yes

Customer and Site Details:	Ramboll Environ: Zeon Chemicals ESA	**Directory/Quant file:**	0412VOC.MS8\ Initial Calibration	**Matrix:**	Water
Sample Details:	ETP1	**Date Booked in:**	08-Apr-16	**Method:**	Headspace
LIMS ID Number:	EX1680037	**Date Analysed:**	13-Apr-16	**Multiplier:**	1
Job Number:	W21_7815	**Operator:**	PR	**Position:**	17

Target Compounds	CAS #	R.T. (min.)	Concentration µg/l	% Fit
Dichlorodifluoromethane	75-71-8 *	-	< 1	-
Chloromethane	74-87-3	-	< 1	-
Vinyl Chloride	75-01-4	-	< 1	-
Bromomethane	74-83-9 *	-	< 5	-
Chloroethane	75-00-3	-	< 5	-
Trichlorofluoromethane	75-69-4	-	< 1	-
1,1-Dichloroethene	75-35-4	-	< 1	-
trans 1,2-Dichloroethene	156-60-5	-	< 1	-
1,1-Dichloroethane	75-34-3	-	< 1	-
2,2-Dichloropropane	594-20-7 *	-	< 1	-
cis 1,2-Dichloroethene	156-59-2	-	< 1	-
Bromochloromethane	74-97-5	-	< 1	-
Chloroform	67-66-3	-	< 1	-
1,1,1-Trichloroethane	71-55-6	-	< 1	-
Carbon Tetrachloride	56-23-5	-	< 1	-
1,1-Dichloropropene	563-58-6	-	< 1	-
Benzene	71-43-2	-	< 1	-
1,2-Dichloroethane	107-06-2	-	< 1	-
Trichloroethene	79-01-6	-	< 5	-
1,2-Dichloropropane	78-87-5	-	< 1	-
Dibromomethane	74-95-3	-	< 1	-
Bromodichloromethane	75-27-4	-	< 1	-
cis 1,3-Dichloropropene	10061-01-5 *	-	< 1	-
Toluene	108-88-3	-	< 1	-
trans 1,3-Dichloropropene	10061-02-6 *	-	< 1	-
1,1,2-Trichloroethane	79-00-5	-	< 1	-
Tetrachloroethene	127-18-4	-	< 5	-
1,3-Dichloropropane	142-28-9	-	< 1	-
Dibromochloromethane	124-48-1	-	< 1	-
1,2-Dibromoethane	106-93-4	-	< 1	-
Chlorobenzene	108-90-7	-	< 1	-
Ethylbenzene	100-41-4	-	< 1	-
1,1,1,2-Tetrachloroethane	630-20-6	-	< 1	-
m and p-Xylene	108-38-3/106-42-3	-	< 1	-
o-Xylene	95-47-6	-	< 1	-

Target Compounds	CAS #	R.T. (min.)	Concentration µg/l	% Fit
Styrene	100-42-5	-	< 1	-
Bromoform	75-25-2	-	< 1	-
iso-Propylbenzene	98-82-8	-	< 1	-
1,1,2,2-Tetrachloroethane	79-34-5 *	-	< 1	-
Propylbenzene	103-65-1	-	< 1	-
Bromobenzene	108-86-1	-	< 1	-
1,2,3-Trichloropropane	96-18-4	-	< 1	-
2-Chlorotoluene	95-49-8	-	< 1	-
1,3,5-Trimethylbenzene	108-67-8	-	< 1	-
4-Chlorotoluene	106-43-4	-	< 1	-
tert-Butylbenzene	98-06-6	-	< 1	-
1,2,4-Trimethylbenzene	95-63-6	-	< 1	-
sec-Butylbenzene	135-98-8	-	< 1	-
p-Isopropyltoluene	99-87-6	-	< 1	-
1,3-Dichlorobenzene	541-73-1	-	< 1	-
1,4-Dichlorobenzene	106-46-7	-	< 1	-
n-Butylbenzene	104-51-8	-	< 1	-
1,2-Dichlorobenzene	95-50-1	-	< 5	-
1,2-Dibromo-3-chloropropane	96-12-8 *	-	< 5	-
1,2,4-Trichlorobenzene	120-82-1	-	< 5	-
Hexachlorobutadiene	87-68-3	-	< 5	-
Naphthalene	91-20-3	-	< 5	-
1,2,3-Trichlorobenzene	87-61-6	-	< 5	-

Compounds marked * are not UKAS accredited
"M" denotes that % fit has been manually interpreted

Internal standards	R.T.	Area %	Surrogates	% Rec
Pentafluorobenzene	3.32	97	Dibromofluoromethane	116
1,4-Difluorobenzene	3.68	96	Toluene-d8	118
Chlorobenzene-d5	4.85	111	Bromofluorobenzene	93
1,4-Dichlorobenzene-d4	5.65	89		

Note: Volatile compounds degrade with time, and this may affect the integrity of the data depending on the timescale between sampling and analysis. It is recommended that analysis takes place within 7 days of sampling.

Where individual results are flagged see report notes for status.

Volatile Organic Compounds by HSA-GCMS

UKAS accredited?: Yes

Customer and Site Details:	Ramboll Environ: Zeon Chemicals ESA	**Directory/Quant file:**	0412VOC.MS8\ Initial Calibration	**Matrix:**	Water
Sample Details:	ETP2	**Date Booked in:**	08-Apr-16	**Method:**	Headspace
LIMS ID Number:	EX1680038	**Date Analysed:**	13-Apr-16	**Multiplier:**	1
Job Number:	W21_7815	**Operator:**	PR	**Position:**	18

Target Compounds	CAS #	R.T. (min.)	Concentration µg/l	% Fit
Dichlorodifluoromethane	75-71-8 *	-	< 1	-
Chloromethane	74-87-3	-	< 1	-
Vinyl Chloride	75-01-4	-	< 1	-
Bromomethane	74-83-9 *	-	< 5	-
Chloroethane	75-00-3	-	< 5	-
Trichlorofluoromethane	75-69-4	-	< 1	-
1,1-Dichloroethene	75-35-4	-	< 1	-
trans 1,2-Dichloroethene	156-60-5	-	< 1	-
1,1-Dichloroethane	75-34-3	-	< 1	-
2,2-Dichloropropane	594-20-7 *	-	< 1	-
cis 1,2-Dichloroethene	156-59-2	-	< 1	-
Bromochloromethane	74-97-5	-	< 1	-
Chloroform	67-66-3	-	< 1	-
1,1,1-Trichloroethane	71-55-6	-	< 1	-
Carbon Tetrachloride	56-23-5	-	< 1	-
1,1-Dichloropropene	563-58-6	-	< 1	-
Benzene	71-43-2	-	< 1	-
1,2-Dichloroethane	107-06-2	-	< 1	-
Trichloroethene	79-01-6	-	< 5	-
1,2-Dichloropropane	78-87-5	-	< 1	-
Dibromomethane	74-95-3	-	< 1	-
Bromodichloromethane	75-27-4	-	< 1	-
cis 1,3-Dichloropropene	10061-01-5 *	-	< 1	-
Toluene	108-88-3	-	< 1	-
trans 1,3-Dichloropropene	10061-02-6 *	-	< 1	-
1,1,2-Trichloroethane	79-00-5	-	< 1	-
Tetrachloroethene	127-18-4	-	< 5	-
1,3-Dichloropropane	142-28-9	-	< 1	-
Dibromochloromethane	124-48-1	-	< 1	-
1,2-Dibromoethane	106-93-4	-	< 1	-
Chlorobenzene	108-90-7	-	< 1	-
Ethylbenzene	100-41-4	-	< 1	-
1,1,1,2-Tetrachloroethane	630-20-6	-	< 1	-
m and p-Xylene	108-38-3/106-42-3	-	< 1	-
o-Xylene	95-47-6	-	< 1	-

Target Compounds	CAS #	R.T. (min.)	Concentration µg/l	% Fit
Styrene	100-42-5	-	< 1	-
Bromoform	75-25-2	-	< 1	-
iso-Propylbenzene	98-82-8	-	< 1	-
1,1,2,2-Tetrachloroethane	79-34-5 *	-	< 1	-
Propylbenzene	103-65-1	-	< 1	-
Bromobenzene	108-86-1	-	< 1	-
1,2,3-Trichloropropane	96-18-4	-	< 1	-
2-Chlorotoluene	95-49-8	-	< 1	-
1,3,5-Trimethylbenzene	108-67-8	-	< 1	-
4-Chlorotoluene	106-43-4	-	< 1	-
tert-Butylbenzene	98-06-6	-	< 1	-
1,2,4-Trimethylbenzene	95-63-6	-	< 1	-
sec-Butylbenzene	135-98-8	-	< 1	-
p-Isopropyltoluene	99-87-6	-	< 1	-
1,3-Dichlorobenzene	541-73-1	-	< 1	-
1,4-Dichlorobenzene	106-46-7	-	< 1	-
n-Butylbenzene	104-51-8	-	< 1	-
1,2-Dichlorobenzene	95-50-1	-	< 5	-
1,2-Dibromo-3-chloropropane	96-12-8 *	-	< 5	-
1,2,4-Trichlorobenzene	120-82-1	-	< 5	-
Hexachlorobutadiene	87-68-3	-	< 5	-
Naphthalene	91-20-3	-	< 5	-
1,2,3-Trichlorobenzene	87-61-6	-	< 5	-

Compounds marked * are not UKAS accredited
"M" denotes that % fit has been manually interpreted

Internal standards	R.T.	Area %	Surrogates	% Rec
Pentafluorobenzene	3.32	108	Dibromofluoromethane	120
1,4-Difluorobenzene	3.69	108	Toluene-d8	97
Chlorobenzene-d5	4.84	106	Bromofluorobenzene	92
1,4-Dichlorobenzene-d4	5.65	83		

Note: Volatile compounds degrade with time, and this may affect the integrity of the data depending on the timescale between sampling and analysis. It is recommended that analysis takes place within 7 days of sampling.

Where individual results are flagged see report notes for status.

TICs by HSA-GCMS

UKAS accredited?: No

Customer and Site Details:	Ramboll Environ: Zeon Chemicals ESA		**Date Booked in:**	08-Apr-16
Sample Details:	ETP1		**Date Analysed:**	13-Apr-16
LIMS ID Number:	EX1680037		**Matrix:**	Water
Job Number:	W21_7815		**Ext Method:**	Headspace
Directory/Quant file:	0412VOC.MS8\	Initial Calibration	**Dilution:**	1
Operator:	PR		**Position:**	17

Tentatively Identified Compounds	CAS No	R.T. (min.)	Concentration µg/l	% Fit
None Detected			<5	

The compounds listed above have been tentatively identified by a computer based library search.
Compounds identified in the sample are not reported if they also occur in the method blank.
The % fit is an indication of the reliability of the compound assignment.
Due to the similarity between mass spectra of some isomeric compounds, assignments may not be correct.
Other compounds may also be present but identification was not possible.
Concentrations are semi-quantitative, assume a response factor of 1 and use the nearest internal standard.
Compounds marked * are not UKAS accredited
"M" denotes that % fit has been manually interpreted

Where individual results are flagged see report notes for status.

TICs by HSA-GCMS

UKAS accredited?: No

Customer and Site Details:	Ramboll Environ: Zeon Chemicals ESA		**Date Booked in:**	08-Apr-16
Sample Details:	ETP2		**Date Analysed:**	13-Apr-16
LIMS ID Number:	EX1680038		**Matrix:**	Water
Job Number:	W21_7815		**Ext Method:**	Headspace
Directory/Quant file:	0412VOC.MS8\	Initial Calibration	**Dilution:**	1
Operator:	PR		**Position:**	18

Tentatively Identified Compounds	CAS No	R.T. (min.)	Concentration µg/l	% Fit
Hexane	000110-54-3	2.38	6	68

The compounds listed above have been tentatively identified by a computer based library search.
Compounds identified in the sample are not reported if they also occur in the method blank.
The % fit is an indication of the reliability of the compound assignment.
Due to the similarity between mass spectra of some isomeric compounds, assignments may not be correct.
Other compounds may also be present but identification was not possible.
Concentrations are semi-quantitative, assume a response factor of 1 and use the nearest internal standard.
Compounds marked * are not UKAS accredited
"M" denotes that % fit has been manually interpreted

Where individual results are flagged see report notes for status.

Sample Analysis

ESG Environmental Chemistry
Analytical and Deviating Sample Overview

W217815

Customer Ramboll Environ
Site Zeon Chemicals ESA
Report No W217815

Consignment No W102402
Date Logged 08-Apr-2016

Report Due 15-Apr-2016

ID Number	Description	Matrix Type	Sampled	MethodID	CUSTSERV	ICPMSW										ICPWATVAR				TPHFID	VOCHSAW	WSLM13	WSLM3
					Report A	Nickel as Ni MS (Dissolved)	Chromium as Cr MS (Dissolved)	Cadmium as Cd MS (Dissolved)	Copper as Cu MS (Dissolved)	Lead as Pb MS (Dissolved)	Zinc as Zn MS (Dissolved)	Arsenic as As MS (Dissolved)	Mercury as Hg MS (Dissolved)	Selenium as Se MS (Dissolved)	Vanadium as V MS (Dissolved)	Total Sulphur as SO4 (Diss) VAR	Barium as Ba (Dissolved) VAR	Boron as B (Dissolved) VAR	Beryllium as Be (Dissolved) VAR	TPH GC	VOC + TICS HSA-GCMS	Total Organic Carbon	pH units
						✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓		✓	✓	✓	✓
EX/1680037	ETP1	Trade Effluent	07/04/16																				
EX/1680038	ETP2	Trade Effluent	07/04/16																				

Note: For analysis where the scheduled turnaround is greater than the holding time we will do our utmost to prioritise these samples. However, it is possible that samples could become deviant whilst being processed in the laboratory.

In this instance please contact the laboratory immediately should you wish to discuss how you would like us to proceed. If you do not respond within 24 hours, we will proceed as originally requested.

Deviating Sample Key	
A	The sample was received in an inappropriate container for this analysis
B	The sample was received without the correct preservation for this analysis
C	Headspace present in the sample container
D	The sampling date was not supplied so holding time may be compromised - applicable to all analysis
E	Sample processing did not commence within the appropriate holding time
F	Sample processing did not commence within the appropriate handling time

Requested Analysis Key	
	Analysis Required
	Analysis dependant upon trigger result - **Note: due date may be affected if triggered**
	No analysis scheduled
^	Analysis Subcontracted - **Note: due date may vary**

The integrity of data for samples/analysis that have been categorised as Deviating may be compromised. Data may not be representative of the sample at the time of sampling.
Where individual results are flagged see report notes for status.

Customer Ramboll Environ
Site Zeon Chemicals ESA
Report No W217815

Consignment No W102402
Date Logged 08-Apr-2016

Report Due 15-Apr-2016

ID Number	Description	Matrix Type	Sampled	WSLM3 pH units
			MethodID	✓
EX/1680037	ETP1	Trade Effluent	07/04/16	
EX/1680038	ETP2	Trade Effluent	07/04/16	

Note: For analysis where the scheduled turnaround is greater than the holding time we will do our utmost to prioritise these samples. However, it is possible that samples could become deviant whilst being processed in the laboratory.

In this instance please contact the laboratory immediately should you wish to discuss how you would like us to proceed. If you do not respond within 24 hours, we will proceed as originally requested.

Deviating Sample Key	
A	The sample was received in an inappropriate container for this analysis
B	The sample was received without the correct preservation for this analysis
C	Headspace present in the sample container
D	The sampling date was not supplied so holding time may be compromised - applicable to all analysis
E	Sample processing did not commence within the appropriate holding time
F	Sample processing did not commence within the appropriate handling time

Requested Analysis Key	
	Analysis Required
	Analysis dependant upon trigger result - **Note: due date may be affected if triggered**
	No analysis scheduled
^	Analysis Subcontracted - **Note: due date may vary**

The integrity of data for samples/analysis that have been categorised as Deviating may be compromised. Data may not be representative of the sample at the time of sampling.
Where individual results are flagged see report notes for status.

Report Number : W/EXR/217815

Additional Report Notes

Method Code	Sample ID	The following information should be taken into consideration when using the data contained within this report
TPHFID	EX1680037 EX1680038	The matrix of this sample has been found to interfere with the result for this test. The sample has therefore been diluted to improve the signal to noise ratio but in doing so, the detection limit for this test has been elevated.

Method Descriptions

Matrix	MethodID	Analysis Basis	Method Description
Water	ICPMSW	As Received	Direct quantitative determination of Metals in water samples using ICPMS
Water	ICPWATVAR	As Received	Direct determination of Metals and Sulphate in water samples using ICPOES
Water	TPHFID	As Received	Determination of pentane extractable hydrocarbons in water by GCFID
Water	VOCHSAW	As Received	Determination of Volatile Organics Compounds by Headspace GCMS
Water	WSLM13	As Received	Instrumental analysis using acid/persulphate digestion and non-dispersive IR detection
Water	WSLM3	As Received	Determination of the pH of water samples by pH probe

Report Notes

Generic Notes

Soil/Solid Analysis

Unless stated otherwise,
- Results expressed as mg/kg have been calculated on the basis indicated in the Method Description table.
  All results on MCERTS reports are reported on a 105ºC dry weight basis with the exception of pH and conductivity.
- Sulphate analysis not conducted in accordance with BS1377
- Water Soluble Sulphate is on a 2:1 water:soil extract

Waters Analysis

Unless stated otherwise results are expressed as mg/l
Nil: Where "Nil" has been entered against Total Alkalinity or Total Acidity this indicates that a measurement was not required due to the inherent pH of the sample.

Oil analysis specific

Unless stated otherwise,
- Results are expressed as mg/kg
- SG is expressed as g/cm^3@ 15^{o}C

Gas (Tedlar bag) Analysis

Unless stated otherwise, results are expressed as ug/l

Asbestos Analysis

CH Denotes Chrysotile **TR** Denotes Tremolite
CR Denotes Crocidolite **AC** Denotes Actinolite
AM Denotes Amosite **AN** Denotes Anthophylite
NAIIS No Asbestos Identified in Sample
NADIS No Asbestos Detected In Sample

Symbol Reference

^ Sub-contracted analysis.
$$ Unable to analyse due to the nature of the sample
¶ Samples submitted for this analyte were not preserved on site in accordance with laboratory protocols. This may have resulted in deterioration of the sample(s) during transit to the laboratory. Consequently the reported data may not represent the concentration of the target analyte present in the sample at the time of sampling
¥ Results for guidance only due to possible interference
& Blank corrected result
I.S Insufficient sample to complete requested analysis
I.S(g) Insufficient sample to re-analyse, results for guidance only
Intf Unable to analyse due to interferences
N.D Not determined **N.Det** Not detected
N.F No Flow
NS Information Not Supplied
Req Analysis requested, see attached sheets for results
Þ Raised detection limit due to nature of the sample
***** All accreditation has been removed by the laboratory for this result
‡ MCERTS accreditation has been removed for this result
§ accreditation has been removed for this result as it is a non-accredited matrix

Note: The Laboratory may only claim that data is accredited when all of the requirements of our Quality System have been met. Where these requirements have not been met the laboratory may elect to include the data in its final report and remove the accreditation from individual data items if it believes that the validity of the data has not been affected. If further details are required of the circumstances which have led to the removal of accreditation then please do not hesitate to contact the laboratory.

Sample Descriptions

Client : Ramboll Environ
Site : Zeon Chemicals ESA
Report Number : W21_7815

Lab ID Number	Client ID	Description
EX/1680037	ETP1	Trade Effluent
EX/1680038	ETP2	Trade Effluent

RAMBOLL ENVIRON

APPENDIX 7
DRAINAGE SYSTEMS REVIEW

Intended for
Zeon Chemicals Europe Ltd

Document type
Report

Date
April 2016

ZEON CHEMICALS EUROPE LTD, SULLY DRAINAGE SYSTEMS REVIEW

RAMBOLL ENVIRON

ZEON CHEMICALS EUROPE LTD, SULLY
DRAINAGE SYSTEMS REVIEW

Revision	-
Date	**14/04/2016**
Made by	**Luke Strickland**
Checked by	**Matt Royall**
Approved by	**Matt Royall**
Description	**Drainage Systems Review**

Ref R-UK15-21370_1-Drainage

Ramboll Environ
Christchurch House
30 Waterloo Street
Victoria Square
Birmingham B2 5TJ
United Kingdom
T +44 (0) 121 230 1650
F +44 (0) 121 230 1675
www.ramboll-environ.com

CONTENTS

1. INTRODUCTION

Ramboll Environ UK Ltd (Ramboll Environ) was commissioned by Zeon Chemicals Europe Ltd (the 'Client') to undertake a preliminary drainage appraisal at the Zeon facility at Hayes Road, Sully, South Wales (the 'Site'). For the purposes of the appraisal the Site is understood to comprise the existing built footprint and not the vacant, vegetated leased land to the south. The purpose of this appraisal is to inform the demolition works proposed at the Site. This appraisal builds on initial advice provided to the Client in a letter dated 25th January 2016 (L-UK15-21370, 2-Drainage).

The following information sources have been used to prepare this report:

- A Phase 1 Environmental Review for the site (Ramboll Environ, Sept 2015);
- An existing drainage records drawing (ZECL Site Map ZSM0001, May 2013); and
- CCTV drainage survey information from Lanes Group dated 21st March 2016 (Zeon Zone 1-PJ217240-11.3.16, Zeon Zone 2-PJ217240-11.3.16, Zeon Zone 3-PJ217240-11.3.16, Zeon Zone 4-PJ217240-11.3.16, Zeon Zone 5-PJ217240-11.3.16, Zeon Zone 6-PJ217240-11.3.16, Zeon Zone 7-PJ217240-11.3.16, Zeon Zone 8-PJ217240-11.3.16, Zeon Zone 6-PJ217240-11.3.16, and accompanying plan drawing).

Ramboll Environ cannot accept liability for the accuracy or otherwise of any information derived from third party sources.

2. EXISTING DRAINAGE SYSTEMS

The record drawing for the Site and the subsequent CCTV drainage survey undertaken have identified numerous drainage systems on site including foul/septic waste systems, surface water drains and process drainage. The surveys have confirmed that the drainage systems on site are 'closed' (i.e. there are no recorded inflows or pipes from outside the Site, and no outfalls into public sewers or nearby watercourses).

The foul drainage systems on the Site terminate in septic tanks or pits, which are emptied as required by tanker. The surface water and process drainage systems are ultimately directed to a balancing tank and effluent treatment plant in the eastern portion of the Site. From the treatment plant discharge is pumped through an above ground pipeline to the north of the Site and off-site into the lagoon on the neighbouring Hexion facility.

The CCTV survey has shown that the existing drains are generally in a poor condition, with numerous blockages, cracks, root ingress and latex ingress. Parts of the system are unlikely to have been operating efficiently for some time. As a general observation the foul drains appear to be in slightly better condition than the surface water and process drainage systems, however the CCTV survey identified numerous remedial actions for each system.

In one specific location, manhole SW60, through misconnection or otherwise, a pipe run has been identified that is discharging direct to ground. There is insufficient information to determine if this has caused any contamination. Ramboll Environ will separately consider the findings of the drainage survey in terms of contamination issues.

3. DEMOLITION AND REMOVAL

Given that the drainage systems on site are 'closed', and that there is a single point of pumped discharge off site, no approvals from Natural Resources Wales (NRW) or Welsh Water should be required for any changes to the drainage system.

The key issues to be taken into account during demolition are the need to effectively drain surface water from the Site, and to ensure that fine particles from demolition material are not washed off-site in the form of silt – particularly that the Hexion lagoon does not receive any silt during demolition.

In terms of decommissioning the Site, the ideal option would be to remove all the existing drainage systems and tanks, and leave the Site unsurfaced. It is recommended that the demolition contractor undertake infiltration tests at select locations (three or four evenly across the site) in accordance with the BRE 365 methodology. Should infiltration rates be suitable, then future rainfall on site could then be directed straight to ground and would not increase flood risk elsewhere. A further option could be to direct runoff from the Site into the existing vegetated land to the south, or a combination of the two approaches.

If any impermeable area is to be left on site following demolition of the buildings, then consideration needs to be given to how rainfall runoff will be dealt with. Given the condition of the existing drainage systems, these are not operating efficiently and therefore may not be the optimum solution in terms of re-use. It may be that a more appropriate solution would be to remove the existing drainage and replace it with either a new system discharging to the effluent balance tank, or to introduce filter drains to contain all runoff on site and direct it to ground – or even to the vegetated areas on site as stated above. It is unlikely that installing soakaways will require formal consent from NRW.

If drain runs are being left in-situ then the contractor should allow for their suitable removal, along with any associated septic tanks/pits, and backfill with suitable material. Drains not being removed should be sealed.

In terms of the Site surface upon completion of demolition, levels should be graded to follow the levels of adjacent areas, and ideally to retain rainfall within the Site, whilst avoiding steep drops.

During demolition, the demolition contractor should apply best practice techniques for preventing water pollution in accordance with CIRIA's "Control of Water Pollution from Construction Sites" (C532). Likewise, application of best practice soil storage and management will reduce the risk of silt reaching the Hexion lagoon. Soil should be excavated, moved and stored according to the Defra Construction Code of Practice for the Sustainable Use of Soils on Construction Sites.

APPENDIX 8
PHASE II ENVIRONMENTAL ASSESSMENT FOR PERMIT SURRENDER

Intended for
Zeon Chemicals Europe Limited

Date
August, 2016

Project Number
UK15-21370_Ph II Permit Surrender

ZEON CHEMICALS EUROPE LIMITED
PHASE II ENVIRONMENTAL SITE ASSESSMENT FOR PERMIT SURRENDER

RAMBOLL ENVIRON

ZEON CHEMICALS EUROPE LIMITED
PHASE II ENVIRONMENTAL SITE ASSESSMENT FOR PERMIT SURRENDER

Project No.	**UK15-21370_Ph II Permit Surrender**
Issue No.	**02**
Date	**31/08/2016**
Made by	**Robert Hodgson**
Checked by	**Lucy Cleverley**
Approved by	**Matt Royall**

Made by:

Checked/Approved by:

This report has been prepared by Ramboll Environ with all reasonable skill, care and diligence, and taking account of the Services and the Terms agreed between Ramboll Environ and the Client. This report is confidential to the Client, and Ramboll Environ accepts no responsibility whatsoever to third parties to whom this report, or any part thereof, is made known, unless formally agreed by Ramboll Environ beforehand. Any such party relies upon the report at their own risk.
Ramboll Environ disclaims any responsibility to the Client and others in respect of any matters outside the agreed scope of the Services.

Version Control Log

Revision	Date	Made by	Checked by	Approved by	Description
01	24/06/2016	LC/RH	LC	MR	First Issue to Client
02	31/08/16	LC/RH	LC	MR	Final Issue to Client

Ramboll Environ
8 The Wharf
Bridge Street
Birmingham
B1 2JS
United Kingdom
T +44 121 616 2180
www.ramboll-environ.com

CONTENTS

APPENDICES

EXECUTIVE SUMMARY

Ramboll Environ UK Limited ("Ramboll Environ") was commissioned by Zeon Chemicals Europe Limited ("Zeon" or the "Client"), to undertake a Phase II Environmental Site Assessment (ESA) of the Zeon facility located at Hayes Road, Sully, South Wales (the "Site"). The assessment was required to collect Environmental Permit Surrender Data on soil and groundwater for comparison with Reference Data to support the proposed Permit Surrender. A secondary objective was to investigate potential areas of concern (not necessarily associated with the activities relating to the Environmental Permit) with respect to the proposed surrender of the Site leases back to the landlord. Therefore, some elements of this report solely relate to the proposed Permit Surrender and others relate to the proposed surrender of the Site leases and hence for clarity where applicable these elements have been separated into different sections in the report. For clarity where reference is made to the area associated with the Environmental Permit, this comprises the "Installation", whereas the total leased area comprises the Site

Environmental Permit Surrender

Where historical soil data exist for the Installation (i.e. Reference Data, 2006), soil samples were collected from exploratory locations positioned in close proximity to these locations so that direct comparison in soil substance concentrations could be made. Groundwater samples were collected from the 14 existing monitoring wells (where accessible) and compared against existing Reference and annual groundwater monitoring data (collected by Zeon).

No significant increases in concentrations were identified in soil samples collected from comparable depths to Reference Data. The concentrations of hydrocarbons recorded in soil samples were all lower than those detected during Reference Data collection in 2006. Only limited Reference Data on volatile organic compounds (VOCs) was collected in 2006 from selected locations. Ramboll Environ detected trace concentrations of benzene and toluene in a single soil sample; however, for context, the concentrations are lower than the respective generic human health screening criteria (considering commercial/ industrial site use).

In groundwater, no significant increases were identified when compared with Reference Data. Hydrocarbon concentrations (where analysed) were less than those detected in Reference Data. Slight increases in magnesium and chloride were detected at several locations; however, all were in the same order of magnitude as Reference Data. A trace concentration of the volatile compound isopropylbenzene was identified at one location; however, this was also detected as a trace concentration in 2006.

Annual groundwater monitoring carried out by Zeon under the Permit, has identified some increasing trends in polycyclic aromatic hydrocarbon (PAH) and total petroleum hydrocarbon (TPH) concentrations at several monitoring locations; however, the concentrations, despite increasing, are generally below Controlled Waters screening criteria. Some minor exceedances have been identified and Ramboll Environ has recommended that these are assessed further through detailed quantitative risk assessment (DQRA) discussed further below.

Overall, no significant increases in concentrations have been detected in soil or groundwater based on a direct comparison with Reference Data. However, SPMP monitoring has identified some increasing trends in PAH and TPH concentrations over the years since the Permit commenced. Ramboll Environ recommends that DQRA is carried out for those determinants which have concentrations that both exceed Controlled Water screening criteria and show increasing trends. Ramboll Environ considers that the Surrender Site Condition Report and the Statement of Site Condition can only be compiled following the findings of the DQRA.

Site Lease Surrender

Exploratory locations have been positioned to investigate potential areas of concern at the Site (both historical and recent), based on the findings of the Phase I Environmental Site Assessment (ESA) carried out by Ramboll Environ in September 2015. It should be noted that there was no Reference Data for these locations for comparison of data.

Evidence of soil and/ or groundwater contamination has been identified in several localised areas, namely: near the ammonia compressor pumps; the former tanker off-loading point; the Oil Storage Area; in the vicinity of the Effluent Treatment Plant (ETP); the Polyblack Crumb Plant; and in the far west of the Site external to the storage warehouse.

The following determinands were found to exceed Controlled Waters screening criteria at one or more location: TPH (various fractions), several PAH compounds, VOCs (vinyl chloride and 1,1-dichloroethane), semi-volatile organic compounds (phenol and 1-methylnaphthalene).

Soil concentrations did not exceed human health screening criteria considering a commercial / industrial site use at any locations; however, some hydrocarbon concentrations are considered to be elevated in terms of the risk to Controlled Waters, i.e. due to the potential for leaching to groundwater and potentially migrating towards the river to the north of the Site.

Where concentrations were found to exceed Controlled Waters and/ or human health screening criteria (considering commercial/ industrial site use), a detailed quantitative risk assessment (DQRA) would be required to determine how significant the concentrations are in terms of risk to the nearest receptor (the Cadoxton River). Where an unacceptable risk to the river is identified, localised remediation will be required to the remedial target concentrations calculated in the DQRA. Overall, the DQRA will be used to determine which areas of the Site are required to be remediation to return the Site in a satisfactory condition for the landlord, considering the intended on-going use of the Site for commercial/ industrial purposes.

It should be noted that the recommendation to undertake DQRA at the areas where contamination has been identified is over and above the requirement to satisfy Environmental Permit Surrender. Predominantly due the fact that contamination may be historical and therefore not related to Zeon's activities; and there is no Reference Data for these areas for comparison.

1. INTRODUCTION

1.1 Background

Ramboll Environ UK Limited ("Ramboll Environ") was commissioned by Zeon Chemicals Europe Limited ("Zeon" or the "Client"), to undertake a Phase II Environmental Site Assessment (ESA) of the Zeon facility located at Hayes Road, Sully, South Wales (the "Site"). The assessment was required to collect Environmental Permit Surrender Data on soil and groundwater for comparison with Reference Data to support the proposed Permit Surrender. A secondary objective was to investigate potential areas of concern (not necessarily associated with the activities relating to the Environmental Permit) with respect to the proposed surrender of the Site leases back to the landlord. Therefore, some elements of this report solely relate to the proposed Permit Surrender and others relate to the proposed surrender of the Site leases and hence for clarity where applicable these elements have been separated into different sections in the report. For clarity where reference is made to the area associated with the Environmental Permit, this comprises the "Installation", whereas the total lease area comprises the Site.

Operations ceased at the Site in January 2016, after which a period of decommissioning has been carried out, i.e. the removal of chemicals and hazardous substances from the Site and decontamination of residual vessels and below-ground structures. Site decommissioning was compete in May 2016; however, all buildings remain in place at the time of writing. Ramboll Environ understands that all buildings and infrastructure are intended to be demolished in due course.

At the time of writing, a Prior Notification Application for demolition had been submitted to the Local Authority. The planning application for 'engineering' works includes the removal of underground structures. Ramboll Environ has prepared and submitted the following in support of the planning application:

- Contamination Assessment Report in Support of Proposed Demolition, March 2016 (Ref: UK15-21370_CAR_DP);
- Demolition Environmental Management Plan, April 2016 (Ref: UK15-21370_DEMP).

The scope of the ESA for Permit Surrender follows on from the findings of a Phase I Environmental Site Assessment and review of Environmental Permit (EP) and Site Protection and Monitoring Programme (SPMP) information, completed by Ramboll Environ in September 2015 (report ref: UKR15-21370).

This Phase II report presents the Environmental Permit Surrender Data on soil and groundwater; however, the application to surrender the Permit, i.e. the Surrender Site Condition Report will be issued separately. The Surrender Site Condition Report is intended to be a comprehensive document which will also provide information on the site decommissioning process in accordance with the Site Closure Plan and how Zeon has removed sources of pollution risk from the Site.

The terms for engagement are as per the Ramboll Environ proposal ref: UKP15-20009_2-Phase II ESA, dated 25th January 2016.

1.2 Environmental Permit Surrender

1.2.1 Permit Surrender Stages

An Application Site Report (ASR) was produced in 2006 by URS on behalf of Zeon as part of an application to the Environment Agency (EA), (now Natural Resources Wales (NRW)) for a Permit to operate an installation under Regulation 10 of the Pollution Prevention and Control (England and Wales) Regulations 2000. The ASR details historical Site uses and lists substances used,

stored and manufactured at the facility. The installation was divided into a number of zones based on site activities carried out and chemical storage. An assessment of pollution potential was carried out which identified a possibility for pollution of the land to occur and subsequently Reference ('Baseline') Data was collected as part of the application.

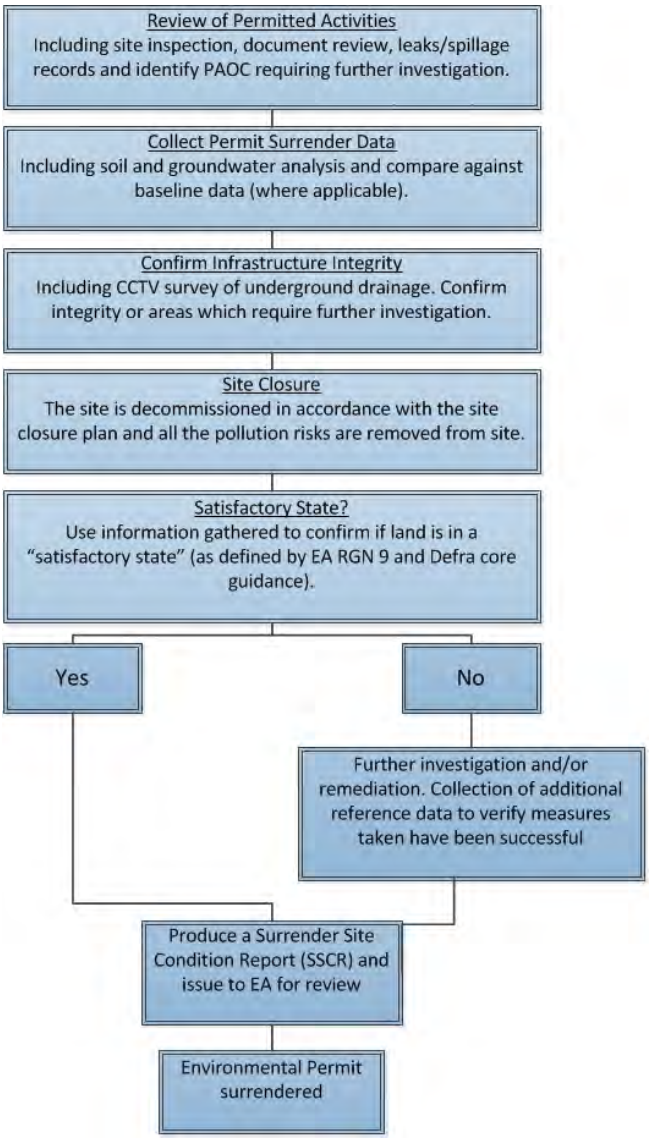
A Site Protection and Monitoring Programme (SPMP) was required under the Permit and accordingly, groundwater monitoring has taken place periodically at the facility since 2007 from 14 No. groundwater monitoring wells installed at the Installation. The last groundwater monitoring round was carried out in 2014.

According to NRW guidance (Regulatory Guidance Note 9 (RGN 9)), and DEFRA Core Guidance, NRW will accept an application to surrender an Environmental Permit providing that it can be demonstrated that the necessary measures have been taken to:

- avoid pollution risk resulting from the operation of the regulated facility; and
- return the site of the regulated facility to a 'satisfactory state', having regard to the state of the site before the facility was in operation , i.e. to 'Baseline' conditions recorded as Reference Data at the start of the permitted period.

DEFRA Core Guidance on Permit surrender also states that the return of the regulated facility to a satisfactory state should include removing, as far as is practicable, any contamination to return the site to the original condition (i.e. at the start of the permitted period), or where removal is not practicable, treating or immobilising contamination, remedying any harm the contamination may have caused, and mitigating the effects of harm.

The following flow chart presents the steps that are required in order for an Environmental Permit to successfully be surrendered:



The first stage 'Review of Permitted Activities' has already been carried out by Ramboll Environ in the format of a Phase I Environmental Site Assessment (ESA) (Ref. UK1521370, September 2015). The assessment identified several Potential Areas of Concern (PAOC) requiring further investigation.

This report represents the second stage in the process: collection of Permit Surrender Data, including soil and groundwater analysis and compare against baseline data (where applicable).

The third stage: confirm infrastructure integrity, including CCTV survey of underground drainage has already been carried out. *See Ramboll Environ Drainage Systems Review Ref: L-UK15-21370_2-Drainage; and 'Lanes for Drains' CCTV drainage survey information dated 21st March 2016.* The drainage survey identified several areas which required further investigation predominantly related to the integrity of the effluent pits and an area of cracked drainage located in the east of the Installation. These areas have been targeted in the intrusive investigation (see Table 3.3: Exploratory Hole Positioning Rationale).

The fourth stage: site closure and decommissioning in accordance with the Site Closure Plan (Zeon Ref: ZCcmP 11.001, Revision 3, 30th November 2015) has already been carried out. All pollution risks had been removed from the site by Zeon by 3rd May 2016, prior to the intrusive investigation commencing.

The fifth stage is to use the permit surrender data to confirm whether or not the land is in a 'satisfactory state' (as defined by NRW RGN 9 and Defra Core Guidance).

1.2.2 Lines of Evidence Approach

The Phase II ESA has used the 'lines of evidence' approach to determine whether the Installation is in a 'satisfactory state' following facility decommissioning. This approach has been developed by Ramboll Environ, in consultation with NRW in order to clearly define what contamination may, or may not have resulted from activities during the lifetime of the EP. The proposed scope was issued to NRW on 18th March 2016 (Ref: L-UK15-21370_1-Permit Surrender_NRW). NRW's comments on the scope of work were received by email on 1st April 2016 and were subsequently issued formerly as a Compliance Assessment Report (CAR) Ref: CAR_NRW0000086, on 18th April 2016 *(which also addressed other matters over and above the Phase II scope of work)*. Ramboll Environ issued a revised scope of work taking into account the comments made by NRW on 6th April 2016. In summary, the following items were added to the scope:

- two exploratory locations adjacent to the N99 Warehouse were re-positioned to target the diesel tank which showed evidence of a spillage;
- methacrylic acid was added to the analysis suite for samples taken near the ZSC plant; and
- a description of the determinands tested for in Reference Data (2006)

The stages are defined in Table 1.1 below.

Table 1.1 LINES OF EVIDENCE APPROACH

Stage	Description
Stage 1: Soil and Groundwater Quality	Collection of EP surrender soil and groundwater data and comparison with existing 'Reference' data (where available) to identify potential increases in concentrations of contaminants of concern in soil and/or groundwater.
Stage 2: Substance	Where increases in concentrations are identified; or where elevated concentrations are identified in areas where no Baseline Data is available, determine whether the contamination is 'historical' or Permit-related. E.g. establish whether the substances detected were stored or used by Zeon during the lifetime of the EP and whether there are any recorded pollution events.
Stage 3: Infrastructure	Where there is a potential that contamination is present which relates to permitted activities, the next step is to prove or disprove the integrity of the tanks, bunds, sumps and drains used during the lifetime of the EP. This is carried out using existing integrity testing data and SPMP monitoring, where available, and may need to be supplemented by additional inspection or testing.
Stage 4: Confirmation of Permit vs Historical Contamination.	By using these 'lines of evidence' it is possible to demonstrate to NRW whether contamination is likely to have occurred during the lifetime of the EP, and therefore requires remediation back to Baseline, or whether the contamination is likely to be historical, in which case remediation may be risk

Stage	Description
	based and addressed within the planning and development regime.

1.3 Objectives

The objectives of the Phase II ESA were to:

- collect EP Surrender Data on soil and groundwater for comparison with Reference Data to support the Permit Surrender;
- identify possible remediation requirements in order to return the Installation to a 'satisfactory state' (if required); and
- investigate potential areas of concern (both historical and recent) at the Site in order to consider potential liabilities with respect to surrender of the relevant Site leases.

1.4 Scope of Works

The Phase II ESA was designed to collect data which will form Stage 1 (Soil and Groundwater Quality) of the lines of evidence approach for Permit Surrender described in Table 1.1 above. The scope of work comprised drilling exploratory locations within each of the zones outlined in the ASR in order to obtain Permit surrender data and also included the investigation of potential areas of concern (PAOC) identified in Ramboll Environ's Phase I report (Ref: UK15-21370_Phase I Environmental Review, September 2015).

Where historical soil data exist for the Installation, soil samples were collected from exploratory locations positioned in close proximity to these locations so that comparison in soil substance concentrations can be made. Groundwater samples were collected from the 14 existing monitoring wells (where accessible) and compared against existing Reference and SPMP monitoring data.

The scope of work was as follows:

- exploratory locations were marked out and cleared by a specialist underground service clearance contractor before the start of intrusive works, in accordance with Ramboll Environ's health and safety procedures;
- *each borehole location was 'cleared' for Unexploded Ordnance (UXO) risk prior to drilling; however, this work was commissioned by a third party, Bilfinger GVA Ltd.;*
- drilling of 9 No. 'deep' boreholes (BH101 to BH106 and BH7 to BH9) using a rotary drilling rig to depths of up to 6m below ground level (bgl), installed with ground gas and groundwater monitoring wells to allow collection of groundwater from the underlying aquifer;
- drilling of 31 No. shallow 'window sample' boreholes to depths of up to 4m bgl, 13 No. of which were installed as groundwater and ground gas monitoring wells;
- supervision of drilling works by a Ramboll Environ field engineer, who logged the soil arisings and collected soil samples for laboratory analysis. Soil samples were screened at regular intervals for the presence of volatile organic compounds (VOCs) using a hand held photo-ionisation detector;
- submission of selected soil samples to a Ramboll Environ approved MCERTs and UKAS accredited laboratory for analysis for a range of determinands appropriate for the Site's current and historical use;
- monitoring of the installed wells on one occasion for the presence of ground gases (including carbon dioxide, methane, oxygen and flow rates), the presence of non-aqueous phase liquid (NAPL (free phase product)) using an electronic oil/water interface probe and rest water

levels. Each well was purged, after which groundwater samples were collected for laboratory analysis on one occasion using low flow techniques (peristaltic pump or similar);

- groundwater monitoring and sampling of the 13 No. available SPMP monitoring wells previously installed at the Site on one occasion;
- groundwater analysis of the samples from the newly installed and existing boreholes at an approved UKAS and MCERTS accredited laboratory for analysis of a range of compounds appropriate for the Site's current and historical use;
- a topographical survey to determine the ground elevation (in metres above ordnance datum, m AOD) of the exploratory locations; and
- production of an interpretative report, including information on ground conditions, field observations and contamination, groundwater levels and likely flow directions, and refinement of the conceptual site model presented in the ASR. Reporting objectives are two-fold:
  - Environmental Permit Surrender: comparison of soil and groundwater results with the Reference Data collected in 2006 and the SPMP monitoring results; and
  - Site lease surrender: comparison of soil and groundwater results with risk based Generic Assessment Criteria (GAC) for human health based on a commercial/ industrial site use; and, for groundwater, comparison against published water quality standards including the Environmental Quality Standards (EQS) and UK Drinking Water Standards (DWS).

1.5 Report Layout

The report is structured in the following way:

Section 1: describes the background to the report and sets out the objectives of the investigation;

Section 2: describes the current Site layout and summarises information from the Ramboll Environ Phase I ESA;

Section 3: introduces a preliminary conceptual site model for the Site and sampling rationale;

Section 4: describes the findings of the investigation, including the ground and groundwater conditions and summarises field evidence of contamination;

Section 5: summarises the laboratory chemical analysis results for soils and groundwater and screens the data against Reference Data where available;

Section 6: summarises the laboratory chemical analysis results for soils and groundwater and screens the data against risk based generic assessment criteria (GAC) for human health and Controlled Waters devised by Ramboll Environ;

Section 7: screens ground gas data against generic screening criteria, summarises the results of ground gas monitoring and discusses potential risks to the existing built environment;

Section 8: presents the revised conceptual site model, updated using information obtained during the investigation and sets out a qualitative source-pathway-receptor risk assessment; and

Section 9: presents the conclusions of the investigation and recommendations.

2. SITE DESCRIPTION

2.1 Site Setting

The Site is located approximately 3.36 km to the north-east of Barry town centre and 400m north of Sully Bay (the Severn Estuary) at National Grid Reference 314070,168090.

The Site lies at an approximate elevation of 6m above Ordnance Datum (m AOD) and is generally flat. Surrounding land uses to the Site are detailed in Table 2.1 below.

Table 2.1: Surrounding Land Uses

Direction	Description	Distance
To the North	River Cadoxton. Phenolic resin manufacturing plant operated by Hexion Chemical UK Ltd (Upper Tier COMAH site). Former Polyvinylchloride manufacturing plant operated by INEOS Vinyls UK Ltd.	Adjacent (N) Adjacent (NE) 160m (NE)
	Silicones manufacturing plant operated by Dow Corning Ltd (Upper Tier COMAH site).	40m
To the East	Phenolic resin manufacturing plant operated by Hexion Chemical UK Ltd (Upper Tier COMAH site).	Adjacent
	Agricultural land.	520m
	The town of Sully.	850m
To the South	An area of overgrown open land.	Adjacent
	A former polystyrene manufacturing plant operated by Dow Chemicals – no longer operational. *Remediation has reportedly been carried out and is now complete.*	Adjacent (SE)
	A bulk chemical storage facility operated by Vopak (Upper Tier COMAH site).	Adjacent (SW)
To the West	River Cadoxton.	Adjacent
	Warehouse.	110m

2.2 Site Layout and Activities

The Site is irregular in shape and occupies an area of approximately 8.84 hectares.

The land and immediate surrounds are reportedly owned by Associated British Ports (ABP). The long leasehold agreement for the Site is held by St Modwen and Zeon currently leases the Site from St Modwen. *Ramboll Environ understands that Zeon intends to end the lease arrangement with St Modwen simultaneously with surrender of the Environmental Permit.* There are three distinct plots of land as follows:

- Plot A - the manufacturing site, sub-lease contract from St Modwen until 2044;
- Plot B – storage warehouse, sub-lease contract from St. Modwen until 2039; and
- Plot C – undeveloped, overgrown land, sub-lease contract until 2044.

Plots A and B collectively make up the Installation referred to in the facility's Environmental Permit (Permit No. EPR/UP3836SS). The main activity regulated under the Part A(1) Environmental Permit was the manufacture of nitrile rubber compounds. Part of the Installation was also formerly registered as a lower tier Control of Major Accident Hazards (COMAH) facility due to the volumes of chemicals stored (acrylonitrile, butadiene, tertiary dodecylmercaptan (TDM) and ammonia).

At the time of the investigation, manufacturing had ceased and the facility had been decommissioned in preparation for Environmental Permit Surrender. The Installation had also been de-notified as a COMAH facility.

Plot C is a rectangular shaped area located at the centre of the Site. The majority of the area is occupied by densely overgrown vegetation including mature trees. The northern portion of the area includes the concrete surfaced Site access road and an external storage area with three disused above-ground storage tanks (ASTs). The ASTs have reportedly never been used by Zeon; they historically contained vinyl chloride up to the 1980s used by BP (the former lease holder) in a pilot trial.

For the purpose of the Permit Application in 2006, the Site was divided into zones A to L in accordance with the locations of potentially polluting substances. The Installation Zones are described in Table 2.2 below.

Table 2.2: Installation Zones (ASR, 2006)

Zone	Description	Reason for Delineation
A	Rail car transfer - storage and offloading area (not in use since 2000)	Location of external bulk raw material storage and offloading activities (not in use since 2000)
B	Monomer pipeline and recovery system	Bulk raw material transfer in above ground pipelines
C	Bulk raw material storage	Bulk raw material storage in tanks
D	Non-bulk raw material storage	Internal non-bulk storage of raw materials in warehouses
E	Production areas	Location of bulk synthetic rubber production
F	Nitrile monomer recovery room	Location of non-bulk acrylonitrile recovery
G	Laboratories	Location of non-bulk additive and reactant storage
H	Solvent stores	Location of non-bulk solvent storage
I	Oil storage	Location of non-bulk oil storage
J	Effluent Treatment Plant	Location of Bulk wastewater and additive storage
K	Waste storage areas	Location of bulk hazardous and non-hazardous waste storage
L	Area of perceived Low Environmental Risk	Areas of hardstanding or vegetation with no bulk or non-bulk storage of substances of concern.

2.3 Summary of Previous Phase I Environmental Site Assessment

Ramboll Environ carried out a Phase I ESA and review of Environmental Permit and Site Protection and Monitoring Programme (SPMP) in September 2015 (Report Ref: UK15-21370). The objective of the ESA was to identify areas of potential environmental concern from historical and recent activities, i.e. Stage 1 of the Permit Surrender Process as described in Section 1.

Contamination may have resulted from historical activities (i.e. prior to the Environmental Permit being issued) or from surrounding site uses which were identified as having similar or greater potential (than the Site) for contamination.

The following potential sources were identified based on recent (i.e. during Permit operation) activities:

- bulk chemical storage (including COMAH) areas located at the centre of the manufacturing area (Building N54/ N171 and N55);
- oil, waste oil and solvent stores located in the north-west of the manufacturing area;
- redundant Polyblack Plant (Buildings N160 and N99) – the plant has not been in use since 2004; however, the infrastructure, tanks and fluid beds remain;
- tank farm (N58) and adjacent area to the south-east;
- former rail transfer off-loading area for acrylonitrile;
- Effluent Treatment Plant (ETP), (U167);
- waste storage area in the south-east of the Site; and
- redundant vinyl chloride above-ground storage tanks (ASTs) in the north-west of the manufacturing area.

The following potential sources were identified based on historical on-site activities (i.e. prior to Permitted activities):

- historically, the Site was undeveloped until 1920 when an Anchor Patent Fuel Works with associated railway tracks was constructed in the north-east. Gravel pits were also present in the north, south and south-east and a pond was marked in the centre of the Site. The Sully Brook was previously located in the north-west of the Site and had been infilled by 1947. The infill materials for the various aforementioned features are unknown and represent a potential source of historical contamination; and
- nitrile rubber production at the Site commenced in the late 1950s. The principal raw materials stored and used at the Site throughout its history are acrylonitrile and butadiene. Styrene was also used as a raw material between the 1960s and 1970s.

The following potential sources of contamination were identified based on current off-site activities:

- the Site is located within an industrial area of Barry in close proximity to the Severn Estuary and docklands. There are three upper tier COMAH sites in the immediate surrounds and one lower tier COMAH site.

Historically, the Site surrounds largely comprised undeveloped agricultural land until the early 1900s when industrial development became evident. The following potentially contaminative uses have been identified within influencing distance of the Site:

- railway tracks with raised embankments were present 25m north from 1900 and are still currently present;
- a hydraulic engine house 370m west of the Site from 1900 until 1963, at which point it was re-developed into an unidentified works;
- a magnesite works was constructed 100m north-west of the Site by 1947, by 1964 the factory was annotated as ‘works’ and continued to expand to the west. By 1999 works buildings and associated tanks were present 40m north;
- a chemical works with over 50 associated tanks was constructed 50m north-east of the Site by at least 1956 and is still currently present. This relates to Dow Corning (Upper Tier COMAH) to the north-west and Hexion (Momentive) (Upper Tier COMAH) to the north-east;
- a reservoir was present 75m north from 1921 until 1984 when it was partially infilled with unknown materials;

- three historical landfills are present within 250m of the Site, two of which accepted household waste; and
- by 2006 Vopak Terminal UK Ltd occupied the land immediately west of the Site and constructed twelve bulk storage tanks for the storage of chemicals including methanol. Vopak is an Upper Tier COMAH site and the storage terminal is connected to Barry Docks.

Anecdotal evidence suggests that the adjacent Hexion site was historically used for munitions storage during the Second World War (WW2). In the 1980s an old boiler house was found to be filled with grenades at the Hexion site. The storage warehouse on-site (Plot B) also reportedly dates back to WW2 when it was used as a boat store. Considering the Site and surrounding area's military history, the potential for unexploded ordnance to be present cannot be entirely discounted.

3. SITE INVESTIGATION STRATEGY

3.1 Preliminary Site Conceptual Model

The preliminary conceptual site model (CSM) is a simplified representation of the environmental conditions at the Site, and in the vicinity of the Site, and is used to initially identify potentially sensitive receptors and potential pollutant linkages. This preliminary CSM has been compiled based on the findings of the Application Site Report (ASR) prepared by URS on behalf of Zeon as part of its Permit Application in January 2006; and Ramboll Environ's Phase I Environmental Assessment, May 2015.

Information obtained during the environmental site investigation, described in the following sections of this report, is then used to refine and update this preliminary conceptual model.

Table 3.1 Preliminary Conceptual Site Model

Potential Sources of Contamination Ramboll Environ has identified the following potential areas of concern in terms of contamination potential from current and historical Site uses: • bulk chemical storage (including COMAH) areas located at the centre of the manufacturing area (Building N54/ N171 and N55). Former spillages from a redundant methanol tank and pump; several EMAL (soap) spillages; some areas of unsurfaced ground; and a brine underground storage tank (UST); • oil, waste oil and solvent stores located in the north-west of the manufacturing area; • redundant Polyblack Plant (Buildings N160 and N99) – the plant has not been in use since 2004; however, the infrastructure, tanks and fluid beds remain; • tank farm (N58) and adjacent area to the south-east. Two recorded incidents of acrylonitrile loss to ground (1989 and 2009); • former rail transfer off-loading area for acrylonitrile; • Effluent Treatment Plant (ETP), (U167). Sludge overflow has occurred which migrated to the adjacent land to the east; • waste storage area in the south-east of the Site; • redundant vinyl chloride above-ground storage tanks (ASTs) in the north-west of the Site; and • historical infilling of gravel pits and the former Sully Brook on-site. It is noted that the surrounding site uses have a similar and in some cases greater potential for contamination than the Site.
Geology The western region of the Site (approximately 30% of the Site area) is underlain by Tidal Flat Deposits, generally comprising clay, silt and sand. The north-eastern corner of the Site (approximately 10% of the total area) is underlain by Alluvium, generally comprising clay, silt, sand and gravel. No superficial deposits are recorded at the remainder of the Site. The majority of the Site is further underlain by the solid geology of the Mercia Mudstone Group (marginal Facies) typically consisting of conglomerate of local rock comprising finer-grained rock fragments or, less commonly, siltstone, sandstone or micritic limestone. However the north-western corner of the Site (approximately 5% of the Site area) is underlain by the Mercia Mudstone Group which comprises mudstones and subordinate siltstones with thick halite-bearing units in some basinal areas.

Hydrogeology

The Site is underlain by Secondary Aquifers in the west and north-east (Tidal Flat Deposits and Alluvium) and the central and southern regions of the Site are immediately underlain by a Principal Aquifer (Mercia Mudstone Group - Marginal Facies).

Borehole records from a third party report (URS Ref: 44382745/CRRP0002, 2007) identified groundwater within the Mercia Mudstone bedrock at depths of between 0.6m and 2.6m bgl. Resting groundwater levels ranged from 0.1m to 1.5m bgl. Groundwater flow within the bedrock was implied in a broadly north-north-easterly direction. The groundwater contours also indicated a possible easterly groundwater flow from the south-eastern area of the Site. Groundwater was interpreted (by URS) as being at least partially confined by the overlying Made Ground and / or alluvium.

There are two groundwater abstractions within 2 km of the Site; the closest of which is located 1.6 km north and is utilised for public water supply. However, the Site is not located within a groundwater Source Protection Zone (SPZ).

Hydrology

The nearest identified surface water feature to the Site is the Cadoxton River which borders the Site to the north and west and flows in a westerly direction. The Cadoxton River was classified under the EA General Quality Assessment Scheme as having chemistry level B ('good') in 2009 at a location shown to be approximately 100m north-east of the Site.

Using the Water Framework Directive (WFD) the current methodology for assessing water quality, the EA has classified the Cadoxton River as having a 'Moderate' ecological quality and having 'Good' chemical quality.

The Sully Brook is located approximately 200m to the north-east of the Site boundary, flowing in a westerly direction to join the Cadoxton River approximately 50m north-east of the centre of the Site.

There are three surface water abstractions within 2 km of the Site, the closest is located 80m north and none are considered to be for sensitive use.

Approximately 50% of the Site in the north is located within an area at risk of flooding. The north of the Site is located within Flood Zone 3 (High Probability); the central region is located within Flood Zone 2 (Medium Probability); and the remainder of the Site is located in Flood Zone 1 (Low Probability).

Potential Receptors to Contamination (if Present)			**Receptor Present?**
Humans	On-site	Current and future Site users – the Site comprises a former nitrile rubber manufacturing facility (decommissioned in May 2016), with associated storage warehouse and a central area of undeveloped, overgrown land. The buildings are intended to be demolished. It is anticipated that going forward, the Site will remain in continued commercial / industrial use.	Yes
	Off-site	Adjacent industrial property users.	Yes
Water Environment	On-site	Groundwater is present in the Mercia Mudstone Group - Marginal Facies, classified as a Principal Aquifer.	Yes

Potential Receptors to Contamination (if Present)			Receptor Present?
	Off-site	Off-site groundwater conditions in the immediate vicinity of the Site are likely to be similar to those on-site. The closest groundwater abstraction is located 1.6km north and is utilised for public water supply. This abstraction is also used by the Site for process water. The Cadoxton River borders the Site to the north.	Yes
Ecological Receptors	On-site	There are no designated ecological sites present on-site. Ramboll Environ has separately undertaken a Preliminary Ecological Assessment (dated November 2015).	No
	Off-site	Hayes Point to Bendrick Rock SSSI is located 280m south-east of the Site; however, this site is designated for its geology (i.e. not for ecological value).	No
Built Environment	On-site	The Site is developed with numerous above and below ground structures. Ramboll Environ has assumed the on-going use of the Site for commercial / industrial purposes; however, the structures are intended to be demolished.	Yes

The following sections describe the site investigation strategy, the results of laboratory chemical analysis and a comparison of the results with both Reference Data and risk based Generic Assessment Criteria (GAC) for human health and environmental receptors. A revised conceptual model, based on the results of the investigation is then presented in Section ~~7~~8.

3.2 Site Investigation Works

The intrusive site investigation was undertaken between 3rd and 13th May 2016 and was supervised by Robert Hodgson of Ramboll Environ. Groundwater and ground gas sampling was carried out between 18th and 20th May 2016.

A summary of the scope of the investigation undertaken at the site is presented in Table 3.2 below. Exploratory locations are shown on Figure 1, Appendix 1. Borehole logs (including monitoring well details) are provided in Appendix 2.

Table 3.2: Summary of Intrusive Works

Item	No.	Comments
Service Location Survey	Item	Prior to intrusive works a specialist service location contractor, Geotechnical Engineering Ltd, was used to confirm that proposed exploratory positions were clear of underground services.
UXO Clearance	*Item*	*UXO clearance was undertaken at each exploratory location by a specialist contractor (BACTEC International Limited) appointed by Bilfinger GVA Ltd.*

Item	No.	Comments
Borehole Locations	9 No.	A Comacchio 305 rotary drilling rig was used to advance nine boreholes (BH101-BH106 and BH7-BH9) to maximum depths of 6.0m bgl. All of the above locations were installed with 50mm diameter gas and groundwater monitoring wells. Wells were of appropriate construction for the ground conditions encountered. The well designs are detailed within the borehole logs presented in Appendix 2.
Window Sample Locations	31 No.	A Dando Terrier window sampling rig was used to advance 31 window sample boreholes (WS1-WS31) to depths of up to 4.0m bgl. Thirteen of the above locations were installed with 50mm diameter gas and groundwater monitoring wells. Wells were of appropriate construction for the ground conditions encountered. The well designs are detailed within the borehole logs presented in Appendix 2.
Soil Sampling and Analysis	55 No.	During the site investigation, soil samples were recovered from each exploratory hole location and screened on-site using a hand held photo-ionisation detector (PID) for the presence of volatile organic compounds. Samples were collected in accordance with BS BS10175:2011 and were stored within appropriate sample containers and forwarded to an independent Ramboll Environ approved MCERTS accredited analytical laboratory (ESG). Selected soil samples were analysed for a predetermined suite of contaminants, designed to be reflective of the Site's current and historic uses.
Groundwater Sampling and Analysis	31 No.	Groundwater was encountered in all nine of the Ramboll Environ boreholes (monitoring wells BH101-BH106 and BH7-BH9) and the thirteen available existing monitoring wells installed by others (ZC201-ZC211, ZC213 and ZC214). Groundwater was also encountered in nine of the shallower window sampling boreholes. Resting groundwater levels were monitored and the wells were purged until water quality parameters such as temperature and conductivity stabilised. After which, groundwater samples were collected for laboratory analysis using a low flow technique (peristaltic pump). The purging and groundwater sampling was undertaken using dedicated clean disposable sampling equipment. All samples were stored within appropriate containers and forwarded to a UKAS accredited independent analytical laboratory (ESG). Samples were analysed for a suite of contaminants designed to be reflective of the Site's historic uses.
Gas Monitoring	Item	The newly installed wells were monitored on one occasion for the presence of ground gases (including carbon dioxide, methane, oxygen and flow rates).
Topographical Survey	Item	Prior to completion of the exploratory locations a topographical survey was undertaken by Geotechnical Engineering Ltd to determine the ground elevation (m AOD) of the exploratory locations to be installed with monitoring wells and all available existing monitoring wells at the Site.

3.3 Sample Location Rationale

The rationale for positioning the sampling locations is described in Tables 3.3 and 3.4 below. Overall, sample locations were selected specifically to assess current soil and groundwater data in comparison with Reference Data collected in 2006 (Table 3.3). Where historical soil data exist for the Installation, soil samples have been collected from exploratory locations positioned in close proximity to these locations so that comparison of soil substance concentrations could be made. Groundwater samples were collected from the 14 No. existing monitoring wells (where accessible) and compared against existing baseline and SPMP monitoring data. It was not possible to obtain a groundwater sample from borehole Z2C212 as the well has been damaged or destroyed.

Additional exploratory locations were positioned in areas identified as 'PAOC' from the Phase I ESA, related to both historical and more recent activities; and at the Site boundaries for the purpose of determining whether or not migration of contamination (if present) on or off-site is occurring (Table 3.4).

Ramboll Environ has referred to 'likely up-hydraulic and down-hydraulic gradient' locations based on the findings of a previous third party report (Application Site Report, URS, 2006).

Table 3.3: Exploratory Hole Positioning Rationale for Comparison of Reference Data

Borehole Ref.	Reference Data Borehole Ref.	Rationale	Depth (m bgl)
BH101	NA	To determine groundwater conditions at the south-west site boundary, down-hydraulic gradient of the Installation.	6.00
BH102	NA	To determine groundwater conditions in the vicinity of the historical decommissioned vinyl chloride tanks.	6.00
BH103	ZC201	Located directly adjacent to ZC201, Reference Data borehole for the comparison of soil and groundwater concentrations. Located adjacent to the former latex stock tanks *(empty)*.	6.00
BH104	NA	To determine groundwater conditions in the vicinity of the former bulk material storage area, including methanol. *All vessels are empty*. Installation Zone C – Bulk Material Storage.	6.00
BH105	NA	To determine groundwater conditions adjacent to the effluent collection below-ground pit. Installation Zone J – ETP.	6.00
BH106	NA	To determine groundwater conditions adjacent (south-east) of the Tank Farm. *All vessels are empty.* Installation Zone C – Bulk Material Storage.	6.00
WS1	ZC209	Located directly adjacent to ZC209, Reference Data borehole for the comparison of soil concentrations. Located in the south-west of the Site, adjacent (west) to the Storage Warehouse.	4.00
WS2	NA	To determine soil conditions in the vicinity of the historical decommissioned vinyl chloride tanks.	2.45

Borehole Ref.	Reference Data Borehole Ref.	Rationale	Depth (m bgl)
WS3	NA	To determine soil conditions external to the European Technical Services Laboratory (ETSL), located in the far west of the installation. Installation Zone G – Laboratories	4.00
WS4	ZC214	Located directly adjacent to ZC214, Reference Data borehole for the comparison of soil concentrations. Located between the ETSL and the Oil Storage Area. Installation Zone I – Oil Stores.	3.00
WS5	ZC202	Located directly adjacent to ZC202, Reference Data borehole for the comparison of soil concentrations. Located in Installation Zone L – Area of Perceived Low Environmental Risk.	2.20
WS6	NA	To determine soil conditions adjacent (west) of the former bulk raw material storage area (including methanol). *All vessels are empty*. Installation Zone C – Bulk Material Storage.	2.50
WS7	ZC203	Located directly adjacent to ZC203, Reference Data borehole for the comparison of soil concentrations. Located adjacent (north) of in Installation Zone C – Bulk Material Storage. *All vessels are empty.*	1.70
WS8	NA	To determine soil conditions at the centre of Installation Zone C – Bulk Material Storage. *All vessels are empty.*	0.90
WS9	ZC204	Located directly adjacent to ZC204, Reference Data borehole for the comparison of soil concentrations. Located between the N55 effluent pit and Installation Zone F – Nitrile Monomer Recovery System.	1.70
WS10	ZC212	Located directly adjacent to ZC212, Reference Data borehole for the comparison of soil concentrations. Located adjacent (south) of the external drum storage area.	0.40
WS11 WS12	NA	To determine shallow soil and groundwater (if present) conditions in the vicinity of an above ground diesel storage tank. Minor staining was observed on the surrounding concrete floor. *The tank has since been removed from Site.*	0.68, 0.40
WS13	ZC211	Located directly adjacent to ZC211, Reference Data borehole for the comparison of soil concentrations. Located to the north of the Polyblack effluent pits.	1.05
WS14	ZC205	Located directly adjacent to ZC205, Reference Data borehole for the comparison of soil concentrations. Located between the Polyblack Crumb Plant and the external bulk storage tanks associated with the Coagulant Building. *All vessels are empty.*	2.50

Borehole Ref.	Reference Data Borehole Ref.	Rationale	Depth (m bgl)
WS15	NA	To determine shallow soil conditions in the former acrylonitrile rail off-loading area. *Rail transfer of acrylonitrile ceased on 2000.* Also, the recent drainage survey identified significant cracks in the drainage near this location.	1.30
WS16	ZC207	Located directly adjacent to ZC207, Reference Data borehole for the comparison of soil concentrations. Located to the south-west of the Tank Farm and directly adjacent (north) to the ETP. Also, the recent drainage survey identified significant cracks in the drainage near this location.	1.50
WS17	NA	To determine shallow soil conditions in the north of the ETP. Installation Zone J – ETP.	1.50
WS18	NA	To determine shallow soil conditions adjacent (north) of the waste storage area located in the southern corner of the Installation. Installation Zone K – Waste Storage Area.	1.85
WS19	ZC206	Located directly adjacent to ZC206, Reference Data borehole for the comparison of soil concentrations. Located within Installation Zone J – ETP.	1.60
WS20	ZC213	Located directly adjacent to ZC213, Reference Data borehole for the comparison of soil concentrations. Located within Installation Zone J – ETP, in the far south-east corner of the site.	2.55
WS21	NA	To determine shallow soil conditions between ETP tanks within Installation Zone J – ETP. *All tanks are empty.*	2.15
WS22	ZC210	Located directly adjacent to ZC210, Reference Data borehole for the comparison of soil concentrations. Located directly adjacent (west) of the Tank Farm. Installation Zone C – Bulk Material Storage.	1.20
WS23	ZC208	Located directly adjacent to ZC208, Reference Data borehole for the comparison of soil concentrations. Located directly adjacent (south) of the Tank Farm. Installation Zone C – Bulk Material Storage.	2.75

Notes

Cells shaded in blue indicate borehole locations that drilled specifically for the comparison of Reference data for soil and groundwater.

NA – not applicable

Table 3.4: Exploratory Hole Positioning Rationale for PAOC identified in the Phase I ESA

Borehole	Rationale	Depth (m bgl)
BH7 to BH9	To determine groundwater conditions along the north-western Site boundary, down-hydraulic gradient of the historical vinyl chloride tanks. Specifically, whether or not groundwater is contaminated with vinyl chloride and if so, if off-site migration is occurring.	6.00
WS24 to WS27	N99 Polyblack Section: to determine whether soil and/ or groundwater has been impacted by activities carried out with the building.	Up to 1.50
WS28 to WS31	N160 Polyblack Crumb Plant: to determine whether soil and/ or groundwater has been impacted by activities carried out with the building.	Up to 1.60

3.4 Sample Collection

3.4.1 Soil Samples

Soil samples were recovered from the boreholes located adjacent to Reference Data boreholes at the same depths at which Reference Data samples were collected 2006 where applicable.

In the remaining exploratory locations, soil samples were recovered from depths based on visual and/or olfactory evidence of contamination and at regular intervals and/or changes of strata.

Selected samples were placed in containers supplied by the laboratory appropriate to the type of analysis being undertaken and stored in cool boxes with ice packs. All samples were dispatched accompanied by chain of custody documentation to Environmental Scientifics Group Ltd (ESG).

Selected soil samples were tested on-site for the presence of volatile organic compounds (VOCs) using a photo-ionisation detector (PID), calibrated in accordance with Ramboll Environ's Quality Management procedures. Each soil sample tested was placed into a sealed plastic bag and agitated. The PID was then inserted into the headspace and the total VOC reading recorded. The PID screens for a wide range of VOCs but does not indicate a specific compound; therefore, the results of the PID screening provide a semi-quantitative indication of the concentration of VOCs present in soil pore spaces. The results of the PID screening are discussed in Section 4.3.

3.4.2 Groundwater Samples

Groundwater sampling was undertaken between 15th and 20th May 2016. Prior to the sampling of the groundwater wells, the resting groundwater level; base of the monitoring wells; and the presence of non-aqueous phase liquid (NAPL (free phase product)) were measured using an electronic oil/water interface probe. The wells were then purged until water quality parameters such as temperature and conductivity stabilised; after which, groundwater samples were collected for laboratory analysis using a low flow technique (peristaltic pump). Groundwater purging and sampling was undertaken using dedicated clean disposable sampling equipment to prevent cross contamination.

3.5 Analytical Strategy

The overall analytical strategy for the site investigation was developed based on the Reference Data collected in 2006. However, additional analysis was scheduled on selected samples based

on the findings of Ramboll Environ's Phase I ESA, September 2015 (Ref: UK15-21370). The selection of determinands was based on:

- Reference Data and SPMP analysis suites;
- potential contaminants from recent site activities (i.e. during the Permit, prior to decommissioning); and
- historical activities prior to the issue of the Permit.

Table 3.5 shows the analytical schedule for soil and groundwater samples together with the rationale for analysis.

Table 3.5: Analytical Strategy

Analysis	Rationale	Number of soil samples submitted	Number of groundwater samples submitted
pH	Analysed in soil & groundwater Reference Data. Increased or decreased pH can be associated with Made Ground, or be indicative of chemical contamination.	55	30
Metals (As, Cd, Cr, Cu, Pb, Ni, Hg, Se, Zn, V, Be, B)	Analysed in soil & groundwater Reference Data. Often encountered in Made Ground and common industrial contaminants.	55	30
Alkalinity	Analysed in groundwater Reference Data.		30
Total phenols, cyanide & sulphate	Analysed in groundwater Reference Data (selected locations). Typically associated with industrial sites and processes.	55	30
Ammonia	Historically and recently stored in bulk storage areas within the installation.	7	-
Chloride and nitrate	Analysed in groundwater Reference Data.	0	14
Volatile Organic Compounds (VOCs) & Tentatively Identified Compounds (TICs)	Analysed in soil & groundwater Reference Data. The VOC analysis suite includes methacrylic acid and acrylonitrile which would be detected as TICs if present.	59	33
Semi-Volatile Organic Compounds (SVOCs) & TICs	Analysed in groundwater Reference Data.	35	11
Alcohol suite	Includes methanol, historically and recently stored in bulk on-site	11	4
Formaldehyde	Analysed in soil & groundwater Reference Data (selected locations).	1	1

Analysis	Rationale	Number of soil samples submitted	Number of groundwater samples submitted
Catechol	Analysed in soil & groundwater Reference Data (selected locations).	4	4
Total Petroleum Hydrocarbons Carbon Working Group (TPH CWG) including BTEX	Analysed in soil & groundwater Reference Data (selected locations). Typically associated with fuels and oils.	55	32
Polycyclic Aromatic Hydrocarbons (PAH)	Typically associated with fuels and oils.	55	30
Polychlorinated biphenyls (PCBs)	Analysis in the vicinity of transformers.	1	0
Total Organic Content (TOC)	Analysed in soil Reference Data. Used to identify organic rich material to understand the potential leaching or contaminants (if present) and to identify potential areas of concern regarding ground gases.	16	0
Asbestos screen and identification	Typically associated with Made Ground	19	0
Chemical Oxygen Demand (COD) & Biological Oxygen Demand (BOD)	Analysed in groundwater Reference Data	0	14
Notes Cells shaded in blue indicate analysis for direct comparison with Reference Data.			

3.6 Data Quality Assurance

The laboratory selected to perform the analysis is accredited by UKAS to ISO 17025 and MCerts standards. Internal quality assurance checks are carried out by the laboratory data prior to the laboratory certificates being issued.

Measures adopted in the field to reduce external influences on the quality of the samples and provide reliable laboratory data included:

- field based procedures such as clean sampling methodologies and decontamination between sample locations; and
- submission of duplicate samples of soil and groundwater to the laboratory, which provide an indication of the precision of the analytical results i.e. the repeatability of the laboratory analytical process and comparison of results.

The results of the duplicate analyses were compared with the original sample data. If the results of the sample and duplicate analyses are similar (i.e. within ± 25%), it is generally considered that an acceptable standard of repeatability has been maintained in the sampling and analytical process. The results of the comparison indicate a good match between the duplicate and the original groundwater sample (greater than 95% of the duplicate results were similar to the original result).

4. SITE INVESTIGATION FINDINGS

4.1 Ground Conditions

Ground conditions are summarised in Table 4.1 below. A full lithological description is recorded on the logs, presented in Appendix 2.

Table 4.1: Summary of Ground Conditions

Strata	Description	Depth to Base (m bgl)	Approximate Average Thickness (m)
Surface Covering	Present as grass over topsoil; bare topsoil; asphalt; coarse gravel (ballast); and concrete (between 0.11m thickness at WS4 and 0.38m thickness at WS26).	Up to 0.38	0.20
Made Ground	Gravel sub-base was encountered beneath hardstanding, where present, to depths of approximately 0.4m bgl. Other Made Ground generally comprised: • black slightly sandy ashy fine to coarse gravel of clinker with fragments of concrete, brick and metal; and/or • dark brown slightly sandy gravelly clay with fragments of concrete, brick, coal, clinker and metal.	0.35 – 2.00, where present	1.00, where present
Superficial Deposits	Superficial deposits were encountered across the majority of the Site and generally comprised firm red brown slightly sandy locally gravelly clay and/or soft to firm grey brown slightly sandy clay (Alluvium / Tidal Flat Deposits).	0.35 - unproven, where present	1.50, where present and proven
Solid Geology / Bedrock	Strong red, yellow, grey and green sandstone conglomerate with cobble sized clasts (Mercia Mudstone Group – Marginal Facies).	0.45 - unproven, where present	Unproven

The ground conditions encountered across the Site are generally comparable to the geology described in the British Geological Survey (BGS) map of the area.

4.2 Groundwater

Groundwater was encountered during drilling in four of the nine deeper borehole locations at depths of between 0.78m and 2.86m bgl, within superficial deposits. Due to the addition of water as drilling flush, it was not possible to record water strikes within the solid geology.

Resting groundwater levels were recorded in 16 of the installed monitoring wells; at depths of between 0.54m bgl (WS15) and 3.72m bgl (WS3).

Resting groundwater levels were recorded in the pre-existing monitoring wells at depths of between 0.46m bgl (ZC210) and 3.05m bgl (ZC214).

A shallow groundwater aquifer was not encountered consistently across the Site; however, there are potentially discontinuous, perched groundwater, recorded as saturated strata. Deep groundwater was encountered at each deeper borehole drilling location, within the sandstone conglomerate and/or overlying alluvial deposits.

A complex pattern of groundwater flow direction is present at the Site, presented on Figure 2 in Appendix 1. There appears to be a groundwater level 'mound' near the centre of the Installation from which groundwater flows in all directions; however, overall groundwater flows to the west in the direction of the Cadoxton River and to the south towards the Severn Estuary (approximately 600m distant).

The identification of a groundwater level 'mound' near the centre of the manufacturing area is broadly consistent with the findings of a Hydrogeological Groundwater Study undertaken for the wider Barry Chemical Complex by URS in December 2002 (Ref: 48760-002-785/FR1108). The URS report describes complex groundwater level contours, with a groundwater level 'mound' located under the north of the Site. This groundwater level 'mound' was reported to coincide with the area of limited superficial deposits, with the increased inflow into the conglomerate interpreted as accounting for this groundwater level 'mound'. From the 'mound', URS interpreted groundwater flow in all directions as follows:

- groundwater discharges to the River Cadoxton, downstream of the confluence with Sully Brook;
- groundwater flows to the south-west towards the coast;
- groundwater flows to the north, under Sully Brook, although there is likely to be a component of discharge to the brook through the alluvial deposits between the brook and the deep aquifer; and
- groundwater flows to the south-east towards the coast.

4.3 Field Evidence of Contamination

4.3.1 Soils

The following visual and olfactory observations were recorded during sampling:

- A strong hydrocarbon odour and an oily sheen were recorded within Made Ground and underlying superficial deposits in WS6; located adjacent north-west of the ammonia compressor house (Building N251).
- Black staining and a slight hydrocarbon odour were observed between approximately 2.00m bgl and the base of the window sample borehole at 4.00m bgl in WS4; located adjacent to reference borehole ZC214, within the former oil storage area.
- To a lesser degree, localised black staining and a slight hydrocarbon odour was also observed in WS3; located north of WS4 and ZC214, adjacent to the northern Site boundary. The staining and odour were observed within superficial deposits between 1.80m bgl and the base of the window sample borehole at 4.00m bgl.
- A moderate hydrocarbon odour was observed throughout WS17; located in the north of the effluent treatment plant. Occasional black staining was observed, along with a sticky substance that was noted to form white strands when soil was parted. WS17 terminated at 1.50m bgl on suspected bedrock.
- A slight hydrocarbon odour and a slight oily sheen were noted within Made Ground and the upper strata of the superficial deposits in WS21; located in the west of the effluent treatment plant.
- A slight hydrocarbon odour was noted within Made Ground in WS19; located in the south of the effluent treatment plant.
- A moderate hydrocarbon odour and oily sheen was recorded in WS18; located within the waste storage area. The hydrocarbon odour was restricted to the natural soil strata, located between a layer of ashy Made Ground and suspected bedrock at 1.85m bgl.

- Black staining and a slight hydrocarbon odour were noted within the base of the Made Ground, between 0.50m and 0.60m bgl, in WS22; located adjacent to reference borehole ZC210 in a former bulk storage area.
- Evidence of contamination present as ash and fragments of clinker, brick and metal in the Made Ground at numerous locations across the Site. Asbestos containing material was visibly identified within ashy Made Ground in BH102; located in the north of the Site.

Soil headspace screening for volatile organic compounds was recorded using a photo-ionisation detector (PID) for selected soil samples. Significant detections of volatile organic compounds were encountered in association with areas of hydrocarbon odour in WS4 (up to 152.4ppm), WS6 (up to 116.6ppm) and WS17 (up to 55.5ppm). To a lesser degree, readings of up to 9.0ppm were recorded in WS3.

4.3.2 Groundwater

During groundwater sampling a strong hydrocarbon odour and oily sheen was noted in window sample borehole WS6; whilst free phase hydrocarbons were not detected as a distinct layer of product, small globules of a yellow oily substance were noted in upper groundwater.

Furthermore, slight hydrocarbon odours were noted during sampling of boreholes ZC202, ZC214 and WS17. In addition, other odours were noted during sampling of BH103 (rubber-type odour); WS17 (soap-type odour); and WS30 (landfill-type odour).

The groundwater samples collected from BH104 were noted to be dark brown in colour and on-site water quality measurements recorded an elevated pH value of 12.54.

4.4 Ground Gas Monitoring

A round of ground gas monitoring was undertaken on the 18th and 20th May 2016. Ground gases including carbon dioxide, methane and oxygen were monitored using an infra-red portable gas analyser (Gas Data GFM 430).

The results of the ground gas monitoring are discussed in Section 7.

5. CHEMICAL ANALYSIS COMPARISON WITH REFERENCE DATA

5.1 Reference Data

The First Phase Reporting of the Site Protection and Monitoring Programme (SPMP) was prepared by URS on behalf of Zeon in September 2007. The report provides the Reference Data as required by the Installation's IPPC Permit (Ref: UP3836SS), dated December 2006.

The URS investigation strategy was developed from the information presented in the ASR describing Potentially Polluting Substances and an Assessment of the Likelihood of Pollution.

The scope of work comprised the installation of five groundwater monitoring wells (ZC210 to ZC214) across the Installation to obtain soil and groundwater Reference Data and to provide additional groundwater monitoring infrastructure for the ongoing environmental monitoring programme required under the SPMP. The borehole locations are shown on Figure 1, Appendix 1.

The statement of Reference Data is presented in Appendix E of the report and is replicated in Appendix 5 of this report. The Reference Data presented by URS also includes groundwater data from the earlier (1999) installed boreholes (ZC201 to ZC208); although no soil data from these boreholes.

The following tables provide a comparison of Reference Data with Ramboll Environ's data collected in May 2016: Table 5.1 Soil Reference Data Comparison; and Table 5.2, Groundwater Reference Data comparison. Laboratory Analytical Certificates of analysis are presented in Appendix 4.

5.2 Soil Analytical Results Compared with Reference Data

The soil analytical results have been compared with Reference Data for soil collected by URS in 2006. For consistency, sample depths have also been kept the same, except in circumstances where poor recovery of soil occurred, in which case the nearest soil sample was collected.

The results are summarised below and are presented in Table 5.1.

- No significant increases in metal concentrations have been identified. Some concentrations are marginally higher than those detected in 2006; however, given that all concentrations are in the same order of magnitude, these are considered likely to be due to natural variation in soil. *All concentrations are significantly lower than the respective GAC for commercial site use (see Section 6).*
- pH values are comparable with Reference Data, within the range pH 7.6 to pH 9.2.
- TPH was only analysed for Reference Data in soil from one location, ZC214 (located between the ETSL and the Oil Storage Area). Three samples were collected from depths between 0.9m and 3.6m bgl. The corresponding TPH concentrations from soil samples collected from the same depths in WS4 were all less than the Reference Data concentrations. The maximum total TPH concentration detected was 169mg/kg in the sample from 2.5m bgl.
- VOCs were only analysed for Reference Data in soil from two locations, ZC212 (adjacent, south of the external drum storage area); and ZC214 (located between the ETSL and the Oil Storage Area). No VOCs were detected in any of the soil samples collected for Reference Data; however, trace concentrations of benzene and toluene were detected in Ramboll Environ WS4 (next to ZC214) at 0.9m bgl. *The concentrations are significantly lower than the respective GACs for these compounds considering commercial site use (see Section 6).*
- Formaldehyde was only analysed for in Reference Data in soil from one location, ZC212 (adjacent, south of the external drum storage area). Formaldehyde was not detected in

Reference Data, or in the recent corresponding soil sample (taken from WS10 at the same depth).

- Acrylonitrile was not recorded above the laboratory limits of detection in any of the tested samples, which is consistent with the Reference Data. Acrylonitrile was analysed in samples from four locations associated with bulk storage and effluent processes.
- Catechol was analysed in soils from two locations, ZC210 in the Tank Farm and ZC212 adjacent to external drum storage, within the Reference Data. Catechol was not recorded above the laboratory limit of detection in these samples, nor was it detected in the associated Ramboll Environ soil samples.
- Total Organic Carbon (TOC) was reported for three borehole locations within the Reference Data; whilst TOC is not a direct measure of soil contamination, Ramboll Environ analysis results are broadly comparable to the Reference Data.

Table 5.1: Comparison of Soil Reference Data (2006) with Ramboll Environ Data (May 2016)

Location	ZC210	WS22	ZC210	WS22	ZC210	WS22	ZC211	WS13	ZC211	WS13	ZC212	WS10	ZC213	WS20
Date	**2006**	**2016**	**2006**	**2016**	**2006**	**2016**	**2006**	**2016**	**2006**	**2016**	**2006**	**2016**	**2006**	**2016**
Depth (m)	**0.5**	**0.6**	**1.0**	**1.0**	**1.4**	**1.2**	**0.3**	**0.3**	**0.8**	**0.8**	**0.2**	**0.2**	**0.3**	**0.3**
Inorganics (mg/kg)														
Arsenic	8.2	**13**	9.3	**10.4**	18	10.6	4.1	**9**	6.1	**13.3**	8.9	**15**	21	10.3
Barium	160	103.0	45	**64.1**	48	**59.4**	24	**83.9**	36	**170**	91	**209**	460	303
Cadmium	ND	**0.46**	ND	ND	ND	ND	ND	**0.33**	ND	**0.96**	ND	**1.2**	0.63	0.55
Chromium	20	**41.4**	31	**45.8**	32	**43.5**	12	**27**	21	**39**	19	**42.7**	72	34.4
Copper	32	19.5	17	17	45	16	8	**16.1**	11	**32.7**	23	**33**	140	53.1
Iron	15000	**34400**	32000	**38000**	28000	**35400**	4900	**23400**	7000	**29900**	15000	**36100**	2900	**25800**
Lead	40	**55**	30	**30.3**	60	31.7	ND	**29.3**	14	**56.4**	25	**50.8**	93	**109.9**
Mercury	0.28	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.5	ND	1.9	**2.26**
Selenium	0.37	**0.5**	ND	**0.6**	ND	ND	ND	**0.6**	ND	**0.7**	ND	**0.9**	ND	ND
Zinc	67	**149.8**	92	**129.8**	97	**117.1**	18	**85.5**	31	**191.4**	79	**202.8**	190	**263.2**
pH (pH units)	9.2	7.6	8.6	7.7	8.6	7.9	9.3	7.9	10.6	7.6	8.6	7.9	8.7	8.1
Total petroleum Hydrocarbons (mg/kg)														
Total EPH (>C5-C44)	NT	NA	NT	NA	NT	NA	NT	NA	NT	NA	NT	NA	NT	NA
Total Aliphatics (>C5-C44)	NT	NA	NT	NA	NT	NA	NT	NA	NT	NA	NT	NA	NT	NA
Total Aromatics (>C5-C44)	NT	NA	NT	NA	NT	NA	NT	NA	NT	NA	NT	NA	NT	NA
Volatile Organic Compounds (µg/kg) Only VOCs detected above laboratory detection are summarised														
Benzene	NT	NA	NT	NA	NT	NA	NT	NA	NT	NA	ND	ND	NT	NA

Location	**ZC210**	**WS22**	**ZC210**	**WS22**	**ZC210**	**WS22**	**ZC211**	**WS13**	**ZC211**	**WS13**	**ZC212**	**WS10**	**ZC213**	**WS20**
Date	**2006**	**2016**	**2006**	**2016**	**2006**	**2016**	**2006**	**2016**	**2006**	**2016**	**2006**	**2016**	**2006**	**2016**
Depth (m)	**0.5**	**0.6**	**1.0**	**1.0**	**1.4**	**1.2**	**0.3**	**0.3**	**0.8**	**0.8**	**0.2**	**0.2**	**0.3**	**0.3**
Toluene	NT	NA	NT	NA	NT	NA	NT	NA	NT	NA	ND	ND	NT	NA
Miscellaneous Compounds														
Formaldehyde	NT	NA	NT	NA	NT	NA	NT	NA	NT	NA	ND	ND	NT	NA
Acrylonitrile	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Catechol	ND	ND	ND	ND	ND	ND	NT	NA	NT	NA	ND	ND	NT	NA
Total Organic Carbon (%)	10	2.37	0.92	0.73	NT	NA	7.2	2.47	NT	NA	NT	NA	NT	NA

Notes:

NT – Not Tested

ND – Not Detected

NA – Not Applicable

Concentrations in bold print indicate where concentrations have increased since Reference Data collection.

Location	**ZC213**	**WS20**	**ZC213**	**WS20**	**ZC213**	**WS20**	**ZC214**	**WS4**	**ZC214**	**WS4**	**ZC214**	**WS4**
Date	**2006**	**2016**	**2006**	**2016**	**2006**	**2016**	**2006**	**2016**	**2006**	**2016**	**2006**	**2016**
Depth (m)	**1.2**	**1.2**	**1.8**	**1.8**	**2.6**	**2.5**	**0.9**	**0.9**	**1.8**	**1.8**	**3.6**	**2.5**
Inorganics (mg/kg)												
Arsenic	NT	NA	9.2	4.5	9.2	4.55	21	**85.8**	13	**15.1**	7.9	**9.9**
Barium	NT	NA	64	23.8	19	**28.1**	460	372	110	108	37	**52.9**
Cadmium	NT	NA	ND	<0.2	ND	0.283	0.63	**0.7**	0.53	**0.78**	ND	ND
Chromium	NT	NA	69	21.1	15	13.65	72	16.7	35	32	30	**31.4**
Copper	NT	NA	35	13.6	11	7.78	140	**168**	30	27.6	18	14.9
Iron	NT	NA	23000	17500	10000	8500	29000	26000	33000	32200	25000	**32800**
Lead	NT	NA	47	13.6	ND	13.24	62	**67.9**	64	**79.2**	25	**25.4**
Mercury	NT	NA	0.3	ND	ND	ND	0.33	ND	ND	ND	ND	ND
Selenium	NT	NA	ND	ND	ND	0.51	ND	**0.7**	ND	**0.7**	ND	ND
Zinc	NT	NA	100	90	49	**62.28**	150	119.1	130	**202.5**	84	**102.7**
pH (pH units)	NT	NA	7.9	**8.3**	8.6	8.6	8.3	8.1	7.9	7.9	8.1	7.9
Total petroleum Hydrocarbons (mg/kg)												
Total EPH (>C5-C44)	NT	NA	NT	NA	NT	NA	270	ND	400	ND	1500	169
Total Aliphatics (>C5-C44)	NT	NA	NT	NA	NT	NA	140	ND	320	ND	1300	106
Total Aromatics (>C5-C44)	NT	NA	NT	NA	NT	NA	120	ND	81	ND	270	63
Volatile Organic Compounds (µg/kg) Only VOCs detected above laboratory detection are summarised												
Benzene	NT	NA	NT	NA	NT	NA	ND	**4**	ND	ND	ND	ND
Toluene	NT	NA	NT	NA	NT	NA	ND	**10**	ND	ND	ND	ND

Location	ZC213	WS20	ZC213	WS20	ZC213	WS20	ZC214	WS4	ZC214	WS4	ZC214	WS4
Date	**2006**	**2016**	**2006**	**2016**	**2006**	**2016**	**2006**	**2016**	**2006**	**2016**	**2006**	**2016**
Depth (m)	**1.2**	**1.2**	**1.8**	**1.8**	**2.6**	**2.5**	**0.9**	**0.9**	**1.8**	**1.8**	**3.6**	**2.5**
Miscellaneous Compounds												
Formaldehyde	NT	NA	NT	NA	NT	NA	NT	NA	NT	NA	NT	NA
Acrylonitrile	NT	NA	ND	ND	ND	ND	NT	NA	NT	NA	NT	NA
Catechol	NT	NA	NT	NA	NT	NA	NT	NA	NT	NA	NT	NA
Total Organic Carbon (%)	14	2.95	NT	NA	NT	NA	NT	NA	NT	NA	NT	NA

Notes:

NT – Not Tested

ND – Not Detected

NA – Not Applicable

Concentrations in bold print indicate where concentrations have increased since Reference Data collection.

5.3 Groundwater Analytical Results Compared with Reference Data

Groundwater was collected from the Reference Data boreholes for comparison with concentrations recorded in the Statement of Reference Data, 2006.

The results are summarised below and are presented in Table 5.2.

- Significant increases in the concentration of metals has not been identified. Magnesium had increased in 7 No. locations; however, all were in the same order of magnitude. *There is no environmental quality standard (EQS) or drinking water standard (DWS) for magnesium; however, it occurs naturally in drinking water.*
- Sulphate concentrations had increased at three sampling locations, although in each case detected in the same order of magnitude as the Reference Data. *All concentrations are below the EQS of 400mg/l.*
- Chloride concentrations had increased at eight sampling locations, although in each case detected in the same order of magnitude. *There is no EQS for chloride; however, the UK DWS stipulates a maximum concentration of 250mg/l as an indicator parameter for consumer's taps. This concentration was only exceeded at one location (ZC204) at 1,300mg/l and the groundwater is not abstracted for drinking water in the near vicinity. As such, the increases in chloride are not considered significant.*
- A trace concentration of the VOC isopropylbenzene was identified at one sampling location (ZC214); this was also detected as a trace concentration in the 2006 Reference Data. *The concentration 0.003mg/l is lower than the international World Health Organisation (WHO) guideline value of 0.39mg/ (used in the absence of UK criteria).*
- TPH was only analysed for EP Reference Data in groundwater from one location, ZC214 (located between the ETSL and the Oil Storage Area). Total TPH was detected at 1.98mg/l in 2006; whereas the concentration detected in 2016 was 1.19mg/l, i.e. less than Reference Data.

Table 5.2: Comparison of Groundwater Reference Data with Ramboll Environ Data, May 2016

Location	ZC201		ZC203		ZC204		ZC205		ZC206		ZC207	
Date	**2006**	**2016**	**2006**	**2016**	**2006**	**2016**	**2006**	**2016**	**2006**	**2016**	**2006**	**2016**
TPH CWG (µg/l)												
C10-C16	NT	NA	NT	NA	NT	NA	NT	NA	NT	NA	NT	NA
C16-C24	NT	NA	NT	NA	NT	NA	NT	NA	NT	NA	NT	NA
C24-C40	NT	NA	NT	NA	NT	NA	NT	NA	NT	NA	NT	NA
C6-C40	NT	NA	NT	NA	NT	NA	NT	NA	NT	NA	NT	NA
C6-C8	NT	NA	NT	NA	NT	NA	NT	NA	NT	NA	NT	NA
C8-C10	NT	NA	NT	NA	NT	NA	NT	NA	NT	NA	NT	NA
VOCs (µg/l)												
Isopropylbenzene	ND	ND	NT	NA	NT	NA	NT	NA	NT	NA	NT	NA
Sec-Butylbenzene	ND	ND	NT	NA	NT	NA	NT	NA	NT	NA	NT	NA
SVOCs (µg/l)	NT	NA	NT	NA	NT	NA	ND	ND	NT	NA	NT	NA
Metals												
Arsenic	16	14	12	1	11	5	15	9	19	**21**	62	30
Barium	52	**80**	110	**1590**	23	**190**	43	**60**	88	60	140	60
Cadmium	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Calcium	38000	**54100**	16000	**258000**	50000	**279000**	67000	**124000**	157000	141000	78000	68400
Chromium	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Copper	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Iron	410	**520**	140	**780**	950	**5690**	1910	**10200**	2130	**2520**	10010	4710
Lead	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Magnesium	4400	**6600**	16000	**110000**	11000	**57400**	6900	**12000**	21000	19400	26000	20300

Location	ZC201		ZC203		ZC204		ZC205		ZC206		ZC207	
Mercury	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Potassium	1700	*NT*	9700	**31500**	3000	**10400**	4400	**5900**	10000	4000	8200	6000
Selenium	4	ND	5	2	3	**18**	1	ND	3	ND	2	ND
Sodium	462000	74400	1060000	**3363000**	103000	**315000**	22000	**70500**	177000	134000	72000	**80700**
Zinc	11	4	7	ND	5	ND	19	ND	17	ND	8	ND
Miscellaneous Analysis												
Formaldehyde	400	ND	NT	NA	NT	NA	NT	NA	NT	NA	NT	NA
Acrylonitrile	NT	NA	NT	NA	ND	ND	NT	NA	ND	ND	ND	ND
Catechol	NT	NA	NT	NA	ND	ND	NT	NA	NT	NA	ND	ND
pH	8.2	7.8	9.4	7	8.2	7	7.9	7.3	7.6	7.1	7.5	7.2
Alkalinity	286000	263000	562000	230000	322000	189000	163000	**475000**	301000	301000	352000	327000
BOD+ATU (5 day)	56000	18300	10000	4200	2000	ND	3000	**3700**	42000	3700	9000	2000
Chloride as Cl	129000	56000	134000	**5870000**	79000	**1300000**	40000	**43000**	289000	278000	96000	**108000**
COD (total)	469000	75000	115000	34000	31000	22000	40000	**47000**	371000	39000	43000	16000
Nitrate as N	ND	ND	ND	ND	ND	ND	1300	50	900	ND	900	ND
nonyl phenol	NT	NA	NT	NA	NT	NA	1	ND	NT	NA	NT	NA
octyl phenol	NT	NA	NT	NA	NT	NA	ND	ND	NT	NA	NT	NA
sulphate as SO4	15000	**21900**	ND	**7000**	ND	ND	20000	9300	26000	24000	ND	ND
Detergents, ammonic as NaLS	NT	NA	2000	ND	NT	NA	NT	NA	NT	NA	NT	NA
Methanol	NT	NA	ND	ND	NT	NA	NT	NA	NT	NA	NT	NA

Location	ZC201	ZC203	ZC204	ZC205	ZC206	ZC207
Notes: NT – Not Tested; ND – Not Detected; NA – Not Applicable Concentrations in bold print indicate where concentrations have increased since Reference Data collection.						

Location	ZC208		ZC210		ZC211		ZC212*		ZC213		ZC214	
Sample Date	**2006**	**2016**	**2006**	**2016**	**2006**	**2016**	**2006**	**2016**	**2006**	**2016**	**2006**	**2016**
TPH CWG (µg/l)												
C10-C16	NT	NA	NT	NA	NT	NA	NT	-	NT	NA	969	578
C16-C24	NT	NA	NT	NA	NT	NA	NT	-	NT	NA	878	446
C24-C40	NT	NA	NT	NA	NT	NA	NT	-	NT	NA	122	155
C6-C40	NT	NA	NT	NA	NT	NA	NT	-	NT	NA	1980	1194
C6-C8	NT	NA	NT	NA	NT	NA	NT	-	NT	NA	ND	ND
C8-C10	NT	NA	NT	NA	NT	NA	NT	-	NT	NA	13	ND
VOCs												
Isopropylbenzene	NT	NA	NT	NA	NT	NA	ND	-	NT	NA	1	**3**
Sec-Butylbenzene	NT	NA	NT	NA	NT	NA	ND	-	NT	NA	1	ND
SVOCs	NT	NA	NT	NA	NT	NA	NT	-	NT	NA	NT	NA
Metals												
Arsenic	10	**11**	4	**11**	21	10	7	-	10	2	21	13
Barium	240	**260**	52	**60**	75	50	210	-	42	**50**	120	90
Cadmium	ND	ND	ND	ND	0.6	ND	ND	-	0.7	**1.4**	0.6	ND
Calcium	47000	**49600**	39000	**68100**	71000	**86100**	96000	-	154000	134000	126000	105000
Chromium	ND	ND	ND	ND	ND	ND	ND	-	ND	ND	ND	ND
Copper	ND	ND	ND	ND	ND	ND	11	-	ND	**19**	8	ND

Location	**ZC208**		**ZC210**		**ZC211**		**ZC212***		**ZC213**		**ZC214**	
Iron	850	140	60	**9670**	6490	2750	330	-	2240	700	6540	2960
Lead	ND	ND	ND	ND	ND	ND	ND	-	ND	**8**	ND	ND
Magnesium	31000	30100	4800	**11500**	6400	**6900**	17000	-	30000	19500	16000	**17000**
Mercury	ND	ND	ND	ND	ND	ND	ND	-	ND	ND	ND	ND
Potassium	9000	6900	2900	**4800**	12000	7300	6100	-	7300	**8200**	7500	7400
Selenium	2	ND	1	ND	ND	ND	12	-	2	ND	7	ND
Sodium	78000	67900	13000	**87600**	41000	**67300**	51000	-	131000	89500	46000	23100
Zinc	16	ND	13	ND	18	ND	11	-	22	**159**	19	ND
Miscellaneous Analysis												
Formaldehyde	NT	NA	NT	NA	NT	NA	3710	-	NT	NA	NT	NA
Acrylonitrile	ND	ND	ND	ND	ND	ND	ND	-	ND	ND	NT	NA
Catechol	ND	ND	ND	ND	NT	NA	ND	-	NT	NA	NT	NA
pH	7.8	7.3	8.3	7.2	7.6	6.8	7.5	-	7.6	7	7.2	7
Alkalinity	302000	272000	498000	424000	282000	**345000**	391000	-	287000	**357000**	392000	369000
BOD+ATU (5 day)	3000	ND	ND	ND	58000	**68100**	2000	-	2000	ND	4000	ND
Chloride as Cl	103000	**110000**	28000	**119000**	17000	**39000**	52000	-	299000	170000	29000	**34000**
COD (total)	41000	11000	36000	13000	254000	205000	140000	-	71000	45000	94000	13000
Nitrate as N	600	ND	1000	ND	ND	ND	700	-	400	ND	ND	ND
nonyl phenol	NT	NA	NT	NA	NT	NA	NT	-	NT	NA	NT	NA
octyl phenol	NT	NA	NT	NA	NT	NA	NT	-	NT	NA	NT	NA
sulphate as SO4	ND	ND	6000	ND	5000	**5600**	64000	-	82000	37000	14000	ND
Detergents, ammonic as NaLS	NT	NA	NT	NA	NT	NA	NT	-	NT	NA	NT	NA
Methanol	NT	NA	NT	NA	NT	NA	NT	-	NT	NA	NT	NA

Location	ZC208	ZC210	ZC211	ZC212*	ZC213	ZC214
Notes: NT – Not Tested; ND – Not Detected; NA – Not Applicable Concentrations in bold print indicate where concentrations have increased since Reference Data collection. * ZC212 no longer present; damaged or destroyed.						

Groundwater samples were also collected from the newly installed boreholes and these are discussed in Section 6.

5.4 Groundwater Analytical Results Compared with SPMP Data

By 2007, there were 14 No. SPMP boreholes (shown on Figure 1, Appendix 1), which were monitored by Zeon on an annual basis for TPH and PAH. The results have been provided to Ramboll Environ as laboratory certificates of analysis; however, there are no corresponding factual interpretative reports, with the exception of a brief 'Borehole Analysis Summary' as part of the SPMP review in 2011 compiled by Zeon.

Ramboll Environ has compared the recent groundwater sampling analysis results with the SPMP groundwater data in order to identify trends in concentrations over time.

Previously, elevated TPH was detected in ZC211 as a consequence of an overflow incident in 2008 from the EMAL soap tank. Remediation (carried out by Zeon) comprised dilution with water and pumping to the effluent treatment plant (ETP). The results (including Ramboll Environ's recent monitoring) have indicated an overall decrease in concentrations since.

Elevated concentrations of acrylonitrile have previously been detected in the boreholes near the Tank Farm (ZC207, ZC208, ZC210) as a consequence of a spillage incident in 2009; however, acrylonitrile was not detected in any of these boreholes during Ramboll Environ's recent monitoring.

5.4.1 TPH Trends in Groundwater

Overall increases in TPH over the monitoring period have been identified in:

- ZC214 (oil storage area);
- ZC202 (area of low risk , south of L179 QA Lab);
- ZC203 (northern Installation boundary); and
- ZC208 (northern Installation boundary and north of Tank Farm).

However, the increasing trends are not necessarily indicative of ongoing risks to groundwater. At some locations, the concentrations only marginally exceed the conservative UK Drinking Water Standard (UK DWS), and as such, are not considered to be representative of significant contamination. Concentrations in TPH marginally higher than the UK DWS of 0.01mg/l are common in groundwater on industrial sites and are likely to represent natural fluctuations in groundwater quality, rather than be indicative of a source of contamination. Detailed risk assessment would be required to accurately determine the risk to receptors (see Section 9.2 Recommendations).

5.4.2 PAH Trends in Groundwater

Overall increases in total PAH over the monitoring period have been identified in:

- ZC203 (northern Installation boundary);
- ZC204 (northern portion of the Installation (east of N55 Effluent Pit);
- ZC208 (northern Installation boundary and north of Tank Farm);
- ZC207 (south of Tank Farm);
- ZC205 (north of N159 Coagulant Building); and
- ZC213 (south-east of ETP, at the Installation boundary).

As described above, the increasing trends are not necessarily indicative of ongoing risks to groundwater. The PAH concentrations, although increasing at certain locations, do not necessarily exceed the respective Controlled Waters screening criteria. Only at locations where there is both an increasing trend, and the concentrations exceed screening criteria will additional risk assessment be required to determine the risks to receptors (see Section 9.2 Recommendations).

6. CHEMICAL ANALYSIS COMPARISON WITH GENERIC ASSESSMENT CRITERIA

6.1 Legislative Background

The regime for contaminated land was set out in Part 2A (ss.78A-78YC) of the Environmental Protection Act 1990 (EPA), as inserted by S.57 of The Environment Act 1995 and came into effect in Wales on 1st July 2001 as The Contaminated Land (Wales) Regulations 2001 (WSI 2001/2197, W.157). These regulations were subsequently revoked with the provision of The Contaminated Land (Wales) Regulations 2006 (SI 2006/2989 W.278), which consolidated the previous regulations and amendments and added in provisions regarding radioactive contaminated land. These regulations came into force on 10th December 2006 and were accompanied by statutory guidance published by the Welsh Assembly Government in December 2006 ('the Guidance') for local authorities on how to implement the regime. The 2006 statutory guidance was replaced by the Contaminated Land Statutory Guidance - 2012 (WG19243), issued by the Welsh Government.

Under Part 2A of the EPA Section 78A(2), "contaminated land" is defined as "land which appears… to be in such a condition, by reason of substances in, on or under the land, that –

a) significant harm is being caused or there is a significant possibility of such harm being caused; or

b) pollution of controlled waters is being, or is likely to be caused".

"Significant harm" is defined in the Guidance on risk based criteria and must be the result of one or more relevant 'contaminant linkages' relating to the land. The presence of a contaminant linkage relies on the Source-Pathway-Receptor concept, where all three factors must be present and potentially or actually linked for a potential risk to exist. Under the Guidance, a 'significant contaminant linkage' is one which gives rise to a level of risk sufficient to justify a piece of land being determined as contaminated land. Should the authority consider that there is an unacceptably high probability, supported by robust science-based evidence that significant harm would occur if no action is taken to stop it, the land should be deemed a Category 1: Human Health.

Land should be placed into Category 2 if the authority concludes, on the basis that there is a strong case for considering that the risks from the land are of sufficient concern, that the land poses a significant possibility of significant harm.

Both Category 1 and Category 2 cases would be capable of being determined as contaminated land under Part 2A on the grounds of significant possibility of significant harm to human health. If the legal test for significant possibility of significant harm is not met, the authority should place the land into Category 3. If the local authority considers that there is no risk or that the level of risk posed is low, the land should be placed into Category 4.

For six common contaminants (benzo(a)pyrene, cadmium, arsenic, benzene, hexavalent chromium and lead), a set of screening values have been developed and endorsed for use by DEFRA (the Category 4 Screening Levels, or C4SLs) that describe a level of risk just below the Category 3/4 boundary set in the Statutory Guidance, i.e. where concentrations are below the C4SL, there is no risk or the level of risk is acceptably low. In March 2015, the Welsh Government issued a statement reaffirming that C4SLs are a "pragmatic but still strongly precautionary approach to risk assessment of potentially contaminated land". They represent a level of a contaminant in soil that would pose a low risk to human health and would not be considered contaminated under Part 2A. The statement notes that C4SLs have been derived using toxicological methods that are robust and are considered appropriate in the UK. The Welsh

Government's statement confirms that C4SLs can provide a simple test for deciding if land is suitable for use and definitely not contaminated under Part 2A. As such, they can be used as a generic screening criteria and could be used as part of the risk assessment process under the planning regime as with Part 2A.

The pollution of Controlled Waters is defined in Section 78A(9) of the Act as "the entry into Controlled Waters of any poisonous, noxious or polluting matter or any solid waste matter". According to the Guidance, before determining that pollution of Controlled Waters is being, or is likely to be, caused, the local authority should be satisfied that a substance is continuing to enter Controlled Waters or is likely to enter controlled waters. *The term "Controlled Waters" in relation to Wales has the same meaning as in Part 3 of the Water Resources Act 1991, except that "ground waters" does not include waters contained in underground strata but above the saturation zone.*

As with human health risk, Categories 1 and 2 comprise land where the local authority considers that a significant possibility of significant pollution of controlled waters exists and Categories 3 and 4 comprises cases where the authority considers that a significant possibility of such pollution does not exist. The local authority should be satisfied that a substance is continuing to enter controlled waters or is likely to enter controlled waters.

The risk assessment presented in this report is based on a set of generic assessment criteria (the Ramboll Environ GAC) considered to be threshold-based screening concentrations, at which a significant risk is not considered to be present to the relevant receptors.

6.2 Soil Analytical Results

The soil analytical results obtained during this investigation have been screened against the Ramboll Environ GAC for a commercial / industrial end use. The results of the screening are summarised in Table 5.1 below.

The following determinands were not detected above the laboratory reporting limits:

- alcohols (comprising methanol, ethanol, iso-propanol, tert-butanol, 1-propanol, sec-butanol, iso-butanol and n-butanol);
- toluene;
- polychlorinated biphenyls (PCBs);
- volatile organic compounds (VOCs) and semi-volatile organic compounds (SVOCs) with the exception of the compounds identified in Table 6.1; and
- total petroleum hydrocarbon (TPH) between carbon range of C5 to C7.

The analytical certificates are presented in full in Appendix 4. Exceedance of a Ramboll Environ GAC does not infer that an unacceptable risk is present; the outcome of the screening is assessed further in the context of a qualitative source-pathway-receptor risk assessment presented in Section 7.

Table 6.1: Summary of Soil Analytical Results

Determinand	Number of Samples	Minimum Concentration (mg/kg)	Maximum Concentration (mg/kg) and Location (m bgl)	GAC for Commercial use (mg/kg)	No. of GAC Exceedances	Location of Exceedances
Inorganics						
Arsenic	55	3.23	85.8 (WS4, 0.9m)	640	0	NA
Beryllium	55	0.1679	3.00 (BH101, 0.30m)	12	0	NA
Boron	55	<MRL	5.9 (WS1, 3.00m)	240,000	0	NA
Cadmium	55	<MRL	5.38 (BH105, 0.50m)	410	0	NA
Chromium	55	3.9	88.2 (BH103, 0.40m)	8,600	0	NA
Copper	55	6.5	168 (WS, 0.90m)	68,000	0	NA
Lead	55	6.6	522.4 (WS24, 1.00m)	2,300	0	NA
Mercury	55	<MRL	2.26 (WS20, 0.30m)	1,100	0	NA
Nickel	55	10.51	162.9 (BH105, 0.50m)	980	0	NA
Selenium	55	<MRL	1.4 (WS15, 0.40m)	12,000	0	NA
Vanadium	55	3.0	59.9 (WS23, 0.90m)	9,000	0	NA
Zinc	55	26.26	710 (WS9, 0.30m)	730,000	0	NA
pH Units	55	7.3	11.9 (BH104, 0.50m)	NC	NA	NA
Cyanide	55	<MRL	1.13 (WS15, 0.40m)	49	0	NA
Sulphate	55	<MRL	515 (WS21, 0.75m)	NC	NA	NA
Polycyclic Aromatic Hydrocarbons (PAH)						
Naphthalene	55	<MRL	0.6 (WS17, 0.30m)	110	0	NA
Acenaphthylene	55	<MRL	0.31 (BH101, 0.30m)	76,000	0	NA
Acenaphthene	55	<MRL	0.63 (BH104, 0.50m)	75,000	0	NA
Fluorene	55	<MRL	0.46 (BH104, 0.50m)	31	0	NA

Determinand		Number of Samples	Minimum Concentration (mg/kg)	Maximum Concentration (mg/kg) and Location (m bgl)	GAC for Commercial use (mg/kg)	No. of GAC Exceedances	Location of Exceedances
Phenanthrene		55	<MRL	2.27 (BH104, 0.50m)	36	0	NA
Anthracene		55	<MRL	0.8 (BH101, 0.30m)	520,000	0	NA
Fluoranthene		55	<MRL	4.42 (BH104, 0.50m)	23,000	0	NA
Pyrene		55	<MRL	3.3 (BH101, 0.30m)	54,000	0	NA
Benzo[a]anthracene		55	<MRL	3.96 (BH101, 0.30m)	NA	NA	NA
Chrysene		55	<MRL	3.81 (BH101, 0.30m)	NA	NA	NA
Benzo[b]fluoranthene		55	<MRL	5.4 (BH101, 0.30m)	NA	NA	NA
Benzo[k]fluoranthene		55	<MRL	1.9 (BH101, 0.30m)	NA	NA	NA
Benzo[a]pyrene		55	<MRL	3.72 (BH101, 0.30m)	76	0	NA
Indeno[1,2,3-cd]pyrene		55	<MRL	2.68 (BH101, 0.30m)	NA	NA	NA
Dibenzo[a,h]anthracene		55	<MRL	0.88 (BH101, 0.30m)	NA	NA	NA
Benzo[g,h,i]perylene		55	<MRL	2.34 (BH101, 0.30m)	NA	NA	NA
BTEX Compounds							
Benzene		55	<MRL	0.01 (WS13, 0.30m)	15	0	NA
Ethyl benzene		55	<MRL	0.57 (WS17, 0.30m)	3,200	0	NA
m/p-Xylene		55	<MRL	0.335 (WS6, 2.00m)	3,300	0	NA
o-Xylene		55	<MRL	0.137 (WS6, 2.00m)	3,700	0	NA
Total Petroleum Hydrocarbons (TPH)							
Aliphatic	C8-C10	55	<MRL	39.7 (BH101, 0.30m)	1,300	0	NA
	C10-C12	55	<MRL	394 (WS6, 2.00m)	6,100	0	NA
	C12-C16	55	<MRL	1,880 (WS6, 2.00m)	43,000	0	NA
	C16-C21	55	<MRL	2,610 (WS6, 2.00m)	1,000,000	0	NA

Determinand		Number of Samples	Minimum Concentration (mg/kg)	Maximum Concentration (mg/kg) and Location (m bgl)	GAC for Commercial use (mg/kg)	No. of GAC Exceedances	Location of Exceedances
	C21-C35	55	<MRL	14,100 (WS19, 0.65m)	1,000,000	0	NA
	C8-C40	55	NA	16,000 (WS19, 0.65m)	NC	NA	NA
Aromatic	C8-C10	55	<MRL	54.5 (BH101, 0.30m)	6,100	0	NA
	C10-C12	55	<MRL	175 (WS17, 0.30m)	11,000	0	NA
	C12-C16	55	<MRL	417 (WS6, 2.00m)	35,000	0	NA
	C16-C21	55	<MRL	5,880 (WS17, 0.30m)	29,000	0	NA
	C21-C35	55	<MRL	4,130 (WS19, 0.65m)	29,000	0	NA
	C8-C40	55	NA	8,110 (WS17, 0.30m)	NC	NA	NA
Volatile Organic Compounds (VOC)							
Chloroethane		59	<MRL	0.056 (WS18, 1.60m)	530	0	NA
1,1-Dichloroethene		59	<MRL	0.012 (WS16, 0.30m)	140	0	NA
Chloroform		59	<MRL	0.001 (WS27, 0.70m)	53	0	NA
Benzene		59	<MRL	0.058 (WS13, 0.30m)	15	0	NA
Toluene		59	<MRL	0.058 (WS13, 0.30m)	33,000	0	NA
Tetrachloroethene		59	<MRL	0.005 (BH102, 0.50m)	10	0	NA
Ethylbenzene		59	<MRL	1.73 (WS17, 0.30m)	3,200	0	NA
m and p-Xylene		59	<MRL	0.086 (WS29, 1.00m)	3,300	0	NA
o-Xylene		59	<MRL	0.050 (WS29, 1.00m)	3,700	0	NA
Styrene		59	<MRL	0.366 (WS17, 0.30m)	1,900	0	NA
iso-Propylbenzene		59	<MRL	0.043 (WS29, 1.00m)	710	0	NA
Propylbenzene		59	<MRL	0.014 (WS11, 0.30m)	2,100	0	NA
1,3,5-Trimethylbenzene		59	<MRL	0.033 (WS11, 0.30m)	12	0	NA

Determinand	Number of Samples	Minimum Concentration (mg/kg)	Maximum Concentration (mg/kg) and Location (m bgl)	GAC for Commercial use (mg/kg)	No. of GAC Exceedances	Location of Exceedances
1,2,4-Trimethylbenzene	59	<MRL	0.176 (WS6, 1.00m)	22	0	NA
sec-Butylbenzene	59	<MRL	0.085 (WS6, 1.00m)	333,000	0	NA
p-Isopropyltoluene	59	<MRL	0.002 (WS11, 0.20m)	NC	NA	NA
n-Butylbenzene	59	<MRL	0.235 (WS17, 0.30m)	250,000	0	NA
1,2-Dichlorobenzene	59	<MRL	0.007 (WS29, 1.00m)	1,100	0	NA
Semi Volatile Organic Compounds (SVOC)						
3- & 4-Methylphenol	35	<MRL	10.8 (WS19, 0.65m)	160,000	0	NA
2,4-Dimethylphenol	35	<MRL	0.4 (WS17, 0.30m)	13,000	0	NA
2-Methylnaphthalene	35	<MRL	0.1 (WS6, 1.00m)	34,300 (ENVIRON)	0	NA
1-Methylnaphthalene	35	<MRL	0.3 (WS6, 2.00m)	2,960 (ENVIRON)	0	NA
Biphenyl	35	<MRL	0.5 (WS29, 1.00m)	11,000	0	NA
Diphenyl ether	35	<MRL	2.4 (WS29, 1.00m)	NC	NA	NA
bis(2-Ethylhexyl)phthalate	35	<MRL	7.2 (BH101, 0.30m)	85,000	0	NA

Notes:
MRL – Method reporting limit
NC – No criteria
NA – Not applicable
A – Ramboll Environ GAC for Chromium III (see Section 6.3, below)

6.3 Soil Assessment – Human Health

Comparison of soil analytical results with human health screening criteria has not identified any exceedances. The results are summarised as follows:

- Metal concentrations within all analysed samples were detected below the respective GAC for a commercial / industrial use.
- PAH concentrations were not recorded above the GAC for human health in a commercial / industrial setting.
- BTEX compounds were not recorded at concentrations exceeding the GAC.
- TPH concentrations for the individual carbon fractions did not exceed the GAC for human health considering commercial use. However, some values are considered to be notable and may pose a risk to environmental receptors through leaching, e.g. total TPH concentrations over 5,000mg/kg are considered likely to indicate some hydrocarbon impact in soil. Whereas these concentrations may not represent a risk to human health, the hydrocarbons have potential to be effectively washed / or 'leached' through the soil and into groundwater. Most notably, TPH concentrations over 5,000mg/kg were detected at:
  - WS17, 5,880mg/kg aromatic C16 to C21 detected in the sample from 0.3m bgl; and 8,110mg/kg aromatic C8 to C40 in the same sample
  - WS19 (in the ETP area), 14,100mg/kg aliphatic C21 to C35 in the sample from 0.65m bgl; and 16,000mg/kg aliphatic C8 to C40 in the same sample;
  - WS6, total aromatic hydrocarbons C8 to C40 3,090mg/kg and aliphatic hydrocarbons C8 to C40 8,470mg/kg in the sample from 2.0m bgl (the majority detected in the aliphatic C16 to C35 range).
- Concentrations of VOCs and SVOCs were recorded below the relevant GAC for human health, where available, in all samples analysed. The laboratory analysis also included the production of a list of tentatively identified compounds, for both VOCs and SVOCs; these are detailed fully in the analytical certificates presented in Appendix 4.

In addition to the above, asbestos was positively identified in Made Ground in 4 out of 18 samples tested (as chrysotile cement and amosite free fibres). In these samples, the ACM was only detected from an asbestos screen and identification and was not visibly observed in the samples. There is no human health screening criteria for asbestos in soil. Ramboll Environ considers that that the asbestos has a historical origin and is likely to be present in the Made Ground over the wider area which is common with many industrial brownfield sites. E.g. the ACM was found to be present in Made Ground which also contained fragments of clinker, brick and metal originating from historical site uses.

6.4 Groundwater Analytical Results

6.4.1 Groundwater Screening Criteria - Controlled Waters

In the absence of relevant published water assessment criteria, the potential risk to human health from contaminated surface and groundwater and the potential risk to the aquatic environment from entry of pollutants (either directly or via a groundwater pathway) has been assessed using commonly accepted UK guidelines including the Water Supply (Water Quality) (England) Regulations 2000 (known as the Drinking Water Standards, or DWS) and the Environmental Quality Standards (EQS) defined in European legislation such as the Water Framework Directive (WFD) (2000/60/EC).

Revised EQS were published in December 2009 under the Priority Substances Directive (PSD) (2008/105/EC), a daughter directive of the WFD. The PSD establishes EQS for Priority Substances which have been set at levels of concentration which are safe for the aquatic

environment and for human health. A list of such dangerous substances (including those from other European legislation e.g. the Dangerous Substances Directive (76/464/EC)) and EQS has been established and is listed in the August 2010 Direction to the Environment Agency, the River Basin Districts Typology, Standards and Groundwater Threshold Values (Water Framework Directive) (England and Wales) Direction 2010. The EQS are detailed in Part 4 (Specific Pollutants) and Part 5 (Priority Substances) of the Directions.

For those determinants included in the analytical suite which do not have a corresponding UK drinking water or environmental screening criteria, reference is made to international guidance in accordance with Environment Agency guidance.

A Ramboll Environ GAC has also been derived for the contaminant volatilisation pathway from groundwater to human receptors. This has been calculated using the RBCA Tool Kit V2.6 model. The RBCA model has been altered where necessary to reflect the current UK approach to human health risk assessment, as detailed above.

The nearest identified Controlled Water receptor is the River Cadoxton, located adjacent to the north and west Site boundary. Therefore UK EQS, where available, have been used as screening criteria in the first instance. For those determinants included in the analytical suite which do not have a corresponding UK screening criteria derived from the above sources, reference is made to a hierarchy of international guidance in accordance with Environment Agency guidance (also applicable to Natural Resources Wales (NRW)).

6.4.2 Groundwater Results

The following determinands were not detected above the laboratory reporting limits:

- total cyanide;
- metals: mercury and beryllium;
- alcohols (comprising methanol, ethanol, iso-propanol, tert-butanol, 1-propanol, sec-butanol, iso-butanol and n-butanol)
- BTEX compound: toluene;
- TPH fraction: C5-C6;
- PAH: Dibenzo[a,h]anthracene
- PCBs; and
- volatile organic compounds (VOCs) and semi-volatile organic compounds (SVOCs) with the exception of the compounds identified in Table 6.2

The results of the groundwater analysis are summarised in Table 6.2 below. Analytical certificates are presented in Appendix 4.

Table 6.2: Summary of Groundwater Analytical Results

Determinand	Number of Samples	Minimum Concentration (mg/l)	Maximum Concentration (mg/l)	GAC for Human Health (mg/l)	Location of GAC Exceedances (Human Health)	GAC for Controlled Waters (mg/l)	Location of Exceedances (Controlled Waters)
Inorganics							
Arsenic	30	<MRL	0.03	NC	NA	0.05	NA
Boron	30	<MRL	2.15	NC	NA	2	ZC209
Cadmium	30	<MRL	0.0014	NC	NA	0.00025	BH104, ZC213, WS21
Chromium	30	<MRL	0.003	NC	NA	0.0047	NA
Copper	30	<MRL	0.019	NC	NA	0.028	NA
Lead	30	<MRL	0.086	NC	NA	0.0072	BH104, ZC213
Nickel	30	<MRL	0.052	NC	NA	0.02	BH103, BH106, ZC201, ZC206, ZC213, WS21, WS30
Selenium	30	<MRL	0.018	NC	NA	0.01 (B)	ZC204, ZC209
Vanadium	30	<MRL	0.058	NC	NA	0.06	NA
Zinc	30	<MRL	0.159	NC	NA	0.125	ZC213
pH	30	6.9	11.8	NC	NA	6 to 9	BH104
Total Sulphur	30	<MRL	191	NC	NA	400	NA
Polycyclic Aromatic Hydrocarbons (PAH)							
Naphthalene	30	<MRL	0.00551	13.8	NA	0.002	ZC206, WS6
Acenaphthylene	30	<MRL	0.00875	8	NA	NC	NA
Acenaphthene	30	<MRL	0.011	4.1	NA	0.4 (D)	NA
Fluorene	30	<MRL	0.050	1.9	NA	0.22 (D)	NA
Phenanthrene	30	<MRL	0.0876	1.1	NA	0.005 (E)	WS6

Determinand		Number of Samples	Minimum Concentration (mg/l)	Maximum Concentration (mg/l)	GAC for Human Health (mg/l)	Location of GAC Exceedances (Human Health)	GAC for Controlled Waters (mg/l)	Location of Exceedances (Controlled Waters)
Anthracene		30	<MRL	0.00944	0.056	NA	0.0001	WS6
Fluoranthene		30	<MRL	0.00512	0.23	NA	0.00012	BH104, WS6
Pyrene		30	<MRL	0.00997	0.13	NA	0.087 (D)	NA
Benzo[a]anthracene		30	<MRL	0.00243	0.011	NA	0.000029 (D)	BH104, WS6
Chrysene		30	<MRL	0.00346	0.002	WS6	0.0029 (D)	WS6
Benzo[b]fluoranthene		30	<MRL	0.000094	0.002	NA	0.00003	BH104
Benzo[k]fluoranthene		30	<MRL	0.000024	0.0008	NA	0.00003	NA
Benzo[a]pyrene		30	<MRL	0.000042	0.0038	NA	0.00005	NA
Indeno[1,2,3-cd]pyrene		30	<MRL	0.000026	0.0002	NA	0.000002	BH104
Benzo[g,h,i]perylene		30	<MRL	0.000026	0.00026	NA	0.000002	BH104
BTEX Compounds								
Benzene		32	<MRL	0.007	1.58	NA	0.01	NA
Ethyl benzene		32	<MRL	0.051	160	NA	0.02	WS6
m/p-Xylene		32	<MRL	0.126	55.9	NA	0.03	WS6
o-Xylene		32	<MRL	0.062	74.1	NA	0.03	WS4
Total Petroleum Hydrocarbons (TPH)								
C6-C7		32	<MRL	0.2	1.58	NA	0.01	ZC209
C7-C8		32	<MRL	0.2	520	NA	0.01	WS4
C8-C10		32	<MRL	4.3	NC	NA	0.01	WS4
Aliphatic	C8-C10	32	<MRL	3.52	0.43	WS6	0.01	ZC207, WS6
	C10-C12	32	<MRL	30.8	0.034	ZC207, ZC214, WS6	0.01	ZC207, ZC214, WS4, WS6

Determinand		Number of Samples	Minimum Concentration (mg/l)	Maximum Concentration (mg/l)	GAC for Human Health (mg/l)	Location of GAC Exceedances (Human Health)	GAC for Controlled Waters (mg/l)	Location of Exceedances (Controlled Waters)
	C12-C16	32	<MRL	175	0.00076	ZC203, ZC206, ZC214, WS3, WS4, WS6	0.01	ZC203, ZC206, ZC214, WS3, WS4, WS6
	C16-C21	32	<MRL	347	NC	NA	0.01	ZC205, ZC206, ZC208, ZC214, WS1, WS3, WS4, WS6, WS15, WS28, WS30
	C21-C35	32	<MRL	576	NC	NA	0.01	BH101, ZC205, ZC206, ZC214, WS1, WS3, WS4, WS6, WS15, WS17, WS21, WS28, WS30
Aromatic	C8-C10	32	<MRL	0.178	15.6	NA	0.01	BH104, ZC207, WS6
	C10-C12	32	<MRL	3.31	25	NA	0.01	BH104, BH105, ZC207, ZC208, ZC214, WS4, WS6, WS17
	C12-C16	32	<MRL	43	5.8	NA	0.01	BH105, ZC202, ZC203, ZC204, ZC210, ZC211, ZC214, WS4, WS6
	C16-C21	32	<MRL	84.8	NC	NA	0.01	BH104, BH105, ZC202, ZC203, ZC206, ZC207, ZC210, ZC211, ZC214, WS6WS28, WS30
	C21-C35	32	<MRL	191	NC	NA	0.01	BH104, ZC205, ZC206, ZC207, ZC211, ZC214, WS1, WS3, WS4, WS6, WS15, WS17, WS21, WS28, WS30
Volatile Organic Compounds (VOC)								

Determinand	Number of Samples	Minimum Concentration (mg/l)	Maximum Concentration (mg/l)	GAC for Human Health (mg/l)	Location of GAC Exceedances (Human Health)	GAC for Controlled Waters (mg/l)	Location of Exceedances (Controlled Waters)
Vinyl Chloride	33	<MRL	0.418	0.0628	ZC209	0.0005 (B)	ZC209
trans 1,2-Dichloroethene	33	<MRL	0.005	10.9	NA	0.050 (F)	NA
1,1-Dichloroethane	33	<MRL	0.016	NC	NA	0.0024 (D)	ZC209
cis 1,2-Dichloroethene	33	<MRL	0.045	NC	NA	0.050 (F)	NA
1,1-Dichloroethane	33	<MRL	0.001	0.627	NA	0.010	NA
Chlorobenzene	33	<MRL	0.003	13.3	NA	0.1 (A)	NA
iso-Propylbenzene	33	<MRL	0.003	52	NA	0.390 (D)	NA
1,3,5-Trimethylbenzene	33	<MRL	0.002	1.620	NA	NC	NA
tert-Butylbenzene	33	<MRL	0.001	NC	NA	NC	NA
1,2,4-Trimethylbenzene	33	<MRL	0.005	1.3	NA	NC	NA
p-Isopropyltoluene	33	<MRL	0.001	NC	NA	NC	NA
Semi Volatile Organic Compounds (SVOC)							
1-Methylnaphthalene	11	<MRL	0.009	NC	NA	0.000997 (D)	ZC214

Environmental Quality Standards (EQS) based on Priority Substances (Directive 2008/105/EC) daughter directive of the Water Framework Directive (WFD) (2000/60/EC) Annex VIII. In the absence of an EQS the following criteria has been used:

A – US National Primary Drinking Water Regulations

B – UK Drinking Water Criteria

C – Private Water Supplies Regulations SI1991 No. 2790

D – Regional Screening Level for Tapwater (USEPA, April 2009)

E – Dutch Intervention Values, 2009

F – WHO – World Health Organisation Guidelines for Drinking Water Quality

MRL – Method reporting limit

NA – Not applicable

NC – No criteria available. Only determinands detected above method reporting limits are included.

6.5 Water Assessment – Human Health

The following exceedances were identified:

- Chrysene in groundwater was recorded slightly above the human health GAC of 0.002mg/l in WS6, at a concentration of 0.00346mg/l. All other PAH compounds were recorded at concentrations below the relevant GAC for human health in a commercial / industrial setting.
- The following TPH fractions were recorded in excess of the relevant GAC for human health:
  - Aliphatic C8-C10 was recorded in excess of the GAC (0.43mg/l) in WS6, at a concentration of 3.52mg/l;
  - Aliphatic C10-C12 was recorded in excess of the GAC (0.034mg/l) in boreholes ZC207, ZC214 and WS6. A maximum recorded concentration of 30.8mg/l was recorded in WS6; and
  - Aliphatic C12-C16 was recorded in excess of the GAC (0.00076mg/l, which is below the laboratory LOD) in ZC203, ZC206, ZC214, WS3, WS4 and WS6. A maximum concentration, significantly greater than other recorded concentrations, of 175mg/l was recorded in WS6.
- Vinyl chloride in borehole ZC209 exceeded the GAC for groundwater volatilisation of 0.0628mg/l with a concentration of 0.418mg/l. Borehole ZC209 is installed with a dual installation comprising of two 50mm monitoring wells that extend to depths of approximately 6.60m bgl and 11.88m bgl. Elevated concentrations of vinyl chloride have only been detected in the sample collected from the deeper of the two wells. Furthermore, vinyl chloride was not detected in soil or groundwater samples from boreholes BH7, BH8 and BH9 located in the near vicinity of ZC209. Vinyl chloride was not detected in samples from window sample borehole WS1, located adjacent to ZC209.

6.6 Water Assessment – Controlled Waters

The following exceedances were identified:

- The metals boron, cadmium, lead, nickel, selenium and zinc were all recorded above the GAC in at least one sample during groundwater sampling, summarised as follows:
  - boron was recorded in ZC209 at a concentration of 2.15mg/l, which marginally exceeds the EQS of 2.00mg/l;
  - cadmium was recorded in BH104, ZC213 and WS21 at concentrations of 0.0003mg/l, 0.0014mg/l and 0.0005mg/l, which marginally exceed the assessment criteria of 0.00025mg/l;
  - lead was recorded in BH104 and ZC213 at concentrations of 0.086mg/l and 0.008mg/l, which marginally exceed the assessment criteria of 0.0072mg/l;
  - nickel was recorded in eight boreholes across the site at concentrations marginally exceeding the EQS of 0.02mg/l ranging between 0.022mgl in WS20 and 0.052mg/l in ZC206;
  - selenium was recorded in boreholes ZC204 and ZC209 at concentrations of 0.018mg/l and 0.013mg/l respectively, which marginally exceed the UK DWS of 0.01mg/l; and
  - zinc was recorded in borehole ZC213 at a concentration of 0.159mg/l, which marginally exceeds the assessment criteria of 0.125mg/l.
- A slightly elevated pH value of 11.8 was recorded in borehole BH104; this is slightly outside the assessment criteria, which ranges from pH6 to pH9.
- PAH compounds were detected above Controlled Waters screening criteria at three locations: WS6, BH104 and ZC207 (up to 6 PAH compounds in WS6). Lubrication oil from ammonia

compressor pumps (since drained) represent a potential source of PAH near WS6. BH104 is located near the Sulphonic Acid Tank and Tanker offloading point. Whereas the sulphonic acid tank is not considered to be a likely source of PAHs, these concentrations may have arisen from historical spillages near the tanker off-loading point, which previously did not have concrete containment.

- TPH was detected at the majority of locations above the conservative UK DWS of 0.01mg/l. Considering the industrial setting of the Site, minor TPH exceedances are not considered overly significant; however, some concentrations were elevated significantly above this criteria:
  - ZC214 and WS4 (adjacent boreholes) - TPH detected at 1.19mg/l and 0.4mg/l respectively. Elevated concentrations coincide with hydrocarbon odour noted in soil at this location between 2.00m and 2.80m bgl, during drilling. These boreholes are located in the oil storage area, which represents a potential source;
  - WS6 – TPH detected at 1,528mg/l, which coincides with strong hydrocarbon odour and black staining in soil noted between 2.00m and 2.50m bgl during drilling. Ammonia compressor pump failures over time represent a potential source; lab analysis confirms two types of lubricating oil in the sample;
  - WS28 - TPH detected at 0.9mg/l in the Polyblack crumb plant;
  - ZC207 – TPH detected at 1.12mg/l; adjacent to very badly cracked drain;
  - WS17 – TPH detected at 1.2mg/l. Coincides with hydrocarbon odour, sticky substance and occasional black staining in soil between 0.80m and 1.50m bgl. In the vicinity of badly cracked drain and located within the north of the ETP area. Additionally, a sticky substance likely to be rubber or rubber latex was recorded in the soil at this location during drilling.
- The VOCs vinyl chloride and 1,1-dichloroethane were detected at 418µg/l and 16µg/l respectively in ZC209 only. There are no EQS values for these compounds; as an alternative, the UKDWS for vinyl chloride has been used as the assessment criteria (0.5µg/l). There is no UK DWS for 1,1-dichloroethane; however, the recorded concentration exceeds the international drinking standard (RSL) of 2.4µg/l. Both drinking water standards are considered to be conservative considering the industrial setting of the Site.
- 1-methylnaphthalene was detected in excess of the Controlled Waters criteria in borehole ZC214. There are no UK guidelines for this compound so the RSL of 0.97µg/l has been used (USEPA Regional Screening Level (drinking water standard)), which is considered conservative. The concentration is not considered significant.

Considering the industrial setting of the Site, minor exceedances are not considered overly significant; however, some concentrations of PAH and TPH in groundwater were elevated significantly above the criteria, most notably in areas of oil use and/or storage (e.g. ZC214 and WS6) and the effluent treatment plant (e.g. WS17). As such, DQRA (and potentially localised remediation) is considered likely to be required for these areas (see Section 9.2, Recommendations).

7. GROUND GAS ASSESSMENT

7.1 Ground Gas Assessment Criteria

Ground gas can be produced as a result of the decomposition of organic materials and may also originate from natural sources, such as coal seams and organic rich soils. The principal components of ground gas are methane and carbon dioxide, although other gases may be present in trace concentrations. Ground gas can present a hazard to site occupants and property as result of flammable/explosive hazards, physiological effects, odour and effects on vegetation.

There is no one specific guidance document relating to ground gas measurement methods, risk assessment, and gas protection measures. Several documents have been published since the early 1990s to provide guidance for new developments, some of which have been more recently revised.

The following guidance documents were used in this assessment:

Table 7.1: Ground Gas Assessment Criteria

Ground Gas	Reference Documents
Methane and Carbon Dioxide	*Assessing Risks Posed by Hazardous Ground Gases to Buildings*. Report C665, Construction Industry Research and Information Association (CIRIA), 2007. *Code of Practice for the Design of Protective Measures for Methane and Carbon Dioxide Ground Gases for New Buildings*. BSi 8485:2015. The Building Regulations, Approved Document C: *Site preparation and resistance to contaminants and moisture*, (2004) *Guidance on Evaluation of Development Proposals on Sites where Methane and Carbon Dioxide are Present.* Report Edition No. 4, NHBC, March 2007.
Oxygen	*Waste Management Paper 27 – Guidelines for Building Houses near Landfill Sites*. Department of the Environment 1991.

7.1.1 Methane and Carbon Dioxide

Guidance on undertaking ground gas risk assessment is provided by the Construction Industry Research and Information Association (CIRIA), Report C665 'Assessing Risks Posed by Hazardous Ground Gases to Buildings' (2007). The guidance consolidates the requirement for good practice in site investigation, the collection of relevant data and monitoring programmes in the context of a risk based approach to gas contaminated ground.

Two semi-quantitative methods are set out in the guidance for the assessment of ground gas risk; one method for low rise housing with gardens and the other for all remaining development types, including commercial development.

The appropriate method for this site is the 'Modified Wilson and Card Classification', which uses gas concentrations and borehole flow rates to define a characteristic situation for the site, by calculating a Site Gas Screening Value (SGSV). The SGSV is calculated using a worst case scenario (i.e. the maximum gas concentration and flow rates detected) across the entire site during the monitoring period. The SGSV is calculated for both methane and carbon dioxide, and the 'Characteristic Situation' is derived by comparison with a table relevant to each method. It is important to note that SGSVs are not absolute thresholds but guideline values.

The NHBC has developed a characterisation system similar to Wilson and Card system but is specific to low-rise housing development with a clear ventilated underfloor void. Given that the site is not proposed to be redeveloped with residential housing, this scenario is not applicable and has not been considered further in this risk assessment.

The Building Regulations, Approved Document C (2004) states that where methane concentrations do not exceed 1% and that the floor of the building to be constructed is suspended and ventilated, no further protection needs to be provided. Above 1% by volume there is a need to consider possible measures to prevent gas ingress into new buildings.

Approved Document C also states that there is a need to consider possible measures to prevent gas ingress into new buildings if concentrations of carbon dioxide above 1.5% are detected in the ground, and that measures are definitely required at concentrations above 5%.

7.2 Ground Gas Results

The ground gas concentrations are presented in Appendix 3 of this report and a summary of the ground gas concentrations recorded during the monitoring round of 18th and 20th May 2016 is presented below.

7.2.1 Flow Rates

Flow was not recorded above the instrument's limit of detection (i.e. <0.1l/hr) in any of the monitored locations.

7.2.2 Oxygen

Oxygen concentrations were recorded between 2.8% (WS4) and 20.5% by volume (WS26). Concentrations were recorded below 18% in boreholes WS1, WS2, WS3, WS4, WS6, WS17, WS18, WS24, BH101, BH102 and BH105, which is the minimum concentration required to prevent asphyxiation as stated in WMP27. These boreholes are located in the north-west and south-east of the main production area, and in the far west of the Site. This distribution broadly coincides with areas of deepest overlying superficial deposits and deeper groundwater.

7.2.3 Methane and Carbon Dioxide

Methane was recorded at a concentration of 0.2% by volume in borehole WS30. Methane was not recorded above the instrument detection level (<0.1%) in any of the other monitoring wells.

Carbon dioxide was detected above the instrument detection limit in 13 of the 19 monitoring wells. A maximum recorded concentration of 10.6% by volume was recorded in borehole WS4 during the monitoring round. Concentrations were recorded above the Approved Document C threshold of 1.5% in boreholes WS1, WS2, WS3, WS4, WS6, WS21, WS24, BH101 and BH102.

7.3 Site Gas Screening Value (SGSV)

The Gas Screening Value for the site has been calculated from available data as 0.0106l/hr. This has been calculated by multiplying the maximum gas concentration (carbon dioxide at 10.6% by volume) by the highest sustained flow rate detected at the Site (0.1l/hr).

Typical maximum concentrations have been recorded below threshold levels of 1% by volume for methane and 5% by volume for carbon dioxide; however, due to a maximum recorded carbon dioxide concentration of 10.6% by volume, comparison against the Modified Wilson and Card classification places the Site in Characteristic Situation (CS) 2: low risk where basic gas protection measures are considered necessary. Typical basic gas protection measures include: reinforced concrete cast in situ floor slab with at least 1200g DPM; or beam and block or pre cast concrete slab and minimum 2000g DPM / reinforced gas membrane; with the option to include underfloor venting or pressurisation, depending on use. Gas protection measures would only apply to the construction of new buildings, and would not need to be retrospectively fitted to existing buildings.

The results from an initial round of gas monitoring have not identified widespread elevated ground gas concentrations at the Site; however, areas in the west of the Site and north-west on the production area recorded elevated carbon dioxide and depleted oxygen. These preliminary findings indicate that the Site is suitable for on-going commercial / industrial use, subject to basic ground gas mitigation; however, further gas monitoring would be required to further characterise the ground gas regime prior to any future redevelopment of the Site.

8. SOURCE PATHWAY RECEPTOR RISK ASSESSMENT

8.1 Revised Conceptual Site Model

Using information obtained during this site investigation, the preliminary conceptual site model presented in Section 3.1 has been refined and is described in the table below. Additionally, the revised conceptual site model is presented graphically in Figure 7, Appendix 1.

Table 8.1: Revised Conceptual Site Model

It is noted that the surrounding site uses have a similar and in some cases greater potential for contamination than the Site.

Identified Sources of Contamination

Soil

Concentrations of all analysed soil samples were below the relevant GAC for a commercial / industrial use. However, visual and olfactory evidence of contamination was observed as:

- a strong hydrocarbon odour and an oily sheen within the Made Ground and underlying superficial deposits in WS6, located adjacent north-west of the ammonia compressor house (Building N251);
- black staining and a slight hydrocarbon odour in WS4, located adjacent to reference borehole ZC214, within the former oil storage area;
- localised black staining and a slight hydrocarbon odour in WS3, located north of WS4 and ZC214, adjacent to the northern site boundary;
- a moderate hydrocarbon odour throughout the depth of WS17 with occasional black staining and a sticky substance within the soil, located in the north of the effluent treatment plant;
- a slight hydrocarbon odour and a slight oily sheen within Made Ground and the upper strata of the superficial deposits in WS21, located in the west of the effluent treatment plant;
- a slight hydrocarbon odour within Made Ground in WS19, located in the south of the effluent treatment plant;
- a moderate hydrocarbon odour and oily sheen in WS18, located within the waste storage area; and
- black staining and a slight hydrocarbon odour within the base of the Made Ground in WS22, located adjacent to reference borehole ZC210 in a former bulk storage area.

Additionally, evidence of contamination was present as ash and fragments of clinker, brick and metal in the Made Ground at numerous locations across the Site. Asbestos was positively identified in Made Ground in 4 out of 18 samples tested (as chrysotile cement and amosite free fibres).

Soil headspace screening for volatile organic compounds was recorded using a photo-ionisation detector (PID) for selected soil samples. Significant detections of volatile organic compounds were encountered in association with areas of hydrocarbon odour in WS4, WS6 and WS17.

Groundwater

- Chrysene was recorded slightly above the human health GAC of 0.002mg/l in WS6, at a concentration of 0.00346mg/l. All other PAH compounds were recorded at concentrations below the relevant GAC for human health in a commercial / industrial setting.
- PAH compounds were detected above Controlled Waters screening criteria at three locations: WS6, BH104 and ZC207 (up to 6 PAH compounds in WS6).
- Some TPH fractions were recorded in excess of the relevant GAC for human health, most significantly identified in boreholes WS6, ZC207 and ZC214. Widespread exceedance of the Controlled Waters GAC was identified for TPH.
- Vinyl chloride exceeded the human health GAC for groundwater volatilisation of 0.0628mg/l with a concentration of 0.418mg/l in borehole ZC209. Elevated concentrations of vinyl chloride were only detected in the deeper of the two wells that form the dual installation here. The concentration of vinyl chloride in ZC209 was also considered to exceed the GAC

for Controlled Waters, as the human health criteria was applied in the absence of specific guidance.

- The metals boron, cadmium, lead, nickel, selenium and zinc were all recorded above the GAC for controlled waters in at least one sample; however, all exceedances are considered marginal.
- A slightly elevated pH value of 11.8 was recorded in borehole BH104.

Geology

Made Ground was encountered to depths of up to 2.00m bgl. Where present, Made Ground was observed as black slightly sandy ashy fine to coarse gravel of clinker with fragments of concrete, brick and metal; and/or dark brown slightly sandy gravelly clay with fragments of concrete, brick, coal, clinker and metal.

Superficial deposits were encountered across the majority of the Site and generally comprised firm red brown slightly sandy locally gravelly clay and/or soft to firm grey brown slightly sandy clay (Alluvium / Tidal Flat Deposits). The thickness of superficial deposits was generally at its least in the centre of the production area of the Site, becoming thicker with distance towards the Site boundaries. In the far west of the Site, superficial deposits extended to at least the base of the boreholes at 6.00m bgl.

Bedrock geology was recorded as strong red, yellow, grey and green sandstone conglomerate with cobble sized clasts (Mercia Mudstone Group – Marginal Facies). Bedrock was encountered from a minimum depth of 0.4m bgl (thickness / base depth not proven). Bedrock was encountered in seven of the nine deeper boreholes. The majority of all window sample boreholes terminated on suspected bedrock within 4.00m bgl.

Hydrogeology

A shallow groundwater aquifer was not encountered consistently across the Site; however, there are potentially discontinuous, perched groundwater, recorded as saturated strata. Deep groundwater was encountered at each deeper borehole drilling location, within the sandstone conglomerate and/or overlying alluvial deposits.

Resting groundwater levels were recorded in 16 of the installed monitoring wells; at depths of between 0.54m bgl (WS15) and 3.72m bgl (WS3).

Resting groundwater levels were recorded in the pre-existing monitoring wells at depths of between 0.46m bgl (ZC210) and 3.05m bgl (ZC214).

A complex pattern of groundwater flow direction is present at the Site. There appears to be a groundwater level 'mound' near the centre of the installation from which groundwater flows in all directions; however, overall groundwater flows to the west in the direction of the Cadoxton River and to the south towards the Severn Estuary (approximately 600m distant).

Hydrology

The Site is considered to be located in a setting of moderate-high sensitivity with regard to surface water resources given that the Cadoxton River borders the Site to the north. The Cadoxton River has 'good' chemical quality and 'moderate' ecological quality. There are three surface water abstractions within 2km of the Site, the closest is located 80m north and none are considered to be for sensitive use.

Approximately 50% of the Site in the north is located within an area at risk of flooding. The north of the Site is located within Flood Zone 3 (High Probability); the central region is located within Flood Zone 2 (Medium Probability); and the remainder of the Site is located in Flood Zone 1 (Low Probability).

Potential Pollutant Linkages The following potential pollutant linkages have been identified at the Site and are considered further in the qualitative risk assessment:			**Pollutant Linkage**
Humans (current and future commercial/ industrial site users)	On-site	Volatilisation of groundwater and inhalation.	PL1
	Off-site	Volatilisation of groundwater and inhalation.	PL2

Water Environment	On-site	Lateral and vertical migration of contaminated groundwater.	PL3
	Off-site	Lateral migration of groundwater off-site and to the River Cadoxton, considered likely to be in hydraulic continuity with groundwater.	PL4
Built Environment	On-site	Migration of ground gases into buildings and structures.	PL5

8.2 Qualitative Assessment

The principal sources of contamination, receptors and potential pollutant linkages have been assessed using a qualitative source-pathway-receptor approach and are summarised in Table 8.2 below and Figure 7, Appendix 1.

Table 8.2: Source-Pathway-Receptor Risk Assessment – Commercial Site Use

Potential Contaminant Linkage	Source	Pathways	Receptor	Discussion	Risk Ranking
PL1	PAH, TPH and Volatile Organic Compounds within groundwater	Volatilisation and inhalation	On-site current & future site users	The PAH compound chrysene was detected in borehole WS6 at a concentration of 0.00346mg/l, which marginally exceeds the GAC for human health of 0.002mg/l. As the exceedance is only marginally greater than the GAC, and considering that there are no other PAH exceedances, it is not considered to represent a significant risk to human health. The TPH fraction, Aliphatic C8-C10 was recorded in excess of the GAC for human health (0.43mg/l) in WS6, at a concentration of 3.52mg/l. Aliphatic C10-C12 was recorded in excess of the human health GAC (0.034mg/l) in boreholes ZC207, ZC214 and WS6. A maximum recorded concentration of 30.8mg/l was recorded in WS6. Additionally, Aliphatic C12-C16 was recorded in excess of the GAC (0.00076mg/l) in ZC203, ZC206, ZC214, WS3, WS4 and WS6. In the majority of these cases the exceedance is not considered significant as the GAC is very low, below the laboratory LOD. However, a concentration of 175mg/l was recorded in WS6, significantly greater than other recorded concentrations. Vinyl chloride exceeded the GAC for groundwater volatilisation of 0.0628mg/l in borehole ZC209 with a concentration of 0.418mg/l. Elevated concentrations of vinyl chloride have only been detected in the sample collected from the deeper of the two installed wells at this location. Furthermore, vinyl chloride was not detected in soil or groundwater samples from boreholes BH7-BH9 located in the near in the vicinity of ZC209. Vinyl chloride was not detected in samples from window sample borehole WS1, located adjacent to ZC209.	**Low**, based on the limited on-site activity in the vicinity of the sampling location by current Site users. **Moderate**, to future construction workers and future Site users.

PL2	PAH, TPH and Volatile Organic Compounds within groundwater	Volatilisation and inhalation	Off-site current & future site users	Elevated concentrations of PAHs, TPH fractions and VOCs have been recorded in soil and groundwater at the Site. The extent to which contaminants are migrating would need to be further assessed through detailed quantitative risk assessment (DQRA) in order to determine any potential off-site risks. However, based on the concentrations of determinands detected, the likelihood of significant volatilisation and migration off-site occurring is considered to be low.	**Low to Moderate**
PL3 and PL4	Contaminants identified in the groundwater at concentrations in exceedance of the GAC for Controlled Waters	Lateral and vertical migration of contaminated groundwater	Controlled Waters: groundwater and surface water	The metals boron, cadmium, lead, nickel, selenium and zinc were all recorded above the GAC in at least one sample during groundwater sampling. PAH compounds were detected above Controlled Waters screening criteria at three locations: WS6, BH104 and ZC207 (up to 6 PAH compounds in WS6). TPH was detected at the majority of locations above the conservative UKDWS of 0.01mg/l. Considering the industrial setting of the Site, minor TPH exceedances are not considered overly significant. However, some concentrations were elevated significantly above this criteria; located in ZC214 and WS4 (adjacent boreholes), WS6, WS28, ZC207, WS17. Elevated concentrations coincide with hydrocarbon odours and occasional black staining observed in soil during drilling. The VOCs vinyl chloride and 1,1-dichloroethane were detected in ZC209 only. There are no EQS values for these compounds; as an alternative, the UKDWS for vinyl chloride has been used as the assessment criteria (0.5µg/l). There is no UKDWS for 1,1 dichloroethane; however, the recorded concentration exceeds the international drinking standard (RSL) of 2.4µg/l. Both drinking water standards are considered to be conservative considering the industrial setting of the site. 1-Methylnaphthalene was detected in excess of the Controlled Waters criteria in borehole ZC214.	**Moderate to high**

				Considering the industrial setting of the Site, minor exceedances are not considered overly significant; however, some concentrations of PAH and TPH in groundwater were elevated significantly above the criteria, most notably in areas of oil use and/or storage (e.g. ZC214 and WS6) and the effluent treatment plant (e.g. WS17). *As such, DQRA (and potentially localised remediation) is considered likely to be required for these areas.*	
PL5	Ground gases	Lateral and vertical migration	Current and future Site users	An initial ground gas assessment has been carried out in accordance with CIRIA C665. This has identified a low risk, where basic gas protection measures are considered necessary in the construction of new buildings. However, this is based on only one round of monitoring. Areas in the west of the Site and north-west on the production area recorded elevated carbon dioxide and depleted oxygen. These preliminary findings indicate that the Site is suitable for on-going commercial / industrial use; however, further gas monitoring could be implemented to further characterise the ground gas regime.	**Low,** based upon results from one gas monitoring round

9. CONCLUSIONS AND RECOMMENDATIONS

9.1 Conclusions

A Phase II ESA has been carried out to collect EP Surrender data and to investigate potential areas of concern with respect to the surrender of the Site leases. Specifically, the objectives were as follows:

- collect EP Surrender Data on soil and groundwater for comparison with Reference Data to support the Permit Surrender;
- identify possible remediation requirements in order to return the Installation to a 'satisfactory state' (if required); and
- investigate potential areas of concern (both historical and recent) at the Site in order to consider potential liabilities with respect to surrender of the relevant Site leases.

Our conclusions with respect to each of the above are presented below.

9.1.1 Environmental Permit Surrender Conclusions

Where historical soil data exist for the Installation (i.e. Reference Data, 2006), soil samples were collected from exploratory locations positioned in close proximity to these locations so that direct comparison in soil substance concentrations could be made. Groundwater samples were collected from the 14 existing monitoring wells (where accessible) and compared against existing Reference and SPMP monitoring data.

No significant increases in concentrations were identified in soil samples collected from comparable depths to Reference Data. Minor increases in certain metal concentrations were identified; however, given that all concentrations are in the same order of magnitude, these are considered likely to be due to natural variation in soil. Furthermore, concentrations were found to be similar at shallow and deeper depths, i.e. not only associated with Made Ground.

The TPH concentrations recorded in soil samples were all lower than those detected during Reference Data collection in 2006.

VOCs were only analysed for EP Reference Data in soil from two locations and no VOCs were detected. However, trace concentrations of benzene and toluene were detected in one soil sample collected by Ramboll Environ. The concentrations detected were low and do not exceed the relevant human health screening criteria.

In groundwater, no significant increases were identified when compared with Reference Data. TPH concentrations (where analysed) were less than those detected in Reference Data. Slight increases in magnesium were detected at several locations; however, all were in the same order of magnitude as Reference Data. Similarly, chloride was found to have increased at several locations; however, was not detected at significantly elevated concentrations above the conservative UK DWS (used for comparison in the absence of an EQS).

A trace concentration of the VOC isopropylbenzene was identified at one location; however, this was also detected as trace concentration in 2006.

Annual SPMP groundwater monitoring carried out by Zeon under the Permit, has identified some increasing trends in TPH and PAH concentrations at several monitoring locations; however, the concentrations, despite increasing, are generally below Controlled Waters screening criteria. Some minor exceedances of Controlled Waters screening criteria have been identified and further risk assessment would be required to determine whether or not the concentrations detected represent a risk to Controlled Waters. Discussed further in Section 9.2.1 below.

9.1.2 Site Lease Surrender Conclusions

Exploratory locations have been positioned to investigate potential areas of concern at the Site, based on the findings of the Phase I ESA carried out by Ramboll Environ in May 2015. *It should be noted that there was no Reference Data for these locations for comparison of data.*

Evidence of soil and/ or groundwater contamination was identified in several localised areas summarised as follows:

- WS6: adjacent to the ammonia compressor pumps which are known to have failed in the past resulting in hydraulic oil leakage. Localised soil and groundwater impact with hydrocarbons consistent with hydraulic oil.
- BH104: Near the sulphonic acid tank and tanker off-loading point. Localised elevated concentrations of polycyclic aromatic hydrocarbons (PAHs) and slightly elevated total petroleum hydrocarbons (TPH) in groundwater. Whereas the sulphonic acid tank is not considered to be a likely source of elevated PAHs, concentrations may have resulted from historical spillages near the tanker off-loading point which previously did not have concrete containment.
- ZC214/ WS4: Oil Storage Area, localised hydrocarbon odour in soil and elevated TPH concentrations; and elevated TPH in groundwater. Several potential sources in the oil storage area.
- ZC207/ WS17: North of effluent treatment plant (ETP). In close proximity to a badly cracked drain which may have leaked. Localised hydrocarbon odour and visual observations in soil; and elevated TPH in groundwater.
- WS19: West ETP area. Localised visual evidence of hydrocarbons in soil.
- WS28: Polyblack Crumb Plant (internal). Localised visual dark staining in shallow soil; and minor localised TPH exceedance in groundwater.
- ZC209: West of S75 Warehouse, VOC's vinyl chloride and 1,1-dichloroethane detected in groundwater.

In addition to the above, asbestos was positively identified in Made Ground in 4 out of 18 samples tested (as chrysotile cement and amosite free fibres). Ramboll Environ considers that that the asbestos has a historical origin and is likely to be present in the Made Ground over the wider area which is common with many industrial brownfield sites. E.g. the ACM was found to be present in Made Ground which also contained fragments of clinker, brick and metal originating from historical site uses. There is no human health screening criteria for asbestos in soil and while it remains in-situ there is no pathway to human receptors. There is a potential risk to construction workers when carrying out excavations and as such, the Principal Contractor will be made aware of these findings to that appropriate risk assessment and H&S precautions can be adopted.

The following determinands were found to exceed Controlled Waters screening criteria at one or more location: TPH (various fractions), PAH compounds, VOCs (vinyl chloride and 1,1-dichloroethane), SVOCs (phenol and 1-methylnaphthalene).

Soil concentrations did not exceed human health screening criteria considering a commercial / industrial site use at any locations; however, some hydrocarbon concentrations are considered to be elevated in terms of the potential risk to Controlled Waters, i.e. due to the potential for leaching to groundwater.

Initial ground gas monitoring indicates that basic ground gas protection measures would likely be required for construction of new buildings on the Site. The results have been assessed with reference to CIRIA C665 guidance for commercial developments; however it should be noted that

these findings are based on only one round of gas monitoring and further rounds would be required for any proposed future redevelopment of the Site.

9.2 Recommendations

9.2.1 Environmental Permit Surrender Recommendations

The direct comparison of site surrender data with Reference Data has not identified any significant increases in concentrations in soil or groundwater. However, SPMP monitoring has identified some increasing trends in PAH and TPH concentrations over the years since the Permit commenced. Ramboll Environ recommends that DQRA is carried out for those determinants which have concentrations that both exceed Controlled Water screening criteria and show increasing trends.

This collection of surrender data represents the second stage in the Environmental Permit surrender process: 'collection of Permit Surrender Data, including soil and groundwater analysis and compare against baseline data (where applicable)'.

Ramboll Environ considers that the Surrender Site Condition Report and the Statement of Site Condition can only be compiled following the findings of the DQRA.

The Surrender Site Condition Report, will incorporate Installation surrender data and all other supporting documents, i.e. drainage condition survey, details on-site decommissioning and closure, and removal of pollution risks, i.e. in order to demonstrate that the land is in a 'satisfactory state' (as defined by NRW RGN 9 and Defra Core Guidance). The information gathered will be required by NRW to demonstrate that:

- The permitted activities have stopped;
- Decommissioning is complete, and the pollution risk has been removed; and
- The land is in satisfactory condition.

It should be noted that in order to satisfy the landlord and the surrender of the leases, actions are recommended to further assess / improve soil and groundwater conditions. These recommendations are not considered to be relevant to Permit Surrender since there is no Reference Data for comparison for the locations that require further assessment; and furthermore, the contamination may be related to historical activities at the Site, i.e. not attributable to Zeon.

9.2.2 Site Lease Surrender Recommendations

Ramboll Environ's investigation of potential areas of concern at the Site (both historical and recent) has identified several localised areas where elevated concentrations of determinands are present in soil and/ or groundwater. Where concentrations were found to exceed Controlled Waters and/ or human health screening criteria (considering commercial/ industrial site use), a detailed quantitative risk assessment (DQRA) would be required to determine how significant the concentrations are in terms of risk to the nearest relevant receptor (the Cadoxton River).

DQRA is recommended to be carried out for those contaminants where notable exceedances of the respective screening criteria were identified, i.e. for petroleum hydrocarbons (WS6, WS17, WS28, ZC207 and ZC214/WS4), polycyclic aromatic hydrocarbons (BH104, WS6 and ZC207) and volatile organic compounds (ZC209). The DQRA will identify where the concentrations are elevated such that they represent a risk to the river. In such cases, localised remediation will be required to the remedial target concentrations calculated in the DQRA. Where exceedances of screening criteria are only marginal, it is considered likely that the DQRA will demonstrate that there is no on-going risk to Controlled Water receptors. Overall, the DQRA will be used to determine which areas of the site are required to be remediation to return the Site in a

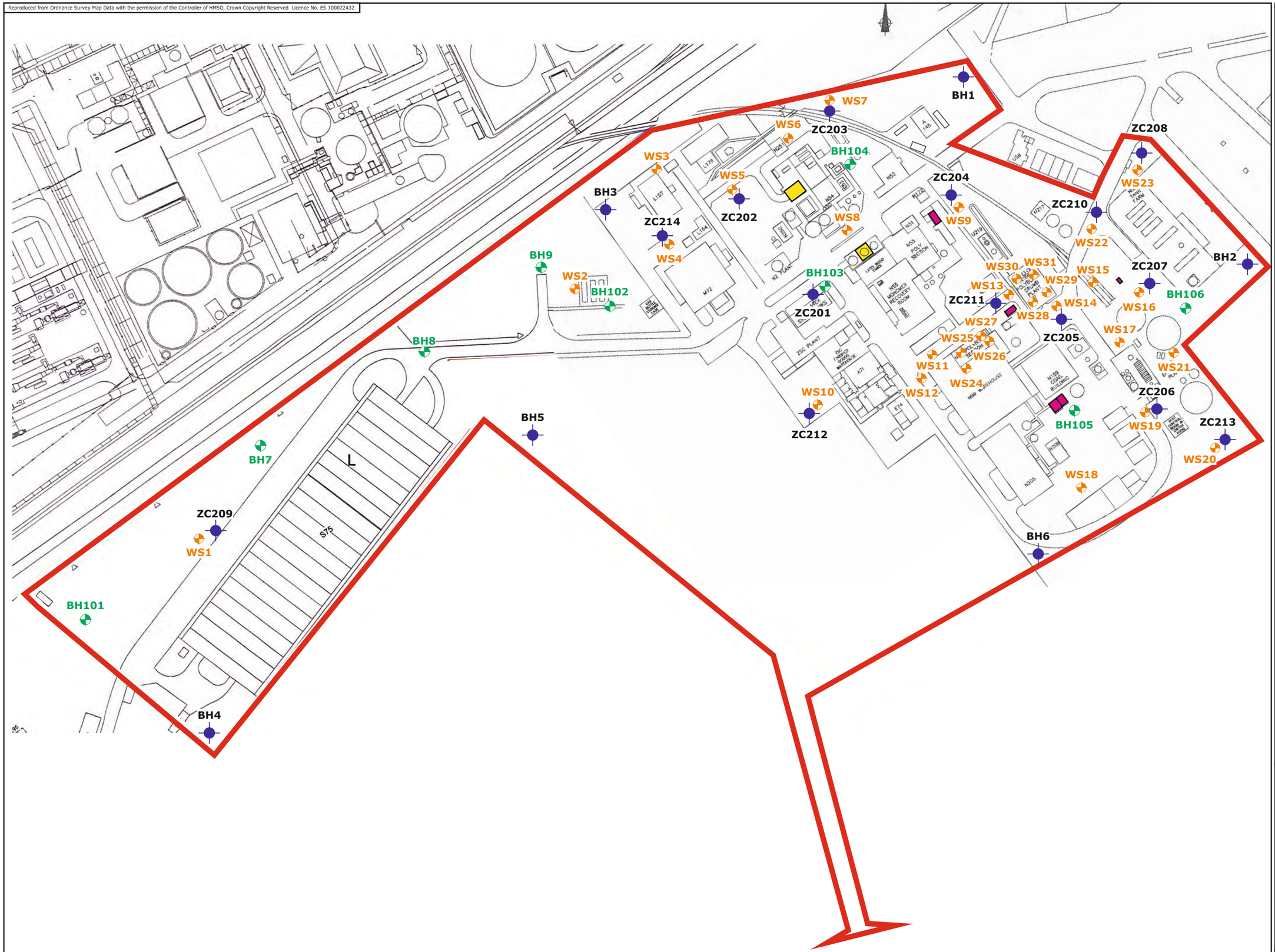
satisfactory condition for the landlord, considering the intended on-going use of the Site for commercial/ industrial purposes.

As mentioned above, the recommendation to undertake DQRA at the aforementioned locations is over and above the requirement to satisfy Environmental Permit Surrender. Predominantly due the fact that contamination may be historical and therefore not related to Zeon's activities; and there is no Reference Data for these areas for comparison.

Remediation work (where required) is considered likely to be limited to localised excavation and treatment or disposal of contaminated soil; and localised treatment of groundwater, either by 'pump and treat' or by the addition of chemicals to enhance degradation, e.g. enhanced natural attenuation for VOCs.

The Principal Contractor should be made aware of the findings within this report in advance of commencing remediation work on-site, so that appropriate H&S measures and risk assessment can be adopted.

APPENDIX 1
FIGURES

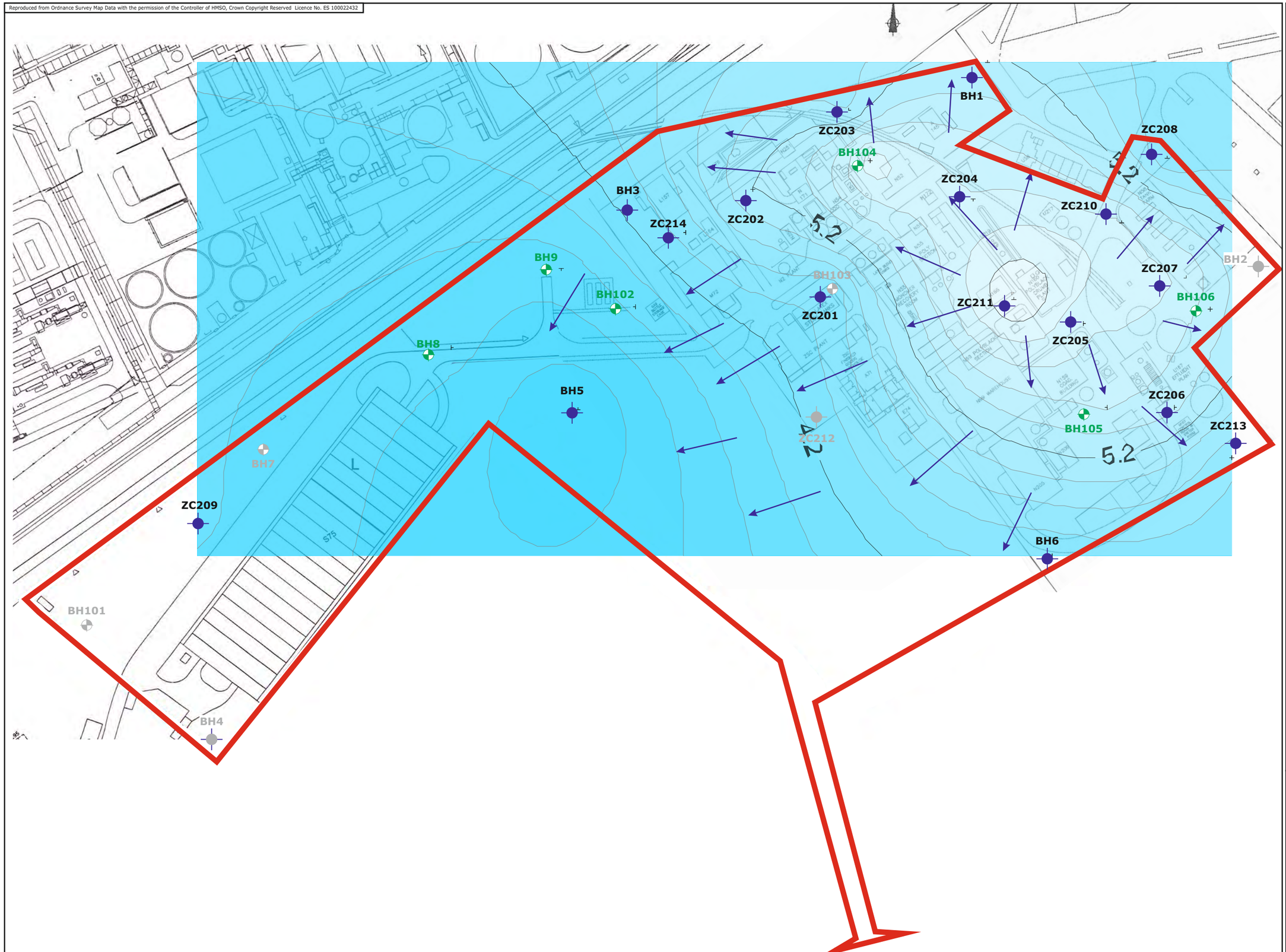


Key

- Site Boundary
- Effluent Pits
- COMAH Areas
- Existing Monitoring Well
- Borehole Location (Deep)
- Window Sample Location (Shallow)

Title	Figure 1: Borehole Locations
Project No.	UK15-21370
Site	Land off Hayes Road, Sully, Vale of Glamorgan
Client	Zeon Chemicals Europe Limited
Date	June 2016
Scale	See scale bar
Issue	1
Drawn by	RH

RAMBOLL ENVIRON



Key

- Site Boundary
- Existing Monitoring Well
- Borehole Location (Deep)
- Window Sample Location (Shallow)

Title	Figure 2: Groundwater Contour Plot
Project No.	UK15-21370
Site	Land off Hayes Road, Sully, Vale of Glamorgan
Client	Zeon Chemicals Europe Limited
Date	June 2016
Scale	See scale bar
Issue	1
Drawn by	RH

RAMBOLL ENVIRON

Location	ZC214	WS4
Date	2006	2016
Depth (m)	0.9	0.9
Arsenic	21	85.8
Cadmium	0.63	0.7
Copper	140	168
Lead	62	67.9
Selenium	ND	0.7
Benzene	ND	0.004
Toluene	ND	0.01

Location	ZC214	WS4
Date	2006	2016
Depth (m)	1.8	1.8
Arsenic	13	15.1
Cadmium	0.53	0.78
Lead	64	79.2
Selenium	ND	0.7
Zinc	130	202.5

Location	ZC214	WS4
Date	2006	2016
Depth (m)	3.6	2.5
Arsenic	7.9	9.9
Barium	37	52.9
Cadmium	30	31.4
Iron	25000	32800
Lead	25	25.4
Zinc	84	102.7

Location	ZC211	WS13
Date	2006	2016
Depth (m)	0.3	0.3
Arsenic	4.1	9
Cadmium	ND	0.33
Chromium	12	27
Copper	8	16.1
Lead	ND	29.3
Selenium	ND	0.6
Zinc	18	85.5

Location	ZC211	WS13
Date	2006	2016
Depth (m)	0.8	0.8
Arsenic	6.1	13.3
Cadmium	ND	0.96
Chromium	21	39
Copper	11	32.7
Lead	14	56.4
Selenium	ND	0.7
Zinc	31	191.4

Location	ZC210	WS22
Date	2006	2016
Depth (m)	0.5	0.6
Arsenic	8.2	13
Cadmium	ND	0.46
Chromium	20	41.4
Lead	40	55
Selenium	0.37	0.5
Zinc	67	149.8

Location	ZC210	WS22
Date	2006	2016
Depth (m)	1.0	1.0
Arsenic	9.3	10.4
Chromium	31	45.8
Lead	30	30.3
Selenium	ND	0.6
Zinc	92	129.8

Location	ZC210	WS22
Date	2006	2016
Depth (m)	1.4	1.2
Chromium	32	43.5
Zinc	97	117.1

Location	ZC212	WS10
Date	2006	2016
Depth (m)	0.2	0.2
Arsenic	8.9	15
Cadmium	ND	1.2
Chromium	19	42.7
Copper	23	33
Lead	25	50.8
Selenium	ND	0.9
Zinc	79	202.8

Location	ZC213	WS20
Date	2006	2016
Depth (m)	0.3	0.3
Iron	2900	25800
Lead	93	109.9
Mercury	1.9	2.26
Zinc	190	263.2

Location	ZC213	WS20
Date	2006	2016
Depth (m)	2.6	2.5
Barium	19	28.1
Zinc	49	62.28

Contaminant concentrations are presented in mg/kg. ND = Not Detected.
Only increases in Reference data are shown.
Other determinands tested (eg VOCs, TPH, formaldehyde, acrylonitrile, catechol) were below Reference Data concentrations.

Key
- Site Boundary
- Effluent Pits
- COMAH Areas
- Existing Monitoring Well
- Borehole Location (Deep)
- Window Sample Location (Shallow)

Title: Figure 3: Soil Reference Data Comparison

Project No.: UK15-21370

Site: Land off Hayes Road, Sully, Vale of Glamorgan

Client: Zeon Chemicals Europe Limited

Date: June 2016

Scale: See scale bar

Issue: 1

Drawn by: RH

RAMBOLL ENVIRON

Location	ZC203	
Date	2006	2016
Magnesium	16	110
Chloride	1,340	5,870
Sulphate	ND	7

Location	ZC204	
Date	2006	2016
Magnesium	11	57.4
Selenium	0.003	0.018
Chloride	79	1,300

Location	ZC214	
Date	2006	2016
Magnesium	16	17
Chloride	29	34
Isopropylbenzene	0.001	0.003

Location	ZC208	
Date	2006	2016
Chloride	103	110

Location	ZC210	
Date	2006	2016
Magnesium	4.8	11.5
Chloride	28	119

Location	ZC207	
Date	2006	2016
Chloride	96	108

Location	ZC201	
Date	2006	2016
Magnesium	4.4	6.6
Sulphate	15	21.9

Location	ZC211	
Date	2006	2016
Magnesium	6.4	6.9
Chloride	17	39
Sulphate	5	5.6

Location	ZC205	
Date	2006	2016
Magnesium	6.9	12
Chloride	40	43

Location	ZC213	
Date	2006	2016
Cadmium	0.0007	0.0014
Copper	ND	0.019
Lead	ND	0.008
Zinc	0.022	0.159

Contaminant concentrations are presented in mg/kg. ND = Not Detected.
Only increases in Reference data are shown.
Other determinands tested (eg VOCs, SVOCs, TPH, formaldehyde, acrylonitrile, catechol) were below Reference Data concentrations.

Key
- Site Boundary
- Effluent Pits
- COMAH Areas
- Existing Monitoring Well
- Borehole Location (Deep)
- Window Sample Location (Shallow)

Title: Figure 4: Groundwater Reference Data Comparison

Project No. UK15-21370

Site: Land off Hayes Road, Sully, Vale of Glamorgan

Client: Zeon Chemicals Europe Limited

Date: June 2016

Scale: See scale bar

Issue: 1 Drawn by: RH

RAMBOLL ENVIRON

WS6	GAC	Conc.
Naphthalene (µg/l)	2	5.51
Phenanthrene (µg/l)	5	87.6
Anthracene (µg/l)	0.1	9.44
Fluoranthene (µg/l)	0.12	5.12
Benzo[a]anthracene (µg/l)	0.029	2.43
Chrysene (µg/l)	2.9	3.46
Ethyl benzene (mg/l)	0.02	0.051
m/p-Xylene (mg/l)	0.03	0.126
o-Xylene (mg/l)	0.03	0.062
Total TPH (mg/l)	0.01	1528

WS6: Strong hydrocarbon odour and black staining, 2.0-2.5m bgl

ZC203	GAC	Conc.
Total TPH (mg/l)	0.01	0.1

BH104	GAC	Conc.
Cadmium (mg/l)	0.00025	0.0003
Lead (mg/l)	0.0072	0.086
pH	6 to 9	11.8
Fluoranthene (µg/l)	0.12	0.275
Benzo[a]anthracene (µg/l)	0.029	0.066
Benzo[b]fluoranthene (µg/l)	0.03	0.094
Indeno[1,2,3-cd]pyrene (µg/l)	0.002	0.026
Benzo[g,h,i]perylene (µg/l)	0.002	0.026
Total TPH (mg/l)	0.01	0.096

BH104: Groundwater dark in colour and high pH

ZC204	GAC	Conc.
Selenium (mg/l)	0.01	0.018
Total TPH (mg/l)	0.01	0.036

ZC210	GAC	Conc.
Total TPH (mg/l)	0.01	0.074

ZC208	GAC	Conc.
Total TPH (mg/l)	0.01	0.047

WS5	GAC	Conc.
Total TPH (mg/l)	0.01	0.011

ZC202	GAC	Conc.
Total TPH (mg/l)	0.01	0.12

WS3	GAC	Conc.
Total TPH (mg/l)	0.01	0.258

WS15	GAC	Conc.
Total TPH (mg/l)	0.01	0.099

ZC214	GAC	Conc.
Total TPH (mg/l)	0.01	1.194
1-Methylnaphthalene (mg/l)	0.00097	0.009

ZC207	GAC	Conc.
Naphthalene (µg/l)	2	4.17
Total TPH (mg/l)	0.01	1.119

WS4	GAC	Conc.
Total TPH (mg/l)	0.01	0.397

WS4: Hydrocarbon odour, 2.0-2.8m bgl

BH106	GAC	Conc.
Nickel (mg/l)	0.02	0.036

WS17	GAC	Conc.
Total TPH (mg/l)	0.01	1.218

WS17: Hydrocarbon odour, sticky, black staining, 0.8-1.5m bgl

ZC209	GAC	Conc.
Boron (mg/l)	2	2.15
Selenium (mg/l)	0.01	0.013
Total TPH (mg/l)	0.01	0.014
Vinyl Chloride (µg/l)	0.5	4.18
1,1-Dichloroethane	2.4	16

WS21	GAC	Conc.
Nickel (mg/l)	0.02	0.033
Cadmium (mg/l)	0.00025	0.0005
Total TPH (mg/l)	0.01	0.109

WS1	GAC	Conc.
Total TPH (mg/l)	0.01	0.192

ZC213	GAC	Conc.
Nickel (mg/l)	0.02	0.039
Cadmium (mg/l)	0.00025	0.0014
Lead (mg/l)	0.0072	0.008
Zinc (mg/l)	0.125	0.159
Total TPH (mg/l)	0.01	0.02

BH102	GAC	Conc.
Total TPH (mg/l)	0.01	0.01

ZC206	GAC	Conc.
Nickel (mg/l)	0.02	0.052
Total TPH (mg/l)	0.01	0.207

ZC201	GAC	Conc.
Nickel (mg/l)	0.02	0.037
Total TPH (mg/l)	0.01	0.011

BH105	GAC	Conc.
Total TPH (mg/l)	0.01	0.113
Phenol (mg/l)	0.0077	0.0094

ZC205	GAC	Conc.
Total TPH (mg/l)	0.01	0.142

BH103	GAC	Conc.
Nickel (mg/l)	0.02	0.031

WS28	GAC	Conc.
Total TPH (mg/l)	0.01	0.929

ZC211	GAC	Conc.
Total TPH (mg/l)	0.01	0.099

WS30	GAC	Conc.
Nickel (mg/l)	0.02	0.022
Total TPH (mg/l)	0.01	0.136

BH101	GAC	Conc.
Total TPH (mg/l)	0.01	0.032

Key

- Site Boundary
- Effluent Pits
- COMAH Areas
- Existing Monitoring Well
- Borehole Location (Deep)
- Window Sample Location (Shallow)
- Localised Remediation and / or DQRA

Blue text: Visual / Olfactory evidence of contamination

- Metal Exceedances
- Inorganic Compound Exceedances
- PAH Exceedances
- TPH Exceedances
- VOC Exceedances
- SVOC Exceedances

Title: Figure 5: Comparison of Concentrations with Controlled Waters Criteria

Project No.: UK15-21370

Site: Land off Hayes Road, Sully, Vale of Glamorgan

Client: Zeon Chemicals Europe Limited

Date: June 2016

Scale: See scale bar

Issue: 1

Drawn by: RH

RAMBOLL ENVIRON

WS6: Strong hydrocarbon odour and black staining, 2.0-2.5m bgl

WS6	GAC	Conc.
Chrysene (µg/l)	2	3.46
TPH Aliphatic >C8-C10 (mg/l)	0.43	3.52
TPH Aliphatic >C10-C12 (mg/l)	0.034	30.8
TPH Aliphatic >C12-C16 (mg/l)	0.00076	175
TPH Aromatic >C12-C16 (mg/l)	5.8	43

WS3	GAC	Conc.
TPH Aliphatic >C12-C16 (mg/l)	0.00076	0.018

ZC203	GAC	Conc.
TPH Aliphatic >C12-C16 (mg/l)	0.00076	0.011

ZC214	GAC	Conc.
TPH Aliphatic >C10-C12 (mg/l)	0.034	0.064
TPH Aliphatic >C12-C16 (mg/l)	0.00076	0.238

ZC207	GAC	Conc.
TPH Aliphatic >C10-C12 (mg/l)	0.034	0.176

WS4	GAC	Conc.
TPH Aliphatic >C12-C16 (mg/l)	0.00076	0.06

WS4: Hydrocarbon odour, 2.0-2.8m bgl

ZC205	GAC	Conc.
TPH Aliphatic >C12-C16 (mg/l)	0.00076	0.055

ZC209	GAC	Conc.
Vinyl Chloride (µg/l)	62.8	418

WS7 WS8 WS5 WS3 WS4 WS2 WS1 WS10 WS11 WS12 WS24 WS25 WS26 WS27 WS28 WS29 WS30 WS31 WS13 WS14 WS15 WS16 WS17 WS18 WS19 WS20 WS21 WS22 WS23 WS9

BH1 BH2 BH3 BH4 BH5 BH6 BH7 BH8 BH9 BH101 BH102 BH103 BH104 BH105 BH106

ZC201 ZC202 ZC203 ZC204 ZC205 ZC206 ZC207 ZC208 ZC209 ZC210 ZC211 ZC212 ZC213 ZC214

Key

- Site Boundary
- Effluent Pits
- COMAH Areas
- Existing Monitoring Well
- Borehole Location (Deep)
- Window Sample Location (Shallow)
- Localised Remediation and / or DQRA

Blue text: Visual / Olfactory evidence of contamination

- PAH Exceedances
- TPH Exceedances
- VOC Exceedances

Title	Figure 6: Comparison of Concentrations with Human Health Criteria
Project No.	UK15-21370
Site	Land off Hayes Road, Sully, Vale of Glamorgan
Client	Zeon Chemicals Europe Limited
Date	June 2016
Scale	See scale bar
Issue	1
Drawn by	RH

RAMBOLL ENVIRON

APPENDIX 2
EXPLORATORY HOLE LOGS

BOREHOLE SAMPLE LOG

Project Number: UK15-21370

ID: BH101

Site: Sully, Vale of Glamorgan

Client: Zeon Chemicals Europe Ltd

Logged By: R Hodgson

Ground Elevation: 5.99m AOD

Co-ordinates: 313791E, 168053N

Date: 03/05/2016

Equipment: Comacchio 305

Diameter: Maximum 140mm

Depth (m)	Strata Description	Depth (m)	Sample
	MADE GROUND: Grass over firm dark brown slightly sandy slightly gravelly silt topsoil.	0.40	0.30m
1.0	MADE GROUND: Loose black slightly sandy very ashy angular fine and medium gravel of clinker.		
	Firm grey brown locally mottled orange slightly sandy CLAY.	1.20	
	Firm and stiff orange brown mottled grey slightly sandy CLAY.		
2.0	Damp below 2.40m bgl.		
3.0		3.00	
	Soft grey brown slightly sandy CLAY/SILT.		3.20m
4.0		4.30	
	Very soft green grey locally mottled black slightly sandy SILT.		
5.0			
6.0		6.00	
	End of Borehole at 6 m bgl.		
7.0			
8.0			
9.0			
10.0			

Headspace PID: ppm v, 0 20 60 100

Well Installation

Water Level: 1.52m, 2.41m

The information contained on this borehole log is for environmental purposes only and cannot be relied upon for geotechnical or any design purposes

Temporary casing details: No casing

Groundwater details: Encountered during drilling at 2.41m bgl. Rest level at 1.52m bgl on 18/05/2016.

Monitoring well standpipe diameter: 50mm

Other comments:

Well installation key: Concrete, Bentonite seal, Arisings, Filter pack, Slotted pipe, Plain pipe

Checked by: L Cleverley

BOREHOLE SAMPLE LOG

Project Number: UK15-21370

ID: BH102

Site: Sully, Vale of Glamorgan

Client: Zeon Chemicals Europe Ltd

Logged By: R Hodgson

Ground Elevation: 7.53m AOD

Co-ordinates: 314040E, 168199N

Date: 03/05/2016 - 04/05/2016

Equipment: Comacchio 305

Diameter: Maximum 140mm

Depth (m)	Symbol	Strata Description	Depth (m)	Sample	Headspace PID (ppm v)	Well Installation	Water Level
0		MADE GROUND: Dense brown slightly sandy gravelly clay with many fragments of brick concrete and clinker. Rare fragments of suspected asbestos containing material (tile). Gravel is subangular and subrounded fine to coarse sandstone.	0.90	0.50m 0.80m 1.00m	0 20 60 100		1.09m
1.0		MADE GROUND: Loose black ashy sandy gravel of angular to subrounded fine and medium shale and sandstone with many fragments of clinker brick and concrete.					
		Stiff red brown slightly sandy CLAY.	2.00				
2.0		Strong red yellow grey and green sandstone conglomerate with cobble sized clasts.					
3.0							
4.0							
5.0							3.68m
6.0			6.00				
		End of Borehole at 6 m bgl.					
7.0							
8.0							
9.0							
10.0							

The information contained on this borehole log is for environmental purposes only and cannot be relied upon for geotechnical or any design purposes

Temporary casing details: Cased to 2.10m bgl

Groundwater details: Recorded during drilling at 1.09m bgl. Rest level at 3.68m bgl on 18/05/2016.

Monitoring well standpipe diameter: 50mm

Other comments:

Well installation key:

Concrete | Bentonite seal | Arisings | Filter pack | Slotted pipe | Plain pipe

Checked by: L Cleverley

BOREHOLE SAMPLE LOG

Project Number: UK15-21370

ID: BH103

Site: Sully, Vale of Glamorgan

Client: Zeon Chemicals Europe Ltd

Logged By: R Hodgson

Ground Elevation: 7.50m AOD

Co-ordinates: 314130E, 168206N

Date: 05/05/2016

Equipment: Comacchio 305

Diameter: Maximum 140mm

Depth (m)	Symbol	Strata Description	Depth (m)	Sample	Headspace PID (ppm v)	Well Installation	Water Level
0		MADE GROUND: Gravel over firm dark brown slightly sandy gravelly clay with many fragments of concrete and brick. Rare fragments of metal.	0.35	0.40m	0.0		
1.0		MADE GROUND: Firm dark brown slightly sandy slightly gravelly clay with many fragments of white shell. Rare fragments of coal.					
2.0		Strong red yellow grey and green sandstone conglomerate with cobble sized clasts.					2.55m
3.0							
4.0							
5.0							
6.0			6.00				
7.0		End of Borehole at 6 m bgl.					
8.0							
9.0							
10.0							

The information contained on this borehole log is for environmental purposes only and cannot be relied upon for geotechnical or any design purposes

Temporary casing details: Cased to 1.20m bgl

Groundwater details: Rest level at 2.55m bgl on 18/05/2016

Monitoring well standpipe diameter: 50mm

Other comments:

Well installation key:

Concrete | Bentonite seal | Arisings | Filter pack | Slotted pipe | Plain pipe

Checked by: L Cleverley

BOREHOLE SAMPLE LOG

Project Number: UK15-21370

ID: BH104

Site: Sully, Vale of Glamorgan

Client: Zeon Chemicals Europe Ltd

Logged By: R Hodgson

Ground Elevation: 7.13m AOD

Co-ordinates: 314149E, 168267N

Date: 06/05/2016

Equipment: Comacchio 305

Diameter: Maximum 140mm

Depth (m)	Strata Description	Depth (m)	Sample	Headspace PID (ppm v)	Well Installation
	MADE GROUND: Concrete (0.22m) over dense red brown slightly clayey slightly sandy subangular fine to coarse gravel of sandstone (sub-base).	0.35	0.50m	0.0	
1.0	MADE GROUND: Angular and subangular cobbles of sandstone.			0.0	
	Very soft dark brown slightly sandy gravelly CLAY with occasional angular and subangular cobbles of sandstone. Gravel is angular and subangular fine to coarse sandstone.	1.20	1.30m	0.0	
2.0	Firm red brown slightly sandy gravelly CLAY. Gravel is angular and subangular fine to coarse sandstone.	1.45			
	Strong red yellow grey and green sandstone conglomerate with cobble sized clasts.				
3.0					
4.0					
5.0					
6.0		6.00			
	End of Borehole at 6 m bgl.				
7.0					
8.0					
9.0					
10.0					

Water Level: ▽ 0.78m, ▼ 0.99m

The information contained on this borehole log is for environmental purposes only and cannot be relied upon for geotechnical or any design purposes

Temporary casing details: Cased to 1.45m

Groundwater details: Groundwater strike recorded during drilling at 0.78m bgl. Rest level at 0.99m bgl on 18/05/2016

Monitoring well standpipe diameter: 50mm

Other comments:

Well installation key: Concrete, Bentonite seal, Arisings, Filter pack, Slotted pipe, Plain pipe

Checked by: L Cleverley

BOREHOLE SAMPLE LOG

Project Number: UK15-21370

ID: BH105

Site: Sully, Vale of Glamorgan

Client: Zeon Chemicals Europe Ltd

Logged By: R Hodgson

Ground Elevation: 6.58m AOD

Co-ordinates: 314258E, 168153N

Date: 06/05/2016

Equipment: Comacchio 305

Diameter: Maximum 140mm

Depth (m)	Symbol	Strata Description	Depth (m)	Sample	Headspace PID (ppm v)	Well Installation	Water Level
0		MADE GROUND: Concrete (0.18m) over dense red brown slightly clayey slightly sandy subangular fine to coarse gravel of sandstone.	0.40	0.50m	0.0		
		MADE GROUND: Soft dark brown slightly sandy gravelly clay. Gravel is angular fine to coarse sandstone.	0.75				
1.0		Strong red grey and green sandstone conglomerate with cobble sized clasts.					
2.0							
3.0							
4.0							
5.0							
6.0			6.00				
		End of Borehole at 6 m bgl.					
7.0							
8.0							
9.0							
10.0							

Headspace PID: ppm v, 0 20 60 100

Water Level: 0.97m

The information contained on this borehole log is for environmental purposes only and cannot be relied upon for geotechnical or any design purposes

Temporary casing details: Cased to 1.20m bgl

Groundwater details: Rest level at 0.97m bgl on 18/05/2016

Monitoring well standpipe diameter: 50mm

Other comments:

Well installation key:

Concrete | Bentonite seal | Arisings | Filter pack | Slotted pipe | Plain pipe

Checked by: L Cleverley

BOREHOLE SAMPLE LOG

Project Number: UK15-21370

ID: BH106

Site: Sully, Vale of Glamorgan

Client: Zeon Chemicals Europe Ltd

Logged By: R Hodgson

Ground Elevation: 6.26m AOD

Co-ordinates: 314306E, 168198N

Date: 09/05/2016

Equipment: Comacchio 305

Diameter: Maximum 140mm

Depth (m)	Symbol	Strata Description	Depth (m)	Sample	Headspace PID (ppm v)	Well Installation	Water Level
0		MADE GROUND: Grass and concrete (0.20m) over dense red brown slightly clayey subangular fine to coarse gravel of sandstone with many fragments of brick and concrete.	0.50	0.60m	0.0		
1.0		Firm and stiff red brown slightly sandy slightly gravelly CLAY.		1.50m	0.0		
2.0			2.15		0.0		
3.0		Strong red yellow grey and green sandstone conglomerate with cobble sized clasts.			0.0		
4.0							
5.0							
6.0			6.00				
7.0		End of Borehole at 6 m bgl.					
8.0							
9.0							
10.0							

Headspace PID: 0 20 60 100

Water Level: 0.76m

The information contained on this borehole log is for environmental purposes only and cannot be relied upon for geotechnical or any design purposes

Temporary casing details: Cased to 2.15m bgl

Groundwater details: Rest level at 0.76m bgl on 18/05/2016

Monitoring well standpipe diameter: 50mm

Other comments:

Well installation key:

Concrete | Bentonite seal | Arisings | Filter pack | Slotted pipe | Plain pipe

Checked by: L Cleverley

BOREHOLE SAMPLE LOG

RAMBOLL ENVIRON

Project Number: UK15-21370

Ground Elevation: 5.74m AOD

ID: BH7

Co-ordinates: 313873E, 168133N

Site: Sully, Vale of Glamorgan

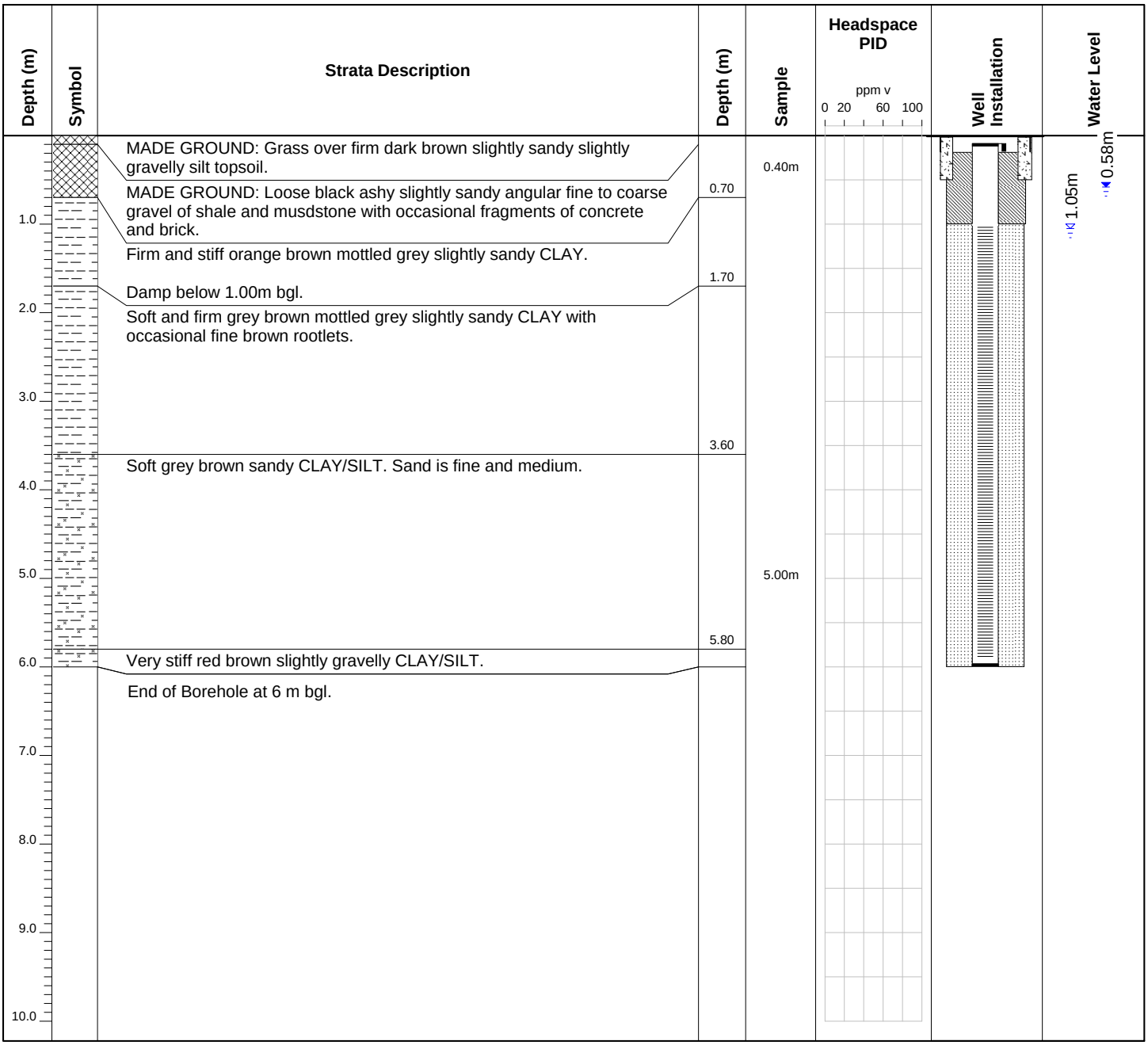
Date: 03/05/2016

Client: Zeon Chemicals Europe Ltd

Equipment: Comacchio 305

Logged By: R Hodgson

Diameter: Maximum 140mm



The information contained on this borehole log is for environmental purposes only and cannot be relied upon for geotechnical or any design purposes

Temporary casing details: Cased to 2.50m bgl

Groundwater details: Groundwater strike during drilling at 1.05m bgl. Rest level at 0.58m bgl on 16/05/2016

Monitoring well standpipe diameter: 50mm

Other comments:

Well installation key:

Concrete | Bentonite seal | Arisings | Filter pack | Slotted pipe | Plain pipe

Checked by: L Cleverley

BOREHOLE SAMPLE LOG

RAMBOLL ENVIRON

Project Number: UK15-21370

ID: BH8

Site: Sully, Vale of Glamorgan

Client: Zeon Chemicals Europe Ltd

Logged By: R Hodgson

Ground Elevation: 6.68m AOD

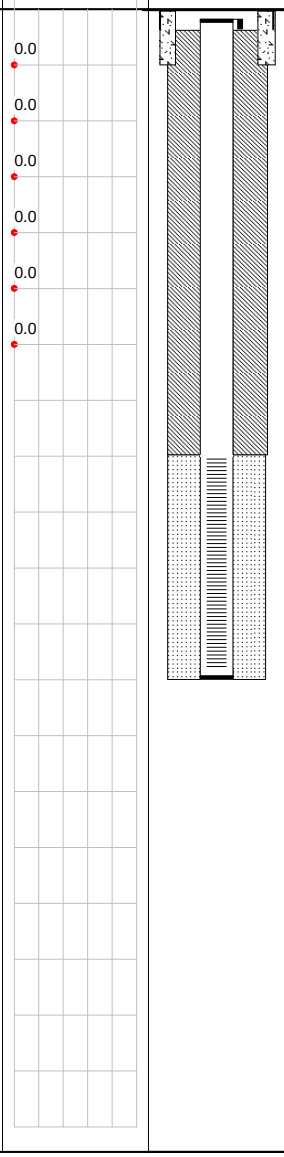
Co-ordinates: 313956E, 168180N

Date: 04/05/2016 - 05/05/2016

Equipment: Comacchio 305

Diameter: Maximum 140mm

Depth (m)	Strata Description	Depth (m)	Sample
0.0	MADE GROUND: Concrete (0.16m) over dense light brown slightly sandy angular and subangular fine to coarse gravel of sandstone with occasional subangular cobbles of snadstone.	0.80	1.50m
1.0	MADE GROUND: Firm dark brown slightly sandy slightly gravelly clay with occasional fragments of brick and black rootlets.	1.40	
	Stiff grey brown slightly sandy slightly gravelly CLAY.	2.80	
3.0	Soft grey brown mottled black slightly sandy CLAY/SILT.	3.45	
4.0	Strong red yellow grey and green sandstone conglomerate with cobble sized clasts.	6.00	
6.0	End of Borehole at 6 m bgl.		
7.0			
8.0			
9.0			
10.0			



The information contained on this borehole log is for environmental purposes only and cannot be relied upon for geotechnical or any design purposes

Temporary casing details: Cased to 1.14m bgl

Groundwater details: Recorded during drilling at 2.86m bgl. Rest level at 3.00m bgl on 16/05/2016

Monitoring well standpipe diameter: 50mm

Other comments:

Well installation key:

Concrete | Bentonite seal | Arisings | Filter pack | Slotted pipe | Plain pipe

Checked by: L Cleverley

BOREHOLE SAMPLE LOG

Project Number: UK15-21370

ID: BH9

Site: Sully, Vale of Glamorgan

Client: Zeon Chemicals Europe Ltd

Logged By: R Hodgson

Ground Elevation: 7.33m AOD

Co-ordinates: 314006E, 168217N

Date: 05/05/2016

Equipment: Comacchio 305

Diameter: Maximum 140mm

Depth (m)	Strata Description	Depth (m)	Sample
0.0	MADE GROUND: Firm dark brown slightly sandy slightly gravelly silt topsoil.		
	MADE GROUND: Firm red brown locally black slightly sandy gravelly clay with many fragments of concrete brick and metal. Gravel is angular and subangular fine to coarse sandstone.		1.00m
		1.70	
2.0	Firm and stiff dark grey brown locally mottled orange slightly sandy CLAY.		
		3.20	
	Soft green grey mottled black slightly gravelly CLAY/SILT with a slight organic alluvial odour.	3.45	3.40m
4.0	Strong red yellow grey and green sandstone conglomerate with cobble sized clasts.		
		6.00	
6.0	End of Borehole at 6 m bgl.		

Headspace PID (ppm v): 0 20 60 100 — 0.0, 0.0, 0.0, 0.0, 0.0, 0.0

Well Installation

Water Level: 3.65m

The information contained on this borehole log is for environmental purposes only and cannot be relied upon for geotechnical or any design purposes

Temporary casing details: Cased to 3.45m bgl

Groundwater details: Rest level at 3.65m bgl on 16/05/2016

Monitoring well standpipe diameter: 50mm

Other comments:

Well installation key: Concrete, Bentonite seal, Arisings, Filter pack, Slotted pipe, Plain pipe

Checked by: L Cleverley

WINDOW SAMPLE LOG

RAMBOLL ENVIRON

Project Number: UK15-21370

ID: WS1

Site: Sully, Vale of Glamorgan

Client: Zeon Chemicals Europe Ltd

Logged By: R Hodgson

Ground Elevation: 5.93m AOD

Co-ordinates: 313836E, 168099N

Date: 13/05/2016

Equipment: Dando Terrier

Diameter: 110mm max

Depth (m)	Symbol	Strata Description	Depth (m)	Sample	Headspace PID (ppm v)	Well Installation	Water Level
		MADE GROUND: Dark brown slightly gravelly clay with occasional fragments of brick and coal.	0.20		0.0		
		MADE GROUND: Black ashy sandy subangular and subrounded fine to coarse gravel of sandstone with many fragments of clinker and coal.	0.80		0.0		
1.0		Stiff dark green brown CLAY. Firm grey brown mottled orange brown and grey CLAY. Soft and wet below 2.00m bgl with a possible slight oily sheen on surface.		1.00m	0.0		
2.0					0.1		
3.0		Very soft grey brown sandy CLAY with a slight oily sheen and slight organic alluvial odour.	3.00	3.00m	0.0		
4.0		End of Borehole at 4 m bgl.	4.00	4.00m	0.0		1.69m ▽ 1.50m
5.0							

The information contained on this borehole log is for environmental purposes only and cannot be relied upon for geotechnical or any design purposes

Temporary casing details: Cased to 4.00m bgl

Groundwater details: Groundwater strike at 1.69m bgl during drilling. Rest level at 1.50m bgl on 18/05/2016

Monitoring well standpipe diameter: 50mm

Other comments:

Well installation key:

Concrete | Bentonite seal | Arisings | Filter pack | Slotted pipe | Plain pipe

Checked by: L Cleverley

WINDOW SAMPLE LOG

RAMBOLL ENVIRON

Project Number: UK15-21370

ID: WS2

Site: Sully, Vale of Glamorgan

Client: Zeon Chemicals Europe Ltd

Logged By: R Hodgson

Ground Elevation: 7.54m AOD

Co-ordinates: 314023E, 168209N

Date: 13/05/2016

Equipment: Dando Terrier

Diameter: 110mm max

Depth (m)	Symbol	Strata Description	Depth (m)	Sample	Headspace PID (ppm v)	Well Installation	Water Level
		MADE GROUND: Black ashy sandy subangular and subrounded fine and medium gravel of shale and sandstone with many fragments of clinker and coal.	0.40	0.30m	0.0		
1.0		Stiff brown slightly gravelly CLAY with subangular cobbles of sandstone. Gravel is angular and subangular fine to coarse sandstone.	1.30		0.0		
2.0		Stiff dark brown mottled orange brown and grey slightly sandy slightly gravelly CLAY.	2.45	2.00m	0.0		
		End of Borehole at 2.45 m bgl.			0.0		
3.0							
4.0							
5.0							

The information contained on this borehole log is for environmental purposes only and cannot be relied upon for geotechnical or any design purposes

Temporary casing details: Cased to 1.00m bgl

Groundwater details: Groundwater not encountered

Monitoring well standpipe diameter: 50mm

Other comments: Window sample borehole terminated on suspected bedrock

Well installation key:

Concrete | Bentonite seal | Arisings | Filter pack | Slotted pipe | Plain pipe

Checked by: L Cleverley

WINDOW SAMPLE LOG

RAMBOLL ENVIRON

Project Number: UK15-21370

Ground Elevation: 7.51m AOD

ID: WS3

Co-ordinates: 314061E, 168266N

Site: Sully, Vale of Glamorgan

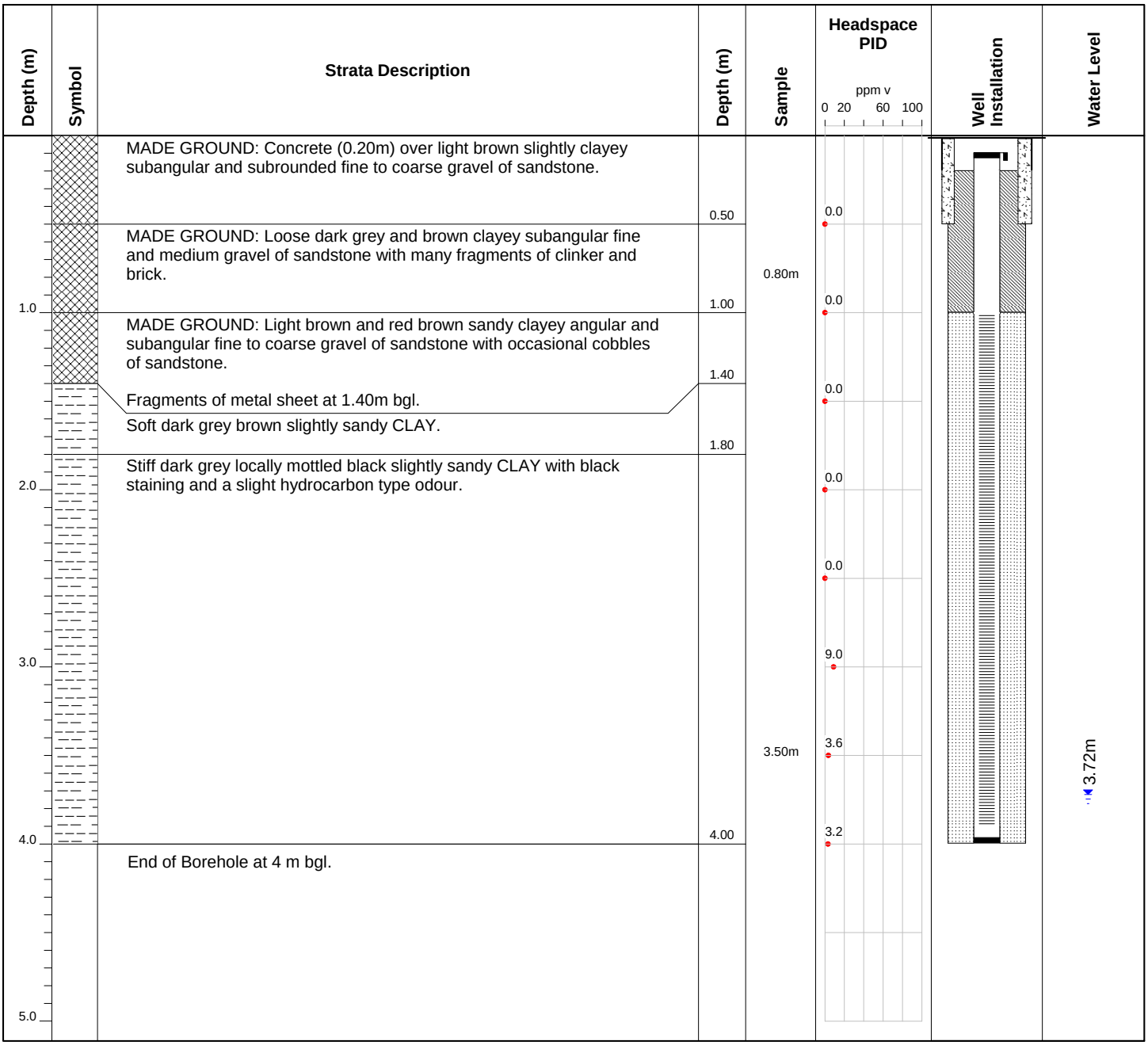
Date: 12/05/2016

Client: Zeon Chemicals Europe Ltd

Equipment: Dando Terrier

Logged By: R Hodgson

Diameter: 110mm max



The information contained on this borehole log is for environmental purposes only and cannot be relied upon for geotechnical or any design purposes

Temporary casing details: Cased to 2.00m bgl

Groundwater details: Rest level at 3.72m bgl on 18/05/2016

Monitoring well standpipe diameter: 50mm

Other comments:

Well installation key:

Concrete | Bentonite seal | Arisings | Filter pack | Slotted pipe | Plain pipe

Checked by: L Cleverley

Sheet 1 of 1

WINDOW SAMPLE LOG

RAMBOLL ENVIRON

Project Number: UK15-21370

Ground Elevation: 7.61m AOD

ID: WS4

Co-ordinates: 314064E, 168233N

Site: Sully, Vale of Glamorgan

Date: 12/05/2016

Client: Zeon Chemicals Europe Ltd

Equipment: Dando Terrier

Logged By: R Hodgson

Diameter: 110mm max

Depth (m)	Strata Description	Depth (m)	Sample	Headspace PID (ppm v)	Well Installation	Water Level
	MADE GROUND: Concrete (0.11m) over light orange brown slightly clayey angular and subangular fine to coarse gravel of sandstone.	0.30		0.0		
	MADE GROUND: Firm dark grey brown and orange brown slightly sandy slightly gravelly clay with occasional fragments of coal and clinker.	0.65				
1.0	MADE GROUND: Black ashy very sandy angular and subangular fine and medium gravel of sandstone with many fragments of coal and clinker.	1.00	0.90m	0.0		
	MADE GROUND: Firm and stiff dark orange brown slightly sandy slightly gravelly clay with occasional fragments of coal.	1.65		0.1		
	Soft and firm grey brown slightly sandy CLAY.	2.00	1.80m	>100.0		
2.0	Firm and stiff grey brown slightly sandy CLAY with black staining and a slight hydrocarbon type odour.	2.55	2.40m	>100.0		
	Firm orange brown locally black slightly sandy CLAY with a slight hydrocarbon type odour.	2.80				
3.0	Medium dense white and brown very clayey angular and subangular fine to coarse gravel of sandstone.	3.00		55.1		1.60m
	End of Borehole at 3 m bgl.					
4.0						
5.0						

The information contained on this borehole log is for environmental purposes only and cannot be relied upon for geotechnical or any design purposes

Temporary casing details: Cased to 2.00m bgl

Groundwater details: Rest level at 1.60m bgl on 18/05/2016

Monitoring well standpipe diameter: 50mm

Other comments: Window sample borehole terminated on suspected bedrock

Well installation key:

Concrete | Bentonite seal | Arisings | Filter pack | Slotted pipe | Plain pipe

Checked by: L Cleverley

WINDOW SAMPLE LOG

RAMBOLL ENVIRON

Project Number: UK15-21370

Ground Elevation: 7.37m AOD

ID: WS5

Co-ordinates: 314094E, 168255N

Site: Sully, Vale of Glamorgan

Date: 12/05/2016

Client: Zeon Chemicals Europe Ltd

Equipment: Dando Terrier

Logged By: R Hodgson

Diameter: 110mm max

Depth (m)	Symbol	Strata Description	Depth (m)	Sample	Headspace PID (ppm v)	Well Installation	Water Level
		MADE GROUND: Gravel over red brown slightly clayey angular and subangular fine to coarse gravel of sandstone.	0.50	0.30m	0.0		
1.0		MADE GROUND: Soft dark brown slightly sandy gravelly clay with many fragments of clinker and coal.	1.20	0.90m	0.0		
2.0		Stiff dark brown and red brown slightly gravelly CLAY.	2.20		0.0		2.10m
		End of Borehole at 2.2 m bgl.			0.0		
3.0							
4.0							
5.0							

The information contained on this borehole log is for environmental purposes only and cannot be relied upon for geotechnical or any design purposes

Temporary casing details: Cased to 1.0m bgl

Groundwater details: Groundwater strike at 2.10m bgl during drilling.

Monitoring well standpipe diameter: Not installed

Other comments: Window sample borehole terminated on suspected bedrock

Well installation key:

Concrete | Bentonite seal | Arisings | Filter pack | Slotted pipe | Plain pipe

Checked by: L Cleverley

WINDOW SAMPLE LOG

RAMBOLL ENVIRON

Project Number: UK15-21370

Ground Elevation: 7.30m AOD

ID: WS6

Co-ordinates: 314122E, 168279N

Site: Sully, Vale of Glamorgan

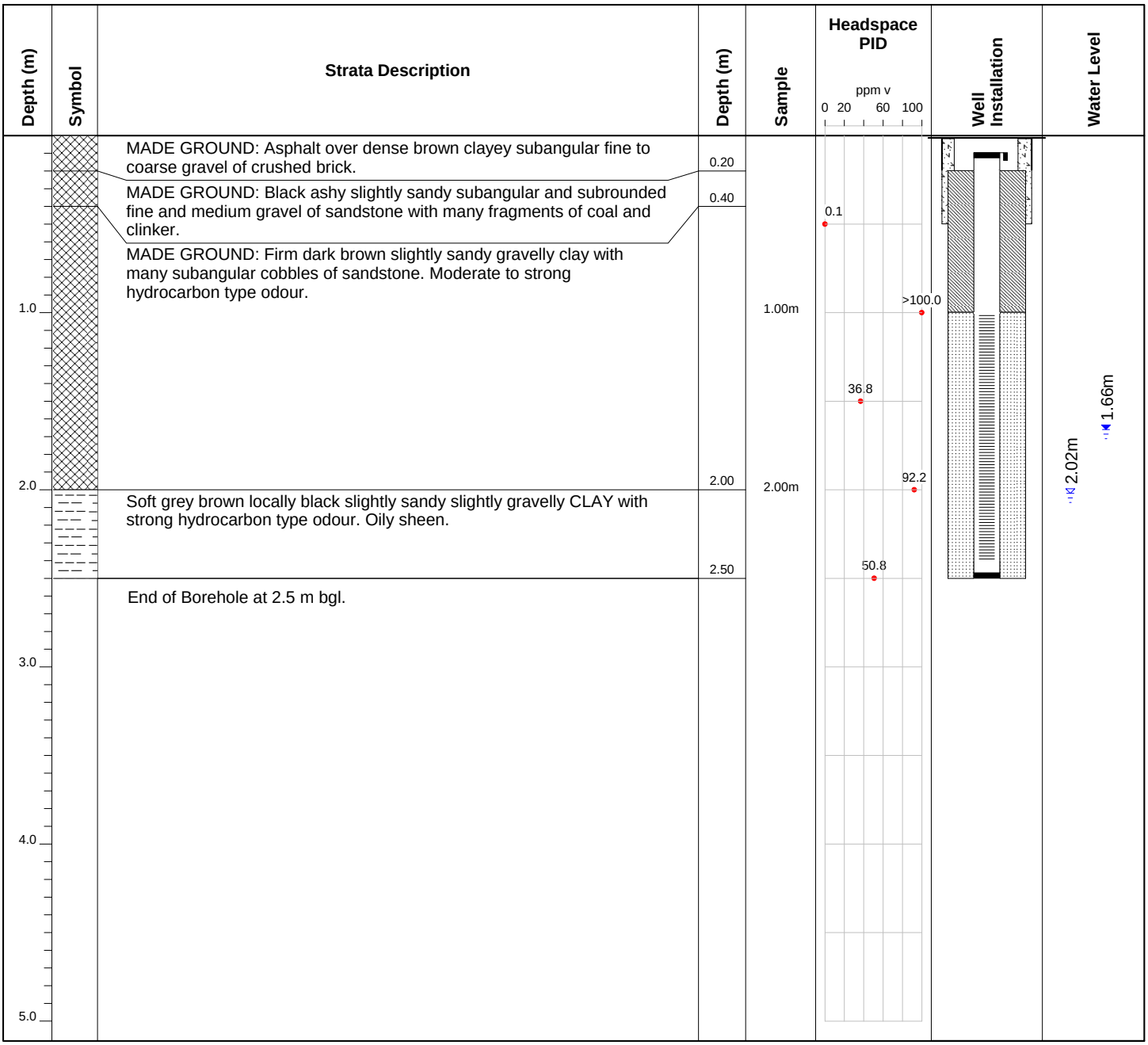
Date: 12/05/2016

Client: Zeon Chemicals Europe Ltd

Equipment: Dando Terrier

Logged By: R Hodgson

Diameter: 110mm max



The information contained on this borehole log is for environmental purposes only and cannot be relied upon for geotechnical or any design purposes

Temporary casing details: Cased to 1.00m bgl

Groundwater details: Groundwater strike at 2.02m bgl during drilling. Rest level at 1.66m bgl on 18/05/2016

Monitoring well standpipe diameter: 50mm

Other comments: Window sample borehole terminated on suspected bedrock

Well installation key:

Concrete | Bentonite seal | Arisings | Filter pack | Slotted pipe | Plain pipe

Checked by: L Cleverley

WINDOW SAMPLE LOG

RAMBOLL ENVIRON

Project Number: UK15-21370

Ground Elevation: 7.33m AOD

ID: WS7

Co-ordinates: 314140E, 168293N

Site: Sully, Vale of Glamorgan

Date: 13/05/2016

Client: Zeon Chemicals Europe Ltd

Equipment: Dando Terrier

Logged By: R Hodgson

Diameter: 110mm max

Depth (m)	Symbol	Strata Description	Depth (m)	Sample	Headspace PID (ppm v, 0 20 60 100)	Well Installation	Water Level
		MADE GROUND: Asphalt over black ashy sandy gravel of subangular and subrounded fine and medium shale and sandstone with many fragments of clinker and coal.	0.50	0.30m	0.0		
1.0		Stiff orange brown and dark brown slightly sandy slightly gravelly CLAY with occasional subangular cobbles of sandstone belwo 0.90m bgl. No recovery between 1.00m and 1.70m bgl due to cobble sized obstruction.	1.70	0.80m	0.0		
2.0		End of Borehole at 1.7 m bgl.					
3.0							
4.0							
5.0							

The information contained on this borehole log is for environmental purposes only and cannot be relied upon for geotechnical or any design purposes

Temporary casing details: Cased to 1.00m bgl

Groundwater details: Groundwater not encountered

Monitoring well standpipe diameter: Not installed

Other comments: Window sample borehole terminated on suspected bedrock

Well installation key:

Concrete | Bentonite seal | Arisings | Filter pack | Slotted pipe | Plain pipe

Checked by: L Cleverley

WINDOW SAMPLE LOG

RAMBOLL ENVIRON

Project Number: UK15-21370

Ground Elevation: 7.00m AOD

ID: WS8

Co-ordinates: 314151E, 168236N

Site: Sully, Vale of Glamorgan

Date: 12/05/2016

Client: Zeon Chemicals Europe Ltd

Equipment: Dando Terrier

Logged By: R Hodgson

Diameter: 110mm max

Depth (m)	Symbol	Strata Description	Depth (m)	Sample	Headspace PID (ppm v)	Well Installation	Water Level
		MADE GROUND: Concrete (0.20m) over soft dark grey brown slightly sandy gravelly clay with occasional fragments of brick. Gravel is subangular and subrounded fine to coarse sandstone.	0.35	0.30m 0.40m	0.0 0.0		
		Stiff dark brown slightly sandy CLAY.	0.50				
		Firm red brown slightly sandy gravelly CLAY. Gravel is angular and subangular fine to coarse sandstone.	0.90		0.0		
1.0		End of Borehole at 0.9 m bgl.					
2.0							
3.0							
4.0							
5.0							

The information contained on this borehole log is for environmental purposes only and cannot be relied upon for geotechnical or any design purposes

Temporary casing details: Cased to 0.80m bgl

Groundwater details: Rest level at m bgl on 18/05/2016

Monitoring well standpipe diameter: Not Installed

Other comments: Window sample borehole terminated on suspected bedrock

Well installation key:

Concrete | Bentonite seal | Arisings | Filter pack | Slotted pipe | Plain pipe

Checked by: L Cleverley

WINDOW SAMPLE LOG

RAMBOLL ENVIRON

Project Number: UK15-21370

Ground Elevation: 7.05m AOD

ID: WS9

Co-ordinates: 314194E, 168249N

Site: Sully, Vale of Glamorgan

Date: 13/05/2016

Client: Zeon Chemicals Europe Ltd

Equipment: Dando Terrier

Logged By: R Hodgson

Diameter: 110mm max

Depth (m)	Symbol	Strata Description	Depth (m)	Sample	Headspace PID (ppm v)	Well Installation	Water Level
0		MADE GROUND: Firm dark brown slightly sandy gravelly clay with many fragments of coal and brick. Many subangular cobbles of sandstone.		0.30m	0.3		
1.0			1.10	1.00m	0.1		
		Stiff dark brown slightly sandy gravelly CLAY with occasional subrounded cobbles of sandstone. Gravel is angular and subangular fine to coarse sandstone.	1.70		0.0		
2.0		End of Borehole at 1.7 m bgl.					
3.0							
4.0							
5.0							

Headspace PID: ppm v, 0 20 60 100

The information contained on this borehole log is for environmental purposes only and cannot be relied upon for geotechnical or any design purposes

Temporary casing details: Cased to 1.00m bgl

Groundwater details: Groundwater not encountered

Monitoring well standpipe diameter: Not installed

Other comments: Window sample borehole terminated on suspected bedrock

Well installation key:

Concrete | Bentonite seal | Arisings | Filter pack | Slotted pipe | Plain pipe

Checked by: L Cleverley

WINDOW SAMPLE LOG

RAMBOLL ENVIRON

Project Number: UK15-21370

ID: WS10

Site: Sully, Vale of Glamorgan

Client: Zeon Chemicals Europe Ltd

Logged By: R Hodgson

Ground Elevation: 8.50m AOD

Co-ordinates: 314126E, 168154N

Date: 10/05/2016

Equipment: Dando Terrier

Diameter: 110mm max

Depth (m)	Symbol	Strata Description	Depth (m)	Sample	Headspace PID (ppm v, 0 20 60 100)	Well Installation	Water Level
		MADE GROUND: Grass over firm dark brown slightly sandy clay/silt topsoil.	0.20	0.20m	0.0		
		Firm orange brown very gravelly CLAY. Gravel is angular and subangular fine to coarse sandstone.	0.40				
		End of Borehole at 0.4 m bgl.					

1.0

2.0

3.0

4.0

5.0

The information contained on this borehole log is for environmental purposes only and cannot be relied upon for geotechnical or any design purposes

Temporary casing details: None

Groundwater details: Groundwater not encountered

Monitoring well standpipe diameter: Not installed

Other comments: Window sample borehole terminated on suspected bedrock

Well installation key:

Concrete | Bentonite seal | Arisings | Filter pack | Slotted pipe | Plain pipe

Checked by: L Cleverley

WINDOW SAMPLE LOG

RAMBOLL ENVIRON

Project Number: UK15-21370

ID: WS11

Site: Sully, Vale of Glamorgan

Client: Zeon Chemicals Europe Ltd

Logged By: T Loftus

Ground Elevation: NA

Co-ordinates: NA

Date: 11/05/2016

Equipment: Dando Terrier

Diameter: 110mm max

Depth (m)	Symbol	Strata Description	Depth (m)	Sample	Headspace PID (ppm v, 0 20 60 100)	Well Installation	Water Level
		MADE GROUND: Concrete (0.24m).	0.24	0.30m	1.1		
		MADE GROUND: Light brown slightly clayey sandy subangular and subrounded fine to coarse gravel of sandstone.					
		MADE GROUND: Concrete.	0.68				
		End of Borehole at 0.68 m bgl.					
1.0							
2.0							
3.0							
4.0							
5.0							

The information contained on this borehole log is for environmental purposes only and cannot be relied upon for geotechnical or any design purposes

Temporary casing details: No casing

Groundwater details: Groundwater not encountered

Monitoring well standpipe diameter: Not installed

Other comments: Window sample borehole terminated on below ground obsruction

Well installation key:

Concrete | Bentonite seal | Arisings | Filter pack | Slotted pipe | Plain pipe

Checked by: L Cleverley

WINDOW SAMPLE LOG

RAMBOLL ENVIRON

Project Number: UK15-21370

ID: WS12

Site: Sully, Vale of Glamorgan

Client: Zeon Chemicals Europe Ltd

Logged By: T Loftus

Ground Elevation: NA

Co-ordinates: NA

Date: 11/05/2016

Equipment: Dando Terrier

Diameter: 110mm max

Depth (m)	Symbol	Strata Description	Depth (m)	Sample	Headspace PID (ppm v, 0 20 60 100)	Well Installation	Water Level
		MADE GROUND: Concrete (0.24m).	0.20	0.30m	2.7		
		MADE GROUND: Light brown slightly clayey subangular and subrounded fine to coarse gravel of sandstone.	0.40				
		End of Borehole at 0.4 m bgl.					
1.0							
2.0							
3.0							
4.0							
5.0							

The information contained on this borehole log is for environmental purposes only and cannot be relied upon for geotechnical or any design purposes

Temporary casing details: No casing

Groundwater details: Groundwater not encountered

Monitoring well standpipe diameter: Not installed

Other comments: Window sample borehole terminated on below ground obstruction

Well installation key:

Concrete | Bentonite seal | Arisings | Filter pack | Slotted pipe | Plain pipe

Checked by: L Cleverley

WINDOW SAMPLE LOG

RAMBOLL ENVIRON

Project Number: UK15-21370

Ground Elevation: 7.07m AOD

ID: WS13

Co-ordinates: 314211E, 168207N

Site: Sully, Vale of Glamorgan

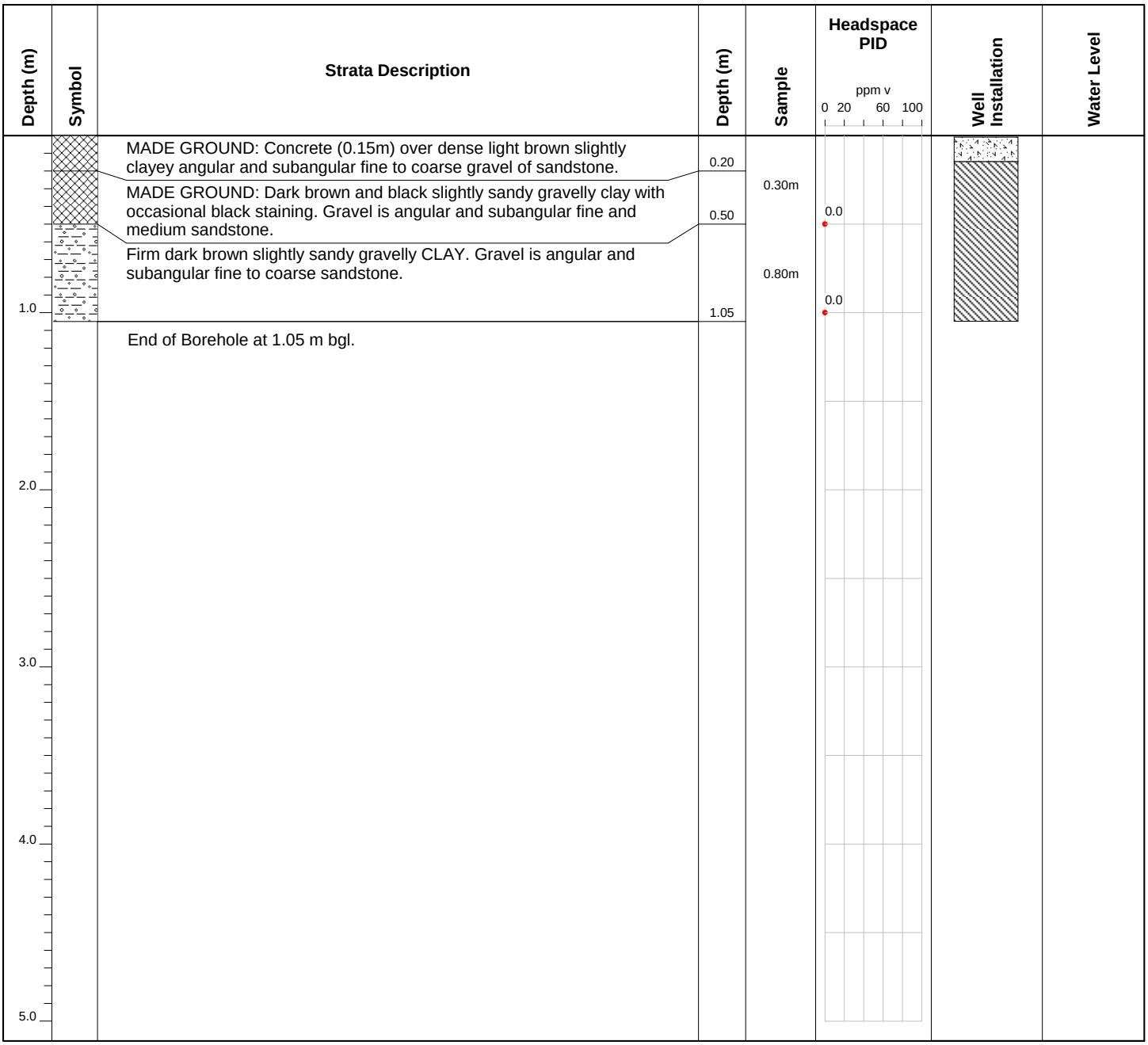
Date: 10/05/2016

Client: Zeon Chemicals Europe Ltd

Equipment: Dando Terrier

Logged By: R Hodgson

Diameter: 110mm max



The information contained on this borehole log is for environmental purposes only and cannot be relied upon for geotechnical or any design purposes

Temporary casing details: Cased to 1.00m bgl

Groundwater details: Groundwater not encountered

Monitoring well standpipe diameter: Not installed

Other comments: Window sample borehole terminated on suspected bedrock

Well installation key:

Concrete | Bentonite seal | Arisings | Filter pack | Slotted pipe | Plain pipe

Checked by: L Cleverley

WINDOW SAMPLE LOG

RAMBOLL ENVIRON

Project Number: UK15-21370

Ground Elevation: 6.58m AOD

ID: WS14

Co-ordinates: 314249E, 168193N

Site: Sully, Vale of Glamorgan

Date: 09/05/2016

Client: Zeon Chemicals Europe Ltd

Equipment: Dando Terrier

Logged By: R Hodgson

Diameter: 110mm max

Depth (m)	Symbol	Strata Description	Depth (m)	Sample	Headspace PID (ppm v)	Well Installation	Water Level
		MADE GROUND: Concrete (0.22m) over dense red brown slightly clayey angular and subangular fine to coarse gravel of sandstone.	0.90		0.0		
1.0		Firm red brown slightly sandy CLAY.	1.20	1.00m	0.0		
		Soft and firm brown light green black and yellow brown slightly gravelly CLAY.	1.80	1.50m	0.0		
2.0		Firm yellow brown slightly sandy gravelly CLAY. Gravel is angular and subangular fine to coarse sandstone.	2.50		0.0		
		End of Borehole at 2.5 m bgl.					
3.0							
4.0							
5.0							

The information contained on this borehole log is for environmental purposes only and cannot be relied upon for geotechnical or any design purposes

Temporary casing details: Cased to 1.00m bgl

Groundwater details: Groundwater not encountered

Monitoring well standpipe diameter: Not installed

Other comments: Window sample borehole terminated on suspected bedrock

Well installation key:

Concrete | Bentonite seal | Arisings | Filter pack | Slotted pipe | Plain pipe

Checked by: L Cleverley

WINDOW SAMPLE LOG

RAMBOLL ENVIRON

Project Number: UK15-21370

ID: WS15

Site: Sully, Vale of Glamorgan

Client: Zeon Chemicals Europe Ltd

Logged By: R Hodgson

Ground Elevation: 6.49m AOD

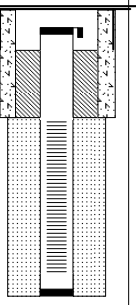
Co-ordinates: 314266E, 168208N

Date: 09/05/2016

Equipment: Dando Terrier

Diameter: 110mm max

Depth (m)	Symbol	Strata Description	Depth (m)	Sample	Headspace PID (ppm v, 0 20 60 100)	Well Installation	Water Level
		MADE GROUND: Gravel over medium dense black ashy sandy angular and subangular fine and medium gravel of sandstone with many fragments of clinker. Occasional fragments of rubber.		0.40m	0.0		
			0.60				
		MADE GROUND: Firm grey brown slightly gravelly clay with occasional fragments of brick.		0.80m			
1.0		MADE GROUND: Firm dark brown slightly gravelly clay with occasional fragments of coal.	1.00		0.0		
		Firm and stiff red brown slightly sandy CLAY.	1.30				
		End of Borehole at 1.3 m bgl.					
2.0							
3.0							
4.0							
5.0							



The information contained on this borehole log is for environmental purposes only and cannot be relied upon for geotechnical or any design purposes

Temporary casing details: Cased to 1.30m bgl

Groundwater details: Rest level at 0.54m bgl on 18/05/2016

Monitoring well standpipe diameter: 50mm

Other comments: Window sample borehole terminated on suspected bedrock

Well installation key:

Concrete | Bentonite seal | Arisings | Filter pack | Slotted pipe | Plain pipe

Checked by: L Cleverley

WINDOW SAMPLE LOG

RAMBOLL ENVIRON

Project Number: UK15-21370

Ground Elevation: 6.26m AOD

ID: WS16

Co-ordinates: 314294E, 168212N

Site: Sully, Vale of Glamorgan

Date: 10/05/2016

Client: Zeon Chemicals Europe Ltd

Equipment: Dando Terrier

Logged By: R Hodgson

Diameter: 110mm max

Depth (m)	Symbol	Strata Description	Depth (m)	Sample	Headspace PID (ppm v, 0 20 60 100)	Well Installation	Water Level
		MADE GROUND: Concrete (0.18m) over black ashy sandy angular and subangular fine and medium gravel of sandstone with many fragments of clinker.	0.40	0.30m	0.0		
		MADE GROUND: Light brown slightly clayey angular and subangular fine to coarse gravel of sandstone.	0.80	0.80m			
1.0		Firm dark brown slightly sandy CLAY.	1.00		1.5		
		Firm red brown slightly sandy slightly gravelly CLAY.	1.50		0.0		
		End of Borehole at 1.5 m bgl.					
2.0							
3.0							
4.0							
5.0							

The information contained on this borehole log is for environmental purposes only and cannot be relied upon for geotechnical or any design purposes

Temporary casing details: Cased to 1.00m bgl

Groundwater details: Groundwater not encountered

Monitoring well standpipe diameter: Not installed

Other comments: Window sample borehole terminated on suspected bedrock

Well installation key:

Concrete | Bentonite seal | Arisings | Filter pack | Slotted pipe | Plain pipe

Checked by: L Cleverley

WINDOW SAMPLE LOG

RAMBOLL ENVIRON

Project Number: UK15-21370

ID: WS17

Site: Sully, Vale of Glamorgan

Client: Zeon Chemicals Europe Ltd

Logged By: R Hodgson

Ground Elevation: 6.64m AOD

Co-ordinates: 314274E, 168184N

Date: 12/05/2016

Equipment: Dando Terrier

Diameter: 110mm max

Depth (m)	Symbol	Strata Description	Depth (m)	Sample	Headspace PID (ppm v, 0 20 60 100)	Well Installation	Water Level
0		MADE GROUND: Concrete (0.21m) over soft black slightly sandy gravelly clay with occasional cobbles of concrete. Moderate hydrocarbon type odour.	0.80	0.30m	55.5		
1.0		Soft dark brown slightly sandy CLAY with occasional black staining. Moderate hydrocarbon type odour and sticky substance throughout that forms thin white strands when soil is parted.	1.20	1.00m	50.1		
		Firm and stiff red brown slightly sandy CLAY with slight hydrocarbon type odour.	1.50	1.30m	34.6		
		End of Borehole at 1.5 m bgl.					
2.0							
3.0							
4.0							
5.0							

Water Level: 0.94m, 0.62m

The information contained on this borehole log is for environmental purposes only and cannot be relied upon for geotechnical or any design purposes

Temporary casing details: Cased to 1.50m bgl

Groundwater details: Groundwater strike during drilling at 0.94m bgl. Rest level at 0.62m bgl on 18/05/2016

Monitoring well standpipe diameter: 50mm

Other comments: Window sample borehole terminated on suspected bedrock

Well installation key:

Concrete | Bentonite seal | Arisings | Filter pack | Slotted pipe | Plain pipe

Checked by: L Cleverley

WINDOW SAMPLE LOG

RAMBOLL ENVIRON

Project Number: UK15-21370

ID: WS18

Site: Sully, Vale of Glamorgan

Client: Zeon Chemicals Europe Ltd

Logged By: T Loftus

Ground Elevation: 7.44m AOD

Co-ordinates: 314251E, 168115N

Date: 11/05/2016

Equipment: Dando Terrier

Diameter: 110mm max

Depth (m)	Symbol	Strata Description	Depth (m)	Sample	Headspace PID (ppm v, 0 20 60 100)	Well Installation	Water Level
		MADE GROUND: Concrete (0.18m) over light brown slightly clayey sandy subangular and subrounded fine to coarse gravel of sandstone.	0.35				
		MADE GROUND: Light brown slightly gravelly subangular cobbles of sandstone.	0.60				
1.0		Firm dark grey brown slightly gravelly sandy clay with occasional rootlets.	1.20	0.80m	0.0		
		MADE GROUND: Black ashy sandy angular fine and medium gravel of sandstone with many fragments of clinker and coal.	1.45				
		Firm dark grey brown CLAY/SILT with moderate hydrocarbon type odour and oily sheen.	1.85	1.60m	0.0		
2.0		End of Borehole at 1.85 m bgl.					
3.0							
4.0							
5.0							

The information contained on this borehole log is for environmental purposes only and cannot be relied upon for geotechnical or any design purposes

Temporary casing details: Cased to 1.00m bgl

Groundwater details: Rest level at 1.61m bgl on 18/05/2016

Monitoring well standpipe diameter: 50mm

Other comments: Window sample borehole terminated on suspected bedrock

Well installation key:

Concrete | Bentonite seal | Arisings | Filter pack | Slotted pipe | Plain pipe

Checked by: L Cleverley

WINDOW SAMPLE LOG

RAMBOLL ENVIRON

Project Number: UK15-21370

Ground Elevation: 6.41m AOD

ID: WS19

Co-ordinates: 314290E, 168152N

Site: Sully, Vale of Glamorgan

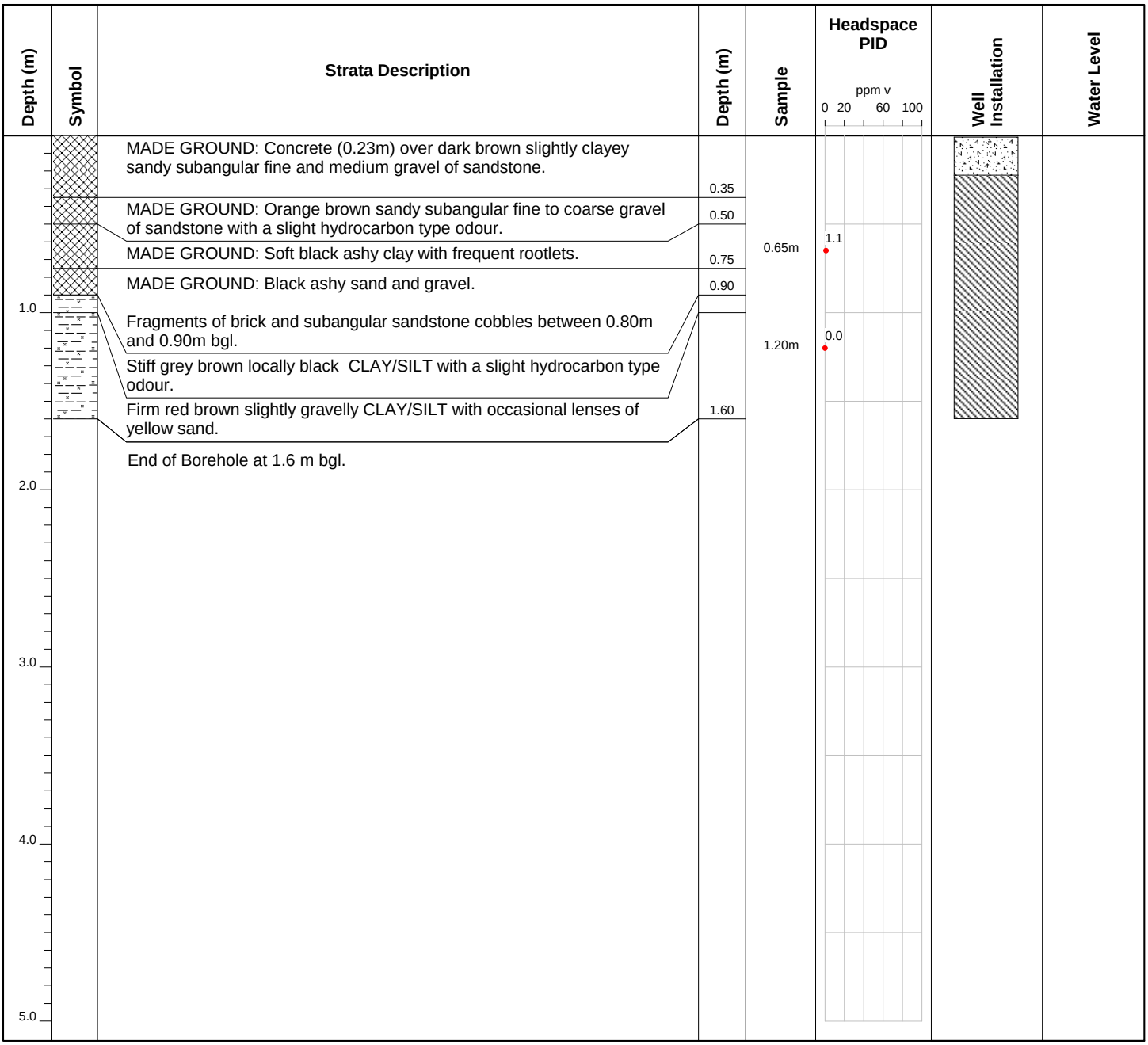
Date: 11/05/2016

Client: Zeon Chemicals Europe Ltd

Equipment: Dando Terrier

Logged By: T Loftus

Diameter: 110mm max



The information contained on this borehole log is for environmental purposes only and cannot be relied upon for geotechnical or any design purposes

Temporary casing details: Cased to 1.00m bgl

Groundwater details: Grooundwater not encountered

Monitoring well standpipe diameter: Not installed

Other comments: Window sample borehole terminated on suspected bedrock

Well installation key:

Concrete | Bentonite seal | Arisings | Filter pack | Slotted pipe | Plain pipe

Checked by: L Cleverley

WINDOW SAMPLE LOG

RAMBOLL ENVIRON

Project Number: UK15-21370

ID: WS20

Site: Sully, Vale of Glamorgan

Client: Zeon Chemicals Europe Ltd

Logged By: T Loftus

Ground Elevation: 6.59m AOD

Co-ordinates: 314316E, 168128N

Date: 11/05/2016

Equipment: Dando Terrier

Diameter: 110mm max

Depth (m)	Symbol	Strata Description	Depth (m)	Sample	Headspace PID (ppm v)	Well Installation	Water Level
		MADE GROUND: Vegetation over orange brown slightly clayey sandy subangular and subrounded fine to coarse gravel of sandstone.	0.30	0.30m	0.0		
		MADE GROUND: Stiff red brown slightly gravelly clay with occasional rootlets and fragments of coal. Gravel is angular sandstone.					
		MADE GROUND: Stiff red brown sandy gravelly clay with occasional rootlets. Sandstone cobble and fragment of metal (<8cm) between 0.90m and 1.10m bgl.	1.10				
1.0		Soft dark brown CLAY/SILT.		1.20m	0.0		
		Stiff dark brown CLAY.	1.65				
		Red slightly silty slightly gravelly clayey SAND.		1.80m	0.0		
2.0			2.20				
		Red brown silty SAND.	2.55	2.50m	0.0		
		End of Borehole at 2.55 m bgl.					
3.0							
4.0							
5.0							

The information contained on this borehole log is for environmental purposes only and cannot be relied upon for geotechnical or any design purposes

Temporary casing details: Cased to 1.00m bgl

Groundwater details: Groundwater not encountered

Monitoring well standpipe diameter: Not Installed

Other comments: Window sample borehole terminated on suspected bedrock

Well installation key:

Concrete | Bentonite seal | Arisings | Filter pack | Slotted pipe | Plain pipe

Checked by: L Cleverley

WINDOW SAMPLE LOG

RAMBOLL ENVIRON

Project Number: UK15-21370

Ground Elevation: 6.71m AOD

ID: WS21

Co-ordinates: 314298E, 168179N

Site: Sully, Vale of Glamorgan

Date: 11/05/2016

Client: Zeon Chemicals Europe Ltd

Equipment: Dando Terrier

Logged By: T Loftus

Diameter: 110mm max

Depth (m)	Strata Description	Depth (m)	Sample	Headspace PID (ppm v)	Well Installation	Water Level
	MADE GROUND: Gravel over light brown sandy subangular and subrounded fine to coarse gravel of sandstone.	0.60				
	MADE GROUND: Black sand and gravel with a slight hydrocarbon type odour.		0.75m	0.0		
1.0	Grey brown locally black CLAY/SILT with occasional rootlets. Slight hydrocarbon type odour and slight oily sheen.	1.10				
	Soft grey brown slightly sandy slightly gravelly CLAY/SILT with a slight hydrocarbon type odour.		1.40m	0.0		
	Stiff red brown locally black CLAY/SILT with occasional rootlets.	1.50				
	Firm friable slightly gravelly sandy CLAY.					
2.0		2.10				
	Firm green white gravelly CLAY. Gravel is subrounded fine to coarse sandstone.					
	End of Borehole at 2.15 m bgl.					
3.0						
4.0						
5.0						

Headspace PID: 0 20 60 100

Water Level: 0.86m

The information contained on this borehole log is for environmental purposes only and cannot be relied upon for geotechnical or any design purposes

Temporary casing details: Cased to 1.00m bgl

Groundwater details: Rest level at 0.86m bgl on 18/05/2016

Monitoring well standpipe diameter: 50mm

Other comments: Window sample borehole terminated on suspected bedrock

Well installation key:

Concrete | Bentonite seal | Arisings | Filter pack | Slotted pipe | Plain pipe

Checked by: L Cleverley

WINDOW SAMPLE LOG

RAMBOLL ENVIRON

Project Number: UK15-21370

Ground Elevation: 6.31m AOD

ID: WS22

Co-ordinates: 314265E, 168237N

Site: Sully, Vale of Glamorgan

Date: 09/05/2016

Client: Zeon Chemicals Europe Ltd

Equipment: Dando Terrier

Logged By: R Hodgson

Diameter: 110mm max

Depth (m)	Symbol	Strata Description	Depth (m)	Sample	Headspace PID (ppm v, 0 20 60 100)	Well Installation	Water Level
		MADE GROUND: Concrete (0.25m) over dense orange brown slightly clayey angular and subangular fine to coarse gravel of sandstone. Black staining and slight hydrocarbon type odour in gravel below 0.5m bgl.	0.60	0.50m	1.0		
1.0		Firm and stiff dark grey brown slightly sandy CLAY/SILT.		1.00m	1.0		
			1.20	1.20m	0.7		
		End of Borehole at 1.2 m bgl.					
2.0							
3.0							
4.0							
5.0							

The information contained on this borehole log is for environmental purposes only and cannot be relied upon for geotechnical or any design purposes

Temporary casing details: Cased to1.20m bgl

Groundwater details: Groundwater not encountered

Monitoring well standpipe diameter: No installation

Other comments: Window sample borehole terminated on suspected bedrock

Well installation key:

Concrete | Bentonite seal | Arisings | Filter pack | Slotted pipe | Plain pipe

Checked by: L Cleverley

WINDOW SAMPLE LOG

RAMBOLL ENVIRON

Project Number: UK15-21370

ID: WS23

Site: Sully, Vale of Glamorgan

Client: Zeon Chemicals Europe Ltd

Logged By: R Hodgson

Ground Elevation: 6.50m AOD

Co-ordinates: 314286E, 168268N

Date: 09/05/2016

Equipment: Dando Terrier

Diameter: 110mm max

Depth (m)	Symbol	Strata Description	Depth (m)	Sample	Headspace PID (ppm v)	Well Installation	Water Level
		MADE GROUND: Gravel over loose black and red brown sandy subangular and subrounded fine and medium gravel of sandstone with occasional fragments of coal.	0.50	0.50m	0.0		
		MADE GROUND: Firm grey brown mottled orange slightly sandy clay.	1.00		0.0		
1.0		MADE GROUND: Black ashy silty fine to coarse sand.					
		Firm and stiff dark brown mottled red brown slightly sandy CLAY.	1.60		0.0		
		Firm and stiff red brown slightly sandy CLAY becoming gravelly with depth.		2.00m	2.6		
2.0							
			2.75		1.3		
		End of Borehole at 2.75 m bgl.					
3.0							
4.0							
5.0							

The information contained on this borehole log is for environmental purposes only and cannot be relied upon for geotechnical or any design purposes

Temporary casing details: 2.00m bgl

Groundwater details: Groundwater not encountered

Monitoring well standpipe diameter: No Installation

Other comments: Window sample borehole terminated on suspected bedrock

Well installation key:

Concrete | Bentonite seal | Arisings | Filter pack | Slotted pipe | Plain pipe

Checked by: L Cleverley

WINDOW SAMPLE LOG

RAMBOLL ENVIRON

Project Number: UK15-21370

ID: WS24

Site: Sully, Vale of Glamorgan

Client: Zeon Chemicals Europe Ltd

Logged By: T Loftus

Ground Elevation: NA

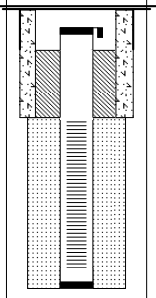
Co-ordinates: NA

Date: 11/05/2016

Equipment: Dando Terrier

Diameter: 110mm max

Depth (m)	Symbol	Strata Description	Depth (m)	Sample	Headspace PID (ppm v, 0 20 60 100)	Well Installation	Water Level
		MADE GROUND: Concrete (0.34m) over brown slightly clayey sandy subangular and subrounded fine to coarse gravel of sandstone with many fragments of brick.	0.50	0.40m	0.0		
1.0		MADE GROUND: Brown slightly gravelly sandy clay with occasional rootlets and fragments of glass.	1.27	1.00m	0.0		
		End of Borehole at 1.27 m bgl.					
2.0							
3.0							
4.0							
5.0							



The information contained on this borehole log is for environmental purposes only and cannot be relied upon for geotechnical or any design purposes

Temporary casing details: Cased to 1.27m bgl

Groundwater details: Groundwater not encountered

Monitoring well standpipe diameter: 50mm

Other comments: Window sample borehole terminated on suspected bedrock

Well installation key:

Concrete | Bentonite seal | Arisings | Filter pack | Slotted pipe | Plain pipe

Checked by: L Cleverley

WINDOW SAMPLE LOG

RAMBOLL ENVIRON

Project Number: UK15-21370

ID: WS25

Site: Sully, Vale of Glamorgan

Client: Zeon Chemicals Europe Ltd

Logged By: R Hodgson

Ground Elevation: NA

Co-ordinates: NA

Date: 10/05/2016

Equipment: Dando Terrier

Diameter: 110mm max

Depth (m)	Symbol	Strata Description	Depth (m)	Sample	Headspace PID (ppm v, 0 20 60 100)	Well Installation	Water Level
		MADE GROUND: Concrete (0.26m) over subangular cobbles of concrete and brick. Concrete obstruction at 0.70m bgl.	0.70				
		End of Borehole at 0.7 m bgl.					
1.0							
2.0							
3.0							
4.0							
5.0							

The information contained on this borehole log is for environmental purposes only and cannot be relied upon for geotechnical or any design purposes

Temporary casing details: Cased to 0.70m bgl

Groundwater details: Groundwater not encountered

Monitoring well standpipe diameter: Not installed

Other comments: Window sample borehole terminated on below ground obstruction

Well installation key:

Concrete | Bentonite seal | Arisings | Filter pack | Slotted pipe | Plain pipe

Checked by: L Cleverley

WINDOW SAMPLE LOG

RAMBOLL ENVIRON

Project Number: UK15-21370

ID: WS26

Site: Sully, Vale of Glamorgan

Client: Zeon Chemicals Europe Ltd

Logged By: R Hodgson

Ground Elevation: NA

Co-ordinates: NA

Date: 10/05/2016

Equipment: Dando Terrier

Diameter: 110mm max

Depth (m)	Symbol	Strata Description	Depth (m)	Sample	Headspace PID (ppm v)	Well Installation	Water Level
		MADE GROUND: Concrete (0.38m) over dense orange brown slightly clayey angular and subangular fine to coarse gravel of sandstone.	0.50		0.0		
1.0		MADE GROUND: Soft and firm dark brown slightly sandy gravelly clay with many fragments of coal and brick. Soft below 0.80m bgl.		0.60m 1.20m	0.0 0.0		
			1.50				
		End of Borehole at 1.5 m bgl.					
2.0							
3.0							
4.0							
5.0							

The information contained on this borehole log is for environmental purposes only and cannot be relied upon for geotechnical or any design purposes

Temporary casing details: Cased to 1.50m

Groundwater details: Groundwater not encountered

Monitoring well standpipe diameter: 50mm

Other comments: Window sample borehole terminated on suspected bedrock

Well installation key:

Concrete | Bentonite seal | Arisings | Filter pack | Slotted pipe | Plain pipe

Checked by: L Cleverley

WINDOW SAMPLE LOG

RAMBOLL ENVIRON

Project Number: UK15-21370

ID: WS27

Site: Sully, Vale of Glamorgan

Client: Zeon Chemicals Europe Ltd

Logged By: R Hodgson

Ground Elevation: NA

Co-ordinates: NA

Date: 10/05/2016

Equipment: Dando Terrier

Diameter: 110mm max

Depth (m)	Symbol	Strata Description	Depth (m)	Sample	Headspace PID (ppm v, 0 20 60 100)	Well Installation	Water Level
		MADE GROUND: Concrete (0.34m) over dense orange brown slightly clayey angular to subrounded fine to coarse gravel of sandstone.	0.55	0.70m	0.0		
1.0		MADE GROUND: Soft and firm dark brown slightly sandy gravelly clay with occasional fragments of coal and brick. Gravel is subangular and subrounded fine to coarse sandstone.	1.17		0.0		
		End of Borehole at 1.17 m bgl.					
2.0							
3.0							
4.0							
5.0							

The information contained on this borehole log is for environmental purposes only and cannot be relied upon for geotechnical or any design purposes

Temporary casing details: Cased to 1.00m bgl

Groundwater details: Groundwater not encountered

Monitoring well standpipe diameter: Not installed

Other comments: Window sample borehole terminated on suspected bedrock

Well installation key:

Concrete | Bentonite seal | Arisings | Filter pack | Slotted pipe | Plain pipe

Checked by: L Cleverley

WINDOW SAMPLE LOG

RAMBOLL ENVIRON

Project Number: UK15-21370

ID: WS28

Site: Sully, Vale of Glamorgan

Client: Zeon Chemicals Europe Ltd

Logged By: R Hodgson

Ground Elevation: NA

Co-ordinates: NA

Date: 09/05/2016

Equipment: Dando Terrier

Diameter: 110mm max

Depth (m)	Symbol	Strata Description	Depth (m)	Sample	Headspace PID (ppm v)	Well Installation	Water Level
		MADE GROUND: Concrete (0.27m) over dense orange brown slightly clayey angular and subangular fine to coarse gravel of sandstone with dark grey staining.	0.60		0.0		
		MADE GROUND: Light grey brown clayey angular fine and medium gravel of sandstone.	0.80				
1.0		MADE GROUND: Firm dark brown mottled black slightly sandy gravelly clay with occasional fragments of coal and brick. Gravel is angular and subangular fine to coarse sandstone.	1.10	1.00m	0.0		
		Firm dark brown slightly sandy CLAY.	1.40		0.0		1.20m
		End of Borehole at 1.4 m bgl.					
2.0							
3.0							
4.0							
5.0							

Headspace PID: 0 20 60 100

The information contained on this borehole log is for environmental purposes only and cannot be relied upon for geotechnical or any design purposes

Temporary casing details: Cased to 1.00m bgl

Groundwater details: Rest level at 1.20m bgl on 18/05/2016

Monitoring well standpipe diameter: 50mm

Other comments: Window sample borehole terminated on suspected bedrock

Well installation key:

Concrete | Bentonite seal | Arisings | Filter pack | Slotted pipe | Plain pipe

Checked by: L Cleverley

WINDOW SAMPLE LOG

RAMBOLL ENVIRON

Project Number: UK15-21370

ID: WS29

Site: Sully, Vale of Glamorgan

Client: Zeon Chemicals Europe Ltd

Logged By: R Hodgson

Ground Elevation: NA

Co-ordinates: NA

Date: 09/05/2016

Equipment: Dando Terrier

Diameter: 110mm max

Depth (m)	Symbol	Strata Description	Depth (m)	Sample	Headspace PID (ppm v)	Well Installation	Water Level
		MADE GROUND: Concrete (0.26m) over dense orange brown slightly clayey angular and subangular fine to coarse gravel of sandstone with dark grey staining.	0.60		2.2		
		MADE GROUND: Light grey brown clayey angular fine and medium gravel of sandstone.	0.90				
1.0		MADE GROUND: Firm dark brown mottled black slightly sandy gravelly clay with occasional fragments of coal and brick. Gravel is angular and subangular fine to coarse sandstone.	1.10	1.00m	0.0		
		Firm dark brown slightly sandy CLAY.	1.35	1.20m	0.0		
		End of Borehole at 1.35 m bgl.					
2.0							
3.0							
4.0							
5.0							

The information contained on this borehole log is for environmental purposes only and cannot be relied upon for geotechnical or any design purposes

Temporary casing details: Cased to 1.00m bgl

Groundwater details: Groundwater not encountered

Monitoring well standpipe diameter: Not installed

Other comments: Window sample borehole terminated on suspected bedrock

Well installation key:

Concrete | Bentonite seal | Arisings | Filter pack | Slotted pipe | Plain pipe

Checked by: L Cleverley

WINDOW SAMPLE LOG

RAMBOLL ENVIRON

Project Number: UK15-21370 | **Ground Elevation: NA**

ID: WS30 | **Co-ordinates: NA**

Site: Sully, Vale of Glamorgan | **Date: 09/05/2016**

Client: Zeon Chemicals Europe Ltd | **Equipment: Dando Terrier**

Logged By: R Hodgson | **Diameter: 110mm max**

Strata Description	Depth (m)	Sample	Headspace PID (ppm v)	Water Level
MADE GROUND: Concrete (0.27m) over dense light grey brown slightly clayey subangular fine to coarse gravel of sandstone.	0.80	1.20m	0.0	1.03m
MADE GROUND: Red brown and yellow brown slightly sandy gravelly clay with occasional black staining and a slight unidentified odour (poor recovery).	1.50		0.0 0.0	1.32m
End of Borehole at 1.5 m bgl.				

Depth scale (m): 1.0, 2.0, 3.0, 4.0, 5.0

Headspace PID scale (ppm v): 0, 20, 60, 100

The information contained on this borehole log is for environmental purposes only and cannot be relied upon for geotechnical or any design purposes

Temporary casing details: Cased to 1.00m bgl

Groundwater details: Groundwater strike during drilling at 1.32m bgl. Rest level at 1.03m bgl on 18/05/2016

Monitoring well standpipe diameter: 50mm

Other comments: Window sample borehole terminated on suspected bedrock

Well installation key: Concrete | Bentonite seal | Arisings | Filter pack | Slotted pipe | Plain pipe

Checked by: L Cleverley

Sheet 1 of 1

WINDOW SAMPLE LOG

RAMBOLL ENVIRON

Project Number: UK15-21370

ID: WS31

Site: Sully, Vale of Glamorgan

Client: Zeon Chemicals Europe Ltd

Logged By: R Hodgson

Ground Elevation: NA

Co-ordinates: NA

Date: 09/05/2016

Equipment: Dando Terrier

Diameter: 110mm max

Depth (m)	Symbol	Strata Description	Depth (m)	Sample	Headspace PID (ppm v)	Well Installation	Water Level
0		MADE GROUND: Concrete (0.26m) over dense orange brown slightly clayey angular and subangular fine to coarse gravel of sandstone.	0.80		0.0		
1.0		MADE GROUND: Firm red brown and yellow brown slightly gravelly clay with occasional fragments of coal and brick.		1.00m	0.0		
			1.60	1.50m	0.0		
2.0		End of Borehole at 1.6 m bgl.					
3.0							
4.0							
5.0							

The information contained on this borehole log is for environmental purposes only and cannot be relied upon for geotechnical or any design purposes

Temporary casing details: Cased to 1.00m bgl

Groundwater details: Groundwater not encountered

Monitoring well standpipe diameter: Not installed

Other comments: Window sample borehole terminated on suspected bedrock

Well installation key:

Concrete | Bentonite seal | Arisings | Filter pack | Slotted pipe | Plain pipe

Checked by: L Cleverley

APPENDIX 3
FIELD MONITORING RESULTS

Site	Zeon, Sully	**Date Sampled:**	18/05/2016
Contract No.	UK15-21370	**Weather:**	Sun with cloud, warm, dry
Sampler:	RH	**Equipment:**	Gasdata GFM 430, Interface Probe

Gas Monitoring Data

Monitoring Well	Flow Rate (l/hour)	Time	CH_4 (% vol)	CO_2 (% vol)	O_2 (% vol)	H_2S (ppm)	CO (ppm)	Atm Pressure (mBar)	PID (ppm)	Depth to Water (m bgl)	Depth to Base (m bgl)	Comments
Start	0.0	09:30	<0.1	<0.1	20.7	-	-	999	-	-	-	-
WS1	0.0	13:55	<0.1	2.4	16.8	-	-	1000	-	1.50	4.09	-
WS2	0.0	16:30	<0.1	3.0	16.7	-	-	1000	-	Dry	2.46	-
WS3	0.0	16:20	<0.1	2.0	16.9	-	-	1000	-	3.72	4.00	-
WS4	0.0	13:10	<0.1	10.6	2.8	-	-	1000	-	1.60	2.93	-
WS6	0.0	16:05	<0.1	1.7	12.1	-	-	1000	-	1.66	2.47	-
WS15	0.0	15:35	<0.1	0.4	19.6	-	-	1000	-	0.54	1.37	-
WS17	0.0	15:40	<0.1	0.8	17.4	-	-	1000	-	0.62	1.46	-
WS18	0.0	15:55	<0.1	0.3	16.6	-	-	1000	-	1.61	1.67	-
WS21	0.0	15:45	<0.1	1.7	18.2	-	-	1000	-	0.86	2.12	-
WS24	0.0	15:15	<0.1	3.6	14.0	-	-	1000	-	Dry	1.20	-
WS26	0.0	15:25	<0.1	<0.1	20.5	-	-	1000	-	Dry	1.40	-
WS28	0.0	09:55	<0.1	<0.1	20.3	-	-	1000	-	1.20	1.40	-
WS30	0.0	10:25	0.2	<0.1	20.2	-	-	1000	-	1.03	1.49	-
End	0.0	17:00	<0.1	<0.1	20.3	-	-	1000	-	-	-	-

Atmospheric Pressure Trend: Falling

Local weather station: Sully

Date	Time	Barometric pressure	
16/05/2016	12:00	1019mb	48 hrs before
17/05/2016	12:00	1013mb	24 hrs before
18/05/2016	12:00	999mb	Day of monitoring
19/05/2016	12:00	1009mb	24 hrs after monitoring
20/05/2016	12:00	1011mb	48 hrs after monitoring

Site	Zeon, Sully	**Date Sampled:**	20/05/2016
Contract No.	UK15-21370	**Weather:**	Sun with cloud, warm, dry
Sampler:	RH	**Equipment:**	Gasdata GFM 430, Interface Probe

Gas Monitoring Data

Monitoring Well	Flow Rate (l/hour)	Time	CH_4 (% vol)	CO_2 (% vol)	O_2 (% vol)	H_2S (ppm)	CO (ppm)	Atm Pressure (mBar)	PID (ppm)	Depth to Water (m bgl)	Depth to Base (m bgl)	Comments
Start	0.0	09:30	<0.1	<0.1	20.7	-	-	1012	-	-	-	-
BH101	0.0	12:05	<0.1	5.2	6.6	-	-	1012	-	1.52	5.95	-
BH102	0.0	12:20	<0.1	4.3	11.6	-	-	1012	-	3.68	6.05	-
BH103	0.0	11:40	<0.1	<0.1	20.2	-	-	1012	-	2.55	6.04	Response zone flooded
BH104	0.0	10:35	<0.1	<0.1	20.1	-	-	1012	-	0.99	6.04	Response zone flooded
BH105	0.0	10:15	<0.1	<0.1	17.9	-	-	1012	-	0.97	5.95	Response zone flooded
BH106	0.0	10:05	<0.1	0.1	20.3	-	-	1012	-	0.76	6.07	Response zone flooded
End	0.0	12:30	<0.1	<0.1	20.3	-	-	1012	-	-	-	-

Atmospheric Pressure Trend: Rising

Local weather station: Sully

Date	Time	Barometric pressure	
18/05/2016	12:00	999mb	48 hrs before
19/05/2016	12:00	1009mb	24 hrs before
20/05/2016	12:00	1011mb	Day of monitoring
21/05/2016	12:00	1001mb	24 hrs after monitoring
22/05/2016	12:00	1004mb	48 hrs after monitoring

APPENDIX 4
LABORATORY CERTIFICATES

Our Ref: EFS/163678M (Ver. 1)
Your Ref: UK15-21370

May 13, 2016

Environmental Chemistry
ESG
Bretby Business Park
Ashby Road
Burton-on-Trent
Staffordshire
DE15 0YZ

Telephone: 01283 554400
Facsimile: 01283 554422

Lucy Cleverley
Ramboll Environ
8 Village Way
Cardiff
CF15 2NE

For the attention of Lucy Cleverley

Dear Lucy Cleverley

Sample Analysis - Zeon Chemicals ESA

Samples from the above site have been analysed in accordance with the schedule supplied.
The sample details and the results of analyses for these samples are given in the appended report.

An invoice for this work will follow under a separate cover.

Where appropriate the samples will be kept until 17/06/16 when they will be discarded. Please call 01283 554547 for an extension of this date.
Please be aware that our policy for the retention of paper based laboratory records and analysis reports is 6 years.

The work was carried out in accordance with Environmental Scientifics Group Ltd (Laboratory and Analytical) Standard Terms and Conditions of Contract.

If I can be of any further assistance please do not hesitate to contact me.

Yours sincerely

for ESG

JMColbourne

J Colbourne
Project Co-ordinator
01283 554547

Environmental Chemistry, ESG, P.O. Box 100, Burton-upon-trent, DE15 0XD Tel: 01283 554400 Fax: 01283 554422
Environmental Scientifics Group Limited.
Registered No: 2880501

TEST REPORT

1252

Report No. EFS/163678M (Ver. 1)

Ramboll Environ
8 Village Way
Cardiff
CF15 2NE

Site: Zeon Chemicals ESA

The 1 sample described in this report were registered for analysis by ESG on 06-May-2016. This report supersedes any versions previously issued by the laboratory.
The analysis was completed by: 12-May-2016

Tests where the accreditation is set to N or No, and any individual data items marked with a * are not UKAS or MCERTS accredited. Any opinions or interpretations expressed herein are outside the scope of any UKAS accreditation held by ESG.

The following tables are contained in this report:

On behalf of
ESG :
Declan Burns

Managing Director
Multi-Sector Services

Date of Issue: 13-May-2016

Accreditation Codes: **N** (Not Accredited), **U** (UKAS), **UM** (UKAS & MCERTS)
Tests marked '^' have been subcontracted to another laboratory.
(NVM) - denotes the sample matrix is dissimilar to matrices upon which the MCERTS validation was based, and is therefore not accredited for MCERTS.
All results are reported on a dry weight basis at 105^{o}C unless otherwise stated. (except QC samples)
ESG accepts no responsibility for any sampling not carried out by our personnel.

Where individual results are flagged see report notes for status.

		Units :	%	µg/kg															
		Method Codes :	TMSS	VOCHSAS															
		Method Reporting Limits :	0.2																
		Accreditation Code:	U																
LAB ID Number CL/	**Client Sample Description**	**Sample Date**	**Tot.Moisture @ 105C**	**VOC + TICs HSA-GCMS**															
1615468	BH7 5.00	03-May-16	30.7	Req															

Bretby Business Park, Ashby Road

Burton-on-Trent, Staffordshire, DE15 0YZ

Tel +44 (0) 1283 554400

Fax +44 (0) 1283 554422

Client Name	**Ramboll Environ**
Contact	Lucy Cleverley

Zeon Chemicals ESA

Sample Analysis

Date Printed	**13-May-2016**
Report Number	**EFS/163678M**
Table Number	**1**

Where individual results are flagged see report notes for status.
Results corrected to dry weight at 105°C where appropriate, in accordance with the MCERTS standard.

Volatile Organic Compounds by HSA-GCMS

Accredited?: Yes

Customer and Site Details:	Ramboll Environ: Zeon Chemicals ESA	**Directory/Quant file:**	509VOC.MS19\ Initial Calibration	**Matrix:**	Soil
Sample Details:	BH7 5.00	**Date Booked in:**	06-May-16	**Method:**	Headspace
LIMS ID Number:	CL1615468	**Date Analysed:**	10-May-16	**Multiplier:**	0.95
Job Number:	S16_3678M	**Operator:**		**Position:**	29

Target Compounds	CAS #	R.T. (min.)	Concentration µg/kg	% Fit	Accr. code
Dichlorodifluoromethane	75-71-8 **	-	< 1	-	N
Chloromethane	74-87-3 *	-	< 4	-	N
Vinyl Chloride	75-01-4	-	< 1	-	UM
Bromomethane	74-83-9	-	< 1	-	UM
Chloroethane	75-00-3	-	< 3	-	UM
Trichlorofluoromethane	75-69-4	-	< 1	-	UM
1,1-Dichloroethene	75-35-48 *	-	< 1	-	N
trans 1,2-Dichloroethene	156-60-5	-	< 1	-	UM
1,1-Dichloroethane	75-34-3	-	< 1	-	UM
MTBE	1634-04-4	-	< 1	-	UM
2,2-Dichloropropane	594-20-7	-	< 1	-	UM
cis 1,2-Dichloroethene	156-59-2	-	< 7	-	UM
Bromochloromethane	74-97-5	-	< 1	-	UM
Chloroform	67-66-3	-	< 1	-	UM
1,1,1-Trichloroethane	71-55-6	-	< 1	-	UM
Carbon Tetrachloride	56-23-5	-	< 1	-	UM
1,1-Dichloropropene	563-58-6	-	< 1	-	UM
Benzene	71-43-2	-	< 1	-	UM
1,2-Dichloroethane	107-06-2	-	< 1	-	UM
Trichloroethene	79-01-6 **	-	< 1	-	N
1,2-Dichloropropane	78-87-5	-	< 1	-	UM
Dibromomethane	74-95-3	-	< 1	-	UM
Bromodichloromethane	75-27-4	-	< 1	-	UM
cis 1,3-Dichloropropene	10061-01-5	-	< 1	-	UM
Toluene	108-88-3	-	< 7	-	UM
trans 1,3-Dichloropropene	10061-02-6	-	< 1	-	UM
1,1,2-Trichloroethane	79-00-5	-	< 1	-	UM
Tetrachloroethene	127-18-4	-	< 4	-	UM
1,3-Dichloropropane	142-28-9	-	< 1	-	UM
Dibromochloromethane	124-48-1	-	< 1	-	UM
1,2-Dibromoethane	106-93-4	-	< 1	-	UM
Chlorobenzene	108-90-7	-	< 1	-	UM
Ethylbenzene	100-41-4	-	< 3	-	UM
1,1,1,2-Tetrachloroethane	630-20-6	-	< 1	-	UM
m and p-Xylene	108-38-3/106-42-3	-	< 6	-	UM

Target Compounds	CAS #	R.T. (min.)	Concentration µg/kg	% Fit	Accr. code
o-Xylene	95-47-6	-	< 3	-	UM
Styrene	100-42-5	-	< 1	-	UM
Bromoform	75-25-2	-	< 1	-	UM
iso-Propylbenzene	98-82-8	-	< 1	-	UM
1,1,2,2-Tetrachloroethane	79-34-5 **	-	< 1	-	N
Propylbenzene	103-65-1	-	< 1	-	UM
Bromobenzene	108-86-1	-	< 1	-	UM
1,2,3-Trichloropropane	96-18-4	-	< 1	-	UM
2-Chlorotoluene	95-49-8	-	< 1	-	UM
1,3,5-Trimethylbenzene	108-67-8	-	< 1	-	UM
4-Chlorotoluene	106-43-4	-	< 1	-	UM
tert-Butylbenzene	98-06-6	-	< 1	-	UM
1,2,4-Trimethylbenzene	95-63-6	-	< 1	-	UM
sec-Butylbenzene	135-98-8	-	< 1	-	UM
p-Isopropyltoluene	99-87-6	-	< 1	-	UM
1,3-Dichlorobenzene	541-73-1	-	< 1	-	UM
1,4-Dichlorobenzene	106-46-7	-	< 1	-	UM
n-Butylbenzene	104-51-8 *	-	< 1	-	N
1,2-Dichlorobenzene	95-50-1	-	< 1	-	UM
1,2-Dibromo-3-chloropropane	96-12-8	-	< 1	-	UM
1,2,4-Trichlorobenzene	120-82-1 *	-	< 4	-	N
Hexachlorobutadiene	87-68-3 **	-	< 3	-	N
Naphthalene	91-20-3	-	< 7	-	UM
1,2,3-Trichlorobenzene	87-61-6	-	< 4	-	UM

Concentrations are reported on a dry weight basis
Compounds marked ** are not UKAS or Mcerts accredited
"M" denotes that % fit has been manually interpreted
This analysis was conducted on an 'As Received' basis.

Internal standards	R.T.	Area %	Surrogates	% Rec
Pentafluorobenzene	4.04	88	Dibromofluoromethane	107
1,4-Difluorobenzene	4.39	87	Toluene-d8	99
Chlorobenzene-d5	5.50	83		
Bromofluorobenzene	5.89	74		
1,4-Dichlorobenzene-d4	6.29	63		
Naphthalene-d8	7.12	41		

Note: Volatile compounds degrade with time, and this may affect the integrity of the data depending on the timescale between sampling and analysis. It is recommended that analysis takes place within 7 days of sampling.

Where individual results are flagged see report notes for status.
Results corrected to dry weight at 105°C where appropriate, in accordance with the MCERTS standard.

TICs by HSA-GCMS

Accredited?: No

Customer and Site Details:	Ramboll Environ: Zeon Chemicals ESA		**Date Booked in:**	06-May-16
Sample Details:	BH7 5.00		**Date Analysed:**	10-May-16
LIMS ID Number:	CL1615468		**Matrix:**	Soil
Job Number:	S16_3678		**Ext Method:**	Headspace
Directory/Quant file:	509VOC.MS19\	Initial Calibration	**Dilution:**	0.95
Operator:	0		**Position:**	29

Tentatively Identified Compounds	CAS No	R.T. (min.)	Concentration µg/kg	% Fit	Accr. code
Non Detected	-	-	<7	-	N
1,3,5-Trichlorobenzene	108-70-3	-	<7	-	N
Carbon Disulphide	75-15-0	-	<7	-	N
Dichloromethane (Methylene Chloride)	75-09-2	-	<7	-	N

The compounds listed above have been tentatively identified by a computer based library search.
Compounds identified in the sample are not reported if they also occur in the method blank.
The % fit is an indication of the reliability of the compound assignment.
Due to the similarity between mass spectra of some isomeric compounds, assignments may not be correct.
Other compounds may also be present but identification was not possible.
Concentrations are semi-quantitative, assume a response factor of 1 and use the nearest internal standard.

Compounds marked ** are not UKAS or Mcerts accredited
"M" denotes that % fit has been manually interpreted

Where individual results are flagged see report notes for status.
Results corrected to dry weight at 105°C where appropriate, in accordance with the MCERTS standard.

Sample Analysis

ESG Environmental Chemistry
Analytical and Deviating Sample Overview

S163678M

Customer **Ramboll Environ**
Site **Zeon Chemicals ESA**
Report No **S163678M**

Consignment No S55695
Date Logged 06-May-2016

Report Due 13-May-2016

ID Number	Description	Sampled	MethodID	CustServ	MCertS	TMSS	VOCHSAS
				REPORT A	MCertS Analysis	Tot.Moisture @ 105C	VOC + TICs HSA-GCMS
						✓	✓
CL/1615468	BH7 5.00	03/05/16					

Note: For analysis where the scheduled turnaround is greater than the holding time we will do our utmost to prioritise these samples. However, it is possible that samples could become deviant whilst being processed in the laboratory.

In this instance please contact the laboratory immediately should you wish to discuss how you would like us to proceed. If you do not respond within 24 hours, we will proceed as originally requested.

Deviating Sample Key	
A	The sample was received in an inappropriate container for this analysis
B	The sample was received without the correct preservation for this analysis
C	Headspace present in the sample container
D	The sampling date was not supplied so holding time may be compromised - applicable to all analysis
E	Sample processing did not commence within the appropriate holding time
F	Sample processing did not commence within the appropriate handling time

Requested Analysis Key	
	Analysis Required
	Analysis dependant upon trigger result - **Note: due date may be affected if triggered**
	No analysis scheduled
^	Analysis Subcontracted - **Note: due date may vary**

Where individual results are flagged see report notes for status.
The integrity of data for samples/analysis that have been categorised as Deviating may be compromised. Data may not be representative of the sample at the time of sampling.

Method Descriptions

Matrix	MethodID	Analysis Basis	Method Description
Soil	TMSS	As Received	Determination of the Total Moisture content at 105ºC by loss on oven drying gravimetric analysis (% based upon wet weight)
Soil	VOCHSAS	As Received	Determination of Volatile Organic Compounds (VOC) by Headspace GCMS

Where individual results are flagged see report notes for status.

Report Notes

Generic Notes

Soil/Solid Analysis

Unless stated otherwise,
- Results expressed as mg/kg have been calculated on the basis indicated in the Method Description table.
  All results on MCERTS reports are reported on a 105ºC dry weight basis with the exception of pH and conductivity.
- Sulphate analysis not conducted in accordance with BS1377
- Water Soluble Sulphate is on a 2:1 water:soil extract

Waters Analysis

Unless stated otherwise results are expressed as mg/l
Nil: Where "Nil" has been entered against Total Alkalinity or Total Acidity this indicates that a measurement was not required due to the inherent pH of the sample.

Oil analysis specific

Unless stated otherwise,
- Results are expressed as mg/kg
- SG is expressed as g/cm^3@ 15^{o}C

Gas (Tedlar bag) Analysis

Unless stated otherwise, results are expressed as ug/l

Asbestos Analysis

CH Denotes Chrysotile **TR** Denotes Tremolite
CR Denotes Crocidolite **AC** Denotes Actinolite
AM Denotes Amosite **AN** Denotes Anthophylite
NAIIS No Asbestos Identified in Sample
NADIS No Asbestos Detected In Sample

Symbol Reference

^ Sub-contracted analysis.
$$ Unable to analyse due to the nature of the sample
¶ Samples submitted for this analyte were not preserved on site in accordance with laboratory protocols. This may have resulted in deterioration of the sample(s) during transit to the laboratory. Consequently the reported data may not represent the concentration of the target analyte present in the sample at the time of sampling
¥ Results for guidance only due to possible interference
& Blank corrected result
I.S Insufficient sample to complete requested analysis
I.S(g) Insufficient sample to re-analyse, results for guidance only
Intf Unable to analyse due to interferences
N.D Not determined **N.Det** Not detected
N.F No Flow
NS Information Not Supplied
Req Analysis requested, see attached sheets for results
Þ Raised detection limit due to nature of the sample
***** All accreditation has been removed by the laboratory for this result
‡ MCERTS accreditation has been removed for this result
§ accreditation has been removed for this result as it is a non-accredited matrix

Note: The Laboratory may only claim that data is accredited when all of the requirements of our Quality System have been met. Where these requirements have not been met the laboratory may elect to include the data in its final report and remove the accreditation from individual data items if it believes that the validity of the data has not been affected. If further details are required of the circumstances which have led to the removal of accreditation then please do not hesitate to contact the laboratory.

Sample Descriptions

Client : Ramboll Environ

Site : Zeon Chemicals ESA

Report Number : S16_3678

Note: major constituent in upper case

Lab ID Number	Client ID	Description
CL/1615468	BH7 5.00	CLAY

Our Ref: EFS/163681M (Ver. 2)
Your Ref: UK15-21370

May 17, 2016

Environmental Chemistry
ESG
Bretby Business Park
Ashby Road
Burton-on-Trent
Staffordshire
DE15 0YZ

Telephone: 01283 554400
Facsimile: 01283 554422

Lucy Cleverley
Ramboll Environ
8 Village Way
Cardiff
CF15 2NE

For the attention of Lucy Cleverley

Dear Lucy Cleverley

Sample Analysis - Zeon Chemicals ESA

Samples from the above site have been analysed in accordance with the schedule supplied.
The sample details and the results of analyses for these samples are given in the appended report.

An invoice for this work will follow under a separate cover.

Where appropriate the samples will be kept until 17/06/16 when they will be discarded. Please call 01283 554547 for an extension of this date.
Please be aware that our policy for the retention of paper based laboratory records and analysis reports is 6 years.

The work was carried out in accordance with Environmental Scientifics Group Ltd (Laboratory and Analytical) Standard Terms and Conditions of Contract.

If I can be of any further assistance please do not hesitate to contact me.

Yours sincerely

for ESG

JMColbourne

J Colbourne
Project Co-ordinator
01283 554547

Environmental Chemistry, ESG, P.O. Box 100, Burton-upon-trent, DE15 0XD Tel: 01283 554400 Fax: 01283 554422
Environmental Scientifics Group Limited.
Registered No: 2880501

TEST REPORT

1252

Report No. EFS/163681M (Ver. 2)

Ramboll Environ
8 Village Way
Cardiff
CF15 2NE

Site: Zeon Chemicals ESA

The 5 samples described in this report were registered for analysis by ESG on 06-May-2016. This report supersedes any versions previously issued by the laboratory.
The analysis was completed by: 17-May-2016

Tests where the accreditation is set to N or No, and any individual data items marked with a * are not UKAS or MCERTS accredited. Any opinions or interpretations expressed herein are outside the scope of any UKAS accreditation held by ESG.

The following tables are contained in this report:

On behalf of
ESG :
Declan Burns

Managing Director
Multi-Sector Services

Date of Issue: 17-May-2016

Accreditation Codes: **N** (Not Accredited), **U** (UKAS), **UM** (UKAS & MCERTS)
Tests marked '^' have been subcontracted to another laboratory.
(NVM) - denotes the sample matrix is dissimilar to matrices upon which the MCERTS validation was based, and is therefore not accredited for MCERTS.
All results are reported on a dry weight basis at 105^{o}C unless otherwise stated. (except QC samples)
ESG accepts no responsibility for any sampling not carried out by our personnel.

			Units :	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	pH Units	mg/kg	mg/kg
			Method Codes :	GROHSA	ICPMSS	ICPMSS	ICPMSS	ICPMSS	ICPMSS	ICPMSS	ICPMSS	ICPMSS	ICPMSS	ICPSOIL	ICPSOIL	ICPWSS	PHSOIL	SFAPI	SFAPI
			Method Reporting Limits :	0.2	0.3	0.2	1.2	1.6	0.7	0.5	2	0.5	16	1	0.1	10		0.5	0.5
			Accreditation Code:		UM	UM	UM	UM	UM	UM	UM	UM	UM	UM	UM	UM	UM	UM	U
LAB ID Number CL/	Client Sample Description	Sample Date	GRO (AA) by HSA GC-FID	Arsenic (MS)	Cadmium (MS)	Chromium (MS)	Copper (MS)	Lead (MS)	Mercury (MS)	Nickel (MS)	Selenium (MS)	Zinc (MS)	Barium.	Beryllium.	SO4-- (H2O sol) mg/l	pH units (AR)	Cyanide(Total) (AR)	Phenol Index.(AR)
1615489	BH101 0.30	03-May-16	Req	8.0	0.26	13.7	107.9	98.3	<0.5	55.7	1	134.6	536	3.0	122	8.0	<0.6	<0.6
1615490	BH101 3.20	03-May-16	Req	10.4	<0.20	29.4	10.1	17.7	<0.5	26.2	<0.5	75.4	41.3	0.831	260	9.0	<0.7	<0.7
1615491	BH101A 3.20	03-May-16	Req	10.8	<0.2	28.7	9	17	<0.5	26.4	<0.5	77.0	35.7	0.804	274	9.1	<0.7	<0.7
1615492	BH102 0.50	03-May-16	Req	12.9	0.72	28.2	29.7	63.8	<0.52	29.6	<0.5	142.6	192	1.05	293	8.5	<0.6	<0.6
1615493	BH102 0.80	03-May-16																

ESG

Bretby Business Park, Ashby Road

Burton-on-Trent, Staffordshire, DE15 0YZ

Tel +44 (0) 1283 554400

Fax +44 (0) 1283 554422

Client Name Ramboll Environ

Contact Lucy Cleverley

Zeon Chemicals ESA

Sample Analysis

Date Printed	17-May-2016
Report Number	EFS/163681M
Table Number	1

Where individual results are flagged see report notes for status.
Results corrected to dry weight at 105°C where appropriate, in accordance with the MCERTS standard.

Units :				mg/kg	%	mg/kg	µg/kg	mg/kg	mg/kg									
Method Codes :			Sub020	Sub020	SVOCMSUS	TMSS	TPHUSSI	VOCHSAS	ICPMSS	PAHMSUS								
Method Reporting Limits :						0.2	20		0.6									
Accreditation Code:			U	U		U			N									
LAB ID Number CL/	**Client Sample Description**	**Sample Date**	**^Asbestos (screen).**	**^Asbestos ID & Quan**	**SVOC + TICs by GCMS (AR)**	**Tot.Moisture @ 105C**	**TPH by GCFID (AR/Si)**	**VOC + TICs HSA-GCMS**	**Vanadium (MS)**	**PAH (17) by GCMS**								
1615489	BH101 0.30	**03-May-16**	NAIIS		Req	19.7	Req	Req	34.7	Req								
1615490	BH101 3.20	**03-May-16**				27.6	Req	Req	35.4	Req								
1615491	BH101A 3.20	**03-May-16**				26.1	Req	Req	34.1	Req								
1615492	BH102 0.50	**03-May-16**				16.5	Req	Req	37.1	Req								
1615493	BH102 0.80	**03-May-16**		1.150														

ESG

Bretby Business Park, Ashby Road

Burton-on-Trent, Staffordshire, DE15 0YZ

Tel +44 (0) 1283 554400

Fax +44 (0) 1283 554422

Client Name **Ramboll Environ**

Contact Lucy Cleverley

Zeon Chemicals ESA

Sample Analysis

Date Printed	**17-May-2016**
Report Number	**EFS/163681M**
Table Number	**1**

Where individual results are flagged see report notes for status.
Results corrected to dry weight at 105°C where appropriate, in accordance with the MCERTS standard.

Polycyclic Aromatic Hydrocarbons
GC/MS (SIM)

Customer and Site Details:	Ramboll Environ: Zeon Chemicals ESA		
Sample Details:	BH101 0.30	**Job Number:**	S16_3681M
LIMS ID Number:	CL1615489	**Date Booked in:**	06-May-16
QC Batch Number:	160550	**Date Extracted:**	10-May-16
Quantitation File:	Initial Calibration	**Date Analysed:**	11-May-16
Directory:	1016PAHMS14\	**Matrix:**	Soil
Dilution:	1.0	**Ext Method:**	Ultrasonic

Accredited?: Yes

Target Compounds	CAS #	R.T. (min)	Concentration mg/kg	% Fit	Accr. code
Naphthalene	91-20-3	2.77	0.10	87	**UM**
Acenaphthylene	208-96-8	3.81	0.31	98	U
Acenaphthene	83-32-9	-	< 0.10	-	UM
Fluorene	86-73-7	4.25	0.16	85	UM
Phenanthrene	85-01-8	4.96	1.86	98	UM
Anthracene	120-12-7	5.01	0.80	98	U
Fluoranthene	206-44-0	6.15	3.46	93	UM
Pyrene	129-00-0	6.40	3.30	90	UM
Benzo[a]anthracene	56-55-3	7.99	3.96	95	UM
Chrysene	218-01-9	8.03	3.81	97	UM
Benzo[b]fluoranthene	205-99-2	9.46	5.40	97	UM
Benzo[k]fluoranthene	207-08-9	9.49	1.90	95	UM
Benzo[a]pyrene	50-32-8	9.87	3.72	97	UM
Indeno[1,2,3-cd]pyrene	193-39-5	11.21	2.68	93	UM
Dibenzo[a,h]anthracene	53-70-3	11.25	0.88	92	UM
Benzo[g,h,i]perylene	191-24-2	11.49	2.34	96	UM
Coronene	191-07-1 *	13.10	0.60	75	N
Total (USEPA16) PAHs	-	-	< 34.78	-	N

* Denotes compound is not UKAS accredited

"M" denotes that % fit has been manually interpreted

Internal Standards	% Area
1,4-Dichlorobenzene-d4	NA
Naphthalene-d8	102
Acenaphthene-d10	98
Phenanthrene-d10	100
Chrysene-d12	111
Perylene-d12	114

Surrogates	% Rec
Nitrobenzene-d5	NA
2-Fluorobiphenyl	88
Terphenyl-d14	69

Concentrations are reported on a dry weight basis.

The Total PAH result is the sum of non-rounded individual PAH results and therefore may differ to the sum of the rounded individual PAH results printed above. By convention, where any one or more result is a "less than", the total is expressed as a "less than" and includes the "less than" concentration within the total.

Polycyclic Aromatic Hydrocarbons
GC/MS (SIM)

Customer and Site Details:	Ramboll Environ: Zeon Chemicals ESA		
Sample Details:	BH101 3.20	**Job Number:**	S16_3681M
LIMS ID Number:	CL1615490	**Date Booked in:**	06-May-16
QC Batch Number:	160550	**Date Extracted:**	10-May-16
Quantitation File:	Initial Calibration	**Date Analysed:**	11-May-16
Directory:	1016PAHMS14\	**Matrix:**	Soil
Dilution:	1.0	**Ext Method:**	Ultrasonic

Accredited?: Yes

Target Compounds	CAS #	R.T. (min)	Concentration mg/kg	% Fit	Accr. code
Naphthalene	91-20-3	-	< 0.11	-	**UM**
Acenaphthylene	208-96-8	-	< 0.11	-	U
Acenaphthene	83-32-9	-	< 0.11	-	UM
Fluorene	86-73-7	-	< 0.11	-	UM
Phenanthrene	85-01-8	-	< 0.11	-	UM
Anthracene	120-12-7	-	< 0.11	-	U
Fluoranthene	206-44-0	-	< 0.11	-	UM
Pyrene	129-00-0	-	< 0.11	-	UM
Benzo[a]anthracene	56-55-3	-	< 0.11	-	UM
Chrysene	218-01-9	-	< 0.11	-	UM
Benzo[b]fluoranthene	205-99-2	-	< 0.11	-	UM
Benzo[k]fluoranthene	207-08-9	-	< 0.11	-	UM
Benzo[a]pyrene	50-32-8	-	< 0.11	-	UM
Indeno[1,2,3-cd]pyrene	193-39-5	-	< 0.11	-	UM
Dibenzo[a,h]anthracene	53-70-3	-	< 0.11	-	UM
Benzo[g,h,i]perylene	191-24-2	-	< 0.11	-	UM
Coronene	191-07-1 *	-	< 0.11	-	N
Total (USEPA16) PAHs	-	-	< 1.77	-	N

* Denotes compound is not UKAS accredited

"M" denotes that % fit has been manually interpreted

Internal Standards	% Area
1,4-Dichlorobenzene-d4	NA
Naphthalene-d8	105
Acenaphthene-d10	99
Phenanthrene-d10	97
Chrysene-d12	85
Perylene-d12	76

Surrogates	% Rec
Nitrobenzene-d5	NA
2-Fluorobiphenyl	94
Terphenyl-d14	73

Concentrations are reported on a dry weight basis.

The Total PAH result is the sum of non-rounded individual PAH results and therefore may differ to the sum of the rounded individual PAH results printed above. By convention, where any one or more result is a "less than", the total is expressed as a "less than" and includes the "less than" concentration within the total.

Polycyclic Aromatic Hydrocarbons
GC/MS (SIM)

Customer and Site Details:	Ramboll Environ: Zeon Chemicals ESA		
Sample Details:	BH101A 3.20	**Job Number:**	S16_3681M
LIMS ID Number:	CL1615491	**Date Booked in:**	06-May-16
QC Batch Number:	160550	**Date Extracted:**	10-May-16
Quantitation File:	Initial Calibration	**Date Analysed:**	11-May-16
Directory:	1016PAHMS14\	**Matrix:**	Soil
Dilution:	1.0	**Ext Method:**	Ultrasonic

Accredited?: Yes

Target Compounds	CAS #	R.T. (min)	Concentration mg/kg	% Fit	Accr. code
Naphthalene	91-20-3	-	< 0.11	-	**UM**
Acenaphthylene	208-96-8	-	< 0.11	-	U
Acenaphthene	83-32-9	-	< 0.11	-	UM
Fluorene	86-73-7	-	< 0.11	-	UM
Phenanthrene	85-01-8	-	< 0.11	-	UM
Anthracene	120-12-7	-	< 0.11	-	U
Fluoranthene	206-44-0	-	< 0.11	-	UM
Pyrene	129-00-0	-	< 0.11	-	UM
Benzo[a]anthracene	56-55-3	-	< 0.11	-	UM
Chrysene	218-01-9	-	< 0.11	-	UM
Benzo[b]fluoranthene	205-99-2	-	< 0.11	-	UM
Benzo[k]fluoranthene	207-08-9	-	< 0.11	-	UM
Benzo[a]pyrene	50-32-8	-	< 0.11	-	UM
Indeno[1,2,3-cd]pyrene	193-39-5	-	< 0.11	-	UM
Dibenzo[a,h]anthracene	53-70-3	-	< 0.11	-	UM
Benzo[g,h,i]perylene	191-24-2	-	< 0.11	-	UM
Coronene	191-07-1 *	-	< 0.11	-	N
Total (USEPA16) PAHs	-	-	< 1.73	-	N

* Denotes compound is not UKAS accredited

"M" denotes that % fit has been manually interpreted

Internal Standards	% Area
1,4-Dichlorobenzene-d4	NA
Naphthalene-d8	103
Acenaphthene-d10	98
Phenanthrene-d10	95
Chrysene-d12	85
Perylene-d12	82

Surrogates	% Rec
Nitrobenzene-d5	NA
2-Fluorobiphenyl	96
Terphenyl-d14	74

Concentrations are reported on a dry weight basis.

The Total PAH result is the sum of non-rounded individual PAH results and therefore may differ to the sum of the rounded individual PAH results printed above. By convention, where any one or more result is a "less than", the total is expressed as a "less than" and includes the "less than" concentration within the total.

Polycyclic Aromatic Hydrocarbons
GC/MS (SIM)

Customer and Site Details:	Ramboll Environ: Zeon Chemicals ESA		
Sample Details:	BH102 0.50	**Job Number:**	S16_3681M
LIMS ID Number:	CL1615492	**Date Booked in:**	06-May-16
QC Batch Number:	160550	**Date Extracted:**	10-May-16
Quantitation File:	Initial Calibration	**Date Analysed:**	11-May-16
Directory:	1016PAHMS14\	**Matrix:**	Soil
Dilution:	1.0	**Ext Method:**	Ultrasonic

Accredited?: Yes

Target Compounds	CAS #	R.T. (min)	Concentration mg/kg	% Fit	Accr. code
Naphthalene	91-20-3	-	< 0.10	-	**UM**
Acenaphthylene	208-96-8	-	< 0.10	-	U
Acenaphthene	83-32-9	-	< 0.10	-	UM
Fluorene	86-73-7	-	< 0.10	-	UM
Phenanthrene	85-01-8	4.96	0.81	99	UM
Anthracene	120-12-7	5.01	0.17	99	U
Fluoranthene	206-44-0	6.15	2.30	94	UM
Pyrene	129-00-0	6.40	1.75	90	UM
Benzo[a]anthracene	56-55-3	7.99	1.19	91	UM
Chrysene	218-01-9	8.03	1.30	98	UM
Benzo[b]fluoranthene	205-99-2	9.46	1.34	82	UM
Benzo[k]fluoranthene	207-08-9	9.49	0.65	83	UM
Benzo[a]pyrene	50-32-8	9.87	0.85	97	UM
Indeno[1,2,3-cd]pyrene	193-39-5	11.22	0.51	82	UM
Dibenzo[a,h]anthracene	53-70-3	11.25	0.13	80	UM
Benzo[g,h,i]perylene	191-24-2	11.49	0.44	95	UM
Coronene	191-07-1 *	13.10	0.11	84	N
Total (USEPA16) PAHs	-	-	< 11.84	-	N

* Denotes compound is not UKAS accredited

"M" denotes that % fit has been manually interpreted

Internal Standards	% Area
1,4-Dichlorobenzene-d4	NA
Naphthalene-d8	107
Acenaphthene-d10	100
Phenanthrene-d10	100
Chrysene-d12	101
Perylene-d12	102

Surrogates	% Rec
Nitrobenzene-d5	NA
2-Fluorobiphenyl	92
Terphenyl-d14	72

Concentrations are reported on a dry weight basis.

The Total PAH result is the sum of non-rounded individual PAH results and therefore may differ to the sum of the rounded individual PAH results printed above. By convention, where any one or more result is a "less than", the total is expressed as a "less than" and includes the "less than" concentration within the total.

Semi-Volatile Organic Compounds

Accredited?: Yes

Customer and Site Details:	Ramboll Environ: Zeon Chemicals ESA			**Matrix:**	Soil	**QC Batch Number:**	108
Sample Details:	BH101 0.30	**Date Booked in:**	06-May-16	**Ext Method:**	Ultrasonic	**Multiplier:**	1
LIMS ID Number:	CL1615489	**Date Extracted:**	11-May-16	**Operator:**	SO/RP	**Dilution Factor:**	5
Job Number:	S16_3681M	**Date Analysed:**	12-May-16	**Directory/Quant File:**	051116_MS16\	**GPC (Y/N)**	N

Target Compounds	CAS #	R.T. (min)	Concentration mg/kg	% Fit	Accr. code
Phenol	108-95-2	-	< 0.6	-	U
bis(2-Chloroethyl)ether	111-44-4	-	< 0.6	-	U
2-Chlorophenol	95-57-8	-	< 0.6	-	U
1,3-Dichlorobenzene	541-73-1	-	< 0.6	-	U
1,4-Dichlorobenzene	106-46-7	-	< 0.6	-	U
Benzyl alcohol	100-51-6	-	< 3.1	-	U
1,2-Dichlorobenzene	95-50-1	-	< 0.6	-	U
2-Methylphenol	95-48-7	-	< 0.6	-	U
bis(2-Chloroisopropyl)ether	108-60-1	-	< 3.1	-	U
Hexachloroethane	67-72-1	-	< 0.6	-	U
N-Nitroso-di-n-propylamine	621-64-7*	-	< 5.6	-	N
3- & 4-Methylphenol	108-39-4/106-44-5	-	< 0.6	-	U
Nitrobenzene	98-95-3	-	< 3.1	-	U
Isophorone	78-59-1*	-	< 0.6	-	N
2-Nitrophenol	88-75-5	-	< 0.6	-	U
2,4-Dimethylphenol	105-67-9	-	< 0.6	-	U
Benzoic Acid	65-85-0*	-	< 3.1	-	N
bis(2-Chloroethoxy)methane	111-91-1	-	< 0.6	-	U
2,4-Dichlorophenol	120-83-2	-	< 0.6	-	U
1,2,4-Trichlorobenzene	120-82-1*	-	< 0.6	-	N
Naphthalene	91-20-3	-	< 0.6	-	U
4-Chlorophenol	106-48-9	-	< 3.1	-	U
4-Chloroaniline	106-47-8*	-	< 3.1	-	N
Hexachlorobutadiene	87-68-3*	-	< 0.6	-	N
4-Chloro-3-methylphenol	59-50-7	-	< 0.6	-	U
2-Methylnaphthalene	91-57-6	-	< 0.6	-	U
1-Methylnaphthalene	90-12-0	-	< 0.6	-	U
Hexachlorocyclopentadiene	77-47-4*	-	< 0.6	-	N
2,4,6-Trichlorophenol	88-06-2	-	< 0.6	-	U
2,4,5-Trichlorophenol	95-95-4	-	< 0.6	-	U
2-Chloronaphthalene	91-58-7	-	< 0.6	-	U
Biphenyl	92-52-4	-	< 0.6	-	U
Diphenyl ether	101-84-8	-	< 0.6	-	U
2-Nitroaniline	88-74-4*	-	< 3.1	-	N
Acenaphthylene	208-96-8	-	< 0.6	-	U
Dimethylphthalate	131-11-3	-	< 0.6	-	U
2,6-Dinitrotoluene	606-20-2	-	< 3.1	-	U
Acenaphthene	83-32-9	-	< 0.6	-	U
3-Nitroaniline	99-09-2*	-	< 90.3	-	N

Target Compounds	CAS #	R.T.	Concentration mg/kg	% Fit	Accr. code
2,4-Dinitrophenol	51-28-5*	-	< 3.1	-	N
Dibenzofuran	132-64-9	-	< 0.6	-	U
4-Nitrophenol	100-02-7*	-	< 3.1	-	N
2,4-Dinitrotoluene	121-14-2	-	< 1.0	-	U
Fluorene	86-73-7	-	< 0.6	-	U
Diethylphthalate	84-66-2	-	< 0.6	-	U
4-Chlorophenyl-phenylether	7005-72-3	-	< 0.6	-	U
4,6-Dinitro-2-methylphenol	534-52-1*	-	< 1.0	-	N
4-Nitroaniline	100-01-6*	-	< 4.0	-	N
N-Nitrosodiphenylamine	86-30-6*	-	< 0.6	-	N
4-Bromophenyl-phenylether	101-55-3	-	< 0.6	-	U
Hexachlorobenzene	118-74-1	-	< 0.6	-	U
Pentachlorophenol	87-86-5*	-	< 3.1	-	N
Phenanthrene	85-01-8	5.91	1.5	98	U
Anthracene	120-12-7	5.95	0.6	86	U
Di-n-butylphthalate	84-74-2	-	< 0.6	-	U
Fluoranthene	206-44-0	6.75	2.1	91	U
Pyrene	129-00-0	6.94	2.0	95	U
Butylbenzylphthalate	85-68-7	-	< 1.0	-	U
Benzo[a]anthracene	56-55-3	8.27	2.2	92	U
Chrysene	218-01-9	8.32	2.2	95	U
3,3'-Dichlorobenzidine	91-94-1*	-	N.D	-	N
bis(2-Ethylhexyl)phthalate	117-81-7	8.31	7.2	100	U
Di-n-octylphthalate	117-84-0*	-	< 1.0	-	N
Benzo[b]fluoranthene	205-99-2	10.02	4.5	100	U
Benzo[k]fluoranthene	207-08-9	10.07	1.6	98	U
Benzo[a]pyrene	50-32-8	10.63	3.0	96	U
Indeno[1,2,3-cd]pyrene	193-39-5	-	< 3.1	-	U
Dibenzo[a,h]anthracene	53-70-3	-	< 3.1	-	U
Benzo[g,h,i]perylene	191-24-2	-	< 3.1	-	U
Coronene	191-07-1*	-	< 1.9	-	N

Internal Standards	% Area
1,4-Dichlorobenzene-d4	87
Naphthalene-d8	87
Acenaphthene-d10	86
Phenanthrene-d10	83
Chrysene-d12	78
Perylene-d12	50

Surrogates	% Rec
2-Fluorophenol	73
Phenol-d5	77
Nitrobenzene-d5	88
2-Fluorobiphenyl	98
2,4,6-Tribromophenol	64
Terphenyl-d14	100

This analysis was conducted on an 'As Received' basis.

Concentrations are reported on a dry weight basis.

Where individual results are flagged see report notes for status.
Results corrected to dry weight at 105°C where appropriate, in accordance with the MCERTS standard.

SVOC (TICs)

Accredited?:No

Customer and Site Details:	Ramboll Environ: Zeon Chemicals ESA		
Sample Details:	BH101 0.30	**Job Number:**	S16_3681
LIMS ID Number:	CL1615489		
		Multiplier:	1
Date Booked in:	06-May-16	**Dilution Factor:**	5
Date Extracted:	11-May-16	**GPC (Y/N):**	N
Date Analysed:	12-May-16	**Matrix:**	Soil
QC Batch Number:	108	**Method:**	Ultrasonic
Directory/Quant File:	051116_MS16\ 0	**Operator:**	SO/RP

Tentatively Identified Compounds	CAS #	R.T.	Concentration mg/kg	% Fit	Accr. code
Phthalic acid, hexyl dodecyl ester	999683-84-0	14.83	29.863	72	N
CIS-.BETA.-DIHYDRO TERPINEOL	003901-95-9	3.75	9.597	86	N
TRANS-.BETA.-DIHYDRO TERPINEOL	003901-93-7	3.67	6.378	87	N
Cyclohexane, (1-methylethyl)-	000696-29-7	2.72	5.826	97	N
Unidentified peak	-	3.57	3.919	-	N
Benzo[e]pyrene	000192-97-2	10.53	2.710	96	N
Anthracene, 1-methyl-	000610-48-0	6.30	2.602	70	N
Cyclohexane, 1-methyl-4-(1-methylethyl)-, trans-	001678-82-6	2.97	1.986	87	N
Unidentified peak	-	6.66	1.831	-	N
Unidentified peak	-	6.11	1.801	-	N
trans-p-menthane-1,8-diol	999113-24-1	4.40	1.715	64	N
Unidentified peak	-	6.06	1.596	-	N
Cyclohexanone	000108-94-1	2.61	1.588	64	N
Phenanthrene, 3-methyl-	000832-71-3	6.24	1.555	87	N
Perylene	000198-55-0	10.21	1.475	98	N
Phenanthrene, 2,5-dimethyl-	003674-66-6	6.61	1.466	93	N
Unidentified peak	-	4.73	1.461	-	N
Naphthalene, 2-phenyl-	000612-94-2	6.43	1.420	83	N
(E)-4,4-Dimethylpent-2-enal	000000-00-0	4.15	1.382	50	N
1-Methyl-4-(1-methylethyl)-cyclohexane	000099-82-1	3.04	1.313	91	N

The compounds listed above have been tentatively identified by a computer based library search.
Compounds identified in the sample are not reported if they also occur in the method blank.
The % fit is an indication of the reliability of the compound assignment.
Due to the similarity between mass spectra of some isomeric compounds assignments may not be correct.
Other compounds may also be present but identification was not possible.
Concentrations are semi-quantitative, assume a response factor of 1 and use the nearest internal standard.
Concentrations are reported on a dry weight basis.

Where individual results are flagged see report notes for status.
Results corrected to dry weight at 105°C where appropriate, in accordance with the MCERTS standard.

Gasoline Range Organics
(BTEX and Aliphatic Carbon Ranges)

Customer and Site Details: Ramboll Environ : Zeon Chemicals ESA
Job Number: S16_3681
Directory: E:\TES\DATA\2016\0509HSA_GC9\050916 2016-05-09 13-26-44\049F4901.D
Method: Headspace GCFID
Accreditation Code: UM

Matrix: Soil
Date Booked in: 06-May-16
Date extracted: 09-May-16
Date Analysed: 10-May-16, 03:2

*** Sample data with an asterisk are not UKAS accredited.**

		Concentration, (mg/kg) - as dry weight.					Aliphatics				
Sample ID	**Client ID**	**Benzene**	**Toluene**	**Ethyl benzene**	**m/p-Xylene**	**o-Xylene**	**C5 - C6**	**>C6 - C7**	**>C7 - C8**	**>C8 - C10**	**Total GRO**
CL1615489	BH101 0.30	<0.012	<0.012	<0.012	<0.012	<0.012	<0.2	<0.2	<0.2	0.3	0.4
CL1615490	BH101 3.20	<0.014	<0.014	<0.014	<0.014	<0.014	<0.3	<0.3	<0.3	<0.3	<0.3
CL1615491	BH101A 3.20	<0.014	<0.014	<0.014	<0.014	<0.014	<0.3	<0.3	<0.3	<0.3	<0.3
CL1615492	BH102 0.50	<0.012	<0.012	<0.012	<0.012	<0.012	<0.2	<0.2	<0.2	<0.2	<0.2

Note: Benzene elutes between C6 and C7, toluene elutes between C7 and C8, ethyl benzene and the xylenes elute between C8 and C9.
Each BTEX compound is deducted from the appropriate band to give the aliphatic fractions, however aromatic compounds may still be contributing to these fractions

Where individual results are flagged see report notes for status.
Results corrected to dry weight at 105°C where appropriate, in accordance with the MCERTS standard.

ALIPHATIC / AROMATIC FRACTION BY GC/FID

Customer and Site Details: Ramboll Environ : Zeon Chemicals ESA
Job Number: S16_3681M
QC Batch Number: 16550
Directory: D:\TES\DATA\Y2016\051216TPH_GC4\051216 2016-05-12 11-25-26\059B1101.D
Method: Ultra Sonic

Separation: Silica gel
Eluents: Hexane, DCM

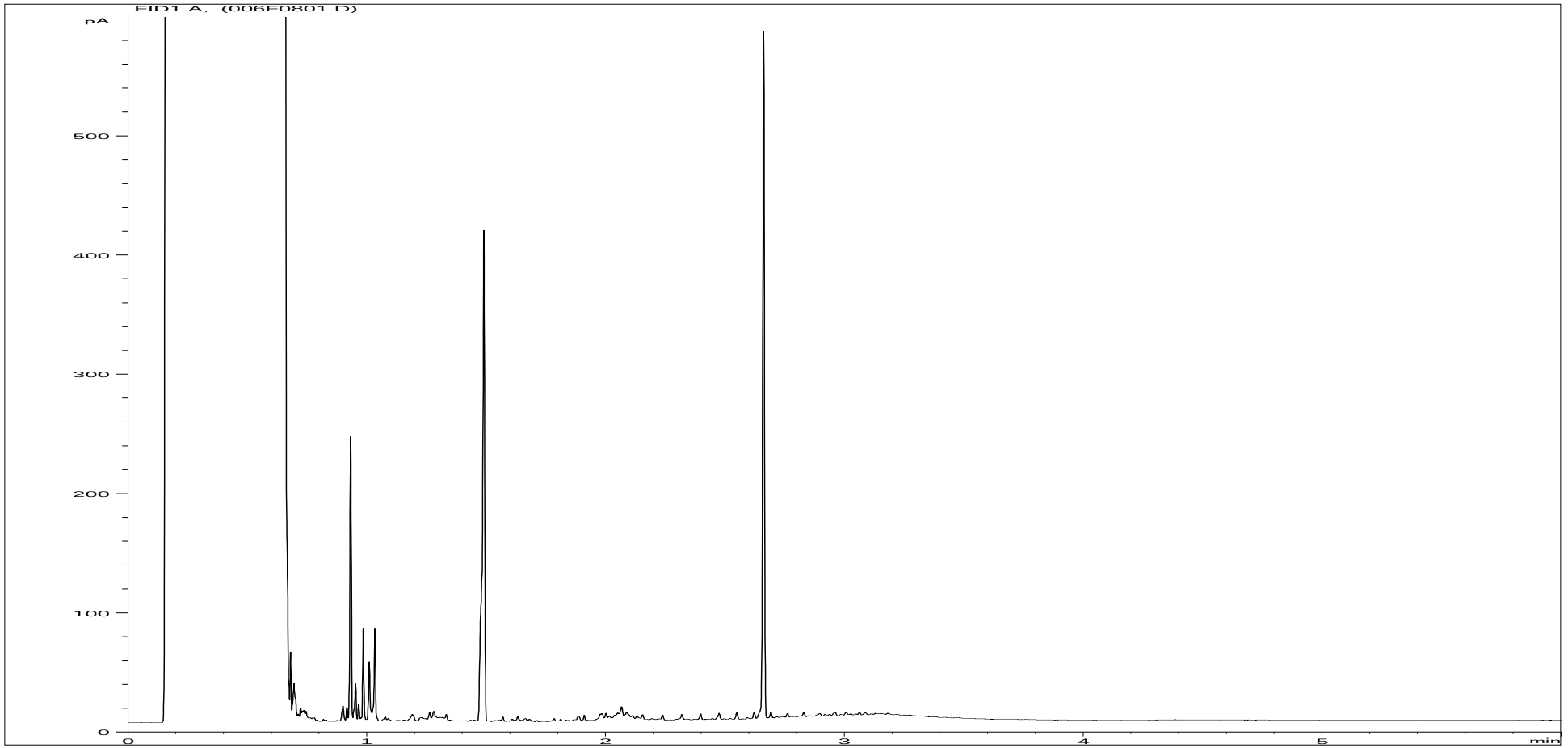
Matrix: Soil
Date Booked ir 06-May-16
Date Extracted 10-May-16
Date Analysed 12-May-16, 13:44:57

This sample data is not MCERTS accredited.
*** This sample data is not ISO17025 accredited.**

		Concentration, (mg/kg) - as dry weight.											
		>C8 - C10		>C10 - C12		>C12 - C16		>C16 - C21		>C21 - C35		>C8 - C40	
Sample ID	**Client ID**	**Aliphatics**	**Aromatics**	**Aliphatics**	**Aromatics**	**Aliphatics**	**Aromatics**	**Aliphatics**	**Aromatics**	**Aliphatics**	**Aromatics**	**Aliphatics**	**Aromatics**
CL1615489	BH101 0.30	39.7	54.5	5.42	40.2	6.08	8.29	20	26.9	38.5	270	113.4	433
CL1615490	BH101 3.20	<6	<6	<6	<6	<6	<6	<6	<6	<12.10	<12.10	<28	<28
CL1615491	BH101A 3.20	<5	<5	<5	<5	<5	<5	<5	<5	<11.85	<11.85	<27	<27
CL1615492	BH102 0.50	<5	<5	<5	<5	<5	<5	5.86	15.2	14	56.8	28.9	90.1

Where individual results are flagged see report notes for status.
Results corrected to dry weight at 105°C where appropriate, in accordance with the MCERTS standard.

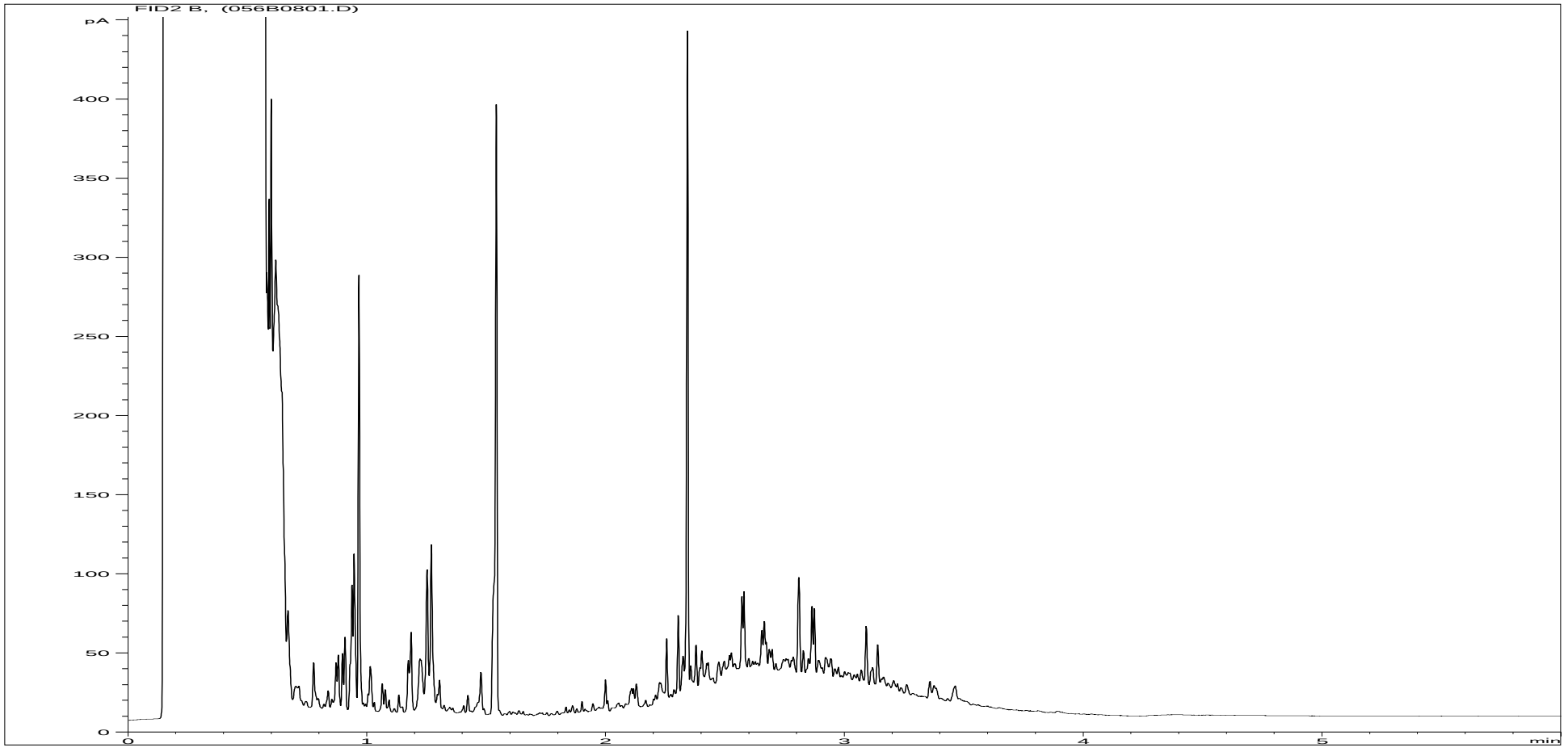
Petroleum Hydrocarbons (C8 to C40) by GC/FID Aliphatics Fraction.



Sample ID:	CL1615489ALI	**Job Number:**	S16_3681M
Multiplier:	14.88	**Client:**	Ramboll Environ
Dilution:	1	**Site:**	Zeon Chemicals ESA
Acquisition Method:	5UL_RUNF.M	**Client Sample Ref:**	BH101 0.30
Acquisition Date/Time:	12-May-16, 13:03:19		
Datafile:	D:\TES\DATA\Y2016\051216TPH_GC4\051216 2016-05-12 11-25-26\006F0801.D		

Where individual results are flagged see report notes for status.
Results corrected to dry weight at 105°C where appropriate, in accordance with the MCERTS standard.

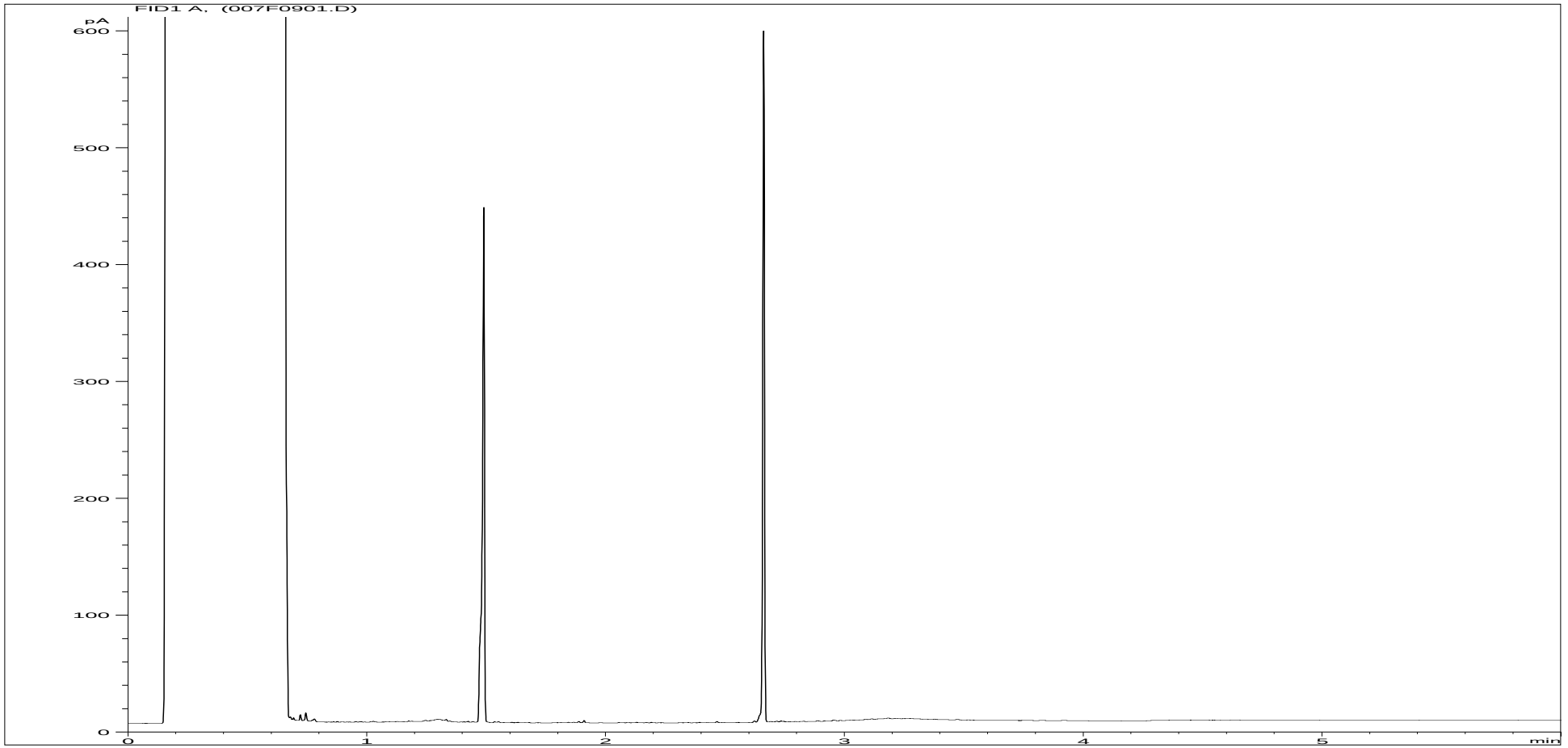
Petroleum Hydrocarbons (C8 to C40) by GC/FID Aromatics Fraction.



Sample ID:	CL1615489ARO	**Job Number:**	S16_3681M
Multiplier:	11.68	**Client:**	Ramboll Environ
Dilution:	1	**Site:**	Zeon Chemicals ESA
Acquisition Method:	5UL_RUNF.M	**Client Sample Ref:**	BH101 0.30
Acquisition Date/Time:	12-May-16, 13:03:19		
Datafile:	D:\TES\DATA\Y2016\051216TPH_GC4\051216 2016-05-12 11-25-26\056B0801.D		

Where individual results are flagged see report notes for status.
Results corrected to dry weight at 105°C where appropriate, in accordance with the MCERTS standard.

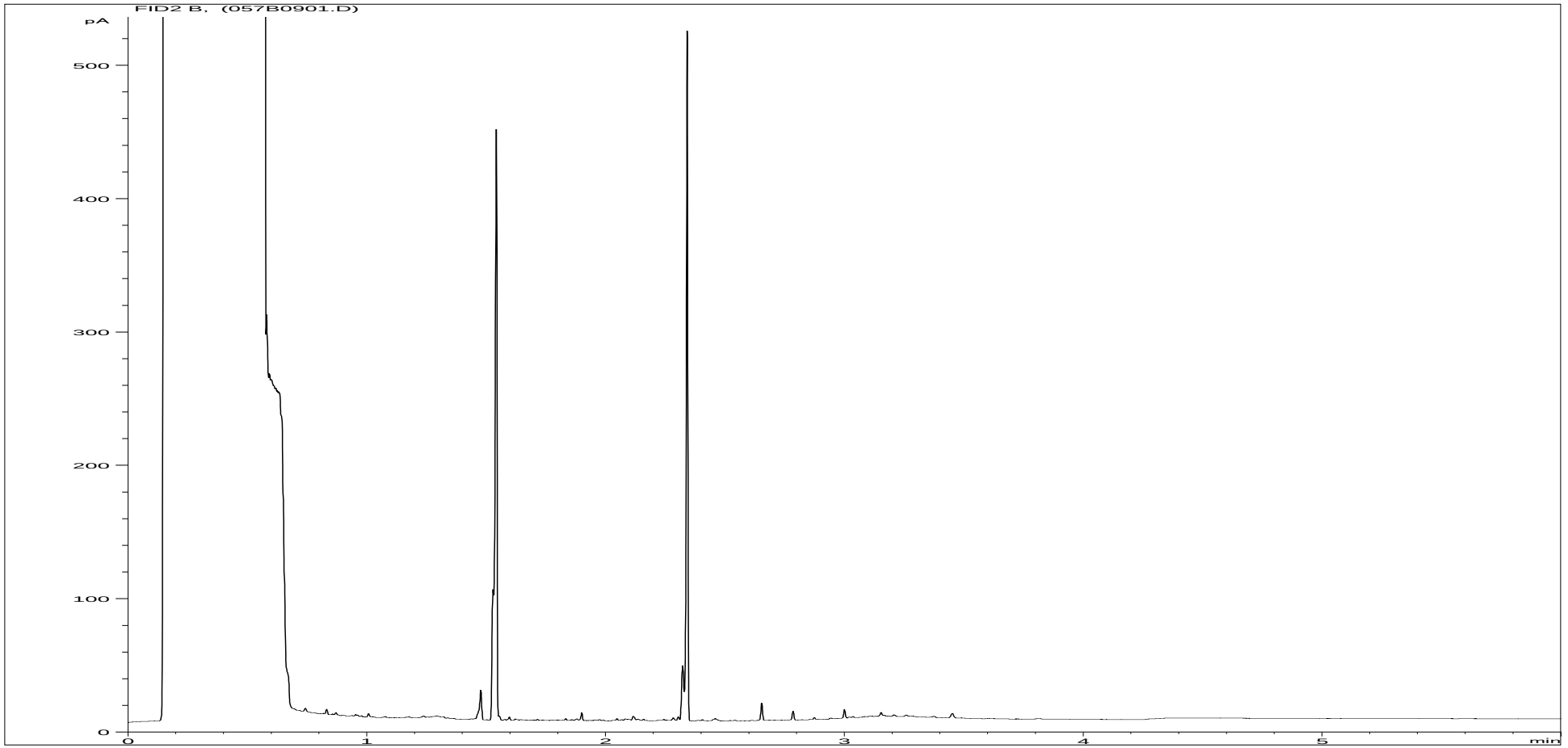
Petroleum Hydrocarbons (C8 to C40) by GC/FID Aliphatics Fraction.



Sample ID:	CL1615490ALI	**Job Number:**	S16_3681M
Multiplier:	14.88	**Client:**	Ramboll Environ
Dilution:	1	**Site:**	Zeon Chemicals ESA
Acquisition Method:	5UL_RUNF.M	**Client Sample Ref:**	BH101 3.20
Acquisition Date/Time:	12-May-16, 13:17:08		
Datafile:	D:\TES\DATA\Y2016\051216TPH_GC4\051216 2016-05-12 11-25-26\007F0901.D		

Where individual results are flagged see report notes for status.
Results corrected to dry weight at 105°C where appropriate, in accordance with the MCERTS standard.

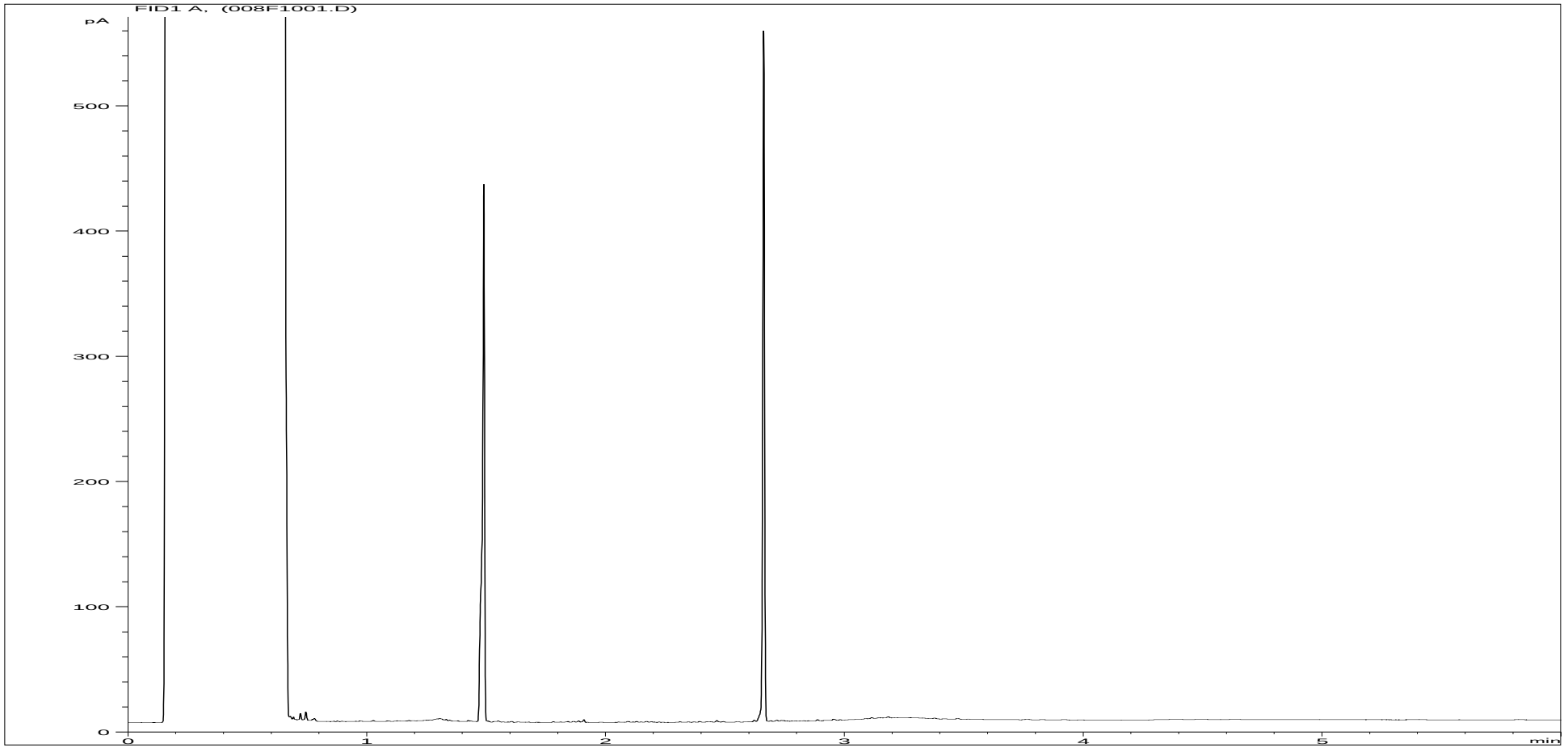
Petroleum Hydrocarbons (C8 to C40) by GC/FID Aromatics Fraction.



Sample ID:	CL1615490ARO	**Job Number:**	S16_3681M
Multiplier:	11.84	**Client:**	Ramboll Environ
Dilution:	1	**Site:**	Zeon Chemicals ESA
Acquisition Method:	5UL_RUNF.M	**Client Sample Ref:**	BH101 3.20
Acquisition Date/Time:	12-May-16, 13:17:08		
Datafile:	D:\TES\DATA\Y2016\051216TPH_GC4\051216 2016-05-12 11-25-26\057B0901.D		

Where individual results are flagged see report notes for status.
Results corrected to dry weight at 105°C where appropriate, in accordance with the MCERTS standard.

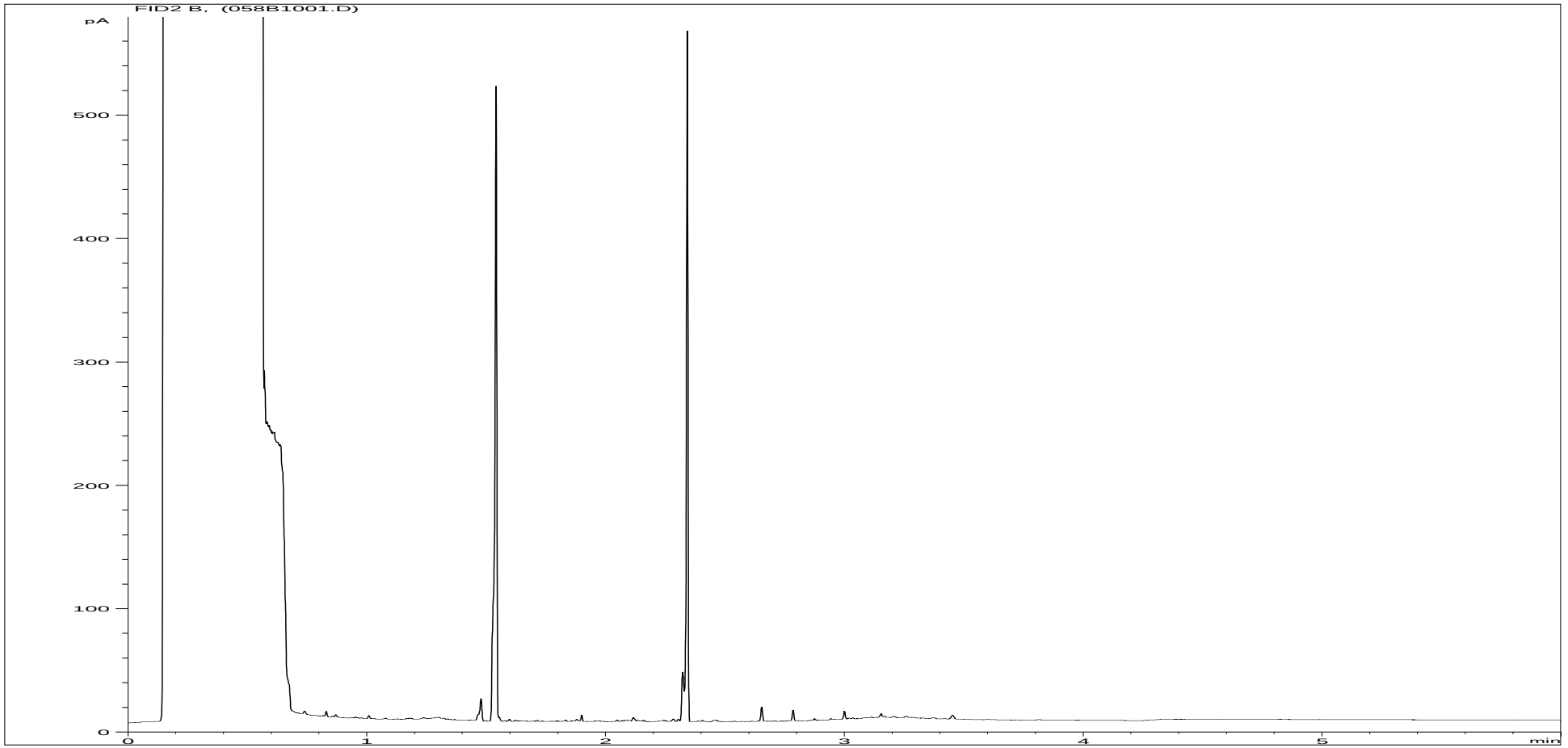
Petroleum Hydrocarbons (C8 to C40) by GC/FID Aliphatics Fraction.



Sample ID:	CL1615491ALI	**Job Number:**	S16_3681M
Multiplier:	15.2	**Client:**	Ramboll Environ
Dilution:	1	**Site:**	Zeon Chemicals ESA
Acquisition Method:	5UL_RUNF.M	**Client Sample Ref:**	BH101A 3.20
Acquisition Date/Time:	12-May-16, 13:30:58		
Datafile:	D:\TES\DATA\Y2016\051216TPH_GC4\051216 2016-05-12 11-25-26\008F1001.D		

Where individual results are flagged see report notes for status.
Results corrected to dry weight at 105°C where appropriate, in accordance with the MCERTS standard.

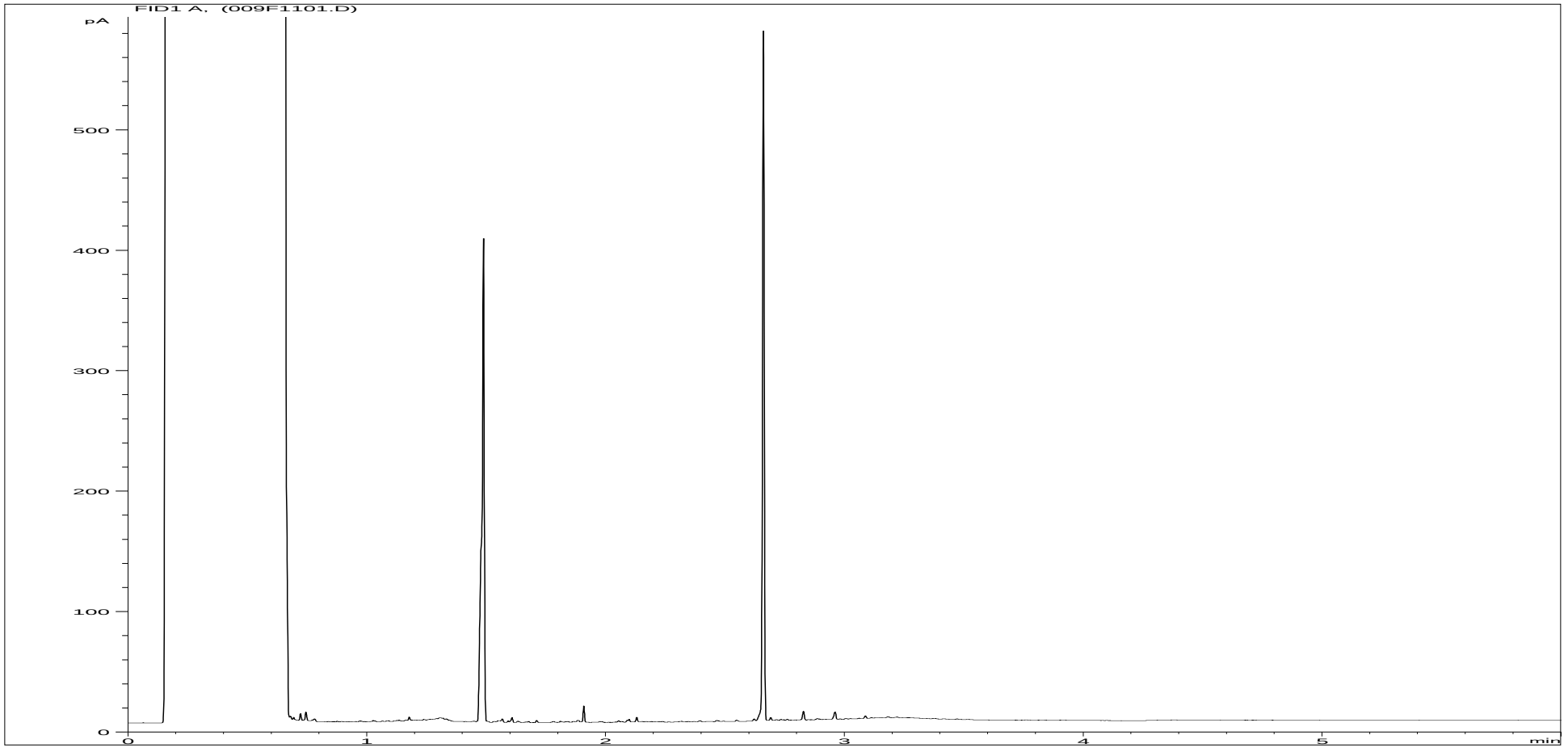
Petroleum Hydrocarbons (C8 to C40) by GC/FID Aromatics Fraction.



Sample ID:	CL1615491ARO	**Job Number:**	S16_3681M
Multiplier:	11.68	**Client:**	Ramboll Environ
Dilution:	1	**Site:**	Zeon Chemicals ESA
Acquisition Method:	5UL_RUNF.M	**Client Sample Ref:**	BH101A 3.20
Acquisition Date/Time:	12-May-16, 13:30:58		
Datafile:	D:\TES\DATA\Y2016\051216TPH_GC4\051216 2016-05-12 11-25-26\058B1001.D		

Where individual results are flagged see report notes for status.
Results corrected to dry weight at 105°C where appropriate, in accordance with the MCERTS standard.

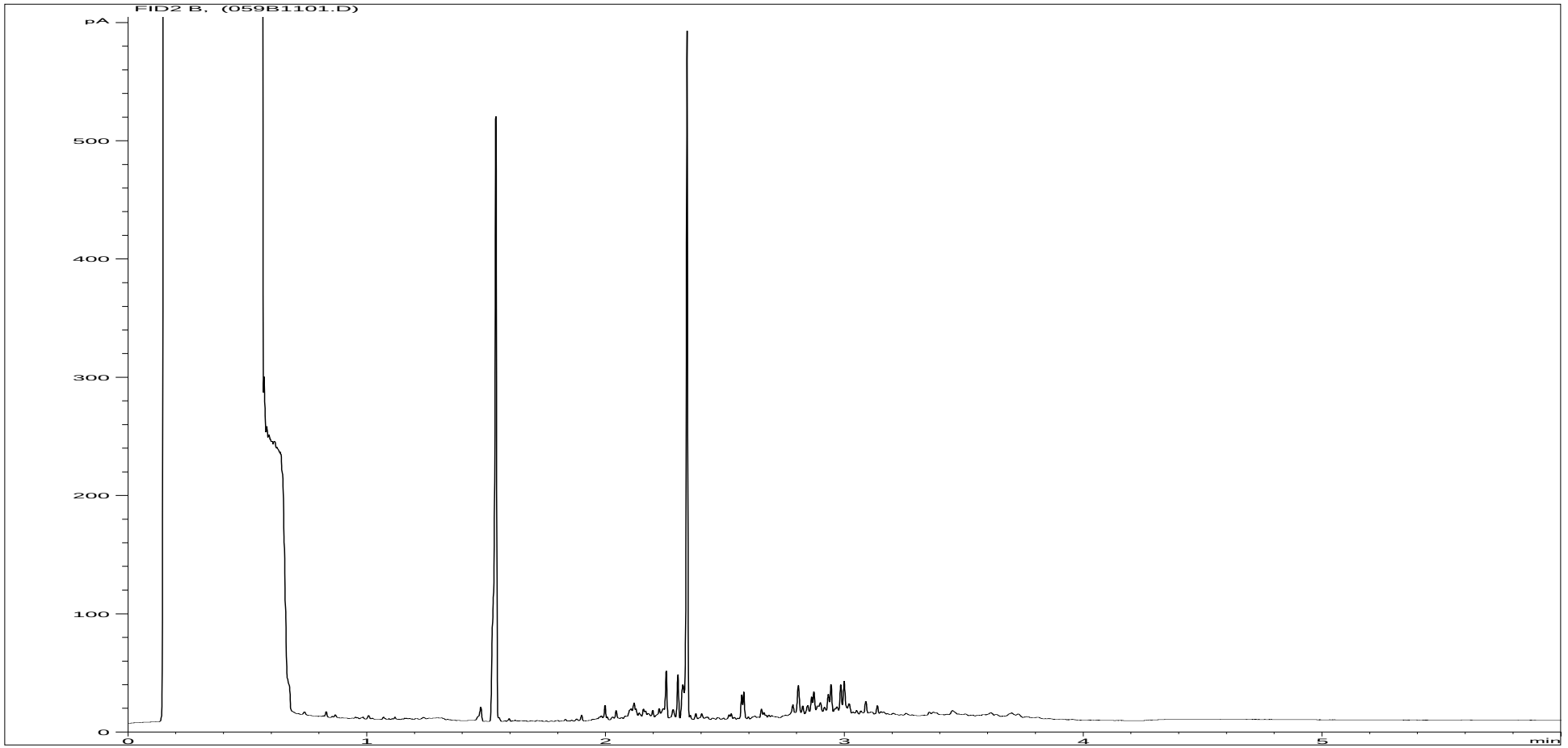
Petroleum Hydrocarbons (C8 to C40) by GC/FID Aliphatics Fraction.



Sample ID:	CL1615492ALI	**Job Number:**	S16_3681M
Multiplier:	14.88	**Client:**	Ramboll Environ
Dilution:	1	**Site:**	Zeon Chemicals ESA
Acquisition Method:	5UL_RUNF.M	**Client Sample Ref:**	BH102 0.50
Acquisition Date/Time:	12-May-16, 13:44:57		
Datafile:	D:\TES\DATA\Y2016\051216TPH_GC4\051216 2016-05-12 11-25-26\009F1101.D		

Where individual results are flagged see report notes for status.
Results corrected to dry weight at 105°C where appropriate, in accordance with the MCERTS standard.

Petroleum Hydrocarbons (C8 to C40) by GC/FID Aromatics Fraction.



Sample ID:	CL1615492ARO	**Job Number:**	S16_3681M
Multiplier:	11.84	**Client:**	Ramboll Environ
Dilution:	1	**Site:**	Zeon Chemicals ESA
Acquisition Method:	5UL_RUNF.M	**Client Sample Ref:**	BH102 0.50
Acquisition Date/Time:	12-May-16, 13:44:57		
Datafile:	D:\TES\DATA\Y2016\051216TPH_GC4\051216 2016-05-12 11-25-26\059B1101.D		

Where individual results are flagged see report notes for status.
Results corrected to dry weight at 105°C where appropriate, in accordance with the MCERTS standard.

Volatile Organic Compounds by HSA-GCMS

Accredited?: Yes

Customer and Site Details:	Ramboll Environ: Zeon Chemicals ESA	**Directory/Quant file:**	509VOC.MS19\ Initial Calibration	**Matrix:**	Soil
Sample Details:	BH101 0.30	**Date Booked in:**	06-May-16	**Method:**	Headspace
LIMS ID Number:	CL1615489	**Date Analysed:**	10-May-16	**Multiplier:**	0.95
Job Number:	S16_3681M	**Operator:**	TP	**Position:**	10

Target Compounds	CAS #	R.T. (min.)	Concentration µg/kg	% Fit	Accr. code
Dichlorodifluoromethane	75-71-8 **	-	< 1	-	N
Chloromethane	74-87-3 *	-	< 4	-	N
Vinyl Chloride	75-01-4	-	< 1	-	UM
Bromomethane	74-83-9	-	< 1	-	UM
Chloroethane	75-00-3	-	< 2	-	UM
Trichlorofluoromethane	75-69-4	-	< 1	-	UM
1,1-Dichloroethene	75-35-48 *	-	< 1	-	N
trans 1,2-Dichloroethene	156-60-5	-	< 1	-	UM
1,1-Dichloroethane	75-34-3	-	< 1	-	UM
MTBE	1634-04-4	-	< 1	-	UM
2,2-Dichloropropane	594-20-7	-	< 1	-	UM
cis 1,2-Dichloroethene	156-59-2	-	< 6	-	UM
Bromochloromethane	74-97-5	-	< 1	-	UM
Chloroform	67-66-3	-	< 1	-	UM
1,1,1-Trichloroethane	71-55-6	-	< 1	-	UM
Carbon Tetrachloride	56-23-5	-	< 1	-	UM
1,1-Dichloropropene	563-58-6	-	< 1	-	UM
Benzene	71-43-2	4.23	2	M	UM
1,2-Dichloroethane	107-06-2	-	< 1	-	UM
Trichloroethene	79-01-6 **	-	< 1	-	N
1,2-Dichloropropane	78-87-5	-	< 1	-	UM
Dibromomethane	74-95-3	-	< 1	-	UM
Bromodichloromethane	75-27-4	-	< 1	-	UM
cis 1,3-Dichloropropene	10061-01-5	-	< 1	-	UM
Toluene	108-88-3	-	< 6	-	UM
trans 1,3-Dichloropropene	10061-02-6	-	< 1	-	UM
1,1,2-Trichloroethane	79-00-5	-	< 1	-	UM
Tetrachloroethene	127-18-4	-	< 4	-	UM
1,3-Dichloropropane	142-28-9	-	< 1	-	UM
Dibromochloromethane	124-48-1	-	< 1	-	UM
1,2-Dibromoethane	106-93-4	-	< 1	-	UM
Chlorobenzene	108-90-7	-	< 1	-	UM
Ethylbenzene	100-41-4	-	< 2	-	UM
1,1,1,2-Tetrachloroethane	630-20-6	-	< 1	-	UM
m and p-Xylene	108-38-3/106-42-3	-	< 5	-	UM

Target Compounds	CAS #	R.T. (min.)	Concentration µg/kg	% Fit	Accr. code
o-Xylene	95-47-6	-	< 2	-	UM
Styrene	100-42-5	-	< 1	-	UM
Bromoform	75-25-2	-	< 1	-	UM
iso-Propylbenzene	98-82-8	-	< 1	-	UM
1,1,2,2-Tetrachloroethane	79-34-5 **	-	< 1	-	N
Propylbenzene	103-65-1	-	< 1	-	UM
Bromobenzene	108-86-1	-	< 1	-	UM
1,2,3-Trichloropropane	96-18-4	-	< 1	-	UM
2-Chlorotoluene	95-49-8	-	< 1	-	UM
1,3,5-Trimethylbenzene	108-67-8	-	< 1	-	UM
4-Chlorotoluene	106-43-4	-	< 1	-	UM
tert-Butylbenzene	98-06-6	-	< 1	-	UM
1,2,4-Trimethylbenzene	95-63-6	-	< 1	-	UM
sec-Butylbenzene	135-98-8	-	< 1	-	UM
p-Isopropyltoluene	99-87-6	-	< 1	-	UM
1,3-Dichlorobenzene	541-73-1	-	< 1	-	UM
1,4-Dichlorobenzene	106-46-7	-	< 1	-	UM
n-Butylbenzene	104-51-8 *	-	< 1	-	N
1,2-Dichlorobenzene	95-50-1	-	< 1	-	UM
1,2-Dibromo-3-chloropropane	96-12-8	-	< 1	-	UM
1,2,4-Trichlorobenzene	120-82-1 *	-	< 4	-	N
Hexachlorobutadiene	87-68-3 **	-	< 2	-	N
Naphthalene	91-20-3	-	< 6	-	UM
1,2,3-Trichlorobenzene	87-61-6	-	< 4	-	UM

Concentrations are reported on a dry weight basis
Compounds marked ** are not UKAS or Mcerts accredited
"M" denotes that % fit has been manually interpreted
This analysis was conducted on an 'As Received' basis.

Internal standards	R.T.	Area %	Surrogates	% Rec
Pentafluorobenzene	4.05	46	Dibromofluoromethane	162
1,4-Difluorobenzene	4.39	39	Toluene-d8	96
Chlorobenzene-d5	5.50	21		
Bromofluorobenzene	5.89	11		
1,4-Dichlorobenzene-d4	6.29	6		
Naphthalene-d8	7.13	1		

Note: Volatile compounds degrade with time, and this may affect the integrity of the data depending on the timescale between sampling and analysis. It is recommended that analysis takes place within 7 days of sampling.

Where individual results are flagged see report notes for status.
Results corrected to dry weight at 105°C where appropriate, in accordance with the MCERTS standard.

Volatile Organic Compounds by HSA-GCMS

Accredited?: Yes

Customer and Site Details:	Ramboll Environ: Zeon Chemicals ESA	**Directory/Quant file:**	509VOC.MS19\ Initial Calibration	**Matrix:**	Soil
Sample Details:	BH101 3.20	**Date Booked in:**	06-May-16	**Method:**	Headspace
LIMS ID Number:	CL1615490	**Date Analysed:**	10-May-16	**Multiplier:**	0.95
Job Number:	S16_3681M	**Operator:**	TP	**Position:**	11

Target Compounds	CAS #	R.T. (min.)	Concentration µg/kg	% Fit	Accr. code
Dichlorodifluoromethane	75-71-8 **	-	< 1	-	N
Chloromethane	74-87-3 *	-	< 4	-	N
Vinyl Chloride	75-01-4	-	< 1	-	UM
Bromomethane	74-83-9	-	< 1	-	UM
Chloroethane	75-00-3	-	< 3	-	UM
Trichlorofluoromethane	75-69-4	-	< 1	-	UM
1,1-Dichloroethene	75-35-48 *	-	< 1	-	N
trans 1,2-Dichloroethene	156-60-5	-	< 1	-	UM
1,1-Dichloroethane	75-34-3	-	< 1	-	UM
MTBE	1634-04-4	-	< 1	-	UM
2,2-Dichloropropane	594-20-7	-	< 1	-	UM
cis 1,2-Dichloroethene	156-59-2	-	< 7	-	UM
Bromochloromethane	74-97-5	-	< 1	-	UM
Chloroform	67-66-3	-	< 1	-	UM
1,1,1-Trichloroethane	71-55-6	-	< 1	-	UM
Carbon Tetrachloride	56-23-5	-	< 1	-	UM
1,1-Dichloropropene	563-58-6	-	< 1	-	UM
Benzene	71-43-2	-	< 1	-	UM
1,2-Dichloroethane	107-06-2	-	< 1	-	UM
Trichloroethene	79-01-6 **	-	< 1	-	N
1,2-Dichloropropane	78-87-5	-	< 1	-	UM
Dibromomethane	74-95-3	-	< 1	-	UM
Bromodichloromethane	75-27-4	-	< 1	-	UM
cis 1,3-Dichloropropene	10061-01-5	-	< 1	-	UM
Toluene	108-88-3	-	< 7	-	UM
trans 1,3-Dichloropropene	10061-02-6	-	< 1	-	UM
1,1,2-Trichloroethane	79-00-5	-	< 1	-	UM
Tetrachloroethene	127-18-4	-	< 4	-	UM
1,3-Dichloropropane	142-28-9	-	< 1	-	UM
Dibromochloromethane	124-48-1	-	< 1	-	UM
1,2-Dibromoethane	106-93-4	-	< 1	-	UM
Chlorobenzene	108-90-7	-	< 1	-	UM
Ethylbenzene	100-41-4	-	< 3	-	UM
1,1,1,2-Tetrachloroethane	630-20-6	-	< 1	-	UM
m and p-Xylene	108-38-3/106-42-3	-	< 6	-	UM

Target Compounds	CAS #	R.T. (min.)	Concentration µg/kg	% Fit	Accr. code
o-Xylene	95-47-6	-	< 3	-	UM
Styrene	100-42-5	-	< 1	-	UM
Bromoform	75-25-2	-	< 1	-	UM
iso-Propylbenzene	98-82-8	-	< 1	-	UM
1,1,2,2-Tetrachloroethane	79-34-5 **	-	< 1	-	N
Propylbenzene	103-65-1	-	< 1	-	UM
Bromobenzene	108-86-1	-	< 1	-	UM
1,2,3-Trichloropropane	96-18-4	-	< 1	-	UM
2-Chlorotoluene	95-49-8	-	< 1	-	UM
1,3,5-Trimethylbenzene	108-67-8	-	< 1	-	UM
4-Chlorotoluene	106-43-4	-	< 1	-	UM
tert-Butylbenzene	98-06-6	-	< 1	-	UM
1,2,4-Trimethylbenzene	95-63-6	-	< 1	-	UM
sec-Butylbenzene	135-98-8	-	< 1	-	UM
p-Isopropyltoluene	99-87-6	-	< 1	-	UM
1,3-Dichlorobenzene	541-73-1	-	< 1	-	UM
1,4-Dichlorobenzene	106-46-7	-	< 1	-	UM
n-Butylbenzene	104-51-8 *	-	< 1	-	N
1,2-Dichlorobenzene	95-50-1	-	< 1	-	UM
1,2-Dibromo-3-chloropropane	96-12-8	-	< 1	-	UM
1,2,4-Trichlorobenzene	120-82-1 *	-	< 4	-	N
Hexachlorobutadiene	87-68-3 **	-	< 3	-	N
Naphthalene	91-20-3	-	< 7	-	UM
1,2,3-Trichlorobenzene	87-61-6	-	< 4	-	UM

Concentrations are reported on a dry weight basis
Compounds marked ** are not UKAS or Mcerts accredited
"M" denotes that % fit has been manually interpreted
This analysis was conducted on an 'As Received' basis.

Internal standards	R.T.	Area %	Surrogates	% Rec
Pentafluorobenzene	4.05	84	Dibromofluoromethane	110
1,4-Difluorobenzene	4.39	86	Toluene-d8	98
Chlorobenzene-d5	5.50	79		
Bromofluorobenzene	5.89	69		
1,4-Dichlorobenzene-d4	6.29	57		
Naphthalene-d8	7.13	40		

Note: Volatile compounds degrade with time, and this may affect the integrity of the data depending on the timescale between sampling and analysis. It is recommended that analysis takes place within 7 days of sampling.

Where individual results are flagged see report notes for status.
Results corrected to dry weight at 105°C where appropriate, in accordance with the MCERTS standard.

Volatile Organic Compounds by HSA-GCMS

Accredited?: Yes

Customer and Site Details:	Ramboll Environ: Zeon Chemicals ESA	**Directory/Quant file:**	509VOC.MS19\ Initial Calibration	**Matrix:**	Soil
Sample Details:	BH101A 3.20	**Date Booked in:**	06-May-16	**Method:**	Headspace
LIMS ID Number:	CL1615491	**Date Analysed:**	10-May-16	**Multiplier:**	0.98
Job Number:	S16_3681M	**Operator:**	TP	**Position:**	12

Target Compounds	CAS #	R.T. (min.)	Concentration µg/kg	% Fit	Accr. code
Dichlorodifluoromethane	75-71-8 **	-	< 1	-	N
Chloromethane	74-87-3 *	-	< 4	-	N
Vinyl Chloride	75-01-4	-	< 1	-	UM
Bromomethane	74-83-9	-	< 1	-	UM
Chloroethane	75-00-3	-	< 3	-	UM
Trichlorofluoromethane	75-69-4	-	< 1	-	UM
1,1-Dichloroethene	75-35-48 *	-	< 1	-	N
trans 1,2-Dichloroethene	156-60-5	-	< 1	-	UM
1,1-Dichloroethane	75-34-3	-	< 1	-	UM
MTBE	1634-04-4	-	< 1	-	UM
2,2-Dichloropropane	594-20-7	-	< 1	-	UM
cis 1,2-Dichloroethene	156-59-2	-	< 7	-	UM
Bromochloromethane	74-97-5	-	< 1	-	UM
Chloroform	67-66-3	-	< 1	-	UM
1,1,1-Trichloroethane	71-55-6	-	< 1	-	UM
Carbon Tetrachloride	56-23-5	-	< 1	-	UM
1,1-Dichloropropene	563-58-6	-	< 1	-	UM
Benzene	71-43-2	-	< 1	-	UM
1,2-Dichloroethane	107-06-2	-	< 1	-	UM
Trichloroethene	79-01-6 **	-	< 1	-	N
1,2-Dichloropropane	78-87-5	-	< 1	-	UM
Dibromomethane	74-95-3	-	< 1	-	UM
Bromodichloromethane	75-27-4	-	< 1	-	UM
cis 1,3-Dichloropropene	10061-01-5	-	< 1	-	UM
Toluene	108-88-3	-	< 7	-	UM
trans 1,3-Dichloropropene	10061-02-6	-	< 1	-	UM
1,1,2-Trichloroethane	79-00-5	-	< 1	-	UM
Tetrachloroethene	127-18-4	-	< 4	-	UM
1,3-Dichloropropane	142-28-9	-	< 1	-	UM
Dibromochloromethane	124-48-1	-	< 1	-	UM
1,2-Dibromoethane	106-93-4	-	< 1	-	UM
Chlorobenzene	108-90-7	-	< 1	-	UM
Ethylbenzene	100-41-4	-	< 3	-	UM
1,1,1,2-Tetrachloroethane	630-20-6	-	< 1	-	UM
m and p-Xylene	108-38-3/106-42-3	-	< 5	-	UM

Target Compounds	CAS #	R.T. (min.)	Concentration µg/kg	% Fit	Accr. code
o-Xylene	95-47-6	-	< 3	-	UM
Styrene	100-42-5	-	< 1	-	UM
Bromoform	75-25-2	-	< 1	-	UM
iso-Propylbenzene	98-82-8	-	< 1	-	UM
1,1,2,2-Tetrachloroethane	79-34-5 **	-	< 1	-	N
Propylbenzene	103-65-1	-	< 1	-	UM
Bromobenzene	108-86-1	-	< 1	-	UM
1,2,3-Trichloropropane	96-18-4	-	< 1	-	UM
2-Chlorotoluene	95-49-8	-	< 1	-	UM
1,3,5-Trimethylbenzene	108-67-8	-	< 1	-	UM
4-Chlorotoluene	106-43-4	-	< 1	-	UM
tert-Butylbenzene	98-06-6	-	< 1	-	UM
1,2,4-Trimethylbenzene	95-63-6	-	< 1	-	UM
sec-Butylbenzene	135-98-8	-	< 1	-	UM
p-Isopropyltoluene	99-87-6	-	< 1	-	UM
1,3-Dichlorobenzene	541-73-1	-	< 1	-	UM
1,4-Dichlorobenzene	106-46-7	-	< 1	-	UM
n-Butylbenzene	104-51-8 *	-	< 1	-	N
1,2-Dichlorobenzene	95-50-1	-	< 1	-	UM
1,2-Dibromo-3-chloropropane	96-12-8	-	< 1	-	UM
1,2,4-Trichlorobenzene	120-82-1 *	-	< 4	-	N
Hexachlorobutadiene	87-68-3 **	-	< 3	-	N
Naphthalene	91-20-3	-	< 7	-	UM
1,2,3-Trichlorobenzene	87-61-6	-	< 4	-	UM

Concentrations are reported on a dry weight basis
Compounds marked ** are not UKAS or Mcerts accredited
"M" denotes that % fit has been manually interpreted
This analysis was conducted on an 'As Received' basis.

Internal standards	R.T.	Area %	Surrogates	% Rec
Pentafluorobenzene	4.05	81	Dibromofluoromethane	110
1,4-Difluorobenzene	4.39	82	Toluene-d8	98
Chlorobenzene-d5	5.50	77		
Bromofluorobenzene	5.89	69		
1,4-Dichlorobenzene-d4	6.29	58		
Naphthalene-d8	7.13	42		

Note: Volatile compounds degrade with time, and this may affect the integrity of the data depending on the timescale between sampling and analysis. It is recommended that analysis takes place within 7 days of sampling.

Where individual results are flagged see report notes for status.
Results corrected to dry weight at 105°C where appropriate, in accordance with the MCERTS standard.

Volatile Organic Compounds by HSA-GCMS

Accredited?: Yes

Customer and Site Details:	Ramboll Environ: Zeon Chemicals ESA	**Directory/Quant file:**	509VOC.MS19\ Initial Calibration	**Matrix:**	Soil
Sample Details:	BH102 0.50	**Date Booked in:**	06-May-16	**Method:**	Headspace
LIMS ID Number:	CL1615492	**Date Analysed:**	10-May-16	**Multiplier:**	1
Job Number:	S16_3681M	**Operator:**	TP	**Position:**	13

Target Compounds	CAS #	R.T. (min.)	Concentration µg/kg	% Fit	Accr. code
Dichlorodifluoromethane	75-71-8 **	-	< 1	-	N
Chloromethane	74-87-3 *	-	< 4	-	N
Vinyl Chloride	75-01-4	-	< 1	-	UM
Bromomethane	74-83-9	-	< 1	-	UM
Chloroethane	75-00-3	-	< 2	-	UM
Trichlorofluoromethane	75-69-4	-	< 1	-	UM
1,1-Dichloroethene	75-35-48 *	-	< 1	-	N
trans 1,2-Dichloroethene	156-60-5	-	< 1	-	UM
1,1-Dichloroethane	75-34-3	-	< 1	-	UM
MTBE	1634-04-4	-	< 1	-	UM
2,2-Dichloropropane	594-20-7	-	< 1	-	UM
cis 1,2-Dichloroethene	156-59-2	-	< 6	-	UM
Bromochloromethane	74-97-5	-	< 1	-	UM
Chloroform	67-66-3	-	< 1	-	UM
1,1,1-Trichloroethane	71-55-6	-	< 1	-	UM
Carbon Tetrachloride	56-23-5	-	< 1	-	UM
1,1-Dichloropropene	563-58-6	-	< 1	-	UM
Benzene	71-43-2	-	< 1	-	UM
1,2-Dichloroethane	107-06-2	-	< 1	-	UM
Trichloroethene	79-01-6 **	-	< 1	-	N
1,2-Dichloropropane	78-87-5	-	< 1	-	UM
Dibromomethane	74-95-3	-	< 1	-	UM
Bromodichloromethane	75-27-4	-	< 1	-	UM
cis 1,3-Dichloropropene	10061-01-5	-	< 1	-	UM
Toluene	108-88-3	-	< 6	-	UM
trans 1,3-Dichloropropene	10061-02-6	-	< 1	-	UM
1,1,2-Trichloroethane	79-00-5	-	< 1	-	UM
Tetrachloroethene	127-18-4	5.20	5	M	UM
1,3-Dichloropropane	142-28-9	-	< 1	-	UM
Dibromochloromethane	124-48-1	-	< 1	-	UM
1,2-Dibromoethane	106-93-4	-	< 1	-	UM
Chlorobenzene	108-90-7	-	< 1	-	UM
Ethylbenzene	100-41-4	-	< 2	-	UM
1,1,1,2-Tetrachloroethane	630-20-6	-	< 1	-	UM
m and p-Xylene	108-38-3/106-42-3	-	< 5	-	UM

Target Compounds	CAS #	R.T. (min.)	Concentration µg/kg	% Fit	Accr. code
o-Xylene	95-47-6	-	< 2	-	UM
Styrene	100-42-5	-	< 1	-	UM
Bromoform	75-25-2	-	< 1	-	UM
iso-Propylbenzene	98-82-8	-	< 1	-	UM
1,1,2,2-Tetrachloroethane	79-34-5 **	-	< 1	-	N
Propylbenzene	103-65-1	-	< 1	-	UM
Bromobenzene	108-86-1	-	< 1	-	UM
1,2,3-Trichloropropane	96-18-4	-	< 1	-	UM
2-Chlorotoluene	95-49-8	-	< 1	-	UM
1,3,5-Trimethylbenzene	108-67-8	-	< 1	-	UM
4-Chlorotoluene	106-43-4	-	< 1	-	UM
tert-Butylbenzene	98-06-6	-	< 1	-	UM
1,2,4-Trimethylbenzene	95-63-6	-	< 1	-	UM
sec-Butylbenzene	135-98-8	-	< 1	-	UM
p-Isopropyltoluene	99-87-6	-	< 1	-	UM
1,3-Dichlorobenzene	541-73-1	-	< 1	-	UM
1,4-Dichlorobenzene	106-46-7	-	< 1	-	UM
n-Butylbenzene	104-51-8 *	-	< 1	-	N
1,2-Dichlorobenzene	95-50-1	-	< 1	-	UM
1,2-Dibromo-3-chloropropane	96-12-8	-	< 1	-	UM
1,2,4-Trichlorobenzene	120-82-1 *	-	< 4	-	N
Hexachlorobutadiene	87-68-3 **	-	< 2	-	N
Naphthalene	91-20-3	-	< 6	-	UM
1,2,3-Trichlorobenzene	87-61-6	-	< 4	-	UM

Concentrations are reported on a dry weight basis
Compounds marked ** are not UKAS or Mcerts accredited
"M" denotes that % fit has been manually interpreted
This analysis was conducted on an 'As Received' basis.

Internal standards	R.T.	Area %	Surrogates	% Rec
Pentafluorobenzene	4.05	75	Dibromofluoromethane	116
1,4-Difluorobenzene	4.39	73	Toluene-d8	97
Chlorobenzene-d5	5.50	58		
Bromofluorobenzene	5.89	44		
1,4-Dichlorobenzene-d4	6.29	30		
Naphthalene-d8	7.12	12		

Note: Volatile compounds degrade with time, and this may affect the integrity of the data depending on the timescale between sampling and analysis. It is recommended that analysis takes place within 7 days of sampling.

Where individual results are flagged see report notes for status.
Results corrected to dry weight at 105°C where appropriate, in accordance with the MCERTS standard.

TICs by HSA-GCMS

Accredited?: No

Customer and Site Details:	Ramboll Environ: Zeon Chemicals ESA		**Date Booked in:**	06-May-16
Sample Details:	BH101 0.30		**Date Analysed:**	10-May-16
LIMS ID Number:	CL1615489		**Matrix:**	Soil
Job Number:	S16_3681		**Ext Method:**	Headspace
Directory/Quant file:	509VOC.MS19\	Initial Calibration	**Dilution:**	0.95
Operator:	TP		**Position:**	10

Tentatively Identified Compounds	CAS No	R.T. (min.)	Concentration µg/kg	% Fit	Accr. code
Non Detected	-	-	<6	-	N
1,3,5-Trichlorobenzene	108-70-3	-	<6	-	N
Carbon Disulphide	75-15-0	-	<6	-	N
Dichloromethane (Methylene Chloride)	75-09-2	-	<6	-	N

The compounds listed above have been tentatively identified by a computer based library search.
Compounds identified in the sample are not reported if they also occur in the method blank.
The % fit is an indication of the reliability of the compound assignment.
Due to the similarity between mass spectra of some isomeric compounds, assignments may not be correct.
Other compounds may also be present but identification was not possible.
Concentrations are semi-quantitative, assume a response factor of 1 and use the nearest internal standard.

Compounds marked ** are not UKAS or Mcerts accredited
"M" denotes that % fit has been manually interpreted

Where individual results are flagged see report notes for status.
Results corrected to dry weight at 105°C where appropriate, in accordance with the MCERTS standard.

TICs by HSA-GCMS

Accredited?: No

Customer and Site Details:	Ramboll Environ: Zeon Chemicals ESA		**Date Booked in:**	06-May-16
Sample Details:	BH101 3.20		**Date Analysed:**	10-May-16
LIMS ID Number:	CL1615490		**Matrix:**	Soil
Job Number:	S16_3681		**Ext Method:**	Headspace
Directory/Quant file:	509VOC.MS19\	Initial Calibration	**Dilution:**	0.95
Operator:	TP		**Position:**	11

Tentatively Identified Compounds	CAS No	R.T. (min.)	Concentration µg/kg	% Fit	Accr. code
Non Detected	-	-	<7	-	N
1,3,5-Trichlorobenzene	108-70-3	-	<7	-	N
Carbon Disulphide	75-15-0	-	<7	-	N
Dichloromethane (Methylene Chloride)	75-09-2	-	<7	-	N

The compounds listed above have been tentatively identified by a computer based library search.
Compounds identified in the sample are not reported if they also occur in the method blank.
The % fit is an indication of the reliability of the compound assignment.
Due to the similarity between mass spectra of some isomeric compounds, assignments may not be correct.
Other compounds may also be present but identification was not possible.
Concentrations are semi-quantitative, assume a response factor of 1 and use the nearest internal standard.

Compounds marked ** are not UKAS or Mcerts accredited
"M" denotes that % fit has been manually interpreted

Where individual results are flagged see report notes for status.
Results corrected to dry weight at 105°C where appropriate, in accordance with the MCERTS standard.

TICs by HSA-GCMS

Accredited?: No

Customer and Site Details:	Ramboll Environ: Zeon Chemicals ESA		**Date Booked in:**	06-May-16
Sample Details:	BH101A 3.20		**Date Analysed:**	10-May-16
LIMS ID Number:	CL1615491		**Matrix:**	Soil
Job Number:	S16_3681		**Ext Method:**	Headspace
Directory/Quant file:	509VOC.MS19\	Initial Calibration	**Dilution:**	0.98
Operator:	TP		**Position:**	12

Tentatively Identified Compounds	CAS No	R.T. (min.)	Concentration µg/kg	% Fit	Accr. code
Non Detected	-	-	<7	-	N
1,3,5-Trichlorobenzene	108-70-3	-	<7	-	N
Carbon Disulphide	75-15-0	-	<7	-	N
Dichloromethane (Methylene Chloride)	75-09-2	-	<7	-	N

The compounds listed above have been tentatively identified by a computer based library search.
Compounds identified in the sample are not reported if they also occur in the method blank.
The % fit is an indication of the reliability of the compound assignment.
Due to the similarity between mass spectra of some isomeric compounds, assignments may not be correct.
Other compounds may also be present but identification was not possible.
Concentrations are semi-quantitative, assume a response factor of 1 and use the nearest internal standard.

Compounds marked ** are not UKAS or Mcerts accredited
"M" denotes that % fit has been manually interpreted

Where individual results are flagged see report notes for status.
Results corrected to dry weight at 105°C where appropriate, in accordance with the MCERTS standard.

TICs by HSA-GCMS

Accredited?: No

Customer and Site Details:	Ramboll Environ: Zeon Chemicals ESA		**Date Booked in:**	06-May-16
Sample Details:	BH102 0.50		**Date Analysed:**	10-May-16
LIMS ID Number:	CL1615492		**Matrix:**	Soil
Job Number:	S16_3681		**Ext Method:**	Headspace
Directory/Quant file:	509VOC.MS19\	Initial Calibration	**Dilution:**	1
Operator:	TP		**Position:**	13

Tentatively Identified Compounds	CAS No	R.T. (min.)	Concentration µg/kg	% Fit	Accr. code
Non Detected	-	-	<6	-	N
1,3,5-Trichlorobenzene	108-70-3	-	<6	-	N
Carbon Disulphide	75-15-0	-	<6	-	N
Dichloromethane (Methylene Chloride)	75-09-2	-	<6	-	N

The compounds listed above have been tentatively identified by a computer based library search.
Compounds identified in the sample are not reported if they also occur in the method blank.
The % fit is an indication of the reliability of the compound assignment.
Due to the similarity between mass spectra of some isomeric compounds, assignments may not be correct.
Other compounds may also be present but identification was not possible.
Concentrations are semi-quantitative, assume a response factor of 1 and use the nearest internal standard.

Compounds marked ** are not UKAS or Mcerts accredited
"M" denotes that % fit has been manually interpreted

Where individual results are flagged see report notes for status.
Results corrected to dry weight at 105°C where appropriate, in accordance with the MCERTS standard.

IOM

WORKING FOR A HEALTHIER FUTURE

CERTIFICATE OF ANALYSIS

ANALYSIS REQUESTED BY: ESG Environmental Chemistry
PO Box 100
Burton upon Trent
Staffordshire
DE15 0XD

CONTRACT NO: 48355-8a

PROJECT NO: 610

DATE OF ISSUE: 17.05.16

DATE SAMPLES RECEIVED: 10.05.16

DATE SAMPLES ANALYSED: 17.05.16

SAMPLE DESCRIPTION: One soil/loose aggregate sample.

ANALYSIS REQUESTED: Qualitative analysis of a sample for determination of presence/type of asbestos.

METHODS:

Our method involves initial examination of entire samples followed by detailed analysis of representative sub-samples. The sub samples are analysed qualitatively for asbestos by polarised light and dispersion staining as described by the Health and Safety Executive in HSG 248.

RESULTS:

Initial Screening

No asbestos was detected in the soil sample by stereo-binocular and polarised light microscopy.

A summary of the results is given in Table 1.

www.iom-world.org

Registered Address: Research Avenue North, Riccarton, Edinburgh, EH14 4AP, United Kingdom
Tel: 0131 449 8000 Fax: 0131 449 8084 Email: iom@iom-world.org

UKAS TESTING
0374

CONTRACT NO: 48355-8a
PROJECT NO: 610
DATE OF ISSUE: 17.05.16

RESULTS: (cont.)

Table 1: Qualitative Results

ESG Job I.D: S163681

IOM Sample Number	Client Sample Number	ACM Type Detected	PLM Result
S39193	S1615489 BH101 0.30	-	No Asbestos Detected

Our detection limit for this method is 0.001%.

COMMENTS

IOM Consulting cannot accept responsibility for samples that have been incorrectly collected or despatched by external clients.

Any opinions and interpretations expressed herein are out with the scope of our UKAS accreditation.

Julie Simpson

AUTHORISED BY: .....
J Simpson
Senior Scientific Technician

IOM

WORKING FOR A HEALTHIER FUTURE

CERTIFICATE OF ANALYSIS

ANALYSIS REQUESTED BY: ESG Environmental Chemistry
PO Box 100
Burton upon Trent
Staffordshire
DE15 0XD

CONTRACT NO: 48355-8b

PROJECT NO: 610

DATE OF ISSUE: 17.05.16

DATE SAMPLES RECEIVED: 10.05.16

DATE SAMPLES ANALYSED: 17.05.16

SAMPLE DESCRIPTION: One soil/loose aggregate sample weighing approximately 1.1kg.

ANALYSIS REQUESTED: Qualitative and quantitative analysis of a soil/loose aggregate sample for mass determination of asbestos.

METHODS:

Qualitative - The sample was analysed qualitatively for asbestos by polarised light and dispersion staining as described by the Health and Safety Executive in HSG 248.

Quantitative - The analysis was carried out using our documented in-house method based on HSE Contract Research Report No. 83/1996: Development and Validation of an analytical method to determine the amount of asbestos in soils and loose aggregates (Davies *et al*, 1996) and HSG 248. Our method includes initial examination of the entire sample, detailed analysis of a representative sub-sample and quantification by hand picking/weighing and/or fibre counting/sizing as appropriate.

RESULTS:

Initial Screening

Asbestos was detected in the soil sample by stereo-binocular and polarised light microscopy.

A summary of the qualitative and quantitative results are given in Tables 1 & 2 respectively.

www.iom-world.org

Registered Address: Research Avenue North, Riccarton, Edinburgh, EH14 4AP, United Kingdom
Tel: 0131 449 8000 Fax: 0131 449 8084 Email: iom@iom-world.org

UKAS TESTING
0374

CONTRACT NO: 48355-8b
PROJECT NO: 610
DATE OF ISSUE: 17.05.16

RESULTS: (cont.)

Table 1: Qualitative Results

ESG Job I.D: S163681

IOM sample number	Client sample number	ACM type detected	PLM result
S39194	S1615493 BH102 0.80	Cement[1] & Thermal Insulation[1&2]	Chrysotile & Amsoite

Our detection limit for this method is 0.001%.

Table 2: Quantitative Analysis Results

Client Sample Number	Sample Weight (g)	% Asbestos in Sample from ACM's	% Asbestos in Sample as Unbound Fibres	Total % Asbestos in Sample
S1615493 BH102 0.80	1068	1.150	-	1.150

Our limit of quantification for gravimetric analysis of soil samples is 0.001%.
The detection limit for fibre counting/sizing is around 0.0001% with a limit of quantification of 0.001%.

COMMENTS:

[1] ACM was visible during initial examination of the sample.
[2] ACM was detected during microscopic examination of the sample.

IOM Consulting cannot accept responsibility for samples that have been incorrectly collected or despatched by external clients.

Any opinions and interpretations expressed herein are outwith the scope of our UKAS accreditation.

Julie Simpson

AUTHORISED BY: .....
J Simpson
Senior Scientific Technician

Analytical and Deviating Sample Overview

Customer Ramboll Environ
Site Zeon Chemicals ESA
Report No S163681M

Consignment No S55693
Date Logged 06-May-2016

Report Due 13-May-2016

ID Number	Description	MethodID	CustServ	GROHSA	ICPMSS									ICPSOIL		ICPWSS	MCertS	PAHMSUS	PHSOIL	SFAPI		Sub020		SVOCMSUS	TMSS	TPHUSSI	VOCHSAS
		Sampled	REPORT A	GRO (AA) by HSA GC-FID	Arsenic (MS)	Cadmium (MS)	Chromium (MS)	Copper (MS)	Lead (MS)	Mercury (MS)	Nickel (MS)	Selenium (MS)	Vanadium (MS)	Zinc (MS)	Barium.	Beryllium.	SO4-- (H2O sol) mg/l	MCertS Analysis	PAH (17) by GCMS	pH units (AR)	Cyanide(Total) (AR)	Phenol Index.(AR)	^Asbestos (screen).	^Asbestos ID & Quan	SVOC + TICs by GCMS (AR)	Tot.Moisture @ 105C	TPH by GCFID (AR/Si)	VOC + TICs HSA-GCMS
				✓	✓	✓	✓	✓	✓	✓	✓	✓	✓		✓	✓	✓	✓		✓	✓	✓	✓	✓	✓	✓	✓	✓
CL/1615489	BH101 0.30	03/05/16																										
CL/1615490	BH101 3.20	03/05/16																										
CL/1615491	BH101A 3.20	03/05/16																										
CL/1615492	BH102 0.50	03/05/16																										
CL/1615493	BH102 0.80	03/05/16																										

Note: For analysis where the scheduled turnaround is greater than the holding time we will do our utmost to prioritise these samples. However, it is possible that samples could become deviant whilst being processed in the laboratory.

In this instance please contact the laboratory immediately should you wish to discuss how you would like us to proceed. If you do not respond within 24 hours, we will proceed as originally requested.

Deviating Sample Key

A	The sample was received in an inappropriate container for this analysis
B	The sample was received without the correct preservation for this analysis
C	Headspace present in the sample container
D	The sampling date was not supplied so holding time may be compromised - applicable to all analysis
E	Sample processing did not commence within the appropriate holding time
F	Sample processing did not commence within the appropriate handling time

Requested Analysis Key

	Analysis Required
	Analysis dependant upon trigger result - **Note: due date may be affected if triggered**
	No analysis scheduled
^	Analysis Subcontracted - **Note: due date may vary**

Where individual results are flagged see report notes for status.
The integrity of data for samples/analysis that have been categorised as Deviating may be compromised. Data may not be representative of the sample at the time of sampling.

Analytical and Deviating Sample Overview

Customer Ramboll Environ
Site Zeon Chemicals ESA
Report No S163681M

Consignment No S55693
Date Logged 06-May-2016

Report Due 13-May-2016

ID Number	Description	Sampled	MethodID: VOCHSAS — VOC + TICs HSA-GCMS
			✓
CL/1615489	BH101 0.30	03/05/16	
CL/1615490	BH101 3.20	03/05/16	
CL/1615491	BH101A 3.20	03/05/16	
CL/1615492	BH102 0.50	03/05/16	
CL/1615493	BH102 0.80	03/05/16	

Note: For analysis where the scheduled turnaround is greater than the holding time we will do our utmost to prioritise these samples. However, it is possible that samples could become deviant whilst being processed in the laboratory.

In this instance please contact the laboratory immediately should you wish to discuss how you would like us to proceed. If you do not respond within 24 hours, we will proceed as originally requested.

Deviating Sample Key	
A	The sample was received in an inappropriate container for this analysis
B	The sample was received without the correct preservation for this analysis
C	Headspace present in the sample container
D	The sampling date was not supplied so holding time may be compromised - applicable to all analysis
E	Sample processing did not commence within the appropriate holding time
F	Sample processing did not commence within the appropriate handling time

Requested Analysis Key	
	Analysis Required
	Analysis dependant upon trigger result - **Note: due date may be affected if triggered**
	No analysis scheduled
^	Analysis Subcontracted - **Note: due date may vary**

Where individual results are flagged see report notes for status.
The integrity of data for samples/analysis that have been categorised as Deviating may be compromised. Data may not be representative of the sample at the time of sampling.

Report Number : EFS/163681

Additional Report Notes

Method Code	Sample ID	The following information should be taken into consideration when using the data contained within this report
VOCHSAS	CL/1615489 CL/1615492	Due to matrix interference, the Internal Standard recovery for this Test is below the required QMS specification. This has been confirmed by historic data. All other Laboratory Process Controls meet the requirements of the QMS. These circumstances should be taken into consideration when utilising the data.
SVOCMSUS	CL/1615489	The Secondary process control result associated with this Test has not wholly met the requirements of the Laboratory Quality Management System (QMS). All other Process controls (including the Primary Process control) are within specification. The Laboratory believes that the validity of the data has not been affected but in line with our QMS policy we have removed accreditation from the affected analyte which is Di-n-octyl phthalate. These circumstances should be taken into consideration when utilising the data.

Method Descriptions

Matrix	MethodID	Analysis Basis	Method Description
Soil	GROHSA	As Received	Determination of Total Gasoline Range Organics Hydrocarbons (GRO) by Headspace GCFID
Soil	ICPMSS	Oven Dried @ < 35°C	Determination of Metals in soil samples by aqua regia digestion followed by ICPMS
Soil	ICPSOIL	Oven Dried @ < 35°C	Determination of Metals in soil samples by aqua regia digestion followed by ICPOES detection
Soil	ICPWSS	Oven Dried @ < 35°C	Determination of Water Soluble Sulphate in soil samples by water extraction followed by ICPOES detection
Soil	PAHMSUS	As Received	Determination of Polycyclic Aromatic Hydrocarbons (PAH) by hexane/acetone extraction followed by GCMS detection
Soil	PHSOIL	As Received	Determination of pH of 2.5:1 deionised water to soil extracts using pH probe.
Soil	SFAPI	As Received	Segmented flow analysis with colorimetric detection
Soil	SubCon*	*	Contact Laboratory for details of the methodology used by the sub-contractor.
Soil	SVOCMSUS	As Received	Determination of Semi Volatile Organic Compounds in soil samples by Dichloromethane/Acetone extraction followed by GCMS detection
Soil	TMSS	As Received	Determination of the Total Moisture content at 105ºC by loss on oven drying gravimetric analysis (% based upon wet weight)
Soil	TPHUSSI	As Received	Determination of hexane/acetone extractable Hydrocarbons in soil with GCFID detection including quantitation of Aromatic and Aliphatic fractions.
Soil	VOCHSAS	As Received	Determination of Volatile Organic Compounds (VOC) by Headspace GCMS

Where individual results are flagged see report notes for status.

Report Notes

Generic Notes

Soil/Solid Analysis

Unless stated otherwise,
- Results expressed as mg/kg have been calculated on the basis indicated in the Method Description table.
  All results on MCERTS reports are reported on a 105ºC dry weight basis with the exception of pH and conductivity.
- Sulphate analysis not conducted in accordance with BS1377
- Water Soluble Sulphate is on a 2:1 water:soil extract

Waters Analysis

Unless stated otherwise results are expressed as mg/l

Nil: Where "Nil" has been entered against Total Alkalinity or Total Acidity this indicates that a measurement was not required due to the inherent pH of the sample.

Oil analysis specific

Unless stated otherwise,
- Results are expressed as mg/kg
- SG is expressed as g/cm^3@ 15^{o}C

Gas (Tedlar bag) Analysis

Unless stated otherwise, results are expressed as ug/l

Asbestos Analysis

CH Denotes Chrysotile **TR** Denotes Tremolite
CR Denotes Crocidolite **AC** Denotes Actinolite
AM Denotes Amosite **AN** Denotes Anthophylite
NAIIS No Asbestos Identified in Sample
NADIS No Asbestos Detected In Sample

Symbol Reference

^ Sub-contracted analysis.
$$ Unable to analyse due to the nature of the sample
¶ Samples submitted for this analyte were not preserved on site in accordance with laboratory protocols. This may have resulted in deterioration of the sample(s) during transit to the laboratory. Consequently the reported data may not represent the concentration of the target analyte present in the sample at the time of sampling
¥ Results for guidance only due to possible interference
& Blank corrected result
I.S Insufficient sample to complete requested analysis
I.S(g) Insufficient sample to re-analyse, results for guidance only
Intf Unable to analyse due to interferences
N.D Not determined **N.Det** Not detected
N.F No Flow
NS Information Not Supplied
Req Analysis requested, see attached sheets for results
Þ Raised detection limit due to nature of the sample
***** All accreditation has been removed by the laboratory for this result
‡ MCERTS accreditation has been removed for this result
§ accreditation has been removed for this result as it is a non-accredited matrix

Note: The Laboratory may only claim that data is accredited when all of the requirements of our Quality System have been met. Where these requirements have not been met the laboratory may elect to include the data in its final report and remove the accreditation from individual data items if it believes that the validity of the data has not been affected. If further details are required of the circumstances which have led to the removal of accreditation then please do not hesitate to contact the laboratory.

Sample Descriptions

Client : Ramboll Environ

Site : Zeon Chemicals ESA

Report Number : S16_3681

Note: major constituent in upper case

Lab ID Number	Client ID	Description
CL/1615489	BH101 0.30	Grey MADE GROUND
CL/1615490	BH101 3.20	Grey CLAY
CL/1615491	BH101A 3.20	Grey CLAY
CL/1615492	BH102 0.50	Brown MADE GROUND
CL/1615493	BH102 0.80	Brown MADE GROUND

Our Ref: EFS/163743M (Ver. 1)
Your Ref: UK15-21370

May 16, 2016

Environmental Chemistry
ESG
Bretby Business Park
Ashby Road
Burton-on-Trent
Staffordshire
DE15 0YZ

Telephone: 01283 554400
Facsimile: 01283 554422

Lucy Cleverley
Ramboll Environ
8 Village Way
Cardiff
CF15 2NE

For the attention of Lucy Cleverley

Dear Lucy Cleverley

Sample Analysis - Zeon Chemicals ESA

Samples from the above site have been analysed in accordance with the schedule supplied.
The sample details and the results of analyses for these samples are given in the appended report.

An invoice for this work will follow under a separate cover.

Where appropriate the samples will be kept until 20/06/16 when they will be discarded. Please call 01283 554547 for an extension of this date.
Please be aware that our policy for the retention of paper based laboratory records and analysis reports is 6 years.

The work was carried out in accordance with Environmental Scientifics Group Ltd (Laboratory and Analytical) Standard Terms and Conditions of Contract.

If I can be of any further assistance please do not hesitate to contact me.

Yours sincerely

for ESG

JMColbourne

J Colbourne
Project Co-ordinator
01283 554547

Environmental Chemistry, ESG, P.O. Box 100, Burton-upon-trent, DE15 0XD Tel: 01283 554400 Fax: 01283 554422
Environmental Scientifics Group Limited.
Registered No: 2880501

TEST REPORT

1252

Report No. EFS/163743M (Ver. 1)

Ramboll Environ
8 Village Way
Cardiff
CF15 2NE

Site: Zeon Chemicals ESA

The 4 samples described in this report were registered for analysis by ESG on 09-May-2016. This report supersedes any versions previously issued by the laboratory.
The analysis was completed by: 16-May-2016

Tests where the accreditation is set to N or No, and any individual data items marked with a * are not UKAS or MCERTS accredited. Any opinions or interpretations expressed herein are outside the scope of any UKAS accreditation held by ESG.

The following tables are contained in this report:

On behalf of
ESG :
Declan Burns

Managing Director
Multi-Sector Services

Date of Issue: 16-May-2016

Accreditation Codes: **N** (Not Accredited), **U** (UKAS), **UM** (UKAS & MCERTS)
Tests marked '^' have been subcontracted to another laboratory.
(NVM) - denotes the sample matrix is dissimilar to matrices upon which the MCERTS validation was based, and is therefore not accredited for MCERTS.
All results are reported on a dry weight basis at 105^{o}C unless otherwise stated. (except QC samples)
ESG accepts no responsibility for any sampling not carried out by our personnel.

Where individual results are flagged see report notes for status.

Units :			mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	pH Units	mg/kg
Method Codes :			AMMAR	GROHSA	ICPBOR	ICPMSS	ICPMSS	ICPMSS	ICPMSS	ICPMSS	ICPMSS	ICPMSS	ICPMSS	ICPMSS	ICPSOIL	ICPWSS	PHSOIL	SFAPI
Method Reporting Limits :			0.5	0.2	0.5	0.3	0.2	1.2	1.6	0.7	0.5	2	0.5	16	0.1	10		0.5
Accreditation Code:			UM		UM	UM	UM	UM	UM	UM	UM	UM	UM	UM	UM	UM	UM	UM
LAB ID Number CL/	**Client Sample Description**	**Sample Date**	**Exchange.Ammonium AR**	**GRO (AA) by HSA GC-FID**	**Boron (H20 Soluble)**	**Arsenic (MS)**	**Cadmium (MS)**	**Chromium (MS)**	**Copper (MS)**	**Lead (MS)**	**Mercury (MS)**	**Nickel (MS)**	**Selenium (MS)**	**Zinc (MS)**	**Beryllium.**	**SO4-- (H2O sol) mg/l**	**pH units (AR)**	**Cyanide(Total) (AR)**
1615729	BH103 0.40	05-May-16		Req	1.9	15.9	0.41	88.2	32.4	71.0	<0.54	59.8	0.5	393.6	0.584	108	9.0	<0.7
1615730	BH104 0.50	06-May-16	5.7	Req	<5	17.9	0.32	30.2	56	140.5	<0.50	33.8	0.8	142.5	1.31	284	11.9	<0.7
1615731	BH104 1.30	06-May-16		Req	<5	51.7	<0.2	8.1	6.5	17.7	<0.5	11.6	<0.5	31	0.463	112	11.5	<0.6
1615732	BH105 0.50	06-May-16		Req	3.0	5.1	5.38	3.9	9.8	6.6	<0.5	162.9	<0.5	389.0	0.191	37	8.1	<0.7

ESG

Bretby Business Park, Ashby Road

Burton-on-Trent, Staffordshire, DE15 0YZ

Tel +44 (0) 1283 554400

Fax +44 (0) 1283 554422

Client Name **Ramboll Environ**

Contact Lucy Cleverley

Zeon Chemicals ESA

Sample Analysis

Date Printed	**16-May-2016**
Report Number	**EFS/163743M**
Table Number	**1**

Where individual results are flagged see report notes for status.
Results corrected to dry weight at 105°C where appropriate, in accordance with the MCERTS standard.

		Units :	mg/kg		mg/kg	%	mg/kg	µg/kg	mg/kg	mg/kg	% M/M	mg/kg						
		Method Codes :	SFAPI	Sub002a	SVOCMSUS	TMSS	TPHUSSI	VOCHSAS	ALCHSAFID	ICPMSS	WSLM59	PAHMSUS						
		Method Reporting Limits :	0.5			0.2	20		40	0.6	0.04							
		Accreditation Code:	U	U		U				N	N							
LAB ID Number CL/	**Client Sample Description**	**Sample Date**	**Phenol Index.(AR)**	**^Asbestos Screen**	**SVOC + TICs by GCMS (AR)**	**Tot.Moisture @ 105C**	**TPH by GCFID (AR/Si)**	**VOC + TICs HSA-GCMS**	**Alcohols by HSA-FID o**	**Vanadium (MS)**	**Total Organic Carbon**	**PAH (17) by GCMS**						
1615729	BH103 0.40	**05-May-16**	<0.7	NAIIS		25.4	Req	Req		33.7	2.46	Req						
1615730	BH104 0.50	**06-May-16**	<0.7		Req	30.1	Req	Req	Req	51.6		Req						
1615731	BH104 1.30	**06-May-16**	<0.6			12.8	Req	Req		5	0.44	Req						
1615732	BH105 0.50	**06-May-16**	<0.7		Req	30.3	Req	Req		3		Req						

ESG

Bretby Business Park, Ashby Road

Burton-on-Trent, Staffordshire, DE15 0YZ

Tel +44 (0) 1283 554400

Fax +44 (0) 1283 554422

Client Name **Ramboll Environ**

Contact Lucy Cleverley

Zeon Chemicals ESA

Sample Analysis

Date Printed	**16-May-2016**
Report Number	**EFS/163743M**
Table Number	**1**

Where individual results are flagged see report notes for status.
Results corrected to dry weight at 105°C where appropriate, in accordance with the MCERTS standard.

Alcohols by Headspace GC-FID

Customer and Site Details: Ramboll Environ: Zeon Chemicals ESA
Job Number: S16_3743
Accreditation Code: N

Matrix: SOIL

Date Booked in: 09-May-16
Date extracted: 11-May-16
Date Analysed: 12-May-16

This sample data is not accredited.

		Concentration, (mg/kg) - as dry weight.							
Sample ID	**Client ID**	**Methanol**	**Ethanol**	**iso-Propanol**	**tert-Butanol**	**1-Propanol**	**sec-Butanol**	**iso-Butanol**	**n-Butanol**
CL1615730	BH104 0.50	<57	<57	<57	<57	<57	<57	<57	<57

Where individual results are flagged see report notes for status.
Results corrected to dry weight at 105°C where appropriate, in accordance with the MCERTS standard.

Polycyclic Aromatic Hydrocarbons
GC/MS (SIM)

Customer and Site Details:	Ramboll Environ: Zeon Chemicals ESA		
Sample Details:	BH103 0.40	**Job Number:**	S16_3743M
LIMS ID Number:	CL1615729	**Date Booked in:**	09-May-16
QC Batch Number:	160563	**Date Extracted:**	12-May-16
Quantitation File:	Initial Calibration	**Date Analysed:**	13-May-16
Directory:	1316PAHMS20\	**Matrix:**	Soil
Dilution:	1.0	**Ext Method:**	Ultrasonic

Accredited?: Yes

Target Compounds	CAS #	R.T. (min)	Concentration mg/kg	% Fit	Accr. code
Naphthalene	91-20-3	-	< 0.11	-	**UM**
Acenaphthylene	208-96-8	-	< 0.11	-	U
Acenaphthene	83-32-9	-	< 0.11	-	UM
Fluorene	86-73-7	-	< 0.11	-	UM
Phenanthrene	85-01-8	-	< 0.11	-	UM
Anthracene	120-12-7	-	< 0.11	-	U
Fluoranthene	206-44-0	-	< 0.11	-	UM
Pyrene	129-00-0	-	< 0.11	-	UM
Benzo[a]anthracene	56-55-3	-	< 0.11	-	UM
Chrysene	218-01-9	-	< 0.11	-	UM
Benzo[b]fluoranthene	205-99-2	-	< 0.11	-	UM
Benzo[k]fluoranthene	207-08-9	-	< 0.11	-	UM
Benzo[a]pyrene	50-32-8	-	< 0.11	-	UM
Indeno[1,2,3-cd]pyrene	193-39-5	-	< 0.11	-	UM
Dibenzo[a,h]anthracene	53-70-3	-	< 0.11	-	UM
Benzo[g,h,i]perylene	191-24-2	-	< 0.11	-	UM
Coronene	191-07-1 *	-	< 0.11	-	N
Total (USEPA16) PAHs	-	-	< 1.72	-	N

* Denotes compound is not UKAS accredited

"M" denotes that % fit has been manually interpreted

Internal Standards	% Area
1,4-Dichlorobenzene-d4	NA
Naphthalene-d8	106
Acenaphthene-d10	104
Phenanthrene-d10	106
Chrysene-d12	96
Perylene-d12	88

Surrogates	% Rec
Nitrobenzene-d5	NA
2-Fluorobiphenyl	95
Terphenyl-d14	73

Concentrations are reported on a dry weight basis.

The Total PAH result is the sum of non-rounded individual PAH results and therefore may differ to the sum of the rounded individual PAH results printed above. By convention, where any one or more result is a "less than", the total is expressed as a "less than" and includes the "less than" concentration within the total.

Polycyclic Aromatic Hydrocarbons
GC/MS (SIM)

Customer and Site Details:	Ramboll Environ: Zeon Chemicals ESA		
Sample Details:	BH104 0.50	**Job Number:**	S16_3743M
LIMS ID Number:	CL1615730	**Date Booked in:**	09-May-16
QC Batch Number:	160563	**Date Extracted:**	12-May-16
Quantitation File:	Initial Calibration	**Date Analysed:**	13-May-16
Directory:	1316PAHMS20\	**Matrix:**	Soil
Dilution:	1.0	**Ext Method:**	Ultrasonic

Accredited?: Yes

Target Compounds	CAS #	R.T. (min)	Concentration mg/kg	% Fit	Accr. code
Naphthalene	91-20-3	2.85	0.31	98	**UM**
Acenaphthylene	208-96-8	-	< 0.11	-	U
Acenaphthene	83-32-9	3.99	0.63	95	UM
Fluorene	86-73-7	4.33	0.46	95	UM
Phenanthrene	85-01-8	5.07	2.27	98	UM
Anthracene	120-12-7	5.11	0.66	94	U
Fluoranthene	206-44-0	6.28	4.42	99	UM
Pyrene	129-00-0	6.54	3.22	97	UM
Benzo[a]anthracene	56-55-3	8.15	2.68	94	UM
Chrysene	218-01-9	8.20	2.69	98	UM
Benzo[b]fluoranthene	205-99-2	9.64	3.00	97	UM
Benzo[k]fluoranthene	207-08-9	9.68	1.16	96	UM
Benzo[a]pyrene	50-32-8	10.06	1.75	97	UM
Indeno[1,2,3-cd]pyrene	193-39-5	11.41	0.93	95	UM
Dibenzo[a,h]anthracene	53-70-3	11.45	0.23	88	UM
Benzo[g,h,i]perylene	191-24-2	11.70	0.77	98	UM
Coronene	191-07-1 *	13.37	0.16	54	N
Total (USEPA16) PAHs	-	-	< 25.29	-	N

* Denotes compound is not UKAS accredited

"M" denotes that % fit has been manually interpreted

Internal Standards	% Area
1,4-Dichlorobenzene-d4	NA
Naphthalene-d8	103
Acenaphthene-d10	99
Phenanthrene-d10	105
Chrysene-d12	108
Perylene-d12	106

Surrogates	% Rec
Nitrobenzene-d5	NA
2-Fluorobiphenyl	97
Terphenyl-d14	74

Concentrations are reported on a dry weight basis.

The Total PAH result is the sum of non-rounded individual PAH results and therefore may differ to the sum of the rounded individual PAH results printed above. By convention, where any one or more result is a "less than", the total is expressed as a "less than" and includes the "less than" concentration within the total.

Polycyclic Aromatic Hydrocarbons
GC/MS (SIM)

Customer and Site Details:	Ramboll Environ: Zeon Chemicals ESA		
Sample Details:	BH104 1.30	**Job Number:**	S16_3743M
LIMS ID Number:	CL1615731	**Date Booked in:**	09-May-16
QC Batch Number:	160563	**Date Extracted:**	12-May-16
Quantitation File:	Initial Calibration	**Date Analysed:**	13-May-16
Directory:	1316PAHMS20\	**Matrix:**	Soil
Dilution:	1.0	**Ext Method:**	Ultrasonic

Accredited?: Yes

Target Compounds	CAS #	R.T. (min)	Concentration mg/kg	% Fit	Accr. code
Naphthalene	91-20-3	-	< 0.09	-	**UM**
Acenaphthylene	208-96-8	-	< 0.09	-	U
Acenaphthene	83-32-9	-	< 0.09	-	UM
Fluorene	86-73-7	-	< 0.09	-	UM
Phenanthrene	85-01-8	-	< 0.09	-	UM
Anthracene	120-12-7	-	< 0.09	-	U
Fluoranthene	206-44-0	-	< 0.09	-	UM
Pyrene	129-00-0	-	< 0.09	-	UM
Benzo[a]anthracene	56-55-3	-	< 0.09	-	UM
Chrysene	218-01-9	-	< 0.09	-	UM
Benzo[b]fluoranthene	205-99-2	-	< 0.09	-	UM
Benzo[k]fluoranthene	207-08-9	-	< 0.09	-	UM
Benzo[a]pyrene	50-32-8	-	< 0.09	-	UM
Indeno[1,2,3-cd]pyrene	193-39-5	-	< 0.09	-	UM
Dibenzo[a,h]anthracene	53-70-3	-	< 0.09	-	UM
Benzo[g,h,i]perylene	191-24-2	-	< 0.09	-	UM
Coronene	191-07-1 *	-	< 0.09	-	N
Total (USEPA16) PAHs	-	-	< 1.47	-	N

* Denotes compound is not UKAS accredited

"M" denotes that % fit has been manually interpreted

Internal Standards	% Area
1,4-Dichlorobenzene-d4	NA
Naphthalene-d8	98
Acenaphthene-d10	96
Phenanthrene-d10	97
Chrysene-d12	85
Perylene-d12	77

Surrogates	% Rec
Nitrobenzene-d5	NA
2-Fluorobiphenyl	97
Terphenyl-d14	74

Concentrations are reported on a dry weight basis.

The Total PAH result is the sum of non-rounded individual PAH results and therefore may differ to the sum of the rounded individual PAH results printed above. By convention, where any one or more result is a "less than", the total is expressed as a "less than" and includes the "less than" concentration within the total.

Polycyclic Aromatic Hydrocarbons
GC/MS (SIM)

Customer and Site Details:	Ramboll Environ: Zeon Chemicals ESA		
Sample Details:	BH105 0.50	**Job Number:**	S16_3743M
LIMS ID Number:	CL1615732	**Date Booked in:**	09-May-16
QC Batch Number:	160563	**Date Extracted:**	12-May-16
Quantitation File:	Initial Calibration	**Date Analysed:**	13-May-16
Directory:	1316PAHMS20\	**Matrix:**	Soil
Dilution:	1.0	**Ext Method:**	Ultrasonic

Accredited?: Yes

Target Compounds	CAS #	R.T. (min)	Concentration mg/kg	% Fit	Accr. code
Naphthalene	91-20-3	-	< 0.11	-	**UM**
Acenaphthylene	208-96-8	-	< 0.11	-	U
Acenaphthene	83-32-9	-	< 0.11	-	UM
Fluorene	86-73-7	-	< 0.11	-	UM
Phenanthrene	85-01-8	5.07	1.03	98	UM
Anthracene	120-12-7	5.11	0.22	97	U
Fluoranthene	206-44-0	6.28	2.34	100	UM
Pyrene	129-00-0	6.54	1.90	97	UM
Benzo[a]anthracene	56-55-3	8.15	0.93	91	UM
Chrysene	218-01-9	8.20	0.99	94	UM
Benzo[b]fluoranthene	205-99-2	9.65	1.18	97	UM
Benzo[k]fluoranthene	207-08-9	9.68	0.49	96	UM
Benzo[a]pyrene	50-32-8	10.06	0.79	98	UM
Indeno[1,2,3-cd]pyrene	193-39-5	11.42	0.50	84	UM
Dibenzo[a,h]anthracene	53-70-3	-	< 0.11	-	UM
Benzo[g,h,i]perylene	191-24-2	11.70	0.47	96	UM
Coronene	191-07-1 *	13.37	0.11	58	N
Total (USEPA16) PAHs	-	-	< 11.38	-	N

* Denotes compound is not UKAS accredited

"M" denotes that % fit has been manually interpreted

Internal Standards	% Area
1,4-Dichlorobenzene-d4	NA
Naphthalene-d8	99
Acenaphthene-d10	98
Phenanthrene-d10	99
Chrysene-d12	98
Perylene-d12	98

Surrogates	% Rec
Nitrobenzene-d5	NA
2-Fluorobiphenyl	99
Terphenyl-d14	76

Concentrations are reported on a dry weight basis.

The Total PAH result is the sum of non-rounded individual PAH results and therefore may differ to the sum of the rounded individual PAH results printed above. By convention, where any one or more result is a "less than", the total is expressed as a "less than" and includes the "less than" concentration within the total.

Semi-Volatile Organic Compounds

Accredited?: Yes

Customer and Site Details:	Ramboll Environ: Zeon Chemicals ESA			**Matrix:**	Soil	**QC Batch Number:**	108
Sample Details:	BH104 0.50	**Date Booked in:**	09-May-16	**Ext Method:**	Ultrasonic	**Multiplier:**	0.2
LIMS ID Number:	CL1615730	**Date Extracted:**	11-May-16	**Operator:**	SO/RP	**Dilution Factor:**	1
Job Number:	S16_3743M	**Date Analysed:**	12-May-16	**Directory/Quant File:**	051116_MS16\	**GPC (Y/N)**	N

Target Compounds	CAS #	R.T. (min)	Concentration mg/kg	% Fit	Accr. code
Phenol	108-95-2	-	< 0.1	-	U
bis(2-Chloroethyl)ether	111-44-4	-	< 0.1	-	U
2-Chlorophenol	95-57-8	-	< 0.1	-	U
1,3-Dichlorobenzene	541-73-1	-	< 0.1	-	U
1,4-Dichlorobenzene	106-46-7	-	< 0.1	-	U
Benzyl alcohol	100-51-6	-	< 0.7	-	U
1,2-Dichlorobenzene	95-50-1	-	< 0.1	-	U
2-Methylphenol	95-48-7	-	< 0.1	-	U
bis(2-Chloroisopropyl)ether	108-60-1	-	< 0.7	-	U
Hexachloroethane	67-72-1	-	< 0.1	-	U
N-Nitroso-di-n-propylamine	621-64-7*	-	< 1.3	-	N
3- & 4-Methylphenol	108-39-4/106-44-5	-	< 0.1	-	U
Nitrobenzene	98-95-3	-	< 0.7	-	U
Isophorone	78-59-1*	-	< 0.1	-	N
2-Nitrophenol	88-75-5	-	< 0.1	-	U
2,4-Dimethylphenol	105-67-9	-	< 0.1	-	U
Benzoic Acid	65-85-0*	-	< 0.7	-	N
bis(2-Chloroethoxy)methane	111-91-1	-	< 0.1	-	U
2,4-Dichlorophenol	120-83-2	-	< 0.1	-	U
1,2,4-Trichlorobenzene	120-82-1*	-	< 0.1	-	N
Naphthalene	91-20-3	-	< 0.1	-	U
4-Chlorophenol	106-48-9	-	< 0.7	-	U
4-Chloroaniline	106-47-8*	-	< 0.7	-	N
Hexachlorobutadiene	87-68-3*	-	< 0.1	-	N
4-Chloro-3-methylphenol	59-50-7	-	< 0.1	-	U
2-Methylnaphthalene	91-57-6	-	< 0.1	-	U
1-Methylnaphthalene	90-12-0	-	< 0.1	-	U
Hexachlorocyclopentadiene	77-47-4*	-	< 0.1	-	N
2,4,6-Trichlorophenol	88-06-2	-	< 0.1	-	U
2,4,5-Trichlorophenol	95-95-4	-	< 0.1	-	U
2-Chloronaphthalene	91-58-7	-	< 0.1	-	U
Biphenyl	92-52-4	-	< 0.1	-	U
Diphenyl ether	101-84-8	-	< 0.1	-	U
2-Nitroaniline	88-74-4*	-	< 0.7	-	N
Acenaphthylene	208-96-8	-	< 0.1	-	U
Dimethylphthalate	131-11-3	-	< 0.1	-	U
2,6-Dinitrotoluene	606-20-2	-	< 0.7	-	U
Acenaphthene	83-32-9	-	< 0.1	-	U
3-Nitroaniline	99-09-2*	-	< 20.7	-	N

Target Compounds	CAS #	R.T.	Concentration mg/kg	% Fit	Accr. code
2,4-Dinitrophenol	51-28-5*	-	< 0.7	-	N
Dibenzofuran	132-64-9	-	< 0.1	-	U
4-Nitrophenol	100-02-7*	-	< 0.7	-	N
2,4-Dinitrotoluene	121-14-2	-	< 0.3	-	U
Fluorene	86-73-7	-	< 0.1	-	U
Diethylphthalate	84-66-2	-	< 0.1	-	U
4-Chlorophenyl-phenylether	7005-72-3	-	< 0.1	-	U
4,6-Dinitro-2-methylphenol	534-52-1*	-	< 0.3	-	N
4-Nitroaniline	100-01-6*	-	< 0.9	-	N
N-Nitrosodiphenylamine	86-30-6*	-	< 0.1	-	N
4-Bromophenyl-phenylether	101-55-3	-	< 0.1	-	U
Hexachlorobenzene	118-74-1	-	< 0.1	-	U
Pentachlorophenol	87-86-5*	-	< 0.7	-	N
Phenanthrene	85-01-8	5.91	0.7	97	U
Anthracene	120-12-7	5.95	0.1	95	U
Di-n-butylphthalate	84-74-2	-	< 0.1	-	U
Fluoranthene	206-44-0	6.75	2.6	92	U
Pyrene	129-00-0	6.94	2.0	93	U
Butylbenzylphthalate	85-68-7	-	< 0.3	-	U
Benzo[a]anthracene	56-55-3	8.27	1.6	97	U
Chrysene	218-01-9	8.32	1.0	98	U
3,3'-Dichlorobenzidine	91-94-1*	-	N.D	-	N
bis(2-Ethylhexyl)phthalate	117-81-7	8.31	1.3	99	U
Di-n-octylphthalate	117-84-0*	-	< 0.3	-	N
Benzo[b]fluoranthene	205-99-2	10.02	2.1	99	U
Benzo[k]fluoranthene	207-08-9	10.07	0.9	98	U
Benzo[a]pyrene	50-32-8	10.63	1.3	98	U
Indeno[1,2,3-cd]pyrene	193-39-5	-	< 0.7	-	U
Dibenzo[a,h]anthracene	53-70-3	-	< 0.7	-	U
Benzo[g,h,i]perylene	191-24-2	-	< 0.7	-	U
Coronene	191-07-1*	-	< 0.4	-	N

Internal Standards	% Area
1,4-Dichlorobenzene-d4	76
Naphthalene-d8	76
Acenaphthene-d10	70
Phenanthrene-d10	72
Chrysene-d12	64
Perylene-d12	43

Surrogates	% Rec
2-Fluorophenol	71
Phenol-d5	85
Nitrobenzene-d5	76
2-Fluorobiphenyl	95
2,4,6-Tribromophenol	35
Terphenyl-d14	99

This analysis was conducted on an 'As Received' basis.

Concentrations are reported on a dry weight basis.

Where individual results are flagged see report notes for status.
Results corrected to dry weight at 105°C where appropriate, in accordance with the MCERTS standard.

Semi-Volatile Organic Compounds

Accredited?: Yes

Customer and Site Details:	Ramboll Environ: Zeon Chemicals ESA			**Matrix:**	Soil	**QC Batch Number:**	108
Sample Details:	BH105 0.50	**Date Booked in:**	09-May-16	**Ext Method:**	Ultrasonic	**Multiplier:**	0.2
LIMS ID Number:	CL1615732	**Date Extracted:**	11-May-16	**Operator:**	SO/RP	**Dilution Factor:**	1
Job Number:	S16_3743M	**Date Analysed:**	12-May-16	**Directory/Quant File:**	051116_MS16\	**GPC (Y/N)**	N

Target Compounds	CAS #	R.T. (min)	Concentration mg/kg	% Fit	Accr. code
Phenol	108-95-2	-	< 0.1	-	U
bis(2-Chloroethyl)ether	111-44-4	-	< 0.1	-	U
2-Chlorophenol	95-57-8	-	< 0.1	-	U
1,3-Dichlorobenzene	541-73-1	-	< 0.1	-	U
1,4-Dichlorobenzene	106-46-7	-	< 0.1	-	U
Benzyl alcohol	100-51-6	-	< 0.7	-	U
1,2-Dichlorobenzene	95-50-1	-	< 0.1	-	U
2-Methylphenol	95-48-7	-	< 0.1	-	U
bis(2-Chloroisopropyl)ether	108-60-1	-	< 0.7	-	U
Hexachloroethane	67-72-1	-	< 0.1	-	U
N-Nitroso-di-n-propylamine	621-64-7*	-	< 1.3	-	N
3- & 4-Methylphenol	108-39-4/106-44-5	-	< 0.1	-	U
Nitrobenzene	98-95-3	-	< 0.7	-	U
Isophorone	78-59-1*	-	< 0.1	-	N
2-Nitrophenol	88-75-5	-	< 0.1	-	U
2,4-Dimethylphenol	105-67-9	-	< 0.1	-	U
Benzoic Acid	65-85-0*	-	< 0.7	-	N
bis(2-Chloroethoxy)methane	111-91-1	-	< 0.1	-	U
2,4-Dichlorophenol	120-83-2	-	< 0.1	-	U
1,2,4-Trichlorobenzene	120-82-1*	-	< 0.1	-	N
Naphthalene	91-20-3	-	< 0.1	-	U
4-Chlorophenol	106-48-9	-	< 0.7	-	U
4-Chloroaniline	106-47-8*	-	< 0.7	-	N
Hexachlorobutadiene	87-68-3*	-	< 0.1	-	N
4-Chloro-3-methylphenol	59-50-7	-	< 0.1	-	U
2-Methylnaphthalene	91-57-6	-	< 0.1	-	U
1-Methylnaphthalene	90-12-0	-	< 0.1	-	U
Hexachlorocyclopentadiene	77-47-4*	-	< 0.1	-	N
2,4,6-Trichlorophenol	88-06-2	-	< 0.1	-	U
2,4,5-Trichlorophenol	95-95-4	-	< 0.1	-	U
2-Chloronaphthalene	91-58-7	-	< 0.1	-	U
Biphenyl	92-52-4	-	< 0.1	-	U
Diphenyl ether	101-84-8	-	< 0.1	-	U
2-Nitroaniline	88-74-4*	-	< 0.7	-	N
Acenaphthylene	208-96-8	-	< 0.1	-	U
Dimethylphthalate	131-11-3	-	< 0.1	-	U
2,6-Dinitrotoluene	606-20-2	-	< 0.7	-	U
Acenaphthene	83-32-9	-	< 0.1	-	U
3-Nitroaniline	99-09-2*	-	< 20.8	-	N

Target Compounds	CAS #	R.T.	Concentration mg/kg	% Fit	Accr. code
2,4-Dinitrophenol	51-28-5*	-	< 0.7	-	N
Dibenzofuran	132-64-9	-	< 0.1	-	U
4-Nitrophenol	100-02-7*	-	< 0.7	-	N
2,4-Dinitrotoluene	121-14-2	-	< 0.3	-	U
Fluorene	86-73-7	-	< 0.1	-	U
Diethylphthalate	84-66-2	-	< 0.1	-	U
4-Chlorophenyl-phenylether	7005-72-3	-	< 0.1	-	U
4,6-Dinitro-2-methylphenol	534-52-1*	-	< 0.3	-	N
4-Nitroaniline	100-01-6*	-	< 0.9	-	N
N-Nitrosodiphenylamine	86-30-6*	-	< 0.1	-	N
4-Bromophenyl-phenylether	101-55-3	-	< 0.1	-	U
Hexachlorobenzene	118-74-1	-	< 0.1	-	U
Pentachlorophenol	87-86-5*	-	< 0.7	-	N
Phenanthrene	85-01-8	5.92	0.4	96	U
Anthracene	120-12-7	-	< 0.1	-	U
Di-n-butylphthalate	84-74-2	-	< 0.1	-	U
Fluoranthene	206-44-0	6.75	1.0	92	U
Pyrene	129-00-0	6.94	1.1	95	U
Butylbenzylphthalate	85-68-7	-	< 0.3	-	U
Benzo[a]anthracene	56-55-3	8.27	0.6	94	U
Chrysene	218-01-9	8.32	0.6	94	U
3,3'-Dichlorobenzidine	91-94-1*	-	N.D	-	N
bis(2-Ethylhexyl)phthalate	117-81-7	8.31	1.0	99	U
Di-n-octylphthalate	117-84-0*	-	< 0.3	-	N
Benzo[b]fluoranthene	205-99-2	10.02	0.7	100	U
Benzo[k]fluoranthene	207-08-9	10.07	0.4	99	U
Benzo[a]pyrene	50-32-8	10.63	0.6	94	U
Indeno[1,2,3-cd]pyrene	193-39-5	-	< 0.7	-	U
Dibenzo[a,h]anthracene	53-70-3	-	< 0.7	-	U
Benzo[g,h,i]perylene	191-24-2	-	< 0.7	-	U
Coronene	191-07-1*	-	< 0.4	-	N

Internal Standards	% Area
1,4-Dichlorobenzene-d4	83
Naphthalene-d8	83
Acenaphthene-d10	79
Phenanthrene-d10	77
Chrysene-d12	68
Perylene-d12	42

Surrogates	% Rec
2-Fluorophenol	95
Phenol-d5	92
Nitrobenzene-d5	84
2-Fluorobiphenyl	96
2,4,6-Tribromophenol	63
Terphenyl-d14	112

This analysis was conducted on an 'As Received' basis.

Concentrations are reported on a dry weight basis.

Where individual results are flagged see report notes for status.
Results corrected to dry weight at 105°C where appropriate, in accordance with the MCERTS standard.

SVOC (TICs)

Accredited?:No

Customer and Site Details:	Ramboll Environ: Zeon Chemicals ESA		
Sample Details:	BH104 0.50	**Job Number:**	S16_3743
LIMS ID Number:	CL1615730		
		Multiplier:	0.2
Date Booked in:	09-May-16	**Dilution Factor:**	1
Date Extracted:	11-May-16	**GPC (Y/N):**	N
Date Analysed:	12-May-16	**Matrix:**	Soil
QC Batch Number:	108	**Method:**	Ultrasonic
Directory/Quant File:	051116_MS16\ 0	**Operator:**	SO/RP

Tentatively Identified Compounds	CAS #	R.T.	Concentration mg/kg	% Fit	Accr. code
Cyclononasiloxane, octadecamethyl-	000556-71-8	13.24	1.199	56	N
TRICONTAMETHYLCYCLOPENTADECASILOXANE	023523-14-0	13.85	0.976	87	N
Benzo[e]pyrene	000192-97-2	10.53	0.906	96	N
Cyclohexasiloxane, dodecamethyl-	000540-97-6	4.16	0.753	91	N
Cyclononasiloxane, octadecamethyl-	000556-71-8	14.53	0.727	87	N
Cyclopentasiloxane, decamethyl-	000541-02-6	3.52	0.688	94	N
Dibenzo[fg,op]naphthacene	000192-51-8	14.88	0.680	81	N
Indeno[1,2,3-fg]naphthacene	000203-11-2	14.76	0.588	89	N
Unidentified peak	999587-33-6	-	0.546	-	N
3-Isopropoxy-1,1,1,7,7,7-hexamethyl-3,5,5-tris(trimethylsiloxy	071579-69-6	4.74	0.507	53	N
Cyclononasiloxane, octadecamethyl-	000556-71-8	15.33	0.490	80	N
Tetracosamethyl-cyclododecasiloxane	018919-94-3	10.90	0.479	90	N
(R)-(.alpha.-Hydroxy(2-methylphenyl)methyl)ferrocene	999473-33-1	13.97	0.476	50	N
Unidentified peak	-	13.71	0.471	-	N
Cyclononasiloxane, octadecamethyl-	000556-71-8	12.63	0.469	86	N
Unidentified peak	-	12.96	0.401	-	N
Unidentified peak	-	6.30	0.388	-	N
Unidentified peak	-	13.59	0.385	-	N
Unidentified peak	999584-58-4	-	0.367	-	N

The compounds listed above have been tentatively identified by a computer based library search.
Compounds identified in the sample are not reported if they also occur in the method blank.
The % fit is an indication of the reliability of the compound assignment.
Due to the similarity between mass spectra of some isomeric compounds assignments may not be correct.
Other compounds may also be present but identification was not possible.
Concentrations are semi-quantitative, assume a response factor of 1 and use the nearest internal standard.
Concentrations are reported on a dry weight basis.

Where individual results are flagged see report notes for status.
Results corrected to dry weight at 105°C where appropriate, in accordance with the MCERTS standard.

SVOC (TICs)

Accredited?:No

Customer and Site Details:	Ramboll Environ: Zeon Chemicals ESA		
Sample Details:	BH105 0.50	**Job Number:**	S16_3743
LIMS ID Number:	CL1615732		
		Multiplier:	0.2
Date Booked in:	09-May-16	**Dilution Factor:**	1
Date Extracted:	11-May-16	**GPC (Y/N):**	N
Date Analysed:	12-May-16	**Matrix:**	Soil
QC Batch Number:	108	**Method:**	Ultrasonic
Directory/Quant File:	051116_MS16\ 0	**Operator:**	SO/RP

Tentatively Identified Compounds	CAS #	R.T.	Concentration mg/kg	% Fit	Accr. code
Perylene	000198-55-0	10.53	0.388	96	N
1,1-Difluoro-2,5-diphenylcyclopropabenzene	052326-84-8	12.96	0.253	50	N

The compounds listed above have been tentatively identified by a computer based library search.
Compounds identified in the sample are not reported if they also occur in the method blank.
The % fit is an indication of the reliability of the compound assignment.
Due to the similarity between mass spectra of some isomeric compounds assignments may not be correct.
Other compounds may also be present but identification was not possible.
Concentrations are semi-quantitative, assume a response factor of 1 and use the nearest internal standard.
Concentrations are reported on a dry weight basis.

Where individual results are flagged see report notes for status.
Results corrected to dry weight at 105°C where appropriate, in accordance with the MCERTS standard.

Gasoline Range Organics
(BTEX and Aliphatic Carbon Ranges)

Customer and Site Details: Ramboll Environ : Zeon Chemicals ESA
Job Number: S16_3743
Directory: E:\TES\DATA\2016\0511HSA_GC9\051116 2016-05-11 12-29-33\158B5801.D
Method: Headspace GCFID
Accreditation Code: UM

Matrix: Soil
Date Booked in: 09-May-16
Date extracted: 11-May-16
Date Analysed: 12-May-16, 05:0

*** Sample data with an asterisk are not UKAS accredited.**

		Concentration, (mg/kg) - as dry weight.					Aliphatics				
Sample ID	**Client ID**	**Benzene**	**Toluene**	**Ethyl benzene**	**m/p-Xylene**	**o-Xylene**	**C5 - C6**	**>C6 - C7**	**>C7 - C8**	**>C8 - C10**	**Total GRO**
CL1615729	BH103 0.40	<0.013	<0.013	<0.013	<0.013	<0.013	<0.3	<0.3	<0.3	<0.3	<0.3
CL1615730	BH104 0.50	<0.014	<0.014	<0.014	<0.014	<0.014	<0.3	<0.3	<0.3	<0.3	<0.3
CL1615731	BH104 1.30	<0.011	<0.011	<0.011	<0.011	<0.011	<0.2	<0.2	<0.2	<0.2	<0.2
CL1615732	BH105 0.50	<0.014	<0.014	<0.014	<0.014	<0.014	<0.3	<0.3	<0.3	<0.3	<0.3

Note: Benzene elutes between C6 and C7, toluene elutes between C7 and C8, ethyl benzene and the xylenes elute between C8 and C9.
Each BTEX compound is deducted from the appropriate band to give the aliphatic fractions, however aromatic compounds may still be contributing to these fractions

Where individual results are flagged see report notes for status.
Results corrected to dry weight at 105°C where appropriate, in accordance with the MCERTS standard.

ALIPHATIC / AROMATIC FRACTION BY GC/FID

Customer and Site Details: Ramboll Environ : Zeon Chemicals ESA
Job Number: S16_3743M
QC Batch Number: 160563
Directory: D:\TES\DATA\Y2016\051516TPH_GC14\051616 2016-05-15 19-20-54\080B3801.D
Method: Ultra Sonic

Separation: Silica gel
Eluents: Hexane, DCM

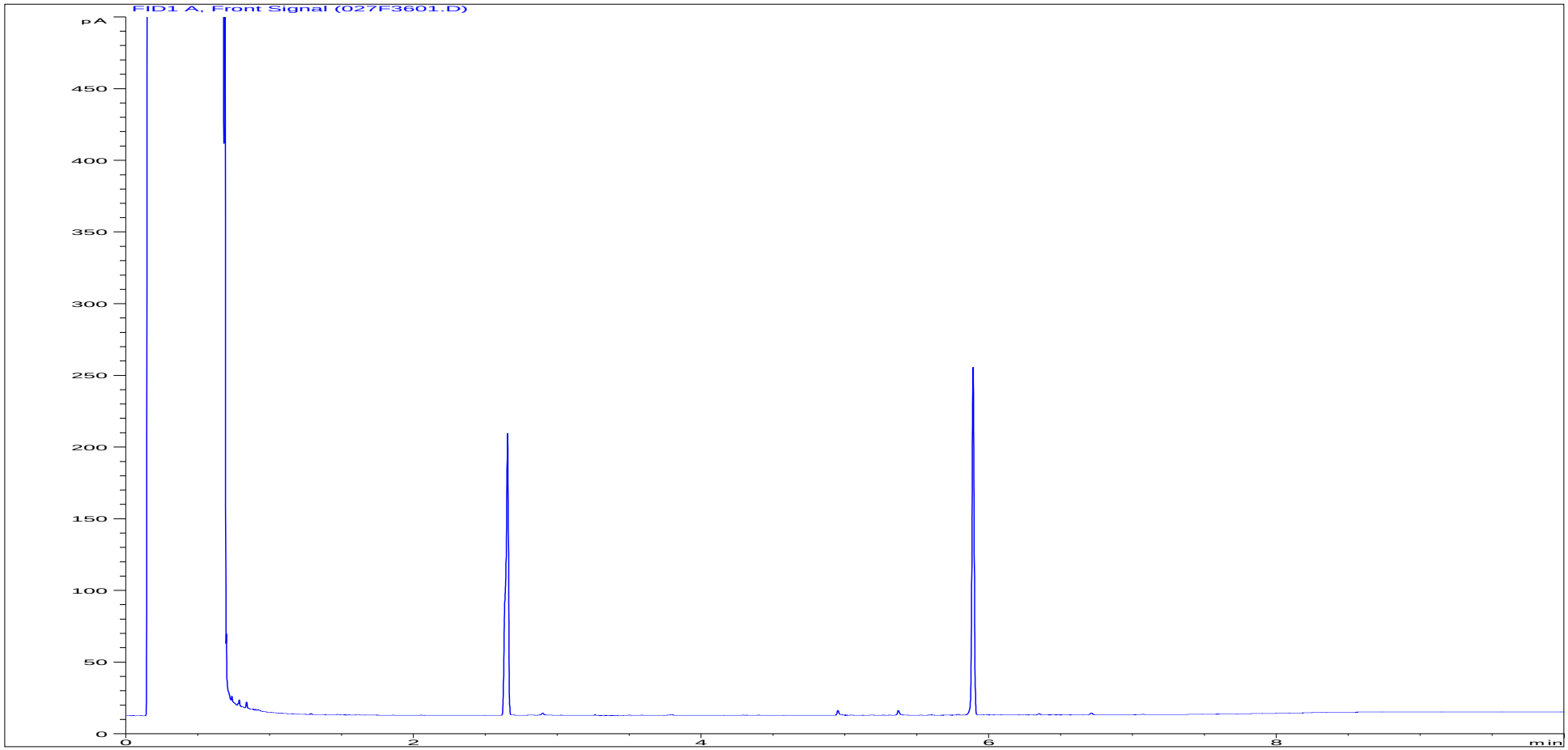
Matrix: Soil
Date Booked ir 09-May-16
Date Extracted 12-May-16
Date Analysed 16-May-16, 06:10:29

This sample data is not MCERTS accredited.
*** This sample data is not ISO17025 accredited.**

		Concentration, (mg/kg) - as dry weight.											
		>C8 - C10		>C10 - C12		>C12 - C16		>C16 - C21		>C21 - C35		>C8 - C40	
Sample ID	**Client ID**	**Aliphatics**	**Aromatics**	**Aliphatics**	**Aromatics**	**Aliphatics**	**Aromatics**	**Aliphatics**	**Aromatics**	**Aliphatics**	**Aromatics**	**Aliphatics**	**Aromatics**
CL1615729	BH103 0.40	<5	<5	<5	<5*	<5	<5	<5	<5	<11.74	<11.74	<27	<27
CL1615730	BH104 0.50	<6	<6	<6	<6*	<6	<6	<6	13	<12.53	28.5	<29	47
CL1615731	BH104 1.30	<5	<5	<5	<5*	<5	<5	<5	<5	<10.05	<10.05	<23	<23
CL1615732	BH105 0.50	<6	<6	<6	<6*	<6	<6	<6	6.34	<12.57	17	<29	<29

Where individual results are flagged see report notes for status.
Results corrected to dry weight at 105°C where appropriate, in accordance with the MCERTS standard.

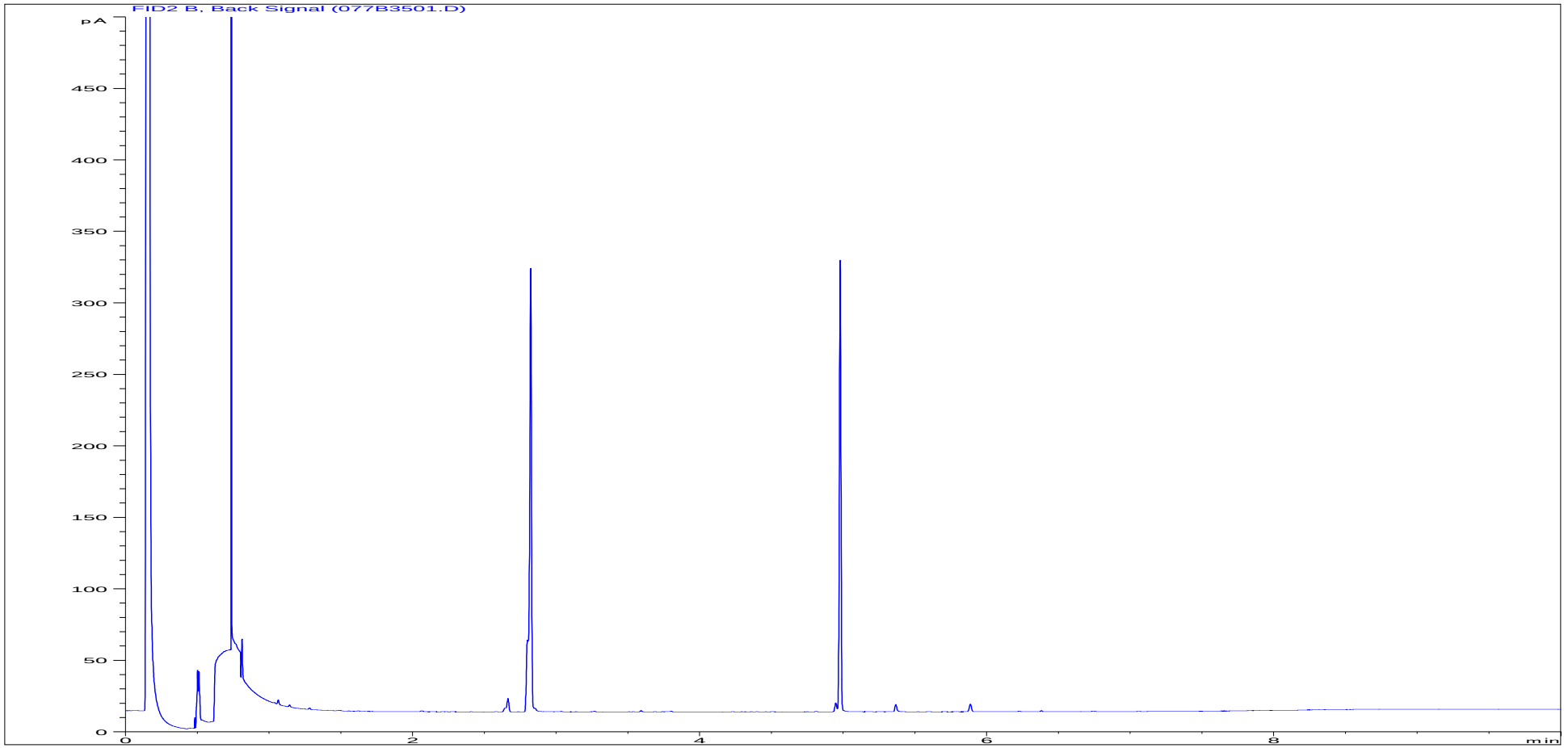
Petroleum Hydrocarbons (C8 to C40) by GC/FID Aliphatics Fraction.



Sample ID:	CL1615729ALI	**Job Number:**	S16_3743M
Multiplier:	14.72	**Client:**	Ramboll Environ
Dilution:	1	**Site:**	Zeon Chemicals ESA
Acquisition Method:	TPH_RUNF.M	**Client Sample Ref:**	BH103 0.40
Acquisition Date/Time:	16-May-16, 05:36:07		
Datafile:	D:\TES\DATA\Y2016\051516TPH_GC14\051616 2016-05-15 19-20-54\027F3601.D		

Where individual results are flagged see report notes for status.
Results corrected to dry weight at 105°C where appropriate, in accordance with the MCERTS standard.

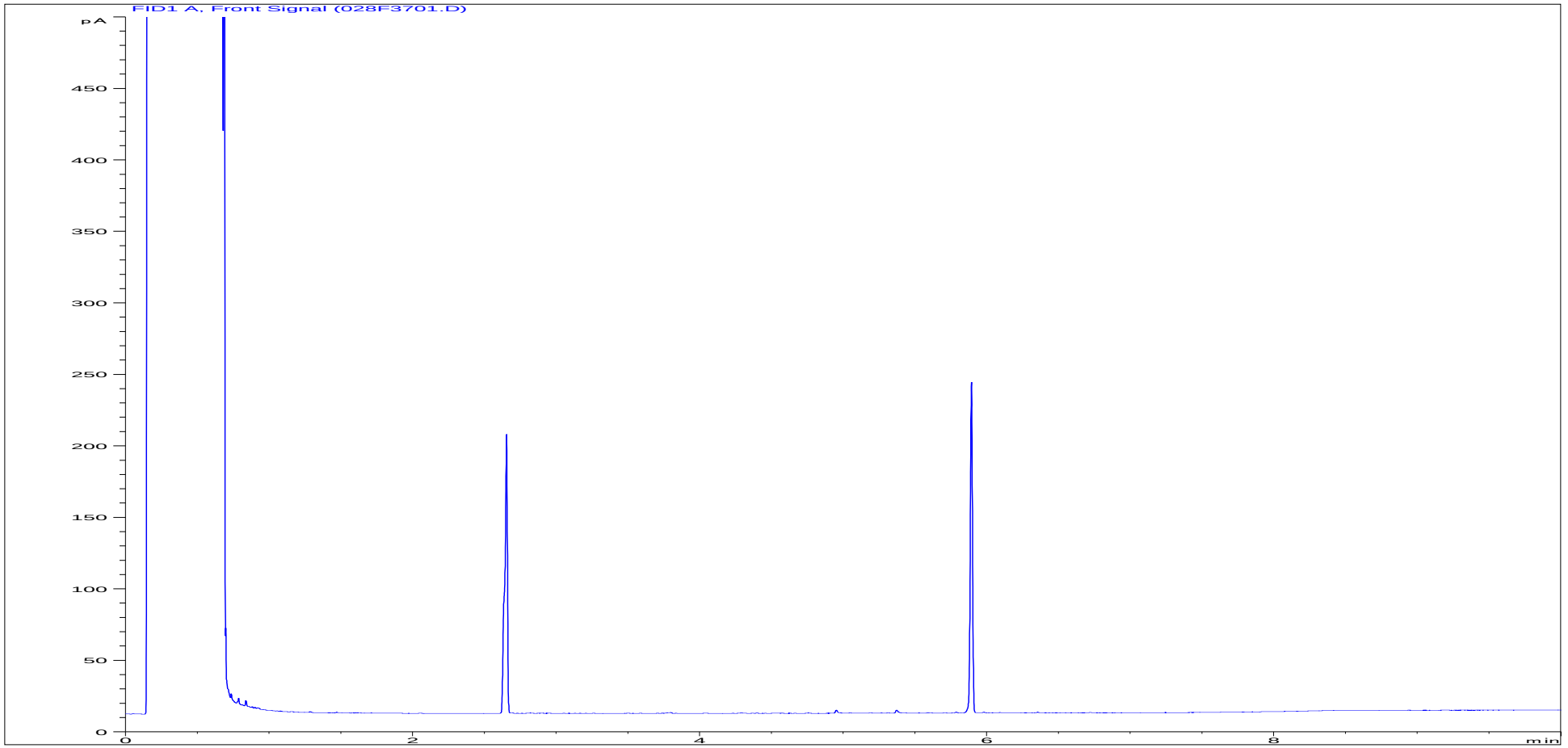
Petroleum Hydrocarbons (C8 to C40) by GC/FID Aromatics Fraction.



Sample ID:	CL1615729ARO	**Job Number:**	S16_3743M
Multiplier:	11.2	**Client:**	Ramboll Environ
Dilution:	1	**Site:**	Zeon Chemicals ESA
Acquisition Method:	TPH_RUNF.M	**Client Sample Ref:**	BH103 0.40
Acquisition Date/Time:	16-May-16, 05:19:04		
Datafile:	D:\TES\DATA\Y2016\051516TPH_GC14\051616 2016-05-15 19-20-54\077B3501.D		

Where individual results are flagged see report notes for status.
Results corrected to dry weight at 105°C where appropriate, in accordance with the MCERTS standard.

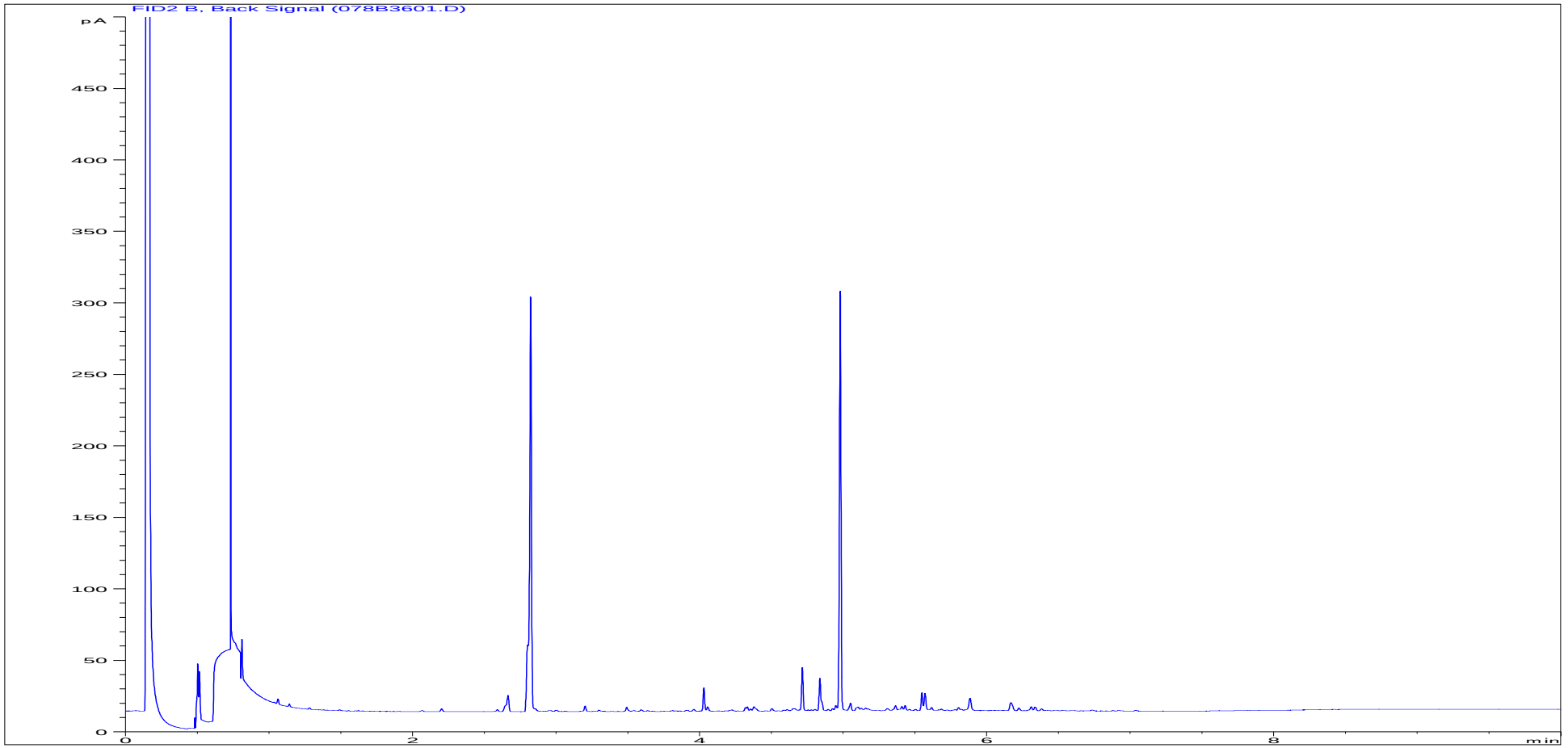
Petroleum Hydrocarbons (C8 to C40) by GC/FID Aliphatics Fraction.



Sample ID:	CL1615730ALI	**Job Number:**	S16_3743M
Multiplier:	14.56	**Client:**	Ramboll Environ
Dilution:	1	**Site:**	Zeon Chemicals ESA
Acquisition Method:	TPH_RUNF.M	**Client Sample Ref:**	BH104 0.50
Acquisition Date/Time:	16-May-16, 05:53:12		
Datafile:	D:\TES\DATA\Y2016\051516TPH_GC14\051616 2016-05-15 19-20-54\028F3701.D		

Where individual results are flagged see report notes for status.
Results corrected to dry weight at 105°C where appropriate, in accordance with the MCERTS standard.

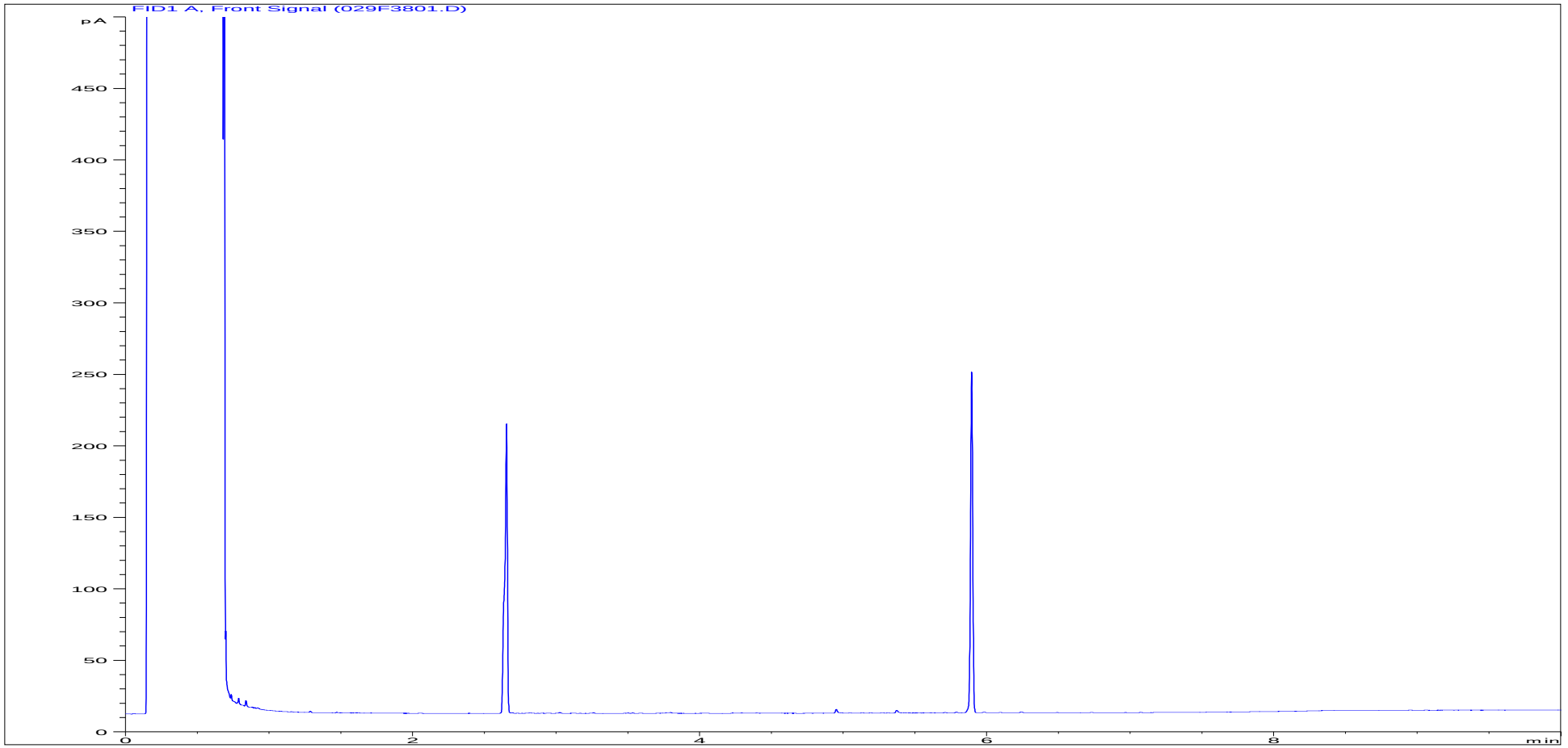
Petroleum Hydrocarbons (C8 to C40) by GC/FID Aromatics Fraction.



Sample ID:	CL1615730ARO	**Job Number:**	S16_3743M
Multiplier:	11.2	**Client:**	Ramboll Environ
Dilution:	1	**Site:**	Zeon Chemicals ESA
Acquisition Method:	TPH_RUNF.M	**Client Sample Ref:**	BH104 0.50
Acquisition Date/Time:	16-May-16, 05:36:07		
Datafile:	D:\TES\DATA\Y2016\051516TPH_GC14\051616 2016-05-15 19-20-54\078B3601.D		

Where individual results are flagged see report notes for status.
Results corrected to dry weight at 105°C where appropriate, in accordance with the MCERTS standard.

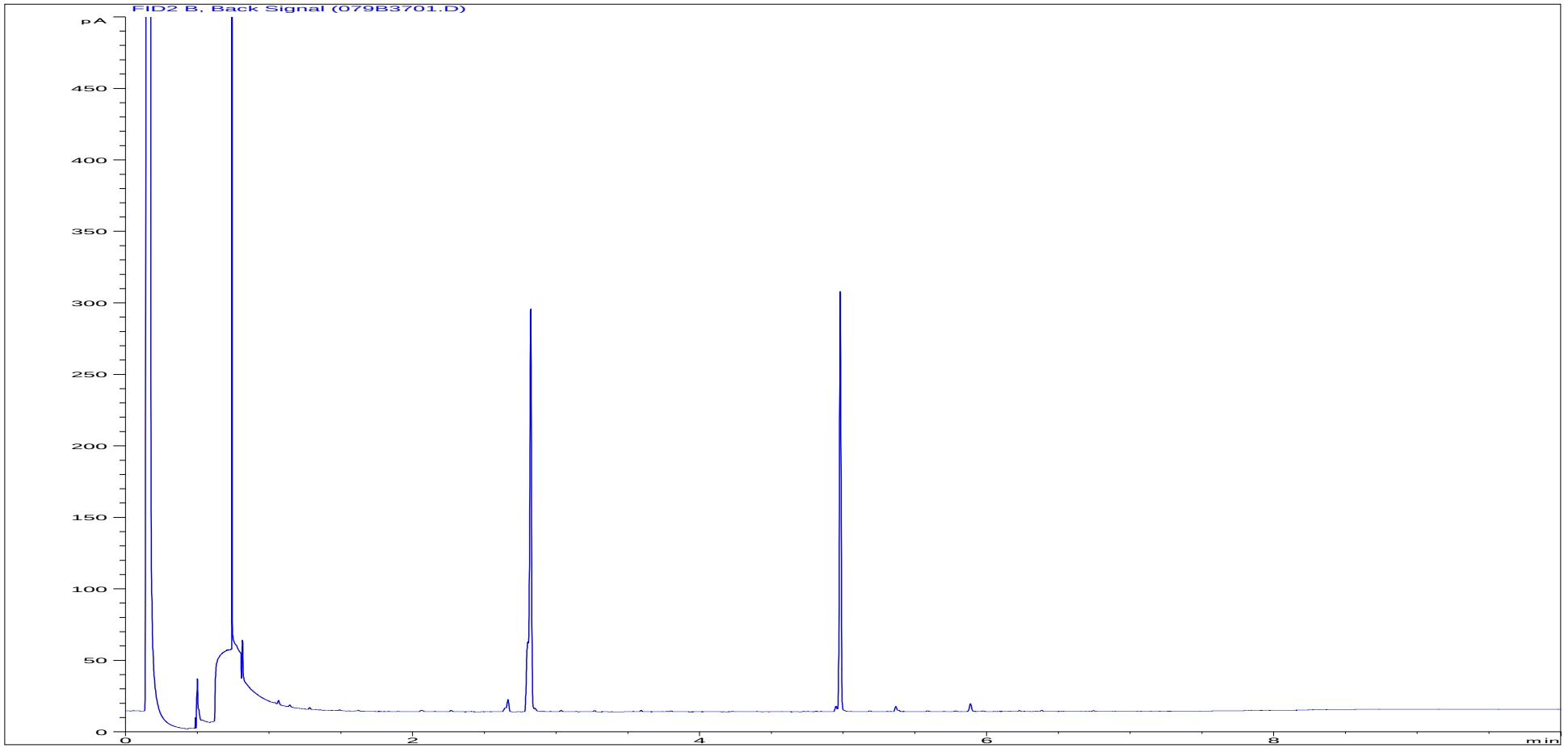
Petroleum Hydrocarbons (C8 to C40) by GC/FID Aliphatics Fraction.



Sample ID:	CL1615731ALI	**Job Number:**	S16_3743M
Multiplier:	14.88	**Client:**	Ramboll Environ
Dilution:	1	**Site:**	Zeon Chemicals ESA
Acquisition Method:	TPH_RUNF.M	**Client Sample Ref:**	BH104 1.30
Acquisition Date/Time:	16-May-16, 06:10:29		
Datafile:	D:\TES\DATA\Y2016\051516TPH_GC14\051616 2016-05-15 19-20-54\029F3801.D		

Where individual results are flagged see report notes for status.
Results corrected to dry weight at 105°C where appropriate, in accordance with the MCERTS standard.

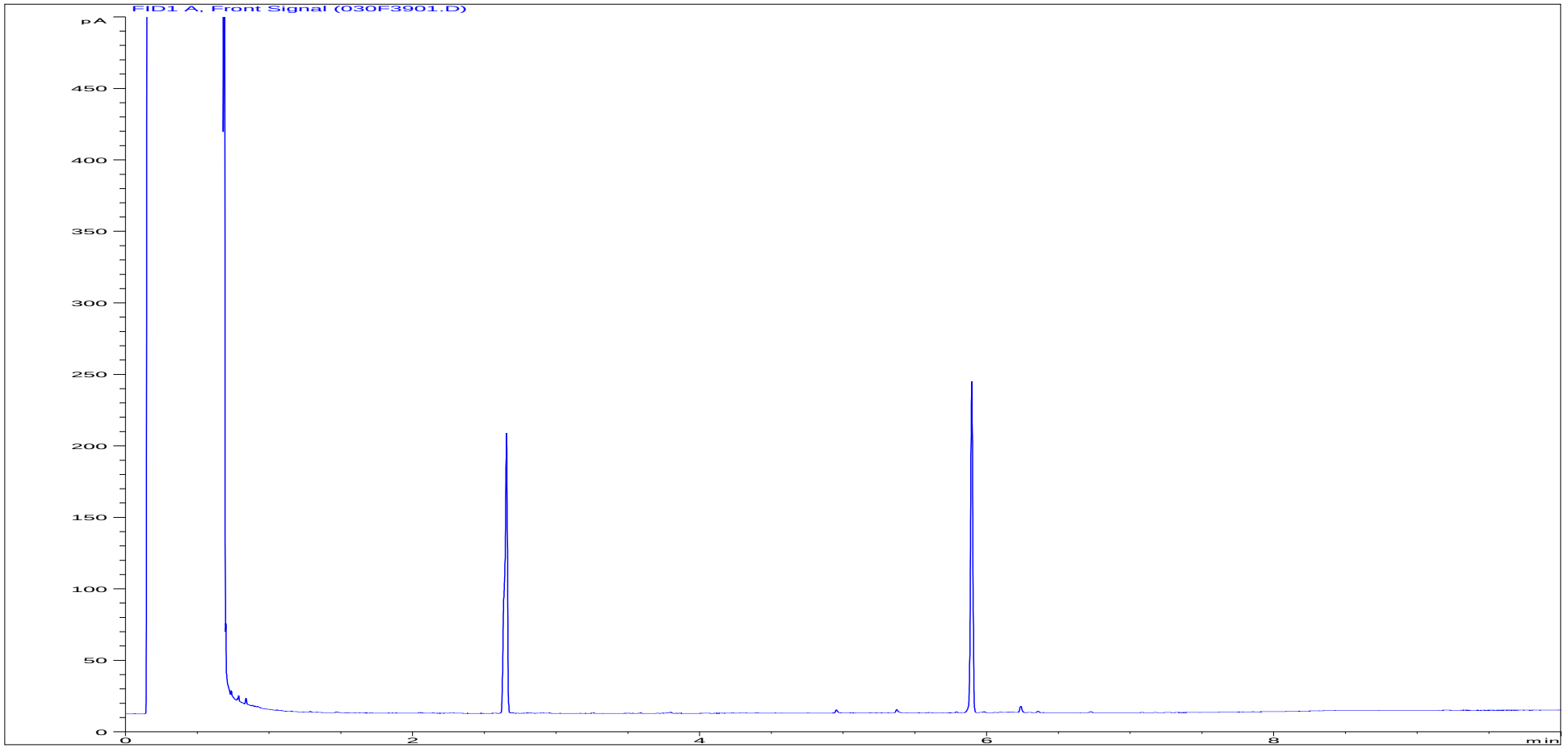
Petroleum Hydrocarbons (C8 to C40) by GC/FID Aromatics Fraction.



Sample ID:	CL1615731ARO	**Job Number:**	S16_3743M
Multiplier:	11.2	**Client:**	Ramboll Environ
Dilution:	1	**Site:**	Zeon Chemicals ESA
Acquisition Method:	TPH_RUNF.M	**Client Sample Ref:**	BH104 1.30
Acquisition Date/Time:	16-May-16, 05:53:12		
Datafile:	D:\TES\DATA\Y2016\051516TPH_GC14\051616 2016-05-15 19-20-54\079B3701.D		

Where individual results are flagged see report notes for status.
Results corrected to dry weight at 105°C where appropriate, in accordance with the MCERTS standard.

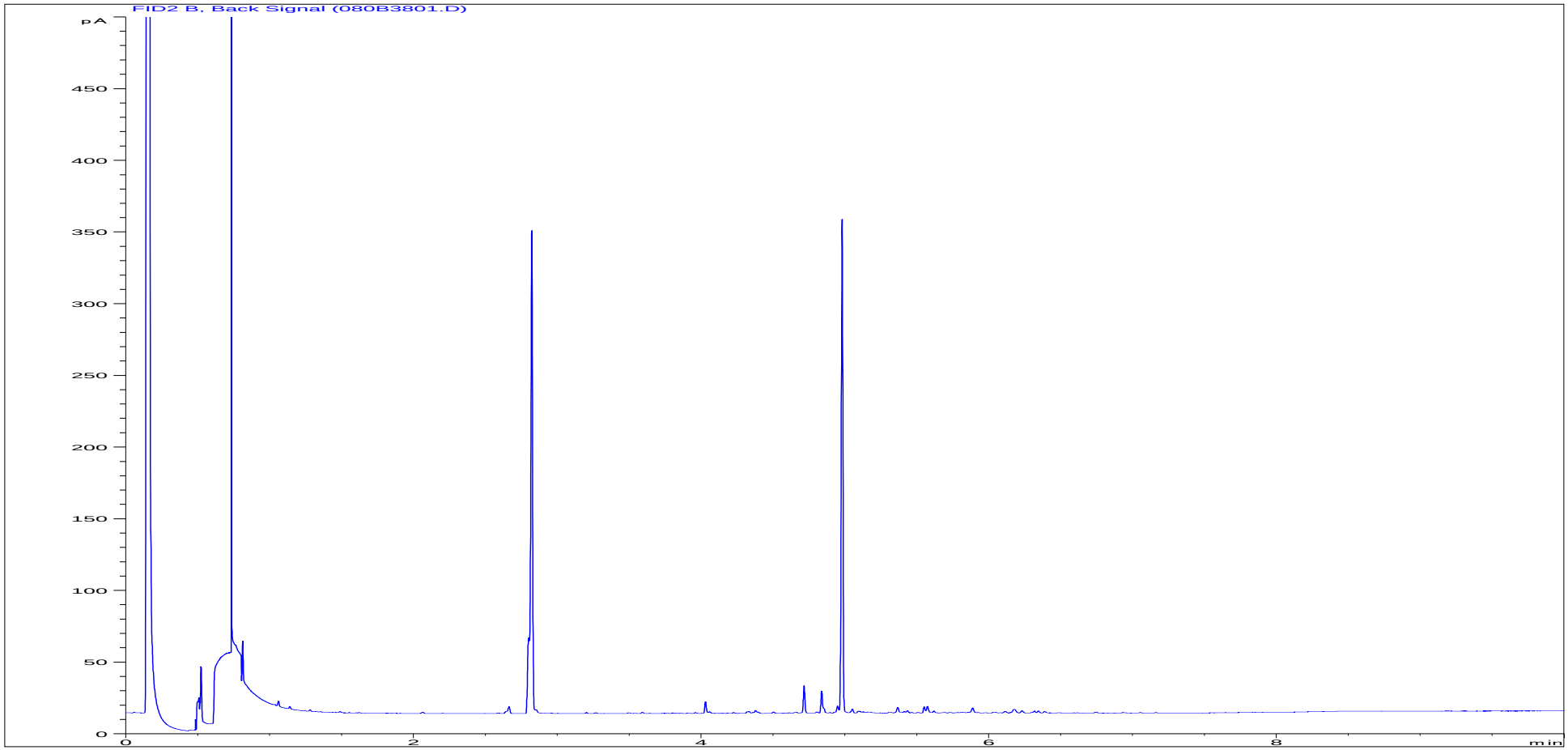
Petroleum Hydrocarbons (C8 to C40) by GC/FID Aliphatics Fraction.



Sample ID:	CL1615732ALI	**Job Number:**	S16_3743M
Multiplier:	14.56	**Client:**	Ramboll Environ
Dilution:	1	**Site:**	Zeon Chemicals ESA
Acquisition Method:	TPH_RUNF.M	**Client Sample Ref:**	BH105 0.50
Acquisition Date/Time:	16-May-16, 06:27:31		
Datafile:	D:\TES\DATA\Y2016\051516TPH_GC14\051616 2016-05-15 19-20-54\030F3901.D		

Where individual results are flagged see report notes for status.
Results corrected to dry weight at 105°C where appropriate, in accordance with the MCERTS standard.

Petroleum Hydrocarbons (C8 to C40) by GC/FID Aromatics Fraction.



Sample ID:	CL1615732ARO	**Job Number:**	S16_3743M
Multiplier:	11.2	**Client:**	Ramboll Environ
Dilution:	1	**Site:**	Zeon Chemicals ESA
Acquisition Method:	TPH_RUNF.M	**Client Sample Ref:**	BH105 0.50
Acquisition Date/Time:	16-May-16, 06:10:29		
Datafile:	D:\TES\DATA\Y2016\051516TPH_GC14\051616 2016-05-15 19-20-54\080B3801.D		

Where individual results are flagged see report notes for status.
Results corrected to dry weight at 105°C where appropriate, in accordance with the MCERTS standard.

Volatile Organic Compounds by HSA-GCMS

Accredited?: Yes

Customer and Site Details: Ramboll Environ: Zeon Chemicals ESA
Sample Details: BH103 0.40
LIMS ID Number: CL1615729
Job Number: S16_3743M

Directory/Quant file: 512VOC.MS19\ Initial Calibration
Date Booked in: 09-May-16
Date Analysed: 12-May-16
Operator:

Matrix: Soil
Method: Headspace
Multiplier: 1.02
Position: 14

Target Compounds	CAS #	R.T. (min.)	Concentration µg/kg	% Fit	Accr. code
Dichlorodifluoromethane	75-71-8 **	-	< 1	-	N
Chloromethane	74-87-3 *	-	< 4	-	N
Vinyl Chloride	75-01-4	-	< 1	-	UM
Bromomethane	74-83-9	-	< 1	-	UM
Chloroethane	75-00-3	-	< 3	-	UM
Trichlorofluoromethane	75-69-4	-	< 1	-	UM
1,1-Dichloroethene	75-35-48 *	-	< 1	-	N
trans 1,2-Dichloroethene	156-60-5	-	< 1	-	UM
1,1-Dichloroethane	75-34-3	-	< 1	-	UM
MTBE	1634-04-4	-	< 1	-	UM
2,2-Dichloropropane	594-20-7	-	< 1	-	UM
cis 1,2-Dichloroethene	156-59-2	-	< 7	-	UM
Bromochloromethane	74-97-5	-	< 1	-	UM
Chloroform	67-66-3	-	< 1	-	UM
1,1,1-Trichloroethane	71-55-6	-	< 1	-	UM
Carbon Tetrachloride	56-23-5	-	< 1	-	UM
1,1-Dichloropropene	563-58-6	-	< 1	-	UM
Benzene	71-43-2	-	< 1	-	UM
1,2-Dichloroethane	107-06-2	-	< 1	-	UM
Trichloroethene	79-01-6 **	-	< 1	-	N
1,2-Dichloropropane	78-87-5	-	< 1	-	UM
Dibromomethane	74-95-3	-	< 1	-	UM
Bromodichloromethane	75-27-4	-	< 1	-	UM
cis 1,3-Dichloropropene	10061-01-5	-	< 1	-	UM
Toluene	108-88-3	-	< 7	-	UM
trans 1,3-Dichloropropene	10061-02-6	-	< 1	-	UM
1,1,2-Trichloroethane	79-00-5	-	< 1	-	UM
Tetrachloroethene	127-18-4	-	< 4	-	UM
1,3-Dichloropropane	142-28-9	-	< 1	-	UM
Dibromochloromethane	124-48-1	-	< 1	-	UM
1,2-Dibromoethane	106-93-4	-	< 1	-	UM
Chlorobenzene	108-90-7	-	< 1	-	UM
Ethylbenzene	100-41-4	-	< 3	-	UM
1,1,1,2-Tetrachloroethane	630-20-6	-	< 1	-	UM
m and p-Xylene	108-38-3/106-42-3	-	< 5	-	UM

Target Compounds	CAS #	R.T. (min.)	Concentration µg/kg	% Fit	Accr. code
o-Xylene	95-47-6	-	< 3	-	UM
Styrene	100-42-5	-	< 1	-	UM
Bromoform	75-25-2	-	< 1	-	UM
iso-Propylbenzene	98-82-8	-	< 1	-	UM
1,1,2,2-Tetrachloroethane	79-34-5 **	-	< 1	-	N
Propylbenzene	103-65-1	-	< 1	-	UM
Bromobenzene	108-86-1	-	< 1	-	UM
1,2,3-Trichloropropane	96-18-4	-	< 1	-	UM
2-Chlorotoluene	95-49-8	-	< 1	-	UM
1,3,5-Trimethylbenzene	108-67-8	-	< 1	-	UM
4-Chlorotoluene	106-43-4	-	< 1	-	UM
tert-Butylbenzene	98-06-6	-	< 1	-	UM
1,2,4-Trimethylbenzene	95-63-6	-	< 1	-	UM
sec-Butylbenzene	135-98-8	-	< 1	-	UM
p-Isopropyltoluene	99-87-6	-	< 1	-	UM
1,3-Dichlorobenzene	541-73-1	-	< 1	-	UM
1,4-Dichlorobenzene	106-46-7	-	< 1	-	UM
n-Butylbenzene	104-51-8 *	-	< 1	-	N
1,2-Dichlorobenzene	95-50-1	-	< 1	-	UM
1,2-Dibromo-3-chloropropane	96-12-8	-	< 1	-	UM
1,2,4-Trichlorobenzene	120-82-1 *	-	< 4	-	N
Hexachlorobutadiene	87-68-3 **	-	< 3	-	N
Naphthalene	91-20-3	-	< 7	-	UM
1,2,3-Trichlorobenzene	87-61-6	-	< 4	-	UM

Concentrations are reported on a dry weight basis
Compounds marked ** are not UKAS or Mcerts accredited
"M" denotes that % fit has been manually interpreted
This analysis was conducted on an 'As Received' basis.

Internal standards	R.T.	Area %	Surrogates	% Rec
Pentafluorobenzene	4.05	92	Dibromofluoromethane	110
1,4-Difluorobenzene	4.39	94	Toluene-d8	97
Chlorobenzene-d5	5.50	85		
Bromofluorobenzene	5.89	74		
1,4-Dichlorobenzene-d4	6.29	62		
Naphthalene-d8	7.13	31		

Note: Volatile compounds degrade with time, and this may affect the integrity of the data depending on the timescale between sampling and analysis. It is recommended that analysis takes place within 7 days of sampling.

Where individual results are flagged see report notes for status.
Results corrected to dry weight at 105°C where appropriate, in accordance with the MCERTS standard.

Volatile Organic Compounds by HSA-GCMS

Accredited?: Yes

Customer and Site Details: Ramboll Environ: Zeon Chemicals ESA
Sample Details: BH104 0.50
LIMS ID Number: CL1615730
Job Number: S16_3743M

Directory/Quant file: 512VOC.MS19\ Initial Calibration
Date Booked in: 09-May-16
Date Analysed: 12-May-16
Operator:

Matrix: Soil
Method: Headspace
Multiplier: 0.96
Position: 15

Target Compounds	CAS #	R.T. (min.)	Concentration µg/kg	% Fit	Accr. code
Dichlorodifluoromethane	75-71-8 **	-	< 1	-	N
Chloromethane	74-87-3 *	-	< 4	-	N
Vinyl Chloride	75-01-4	-	< 1	-	UM
Bromomethane	74-83-9	-	< 1	-	UM
Chloroethane	75-00-3	-	< 3	-	UM
Trichlorofluoromethane	75-69-4	-	< 1	-	UM
1,1-Dichloroethene	75-35-48 *	-	< 1	-	N
trans 1,2-Dichloroethene	156-60-5	-	< 1	-	UM
1,1-Dichloroethane	75-34-3	-	< 1	-	UM
MTBE	1634-04-4	-	< 1	-	UM
2,2-Dichloropropane	594-20-7	-	< 1	-	UM
cis 1,2-Dichloroethene	156-59-2	-	< 7	-	UM
Bromochloromethane	74-97-5	-	< 1	-	UM
Chloroform	67-66-3	-	< 1	-	UM
1,1,1-Trichloroethane	71-55-6	-	< 1	-	UM
Carbon Tetrachloride	56-23-5	-	< 1	-	UM
1,1-Dichloropropene	563-58-6	-	< 1	-	UM
Benzene	71-43-2	4.23	4	M	UM
1,2-Dichloroethane	107-06-2	-	< 1	-	UM
Trichloroethene	79-01-6 **	-	< 1	-	N
1,2-Dichloropropane	78-87-5	-	< 1	-	UM
Dibromomethane	74-95-3	-	< 1	-	UM
Bromodichloromethane	75-27-4	-	< 1	-	UM
cis 1,3-Dichloropropene	10061-01-5	-	< 1	-	UM
Toluene	108-88-3	-	< 7	-	UM
trans 1,3-Dichloropropene	10061-02-6	-	< 1	-	UM
1,1,2-Trichloroethane	79-00-5	-	< 1	-	UM
Tetrachloroethene	127-18-4	-	< 4	-	UM
1,3-Dichloropropane	142-28-9	-	< 1	-	UM
Dibromochloromethane	124-48-1	-	< 1	-	UM
1,2-Dibromoethane	106-93-4	-	< 1	-	UM
Chlorobenzene	108-90-7	-	< 1	-	UM
Ethylbenzene	100-41-4	-	< 3	-	UM
1,1,1,2-Tetrachloroethane	630-20-6	-	< 1	-	UM
m and p-Xylene	108-38-3/106-42-3	-	< 6	-	UM

Target Compounds	CAS #	R.T. (min.)	Concentration µg/kg	% Fit	Accr. code
o-Xylene	95-47-6	-	< 3	-	UM
Styrene	100-42-5	-	< 1	-	UM
Bromoform	75-25-2	-	< 1	-	UM
iso-Propylbenzene	98-82-8	-	< 1	-	UM
1,1,2,2-Tetrachloroethane	79-34-5 **	-	< 1	-	N
Propylbenzene	103-65-1	-	< 1	-	UM
Bromobenzene	108-86-1	-	< 1	-	UM
1,2,3-Trichloropropane	96-18-4	-	< 1	-	UM
2-Chlorotoluene	95-49-8	-	< 1	-	UM
1,3,5-Trimethylbenzene	108-67-8	-	< 1	-	UM
4-Chlorotoluene	106-43-4	-	< 1	-	UM
tert-Butylbenzene	98-06-6	-	< 1	-	UM
1,2,4-Trimethylbenzene	95-63-6	-	< 1	-	UM
sec-Butylbenzene	135-98-8	-	< 1	-	UM
p-Isopropyltoluene	99-87-6	-	< 1	-	UM
1,3-Dichlorobenzene	541-73-1	-	< 1	-	UM
1,4-Dichlorobenzene	106-46-7	-	< 1	-	UM
n-Butylbenzene	104-51-8 *	-	< 1	-	N
1,2-Dichlorobenzene	95-50-1	-	< 1	-	UM
1,2-Dibromo-3-chloropropane	96-12-8	-	< 1	-	UM
1,2,4-Trichlorobenzene	120-82-1 *	-	< 4	-	N
Hexachlorobutadiene	87-68-3 **	-	< 3	-	N
Naphthalene	91-20-3	7.14	37	M	UM
1,2,3-Trichlorobenzene	87-61-6	-	< 4	-	UM

Concentrations are reported on a dry weight basis
Compounds marked ** are not UKAS or Mcerts accredited
"M" denotes that % fit has been manually interpreted
This analysis was conducted on an 'As Received' basis.

Internal standards	R.T.	Area %
Pentafluorobenzene	4.05	88
1,4-Difluorobenzene	4.39	84
Chlorobenzene-d5	5.50	70
Bromofluorobenzene	5.89	58
1,4-Dichlorobenzene-d4	6.29	47
Naphthalene-d8	7.13	28

Surrogates	% Rec
Dibromofluoromethane	24
Toluene-d8	98

Note: Volatile compounds degrade with time, and this may affect the integrity of the data depending on the timescale between sampling and analysis. It is recommended that analysis takes place within 7 days of sampling.

Where individual results are flagged see report notes for status.
Results corrected to dry weight at 105°C where appropriate, in accordance with the MCERTS standard.

Volatile Organic Compounds by HSA-GCMS

Accredited?: Yes

Customer and Site Details: Ramboll Environ: Zeon Chemicals ESA
Sample Details: BH104 1.30
LIMS ID Number: CL1615731
Job Number: S16_3743M

Directory/Quant file: 512VOC.MS19\ Initial Calibration
Date Booked in: 09-May-16
Date Analysed: 12-May-16
Operator:

Matrix: Soil
Method: Headspace
Multiplier: 1.05
Position: 16

Target Compounds	CAS #	R.T. (min.)	Concentration µg/kg	% Fit	Accr. code
Dichlorodifluoromethane	75-71-8 **	-	< 1	-	N
Chloromethane	74-87-3 *	-	< 3	-	N
Vinyl Chloride	75-01-4	-	< 1	-	UM
Bromomethane	74-83-9	-	< 1	-	UM
Chloroethane	75-00-3	-	< 2	-	UM
Trichlorofluoromethane	75-69-4	-	< 1	-	UM
1,1-Dichloroethene	75-35-48 *	-	< 1	-	N
trans 1,2-Dichloroethene	156-60-5	-	< 1	-	UM
1,1-Dichloroethane	75-34-3	-	< 1	-	UM
MTBE	1634-04-4	-	< 1	-	UM
2,2-Dichloropropane	594-20-7	-	< 1	-	UM
cis 1,2-Dichloroethene	156-59-2	-	< 6	-	UM
Bromochloromethane	74-97-5	-	< 1	-	UM
Chloroform	67-66-3	-	< 1	-	UM
1,1,1-Trichloroethane	71-55-6	-	< 1	-	UM
Carbon Tetrachloride	56-23-5	-	< 1	-	UM
1,1-Dichloropropene	563-58-6	-	< 1	-	UM
Benzene	71-43-2	-	< 1	-	UM
1,2-Dichloroethane	107-06-2	-	< 1	-	UM
Trichloroethene	79-01-6 **	-	< 1	-	N
1,2-Dichloropropane	78-87-5	-	< 1	-	UM
Dibromomethane	74-95-3	-	< 1	-	UM
Bromodichloromethane	75-27-4	-	< 1	-	UM
cis 1,3-Dichloropropene	10061-01-5	-	< 1	-	UM
Toluene	108-88-3	-	< 6	-	UM
trans 1,3-Dichloropropene	10061-02-6	-	< 1	-	UM
1,1,2-Trichloroethane	79-00-5	-	< 1	-	UM
Tetrachloroethene	127-18-4	-	< 3	-	UM
1,3-Dichloropropane	142-28-9	-	< 1	-	UM
Dibromochloromethane	124-48-1	-	< 1	-	UM
1,2-Dibromoethane	106-93-4	-	< 1	-	UM
Chlorobenzene	108-90-7	-	< 1	-	UM
Ethylbenzene	100-41-4	-	< 2	-	UM
1,1,1,2-Tetrachloroethane	630-20-6	-	< 1	-	UM
m and p-Xylene	108-38-3/106-42-3	-	< 5	-	UM

Target Compounds	CAS #	R.T. (min.)	Concentration µg/kg	% Fit	Accr. code
o-Xylene	95-47-6	-	< 2	-	UM
Styrene	100-42-5	-	< 1	-	UM
Bromoform	75-25-2	-	< 1	-	UM
iso-Propylbenzene	98-82-8	-	< 1	-	UM
1,1,2,2-Tetrachloroethane	79-34-5 **	-	< 1	-	N
Propylbenzene	103-65-1	-	< 1	-	UM
Bromobenzene	108-86-1	-	< 1	-	UM
1,2,3-Trichloropropane	96-18-4	-	< 1	-	UM
2-Chlorotoluene	95-49-8	-	< 1	-	UM
1,3,5-Trimethylbenzene	108-67-8	-	< 1	-	UM
4-Chlorotoluene	106-43-4	-	< 1	-	UM
tert-Butylbenzene	98-06-6	-	< 1	-	UM
1,2,4-Trimethylbenzene	95-63-6	-	< 1	-	UM
sec-Butylbenzene	135-98-8	-	< 1	-	UM
p-Isopropyltoluene	99-87-6	-	< 1	-	UM
1,3-Dichlorobenzene	541-73-1	-	< 1	-	UM
1,4-Dichlorobenzene	106-46-7	-	< 1	-	UM
n-Butylbenzene	104-51-8 *	-	< 1	-	N
1,2-Dichlorobenzene	95-50-1	-	< 1	-	UM
1,2-Dibromo-3-chloropropane	96-12-8	-	< 1	-	UM
1,2,4-Trichlorobenzene	120-82-1 *	-	< 3	-	N
Hexachlorobutadiene	87-68-3 **	-	< 2	-	N
Naphthalene	91-20-3	-	< 6	-	UM
1,2,3-Trichlorobenzene	87-61-6	-	< 3	-	UM

Concentrations are reported on a dry weight basis
Compounds marked ** are not UKAS or Mcerts accredited
"M" denotes that % fit has been manually interpreted
This analysis was conducted on an 'As Received' basis.

Internal standards	R.T.	Area %	Surrogates	% Rec
Pentafluorobenzene	4.04	93	Dibromofluoromethane	83
1,4-Difluorobenzene	4.39	95	Toluene-d8	98
Chlorobenzene-d5	5.50	91		
Bromofluorobenzene	5.89	85		
1,4-Dichlorobenzene-d4	6.29	78		
Naphthalene-d8	7.12	73		

Note: Volatile compounds degrade with time, and this may affect the integrity of the data depending on the timescale between sampling and analysis. It is recommended that analysis takes place within 7 days of sampling.

Where individual results are flagged see report notes for status.
Results corrected to dry weight at 105°C where appropriate, in accordance with the MCERTS standard.

Volatile Organic Compounds by HSA-GCMS

Accredited?: Yes

Customer and Site Details: Ramboll Environ: Zeon Chemicals ESA
Sample Details: BH105 0.50
LIMS ID Number: CL1615732
Job Number: S16_3743M

Directory/Quant file: 512VOC.MS19\ Initial Calibration
Date Booked in: 09-May-16
Date Analysed: 12-May-16
Operator:

Matrix: Soil
Method: Headspace
Multiplier: 1.04
Position: 17

Target Compounds	CAS #	R.T. (min.)	Concentration µg/kg	% Fit	Accr. code
Dichlorodifluoromethane	75-71-8 **	-	< 1	-	N
Chloromethane	74-87-3 *	-	< 4	-	N
Vinyl Chloride	75-01-4	-	< 1	-	UM
Bromomethane	74-83-9	-	< 1	-	UM
Chloroethane	75-00-3	-	< 3	-	UM
Trichlorofluoromethane	75-69-4	-	< 1	-	UM
1,1-Dichloroethene	75-35-48 *	-	< 1	-	N
trans 1,2-Dichloroethene	156-60-5	-	< 1	-	UM
1,1-Dichloroethane	75-34-3	-	< 1	-	UM
MTBE	1634-04-4	-	< 1	-	UM
2,2-Dichloropropane	594-20-7	-	< 1	-	UM
cis 1,2-Dichloroethene	156-59-2	-	< 7	-	UM
Bromochloromethane	74-97-5	-	< 1	-	UM
Chloroform	67-66-3	-	< 1	-	UM
1,1,1-Trichloroethane	71-55-6	-	< 1	-	UM
Carbon Tetrachloride	56-23-5	-	< 1	-	UM
1,1-Dichloropropene	563-58-6	-	< 1	-	UM
Benzene	71-43-2	4.23	6	M	UM
1,2-Dichloroethane	107-06-2	-	< 1	-	UM
Trichloroethene	79-01-6 **	-	< 1	-	N
1,2-Dichloropropane	78-87-5	-	< 1	-	UM
Dibromomethane	74-95-3	-	< 1	-	UM
Bromodichloromethane	75-27-4	-	< 1	-	UM
cis 1,3-Dichloropropene	10061-01-5	-	< 1	-	UM
Toluene	108-88-3	-	< 7	-	UM
trans 1,3-Dichloropropene	10061-02-6	-	< 1	-	UM
1,1,2-Trichloroethane	79-00-5	-	< 1	-	UM
Tetrachloroethene	127-18-4	-	< 4	-	UM
1,3-Dichloropropane	142-28-9	-	< 1	-	UM
Dibromochloromethane	124-48-1	-	< 1	-	UM
1,2-Dibromoethane	106-93-4	-	< 1	-	UM
Chlorobenzene	108-90-7	-	< 1	-	UM
Ethylbenzene	100-41-4	-	< 3	-	UM
1,1,1,2-Tetrachloroethane	630-20-6	-	< 1	-	UM
m and p-Xylene	108-38-3/106-42-3	-	< 6	-	UM

Target Compounds	CAS #	R.T. (min.)	Concentration µg/kg	% Fit	Accr. code
o-Xylene	95-47-6	-	< 3	-	UM
Styrene	100-42-5	-	< 1	-	UM
Bromoform	75-25-2	-	< 1	-	UM
iso-Propylbenzene	98-82-8	-	< 1	-	UM
1,1,2,2-Tetrachloroethane	79-34-5 **	-	< 1	-	N
Propylbenzene	103-65-1	-	< 1	-	UM
Bromobenzene	108-86-1	-	< 1	-	UM
1,2,3-Trichloropropane	96-18-4	-	< 1	-	UM
2-Chlorotoluene	95-49-8	-	< 1	-	UM
1,3,5-Trimethylbenzene	108-67-8	-	< 1	-	UM
4-Chlorotoluene	106-43-4	-	< 1	-	UM
tert-Butylbenzene	98-06-6	-	< 1	-	UM
1,2,4-Trimethylbenzene	95-63-6	-	< 1	-	UM
sec-Butylbenzene	135-98-8	-	< 1	-	UM
p-Isopropyltoluene	99-87-6	-	< 1	-	UM
1,3-Dichlorobenzene	541-73-1	-	< 1	-	UM
1,4-Dichlorobenzene	106-46-7	-	< 1	-	UM
n-Butylbenzene	104-51-8 *	-	< 1	-	N
1,2-Dichlorobenzene	95-50-1	-	< 1	-	UM
1,2-Dibromo-3-chloropropane	96-12-8	-	< 1	-	UM
1,2,4-Trichlorobenzene	120-82-1 *	-	< 4	-	N
Hexachlorobutadiene	87-68-3 **	-	< 3	-	N
Naphthalene	91-20-3	-	< 7	-	UM
1,2,3-Trichlorobenzene	87-61-6	-	< 4	-	UM

Concentrations are reported on a dry weight basis
Compounds marked ** are not UKAS or Mcerts accredited
"M" denotes that % fit has been manually interpreted
This analysis was conducted on an 'As Received' basis.

Internal standards	R.T.	Area %	Surrogates	% Rec
Pentafluorobenzene	4.04	86	Dibromofluoromethane	102
1,4-Difluorobenzene	4.39	81	Toluene-d8	94
Chlorobenzene-d5	5.50	61		
Bromofluorobenzene	5.89	49		
1,4-Dichlorobenzene-d4	6.29	36		
Naphthalene-d8	7.12	19		

Note: Volatile compounds degrade with time, and this may affect the integrity of the data depending on the timescale between sampling and analysis. It is recommended that analysis takes place within 7 days of sampling.

Where individual results are flagged see report notes for status.
Results corrected to dry weight at 105°C where appropriate, in accordance with the MCERTS standard.

TICs by HSA-GCMS

Accredited?: No

Customer and Site Details:	Ramboll Environ: Zeon Chemicals ESA		**Date Booked in:**	09-May-16
Sample Details:	BH103 0.40		**Date Analysed:**	12-May-16
LIMS ID Number:	CL1615729		**Matrix:**	Soil
Job Number:	S16_3743		**Ext Method:**	Headspace
Directory/Quant file:	512VOC.MS19\	Initial Calibration	**Dilution:**	1.02
Operator:	0		**Position:**	14

Tentatively Identified Compounds	CAS No	R.T. (min.)	Concentration µg/kg	% Fit	Accr. code
None Detected			<7		N

The compounds listed above have been tentatively identified by a computer based library search.
Compounds identified in the sample are not reported if they also occur in the method blank.
The % fit is an indication of the reliability of the compound assignment.
Due to the similarity between mass spectra of some isomeric compounds, assignments may not be correct.
Other compounds may also be present but identification was not possible.
Concentrations are semi-quantitative, assume a response factor of 1 and use the nearest internal standard.

Compounds marked ** are not UKAS or Mcerts accredited
"M" denotes that % fit has been manually interpreted

Where individual results are flagged see report notes for status.
Results corrected to dry weight at 105°C where appropriate, in accordance with the MCERTS standard.

TICs by HSA-GCMS

Accredited?: No

Customer and Site Details:	Ramboll Environ: Zeon Chemicals ESA		**Date Booked in:**	09-May-16
Sample Details:	BH104 0.50		**Date Analysed:**	12-May-16
LIMS ID Number:	CL1615730		**Matrix:**	Soil
Job Number:	S16_3743		**Ext Method:**	Headspace
Directory/Quant file:	512VOC.MS19\	Initial Calibration	**Dilution:**	0.96
Operator:	0		**Position:**	15

Tentatively Identified Compounds	CAS No	R.T. (min.)	Concentration µg/kg	% Fit	Accr. code
Unidentified Peak		1.62	115		N

The compounds listed above have been tentatively identified by a computer based library search.
Compounds identified in the sample are not reported if they also occur in the method blank.
The % fit is an indication of the reliability of the compound assignment.
Due to the similarity between mass spectra of some isomeric compounds, assignments may not be correct.
Other compounds may also be present but identification was not possible.
Concentrations are semi-quantitative, assume a response factor of 1 and use the nearest internal standard.

Compounds marked ** are not UKAS or Mcerts accredited
"M" denotes that % fit has been manually interpreted

Where individual results are flagged see report notes for status.
Results corrected to dry weight at 105°C where appropriate, in accordance with the MCERTS standard.

TICs by HSA-GCMS

Accredited?: No

Customer and Site Details:	Ramboll Environ: Zeon Chemicals ESA		**Date Booked in:**	09-May-16
Sample Details:	BH104 1.30		**Date Analysed:**	12-May-16
LIMS ID Number:	CL1615731		**Matrix:**	Soil
Job Number:	S16_3743		**Ext Method:**	Headspace
Directory/Quant file:	512VOC.MS19\	Initial Calibration	**Dilution:**	1.05
Operator:	0		**Position:**	16

Tentatively Identified Compounds	CAS No	R.T. (min.)	Concentration µg/kg	% Fit	Accr. code
None Detected			<6		N

The compounds listed above have been tentatively identified by a computer based library search.
Compounds identified in the sample are not reported if they also occur in the method blank.
The % fit is an indication of the reliability of the compound assignment.
Due to the similarity between mass spectra of some isomeric compounds, assignments may not be correct.
Other compounds may also be present but identification was not possible.
Concentrations are semi-quantitative, assume a response factor of 1 and use the nearest internal standard.

Compounds marked ** are not UKAS or Mcerts accredited
"M" denotes that % fit has been manually interpreted

Where individual results are flagged see report notes for status.
Results corrected to dry weight at 105°C where appropriate, in accordance with the MCERTS standard.

TICs by HSA-GCMS

Accredited?: No

Customer and Site Details:	Ramboll Environ: Zeon Chemicals ESA		**Date Booked in:**	09-May-16
Sample Details:	BH105 0.50		**Date Analysed:**	12-May-16
LIMS ID Number:	CL1615732		**Matrix:**	Soil
Job Number:	S16_3743		**Ext Method:**	Headspace
Directory/Quant file:	512VOC.MS19\	Initial Calibration	**Dilution:**	1.04
Operator:	0		**Position:**	17

Tentatively Identified Compounds	CAS No	R.T. (min.)	Concentration µg/kg	% Fit	Accr. code
None Detected			<7		N

The compounds listed above have been tentatively identified by a computer based library search.
Compounds identified in the sample are not reported if they also occur in the method blank.
The % fit is an indication of the reliability of the compound assignment.
Due to the similarity between mass spectra of some isomeric compounds, assignments may not be correct.
Other compounds may also be present but identification was not possible.
Concentrations are semi-quantitative, assume a response factor of 1 and use the nearest internal standard.

Compounds marked ** are not UKAS or Mcerts accredited
"M" denotes that % fit has been manually interpreted

Where individual results are flagged see report notes for status.
Results corrected to dry weight at 105°C where appropriate, in accordance with the MCERTS standard.

ASBESTOS ANALYSIS RESULTS - SOIL ANALYSIS

ESG Asbestos Limited Certificate of Analysis for Asbestos in Soils, Sediments and Aggregates

1089

Detection limit of Method SCI-ASB-020 is 0.001%

Sampling has been carried out by a third party

Client:	ESG Environmental Chemistry	**Page 1 of 1**	
Address:	Etwall House, Bretby Business Park, Ashby Road, Burton upon Trent	**Report No:**	**ANO-0488-12474**
For the attention of:	Ramboll Environ	**Report Date:**	**11/05/2016**
Site Address:	Zeon Chemicals ESA	**Project Number:**	**S163743**

Sample Number	Sample Date	Sample Location & Matrix	Test Date	Total Sample Dry Weight (g)	Weight of <2mm Fraction (g)	Asbestos(g) in >8mm+>2mm	Asbestos(g) in <2mm	% Asbestos by weight of Total Dried Sample	Asbestos Fibre Types Identified
CL/1615729	05/05/16	BH103 0.40	11/05/2016					Screen Only	NAIIS

Keys

NAACR = Not Analysed at Clients Request

NAIIS = No Asbestos Identified in Sample (Screens Only)

*** visible to naked eye**

NADIS = No Asbestos Detected in Sample (ID & Quant Only)

Name: Laura Atkins

Position: Lab Analyst

Authorised Signatory:

The sample analysis for the above results was carried out using the procedures detailed in ESG Asbestos Limited in house method (SCI-ASB-020) based on HSE document MDHS 90 - Asbestos Contaminated Land - Draft 5 - November 1997 (withdrawn). Fibre identification was carried out using ESG Asbestos Limited in house method of transmitted/polarised light microscopy and centre stop dispersion staining (SCI-ASB-007), based on HSE's HSG 248. The analysis of fine fraction for asbestos content only includes fibres and does not discriminate non-asbestos fibres. All fibres are assumed, unless specified, to be amphiboles. All tests were carried out at ESG Asbestos Laboratory, Ashbourne House, Bretby Business Park, Ashby Road, Burton-upon-Trent, Staffordshire. DE15 0XD, UKAS Laboratory Number 1089.

Where individual results are flagged see report notes for status.

Analytical and Deviating Sample Overview

Customer **Ramboll Environ**
Site **Zeon Chemicals ESA**
Report No **S163743M**

Consignment No S55770
Date Logged 09-May-2016

Report Due 16-May-2016

ID Number	Description	MethodID	ALCHSAFID	AMMAR	CustServ	GROHSA	ICPBOR	ICPMSS									ICPSOIL	ICPWSS	MCertS	PAHMSUS	PHSOIL	SFAPI		Sub002a	SVOCMSUS	TMSS
		Sampled	Alcohols by HSA-FID o	Exchange.Ammonium AR	REPORT A	GRO (AA) by HSA GC-FID	Boron (H20 Soluble)	Arsenic (MS)	Cadmium (MS)	Chromium (MS)	Copper (MS)	Lead (MS)	Mercury (MS)	Nickel (MS)	Selenium (MS)	Vanadium (MS)	Zinc (MS)	Beryllium.	SO4-- (H2O sol) mg/l	MCertS Analysis	PAH (17) by GCMS	pH units (AR)	Cyanide(Total) (AR)	Phenol Index.(AR)	^Asbestos Screen	SVOC + TICs by GCMS (AR)	Tot.Moisture @ 105C
				✓		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓		✓	✓	✓		✓	✓	✓	✓	✓	✓	✓
CL/1615729	BH103 0.40	05/05/16																									
CL/1615730	BH104 0.50	06/05/16																									
CL/1615731	BH104 1.30	06/05/16																									
CL/1615732	BH105 0.50	06/05/16																									

Note: For analysis where the scheduled turnaround is greater than the holding time we will do our utmost to prioritise these samples. However, it is possible that samples could become deviant whilst being processed in the laboratory.

In this instance please contact the laboratory immediately should you wish to discuss how you would like us to proceed. If you do not respond within 24 hours, we will proceed as originally requested.

Deviating Sample Key

A	The sample was received in an inappropriate container for this analysis
B	The sample was received without the correct preservation for this analysis
C	Headspace present in the sample container
D	The sampling date was not supplied so holding time may be compromised - applicable to all analysis
E	Sample processing did not commence within the appropriate holding time
F	Sample processing did not commence within the appropriate handling time

Requested Analysis Key

	Analysis Required
	Analysis dependant upon trigger result - **Note: due date may be affected if triggered**
	No analysis scheduled
^	Analysis Subcontracted - **Note: due date may vary**

Where individual results are flagged see report notes for status.
The integrity of data for samples/analysis that have been categorised as Deviating may be compromised. Data may not be representative of the sample at the time of sampling.

Analytical and Deviating Sample Overview

Customer Ramboll Environ
Site Zeon Chemicals ESA
Report No S163743M

Consignment No S55770
Date Logged 09-May-2016

Report Due 16-May-2016

ID Number	Description	Sampled	MethodID	TPHUSSI	VOCHSAS	WSLM59
				TPH by GCFID (AR/Si)	VOC + TICs HSA-GCMS	Total Organic Carbon
				✓	✓	
CL/1615729	BH103 0.40	05/05/16				
CL/1615730	BH104 0.50	06/05/16				
CL/1615731	BH104 1.30	06/05/16				
CL/1615732	BH105 0.50	06/05/16				

Note: For analysis where the scheduled turnaround is greater than the holding time we will do our utmost to prioritise these samples. However, it is possible that samples could become deviant whilst being processed in the laboratory.

In this instance please contact the laboratory immediately should you wish to discuss how you would like us to proceed. If you do not respond within 24 hours, we will proceed as originally requested.

Deviating Sample Key	
A	The sample was received in an inappropriate container for this analysis
B	The sample was received without the correct preservation for this analysis
C	Headspace present in the sample container
D	The sampling date was not supplied so holding time may be compromised - applicable to all analysis
E	Sample processing did not commence within the appropriate holding time
F	Sample processing did not commence within the appropriate handling time

Requested Analysis Key	
	Analysis Required
	Analysis dependant upon trigger result - **Note: due date may be affected if triggered**
	No analysis scheduled
^	Analysis Subcontracted - **Note: due date may vary**

Where individual results are flagged see report notes for status.
The integrity of data for samples/analysis that have been categorised as Deviating may be compromised. Data may not be representative of the sample at the time of sampling.

Report Number : EFS/163743

Additional Report Notes

Method Code	Sample ID	The following information should be taken into consideration when using the data contained within this report
SVOCMSUS	CL/1615489	The Secondary process control result associated with this Test has not wholly met the requirements of the Laboratory Quality Management System (QMS). All other Process controls (including the Primary Process control) are within specification. The Laboratory believes that the validity of the data has not been affected but in line with our QMS policy we have removed accreditation from the affected analyte which is Di-n-octyl phthalate. These circumstances should be taken into consideration when utilising the data.
ICPBOR	C//1615730 CL/1615731	The matrix of this sample has been found to interfere with the result for this test. The sample has therefore been diluted to improve the signal to noise ratio but in doing so, the detection limit for this test has been elevated.
VOCHSAS	CL1615730, 5732	Due to matrix interference, the Internal Standard recovery for this Test is below the required QMS specification. This has been confirmed by historical data. All other Laboratory Process Controls meet the requirements of the QMS. These circumstances should be taken into consideration when utilising the data.
TPHUSSI	CL1615729 TO CL1615732	The Secondary process control result associated with this Test has not wholly met the requirements of the Laboratory Quality Management System (QMS). All other Process controls (including the Primary Process control) are within specification. The Laboratory believes that the validity of the data has not been affected but in line with our QMS policy we have removed accreditation from the affected analytes >nC10->nC12 From the aromatic fraction . These circumstances should be taken into consideration when utilising the data.

Method Descriptions

Matrix	MethodID	Analysis Basis	Method Description
Soil	ALCHSAFID	As Received	Determination of Alcohols in soils by Headspace GCFID
Soil	AMMAR	As Received	Determination of Exchangeable Ammonium in Soil using potassium chloride extraction, discrete colorimetric detection
Soil	GROHSA	As Received	Determination of Total Gasoline Range Organics Hydrocarbons (GRO) by Headspace GCFID
Soil	ICPBOR	Oven Dried @ < 35°C	Determination of Boron in soil samples by hot water extraction followed by ICPOES detection
Soil	ICPMSS	Oven Dried @ < 35°C	Determination of Metals in soil samples by aqua regia digestion followed by ICPMS
Soil	ICPSOIL	Oven Dried @ < 35°C	Determination of Metals in soil samples by aqua regia digestion followed by ICPOES detection
Soil	ICPWSS	Oven Dried @ < 35°C	Determination of Water Soluble Sulphate in soil samples by water extraction followed by ICPOES detection
Soil	PAHMSUS	As Received	Determination of Polycyclic Aromatic Hydrocarbons (PAH) by hexane/acetone extraction followed by GCMS detection
Soil	PHSOIL	As Received	Determination of pH of 2.5:1 deionised water to soil extracts using pH probe.
Soil	SFAPI	As Received	Segmented flow analysis with colorimetric detection
Soil	SubCon*	*	Contact Laboratory for details of the methodology used by the sub-contractor.
Soil	SVOCMSUS	As Received	Determination of Semi Volatile Organic Compounds in soil samples by Dichloromethane/Acetone extraction followed by GCMS detection
Soil	TMSS	As Received	Determination of the Total Moisture content at 105ºC by loss on oven drying gravimetric analysis (% based upon wet weight)
Soil	TPHUSSI	As Received	Determination of hexane/acetone extractable Hydrocarbons in soil with GCFID detection including quantitation of Aromatic and Aliphatic fractions.
Soil	VOCHSAS	As Received	Determination of Volatile Organic Compounds (VOC) by Headspace GCMS
Soil	WSLM59	Oven Dried @ < 35°C	Determination of Organic Carbon in soil using sulphurous Acid digestion followed by high temperature combustion and IR detection

Report Notes

Generic Notes

Soil/Solid Analysis

Unless stated otherwise,
- Results expressed as mg/kg have been calculated on the basis indicated in the Method Description table.
  All results on MCERTS reports are reported on a 105ºC dry weight basis with the exception of pH and conductivity.
- Sulphate analysis not conducted in accordance with BS1377
- Water Soluble Sulphate is on a 2:1 water:soil extract

Waters Analysis

Unless stated otherwise results are expressed as mg/l

Nil: Where "Nil" has been entered against Total Alkalinity or Total Acidity this indicates that a measurement was not required due to the inherent pH of the sample.

Oil analysis specific

Unless stated otherwise,
- Results are expressed as mg/kg
- SG is expressed as g/cm^3@ 15^{o}C

Gas (Tedlar bag) Analysis

Unless stated otherwise, results are expressed as ug/l

Asbestos Analysis

CH Denotes Chrysotile **TR** Denotes Tremolite
CR Denotes Crocidolite **AC** Denotes Actinolite
AM Denotes Amosite **AN** Denotes Anthophylite
NAIIS No Asbestos Identified in Sample
NADIS No Asbestos Detected In Sample

Symbol Reference

^ Sub-contracted analysis.
$$ Unable to analyse due to the nature of the sample
¶ Samples submitted for this analyte were not preserved on site in accordance with laboratory protocols. This may have resulted in deterioration of the sample(s) during transit to the laboratory. Consequently the reported data may not represent the concentration of the target analyte present in the sample at the time of sampling
¥ Results for guidance only due to possible interference
& Blank corrected result
I.S Insufficient sample to complete requested analysis
I.S(g) Insufficient sample to re-analyse, results for guidance only
Intf Unable to analyse due to interferences
N.D Not determined **N.Det** Not detected
N.F No Flow
NS Information Not Supplied
Req Analysis requested, see attached sheets for results
Þ Raised detection limit due to nature of the sample
***** All accreditation has been removed by the laboratory for this result
‡ MCERTS accreditation has been removed for this result
§ accreditation has been removed for this result as it is a non-accredited matrix

Note: The Laboratory may only claim that data is accredited when all of the requirements of our Quality System have been met. Where these requirements have not been met the laboratory may elect to include the data in its final report and remove the accreditation from individual data items if it believes that the validity of the data has not been affected. If further details are required of the circumstances which have led to the removal of accreditation then please do not hesitate to contact the laboratory.

Sample Descriptions

Client : Ramboll Environ

Site : Zeon Chemicals ESA

Report Number : S16_3743

Note: major constituent in upper case

Lab ID Number	Client ID	Description
CL/1615729	BH103 0.40	Brown MADE GROUND
CL/1615730	BH104 0.50	Brown Stone SILT
CL/1615731	BH104 1.30	Brown Stone CLAY
CL/1615732	BH105 0.50	Brown Stone CLAY

Our Ref: EFS/163747M (Ver. 1)
Your Ref: UK15-21370

May 16, 2016

Environmental Chemistry
ESG
Bretby Business Park
Ashby Road
Burton-on-Trent
Staffordshire
DE15 0YZ

Telephone: 01283 554400
Facsimile: 01283 554422

Lucy Cleverley
Ramboll Environ
8 Village Way
Cardiff
CF15 2NE

For the attention of Lucy Cleverley

Dear Lucy Cleverley

Sample Analysis - Zeon Chemicals ESA

Samples from the above site have been analysed in accordance with the schedule supplied.
The sample details and the results of analyses for these samples are given in the appended report.

An invoice for this work will follow under a separate cover.

Where appropriate the samples will be kept until 20/06/16 when they will be discarded. Please call 01283 554547 for an extension of this date.
Please be aware that our policy for the retention of paper based laboratory records and analysis reports is 6 years.

The work was carried out in accordance with Environmental Scientifics Group Ltd (Laboratory and Analytical) Standard Terms and Conditions of Contract.

If I can be of any further assistance please do not hesitate to contact me.

Yours sincerely

for ESG

JMColbourne

J Colbourne
Project Co-ordinator
01283 554547

Environmental Chemistry, ESG, P.O. Box 100, Burton-upon-trent, DE15 0XD Tel: 01283 554400 Fax: 01283 554422
Environmental Scientifics Group Limited.
Registered No: 2880501

TEST REPORT

1252

Report No. EFS/163747M (Ver. 1)

Ramboll Environ
8 Village Way
Cardiff
CF15 2NE

Site: Zeon Chemicals ESA

The 3 samples described in this report were registered for analysis by ESG on 09-May-2016. This report supersedes any versions previously issued by the laboratory.
The analysis was completed by: 16-May-2016

Tests where the accreditation is set to N or No, and any individual data items marked with a * are not UKAS or MCERTS accredited. Any opinions or interpretations expressed herein are outside the scope of any UKAS accreditation held by ESG.

The following tables are contained in this report:

On behalf of
ESG :
Declan Burns

Managing Director
Multi-Sector Services

Date of Issue: 16-May-2016

Accreditation Codes: **N** (Not Accredited), **U** (UKAS), **UM** (UKAS & MCERTS)
Tests marked '^' have been subcontracted to another laboratory.
(NVM) - denotes the sample matrix is dissimilar to matrices upon which the MCERTS validation was based, and is therefore not accredited for MCERTS.
All results are reported on a dry weight basis at 105^{o}C unless otherwise stated. (except QC samples)
ESG accepts no responsibility for any sampling not carried out by our personnel.

Where individual results are flagged see report notes for status.

		Units :	%	µg/kg															
		Method Codes :	TMSS	VOCHSAS															
		Method Reporting Limits :	0.2																
		Accreditation Code:	U																
LAB ID Number CL/	**Client Sample Description**	**Sample Date**	**Tot.Moisture @ 105C**	**VOC + TICs HSA-GCMS**															
1615737	BH8 1.50	**04-May-16**	15.1	Req															
1615738	BH9 1.00	**05-May-16**	15.6	Req															
1615739	BH9 3.40	**05-May-16**	25.4	Req															

Bretby Business Park, Ashby Road

Burton-on-Trent, Staffordshire, DE15 0YZ

Tel +44 (0) 1283 554400

Fax +44 (0) 1283 554422

Client Name	**Ramboll Environ**
Contact	Lucy Cleverley

Zeon Chemicals ESA

Sample Analysis

Date Printed	**16-May-2016**
Report Number	**EFS/163747M**
Table Number	**1**

Where individual results are flagged see report notes for status.
Results corrected to dry weight at 105°C where appropriate, in accordance with the MCERTS standard.

Volatile Organic Compounds by HSA-GCMS

Accredited?: Yes

Customer and Site Details:	Ramboll Environ: Zeon Chemicals ESA	**Directory/Quant file:**	512VOC.MS19\ Initial Calibration	**Matrix:**	Soil
Sample Details:	BH8 1.50	**Date Booked in:**	09-May-16	**Method:**	Headspace
LIMS ID Number:	CL1615737	**Date Analysed:**	12-May-16	**Multiplier:**	1.01
Job Number:	S16_3747M	**Operator:**		**Position:**	18

Target Compounds	CAS #	R.T. (min.)	Concentration µg/kg	% Fit	Accr. code
Dichlorodifluoromethane	75-71-8 **	-	< 1	-	N
Chloromethane	74-87-3 *	-	< 4	-	N
Vinyl Chloride	75-01-4	-	< 1	-	UM
Bromomethane	74-83-9	-	< 1	-	UM
Chloroethane	75-00-3	-	< 2	-	UM
Trichlorofluoromethane	75-69-4	-	< 1	-	UM
1,1-Dichloroethene	75-35-48 *	-	< 1	-	N
trans 1,2-Dichloroethene	156-60-5	-	< 1	-	UM
1,1-Dichloroethane	75-34-3	-	< 1	-	UM
MTBE	1634-04-4	-	< 1	-	UM
2,2-Dichloropropane	594-20-7	-	< 1	-	UM
cis 1,2-Dichloroethene	156-59-2	-	< 6	-	UM
Bromochloromethane	74-97-5	-	< 1	-	UM
Chloroform	67-66-3	-	< 1	-	UM
1,1,1-Trichloroethane	71-55-6	-	< 1	-	UM
Carbon Tetrachloride	56-23-5	-	< 1	-	UM
1,1-Dichloropropene	563-58-6	-	< 1	-	UM
Benzene	71-43-2	-	< 1	-	UM
1,2-Dichloroethane	107-06-2	-	< 1	-	UM
Trichloroethene	79-01-6 **	-	< 1	-	N
1,2-Dichloropropane	78-87-5	-	< 1	-	UM
Dibromomethane	74-95-3	-	< 1	-	UM
Bromodichloromethane	75-27-4	-	< 1	-	UM
cis 1,3-Dichloropropene	10061-01-5	-	< 1	-	UM
Toluene	108-88-3	-	< 6	-	UM
trans 1,3-Dichloropropene	10061-02-6	-	< 1	-	UM
1,1,2-Trichloroethane	79-00-5	-	< 1	-	UM
Tetrachloroethene	127-18-4	-	< 4	-	UM
1,3-Dichloropropane	142-28-9	-	< 1	-	UM
Dibromochloromethane	124-48-1	-	< 1	-	UM
1,2-Dibromoethane	106-93-4	-	< 1	-	UM
Chlorobenzene	108-90-7	-	< 1	-	UM
Ethylbenzene	100-41-4	-	< 2	-	UM
1,1,1,2-Tetrachloroethane	630-20-6	-	< 1	-	UM
m and p-Xylene	108-38-3/106-42-3	-	< 5	-	UM

Target Compounds	CAS #	R.T. (min.)	Concentration µg/kg	% Fit	Accr. code
o-Xylene	95-47-6	-	< 2	-	UM
Styrene	100-42-5	-	< 1	-	UM
Bromoform	75-25-2	-	< 1	-	UM
iso-Propylbenzene	98-82-8	-	< 1	-	UM
1,1,2,2-Tetrachloroethane	79-34-5 **	-	< 1	-	N
Propylbenzene	103-65-1	-	< 1	-	UM
Bromobenzene	108-86-1	-	< 1	-	UM
1,2,3-Trichloropropane	96-18-4	-	< 1	-	UM
2-Chlorotoluene	95-49-8	-	< 1	-	UM
1,3,5-Trimethylbenzene	108-67-8	-	< 1	-	UM
4-Chlorotoluene	106-43-4	-	< 1	-	UM
tert-Butylbenzene	98-06-6	-	< 1	-	UM
1,2,4-Trimethylbenzene	95-63-6	-	< 1	-	UM
sec-Butylbenzene	135-98-8	-	< 1	-	UM
p-Isopropyltoluene	99-87-6	-	< 1	-	UM
1,3-Dichlorobenzene	541-73-1	-	< 1	-	UM
1,4-Dichlorobenzene	106-46-7	-	< 1	-	UM
n-Butylbenzene	104-51-8 *	-	< 1	-	N
1,2-Dichlorobenzene	95-50-1	-	< 1	-	UM
1,2-Dibromo-3-chloropropane	96-12-8	-	< 1	-	UM
1,2,4-Trichlorobenzene	120-82-1 *	-	< 4	-	N
Hexachlorobutadiene	87-68-3 **	-	< 2	-	N
Naphthalene	91-20-3	-	< 6	-	UM
1,2,3-Trichlorobenzene	87-61-6	-	< 4	-	UM

Concentrations are reported on a dry weight basis
Compounds marked ** are not UKAS or Mcerts accredited
"M" denotes that % fit has been manually interpreted
This analysis was conducted on an 'As Received' basis.

Internal standards	R.T.	Area %	Surrogates	% Rec
Pentafluorobenzene	4.05	93	Dibromofluoromethane	110
1,4-Difluorobenzene	4.39	94	Toluene-d8	97
Chlorobenzene-d5	5.50	88		
Bromofluorobenzene	5.89	81		
1,4-Dichlorobenzene-d4	6.29	74		
Naphthalene-d8	7.13	58		

Note: Volatile compounds degrade with time, and this may affect the integrity of the data depending on the timescale between sampling and analysis. It is recommended that analysis takes place within 7 days of sampling.

Where individual results are flagged see report notes for status.
Results corrected to dry weight at 105°C where appropriate, in accordance with the MCERTS standard.

Volatile Organic Compounds by HSA-GCMS

Accredited?: Yes

Customer and Site Details: Ramboll Environ: Zeon Chemicals ESA
Sample Details: BH9 1.00
LIMS ID Number: CL1615738
Job Number: S16_3747M

Directory/Quant file: 512VOC.MS19\ Initial Calibration
Date Booked in: 09-May-16
Date Analysed: 12-May-16
Operator:

Matrix: Soil
Method: Headspace
Multiplier: 0.97
Position: 19

Target Compounds	CAS #	R.T. (min.)	Concentration µg/kg	% Fit	Accr. code
Dichlorodifluoromethane	75-71-8 **	-	< 1	-	N
Chloromethane	74-87-3 *	-	< 4	-	N
Vinyl Chloride	75-01-4	-	< 1	-	UM
Bromomethane	74-83-9	-	< 1	-	UM
Chloroethane	75-00-3	-	< 2	-	UM
Trichlorofluoromethane	75-69-4	-	< 1	-	UM
1,1-Dichloroethene	75-35-48 *	-	< 1	-	N
trans 1,2-Dichloroethene	156-60-5	-	< 1	-	UM
1,1-Dichloroethane	75-34-3	-	< 1	-	UM
MTBE	1634-04-4	-	< 1	-	UM
2,2-Dichloropropane	594-20-7	-	< 1	-	UM
cis 1,2-Dichloroethene	156-59-2	-	< 6	-	UM
Bromochloromethane	74-97-5	-	< 1	-	UM
Chloroform	67-66-3	-	< 1	-	UM
1,1,1-Trichloroethane	71-55-6	-	< 1	-	UM
Carbon Tetrachloride	56-23-5	-	< 1	-	UM
1,1-Dichloropropene	563-58-6	-	< 1	-	UM
Benzene	71-43-2	-	< 1	-	UM
1,2-Dichloroethane	107-06-2	-	< 1	-	UM
Trichloroethene	79-01-6 **	-	< 1	-	N
1,2-Dichloropropane	78-87-5	-	< 1	-	UM
Dibromomethane	74-95-3	-	< 1	-	UM
Bromodichloromethane	75-27-4	-	< 1	-	UM
cis 1,3-Dichloropropene	10061-01-5	-	< 1	-	UM
Toluene	108-88-3	-	< 6	-	UM
trans 1,3-Dichloropropene	10061-02-6	-	< 1	-	UM
1,1,2-Trichloroethane	79-00-5	-	< 1	-	UM
Tetrachloroethene	127-18-4	-	< 4	-	UM
1,3-Dichloropropane	142-28-9	-	< 1	-	UM
Dibromochloromethane	124-48-1	-	< 1	-	UM
1,2-Dibromoethane	106-93-4	-	< 1	-	UM
Chlorobenzene	108-90-7	-	< 1	-	UM
Ethylbenzene	100-41-4	-	< 2	-	UM
1,1,1,2-Tetrachloroethane	630-20-6	-	< 1	-	UM
m and p-Xylene	108-38-3/106-42-3	-	< 5	-	UM

Target Compounds	CAS #	R.T. (min.)	Concentration µg/kg	% Fit	Accr. code
o-Xylene	95-47-6	-	< 2	-	UM
Styrene	100-42-5	-	< 1	-	UM
Bromoform	75-25-2	-	< 1	-	UM
iso-Propylbenzene	98-82-8	-	< 1	-	UM
1,1,2,2-Tetrachloroethane	79-34-5 **	-	< 1	-	N
Propylbenzene	103-65-1	-	< 1	-	UM
Bromobenzene	108-86-1	-	< 1	-	UM
1,2,3-Trichloropropane	96-18-4	-	< 1	-	UM
2-Chlorotoluene	95-49-8	-	< 1	-	UM
1,3,5-Trimethylbenzene	108-67-8	-	< 1	-	UM
4-Chlorotoluene	106-43-4	-	< 1	-	UM
tert-Butylbenzene	98-06-6	-	< 1	-	UM
1,2,4-Trimethylbenzene	95-63-6	-	< 1	-	UM
sec-Butylbenzene	135-98-8	-	< 1	-	UM
p-Isopropyltoluene	99-87-6	-	< 1	-	UM
1,3-Dichlorobenzene	541-73-1	-	< 1	-	UM
1,4-Dichlorobenzene	106-46-7	-	< 1	-	UM
n-Butylbenzene	104-51-8 *	-	< 1	-	N
1,2-Dichlorobenzene	95-50-1	-	< 1	-	UM
1,2-Dibromo-3-chloropropane	96-12-8	-	< 1	-	UM
1,2,4-Trichlorobenzene	120-82-1 *	-	< 4	-	N
Hexachlorobutadiene	87-68-3 **	-	< 2	-	N
Naphthalene	91-20-3	-	< 6	-	UM
1,2,3-Trichlorobenzene	87-61-6	-	< 4	-	UM

Concentrations are reported on a dry weight basis
Compounds marked ** are not UKAS or Mcerts accredited
"M" denotes that % fit has been manually interpreted
This analysis was conducted on an 'As Received' basis.

Internal standards	R.T.	Area %	Surrogates	% Rec
Pentafluorobenzene	4.05	88	Dibromofluoromethane	106
1,4-Difluorobenzene	4.39	88	Toluene-d8	95
Chlorobenzene-d5	5.50	70		
Bromofluorobenzene	5.89	54		
1,4-Dichlorobenzene-d4	6.29	40		
Naphthalene-d8	7.13	19		

Note: Volatile compounds degrade with time, and this may affect the integrity of the data depending on the timescale between sampling and analysis. It is recommended that analysis takes place within 7 days of sampling.

Where individual results are flagged see report notes for status.
Results corrected to dry weight at 105°C where appropriate, in accordance with the MCERTS standard.

Volatile Organic Compounds by HSA-GCMS

Accredited?: Yes

Customer and Site Details: Ramboll Environ: Zeon Chemicals ESA
Sample Details: BH9 3.40
LIMS ID Number: CL1615739
Job Number: S16_3747M

Directory/Quant file: 512VOC.MS19\ Initial Calibration
Date Booked in: 09-May-16
Date Analysed: 12-May-16
Operator:

Matrix: Soil
Method: Headspace
Multiplier: 0.99
Position: 20

Target Compounds	CAS #	R.T. (min.)	Concentration µg/kg	% Fit	Accr. code
Dichlorodifluoromethane	75-71-8 **	-	< 1	-	N
Chloromethane	74-87-3 *	-	< 4	-	N
Vinyl Chloride	75-01-4	-	< 1	-	UM
Bromomethane	74-83-9	-	< 1	-	UM
Chloroethane	75-00-3	-	< 3	-	UM
Trichlorofluoromethane	75-69-4	-	< 1	-	UM
1,1-Dichloroethene	75-35-48 *	-	< 1	-	N
trans 1,2-Dichloroethene	156-60-5	-	< 1	-	UM
1,1-Dichloroethane	75-34-3	-	< 1	-	UM
MTBE	1634-04-4	-	< 1	-	UM
2,2-Dichloropropane	594-20-7	-	< 1	-	UM
cis 1,2-Dichloroethene	156-59-2	-	< 7	-	UM
Bromochloromethane	74-97-5	-	< 1	-	UM
Chloroform	67-66-3	-	< 1	-	UM
1,1,1-Trichloroethane	71-55-6	-	< 1	-	UM
Carbon Tetrachloride	56-23-5	-	< 1	-	UM
1,1-Dichloropropene	563-58-6	-	< 1	-	UM
Benzene	71-43-2	-	< 1	-	UM
1,2-Dichloroethane	107-06-2	-	< 1	-	UM
Trichloroethene	79-01-6 **	-	< 1	-	N
1,2-Dichloropropane	78-87-5	-	< 1	-	UM
Dibromomethane	74-95-3	-	< 1	-	UM
Bromodichloromethane	75-27-4	-	< 1	-	UM
cis 1,3-Dichloropropene	10061-01-5	-	< 1	-	UM
Toluene	108-88-3	-	< 7	-	UM
trans 1,3-Dichloropropene	10061-02-6	-	< 1	-	UM
1,1,2-Trichloroethane	79-00-5	-	< 1	-	UM
Tetrachloroethene	127-18-4	-	< 4	-	UM
1,3-Dichloropropane	142-28-9	-	< 1	-	UM
Dibromochloromethane	124-48-1	-	< 1	-	UM
1,2-Dibromoethane	106-93-4	-	< 1	-	UM
Chlorobenzene	108-90-7	-	< 1	-	UM
Ethylbenzene	100-41-4	-	< 3	-	UM
1,1,1,2-Tetrachloroethane	630-20-6	-	< 1	-	UM
m and p-Xylene	108-38-3/106-42-3	-	< 5	-	UM

Target Compounds	CAS #	R.T. (min.)	Concentration µg/kg	% Fit	Accr. code
o-Xylene	95-47-6	-	< 3	-	UM
Styrene	100-42-5	-	< 1	-	UM
Bromoform	75-25-2	-	< 1	-	UM
iso-Propylbenzene	98-82-8	-	< 1	-	UM
1,1,2,2-Tetrachloroethane	79-34-5 **	-	< 1	-	N
Propylbenzene	103-65-1	-	< 1	-	UM
Bromobenzene	108-86-1	-	< 1	-	UM
1,2,3-Trichloropropane	96-18-4	-	< 1	-	UM
2-Chlorotoluene	95-49-8	-	< 1	-	UM
1,3,5-Trimethylbenzene	108-67-8	-	< 1	-	UM
4-Chlorotoluene	106-43-4	-	< 1	-	UM
tert-Butylbenzene	98-06-6	-	< 1	-	UM
1,2,4-Trimethylbenzene	95-63-6	-	< 1	-	UM
sec-Butylbenzene	135-98-8	-	< 1	-	UM
p-Isopropyltoluene	99-87-6	-	< 1	-	UM
1,3-Dichlorobenzene	541-73-1	-	< 1	-	UM
1,4-Dichlorobenzene	106-46-7	-	< 1	-	UM
n-Butylbenzene	104-51-8 *	-	< 1	-	N
1,2-Dichlorobenzene	95-50-1	-	< 1	-	UM
1,2-Dibromo-3-chloropropane	96-12-8	-	< 1	-	UM
1,2,4-Trichlorobenzene	120-82-1 *	-	< 4	-	N
Hexachlorobutadiene	87-68-3 **	-	< 3	-	N
Naphthalene	91-20-3	-	< 7	-	UM
1,2,3-Trichlorobenzene	87-61-6	-	< 4	-	UM

Concentrations are reported on a dry weight basis
Compounds marked ** are not UKAS or Mcerts accredited
"M" denotes that % fit has been manually interpreted
This analysis was conducted on an 'As Received' basis.

Internal standards	R.T.	Area %	Surrogates	% Rec
Pentafluorobenzene	4.05	93	Dibromofluoromethane	108
1,4-Difluorobenzene	4.39	92	Toluene-d8	98
Chlorobenzene-d5	5.50	84		
Bromofluorobenzene	5.89	75		
1,4-Dichlorobenzene-d4	6.29	63		
Naphthalene-d8	7.13	38		

Note: Volatile compounds degrade with time, and this may affect the integrity of the data depending on the timescale between sampling and analysis. It is recommended that analysis takes place within 7 days of sampling.

Where individual results are flagged see report notes for status.
Results corrected to dry weight at 105°C where appropriate, in accordance with the MCERTS standard.

TICs by HSA-GCMS

Accredited?: No

Customer and Site Details:	Ramboll Environ: Zeon Chemicals ESA		**Date Booked in:**	09-May-16
Sample Details:	BH8 1.50		**Date Analysed:**	12-May-16
LIMS ID Number:	CL1615737		**Matrix:**	Soil
Job Number:	S16_3747		**Ext Method:**	Headspace
Directory/Quant file:	512VOC.MS19\	Initial Calibration	**Dilution:**	1.01
Operator:	0		**Position:**	18

Tentatively Identified Compounds	CAS No	R.T. (min.)	Concentration µg/kg	% Fit	Accr. code
None Detected			<6		N

The compounds listed above have been tentatively identified by a computer based library search.
Compounds identified in the sample are not reported if they also occur in the method blank.
The % fit is an indication of the reliability of the compound assignment.
Due to the similarity between mass spectra of some isomeric compounds, assignments may not be correct.
Other compounds may also be present but identification was not possible.
Concentrations are semi-quantitative, assume a response factor of 1 and use the nearest internal standard.

Compounds marked ** are not UKAS or Mcerts accredited
"M" denotes that % fit has been manually interpreted

Where individual results are flagged see report notes for status.
Results corrected to dry weight at 105°C where appropriate, in accordance with the MCERTS standard.

TICs by HSA-GCMS

Accredited?: No

Customer and Site Details:	Ramboll Environ: Zeon Chemicals ESA		**Date Booked in:**	09-May-16
Sample Details:	BH9 1.00		**Date Analysed:**	12-May-16
LIMS ID Number:	CL1615738		**Matrix:**	Soil
Job Number:	S16_3747		**Ext Method:**	Headspace
Directory/Quant file:	512VOC.MS19\	Initial Calibration	**Dilution:**	0.97
Operator:	0		**Position:**	19

Tentatively Identified Compounds	CAS No	R.T. (min.)	Concentration µg/kg	% Fit	Accr. code
None Detected			<6		N

The compounds listed above have been tentatively identified by a computer based library search.
Compounds identified in the sample are not reported if they also occur in the method blank.
The % fit is an indication of the reliability of the compound assignment.
Due to the similarity between mass spectra of some isomeric compounds, assignments may not be correct.
Other compounds may also be present but identification was not possible.
Concentrations are semi-quantitative, assume a response factor of 1 and use the nearest internal standard.

Compounds marked ** are not UKAS or Mcerts accredited
"M" denotes that % fit has been manually interpreted

Where individual results are flagged see report notes for status.
Results corrected to dry weight at 105°C where appropriate, in accordance with the MCERTS standard.

TICs by HSA-GCMS

Accredited?: No

Customer and Site Details:	Ramboll Environ: Zeon Chemicals ESA		**Date Booked in:**	09-May-16
Sample Details:	BH9 3.40		**Date Analysed:**	12-May-16
LIMS ID Number:	CL1615739		**Matrix:**	Soil
Job Number:	S16_3747		**Ext Method:**	Headspace
Directory/Quant file:	512VOC.MS19\	Initial Calibration	**Dilution:**	0.99
Operator:	0		**Position:**	20

Tentatively Identified Compounds	CAS No	R.T. (min.)	Concentration µg/kg	% Fit	Accr. code
None Detected			<7		N

The compounds listed above have been tentatively identified by a computer based library search.
Compounds identified in the sample are not reported if they also occur in the method blank.
The % fit is an indication of the reliability of the compound assignment.
Due to the similarity between mass spectra of some isomeric compounds, assignments may not be correct.
Other compounds may also be present but identification was not possible.
Concentrations are semi-quantitative, assume a response factor of 1 and use the nearest internal standard.

Compounds marked ** are not UKAS or Mcerts accredited
"M" denotes that % fit has been manually interpreted

Where individual results are flagged see report notes for status.
Results corrected to dry weight at 105°C where appropriate, in accordance with the MCERTS standard.

Analytical and Deviating Sample Overview

Customer Ramboll Environ
Site Zeon Chemicals ESA
Report No S163747M

Consignment No S55771
Date Logged 09-May-2016

Report Due 16-May-2016

ID Number	Description	Sampled	MethodID	CustServ	MCertS	TMSS	VOCHSAS
				REPORT A	MCertS Analysis	Tot.Moisture @ 105C	VOC + TICs HSA-GCMS
						✓	✓
CL/1615737	BH8 1.50	04/05/16					
CL/1615738	BH9 1.00	05/05/16					
CL/1615739	BH9 3.40	05/05/16					

Note: For analysis where the scheduled turnaround is greater than the holding time we will do our utmost to prioritise these samples. However, it is possible that samples could become deviant whilst being processed in the laboratory.

In this instance please contact the laboratory immediately should you wish to discuss how you would like us to proceed. If you do not respond within 24 hours, we will proceed as originally requested.

Deviating Sample Key	
A	The sample was received in an inappropriate container for this analysis
B	The sample was received without the correct preservation for this analysis
C	Headspace present in the sample container
D	The sampling date was not supplied so holding time may be compromised - applicable to all analysis
E	Sample processing did not commence within the appropriate holding time
F	Sample processing did not commence within the appropriate handling time

Requested Analysis Key	
	Analysis Required
	Analysis dependant upon trigger result - **Note: due date may be affected if triggered**
	No analysis scheduled
^	Analysis Subcontracted - **Note: due date may vary**

Where individual results are flagged see report notes for status.
The integrity of data for samples/analysis that have been categorised as Deviating may be compromised. Data may not be representative of the sample at the time of sampling.

Report Number : EFS/163747

Additional Report Notes

Method Code	Sample ID	The following information should be taken into consideration when using the data contained within this report
VOCHSAS	CL1615738	Due to matrix interference, the Internal Standard recovery for this Test is below the required QMS specification. This has been confirmed by historical data. All other Laboratory Process Controls meet the requirements of the QMS. These circumstances should be taken into consideration when utilising the data.

Method Descriptions

Matrix	MethodID	Analysis Basis	Method Description
Soil	TMSS	As Received	Determination of the Total Moisture content at 105ºC by loss on oven drying gravimetric analysis (% based upon wet weight)
Soil	VOCHSAS	As Received	Determination of Volatile Organic Compounds (VOC) by Headspace GCMS

Report Notes

Generic Notes

Soil/Solid Analysis

Unless stated otherwise,
- Results expressed as mg/kg have been calculated on the basis indicated in the Method Description table.
  All results on MCERTS reports are reported on a 105ºC dry weight basis with the exception of pH and conductivity.
- Sulphate analysis not conducted in accordance with BS1377
- Water Soluble Sulphate is on a 2:1 water:soil extract

Waters Analysis

Unless stated otherwise results are expressed as mg/l

Nil: Where "Nil" has been entered against Total Alkalinity or Total Acidity this indicates that a measurement was not required due to the inherent pH of the sample.

Oil analysis specific

Unless stated otherwise,
- Results are expressed as mg/kg
- SG is expressed as g/cm^3@ 15^{o}C

Gas (Tedlar bag) Analysis

Unless stated otherwise, results are expressed as ug/l

Asbestos Analysis

CH Denotes Chrysotile **TR** Denotes Tremolite
CR Denotes Crocidolite **AC** Denotes Actinolite
AM Denotes Amosite **AN** Denotes Anthophylite
NAIIS No Asbestos Identified in Sample
NADIS No Asbestos Detected In Sample

Symbol Reference

^ Sub-contracted analysis.
$$ Unable to analyse due to the nature of the sample
¶ Samples submitted for this analyte were not preserved on site in accordance with laboratory protocols. This may have resulted in deterioration of the sample(s) during transit to the laboratory. Consequently the reported data may not represent the concentration of the target analyte present in the sample at the time of sampling
¥ Results for guidance only due to possible interference
& Blank corrected result
I.S Insufficient sample to complete requested analysis
I.S(g) Insufficient sample to re-analyse, results for guidance only
Intf Unable to analyse due to interferences
N.D Not determined **N.Det** Not detected
N.F No Flow
NS Information Not Supplied
Req Analysis requested, see attached sheets for results
Þ Raised detection limit due to nature of the sample
***** All accreditation has been removed by the laboratory for this result
‡ MCERTS accreditation has been removed for this result
§ accreditation has been removed for this result as it is a non-accredited matrix

Note: The Laboratory may only claim that data is accredited when all of the requirements of our Quality System have been met. Where these requirements have not been met the laboratory may elect to include the data in its final report and remove the accreditation from individual data items if it believes that the validity of the data has not been affected. If further details are required of the circumstances which have led to the removal of accreditation then please do not hesitate to contact the laboratory.

Sample Descriptions

Client : Ramboll Environ

Site : Zeon Chemicals ESA

Report Number : S16_3747

Note: major constituent in upper case

Lab ID Number	Client ID	Description
CL/1615737	BH8 1.50	Brown CLAY
CL/1615738	BH9 1.00	Brown CLAY
CL/1615739	BH9 3.40	Grey CLAY

Our Ref: EFS/163840M (Ver. 2)
Your Ref: UK15-21370

June 14, 2016

Environmental Chemistry
ESG
Bretby Business Park
Ashby Road
Burton-on-Trent
Staffordshire
DE15 0YZ

Telephone: 01283 554400
Facsimile: 01283 554422

Lucy Cleverley
Ramboll Environ
8 Village Way
Cardiff
CF15 2NE

For the attention of Lucy Cleverley

Dear Lucy Cleverley

Sample Analysis - Zeon Chemicals ESA

Samples from the above site have been analysed in accordance with the schedule supplied.
The sample details and the results of analyses for these samples are given in the appended report.

An invoice for this work will follow under a separate cover.

Where appropriate the samples will be kept until 22/06/16 when they will be discarded. Please call 01283 554547 for an extension of this date.
Please be aware that our policy for the retention of paper based laboratory records and analysis reports is 6 years.

The work was carried out in accordance with Environmental Scientifics Group Ltd (Laboratory and Analytical) Standard Terms and Conditions of Contract.

If I can be of any further assistance please do not hesitate to contact me.

Yours sincerely

for ESG

JMColbourne

J Colbourne
Project Co-ordinator
01283 554547

Environmental Chemistry, ESG, P.O. Box 100, Burton-upon-trent, DE15 0XD Tel: 01283 554400 Fax: 01283 554422
Environmental Scientifics Group Limited.
Registered No: 2880501

TEST REPORT

1252

Report No. EFS/163840M (Ver. 2)

Ramboll Environ
8 Village Way
Cardiff
CF15 2NE

Site: Zeon Chemicals ESA

The 12 samples described in this report were registered for analysis by ESG on 11-May-2016. This report supersedes any versions previously issued by the laboratory.
The analysis was completed by: 14-Jun-2016

Tests where the accreditation is set to N or No, and any individual data items marked with a * are not UKAS or MCERTS accredited. Any opinions or interpretations expressed herein are outside the scope of any UKAS accreditation held by ESG.

The following tables are contained in this report:

On behalf of
ESG :
Declan Burns

Managing Director
Multi-Sector Services

Date of Issue: 14-Jun-2016

Accreditation Codes: **N** (Not Accredited), **U** (UKAS), **UM** (UKAS & MCERTS)
Tests marked '^' have been subcontracted to another laboratory.
(NVM) - denotes the sample matrix is dissimilar to matrices upon which the MCERTS validation was based, and is therefore not accredited for MCERTS.
All results are reported on a dry weight basis at 105^{o}C unless otherwise stated. (except QC samples)
ESG accepts no responsibility for any sampling not carried out by our personnel.

Units :			mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
Method Codes :			AMMAR	GROHSA	ICPBOR	ICPMSS	ICPMSS	ICPMSS	ICPMSS	ICPMSS	ICPMSS	ICPMSS	ICPMSS	ICPMSS	ICPSOIL	ICPSOIL	ICPSOIL	ICPWSS
Method Reporting Limits :			0.5	0.2	0.5	0.3	0.2	1.2	1.6	0.7	0.5	2	0.5	16	1	0.1	36	10
Accreditation Code:			UM		UM	UM	UM	UM	UM	UM	UM	UM	UM	UM	UM	UM	UM	UM
LAB ID Number CL/	**Client Sample Description**	**Sample Date**	**Exchange.Ammonium AR**	**GRO (AA) by HSA GC-FID**	**Boron (H20 Soluble)**	**Arsenic (MS)**	**Cadmium (MS)**	**Chromium (MS)**	**Copper (MS)**	**Lead (MS)**	**Mercury (MS)**	**Nickel (MS)**	**Selenium (MS)**	**Zinc (MS)**	**Barium.**	**Beryllium.**	**Iron**	**SO4-- (H2O sol) mg/l**
1616104	BH106 0.6	09-May-16	111.2	Req	1.7	10.4	0.4	36.6	20.6	36.5	<0.5	32.3	0.6	124.4		1.19		38
1616105	WS23 0.5	09-May-16	4.6	Req	5.4	15.5	<0.21	47.2	12.4	30.4	<0.5	41.9	<0.5	123.8		1.46		<21
1616106	WS23 2.00	09-May-16		Req	2.8	9.8	<0.20	37.6	17.2	28.3	<0.5	35.2	<0.5	100.6		1.25		24
1616107	WS22 0.6	09-May-16		Req	4.9	13	0.46	41.4	19.5	55	<0.5	32	0.5	149.8	103.0	1.18	34400	119
1616108	WS221.0	09-May-16		Req	4	10.4	<0.21	45.8	17	30.3	<0.5	36.6	0.6	129.8	64.1	1.26	38000	33
1616109	WS22 1.2	09-May-16		Req	4.4	10.6	<0.21	43.5	16.0	31.7	<0.5	35.5	<0.5	117.1	59.4	1.19	35400	31
1616110	WS15 0.4 (NVM)	09-May-16	<0.71§	Req §	1.19§	9.27§	<0.216§	54.54§	70.17§	13.47§	<0.54§	56.27§	1.40§	51§		2.813§		125§
1616111	WS14 1.5	09-May-16		Req	1.1	4.6	0.21	48.9	55.4	7.5	<0.5	20.8	0.6	89.6		0.833		72
1616112	WS16 0.3 (NVM)	10-May-16		Req §	1.00§	9.31§	0.366§	22§	38§	10.30§	<0.55§	30§	1.00§	26.26§		0.842§		239§
1616113	WS17 0.3	10-May-16		Req	1.5	10	0.40	32	29.2	47.5	<0.53	26.3	0.6	110.5		0.879		94
1616114	WS13 0.3	10-May-16		Req	1.2	9.0	0.33	27.0	16.1	29.3	<0.53	29.7	0.6	85.5	83.9	0.577	23400	137
1616115	WS13 0.8	10-May-16		Req	2.9	13.3	0.96	39.0	32.7	56.4	<0.5	30.4	0.7	191.4	170	1.16	29900	91

ESG

Bretby Business Park, Ashby Road

Burton-on-Trent, Staffordshire, DE15 0YZ

Tel +44 (0) 1283 554400

Fax +44 (0) 1283 554422

Client Name **Ramboll Environ**

Contact Lucy Cleverley

Zeon Chemicals ESA

Sample Analysis

Date Printed	**14-Jun-2016**
Report Number	**EFS/163840M**
Table Number	**1**

Where individual results are flagged see report notes for status.
Results corrected to dry weight at 105°C where appropriate, in accordance with the MCERTS standard.

Units :			pH Units	mg/kg	mg/kg		mg/kg	%	mg/kg	µg/kg	mg/kg	mg/kg	% M/M	mg/kg	mg/kg			
Method Codes :			PHSOIL	SFAPI	SFAPI	Sub002a	SVOCMSUS	TMSS	TPHUSSI	VOCHSAS	ALCHSAFID	ICPMSS	WSLM59	PAHMSUS	PHEHPLC			
Method Reporting Limits :				0.5	0.5			0.2	20		40	0.6	0.04					
Accreditation Code:			UM	UM	U	U		U				N	N		N			
LAB ID Number CL/	**Client Sample Description**	**Sample Date**	**pH units (AR)**	**Cyanide(Total) (AR)**	**Phenol Index.(AR)**	**^Asbestos Screen**	**SVOC + TICs by GCMS (AR)**	**Tot.Moisture @ 105C**	**TPH by GCFID (AR/Si)**	**VOC + TICs HSA-GCMS**	**Alcohols by HSA-FID o**	**Vanadium (MS)**	**Total Organic Carbon**	**PAH (17) by GCMS**	**Catechol**			
1616104	BH106 0.6	09-May-16	7.3	<0.6	<0.6	NAIIS	Req	15.8	Req	Req	Req	46.7		Req				
1616105	WS23 0.5	09-May-16	7.9	<0.7	<0.7	NAIIS	Req	24.3	Req	Req	Req	59.9		Req				
1616106	WS23 2.00	09-May-16	7.8	<0.6	<0.6			15.9	Req	Req		43.7		Req				
1616107	WS22 0.6	09-May-16	7.6	<0.7	<0.7			31.2	Req	Req		50.3	2.37	Req	<0.4			
1616108	WS221.0	09-May-16	7.7	<0.6	<0.6			18.9	Req	Req		50.2	0.73	Req	<0.4			
1616109	WS22 1.2	09-May-16	7.9	<0.6	<0.6			19.2	Req	Req		49.5		Req	<0.4			
1616110	WS15 0.4 (NVM)	09-May-16	8.1 §	1.13§	<0.71§	NAIIS	Req §	29.3 §	Req §	Req §	Req	54.8		Req §				
1616111	WS14 1.5	09-May-16	8.4	<0.6	<0.6			16.1	Req	Req		27.6		Req				
1616112	WS16 0.3 (NVM)	10-May-16	8.1 §	<0.74§	<0.74§	NAIIS		32.7 §	Req §	Req §		29.8		Req §				
1616113	WS17 0.3	10-May-16	8.2	<0.6	1.4	AM	Req	20.7	Req	Req	Req	34		Req				
1616114	WS13 0.3	10-May-16	7.9	<0.6	<0.6	CH	Req	16.2	Req	Req	Req	21		Req				
1616115	WS13 0.8	10-May-16	7.6	<0.7	<0.7	NAIIS	Req	23.5	Req	Req		44.9	2.47	Req				

ESG

Bretby Business Park, Ashby Road

Burton-on-Trent, Staffordshire, DE15 0YZ

Tel +44 (0) 1283 554400

Fax +44 (0) 1283 554422

Client Name	**Ramboll Environ**
Contact	Lucy Cleverley

Zeon Chemicals ESA

Sample Analysis

Date Printed	**14-Jun-2016**
Report Number	**EFS/163840M**
Table Number	**1**

Where individual results are flagged see report notes for status.
Results corrected to dry weight at 105°C where appropriate, in accordance with the MCERTS standard.

Alcohols by Headspace GC-FID

Customer and Site Details: Ramboll Environ: Zeon Chemicals ESA
Job Number: S16_3840
Accreditation Code: N

Matrix: SOIL

Date Booked in: 11-May-16
Date extracted: 16-May-16
Date Analysed: 17-May-16

This sample data is not accredited.

		Concentration, (mg/kg) - as dry weight.							
Sample ID	**Client ID**	**Methanol**	**Ethanol**	**iso-Propanol**	**tert-Butanol**	**1-Propanol**	**sec-Butanol**	**iso-Butanol**	**n-Butanol**
CL1616104	BH106 0.6	<48	<48	<48	<48	<48	<48	<48	<48
CL1616105	WS23 0.5	<53	<53	<53	<53	<53	<53	<53	<53
CL1616110	WS15 0.4 (NVM)	<57	<57	<57	<57	<57	<57	<57	<57
CL1616113	WS17 0.3	<50	<50	<50	<50	<50	<50	<50	<50
CL1616114	WS173 0.3	<48	<48	<48	<48	<48	<48	<48	<48

Where individual results are flagged see report notes for status.
Results corrected to dry weight at 105°C where appropriate, in accordance with the MCERTS standard.

Polycyclic Aromatic Hydrocarbons
GC/MS (SIM)

Customer and Site Details:	Ramboll Environ: Zeon Chemicals ESA		
Sample Details:	BH106 0.6	**Job Number:**	S16_3840M
LIMS ID Number:	CL1616104	**Date Booked in:**	11-May-16
QC Batch Number:	160572	**Date Extracted:**	13-May-16
Quantitation File:	Initial Calibration	**Date Analysed:**	15-May-16
Directory:	6\051316GC5\	**Matrix:**	Soil
Dilution:	1.0	**Ext Method:**	Ultrasonic

Accredited?: Yes

Target Compounds	CAS #	R.T. (min)	Concentration mg/kg	% Fit	Accr. code
Naphthalene	91-20-3	-	< 0.10	-	**UM**
Acenaphthylene	208-96-8*	-	< 0.10	-	N
Acenaphthene	83-32-9	-	< 0.10	-	UM
Fluorene	86-73-7	-	< 0.10	-	UM
Phenanthrene	85-01-8	-	< 0.10	-	UM
Anthracene	120-12-7	-	< 0.10	-	U
Fluoranthene	206-44-0	-	< 0.10	-	UM
Pyrene	129-00-0	-	< 0.10	-	UM
Benzo[a]anthracene	56-55-3	-	< 0.10	-	UM
Chrysene	218-01-9	-	< 0.10	-	UM
Benzo[b]fluoranthene	205-99-2	-	< 0.10	-	UM
Benzo[k]fluoranthene	207-08-9	-	< 0.10	-	UM
Benzo[a]pyrene	50-32-8	-	< 0.10	-	UM
Indeno[1,2,3-cd]pyrene	193-39-5	-	< 0.10	-	UM
Dibenzo[a,h]anthracene	53-70-3	-	< 0.10	-	UM
Benzo[g,h,i]perylene	191-24-2*	-	< 0.10	-	N
Coronene	191-07-1 *	-	< 0.10	-	N
Total (USEPA16) PAHs	-	-	< 1.52	-	N

* Denotes compound is not UKAS accredited

"M" denotes that % fit has been manually interpreted

Internal Standards	% Area
1,4-Dichlorobenzene-d4	NA
Naphthalene-d8	35
Acenaphthene-d10	48
Phenanthrene-d10	55
Chrysene-d12	51
Perylene-d12	47

Surrogates	% Rec
Nitrobenzene-d5	NA
2-Fluorobiphenyl	86
Terphenyl-d14	73

Concentrations are reported on a dry weight basis.

The Total PAH result is the sum of non-rounded individual PAH results and therefore may differ to the sum of the rounded individual PAH results printed above. By convention, where any one or more result is a "less than", the total is expressed as a "less than" and includes the "less than" concentration within the total.

Polycyclic Aromatic Hydrocarbons
GC/MS (SIM)

Customer and Site Details:	Ramboll Environ: Zeon Chemicals ESA		
Sample Details:	WS23 0.5	**Job Number:**	S16_3840M
LIMS ID Number:	CL1616105	**Date Booked in:**	11-May-16
QC Batch Number:	160572	**Date Extracted:**	13-May-16
Quantitation File:	Initial Calibration	**Date Analysed:**	15-May-16
Directory:	6\051316GC5\	**Matrix:**	Soil
Dilution:	1.0	**Ext Method:**	Ultrasonic

Accredited?: Yes

Target Compounds	CAS #	R.T. (min)	Concentration mg/kg	% Fit	Accr. code
Naphthalene	91-20-3	-	< 0.11	-	**UM**
Acenaphthylene	208-96-8*	-	< 0.11	-	N
Acenaphthene	83-32-9	-	< 0.11	-	UM
Fluorene	86-73-7	-	< 0.11	-	UM
Phenanthrene	85-01-8	-	< 0.11	-	UM
Anthracene	120-12-7	-	< 0.11	-	U
Fluoranthene	206-44-0	-	< 0.11	-	UM
Pyrene	129-00-0	-	< 0.11	-	UM
Benzo[a]anthracene	56-55-3	-	< 0.11	-	UM
Chrysene	218-01-9	-	< 0.11	-	UM
Benzo[b]fluoranthene	205-99-2	-	< 0.11	-	UM
Benzo[k]fluoranthene	207-08-9	-	< 0.11	-	UM
Benzo[a]pyrene	50-32-8	-	< 0.11	-	UM
Indeno[1,2,3-cd]pyrene	193-39-5	-	< 0.11	-	UM
Dibenzo[a,h]anthracene	53-70-3	-	< 0.11	-	UM
Benzo[g,h,i]perylene	191-24-2*	-	< 0.11	-	N
Coronene	191-07-1 *	-	< 0.11	-	N
Total (USEPA16) PAHs	-	-	< 1.69	-	N

* Denotes compound is not UKAS accredited

"M" denotes that % fit has been manually interpreted

Internal Standards	% Area
1,4-Dichlorobenzene-d4	NA
Naphthalene-d8	33
Acenaphthene-d10	45
Phenanthrene-d10	50
Chrysene-d12	45
Perylene-d12	40

Surrogates	% Rec
Nitrobenzene-d5	NA
2-Fluorobiphenyl	86
Terphenyl-d14	71

Concentrations are reported on a dry weight basis.

The Total PAH result is the sum of non-rounded individual PAH results and therefore may differ to the sum of the rounded individual PAH results printed above. By convention, where any one or more result is a "less than", the total is expressed as a "less than" and includes the "less than" concentration within the total.

Polycyclic Aromatic Hydrocarbons
GC/MS (SIM)

Customer and Site Details:	Ramboll Environ: Zeon Chemicals ESA		
Sample Details:	WS23 2.00	**Job Number:**	S16_3840M
LIMS ID Number:	CL1616106	**Date Booked in:**	11-May-16
QC Batch Number:	160572	**Date Extracted:**	13-May-16
Quantitation File:	Initial Calibration	**Date Analysed:**	15-May-16
Directory:	6\051316GC5\	**Matrix:**	Soil
Dilution:	1.0	**Ext Method:**	Ultrasonic

Accredited?: Yes

Target Compounds	CAS #	R.T. (min)	Concentration mg/kg	% Fit	Accr. code
Naphthalene	91-20-3	-	< 0.10	-	**UM**
Acenaphthylene	208-96-8*	-	< 0.10	-	N
Acenaphthene	83-32-9	-	< 0.10	-	UM
Fluorene	86-73-7	-	< 0.10	-	UM
Phenanthrene	85-01-8	-	< 0.10	-	UM
Anthracene	120-12-7	-	< 0.10	-	U
Fluoranthene	206-44-0	-	< 0.10	-	UM
Pyrene	129-00-0	-	< 0.10	-	UM
Benzo[a]anthracene	56-55-3	-	< 0.10	-	UM
Chrysene	218-01-9	-	< 0.10	-	UM
Benzo[b]fluoranthene	205-99-2	-	< 0.10	-	UM
Benzo[k]fluoranthene	207-08-9	-	< 0.10	-	UM
Benzo[a]pyrene	50-32-8	-	< 0.10	-	UM
Indeno[1,2,3-cd]pyrene	193-39-5	-	< 0.10	-	UM
Dibenzo[a,h]anthracene	53-70-3	-	< 0.10	-	UM
Benzo[g,h,i]perylene	191-24-2*	-	< 0.10	-	N
Coronene	191-07-1 *	-	< 0.10	-	N
Total (USEPA16) PAHs	-	-	< 1.52	-	N

* Denotes compound is not UKAS accredited

"M" denotes that % fit has been manually interpreted

Internal Standards	% Area
1,4-Dichlorobenzene-d4	NA
Naphthalene-d8	33
Acenaphthene-d10	47
Phenanthrene-d10	53
Chrysene-d12	48
Perylene-d12	43

Surrogates	% Rec
Nitrobenzene-d5	NA
2-Fluorobiphenyl	87
Terphenyl-d14	73

Concentrations are reported on a dry weight basis.

The Total PAH result is the sum of non-rounded individual PAH results and therefore may differ to the sum of the rounded individual PAH results printed above. By convention, where any one or more result is a "less than", the total is expressed as a "less than" and includes the "less than" concentration within the total.

Polycyclic Aromatic Hydrocarbons
GC/MS (SIM)

Customer and Site Details:	Ramboll Environ: Zeon Chemicals ESA		
Sample Details:	WS22 0.6	**Job Number:**	S16_3840M
LIMS ID Number:	CL1616107	**Date Booked in:**	11-May-16
QC Batch Number:	160572	**Date Extracted:**	13-May-16
Quantitation File:	Initial Calibration	**Date Analysed:**	15-May-16
Directory:	6\051316GC5\	**Matrix:**	Soil
Dilution:	1.0	**Ext Method:**	Ultrasonic

Accredited?: Yes

Target Compounds	CAS #	R.T. (min)	Concentration mg/kg	% Fit	Accr. code
Naphthalene	91-20-3	-	< 0.12	-	**UM**
Acenaphthylene	208-96-8*	-	< 0.12	-	N
Acenaphthene	83-32-9	-	< 0.12	-	UM
Fluorene	86-73-7	-	< 0.12	-	UM
Phenanthrene	85-01-8	5.59	0.10	97	UM
Anthracene	120-12-7	-	< 0.12	-	U
Fluoranthene	206-44-0	6.92	0.28	69	UM
Pyrene	129-00-0	7.20	0.22	67	UM
Benzo[a]anthracene	56-55-3	8.88	0.10	75	UM
Chrysene	218-01-9	8.93	0.17	59	UM
Benzo[b]fluoranthene	205-99-2	10.41	0.17	64	UM
Benzo[k]fluoranthene	207-08-9	-	< 0.12	-	UM
Benzo[a]pyrene	50-32-8	10.77	0.13	89	UM
Indeno[1,2,3-cd]pyrene	193-39-5	-	< 0.12	-	UM
Dibenzo[a,h]anthracene	53-70-3	-	< 0.12	-	UM
Benzo[g,h,i]perylene	191-24-2*	-	< 0.12	-	N
Coronene	191-07-1 *	-	< 0.12	-	N
Total (USEPA16) PAHs	-	-	< 2.31	-	N

* Denotes compound is not UKAS accredited

"M" denotes that % fit has been manually interpreted

Internal Standards	% Area
1,4-Dichlorobenzene-d4	NA
Naphthalene-d8	34
Acenaphthene-d10	40
Phenanthrene-d10	41
Chrysene-d12	47
Perylene-d12	44

Surrogates	% Rec
Nitrobenzene-d5	NA
2-Fluorobiphenyl	91
Terphenyl-d14	83

Concentrations are reported on a dry weight basis.

The Total PAH result is the sum of non-rounded individual PAH results and therefore may differ to the sum of the rounded individual PAH results printed above. By convention, where any one or more result is a "less than", the total is expressed as a "less than" and includes the "less than" concentration within the total.

Polycyclic Aromatic Hydrocarbons
GC/MS (SIM)

Customer and Site Details:	Ramboll Environ: Zeon Chemicals ESA		
Sample Details:	WS221.0	**Job Number:**	S16_3840M
LIMS ID Number:	CL1616108	**Date Booked in:**	11-May-16
QC Batch Number:	160572	**Date Extracted:**	13-May-16
Quantitation File:	Initial Calibration	**Date Analysed:**	15-May-16
Directory:	6\051316GC5\	**Matrix:**	Soil
Dilution:	1.0	**Ext Method:**	Ultrasonic

Accredited?: Yes

Target Compounds	CAS #	R.T. (min)	Concentration mg/kg	% Fit	Accr. code
Naphthalene	91-20-3	-	< 0.10	-	**UM**
Acenaphthylene	208-96-8*	-	< 0.10	-	N
Acenaphthene	83-32-9	-	< 0.10	-	UM
Fluorene	86-73-7	-	< 0.10	-	UM
Phenanthrene	85-01-8	-	< 0.10	-	UM
Anthracene	120-12-7	-	< 0.10	-	U
Fluoranthene	206-44-0	-	< 0.10	-	UM
Pyrene	129-00-0	-	< 0.10	-	UM
Benzo[a]anthracene	56-55-3	-	< 0.10	-	UM
Chrysene	218-01-9	-	< 0.10	-	UM
Benzo[b]fluoranthene	205-99-2	-	< 0.10	-	UM
Benzo[k]fluoranthene	207-08-9	-	< 0.10	-	UM
Benzo[a]pyrene	50-32-8	-	< 0.10	-	UM
Indeno[1,2,3-cd]pyrene	193-39-5	-	< 0.10	-	UM
Dibenzo[a,h]anthracene	53-70-3	-	< 0.10	-	UM
Benzo[g,h,i]perylene	191-24-2*	-	< 0.10	-	N
Coronene	191-07-1 *	-	< 0.10	-	N
Total (USEPA16) PAHs	-	-	< 1.58	-	N

* Denotes compound is not UKAS accredited

"M" denotes that % fit has been manually interpreted

Internal Standards	% Area
1,4-Dichlorobenzene-d4	NA
Naphthalene-d8	34
Acenaphthene-d10	45
Phenanthrene-d10	50
Chrysene-d12	44
Perylene-d12	40

Surrogates	% Rec
Nitrobenzene-d5	NA
2-Fluorobiphenyl	87
Terphenyl-d14	72

Concentrations are reported on a dry weight basis.

The Total PAH result is the sum of non-rounded individual PAH results and therefore may differ to the sum of the rounded individual PAH results printed above. By convention, where any one or more result is a "less than", the total is expressed as a "less than" and includes the "less than" concentration within the total.

Polycyclic Aromatic Hydrocarbons
GC/MS (SIM)

Customer and Site Details:	Ramboll Environ: Zeon Chemicals ESA		
Sample Details:	WS22 1.2	**Job Number:**	S16_3840M
LIMS ID Number:	CL1616109	**Date Booked in:**	11-May-16
QC Batch Number:	160572	**Date Extracted:**	13-May-16
Quantitation File:	Initial Calibration	**Date Analysed:**	16-May-16
Directory:	6\051316GC5\	**Matrix:**	Soil
Dilution:	1.0	**Ext Method:**	Ultrasonic

Accredited?: Yes

Target Compounds	CAS #	R.T. (min)	Concentration mg/kg	% Fit	Accr. code
Naphthalene	91-20-3	-	< 0.10	-	**UM**
Acenaphthylene	208-96-8*	-	< 0.10	-	N
Acenaphthene	83-32-9	-	< 0.10	-	UM
Fluorene	86-73-7	-	< 0.10	-	UM
Phenanthrene	85-01-8	-	< 0.10	-	UM
Anthracene	120-12-7	-	< 0.10	-	U
Fluoranthene	206-44-0	-	< 0.10	-	UM
Pyrene	129-00-0	-	< 0.10	-	UM
Benzo[a]anthracene	56-55-3	-	< 0.10	-	UM
Chrysene	218-01-9	-	< 0.10	-	UM
Benzo[b]fluoranthene	205-99-2	-	< 0.10	-	UM
Benzo[k]fluoranthene	207-08-9	-	< 0.10	-	UM
Benzo[a]pyrene	50-32-8	-	< 0.10	-	UM
Indeno[1,2,3-cd]pyrene	193-39-5	-	< 0.10	-	UM
Dibenzo[a,h]anthracene	53-70-3	-	< 0.10	-	UM
Benzo[g,h,i]perylene	191-24-2*	-	< 0.10	-	N
Coronene	191-07-1 *	-	< 0.10	-	N
Total (USEPA16) PAHs	-	-	< 1.58	-	N

* Denotes compound is not UKAS accredited

"M" denotes that % fit has been manually interpreted

Internal Standards	% Area
1,4-Dichlorobenzene-d4	NA
Naphthalene-d8	33
Acenaphthene-d10	44
Phenanthrene-d10	49
Chrysene-d12	45
Perylene-d12	40

Surrogates	% Rec
Nitrobenzene-d5	NA
2-Fluorobiphenyl	83
Terphenyl-d14	71

Concentrations are reported on a dry weight basis.

The Total PAH result is the sum of non-rounded individual PAH results and therefore may differ to the sum of the rounded individual PAH results printed above. By convention, where any one or more result is a "less than", the total is expressed as a "less than" and includes the "less than" concentration within the total.

Polycyclic Aromatic Hydrocarbons
GC/MS (SIM)

Customer and Site Details:	Ramboll Environ: Zeon Chemicals ESA		
Sample Details:	WS15 0.4 (NVM)	**Job Number:**	S16_3840M
LIMS ID Number:	CL1616110	**Date Booked in:**	11-May-16
QC Batch Number:	160572	**Date Extracted:**	13-May-16
Quantitation File:	Initial Calibration	**Date Analysed:**	16-May-16
Directory:	6\051316GC5\	**Matrix:**	Soil
Dilution:	1.0	**Ext Method:**	Ultrasonic

Accredited?: No

Target Compounds	CAS #	R.T. (min)	Concentration mg/kg	% Fit	Accr. code
Naphthalene	91-20-3	-	< 0.11	-	**N**
Acenaphthylene	208-96-8	-	< 0.11	-	N
Acenaphthene	83-32-9	-	< 0.11	-	N
Fluorene	86-73-7	-	< 0.11	-	N
Phenanthrene	85-01-8	-	< 0.11	-	N
Anthracene	120-12-7	-	< 0.11	-	N
Fluoranthene	206-44-0	-	< 0.11	-	N
Pyrene	129-00-0	-	< 0.11	-	N
Benzo[a]anthracene	56-55-3	-	< 0.11	-	N
Chrysene	218-01-9	-	< 0.11	-	N
Benzo[b]fluoranthene	205-99-2	-	< 0.11	-	N
Benzo[k]fluoranthene	207-08-9	-	< 0.11	-	N
Benzo[a]pyrene	50-32-8	-	< 0.11	-	N
Indeno[1,2,3-cd]pyrene	193-39-5	-	< 0.11	-	N
Dibenzo[a,h]anthracene	53-70-3	-	< 0.11	-	N
Benzo[g,h,i]perylene	191-24-2	-	< 0.11	-	N
Coronene	191-07-1	-	< 0.11	-	N
Total (USEPA16) PAHs	-	-	< 1.81	-	N

* Denotes compound is not UKAS accredited

"M" denotes that % fit has been manually interpreted

Internal Standards	% Area
1,4-Dichlorobenzene-d4	NA
Naphthalene-d8	33
Acenaphthene-d10	43
Phenanthrene-d10	47
Chrysene-d12	44
Perylene-d12	40

Surrogates	% Rec
Nitrobenzene-d5	NA
2-Fluorobiphenyl	88
Terphenyl-d14	72

Concentrations are reported on a dry weight basis.

The Total PAH result is the sum of non-rounded individual PAH results and therefore may differ to the sum of the rounded individual PAH results printed above. By convention, where any one or more result is a "less than", the total is expressed as a "less than" and includes the "less than" concentration within the total.

Polycyclic Aromatic Hydrocarbons
GC/MS (SIM)

Customer and Site Details:	Ramboll Environ: Zeon Chemicals ESA		
Sample Details:	WS14 1.5	**Job Number:**	S16_3840M
LIMS ID Number:	CL1616111	**Date Booked in:**	11-May-16
QC Batch Number:	160572	**Date Extracted:**	13-May-16
Quantitation File:	Initial Calibration	**Date Analysed:**	16-May-16
Directory:	6\051316GC5\	**Matrix:**	Soil
Dilution:	1.0	**Ext Method:**	Ultrasonic

Accredited?: Yes

Target Compounds	CAS #	R.T. (min)	Concentration mg/kg	% Fit	Accr. code
Naphthalene	91-20-3	-	< 0.10	-	**UM**
Acenaphthylene	208-96-8*	-	< 0.10	-	N
Acenaphthene	83-32-9	-	< 0.10	-	UM
Fluorene	86-73-7	-	< 0.10	-	UM
Phenanthrene	85-01-8	-	< 0.10	-	UM
Anthracene	120-12-7	-	< 0.10	-	U
Fluoranthene	206-44-0	-	< 0.10	-	UM
Pyrene	129-00-0	-	< 0.10	-	UM
Benzo[a]anthracene	56-55-3	-	< 0.10	-	UM
Chrysene	218-01-9	-	< 0.10	-	UM
Benzo[b]fluoranthene	205-99-2	-	< 0.10	-	UM
Benzo[k]fluoranthene	207-08-9	-	< 0.10	-	UM
Benzo[a]pyrene	50-32-8	-	< 0.10	-	UM
Indeno[1,2,3-cd]pyrene	193-39-5	-	< 0.10	-	UM
Dibenzo[a,h]anthracene	53-70-3	-	< 0.10	-	UM
Benzo[g,h,i]perylene	191-24-2*	-	< 0.10	-	N
Coronene	191-07-1 *	-	< 0.10	-	N
Total (USEPA16) PAHs	-	-	< 1.53	-	N

* Denotes compound is not UKAS accredited

"M" denotes that % fit has been manually interpreted

Internal Standards	% Area
1,4-Dichlorobenzene-d4	NA
Naphthalene-d8	35
Acenaphthene-d10	48
Phenanthrene-d10	55
Chrysene-d12	49
Perylene-d12	43

Surrogates	% Rec
Nitrobenzene-d5	NA
2-Fluorobiphenyl	86
Terphenyl-d14	72

Concentrations are reported on a dry weight basis.

The Total PAH result is the sum of non-rounded individual PAH results and therefore may differ to the sum of the rounded individual PAH results printed above. By convention, where any one or more result is a "less than", the total is expressed as a "less than" and includes the "less than" concentration within the total.

Polycyclic Aromatic Hydrocarbons
GC/MS (SIM)

Customer and Site Details:	Ramboll Environ: Zeon Chemicals ESA		
Sample Details:	WS16 0.3 (NVM)	**Job Number:**	S16_3840M
LIMS ID Number:	CL1616112	**Date Booked in:**	11-May-16
QC Batch Number:	160572	**Date Extracted:**	13-May-16
Quantitation File:	Initial Calibration	**Date Analysed:**	16-May-16
Directory:	6\051316GC5\	**Matrix:**	Soil
Dilution:	1.0	**Ext Method:**	Ultrasonic

Accredited?: No

Target Compounds	CAS #	R.T. (min)	Concentration mg/kg	% Fit	Accr. code
Naphthalene	91-20-3	-	< 0.12	-	**N**
Acenaphthylene	208-96-8	-	< 0.12	-	N
Acenaphthene	83-32-9	-	< 0.12	-	N
Fluorene	86-73-7	-	< 0.12	-	N
Phenanthrene	85-01-8	-	< 0.12	-	N
Anthracene	120-12-7	-	< 0.12	-	N
Fluoranthene	206-44-0	6.91	0.12	72	N
Pyrene	129-00-0	7.20	0.13	69	N
Benzo[a]anthracene	56-55-3	8.88	0.18	89	N
Chrysene	218-01-9	8.93	0.10	83	N
Benzo[b]fluoranthene	205-99-2	10.41	0.22	78	N
Benzo[k]fluoranthene	207-08-9	-	< 0.12	-	N
Benzo[a]pyrene	50-32-8	10.84	0.10	64	N
Indeno[1,2,3-cd]pyrene	193-39-5	-	< 0.12	-	N
Dibenzo[a,h]anthracene	53-70-3	-	< 0.12	-	N
Benzo[g,h,i]perylene	191-24-2	-	< 0.12	-	N
Coronene	191-07-1	-	< 0.12	-	N
Total (USEPA16) PAHs	-	-	< 2.14	-	N

* Denotes compound is not UKAS accredited

"M" denotes that % fit has been manually interpreted

Internal Standards	% Area
1,4-Dichlorobenzene-d4	NA
Naphthalene-d8	34
Acenaphthene-d10	44
Phenanthrene-d10	48
Chrysene-d12	43
Perylene-d12	38

Surrogates	% Rec
Nitrobenzene-d5	NA
2-Fluorobiphenyl	87
Terphenyl-d14	71

Concentrations are reported on a dry weight basis.

The Total PAH result is the sum of non-rounded individual PAH results and therefore may differ to the sum of the rounded individual PAH results printed above. By convention, where any one or more result is a "less than", the total is expressed as a "less than" and includes the "less than" concentration within the total.

Polycyclic Aromatic Hydrocarbons
GC/MS (SIM)

Customer and Site Details:	Ramboll Environ: Zeon Chemicals ESA		
Sample Details:	WS17 0.3	**Job Number:**	S16_3840M
LIMS ID Number:	CL1616113	**Date Booked in:**	11-May-16
QC Batch Number:	160572	**Date Extracted:**	13-May-16
Quantitation File:	Initial Calibration	**Date Analysed:**	16-May-16
Directory:	6\051316GC5\	**Matrix:**	Soil
Dilution:	1.0	**Ext Method:**	Ultrasonic

Accredited?: Yes

Target Compounds	CAS #	R.T. (min)	Concentration mg/kg	% Fit	Accr. code
Naphthalene	91-20-3	3.23	0.60	97	**UM**
Acenaphthylene	208-96-8*	-	< 0.10	-	N
Acenaphthene	83-32-9	-	< 0.10	-	UM
Fluorene	86-73-7	-	< 0.10	-	UM
Phenanthrene	85-01-8	5.61	0.67	60	UM
Anthracene	120-12-7	-	< 0.10	-	U
Fluoranthene	206-44-0	6.92	0.54	73	UM
Pyrene	129-00-0	7.20	0.50	68	UM
Benzo[a]anthracene	56-55-3	8.88	0.18	84	UM
Chrysene	218-01-9	8.92	0.15	55	UM
Benzo[b]fluoranthene	205-99-2	-	< 0.10	-	UM
Benzo[k]fluoranthene	207-08-9	-	< 0.10	-	UM
Benzo[a]pyrene	50-32-8	10.84	0.10	72	UM
Indeno[1,2,3-cd]pyrene	193-39-5	-	< 0.10	-	UM
Dibenzo[a,h]anthracene	53-70-3	-	< 0.10	-	UM
Benzo[g,h,i]perylene	191-24-2*	-	< 0.10	-	N
Coronene	191-07-1 *	-	< 0.10	-	N
Total (USEPA16) PAHs	-	-	< 3.71	-	N

* Denotes compound is not UKAS accredited

"M" denotes that % fit has been manually interpreted

Internal Standards	% Area
1,4-Dichlorobenzene-d4	NA
Naphthalene-d8	28
Acenaphthene-d10	38
Phenanthrene-d10	30
Chrysene-d12	36
Perylene-d12	33

Surrogates	% Rec
Nitrobenzene-d5	NA
2-Fluorobiphenyl	92
Terphenyl-d14	91

Concentrations are reported on a dry weight basis.

The Total PAH result is the sum of non-rounded individual PAH results and therefore may differ to the sum of the rounded individual PAH results printed above. By convention, where any one or more result is a "less than", the total is expressed as a "less than" and includes the "less than" concentration within the total.

Polycyclic Aromatic Hydrocarbons
GC/MS (SIM)

Customer and Site Details:	Ramboll Environ: Zeon Chemicals ESA		
Sample Details:	WS13 0.3	**Job Number:**	S16_3840M
LIMS ID Number:	CL1616114	**Date Booked in:**	11-May-16
QC Batch Number:	160572	**Date Extracted:**	13-May-16
Quantitation File:	Initial Calibration	**Date Analysed:**	16-May-16
Directory:	6\051316GC5\	**Matrix:**	Soil
Dilution:	1.0	**Ext Method:**	Ultrasonic

Accredited?: Yes

Target Compounds	CAS #	R.T. (min)	Concentration mg/kg	% Fit	Accr. code
Naphthalene	91-20-3	3.23	0.17	97	**UM**
Acenaphthylene	208-96-8*	-	< 0.10	-	N
Acenaphthene	83-32-9	-	< 0.10	-	UM
Fluorene	86-73-7	-	< 0.10	-	UM
Phenanthrene	85-01-8	5.59	0.32	97	UM
Anthracene	120-12-7	-	< 0.10	-	U
Fluoranthene	206-44-0	6.92	0.19	68	UM
Pyrene	129-00-0	7.20	0.16	65	UM
Benzo[a]anthracene	56-55-3	8.87	0.13	71	UM
Chrysene	218-01-9	8.93	0.20	81	UM
Benzo[b]fluoranthene	205-99-2	10.41	0.18	61	UM
Benzo[k]fluoranthene	207-08-9	-	< 0.10	-	UM
Benzo[a]pyrene	50-32-8	10.84	0.10	74	UM
Indeno[1,2,3-cd]pyrene	193-39-5	-	< 0.10	-	UM
Dibenzo[a,h]anthracene	53-70-3	-	< 0.10	-	UM
Benzo[g,h,i]perylene	191-24-2*	-	< 0.10	-	N
Coronene	191-07-1 *	-	< 0.10	-	N
Total (USEPA16) PAHs	-	-	< 2.24	-	N

* Denotes compound is not UKAS accredited

"M" denotes that % fit has been manually interpreted

Internal Standards	% Area
1,4-Dichlorobenzene-d4	NA
Naphthalene-d8	37
Acenaphthene-d10	47
Phenanthrene-d10	46
Chrysene-d12	45
Perylene-d12	44

Surrogates	% Rec
Nitrobenzene-d5	NA
2-Fluorobiphenyl	91
Terphenyl-d14	77

Concentrations are reported on a dry weight basis.

The Total PAH result is the sum of non-rounded individual PAH results and therefore may differ to the sum of the rounded individual PAH results printed above. By convention, where any one or more result is a "less than", the total is expressed as a "less than" and includes the "less than" concentration within the total.

Polycyclic Aromatic Hydrocarbons
GC/MS (SIM)

Customer and Site Details:	Ramboll Environ: Zeon Chemicals ESA		
Sample Details:	WS13 0.8	**Job Number:**	S16_3840M
LIMS ID Number:	CL1616115	**Date Booked in:**	11-May-16
QC Batch Number:	160572	**Date Extracted:**	13-May-16
Quantitation File:	Initial Calibration	**Date Analysed:**	16-May-16
Directory:	6\051316GC5\	**Matrix:**	Soil
Dilution:	1.0	**Ext Method:**	Ultrasonic

Accredited?: Yes

Target Compounds	CAS #	R.T. (min)	Concentration mg/kg	% Fit	Accr. code
Naphthalene	91-20-3	-	< 0.10	-	**UM**
Acenaphthylene	208-96-8*	-	< 0.10	-	N
Acenaphthene	83-32-9	-	< 0.10	-	UM
Fluorene	86-73-7	-	< 0.10	-	UM
Phenanthrene	85-01-8	-	< 0.10	-	UM
Anthracene	120-12-7	-	< 0.10	-	U
Fluoranthene	206-44-0	-	< 0.10	-	UM
Pyrene	129-00-0	-	< 0.10	-	UM
Benzo[a]anthracene	56-55-3	-	< 0.10	-	UM
Chrysene	218-01-9	-	< 0.10	-	UM
Benzo[b]fluoranthene	205-99-2	-	< 0.10	-	UM
Benzo[k]fluoranthene	207-08-9	-	< 0.10	-	UM
Benzo[a]pyrene	50-32-8	-	< 0.10	-	UM
Indeno[1,2,3-cd]pyrene	193-39-5	-	< 0.10	-	UM
Dibenzo[a,h]anthracene	53-70-3	-	< 0.10	-	UM
Benzo[g,h,i]perylene	191-24-2*	-	< 0.10	-	N
Coronene	191-07-1 *	-	< 0.10	-	N
Total (USEPA16) PAHs	-	-	< 1.67	-	N

* Denotes compound is not UKAS accredited

"M" denotes that % fit has been manually interpreted

Internal Standards	% Area
1,4-Dichlorobenzene-d4	NA
Naphthalene-d8	35
Acenaphthene-d10	43
Phenanthrene-d10	46
Chrysene-d12	41
Perylene-d12	37

Surrogates	% Rec
Nitrobenzene-d5	NA
2-Fluorobiphenyl	91
Terphenyl-d14	75

Concentrations are reported on a dry weight basis.

The Total PAH result is the sum of non-rounded individual PAH results and therefore may differ to the sum of the rounded individual PAH results printed above. By convention, where any one or more result is a "less than", the total is expressed as a "less than" and includes the "less than" concentration within the total.

Semi-Volatile Organic Compounds

Accredited?: Yes

Customer and Site Details:	Ramboll Environ: Zeon Chemicals ESA			**Matrix:**	Soil	**QC Batch Number:**	109
Sample Details:	BH106 0.6	**Date Booked in:**	11-May-16	**Ext Method:**	Ultrasonic	**Multiplier:**	0.2
LIMS ID Number:	CL1616104	**Date Extracted:**	13-May-16	**Operator:**	SO/RP	**Dilution Factor:**	1
Job Number:	S16_3840M	**Date Analysed:**	17-May-16	**Directory/Quant File:**	051616_MS16\	**GPC (Y/N)**	N

Target Compounds	CAS #	R.T. (min)	Concentration mg/kg	% Fit	Accr. code
Phenol	108-95-2	-	< 0.1	-	U
bis(2-Chloroethyl)ether	111-44-4	-	< 0.1	-	U
2-Chlorophenol	95-57-8	-	< 0.1	-	U
1,3-Dichlorobenzene	541-73-1	-	< 0.1	-	U
1,4-Dichlorobenzene	106-46-7	-	< 0.1	-	U
Benzyl alcohol	100-51-6	-	< 0.6	-	U
1,2-Dichlorobenzene	95-50-1	-	< 0.1	-	U
2-Methylphenol	95-48-7	-	< 0.1	-	U
bis(2-Chloroisopropyl)ether	108-60-1	-	< 0.6	-	U
Hexachloroethane	67-72-1	-	< 0.1	-	U
N-Nitroso-di-n-propylamine	621-64-7*	-	< 1.1	-	N
3- & 4-Methylphenol	108-39-4/106-44-5	-	< 0.1	-	U
Nitrobenzene	98-95-3	-	< 0.6	-	U
Isophorone	78-59-1*	-	< 0.1	-	N
2-Nitrophenol	88-75-5	-	< 0.1	-	U
2,4-Dimethylphenol	105-67-9	-	< 0.1	-	U
Benzoic Acid	65-85-0*	-	< 0.6	-	N
bis(2-Chloroethoxy)methane	111-91-1	-	< 0.1	-	U
2,4-Dichlorophenol	120-83-2	-	< 0.1	-	U
1,2,4-Trichlorobenzene	120-82-1*	-	< 0.1	-	N
Naphthalene	91-20-3	-	< 0.1	-	U
4-Chlorophenol	106-48-9	-	< 0.6	-	U
4-Chloroaniline	106-47-8*	-	< 0.6	-	N
Hexachlorobutadiene	87-68-3*	-	< 0.1	-	N
4-Chloro-3-methylphenol	59-50-7	-	< 0.1	-	U
2-Methylnaphthalene	91-57-6	-	< 0.1	-	U
1-Methylnaphthalene	90-12-0	-	< 0.1	-	U
Hexachlorocyclopentadiene	77-47-4*	-	< 0.1	-	N
2,4,6-Trichlorophenol	88-06-2	-	< 0.1	-	U
2,4,5-Trichlorophenol	95-95-4	-	< 0.1	-	U
2-Chloronaphthalene	91-58-7	-	< 0.1	-	U
Biphenyl	92-52-4	-	< 0.1	-	U
Diphenyl ether	101-84-8	-	< 0.1	-	U
2-Nitroaniline	88-74-4*	-	< 0.6	-	N
Acenaphthylene	208-96-8	-	< 0.1	-	U
Dimethylphthalate	131-11-3	-	< 0.1	-	U
2,6-Dinitrotoluene	606-20-2	-	< 0.6	-	U
Acenaphthene	83-32-9	-	< 0.1	-	U
3-Nitroaniline	99-09-2*	-	< 17.2	-	N

Target Compounds	CAS #	R.T.	Concentration mg/kg	% Fit	Accr. code
2,4-Dinitrophenol	51-28-5*	-	< 0.6	-	N
Dibenzofuran	132-64-9	-	< 0.1	-	U
4-Nitrophenol	100-02-7*	-	< 0.6	-	N
2,4-Dinitrotoluene	121-14-2	-	< 0.2	-	U
Fluorene	86-73-7	-	< 0.1	-	U
Diethylphthalate	84-66-2	-	< 0.1	-	U
4-Chlorophenyl-phenylether	7005-72-3	-	< 0.1	-	U
4,6-Dinitro-2-methylphenol	534-52-1*	-	< 0.2	-	N
4-Nitroaniline	100-01-6*	-	< 0.7	-	N
N-Nitrosodiphenylamine	86-30-6*	-	< 0.1	-	N
4-Bromophenyl-phenylether	101-55-3*	-	< 0.1	-	N
Hexachlorobenzene	118-74-1*	-	< 0.1	-	N
Pentachlorophenol	87-86-5*	-	< 0.6	-	N
Phenanthrene	85-01-8	-	< 0.1	-	U
Anthracene	120-12-7	-	< 0.1	-	U
Di-n-butylphthalate	84-74-2	-	< 0.1	-	U
Fluoranthene	206-44-0	-	< 0.2	-	U
Pyrene	129-00-0	-	< 0.2	-	U
Butylbenzylphthalate	85-68-7	-	< 0.2	-	U
Benzo[a]anthracene	56-55-3	-	< 0.2	-	U
Chrysene	218-01-9	-	< 0.2	-	U
3,3'-Dichlorobenzidine	91-94-1*	-	N.D	-	N
bis(2-Ethylhexyl)phthalate	117-81-7	-	< 0.2	-	U
Di-n-octylphthalate	117-84-0*	-	< 0.2	-	N
Benzo[b]fluoranthene	205-99-2	-	< 0.2	-	U
Benzo[k]fluoranthene	207-08-9	-	< 0.2	-	U
Benzo[a]pyrene	50-32-8	-	< 0.2	-	U
Indeno[1,2,3-cd]pyrene	193-39-5	-	< 0.6	-	U
Dibenzo[a,h]anthracene	53-70-3	-	< 0.6	-	U
Benzo[g,h,i]perylene	191-24-2	-	< 0.6	-	U
Coronene	191-07-1*	-	< 0.4	-	N

Internal Standards	% Area
1,4-Dichlorobenzene-d4	86
Naphthalene-d8	83
Acenaphthene-d10	79
Phenanthrene-d10	72
Chrysene-d12	67
Perylene-d12	61

Surrogates	% Rec
2-Fluorophenol	97
Phenol-d5	96
Nitrobenzene-d5	94
2-Fluorobiphenyl	99
2,4,6-Tribromophenol	97
Terphenyl-d14	105

This analysis was conducted on an 'As Received' basis.

Concentrations are reported on a dry weight basis.

Where individual results are flagged see report notes for status.
Results corrected to dry weight at 105°C where appropriate, in accordance with the MCERTS standard.

Semi-Volatile Organic Compounds

Accredited?: Yes

Customer and Site Details:	Ramboll Environ: Zeon Chemicals ESA			**Matrix:**	Soil	**QC Batch Number:**	109
Sample Details:	WS23 0.5	**Date Booked in:**	11-May-16	**Ext Method:**	Ultrasonic	**Multiplier:**	0.2
LIMS ID Number:	CL1616105	**Date Extracted:**	13-May-16	**Operator:**	SO/RP	**Dilution Factor:**	1
Job Number:	S16_3840M	**Date Analysed:**	17-May-16	**Directory/Quant File:**	051616_MS16\	**GPC (Y/N)**	N

Target Compounds	CAS #	R.T. (min)	Concentration mg/kg	% Fit	Accr. code
Phenol	108-95-2	-	< 0.1	-	U
bis(2-Chloroethyl)ether	111-44-4	-	< 0.1	-	U
2-Chlorophenol	95-57-8	-	< 0.1	-	U
1,3-Dichlorobenzene	541-73-1	-	< 0.1	-	U
1,4-Dichlorobenzene	106-46-7	-	< 0.1	-	U
Benzyl alcohol	100-51-6	-	< 0.7	-	U
1,2-Dichlorobenzene	95-50-1	-	< 0.1	-	U
2-Methylphenol	95-48-7	-	< 0.1	-	U
bis(2-Chloroisopropyl)ether	108-60-1	-	< 0.7	-	U
Hexachloroethane	67-72-1	-	< 0.1	-	U
N-Nitroso-di-n-propylamine	621-64-7*	-	< 1.2	-	N
3- & 4-Methylphenol	108-39-4/106-44-5	-	< 0.1	-	U
Nitrobenzene	98-95-3	-	< 0.7	-	U
Isophorone	78-59-1*	-	< 0.1	-	N
2-Nitrophenol	88-75-5	-	< 0.1	-	U
2,4-Dimethylphenol	105-67-9	-	< 0.1	-	U
Benzoic Acid	65-85-0*	-	< 0.7	-	N
bis(2-Chloroethoxy)methane	111-91-1	-	< 0.1	-	U
2,4-Dichlorophenol	120-83-2	-	< 0.1	-	U
1,2,4-Trichlorobenzene	120-82-1*	-	< 0.1	-	N
Naphthalene	91-20-3	-	< 0.1	-	U
4-Chlorophenol	106-48-9	-	< 0.7	-	U
4-Chloroaniline	106-47-8*	-	< 0.7	-	N
Hexachlorobutadiene	87-68-3*	-	< 0.1	-	N
4-Chloro-3-methylphenol	59-50-7	-	< 0.1	-	U
2-Methylnaphthalene	91-57-6	-	< 0.1	-	U
1-Methylnaphthalene	90-12-0	-	< 0.1	-	U
Hexachlorocyclopentadiene	77-47-4*	-	< 0.1	-	N
2,4,6-Trichlorophenol	88-06-2	-	< 0.1	-	U
2,4,5-Trichlorophenol	95-95-4	-	< 0.1	-	U
2-Chloronaphthalene	91-58-7	-	< 0.1	-	U
Biphenyl	92-52-4	-	< 0.1	-	U
Diphenyl ether	101-84-8	-	< 0.1	-	U
2-Nitroaniline	88-74-4*	-	< 0.7	-	N
Acenaphthylene	208-96-8	-	< 0.1	-	U
Dimethylphthalate	131-11-3	-	< 0.1	-	U
2,6-Dinitrotoluene	606-20-2	-	< 0.7	-	U
Acenaphthene	83-32-9	-	< 0.1	-	U
3-Nitroaniline	99-09-2*	-	< 19.2	-	N

Target Compounds	CAS #	R.T.	Concentration mg/kg	% Fit	Accr. code
2,4-Dinitrophenol	51-28-5*	-	< 0.7	-	N
Dibenzofuran	132-64-9	-	< 0.1	-	U
4-Nitrophenol	100-02-7*	-	< 0.7	-	N
2,4-Dinitrotoluene	121-14-2	-	< 0.3	-	U
Fluorene	86-73-7	-	< 0.1	-	U
Diethylphthalate	84-66-2	-	< 0.1	-	U
4-Chlorophenyl-phenylether	7005-72-3	-	< 0.1	-	U
4,6-Dinitro-2-methylphenol	534-52-1*	-	< 0.3	-	N
4-Nitroaniline	100-01-6*	-	< 0.8	-	N
N-Nitrosodiphenylamine	86-30-6*	-	< 0.1	-	N
4-Bromophenyl-phenylether	101-55-3*	-	< 0.1	-	N
Hexachlorobenzene	118-74-1*	-	< 0.1	-	N
Pentachlorophenol	87-86-5*	-	< 0.7	-	N
Phenanthrene	85-01-8	-	< 0.1	-	U
Anthracene	120-12-7	-	< 0.1	-	U
Di-n-butylphthalate	84-74-2	-	< 0.1	-	U
Fluoranthene	206-44-0	-	< 0.3	-	U
Pyrene	129-00-0	-	< 0.3	-	U
Butylbenzylphthalate	85-68-7	-	< 0.3	-	U
Benzo[a]anthracene	56-55-3	-	< 0.3	-	U
Chrysene	218-01-9	-	< 0.3	-	U
3,3'-Dichlorobenzidine	91-94-1*	-	N.D	-	N
bis(2-Ethylhexyl)phthalate	117-81-7	-	< 0.3	-	U
Di-n-octylphthalate	117-84-0*	-	< 0.3	-	N
Benzo[b]fluoranthene	205-99-2	-	< 0.3	-	U
Benzo[k]fluoranthene	207-08-9	-	< 0.3	-	U
Benzo[a]pyrene	50-32-8	-	< 0.3	-	U
Indeno[1,2,3-cd]pyrene	193-39-5	-	< 0.7	-	U
Dibenzo[a,h]anthracene	53-70-3	-	< 0.7	-	U
Benzo[g,h,i]perylene	191-24-2	-	< 0.7	-	U
Coronene	191-07-1*	-	< 0.4	-	N

Internal Standards	% Area
1,4-Dichlorobenzene-d4	81
Naphthalene-d8	79
Acenaphthene-d10	75
Phenanthrene-d10	71
Chrysene-d12	70
Perylene-d12	63

Surrogates	% Rec
2-Fluorophenol	90
Phenol-d5	84
Nitrobenzene-d5	88
2-Fluorobiphenyl	94
2,4,6-Tribromophenol	79
Terphenyl-d14	96

This analysis was conducted on an 'As Received' basis.

Concentrations are reported on a dry weight basis.

Where individual results are flagged see report notes for status.
Results corrected to dry weight at 105°C where appropriate, in accordance with the MCERTS standard.

Semi-Volatile Organic Compounds

Accredited?: No

Customer and Site Details:	Ramboll Environ: Zeon Chemicals ESA			**Matrix:**	Soil	**QC Batch Number:**	109
Sample Details:	WS15 0.4 (NVM)	**Date Booked in:**	11-May-16	**Ext Method:**	Ultrasonic	**Multiplier:**	0.2
LIMS ID Number:	CL1616110	**Date Extracted:**	13-May-16	**Operator:**	SO/RP	**Dilution Factor:**	1
Job Number:	S16_3840M	**Date Analysed:**	17-May-16	**Directory/Quant File:**	051616_MS16\	**GPC (Y/N)**	N

Target Compounds	CAS #	R.T. (min)	Concentration mg/kg	% Fit	Accr. code
Phenol	108-95-2	-	< 0.1	-	N
bis(2-Chloroethyl)ether	111-44-4	-	< 0.1	-	N
2-Chlorophenol	95-57-8	-	< 0.1	-	N
1,3-Dichlorobenzene	541-73-1	-	< 0.1	-	N
1,4-Dichlorobenzene	106-46-7	-	< 0.1	-	N
Benzyl alcohol	100-51-6	-	< 0.7	-	N
1,2-Dichlorobenzene	95-50-1	-	< 0.1	-	N
2-Methylphenol	95-48-7	-	< 0.1	-	N
bis(2-Chloroisopropyl)ether	108-60-1	-	< 0.7	-	N
Hexachloroethane	67-72-1	-	< 0.1	-	N
N-Nitroso-di-n-propylamine	621-64-7	-	< 1.3	-	N
3- & 4-Methylphenol	108-39-4/106-44-5	-	< 0.1	-	N
Nitrobenzene	98-95-3	-	< 0.7	-	N
Isophorone	78-59-1	-	< 0.1	-	N
2-Nitrophenol	88-75-5	-	< 0.1	-	N
2,4-Dimethylphenol	105-67-9	-	< 0.1	-	N
Benzoic Acid	65-85-0	-	< 0.7	-	N
bis(2-Chloroethoxy)methane	111-91-1	-	< 0.1	-	N
2,4-Dichlorophenol	120-83-2	-	< 0.1	-	N
1,2,4-Trichlorobenzene	120-82-1	-	< 0.1	-	N
Naphthalene	91-20-3	-	< 0.1	-	N
4-Chlorophenol	106-48-9	-	< 0.7	-	N
4-Chloroaniline	106-47-8	-	< 0.7	-	N
Hexachlorobutadiene	87-68-3	-	< 0.1	-	N
4-Chloro-3-methylphenol	59-50-7	-	< 0.1	-	N
2-Methylnaphthalene	91-57-6	-	< 0.1	-	N
1-Methylnaphthalene	90-12-0	-	< 0.1	-	N
Hexachlorocyclopentadiene	77-47-4	-	< 0.1	-	N
2,4,6-Trichlorophenol	88-06-2	-	< 0.1	-	N
2,4,5-Trichlorophenol	95-95-4	-	< 0.1	-	N
2-Chloronaphthalene	91-58-7	-	< 0.1	-	N
Biphenyl	92-52-4	-	< 0.1	-	N
Diphenyl ether	101-84-8	-	< 0.1	-	N
2-Nitroaniline	88-74-4	-	< 0.7	-	N
Acenaphthylene	208-96-8	-	< 0.1	-	N
Dimethylphthalate	131-11-3	-	< 0.1	-	N
2,6-Dinitrotoluene	606-20-2	-	< 0.7	-	N
Acenaphthene	83-32-9	-	< 0.1	-	N
3-Nitroaniline	99-09-2	-	< 20.5	-	N

Target Compounds	CAS #	R.T.	Concentration mg/kg	% Fit	Accr. code
2,4-Dinitrophenol	51-28-5	-	< 0.7	-	N
Dibenzofuran	132-64-9	-	< 0.1	-	N
4-Nitrophenol	100-02-7	-	< 0.7	-	N
2,4-Dinitrotoluene	121-14-2	-	< 0.3	-	N
Fluorene	86-73-7	-	< 0.1	-	N
Diethylphthalate	84-66-2	-	< 0.1	-	N
4-Chlorophenyl-phenylether	7005-72-3	-	< 0.1	-	N
4,6-Dinitro-2-methylphenol	534-52-1	-	< 0.3	-	N
4-Nitroaniline	100-01-6	-	< 0.8	-	N
N-Nitrosodiphenylamine	86-30-6	-	< 0.1	-	N
4-Bromophenyl-phenylether	101-55-3	-	< 0.1	-	N
Hexachlorobenzene	118-74-1	-	< 0.1	-	N
Pentachlorophenol	87-86-5	-	< 0.7	-	N
Phenanthrene	85-01-8	-	< 0.1	-	N
Anthracene	120-12-7	-	< 0.1	-	N
Di-n-butylphthalate	84-74-2	-	< 0.1	-	N
Fluoranthene	206-44-0	-	< 0.3	-	N
Pyrene	129-00-0	-	< 0.3	-	N
Butylbenzylphthalate	85-68-7	-	< 0.3	-	N
Benzo[a]anthracene	56-55-3	-	< 0.3	-	N
Chrysene	218-01-9	-	< 0.3	-	N
3,3'-Dichlorobenzidine	91-94-1	-	N.D	-	N
bis(2-Ethylhexyl)phthalate	117-81-7	-	< 0.3	-	N
Di-n-octylphthalate	117-84-0	-	< 0.3	-	N
Benzo[b]fluoranthene	205-99-2	-	< 0.3	-	N
Benzo[k]fluoranthene	207-08-9	-	< 0.3	-	N
Benzo[a]pyrene	50-32-8	-	< 0.3	-	N
Indeno[1,2,3-cd]pyrene	193-39-5	-	< 0.7	-	N
Dibenzo[a,h]anthracene	53-70-3	-	< 0.7	-	N
Benzo[g,h,i]perylene	191-24-2	-	< 0.7	-	N
Coronene	191-07-1*	-	< 0.4	-	N

Internal Standards	% Area
1,4-Dichlorobenzene-d4	82
Naphthalene-d8	82
Acenaphthene-d10	77
Phenanthrene-d10	71
Chrysene-d12	69
Perylene-d12	62

Surrogates	% Rec
2-Fluorophenol	79
Phenol-d5	80
Nitrobenzene-d5	86
2-Fluorobiphenyl	89
2,4,6-Tribromophenol	81
Terphenyl-d14	91

This analysis was conducted on an 'As Received' basis.

Concentrations are reported on a dry weight basis.

Where individual results are flagged see report notes for status.
Results corrected to dry weight at 105°C where appropriate, in accordance with the MCERTS standard.

Semi-Volatile Organic Compounds

Accredited?: Yes

Customer and Site Details:	Ramboll Environ: Zeon Chemicals ESA			**Matrix:**	Soil	**QC Batch Number:**	109
Sample Details:	WS17 0.3	**Date Booked in:**	11-May-16	**Ext Method:**	Ultrasonic	**Multiplier:**	0.2
LIMS ID Number:	CL1616113	**Date Extracted:**	13-May-16	**Operator:**	SO/RP	**Dilution Factor:**	1
Job Number:	S16_3840M	**Date Analysed:**	17-May-16	**Directory/Quant File:**	051616_MS16\	**GPC (Y/N)**	N

Target Compounds	CAS #	R.T. (min)	Concentration mg/kg	% Fit	Accr. code
Phenol	108-95-2	-	< 0.1	-	U
bis(2-Chloroethyl)ether	111-44-4	-	< 0.1	-	U
2-Chlorophenol	95-57-8	-	< 0.1	-	U
1,3-Dichlorobenzene	541-73-1	-	< 0.1	-	U
1,4-Dichlorobenzene	106-46-7	-	< 0.1	-	U
Benzyl alcohol	100-51-6	-	< 0.6	-	U
1,2-Dichlorobenzene	95-50-1	-	< 0.1	-	U
2-Methylphenol	95-48-7	-	< 0.1	-	U
bis(2-Chloroisopropyl)ether	108-60-1	-	< 0.6	-	U
Hexachloroethane	67-72-1	-	< 0.1	-	U
N-Nitroso-di-n-propylamine	621-64-7*	-	< 1.1	-	N
3- & 4-Methylphenol	108-39-4/106-44-5	-	< 0.1	-	U
Nitrobenzene	98-95-3	-	< 0.6	-	U
Isophorone	78-59-1*	-	< 0.1	-	N
2-Nitrophenol	88-75-5	-	< 0.1	-	U
2,4-Dimethylphenol	105-67-9	3.68	0.4	93	U
Benzoic Acid	65-85-0*	-	< 0.6	-	N
bis(2-Chloroethoxy)methane	111-91-1	-	< 0.1	-	U
2,4-Dichlorophenol	120-83-2	-	< 0.1	-	U
1,2,4-Trichlorobenzene	120-82-1*	-	< 0.1	-	N
Naphthalene	91-20-3	3.89	0.5	97	U
4-Chlorophenol	106-48-9	-	< 0.6	-	U
4-Chloroaniline	106-47-8*	-	< 0.6	-	N
Hexachlorobutadiene	87-68-3*	-	< 0.1	-	N
4-Chloro-3-methylphenol	59-50-7	-	< 0.1	-	U
2-Methylnaphthalene	91-57-6	-	< 0.1	-	U
1-Methylnaphthalene	90-12-0	-	< 0.1	-	U
Hexachlorocyclopentadiene	77-47-4*	-	< 0.1	-	N
2,4,6-Trichlorophenol	88-06-2	-	< 0.1	-	U
2,4,5-Trichlorophenol	95-95-4	-	< 0.1	-	U
2-Chloronaphthalene	91-58-7	-	< 0.1	-	U
Biphenyl	92-52-4	-	< 0.1	-	U
Diphenyl ether	101-84-8	-	< 0.1	-	U
2-Nitroaniline	88-74-4*	-	< 0.6	-	N
Acenaphthylene	208-96-8	-	< 0.1	-	U
Dimethylphthalate	131-11-3	-	< 0.1	-	U
2,6-Dinitrotoluene	606-20-2	-	< 0.6	-	U
Acenaphthene	83-32-9	-	< 0.1	-	U
3-Nitroaniline	99-09-2*	-	< 18.3	-	N

Target Compounds	CAS #	R.T.	Concentration mg/kg	% Fit	Accr. code
2,4-Dinitrophenol	51-28-5*	-	< 0.6	-	N
Dibenzofuran	132-64-9	-	< 0.1	-	U
4-Nitrophenol	100-02-7*	-	< 0.6	-	N
2,4-Dinitrotoluene	121-14-2	-	< 0.3	-	U
Fluorene	86-73-7	-	< 0.1	-	U
Diethylphthalate	84-66-2	-	< 0.1	-	U
4-Chlorophenyl-phenylether	7005-72-3	-	< 0.1	-	U
4,6-Dinitro-2-methylphenol	534-52-1*	-	< 0.3	-	N
4-Nitroaniline	100-01-6*	-	< 0.8	-	N
N-Nitrosodiphenylamine	86-30-6*	-	< 0.1	-	N
4-Bromophenyl-phenylether	101-55-3*	-	< 0.1	-	N
Hexachlorobenzene	118-74-1*	-	< 0.1	-	N
Pentachlorophenol	87-86-5*	-	< 0.6	-	N
Phenanthrene	85-01-8	-	< 0.1	-	U
Anthracene	120-12-7	-	< 0.1	-	U
Di-n-butylphthalate	84-74-2	-	< 0.1	-	U
Fluoranthene	206-44-0	-	< 0.3	-	U
Pyrene	129-00-0	-	< 0.3	-	U
Butylbenzylphthalate	85-68-7	-	< 0.3	-	U
Benzo[a]anthracene	56-55-3	-	< 0.3	-	U
Chrysene	218-01-9	-	< 0.3	-	U
3,3'-Dichlorobenzidine	91-94-1*	-	N.D	-	N
bis(2-Ethylhexyl)phthalate	117-81-7	8.33	0.5	99	U
Di-n-octylphthalate	117-84-0*	-	< 0.3	-	N
Benzo[b]fluoranthene	205-99-2	-	< 0.3	-	U
Benzo[k]fluoranthene	207-08-9	-	< 0.3	-	U
Benzo[a]pyrene	50-32-8	-	< 0.3	-	U
Indeno[1,2,3-cd]pyrene	193-39-5	-	< 0.6	-	U
Dibenzo[a,h]anthracene	53-70-3	-	< 0.6	-	U
Benzo[g,h,i]perylene	191-24-2	-	< 0.6	-	U
Coronene	191-07-1*	-	< 0.4	-	N

Internal Standards	% Area
1,4-Dichlorobenzene-d4	76
Naphthalene-d8	82
Acenaphthene-d10	80
Phenanthrene-d10	67
Chrysene-d12	96
Perylene-d12	85

Surrogates	% Rec
2-Fluorophenol	98
Phenol-d5	95
Nitrobenzene-d5	94
2-Fluorobiphenyl	97
2,4,6-Tribromophenol	140
Terphenyl-d14	90

This analysis was conducted on an 'As Received' basis.

Concentrations are reported on a dry weight basis.

Where individual results are flagged see report notes for status.
Results corrected to dry weight at 105°C where appropriate, in accordance with the MCERTS standard.

Semi-Volatile Organic Compounds

Accredited?: Yes

Customer and Site Details:	Ramboll Environ: Zeon Chemicals ESA			**Matrix:**	Soil	**QC Batch Number:**	109
Sample Details:	WS13 0.3	**Date Booked in:**	11-May-16	**Ext Method:**	Ultrasonic	**Multiplier:**	0.2
LIMS ID Number:	CL1616114	**Date Extracted:**	13-May-16	**Operator:**	SO/RP	**Dilution Factor:**	1
Job Number:	S16_3840M	**Date Analysed:**	17-May-16	**Directory/Quant File:**	051616_MS16\	**GPC (Y/N)**	N

Target Compounds	CAS #	R.T. (min)	Concentration mg/kg	% Fit	Accr. code
Phenol	108-95-2	-	< 0.1	-	U
bis(2-Chloroethyl)ether	111-44-4	-	< 0.1	-	U
2-Chlorophenol	95-57-8	-	< 0.1	-	U
1,3-Dichlorobenzene	541-73-1	-	< 0.1	-	U
1,4-Dichlorobenzene	106-46-7	-	< 0.1	-	U
Benzyl alcohol	100-51-6	-	< 0.6	-	U
1,2-Dichlorobenzene	95-50-1	-	< 0.1	-	U
2-Methylphenol	95-48-7	-	< 0.1	-	U
bis(2-Chloroisopropyl)ether	108-60-1	-	< 0.6	-	U
Hexachloroethane	67-72-1	-	< 0.1	-	U
N-Nitroso-di-n-propylamine	621-64-7*	-	< 1.1	-	N
3- & 4-Methylphenol	108-39-4/106-44-5	-	< 0.1	-	U
Nitrobenzene	98-95-3	-	< 0.6	-	U
Isophorone	78-59-1*	-	< 0.1	-	N
2-Nitrophenol	88-75-5	-	< 0.1	-	U
2,4-Dimethylphenol	105-67-9	-	< 0.1	-	U
Benzoic Acid	65-85-0*	-	< 0.6	-	N
bis(2-Chloroethoxy)methane	111-91-1	-	< 0.1	-	U
2,4-Dichlorophenol	120-83-2	-	< 0.1	-	U
1,2,4-Trichlorobenzene	120-82-1*	-	< 0.1	-	N
Naphthalene	91-20-3	-	< 0.1	-	U
4-Chlorophenol	106-48-9	-	< 0.6	-	U
4-Chloroaniline	106-47-8*	-	< 0.6	-	N
Hexachlorobutadiene	87-68-3*	-	< 0.1	-	N
4-Chloro-3-methylphenol	59-50-7	-	< 0.1	-	U
2-Methylnaphthalene	91-57-6	-	< 0.1	-	U
1-Methylnaphthalene	90-12-0	-	< 0.1	-	U
Hexachlorocyclopentadiene	77-47-4*	-	< 0.1	-	N
2,4,6-Trichlorophenol	88-06-2	-	< 0.1	-	U
2,4,5-Trichlorophenol	95-95-4	-	< 0.1	-	U
2-Chloronaphthalene	91-58-7	-	< 0.1	-	U
Biphenyl	92-52-4	-	< 0.1	-	U
Diphenyl ether	101-84-8	-	< 0.1	-	U
2-Nitroaniline	88-74-4*	-	< 0.6	-	N
Acenaphthylene	208-96-8	-	< 0.1	-	U
Dimethylphthalate	131-11-3	-	< 0.1	-	U
2,6-Dinitrotoluene	606-20-2	-	< 0.6	-	U
Acenaphthene	83-32-9	-	< 0.1	-	U
3-Nitroaniline	99-09-2*	-	< 17.3	-	N

Target Compounds	CAS #	R.T.	Concentration mg/kg	% Fit	Accr. code
2,4-Dinitrophenol	51-28-5*	-	< 0.6	-	N
Dibenzofuran	132-64-9	-	< 0.1	-	U
4-Nitrophenol	100-02-7*	-	< 0.6	-	N
2,4-Dinitrotoluene	121-14-2	-	< 0.2	-	U
Fluorene	86-73-7	-	< 0.1	-	U
Diethylphthalate	84-66-2	-	< 0.1	-	U
4-Chlorophenyl-phenylether	7005-72-3	-	< 0.1	-	U
4,6-Dinitro-2-methylphenol	534-52-1*	-	< 0.2	-	N
4-Nitroaniline	100-01-6*	-	< 0.7	-	N
N-Nitrosodiphenylamine	86-30-6*	-	< 0.1	-	N
4-Bromophenyl-phenylether	101-55-3*	-	< 0.1	-	N
Hexachlorobenzene	118-74-1*	-	< 0.1	-	N
Pentachlorophenol	87-86-5*	-	< 0.6	-	N
Phenanthrene	85-01-8	-	< 0.1	-	U
Anthracene	120-12-7	-	< 0.1	-	U
Di-n-butylphthalate	84-74-2	-	< 0.1	-	U
Fluoranthene	206-44-0	-	< 0.2	-	U
Pyrene	129-00-0	-	< 0.2	-	U
Butylbenzylphthalate	85-68-7	-	< 0.2	-	U
Benzo[a]anthracene	56-55-3	-	< 0.2	-	U
Chrysene	218-01-9	-	< 0.2	-	U
3,3'-Dichlorobenzidine	91-94-1*	-	N.D	-	N
bis(2-Ethylhexyl)phthalate	117-81-7	-	< 0.2	-	U
Di-n-octylphthalate	117-84-0*	-	< 0.2	-	N
Benzo[b]fluoranthene	205-99-2	-	< 0.2	-	U
Benzo[k]fluoranthene	207-08-9	-	< 0.2	-	U
Benzo[a]pyrene	50-32-8	-	< 0.2	-	U
Indeno[1,2,3-cd]pyrene	193-39-5	-	< 0.6	-	U
Dibenzo[a,h]anthracene	53-70-3	-	< 0.6	-	U
Benzo[g,h,i]perylene	191-24-2	-	< 0.6	-	U
Coronene	191-07-1*	-	< 0.4	-	N

Internal Standards	% Area
1,4-Dichlorobenzene-d4	82
Naphthalene-d8	83
Acenaphthene-d10	80
Phenanthrene-d10	74
Chrysene-d12	77
Perylene-d12	69

Surrogates	% Rec
2-Fluorophenol	91
Phenol-d5	91
Nitrobenzene-d5	84
2-Fluorobiphenyl	87
2,4,6-Tribromophenol	92
Terphenyl-d14	86

This analysis was conducted on an 'As Received' basis.

Concentrations are reported on a dry weight basis.

Where individual results are flagged see report notes for status.
Results corrected to dry weight at 105°C where appropriate, in accordance with the MCERTS standard.

Semi-Volatile Organic Compounds

Accredited?: Yes

Customer and Site Details:	Ramboll Environ: Zeon Chemicals ESA			**Matrix:**	Soil	**QC Batch Number:**	109
Sample Details:	WS13 0.8	**Date Booked in:**	11-May-16	**Ext Method:**	Ultrasonic	**Multiplier:**	0.2
LIMS ID Number:	CL1616115	**Date Extracted:**	13-May-16	**Operator:**	SO/RP	**Dilution Factor:**	1
Job Number:	S16_3840M	**Date Analysed:**	17-May-16	**Directory/Quant File:**	051616_MS16\	**GPC (Y/N)**	N

Target Compounds	CAS #	R.T. (min)	Concentration mg/kg	% Fit	Accr. code
Phenol	108-95-2	-	< 0.1	-	U
bis(2-Chloroethyl)ether	111-44-4	-	< 0.1	-	U
2-Chlorophenol	95-57-8	-	< 0.1	-	U
1,3-Dichlorobenzene	541-73-1	-	< 0.1	-	U
1,4-Dichlorobenzene	106-46-7	-	< 0.1	-	U
Benzyl alcohol	100-51-6	-	< 0.7	-	U
1,2-Dichlorobenzene	95-50-1	-	< 0.1	-	U
2-Methylphenol	95-48-7	-	< 0.1	-	U
bis(2-Chloroisopropyl)ether	108-60-1	-	< 0.7	-	U
Hexachloroethane	67-72-1	-	< 0.1	-	U
N-Nitroso-di-n-propylamine	621-64-7*	-	< 1.2	-	N
3- & 4-Methylphenol	108-39-4/106-44-5	-	< 0.1	-	U
Nitrobenzene	98-95-3	-	< 0.7	-	U
Isophorone	78-59-1*	-	< 0.1	-	N
2-Nitrophenol	88-75-5	-	< 0.1	-	U
2,4-Dimethylphenol	105-67-9	-	< 0.1	-	U
Benzoic Acid	65-85-0*	-	< 0.7	-	N
bis(2-Chloroethoxy)methane	111-91-1	-	< 0.1	-	U
2,4-Dichlorophenol	120-83-2	-	< 0.1	-	U
1,2,4-Trichlorobenzene	120-82-1*	-	< 0.1	-	N
Naphthalene	91-20-3	-	< 0.1	-	U
4-Chlorophenol	106-48-9	-	< 0.7	-	U
4-Chloroaniline	106-47-8*	-	< 0.7	-	N
Hexachlorobutadiene	87-68-3*	-	< 0.1	-	N
4-Chloro-3-methylphenol	59-50-7	-	< 0.1	-	U
2-Methylnaphthalene	91-57-6	-	< 0.1	-	U
1-Methylnaphthalene	90-12-0	-	< 0.1	-	U
Hexachlorocyclopentadiene	77-47-4*	-	< 0.1	-	N
2,4,6-Trichlorophenol	88-06-2	-	< 0.1	-	U
2,4,5-Trichlorophenol	95-95-4	-	< 0.1	-	U
2-Chloronaphthalene	91-58-7	-	< 0.1	-	U
Biphenyl	92-52-4	-	< 0.1	-	U
Diphenyl ether	101-84-8	-	< 0.1	-	U
2-Nitroaniline	88-74-4*	-	< 0.7	-	N
Acenaphthylene	208-96-8	-	< 0.1	-	U
Dimethylphthalate	131-11-3	-	< 0.1	-	U
2,6-Dinitrotoluene	606-20-2	-	< 0.7	-	U
Acenaphthene	83-32-9	-	< 0.1	-	U
3-Nitroaniline	99-09-2*	-	< 19.0	-	N

Target Compounds	CAS #	R.T.	Concentration mg/kg	% Fit	Accr. code
2,4-Dinitrophenol	51-28-5*	-	< 0.7	-	N
Dibenzofuran	132-64-9	-	< 0.1	-	U
4-Nitrophenol	100-02-7*	-	< 0.7	-	N
2,4-Dinitrotoluene	121-14-2	-	< 0.3	-	U
Fluorene	86-73-7	-	< 0.1	-	U
Diethylphthalate	84-66-2	-	< 0.1	-	U
4-Chlorophenyl-phenylether	7005-72-3	-	< 0.1	-	U
4,6-Dinitro-2-methylphenol	534-52-1*	-	< 0.3	-	N
4-Nitroaniline	100-01-6*	-	< 0.8	-	N
N-Nitrosodiphenylamine	86-30-6*	-	< 0.1	-	N
4-Bromophenyl-phenylether	101-55-3*	-	< 0.1	-	N
Hexachlorobenzene	118-74-1*	-	< 0.1	-	N
Pentachlorophenol	87-86-5*	-	< 0.7	-	N
Phenanthrene	85-01-8	-	< 0.1	-	U
Anthracene	120-12-7	-	< 0.1	-	U
Di-n-butylphthalate	84-74-2	-	< 0.1	-	U
Fluoranthene	206-44-0	-	< 0.3	-	U
Pyrene	129-00-0	-	< 0.3	-	U
Butylbenzylphthalate	85-68-7	-	< 0.3	-	U
Benzo[a]anthracene	56-55-3	-	< 0.3	-	U
Chrysene	218-01-9	-	< 0.3	-	U
3,3'-Dichlorobenzidine	91-94-1*	-	N.D	-	N
bis(2-Ethylhexyl)phthalate	117-81-7	-	< 0.3	-	U
Di-n-octylphthalate	117-84-0*	-	< 0.3	-	N
Benzo[b]fluoranthene	205-99-2	-	< 0.3	-	U
Benzo[k]fluoranthene	207-08-9	-	< 0.3	-	U
Benzo[a]pyrene	50-32-8	-	< 0.3	-	U
Indeno[1,2,3-cd]pyrene	193-39-5	-	< 0.7	-	U
Dibenzo[a,h]anthracene	53-70-3	-	< 0.7	-	U
Benzo[g,h,i]perylene	191-24-2	-	< 0.7	-	U
Coronene	191-07-1*	-	< 0.4	-	N

Internal Standards	% Area
1,4-Dichlorobenzene-d4	79
Naphthalene-d8	77
Acenaphthene-d10	76
Phenanthrene-d10	70
Chrysene-d12	70
Perylene-d12	63

Surrogates	% Rec
2-Fluorophenol	93
Phenol-d5	97
Nitrobenzene-d5	94
2-Fluorobiphenyl	96
2,4,6-Tribromophenol	100
Terphenyl-d14	102

This analysis was conducted on an 'As Received' basis.

Concentrations are reported on a dry weight basis.

Where individual results are flagged see report notes for status.
Results corrected to dry weight at 105°C where appropriate, in accordance with the MCERTS standard.

SVOC (TICs)

Accredited?:No

Customer and Site Details:	Ramboll Environ: Zeon Chemicals ESA		
Sample Details:	BH106 0.6	**Job Number:**	S16_3840
LIMS ID Number:	CL1616104		
		Multiplier:	0.2
Date Booked in:	11-May-16	**Dilution Factor:**	1
Date Extracted:	13-May-16	**GPC (Y/N):**	N
Date Analysed:	17-May-16	**Matrix:**	Soil
QC Batch Number:	109	**Method:**	Ultrasonic
Directory/Quant File:	051616_MS16\ 0	**Operator:**	SO/RP

Tentatively Identified Compounds	CAS #	R.T.	Concentration mg/kg	% Fit	Accr. code
None detected			<1.8		N

The compounds listed above have been tentatively identified by a computer based library search.
Compounds identified in the sample are not reported if they also occur in the method blank.
The % fit is an indication of the reliability of the compound assignment.
Due to the similarity between mass spectra of some isomeric compounds assignments may not be correct.
Other compounds may also be present but identification was not possible.
Concentrations are semi-quantitative, assume a response factor of 1 and use the nearest internal standard.
Concentrations are reported on a dry weight basis.

Where individual results are flagged see report notes for status.
Results corrected to dry weight at 105°C where appropriate, in accordance with the MCERTS standard.

SVOC (TICs)

Accredited?:No

Customer and Site Details:	Ramboll Environ: Zeon Chemicals ESA		
Sample Details:	WS23 0.5	**Job Number:**	S16_3840
LIMS ID Number:	CL1616105		
		Multiplier:	0.2
Date Booked in:	11-May-16	**Dilution Factor:**	1
Date Extracted:	13-May-16	**GPC (Y/N):**	N
Date Analysed:	17-May-16	**Matrix:**	Soil
QC Batch Number:	109	**Method:**	Ultrasonic
Directory/Quant File:	051616_MS16\ 0	**Operator:**	SO/RP

Tentatively Identified Compounds	CAS #	R.T.	Concentration mg/kg	% Fit	Accr. code
None detected			<2.0		N

The compounds listed above have been tentatively identified by a computer based library search.
Compounds identified in the sample are not reported if they also occur in the method blank.
The % fit is an indication of the reliability of the compound assignment.
Due to the similarity between mass spectra of some isomeric compounds assignments may not be correct.
Other compounds may also be present but identification was not possible.
Concentrations are semi-quantitative, assume a response factor of 1 and use the nearest internal standard.
Concentrations are reported on a dry weight basis.

Where individual results are flagged see report notes for status.
Results corrected to dry weight at 105°C where appropriate, in accordance with the MCERTS standard.

SVOC (TICs)

Accredited?:No

Customer and Site Details:	Ramboll Environ: Zeon Chemicals ESA		
Sample Details:	WS15 0.4 (NVM)	**Job Number:**	S16_3840
LIMS ID Number:	CL1616110		
		Multiplier:	0.2
Date Booked in:	11-May-16	**Dilution Factor:**	1
Date Extracted:	13-May-16	**GPC (Y/N):**	N
Date Analysed:	17-May-16	**Matrix:**	Soil
QC Batch Number:	109	**Method:**	Ultrasonic
Directory/Quant File:	051616_MS16\ 0	**Operator:**	SO/RP

Tentatively Identified Compounds	CAS #	R.T.	Concentration mg/kg	% Fit	Accr. code
1-Decanol	000112-30-1	4.13	0.449	91	N
Tridecane	000629-50-5	5.81	0.243	68	N

The compounds listed above have been tentatively identified by a computer based library search.
Compounds identified in the sample are not reported if they also occur in the method blank.
The % fit is an indication of the reliability of the compound assignment.
Due to the similarity between mass spectra of some isomeric compounds assignments may not be correct.
Other compounds may also be present but identification was not possible.
Concentrations are semi-quantitative, assume a response factor of 1 and use the nearest internal standard.
Concentrations are reported on a dry weight basis.

Where individual results are flagged see report notes for status.
Results corrected to dry weight at 105°C where appropriate, in accordance with the MCERTS standard.

SVOC (TICs)

Accredited?:No

Customer and Site Details:	Ramboll Environ: Zeon Chemicals ESA		
Sample Details:	WS17 0.3	**Job Number:**	S16_3840
LIMS ID Number:	CL1616113		
		Multiplier:	0.2
Date Booked in:	11-May-16	**Dilution Factor:**	1
Date Extracted:	13-May-16	**GPC (Y/N):**	N
Date Analysed:	17-May-16	**Matrix:**	Soil
QC Batch Number:	109	**Method:**	Ultrasonic
Directory/Quant File:	051616_MS16\ 0	**Operator:**	SO/RP

Tentatively Identified Compounds	CAS #	R.T.	Concentration mg/kg	% Fit	Accr. code
5-Methyl-5H-benzo[b]carbazole-6,11-dione	999350-87-4	7.33	317.371	78	N
Benzamide, N-decyl-	053044-19-2	7.42	85.889	56	N
Pyran-4-carbonitrile, 4-(4-methoxyphenyl)-tetrahydro-	999226-01-3	14.22	65.737	76	N
Hexanedioic acid, bis(2-ethylhexyl) ester	000103-23-1	7.70	61.380	91	N
3-(2-indolyl)isocoumarin	999350-87-3	7.49	48.686	64	N
Phenol, 2,5-dimethyl-	000095-87-4	5.43	31.157	83	N
Benzene, 1,3-diethenyl-	000108-57-6	3.56	22.929	96	N
Phenol, nonyl-	025154-52-3	5.77	14.916	87	N
1-Methyl-2-cyano-3-ethyl-3-piperidine	073657-96-2	5.38	9.075	78	N
Phenol, 2,2'-methylenebis[6-(1,1-dimethylethyl)-4-methyl-	000119-47-1	7.84	5.427	86	N
Cyclopentane-1-carbonitrile, 1-(4-hydroxy-3-methoxyphenyl)-	294873-75-9	13.81	4.283	70	N
10-azatricyclo[4.3.1.0(1,6)]deca-3-ene	121056-46-0	5.27	2.631	72	N
2-AMINOPYRENE	001732-23-6	11.37	2.309	58	N
Dimethylthiocarbamic acid, o,4-biphenyl ester	016241-08-0	8.14	2.021	56	N
8-Amino-4,7-dimethoxy-6-methylisoquinoline	999228-29-1	6.22	1.969	91	N
Pyran-4-carbonitrile, 4-(4-methoxyphenyl)-tetrahydro-	999226-01-3	13.25	1.737	70	N
Unidentified peak	-	13.48	1.502	-	N
2-Furancarboxylic acid, 5-(2-aminophenyl)-, methyl ester	999225-66-6	13.29	1.483	53	N

The compounds listed above have been tentatively identified by a computer based library search.
Compounds identified in the sample are not reported if they also occur in the method blank.
The % fit is an indication of the reliability of the compound assignment.
Due to the similarity between mass spectra of some isomeric compounds assignments may not be correct.
Other compounds may also be present but identification was not possible.
Concentrations are semi-quantitative, assume a response factor of 1 and use the nearest internal standard.
Concentrations are reported on a dry weight basis.

Where individual results are flagged see report notes for status.
Results corrected to dry weight at 105°C where appropriate, in accordance with the MCERTS standard.

SVOC (TICs)

Accredited?:No

Customer and Site Details:	Ramboll Environ: Zeon Chemicals ESA		
Sample Details:	WS13 0.3	**Job Number:**	S16_3840
LIMS ID Number:	CL1616114		
		Multiplier:	0.2
Date Booked in:	11-May-16	**Dilution Factor:**	1
Date Extracted:	13-May-16	**GPC (Y/N):**	N
Date Analysed:	17-May-16	**Matrix:**	Soil
QC Batch Number:	109	**Method:**	Ultrasonic
Directory/Quant File:	051616_MS16\ 0	**Operator:**	SO/RP

Tentatively Identified Compounds	CAS #	R.T.	Concentration mg/kg	% Fit	Accr. code
4,4'-Ethylenebis(2,6-di-tert-butylphenol)	001516-94-5	9.65	1.374	94	N
4,6-Dimethyl-2-(2-methylcyclohexyl)phenol	000719-49-3	5.79	1.051	83	N
Phenol, 4-(2,2,3,3-tetramethylbutyl)-	054932-78-4	5.71	0.843	78	N
Phenol, nonyl-	025154-52-3	5.61	0.543	96	N
Methyl-23,24-Dinor-3-oxolean-1,4,12-trien-28-oate	999702-89-6	12.68	0.336	86	N
2,8-Dimethoxy-1,4-naphthoquinone	999228-02-8	6.10	0.241	90	N
N,N'-Dicyano-2,3-diphenylpyrazino[2,3-b]naphthoquinodiimine	999673-38-2	9.20	0.235	83	N
3-Methoxy-2'-methoxycarbonylbenzoestra-1,3,5(10),6,8,11,14	999610-16-2	7.52	0.215	90	N

The compounds listed above have been tentatively identified by a computer based library search.
Compounds identified in the sample are not reported if they also occur in the method blank.
The % fit is an indication of the reliability of the compound assignment.
Due to the similarity between mass spectra of some isomeric compounds assignments may not be correct.
Other compounds may also be present but identification was not possible.
Concentrations are semi-quantitative, assume a response factor of 1 and use the nearest internal standard.
Concentrations are reported on a dry weight basis.

Where individual results are flagged see report notes for status.
Results corrected to dry weight at 105°C where appropriate, in accordance with the MCERTS standard.

SVOC (TICs)

Accredited?:No

Customer and Site Details:	Ramboll Environ: Zeon Chemicals ESA		
Sample Details:	WS13 0.8	**Job Number:**	S16_3840
LIMS ID Number:	CL1616115		
		Multiplier:	0.2
Date Booked in:	11-May-16	**Dilution Factor:**	1
Date Extracted:	13-May-16	**GPC (Y/N):**	N
Date Analysed:	17-May-16	**Matrix:**	Soil
QC Batch Number:	109	**Method:**	Ultrasonic
Directory/Quant File:	051616_MS16\ 0	**Operator:**	SO/RP

Tentatively Identified Compounds	CAS #	R.T.	Concentration mg/kg	% Fit	Accr. code
1-Hexacosanol	000506-52-5	10.51	0.825	90	N
Phenol, 4-(1,1,3,3-tetramethylbutyl)-	000140-66-9	5.57	0.794	78	N
4,6-Dimethyl-2-(2-methylcyclohexyl)phenol	000719-49-3	5.79	0.752	83	N
5H-Pyrrolo(3,2-d)pyrimidine-2,4-diamine	999063-92-8	5.73	0.624	72	N
3-(o-Azidophenyl)propanol	999122-47-5	5.68	0.585	50	N
9-Octadecenamide, (Z)-	000301-02-0	7.58	0.340	97	N
1,3,4,5-Tetrahydro-7,8-dimethoxypyrrolo[4,3,2-de]quiniline	999228-20-2	6.10	0.307	90	N
Unidentified peak	-	13.54	0.301	-	N
7-Hexadecene, (Z)-	035507-09-6	9.62	0.292	84	N
Unidentified peak	-	13.38	0.273	-	N
.gamma.-Sitosterol	000083-47-6	13.31	0.247	66	N
3,5-DI-TERT-BUTYL-BENZOIC ACID 4-BUTYL-PHENYL ES	999606-57-0	14.12	0.237	50	N
Pentadecane	000629-62-9	13.13	0.234	87	N
Octadecanal	000638-66-4	12.87	0.233	74	N
1-Octadecene	000112-88-9	13.20	0.220	58	N

The compounds listed above have been tentatively identified by a computer based library search.
Compounds identified in the sample are not reported if they also occur in the method blank.
The % fit is an indication of the reliability of the compound assignment.
Due to the similarity between mass spectra of some isomeric compounds assignments may not be correct.
Other compounds may also be present but identification was not possible.
Concentrations are semi-quantitative, assume a response factor of 1 and use the nearest internal standard.
Concentrations are reported on a dry weight basis.

Where individual results are flagged see report notes for status.
Results corrected to dry weight at 105°C where appropriate, in accordance with the MCERTS standard.

Gasoline Range Organics
(BTEX and Aliphatic Carbon Ranges)

Customer and Site Details: Ramboll Environ : Zeon Chemicals ESA
Job Number: S16_3840
Directory: E:\TES\DATA\2016\0516HSA_GC9\051616 2016-05-16 11-18-45\050F5001.D
Method: Headspace GCFID
Accreditation Code: UM

Matrix: Soil
Date Booked in: 11-May-16
Date extracted: 16-May-16
Date Analysed: 17-May-16, 01:3

*** Sample data with an asterisk are not UKAS accredited.**

		Concentration, (mg/kg) - as dry weight.					Aliphatics				
Sample ID	Client ID	Benzene	Toluene	Ethyl benzene	m/p-Xylene	o-Xylene	C5 - C6	>C6 - C7	>C7 - C8	>C8 - C10	Total GRO
CL1616104	BH106 0.6	<0.012	<0.012	<0.012	<0.012	<0.012	<0.2	<0.2	<0.2	<0.2	<0.2
CL1616105	WS23 0.5	<0.013	<0.013	<0.013	<0.013	<0.013	<0.3	<0.3	<0.3	<0.3	<0.3
CL1616106	WS23 2.00	<0.012	<0.012	<0.012	<0.012	<0.012	<0.2	<0.2	<0.2	<0.2	<0.2
CL1616107	WS22 0.6	<0.015	<0.015	<0.015	<0.015	<0.015	<0.3	<0.3	<0.3	<0.3	<0.3
CL1616108	WS221.0	<0.012	<0.012	<0.012	<0.012	<0.012	<0.2	<0.2	<0.2	<0.2	<0.2
CL1616109	WS22 1.2	<0.012	<0.012	<0.012	<0.012	<0.012	<0.2	<0.2	<0.2	<0.2	<0.2
* CL1616110	WS15 0.4 (NVM)	<0.014	<0.014	<0.014	<0.014	<0.014	<0.3	<0.3	<0.3	<0.3	<0.3
CL1616111	WS14 1.5	<0.012	<0.012	<0.012	<0.012	<0.012	<0.2	<0.2	<0.2	<0.2	<0.2
* CL1616112	WS16 0.3 (NVM)	<0.015	<0.015	<0.015	<0.015	<0.015	<0.3	<0.3	<0.3	<0.3	<0.3
CL1616113	WS17 0.3	<0.013	<0.013	0.570	0.148	<0.013	<0.3	<0.3	2.3	4.7	7.8
CL1616114	WS13 0.3	0.010	<0.012	<0.012	<0.012	<0.012	<0.2	<0.2	<0.2	<0.2	<0.2
CL1616115	WS13 0.8	<0.013	<0.013	<0.013	<0.013	<0.013	<0.3	<0.3	<0.3	<0.3	<0.3

Note: Benzene elutes between C6 and C7, toluene elutes between C7 and C8, ethyl benzene and the xylenes elute between C8 and C9.
Each BTEX compound is deducted from the appropriate band to give the aliphatic fractions, however aromatic compounds may still be contributing to these fractions

Where individual results are flagged see report notes for status.
Results corrected to dry weight at 105°C where appropriate, in accordance with the MCERTS standard.

ALIPHATIC / AROMATIC FRACTION BY GC/FID

Customer and Site Details: Ramboll Environ : Zeon Chemicals ESA
Job Number: S16_3840M
QC Batch Number: 160563
Directory: D:\TES\DATA\Y2016\051716TPH_GC4\051716 2016-05-17 08-23-18\073B2701.D
Method: Ultra Sonic

Separation: Silica gel
Eluents: Hexane, DCM

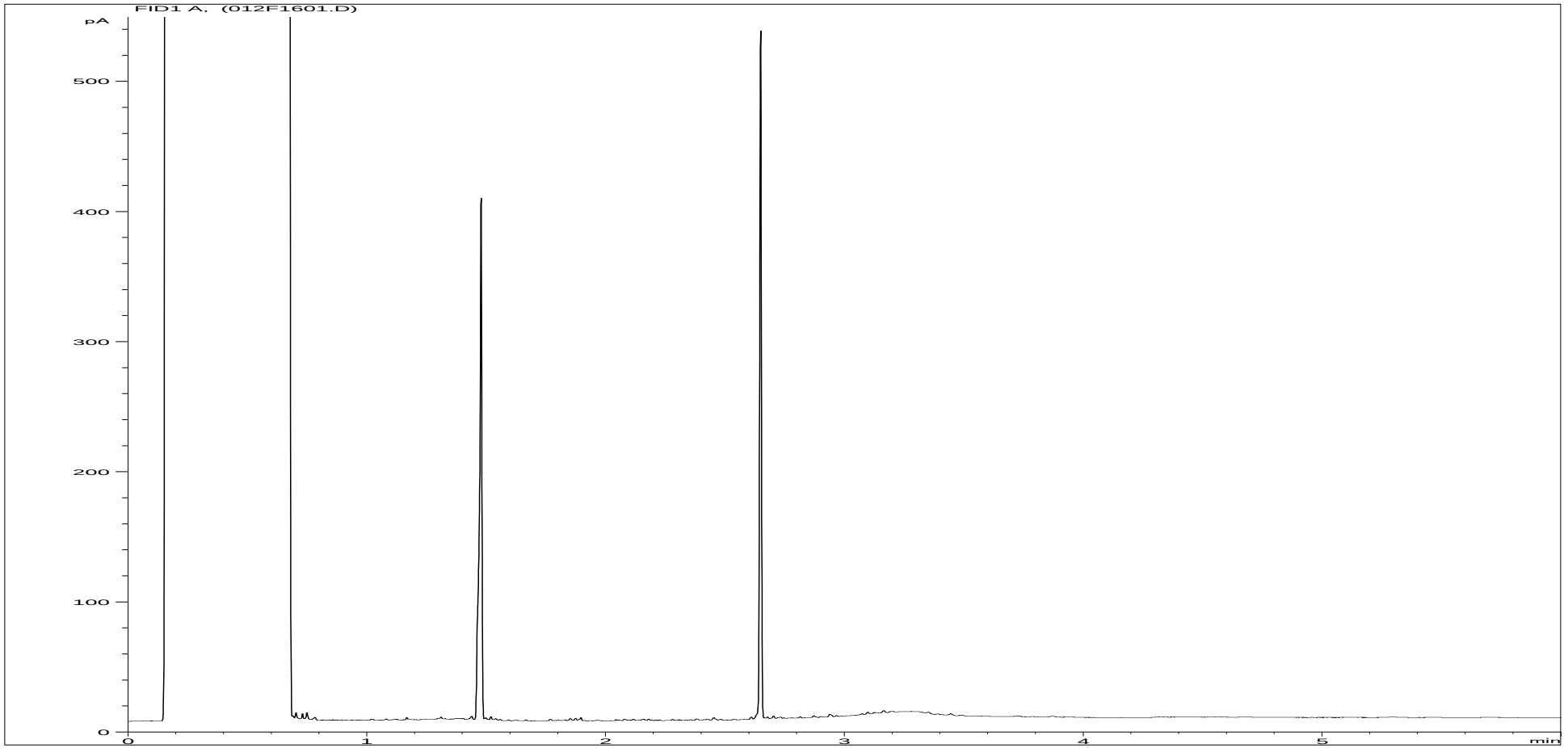
Matrix: Soil
Date Booked ir 11-May-16
Date Extracted 13-May-16
Date Analysed 17-May-16, 14:24:33

This sample data is not MCERTS accredited.
*** This sample data is not ISO17025 accredited.**

		Concentration, (mg/kg) - as dry weight.											
		>C8 - C10		>C10 - C12		>C12 - C16		>C16 - C21		>C21 - C35		>C8 - C40	
Sample ID	Client ID	Aliphatics	Aromatics	Aliphatics	Aromatics	Aliphatics	Aromatics	Aliphatics	Aromatics	Aliphatics	Aromatics	Aliphatics	Aromatics
CL1616104	BH106 0.6	<5	<5	<5	<5	<5	<5	<5	<5	<10.40	<10.40	<24	<24
CL1616105	WS23 0.5	<5	<5	<5	<5	<5	<5	<5	<5	<11.57	<11.57	<26	<26
CL1616106	WS23 2.00	<5	<5	<5	<5	<5	<5	<5	<5	<10.42	<10.42	<24	<24
CL1616107	WS22 0.6	<6	<6	<6	<6	115	8.27	95.5	25.1	65.1	28.1	279	63.2
CL1616108	WS221.0	<4.98	<5	<4.98	<5	<4.98	<5	<4.98	<5	<10.91	<10.80	<24.9	<25
CL1616109	WS22 1.2	<5	<5	<5	<5	<5	<5	<5	<5	<10.84	<10.84	<25	<25
* CL1616110	WS15 0.4 (NVM)	<5.77	<6	<5.77	<6	7.6	<6	12.9	7	40.6	<12.39	61.5	<28
CL1616111	WS14 1.5	<5	<5	<5	<5	<5	<5	<5	<5	<10.44	<10.44	<24	<24
* CL1616112	WS16 0.3 (NVM)	<6	<6	<6	<6	<6	<6	<6	<6	18.1	<13.02	<30	<30
CL1616113	WS17 0.3	18.4	5.69	6.65	175	21	26.6	41.5	5880	407	1950	498	8110
CL1616114	WS13 0.3	<4.87	<5	<4.87	<5	<4.87	<5	24	20.4	74.9	36.2	103	63.5
CL1616115	WS13 0.8	<5	<5	<5	<5	<5	<5	<5	<5	<11.45	<11.45	<26	<26

Where individual results are flagged see report notes for status.
Results corrected to dry weight at 105°C where appropriate, in accordance with the MCERTS standard.

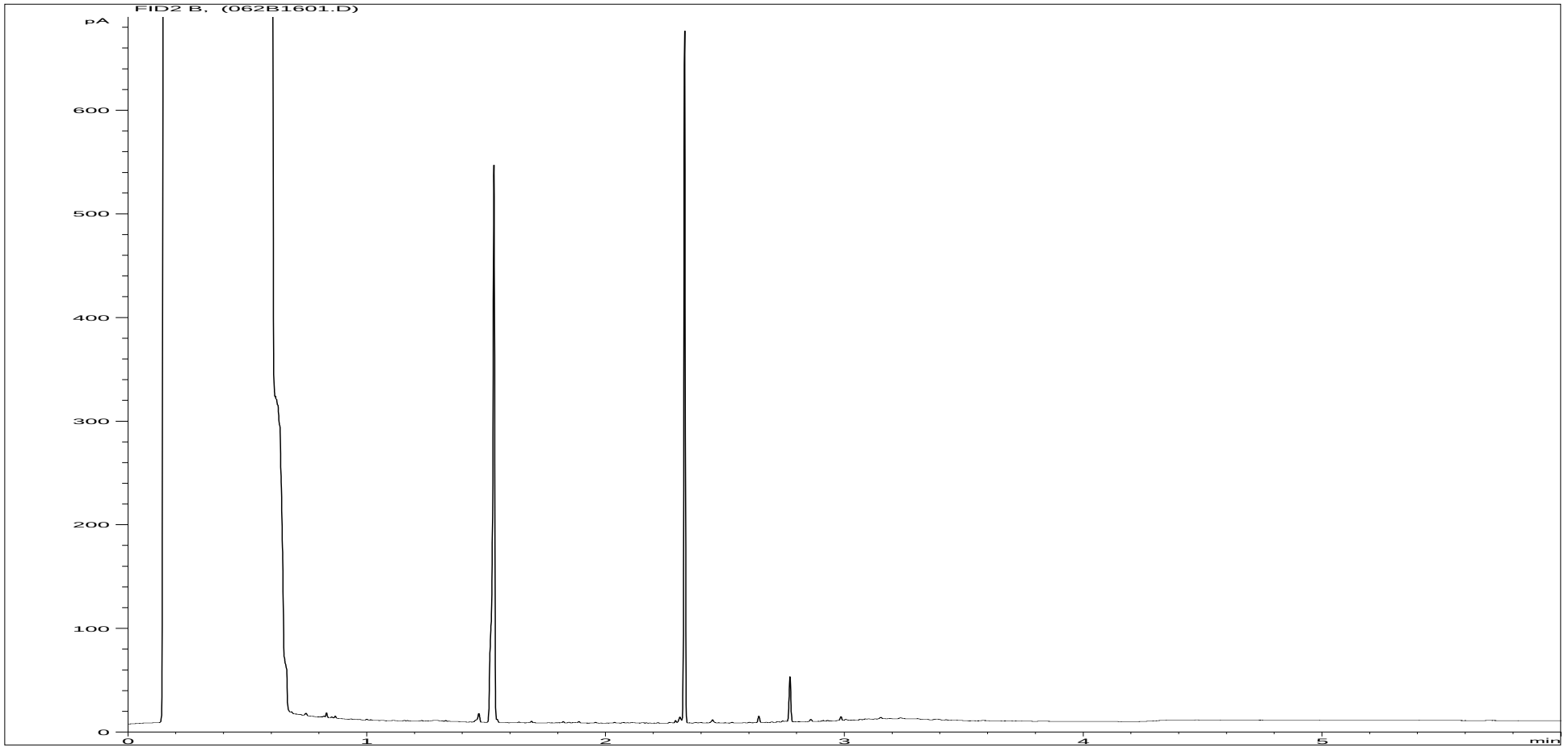
Petroleum Hydrocarbons (C8 to C40) by GC/FID Aliphatics Fraction.



Sample ID:	CL1616104ALI	**Job Number:**	S16_3840M
Multiplier:	15.84	**Client:**	Ramboll Environ
Dilution:	1	**Site:**	Zeon Chemicals ESA
Acquisition Method:	5UL_RUNF.M	**Client Sample Ref:**	BH106 0.6
Acquisition Date/Time:	17-May-16, 11:53:16		
Datafile:	D:\TES\DATA\Y2016\051716TPH_GC4\051716 2016-05-17 08-23-18\012F1601.D		

Where individual results are flagged see report notes for status.
Results corrected to dry weight at 105°C where appropriate, in accordance with the MCERTS standard.

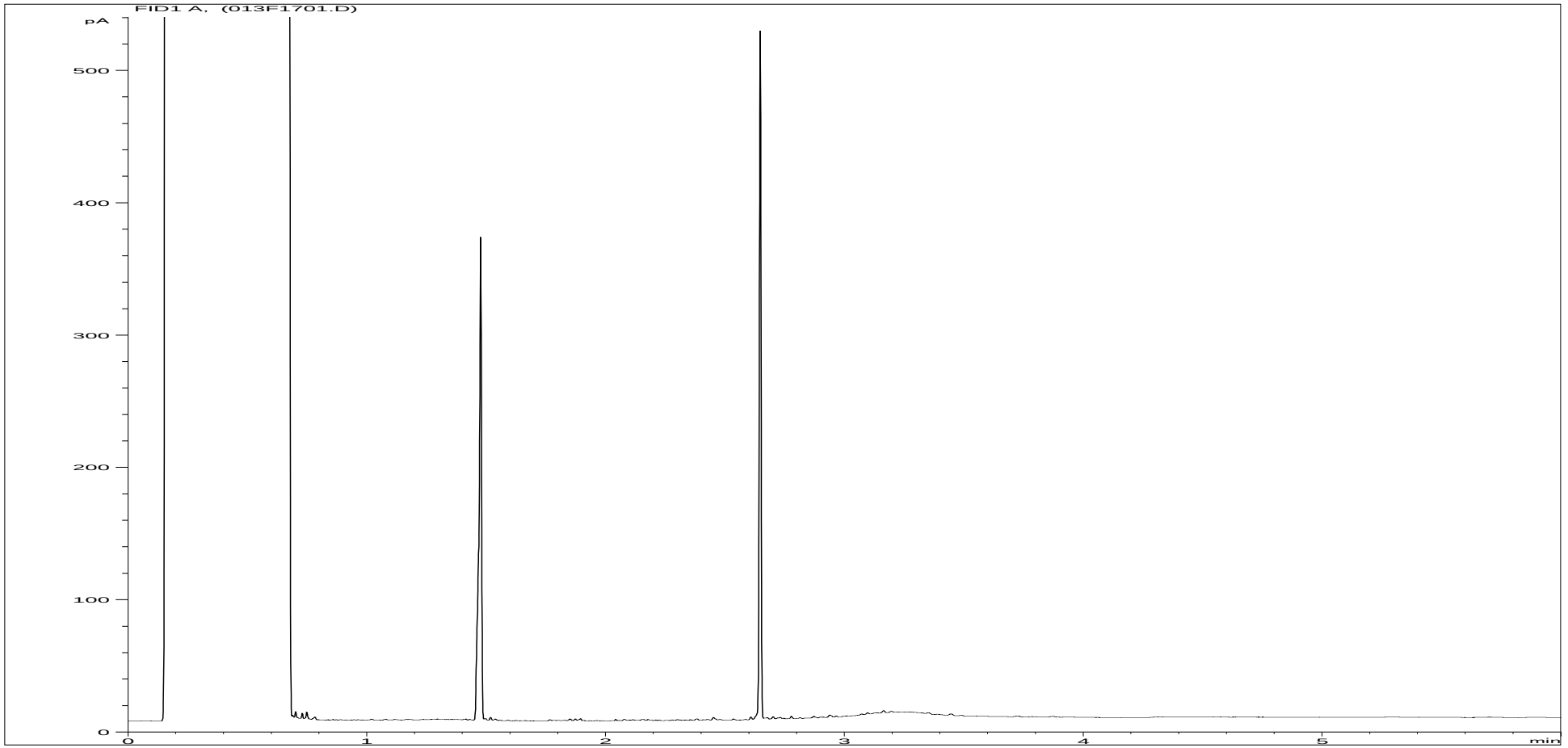
Petroleum Hydrocarbons (C8 to C40) by GC/FID Aromatics Fraction.



Sample ID:	CL1616104ARO	**Job Number:**	S16_3840M
Multiplier:	11.52	**Client:**	Ramboll Environ
Dilution:	1	**Site:**	Zeon Chemicals ESA
Acquisition Method:	5UL_RUNF.M	**Client Sample Ref:**	BH106 0.6
Acquisition Date/Time:	17-May-16, 11:53:16		
Datafile:	D:\TES\DATA\Y2016\051716TPH_GC4\051716 2016-05-17 08-23-18\062B1601.D		

Where individual results are flagged see report notes for status.
Results corrected to dry weight at 105°C where appropriate, in accordance with the MCERTS standard.

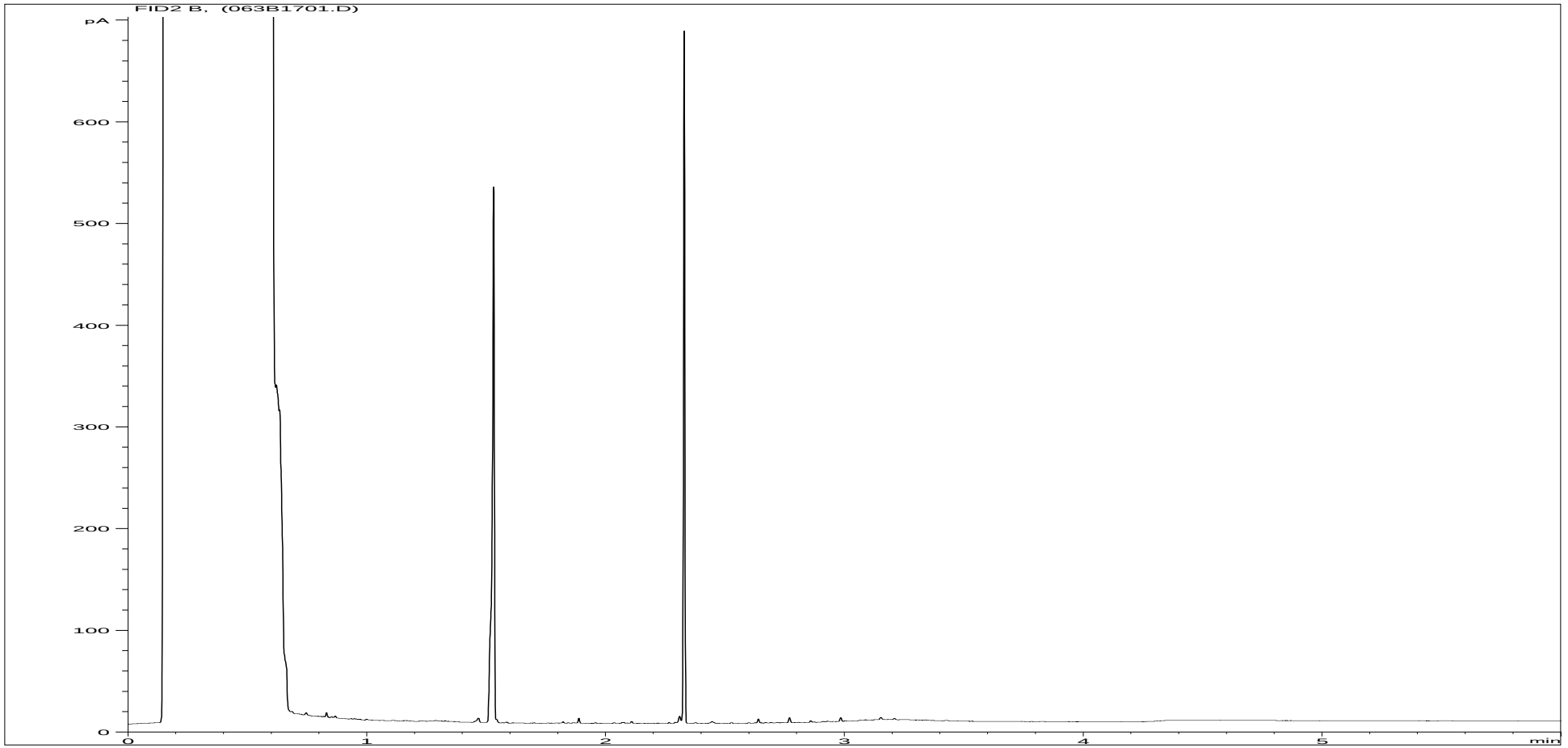
Petroleum Hydrocarbons (C8 to C40) by GC/FID Aliphatics Fraction.



Sample ID:	CL1616105ALI	**Job Number:**	S16_3840M
Multiplier:	16	**Client:**	Ramboll Environ
Dilution:	1	**Site:**	Zeon Chemicals ESA
Acquisition Method:	5UL_RUNF.M	**Client Sample Ref:**	WS23 0.5
Acquisition Date/Time:	17-May-16, 12:07:01		
Datafile:	D:\TES\DATA\Y2016\051716TPH_GC4\051716 2016-05-17 08-23-18\013F1701.D		

Where individual results are flagged see report notes for status.
Results corrected to dry weight at 105°C where appropriate, in accordance with the MCERTS standard.

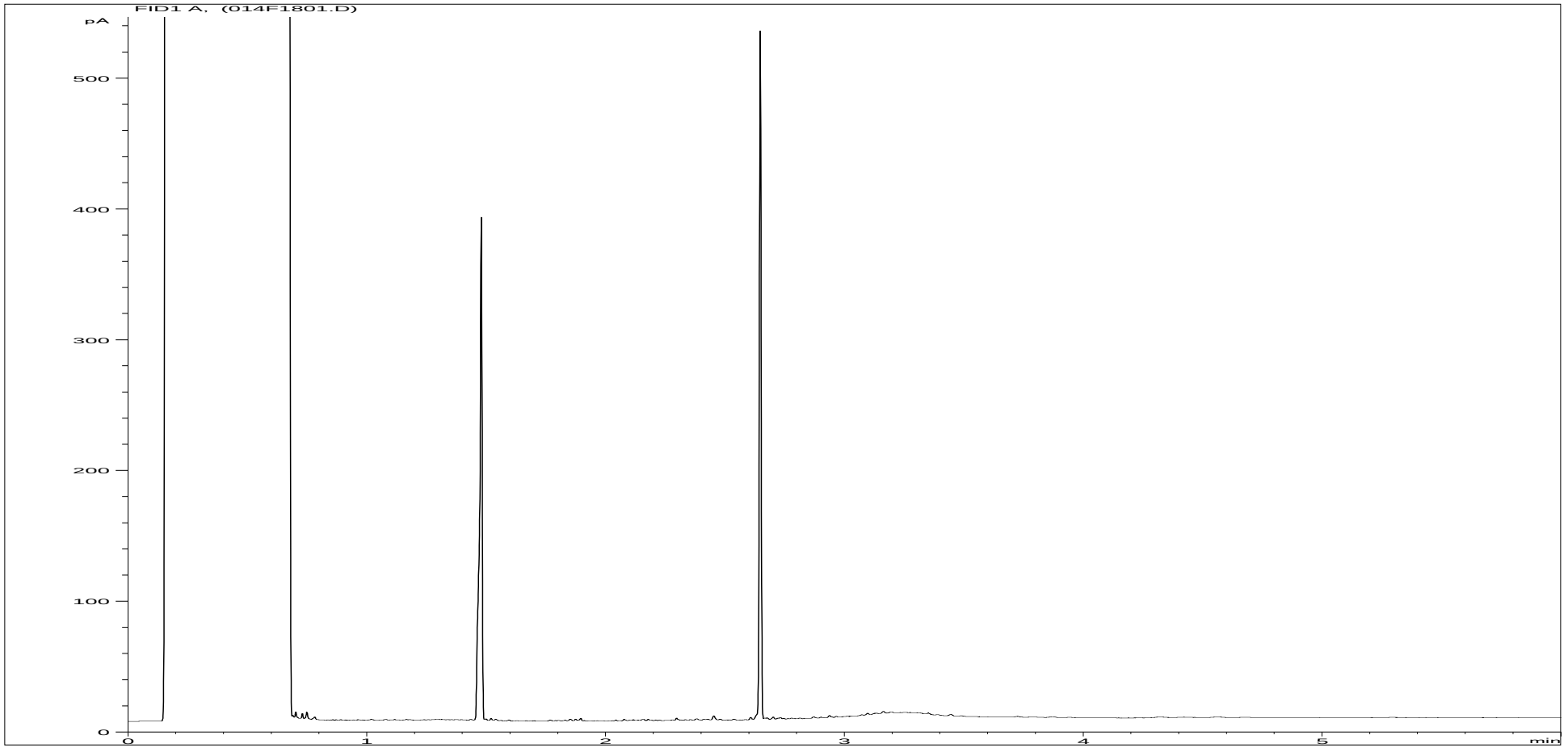
Petroleum Hydrocarbons (C8 to C40) by GC/FID Aromatics Fraction.



Sample ID:	CL1616105ARO	**Job Number:**	S16_3840M
Multiplier:	11.52	**Client:**	Ramboll Environ
Dilution:	1	**Site:**	Zeon Chemicals ESA
Acquisition Method:	5UL_RUNF.M	**Client Sample Ref:**	WS23 0.5
Acquisition Date/Time:	17-May-16, 12:07:01		
Datafile:	D:\TES\DATA\Y2016\051716TPH_GC4\051716 2016-05-17 08-23-18\063B1701.D		

Where individual results are flagged see report notes for status.
Results corrected to dry weight at 105°C where appropriate, in accordance with the MCERTS standard.

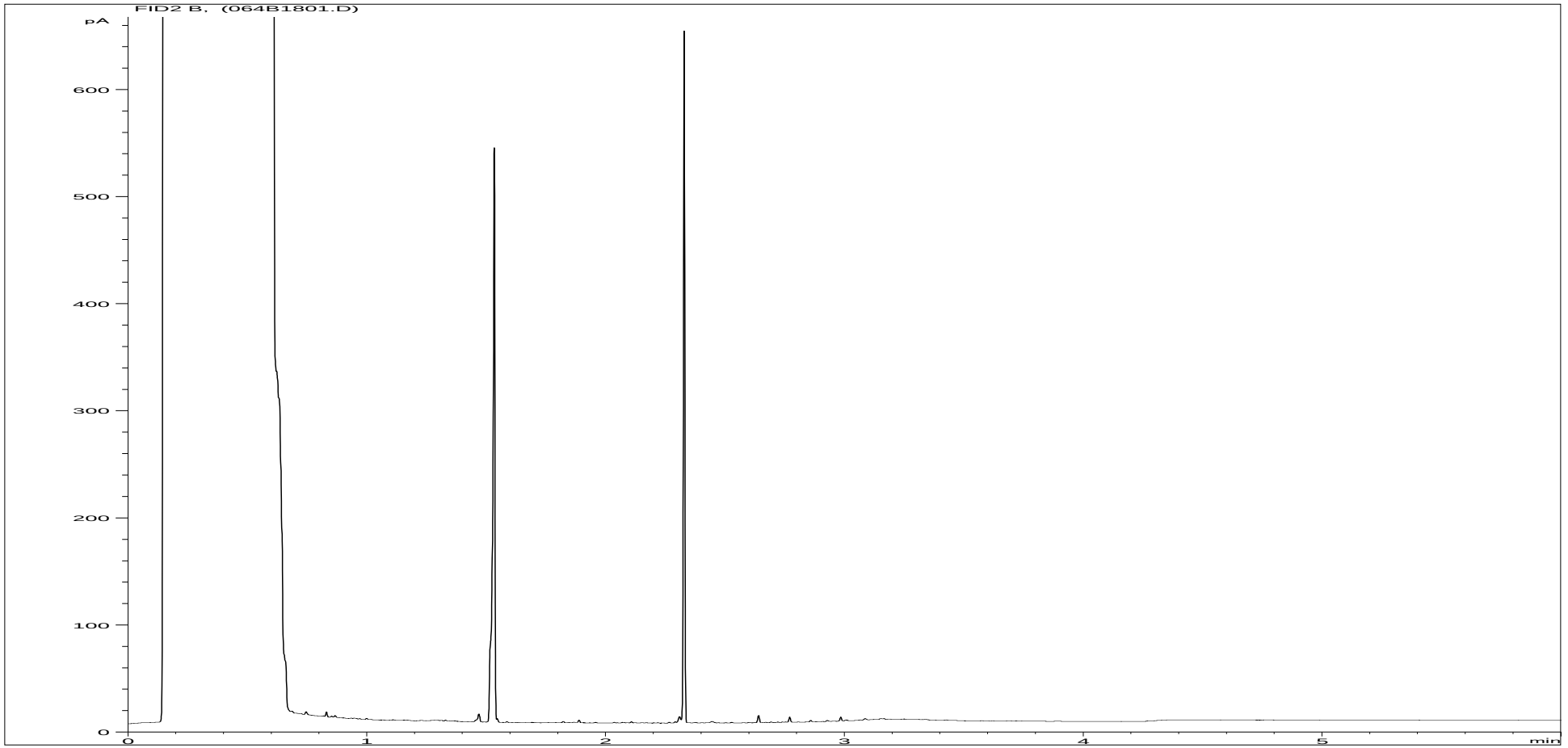
Petroleum Hydrocarbons (C8 to C40) by GC/FID Aliphatics Fraction.



Sample ID:	CL1616106ALI	**Job Number:**	S16_3840M
Multiplier:	16	**Client:**	Ramboll Environ
Dilution:	1	**Site:**	Zeon Chemicals ESA
Acquisition Method:	5UL_RUNF.M	**Client Sample Ref:**	WS23 2.00
Acquisition Date/Time:	17-May-16, 12:20:45		
Datafile:	D:\TES\DATA\Y2016\051716TPH_GC4\051716 2016-05-17 08-23-18\014F1801.D		

Where individual results are flagged see report notes for status.
Results corrected to dry weight at 105°C where appropriate, in accordance with the MCERTS standard.

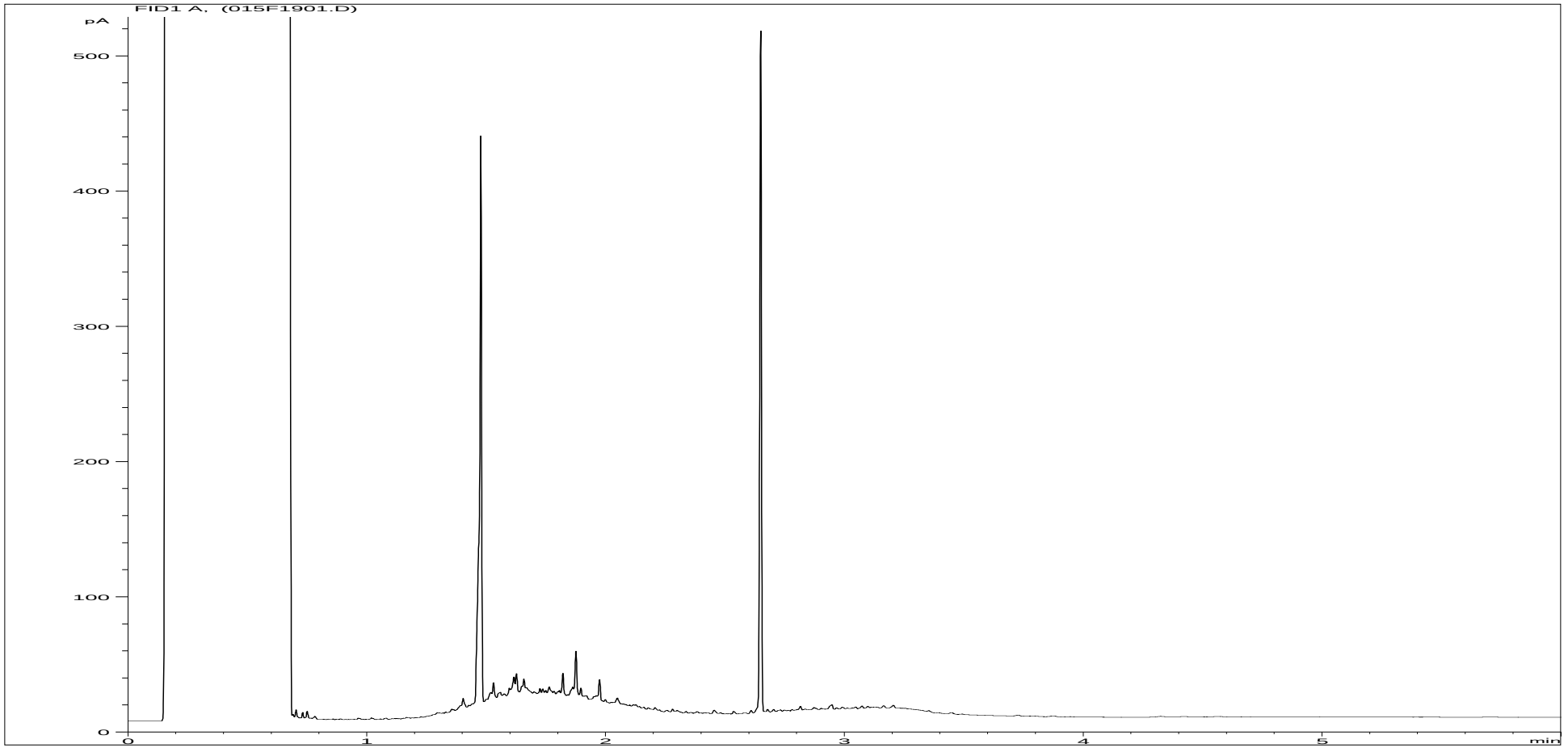
Petroleum Hydrocarbons (C8 to C40) by GC/FID Aromatics Fraction.



Sample ID:	CL1616106ARO	**Job Number:**	S16_3840M
Multiplier:	11.52	**Client:**	Ramboll Environ
Dilution:	1	**Site:**	Zeon Chemicals ESA
Acquisition Method:	5UL_RUNF.M	**Client Sample Ref:**	WS23 2.00
Acquisition Date/Time:	17-May-16, 12:20:45		
Datafile:	D:\TES\DATA\Y2016\051716TPH_GC4\051716 2016-05-17 08-23-18\064B1801.D		

Where individual results are flagged see report notes for status.
Results corrected to dry weight at 105°C where appropriate, in accordance with the MCERTS standard.

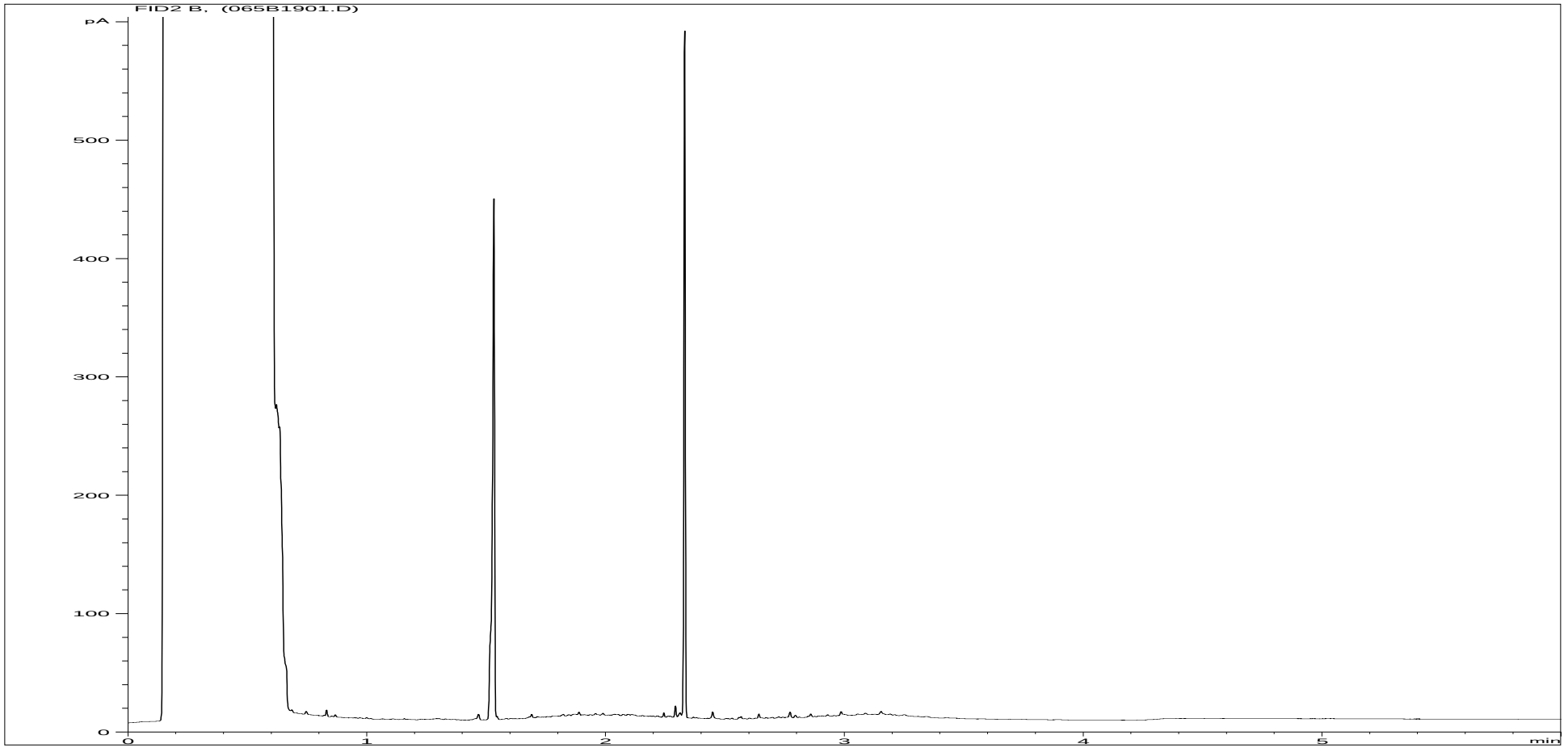
Petroleum Hydrocarbons (C8 to C40) by GC/FID Aliphatics Fraction.



Sample ID:	CL1616107ALI	**Job Number:**	S16_3840M
Multiplier:	16	**Client:**	Ramboll Environ
Dilution:	1	**Site:**	Zeon Chemicals ESA
Acquisition Method:	5UL_RUNF.M	**Client Sample Ref:**	WS22 0.6
Acquisition Date/Time:	17-May-16, 12:34:36		
Datafile:	D:\TES\DATA\Y2016\051716TPH_GC4\051716 2016-05-17 08-23-18\015F1901.D		

Where individual results are flagged see report notes for status.
Results corrected to dry weight at 105°C where appropriate, in accordance with the MCERTS standard.

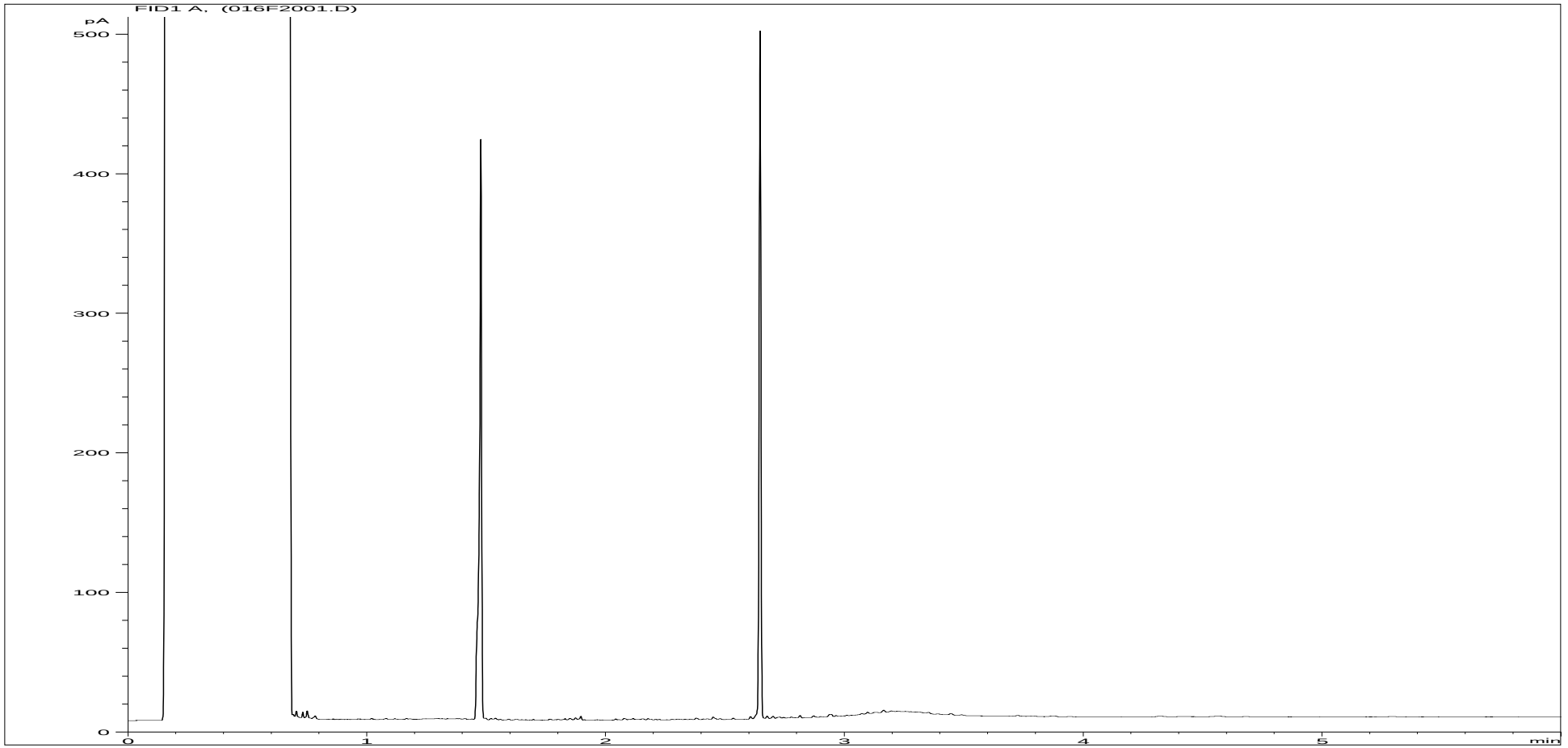
Petroleum Hydrocarbons (C8 to C40) by GC/FID Aromatics Fraction.



Sample ID:	CL1616107ARO	**Job Number:**	S16_3840M
Multiplier:	11.52	**Client:**	Ramboll Environ
Dilution:	1	**Site:**	Zeon Chemicals ESA
Acquisition Method:	5UL_RUNF.M	**Client Sample Ref:**	WS22 0.6
Acquisition Date/Time:	17-May-16, 12:34:36		
Datafile:	D:\TES\DATA\Y2016\051716TPH_GC4\051716 2016-05-17 08-23-18\065B1901.D		

Where individual results are flagged see report notes for status.
Results corrected to dry weight at 105°C where appropriate, in accordance with the MCERTS standard.

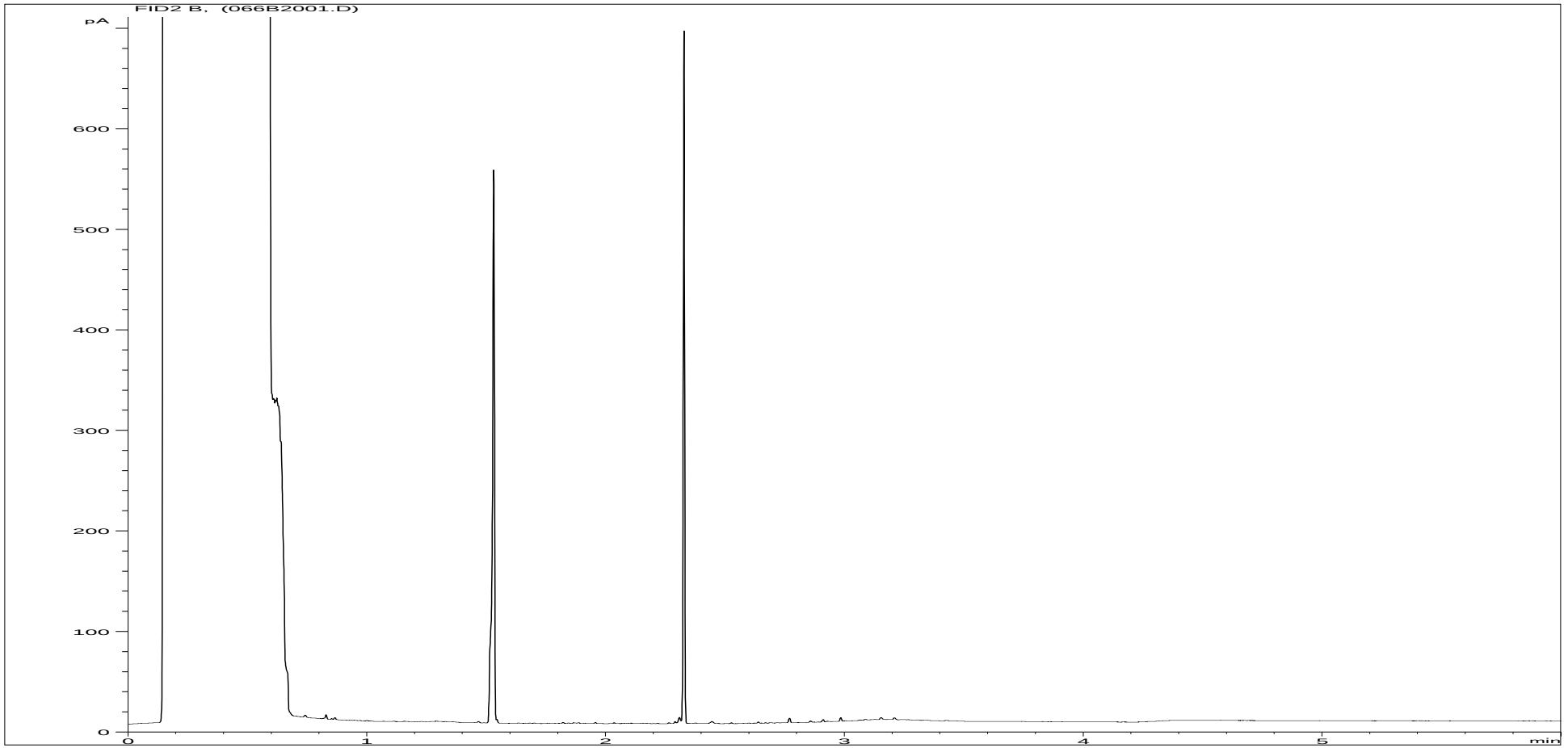
Petroleum Hydrocarbons (C8 to C40) by GC/FID Aliphatics Fraction.



Sample ID:	CL1616108ALI	**Job Number:**	S16_3840M
Multiplier:	16.16	**Client:**	Ramboll Environ
Dilution:	1	**Site:**	Zeon Chemicals ESA
Acquisition Method:	5UL_RUNF.M	**Client Sample Ref:**	WS221.0
Acquisition Date/Time:	17-May-16, 12:48:21		
Datafile:	D:\TES\DATA\Y2016\051716TPH_GC4\051716 2016-05-17 08-23-18\016F2001.D		

Where individual results are flagged see report notes for status.
Results corrected to dry weight at 105°C where appropriate, in accordance with the MCERTS standard.

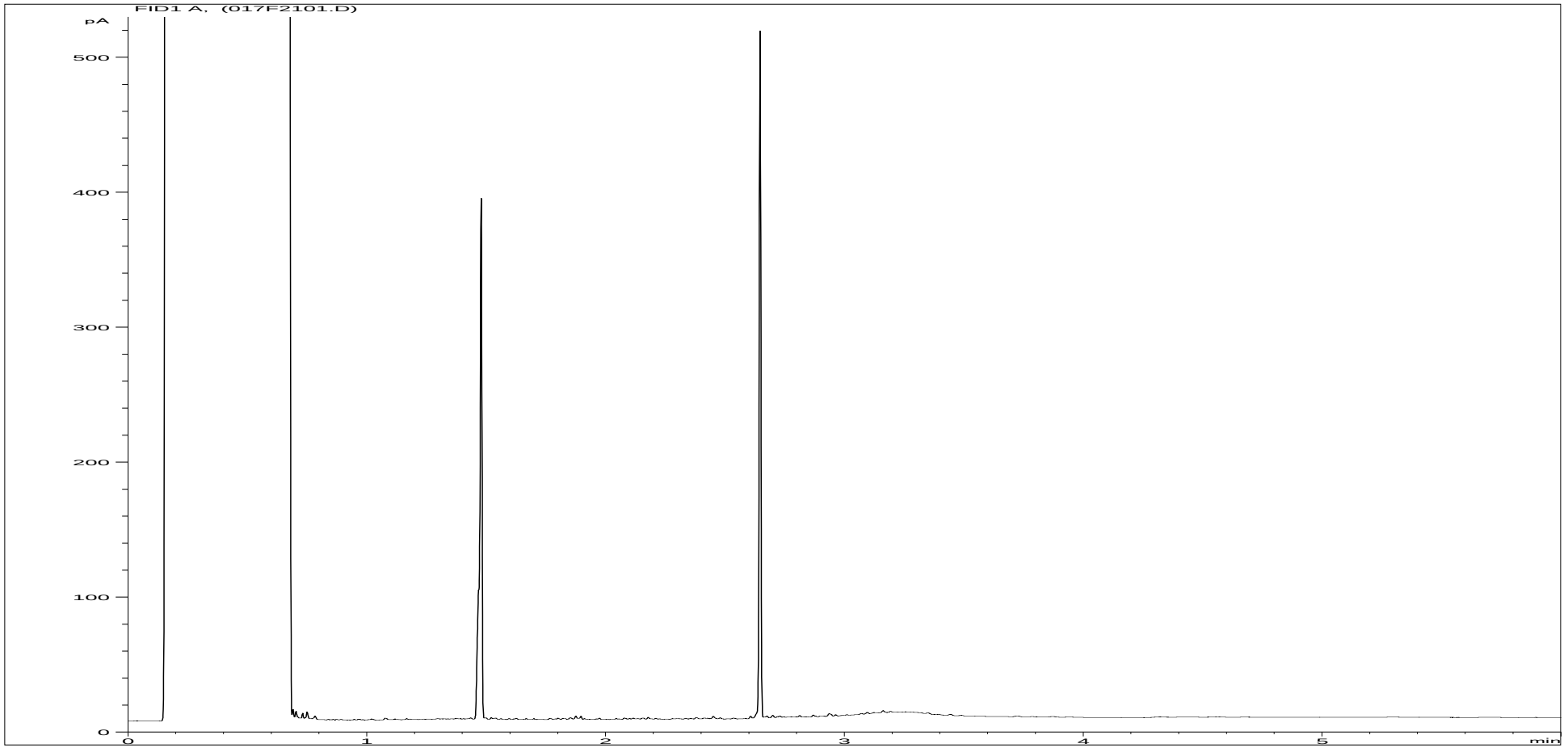
Petroleum Hydrocarbons (C8 to C40) by GC/FID Aromatics Fraction.



Sample ID:	CL1616108ARO	**Job Number:**	S16_3840M
Multiplier:	11.52	**Client:**	Ramboll Environ
Dilution:	1	**Site:**	Zeon Chemicals ESA
Acquisition Method:	5UL_RUNF.M	**Client Sample Ref:**	WS221.0
Acquisition Date/Time:	17-May-16, 12:48:21		
Datafile:	D:\TES\DATA\Y2016\051716TPH_GC4\051716 2016-05-17 08-23-18\066B2001.D		

Where individual results are flagged see report notes for status.
Results corrected to dry weight at 105°C where appropriate, in accordance with the MCERTS standard.

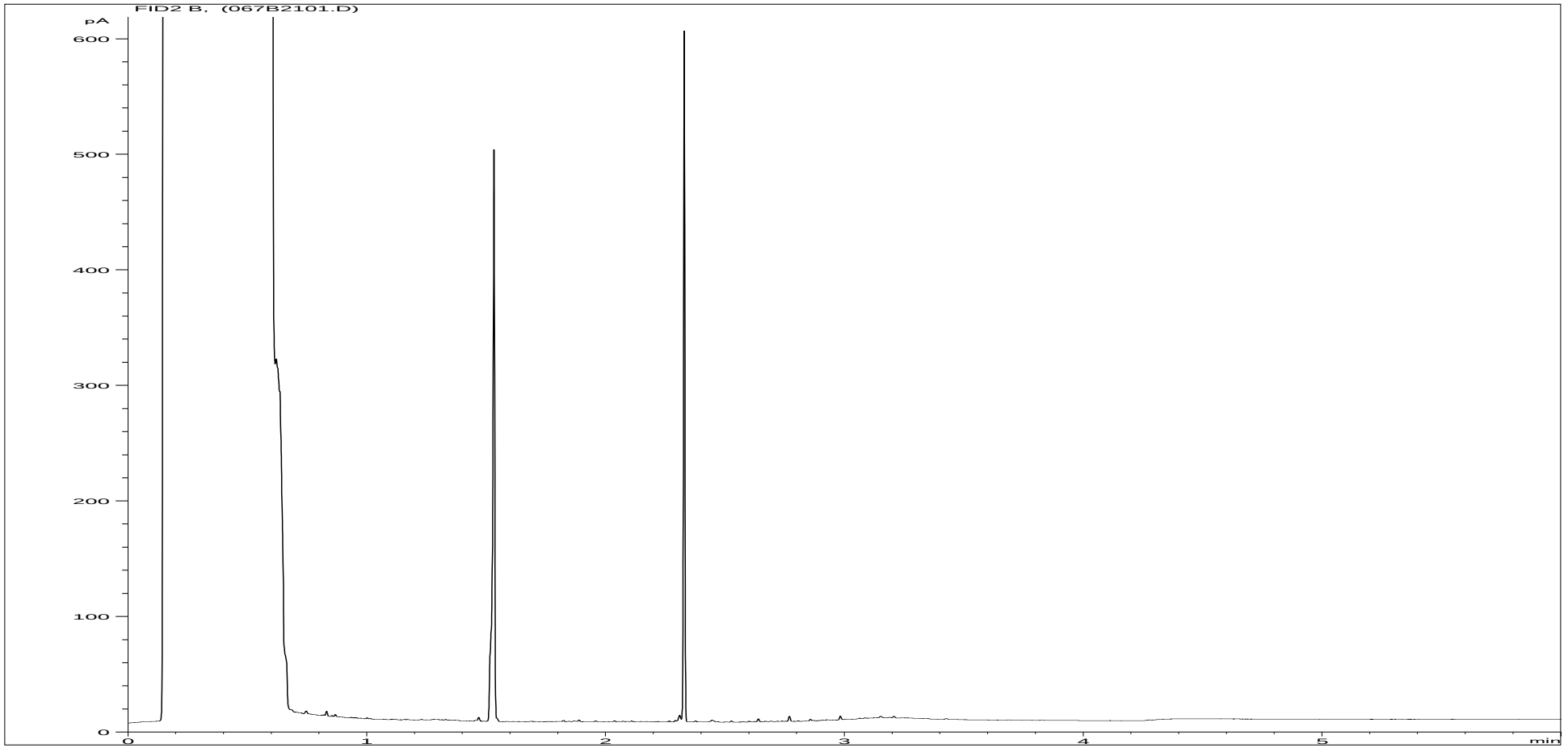
Petroleum Hydrocarbons (C8 to C40) by GC/FID Aliphatics Fraction.



Sample ID:	CL1616109ALI	**Job Number:**	S16_3840M
Multiplier:	16	**Client:**	Ramboll Environ
Dilution:	1	**Site:**	Zeon Chemicals ESA
Acquisition Method:	5UL_RUNF.M	**Client Sample Ref:**	WS22 1.2
Acquisition Date/Time:	17-May-16, 13:02:10		
Datafile:	D:\TES\DATA\Y2016\051716TPH_GC4\051716 2016-05-17 08-23-18\017F2101.D		

Where individual results are flagged see report notes for status.
Results corrected to dry weight at 105°C where appropriate, in accordance with the MCERTS standard.

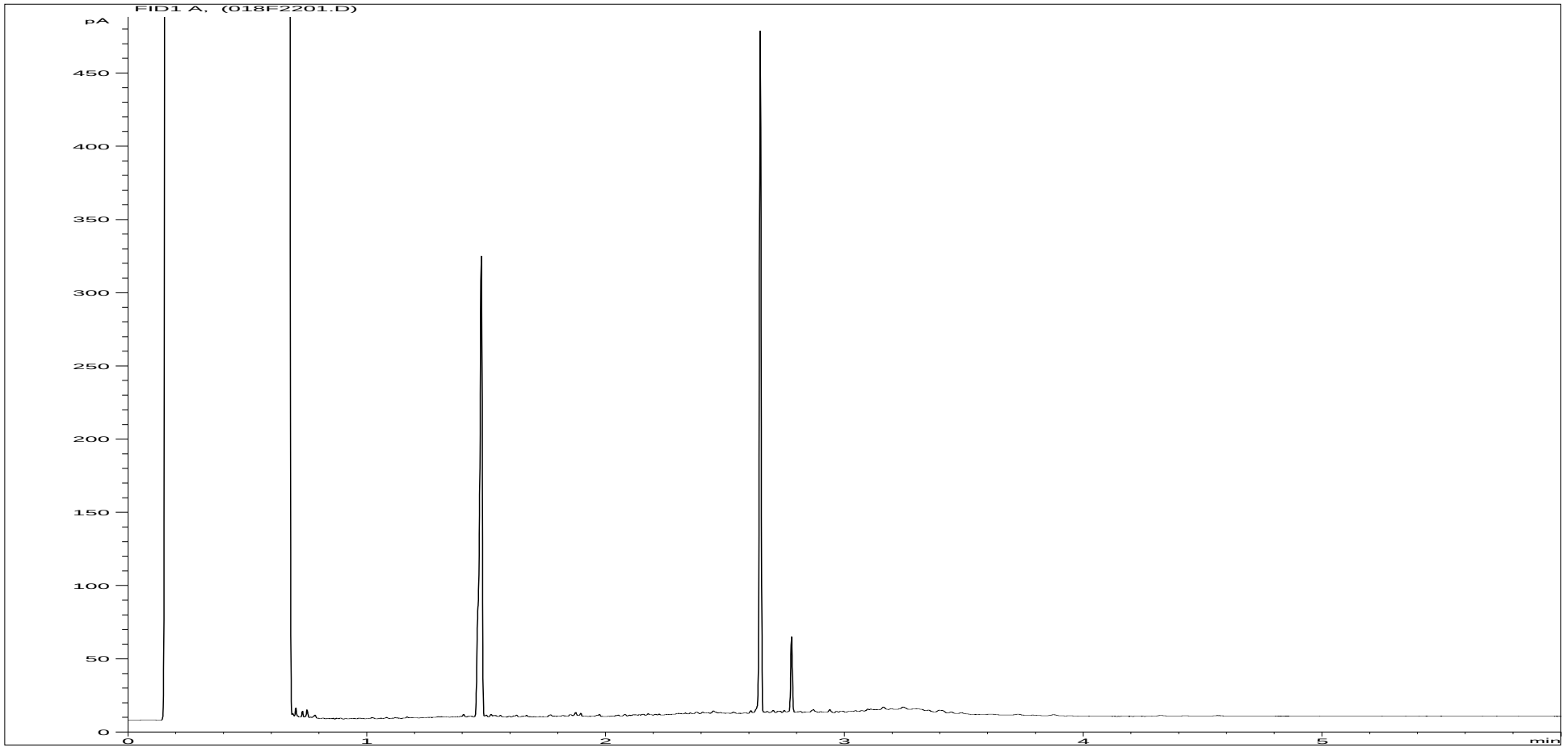
Petroleum Hydrocarbons (C8 to C40) by GC/FID Aromatics Fraction.



Sample ID:	CL1616109ARO	**Job Number:**	S16_3840M
Multiplier:	11.52	**Client:**	Ramboll Environ
Dilution:	1	**Site:**	Zeon Chemicals ESA
Acquisition Method:	5UL_RUNF.M	**Client Sample Ref:**	WS22 1.2
Acquisition Date/Time:	17-May-16, 13:02:10		
Datafile:	D:\TES\DATA\Y2016\051716TPH_GC4\051716 2016-05-17 08-23-18\067B2101.D		

Where individual results are flagged see report notes for status.
Results corrected to dry weight at 105°C where appropriate, in accordance with the MCERTS standard.

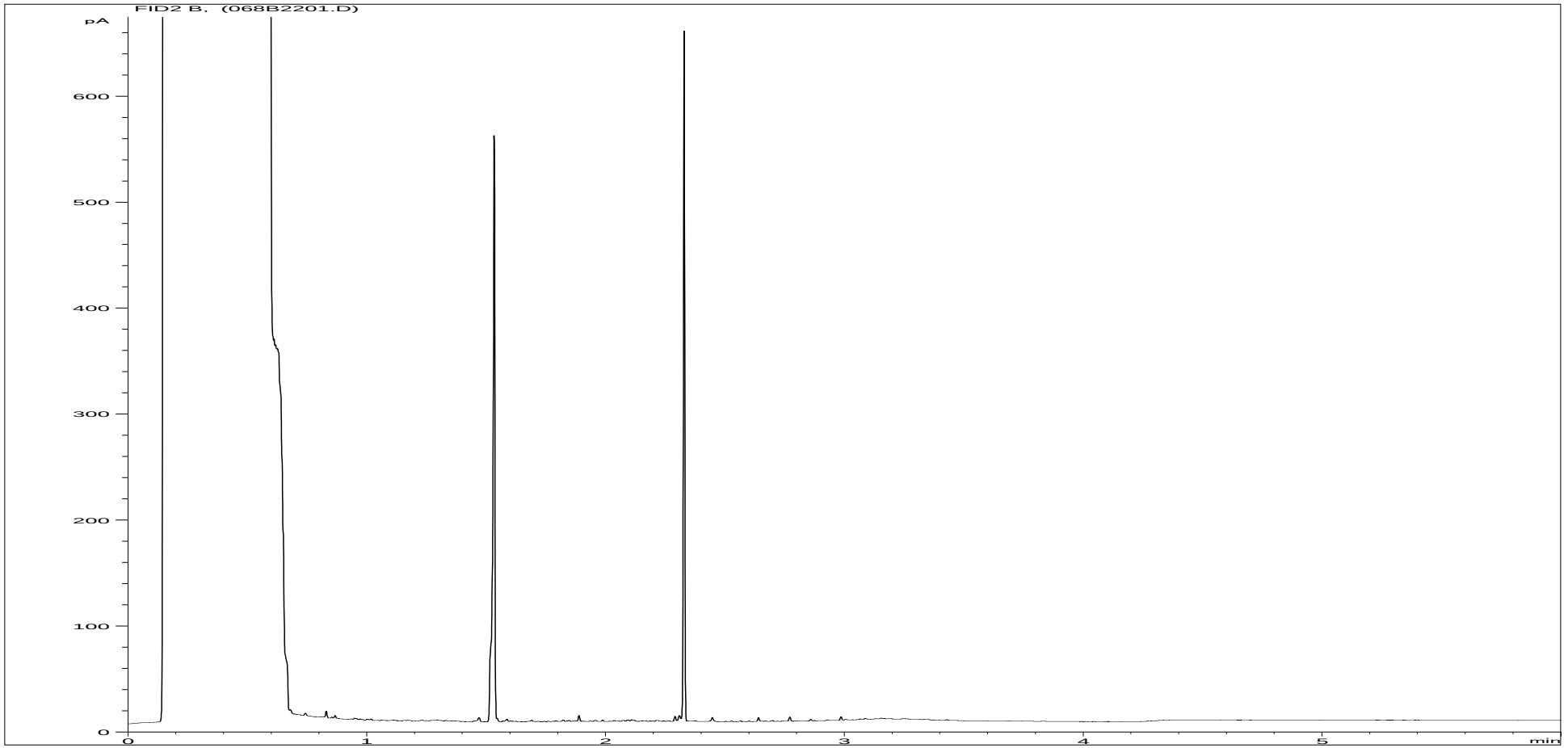
Petroleum Hydrocarbons (C8 to C40) by GC/FID Aliphatics Fraction.



Sample ID:	CL1616110ALI	**Job Number:**	S16_3840M
Multiplier:	16.32	**Client:**	Ramboll Environ
Dilution:	1	**Site:**	Zeon Chemicals ESA
Acquisition Method:	5UL_RUNF.M	**Client Sample Ref:**	WS15 0.4 (NVM)
Acquisition Date/Time:	17-May-16, 13:15:52		
Datafile:	D:\TES\DATA\Y2016\051716TPH_GC4\051716 2016-05-17 08-23-18\018F2201.D		

Where individual results are flagged see report notes for status.
Results corrected to dry weight at 105°C where appropriate, in accordance with the MCERTS standard.

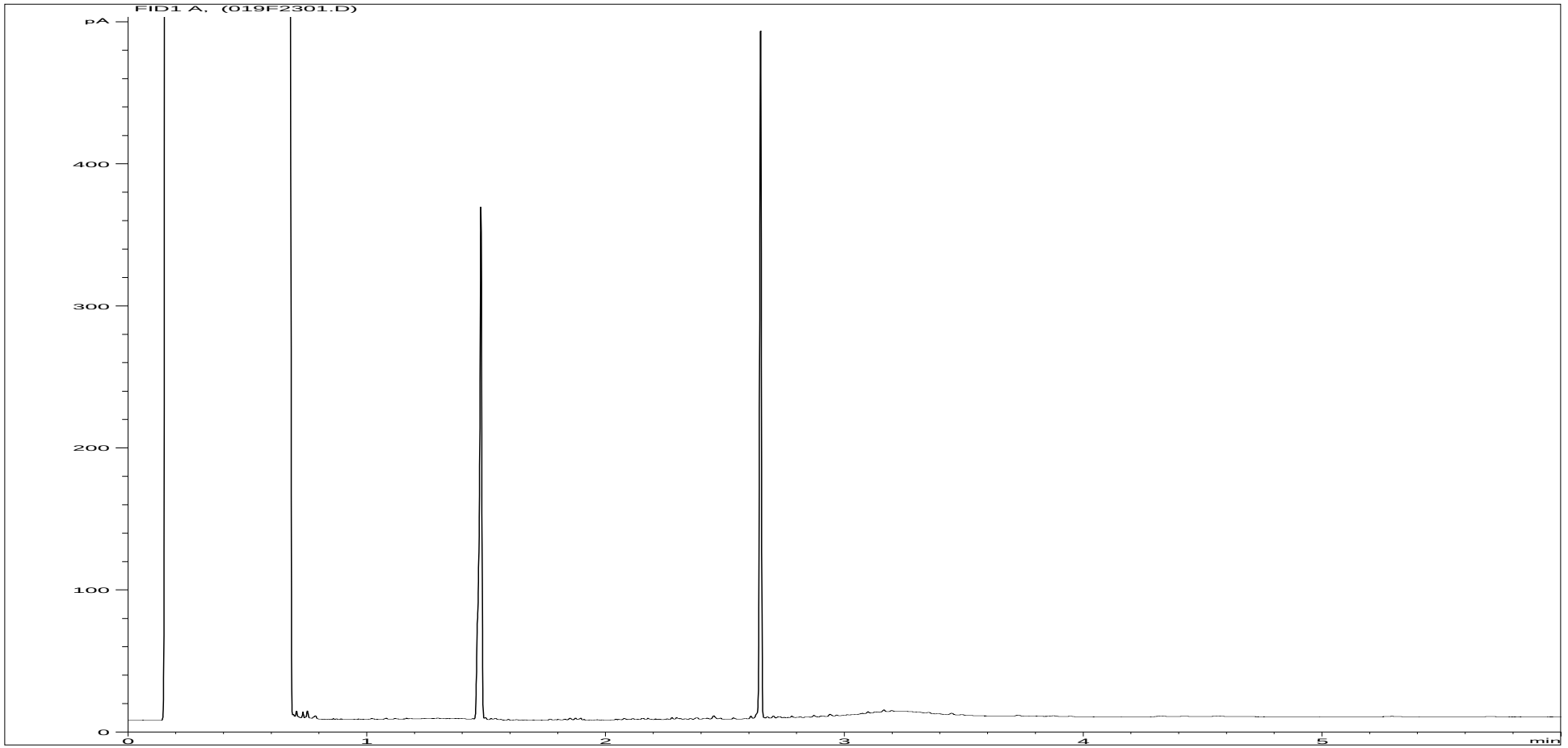
Petroleum Hydrocarbons (C8 to C40) by GC/FID Aromatics Fraction.



Sample ID:	CL1616110ARO	**Job Number:**	S16_3840M
Multiplier:	11.68	**Client:**	Ramboll Environ
Dilution:	1	**Site:**	Zeon Chemicals ESA
Acquisition Method:	5UL_RUNF.M	**Client Sample Ref:**	WS15 0.4 (NVM)
Acquisition Date/Time:	17-May-16, 13:15:52		
Datafile:	D:\TES\DATA\Y2016\051716TPH_GC4\051716 2016-05-17 08-23-18\068B2201.D		

Where individual results are flagged see report notes for status.
Results corrected to dry weight at 105°C where appropriate, in accordance with the MCERTS standard.

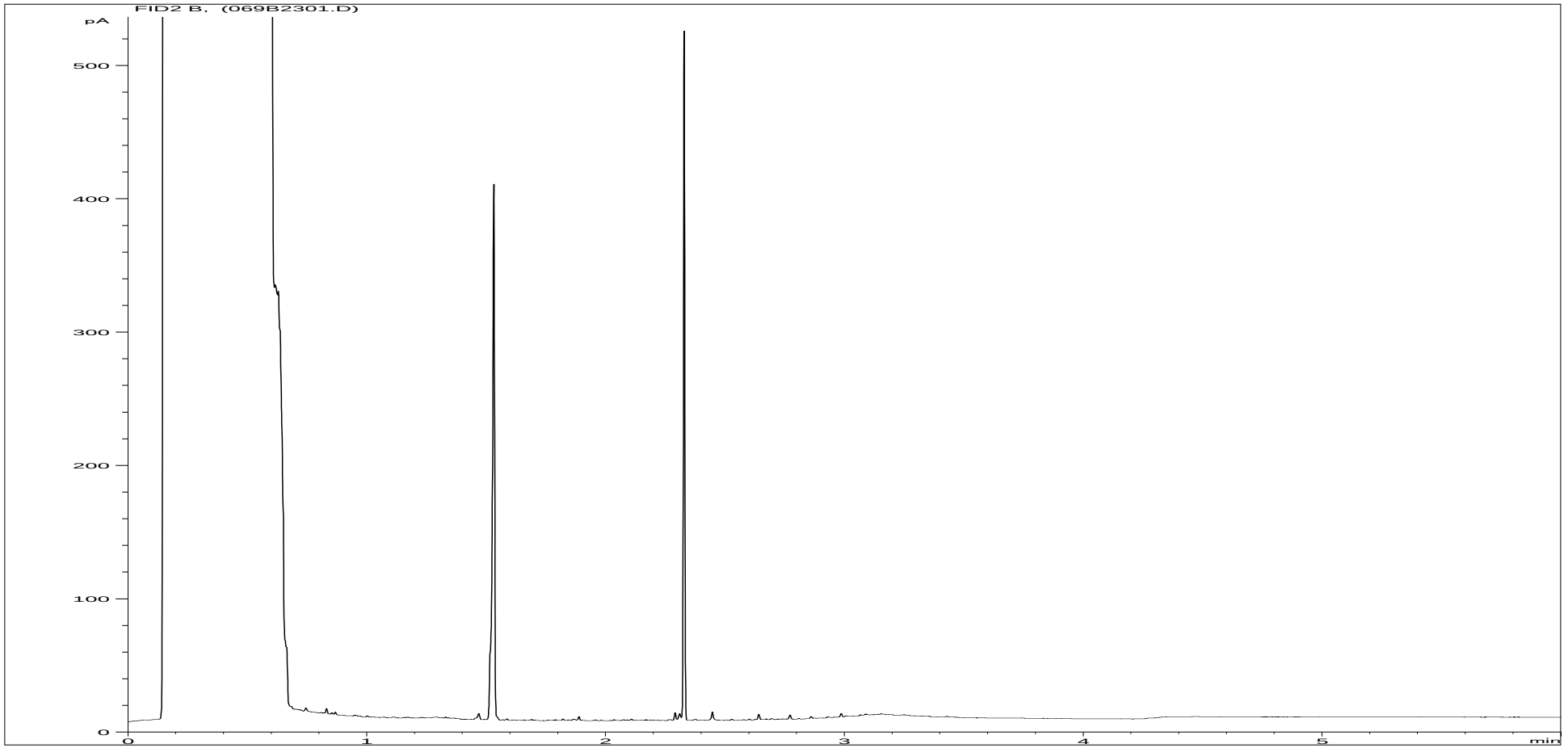
Petroleum Hydrocarbons (C8 to C40) by GC/FID Aliphatics Fraction.



Sample ID:	CL1616111ALI	**Job Number:**	S16_3840M
Multiplier:	16	**Client:**	Ramboll Environ
Dilution:	1	**Site:**	Zeon Chemicals ESA
Acquisition Method:	5UL_RUNF.M	**Client Sample Ref:**	WS14 1.5
Acquisition Date/Time:	17-May-16, 13:29:34		
Datafile:	D:\TES\DATA\Y2016\051716TPH_GC4\051716 2016-05-17 08-23-18\019F2301.D		

Where individual results are flagged see report notes for status.
Results corrected to dry weight at 105°C where appropriate, in accordance with the MCERTS standard.

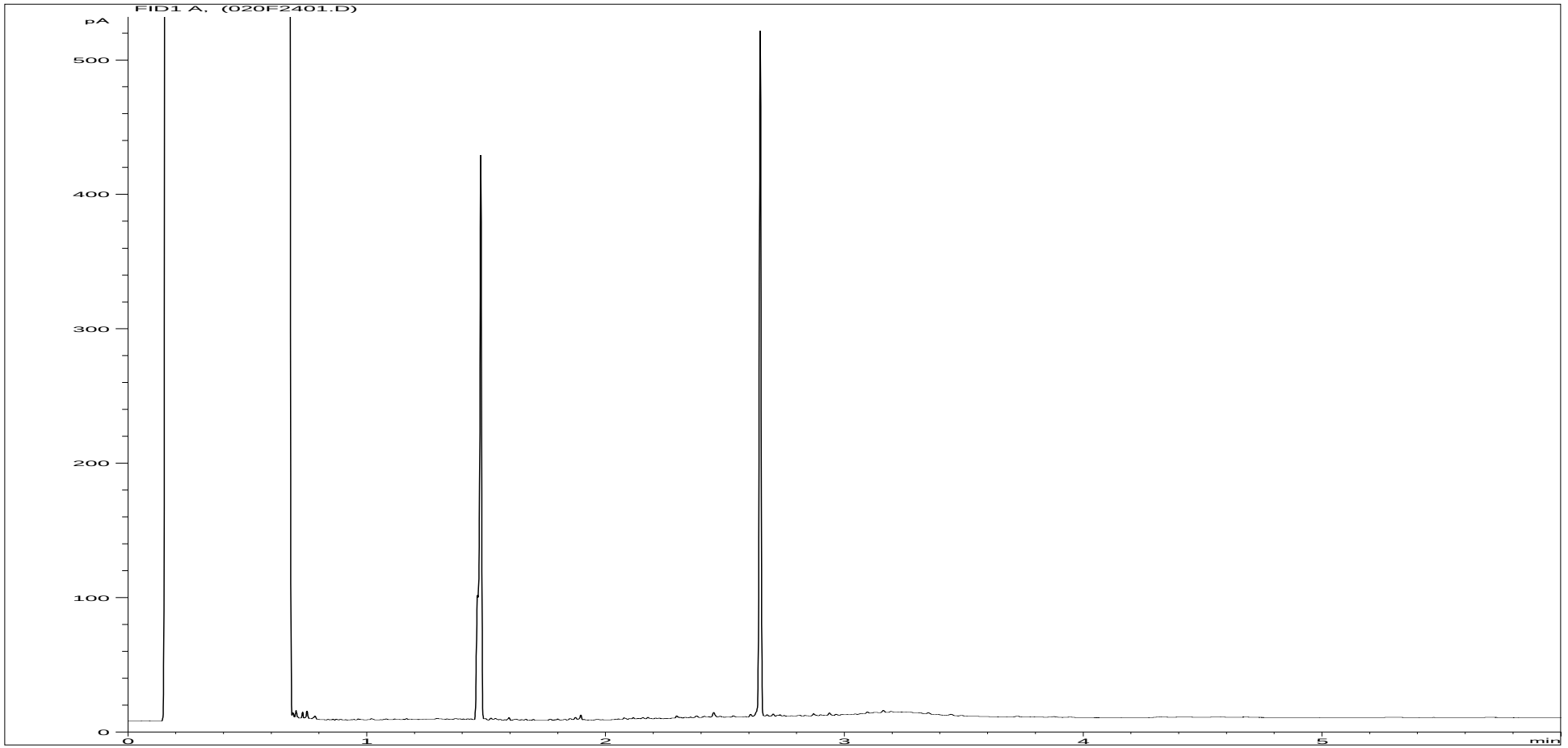
Petroleum Hydrocarbons (C8 to C40) by GC/FID Aromatics Fraction.



Sample ID:	CL1616111ARO	**Job Number:**	S16_3840M
Multiplier:	11.52	**Client:**	Ramboll Environ
Dilution:	1	**Site:**	Zeon Chemicals ESA
Acquisition Method:	5UL_RUNF.M	**Client Sample Ref:**	WS14 1.5
Acquisition Date/Time:	17-May-16, 13:29:34		
Datafile:	D:\TES\DATA\Y2016\051716TPH_GC4\051716 2016-05-17 08-23-18\069B2301.D		

Where individual results are flagged see report notes for status.
Results corrected to dry weight at 105°C where appropriate, in accordance with the MCERTS standard.

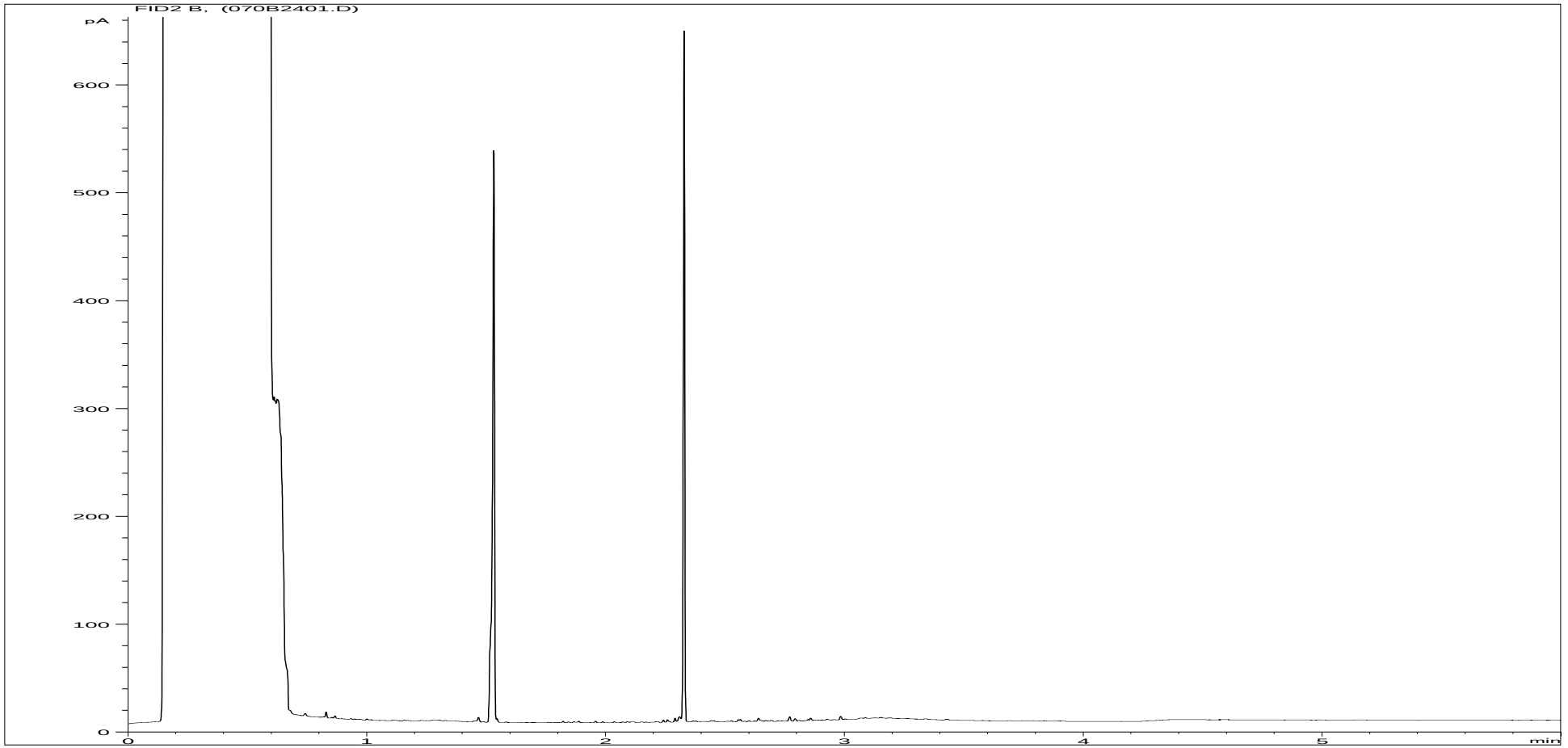
Petroleum Hydrocarbons (C8 to C40) by GC/FID Aliphatics Fraction.



Sample ID:	CL1616112ALI	**Job Number:**	S16_3840M
Multiplier:	16	**Client:**	Ramboll Environ
Dilution:	1	**Site:**	Zeon Chemicals ESA
Acquisition Method:	5UL_RUNF.M	**Client Sample Ref:**	WS16 0.3 (NVM)
Acquisition Date/Time:	17-May-16, 13:43:25		
Datafile:	D:\TES\DATA\Y2016\051716TPH_GC4\051716 2016-05-17 08-23-18\020F2401.D		

Where individual results are flagged see report notes for status.
Results corrected to dry weight at 105°C where appropriate, in accordance with the MCERTS standard.

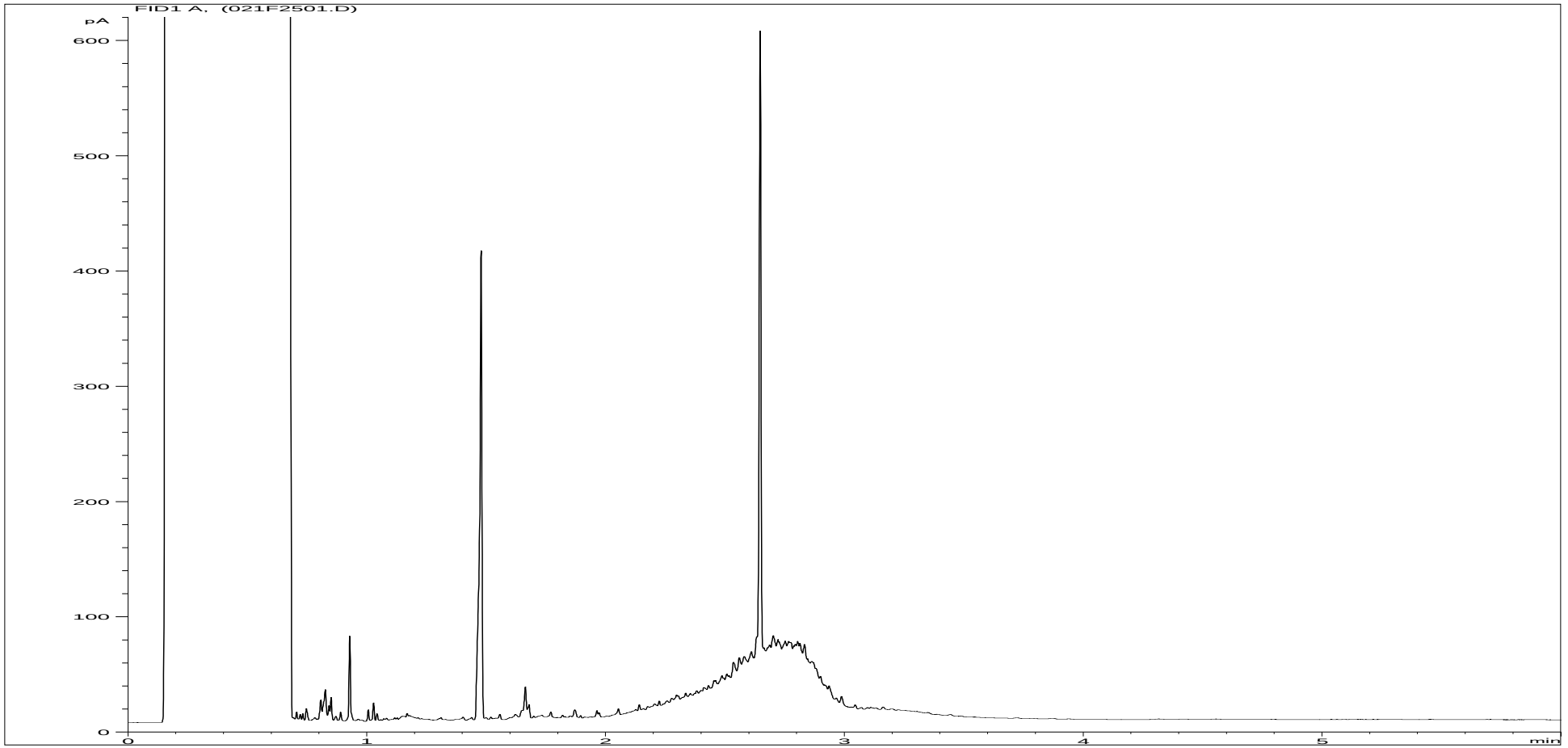
Petroleum Hydrocarbons (C8 to C40) by GC/FID Aromatics Fraction.



Sample ID:	CL1616112ARO	**Job Number:**	S16_3840M
Multiplier:	11.52	**Client:**	Ramboll Environ
Dilution:	1	**Site:**	Zeon Chemicals ESA
Acquisition Method:	5UL_RUNF.M	**Client Sample Ref:**	WS16 0.3 (NVM)
Acquisition Date/Time:	17-May-16, 13:43:25		
Datafile:	D:\TES\DATA\Y2016\051716TPH_GC4\051716 2016-05-17 08-23-18\070B2401.D		

Where individual results are flagged see report notes for status.
Results corrected to dry weight at 105°C where appropriate, in accordance with the MCERTS standard.

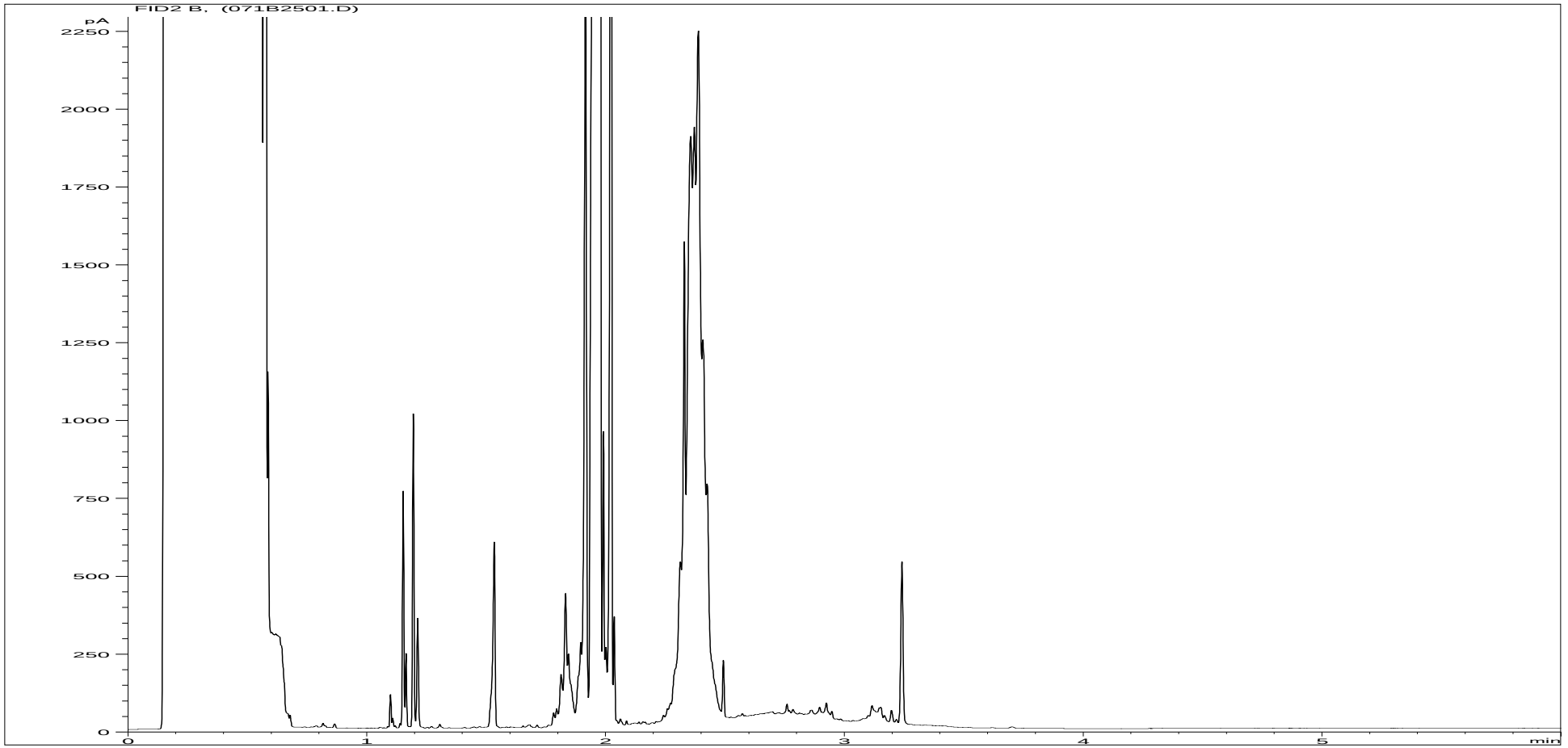
Petroleum Hydrocarbons (C8 to C40) by GC/FID Aliphatics Fraction.



Sample ID:	CL1616113ALI	**Job Number:**	S16_3840M
Multiplier:	16.32	**Client:**	Ramboll Environ
Dilution:	1	**Site:**	Zeon Chemicals ESA
Acquisition Method:	5UL_RUNF.M	**Client Sample Ref:**	WS17 0.3
Acquisition Date/Time:	17-May-16, 13:57:07		
Datafile:	D:\TES\DATA\Y2016\051716TPH_GC4\051716 2016-05-17 08-23-18\021F2501.D		

Where individual results are flagged see report notes for status.
Results corrected to dry weight at 105°C where appropriate, in accordance with the MCERTS standard.

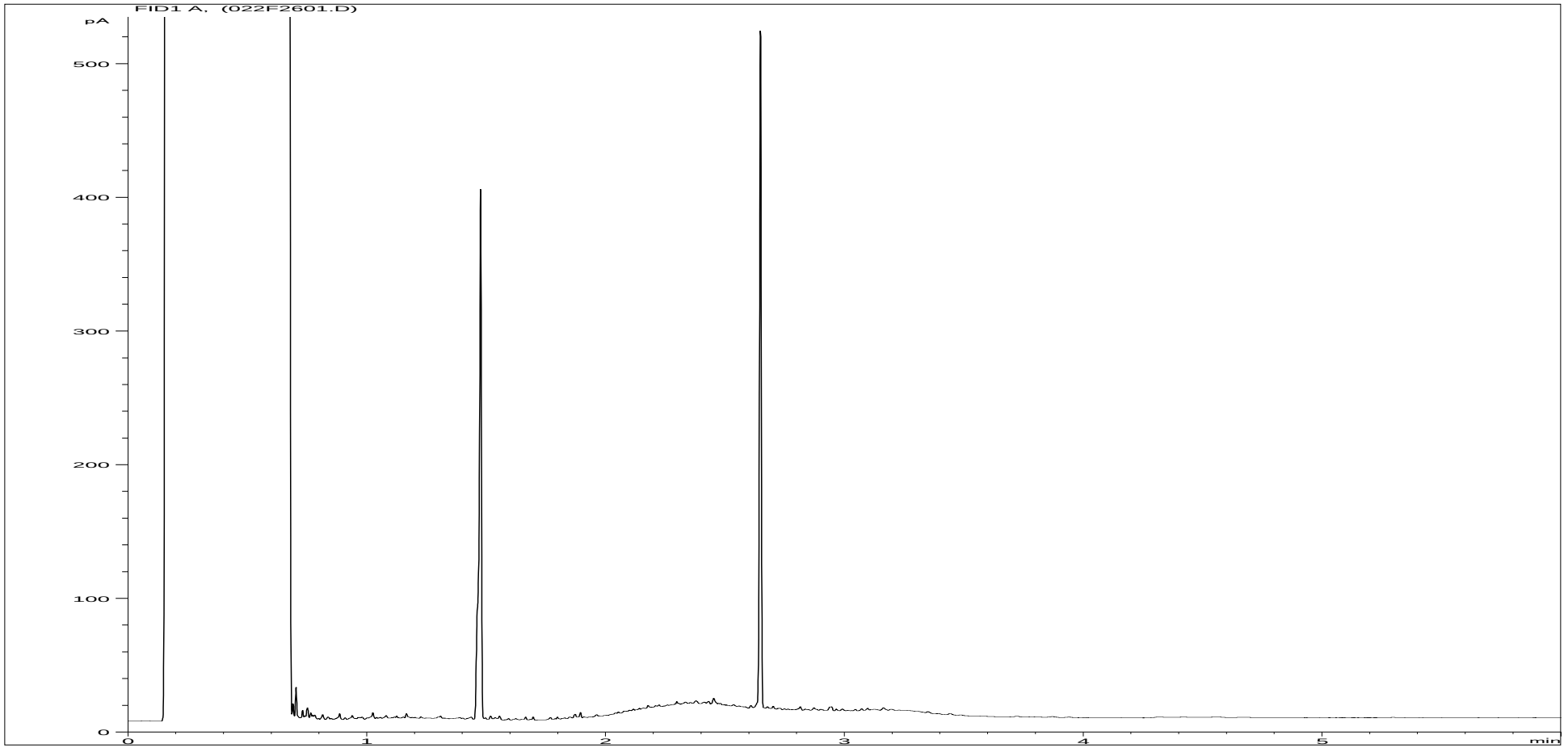
Petroleum Hydrocarbons (C8 to C40) by GC/FID Aromatics Fraction.



Sample ID:	CL1616113ARO	**Job Number:**	S16_3840M
Multiplier:	11.36	**Client:**	Ramboll Environ
Dilution:	1	**Site:**	Zeon Chemicals ESA
Acquisition Method:	5UL_RUNF.M	**Client Sample Ref:**	WS17 0.3
Acquisition Date/Time:	17-May-16, 13:57:07		
Datafile:	D:\TES\DATA\Y2016\051716TPH_GC4\051716 2016-05-17 08-23-18\071B2501.D		

Where individual results are flagged see report notes for status.
Results corrected to dry weight at 105°C where appropriate, in accordance with the MCERTS standard.

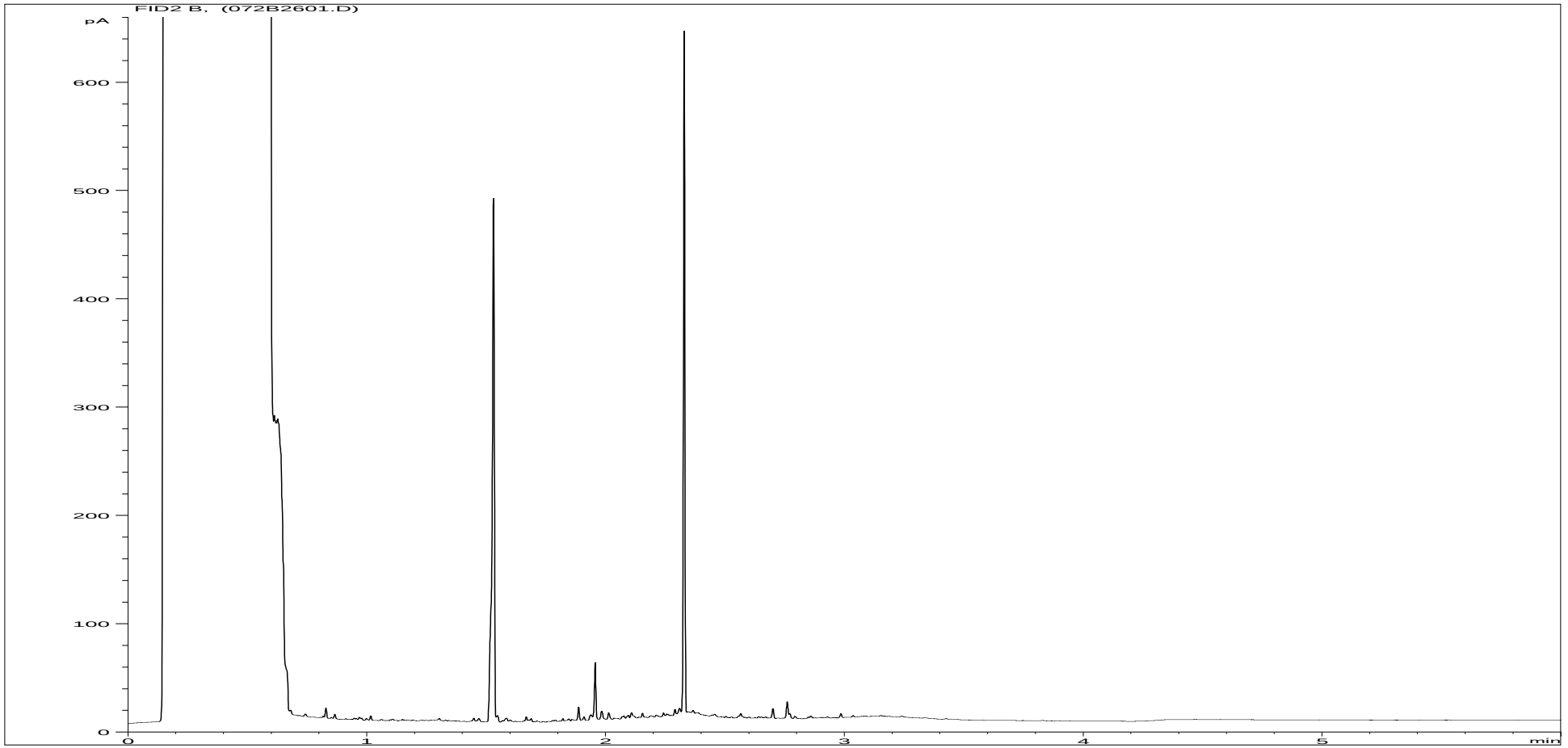
Petroleum Hydrocarbons (C8 to C40) by GC/FID Aliphatics Fraction.



Sample ID:	CL1616114ALI	**Job Number:**	S16_3840M
Multiplier:	16.32	**Client:**	Ramboll Environ
Dilution:	1	**Site:**	Zeon Chemicals ESA
Acquisition Method:	5UL_RUNF.M	**Client Sample Ref:**	WS13 0.3
Acquisition Date/Time:	17-May-16, 14:10:53		
Datafile:	D:\TES\DATA\Y2016\051716TPH_GC4\051716 2016-05-17 08-23-18\022F2601.D		

Where individual results are flagged see report notes for status.
Results corrected to dry weight at 105°C where appropriate, in accordance with the MCERTS standard.

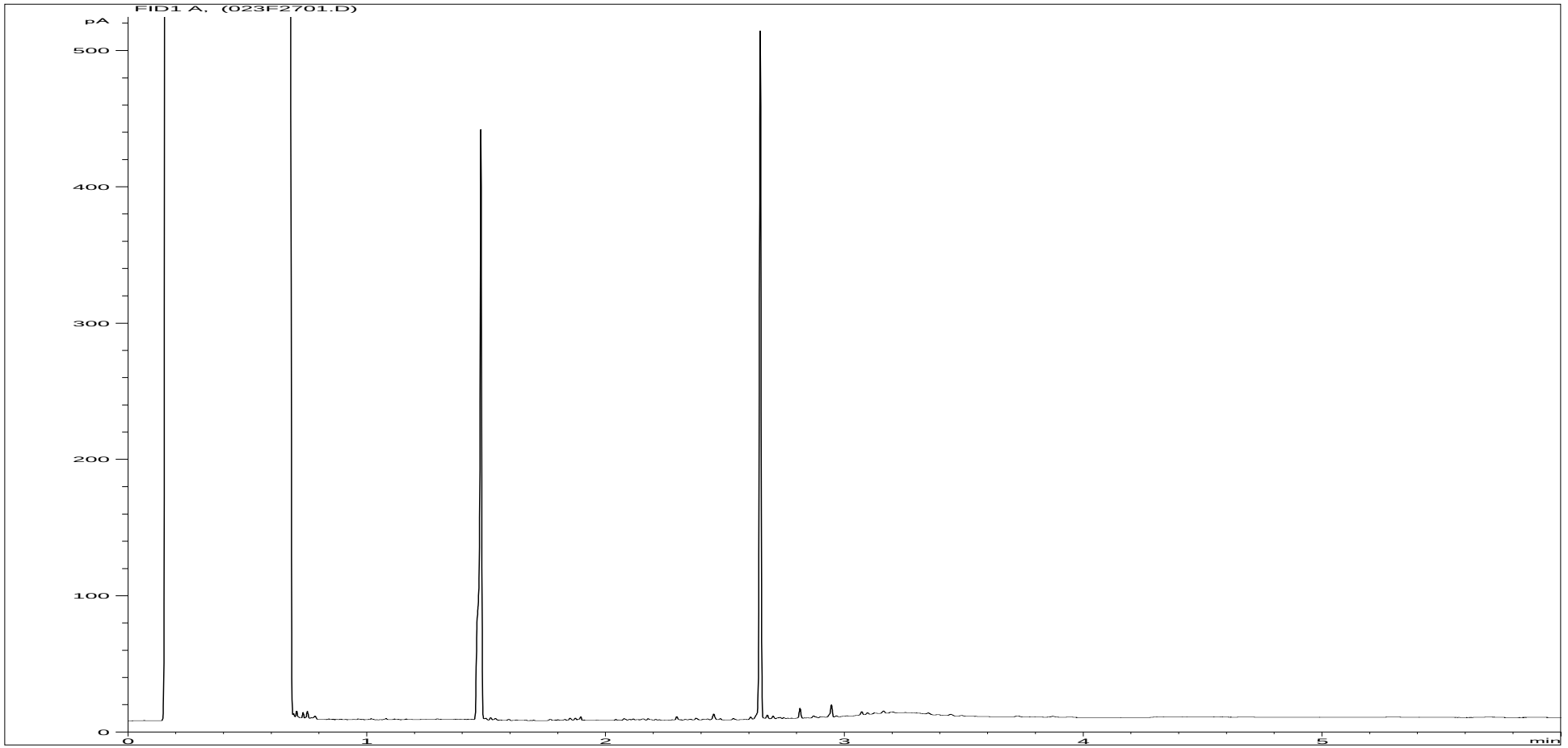
Petroleum Hydrocarbons (C8 to C40) by GC/FID Aromatics Fraction.



Sample ID:	CL1616114ARO	**Job Number:**	S16_3840M
Multiplier:	11.52	**Client:**	Ramboll Environ
Dilution:	1	**Site:**	Zeon Chemicals ESA
Acquisition Method:	5UL_RUNF.M	**Client Sample Ref:**	WS13 0.3
Acquisition Date/Time:	17-May-16, 14:10:53		
Datafile:	D:\TES\DATA\Y2016\051716TPH_GC4\051716 2016-05-17 08-23-18\072B2601.D		

Where individual results are flagged see report notes for status.
Results corrected to dry weight at 105°C where appropriate, in accordance with the MCERTS standard.

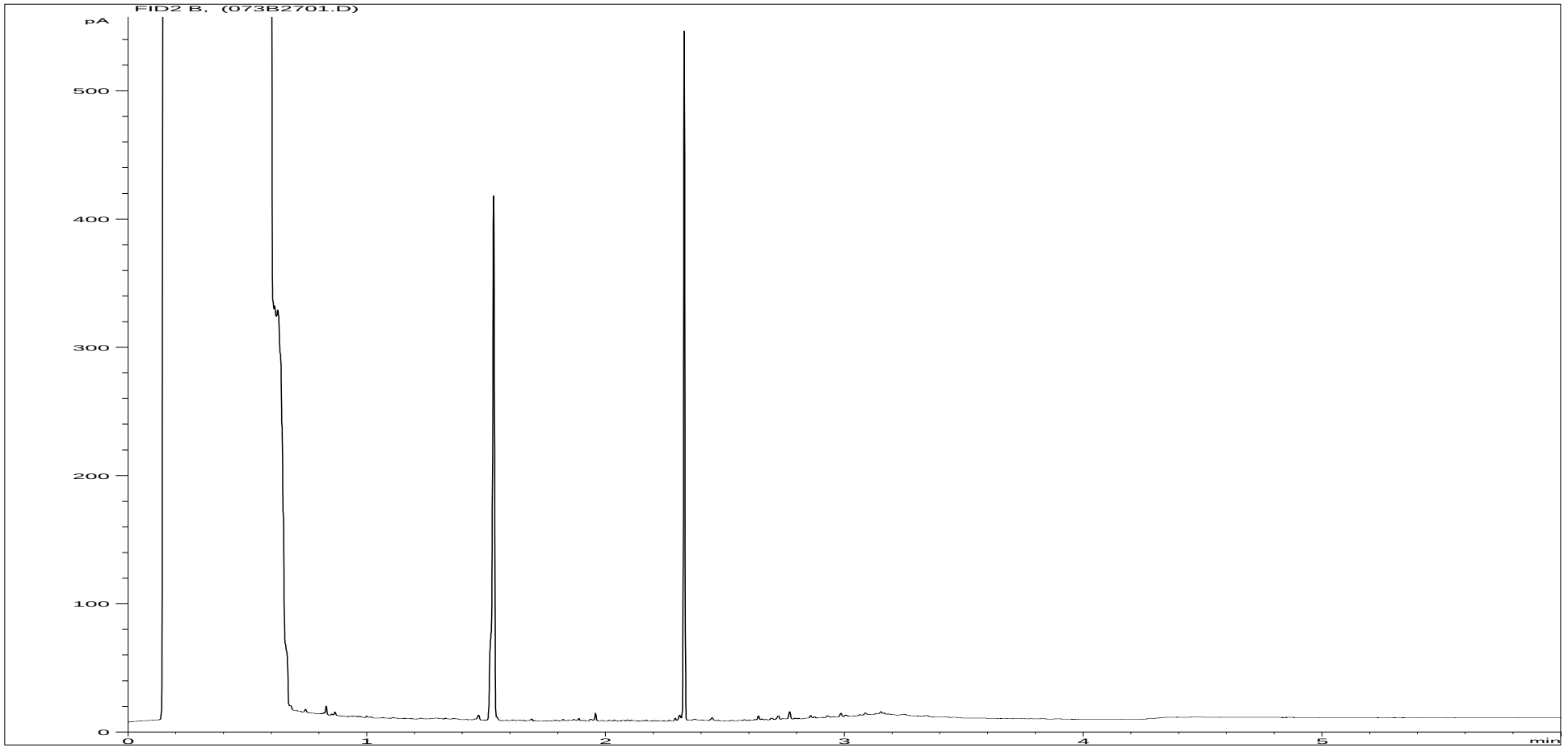
Petroleum Hydrocarbons (C8 to C40) by GC/FID Aliphatics Fraction.



Sample ID:	CL1616115ALI	**Job Number:**	S16_3840M
Multiplier:	16	**Client:**	Ramboll Environ
Dilution:	1	**Site:**	Zeon Chemicals ESA
Acquisition Method:	5UL_RUNF.M	**Client Sample Ref:**	WS13 0.8
Acquisition Date/Time:	17-May-16, 14:24:33		
Datafile:	D:\TES\DATA\Y2016\051716TPH_GC4\051716 2016-05-17 08-23-18\023F2701.D		

Where individual results are flagged see report notes for status.
Results corrected to dry weight at 105°C where appropriate, in accordance with the MCERTS standard.

Petroleum Hydrocarbons (C8 to C40) by GC/FID Aromatics Fraction.



Sample ID:	CL1616115ARO	**Job Number:**	S16_3840M
Multiplier:	11.36	**Client:**	Ramboll Environ
Dilution:	1	**Site:**	Zeon Chemicals ESA
Acquisition Method:	5UL_RUNF.M	**Client Sample Ref:**	WS13 0.8
Acquisition Date/Time:	17-May-16, 14:24:33		
Datafile:	D:\TES\DATA\Y2016\051716TPH_GC4\051716 2016-05-17 08-23-18\073B2701.D		

Where individual results are flagged see report notes for status.
Results corrected to dry weight at 105°C where appropriate, in accordance with the MCERTS standard.

Volatile Organic Compounds by HSA-GCMS

Accredited?: Yes

Customer and Site Details:	Ramboll Environ: Zeon Chemicals ESA	**Directory/Quant file:**	513VOC.MS19\ Initial Calibration	**Matrix:**	Soil
Sample Details:	BH106 0.6	**Date Booked in:**	11-May-16	**Method:**	Headspace
LIMS ID Number:	CL1616104	**Date Analysed:**	16-May-16	**Multiplier:**	1
Job Number:	S16_3840M	**Operator:**	PR	**Position:**	32

Target Compounds	CAS #	R.T. (min.)	Concentration µg/kg	% Fit	Accr. code
Dichlorodifluoromethane	75-71-8 **	-	< 1	-	N
Chloromethane	74-87-3 *	-	< 4	-	N
Vinyl Chloride	75-01-4	-	< 1	-	UM
Bromomethane	74-83-9	-	< 1	-	UM
Chloroethane	75-00-3	-	< 2	-	UM
Trichlorofluoromethane	75-69-4	-	< 1	-	UM
1,1-Dichloroethene	75-35-48 *	-	< 1	-	N
trans 1,2-Dichloroethene	156-60-5	-	< 1	-	UM
1,1-Dichloroethane	75-34-3	-	< 1	-	UM
MTBE	1634-04-4	-	< 1	-	UM
2,2-Dichloropropane	594-20-7	-	< 1	-	UM
cis 1,2-Dichloroethene	156-59-2	-	< 6	-	UM
Bromochloromethane	74-97-5	-	< 1	-	UM
Chloroform	67-66-3	-	< 1	-	UM
1,1,1-Trichloroethane	71-55-6	-	< 1	-	UM
Carbon Tetrachloride	56-23-5	-	< 1	-	UM
1,1-Dichloropropene	563-58-6	-	< 1	-	UM
Benzene	71-43-2	-	< 1	-	UM
1,2-Dichloroethane	107-06-2	-	< 1	-	UM
Trichloroethene	79-01-6 **	-	< 1	-	N
1,2-Dichloropropane	78-87-5	-	< 1	-	UM
Dibromomethane	74-95-3	-	< 1	-	UM
Bromodichloromethane	75-27-4	-	< 1	-	UM
cis 1,3-Dichloropropene	10061-01-5 **	-	< 1	-	N
Toluene	108-88-3 **	-	< 6	-	N
trans 1,3-Dichloropropene	10061-02-6 **	-	< 1	-	N
1,1,2-Trichloroethane	79-00-5	-	< 1	-	UM
Tetrachloroethene	127-18-4	-	< 4	-	UM
1,3-Dichloropropane	142-28-9	-	< 1	-	UM
Dibromochloromethane	124-48-1	-	< 1	-	UM
1,2-Dibromoethane	106-93-4	-	< 1	-	UM
Chlorobenzene	108-90-7	-	< 1	-	UM
Ethylbenzene	100-41-4 **	5.51	10	57	N
1,1,1,2-Tetrachloroethane	630-20-6 **	-	< 1	-	N
m and p-Xylene	108-38-3/106-42-3	-	< 5	-	UM

Target Compounds	CAS #	R.T. (min.)	Concentration µg/kg	% Fit	Accr. code
o-Xylene	95-47-6	-	< 2	-	UM
Styrene	100-42-5 **	-	< 1	-	N
Bromoform	75-25-2	-	< 1	-	UM
iso-Propylbenzene	98-82-8	-	< 1	-	UM
1,1,2,2-Tetrachloroethane	79-34-5 **	-	< 1	-	N
Propylbenzene	103-65-1	-	< 1	-	UM
Bromobenzene	108-86-1	-	< 1	-	UM
1,2,3-Trichloropropane	96-18-4	-	< 1	-	UM
2-Chlorotoluene	95-49-8	-	< 1	-	UM
1,3,5-Trimethylbenzene	108-67-8	-	< 1	-	UM
4-Chlorotoluene	106-43-4	-	< 1	-	UM
tert-Butylbenzene	98-06-6	-	< 1	-	UM
1,2,4-Trimethylbenzene	95-63-6	-	< 1	-	UM
sec-Butylbenzene	135-98-8	-	< 1	-	UM
p-Isopropyltoluene	99-87-6	-	< 1	-	UM
1,3-Dichlorobenzene	541-73-1	-	< 1	-	UM
1,4-Dichlorobenzene	106-46-7	-	< 1	-	UM
n-Butylbenzene	104-51-8 *	-	< 1	-	N
1,2-Dichlorobenzene	95-50-1 **	-	< 1	-	N
1,2-Dibromo-3-chloropropane	96-12-8 **	-	< 1	-	N
1,2,4-Trichlorobenzene	120-82-1 **	-	< 4	-	N
Hexachlorobutadiene	87-68-3 **	-	< 2	-	N
Naphthalene	91-20-3	-	< 6	-	UM
1,2,3-Trichlorobenzene	87-61-6	-	< 4	-	UM

Concentrations are reported on a dry weight basis
Compounds marked ** are not UKAS or Mcerts accredited
"M" denotes that % fit has been manually interpreted
This analysis was conducted on an 'As Received' basis.

Internal standards	R.T.	Area %	Surrogates	% Rec
Pentafluorobenzene	4.04	86	Dibromofluoromethane	121
1,4-Difluorobenzene	4.39	90	Toluene-d8	97
Chlorobenzene-d5	5.50	81		
Bromofluorobenzene	5.89	68		
1,4-Dichlorobenzene-d4	6.29	57		
Naphthalene-d8	7.12	40		

Where individual results are flagged see report notes for status.
Results corrected to dry weight at 105°C where appropriate, in accordance with the MCERTS standard.

Volatile Organic Compounds by HSA-GCMS

Accredited?: Yes

Customer and Site Details: Ramboll Environ: Zeon Chemicals ESA
Sample Details: WS23 0.5
LIMS ID Number: CL1616105
Job Number: S16_3840M

Directory/Quant file: 513VOC.MS19\ Initial Calibration
Date Booked in: 11-May-16
Date Analysed: 16-May-16
Operator: PR

Matrix: Soil
Method: Headspace
Multiplier: 1.03
Position: 1

Target Compounds	CAS #	R.T. (min.)	Concentration µg/kg	% Fit	Accr. code
Dichlorodifluoromethane	75-71-8 **	-	< 1	-	N
Chloromethane	74-87-3 *	-	< 4	-	N
Vinyl Chloride	75-01-4	-	< 1	-	UM
Bromomethane	74-83-9	-	< 1	-	UM
Chloroethane	75-00-3	-	< 3	-	UM
Trichlorofluoromethane	75-69-4	-	< 1	-	UM
1,1-Dichloroethene	75-35-48 *	-	< 1	-	N
trans 1,2-Dichloroethene	156-60-5	-	< 1	-	UM
1,1-Dichloroethane	75-34-3	-	< 1	-	UM
MTBE	1634-04-4	-	< 1	-	UM
2,2-Dichloropropane	594-20-7	-	< 1	-	UM
cis 1,2-Dichloroethene	156-59-2	-	< 7	-	UM
Bromochloromethane	74-97-5	-	< 1	-	UM
Chloroform	67-66-3	-	< 1	-	UM
1,1,1-Trichloroethane	71-55-6	-	< 1	-	UM
Carbon Tetrachloride	56-23-5	-	< 1	-	UM
1,1-Dichloropropene	563-58-6	-	< 1	-	UM
Benzene	71-43-2	-	< 1	-	UM
1,2-Dichloroethane	107-06-2	-	< 1	-	UM
Trichloroethene	79-01-6 **	-	< 1	-	N
1,2-Dichloropropane	78-87-5	-	< 1	-	UM
Dibromomethane	74-95-3	-	< 1	-	UM
Bromodichloromethane	75-27-4	-	< 1	-	UM
cis 1,3-Dichloropropene	10061-01-5 **	-	< 1	-	N
Toluene	108-88-3 **	-	< 7	-	N
trans 1,3-Dichloropropene	10061-02-6 **	-	< 1	-	N
1,1,2-Trichloroethane	79-00-5	-	< 1	-	UM
Tetrachloroethene	127-18-4	-	< 4	-	UM
1,3-Dichloropropane	142-28-9	-	< 1	-	UM
Dibromochloromethane	124-48-1	-	< 1	-	UM
1,2-Dibromoethane	106-93-4	-	< 1	-	UM
Chlorobenzene	108-90-7	-	< 1	-	UM
Ethylbenzene	100-41-4 **	-	< 3	-	N
1,1,1,2-Tetrachloroethane	630-20-6 **	-	< 1	-	N
m and p-Xylene	108-38-3/106-42-3	-	< 5	-	UM

Target Compounds	CAS #	R.T. (min.)	Concentration µg/kg	% Fit	Accr. code
o-Xylene	95-47-6	-	< 3	-	UM
Styrene	100-42-5 **	-	< 1	-	N
Bromoform	75-25-2	-	< 1	-	UM
iso-Propylbenzene	98-82-8	-	< 1	-	UM
1,1,2,2-Tetrachloroethane	79-34-5 **	-	< 1	-	N
Propylbenzene	103-65-1	-	< 1	-	UM
Bromobenzene	108-86-1	-	< 1	-	UM
1,2,3-Trichloropropane	96-18-4	-	< 1	-	UM
2-Chlorotoluene	95-49-8	-	< 1	-	UM
1,3,5-Trimethylbenzene	108-67-8	-	< 1	-	UM
4-Chlorotoluene	106-43-4	-	< 1	-	UM
tert-Butylbenzene	98-06-6	-	< 1	-	UM
1,2,4-Trimethylbenzene	95-63-6	-	< 1	-	UM
sec-Butylbenzene	135-98-8	-	< 1	-	UM
p-Isopropyltoluene	99-87-6	-	< 1	-	UM
1,3-Dichlorobenzene	541-73-1	-	< 1	-	UM
1,4-Dichlorobenzene	106-46-7	-	< 1	-	UM
n-Butylbenzene	104-51-8 *	-	< 1	-	N
1,2-Dichlorobenzene	95-50-1 **	-	< 1	-	N
1,2-Dibromo-3-chloropropane	96-12-8 **	-	< 1	-	N
1,2,4-Trichlorobenzene	120-82-1 **	-	< 4	-	N
Hexachlorobutadiene	87-68-3 **	-	< 3	-	N
Naphthalene	91-20-3	-	< 7	-	UM
1,2,3-Trichlorobenzene	87-61-6	-	< 4	-	UM

Concentrations are reported on a dry weight basis
Compounds marked ** are not UKAS or Mcerts accredited
"M" denotes that % fit has been manually interpreted
This analysis was conducted on an 'As Received' basis.

Internal standards	R.T.	Area %	Surrogates	% Rec
Pentafluorobenzene	4.04	86	Dibromofluoromethane	120
1,4-Difluorobenzene	4.39	89	Toluene-d8	96
Chlorobenzene-d5	5.50	79		
Bromofluorobenzene	5.89	66		
1,4-Dichlorobenzene-d4	6.29	55		
Naphthalene-d8	7.13	43		

Where individual results are flagged see report notes for status.
Results corrected to dry weight at 105°C where appropriate, in accordance with the MCERTS standard.

Volatile Organic Compounds by HSA-GCMS

Accredited?: Yes

Customer and Site Details: Ramboll Environ: Zeon Chemicals ESA
Sample Details: WS23 2.00
LIMS ID Number: CL1616106
Job Number: S16_3840M

Directory/Quant file: 513VOC.MS19\ Initial Calibration
Date Booked in: 11-May-16
Date Analysed: 16-May-16
Operator: PR

Matrix: Soil
Method: Headspace
Multiplier: 1.01
Position: 2

Target Compounds	CAS #	R.T. (min.)	Concentration µg/kg	% Fit	Accr. code
Dichlorodifluoromethane	75-71-8 **	-	< 1	-	N
Chloromethane	74-87-3 *	-	< 4	-	N
Vinyl Chloride	75-01-4	-	< 1	-	UM
Bromomethane	74-83-9	-	< 1	-	UM
Chloroethane	75-00-3	-	< 2	-	UM
Trichlorofluoromethane	75-69-4	-	< 1	-	UM
1,1-Dichloroethene	75-35-48 *	-	< 1	-	N
trans 1,2-Dichloroethene	156-60-5	-	< 1	-	UM
1,1-Dichloroethane	75-34-3	-	< 1	-	UM
MTBE	1634-04-4	-	< 1	-	UM
2,2-Dichloropropane	594-20-7	-	< 1	-	UM
cis 1,2-Dichloroethene	156-59-2	-	< 6	-	UM
Bromochloromethane	74-97-5	-	< 1	-	UM
Chloroform	67-66-3	-	< 1	-	UM
1,1,1-Trichloroethane	71-55-6	-	< 1	-	UM
Carbon Tetrachloride	56-23-5	-	< 1	-	UM
1,1-Dichloropropene	563-58-6	-	< 1	-	UM
Benzene	71-43-2	-	< 1	-	UM
1,2-Dichloroethane	107-06-2	-	< 1	-	UM
Trichloroethene	79-01-6 **	-	< 1	-	N
1,2-Dichloropropane	78-87-5	-	< 1	-	UM
Dibromomethane	74-95-3	-	< 1	-	UM
Bromodichloromethane	75-27-4	-	< 1	-	UM
cis 1,3-Dichloropropene	10061-01-5 **	-	< 1	-	N
Toluene	108-88-3 **	-	< 6	-	N
trans 1,3-Dichloropropene	10061-02-6 **	-	< 1	-	N
1,1,2-Trichloroethane	79-00-5	-	< 1	-	UM
Tetrachloroethene	127-18-4	-	< 4	-	UM
1,3-Dichloropropane	142-28-9	-	< 1	-	UM
Dibromochloromethane	124-48-1	-	< 1	-	UM
1,2-Dibromoethane	106-93-4	-	< 1	-	UM
Chlorobenzene	108-90-7	-	< 1	-	UM
Ethylbenzene	100-41-4 **	-	< 2	-	N
1,1,1,2-Tetrachloroethane	630-20-6 **	-	< 1	-	N
m and p-Xylene	108-38-3/106-42-3	-	< 5	-	UM

Target Compounds	CAS #	R.T. (min.)	Concentration µg/kg	% Fit	Accr. code
o-Xylene	95-47-6	-	< 2	-	UM
Styrene	100-42-5 **	-	< 1	-	N
Bromoform	75-25-2	-	< 1	-	UM
iso-Propylbenzene	98-82-8	-	< 1	-	UM
1,1,2,2-Tetrachloroethane	79-34-5 **	-	< 1	-	N
Propylbenzene	103-65-1	-	< 1	-	UM
Bromobenzene	108-86-1	-	< 1	-	UM
1,2,3-Trichloropropane	96-18-4	-	< 1	-	UM
2-Chlorotoluene	95-49-8	-	< 1	-	UM
1,3,5-Trimethylbenzene	108-67-8	-	< 1	-	UM
4-Chlorotoluene	106-43-4	-	< 1	-	UM
tert-Butylbenzene	98-06-6	-	< 1	-	UM
1,2,4-Trimethylbenzene	95-63-6	-	< 1	-	UM
sec-Butylbenzene	135-98-8	-	< 1	-	UM
p-Isopropyltoluene	99-87-6	-	< 1	-	UM
1,3-Dichlorobenzene	541-73-1	-	< 1	-	UM
1,4-Dichlorobenzene	106-46-7	-	< 1	-	UM
n-Butylbenzene	104-51-8 *	-	< 1	-	N
1,2-Dichlorobenzene	95-50-1 **	-	< 1	-	N
1,2-Dibromo-3-chloropropane	96-12-8 **	-	< 1	-	N
1,2,4-Trichlorobenzene	120-82-1 **	-	< 4	-	N
Hexachlorobutadiene	87-68-3 **	-	< 2	-	N
Naphthalene	91-20-3	-	< 6	-	UM
1,2,3-Trichlorobenzene	87-61-6	-	< 4	-	UM

Concentrations are reported on a dry weight basis
Compounds marked ** are not UKAS or Mcerts accredited
"M" denotes that % fit has been manually interpreted
This analysis was conducted on an 'As Received' basis.

Internal standards	R.T.	Area %	Surrogates	% Rec
Pentafluorobenzene	4.04	91	Dibromofluoromethane	118
1,4-Difluorobenzene	4.39	93	Toluene-d8	99
Chlorobenzene-d5	5.50	88		
Bromofluorobenzene	5.89	77		
1,4-Dichlorobenzene-d4	6.29	65		
Naphthalene-d8	7.13	60		

Where individual results are flagged see report notes for status.
Results corrected to dry weight at 105°C where appropriate, in accordance with the MCERTS standard.

Volatile Organic Compounds by HSA-GCMS

Accredited?: Yes

Customer and Site Details:	Ramboll Environ: Zeon Chemicals ESA	**Directory/Quant file:**	513VOC.MS19\ Initial Calibration	**Matrix:**	Soil
Sample Details:	WS22 0.6	**Date Booked in:**	11-May-16	**Method:**	Headspace
LIMS ID Number:	CL1616107	**Date Analysed:**	16-May-16	**Multiplier:**	1.05
Job Number:	S16_3840M	**Operator:**	PR	**Position:**	3

Target Compounds	CAS #	R.T. (min.)	Concentration µg/kg	% Fit	Accr. code
Dichlorodifluoromethane	75-71-8 **	-	< 1	-	N
Chloromethane	74-87-3 *	-	< 4	-	N
Vinyl Chloride	75-01-4	-	< 1	-	UM
Bromomethane	74-83-9	-	< 1	-	UM
Chloroethane	75-00-3	-	< 3	-	UM
Trichlorofluoromethane	75-69-4	-	< 1	-	UM
1,1-Dichloroethene	75-35-48 *	-	< 1	-	N
trans 1,2-Dichloroethene	156-60-5	-	< 1	-	UM
1,1-Dichloroethane	75-34-3	-	< 1	-	UM
MTBE	1634-04-4	-	< 1	-	UM
2,2-Dichloropropane	594-20-7	-	< 1	-	UM
cis 1,2-Dichloroethene	156-59-2	-	< 7	-	UM
Bromochloromethane	74-97-5	-	< 1	-	UM
Chloroform	67-66-3	-	< 1	-	UM
1,1,1-Trichloroethane	71-55-6	-	< 1	-	UM
Carbon Tetrachloride	56-23-5	-	< 1	-	UM
1,1-Dichloropropene	563-58-6	-	< 1	-	UM
Benzene	71-43-2	-	< 1	-	UM
1,2-Dichloroethane	107-06-2	-	< 1	-	UM
Trichloroethene	79-01-6 **	-	< 1	-	N
1,2-Dichloropropane	78-87-5	-	< 1	-	UM
Dibromomethane	74-95-3	-	< 1	-	UM
Bromodichloromethane	75-27-4	-	< 1	-	UM
cis 1,3-Dichloropropene	10061-01-5 **	-	< 1	-	N
Toluene	108-88-3 **	-	< 7	-	N
trans 1,3-Dichloropropene	10061-02-6 **	-	< 1	-	N
1,1,2-Trichloroethane	79-00-5	-	< 1	-	UM
Tetrachloroethene	127-18-4	-	< 4	-	UM
1,3-Dichloropropane	142-28-9	-	< 1	-	UM
Dibromochloromethane	124-48-1	-	< 1	-	UM
1,2-Dibromoethane	106-93-4	-	< 1	-	UM
Chlorobenzene	108-90-7	-	< 1	-	UM
Ethylbenzene	100-41-4 **	-	< 3	-	N
1,1,1,2-Tetrachloroethane	630-20-6 **	-	< 1	-	N
m and p-Xylene	108-38-3/106-42-3	-	< 6	-	UM

Target Compounds	CAS #	R.T. (min.)	Concentration µg/kg	% Fit	Accr. code
o-Xylene	95-47-6	-	< 3	-	UM
Styrene	100-42-5 **	-	< 1	-	N
Bromoform	75-25-2	-	< 1	-	UM
iso-Propylbenzene	98-82-8	-	< 1	-	UM
1,1,2,2-Tetrachloroethane	79-34-5 **	-	< 1	-	N
Propylbenzene	103-65-1	-	< 1	-	UM
Bromobenzene	108-86-1	-	< 1	-	UM
1,2,3-Trichloropropane	96-18-4	-	< 1	-	UM
2-Chlorotoluene	95-49-8	-	< 1	-	UM
1,3,5-Trimethylbenzene	108-67-8	-	< 1	-	UM
4-Chlorotoluene	106-43-4	-	< 1	-	UM
tert-Butylbenzene	98-06-6	-	< 1	-	UM
1,2,4-Trimethylbenzene	95-63-6	-	< 1	-	UM
sec-Butylbenzene	135-98-8	-	< 1	-	UM
p-Isopropyltoluene	99-87-6	-	< 1	-	UM
1,3-Dichlorobenzene	541-73-1	-	< 1	-	UM
1,4-Dichlorobenzene	106-46-7	-	< 1	-	UM
n-Butylbenzene	104-51-8 *	-	< 1	-	N
1,2-Dichlorobenzene	95-50-1 **	-	< 1	-	N
1,2-Dibromo-3-chloropropane	96-12-8 **	-	< 1	-	N
1,2,4-Trichlorobenzene	120-82-1 **	-	< 4	-	N
Hexachlorobutadiene	87-68-3 **	-	< 3	-	N
Naphthalene	91-20-3	-	< 7	-	UM
1,2,3-Trichlorobenzene	87-61-6	-	< 4	-	UM

Concentrations are reported on a dry weight basis
Compounds marked ** are not UKAS or Mcerts accredited
"M" denotes that % fit has been manually interpreted
This analysis was conducted on an 'As Received' basis.

Internal standards	R.T.	Area %	Surrogates	% Rec
Pentafluorobenzene	4.04	78	Dibromofluoromethane	105
1,4-Difluorobenzene	4.39	73	Toluene-d8	91
Chlorobenzene-d5	5.50	48		
Bromofluorobenzene	5.89	32		
1,4-Dichlorobenzene-d4	6.29	21		
Naphthalene-d8	7.12	12		

Where individual results are flagged see report notes for status.
Results corrected to dry weight at 105°C where appropriate, in accordance with the MCERTS standard.

Volatile Organic Compounds by HSA-GCMS

Accredited?: Yes

Customer and Site Details: Ramboll Environ: Zeon Chemicals ESA
Sample Details: WS221.0
LIMS ID Number: CL1616108
Job Number: S16_3840M

Directory/Quant file: 513VOC.MS19\ Initial Calibration
Date Booked in: 11-May-16
Date Analysed: 16-May-16
Operator: PR

Matrix: Soil
Method: Headspace
Multiplier: 1.08
Position: 4

Target Compounds	CAS #	R.T. (min.)	Concentration µg/kg	% Fit	Accr. code
Dichlorodifluoromethane	75-71-8 **	-	< 1	-	N
Chloromethane	74-87-3 *	-	< 4	-	N
Vinyl Chloride	75-01-4	-	< 1	-	UM
Bromomethane	74-83-9	-	< 1	-	UM
Chloroethane	75-00-3	-	< 2	-	UM
Trichlorofluoromethane	75-69-4	-	< 1	-	UM
1,1-Dichloroethene	75-35-48 *	-	< 1	-	N
trans 1,2-Dichloroethene	156-60-5	-	< 1	-	UM
1,1-Dichloroethane	75-34-3	-	< 1	-	UM
MTBE	1634-04-4	-	< 1	-	UM
2,2-Dichloropropane	594-20-7	-	< 1	-	UM
cis 1,2-Dichloroethene	156-59-2	-	< 6	-	UM
Bromochloromethane	74-97-5	-	< 1	-	UM
Chloroform	67-66-3	-	< 1	-	UM
1,1,1-Trichloroethane	71-55-6	-	< 1	-	UM
Carbon Tetrachloride	56-23-5	-	< 1	-	UM
1,1-Dichloropropene	563-58-6	-	< 1	-	UM
Benzene	71-43-2	-	< 1	-	UM
1,2-Dichloroethane	107-06-2	-	< 1	-	UM
Trichloroethene	79-01-6 **	-	< 1	-	N
1,2-Dichloropropane	78-87-5	-	< 1	-	UM
Dibromomethane	74-95-3	-	< 1	-	UM
Bromodichloromethane	75-27-4	-	< 1	-	UM
cis 1,3-Dichloropropene	10061-01-5 **	-	< 1	-	N
Toluene	108-88-3 **	-	< 6	-	N
trans 1,3-Dichloropropene	10061-02-6 **	-	< 1	-	N
1,1,2-Trichloroethane	79-00-5	-	< 1	-	UM
Tetrachloroethene	127-18-4	-	< 4	-	UM
1,3-Dichloropropane	142-28-9	-	< 1	-	UM
Dibromochloromethane	124-48-1	-	< 1	-	UM
1,2-Dibromoethane	106-93-4	-	< 1	-	UM
Chlorobenzene	108-90-7	-	< 1	-	UM
Ethylbenzene	100-41-4 **	-	< 2	-	N
1,1,1,2-Tetrachloroethane	630-20-6 **	-	< 1	-	N
m and p-Xylene	108-38-3/106-42-3	-	< 5	-	UM

Target Compounds	CAS #	R.T. (min.)	Concentration µg/kg	% Fit	Accr. code
o-Xylene	95-47-6	-	< 2	-	UM
Styrene	100-42-5 **	-	< 1	-	N
Bromoform	75-25-2	-	< 1	-	UM
iso-Propylbenzene	98-82-8	-	< 1	-	UM
1,1,2,2-Tetrachloroethane	79-34-5 **	-	< 1	-	N
Propylbenzene	103-65-1	-	< 1	-	UM
Bromobenzene	108-86-1	-	< 1	-	UM
1,2,3-Trichloropropane	96-18-4	-	< 1	-	UM
2-Chlorotoluene	95-49-8	-	< 1	-	UM
1,3,5-Trimethylbenzene	108-67-8	-	< 1	-	UM
4-Chlorotoluene	106-43-4	-	< 1	-	UM
tert-Butylbenzene	98-06-6	-	< 1	-	UM
1,2,4-Trimethylbenzene	95-63-6	-	< 1	-	UM
sec-Butylbenzene	135-98-8	-	< 1	-	UM
p-Isopropyltoluene	99-87-6	-	< 1	-	UM
1,3-Dichlorobenzene	541-73-1	-	< 1	-	UM
1,4-Dichlorobenzene	106-46-7	-	< 1	-	UM
n-Butylbenzene	104-51-8 *	-	< 1	-	N
1,2-Dichlorobenzene	95-50-1 **	-	< 1	-	N
1,2-Dibromo-3-chloropropane	96-12-8 **	-	< 1	-	N
1,2,4-Trichlorobenzene	120-82-1 **	-	< 4	-	N
Hexachlorobutadiene	87-68-3 **	-	< 2	-	N
Naphthalene	91-20-3	-	< 6	-	UM
1,2,3-Trichlorobenzene	87-61-6	-	< 4	-	UM

Concentrations are reported on a dry weight basis
Compounds marked ** are not UKAS or Mcerts accredited
"M" denotes that % fit has been manually interpreted
This analysis was conducted on an 'As Received' basis.

Internal standards	R.T.	Area %	Surrogates	% Rec
Pentafluorobenzene	4.04	85	Dibromofluoromethane	123
1,4-Difluorobenzene	4.39	87	Toluene-d8	97
Chlorobenzene-d5	5.50	78		
Bromofluorobenzene	5.89	65		
1,4-Dichlorobenzene-d4	6.29	53		
Naphthalene-d8	7.12	36		

Where individual results are flagged see report notes for status.
Results corrected to dry weight at 105°C where appropriate, in accordance with the MCERTS standard.

Volatile Organic Compounds by HSA-GCMS

Accredited?: Yes

Customer and Site Details: Ramboll Environ: Zeon Chemicals ESA
Sample Details: WS22 1.2
LIMS ID Number: CL1616109
Job Number: S16_3840M

Directory/Quant file: 513VOC.MS19\ Initial Calibration
Date Booked in: 11-May-16
Date Analysed: 16-May-16
Operator: PR

Matrix: Soil
Method: Headspace
Multiplier: 0.97
Position: 5

Target Compounds	CAS #	R.T. (min.)	Concentration µg/kg	% Fit	Accr. code
Dichlorodifluoromethane	75-71-8 **	-	< 1	-	N
Chloromethane	74-87-3 *	-	< 4	-	N
Vinyl Chloride	75-01-4	-	< 1	-	UM
Bromomethane	74-83-9	-	< 1	-	UM
Chloroethane	75-00-3	-	< 2	-	UM
Trichlorofluoromethane	75-69-4	-	< 1	-	UM
1,1-Dichloroethene	75-35-48 *	-	< 1	-	N
trans 1,2-Dichloroethene	156-60-5	-	< 1	-	UM
1,1-Dichloroethane	75-34-3	-	< 1	-	UM
MTBE	1634-04-4	-	< 1	-	UM
2,2-Dichloropropane	594-20-7	-	< 1	-	UM
cis 1,2-Dichloroethene	156-59-2	-	< 6	-	UM
Bromochloromethane	74-97-5	-	< 1	-	UM
Chloroform	67-66-3	-	< 1	-	UM
1,1,1-Trichloroethane	71-55-6	-	< 1	-	UM
Carbon Tetrachloride	56-23-5	-	< 1	-	UM
1,1-Dichloropropene	563-58-6	-	< 1	-	UM
Benzene	71-43-2	-	< 1	-	UM
1,2-Dichloroethane	107-06-2	-	< 1	-	UM
Trichloroethene	79-01-6 **	-	< 1	-	N
1,2-Dichloropropane	78-87-5	-	< 1	-	UM
Dibromomethane	74-95-3	-	< 1	-	UM
Bromodichloromethane	75-27-4	-	< 1	-	UM
cis 1,3-Dichloropropene	10061-01-5 **	-	< 1	-	N
Toluene	108-88-3 **	-	< 6	-	N
trans 1,3-Dichloropropene	10061-02-6 **	-	< 1	-	N
1,1,2-Trichloroethane	79-00-5	-	< 1	-	UM
Tetrachloroethene	127-18-4	-	< 4	-	UM
1,3-Dichloropropane	142-28-9	-	< 1	-	UM
Dibromochloromethane	124-48-1	-	< 1	-	UM
1,2-Dibromoethane	106-93-4	-	< 1	-	UM
Chlorobenzene	108-90-7	-	< 1	-	UM
Ethylbenzene	100-41-4 **	-	< 2	-	N
1,1,1,2-Tetrachloroethane	630-20-6 **	-	< 1	-	N
m and p-Xylene	108-38-3/106-42-3	-	< 5	-	UM

Target Compounds	CAS #	R.T. (min.)	Concentration µg/kg	% Fit	Accr. code
o-Xylene	95-47-6	-	< 2	-	UM
Styrene	100-42-5 **	-	< 1	-	N
Bromoform	75-25-2	-	< 1	-	UM
iso-Propylbenzene	98-82-8	-	< 1	-	UM
1,1,2,2-Tetrachloroethane	79-34-5 **	-	< 1	-	N
Propylbenzene	103-65-1	-	< 1	-	UM
Bromobenzene	108-86-1	-	< 1	-	UM
1,2,3-Trichloropropane	96-18-4	-	< 1	-	UM
2-Chlorotoluene	95-49-8	-	< 1	-	UM
1,3,5-Trimethylbenzene	108-67-8	-	< 1	-	UM
4-Chlorotoluene	106-43-4	-	< 1	-	UM
tert-Butylbenzene	98-06-6	-	< 1	-	UM
1,2,4-Trimethylbenzene	95-63-6	-	< 1	-	UM
sec-Butylbenzene	135-98-8	-	< 1	-	UM
p-Isopropyltoluene	99-87-6	-	< 1	-	UM
1,3-Dichlorobenzene	541-73-1	-	< 1	-	UM
1,4-Dichlorobenzene	106-46-7	-	< 1	-	UM
n-Butylbenzene	104-51-8 *	-	< 1	-	N
1,2-Dichlorobenzene	95-50-1 **	-	< 1	-	N
1,2-Dibromo-3-chloropropane	96-12-8 **	-	< 1	-	N
1,2,4-Trichlorobenzene	120-82-1 **	-	< 4	-	N
Hexachlorobutadiene	87-68-3 **	-	< 2	-	N
Naphthalene	91-20-3	-	< 6	-	UM
1,2,3-Trichlorobenzene	87-61-6	-	< 4	-	UM

Concentrations are reported on a dry weight basis
Compounds marked ** are not UKAS or Mcerts accredited
"M" denotes that % fit has been manually interpreted
This analysis was conducted on an 'As Received' basis.

Internal standards	R.T.	Area %	Surrogates	% Rec
Pentafluorobenzene	4.04	83	Dibromofluoromethane	123
1,4-Difluorobenzene	4.39	87	Toluene-d8	97
Chlorobenzene-d5	5.50	76		
Bromofluorobenzene	5.89	62		
1,4-Dichlorobenzene-d4	6.29	50		
Naphthalene-d8	7.12	32		

Where individual results are flagged see report notes for status.
Results corrected to dry weight at 105°C where appropriate, in accordance with the MCERTS standard.

Volatile Organic Compounds by HSA-GCMS

Accredited?: No

Customer and Site Details: Ramboll Environ: Zeon Chemicals ESA
Sample Details: WS15 0.4 (NVM)
LIMS ID Number: CL1616110
Job Number: S16_3840M

Directory/Quant file: 513VOC.MS19\ Initial Calibration
Date Booked in: 11-May-16
Date Analysed: 16-May-16
Operator: PR

Matrix: Soil
Method: Headspace
Multiplier: 0.99
Position: 6

Target Compounds	CAS #	R.T. (min.)	Concentration µg/kg	% Fit	Accr. code
Dichlorodifluoromethane	75-71-8	-	< 1	-	N
Chloromethane	74-87-3	-	< 4	-	N
Vinyl Chloride	75-01-4	-	< 1	-	N
Bromomethane	74-83-9	-	< 1	-	N
Chloroethane	75-00-3	-	< 3	-	N
Trichlorofluoromethane	75-69-4	-	< 1	-	N
1,1-Dichloroethene	75-35-48	-	< 1	-	N
trans 1,2-Dichloroethene	156-60-5	-	< 1	-	N
1,1-Dichloroethane	75-34-3	-	< 1	-	N
MTBE	1634-04-4	-	< 1	-	N
2,2-Dichloropropane	594-20-7	-	< 1	-	N
cis 1,2-Dichloroethene	156-59-2	-	< 7	-	N
Bromochloromethane	74-97-5	-	< 1	-	N
Chloroform	67-66-3	-	< 1	-	N
1,1,1-Trichloroethane	71-55-6	-	< 1	-	N
Carbon Tetrachloride	56-23-5	-	< 1	-	N
1,1-Dichloropropene	563-58-6	-	< 1	-	N
Benzene	71-43-2	4.23	10	M	N
1,2-Dichloroethane	107-06-2	-	< 1	-	N
Trichloroethene	79-01-6	-	< 1	-	N
1,2-Dichloropropane	78-87-5	-	< 1	-	N
Dibromomethane	74-95-3	-	< 1	-	N
Bromodichloromethane	75-27-4	-	< 1	-	N
cis 1,3-Dichloropropene	10061-01-5	-	< 1	-	N
Toluene	108-88-3	4.99	14	M	N
trans 1,3-Dichloropropene	10061-02-6	-	< 1	-	N
1,1,2-Trichloroethane	79-00-5	-	< 1	-	N
Tetrachloroethene	127-18-4	-	< 4	-	N
1,3-Dichloropropane	142-28-9	-	< 1	-	N
Dibromochloromethane	124-48-1	-	< 1	-	N
1,2-Dibromoethane	106-93-4	-	< 1	-	N
Chlorobenzene	108-90-7	-	< 1	-	N
Ethylbenzene	100-41-4	-	< 3	-	N
1,1,1,2-Tetrachloroethane	630-20-6	-	< 1	-	N
m and p-Xylene	108-38-3/106-42-3	5.55	25	M	N

Target Compounds	CAS #	R.T. (min.)	Concentration µg/kg	% Fit	Accr. code
o-Xylene	95-47-6	5.70	4	M	N
Styrene	100-42-5 **	-	< 1	-	N
Bromoform	75-25-2	-	< 1	-	N
iso-Propylbenzene	98-82-8	-	< 1	-	N
1,1,2,2-Tetrachloroethane	79-34-5 **	-	< 1	-	N
Propylbenzene	103-65-1	-	< 1	-	N
Bromobenzene	108-86-1	-	< 1	-	N
1,2,3-Trichloropropane	96-18-4	-	< 1	-	N
2-Chlorotoluene	95-49-8	-	< 1	-	N
1,3,5-Trimethylbenzene	108-67-8	-	< 1	-	N
4-Chlorotoluene	106-43-4	-	< 1	-	N
tert-Butylbenzene	98-06-6	-	< 1	-	N
1,2,4-Trimethylbenzene	95-63-6	-	< 1	-	N
sec-Butylbenzene	135-98-8	-	< 1	-	N
p-Isopropyltoluene	99-87-6	-	< 1	-	N
1,3-Dichlorobenzene	541-73-1	-	< 1	-	N
1,4-Dichlorobenzene	106-46-7	-	< 1	-	N
n-Butylbenzene	104-51-8 *	-	< 1	-	N
1,2-Dichlorobenzene	95-50-1 **	-	< 1	-	N
1,2-Dibromo-3-chloropropane	96-12-8 **	-	< 1	-	N
1,2,4-Trichlorobenzene	120-82-1 **	-	< 4	-	N
Hexachlorobutadiene	87-68-3 **	-	< 3	-	N
Naphthalene	91-20-3	-	< 7	-	N
1,2,3-Trichlorobenzene	87-61-6	-	< 4	-	N

Concentrations are reported on a dry weight basis
Compounds marked ** are not UKAS or Mcerts accredited
"M" denotes that % fit has been manually interpreted
This analysis was conducted on an 'As Received' basis.

Internal standards	R.T.	Area %	Surrogates	% Rec
Pentafluorobenzene	4.04	58	Dibromofluoromethane	105
1,4-Difluorobenzene	4.39	46	Toluene-d8	83
Chlorobenzene-d5	5.50	19		
Bromofluorobenzene	5.89	10		
1,4-Dichlorobenzene-d4	6.29	6		
Naphthalene-d8	7.13	2		

Where individual results are flagged see report notes for status.
Results corrected to dry weight at 105°C where appropriate, in accordance with the MCERTS standard.

Volatile Organic Compounds by HSA-GCMS

Accredited?: Yes

Customer and Site Details: Ramboll Environ: Zeon Chemicals ESA
Sample Details: WS14 1.5
LIMS ID Number: CL1616111
Job Number: S16_3840M

Directory/Quant file: 513VOC.MS19\ Initial Calibration
Date Booked in: 11-May-16
Date Analysed: 16-May-16
Operator: PR

Matrix: Soil
Method: Headspace
Multiplier: 1.05
Position: 7

Target Compounds	CAS #	R.T. (min.)	Concentration µg/kg	% Fit	Accr. code
Dichlorodifluoromethane	75-71-8 **	-	< 1	-	N
Chloromethane	74-87-3 *	-	< 4	-	N
Vinyl Chloride	75-01-4	-	< 1	-	UM
Bromomethane	74-83-9	-	< 1	-	UM
Chloroethane	75-00-3	-	< 2	-	UM
Trichlorofluoromethane	75-69-4	-	< 1	-	UM
1,1-Dichloroethene	75-35-48 *	-	< 1	-	N
trans 1,2-Dichloroethene	156-60-5	-	< 1	-	UM
1,1-Dichloroethane	75-34-3	-	< 1	-	UM
MTBE	1634-04-4	-	< 1	-	UM
2,2-Dichloropropane	594-20-7	-	< 1	-	UM
cis 1,2-Dichloroethene	156-59-2	-	< 6	-	UM
Bromochloromethane	74-97-5	-	< 1	-	UM
Chloroform	67-66-3	-	< 1	-	UM
1,1,1-Trichloroethane	71-55-6	-	< 1	-	UM
Carbon Tetrachloride	56-23-5	-	< 1	-	UM
1,1-Dichloropropene	563-58-6	-	< 1	-	UM
Benzene	71-43-2	-	< 1	-	UM
1,2-Dichloroethane	107-06-2	-	< 1	-	UM
Trichloroethene	79-01-6 **	-	< 1	-	N
1,2-Dichloropropane	78-87-5	-	< 1	-	UM
Dibromomethane	74-95-3	-	< 1	-	UM
Bromodichloromethane	75-27-4	-	< 1	-	UM
cis 1,3-Dichloropropene	10061-01-5 **	-	< 1	-	N
Toluene	108-88-3 **	-	< 6	-	N
trans 1,3-Dichloropropene	10061-02-6 **	-	< 1	-	N
1,1,2-Trichloroethane	79-00-5	-	< 1	-	UM
Tetrachloroethene	127-18-4	-	< 4	-	UM
1,3-Dichloropropane	142-28-9	-	< 1	-	UM
Dibromochloromethane	124-48-1	-	< 1	-	UM
1,2-Dibromoethane	106-93-4	-	< 1	-	UM
Chlorobenzene	108-90-7	-	< 1	-	UM
Ethylbenzene	100-41-4 **	-	< 2	-	N
1,1,1,2-Tetrachloroethane	630-20-6 **	-	< 1	-	N
m and p-Xylene	108-38-3/106-42-3	-	< 5	-	UM

Target Compounds	CAS #	R.T. (min.)	Concentration µg/kg	% Fit	Accr. code
o-Xylene	95-47-6	-	< 2	-	UM
Styrene	100-42-5 **	-	< 1	-	N
Bromoform	75-25-2	-	< 1	-	UM
iso-Propylbenzene	98-82-8	-	< 1	-	UM
1,1,2,2-Tetrachloroethane	79-34-5 **	-	< 1	-	N
Propylbenzene	103-65-1	-	< 1	-	UM
Bromobenzene	108-86-1	-	< 1	-	UM
1,2,3-Trichloropropane	96-18-4	-	< 1	-	UM
2-Chlorotoluene	95-49-8	-	< 1	-	UM
1,3,5-Trimethylbenzene	108-67-8	-	< 1	-	UM
4-Chlorotoluene	106-43-4	-	< 1	-	UM
tert-Butylbenzene	98-06-6	-	< 1	-	UM
1,2,4-Trimethylbenzene	95-63-6	-	< 1	-	UM
sec-Butylbenzene	135-98-8	-	< 1	-	UM
p-Isopropyltoluene	99-87-6	-	< 1	-	UM
1,3-Dichlorobenzene	541-73-1	-	< 1	-	UM
1,4-Dichlorobenzene	106-46-7	-	< 1	-	UM
n-Butylbenzene	104-51-8 *	-	< 1	-	N
1,2-Dichlorobenzene	95-50-1 **	-	< 1	-	N
1,2-Dibromo-3-chloropropane	96-12-8 **	-	< 1	-	N
1,2,4-Trichlorobenzene	120-82-1 **	-	< 4	-	N
Hexachlorobutadiene	87-68-3 **	-	< 2	-	N
Naphthalene	91-20-3	-	< 6	-	UM
1,2,3-Trichlorobenzene	87-61-6	-	< 4	-	UM

Concentrations are reported on a dry weight basis
Compounds marked ** are not UKAS or Mcerts accredited
"M" denotes that % fit has been manually interpreted
This analysis was conducted on an 'As Received' basis.

Internal standards	R.T.	Area %	Surrogates	% Rec
Pentafluorobenzene	4.04	94	Dibromofluoromethane	116
1,4-Difluorobenzene	4.39	97	Toluene-d8	99
Chlorobenzene-d5	5.50	93		
Bromofluorobenzene	5.89	83		
1,4-Dichlorobenzene-d4	6.29	73		
Naphthalene-d8	7.13	72		

Where individual results are flagged see report notes for status.
Results corrected to dry weight at 105°C where appropriate, in accordance with the MCERTS standard.

Volatile Organic Compounds by HSA-GCMS

Accredited?: No

Customer and Site Details:	Ramboll Environ: Zeon Chemicals ESA	**Directory/Quant file:**	513VOC.MS19\ Initial Calibration	**Matrix:**	Soil
Sample Details:	WS16 0.3 (NVM)	**Date Booked in:**	11-May-16	**Method:**	Headspace
LIMS ID Number:	CL1616112	**Date Analysed:**	16-May-16	**Multiplier:**	1.05
Job Number:	S16_3840M	**Operator:**	PR	**Position:**	8

Target Compounds	CAS #	R.T. (min.)	Concentration µg/kg	% Fit	Accr. code
Dichlorodifluoromethane	75-71-8	-	< 1	-	N
Chloromethane	74-87-3	-	< 4	-	N
Vinyl Chloride	75-01-4	-	< 1	-	N
Bromomethane	74-83-9	-	< 1	-	N
Chloroethane	75-00-3	-	< 3	-	N
Trichlorofluoromethane	75-69-4	-	< 1	-	N
1,1-Dichloroethene	75-35-48	2.55	12	M	N
trans 1,2-Dichloroethene	156-60-5	-	< 1	-	N
1,1-Dichloroethane	75-34-3	-	< 1	-	N
MTBE	1634-04-4	-	< 1	-	N
2,2-Dichloropropane	594-20-7	-	< 1	-	N
cis 1,2-Dichloroethene	156-59-2	-	< 7	-	N
Bromochloromethane	74-97-5	-	< 1	-	N
Chloroform	67-66-3	-	< 1	-	N
1,1,1-Trichloroethane	71-55-6	-	< 1	-	N
Carbon Tetrachloride	56-23-5	-	< 1	-	N
1,1-Dichloropropene	563-58-6	-	< 1	-	N
Benzene	71-43-2	-	< 1	-	N
1,2-Dichloroethane	107-06-2	-	< 1	-	N
Trichloroethene	79-01-6	-	< 1	-	N
1,2-Dichloropropane	78-87-5	-	< 1	-	N
Dibromomethane	74-95-3	-	< 1	-	N
Bromodichloromethane	75-27-4	-	< 1	-	N
cis 1,3-Dichloropropene	10061-01-5	-	< 1	-	N
Toluene	108-88-3	-	< 7	-	N
trans 1,3-Dichloropropene	10061-02-6	-	< 1	-	N
1,1,2-Trichloroethane	79-00-5	-	< 1	-	N
Tetrachloroethene	127-18-4	-	< 4	-	N
1,3-Dichloropropane	142-28-9	-	< 1	-	N
Dibromochloromethane	124-48-1	-	< 1	-	N
1,2-Dibromoethane	106-93-4	-	< 1	-	N
Chlorobenzene	108-90-7	-	< 1	-	N
Ethylbenzene	100-41-4	-	< 3	-	N
1,1,1,2-Tetrachloroethane	630-20-6	-	< 1	-	N
m and p-Xylene	108-38-3/106-42-3	-	< 6	-	N

Target Compounds	CAS #	R.T. (min.)	Concentration µg/kg	% Fit	Accr. code
o-Xylene	95-47-6	-	< 3	-	N
Styrene	100-42-5 **	-	< 1	-	N
Bromoform	75-25-2	-	< 1	-	N
iso-Propylbenzene	98-82-8	-	< 1	-	N
1,1,2,2-Tetrachloroethane	79-34-5 **	-	< 1	-	N
Propylbenzene	103-65-1	-	< 1	-	N
Bromobenzene	108-86-1	-	< 1	-	N
1,2,3-Trichloropropane	96-18-4	-	< 1	-	N
2-Chlorotoluene	95-49-8	-	< 1	-	N
1,3,5-Trimethylbenzene	108-67-8	-	< 1	-	N
4-Chlorotoluene	106-43-4	-	< 1	-	N
tert-Butylbenzene	98-06-6	-	< 1	-	N
1,2,4-Trimethylbenzene	95-63-6	-	< 1	-	N
sec-Butylbenzene	135-98-8	-	< 1	-	N
p-Isopropyltoluene	99-87-6	-	< 1	-	N
1,3-Dichlorobenzene	541-73-1	-	< 1	-	N
1,4-Dichlorobenzene	106-46-7	-	< 1	-	N
n-Butylbenzene	104-51-8 *	-	< 1	-	N
1,2-Dichlorobenzene	95-50-1 **	-	< 1	-	N
1,2-Dibromo-3-chloropropane	96-12-8 **	-	< 1	-	N
1,2,4-Trichlorobenzene	120-82-1 **	-	< 4	-	N
Hexachlorobutadiene	87-68-3 **	-	< 3	-	N
Naphthalene	91-20-3	-	< 7	-	N
1,2,3-Trichlorobenzene	87-61-6	-	< 4	-	N

Concentrations are reported on a dry weight basis
Compounds marked ** are not UKAS or Mcerts accredited
"M" denotes that % fit has been manually interpreted
This analysis was conducted on an 'As Received' basis.

Internal standards	R.T.	Area %	Surrogates	% Rec
Pentafluorobenzene	4.04	73	Dibromofluoromethane	105
1,4-Difluorobenzene	4.39	65	Toluene-d8	93
Chlorobenzene-d5	5.50	37		
Bromofluorobenzene	5.89	21		
1,4-Dichlorobenzene-d4	6.29	13		
Naphthalene-d8	7.13	5		

Where individual results are flagged see report notes for status.
Results corrected to dry weight at 105°C where appropriate, in accordance with the MCERTS standard.

Volatile Organic Compounds by HSA-GCMS

Accredited?: Yes

Customer and Site Details: Ramboll Environ: Zeon Chemicals ESA
Sample Details: WS17 0.3
LIMS ID Number: CL1616113
Job Number: S16_3840M

Directory/Quant file: 513VOC.MS19\ Initial Calibration
Date Booked in: 11-May-16
Date Analysed: 16-May-16
Operator: PR

Matrix: Soil
Method: Headspace
Multiplier: 0.97
Position: 9

Target Compounds	CAS #	R.T. (min.)	Concentration µg/kg	% Fit	Accr. code
Dichlorodifluoromethane	75-71-8 **	-	< 1	-	N
Chloromethane	74-87-3 *	-	< 4	-	N
Vinyl Chloride	75-01-4	-	< 1	-	UM
Bromomethane	74-83-9	-	< 1	-	UM
Chloroethane	75-00-3	-	< 3	-	UM
Trichlorofluoromethane	75-69-4	-	< 1	-	UM
1,1-Dichloroethene	75-35-48 *	-	< 1	-	N
trans 1,2-Dichloroethene	156-60-5	-	< 1	-	UM
1,1-Dichloroethane	75-34-3	-	< 1	-	UM
MTBE	1634-04-4	-	< 1	-	UM
2,2-Dichloropropane	594-20-7	-	< 1	-	UM
cis 1,2-Dichloroethene	156-59-2	-	< 6	-	UM
Bromochloromethane	74-97-5	-	< 1	-	UM
Chloroform	67-66-3	-	< 1	-	UM
1,1,1-Trichloroethane	71-55-6	-	< 1	-	UM
Carbon Tetrachloride	56-23-5	-	< 1	-	UM
1,1-Dichloropropene	563-58-6	-	< 1	-	UM
Benzene	71-43-2	-	< 1	-	UM
1,2-Dichloroethane	107-06-2	-	< 1	-	UM
Trichloroethene	79-01-6 **	-	< 1	-	N
1,2-Dichloropropane	78-87-5	-	< 1	-	UM
Dibromomethane	74-95-3	-	< 1	-	UM
Bromodichloromethane	75-27-4	-	< 1	-	UM
cis 1,3-Dichloropropene	10061-01-5 **	-	< 1	-	N
Toluene	108-88-3 **	4.99	33	89	N
trans 1,3-Dichloropropene	10061-02-6 **	-	< 1	-	N
1,1,2-Trichloroethane	79-00-5	-	< 1	-	UM
Tetrachloroethene	127-18-4	-	< 4	-	UM
1,3-Dichloropropane	142-28-9	-	< 1	-	UM
Dibromochloromethane	124-48-1	-	< 1	-	UM
1,2-Dibromoethane	106-93-4	-	< 1	-	UM
Chlorobenzene	108-90-7	-	< 1	-	UM
Ethylbenzene	100-41-4 D	5.51	1730	93	UM
1,1,1,2-Tetrachloroethane	630-20-6 **	-	< 1	-	N
m and p-Xylene	108-38-3/106-42-3	5.55	81	83	UM

Target Compounds	CAS #	R.T. (min.)	Concentration µg/kg	% Fit	Accr. code
o-Xylene	95-47-6	5.70	20	M	UM
Styrene	100-42-5 **	5.71	366	86	N
Bromoform	75-25-2	-	< 1	-	UM
iso-Propylbenzene	98-82-8	-	< 1	-	UM
1,1,2,2-Tetrachloroethane	79-34-5 **	-	< 1	-	N
Propylbenzene	103-65-1	-	< 1	-	UM
Bromobenzene	108-86-1	-	< 1	-	UM
1,2,3-Trichloropropane	96-18-4	-	< 1	-	UM
2-Chlorotoluene	95-49-8	-	< 1	-	UM
1,3,5-Trimethylbenzene	108-67-8	6.00	24	M	UM
4-Chlorotoluene	106-43-4	-	< 1	-	UM
tert-Butylbenzene	98-06-6	-	< 1	-	UM
1,2,4-Trimethylbenzene	95-63-6	6.13	53	M	UM
sec-Butylbenzene	135-98-8	-	< 1	-	UM
p-Isopropyltoluene	99-87-6	-	< 1	-	UM
1,3-Dichlorobenzene	541-73-1	-	< 1	-	UM
1,4-Dichlorobenzene	106-46-7	-	< 1	-	UM
n-Butylbenzene	104-51-8 *	6.35	235	M	N
1,2-Dichlorobenzene	95-50-1 **	-	< 1	-	N
1,2-Dibromo-3-chloropropane	96-12-8 **	-	< 1	-	N
1,2,4-Trichlorobenzene	120-82-1 **	-	< 4	-	N
Hexachlorobutadiene	87-68-3 **	-	< 3	-	N
Naphthalene	91-20-3	7.14	1150	71	UM
1,2,3-Trichlorobenzene	87-61-6	-	< 4	-	UM

Concentrations are reported on a dry weight basis
Compounds marked ** are not UKAS or Mcerts accredited
"M" denotes that % fit has been manually interpreted
This analysis was conducted on an 'As Received' basis.

Internal standards	R.T.	Area %	Surrogates	% Rec
Pentafluorobenzene	4.04	74	Dibromofluoromethane	106
1,4-Difluorobenzene	4.39	65	Toluene-d8	99
Chlorobenzene-d5	5.50	34		
Bromofluorobenzene	5.89	22		
1,4-Dichlorobenzene-d4	6.29	11		
Naphthalene-d8	7.13	4		

Where individual results are flagged see report notes for status.
Results corrected to dry weight at 105°C where appropriate, in accordance with the MCERTS standard.

Volatile Organic Compounds by HSA-GCMS

Accredited?: Yes

Customer and Site Details: Ramboll Environ: Zeon Chemicals ESA
Sample Details: WS13 0.3
LIMS ID Number: CL1616114
Job Number: S16_3840M

Directory/Quant file: 513VOC.MS19\ Initial Calibration
Date Booked in: 11-May-16
Date Analysed: 16-May-16
Operator: PR

Matrix: Soil
Method: Headspace
Multiplier: 0.93
Position: 10

Target Compounds	CAS #	R.T. (min.)	Concentration µg/kg	% Fit	Accr. code
Dichlorodifluoromethane	75-71-8 **	-	< 1	-	N
Chloromethane	74-87-3 *	-	< 4	-	N
Vinyl Chloride	75-01-4	-	< 1	-	UM
Bromomethane	74-83-9	-	< 1	-	UM
Chloroethane	75-00-3	-	< 2	-	UM
Trichlorofluoromethane	75-69-4	-	< 1	-	UM
1,1-Dichloroethene	75-35-48 *	-	< 1	-	N
trans 1,2-Dichloroethene	156-60-5	-	< 1	-	UM
1,1-Dichloroethane	75-34-3	-	< 1	-	UM
MTBE	1634-04-4	-	< 1	-	UM
2,2-Dichloropropane	594-20-7	-	< 1	-	UM
cis 1,2-Dichloroethene	156-59-2	-	< 6	-	UM
Bromochloromethane	74-97-5	-	< 1	-	UM
Chloroform	67-66-3	-	< 1	-	UM
1,1,1-Trichloroethane	71-55-6	-	< 1	-	UM
Carbon Tetrachloride	56-23-5	-	< 1	-	UM
1,1-Dichloropropene	563-58-6	-	< 1	-	UM
Benzene	71-43-2	4.23	58	58	UM
1,2-Dichloroethane	107-06-2	-	< 1	-	UM
Trichloroethene	79-01-6 **	-	< 1	-	N
1,2-Dichloropropane	78-87-5	-	< 1	-	UM
Dibromomethane	74-95-3	-	< 1	-	UM
Bromodichloromethane	75-27-4	-	< 1	-	UM
cis 1,3-Dichloropropene	10061-01-5 **	-	< 1	-	N
Toluene	108-88-3 **	4.99	58	89	N
trans 1,3-Dichloropropene	10061-02-6 **	-	< 1	-	N
1,1,2-Trichloroethane	79-00-5	-	< 1	-	UM
Tetrachloroethene	127-18-4	-	< 4	-	UM
1,3-Dichloropropane	142-28-9	-	< 1	-	UM
Dibromochloromethane	124-48-1	-	< 1	-	UM
1,2-Dibromoethane	106-93-4	-	< 1	-	UM
Chlorobenzene	108-90-7	-	< 1	-	UM
Ethylbenzene	100-41-4 **	5.51	19	62	N
1,1,1,2-Tetrachloroethane	630-20-6 **	-	< 1	-	N
m and p-Xylene	108-38-3/106-42-3	5.56	75	84	UM

Target Compounds	CAS #	R.T. (min.)	Concentration µg/kg	% Fit	Accr. code
o-Xylene	95-47-6	5.70	26	M	UM
Styrene	100-42-5 **	-	< 1	-	N
Bromoform	75-25-2	-	< 1	-	UM
iso-Propylbenzene	98-82-8	-	< 1	-	UM
1,1,2,2-Tetrachloroethane	79-34-5 **	-	< 1	-	N
Propylbenzene	103-65-1	-	< 1	-	UM
Bromobenzene	108-86-1	-	< 1	-	UM
1,2,3-Trichloropropane	96-18-4	-	< 1	-	UM
2-Chlorotoluene	95-49-8	-	< 1	-	UM
1,3,5-Trimethylbenzene	108-67-8	6.00	11	M	UM
4-Chlorotoluene	106-43-4	-	< 1	-	UM
tert-Butylbenzene	98-06-6	-	< 1	-	UM
1,2,4-Trimethylbenzene	95-63-6	6.13	21	M	UM
sec-Butylbenzene	135-98-8	-	< 1	-	UM
p-Isopropyltoluene	99-87-6	-	< 1	-	UM
1,3-Dichlorobenzene	541-73-1	-	< 1	-	UM
1,4-Dichlorobenzene	106-46-7	-	< 1	-	UM
n-Butylbenzene	104-51-8 *	-	< 1	-	N
1,2-Dichlorobenzene	95-50-1 **	-	< 1	-	N
1,2-Dibromo-3-chloropropane	96-12-8 **	-	< 1	-	N
1,2,4-Trichlorobenzene	120-82-1 **	-	< 4	-	N
Hexachlorobutadiene	87-68-3 **	-	< 2	-	N
Naphthalene	91-20-3	7.14	27	M	UM
1,2,3-Trichlorobenzene	87-61-6	-	< 4	-	UM

Concentrations are reported on a dry weight basis
Compounds marked ** are not UKAS or Mcerts accredited
"M" denotes that % fit has been manually interpreted
This analysis was conducted on an 'As Received' basis.

Internal standards	R.T.	Area %	Surrogates	% Rec
Pentafluorobenzene	4.04	35	Dibromofluoromethane	105
1,4-Difluorobenzene	4.39	32	Toluene-d8	95
Chlorobenzene-d5	5.50	24		
Bromofluorobenzene	5.89	17		
1,4-Dichlorobenzene-d4	6.29	10		
Naphthalene-d8	7.12	5		

Where individual results are flagged see report notes for status.
Results corrected to dry weight at 105°C where appropriate, in accordance with the MCERTS standard.

Volatile Organic Compounds by HSA-GCMS

Accredited?: Yes

Customer and Site Details: Ramboll Environ: Zeon Chemicals ESA
Sample Details: WS13 0.8
LIMS ID Number: CL1616115
Job Number: S16_3840M

Directory/Quant file: 513VOC.MS19\ Initial Calibration
Date Booked in: 11-May-16
Date Analysed: 16-May-16
Operator: PR

Matrix: Soil
Method: Headspace
Multiplier: 1.04
Position: 11

Target Compounds	CAS #	R.T. (min.)	Concentration µg/kg	% Fit	Accr. code
Dichlorodifluoromethane	75-71-8 **	-	< 1	-	N
Chloromethane	74-87-3 *	-	< 4	-	N
Vinyl Chloride	75-01-4	-	< 1	-	UM
Bromomethane	74-83-9	-	< 1	-	UM
Chloroethane	75-00-3	-	< 3	-	UM
Trichlorofluoromethane	75-69-4	-	< 1	-	UM
1,1-Dichloroethene	75-35-48 *	-	< 1	-	N
trans 1,2-Dichloroethene	156-60-5	-	< 1	-	UM
1,1-Dichloroethane	75-34-3	-	< 1	-	UM
MTBE	1634-04-4	-	< 1	-	UM
2,2-Dichloropropane	594-20-7	-	< 1	-	UM
cis 1,2-Dichloroethene	156-59-2	-	< 7	-	UM
Bromochloromethane	74-97-5	-	< 1	-	UM
Chloroform	67-66-3	-	< 1	-	UM
1,1,1-Trichloroethane	71-55-6	-	< 1	-	UM
Carbon Tetrachloride	56-23-5	-	< 1	-	UM
1,1-Dichloropropene	563-58-6	-	< 1	-	UM
Benzene	71-43-2	4.23	1	M	UM
1,2-Dichloroethane	107-06-2	-	< 1	-	UM
Trichloroethene	79-01-6 **	-	< 1	-	N
1,2-Dichloropropane	78-87-5	-	< 1	-	UM
Dibromomethane	74-95-3	-	< 1	-	UM
Bromodichloromethane	75-27-4	-	< 1	-	UM
cis 1,3-Dichloropropene	10061-01-5 **	-	< 1	-	N
Toluene	108-88-3 **	-	< 7	-	N
trans 1,3-Dichloropropene	10061-02-6 **	-	< 1	-	N
1,1,2-Trichloroethane	79-00-5	-	< 1	-	UM
Tetrachloroethene	127-18-4	-	< 4	-	UM
1,3-Dichloropropane	142-28-9	-	< 1	-	UM
Dibromochloromethane	124-48-1	-	< 1	-	UM
1,2-Dibromoethane	106-93-4	-	< 1	-	UM
Chlorobenzene	108-90-7	-	< 1	-	UM
Ethylbenzene	100-41-4 **	-	< 3	-	N
1,1,1,2-Tetrachloroethane	630-20-6 **	-	< 1	-	N
m and p-Xylene	108-38-3/106-42-3	5.55	14	M	UM

Target Compounds	CAS #	R.T. (min.)	Concentration µg/kg	% Fit	Accr. code
o-Xylene	95-47-6	5.70	4	M	UM
Styrene	100-42-5 **	-	< 1	-	N
Bromoform	75-25-2	-	< 1	-	UM
iso-Propylbenzene	98-82-8	-	< 1	-	UM
1,1,2,2-Tetrachloroethane	79-34-5 **	-	< 1	-	N
Propylbenzene	103-65-1	-	< 1	-	UM
Bromobenzene	108-86-1	-	< 1	-	UM
1,2,3-Trichloropropane	96-18-4	-	< 1	-	UM
2-Chlorotoluene	95-49-8	-	< 1	-	UM
1,3,5-Trimethylbenzene	108-67-8	-	< 1	-	UM
4-Chlorotoluene	106-43-4	-	< 1	-	UM
tert-Butylbenzene	98-06-6	-	< 1	-	UM
1,2,4-Trimethylbenzene	95-63-6	6.13	4	M	UM
sec-Butylbenzene	135-98-8	-	< 1	-	UM
p-Isopropyltoluene	99-87-6	-	< 1	-	UM
1,3-Dichlorobenzene	541-73-1	-	< 1	-	UM
1,4-Dichlorobenzene	106-46-7	-	< 1	-	UM
n-Butylbenzene	104-51-8 *	-	< 1	-	N
1,2-Dichlorobenzene	95-50-1 **	-	< 1	-	N
1,2-Dibromo-3-chloropropane	96-12-8 **	-	< 1	-	N
1,2,4-Trichlorobenzene	120-82-1 **	-	< 4	-	N
Hexachlorobutadiene	87-68-3 **	-	< 3	-	N
Naphthalene	91-20-3	-	< 7	-	UM
1,2,3-Trichlorobenzene	87-61-6	-	< 4	-	UM

Concentrations are reported on a dry weight basis
Compounds marked ** are not UKAS or Mcerts accredited
"M" denotes that % fit has been manually interpreted
This analysis was conducted on an 'As Received' basis.

Internal standards	R.T.	Area %	Surrogates	% Rec
Pentafluorobenzene	4.04	90	Dibromofluoromethane	109
1,4-Difluorobenzene	4.39	89	Toluene-d8	96
Chlorobenzene-d5	5.50	73		
Bromofluorobenzene	5.89	60		
1,4-Dichlorobenzene-d4	6.29	46		
Naphthalene-d8	7.13	31		

Where individual results are flagged see report notes for status.
Results corrected to dry weight at 105°C where appropriate, in accordance with the MCERTS standard.

TICs by HSA-GCMS

Accredited?: No

Customer and Site Details:	Ramboll Environ: Zeon Chemicals ESA		**Date Booked in:**	11-May-16
Sample Details:	BH106 0.6		**Date Analysed:**	16-May-16
LIMS ID Number:	CL1616104		**Matrix:**	Soil
Job Number:	S16_3840		**Ext Method:**	Headspace
Directory/Quant file:	513VOC.MS19\	Initial Calibration	**Dilution:**	1
Operator:	PR		**Position:**	32

Tentatively Identified Compounds	CAS No	R.T. (min.)	Concentration µg/kg	% Fit	Accr. code
None Detected			<6		N

The compounds listed above have been tentatively identified by a computer based library search.
Compounds identified in the sample are not reported if they also occur in the method blank.
The % fit is an indication of the reliability of the compound assignment.
Due to the similarity between mass spectra of some isomeric compounds, assignments may not be correct.
Other compounds may also be present but identification was not possible.
Concentrations are semi-quantitative, assume a response factor of 1 and use the nearest internal standard.

Compounds marked ** are not UKAS or Mcerts accredited
"M" denotes that % fit has been manually interpreted

Where individual results are flagged see report notes for status.
Results corrected to dry weight at 105°C where appropriate, in accordance with the MCERTS standard.

TICs by HSA-GCMS

Accredited?: No

Customer and Site Details:	Ramboll Environ: Zeon Chemicals ESA		**Date Booked in:**	11-May-16
Sample Details:	WS23 0.5		**Date Analysed:**	16-May-16
LIMS ID Number:	CL1616105		**Matrix:**	Soil
Job Number:	S16_3840		**Ext Method:**	Headspace
Directory/Quant file:	513VOC.MS19\	Initial Calibration	**Dilution:**	1.03
Operator:	PR		**Position:**	1

Tentatively Identified Compounds	CAS No	R.T. (min.)	Concentration µg/kg	% Fit	Accr. code
None Detected			<7		N

The compounds listed above have been tentatively identified by a computer based library search.
Compounds identified in the sample are not reported if they also occur in the method blank.
The % fit is an indication of the reliability of the compound assignment.
Due to the similarity between mass spectra of some isomeric compounds, assignments may not be correct.
Other compounds may also be present but identification was not possible.
Concentrations are semi-quantitative, assume a response factor of 1 and use the nearest internal standard.

Compounds marked ** are not UKAS or Mcerts accredited
"M" denotes that % fit has been manually interpreted

Where individual results are flagged see report notes for status.
Results corrected to dry weight at 105°C where appropriate, in accordance with the MCERTS standard.

TICs by HSA-GCMS

Accredited?: No

Customer and Site Details:	Ramboll Environ: Zeon Chemicals ESA		**Date Booked in:**	11-May-16
Sample Details:	WS23 2.00		**Date Analysed:**	16-May-16
LIMS ID Number:	CL1616106		**Matrix:**	Soil
Job Number:	S16_3840		**Ext Method:**	Headspace
Directory/Quant file:	513VOC.MS19\	Initial Calibration	**Dilution:**	1.01
Operator:	PR		**Position:**	2

Tentatively Identified Compounds	CAS No	R.T. (min.)	Concentration µg/kg	% Fit	Accr. code
None Detected			<6		N

The compounds listed above have been tentatively identified by a computer based library search.
Compounds identified in the sample are not reported if they also occur in the method blank.
The % fit is an indication of the reliability of the compound assignment.
Due to the similarity between mass spectra of some isomeric compounds, assignments may not be correct.
Other compounds may also be present but identification was not possible.
Concentrations are semi-quantitative, assume a response factor of 1 and use the nearest internal standard.

Compounds marked ** are not UKAS or Mcerts accredited
"M" denotes that % fit has been manually interpreted

Where individual results are flagged see report notes for status.
Results corrected to dry weight at 105°C where appropriate, in accordance with the MCERTS standard.

TICs by HSA-GCMS

Accredited?: No

Customer and Site Details:	Ramboll Environ: Zeon Chemicals ESA		**Date Booked in:**	11-May-16
Sample Details:	WS22 0.6		**Date Analysed:**	16-May-16
LIMS ID Number:	CL1616107		**Matrix:**	Soil
Job Number:	S16_3840		**Ext Method:**	Headspace
Directory/Quant file:	513VOC.MS19\	Initial Calibration	**Dilution:**	1.05
Operator:	PR		**Position:**	3

Tentatively Identified Compounds	CAS No	R.T. (min.)	Concentration µg/kg	% Fit	Accr. code
None Detected			<7		N

The compounds listed above have been tentatively identified by a computer based library search.
Compounds identified in the sample are not reported if they also occur in the method blank.
The % fit is an indication of the reliability of the compound assignment.
Due to the similarity between mass spectra of some isomeric compounds, assignments may not be correct.
Other compounds may also be present but identification was not possible.
Concentrations are semi-quantitative, assume a response factor of 1 and use the nearest internal standard.

Compounds marked ** are not UKAS or Mcerts accredited
"M" denotes that % fit has been manually interpreted

Where individual results are flagged see report notes for status.
Results corrected to dry weight at 105°C where appropriate, in accordance with the MCERTS standard.

TICs by HSA-GCMS

Accredited?: No

Customer and Site Details:	Ramboll Environ: Zeon Chemicals ESA		**Date Booked in:**	11-May-16
Sample Details:	WS221.0		**Date Analysed:**	16-May-16
LIMS ID Number:	CL1616108		**Matrix:**	Soil
Job Number:	S16_3840		**Ext Method:**	Headspace
Directory/Quant file:	513VOC.MS19\	Initial Calibration	**Dilution:**	1.08
Operator:	PR		**Position:**	4

Tentatively Identified Compounds	CAS No	R.T. (min.)	Concentration µg/kg	% Fit	Accr. code
None Detected			<6		N

The compounds listed above have been tentatively identified by a computer based library search.
Compounds identified in the sample are not reported if they also occur in the method blank.
The % fit is an indication of the reliability of the compound assignment.
Due to the similarity between mass spectra of some isomeric compounds, assignments may not be correct.
Other compounds may also be present but identification was not possible.
Concentrations are semi-quantitative, assume a response factor of 1 and use the nearest internal standard.

Compounds marked ** are not UKAS or Mcerts accredited
"M" denotes that % fit has been manually interpreted

Where individual results are flagged see report notes for status.
Results corrected to dry weight at 105°C where appropriate, in accordance with the MCERTS standard.

TICs by HSA-GCMS

Accredited?: No

Customer and Site Details:	Ramboll Environ: Zeon Chemicals ESA		**Date Booked in:**	11-May-16
Sample Details:	WS22 1.2		**Date Analysed:**	16-May-16
LIMS ID Number:	CL1616109		**Matrix:**	Soil
Job Number:	S16_3840		**Ext Method:**	Headspace
Directory/Quant file:	513VOC.MS19\	Initial Calibration	**Dilution:**	0.97
Operator:	PR		**Position:**	5

Tentatively Identified Compounds	CAS No	R.T. (min.)	Concentration µg/kg	% Fit	Accr. code
None Detected			<6		N

The compounds listed above have been tentatively identified by a computer based library search.
Compounds identified in the sample are not reported if they also occur in the method blank.
The % fit is an indication of the reliability of the compound assignment.
Due to the similarity between mass spectra of some isomeric compounds, assignments may not be correct.
Other compounds may also be present but identification was not possible.
Concentrations are semi-quantitative, assume a response factor of 1 and use the nearest internal standard.

Compounds marked ** are not UKAS or Mcerts accredited
"M" denotes that % fit has been manually interpreted

Where individual results are flagged see report notes for status.
Results corrected to dry weight at 105°C where appropriate, in accordance with the MCERTS standard.

TICs by HSA-GCMS

Accredited?: No

Customer and Site Details:	Ramboll Environ: Zeon Chemicals ESA		**Date Booked in:**	11-May-16
Sample Details:	WS15 0.4 (NVM)		**Date Analysed:**	16-May-16
LIMS ID Number:	CL1616110		**Matrix:**	Soil
Job Number:	S16_3840		**Ext Method:**	Headspace
Directory/Quant file:	513VOC.MS19\	Initial Calibration	**Dilution:**	0.99
Operator:	PR		**Position:**	6

Tentatively Identified Compounds	CAS No	R.T. (min.)	Concentration µg/kg	% Fit	Accr. code
None Detected			<7		N

The compounds listed above have been tentatively identified by a computer based library search.
Compounds identified in the sample are not reported if they also occur in the method blank.
The % fit is an indication of the reliability of the compound assignment.
Due to the similarity between mass spectra of some isomeric compounds, assignments may not be correct.
Other compounds may also be present but identification was not possible.
Concentrations are semi-quantitative, assume a response factor of 1 and use the nearest internal standard.

Compounds marked ** are not UKAS or Mcerts accredited
"M" denotes that % fit has been manually interpreted

Where individual results are flagged see report notes for status.
Results corrected to dry weight at 105°C where appropriate, in accordance with the MCERTS standard.

TICs by HSA-GCMS

Accredited?: No

Customer and Site Details:	Ramboll Environ: Zeon Chemicals ESA		**Date Booked in:**	11-May-16
Sample Details:	WS14 1.5		**Date Analysed:**	16-May-16
LIMS ID Number:	CL1616111		**Matrix:**	Soil
Job Number:	S16_3840		**Ext Method:**	Headspace
Directory/Quant file:	513VOC.MS19\	Initial Calibration	**Dilution:**	1.05
Operator:	PR		**Position:**	7

Tentatively Identified Compounds	CAS No	R.T. (min.)	Concentration µg/kg	% Fit	Accr. code
None Detected			<6		N

The compounds listed above have been tentatively identified by a computer based library search.
Compounds identified in the sample are not reported if they also occur in the method blank.
The % fit is an indication of the reliability of the compound assignment.
Due to the similarity between mass spectra of some isomeric compounds, assignments may not be correct.
Other compounds may also be present but identification was not possible.
Concentrations are semi-quantitative, assume a response factor of 1 and use the nearest internal standard.

Compounds marked ** are not UKAS or Mcerts accredited
"M" denotes that % fit has been manually interpreted

Where individual results are flagged see report notes for status.
Results corrected to dry weight at 105°C where appropriate, in accordance with the MCERTS standard.

TICs by HSA-GCMS

Accredited?: No

Customer and Site Details:	Ramboll Environ: Zeon Chemicals ESA		**Date Booked in:**	11-May-16
Sample Details:	WS16 0.3 (NVM)		**Date Analysed:**	16-May-16
LIMS ID Number:	CL1616112		**Matrix:**	Soil
Job Number:	S16_3840		**Ext Method:**	Headspace
Directory/Quant file:	513VOC.MS19\	Initial Calibration	**Dilution:**	1.05
Operator:	PR		**Position:**	8

Tentatively Identified Compounds	CAS No	R.T. (min.)	Concentration µg/kg	% Fit	Accr. code
None Detected			<7		N

The compounds listed above have been tentatively identified by a computer based library search.
Compounds identified in the sample are not reported if they also occur in the method blank.
The % fit is an indication of the reliability of the compound assignment.
Due to the similarity between mass spectra of some isomeric compounds, assignments may not be correct.
Other compounds may also be present but identification was not possible.
Concentrations are semi-quantitative, assume a response factor of 1 and use the nearest internal standard.

Compounds marked ** are not UKAS or Mcerts accredited
"M" denotes that % fit has been manually interpreted

Where individual results are flagged see report notes for status.
Results corrected to dry weight at 105°C where appropriate, in accordance with the MCERTS standard.

TICs by HSA-GCMS

Accredited?: No

Customer and Site Details:	Ramboll Environ: Zeon Chemicals ESA		**Date Booked in:**	11-May-16
Sample Details:	WS17 0.3		**Date Analysed:**	16-May-16
LIMS ID Number:	CL1616113		**Matrix:**	Soil
Job Number:	S16_3840		**Ext Method:**	Headspace
Directory/Quant file:	513VOC.MS19\	Initial Calibration	**Dilution:**	0.97
Operator:	PR		**Position:**	9

Tentatively Identified Compounds	CAS No	R.T. (min.)	Concentration µg/kg	% Fit	Accr. code
Benzene, 1,3-diethenyl-	000108-57-6	6.66	6203	97	N
Benzene, 1-ethenyl-4-ethyl-	003454-07-7	6.51	6114	97	N
Carbon disulfide	000075-15-0	2.75	5347	74	N
Cyclohexane, methylene-	001192-37-6	4.74	946	81	N
Cyclohexene, 1-methyl-	000591-49-1	4.71	306	93	N
Benzene, 1,4-diethenyl-	000105-06-6	6.72	306	96	N
Unidentified Peak		6.21	297		N
1-Octene, 6-methyl-	013151-10-5	5.30	141	50	N
2,4-Dimethyl-1-heptene	019549-87-2	5.26	125	62	N
Unidentified Peak		5.40	121		N
2,3-Dimethyl-2-heptene	003074-64-4	5.18	80	76	N

The compounds listed above have been tentatively identified by a computer based library search.
Compounds identified in the sample are not reported if they also occur in the method blank.
The % fit is an indication of the reliability of the compound assignment.
Due to the similarity between mass spectra of some isomeric compounds, assignments may not be correct.
Other compounds may also be present but identification was not possible.
Concentrations are semi-quantitative, assume a response factor of 1 and use the nearest internal standard.

Compounds marked ** are not UKAS or Mcerts accredited
"M" denotes that % fit has been manually interpreted

Where individual results are flagged see report notes for status.
Results corrected to dry weight at 105°C where appropriate, in accordance with the MCERTS standard.

TICs by HSA-GCMS

Accredited?: No

Customer and Site Details:	Ramboll Environ: Zeon Chemicals ESA		**Date Booked in:**	11-May-16
Sample Details:	WS13 0.3		**Date Analysed:**	16-May-16
LIMS ID Number:	CL1616114		**Matrix:**	Soil
Job Number:	S16_3840		**Ext Method:**	Headspace
Directory/Quant file:	513VOC.MS19\	Initial Calibration	**Dilution:**	0.93
Operator:	PR		**Position:**	10

Tentatively Identified Compounds	CAS No	R.T. (min.)	Concentration µg/kg	% Fit	Accr. code
None Detected			<6		N

The compounds listed above have been tentatively identified by a computer based library search.
Compounds identified in the sample are not reported if they also occur in the method blank.
The % fit is an indication of the reliability of the compound assignment.
Due to the similarity between mass spectra of some isomeric compounds, assignments may not be correct.
Other compounds may also be present but identification was not possible.
Concentrations are semi-quantitative, assume a response factor of 1 and use the nearest internal standard.

Compounds marked ** are not UKAS or Mcerts accredited
"M" denotes that % fit has been manually interpreted

Where individual results are flagged see report notes for status.
Results corrected to dry weight at 105°C where appropriate, in accordance with the MCERTS standard.

TICs by HSA-GCMS

Accredited?: No

Customer and Site Details:	Ramboll Environ: Zeon Chemicals ESA		**Date Booked in:**	11-May-16
Sample Details:	WS13 0.8		**Date Analysed:**	16-May-16
LIMS ID Number:	CL1616115		**Matrix:**	Soil
Job Number:	S16_3840		**Ext Method:**	Headspace
Directory/Quant file:	513VOC.MS19\	Initial Calibration	**Dilution:**	1.04
Operator:	PR		**Position:**	11

Tentatively Identified Compounds	CAS No	R.T. (min.)	Concentration µg/kg	% Fit	Accr. code
None Detected			<7		N

The compounds listed above have been tentatively identified by a computer based library search.
Compounds identified in the sample are not reported if they also occur in the method blank.
The % fit is an indication of the reliability of the compound assignment.
Due to the similarity between mass spectra of some isomeric compounds, assignments may not be correct.
Other compounds may also be present but identification was not possible.
Concentrations are semi-quantitative, assume a response factor of 1 and use the nearest internal standard.

Compounds marked ** are not UKAS or Mcerts accredited
"M" denotes that % fit has been manually interpreted

Where individual results are flagged see report notes for status.
Results corrected to dry weight at 105°C where appropriate, in accordance with the MCERTS standard.

ASBESTOS ANALYSIS RESULTS - SOIL ANALYSIS

ESG Asbestos Limited Certificate of Analysis for Asbestos in Soils, Sediments and Aggregates

1089

Detection limit of Method SCI-ASB-020 is 0.001%

Sampling has been carried out by a third party

Client:	ESG Environmental Chemistry	**Page 1 of 1**	
Address:	Etwall House, Bretby Business Park, Ashby Road, Burton upon Trent	**Report No:**	**ANO-0488-12488**
For the attention of:	Ramboll Environ	**Report Date:**	**13/05/2016**
Site Address:	Zeon Chemicals ESA	**Project Number:**	**S163840**

Sample Number	Sample Date	Sample Location & Matrix	Test Date	Total Sample Dry Weight (g)	Weight of <2mm Fraction (g)	Asbestos(g) in >8mm+>2mm	Asbestos(g) in <2mm	% Asbestos by weight of Total Dried Sample	Asbestos Fibre Types Identified
CL/1616104	09/05/16	BH106 0.6	13/05/2016					Screen Only	NAIIS
CL/1616105	09/05/16	WS23 0.5	13/05/2016					Screen Only	NAIIS
CL/1616110	09/05/16	WS15 0.4	13/05/2016					Screen Only	NAIIS
CL/1616112	10/05/16	WS16 0.3	13/05/2016					Screen Only	NAIIS
CL/1616113	10/05/16	WS17 0.3	13/05/2016					Screen & ID	Amosite(Free Fibres)
CL/1616114	10/05/16	WS13 0.3	13/05/2016					Screen & ID	Chrysotile(Cement)
CL/1616115	10/05/16	WS13 0.8	13/05/2016					Screen Only	NAIIS

Keys

NAACR = Not Analysed at Clients Request

NAIIS = No Asbestos Identified in Sample (Screens Only)

*** visible to naked eye**

NADIS = No Asbestos Detected in Sample (ID & Quant Only)

Name: Chris Mackie

Authorised Signatory:

Position: Lab Analyst

The sample analysis for the above results was carried out using the procedures detailed in ESG Asbestos Limited in house method (SCI-ASB-020) based on HSE document MDHS 90 - Asbestos Contaminated Land - Draft 5 - November 1997 (withdrawn). Fibre identification was carried out using ESG Asbestos Limited in house method of transmitted/polarised light microscopy and centre stop dispersion staining (SCI-ASB-007), based on HSE's HSG 248. The analysis of fine fraction for asbestos content only includes fibres and does not discriminate non-asbestos fibres. All fibres are assumed, unless specified, to be amphiboles. All tests were carried out at ESG Asbestos Laboratory, Ashbourne House, Bretby Business Park, Ashby Road, Burton-upon-Trent, Staffordshire. DE15 0XD, UKAS Laboratory Number 1089.

Where individual results are flagged see report notes for status.

Analytical and Deviating Sample Overview

Customer Ramboll Environ
Site Zeon Chemicals ESA
Report No S163840M

Consignment No S55835
Date Logged 11-May-2016

Report Due 09-Jun-2016

ID Number	Description	MethodID	ALCHSAFID	AMMAR	CustServ	GROHSA	ICPBOR	ICPMSS									ICPSOIL			ICPWSS	MCertS	PAHMSUS	PHEHPLC	PHSOIL	SFAPI	
		Sampled	Alcohols by HSA-FID o	Exchange.Ammonium AR	REPORT A	GRO (AA) by HSA GC-FID	Boron (H20 Soluble)	Arsenic (MS)	Cadmium (MS)	Chromium (MS)	Copper (MS)	Lead (MS)	Mercury (MS)	Nickel (MS)	Selenium (MS)	Vanadium (MS)	Zinc (MS)	Barium.	Beryllium.	Iron	SO4-- (H2O sol) mg/l	MCertS Analysis	PAH (17) by GCMS	Phenol - HPLC	pH units (AR)	Cyanide(Total) (AR)	Phenol Index.(AR)
						✓	✓	✓	✓	✓	✓	✓	✓	✓	✓		✓	✓	✓	✓	✓		✓	✓	✓	✓	✓
CL/1616104	BH106 0.6	09/05/16																								
CL/1616105	WS23 0.5	09/05/16																								
CL/1616106	WS23 2.00	09/05/16																								
CL/1616107	WS22 0.6	09/05/16																					E			
CL/1616108	WS221.0	09/05/16																					E			
CL/1616109	WS22 1.2	09/05/16																					E			
CL/1616110	WS15 0.4	09/05/16																								
CL/1616111	WS14 1.5	09/05/16																								
CL/1616112	WS16 0.3	10/05/16																								
CL/1616113	WS17 0.3	10/05/16																								
CL/1616114	WS13 0.3	10/05/16																								
CL/1616115	WS13 0.8	10/05/16																								

Note: For analysis where the scheduled turnaround is greater than the holding time we will do our utmost to prioritise these samples. However, it is possible that samples could become deviant whilst being processed in the laboratory.

In this instance please contact the laboratory immediately should you wish to discuss how you would like us to proceed. If you do not respond within 24 hours, we will proceed as originally requested.

Deviating Sample Key

A	The sample was received in an inappropriate container for this analysis
B	The sample was received without the correct preservation for this analysis
C	Headspace present in the sample container
D	The sampling date was not supplied so holding time may be compromised - applicable to all analysis
E	Sample processing did not commence within the appropriate holding time
F	Sample processing did not commence within the appropriate handling time

Requested Analysis Key

	Analysis Required
	Analysis dependant upon trigger result - **Note: due date may be affected if triggered**
	No analysis scheduled
^	Analysis Subcontracted - **Note: due date may vary**

Where individual results are flagged see report notes for status.
The integrity of data for samples/analysis that have been categorised as Deviating may be compromised. Data may not be representative of the sample at the time of sampling.

Analytical and Deviating Sample Overview

Customer **Ramboll Environ**
Site **Zeon Chemicals ESA**
Report No **S163840M**

Consignment No S55835
Date Logged 11-May-2016

Report Due 09-Jun-2016

ID Number	Description	MethodID	Sub002a	SVOCMSUS	TMSS	TPHUSSI	VOCHSAS	WSLM59
		Sampled	^Asbestos Screen	SVOC + TICs by GCMS (AR)	Tot.Moisture @ 105C	TPH by GCFID (AR/Si)	VOC + TICs HSA-GCMS	Total Organic Carbon
			✓	✓	✓	✓	✓	
CL/1616104	BH106 0.6	09/05/16			EF			
CL/1616105	WS23 0.5	09/05/16			EF			
CL/1616106	WS23 2.00	09/05/16			EF			
CL/1616107	WS22 0.6	09/05/16			EF			
CL/1616108	WS221.0	09/05/16			EF			
CL/1616109	WS22 1.2	09/05/16			EF			
CL/1616110	WS15 0.4	09/05/16			EF			
CL/1616111	WS14 1.5	09/05/16			EF			
CL/1616112	WS16 0.3	10/05/16			EF			
CL/1616113	WS17 0.3	10/05/16			EF			
CL/1616114	WS13 0.3	10/05/16			EF			
CL/1616115	WS13 0.8	10/05/16			EF			

Note: For analysis where the scheduled turnaround is greater than the holding time we will do our utmost to prioritise these samples. However, it is possible that samples could become deviant whilst being processed in the laboratory.

In this instance please contact the laboratory immediately should you wish to discuss how you would like us to proceed. If you do not respond within 24 hours, we will proceed as originally requested.

Deviating Sample Key	
A	The sample was received in an inappropriate container for this analysis
B	The sample was received without the correct preservation for this analysis
C	Headspace present in the sample container
D	The sampling date was not supplied so holding time may be compromised - applicable to all analysis
E	Sample processing did not commence within the appropriate holding time
F	Sample processing did not commence within the appropriate handling time

Requested Analysis Key	
	Analysis Required
	Analysis dependant upon trigger result - **Note: due date may be affected if triggered**
	No analysis scheduled
^	Analysis Subcontracted - **Note: due date may vary**

Where individual results are flagged see report notes for status.
The integrity of data for samples/analysis that have been categorised as Deviating may be compromised. Data may not be representative of the sample at the time of sampling.

Additional Report Notes

Method Code	Sample ID	The following information should be taken into consideration when using the data contained within this report
PAHSMUS	CL1616104- CL1616115	Due to matrix interference, the Internal Standard recovery for this Test is below the required QMS specification. All other Laboratory Pro Controls meet the requirements of the QMS. These circumstances should be taken into consideration when utilising the data.
VOCHSAS	CL1616104 to CL1616115	The Primary process control result associated with this Test has not wholly met the requirements of the Laboratory Quality Management System (QMS Laboratory believes that the validity of the data has not been affected but in line with our QMS policy we have removed accreditation from the affected (cis 1,3-Dichloropropene, Ethylbenzene, Styrene, Toluene, trans 1,3-Dichloropropene) . These circumstances should be taken into consideration wh utilising the data.
VOCHSAS	CL1616104 to CL1616115	The Secondary process control result associated with this Test has not wholly met the requirements of the Laboratory Quality Management System (Q other Process controls (including the Primary Process control) are within specification. The Laboratory believes that the validity of the data has not bee affected but in line with our QMS policy we have removed accreditation from the affected analytes (1,1,1,2-Tetrachloroethane, 1,2,4-Trichlorobenzene Dibromo-3-chloropropane, 1,2-Dichlorobenzene) . These circumstances should be taken into consideration when utilising the data.
VOCHSAS	CL1616107 CL1616110 CL1616112 CL1616114 CL1616115	Due to matrix interference, the Internal Standard recovery for this Test is below the required QMS specification. This has been confirmed by historic da other Laboratory Process Controls meet the requirements of the QMS. These circumstances should be taken into consideration when utilising the data
SVOCMSUS	CL/1616104 to CL/1616115	The Secondary process control result associated with this Test has not wholly met the requirements of the Laboratory Quality Management System (Q other Process controls (including the Primary Process control) are within specification. The Laboratory believes that the validity of the data has not bee affected but in line with our QMS policy we have removed accreditation from the affected analytes (4-Bromophentyl-phenyl ethar and Hexachlorobenz These circumstances should be taken into consideration when utilising the data.
PHEHPLC	CL1616107-6109	The Primary process control result associated with this Test has not wholly met the requirements of the Laboratory Quality Management (QMS). The Laboratory believes that the validity of the data has not been affected but in line with our QMS policy we have removed accreditation from the affected analyte Catechol . These circumstances should be taken into consideration when utilising the data.

Method Descriptions

Matrix	MethodID	Analysis Basis	Method Description
Soil	ALCHSAFID	As Received	Determination of Alcohols in soils by Headspace GCFID
Soil	AMMAR	As Received	Determination of Exchangeable Ammonium in Soil using potassium chloride extraction, discrete colorimetric detection
Soil	GROHSA	As Received	Determination of Total Gasoline Range Organics Hydrocarbons (GRO) by Headspace GCFID
Soil	ICPBOR	Oven Dried @ < 35°C	Determination of Boron in soil samples by hot water extraction followed by ICPOES detection
Soil	ICPMSS	Oven Dried @ < 35°C	Determination of Metals in soil samples by aqua regia digestion followed by ICPMS
Soil	ICPSOIL	Oven Dried @ < 35°C	Determination of Metals in soil samples by aqua regia digestion followed by ICPOES detection
Soil	ICPWSS	Oven Dried @ < 35°C	Determination of Water Soluble Sulphate in soil samples by water extraction followed by ICPOES detection
Soil	PAHMSUS	As Received	Determination of Polycyclic Aromatic Hydrocarbons (PAH) by hexane/acetone extraction followed by GCMS detection
Soil	PHEHPLC	As Received	Determination of Phenols by methanol extraction followed by HPLC detection
Soil	PHSOIL	As Received	Determination of pH of 2.5:1 deionised water to soil extracts using pH probe.
Soil	SFAPI	As Received	Segmented flow analysis with colorimetric detection
Soil	SubCon*	*	Contact Laboratory for details of the methodology used by the sub-contractor.
Soil	SVOCMSUS	As Received	Determination of Semi Volatile Organic Compounds in soil samples by Dichloromethane/Acetone extraction followed by GCMS detection
Soil	TMSS	As Received	Determination of the Total Moisture content at 105ºC by loss on oven drying gravimetric analysis (% based upon wet weight)
Soil	TPHUSSI	As Received	Determination of hexane/acetone extractable Hydrocarbons in soil with GCFID detection including quantitation of Aromatic and Aliphatic fractions.
Soil	VOCHSAS	As Received	Determination of Volatile Organic Compounds (VOC) by Headspace GCMS
Soil	WSLM59	Oven Dried @ < 35°C	Determination of Organic Carbon in soil using sulphurous Acid digestion followed by high temperature combustion and IR detection

Report Notes

Generic Notes

Soil/Solid Analysis

Unless stated otherwise,
- Results expressed as mg/kg have been calculated on the basis indicated in the Method Description table.
  All results on MCERTS reports are reported on a 105ºC dry weight basis with the exception of pH and conductivity.
- Sulphate analysis not conducted in accordance with BS1377
- Water Soluble Sulphate is on a 2:1 water:soil extract

Waters Analysis

Unless stated otherwise results are expressed as mg/l

Nil: Where "Nil" has been entered against Total Alkalinity or Total Acidity this indicates that a measurement was not required due to the inherent pH of the sample.

Oil analysis specific

Unless stated otherwise,
- Results are expressed as mg/kg
- SG is expressed as g/cm^3@ 15^{o}C

Gas (Tedlar bag) Analysis

Unless stated otherwise, results are expressed as ug/l

Asbestos Analysis

CH Denotes Chrysotile **TR** Denotes Tremolite
CR Denotes Crocidolite **AC** Denotes Actinolite
AM Denotes Amosite **AN** Denotes Anthophylite
NAIIS No Asbestos Identified in Sample
NADIS No Asbestos Detected In Sample

Symbol Reference

^ Sub-contracted analysis.
$$ Unable to analyse due to the nature of the sample
¶ Samples submitted for this analyte were not preserved on site in accordance with laboratory protocols. This may have resulted in deterioration of the sample(s) during transit to the laboratory. Consequently the reported data may not represent the concentration of the target analyte present in the sample at the time of sampling
¥ Results for guidance only due to possible interference
& Blank corrected result
I.S Insufficient sample to complete requested analysis
I.S(g) Insufficient sample to re-analyse, results for guidance only
Intf Unable to analyse due to interferences
N.D Not determined **N.Det** Not detected
N.F No Flow
NS Information Not Supplied
Req Analysis requested, see attached sheets for results
Þ Raised detection limit due to nature of the sample
***** All accreditation has been removed by the laboratory for this result
‡ MCERTS accreditation has been removed for this result
§ accreditation has been removed for this result as it is a non-accredited matrix

Note: The Laboratory may only claim that data is accredited when all of the requirements of our Quality System have been met. Where these requirements have not been met the laboratory may elect to include the data in its final report and remove the accreditation from individual data items if it believes that the validity of the data has not been affected. If further details are required of the circumstances which have led to the removal of accreditation then please do not hesitate to contact the laboratory.

Sample Descriptions

Client : Ramboll Environ

Site : Zeon Chemicals ESA

Report Number : S16_3840

Note: major constituent in upper case

Lab ID Number	Client ID	Description
CL/1616104	BH106 0.6	Brown CLAY
CL/1616105	WS23 0.5	Brown CLAY
CL/1616106	WS23 2.00	Brown CLAY
CL/1616107	WS22 0.6	Brown Stone CLAY
CL/1616108	WS221.0	Brown CLAY
CL/1616109	WS22 1.2	Brown Stone CLAY
CL/1616110	WS15 0.4 (NVM)	Grey Silt STONE
CL/1616111	WS14 1.5	Brown Stone CLAY
CL/1616112	WS16 0.3 (NVM)	Grey Silt STONE
CL/1616113	WS17 0.3	Brown Stone CLAY
CL/1616114	WS13 0.3	Brown Stone CLAY
CL/1616115	WS13 0.8	Brown SILT

Our Ref: EFS/163841M (Ver. 1)
Your Ref: UK15-21370

May 18, 2016

Environmental Chemistry
ESG
Bretby Business Park
Ashby Road
Burton-on-Trent
Staffordshire
DE15 0YZ

Telephone: 01283 554400
Facsimile: 01283 554422

Lucy Cleverley
Ramboll Environ
8 Village Way
Cardiff
CF15 2NE

For the attention of Lucy Cleverley

Dear Lucy Cleverley

Sample Analysis - Zeon Chemicals Polyblock

Samples from the above site have been analysed in accordance with the schedule supplied.
The sample details and the results of analyses for these samples are given in the appended report.

An invoice for this work will follow under a separate cover.

Where appropriate the samples will be kept until 22/06/16 when they will be discarded. Please call 01283 554547 for an extension of this date.
Please be aware that our policy for the retention of paper based laboratory records and analysis reports is 6 years.

The work was carried out in accordance with Environmental Scientifics Group Ltd (Laboratory and Analytical) Standard Terms and Conditions of Contract.

If I can be of any further assistance please do not hesitate to contact me.

Yours sincerely

for ESG

JMColbourne

J Colbourne
Project Co-ordinator
01283 554547

TEST REPORT

1252

Report No. EFS/163841M (Ver. 1)

Ramboll Environ
8 Village Way
Cardiff
CF15 2NE

Site: Zeon Chemicals Polyblock

The 7 samples described in this report were registered for analysis by ESG on 11-May-2016. This report supersedes any versions previously issued by the laboratory.
The analysis was completed by: 18-May-2016

Tests where the accreditation is set to N or No, and any individual data items marked with a * are not UKAS or MCERTS accredited. Any opinions or interpretations expressed herein are outside the scope of any UKAS accreditation held by ESG.

The following tables are contained in this report:

On behalf of
ESG :
Declan Burns

Managing Director
Multi-Sector Services

Date of Issue: 18-May-2016

Accreditation Codes: **N** (Not Accredited), **U** (UKAS), **UM** (UKAS & MCERTS)
Tests marked '^' have been subcontracted to another laboratory.
(NVM) - denotes the sample matrix is dissimilar to matrices upon which the MCERTS validation was based, and is therefore not accredited for MCERTS.
All results are reported on a dry weight basis at 105^{o}C unless otherwise stated. (except QC samples)
ESG accepts no responsibility for any sampling not carried out by our personnel.

Where individual results are flagged see report notes for status.

			Units :	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	pH Units	mg/kg	mg/kg
			Method Codes :	GROHSA	ICPBOR	ICPMSS	ICPMSS	ICPMSS	ICPMSS	ICPMSS	ICPMSS	ICPMSS	ICPMSS	ICPMSS	ICPSOIL	ICPWSS	PHSOIL	SFAPI	SFAPI
			Method Reporting Limits :	0.2	0.5	0.3	0.2	1.2	1.6	0.7	0.5	2	0.5	16	0.1	10		0.5	0.5
			Accreditation Code:		UM	UM	UM	UM	UM	UM	UM	UM	UM	UM	UM	UM	UM	UM	U
LAB ID Number CL/	Client Sample Description	Sample Date	GRO (AA) by HSA GC-FID	Boron (H20 Soluble)	Arsenic (MS)	Cadmium (MS)	Chromium (MS)	Copper (MS)	Lead (MS)	Mercury (MS)	Nickel (MS)	Selenium (MS)	Zinc (MS)	Beryllium.	SO4-- (H2O sol) mg/l	pH units (AR)	Cyanide(Total) (AR)	Phenol Index.(AR)
1616116	WS29 1.0	09-May-16	Req	4.5	12	4.60	42.2	49.1	296.1	0.77	33.6	1.0	252.8	0.951	85	8.1	<0.6	<0.6
1616117	WS29 1.2	09-May-16	Req	4.0	13.2	1.39	42.7	33.6	74.0	<0.5	32.2	0.7	204.2	1.16	90	7.8	<0.6	<0.6
1616118	WS28 1.0	09-May-16	Req	3.4	15.7	1.34	48.9	40.7	93.0	<0.55	38.1	1.0	202.3	1.38	59	7.6	<0.7	<0.7
1616119	WS30 1.2 (NVM)	09-May-16	Req §	1.73§	6.16§	0.584§	21.40§	15.89§	30.59§	<0.54§	16§	<0.54§	76.31§	0.4367§	108§	7.7 §	<0.62§	<0.62§
1616120	WS31 1.0	09-May-16	Req	1.6	9.3	0.77	27.8	23.6	49.6	<0.5	22.6	0.6	147	0.632	44	8.2	<0.6	<0.6
1616121	WS31 1.5	09-May-16	Req	2.9	13.0	1.05	42.2	28.9	49.5	<0.5	33.9	0.6	172.6	1.18	53	7.8	<0.6	<0.6
1616122	WS26 0.6	10-May-16	Req	2	11.7	0.85	31.4	29.3	102.5	<0.51	27.9	0.5	215.9	0.812	88	8.2	<0.6	<0.6

ESG

Bretby Business Park, Ashby Road

Burton-on-Trent, Staffordshire, DE15 0YZ

Tel +44 (0) 1283 554400

Fax +44 (0) 1283 554422

Client Name Ramboll Environ

Contact Lucy Cleverley

Zeon Chemicals Polyblock

Sample Analysis

Date Printed	**18-May-2016**
Report Number	**EFS/163841M**
Table Number	**1**

Where individual results are flagged see report notes for status.
Results corrected to dry weight at 105°C where appropriate, in accordance with the MCERTS standard.

		Units :	mg/kg	%	mg/kg	µg/kg	mg/kg	% M/M	mg/kg									
		Method Codes :	SVOCMSUS	TMSS	TPHUSSI	VOCHSAS	ICPMSS	WSLM59	PAHMSUS									
		Method Reporting Limits :		0.2	20		0.6	0.04										
		Accreditation Code:		U			N	N										
LAB ID Number CL/	**Client Sample Description**	**Sample Date**	**SVOC + TICs by GCMS (AR)**	**Tot.Moisture @ 105C**	**TPH by GCFID (AR/Si)**	**VOC + TICs HSA-GCMS**	**Vanadium (MS)**	**Total Organic Carbon**	**PAH (17) by GCMS**									
1616116	WS29 1.0	**09-May-16**	Req	14.0	Req	Req	45.0	7.8	Req									
1616117	WS29 1.2	**09-May-16**		21.0	Req	Req	49.7		Req									
1616118	WS28 1.0	**09-May-16**		25.0	Req	Req	50.7		Req									
1616119	WS30 1.2 (NVM)	**09-May-16**	Req §	19.1 §	Req §	Req §	22.9		Req §									
1616120	WS31 1.0	**09-May-16**	Req	22.0	Req	Req	31.2		Req									
1616121	WS31 1.5	**09-May-16**		17.6	Req	Req	53.2	1.29	Req									
1616122	WS26 0.6	**10-May-16**		21.0	Req	Req	36.4	4.72	Req									

Bretby Business Park, Ashby Road

Burton-on-Trent, Staffordshire, DE15 0YZ

Tel +44 (0) 1283 554400

Fax +44 (0) 1283 554422

Client Name **Ramboll Environ**

Contact Lucy Cleverley

Zeon Chemicals Polyblock

Sample Analysis

Date Printed	**18-May-2016**
Report Number	**EFS/163841M**
Table Number	**1**

Where individual results are flagged see report notes for status.
Results corrected to dry weight at 105°C where appropriate, in accordance with the MCERTS standard.

Polycyclic Aromatic Hydrocarbons
GC/MS (SIM)

Customer and Site Details:	Ramboll Environ: Zeon Chemicals Polyblock		
Sample Details:	WS29 1.0	**Job Number:**	S16_3841M
LIMS ID Number:	CL1616116	**Date Booked in:**	11-May-16
QC Batch Number:	160578	**Date Extracted:**	16-May-16
Quantitation File:	Initial Calibration	**Date Analysed:**	16-May-16
Directory:	1616PAHMS20\	**Matrix:**	Soil
Dilution:	1.0	**Ext Method:**	Ultrasonic

Accredited?: Yes

Target Compounds	CAS #	R.T. (min)	Concentration mg/kg	% Fit	Accr. code
Naphthalene	91-20-3	2.82	0.21	98	**UM**
Acenaphthylene	208-96-8	3.85	0.17	34	U
Acenaphthene	83-32-9	3.97	0.40	70	UM
Fluorene	86-73-7	4.30	0.13	94	UM
Phenanthrene	85-01-8	5.03	0.65	97	UM
Anthracene	120-12-7	5.07	0.14	96	U
Fluoranthene	206-44-0	6.24	0.85	99	UM
Pyrene	129-00-0	6.50	0.87	98	UM
Benzo[a]anthracene	56-55-3	8.10	0.40	66	UM
Chrysene	218-01-9	8.15	0.48	64	UM
Benzo[b]fluoranthene	205-99-2	9.59	0.53	98	UM
Benzo[k]fluoranthene	207-08-9	9.62	0.19	98	UM
Benzo[a]pyrene	50-32-8	10.00	0.33	98	UM
Indeno[1,2,3-cd]pyrene	193-39-5	11.35	0.26	94	UM
Dibenzo[a,h]anthracene	53-70-3	-	< 0.09	-	UM
Benzo[g,h,i]perylene	191-24-2	11.64	0.24	97	UM
Coronene	191-07-1 *	-	< 0.09	-	N
Total (USEPA16) PAHs	-	-	< 5.90	-	N

* Denotes compound is not UKAS accredited

"M" denotes that % fit has been manually interpreted

Internal Standards	% Area
1,4-Dichlorobenzene-d4	NA
Naphthalene-d8	103
Acenaphthene-d10	100
Phenanthrene-d10	104
Chrysene-d12	96
Perylene-d12	96

Surrogates	% Rec
Nitrobenzene-d5	NA
2-Fluorobiphenyl	97
Terphenyl-d14	73

Concentrations are reported on a dry weight basis.

The Total PAH result is the sum of non-rounded individual PAH results and therefore may differ to the sum of the rounded individual PAH results printed above. By convention, where any one or more result is a "less than", the total is expressed as a "less than" and includes the "less than" concentration within the total.

Polycyclic Aromatic Hydrocarbons
GC/MS (SIM)

Customer and Site Details:	Ramboll Environ: Zeon Chemicals Polyblock		
Sample Details:	WS29 1.2	**Job Number:**	S16_3841M
LIMS ID Number:	CL1616117	**Date Booked in:**	11-May-16
QC Batch Number:	160578	**Date Extracted:**	16-May-16
Quantitation File:	Initial Calibration	**Date Analysed:**	16-May-16
Directory:	1616PAHMS20\	**Matrix:**	Soil
Dilution:	1.0	**Ext Method:**	Ultrasonic

Accredited?: Yes

Target Compounds	CAS #	R.T. (min)	Concentration mg/kg	% Fit	Accr. code
Naphthalene	91-20-3	-	< 0.10	-	**UM**
Acenaphthylene	208-96-8	-	< 0.10	-	U
Acenaphthene	83-32-9	-	< 0.10	-	UM
Fluorene	86-73-7	-	< 0.10	-	UM
Phenanthrene	85-01-8	-	< 0.10	-	UM
Anthracene	120-12-7	-	< 0.10	-	U
Fluoranthene	206-44-0	-	< 0.10	-	UM
Pyrene	129-00-0	-	< 0.10	-	UM
Benzo[a]anthracene	56-55-3	-	< 0.10	-	UM
Chrysene	218-01-9	-	< 0.10	-	UM
Benzo[b]fluoranthene	205-99-2	-	< 0.10	-	UM
Benzo[k]fluoranthene	207-08-9	-	< 0.10	-	UM
Benzo[a]pyrene	50-32-8	-	< 0.10	-	UM
Indeno[1,2,3-cd]pyrene	193-39-5	-	< 0.10	-	UM
Dibenzo[a,h]anthracene	53-70-3	-	< 0.10	-	UM
Benzo[g,h,i]perylene	191-24-2	-	< 0.10	-	UM
Coronene	191-07-1 *	-	< 0.10	-	N
Total (USEPA16) PAHs	-	-	< 1.62	-	N

* Denotes compound is not UKAS accredited

"M" denotes that % fit has been manually interpreted

Internal Standards	% Area
1,4-Dichlorobenzene-d4	NA
Naphthalene-d8	101
Acenaphthene-d10	100
Phenanthrene-d10	102
Chrysene-d12	96
Perylene-d12	96

Surrogates	% Rec
Nitrobenzene-d5	NA
2-Fluorobiphenyl	99
Terphenyl-d14	77

Concentrations are reported on a dry weight basis.

The Total PAH result is the sum of non-rounded individual PAH results and therefore may differ to the sum of the rounded individual PAH results printed above. By convention, where any one or more result is a "less than", the total is expressed as a "less than" and includes the "less than" concentration within the total.

Polycyclic Aromatic Hydrocarbons
GC/MS (SIM)

Customer and Site Details:	Ramboll Environ: Zeon Chemicals Polyblock		
Sample Details:	WS28 1.0	**Job Number:**	S16_3841M
LIMS ID Number:	CL1616118	**Date Booked in:**	11-May-16
QC Batch Number:	160578	**Date Extracted:**	16-May-16
Quantitation File:	Initial Calibration	**Date Analysed:**	16-May-16
Directory:	1616PAHMS20\	**Matrix:**	Soil
Dilution:	1.0	**Ext Method:**	Ultrasonic

Accredited?: Yes

Target Compounds	CAS #	R.T. (min)	Concentration mg/kg	% Fit	Accr. code
Naphthalene	91-20-3	2.82	0.11	97	**UM**
Acenaphthylene	208-96-8	-	< 0.11	-	U
Acenaphthene	83-32-9	-	< 0.11	-	UM
Fluorene	86-73-7	-	< 0.11	-	UM
Phenanthrene	85-01-8	5.03	0.17	98	UM
Anthracene	120-12-7	-	< 0.11	-	U
Fluoranthene	206-44-0	6.24	0.25	100	UM
Pyrene	129-00-0	6.50	0.20	97	UM
Benzo[a]anthracene	56-55-3	8.10	0.16	84	UM
Chrysene	218-01-9	8.15	0.21	84	UM
Benzo[b]fluoranthene	205-99-2	9.59	0.24	98	UM
Benzo[k]fluoranthene	207-08-9	-	< 0.11	-	UM
Benzo[a]pyrene	50-32-8	10.00	0.11	100	UM
Indeno[1,2,3-cd]pyrene	193-39-5	-	< 0.11	-	UM
Dibenzo[a,h]anthracene	53-70-3	-	< 0.11	-	UM
Benzo[g,h,i]perylene	191-24-2	-	< 0.11	-	UM
Coronene	191-07-1 *	-	< 0.11	-	N
Total (USEPA16) PAHs	-	-	< 2.31	-	N

* Denotes compound is not UKAS accredited

"M" denotes that % fit has been manually interpreted

Internal Standards	% Area
1,4-Dichlorobenzene-d4	NA
Naphthalene-d8	99
Acenaphthene-d10	99
Phenanthrene-d10	102
Chrysene-d12	94
Perylene-d12	98

Surrogates	% Rec
Nitrobenzene-d5	NA
2-Fluorobiphenyl	97
Terphenyl-d14	75

Concentrations are reported on a dry weight basis.

The Total PAH result is the sum of non-rounded individual PAH results and therefore may differ to the sum of the rounded individual PAH results printed above. By convention, where any one or more result is a "less than", the total is expressed as a "less than" and includes the "less than" concentration within the total.

Polycyclic Aromatic Hydrocarbons
GC/MS (SIM)

Customer and Site Details:	Ramboll Environ: Zeon Chemicals Polyblock		
Sample Details:	WS30 1.2 (NVM)	**Job Number:**	S16_3841M
LIMS ID Number:	CL1616119	**Date Booked in:**	11-May-16
QC Batch Number:	160578	**Date Extracted:**	16-May-16
Quantitation File:	Initial Calibration	**Date Analysed:**	16-May-16
Directory:	1616PAHMS20\	**Matrix:**	Soil
Dilution:	1.0	**Ext Method:**	Ultrasonic

Accredited?: No

Target Compounds	CAS #	R.T. (min)	Concentration mg/kg	% Fit	Accr. code
Naphthalene	91-20-3	-	< 0.10	-	**N**
Acenaphthylene	208-96-8	-	< 0.10	-	N
Acenaphthene	83-32-9	-	< 0.10	-	N
Fluorene	86-73-7	-	< 0.10	-	N
Phenanthrene	85-01-8	-	< 0.10	-	N
Anthracene	120-12-7	-	< 0.10	-	N
Fluoranthene	206-44-0	-	< 0.10	-	N
Pyrene	129-00-0	-	< 0.10	-	N
Benzo[a]anthracene	56-55-3	-	< 0.10	-	N
Chrysene	218-01-9	-	< 0.10	-	N
Benzo[b]fluoranthene	205-99-2	-	< 0.10	-	N
Benzo[k]fluoranthene	207-08-9	-	< 0.10	-	N
Benzo[a]pyrene	50-32-8	-	< 0.10	-	N
Indeno[1,2,3-cd]pyrene	193-39-5	-	< 0.10	-	N
Dibenzo[a,h]anthracene	53-70-3	-	< 0.10	-	N
Benzo[g,h,i]perylene	191-24-2	-	< 0.10	-	N
Coronene	191-07-1	-	< 0.10	-	N
Total (USEPA16) PAHs	-	-	< 1.58	-	N

* Denotes compound is not UKAS accredited

"M" denotes that % fit has been manually interpreted

Internal Standards	% Area
1,4-Dichlorobenzene-d4	NA
Naphthalene-d8	99
Acenaphthene-d10	98
Phenanthrene-d10	99
Chrysene-d12	90
Perylene-d12	86

Surrogates	% Rec
Nitrobenzene-d5	NA
2-Fluorobiphenyl	98
Terphenyl-d14	75

Concentrations are reported on a dry weight basis.

The Total PAH result is the sum of non-rounded individual PAH results and therefore may differ to the sum of the rounded individual PAH results printed above. By convention, where any one or more result is a "less than", the total is expressed as a "less than" and includes the "less than" concentration within the total.

Polycyclic Aromatic Hydrocarbons
GC/MS (SIM)

Customer and Site Details:	Ramboll Environ: Zeon Chemicals Polyblock		
Sample Details:	WS31 1.0	**Job Number:**	S16_3841M
LIMS ID Number:	CL1616120	**Date Booked in:**	11-May-16
QC Batch Number:	160578	**Date Extracted:**	16-May-16
Quantitation File:	Initial Calibration	**Date Analysed:**	16-May-16
Directory:	1616PAHMS20\	**Matrix:**	Soil
Dilution:	1.0	**Ext Method:**	Ultrasonic

Accredited?: Yes

Target Compounds	CAS #	R.T. (min)	Concentration mg/kg	% Fit	Accr. code
Naphthalene	91-20-3	-	< 0.10	-	**UM**
Acenaphthylene	208-96-8	-	< 0.10	-	U
Acenaphthene	83-32-9	-	< 0.10	-	UM
Fluorene	86-73-7	-	< 0.10	-	UM
Phenanthrene	85-01-8	-	< 0.10	-	UM
Anthracene	120-12-7	-	< 0.10	-	U
Fluoranthene	206-44-0	-	< 0.10	-	UM
Pyrene	129-00-0	-	< 0.10	-	UM
Benzo[a]anthracene	56-55-3	-	< 0.10	-	UM
Chrysene	218-01-9	-	< 0.10	-	UM
Benzo[b]fluoranthene	205-99-2	-	< 0.10	-	UM
Benzo[k]fluoranthene	207-08-9	-	< 0.10	-	UM
Benzo[a]pyrene	50-32-8	-	< 0.10	-	UM
Indeno[1,2,3-cd]pyrene	193-39-5	-	< 0.10	-	UM
Dibenzo[a,h]anthracene	53-70-3	-	< 0.10	-	UM
Benzo[g,h,i]perylene	191-24-2	-	< 0.10	-	UM
Coronene	191-07-1 *	-	< 0.10	-	N
Total (USEPA16) PAHs	-	-	< 1.64	-	N

* Denotes compound is not UKAS accredited

"M" denotes that % fit has been manually interpreted

Internal Standards	% Area
1,4-Dichlorobenzene-d4	NA
Naphthalene-d8	101
Acenaphthene-d10	99
Phenanthrene-d10	100
Chrysene-d12	87
Perylene-d12	81

Surrogates	% Rec
Nitrobenzene-d5	NA
2-Fluorobiphenyl	99
Terphenyl-d14	75

Concentrations are reported on a dry weight basis.

The Total PAH result is the sum of non-rounded individual PAH results and therefore may differ to the sum of the rounded individual PAH results printed above. By convention, where any one or more result is a "less than", the total is expressed as a "less than" and includes the "less than" concentration within the total.

Polycyclic Aromatic Hydrocarbons
GC/MS (SIM)

Customer and Site Details:	Ramboll Environ: Zeon Chemicals Polyblock		
Sample Details:	WS31 1.5	**Job Number:**	S16_3841M
LIMS ID Number:	CL1616121	**Date Booked in:**	11-May-16
QC Batch Number:	160578	**Date Extracted:**	16-May-16
Quantitation File:	Initial Calibration	**Date Analysed:**	16-May-16
Directory:	1616PAHMS20\	**Matrix:**	Soil
Dilution:	1.0	**Ext Method:**	Ultrasonic

Accredited?: Yes

Target Compounds	CAS #	R.T. (min)	Concentration mg/kg	% Fit	Accr. code
Naphthalene	91-20-3	-	< 0.10	-	**UM**
Acenaphthylene	208-96-8	-	< 0.10	-	U
Acenaphthene	83-32-9	-	< 0.10	-	UM
Fluorene	86-73-7	-	< 0.10	-	UM
Phenanthrene	85-01-8	-	< 0.10	-	UM
Anthracene	120-12-7	-	< 0.10	-	U
Fluoranthene	206-44-0	-	< 0.10	-	UM
Pyrene	129-00-0	-	< 0.10	-	UM
Benzo[a]anthracene	56-55-3	-	< 0.10	-	UM
Chrysene	218-01-9	-	< 0.10	-	UM
Benzo[b]fluoranthene	205-99-2	-	< 0.10	-	UM
Benzo[k]fluoranthene	207-08-9	-	< 0.10	-	UM
Benzo[a]pyrene	50-32-8	-	< 0.10	-	UM
Indeno[1,2,3-cd]pyrene	193-39-5	-	< 0.10	-	UM
Dibenzo[a,h]anthracene	53-70-3	-	< 0.10	-	UM
Benzo[g,h,i]perylene	191-24-2	-	< 0.10	-	UM
Coronene	191-07-1 *	-	< 0.10	-	N
Total (USEPA16) PAHs	-	-	< 1.55	-	N

* Denotes compound is not UKAS accredited

"M" denotes that % fit has been manually interpreted

Internal Standards	% Area
1,4-Dichlorobenzene-d4	NA
Naphthalene-d8	102
Acenaphthene-d10	100
Phenanthrene-d10	99
Chrysene-d12	79
Perylene-d12	68

Surrogates	% Rec
Nitrobenzene-d5	NA
2-Fluorobiphenyl	99
Terphenyl-d14	74

Concentrations are reported on a dry weight basis.

The Total PAH result is the sum of non-rounded individual PAH results and therefore may differ to the sum of the rounded individual PAH results printed above. By convention, where any one or more result is a "less than", the total is expressed as a "less than" and includes the "less than" concentration within the total.

Polycyclic Aromatic Hydrocarbons
GC/MS (SIM)

Customer and Site Details:	Ramboll Environ: Zeon Chemicals Polyblock		
Sample Details:	WS26 0.6	**Job Number:**	S16_3841M
LIMS ID Number:	CL1616122	**Date Booked in:**	11-May-16
QC Batch Number:	160578	**Date Extracted:**	16-May-16
Quantitation File:	Initial Calibration	**Date Analysed:**	16-May-16
Directory:	1616PAHMS20\	**Matrix:**	Soil
Dilution:	1.0	**Ext Method:**	Ultrasonic

Accredited?: Yes

Target Compounds	CAS #	R.T. (min)	Concentration mg/kg	% Fit	Accr. code
Naphthalene	91-20-3	-	< 0.10	-	**UM**
Acenaphthylene	208-96-8	-	< 0.10	-	U
Acenaphthene	83-32-9	-	< 0.10	-	UM
Fluorene	86-73-7	-	< 0.10	-	UM
Phenanthrene	85-01-8	-	< 0.10	-	UM
Anthracene	120-12-7	-	< 0.10	-	U
Fluoranthene	206-44-0	6.24	0.10	98	UM
Pyrene	129-00-0	-	< 0.10	-	UM
Benzo[a]anthracene	56-55-3	-	< 0.10	-	UM
Chrysene	218-01-9	8.15	0.10	92	UM
Benzo[b]fluoranthene	205-99-2	9.59	0.10	75	UM
Benzo[k]fluoranthene	207-08-9	-	< 0.10	-	UM
Benzo[a]pyrene	50-32-8	-	< 0.10	-	UM
Indeno[1,2,3-cd]pyrene	193-39-5	-	< 0.10	-	UM
Dibenzo[a,h]anthracene	53-70-3	-	< 0.10	-	UM
Benzo[g,h,i]perylene	191-24-2	-	< 0.10	-	UM
Coronene	191-07-1 *	-	< 0.10	-	N
Total (USEPA16) PAHs	-	-	< 1.67	-	N

* Denotes compound is not UKAS accredited

"M" denotes that % fit has been manually interpreted

Internal Standards	% Area
1,4-Dichlorobenzene-d4	NA
Naphthalene-d8	93
Acenaphthene-d10	92
Phenanthrene-d10	91
Chrysene-d12	84
Perylene-d12	80

Surrogates	% Rec
Nitrobenzene-d5	NA
2-Fluorobiphenyl	98
Terphenyl-d14	75

Concentrations are reported on a dry weight basis.

The Total PAH result is the sum of non-rounded individual PAH results and therefore may differ to the sum of the rounded individual PAH results printed above. By convention, where any one or more result is a "less than", the total is expressed as a "less than" and includes the "less than" concentration within the total.

Semi-Volatile Organic Compounds

Accredited?: Yes

Customer and Site Details:	Ramboll Environ: Zeon Chemicals Polyblock			**Matrix:**	Soil	**QC Batch Number:**	109
Sample Details:	WS29 1.0	**Date Booked in:**	11-May-16	**Ext Method:**	Ultrasonic	**Multiplier:**	0.2
LIMS ID Number:	CL1616116	**Date Extracted:**	13-May-16	**Operator:**	SO/RP	**Dilution Factor:**	1
Job Number:	S16_3841M	**Date Analysed:**	17-May-16	**Directory/Quant File:**	051616_MS16\	**GPC (Y/N)**	N

Target Compounds	CAS #	R.T. (min)	Concentration mg/kg	% Fit	Accr. code
Phenol	108-95-2	-	< 0.1	-	U
bis(2-Chloroethyl)ether	111-44-4	-	< 0.1	-	U
2-Chlorophenol	95-57-8	-	< 0.1	-	U
1,3-Dichlorobenzene	541-73-1	-	< 0.1	-	U
1,4-Dichlorobenzene	106-46-7	-	< 0.1	-	U
Benzyl alcohol	100-51-6	-	< 0.6	-	U
1,2-Dichlorobenzene	95-50-1	-	< 0.1	-	U
2-Methylphenol	95-48-7	-	< 0.1	-	U
bis(2-Chloroisopropyl)ether	108-60-1	-	< 0.6	-	U
Hexachloroethane	67-72-1	-	< 0.1	-	U
N-Nitroso-di-n-propylamine	621-64-7*	-	< 1.0	-	N
3- & 4-Methylphenol	108-39-4/106-44-5	-	< 0.1	-	U
Nitrobenzene	98-95-3	-	< 0.6	-	U
Isophorone	78-59-1*	-	< 0.1	-	N
2-Nitrophenol	88-75-5	-	< 0.1	-	U
2,4-Dimethylphenol	105-67-9	-	< 0.1	-	U
Benzoic Acid	65-85-0*	-	< 0.6	-	N
bis(2-Chloroethoxy)methane	111-91-1	-	< 0.1	-	U
2,4-Dichlorophenol	120-83-2	-	< 0.1	-	U
1,2,4-Trichlorobenzene	120-82-1*	-	< 0.1	-	N
Naphthalene	91-20-3	3.89	0.2	99	U
4-Chlorophenol	106-48-9	-	< 0.6	-	U
4-Chloroaniline	106-47-8*	-	< 0.6	-	N
Hexachlorobutadiene	87-68-3*	-	< 0.1	-	N
4-Chloro-3-methylphenol	59-50-7	-	< 0.1	-	U
2-Methylnaphthalene	91-57-6	4.31	0.1	97	U
1-Methylnaphthalene	90-12-0	-	< 0.1	-	U
Hexachlorocyclopentadiene	77-47-4*	-	< 0.1	-	N
2,4,6-Trichlorophenol	88-06-2	-	< 0.1	-	U
2,4,5-Trichlorophenol	95-95-4	-	< 0.1	-	U
2-Chloronaphthalene	91-58-7	-	< 0.1	-	U
Biphenyl	92-52-4	4.60	0.5	96	U
Diphenyl ether	101-84-8	4.66	2.4	94	U
2-Nitroaniline	88-74-4*	-	< 0.6	-	N
Acenaphthylene	208-96-8	4.88	0.1	M	U
Dimethylphthalate	131-11-3	-	< 0.1	-	U
2,6-Dinitrotoluene	606-20-2	-	< 0.6	-	U
Acenaphthene	83-32-9	-	< 0.1	-	U
3-Nitroaniline	99-09-2*	-	< 16.9	-	N

Target Compounds	CAS #	R.T.	Concentration mg/kg	% Fit	Accr. code
2,4-Dinitrophenol	51-28-5*	-	< 0.6	-	N
Dibenzofuran	132-64-9	-	< 0.1	-	U
4-Nitrophenol	100-02-7*	-	< 0.6	-	N
2,4-Dinitrotoluene	121-14-2	-	< 0.2	-	U
Fluorene	86-73-7	5.31	0.1	75	U
Diethylphthalate	84-66-2	-	< 0.1	-	U
4-Chlorophenyl-phenylether	7005-72-3	-	< 0.1	-	U
4,6-Dinitro-2-methylphenol	534-52-1*	-	< 0.2	-	N
4-Nitroaniline	100-01-6*	-	< 0.7	-	N
N-Nitrosodiphenylamine	86-30-6*	-	< 0.1	-	N
4-Bromophenyl-phenylether	101-55-3*	-	< 0.1	-	N
Hexachlorobenzene	118-74-1*	-	< 0.1	-	N
Pentachlorophenol	87-86-5*	-	< 0.6	-	N
Phenanthrene	85-01-8	5.92	0.6	96	U
Anthracene	120-12-7	5.96	0.1	81	U
Di-n-butylphthalate	84-74-2	-	< 0.1	-	U
Fluoranthene	206-44-0	6.76	0.7	95	U
Pyrene	129-00-0	6.96	0.7	100	U
Butylbenzylphthalate	85-68-7	-	< 0.2	-	U
Benzo[a]anthracene	56-55-3	8.30	0.2	M	U
Chrysene	218-01-9	8.35	0.3	65	U
3,3'-Dichlorobenzidine	91-94-1*	-	N.D	-	N
bis(2-Ethylhexyl)phthalate	117-81-7	-	< 0.2	-	U
Di-n-octylphthalate	117-84-0*	-	< 0.2	-	N
Benzo[b]fluoranthene	205-99-2	10.06	0.5	99	U
Benzo[k]fluoranthene	207-08-9	-	< 0.2	-	U
Benzo[a]pyrene	50-32-8	10.67	0.3	93	U
Indeno[1,2,3-cd]pyrene	193-39-5	-	< 0.6	-	U
Dibenzo[a,h]anthracene	53-70-3	-	< 0.6	-	U
Benzo[g,h,i]perylene	191-24-2	-	< 0.6	-	U
Coronene	191-07-1*	-	< 0.3	-	N

Internal Standards	% Area
1,4-Dichlorobenzene-d4	82
Naphthalene-d8	82
Acenaphthene-d10	78
Phenanthrene-d10	77
Chrysene-d12	82
Perylene-d12	71

Surrogates	% Rec
2-Fluorophenol	102
Phenol-d5	99
Nitrobenzene-d5	93
2-Fluorobiphenyl	102
2,4,6-Tribromophenol	121
Terphenyl-d14	96

This analysis was conducted on an 'As Received' basis.

Concentrations are reported on a dry weight basis.

Where individual results are flagged see report notes for status.
Results corrected to dry weight at 105°C where appropriate, in accordance with the MCERTS standard.

Semi-Volatile Organic Compounds

Accredited?: No

Customer and Site Details:	Ramboll Environ: Zeon Chemicals Polyblock			**Matrix:**	Soil	**QC Batch Number:**	109
Sample Details:	WS30 1.2 (NVM)	**Date Booked in:**	11-May-16	**Ext Method:**	Ultrasonic	**Multiplier:**	0.2
LIMS ID Number:	CL1616119	**Date Extracted:**	13-May-16	**Operator:**	SO/RP	**Dilution Factor:**	1
Job Number:	S16_3841M	**Date Analysed:**	17-May-16	**Directory/Quant File:**	051616_MS16\	**GPC (Y/N)**	N

Target Compounds	CAS #	R.T. (min)	Concentration mg/kg	% Fit	Accr. code
Phenol	108-95-2	-	< 0.1	-	N
bis(2-Chloroethyl)ether	111-44-4	-	< 0.1	-	N
2-Chlorophenol	95-57-8	-	< 0.1	-	N
1,3-Dichlorobenzene	541-73-1	-	< 0.1	-	N
1,4-Dichlorobenzene	106-46-7	-	< 0.1	-	N
Benzyl alcohol	100-51-6	-	< 0.6	-	N
1,2-Dichlorobenzene	95-50-1	-	< 0.1	-	N
2-Methylphenol	95-48-7	-	< 0.1	-	N
bis(2-Chloroisopropyl)ether	108-60-1	-	< 0.6	-	N
Hexachloroethane	67-72-1	-	< 0.1	-	N
N-Nitroso-di-n-propylamine	621-64-7	-	< 1.1	-	N
3- & 4-Methylphenol	108-39-4/106-44-5	-	< 0.1	-	N
Nitrobenzene	98-95-3	-	< 0.6	-	N
Isophorone	78-59-1	-	< 0.1	-	N
2-Nitrophenol	88-75-5	-	< 0.1	-	N
2,4-Dimethylphenol	105-67-9	-	< 0.1	-	N
Benzoic Acid	65-85-0	-	< 0.6	-	N
bis(2-Chloroethoxy)methane	111-91-1	-	< 0.1	-	N
2,4-Dichlorophenol	120-83-2	-	< 0.1	-	N
1,2,4-Trichlorobenzene	120-82-1	-	< 0.1	-	N
Naphthalene	91-20-3	-	< 0.1	-	N
4-Chlorophenol	106-48-9	-	< 0.6	-	N
4-Chloroaniline	106-47-8	-	< 0.6	-	N
Hexachlorobutadiene	87-68-3	-	< 0.1	-	N
4-Chloro-3-methylphenol	59-50-7	-	< 0.1	-	N
2-Methylnaphthalene	91-57-6	-	< 0.1	-	N
1-Methylnaphthalene	90-12-0	-	< 0.1	-	N
Hexachlorocyclopentadiene	77-47-4	-	< 0.1	-	N
2,4,6-Trichlorophenol	88-06-2	-	< 0.1	-	N
2,4,5-Trichlorophenol	95-95-4	-	< 0.1	-	N
2-Chloronaphthalene	91-58-7	-	< 0.1	-	N
Biphenyl	92-52-4	-	< 0.1	-	N
Diphenyl ether	101-84-8	-	< 0.1	-	N
2-Nitroaniline	88-74-4	-	< 0.6	-	N
Acenaphthylene	208-96-8	-	< 0.1	-	N
Dimethylphthalate	131-11-3	-	< 0.1	-	N
2,6-Dinitrotoluene	606-20-2	-	< 0.6	-	N
Acenaphthene	83-32-9	-	< 0.1	-	N
3-Nitroaniline	99-09-2	-	< 17.9	-	N

Target Compounds	CAS #	R.T.	Concentration mg/kg	% Fit	Accr. code
2,4-Dinitrophenol	51-28-5	-	< 0.6	-	N
Dibenzofuran	132-64-9	-	< 0.1	-	N
4-Nitrophenol	100-02-7	-	< 0.6	-	N
2,4-Dinitrotoluene	121-14-2	-	< 0.2	-	N
Fluorene	86-73-7	-	< 0.1	-	N
Diethylphthalate	84-66-2	-	< 0.1	-	N
4-Chlorophenyl-phenylether	7005-72-3	-	< 0.1	-	N
4,6-Dinitro-2-methylphenol	534-52-1	-	< 0.2	-	N
4-Nitroaniline	100-01-6	-	< 0.7	-	N
N-Nitrosodiphenylamine	86-30-6	-	< 0.1	-	N
4-Bromophenyl-phenylether	101-55-3	-	< 0.1	-	N
Hexachlorobenzene	118-74-1	-	< 0.1	-	N
Pentachlorophenol	87-86-5	-	< 0.6	-	N
Phenanthrene	85-01-8	-	< 0.1	-	N
Anthracene	120-12-7	-	< 0.1	-	N
Di-n-butylphthalate	84-74-2	-	< 0.1	-	N
Fluoranthene	206-44-0	-	< 0.2	-	N
Pyrene	129-00-0	-	< 0.2	-	N
Butylbenzylphthalate	85-68-7	-	< 0.2	-	N
Benzo[a]anthracene	56-55-3	-	< 0.2	-	N
Chrysene	218-01-9	-	< 0.2	-	N
3,3'-Dichlorobenzidine	91-94-1	-	< 0.6	-	N
bis(2-Ethylhexyl)phthalate	117-81-7	-	N.D	-	N
Di-n-octylphthalate	117-84-0	-	< 0.2	-	N
Benzo[b]fluoranthene	205-99-2	-	< 0.2	-	N
Benzo[k]fluoranthene	207-08-9	-	< 0.2	-	N
Benzo[a]pyrene	50-32-8	-	< 0.2	-	N
Indeno[1,2,3-cd]pyrene	193-39-5	-	< 0.6	-	N
Dibenzo[a,h]anthracene	53-70-3	-	< 0.6	-	N
Benzo[g,h,i]perylene	191-24-2	-	< 0.6	-	N
Coronene	191-07-1*	-	< 0.4	-	N

Internal Standards	% Area
1,4-Dichlorobenzene-d4	85
Naphthalene-d8	90
Acenaphthene-d10	82
Phenanthrene-d10	79
Chrysene-d12	87
Perylene-d12	78

Surrogates	% Rec
2-Fluorophenol	85
Phenol-d5	95
Nitrobenzene-d5	88
2-Fluorobiphenyl	95
2,4,6-Tribromophenol	103
Terphenyl-d14	91

This analysis was conducted on an 'As Received' basis.

Concentrations are reported on a dry weight basis.

Where individual results are flagged see report notes for status.
Results corrected to dry weight at 105°C where appropriate, in accordance with the MCERTS standard.

Semi-Volatile Organic Compounds

Accredited?: Yes

Customer and Site Details:	Ramboll Environ: Zeon Chemicals Polyblock			**Matrix:**	Soil	**QC Batch Number:**	109
Sample Details:	WS31 1.0	**Date Booked in:**	11-May-16	**Ext Method:**	Ultrasonic	**Multiplier:**	0.2
LIMS ID Number:	CL1616120	**Date Extracted:**	13-May-16	**Operator:**	SO/RP	**Dilution Factor:**	1
Job Number:	S16_3841M	**Date Analysed:**	17-May-16	**Directory/Quant File:**	051616_MS16\	**GPC (Y/N)**	N

Target Compounds	CAS #	R.T. (min)	Concentration mg/kg	% Fit	Accr. code
Phenol	108-95-2	-	< 0.1	-	U
bis(2-Chloroethyl)ether	111-44-4	-	< 0.1	-	U
2-Chlorophenol	95-57-8	-	< 0.1	-	U
1,3-Dichlorobenzene	541-73-1	-	< 0.1	-	U
1,4-Dichlorobenzene	106-46-7	-	< 0.1	-	U
Benzyl alcohol	100-51-6	-	< 0.6	-	U
1,2-Dichlorobenzene	95-50-1	-	< 0.1	-	U
2-Methylphenol	95-48-7	-	< 0.1	-	U
bis(2-Chloroisopropyl)ether	108-60-1	-	< 0.6	-	U
Hexachloroethane	67-72-1	-	< 0.1	-	U
N-Nitroso-di-n-propylamine	621-64-7*	-	< 1.2	-	N
3- & 4-Methylphenol	108-39-4/106-44-5	-	< 0.1	-	U
Nitrobenzene	98-95-3	-	< 0.6	-	U
Isophorone	78-59-1*	-	< 0.1	-	N
2-Nitrophenol	88-75-5	-	< 0.1	-	U
2,4-Dimethylphenol	105-67-9	-	< 0.1	-	U
Benzoic Acid	65-85-0*	-	< 0.6	-	N
bis(2-Chloroethoxy)methane	111-91-1	-	< 0.1	-	U
2,4-Dichlorophenol	120-83-2	-	< 0.1	-	U
1,2,4-Trichlorobenzene	120-82-1*	-	< 0.1	-	N
Naphthalene	91-20-3	-	< 0.1	-	U
4-Chlorophenol	106-48-9	-	< 0.6	-	U
4-Chloroaniline	106-47-8*	-	< 0.6	-	N
Hexachlorobutadiene	87-68-3*	-	< 0.1	-	N
4-Chloro-3-methylphenol	59-50-7	-	< 0.1	-	U
2-Methylnaphthalene	91-57-6	-	< 0.1	-	U
1-Methylnaphthalene	90-12-0	-	< 0.1	-	U
Hexachlorocyclopentadiene	77-47-4*	-	< 0.1	-	N
2,4,6-Trichlorophenol	88-06-2	-	< 0.1	-	U
2,4,5-Trichlorophenol	95-95-4	-	< 0.1	-	U
2-Chloronaphthalene	91-58-7	-	< 0.1	-	U
Biphenyl	92-52-4	-	< 0.1	-	U
Diphenyl ether	101-84-8	-	< 0.1	-	U
2-Nitroaniline	88-74-4*	-	< 0.6	-	N
Acenaphthylene	208-96-8	-	< 0.1	-	U
Dimethylphthalate	131-11-3	-	< 0.1	-	U
2,6-Dinitrotoluene	606-20-2	-	< 0.6	-	U
Acenaphthene	83-32-9	-	< 0.1	-	U
3-Nitroaniline	99-09-2*	-	< 18.6	-	N

Target Compounds	CAS #	R.T.	Concentration mg/kg	% Fit	Accr. code
2,4-Dinitrophenol	51-28-5*	-	< 0.6	-	N
Dibenzofuran	132-64-9	-	< 0.1	-	U
4-Nitrophenol	100-02-7*	-	< 0.6	-	N
2,4-Dinitrotoluene	121-14-2	-	< 0.3	-	U
Fluorene	86-73-7	-	< 0.1	-	U
Diethylphthalate	84-66-2	-	< 0.1	-	U
4-Chlorophenyl-phenylether	7005-72-3	-	< 0.1	-	U
4,6-Dinitro-2-methylphenol	534-52-1*	-	< 0.3	-	N
4-Nitroaniline	100-01-6*	-	< 0.8	-	N
N-Nitrosodiphenylamine	86-30-6*	-	< 0.1	-	N
4-Bromophenyl-phenylether	101-55-3*	-	< 0.1	-	N
Hexachlorobenzene	118-74-1*	-	< 0.1	-	N
Pentachlorophenol	87-86-5*	-	< 0.6	-	N
Phenanthrene	85-01-8	-	< 0.1	-	U
Anthracene	120-12-7	-	< 0.1	-	U
Di-n-butylphthalate	84-74-2	-	< 0.1	-	U
Fluoranthene	206-44-0	-	< 0.3	-	U
Pyrene	129-00-0	-	< 0.3	-	U
Butylbenzylphthalate	85-68-7	-	< 0.3	-	U
Benzo[a]anthracene	56-55-3	-	< 0.3	-	U
Chrysene	218-01-9	-	< 0.3	-	U
3,3'-Dichlorobenzidine	91-94-1*	-	N.D	-	N
bis(2-Ethylhexyl)phthalate	117-81-7	-	< 0.3	-	U
Di-n-octylphthalate	117-84-0*	-	< 0.3	-	N
Benzo[b]fluoranthene	205-99-2	-	< 0.3	-	U
Benzo[k]fluoranthene	207-08-9	-	< 0.3	-	U
Benzo[a]pyrene	50-32-8	-	< 0.3	-	U
Indeno[1,2,3-cd]pyrene	193-39-5	-	< 0.6	-	U
Dibenzo[a,h]anthracene	53-70-3	-	< 0.6	-	U
Benzo[g,h,i]perylene	191-24-2	-	< 0.6	-	U
Coronene	191-07-1*	-	< 0.4	-	N

Internal Standards	% Area
1,4-Dichlorobenzene-d4	79
Naphthalene-d8	85
Acenaphthene-d10	80
Phenanthrene-d10	79
Chrysene-d12	79
Perylene-d12	68

Surrogates	% Rec
2-Fluorophenol	97
Phenol-d5	78
Nitrobenzene-d5	97
2-Fluorobiphenyl	98
2,4,6-Tribromophenol	77
Terphenyl-d14	107

This analysis was conducted on an 'As Received' basis.

Concentrations are reported on a dry weight basis.

Where individual results are flagged see report notes for status.
Results corrected to dry weight at 105°C where appropriate, in accordance with the MCERTS standard.

SVOC (TICs)

Accredited?:No

Customer and Site Details:	Ramboll Environ: Zeon Chemicals Polyblock		
Sample Details:	WS29 1.0	**Job Number:**	S16_3841
LIMS ID Number:	CL1616116		
		Multiplier:	0.2
Date Booked in:	11-May-16	**Dilution Factor:**	1
Date Extracted:	13-May-16	**GPC (Y/N):**	N
Date Analysed:	17-May-16	**Matrix:**	Soil
QC Batch Number:	109	**Method:**	Ultrasonic
Directory/Quant File:	051616_MS16\ 0	**Operator:**	SO/RP

Tentatively Identified Compounds	CAS #	R.T.	Concentration mg/kg	% Fit	Accr. code
4,4'-Ethylenebis(2,6-di-tert-butylphenol)	001516-94-5	9.69	25.502	94	N
DELBITERINE	999727-82-9	12.70	4.813	83	N
2.beta.-Cyanoamino-5.alpha.-cholest-3-ene	131318-02-0	9.23	3.351	91	N
Bicyclo[4.2.0]octa-1,3,5-triene	000694-87-1	2.59	2.110	96	N
Unidentified peak	-	8.05	1.689	-	N
1-Hexacosanol	000506-52-5	10.52	1.599	91	N
Phenol, 4,4'-methylenebis[2,6-bis(1,1-dimethylethyl)-	000118-82-1	8.89	1.424	91	N
bis-(octylphenyl)-amine	999650-61-6	11.00	1.298	93	N
Phthalic acid, neopentyl nonyl ester	999599-19-0	9.56	1.288	52	N
3,5-di-tert-Butyl-4-hydroxybenzaldehyde	001620-98-0	5.75	1.237	99	N
Unidentified peak	-	9.82	1.202	-	N
benzo[b]cyclopropa[1m]fluorenone	099707-81-0	8.22	1.170	78	N
Cholesta-3,5-diene	000747-90-0	7.52	1.153	96	N
Phthalic acid, isobutyl pentadecyl ester	999699-22-9	8.45	1.106	78	N
6a,14a-Methanopicene, perhydro-1,2,4a,6b,9,9,12a-heptame	999692-83-0	13.65	1.056	93	N
HYPERCANARIN	999483-35-6	6.48	0.956	83	N
1-Octadecanol	000112-92-5	6.60	0.917	95	N
1-Methyl-2-anthracenamine	999199-73-0	8.58	0.900	83	N
Phthalic acid, 6-ethyl-3-octyl butyl ester	999599-18-7	8.49	0.893	72	N
2,4-Diphenoxy-1,5-naphthyridine	102554-67-6	12.86	0.868	93	N

The compounds listed above have been tentatively identified by a computer based library search.
Compounds identified in the sample are not reported if they also occur in the method blank.
The % fit is an indication of the reliability of the compound assignment.
Due to the similarity between mass spectra of some isomeric compounds assignments may not be correct.
Other compounds may also be present but identification was not possible.
Concentrations are semi-quantitative, assume a response factor of 1 and use the nearest internal standard.
Concentrations are reported on a dry weight basis.

Where individual results are flagged see report notes for status.
Results corrected to dry weight at 105°C where appropriate, in accordance with the MCERTS standard.

SVOC (TICs)

Accredited?:No

Customer and Site Details:	Ramboll Environ: Zeon Chemicals Polyblock		
Sample Details:	WS30 1.2 (NVM)	**Job Number:**	S16_3841
LIMS ID Number:	CL1616119		
		Multiplier:	0.2
Date Booked in:	11-May-16	**Dilution Factor:**	1
Date Extracted:	13-May-16	**GPC (Y/N):**	N
Date Analysed:	17-May-16	**Matrix:**	Soil
QC Batch Number:	109	**Method:**	Ultrasonic
Directory/Quant File:	051616_MS16\ 0	**Operator:**	SO/RP

Tentatively Identified Compounds	CAS #	R.T.	Concentration mg/kg	% Fit	Accr. code
Decanedioic acid, didecyl ester	002432-89-5	6.50	11.968	95	N
5,8-Epoxy-15-nor-labdane	999399-43-3	12.77	0.547	68	N
Unidentified peak	-	6.59	0.306	-	N
VIBRINDOLE A	999348-88-7	6.46	0.230	90	N
Unidentified peak	-	13.13	0.216	-	N
10,18-Bisnorabieta-5,7,9(10),11,13-pentaene	006566-19-4	6.78	0.205	98	N

The compounds listed above have been tentatively identified by a computer based library search.
Compounds identified in the sample are not reported if they also occur in the method blank.
The % fit is an indication of the reliability of the compound assignment.
Due to the similarity between mass spectra of some isomeric compounds assignments may not be correct.
Other compounds may also be present but identification was not possible.
Concentrations are semi-quantitative, assume a response factor of 1 and use the nearest internal standard.
Concentrations are reported on a dry weight basis.

Where individual results are flagged see report notes for status.
Results corrected to dry weight at 105°C where appropriate, in accordance with the MCERTS standard.

SVOC (TICs)

Accredited?:No

Customer and Site Details:	Ramboll Environ: Zeon Chemicals Polyblock		
Sample Details:	WS31 1.0	**Job Number:**	S16_3841
LIMS ID Number:	CL1616120		
		Multiplier:	0.2
Date Booked in:	11-May-16	**Dilution Factor:**	1
Date Extracted:	13-May-16	**GPC (Y/N):**	N
Date Analysed:	17-May-16	**Matrix:**	Soil
QC Batch Number:	109	**Method:**	Ultrasonic
Directory/Quant File:	051616_MS16\ 0	**Operator:**	SO/RP

Tentatively Identified Compounds	CAS #	R.T.	Concentration mg/kg	% Fit	Accr. code
Unidentified peak	-	13.13	0.540	-	N
Unidentified peak	-	13.34	0.418	-	N

The compounds listed above have been tentatively identified by a computer based library search.
Compounds identified in the sample are not reported if they also occur in the method blank.
The % fit is an indication of the reliability of the compound assignment.
Due to the similarity between mass spectra of some isomeric compounds assignments may not be correct.
Other compounds may also be present but identification was not possible.
Concentrations are semi-quantitative, assume a response factor of 1 and use the nearest internal standard.
Concentrations are reported on a dry weight basis.

Where individual results are flagged see report notes for status.
Results corrected to dry weight at 105°C where appropriate, in accordance with the MCERTS standard.

Gasoline Range Organics
(BTEX and Aliphatic Carbon Ranges)

Customer and Site Details: Ramboll Environ : Zeon Chemicals Polyblock
Job Number: S16_3841
Directory: E:\TES\DATA\2016\0516HSA_GC9\051616 2016-05-16 11-18-45\018F1801.D
Method: Headspace GCFID
Accreditation Code: UM

Matrix: Soil
Date Booked in: 11-May-16
Date extracted: 16-May-16
Date Analysed: 16-May-16, 16:2

*** Sample data with an asterisk are not UKAS accredited.**

		Concentration, (mg/kg) - as dry weight.					Aliphatics				
Sample ID	Client ID	Benzene	Toluene	Ethyl benzene	m/p-Xylene	o-Xylene	C5 - C6	>C6 - C7	>C7 - C8	>C8 - C10	Total GRO
CL1616116	WS29 1.0	<0.012	<0.012	0.113	0.016	<0.012	<0.2	<0.2	<0.2	<0.2	0.3
CL1616117	WS29 1.2	<0.013	<0.013	0.018	<0.013	<0.013	<0.3	<0.3	<0.3	<0.3	<0.3
CL1616118	WS28 1.0	<0.013	<0.013	<0.013	<0.013	<0.013	<0.3	<0.3	<0.3	<0.3	<0.3
* CL1616119	WS30 1.2 (NVM)	<0.012	<0.012	<0.012	<0.012	<0.012	<0.2	<0.2	<0.2	<0.2	<0.2
CL1616120	WS31 1.0	<0.013	<0.013	<0.013	<0.013	<0.013	<0.3	<0.3	<0.3	<0.3	<0.3
CL1616121	WS31 1.5	<0.012	<0.012	<0.012	<0.012	<0.012	<0.2	<0.2	<0.2	<0.2	<0.2
CL1616122	WS26 0.6	<0.013	<0.013	<0.013	<0.013	<0.013	<0.3	<0.3	<0.3	<0.3	<0.3

Note: Benzene elutes between C6 and C7, toluene elutes between C7 and C8, ethyl benzene and the xylenes elute between C8 and C9.
Each BTEX compound is deducted from the appropriate band to give the aliphatic fractions, however aromatic compounds may still be contributing to these fractions

Where individual results are flagged see report notes for status.
Results corrected to dry weight at 105°C where appropriate, in accordance with the MCERTS standard.

ALIPHATIC / AROMATIC FRACTION BY GC/FID

Customer and Site Details: Ramboll Environ : Zeon Chemicals Polyblock
Job Number: S16_3841M
QC Batch Number: 160578
Directory: D:\TES\DATA\Y2016\051716TPH_GC4\051716 2016-05-17 08-23-18\066B7501.D
Method: Ultra Sonic

Separation: Silica gel
Eluents: Hexane, DCM

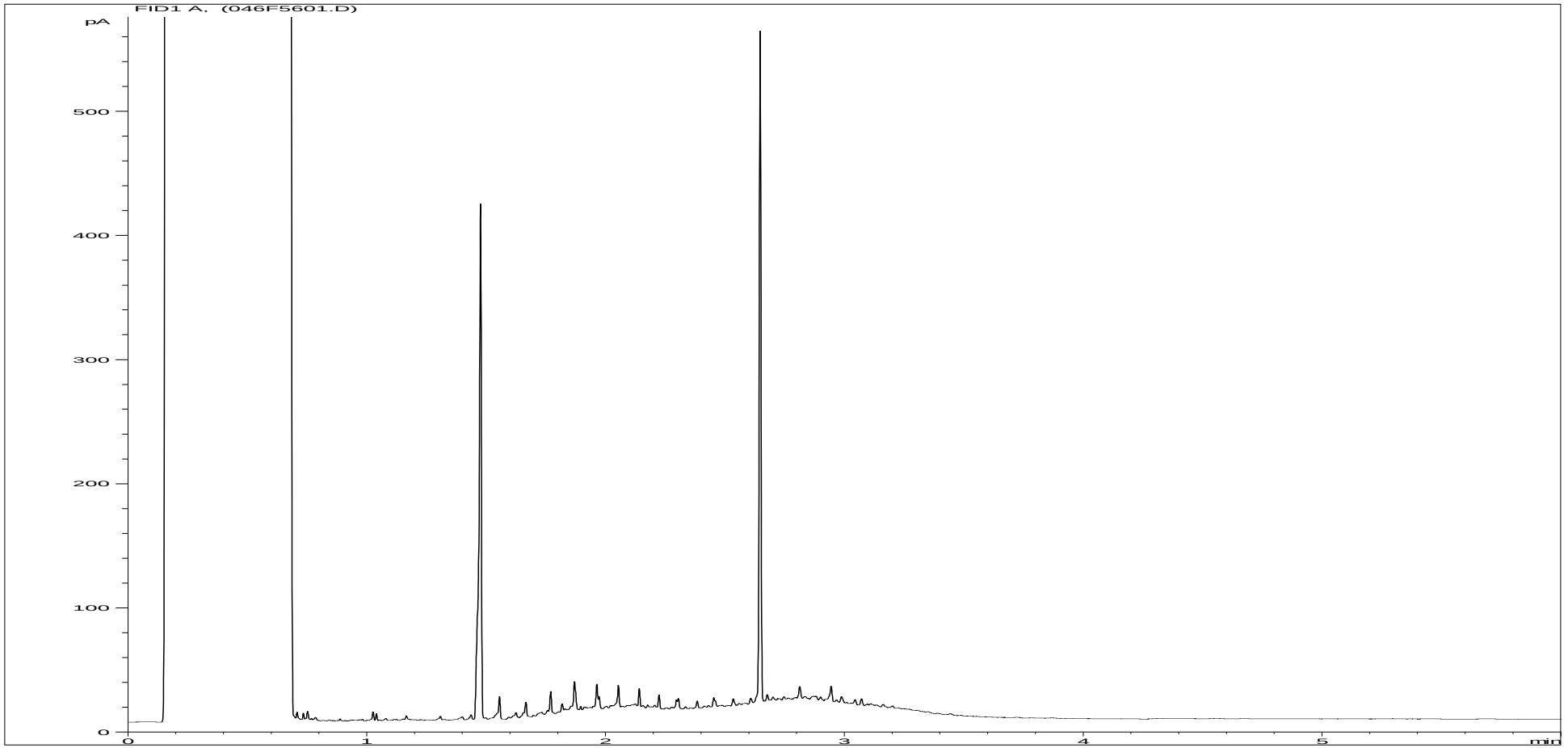
Matrix: Soil
Date Booked ir 11-May-16
Date Extracted 16-May-16
Date Analysed 18-May-16, 01:11:24

This sample data is not MCERTS accredited.
*** This sample data is not ISO17025 accredited.**

		Concentration, (mg/kg) - as dry weight.											
		>C8 - C10		>C10 - C12		>C12 - C16		>C16 - C21		>C21 - C35		>C8 - C40	
Sample ID	Client ID	Aliphatics	Aromatics	Aliphatics	Aromatics	Aliphatics	Aromatics	Aliphatics	Aromatics	Aliphatics	Aromatics	Aliphatics	Aromatics
CL1616116	WS29 1.0	<5	6.29	<5	<5	20	87	64.7	44.5	144	181	238	327
CL1616117	WS29 1.2	<5	<5	<5	<5	<5	<5	<5	<5	22.4	<11.09	28.1	<25
CL1616118	WS28 1.0	<5	<5	<5	<5	<5	16.1	<5	15.7	20.9	15.3	32.3	51.5
* CL1616119	WS30 1.2 (NVM)	<5	<5	<5	<5	<5	<5	5.48	58.3	29.3	<10.83	39.2	66.4
CL1616120	WS31 1.0	<5	<5	<5	<5	<5	<5	<5	<5	<11.23	<11.23	<26	<26
CL1616121	WS31 1.5	<5	<5	<5	<5	<5	<5	<5	<5	<10.63	<10.63	<24	<24
CL1616122	WS26 0.6	<5	<5	<5	<5	<5	<5	9.63	<5	36.6	<11.09	50.5	<25

Where individual results are flagged see report notes for status.
Results corrected to dry weight at 105°C where appropriate, in accordance with the MCERTS standard.

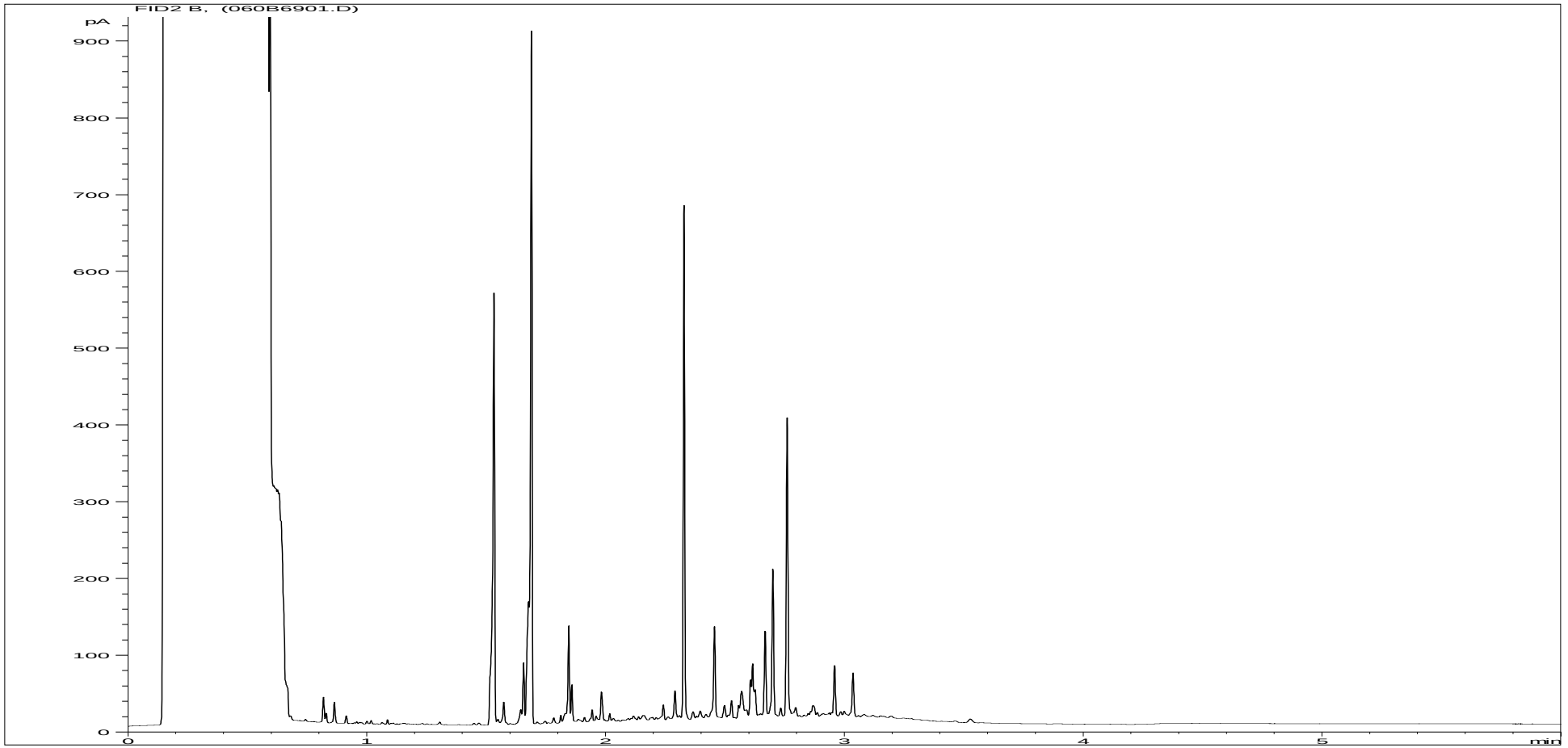
Petroleum Hydrocarbons (C8 to C40) by GC/FID Aliphatics Fraction.



Sample ID:	CL1616116ALI	**Job Number:**	S16_3841M
Multiplier:	15.68	**Client:**	Ramboll Environ
Dilution:	1	**Site:**	Zeon Chemicals Polyblock
Acquisition Method:	5UL_RUNF.M	**Client Sample Ref:**	WS29 1.0
Acquisition Date/Time:	17-May-16, 20:58:11		
Datafile:	D:\TES\DATA\Y2016\051716TPH_GC4\051716 2016-05-17 08-23-18\046F5601.D		

Where individual results are flagged see report notes for status.
Results corrected to dry weight at 105°C where appropriate, in accordance with the MCERTS standard.

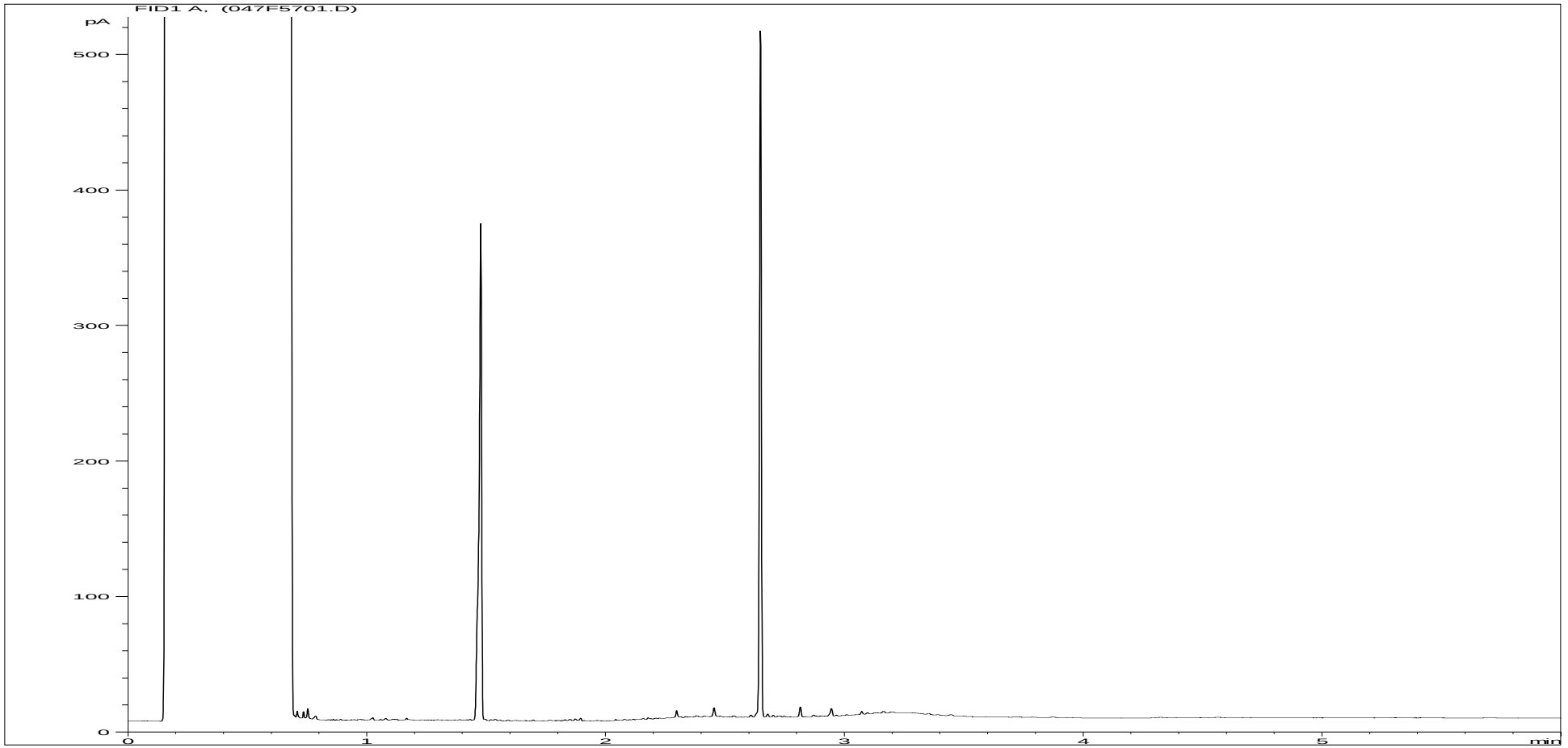
Petroleum Hydrocarbons (C8 to C40) by GC/FID Aromatics Fraction.



Sample ID:	CL1616116ARO	**Job Number:**	S16_3841M
Multiplier:	11.36	**Client:**	Ramboll Environ
Dilution:	1	**Site:**	Zeon Chemicals Polyblock
Acquisition Method:	5UL_RUNF.M	**Client Sample Ref:**	WS29 1.0
Acquisition Date/Time:	17-May-16, 23:51:35		
Datafile:	D:\TES\DATA\Y2016\051716TPH_GC4\051716 2016-05-17 08-23-18\060B6901.D		

Where individual results are flagged see report notes for status.
Results corrected to dry weight at 105°C where appropriate, in accordance with the MCERTS standard.

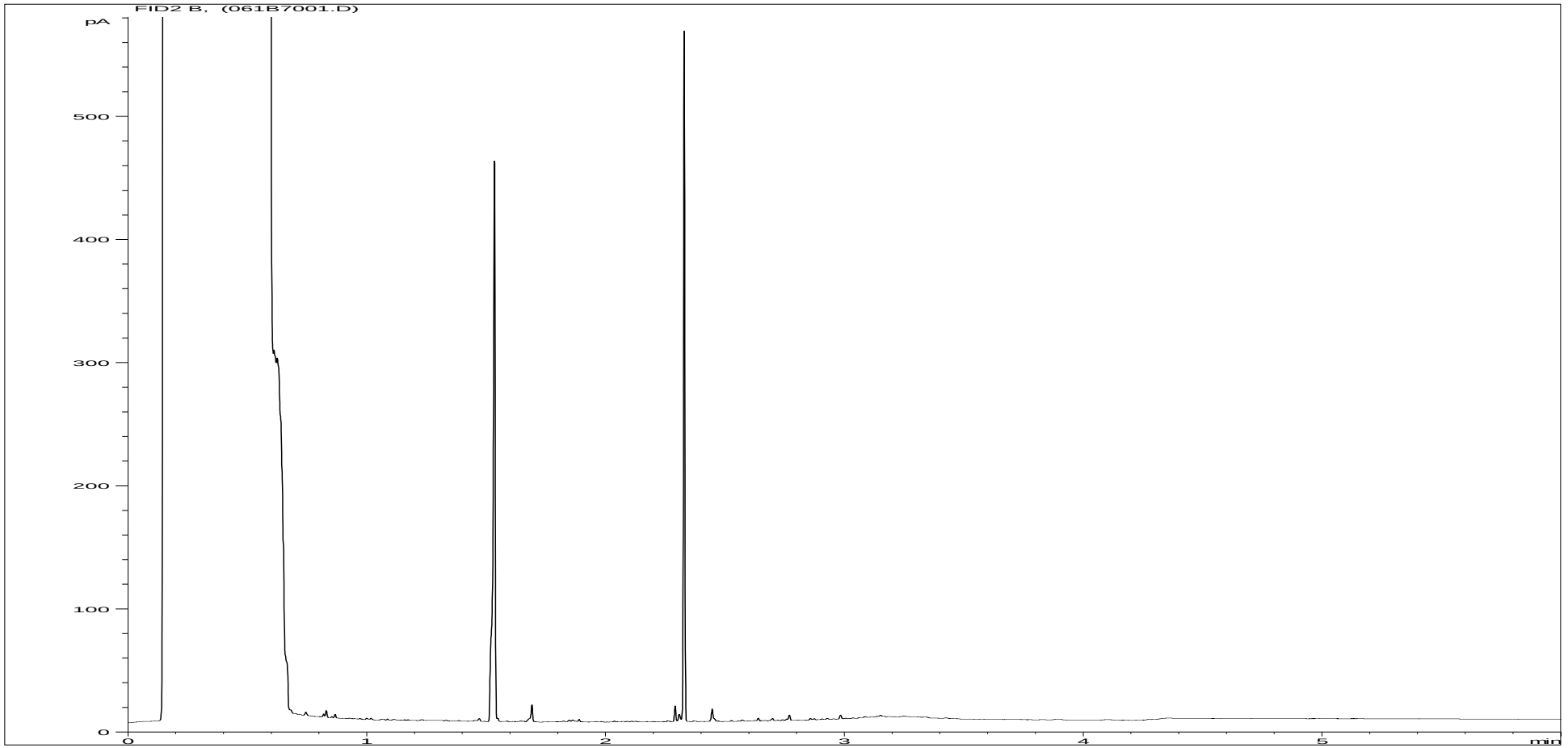
Petroleum Hydrocarbons (C8 to C40) by GC/FID Aliphatics Fraction.



Sample ID:	CL1616117ALI	**Job Number:**	S16_3841M
Multiplier:	15.84	**Client:**	Ramboll Environ
Dilution:	1	**Site:**	Zeon Chemicals Polyblock
Acquisition Method:	5UL_RUNF.M	**Client Sample Ref:**	WS29 1.2
Acquisition Date/Time:	17-May-16, 21:11:31		
Datafile:	D:\TES\DATA\Y2016\051716TPH_GC4\051716 2016-05-17 08-23-18\047F5701.D		

Where individual results are flagged see report notes for status.
Results corrected to dry weight at 105°C where appropriate, in accordance with the MCERTS standard.

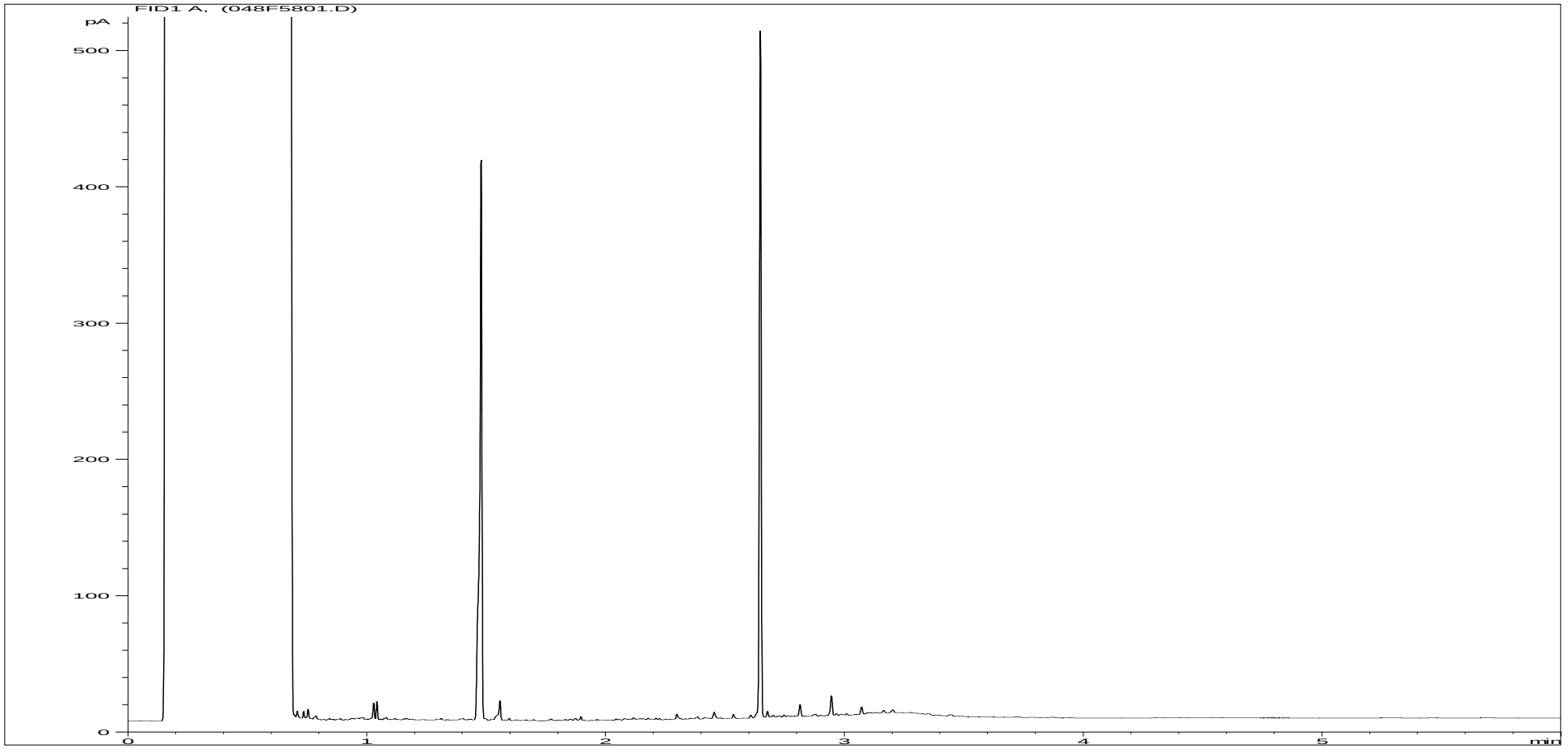
Petroleum Hydrocarbons (C8 to C40) by GC/FID Aromatics Fraction.



Sample ID:	CL1616117ARO	**Job Number:**	S16_3841M
Multiplier:	11.52	**Client:**	Ramboll Environ
Dilution:	1	**Site:**	Zeon Chemicals Polyblock
Acquisition Method:	5UL_RUNF.M	**Client Sample Ref:**	WS29 1.2
Acquisition Date/Time:	18-May-16, 00:04:52		
Datafile:	D:\TES\DATA\Y2016\051716TPH_GC4\051716 2016-05-17 08-23-18\061B7001.D		

Where individual results are flagged see report notes for status.
Results corrected to dry weight at 105°C where appropriate, in accordance with the MCERTS standard.

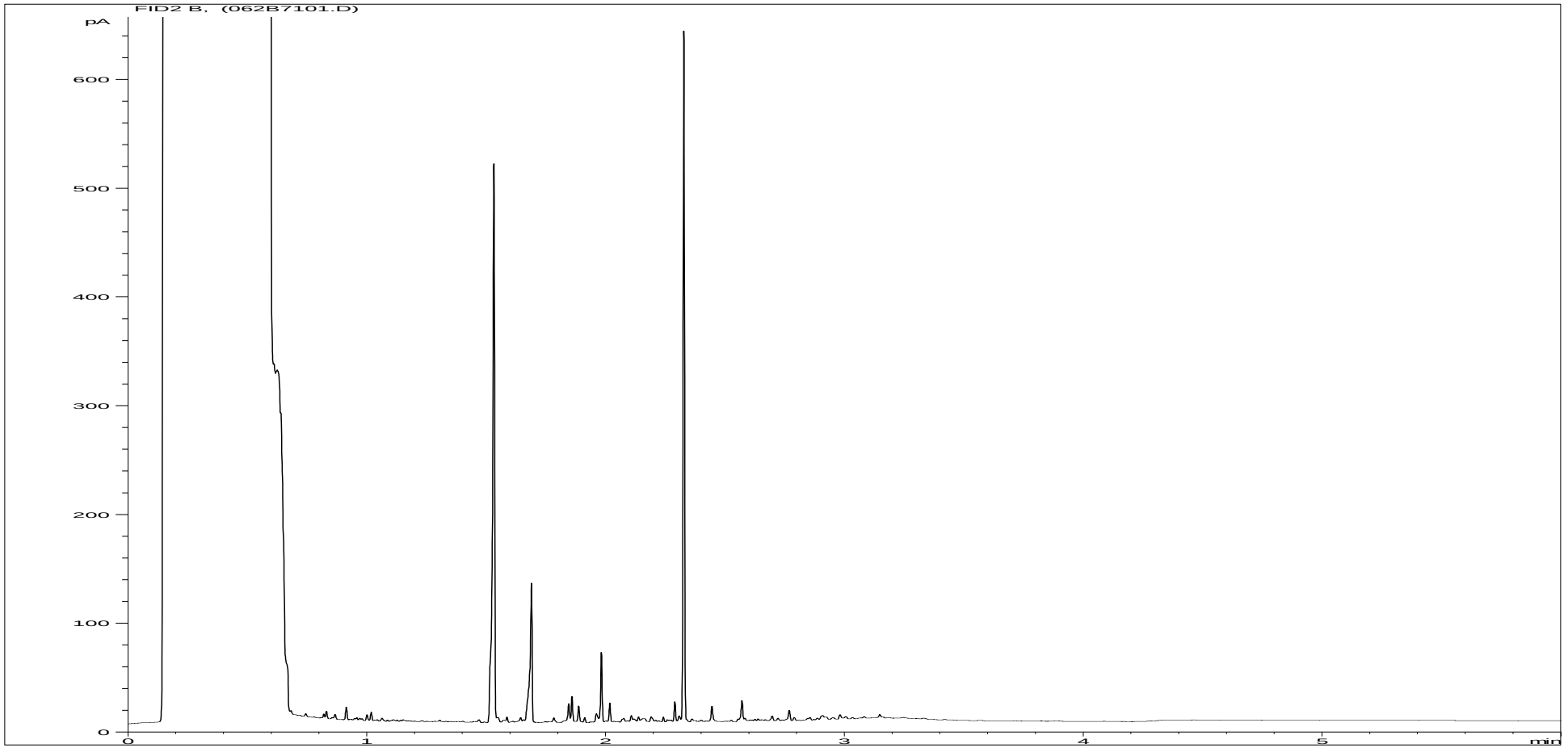
Petroleum Hydrocarbons (C8 to C40) by GC/FID Aliphatics Fraction.



Sample ID:	CL1616118ALI	**Job Number:**	S16_3841M
Multiplier:	16	**Client:**	Ramboll Environ
Dilution:	1	**Site:**	Zeon Chemicals Polyblock
Acquisition Method:	5UL_RUNF.M	**Client Sample Ref:**	WS28 1.0
Acquisition Date/Time:	17-May-16, 21:24:49		
Datafile:	D:\TES\DATA\Y2016\051716TPH_GC4\051716 2016-05-17 08-23-18\048F5801.D		

Where individual results are flagged see report notes for status.
Results corrected to dry weight at 105°C where appropriate, in accordance with the MCERTS standard.

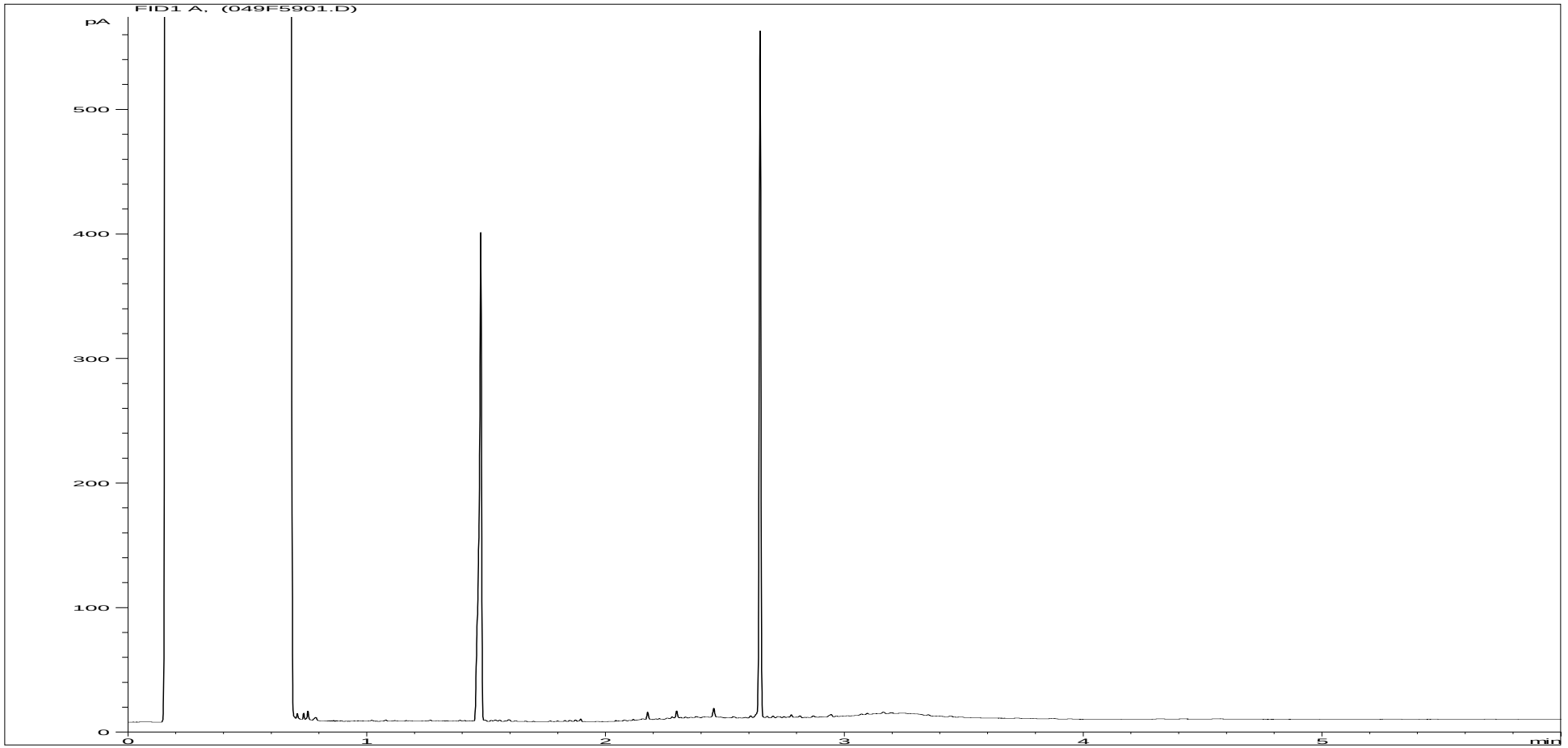
Petroleum Hydrocarbons (C8 to C40) by GC/FID Aromatics Fraction.



Sample ID:	CL1616118ARO	**Job Number:**	S16_3841M
Multiplier:	11.52	**Client:**	Ramboll Environ
Dilution:	1	**Site:**	Zeon Chemicals Polyblock
Acquisition Method:	5UL_RUNF.M	**Client Sample Ref:**	WS28 1.0
Acquisition Date/Time:	18-May-16, 00:18:17		
Datafile:	D:\TES\DATA\Y2016\051716TPH_GC4\051716 2016-05-17 08-23-18\062B7101.D		

Where individual results are flagged see report notes for status.
Results corrected to dry weight at 105°C where appropriate, in accordance with the MCERTS standard.

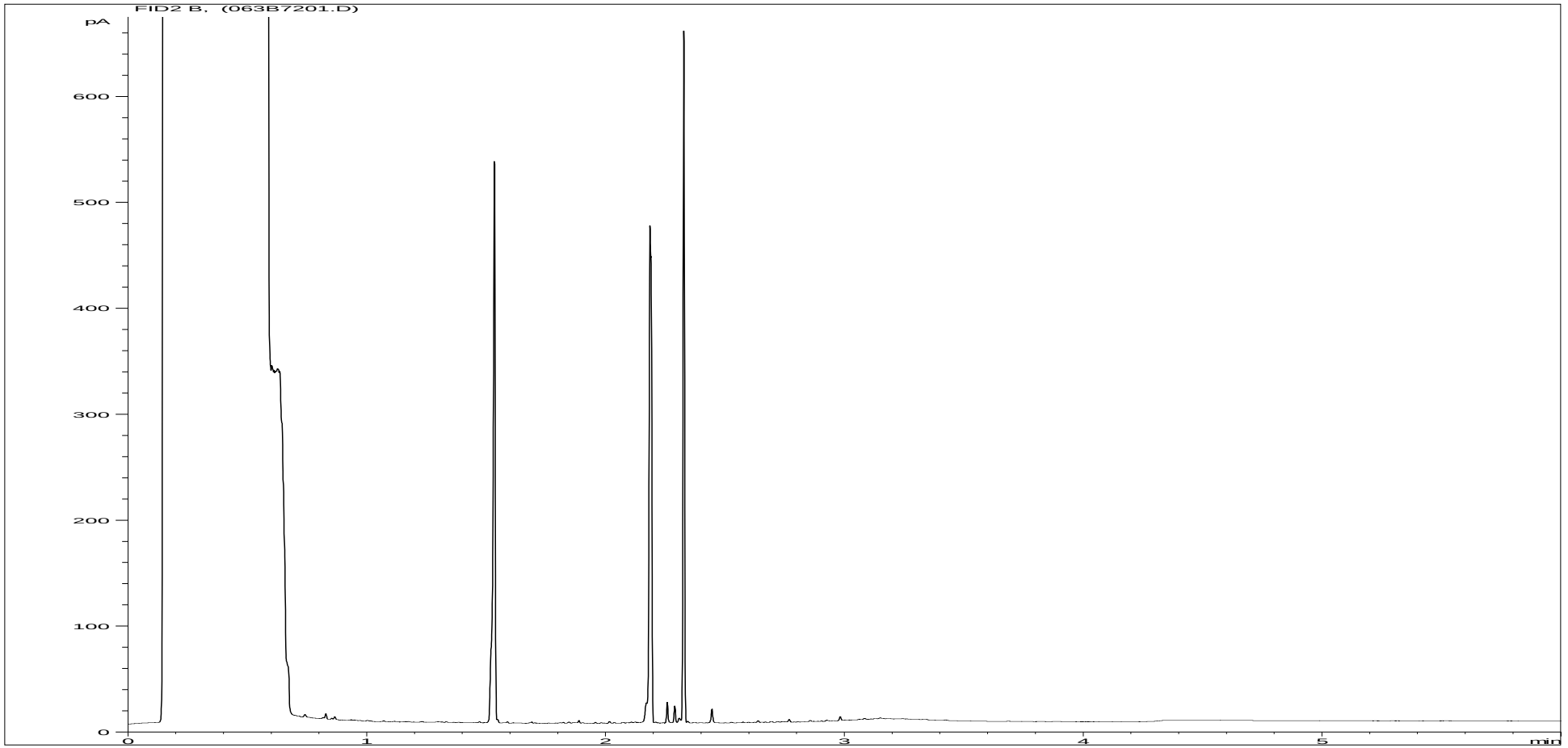
Petroleum Hydrocarbons (C8 to C40) by GC/FID Aliphatics Fraction.



Sample ID:	CL1616119ALI	**Job Number:**	S16_3841M
Multiplier:	15.68	**Client:**	Ramboll Environ
Dilution:	1	**Site:**	Zeon Chemicals Polyblock
Acquisition Method:	5UL_RUNF.M	**Client Sample Ref:**	WS30 1.2 (NVM)
Acquisition Date/Time:	17-May-16, 21:38:11		
Datafile:	D:\TES\DATA\Y2016\051716TPH_GC4\051716 2016-05-17 08-23-18\049F5901.D		

Where individual results are flagged see report notes for status.
Results corrected to dry weight at 105°C where appropriate, in accordance with the MCERTS standard.

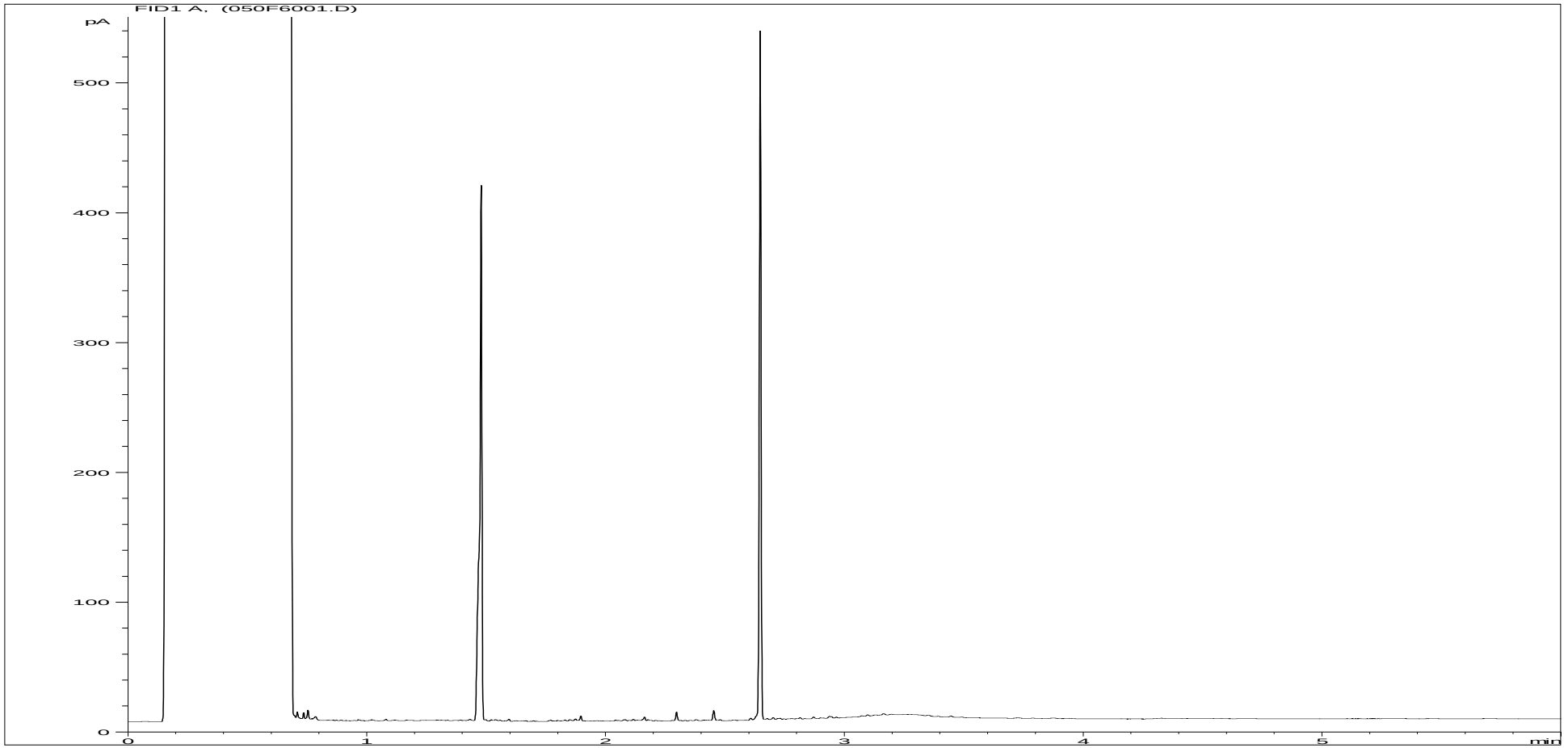
Petroleum Hydrocarbons (C8 to C40) by GC/FID Aromatics Fraction.



Sample ID:	CL1616119ARO	**Job Number:**	S16_3841M
Multiplier:	11.68	**Client:**	Ramboll Environ
Dilution:	1	**Site:**	Zeon Chemicals Polyblock
Acquisition Method:	5UL_RUNF.M	**Client Sample Ref:**	WS30 1.2 (NVM)
Acquisition Date/Time:	18-May-16, 00:31:32		
Datafile:	D:\TES\DATA\Y2016\051716TPH_GC4\051716 2016-05-17 08-23-18\063B7201.D		

Where individual results are flagged see report notes for status.
Results corrected to dry weight at 105°C where appropriate, in accordance with the MCERTS standard.

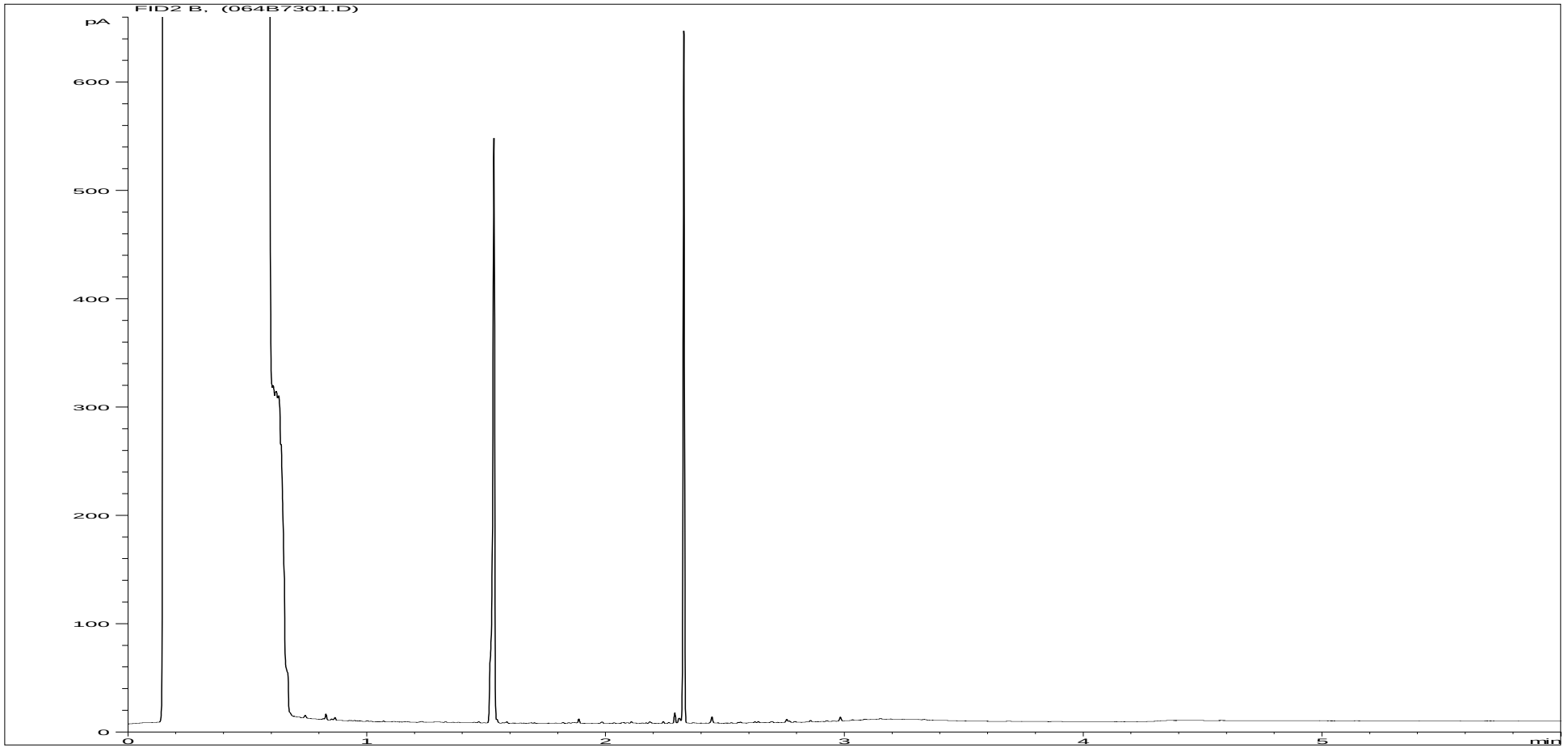
Petroleum Hydrocarbons (C8 to C40) by GC/FID Aliphatics Fraction.



Sample ID:	CL1616120ALI	**Job Number:**	S16_3841M
Multiplier:	15.68	**Client:**	Ramboll Environ
Dilution:	1	**Site:**	Zeon Chemicals Polyblock
Acquisition Method:	5UL_RUNF.M	**Client Sample Ref:**	WS31 1.0
Acquisition Date/Time:	17-May-16, 21:52:03		
Datafile:	D:\TES\DATA\Y2016\051716TPH_GC4\051716 2016-05-17 08-23-18\050F6001.D		

Where individual results are flagged see report notes for status.
Results corrected to dry weight at 105°C where appropriate, in accordance with the MCERTS standard.

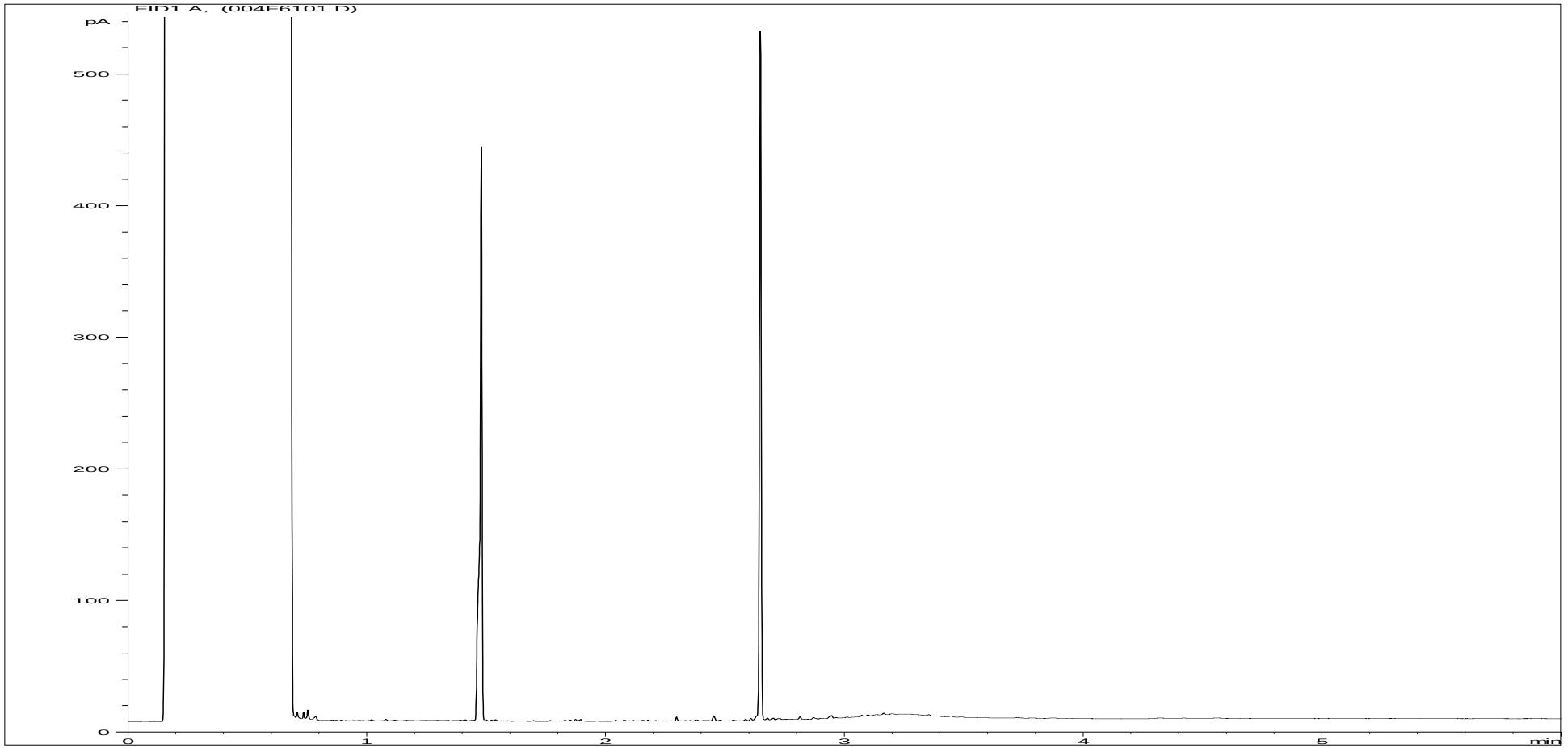
Petroleum Hydrocarbons (C8 to C40) by GC/FID Aromatics Fraction.



Sample ID:	CL1616120ARO	**Job Number:**	S16_3841M
Multiplier:	11.68	**Client:**	Ramboll Environ
Dilution:	1	**Site:**	Zeon Chemicals Polyblock
Acquisition Method:	5UL_RUNF.M	**Client Sample Ref:**	WS31 1.0
Acquisition Date/Time:	18-May-16, 00:44:52		
Datafile:	D:\TES\DATA\Y2016\051716TPH_GC4\051716 2016-05-17 08-23-18\064B7301.D		

Where individual results are flagged see report notes for status.
Results corrected to dry weight at 105°C where appropriate, in accordance with the MCERTS standard.

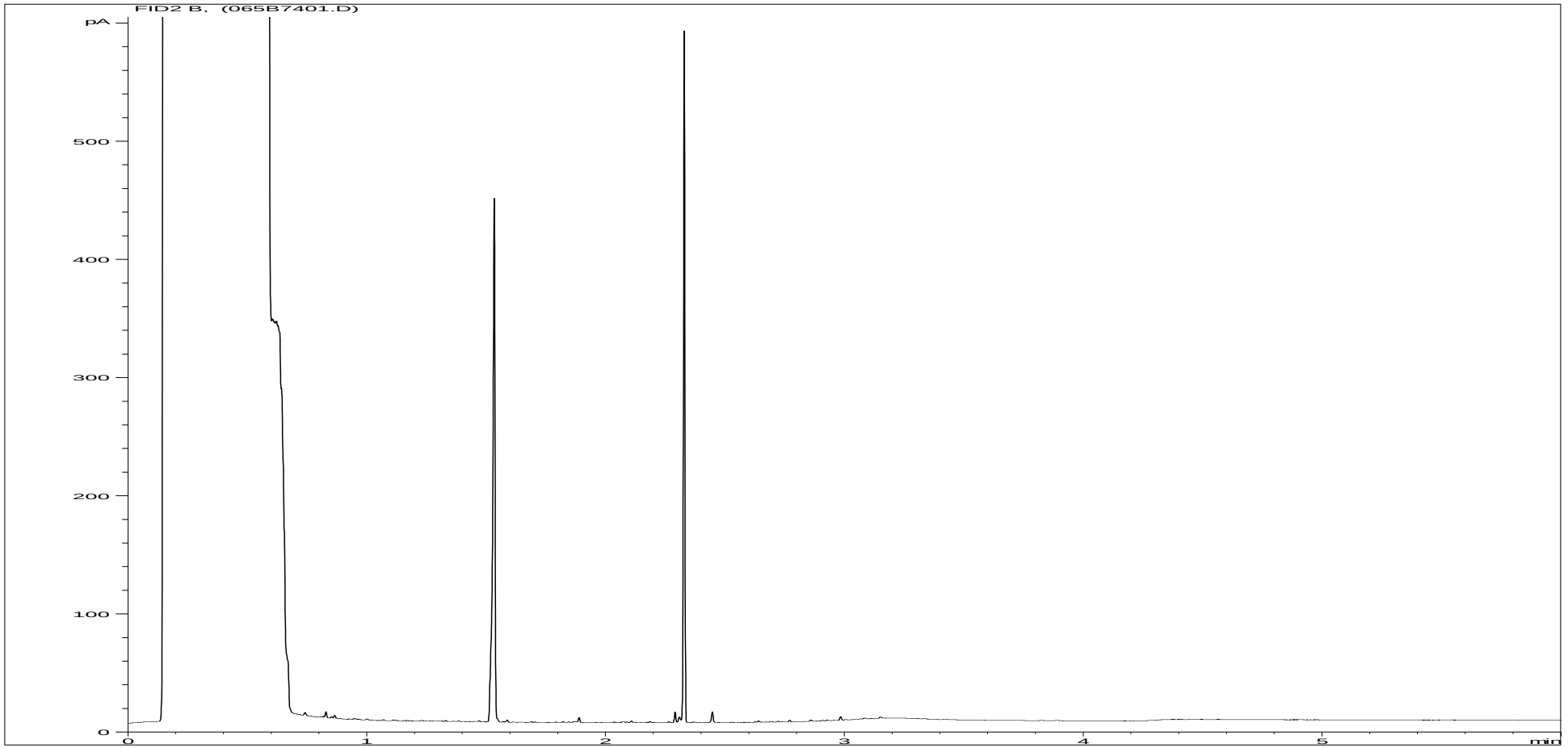
Petroleum Hydrocarbons (C8 to C40) by GC/FID Aliphatics Fraction.



Sample ID:	CL1616121ALI	**Job Number:**	S16_3841M
Multiplier:	15.52	**Client:**	Ramboll Environ
Dilution:	1	**Site:**	Zeon Chemicals Polyblock
Acquisition Method:	5UL_RUNF.M	**Client Sample Ref:**	WS31 1.5
Acquisition Date/Time:	17-May-16, 22:05:34		
Datafile:	D:\TES\DATA\Y2016\051716TPH_GC4\051716 2016-05-17 08-23-18\004F6101.D		

Where individual results are flagged see report notes for status.
Results corrected to dry weight at 105°C where appropriate, in accordance with the MCERTS standard.

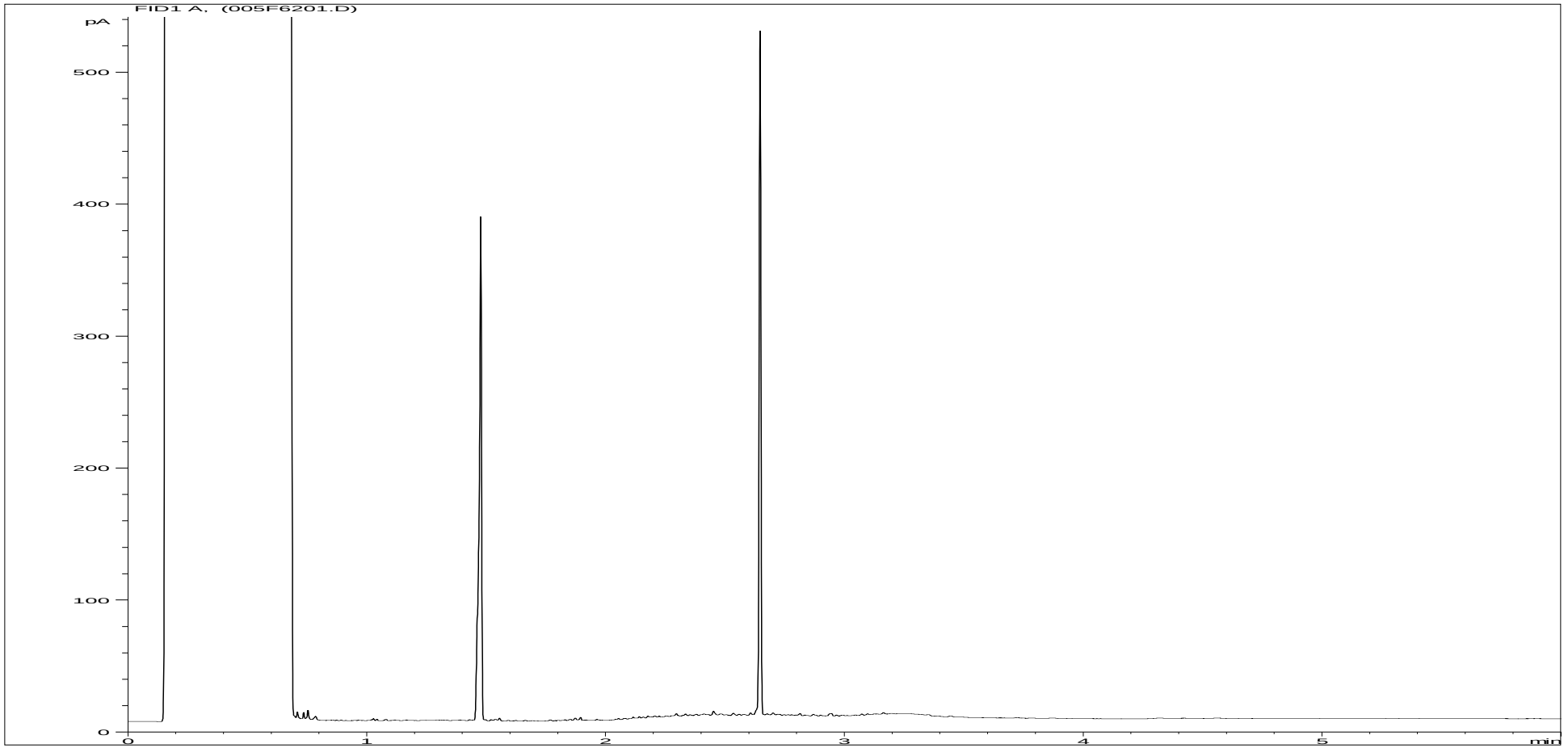
Petroleum Hydrocarbons (C8 to C40) by GC/FID Aromatics Fraction.



Sample ID:	CL1616121ARO	**Job Number:**	S16_3841M
Multiplier:	11.52	**Client:**	Ramboll Environ
Dilution:	1	**Site:**	Zeon Chemicals Polyblock
Acquisition Method:	5UL_RUNF.M	**Client Sample Ref:**	WS31 1.5
Acquisition Date/Time:	18-May-16, 00:58:05		
Datafile:	D:\TES\DATA\Y2016\051716TPH_GC4\051716 2016-05-17 08-23-18\065B7401.D		

Where individual results are flagged see report notes for status.
Results corrected to dry weight at 105°C where appropriate, in accordance with the MCERTS standard.

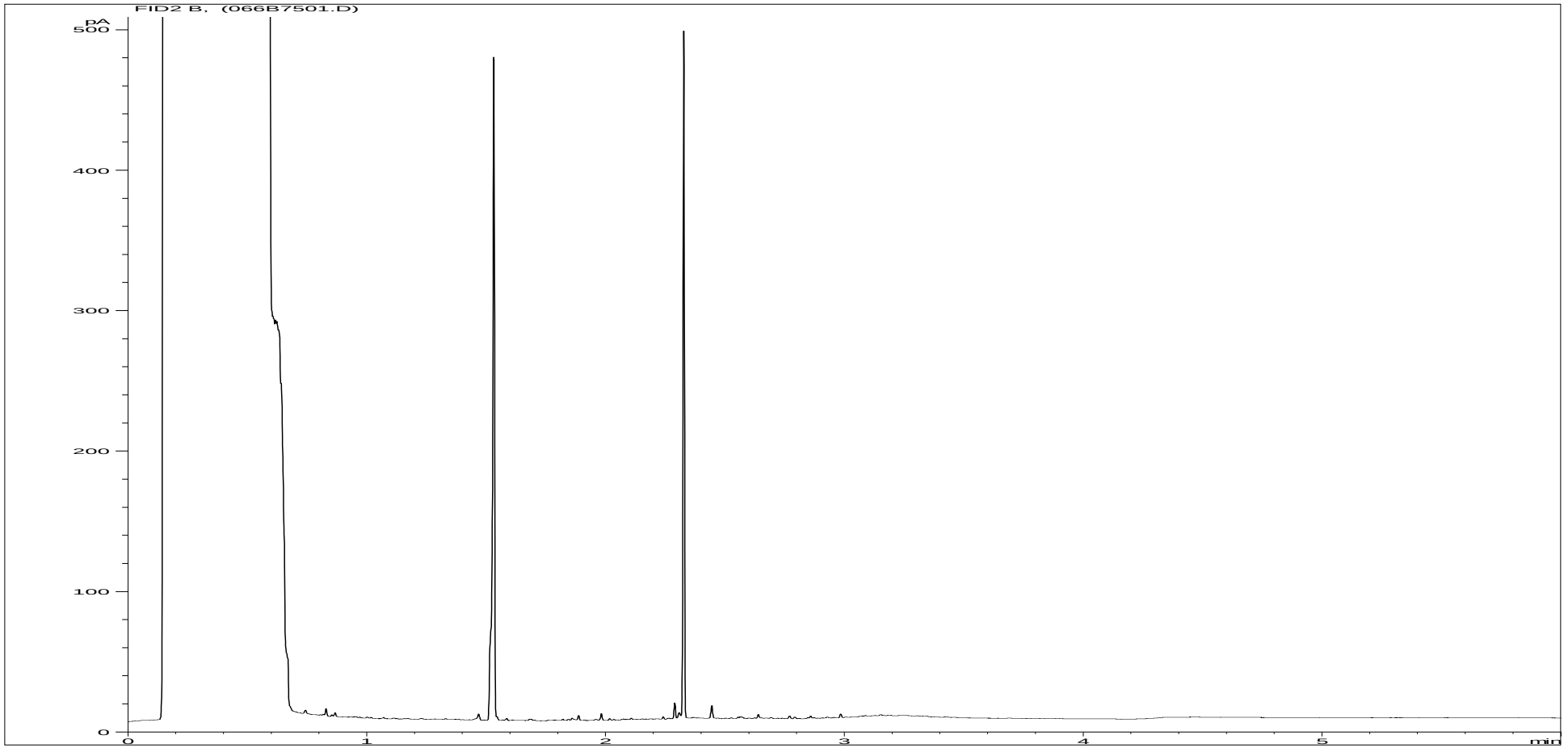
Petroleum Hydrocarbons (C8 to C40) by GC/FID Aliphatics Fraction.



Sample ID:	CL1616122ALI	**Job Number:**	S16_3841M
Multiplier:	15.52	**Client:**	Ramboll Environ
Dilution:	1	**Site:**	Zeon Chemicals Polyblock
Acquisition Method:	5UL_RUNF.M	**Client Sample Ref:**	WS26 0.6
Acquisition Date/Time:	17-May-16, 22:18:55		
Datafile:	D:\TES\DATA\Y2016\051716TPH_GC4\051716 2016-05-17 08-23-18\005F6201.D		

Where individual results are flagged see report notes for status.
Results corrected to dry weight at 105°C where appropriate, in accordance with the MCERTS standard.

Petroleum Hydrocarbons (C8 to C40) by GC/FID Aromatics Fraction.



Sample ID:	CL1616122ARO	**Job Number:**	S16_3841M
Multiplier:	11.84	**Client:**	Ramboll Environ
Dilution:	1	**Site:**	Zeon Chemicals Polyblock
Acquisition Method:	5UL_RUNF.M	**Client Sample Ref:**	WS26 0.6
Acquisition Date/Time:	18-May-16, 01:11:24		
Datafile:	D:\TES\DATA\Y2016\051716TPH_GC4\051716 2016-05-17 08-23-18\066B7501.D		

Where individual results are flagged see report notes for status.
Results corrected to dry weight at 105°C where appropriate, in accordance with the MCERTS standard.

Volatile Organic Compounds by HSA-GCMS

Accredited?: Yes

Customer and Site Details: Ramboll Environ: Zeon Chemicals Polyblock
Sample Details: WS29 1.0
LIMS ID Number: CL1616116
Job Number: S16_3841M

Directory/Quant file: 513VOC.MS19\ Initial Calibration
Date Booked in: 11-May-16
Date Analysed: 13-May-16
Operator: PR

Matrix: Soil
Method: Headspace
Multiplier: 0.98
Position: 22

Target Compounds	CAS #	R.T. (min.)	Concentration µg/kg	% Fit	Accr. code
Dichlorodifluoromethane	75-71-8 **	-	< 1	-	N
Chloromethane	74-87-3 *	-	< 3	-	N
Vinyl Chloride	75-01-4	-	< 1	-	UM
Bromomethane	74-83-9	-	< 1	-	UM
Chloroethane	75-00-3	-	< 2	-	UM
Trichlorofluoromethane	75-69-4	-	< 1	-	UM
1,1-Dichloroethene	75-35-48 *	-	< 1	-	N
trans 1,2-Dichloroethene	156-60-5	-	< 1	-	UM
1,1-Dichloroethane	75-34-3	-	< 1	-	UM
MTBE	1634-04-4	-	< 1	-	UM
2,2-Dichloropropane	594-20-7	-	< 1	-	UM
cis 1,2-Dichloroethene	156-59-2	-	< 6	-	UM
Bromochloromethane	74-97-5	-	< 1	-	UM
Chloroform	67-66-3	-	< 1	-	UM
1,1,1-Trichloroethane	71-55-6	-	< 1	-	UM
Carbon Tetrachloride	56-23-5	-	< 1	-	UM
1,1-Dichloropropene	563-58-6	-	< 1	-	UM
Benzene	71-43-2	4.23	22	58	UM
1,2-Dichloroethane	107-06-2	4.25	3	M	UM
Trichloroethene	79-01-6 **	4.51	3	M	N
1,2-Dichloropropane	78-87-5	-	< 1	-	UM
Dibromomethane	74-95-3	-	< 1	-	UM
Bromodichloromethane	75-27-4 **	-	< 1	-	N
cis 1,3-Dichloropropene	10061-01-5	-	< 1	-	UM
Toluene	108-88-3	4.99	17	89	UM
trans 1,3-Dichloropropene	10061-02-6	-	< 1	-	UM
1,1,2-Trichloroethane	79-00-5	-	< 1	-	UM
Tetrachloroethene	127-18-4	-	< 3	-	UM
1,3-Dichloropropane	142-28-9	-	< 1	-	UM
Dibromochloromethane	124-48-1	-	< 1	-	UM
1,2-Dibromoethane	106-93-4	-	< 1	-	UM
Chlorobenzene	108-90-7	-	< 1	-	UM
Ethylbenzene	100-41-4	5.51	567	95	UM
1,1,1,2-Tetrachloroethane	630-20-6	-	< 1	-	UM
m and p-Xylene	108-38-3/106-42-3	5.55	86	83	UM

Target Compounds	CAS #	R.T. (min.)	Concentration µg/kg	% Fit	Accr. code
o-Xylene	95-47-6	5.70	50	81	UM
Styrene	100-42-5	-	< 1	-	UM
Bromoform	75-25-2	-	< 1	-	UM
iso-Propylbenzene	98-82-8	5.81	43	58	UM
1,1,2,2-Tetrachloroethane	79-34-5 **	-	< 1	-	N
Propylbenzene	103-65-1	-	< 1	-	UM
Bromobenzene	108-86-1	-	< 1	-	UM
1,2,3-Trichloropropane	96-18-4	-	< 1	-	UM
2-Chlorotoluene	95-49-8	-	< 1	-	UM
1,3,5-Trimethylbenzene	108-67-8	-	< 1	-	UM
4-Chlorotoluene	106-43-4	-	< 1	-	UM
tert-Butylbenzene	98-06-6	-	< 1	-	UM
1,2,4-Trimethylbenzene	95-63-6	6.13	36	M	UM
sec-Butylbenzene	135-98-8	-	< 1	-	UM
p-Isopropyltoluene	99-87-6	-	< 1	-	UM
1,3-Dichlorobenzene	541-73-1	-	< 1	-	UM
1,4-Dichlorobenzene	106-46-7	-	< 1	-	UM
n-Butylbenzene	104-51-8 *	6.37	31	59	N
1,2-Dichlorobenzene	95-50-1	6.43	7	M	UM
1,2-Dibromo-3-chloropropane	96-12-8 **	-	< 1	-	N
1,2,4-Trichlorobenzene	120-82-1 **	-	< 3	-	N
Hexachlorobutadiene	87-68-3 **	-	< 2	-	N
Naphthalene	91-20-3	7.14	343	71	UM
1,2,3-Trichlorobenzene	87-61-6	-	< 3	-	UM

Concentrations are reported on a dry weight basis
Compounds marked ** are not UKAS or Mcerts accredited
"M" denotes that % fit has been manually interpreted
This analysis was conducted on an 'As Received' basis.

Internal standards	R.T.	Area %	Surrogates	% Rec
Pentafluorobenzene	4.04	70	Dibromofluoromethane	115
1,4-Difluorobenzene	4.39	67	Toluene-d8	84
Chlorobenzene-d5	5.50	42		
Bromofluorobenzene	5.89	31		
1,4-Dichlorobenzene-d4	6.29	20		
Naphthalene-d8	7.12	6		

Where individual results are flagged see report notes for status.
Results corrected to dry weight at 105°C where appropriate, in accordance with the MCERTS standard.

Volatile Organic Compounds by HSA-GCMS

Accredited?: Yes

Customer and Site Details: Ramboll Environ: Zeon Chemicals Polyblock
Sample Details: WS29 1.2
LIMS ID Number: CL1616117
Job Number: S16_3841M

Directory/Quant file: 513VOC.MS19\ Initial Calibration
Date Booked in: 11-May-16
Date Analysed: 14-May-16
Operator: PR

Matrix: Soil
Method: Headspace
Multiplier: 1
Position: 23

Target Compounds	CAS #	R.T. (min.)	Concentration µg/kg	% Fit	Accr. code
Dichlorodifluoromethane	75-71-8 **	-	< 1	-	N
Chloromethane	74-87-3 *	-	< 4	-	N
Vinyl Chloride	75-01-4	-	< 1	-	UM
Bromomethane	74-83-9	-	< 1	-	UM
Chloroethane	75-00-3	-	< 3	-	UM
Trichlorofluoromethane	75-69-4	-	< 1	-	UM
1,1-Dichloroethene	75-35-48 *	-	< 1	-	N
trans 1,2-Dichloroethene	156-60-5	-	< 1	-	UM
1,1-Dichloroethane	75-34-3	-	< 1	-	UM
MTBE	1634-04-4	-	< 1	-	UM
2,2-Dichloropropane	594-20-7	-	< 1	-	UM
cis 1,2-Dichloroethene	156-59-2	-	< 6	-	UM
Bromochloromethane	74-97-5	-	< 1	-	UM
Chloroform	67-66-3	-	< 1	-	UM
1,1,1-Trichloroethane	71-55-6	-	< 1	-	UM
Carbon Tetrachloride	56-23-5	-	< 1	-	UM
1,1-Dichloropropene	563-58-6	-	< 1	-	UM
Benzene	71-43-2	4.23	3	M	UM
1,2-Dichloroethane	107-06-2	-	< 1	-	UM
Trichloroethene	79-01-6 **	-	< 1	-	N
1,2-Dichloropropane	78-87-5	-	< 1	-	UM
Dibromomethane	74-95-3	-	< 1	-	UM
Bromodichloromethane	75-27-4 **	-	< 1	-	N
cis 1,3-Dichloropropene	10061-01-5	-	< 1	-	UM
Toluene	108-88-3	-	< 6	-	UM
trans 1,3-Dichloropropene	10061-02-6	-	< 1	-	UM
1,1,2-Trichloroethane	79-00-5	-	< 1	-	UM
Tetrachloroethene	127-18-4	-	< 4	-	UM
1,3-Dichloropropane	142-28-9	-	< 1	-	UM
Dibromochloromethane	124-48-1	-	< 1	-	UM
1,2-Dibromoethane	106-93-4	-	< 1	-	UM
Chlorobenzene	108-90-7	-	< 1	-	UM
Ethylbenzene	100-41-4	5.51	37	83	UM
1,1,1,2-Tetrachloroethane	630-20-6	-	< 1	-	UM
m and p-Xylene	108-38-3/106-42-3	5.55	10	75	UM

Target Compounds	CAS #	R.T. (min.)	Concentration µg/kg	% Fit	Accr. code
o-Xylene	95-47-6	5.70	8	M	UM
Styrene	100-42-5	-	< 1	-	UM
Bromoform	75-25-2	-	< 1	-	UM
iso-Propylbenzene	98-82-8	-	< 1	-	UM
1,1,2,2-Tetrachloroethane	79-34-5 **	-	< 1	-	N
Propylbenzene	103-65-1	-	< 1	-	UM
Bromobenzene	108-86-1	-	< 1	-	UM
1,2,3-Trichloropropane	96-18-4	-	< 1	-	UM
2-Chlorotoluene	95-49-8	-	< 1	-	UM
1,3,5-Trimethylbenzene	108-67-8	6.00	9	M	UM
4-Chlorotoluene	106-43-4	-	< 1	-	UM
tert-Butylbenzene	98-06-6	-	< 1	-	UM
1,2,4-Trimethylbenzene	95-63-6	6.13	14	M	UM
sec-Butylbenzene	135-98-8	-	< 1	-	UM
p-Isopropyltoluene	99-87-6	-	< 1	-	UM
1,3-Dichlorobenzene	541-73-1	-	< 1	-	UM
1,4-Dichlorobenzene	106-46-7	-	< 1	-	UM
n-Butylbenzene	104-51-8 *	-	< 1	-	N
1,2-Dichlorobenzene	95-50-1	-	< 1	-	UM
1,2-Dibromo-3-chloropropane	96-12-8 **	-	< 1	-	N
1,2,4-Trichlorobenzene	120-82-1 **	-	< 4	-	N
Hexachlorobutadiene	87-68-3 **	-	< 3	-	N
Naphthalene	91-20-3	7.14	14	M	UM
1,2,3-Trichlorobenzene	87-61-6	-	< 4	-	UM

Concentrations are reported on a dry weight basis
Compounds marked ** are not UKAS or Mcerts accredited
"M" denotes that % fit has been manually interpreted
This analysis was conducted on an 'As Received' basis.

Internal standards	R.T.	Area %	Surrogates	% Rec
Pentafluorobenzene	4.04	93	Dibromofluoromethane	112
1,4-Difluorobenzene	4.39	93	Toluene-d8	97
Chlorobenzene-d5	5.50	95		
Bromofluorobenzene	5.89	82		
1,4-Dichlorobenzene-d4	6.29	65		
Naphthalene-d8	7.12	32		

Where individual results are flagged see report notes for status.
Results corrected to dry weight at 105°C where appropriate, in accordance with the MCERTS standard.

Volatile Organic Compounds by HSA-GCMS

Accredited?: Yes

Customer and Site Details: Ramboll Environ: Zeon Chemicals Polyblock
Sample Details: WS28 1.0
LIMS ID Number: CL1616118
Job Number: S16_3841M

Directory/Quant file: 513VOC.MS19\ Initial Calibration
Date Booked in: 11-May-16
Date Analysed: 14-May-16
Operator: PR

Matrix: Soil
Method: Headspace
Multiplier: 0.97
Position: 24

Target Compounds	CAS #	R.T. (min.)	Concentration µg/kg	% Fit	Accr. code
Dichlorodifluoromethane	75-71-8 **	-	< 1	-	N
Chloromethane	74-87-3 *	-	< 4	-	N
Vinyl Chloride	75-01-4	-	< 1	-	UM
Bromomethane	74-83-9	-	< 1	-	UM
Chloroethane	75-00-3	-	< 3	-	UM
Trichlorofluoromethane	75-69-4	-	< 1	-	UM
1,1-Dichloroethene	75-35-48 *	-	< 1	-	N
trans 1,2-Dichloroethene	156-60-5	-	< 1	-	UM
1,1-Dichloroethane	75-34-3	-	< 1	-	UM
MTBE	1634-04-4	-	< 1	-	UM
2,2-Dichloropropane	594-20-7	-	< 1	-	UM
cis 1,2-Dichloroethene	156-59-2	-	< 7	-	UM
Bromochloromethane	74-97-5	-	< 1	-	UM
Chloroform	67-66-3	-	< 1	-	UM
1,1,1-Trichloroethane	71-55-6	-	< 1	-	UM
Carbon Tetrachloride	56-23-5	-	< 1	-	UM
1,1-Dichloropropene	563-58-6	-	< 1	-	UM
Benzene	71-43-2	4.22	7	M	UM
1,2-Dichloroethane	107-06-2	-	< 1	-	UM
Trichloroethene	79-01-6 **	-	< 1	-	N
1,2-Dichloropropane	78-87-5	-	< 1	-	UM
Dibromomethane	74-95-3	-	< 1	-	UM
Bromodichloromethane	75-27-4 **	-	< 1	-	N
cis 1,3-Dichloropropene	10061-01-5	-	< 1	-	UM
Toluene	108-88-3	4.99	12	M	UM
trans 1,3-Dichloropropene	10061-02-6	-	< 1	-	UM
1,1,2-Trichloroethane	79-00-5	-	< 1	-	UM
Tetrachloroethene	127-18-4	-	< 4	-	UM
1,3-Dichloropropane	142-28-9	-	< 1	-	UM
Dibromochloromethane	124-48-1	-	< 1	-	UM
1,2-Dibromoethane	106-93-4	-	< 1	-	UM
Chlorobenzene	108-90-7	-	< 1	-	UM
Ethylbenzene	100-41-4	5.51	15	57	UM
1,1,1,2-Tetrachloroethane	630-20-6	-	< 1	-	UM
m and p-Xylene	108-38-3/106-42-3	5.55	9	M	UM

Target Compounds	CAS #	R.T. (min.)	Concentration µg/kg	% Fit	Accr. code
o-Xylene	95-47-6	5.70	5	M	UM
Styrene	100-42-5	-	< 1	-	UM
Bromoform	75-25-2	-	< 1	-	UM
iso-Propylbenzene	98-82-8	5.81	35	58	UM
1,1,2,2-Tetrachloroethane	79-34-5 **	-	< 1	-	N
Propylbenzene	103-65-1	-	< 1	-	UM
Bromobenzene	108-86-1	-	< 1	-	UM
1,2,3-Trichloropropane	96-18-4	-	< 1	-	UM
2-Chlorotoluene	95-49-8	-	< 1	-	UM
1,3,5-Trimethylbenzene	108-67-8	-	< 1	-	UM
4-Chlorotoluene	106-43-4	-	< 1	-	UM
tert-Butylbenzene	98-06-6	-	< 1	-	UM
1,2,4-Trimethylbenzene	95-63-6	-	< 1	-	UM
sec-Butylbenzene	135-98-8	-	< 1	-	UM
p-Isopropyltoluene	99-87-6	-	< 1	-	UM
1,3-Dichlorobenzene	541-73-1	-	< 1	-	UM
1,4-Dichlorobenzene	106-46-7	-	< 1	-	UM
n-Butylbenzene	104-51-8 *	-	< 1	-	N
1,2-Dichlorobenzene	95-50-1	-	< 1	-	UM
1,2-Dibromo-3-chloropropane	96-12-8 **	-	< 1	-	N
1,2,4-Trichlorobenzene	120-82-1 **	-	< 4	-	N
Hexachlorobutadiene	87-68-3 **	-	< 3	-	N
Naphthalene	91-20-3	7.14	15	M	UM
1,2,3-Trichlorobenzene	87-61-6	-	< 4	-	UM

Concentrations are reported on a dry weight basis
Compounds marked ** are not UKAS or Mcerts accredited
"M" denotes that % fit has been manually interpreted
This analysis was conducted on an 'As Received' basis.

Internal standards	R.T.	Area %	Surrogates	% Rec
Pentafluorobenzene	4.04	87	Dibromofluoromethane	107
1,4-Difluorobenzene	4.39	82	Toluene-d8	88
Chlorobenzene-d5	5.50	56		
Bromofluorobenzene	5.89	40		
1,4-Dichlorobenzene-d4	6.29	27		
Naphthalene-d8	7.12	8		

Where individual results are flagged see report notes for status.
Results corrected to dry weight at 105°C where appropriate, in accordance with the MCERTS standard.

Volatile Organic Compounds by HSA-GCMS

Accredited?: No

Customer and Site Details:	Ramboll Environ: Zeon Chemicals Polyblock	**Directory/Quant file:**	513VOC.MS19\ Initial Calibration	**Matrix:**	Soil
Sample Details:	WS30 1.2 (NVM)	**Date Booked in:**	11-May-16	**Method:**	Headspace
LIMS ID Number:	CL1616119	**Date Analysed:**	14-May-16	**Multiplier:**	0.95
Job Number:	S16_3841M	**Operator:**	PR	**Position:**	25

Target Compounds	CAS #	R.T. (min.)	Concentration µg/kg	% Fit	Accr. code
Dichlorodifluoromethane	75-71-8	-	< 1	-	N
Chloromethane	74-87-3	-	< 4	-	N
Vinyl Chloride	75-01-4	-	< 1	-	N
Bromomethane	74-83-9	-	< 1	-	N
Chloroethane	75-00-3	-	< 2	-	N
Trichlorofluoromethane	75-69-4	-	< 1	-	N
1,1-Dichloroethene	75-35-48	-	< 1	-	N
trans 1,2-Dichloroethene	156-60-5	-	< 1	-	N
1,1-Dichloroethane	75-34-3	-	< 1	-	N
MTBE	1634-04-4	-	< 1	-	N
2,2-Dichloropropane	594-20-7	-	< 1	-	N
cis 1,2-Dichloroethene	156-59-2	-	< 6	-	N
Bromochloromethane	74-97-5	-	< 1	-	N
Chloroform	67-66-3	-	< 1	-	N
1,1,1-Trichloroethane	71-55-6	-	< 1	-	N
Carbon Tetrachloride	56-23-5	-	< 1	-	N
1,1-Dichloropropene	563-58-6	-	< 1	-	N
Benzene	71-43-2	-	< 1	-	N
1,2-Dichloroethane	107-06-2	-	< 1	-	N
Trichloroethene	79-01-6	-	< 1	-	N
1,2-Dichloropropane	78-87-5	-	< 1	-	N
Dibromomethane	74-95-3	-	< 1	-	N
Bromodichloromethane	75-27-4	-	< 1	-	N
cis 1,3-Dichloropropene	10061-01-5	-	< 1	-	N
Toluene	108-88-3	-	< 6	-	N
trans 1,3-Dichloropropene	10061-02-6	-	< 1	-	N
1,1,2-Trichloroethane	79-00-5	-	< 1	-	N
Tetrachloroethene	127-18-4	-	< 4	-	N
1,3-Dichloropropane	142-28-9	-	< 1	-	N
Dibromochloromethane	124-48-1	-	< 1	-	N
1,2-Dibromoethane	106-93-4	-	< 1	-	N
Chlorobenzene	108-90-7	-	< 1	-	N
Ethylbenzene	100-41-4	5.51	5	M	N
1,1,1,2-Tetrachloroethane	630-20-6	-	< 1	-	N
m and p-Xylene	108-38-3/106-42-3	-	< 5	-	N

Target Compounds	CAS #	R.T. (min.)	Concentration µg/kg	% Fit	Accr. code
o-Xylene	95-47-6	-	< 2	-	N
Styrene	100-42-5	-	< 1	-	N
Bromoform	75-25-2	-	< 1	-	N
iso-Propylbenzene	98-82-8	-	< 1	-	N
1,1,2,2-Tetrachloroethane	79-34-5 **	-	< 1	-	N
Propylbenzene	103-65-1	-	< 1	-	N
Bromobenzene	108-86-1	-	< 1	-	N
1,2,3-Trichloropropane	96-18-4	-	< 1	-	N
2-Chlorotoluene	95-49-8	-	< 1	-	N
1,3,5-Trimethylbenzene	108-67-8	-	< 1	-	N
4-Chlorotoluene	106-43-4	-	< 1	-	N
tert-Butylbenzene	98-06-6	-	< 1	-	N
1,2,4-Trimethylbenzene	95-63-6	-	< 1	-	N
sec-Butylbenzene	135-98-8	-	< 1	-	N
p-Isopropyltoluene	99-87-6	-	< 1	-	N
1,3-Dichlorobenzene	541-73-1	-	< 1	-	N
1,4-Dichlorobenzene	106-46-7	-	< 1	-	N
n-Butylbenzene	104-51-8 *	-	< 1	-	N
1,2-Dichlorobenzene	95-50-1	-	< 1	-	N
1,2-Dibromo-3-chloropropane	96-12-8 **	-	< 1	-	N
1,2,4-Trichlorobenzene	120-82-1 **	-	< 4	-	N
Hexachlorobutadiene	87-68-3 **	-	< 2	-	N
Naphthalene	91-20-3	7.14	14	M	N
1,2,3-Trichlorobenzene	87-61-6	-	< 4	-	N

Concentrations are reported on a dry weight basis
Compounds marked ** are not UKAS or Mcerts accredited
"M" denotes that % fit has been manually interpreted
This analysis was conducted on an 'As Received' basis.

Internal standards	R.T.	Area %	Surrogates	% Rec
Pentafluorobenzene	4.04	92	Dibromofluoromethane	110
1,4-Difluorobenzene	4.39	91	Toluene-d8	98
Chlorobenzene-d5	5.50	84		
Bromofluorobenzene	5.89	75		
1,4-Dichlorobenzene-d4	6.29	60		
Naphthalene-d8	7.12	30		

Where individual results are flagged see report notes for status.
Results corrected to dry weight at 105°C where appropriate, in accordance with the MCERTS standard.

Volatile Organic Compounds by HSA-GCMS

Accredited?: Yes

Customer and Site Details: Ramboll Environ: Zeon Chemicals Polyblock
Sample Details: WS31 1.0
LIMS ID Number: CL1616120
Job Number: S16_3841M

Directory/Quant file: 516VOC.MS19\ Initial Calibration
Date Booked in: 11-May-16
Date Analysed: 16-May-16
Operator: PR

Matrix: Soil
Method: Headspace
Multiplier: 1.04
Position: 26

Target Compounds	CAS #	R.T. (min.)	Concentration µg/kg	% Fit	Accr. code
Dichlorodifluoromethane	75-71-8 **	-	< 1	-	N
Chloromethane	74-87-3 *	-	< 4	-	N
Vinyl Chloride	75-01-4 **	-	< 1	-	N
Bromomethane	74-83-9	-	< 1	-	UM
Chloroethane	75-00-3	-	< 3	-	UM
Trichlorofluoromethane	75-69-4	-	< 1	-	UM
1,1-Dichloroethene	75-35-48 *	-	< 1	-	N
trans 1,2-Dichloroethene	156-60-5	-	< 1	-	UM
1,1-Dichloroethane	75-34-3	-	< 1	-	UM
MTBE	1634-04-4	-	< 1	-	UM
2,2-Dichloropropane	594-20-7	-	< 1	-	UM
cis 1,2-Dichloroethene	156-59-2	-	< 6	-	UM
Bromochloromethane	74-97-5	-	< 1	-	UM
Chloroform	67-66-3	-	< 1	-	UM
1,1,1-Trichloroethane	71-55-6	-	< 1	-	UM
Carbon Tetrachloride	56-23-5	-	< 1	-	UM
1,1-Dichloropropene	563-58-6	-	< 1	-	UM
Benzene	71-43-2	-	< 1	-	UM
1,2-Dichloroethane	107-06-2	-	< 1	-	UM
Trichloroethene	79-01-6 **	-	< 1	-	N
1,2-Dichloropropane	78-87-5	-	< 1	-	UM
Dibromomethane	74-95-3	-	< 1	-	UM
Bromodichloromethane	75-27-4	-	< 1	-	UM
cis 1,3-Dichloropropene	10061-01-5	-	< 1	-	UM
Toluene	108-88-3	-	< 6	-	UM
trans 1,3-Dichloropropene	10061-02-6	-	< 1	-	UM
1,1,2-Trichloroethane	79-00-5	-	< 1	-	UM
Tetrachloroethene	127-18-4	-	< 4	-	UM
1,3-Dichloropropane	142-28-9	-	< 1	-	UM
Dibromochloromethane	124-48-1	-	< 1	-	UM
1,2-Dibromoethane	106-93-4	-	< 1	-	UM
Chlorobenzene	108-90-7	-	< 1	-	UM
Ethylbenzene	100-41-4	-	< 3	-	UM
1,1,1,2-Tetrachloroethane	630-20-6	-	< 1	-	UM
m and p-Xylene	108-38-3/106-42-3	-	< 5	-	UM

Target Compounds	CAS #	R.T. (min.)	Concentration µg/kg	% Fit	Accr. code
o-Xylene	95-47-6	-	< 3	-	UM
Styrene	100-42-5	-	< 1	-	UM
Bromoform	75-25-2	-	< 1	-	UM
iso-Propylbenzene	98-82-8	-	< 1	-	UM
1,1,2,2-Tetrachloroethane	79-34-5 **	-	< 1	-	N
Propylbenzene	103-65-1	-	< 1	-	UM
Bromobenzene	108-86-1	-	< 1	-	UM
1,2,3-Trichloropropane	96-18-4	-	< 1	-	UM
2-Chlorotoluene	95-49-8	-	< 1	-	UM
1,3,5-Trimethylbenzene	108-67-8	-	< 1	-	UM
4-Chlorotoluene	106-43-4	-	< 1	-	UM
tert-Butylbenzene	98-06-6	-	< 1	-	UM
1,2,4-Trimethylbenzene	95-63-6	-	< 1	-	UM
sec-Butylbenzene	135-98-8	-	< 1	-	UM
p-Isopropyltoluene	99-87-6	-	< 1	-	UM
1,3-Dichlorobenzene	541-73-1	-	< 1	-	UM
1,4-Dichlorobenzene	106-46-7	-	< 1	-	UM
n-Butylbenzene	104-51-8 *	-	< 1	-	N
1,2-Dichlorobenzene	95-50-1	-	< 1	-	UM
1,2-Dibromo-3-chloropropane	96-12-8	-	< 1	-	UM
1,2,4-Trichlorobenzene	120-82-1 *	-	< 4	-	N
Hexachlorobutadiene	87-68-3 **	-	< 3	-	N
Naphthalene	91-20-3	-	< 6	-	UM
1,2,3-Trichlorobenzene	87-61-6	-	< 4	-	UM

Concentrations are reported on a dry weight basis
Compounds marked ** are not UKAS or Mcerts accredited
"M" denotes that % fit has been manually interpreted
This analysis was conducted on an 'As Received' basis.

Internal standards	R.T.	Area %	Surrogates	% Rec
Pentafluorobenzene	4.04	87	Dibromofluoromethane	107
1,4-Difluorobenzene	4.39	85	Toluene-d8	99
Chlorobenzene-d5	5.50	84		
Bromofluorobenzene	5.89	79		
1,4-Dichlorobenzene-d4	6.29	71		
Naphthalene-d8	7.12	45		

Where individual results are flagged see report notes for status.
Results corrected to dry weight at 105°C where appropriate, in accordance with the MCERTS standard.

Volatile Organic Compounds by HSA-GCMS

Accredited?: Yes

Customer and Site Details:	Ramboll Environ: Zeon Chemicals Polyblock	**Directory/Quant file:**	513VOC.MS19\ Initial Calibration	**Matrix:**	Soil
Sample Details:	WS31 1.5	**Date Booked in:**	11-May-16	**Method:**	Headspace
LIMS ID Number:	CL1616121	**Date Analysed:**	16-May-16	**Multiplier:**	0.93
Job Number:	S16_3841M	**Operator:**	PR	**Position:**	27

Target Compounds	CAS #	R.T. (min.)	Concentration µg/kg	% Fit	Accr. code
Dichlorodifluoromethane	75-71-8 **	-	< 1	-	N
Chloromethane	74-87-3 *	-	< 4	-	N
Vinyl Chloride	75-01-4	-	< 1	-	UM
Bromomethane	74-83-9	-	< 1	-	UM
Chloroethane	75-00-3	-	< 2	-	UM
Trichlorofluoromethane	75-69-4	-	< 1	-	UM
1,1-Dichloroethene	75-35-48 *	-	< 1	-	N
trans 1,2-Dichloroethene	156-60-5	-	< 1	-	UM
1,1-Dichloroethane	75-34-3	-	< 1	-	UM
MTBE	1634-04-4	-	< 1	-	UM
2,2-Dichloropropane	594-20-7	-	< 1	-	UM
cis 1,2-Dichloroethene	156-59-2	-	< 6	-	UM
Bromochloromethane	74-97-5	-	< 1	-	UM
Chloroform	67-66-3	-	< 1	-	UM
1,1,1-Trichloroethane	71-55-6	-	< 1	-	UM
Carbon Tetrachloride	56-23-5	-	< 1	-	UM
1,1-Dichloropropene	563-58-6	-	< 1	-	UM
Benzene	71-43-2	4.23	1	M	UM
1,2-Dichloroethane	107-06-2	-	< 1	-	UM
Trichloroethene	79-01-6 **	-	< 1	-	N
1,2-Dichloropropane	78-87-5	-	< 1	-	UM
Dibromomethane	74-95-3	-	< 1	-	UM
Bromodichloromethane	75-27-4 **	-	< 1	-	N
cis 1,3-Dichloropropene	10061-01-5	-	< 1	-	UM
Toluene	108-88-3	-	< 6	-	UM
trans 1,3-Dichloropropene	10061-02-6	-	< 1	-	UM
1,1,2-Trichloroethane	79-00-5	-	< 1	-	UM
Tetrachloroethene	127-18-4	-	< 4	-	UM
1,3-Dichloropropane	142-28-9	-	< 1	-	UM
Dibromochloromethane	124-48-1	-	< 1	-	UM
1,2-Dibromoethane	106-93-4	-	< 1	-	UM
Chlorobenzene	108-90-7	-	< 1	-	UM
Ethylbenzene	100-41-4	-	< 2	-	UM
1,1,1,2-Tetrachloroethane	630-20-6	-	< 1	-	UM
m and p-Xylene	108-38-3/106-42-3	-	< 5	-	UM

Target Compounds	CAS #	R.T. (min.)	Concentration µg/kg	% Fit	Accr. code
o-Xylene	95-47-6	-	< 2	-	UM
Styrene	100-42-5	-	< 1	-	UM
Bromoform	75-25-2	-	< 1	-	UM
iso-Propylbenzene	98-82-8	-	< 1	-	UM
1,1,2,2-Tetrachloroethane	79-34-5 **	-	< 1	-	N
Propylbenzene	103-65-1	-	< 1	-	UM
Bromobenzene	108-86-1	-	< 1	-	UM
1,2,3-Trichloropropane	96-18-4	-	< 1	-	UM
2-Chlorotoluene	95-49-8	-	< 1	-	UM
1,3,5-Trimethylbenzene	108-67-8	-	< 1	-	UM
4-Chlorotoluene	106-43-4	-	< 1	-	UM
tert-Butylbenzene	98-06-6	-	< 1	-	UM
1,2,4-Trimethylbenzene	95-63-6	-	< 1	-	UM
sec-Butylbenzene	135-98-8	-	< 1	-	UM
p-Isopropyltoluene	99-87-6	-	< 1	-	UM
1,3-Dichlorobenzene	541-73-1	-	< 1	-	UM
1,4-Dichlorobenzene	106-46-7	-	< 1	-	UM
n-Butylbenzene	104-51-8 *	-	< 1	-	N
1,2-Dichlorobenzene	95-50-1	-	< 1	-	UM
1,2-Dibromo-3-chloropropane	96-12-8 **	-	< 1	-	N
1,2,4-Trichlorobenzene	120-82-1 **	-	< 4	-	N
Hexachlorobutadiene	87-68-3 **	-	< 2	-	N
Naphthalene	91-20-3	-	< 6	-	UM
1,2,3-Trichlorobenzene	87-61-6	-	< 4	-	UM

Concentrations are reported on a dry weight basis
Compounds marked ** are not UKAS or Mcerts accredited
"M" denotes that % fit has been manually interpreted
This analysis was conducted on an 'As Received' basis.

Internal standards	R.T.	Area %	Surrogates	% Rec
Pentafluorobenzene	4.04	79	Dibromofluoromethane	112
1,4-Difluorobenzene	4.39	75	Toluene-d8	92
Chlorobenzene-d5	5.50	53		
Bromofluorobenzene	5.89	36		
1,4-Dichlorobenzene-d4	6.29	24		
Naphthalene-d8	7.13	9		

Where individual results are flagged see report notes for status.
Results corrected to dry weight at 105°C where appropriate, in accordance with the MCERTS standard.

Volatile Organic Compounds by HSA-GCMS

Accredited?: Yes

Customer and Site Details:	Ramboll Environ: Zeon Chemicals Polyblock	**Directory/Quant file:**	513VOC.MS19\ Initial Calibration	**Matrix:**	Soil
Sample Details:	WS26 0.6	**Date Booked in:**	11-May-16	**Method:**	Headspace
LIMS ID Number:	CL1616122	**Date Analysed:**	16-May-16	**Multiplier:**	0.99
Job Number:	S16_3841M	**Operator:**	PR	**Position:**	28

Target Compounds	CAS #	R.T. (min.)	Concentration µg/kg	% Fit	Accr. code
Dichlorodifluoromethane	75-71-8 **	-	< 1	-	N
Chloromethane	74-87-3 *	-	< 4	-	N
Vinyl Chloride	75-01-4	-	< 1	-	UM
Bromomethane	74-83-9	-	< 1	-	UM
Chloroethane	75-00-3	-	< 3	-	UM
Trichlorofluoromethane	75-69-4	-	< 1	-	UM
1,1-Dichloroethene	75-35-48 *	-	< 1	-	N
trans 1,2-Dichloroethene	156-60-5	-	< 1	-	UM
1,1-Dichloroethane	75-34-3	-	< 1	-	UM
MTBE	1634-04-4	-	< 1	-	UM
2,2-Dichloropropane	594-20-7	-	< 1	-	UM
cis 1,2-Dichloroethene	156-59-2	-	< 6	-	UM
Bromochloromethane	74-97-5	-	< 1	-	UM
Chloroform	67-66-3	-	< 1	-	UM
1,1,1-Trichloroethane	71-55-6	-	< 1	-	UM
Carbon Tetrachloride	56-23-5	-	< 1	-	UM
1,1-Dichloropropene	563-58-6	-	< 1	-	UM
Benzene	71-43-2	-	< 1	-	UM
1,2-Dichloroethane	107-06-2	-	< 1	-	UM
Trichloroethene	79-01-6 **	-	< 1	-	N
1,2-Dichloropropane	78-87-5	-	< 1	-	UM
Dibromomethane	74-95-3	-	< 1	-	UM
Bromodichloromethane	75-27-4 **	-	< 1	-	N
cis 1,3-Dichloropropene	10061-01-5	-	< 1	-	UM
Toluene	108-88-3	-	< 6	-	UM
trans 1,3-Dichloropropene	10061-02-6	-	< 1	-	UM
1,1,2-Trichloroethane	79-00-5	-	< 1	-	UM
Tetrachloroethene	127-18-4	-	< 4	-	UM
1,3-Dichloropropane	142-28-9	-	< 1	-	UM
Dibromochloromethane	124-48-1	-	< 1	-	UM
1,2-Dibromoethane	106-93-4	-	< 1	-	UM
Chlorobenzene	108-90-7	-	< 1	-	UM
Ethylbenzene	100-41-4	-	< 3	-	UM
1,1,1,2-Tetrachloroethane	630-20-6	-	< 1	-	UM
m and p-Xylene	108-38-3/106-42-3	-	< 5	-	UM

Target Compounds	CAS #	R.T. (min.)	Concentration µg/kg	% Fit	Accr. code
o-Xylene	95-47-6	-	< 3	-	UM
Styrene	100-42-5	-	< 1	-	UM
Bromoform	75-25-2	-	< 1	-	UM
iso-Propylbenzene	98-82-8	-	< 1	-	UM
1,1,2,2-Tetrachloroethane	79-34-5 **	-	< 1	-	N
Propylbenzene	103-65-1	-	< 1	-	UM
Bromobenzene	108-86-1	-	< 1	-	UM
1,2,3-Trichloropropane	96-18-4	-	< 1	-	UM
2-Chlorotoluene	95-49-8	-	< 1	-	UM
1,3,5-Trimethylbenzene	108-67-8	5.99	4	M	UM
4-Chlorotoluene	106-43-4	-	< 1	-	UM
tert-Butylbenzene	98-06-6	-	< 1	-	UM
1,2,4-Trimethylbenzene	95-63-6	6.13	15	M	UM
sec-Butylbenzene	135-98-8	-	< 1	-	UM
p-Isopropyltoluene	99-87-6	-	< 1	-	UM
1,3-Dichlorobenzene	541-73-1	-	< 1	-	UM
1,4-Dichlorobenzene	106-46-7	-	< 1	-	UM
n-Butylbenzene	104-51-8 *	-	< 1	-	N
1,2-Dichlorobenzene	95-50-1	-	< 1	-	UM
1,2-Dibromo-3-chloropropane	96-12-8 **	-	< 1	-	N
1,2,4-Trichlorobenzene	120-82-1 **	-	< 4	-	N
Hexachlorobutadiene	87-68-3 **	-	< 3	-	N
Naphthalene	91-20-3	-	< 6	-	UM
1,2,3-Trichlorobenzene	87-61-6	-	< 4	-	UM

Concentrations are reported on a dry weight basis
Compounds marked ** are not UKAS or Mcerts accredited
"M" denotes that % fit has been manually interpreted
This analysis was conducted on an 'As Received' basis.

Internal standards	R.T.	Area %	Surrogates	% Rec
Pentafluorobenzene	4.04	69	Dibromofluoromethane	112
1,4-Difluorobenzene	4.39	65	Toluene-d8	92
Chlorobenzene-d5	5.50	46		
Bromofluorobenzene	5.89	31		
1,4-Dichlorobenzene-d4	6.29	22		
Naphthalene-d8	7.13	10		

Where individual results are flagged see report notes for status.
Results corrected to dry weight at 105°C where appropriate, in accordance with the MCERTS standard.

TICs by HSA-GCMS

Accredited?: No

Customer and Site Details:	Ramboll Environ: Zeon Chemicals Polyblock		**Date Booked in:**	11-May-16
Sample Details:	WS29 1.0		**Date Analysed:**	13-May-16
LIMS ID Number:	CL1616116		**Matrix:**	Soil
Job Number:	S16_3841		**Ext Method:**	Headspace
Directory/Quant file:	513VOC.MS19\	Initial Calibration	**Dilution:**	0.98
Operator:	PR		**Position:**	22

Tentatively Identified Compounds	CAS No	R.T. (min.)	Concentration µg/kg	% Fit	Accr. code
None Detected			<6		N

The compounds listed above have been tentatively identified by a computer based library search.
Compounds identified in the sample are not reported if they also occur in the method blank.
The % fit is an indication of the reliability of the compound assignment.
Due to the similarity between mass spectra of some isomeric compounds, assignments may not be correct.
Other compounds may also be present but identification was not possible.
Concentrations are semi-quantitative, assume a response factor of 1 and use the nearest internal standard.

Compounds marked ** are not UKAS or Mcerts accredited
"M" denotes that % fit has been manually interpreted

Where individual results are flagged see report notes for status.
Results corrected to dry weight at 105°C where appropriate, in accordance with the MCERTS standard.

TICs by HSA-GCMS

Accredited?: No

Customer and Site Details:	Ramboll Environ: Zeon Chemicals Polyblock		**Date Booked in:**	11-May-16
Sample Details:	WS29 1.2		**Date Analysed:**	14-May-16
LIMS ID Number:	CL1616117		**Matrix:**	Soil
Job Number:	S16_3841		**Ext Method:**	Headspace
Directory/Quant file:	513VOC.MS19\	Initial Calibration	**Dilution:**	1
Operator:	PR		**Position:**	23

Tentatively Identified Compounds	CAS No	R.T. (min.)	Concentration µg/kg	% Fit	Accr. code
Butylated Hydroxytoluene	000128-37-0	5.13	316	81	N

The compounds listed above have been tentatively identified by a computer based library search.
Compounds identified in the sample are not reported if they also occur in the method blank.
The % fit is an indication of the reliability of the compound assignment.
Due to the similarity between mass spectra of some isomeric compounds, assignments may not be correct.
Other compounds may also be present but identification was not possible.
Concentrations are semi-quantitative, assume a response factor of 1 and use the nearest internal standard.

Compounds marked ** are not UKAS or Mcerts accredited
"M" denotes that % fit has been manually interpreted

Where individual results are flagged see report notes for status.
Results corrected to dry weight at 105°C where appropriate, in accordance with the MCERTS standard.

TICs by HSA-GCMS

Accredited?: No

Customer and Site Details:	Ramboll Environ: Zeon Chemicals Polyblock		**Date Booked in:**	11-May-16
Sample Details:	WS28 1.0		**Date Analysed:**	14-May-16
LIMS ID Number:	CL1616118		**Matrix:**	Soil
Job Number:	S16_3841		**Ext Method:**	Headspace
Directory/Quant file:	513VOC.MS19\	Initial Calibration	**Dilution:**	0.97
Operator:	PR		**Position:**	24

Tentatively Identified Compounds	CAS No	R.T. (min.)	Concentration µg/kg	% Fit	Accr. code
None Detected			<7		N

The compounds listed above have been tentatively identified by a computer based library search.
Compounds identified in the sample are not reported if they also occur in the method blank.
The % fit is an indication of the reliability of the compound assignment.
Due to the similarity between mass spectra of some isomeric compounds, assignments may not be correct.
Other compounds may also be present but identification was not possible.
Concentrations are semi-quantitative, assume a response factor of 1 and use the nearest internal standard.

Compounds marked ** are not UKAS or Mcerts accredited
"M" denotes that % fit has been manually interpreted

Where individual results are flagged see report notes for status.
Results corrected to dry weight at 105°C where appropriate, in accordance with the MCERTS standard.

TICs by HSA-GCMS

Accredited?: No

Customer and Site Details:	Ramboll Environ: Zeon Chemicals Polyblock		**Date Booked in:**	11-May-16
Sample Details:	WS30 1.2 (NVM)		**Date Analysed:**	14-May-16
LIMS ID Number:	CL1616119		**Matrix:**	Soil
Job Number:	S16_3841		**Ext Method:**	Headspace
Directory/Quant file:	513VOC.MS19\	Initial Calibration	**Dilution:**	0.95
Operator:	PR		**Position:**	25

Tentatively Identified Compounds	CAS No	R.T. (min.)	Concentration µg/kg	% Fit	Accr. code
None Detected			<6		N

The compounds listed above have been tentatively identified by a computer based library search.
Compounds identified in the sample are not reported if they also occur in the method blank.
The % fit is an indication of the reliability of the compound assignment.
Due to the similarity between mass spectra of some isomeric compounds, assignments may not be correct.
Other compounds may also be present but identification was not possible.
Concentrations are semi-quantitative, assume a response factor of 1 and use the nearest internal standard.

Compounds marked ** are not UKAS or Mcerts accredited
"M" denotes that % fit has been manually interpreted

Where individual results are flagged see report notes for status.
Results corrected to dry weight at 105°C where appropriate, in accordance with the MCERTS standard.

TICs by HSA-GCMS

Accredited?: No

Customer and Site Details:	Ramboll Environ: Zeon Chemicals Polyblock		**Date Booked in:**	11-May-16
Sample Details:	WS31 1.0		**Date Analysed:**	16-May-16
LIMS ID Number:	CL1616120		**Matrix:**	Soil
Job Number:	S16_3841		**Ext Method:**	Headspace
Directory/Quant file:	516VOC.MS19\	Initial Calibration	**Dilution:**	1.04
Operator:	PR		**Position:**	26

Tentatively Identified Compounds	CAS No	R.T. (min.)	Concentration µg/kg	% Fit	Accr. code
None Detected			<6		N

The compounds listed above have been tentatively identified by a computer based library search.
Compounds identified in the sample are not reported if they also occur in the method blank.
The % fit is an indication of the reliability of the compound assignment.
Due to the similarity between mass spectra of some isomeric compounds, assignments may not be correct.
Other compounds may also be present but identification was not possible.
Concentrations are semi-quantitative, assume a response factor of 1 and use the nearest internal standard.

Compounds marked ** are not UKAS or Mcerts accredited
"M" denotes that % fit has been manually interpreted

Where individual results are flagged see report notes for status.
Results corrected to dry weight at 105°C where appropriate, in accordance with the MCERTS standard.

TICs by HSA-GCMS

Accredited?: No

Customer and Site Details:	Ramboll Environ: Zeon Chemicals Polyblock		**Date Booked in:**	11-May-16
Sample Details:	WS31 1.5		**Date Analysed:**	16-May-16
LIMS ID Number:	CL1616121		**Matrix:**	Soil
Job Number:	S16_3841		**Ext Method:**	Headspace
Directory/Quant file:	513VOC.MS19\	Initial Calibration	**Dilution:**	0.93
Operator:	PR		**Position:**	27

Tentatively Identified Compounds	CAS No	R.T. (min.)	Concentration µg/kg	% Fit	Accr. code
None Detected			<6		N

The compounds listed above have been tentatively identified by a computer based library search.
Compounds identified in the sample are not reported if they also occur in the method blank.
The % fit is an indication of the reliability of the compound assignment.
Due to the similarity between mass spectra of some isomeric compounds, assignments may not be correct.
Other compounds may also be present but identification was not possible.
Concentrations are semi-quantitative, assume a response factor of 1 and use the nearest internal standard.

Compounds marked ** are not UKAS or Mcerts accredited
"M" denotes that % fit has been manually interpreted

Where individual results are flagged see report notes for status.
Results corrected to dry weight at 105°C where appropriate, in accordance with the MCERTS standard.

TICs by HSA-GCMS

Accredited?: No

Customer and Site Details:	Ramboll Environ: Zeon Chemicals Polyblock		**Date Booked in:**	11-May-16
Sample Details:	WS26 0.6		**Date Analysed:**	16-May-16
LIMS ID Number:	CL1616122		**Matrix:**	Soil
Job Number:	S16_3841		**Ext Method:**	Headspace
Directory/Quant file:	513VOC.MS19\	Initial Calibration	**Dilution:**	0.99
Operator:	PR		**Position:**	28

Tentatively Identified Compounds	CAS No	R.T. (min.)	Concentration µg/kg	% Fit	Accr. code
None Detected			<6		N

The compounds listed above have been tentatively identified by a computer based library search.
Compounds identified in the sample are not reported if they also occur in the method blank.
The % fit is an indication of the reliability of the compound assignment.
Due to the similarity between mass spectra of some isomeric compounds, assignments may not be correct.
Other compounds may also be present but identification was not possible.
Concentrations are semi-quantitative, assume a response factor of 1 and use the nearest internal standard.

Compounds marked ** are not UKAS or Mcerts accredited
"M" denotes that % fit has been manually interpreted

Where individual results are flagged see report notes for status.
Results corrected to dry weight at 105°C where appropriate, in accordance with the MCERTS standard.

Analytical and Deviating Sample Overview

Customer Ramboll Environ
Site Zeon Chemicals Polyblock
Report No S163841M

Consignment No S55834
Date Logged 11-May-2016

Report Due 18-May-2016

ID Number	Description	MethodID	CustServ	GROHSA	ICPBOR	ICPMSS									ICPSOIL	ICPWSS	MCertS	PAHMSUS	PHSOIL	SFAPI		SVOCMSUS	TMSS	TPHUSSI	VOCHSAS	WSLM59
		Sampled	REPORT A	GRO (AA) by HSA GC-FID	Boron (H20 Soluble)	Arsenic (MS)	Cadmium (MS)	Chromium (MS)	Copper (MS)	Lead (MS)	Mercury (MS)	Nickel (MS)	Selenium (MS)	Vanadium (MS)	Zinc (MS)	Beryllium.	SO4-- (H2O sol) mg/l	MCertS Analysis	PAH (17) by GCMS	pH units (AR)	Cyanide(Total) (AR)	Phenol Index.(AR)	SVOC + TICs by GCMS (AR)	Tot.Moisture @ 105C	TPH by GCFID (AR/Si)	VOC + TICs HSA-GCMS	Total Organic Carbon
				✓	✓	✓	✓	✓	✓	✓	✓	✓	✓		✓	✓	✓		✓	✓	✓	✓	✓	✓	✓	✓	
CL/1616116	WS29 1.0	09/05/16																									
CL/1616117	WS29 1.2	09/05/16																									
CL/1616118	WS28 1.0	09/05/16																									
CL/1616119	WS30 1.2	09/05/16																									
CL/1616120	WS31 1.0	09/05/16																									
CL/1616121	WS31 1.5	09/05/16																									
CL/1616122	WS26 0.6	10/05/16																									

Note: For analysis where the scheduled turnaround is greater than the holding time we will do our utmost to prioritise these samples. However, it is possible that samples could become deviant whilst being processed in the laboratory.

In this instance please contact the laboratory immediately should you wish to discuss how you would like us to proceed. If you do not respond within 24 hours, we will proceed as originally requested.

Deviating Sample Key

A	The sample was received in an inappropriate container for this analysis
B	The sample was received without the correct preservation for this analysis
C	Headspace present in the sample container
D	The sampling date was not supplied so holding time may be compromised - applicable to all analysis
E	Sample processing did not commence within the appropriate holding time
F	Sample processing did not commence within the appropriate handling time

Requested Analysis Key

	Analysis Required
	Analysis dependant upon trigger result - **Note: due date may be affected if triggered**
	No analysis scheduled
^	Analysis Subcontracted - **Note: due date may vary**

Where individual results are flagged see report notes for status.
The integrity of data for samples/analysis that have been categorised as Deviating may be compromised. Data may not be representative of the sample at the time of sampling.

Report Number : EFS/163841

Additional Report Notes

Method Code	Sample ID	The following information should be taken into consideration when using the data contained within this report
VOCHSAS	CL1616116 to CL1616122	The Primary process control result associated with this Test has not wholly met the requirements of the Laboratory Quality Management System (QMS). The Laboratory believes that the validity of the data has not been affected but in line with our QMS policy we have removed accreditation from the affected analytes (Bromodichloromethane) . These circumstances should be taken into consideration when utilising the data.
VOCHSAS	CL1616116 CL1616117 CL1616118 CL1616119 CL1616121 CL1616122	The Secondary process control result associated with this Test has not wholly met the requirements of the Laboratory Quality Management System (QMS). All other Process controls (including the Primary Process control) are within specification. The Laboratory believes that the validity of the data has not been affected but in line with our QMS policy we have removed accreditation from the affected analytes (1,2,4-Trichlorobenzene,1,2-Dibromo-3-chloropropane) . These circumstances should be taken into consideration when utilising the data.
VOCHSAS	CL1616116 CL1616118 CL1616121 CL1616122	Due to matrix interference, the Internal Standard recovery for this Test is below the required QMS specification. This has been confirmed by repeating the analysis. All other Laboratory Process Controls meet the requirements of the QMS. These circumstances should be taken into consideration when utilising the data.
VOCHSAS	CL1616120	The Primary process control result associated with this Test has not wholly met the requirements of the Laboratory Quality Management System (QMS). The Laboratory believes that the validity of the data has not been affected but in line with our QMS policy we have removed accreditation from the affected analytes (Vinyl Chloride) . These circumstances should be taken into consideration when utilising the data.
SVOCMSUS	CL/1616116 CL/1616119 CL/1616120	The Secondary process control result associated with this Test has not wholly met the requirements of the Laboratory Quality Management System (QMS). All other Process controls (including the Primary Process control) are within specification. The Laboratory believes that the validity of the data has not been affected but in line with our QMS policy we have removed accreditation from the affected analytes (4-Bromophentyl-phenyl ethar and Hexachlorobenzene) . These circumstances should be taken into consideration when utilising the data.

Method Descriptions

Matrix	MethodID	Analysis Basis	Method Description
Soil	GROHSA	As Received	Determination of Total Gasoline Range Organics Hydrocarbons (GRO) by Headspace GCFID
Soil	ICPBOR	Oven Dried @ < 35°C	Determination of Boron in soil samples by hot water extraction followed by ICPOES detection
Soil	ICPMSS	Oven Dried @ < 35°C	Determination of Metals in soil samples by aqua regia digestion followed by ICPMS
Soil	ICPSOIL	Oven Dried @ < 35°C	Determination of Metals in soil samples by aqua regia digestion followed by ICPOES detection
Soil	ICPWSS	Oven Dried @ < 35°C	Determination of Water Soluble Sulphate in soil samples by water extraction followed by ICPOES detection
Soil	PAHMSUS	As Received	Determination of Polycyclic Aromatic Hydrocarbons (PAH) by hexane/acetone extraction followed by GCMS detection
Soil	PHSOIL	As Received	Determination of pH of 2.5:1 deionised water to soil extracts using pH probe.
Soil	SFAPI	As Received	Segmented flow analysis with colorimetric detection
Soil	SVOCMSUS	As Received	Determination of Semi Volatile Organic Compounds in soil samples by Dichloromethane/Acetone extraction followed by GCMS detection
Soil	TMSS	As Received	Determination of the Total Moisture content at 105ºC by loss on oven drying gravimetric analysis (% based upon wet weight)
Soil	TPHUSSI	As Received	Determination of hexane/acetone extractable Hydrocarbons in soil with GCFID detection including quantitation of Aromatic and Aliphatic fractions.
Soil	VOCHSAS	As Received	Determination of Volatile Organic Compounds (VOC) by Headspace GCMS
Soil	WSLM59	Oven Dried @ < 35°C	Determination of Organic Carbon in soil using sulphurous Acid digestion followed by high temperature combustion and IR detection

Report Notes

Generic Notes

Soil/Solid Analysis

Unless stated otherwise,
- Results expressed as mg/kg have been calculated on the basis indicated in the Method Description table.
  All results on MCERTS reports are reported on a 105ºC dry weight basis with the exception of pH and conductivity.
- Sulphate analysis not conducted in accordance with BS1377
- Water Soluble Sulphate is on a 2:1 water:soil extract

Waters Analysis

Unless stated otherwise results are expressed as mg/l
Nil: Where "Nil" has been entered against Total Alkalinity or Total Acidity this indicates that a measurement was not required due to the inherent pH of the sample.

Oil analysis specific

Unless stated otherwise,
- Results are expressed as mg/kg
- SG is expressed as g/cm^3@ 15^{o}C

Gas (Tedlar bag) Analysis

Unless stated otherwise, results are expressed as ug/l

Asbestos Analysis

CH Denotes Chrysotile **TR** Denotes Tremolite
CR Denotes Crocidolite **AC** Denotes Actinolite
AM Denotes Amosite **AN** Denotes Anthophylite
NAIIS No Asbestos Identified in Sample
NADIS No Asbestos Detected In Sample

Symbol Reference

^ Sub-contracted analysis.
$$ Unable to analyse due to the nature of the sample
¶ Samples submitted for this analyte were not preserved on site in accordance with laboratory protocols. This may have resulted in deterioration of the sample(s) during transit to the laboratory. Consequently the reported data may not represent the concentration of the target analyte present in the sample at the time of sampling
¥ Results for guidance only due to possible interference
& Blank corrected result
I.S Insufficient sample to complete requested analysis
I.S(g) Insufficient sample to re-analyse, results for guidance only
Intf Unable to analyse due to interferences
N.D Not determined **N.Det** Not detected
N.F No Flow
NS Information Not Supplied
Req Analysis requested, see attached sheets for results
Þ Raised detection limit due to nature of the sample
***** All accreditation has been removed by the laboratory for this result
‡ MCERTS accreditation has been removed for this result
§ accreditation has been removed for this result as it is a non-accredited matrix

Note: The Laboratory may only claim that data is accredited when all of the requirements of our Quality System have been met. Where these requirements have not been met the laboratory may elect to include the data in its final report and remove the accreditation from individual data items if it believes that the validity of the data has not been affected. If further details are required of the circumstances which have led to the removal of accreditation then please do not hesitate to contact the laboratory.

Sample Descriptions

Client : Ramboll Environ

Site : Zeon Chemicals Polyblock

Report Number : S16_3841

Note: major constituent in upper case

Lab ID Number	Client ID	Description
CL/1616116	WS29 1.0	Brown Stone SILT
CL/1616117	WS29 1.2	Brown Stone CLAY
CL/1616118	WS28 1.0	Brown Stone CLAY
CL/1616119	WS30 1.2 (NVM)	Brown Clay STONE
CL/1616120	WS31 1.0	Brown Stone CLAY
CL/1616121	WS31 1.5	Brown CLAY
CL/1616122	WS26 0.6	Brown MADE GROUND

Our Ref: EFS/163918M (Ver. 2)
Your Ref: UK15-21370

June 7, 2016

Environmental Chemistry
ESG
Bretby Business Park
Ashby Road
Burton-on-Trent
Staffordshire
DE15 0YZ

Telephone: 01283 554400
Facsimile: 01283 554422

Lucy Cleverley
Ramboll Environ
8 Village Way
Cardiff
CF15 2NE

For the attention of Lucy Cleverley

Dear Lucy Cleverley

Sample Analysis - Zeon Chemicals ESA

Samples from the above site have been analysed in accordance with the schedule supplied.
The sample details and the results of analyses for these samples are given in the appended report.

An invoice for this work will follow under a separate cover.

Where appropriate the samples will be kept until 24/06/16 when they will be discarded. Please call 01283 554547 for an extension of this date.
Please be aware that our policy for the retention of paper based laboratory records and analysis reports is 6 years.

The work was carried out in accordance with Environmental Scientifics Group Ltd (Laboratory and Analytical) Standard Terms and Conditions of Contract.

If I can be of any further assistance please do not hesitate to contact me.

Yours sincerely

for ESG

JMColbourne

J Colbourne
Project Co-ordinator
01283 554547

Environmental Chemistry, ESG, P.O. Box 100, Burton-upon-trent, DE15 0XD Tel: 01283 554400 Fax: 01283 554422
Environmental Scientifics Group Limited.
Registered No: 2880501

TEST REPORT

1252

Report No. EFS/163918M (Ver. 2)

Ramboll Environ
8 Village Way
Cardiff
CF15 2NE

Site: Zeon Chemicals ESA

The 10 samples described in this report were registered for analysis by ESG on 13-May-2016. This report supersedes any versions previously issued by the laboratory.
The analysis was completed by: 07-Jun-2016

Tests where the accreditation is set to N or No, and any individual data items marked with a * are not UKAS or MCERTS accredited. Any opinions or interpretations expressed herein are outside the scope of any UKAS accreditation held by ESG.

The following tables are contained in this report:

On behalf of
ESG :
Declan Burns

Managing Director
Multi-Sector Services

Date of Issue: 07-Jun-2016

Accreditation Codes: **N** (Not Accredited), **U** (UKAS), **UM** (UKAS & MCERTS)
Tests marked '^' have been subcontracted to another laboratory.
(NVM) - denotes the sample matrix is dissimilar to matrices upon which the MCERTS validation was based, and is therefore not accredited for MCERTS.
All results are reported on a dry weight basis at 105^{o}C unless otherwise stated. (except QC samples)
ESG accepts no responsibility for any sampling not carried out by our personnel.

			Units :	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	pH Units
			Method Codes :	GROHSA	ICPBOR	ICPMSS	ICPMSS	ICPMSS	ICPMSS	ICPMSS	ICPMSS	ICPMSS	ICPMSS	ICPMSS	ICPSOIL	ICPSOIL	ICPSOIL	ICPWSS	PHSOIL
			Method Reporting Limits :	0.2	0.5	0.3	0.2	1.2	1.6	0.7	0.5	2	0.5	16	1	0.1	36	10	
			Accreditation Code:		UM	UM	UM	UM	UM	UM	UM	UM	UM	UM	UM	UM	UM	UM	UM
LAB ID Number CL/	Client Sample Description	Sample Date	GRO (AA) by HSA GC-FID	Boron (H20 Soluble)	Arsenic (MS)	Cadmium (MS)	Chromium (MS)	Copper (MS)	Lead (MS)	Mercury (MS)	Nickel (MS)	Selenium (MS)	Zinc (MS)	Barium.	Beryllium.	Iron	SO4-- (H2O sol) mg/l	pH units (AR)	
1616335	WS18 1.60	11-May-16	Req	3.5	16	1.32	43.2	40.8	69.8	<0.52	31.5	0.8	246.9		1.1		172	7.5	
1616336	WS20 0.30	11-May-16	Req	1.5	10.3	0.55	34.4	53.1	109.9	2.26	29.5	<0.5	263.2	303	0.890	25800	43	8.1	
1616337	WS20 1.20	11-May-16																	
1616338	WS20 1.80	11-May-16	Req	1.6	4.5	<0.2	21.1	13.6	13.6	<0.5	18.2	<0.5	90.0	23.8	0.434	17500	24	8.3	
1616339	WS20 2.50 (NVM)	11-May-16	Req §	1.31§	4.55§	0.283§	13.65§	7.78§	13.24§	<0.51§	10.51§	<0.51§	62.28§	28.10§	0.212§	8500§	42§	8.6 §	
1616340	WS19 0.65	11-May-16	Req	2	10.9	0.28	41.2	29.4	27.8	<0.51	23	<0.5	141.9		0.721		164	7.9	
1616341	WS21 0.75	11-May-16	Req	1.7	10.3	0.35	20.7	18.4	126.2	<0.6	20	0.6	70		0.50		515	8.1	
1616342	WS21 1.40	11-May-16	Req	2.2	10.9	0.32	36.8	31.2	33.6	<0.5	42.4	0.5	130.7		1.25		53	8.1	
1616343	WS11 0.30 (NVM)	11-May-16	Req §	0.83§	3.23§	0.292§	11.68§	7.51§	22§	<0.52§	10.63§	<0.52§	37.64§		0.1679§		83§	10.8 §	
1616344	WS12 0.30 (NVM)	11-May-16	Req §	1.53§	4.60§	0.31§	15.75§	10.74§	29.97§	<0.511§	12.38§	<0.51§	57.08§		0.2516§		336§	9.6 §	

Bretby Business Park, Ashby Road

Burton-on-Trent, Staffordshire, DE15 0YZ

Tel +44 (0) 1283 554400

Fax +44 (0) 1283 554422

Client Name Ramboll Environ

Contact Lucy Cleverley

Zeon Chemicals ESA

Sample Analysis

Date Printed	07-Jun-2016
Report Number	EFS/163918M
Table Number	1

Where individual results are flagged see report notes for status.
Results corrected to dry weight at 105°C where appropriate, in accordance with the MCERTS standard.

		Units :	mg/kg	mg/kg		mg/kg	%	mg/kg	µg/kg	mg/kg	% M/M	mg/kg						
		Method Codes :	SFAPI	SFAPI	Sub002a	SVOCMSUS	TMSS	TPHUSSI	VOCHSAS	ICPMSS	WSLM59	PAHMSUS						
		Method Reporting Limits :	0.5	0.5			0.2	20		0.6	0.04							
		Accreditation Code:	UM	U	U		U			N	N							
LAB ID Number CL/	**Client Sample Description**	**Sample Date**	**Cyanide(Total) (AR)**	**Phenol Index.(AR)**	**^Asbestos Screen**	**SVOC + TICs by GCMS (AR)**	**Tot.Moisture @ 105C**	**TPH by GCFID (AR/Si)**	**VOC + TICs HSA-GCMS**	**Vanadium (MS)**	**Total Organic Carbon**	**PAH (17) by GCMS**						
1616335	WS18 1.60	**11-May-16**	<0.7	<0.7		Req	28.4	Req	Req	48.1		Req						
1616336	WS20 0.30	**11-May-16**	<0.6	<0.6		Req	21.5	Req	Req	34.3		Req						
1616337	WS20 1.20	**11-May-16**					31.0				2.95							
1616338	WS20 1.80	**11-May-16**	<0.6	<0.6		Req	19.9	Req	Req	25.0		Req						
1616339	WS20 2.50 (NVM)	**11-May-16**	<0.57§	<0.57§		Req §	11.7 §	Req §	Req §	16.9		Req §						
1616340	WS19 0.65	**11-May-16**	0.8	<0.7		Req	26.8	Req	Req	23.1		Req						
1616341	WS21 0.75	**11-May-16**	<0.6	<0.6	NAIIS	Req	21.8	Req	Req	25.2		Req						
1616342	WS21 1.40	**11-May-16**	<0.6	<0.6		Req	20.0	Req	Req	46.2		Req						
1616343	WS11 0.30 (NVM)	**11-May-16**	<0.57§	<0.57§	NAIIS	Req §	12.2 §	Req §	Req §	9.9		Req §						
1616344	WS12 0.30 (NVM)	**11-May-16**	<0.57§	<0.57§		Req §	12.1 §	Req §	Req §	14.0		Req §						

ESG

Bretby Business Park, Ashby Road

Burton-on-Trent, Staffordshire, DE15 0YZ

Tel +44 (0) 1283 554400

Fax +44 (0) 1283 554422

Client Name **Ramboll Environ**

Contact Lucy Cleverley

Zeon Chemicals ESA

Sample Analysis

Date Printed	**07-Jun-2016**
Report Number	**EFS/163918M**
Table Number	**1**

Where individual results are flagged see report notes for status.
Results corrected to dry weight at 105°C where appropriate, in accordance with the MCERTS standard.

Polycyclic Aromatic Hydrocarbons
GC/MS (SIM)

Customer and Site Details:	Ramboll Environ: Zeon Chemicals ESA		
Sample Details:	WS18 1.60	**Job Number:**	S16_3918M
LIMS ID Number:	CL1616335	**Date Booked in:**	13-May-16
QC Batch Number:	160593	**Date Extracted:**	18-May-16
Quantitation File:	Initial Calibration	**Date Analysed:**	18-May-16
Directory:	1816PAHMS20\	**Matrix:**	Soil
Dilution:	1.0	**Ext Method:**	Ultrasonic

Accredited?: Yes

Target Compounds	CAS #	R.T. (min)	Concentration mg/kg	% Fit	Accr. code
Naphthalene	91-20-3	-	< 0.11	-	**UM**
Acenaphthylene	208-96-8	-	< 0.11	-	U
Acenaphthene	83-32-9	-	< 0.11	-	UM
Fluorene	86-73-7	-	< 0.11	-	UM
Phenanthrene	85-01-8	-	< 0.11	-	UM
Anthracene	120-12-7	-	< 0.11	-	U
Fluoranthene	206-44-0	6.19	0.11	98	UM
Pyrene	129-00-0	-	< 0.11	-	UM
Benzo[a]anthracene	56-55-3	-	< 0.11	-	UM
Chrysene	218-01-9	-	< 0.11	-	UM
Benzo[b]fluoranthene	205-99-2	9.54	0.13	80	UM
Benzo[k]fluoranthene	207-08-9	-	< 0.11	-	UM
Benzo[a]pyrene	50-32-8	-	< 0.11	-	UM
Indeno[1,2,3-cd]pyrene	193-39-5	-	< 0.11	-	UM
Dibenzo[a,h]anthracene	53-70-3	-	< 0.11	-	UM
Benzo[g,h,i]perylene	191-24-2	-	< 0.11	-	UM
Coronene	191-07-1 *	-	< 0.11	-	N
Total (USEPA16) PAHs	-	-	< 1.80	-	N

* Denotes compound is not UKAS accredited

"M" denotes that % fit has been manually interpreted

Internal Standards	% Area
1,4-Dichlorobenzene-d4	NA
Naphthalene-d8	96
Acenaphthene-d10	96
Phenanthrene-d10	94
Chrysene-d12	88
Perylene-d12	94

Surrogates	% Rec
Nitrobenzene-d5	NA
2-Fluorobiphenyl	94
Terphenyl-d14	72

Concentrations are reported on a dry weight basis.

The Total PAH result is the sum of non-rounded individual PAH results and therefore may differ to the sum of the rounded individual PAH results printed above. By convention, where any one or more result is a "less than", the total is expressed as a "less than" and includes the "less than" concentration within the total.

Polycyclic Aromatic Hydrocarbons
GC/MS (SIM)

Customer and Site Details:	Ramboll Environ: Zeon Chemicals ESA		
Sample Details:	WS20 0.30	**Job Number:**	S16_3918M
LIMS ID Number:	CL1616336	**Date Booked in:**	13-May-16
QC Batch Number:	160593	**Date Extracted:**	18-May-16
Quantitation File:	Initial Calibration	**Date Analysed:**	18-May-16
Directory:	1816PAHMS20\	**Matrix:**	Soil
Dilution:	1.0	**Ext Method:**	Ultrasonic

Accredited?: Yes

Target Compounds	CAS #	R.T. (min)	Concentration mg/kg	% Fit	Accr. code
Naphthalene	91-20-3	2.79	0.15	96	**UM**
Acenaphthylene	208-96-8	-	< 0.10	-	U
Acenaphthene	83-32-9	3.94	0.19	91	UM
Fluorene	86-73-7	4.27	0.10	96	UM
Phenanthrene	85-01-8	5.00	1.44	98	UM
Anthracene	120-12-7	5.04	0.24	94	U
Fluoranthene	206-44-0	6.19	2.01	100	UM
Pyrene	129-00-0	6.45	1.58	97	UM
Benzo[a]anthracene	56-55-3	8.05	0.83	94	UM
Chrysene	218-01-9	8.10	0.90	99	UM
Benzo[b]fluoranthene	205-99-2	9.54	1.00	93	UM
Benzo[k]fluoranthene	207-08-9	9.57	0.40	94	UM
Benzo[a]pyrene	50-32-8	9.95	0.61	97	UM
Indeno[1,2,3-cd]pyrene	193-39-5	11.30	0.47	99	UM
Dibenzo[a,h]anthracene	53-70-3	11.34	0.11	93	UM
Benzo[g,h,i]perylene	191-24-2	11.58	0.40	99	UM
Coronene	191-07-1 *	13.22	0.10	60	N
Total (USEPA16) PAHs	-	-	< 10.52	-	N

* Denotes compound is not UKAS accredited

"M" denotes that % fit has been manually interpreted

Internal Standards	% Area
1,4-Dichlorobenzene-d4	NA
Naphthalene-d8	97
Acenaphthene-d10	97
Phenanthrene-d10	97
Chrysene-d12	89
Perylene-d12	91

Surrogates	% Rec
Nitrobenzene-d5	NA
2-Fluorobiphenyl	94
Terphenyl-d14	71

Concentrations are reported on a dry weight basis.

The Total PAH result is the sum of non-rounded individual PAH results and therefore may differ to the sum of the rounded individual PAH results printed above. By convention, where any one or more result is a "less than", the total is expressed as a "less than" and includes the "less than" concentration within the total.

Polycyclic Aromatic Hydrocarbons
GC/MS (SIM)

Customer and Site Details:	Ramboll Environ: Zeon Chemicals ESA		
Sample Details:	WS20 1.80	**Job Number:**	S16_3918M
LIMS ID Number:	CL1616338	**Date Booked in:**	13-May-16
QC Batch Number:	160593	**Date Extracted:**	18-May-16
Quantitation File:	Initial Calibration	**Date Analysed:**	18-May-16
Directory:	1816PAHMS20\	**Matrix:**	Soil
Dilution:	1.0	**Ext Method:**	Ultrasonic

Accredited?: Yes

Target Compounds	CAS #	R.T. (min)	Concentration mg/kg	% Fit	Accr. code
Naphthalene	91-20-3	-	< 0.10	-	**UM**
Acenaphthylene	208-96-8	-	< 0.10	-	U
Acenaphthene	83-32-9	-	< 0.10	-	UM
Fluorene	86-73-7	-	< 0.10	-	UM
Phenanthrene	85-01-8	-	< 0.10	-	UM
Anthracene	120-12-7	-	< 0.10	-	U
Fluoranthene	206-44-0	-	< 0.10	-	UM
Pyrene	129-00-0	-	< 0.10	-	UM
Benzo[a]anthracene	56-55-3	-	< 0.10	-	UM
Chrysene	218-01-9	-	< 0.10	-	UM
Benzo[b]fluoranthene	205-99-2	-	< 0.10	-	UM
Benzo[k]fluoranthene	207-08-9	-	< 0.10	-	UM
Benzo[a]pyrene	50-32-8	-	< 0.10	-	UM
Indeno[1,2,3-cd]pyrene	193-39-5	-	< 0.10	-	UM
Dibenzo[a,h]anthracene	53-70-3	-	< 0.10	-	UM
Benzo[g,h,i]perylene	191-24-2	-	< 0.10	-	UM
Coronene	191-07-1 *	-	< 0.10	-	N
Total (USEPA16) PAHs	-	-	< 1.60	-	N

* Denotes compound is not UKAS accredited

"M" denotes that % fit has been manually interpreted

Internal Standards	% Area
1,4-Dichlorobenzene-d4	NA
Naphthalene-d8	91
Acenaphthene-d10	93
Phenanthrene-d10	90
Chrysene-d12	84
Perylene-d12	83

Surrogates	% Rec
Nitrobenzene-d5	NA
2-Fluorobiphenyl	95
Terphenyl-d14	72

Concentrations are reported on a dry weight basis.

The Total PAH result is the sum of non-rounded individual PAH results and therefore may differ to the sum of the rounded individual PAH results printed above. By convention, where any one or more result is a "less than", the total is expressed as a "less than" and includes the "less than" concentration within the total.

Polycyclic Aromatic Hydrocarbons
GC/MS (SIM)

Customer and Site Details:	Ramboll Environ: Zeon Chemicals ESA		
Sample Details:	WS20 2.50 (NVM)	**Job Number:**	S16_3918M
LIMS ID Number:	CL1616339	**Date Booked in:**	13-May-16
QC Batch Number:	160593	**Date Extracted:**	18-May-16
Quantitation File:	Initial Calibration	**Date Analysed:**	18-May-16
Directory:	1816PAHMS20\	**Matrix:**	Soil
Dilution:	1.0	**Ext Method:**	Ultrasonic

Accredited?: No

Target Compounds	CAS #	R.T. (min)	Concentration mg/kg	% Fit	Accr. code
Naphthalene	91-20-3	-	< 0.09	-	**N**
Acenaphthylene	208-96-8	-	< 0.09	-	N
Acenaphthene	83-32-9	-	< 0.09	-	N
Fluorene	86-73-7	-	< 0.09	-	N
Phenanthrene	85-01-8	-	< 0.09	-	N
Anthracene	120-12-7	-	< 0.09	-	N
Fluoranthene	206-44-0	-	< 0.09	-	N
Pyrene	129-00-0	-	< 0.09	-	N
Benzo[a]anthracene	56-55-3	-	< 0.09	-	N
Chrysene	218-01-9	-	< 0.09	-	N
Benzo[b]fluoranthene	205-99-2	-	< 0.09	-	N
Benzo[k]fluoranthene	207-08-9	-	< 0.09	-	N
Benzo[a]pyrene	50-32-8	-	< 0.09	-	N
Indeno[1,2,3-cd]pyrene	193-39-5	-	< 0.09	-	N
Dibenzo[a,h]anthracene	53-70-3	-	< 0.09	-	N
Benzo[g,h,i]perylene	191-24-2	-	< 0.09	-	N
Coronene	191-07-1	-	< 0.09	-	N
Total (USEPA16) PAHs	-	-	< 1.45	-	N

* Denotes compound is not UKAS accredited

"M" denotes that % fit has been manually interpreted

Internal Standards	% Area
1,4-Dichlorobenzene-d4	NA
Naphthalene-d8	95
Acenaphthene-d10	94
Phenanthrene-d10	92
Chrysene-d12	82
Perylene-d12	78

Surrogates	% Rec
Nitrobenzene-d5	NA
2-Fluorobiphenyl	98
Terphenyl-d14	75

Concentrations are reported on a dry weight basis.

The Total PAH result is the sum of non-rounded individual PAH results and therefore may differ to the sum of the rounded individual PAH results printed above. By convention, where any one or more result is a "less than", the total is expressed as a "less than" and includes the "less than" concentration within the total.

Polycyclic Aromatic Hydrocarbons
GC/MS (SIM)

Customer and Site Details:	Ramboll Environ: Zeon Chemicals ESA		
Sample Details:	WS19 0.65	**Job Number:**	S16_3918M
LIMS ID Number:	CL1616340	**Date Booked in:**	13-May-16
QC Batch Number:	160593	**Date Extracted:**	18-May-16
Quantitation File:	Initial Calibration	**Date Analysed:**	18-May-16
Directory:	1816PAHMS20\	**Matrix:**	Soil
Dilution:	1.0	**Ext Method:**	Ultrasonic

Accredited?: Yes

Target Compounds	CAS #	R.T. (min)	Concentration mg/kg	% Fit	Accr. code
Naphthalene	91-20-3	2.79	0.23	98	**UM**
Acenaphthylene	208-96-8	-	< 0.11	-	U
Acenaphthene	83-32-9	3.94	0.19	71	UM
Fluorene	86-73-7	4.27	0.15	90	UM
Phenanthrene	85-01-8	5.00	0.50	98	UM
Anthracene	120-12-7	5.04	0.15	98	U
Fluoranthene	206-44-0	6.20	0.86	76	UM
Pyrene	129-00-0	6.46	0.80	73	UM
Benzo[a]anthracene	56-55-3	8.06	0.66	76	UM
Chrysene	218-01-9	8.11	0.61	54	UM
Benzo[b]fluoranthene	205-99-2	9.55	1.10	80	UM
Benzo[k]fluoranthene	207-08-9	9.58	0.42	81	UM
Benzo[a]pyrene	50-32-8	9.96	0.71	61	UM
Indeno[1,2,3-cd]pyrene	193-39-5	11.31	0.64	64	UM
Dibenzo[a,h]anthracene	53-70-3	11.35	0.16	M	UM
Benzo[g,h,i]perylene	191-24-2	11.59	0.64	83	UM
Coronene	191-07-1 *	13.21	0.34	88	N
Total (USEPA16) PAHs	-	-	< 8.01	-	N

* Denotes compound is not UKAS accredited

"M" denotes that % fit has been manually interpreted

Internal Standards	% Area
1,4-Dichlorobenzene-d4	NA
Naphthalene-d8	96
Acenaphthene-d10	100
Phenanthrene-d10	99
Chrysene-d12	100
Perylene-d12	109

Surrogates	% Rec
Nitrobenzene-d5	NA
2-Fluorobiphenyl	84
Terphenyl-d14	65

Concentrations are reported on a dry weight basis.

The Total PAH result is the sum of non-rounded individual PAH results and therefore may differ to the sum of the rounded individual PAH results printed above. By convention, where any one or more result is a "less than", the total is expressed as a "less than" and includes the "less than" concentration within the total.

Polycyclic Aromatic Hydrocarbons
GC/MS (SIM)

Customer and Site Details:	Ramboll Environ: Zeon Chemicals ESA		
Sample Details:	WS21 0.75	**Job Number:**	S16_3918M
LIMS ID Number:	CL1616341	**Date Booked in:**	13-May-16
QC Batch Number:	160593	**Date Extracted:**	18-May-16
Quantitation File:	Initial Calibration	**Date Analysed:**	18-May-16
Directory:	1816PAHMS20\	**Matrix:**	Soil
Dilution:	1.0	**Ext Method:**	Ultrasonic

Accredited?: Yes

Target Compounds	CAS #	R.T. (min)	Concentration mg/kg	% Fit	Accr. code
Naphthalene	91-20-3	-	< 0.10	-	**UM**
Acenaphthylene	208-96-8	-	< 0.10	-	U
Acenaphthene	83-32-9	-	< 0.10	-	UM
Fluorene	86-73-7	-	< 0.10	-	UM
Phenanthrene	85-01-8	5.00	0.10	97	UM
Anthracene	120-12-7	-	< 0.10	-	U
Fluoranthene	206-44-0	6.19	0.31	89	UM
Pyrene	129-00-0	6.45	0.27	96	UM
Benzo[a]anthracene	56-55-3	8.05	0.29	82	UM
Chrysene	218-01-9	8.10	0.32	86	UM
Benzo[b]fluoranthene	205-99-2	9.54	0.45	95	UM
Benzo[k]fluoranthene	207-08-9	9.57	0.17	96	UM
Benzo[a]pyrene	50-32-8	9.95	0.33	96	UM
Indeno[1,2,3-cd]pyrene	193-39-5	11.30	0.23	98	UM
Dibenzo[a,h]anthracene	53-70-3	-	< 0.10	-	UM
Benzo[g,h,i]perylene	191-24-2	11.58	0.19	99	UM
Coronene	191-07-1 *	-	< 0.10	-	N
Total (USEPA16) PAHs	-	-	< 3.27	-	N

* Denotes compound is not UKAS accredited

"M" denotes that % fit has been manually interpreted

Internal Standards	% Area
1,4-Dichlorobenzene-d4	NA
Naphthalene-d8	95
Acenaphthene-d10	97
Phenanthrene-d10	96
Chrysene-d12	89
Perylene-d12	91

Surrogates	% Rec
Nitrobenzene-d5	NA
2-Fluorobiphenyl	95
Terphenyl-d14	73

Concentrations are reported on a dry weight basis.

The Total PAH result is the sum of non-rounded individual PAH results and therefore may differ to the sum of the rounded individual PAH results printed above. By convention, where any one or more result is a "less than", the total is expressed as a "less than" and includes the "less than" concentration within the total.

Polycyclic Aromatic Hydrocarbons
GC/MS (SIM)

Customer and Site Details:	Ramboll Environ: Zeon Chemicals ESA		
Sample Details:	WS21 1.40	**Job Number:**	S16_3918M
LIMS ID Number:	CL1616342	**Date Booked in:**	13-May-16
QC Batch Number:	160593	**Date Extracted:**	18-May-16
Quantitation File:	Initial Calibration	**Date Analysed:**	18-May-16
Directory:	1816PAHMS20\	**Matrix:**	Soil
Dilution:	1.0	**Ext Method:**	Ultrasonic

Accredited?: Yes

Target Compounds	CAS #	R.T. (min)	Concentration mg/kg	% Fit	Accr. code
Naphthalene	91-20-3	-	< 0.10	-	**UM**
Acenaphthylene	208-96-8	-	< 0.10	-	U
Acenaphthene	83-32-9	-	< 0.10	-	UM
Fluorene	86-73-7	-	< 0.10	-	UM
Phenanthrene	85-01-8	-	< 0.10	-	UM
Anthracene	120-12-7	-	< 0.10	-	U
Fluoranthene	206-44-0	-	< 0.10	-	UM
Pyrene	129-00-0	-	< 0.10	-	UM
Benzo[a]anthracene	56-55-3	-	< 0.10	-	UM
Chrysene	218-01-9	-	< 0.10	-	UM
Benzo[b]fluoranthene	205-99-2	-	< 0.10	-	UM
Benzo[k]fluoranthene	207-08-9	-	< 0.10	-	UM
Benzo[a]pyrene	50-32-8	-	< 0.10	-	UM
Indeno[1,2,3-cd]pyrene	193-39-5	-	< 0.10	-	UM
Dibenzo[a,h]anthracene	53-70-3	-	< 0.10	-	UM
Benzo[g,h,i]perylene	191-24-2	-	< 0.10	-	UM
Coronene	191-07-1 *	-	< 0.10	-	N
Total (USEPA16) PAHs	-	-	< 1.60	-	N

* Denotes compound is not UKAS accredited

"M" denotes that % fit has been manually interpreted

Internal Standards	% Area
1,4-Dichlorobenzene-d4	NA
Naphthalene-d8	88
Acenaphthene-d10	90
Phenanthrene-d10	89
Chrysene-d12	83
Perylene-d12	87

Surrogates	% Rec
Nitrobenzene-d5	NA
2-Fluorobiphenyl	96
Terphenyl-d14	74

Concentrations are reported on a dry weight basis.

The Total PAH result is the sum of non-rounded individual PAH results and therefore may differ to the sum of the rounded individual PAH results printed above. By convention, where any one or more result is a "less than", the total is expressed as a "less than" and includes the "less than" concentration within the total.

Polycyclic Aromatic Hydrocarbons
GC/MS (SIM)

Customer and Site Details:	Ramboll Environ: Zeon Chemicals ESA		
Sample Details:	WS11 0.30 (NVM)	**Job Number:**	S16_3918M
LIMS ID Number:	CL1616343	**Date Booked in:**	13-May-16
QC Batch Number:	160593	**Date Extracted:**	18-May-16
Quantitation File:	Initial Calibration	**Date Analysed:**	18-May-16
Directory:	1816PAHMS20\	**Matrix:**	Soil
Dilution:	1.0	**Ext Method:**	Ultrasonic

Accredited?: No

Target Compounds	CAS #	R.T. (min)	Concentration mg/kg	% Fit	Accr. code
Naphthalene	91-20-3	-	< 0.09	-	**N**
Acenaphthylene	208-96-8	-	< 0.09	-	N
Acenaphthene	83-32-9	-	< 0.09	-	N
Fluorene	86-73-7	-	< 0.09	-	N
Phenanthrene	85-01-8	-	< 0.09	-	N
Anthracene	120-12-7	-	< 0.09	-	N
Fluoranthene	206-44-0	-	< 0.09	-	N
Pyrene	129-00-0	-	< 0.09	-	N
Benzo[a]anthracene	56-55-3	-	< 0.09	-	N
Chrysene	218-01-9	-	< 0.09	-	N
Benzo[b]fluoranthene	205-99-2	-	< 0.09	-	N
Benzo[k]fluoranthene	207-08-9	-	< 0.09	-	N
Benzo[a]pyrene	50-32-8	-	< 0.09	-	N
Indeno[1,2,3-cd]pyrene	193-39-5	-	< 0.09	-	N
Dibenzo[a,h]anthracene	53-70-3	-	< 0.09	-	N
Benzo[g,h,i]perylene	191-24-2	-	< 0.09	-	N
Coronene	191-07-1	-	< 0.09	-	N
Total (USEPA16) PAHs	-	-	< 1.46	-	N

* Denotes compound is not UKAS accredited

"M" denotes that % fit has been manually interpreted

Internal Standards	% Area
1,4-Dichlorobenzene-d4	NA
Naphthalene-d8	92
Acenaphthene-d10	95
Phenanthrene-d10	94
Chrysene-d12	86
Perylene-d12	88

Surrogates	% Rec
Nitrobenzene-d5	NA
2-Fluorobiphenyl	99
Terphenyl-d14	76

Concentrations are reported on a dry weight basis.

The Total PAH result is the sum of non-rounded individual PAH results and therefore may differ to the sum of the rounded individual PAH results printed above. By convention, where any one or more result is a "less than", the total is expressed as a "less than" and includes the "less than" concentration within the total.

Polycyclic Aromatic Hydrocarbons
GC/MS (SIM)

Customer and Site Details:	Ramboll Environ: Zeon Chemicals ESA		
Sample Details:	WS12 0.30 (NVM)	**Job Number:**	S16_3918M
LIMS ID Number:	CL1616344	**Date Booked in:**	13-May-16
QC Batch Number:	160593	**Date Extracted:**	18-May-16
Quantitation File:	Initial Calibration	**Date Analysed:**	18-May-16
Directory:	1816PAHMS20\	**Matrix:**	Soil
Dilution:	1.0	**Ext Method:**	Ultrasonic

Accredited?: No

Target Compounds	CAS #	R.T. (min)	Concentration mg/kg	% Fit	Accr. code
Naphthalene	91-20-3	-	< 0.09	-	**N**
Acenaphthylene	208-96-8	-	< 0.09	-	N
Acenaphthene	83-32-9	-	< 0.09	-	N
Fluorene	86-73-7	-	< 0.09	-	N
Phenanthrene	85-01-8	-	< 0.09	-	N
Anthracene	120-12-7	-	< 0.09	-	N
Fluoranthene	206-44-0	6.19	0.09	96	N
Pyrene	129-00-0	6.45	0.10	96	N
Benzo[a]anthracene	56-55-3	-	< 0.09	-	N
Chrysene	218-01-9	8.10	0.13	54	N
Benzo[b]fluoranthene	205-99-2	9.54	0.13	73	N
Benzo[k]fluoranthene	207-08-9	-	< 0.09	-	N
Benzo[a]pyrene	50-32-8	-	< 0.09	-	N
Indeno[1,2,3-cd]pyrene	193-39-5	-	< 0.09	-	N
Dibenzo[a,h]anthracene	53-70-3	-	< 0.09	-	N
Benzo[g,h,i]perylene	191-24-2	-	< 0.09	-	N
Coronene	191-07-1	-	< 0.09	-	N
Total (USEPA16) PAHs	-	-	< 1.54	-	N

* Denotes compound is not UKAS accredited

"M" denotes that % fit has been manually interpreted

Internal Standards	% Area
1,4-Dichlorobenzene-d4	NA
Naphthalene-d8	96
Acenaphthene-d10	98
Phenanthrene-d10	99
Chrysene-d12	93
Perylene-d12	95

Surrogates	% Rec
Nitrobenzene-d5	NA
2-Fluorobiphenyl	97
Terphenyl-d14	74

Concentrations are reported on a dry weight basis.

The Total PAH result is the sum of non-rounded individual PAH results and therefore may differ to the sum of the rounded individual PAH results printed above. By convention, where any one or more result is a "less than", the total is expressed as a "less than" and includes the "less than" concentration within the total.

Semi-Volatile Organic Compounds

Accredited?: Yes

Customer and Site Details:	Ramboll Environ: Zeon Chemicals ESA			**Matrix:**	Soil	**QC Batch Number:**	110
Sample Details:	WS18 1.60	**Date Booked in:**	13-May-16	**Ext Method:**	Ultrasonic	**Multiplier:**	0.2
LIMS ID Number:	CL1616335	**Date Extracted:**	17/5	**Operator:**		**Dilution Factor:**	1
Job Number:	S16_3918M	**Date Analysed:**	20-May-16	**Directory/Quant File:**	052016.GC11\	**GPC (Y/N)**	N

Target Compounds	CAS #	R.T. (min)	Concentration mg/kg	% Fit	Accr. code
Phenol	108-95-2	-	< 0.1	-	U
bis(2-Chloroethyl)ether	111-44-4	-	< 0.1	-	U
2-Chlorophenol	95-57-8	-	< 0.1	-	U
1,3-Dichlorobenzene	541-73-1	-	< 0.1	-	U
1,4-Dichlorobenzene	106-46-7	-	< 0.1	-	U
Benzyl alcohol	100-51-6	-	< 0.7	-	U
1,2-Dichlorobenzene	95-50-1	-	< 0.1	-	U
2-Methylphenol	95-48-7	-	< 0.1	-	U
bis(2-Chloroisopropyl)ether	108-60-1	-	< 0.7	-	U
Hexachloroethane	67-72-1	-	< 0.1	-	U
N-Nitroso-di-n-propylamine	621-64-7*	-	< 1.3	-	N
3- & 4-Methylphenol	108-39-4/106-44-5	-	< 0.1	-	U
Nitrobenzene	98-95-3	-	< 0.7	-	U
Isophorone	78-59-1*	-	< 0.1	-	N
2-Nitrophenol	88-75-5	-	< 0.1	-	U
2,4-Dimethylphenol	105-67-9	-	< 0.1	-	U
Benzoic Acid	65-85-0*	-	< 0.7	-	N
bis(2-Chloroethoxy)methane	111-91-1	-	< 0.1	-	U
2,4-Dichlorophenol	120-83-2	-	< 0.1	-	U
1,2,4-Trichlorobenzene	120-82-1*	-	< 0.1	-	N
Naphthalene	91-20-3	-	< 0.1	-	U
4-Chlorophenol	106-48-9	-	< 0.7	-	U
4-Chloroaniline	106-47-8*	-	< 0.7	-	N
Hexachlorobutadiene	87-68-3*	-	< 0.1	-	N
4-Chloro-3-methylphenol	59-50-7	-	< 0.1	-	U
2-Methylnaphthalene	91-57-6	-	< 0.1	-	U
1-Methylnaphthalene	90-12-0	-	< 0.1	-	U
Hexachlorocyclopentadiene	77-47-4*	-	< 0.1	-	N
2,4,6-Trichlorophenol	88-06-2	-	< 0.1	-	U
2,4,5-Trichlorophenol	95-95-4	-	< 0.1	-	U
2-Chloronaphthalene	91-58-7	-	< 0.1	-	U
Biphenyl	92-52-4	-	< 0.1	-	U
Diphenyl ether	101-84-8	-	< 0.1	-	U
2-Nitroaniline	88-74-4*	-	< 0.7	-	N
Acenaphthylene	208-96-8	-	< 0.1	-	U
Dimethylphthalate	131-11-3	-	< 0.1	-	U
2,6-Dinitrotoluene	606-20-2	-	< 0.7	-	U
Acenaphthene	83-32-9	-	< 0.1	-	U
3-Nitroaniline	99-09-2*	-	< 20.3	-	N

Target Compounds	CAS #	R.T.	Concentration mg/kg	% Fit	Accr. code
2,4-Dinitrophenol	51-28-5*	-	< 0.7	-	N
Dibenzofuran	132-64-9	-	< 0.1	-	U
4-Nitrophenol	100-02-7*	-	< 0.7	-	N
2,4-Dinitrotoluene	121-14-2	-	< 0.3	-	U
Fluorene	86-73-7	-	< 0.1	-	U
Diethylphthalate	84-66-2	-	< 0.1	-	U
4-Chlorophenyl-phenylether	7005-72-3	-	< 0.1	-	U
4,6-Dinitro-2-methylphenol	534-52-1*	-	< 0.3	-	N
4-Nitroaniline	100-01-6*	-	< 0.8	-	N
N-Nitrosodiphenylamine	86-30-6*	-	< 0.1	-	N
4-Bromophenyl-phenylether	101-55-3	-	< 0.1	-	U
Hexachlorobenzene	118-74-1	-	< 0.1	-	U
Pentachlorophenol	87-86-5*	-	< 0.7	-	N
Phenanthrene	85-01-8	-	< 0.1	-	U
Anthracene	120-12-7	-	< 0.1	-	U
Di-n-butylphthalate	84-74-2	-	< 0.1	-	U
Fluoranthene	206-44-0	-	< 0.3	-	U
Pyrene	129-00-0	-	< 0.3	-	U
Butylbenzylphthalate	85-68-7	-	< 0.3	-	U
Benzo[a]anthracene	56-55-3	-	< 0.3	-	U
Chrysene	218-01-9	-	< 0.3	-	U
3,3'-Dichlorobenzidine	91-94-1*	-	< 0.7	-	N
bis(2-Ethylhexyl)phthalate	117-81-7	-	< 0.3	-	U
Di-n-octylphthalate	117-84-0	-	< 0.3	-	U
Benzo[b]fluoranthene	205-99-2	-	< 0.3	-	U
Benzo[k]fluoranthene	207-08-9	-	< 0.3	-	U
Benzo[a]pyrene	50-32-8	-	< 0.3	-	U
Indeno[1,2,3-cd]pyrene	193-39-5	-	< 0.7	-	U
Dibenzo[a,h]anthracene	53-70-3	-	< 0.7	-	U
Benzo[g,h,i]perylene	191-24-2	-	< 0.7	-	U
Coronene	191-07-1*	-	< 0.4	-	N

Internal Standards	% Area
1,4-Dichlorobenzene-d4	101
Naphthalene-d8	103
Acenaphthene-d10	106
Phenanthrene-d10	108
Chrysene-d12	110
Perylene-d12	114

Surrogates	% Rec
2-Fluorophenol	73
Phenol-d5	92
Nitrobenzene-d5	82
2-Fluorobiphenyl	87
2,4,6-Tribromophenol	89
Terphenyl-d14	94

This analysis was conducted on an 'As Received' basis.

Concentrations are reported on a dry weight basis.

Where individual results are flagged see report notes for status.
Results corrected to dry weight at 105°C where appropriate, in accordance with the MCERTS standard.

Semi-Volatile Organic Compounds

Accredited?: Yes

Customer and Site Details:	Ramboll Environ: Zeon Chemicals ESA			**Matrix:**	Soil	**QC Batch Number:**	110
Sample Details:	WS20 0.30	**Date Booked in:**	13-May-16	**Ext Method:**	Ultrasonic	**Multiplier:**	0.2
LIMS ID Number:	CL1616336	**Date Extracted:**	17/5	**Operator:**		**Dilution Factor:**	1
Job Number:	S16_3918M	**Date Analysed:**	20-May-16	**Directory/Quant File:**	052016.GC11\	**GPC (Y/N)**	N

Target Compounds	CAS #	R.T. (min)	Concentration mg/kg	% Fit	Accr. code
Phenol	108-95-2	-	< 0.1	-	U
bis(2-Chloroethyl)ether	111-44-4	-	< 0.1	-	U
2-Chlorophenol	95-57-8	-	< 0.1	-	U
1,3-Dichlorobenzene	541-73-1	-	< 0.1	-	U
1,4-Dichlorobenzene	106-46-7	-	< 0.1	-	U
Benzyl alcohol	100-51-6	-	< 0.6	-	U
1,2-Dichlorobenzene	95-50-1	-	< 0.1	-	U
2-Methylphenol	95-48-7	-	< 0.1	-	U
bis(2-Chloroisopropyl)ether	108-60-1	-	< 0.6	-	U
Hexachloroethane	67-72-1	-	< 0.1	-	U
N-Nitroso-di-n-propylamine	621-64-7*	-	< 1.1	-	N
3- & 4-Methylphenol	108-39-4/106-44-5	-	< 0.1	-	U
Nitrobenzene	98-95-3	-	< 0.6	-	U
Isophorone	78-59-1*	-	< 0.1	-	N
2-Nitrophenol	88-75-5	-	< 0.1	-	U
2,4-Dimethylphenol	105-67-9	-	< 0.1	-	U
Benzoic Acid	65-85-0*	-	< 0.6	-	N
bis(2-Chloroethoxy)methane	111-91-1	-	< 0.1	-	U
2,4-Dichlorophenol	120-83-2	-	< 0.1	-	U
1,2,4-Trichlorobenzene	120-82-1*	-	< 0.1	-	N
Naphthalene	91-20-3	-	< 0.1	-	U
4-Chlorophenol	106-48-9	-	< 0.6	-	U
4-Chloroaniline	106-47-8*	-	< 0.6	-	N
Hexachlorobutadiene	87-68-3*	-	< 0.1	-	N
4-Chloro-3-methylphenol	59-50-7	-	< 0.1	-	U
2-Methylnaphthalene	91-57-6	-	< 0.1	-	U
1-Methylnaphthalene	90-12-0	-	< 0.1	-	U
Hexachlorocyclopentadiene	77-47-4*	-	< 0.1	-	N
2,4,6-Trichlorophenol	88-06-2	-	< 0.1	-	U
2,4,5-Trichlorophenol	95-95-4	-	< 0.1	-	U
2-Chloronaphthalene	91-58-7	-	< 0.1	-	U
Biphenyl	92-52-4	-	< 0.1	-	U
Diphenyl ether	101-84-8	-	< 0.1	-	U
2-Nitroaniline	88-74-4*	-	< 0.6	-	N
Acenaphthylene	208-96-8	-	< 0.1	-	U
Dimethylphthalate	131-11-3	-	< 0.1	-	U
2,6-Dinitrotoluene	606-20-2	-	< 0.6	-	U
Acenaphthene	83-32-9	-	< 0.1	-	U
3-Nitroaniline	99-09-2*	-	< 18.5	-	N

Target Compounds	CAS #	R.T.	Concentration mg/kg	% Fit	Accr. code
2,4-Dinitrophenol	51-28-5*	-	< 0.6	-	N
Dibenzofuran	132-64-9	-	< 0.1	-	U
4-Nitrophenol	100-02-7*	-	< 0.6	-	N
2,4-Dinitrotoluene	121-14-2	-	< 0.3	-	U
Fluorene	86-73-7	-	< 0.1	-	U
Diethylphthalate	84-66-2	-	< 0.1	-	U
4-Chlorophenyl-phenylether	7005-72-3	-	< 0.1	-	U
4,6-Dinitro-2-methylphenol	534-52-1*	-	< 0.3	-	N
4-Nitroaniline	100-01-6*	-	< 0.8	-	N
N-Nitrosodiphenylamine	86-30-6*	-	< 0.1	-	N
4-Bromophenyl-phenylether	101-55-3	-	< 0.1	-	U
Hexachlorobenzene	118-74-1	-	< 0.1	-	U
Pentachlorophenol	87-86-5*	-	< 0.6	-	N
Phenanthrene	85-01-8	-	< 0.1	-	U
Anthracene	120-12-7	-	< 0.1	-	U
Di-n-butylphthalate	84-74-2	-	< 0.1	-	U
Fluoranthene	206-44-0	-	< 0.3	-	U
Pyrene	129-00-0	-	< 0.3	-	U
Butylbenzylphthalate	85-68-7	-	< 0.3	-	U
Benzo[a]anthracene	56-55-3	-	< 0.3	-	U
Chrysene	218-01-9	-	< 0.3	-	U
3,3'-Dichlorobenzidine	91-94-1*	-	< 0.6	-	N
bis(2-Ethylhexyl)phthalate	117-81-7	-	< 0.3	-	U
Di-n-octylphthalate	117-84-0	-	< 0.3	-	U
Benzo[b]fluoranthene	205-99-2	-	< 0.3	-	U
Benzo[k]fluoranthene	207-08-9	-	< 0.3	-	U
Benzo[a]pyrene	50-32-8	-	< 0.3	-	U
Indeno[1,2,3-cd]pyrene	193-39-5	-	< 0.6	-	U
Dibenzo[a,h]anthracene	53-70-3	-	< 0.6	-	U
Benzo[g,h,i]perylene	191-24-2	-	< 0.6	-	U
Coronene	191-07-1*	-	< 0.4	-	N

Internal Standards	% Area
1,4-Dichlorobenzene-d4	110
Naphthalene-d8	111
Acenaphthene-d10	112
Phenanthrene-d10	115
Chrysene-d12	124
Perylene-d12	131

Surrogates	% Rec
2-Fluorophenol	90
Phenol-d5	97
Nitrobenzene-d5	89
2-Fluorobiphenyl	93
2,4,6-Tribromophenol	94
Terphenyl-d14	92

This analysis was conducted on an 'As Received' basis.

Concentrations are reported on a dry weight basis.

Where individual results are flagged see report notes for status.
Results corrected to dry weight at 105°C where appropriate, in accordance with the MCERTS standard.

Semi-Volatile Organic Compounds

Accredited?: Yes

Customer and Site Details:	Ramboll Environ: Zeon Chemicals ESA			**Matrix:**	Soil	**QC Batch Number:**	110
Sample Details:	WS20 1.80	**Date Booked in:**	13-May-16	**Ext Method:**	Ultrasonic	**Multiplier:**	0.2
LIMS ID Number:	CL1616338	**Date Extracted:**	17/5	**Operator:**		**Dilution Factor:**	1
Job Number:	S16_3918M	**Date Analysed:**	20-May-16	**Directory/Quant File:**	052016.GC11\	**GPC (Y/N)**	N

Target Compounds	CAS #	R.T. (min)	Concentration mg/kg	% Fit	Accr. code
Phenol	108-95-2	-	< 0.1	-	U
bis(2-Chloroethyl)ether	111-44-4	-	< 0.1	-	U
2-Chlorophenol	95-57-8	-	< 0.1	-	U
1,3-Dichlorobenzene	541-73-1	-	< 0.1	-	U
1,4-Dichlorobenzene	106-46-7	-	< 0.1	-	U
Benzyl alcohol	100-51-6	-	< 0.6	-	U
1,2-Dichlorobenzene	95-50-1	-	< 0.1	-	U
2-Methylphenol	95-48-7	-	< 0.1	-	U
bis(2-Chloroisopropyl)ether	108-60-1	-	< 0.6	-	U
Hexachloroethane	67-72-1	-	< 0.1	-	U
N-Nitroso-di-n-propylamine	621-64-7*	-	< 1.1	-	N
3- & 4-Methylphenol	108-39-4/106-44-5	-	< 0.1	-	U
Nitrobenzene	98-95-3	-	< 0.6	-	U
Isophorone	78-59-1*	-	< 0.1	-	N
2-Nitrophenol	88-75-5	-	< 0.1	-	U
2,4-Dimethylphenol	105-67-9	-	< 0.1	-	U
Benzoic Acid	65-85-0*	-	< 0.6	-	N
bis(2-Chloroethoxy)methane	111-91-1	-	< 0.1	-	U
2,4-Dichlorophenol	120-83-2	-	< 0.1	-	U
1,2,4-Trichlorobenzene	120-82-1*	-	< 0.1	-	N
Naphthalene	91-20-3	-	< 0.1	-	U
4-Chlorophenol	106-48-9	-	< 0.6	-	U
4-Chloroaniline	106-47-8*	-	< 0.6	-	N
Hexachlorobutadiene	87-68-3*	-	< 0.1	-	N
4-Chloro-3-methylphenol	59-50-7	-	< 0.1	-	U
2-Methylnaphthalene	91-57-6	-	< 0.1	-	U
1-Methylnaphthalene	90-12-0	-	< 0.1	-	U
Hexachlorocyclopentadiene	77-47-4*	-	< 0.1	-	N
2,4,6-Trichlorophenol	88-06-2	-	< 0.1	-	U
2,4,5-Trichlorophenol	95-95-4	-	< 0.1	-	U
2-Chloronaphthalene	91-58-7	-	< 0.1	-	U
Biphenyl	92-52-4	-	< 0.1	-	U
Diphenyl ether	101-84-8	-	< 0.1	-	U
2-Nitroaniline	88-74-4*	-	< 0.6	-	N
Acenaphthylene	208-96-8	-	< 0.1	-	U
Dimethylphthalate	131-11-3	-	< 0.1	-	U
2,6-Dinitrotoluene	606-20-2	-	< 0.6	-	U
Acenaphthene	83-32-9	-	< 0.1	-	U
3-Nitroaniline	99-09-2*	-	< 18.1	-	N

Target Compounds	CAS #	R.T.	Concentration mg/kg	% Fit	Accr. code
2,4-Dinitrophenol	51-28-5*	-	< 0.6	-	N
Dibenzofuran	132-64-9	-	< 0.1	-	U
4-Nitrophenol	100-02-7*	-	< 0.6	-	N
2,4-Dinitrotoluene	121-14-2	-	< 0.2	-	U
Fluorene	86-73-7	-	< 0.1	-	U
Diethylphthalate	84-66-2	-	< 0.1	-	U
4-Chlorophenyl-phenylether	7005-72-3	-	< 0.1	-	U
4,6-Dinitro-2-methylphenol	534-52-1*	-	< 0.2	-	N
4-Nitroaniline	100-01-6*	-	< 0.7	-	N
N-Nitrosodiphenylamine	86-30-6*	-	< 0.1	-	N
4-Bromophenyl-phenylether	101-55-3	-	< 0.1	-	U
Hexachlorobenzene	118-74-1	-	< 0.1	-	U
Pentachlorophenol	87-86-5*	-	< 0.6	-	N
Phenanthrene	85-01-8	-	< 0.1	-	U
Anthracene	120-12-7	-	< 0.1	-	U
Di-n-butylphthalate	84-74-2	-	< 0.1	-	U
Fluoranthene	206-44-0	-	< 0.2	-	U
Pyrene	129-00-0	-	< 0.2	-	U
Butylbenzylphthalate	85-68-7	-	< 0.2	-	U
Benzo[a]anthracene	56-55-3	-	< 0.2	-	U
Chrysene	218-01-9	-	< 0.2	-	U
3,3'-Dichlorobenzidine	91-94-1*	-	< 0.6	-	N
bis(2-Ethylhexyl)phthalate	117-81-7	-	< 0.2	-	U
Di-n-octylphthalate	117-84-0	-	< 0.2	-	U
Benzo[b]fluoranthene	205-99-2	-	< 0.2	-	U
Benzo[k]fluoranthene	207-08-9	-	< 0.2	-	U
Benzo[a]pyrene	50-32-8	-	< 0.2	-	U
Indeno[1,2,3-cd]pyrene	193-39-5	-	< 0.6	-	U
Dibenzo[a,h]anthracene	53-70-3	-	< 0.6	-	U
Benzo[g,h,i]perylene	191-24-2	-	< 0.6	-	U
Coronene	191-07-1*	-	< 0.4	-	N

Internal Standards	% Area
1,4-Dichlorobenzene-d4	94
Naphthalene-d8	96
Acenaphthene-d10	97
Phenanthrene-d10	98
Chrysene-d12	102
Perylene-d12	101

Surrogates	% Rec
2-Fluorophenol	100
Phenol-d5	89
Nitrobenzene-d5	84
2-Fluorobiphenyl	92
2,4,6-Tribromophenol	82
Terphenyl-d14	97

This analysis was conducted on an 'As Received' basis.

Concentrations are reported on a dry weight basis.

Where individual results are flagged see report notes for status.
Results corrected to dry weight at 105°C where appropriate, in accordance with the MCERTS standard.

Semi-Volatile Organic Compounds

Accredited?: No

Customer and Site Details:	Ramboll Environ: Zeon Chemicals ESA			**Matrix:**	Soil	**QC Batch Number:**	110
Sample Details:	WS20 2.50 (NVM)	**Date Booked in:**	13-May-16	**Ext Method:**	Ultrasonic	**Multiplier:**	0.2
LIMS ID Number:	CL1616339	**Date Extracted:**	17/5	**Operator:**		**Dilution Factor:**	1
Job Number:	S16_3918M	**Date Analysed:**	20-May-16	**Directory/Quant File:**	052016.GC11\	**GPC (Y/N)**	N

Target Compounds	CAS #	R.T. (min)	Concentration mg/kg	% Fit	Accr. code
Phenol	108-95-2	-	< 0.1	-	N
bis(2-Chloroethyl)ether	111-44-4	-	< 0.1	-	N
2-Chlorophenol	95-57-8	-	< 0.1	-	N
1,3-Dichlorobenzene	541-73-1	-	< 0.1	-	N
1,4-Dichlorobenzene	106-46-7	-	< 0.1	-	N
Benzyl alcohol	100-51-6	-	< 0.6	-	N
1,2-Dichlorobenzene	95-50-1	-	< 0.1	-	N
2-Methylphenol	95-48-7	-	< 0.1	-	N
bis(2-Chloroisopropyl)ether	108-60-1	-	< 0.6	-	N
Hexachloroethane	67-72-1	-	< 0.1	-	N
N-Nitroso-di-n-propylamine	621-64-7	-	< 1.0	-	N
3- & 4-Methylphenol	108-39-4/106-44-5	-	< 0.1	-	N
Nitrobenzene	98-95-3	-	< 0.6	-	N
Isophorone	78-59-1	-	< 0.1	-	N
2-Nitrophenol	88-75-5	-	< 0.1	-	N
2,4-Dimethylphenol	105-67-9	-	< 0.1	-	N
Benzoic Acid	65-85-0	-	< 0.6	-	N
bis(2-Chloroethoxy)methane	111-91-1	-	< 0.1	-	N
2,4-Dichlorophenol	120-83-2	-	< 0.1	-	N
1,2,4-Trichlorobenzene	120-82-1	-	< 0.1	-	N
Naphthalene	91-20-3	-	< 0.1	-	N
4-Chlorophenol	106-48-9	-	< 0.6	-	N
4-Chloroaniline	106-47-8	-	< 0.6	-	N
Hexachlorobutadiene	87-68-3	-	< 0.1	-	N
4-Chloro-3-methylphenol	59-50-7	-	< 0.1	-	N
2-Methylnaphthalene	91-57-6	-	< 0.1	-	N
1-Methylnaphthalene	90-12-0	-	< 0.1	-	N
Hexachlorocyclopentadiene	77-47-4	-	< 0.1	-	N
2,4,6-Trichlorophenol	88-06-2	-	< 0.1	-	N
2,4,5-Trichlorophenol	95-95-4	-	< 0.1	-	N
2-Chloronaphthalene	91-58-7	-	< 0.1	-	N
Biphenyl	92-52-4	-	< 0.1	-	N
Diphenyl ether	101-84-8	-	< 0.1	-	N
2-Nitroaniline	88-74-4	-	< 0.6	-	N
Acenaphthylene	208-96-8	-	< 0.1	-	N
Dimethylphthalate	131-11-3	-	< 0.1	-	N
2,6-Dinitrotoluene	606-20-2	-	< 0.6	-	N
Acenaphthene	83-32-9	-	< 0.1	-	N
3-Nitroaniline	99-09-2	-	< 16.4	-	N

Target Compounds	CAS #	R.T.	Concentration mg/kg	% Fit	Accr. code
2,4-Dinitrophenol	51-28-5	-	< 0.6	-	N
Dibenzofuran	132-64-9	-	< 0.1	-	N
4-Nitrophenol	100-02-7	-	< 0.6	-	N
2,4-Dinitrotoluene	121-14-2	-	< 0.2	-	N
Fluorene	86-73-7	-	< 0.1	-	N
Diethylphthalate	84-66-2	-	< 0.1	-	N
4-Chlorophenyl-phenylether	7005-72-3	-	< 0.1	-	N
4,6-Dinitro-2-methylphenol	534-52-1	-	< 0.2	-	N
4-Nitroaniline	100-01-6	-	< 0.7	-	N
N-Nitrosodiphenylamine	86-30-6	-	< 0.1	-	N
4-Bromophenyl-phenylether	101-55-3	-	< 0.1	-	N
Hexachlorobenzene	118-74-1	-	< 0.1	-	N
Pentachlorophenol	87-86-5	-	< 0.6	-	N
Phenanthrene	85-01-8	-	< 0.1	-	N
Anthracene	120-12-7	-	< 0.1	-	N
Di-n-butylphthalate	84-74-2	-	< 0.1	-	N
Fluoranthene	206-44-0	-	< 0.2	-	N
Pyrene	129-00-0	-	< 0.2	-	N
Butylbenzylphthalate	85-68-7	-	< 0.2	-	N
Benzo[a]anthracene	56-55-3	-	< 0.2	-	N
Chrysene	218-01-9	-	< 0.2	-	N
3,3'-Dichlorobenzidine	91-94-1	-	< 0.6	-	N
bis(2-Ethylhexyl)phthalate	117-81-7	-	< 0.2	-	N
Di-n-octylphthalate	117-84-0	-	< 0.2	-	N
Benzo[b]fluoranthene	205-99-2	-	< 0.2	-	N
Benzo[k]fluoranthene	207-08-9	-	< 0.2	-	N
Benzo[a]pyrene	50-32-8	-	< 0.2	-	N
Indeno[1,2,3-cd]pyrene	193-39-5	-	< 0.6	-	N
Dibenzo[a,h]anthracene	53-70-3	-	< 0.6	-	N
Benzo[g,h,i]perylene	191-24-2	-	< 0.6	-	N
Coronene	191-07-1*	-	< 0.3	-	N

Internal Standards	% Area
1,4-Dichlorobenzene-d4	103
Naphthalene-d8	106
Acenaphthene-d10	104
Phenanthrene-d10	107
Chrysene-d12	110
Perylene-d12	109

Surrogates	% Rec
2-Fluorophenol	113
Phenol-d5	78
Nitrobenzene-d5	84
2-Fluorobiphenyl	98
2,4,6-Tribromophenol	89
Terphenyl-d14	103

This analysis was conducted on an 'As Received' basis.

Concentrations are reported on a dry weight basis.

Where individual results are flagged see report notes for status.
Results corrected to dry weight at 105°C where appropriate, in accordance with the MCERTS standard.

Semi-Volatile Organic Compounds

Accredited?: Yes

Customer and Site Details:	Ramboll Environ: Zeon Chemicals ESA			**Matrix:**	Soil	**QC Batch Number:**	110
Sample Details:	WS19 0.65	**Date Booked in:**	13-May-16	**Ext Method:**	Ultrasonic	**Multiplier:**	1
LIMS ID Number:	CL1616340	**Date Extracted:**	17/5	**Operator:**		**Dilution Factor:**	5
Job Number:	S16_3918M	**Date Analysed:**	20-May-16	**Directory/Quant File:**	052016.GC11\	**GPC (Y/N)**	N

Target Compounds	CAS #	R.T. (min)	Concentration mg/kg	% Fit	Accr. code
Phenol	108-95-2	-	< 0.7	-	U
bis(2-Chloroethyl)ether	111-44-4	-	< 0.7	-	U
2-Chlorophenol	95-57-8	-	< 0.7	-	U
1,3-Dichlorobenzene	541-73-1	-	< 0.7	-	U
1,4-Dichlorobenzene	106-46-7	-	< 0.7	-	U
Benzyl alcohol	100-51-6	-	< 3.4	-	U
1,2-Dichlorobenzene	95-50-1	-	< 0.7	-	U
2-Methylphenol	95-48-7	-	< 0.7	-	U
bis(2-Chloroisopropyl)ether	108-60-1	-	< 3.4	-	U
Hexachloroethane	67-72-1	-	< 0.7	-	U
N-Nitroso-di-n-propylamine	621-64-7*	-	< 6.1	-	N
3- & 4-Methylphenol	108-39-4/106-44-5	3.12	10.8	88	U
Nitrobenzene	98-95-3	-	< 3.4	-	U
Isophorone	78-59-1*	-	< 0.7	-	N
2-Nitrophenol	88-75-5	-	< 0.7	-	U
2,4-Dimethylphenol	105-67-9	-	< 0.7	-	U
Benzoic Acid	65-85-0*	-	< 3.4	-	N
bis(2-Chloroethoxy)methane	111-91-1	-	< 0.7	-	U
2,4-Dichlorophenol	120-83-2	-	< 0.7	-	U
1,2,4-Trichlorobenzene	120-82-1*	-	< 0.7	-	N
Naphthalene	91-20-3	-	< 0.7	-	U
4-Chlorophenol	106-48-9	-	< 3.4	-	U
4-Chloroaniline	106-47-8*	-	< 3.4	-	N
Hexachlorobutadiene	87-68-3*	-	< 0.7	-	N
4-Chloro-3-methylphenol	59-50-7	-	< 0.7	-	U
2-Methylnaphthalene	91-57-6	-	< 0.7	-	U
1-Methylnaphthalene	90-12-0	-	< 0.7	-	U
Hexachlorocyclopentadiene	77-47-4*	-	< 0.7	-	N
2,4,6-Trichlorophenol	88-06-2	-	< 0.7	-	U
2,4,5-Trichlorophenol	95-95-4	-	< 0.7	-	U
2-Chloronaphthalene	91-58-7	-	< 0.7	-	U
Biphenyl	92-52-4	-	< 0.7	-	U
Diphenyl ether	101-84-8	-	< 0.7	-	U
2-Nitroaniline	88-74-4*	-	< 3.4	-	N
Acenaphthylene	208-96-8	-	< 0.7	-	U
Dimethylphthalate	131-11-3	-	< 0.7	-	U
2,6-Dinitrotoluene	606-20-2	-	< 3.4	-	U
Acenaphthene	83-32-9	-	< 0.7	-	U
3-Nitroaniline	99-09-2*	-	< 99.0	-	N

Target Compounds	CAS #	R.T.	Concentration mg/kg	% Fit	Accr. code
2,4-Dinitrophenol	51-28-5*	-	< 3.4	-	N
Dibenzofuran	132-64-9	-	< 0.7	-	U
4-Nitrophenol	100-02-7*	-	< 3.4	-	N
2,4-Dinitrotoluene	121-14-2	-	< 1.0	-	U
Fluorene	86-73-7	-	< 0.7	-	U
Diethylphthalate	84-66-2	-	< 0.7	-	U
4-Chlorophenyl-phenylether	7005-72-3	-	< 0.7	-	U
4,6-Dinitro-2-methylphenol	534-52-1*	-	< 1.0	-	N
4-Nitroaniline	100-01-6*	-	< 4.0	-	N
N-Nitrosodiphenylamine	86-30-6*	-	< 0.7	-	N
4-Bromophenyl-phenylether	101-55-3	-	< 0.7	-	U
Hexachlorobenzene	118-74-1	-	< 0.7	-	U
Pentachlorophenol	87-86-5*	-	< 3.4	-	N
Phenanthrene	85-01-8	-	< 0.7	-	U
Anthracene	120-12-7	-	< 0.7	-	U
Di-n-butylphthalate	84-74-2	-	< 0.7	-	U
Fluoranthene	206-44-0	-	< 1.0	-	U
Pyrene	129-00-0	-	< 1.0	-	U
Butylbenzylphthalate	85-68-7	-	< 1.0	-	U
Benzo[a]anthracene	56-55-3	-	< 1.0	-	U
Chrysene	218-01-9	-	< 1.0	-	U
3,3'-Dichlorobenzidine	91-94-1*	-	< 3.4	-	N
bis(2-Ethylhexyl)phthalate	117-81-7	7.88	4.0	88	U
Di-n-octylphthalate	117-84-0	-	< 1.0	-	U
Benzo[b]fluoranthene	205-99-2	-	< 1.0	-	U
Benzo[k]fluoranthene	207-08-9	-	< 1.0	-	U
Benzo[a]pyrene	50-32-8	-	< 1.0	-	U
Indeno[1,2,3-cd]pyrene	193-39-5	-	< 3.4	-	U
Dibenzo[a,h]anthracene	53-70-3	-	< 3.4	-	U
Benzo[g,h,i]perylene	191-24-2	-	< 3.4	-	U
Coronene	191-07-1*	-	< 2.0	-	N

Internal Standards	% Area
1,4-Dichlorobenzene-d4	34
Naphthalene-d8	35
Acenaphthene-d10	40
Phenanthrene-d10	42
Chrysene-d12	47
Perylene-d12	40

Surrogates	% Rec
2-Fluorophenol	57
Phenol-d5	54
Nitrobenzene-d5	49
2-Fluorobiphenyl	58
2,4,6-Tribromophenol	58
Terphenyl-d14	63

This analysis was conducted on an 'As Received' basis.

Concentrations are reported on a dry weight basis.

Where individual results are flagged see report notes for status.
Results corrected to dry weight at 105°C where appropriate, in accordance with the MCERTS standard.

Semi-Volatile Organic Compounds

Accredited?: Yes

Customer and Site Details:	Ramboll Environ: Zeon Chemicals ESA			**Matrix:**	Soil	**QC Batch Number:**	110
Sample Details:	WS21 0.75	**Date Booked in:**	13-May-16	**Ext Method:**	Ultrasonic	**Multiplier:**	0.2
LIMS ID Number:	CL1616341	**Date Extracted:**	17/5/16	**Operator:**		**Dilution Factor:**	1
Job Number:	S16_3918M	**Date Analysed:**	20-May-16	**Directory/Quant File:**	052016.GC11\	**GPC (Y/N)**	N

Target Compounds	CAS #	R.T. (min)	Concentration mg/kg	% Fit	Accr. code
Phenol	108-95-2	-	< 0.1	-	U
bis(2-Chloroethyl)ether	111-44-4	-	< 0.1	-	U
2-Chlorophenol	95-57-8	-	< 0.1	-	U
1,3-Dichlorobenzene	541-73-1	-	< 0.1	-	U
1,4-Dichlorobenzene	106-46-7	-	< 0.1	-	U
Benzyl alcohol	100-51-6	-	< 0.6	-	U
1,2-Dichlorobenzene	95-50-1	-	< 0.1	-	U
2-Methylphenol	95-48-7	-	< 0.1	-	U
bis(2-Chloroisopropyl)ether	108-60-1	-	< 0.6	-	U
Hexachloroethane	67-72-1	-	< 0.1	-	U
N-Nitroso-di-n-propylamine	621-64-7*	-	< 1.2	-	N
3- & 4-Methylphenol	108-39-4/106-44-5	-	< 0.1	-	U
Nitrobenzene	98-95-3	-	< 0.6	-	U
Isophorone	78-59-1*	-	< 0.1	-	N
2-Nitrophenol	88-75-5	-	< 0.1	-	U
2,4-Dimethylphenol	105-67-9	-	< 0.1	-	U
Benzoic Acid	65-85-0*	-	< 0.6	-	N
bis(2-Chloroethoxy)methane	111-91-1	-	< 0.1	-	U
2,4-Dichlorophenol	120-83-2	-	< 0.1	-	U
1,2,4-Trichlorobenzene	120-82-1*	-	< 0.1	-	N
Naphthalene	91-20-3	-	< 0.1	-	U
4-Chlorophenol	106-48-9	-	< 0.6	-	U
4-Chloroaniline	106-47-8*	-	< 0.6	-	N
Hexachlorobutadiene	87-68-3*	-	< 0.1	-	N
4-Chloro-3-methylphenol	59-50-7	-	< 0.1	-	U
2-Methylnaphthalene	91-57-6	-	< 0.1	-	U
1-Methylnaphthalene	90-12-0	-	< 0.1	-	U
Hexachlorocyclopentadiene	77-47-4*	-	< 0.1	-	N
2,4,6-Trichlorophenol	88-06-2	-	< 0.1	-	U
2,4,5-Trichlorophenol	95-95-4	-	< 0.1	-	U
2-Chloronaphthalene	91-58-7	-	< 0.1	-	U
Biphenyl	92-52-4	-	< 0.1	-	U
Diphenyl ether	101-84-8	-	< 0.1	-	U
2-Nitroaniline	88-74-4*	-	< 0.6	-	N
Acenaphthylene	208-96-8	-	< 0.1	-	U
Dimethylphthalate	131-11-3	-	< 0.1	-	U
2,6-Dinitrotoluene	606-20-2	-	< 0.6	-	U
Acenaphthene	83-32-9	-	< 0.1	-	U
3-Nitroaniline	99-09-2*	-	< 18.5	-	N

Target Compounds	CAS #	R.T.	Concentration mg/kg	% Fit	Accr. code
2,4-Dinitrophenol	51-28-5*	-	< 0.6	-	N
Dibenzofuran	132-64-9	-	< 0.1	-	U
4-Nitrophenol	100-02-7*	-	< 0.6	-	N
2,4-Dinitrotoluene	121-14-2	-	< 0.3	-	U
Fluorene	86-73-7	-	< 0.1	-	U
Diethylphthalate	84-66-2	-	< 0.1	-	U
4-Chlorophenyl-phenylether	7005-72-3	-	< 0.1	-	U
4,6-Dinitro-2-methylphenol	534-52-1*	-	< 0.3	-	N
4-Nitroaniline	100-01-6*	-	< 0.8	-	N
N-Nitrosodiphenylamine	86-30-6*	-	< 0.1	-	N
4-Bromophenyl-phenylether	101-55-3	-	< 0.1	-	U
Hexachlorobenzene	118-74-1	-	< 0.1	-	U
Pentachlorophenol	87-86-5*	-	< 0.6	-	N
Phenanthrene	85-01-8	-	< 0.1	-	U
Anthracene	120-12-7	-	< 0.1	-	U
Di-n-butylphthalate	84-74-2	-	< 0.1	-	U
Fluoranthene	206-44-0	-	< 0.3	-	U
Pyrene	129-00-0	-	< 0.3	-	U
Butylbenzylphthalate	85-68-7	-	< 0.3	-	U
Benzo[a]anthracene	56-55-3	-	< 0.3	-	U
Chrysene	218-01-9	-	< 0.3	-	U
3,3'-Dichlorobenzidine	91-94-1*	-	< 0.6	-	N
bis(2-Ethylhexyl)phthalate	117-81-7	-	< 0.3	-	U
Di-n-octylphthalate	117-84-0	-	< 0.3	-	U
Benzo[b]fluoranthene	205-99-2	9.37	0.3	97	U
Benzo[k]fluoranthene	207-08-9	-	< 0.3	-	U
Benzo[a]pyrene	50-32-8	-	< 0.3	-	U
Indeno[1,2,3-cd]pyrene	193-39-5	-	< 0.6	-	U
Dibenzo[a,h]anthracene	53-70-3	-	< 0.6	-	U
Benzo[g,h,i]perylene	191-24-2	-	< 0.6	-	U
Coronene	191-07-1*	-	< 0.4	-	N

Internal Standards	% Area
1,4-Dichlorobenzene-d4	93
Naphthalene-d8	94
Acenaphthene-d10	95
Phenanthrene-d10	97
Chrysene-d12	103
Perylene-d12	98

Surrogates	% Rec
2-Fluorophenol	100
Phenol-d5	96
Nitrobenzene-d5	84
2-Fluorobiphenyl	94
2,4,6-Tribromophenol	92
Terphenyl-d14	94

This analysis was conducted on an 'As Received' basis.

Concentrations are reported on a dry weight basis.

Where individual results are flagged see report notes for status.
Results corrected to dry weight at 105°C where appropriate, in accordance with the MCERTS standard.

Semi-Volatile Organic Compounds

Accredited?: Yes

Customer and Site Details:	Ramboll Environ: Zeon Chemicals ESA			**Matrix:**	Soil	**QC Batch Number:**	110
Sample Details:	WS21 1.40	**Date Booked in:**	13-May-16	**Ext Method:**	Ultrasonic	**Multiplier:**	0.2
LIMS ID Number:	CL1616342	**Date Extracted:**	17/5/16	**Operator:**		**Dilution Factor:**	1
Job Number:	S16_3918M	**Date Analysed:**	20-May-16	**Directory/Quant File:**	052016.GC11\	**GPC (Y/N)**	N

Target Compounds	CAS #	R.T. (min)	Concentration mg/kg	% Fit	Accr. code
Phenol	108-95-2	-	< 0.1	-	U
bis(2-Chloroethyl)ether	111-44-4	-	< 0.1	-	U
2-Chlorophenol	95-57-8	-	< 0.1	-	U
1,3-Dichlorobenzene	541-73-1	-	< 0.1	-	U
1,4-Dichlorobenzene	106-46-7	-	< 0.1	-	U
Benzyl alcohol	100-51-6	-	< 0.6	-	U
1,2-Dichlorobenzene	95-50-1	-	< 0.1	-	U
2-Methylphenol	95-48-7	-	< 0.1	-	U
bis(2-Chloroisopropyl)ether	108-60-1	-	< 0.6	-	U
Hexachloroethane	67-72-1	-	< 0.1	-	U
N-Nitroso-di-n-propylamine	621-64-7*	-	< 1.1	-	N
3- & 4-Methylphenol	108-39-4/106-44-5	-	< 0.1	-	U
Nitrobenzene	98-95-3	-	< 0.6	-	U
Isophorone	78-59-1*	-	< 0.1	-	N
2-Nitrophenol	88-75-5	-	< 0.1	-	U
2,4-Dimethylphenol	105-67-9	-	< 0.1	-	U
Benzoic Acid	65-85-0*	-	< 0.6	-	N
bis(2-Chloroethoxy)methane	111-91-1	-	< 0.1	-	U
2,4-Dichlorophenol	120-83-2	-	< 0.1	-	U
1,2,4-Trichlorobenzene	120-82-1*	-	< 0.1	-	N
Naphthalene	91-20-3	-	< 0.1	-	U
4-Chlorophenol	106-48-9	-	< 0.6	-	U
4-Chloroaniline	106-47-8*	-	< 0.6	-	N
Hexachlorobutadiene	87-68-3*	-	< 0.1	-	N
4-Chloro-3-methylphenol	59-50-7	-	< 0.1	-	U
2-Methylnaphthalene	91-57-6	-	< 0.1	-	U
1-Methylnaphthalene	90-12-0	-	< 0.1	-	U
Hexachlorocyclopentadiene	77-47-4*	-	< 0.1	-	N
2,4,6-Trichlorophenol	88-06-2	-	< 0.1	-	U
2,4,5-Trichlorophenol	95-95-4	-	< 0.1	-	U
2-Chloronaphthalene	91-58-7	-	< 0.1	-	U
Biphenyl	92-52-4	-	< 0.1	-	U
Diphenyl ether	101-84-8	-	< 0.1	-	U
2-Nitroaniline	88-74-4*	-	< 0.6	-	N
Acenaphthylene	208-96-8	-	< 0.1	-	U
Dimethylphthalate	131-11-3	-	< 0.1	-	U
2,6-Dinitrotoluene	606-20-2	-	< 0.6	-	U
Acenaphthene	83-32-9	-	< 0.1	-	U
3-Nitroaniline	99-09-2*	-	< 18.1	-	N

Target Compounds	CAS #	R.T.	Concentration mg/kg	% Fit	Accr. code
2,4-Dinitrophenol	51-28-5*	-	< 0.6	-	N
Dibenzofuran	132-64-9	-	< 0.1	-	U
4-Nitrophenol	100-02-7*	-	< 0.6	-	N
2,4-Dinitrotoluene	121-14-2	-	< 0.3	-	U
Fluorene	86-73-7	-	< 0.1	-	U
Diethylphthalate	84-66-2	-	< 0.1	-	U
4-Chlorophenyl-phenylether	7005-72-3	-	< 0.1	-	U
4,6-Dinitro-2-methylphenol	534-52-1*	-	< 0.3	-	N
4-Nitroaniline	100-01-6*	-	< 0.8	-	N
N-Nitrosodiphenylamine	86-30-6*	-	< 0.1	-	N
4-Bromophenyl-phenylether	101-55-3	-	< 0.1	-	U
Hexachlorobenzene	118-74-1	-	< 0.1	-	U
Pentachlorophenol	87-86-5*	-	< 0.6	-	N
Phenanthrene	85-01-8	-	< 0.1	-	U
Anthracene	120-12-7	-	< 0.1	-	U
Di-n-butylphthalate	84-74-2	-	< 0.1	-	U
Fluoranthene	206-44-0	-	< 0.3	-	U
Pyrene	129-00-0	-	< 0.3	-	U
Butylbenzylphthalate	85-68-7	-	< 0.3	-	U
Benzo[a]anthracene	56-55-3	-	< 0.3	-	U
Chrysene	218-01-9	-	< 0.3	-	U
3,3'-Dichlorobenzidine	91-94-1*	-	< 0.6	-	N
bis(2-Ethylhexyl)phthalate	117-81-7	-	< 0.3	-	U
Di-n-octylphthalate	117-84-0	-	< 0.3	-	U
Benzo[b]fluoranthene	205-99-2	-	< 0.3	-	U
Benzo[k]fluoranthene	207-08-9	-	< 0.3	-	U
Benzo[a]pyrene	50-32-8	-	< 0.3	-	U
Indeno[1,2,3-cd]pyrene	193-39-5	-	< 0.6	-	U
Dibenzo[a,h]anthracene	53-70-3	-	< 0.6	-	U
Benzo[g,h,i]perylene	191-24-2	-	< 0.6	-	U
Coronene	191-07-1*	-	< 0.4	-	N

Internal Standards	% Area
1,4-Dichlorobenzene-d4	91
Naphthalene-d8	84
Acenaphthene-d10	94
Phenanthrene-d10	96
Chrysene-d12	101
Perylene-d12	90

Surrogates	% Rec
2-Fluorophenol	103
Phenol-d5	78
Nitrobenzene-d5	95
2-Fluorobiphenyl	96
2,4,6-Tribromophenol	87
Terphenyl-d14	98

This analysis was conducted on an 'As Received' basis.

Concentrations are reported on a dry weight basis.

Where individual results are flagged see report notes for status.
Results corrected to dry weight at 105°C where appropriate, in accordance with the MCERTS standard.

Semi-Volatile Organic Compounds

Accredited?: No

Customer and Site Details:	Ramboll Environ: Zeon Chemicals ESA			**Matrix:**	Soil	**QC Batch Number:**	110
Sample Details:	WS11 0.30 (NVM)	**Date Booked in:**	13-May-16	**Ext Method:**	Ultrasonic	**Multiplier:**	0.2
LIMS ID Number:	CL1616343	**Date Extracted:**	17-May-16	**Operator:**		**Dilution Factor:**	1
Job Number:	S16_3918M	**Date Analysed:**	20-May-16	**Directory/Quant File:**	052016.GC11\	**GPC (Y/N)**	N

Target Compounds	CAS #	R.T. (min)	Concentration mg/kg	% Fit	Accr. code
Phenol	108-95-2	-	< 0.1	-	N
bis(2-Chloroethyl)ether	111-44-4	-	< 0.1	-	N
2-Chlorophenol	95-57-8	-	< 0.1	-	N
1,3-Dichlorobenzene	541-73-1	-	< 0.1	-	N
1,4-Dichlorobenzene	106-46-7	-	< 0.1	-	N
Benzyl alcohol	100-51-6	-	< 0.6	-	N
1,2-Dichlorobenzene	95-50-1	-	< 0.1	-	N
2-Methylphenol	95-48-7	-	< 0.1	-	N
bis(2-Chloroisopropyl)ether	108-60-1	-	< 0.6	-	N
Hexachloroethane	67-72-1	-	< 0.1	-	N
N-Nitroso-di-n-propylamine	621-64-7	-	< 1.0	-	N
3- & 4-Methylphenol	108-39-4/106-44-5	-	< 0.1	-	N
Nitrobenzene	98-95-3	-	< 0.6	-	N
Isophorone	78-59-1	-	< 0.1	-	N
2-Nitrophenol	88-75-5	-	< 0.1	-	N
2,4-Dimethylphenol	105-67-9	-	< 0.1	-	N
Benzoic Acid	65-85-0	-	< 0.6	-	N
bis(2-Chloroethoxy)methane	111-91-1	-	< 0.1	-	N
2,4-Dichlorophenol	120-83-2	-	< 0.1	-	N
1,2,4-Trichlorobenzene	120-82-1	-	< 0.1	-	N
Naphthalene	91-20-3	-	< 0.1	-	N
4-Chlorophenol	106-48-9	-	< 0.6	-	N
4-Chloroaniline	106-47-8	-	< 0.6	-	N
Hexachlorobutadiene	87-68-3	-	< 0.1	-	N
4-Chloro-3-methylphenol	59-50-7	-	< 0.1	-	N
2-Methylnaphthalene	91-57-6	-	< 0.1	-	N
1-Methylnaphthalene	90-12-0	-	< 0.1	-	N
Hexachlorocyclopentadiene	77-47-4	-	< 0.1	-	N
2,4,6-Trichlorophenol	88-06-2	-	< 0.1	-	N
2,4,5-Trichlorophenol	95-95-4	-	< 0.1	-	N
2-Chloronaphthalene	91-58-7	-	< 0.1	-	N
Biphenyl	92-52-4	-	< 0.1	-	N
Diphenyl ether	101-84-8	-	< 0.1	-	N
2-Nitroaniline	88-74-4	-	< 0.6	-	N
Acenaphthylene	208-96-8	-	< 0.1	-	N
Dimethylphthalate	131-11-3	-	< 0.1	-	N
2,6-Dinitrotoluene	606-20-2	-	< 0.6	-	N
Acenaphthene	83-32-9	-	< 0.1	-	N
3-Nitroaniline	99-09-2	-	< 16.5	-	N

Target Compounds	CAS #	R.T.	Concentration mg/kg	% Fit	Accr. code
2,4-Dinitrophenol	51-28-5	-	< 0.6	-	N
Dibenzofuran	132-64-9	-	< 0.1	-	N
4-Nitrophenol	100-02-7	-	< 0.6	-	N
2,4-Dinitrotoluene	121-14-2	-	< 0.2	-	N
Fluorene	86-73-7	-	< 0.1	-	N
Diethylphthalate	84-66-2	-	< 0.1	-	N
4-Chlorophenyl-phenylether	7005-72-3	-	< 0.1	-	N
4,6-Dinitro-2-methylphenol	534-52-1	-	< 0.2	-	N
4-Nitroaniline	100-01-6	-	< 0.7	-	N
N-Nitrosodiphenylamine	86-30-6	-	< 0.1	-	N
4-Bromophenyl-phenylether	101-55-3	-	< 0.1	-	N
Hexachlorobenzene	118-74-1	-	< 0.1	-	N
Pentachlorophenol	87-86-5	-	< 0.6	-	N
Phenanthrene	85-01-8	-	< 0.1	-	N
Anthracene	120-12-7	-	< 0.1	-	N
Di-n-butylphthalate	84-74-2	-	< 0.1	-	N
Fluoranthene	206-44-0	-	< 0.2	-	N
Pyrene	129-00-0	-	< 0.2	-	N
Butylbenzylphthalate	85-68-7	-	< 0.2	-	N
Benzo[a]anthracene	56-55-3	-	< 0.2	-	N
Chrysene	218-01-9	-	< 0.2	-	N
3,3'-Dichlorobenzidine	91-94-1	-	< 0.6	-	N
bis(2-Ethylhexyl)phthalate	117-81-7	-	< 0.2	-	N
Di-n-octylphthalate	117-84-0	-	< 0.2	-	N
Benzo[b]fluoranthene	205-99-2	-	< 0.2	-	N
Benzo[k]fluoranthene	207-08-9	-	< 0.2	-	N
Benzo[a]pyrene	50-32-8	-	< 0.2	-	N
Indeno[1,2,3-cd]pyrene	193-39-5	-	< 0.6	-	N
Dibenzo[a,h]anthracene	53-70-3	-	< 0.6	-	N
Benzo[g,h,i]perylene	191-24-2	-	< 0.6	-	N
Coronene	191-07-1*	-	< 0.3	-	N

Internal Standards	% Area
1,4-Dichlorobenzene-d4	97
Naphthalene-d8	87
Acenaphthene-d10	101
Phenanthrene-d10	104
Chrysene-d12	112
Perylene-d12	106

Surrogates	% Rec
2-Fluorophenol	84
Phenol-d5	85
Nitrobenzene-d5	99
2-Fluorobiphenyl	95
2,4,6-Tribromophenol	69
Terphenyl-d14	98

This analysis was conducted on an 'As Received' basis.

Concentrations are reported on a dry weight basis.

Where individual results are flagged see report notes for status.
Results corrected to dry weight at 105°C where appropriate, in accordance with the MCERTS standard.

Semi-Volatile Organic Compounds

Accredited?: No

Customer and Site Details:	Ramboll Environ: Zeon Chemicals ESA			**Matrix:**	Soil	**QC Batch Number:**	110
Sample Details:	WS12 0.30 (NVM)	**Date Booked in:**	13-May-16	**Ext Method:**	Ultrasonic	**Multiplier:**	0.2
LIMS ID Number:	CL1616344	**Date Extracted:**	17-May-16	**Operator:**		**Dilution Factor:**	1
Job Number:	S16_3918M	**Date Analysed:**	20-May-16	**Directory/Quant File:**	052016.GC11\	**GPC (Y/N)**	N

Target Compounds	CAS #	R.T. (min)	Concentration mg/kg	% Fit	Accr. code
Phenol	108-95-2	-	< 0.1	-	N
bis(2-Chloroethyl)ether	111-44-4	-	< 0.1	-	N
2-Chlorophenol	95-57-8	-	< 0.1	-	N
1,3-Dichlorobenzene	541-73-1	-	< 0.1	-	N
1,4-Dichlorobenzene	106-46-7	-	< 0.1	-	N
Benzyl alcohol	100-51-6	-	< 0.6	-	N
1,2-Dichlorobenzene	95-50-1	-	< 0.1	-	N
2-Methylphenol	95-48-7	-	< 0.1	-	N
bis(2-Chloroisopropyl)ether	108-60-1	-	< 0.6	-	N
Hexachloroethane	67-72-1	-	< 0.1	-	N
N-Nitroso-di-n-propylamine	621-64-7	-	< 1.0	-	N
3- & 4-Methylphenol	108-39-4/106-44-5	-	< 0.1	-	N
Nitrobenzene	98-95-3	-	< 0.6	-	N
Isophorone	78-59-1	-	< 0.1	-	N
2-Nitrophenol	88-75-5	-	< 0.1	-	N
2,4-Dimethylphenol	105-67-9	-	< 0.1	-	N
Benzoic Acid	65-85-0	-	< 0.6	-	N
bis(2-Chloroethoxy)methane	111-91-1	-	< 0.1	-	N
2,4-Dichlorophenol	120-83-2	-	< 0.1	-	N
1,2,4-Trichlorobenzene	120-82-1	-	< 0.1	-	N
Naphthalene	91-20-3	-	< 0.1	-	N
4-Chlorophenol	106-48-9	-	< 0.6	-	N
4-Chloroaniline	106-47-8	-	< 0.6	-	N
Hexachlorobutadiene	87-68-3	-	< 0.1	-	N
4-Chloro-3-methylphenol	59-50-7	-	< 0.1	-	N
2-Methylnaphthalene	91-57-6	-	< 0.1	-	N
1-Methylnaphthalene	90-12-0	-	< 0.1	-	N
Hexachlorocyclopentadiene	77-47-4	-	< 0.1	-	N
2,4,6-Trichlorophenol	88-06-2	-	< 0.1	-	N
2,4,5-Trichlorophenol	95-95-4	-	< 0.1	-	N
2-Chloronaphthalene	91-58-7	-	< 0.1	-	N
Biphenyl	92-52-4	-	< 0.1	-	N
Diphenyl ether	101-84-8	-	< 0.1	-	N
2-Nitroaniline	88-74-4	-	< 0.6	-	N
Acenaphthylene	208-96-8	-	< 0.1	-	N
Dimethylphthalate	131-11-3	-	< 0.1	-	N
2,6-Dinitrotoluene	606-20-2	-	< 0.6	-	N
Acenaphthene	83-32-9	-	< 0.1	-	N
3-Nitroaniline	99-09-2	-	< 16.5	-	N

Target Compounds	CAS #	R.T.	Concentration mg/kg	% Fit	Accr. code
2,4-Dinitrophenol	51-28-5	-	< 0.6	-	N
Dibenzofuran	132-64-9	-	< 0.1	-	N
4-Nitrophenol	100-02-7	-	< 0.6	-	N
2,4-Dinitrotoluene	121-14-2	-	< 0.2	-	N
Fluorene	86-73-7	-	< 0.1	-	N
Diethylphthalate	84-66-2	-	< 0.1	-	N
4-Chlorophenyl-phenylether	7005-72-3	-	< 0.1	-	N
4,6-Dinitro-2-methylphenol	534-52-1	-	< 0.2	-	N
4-Nitroaniline	100-01-6	-	< 0.7	-	N
N-Nitrosodiphenylamine	86-30-6	-	< 0.1	-	N
4-Bromophenyl-phenylether	101-55-3	-	< 0.1	-	N
Hexachlorobenzene	118-74-1	-	< 0.1	-	N
Pentachlorophenol	87-86-5	-	< 0.6	-	N
Phenanthrene	85-01-8	-	< 0.1	-	N
Anthracene	120-12-7	-	< 0.1	-	N
Di-n-butylphthalate	84-74-2	-	< 0.1	-	N
Fluoranthene	206-44-0	-	< 0.2	-	N
Pyrene	129-00-0	-	< 0.2	-	N
Butylbenzylphthalate	85-68-7	-	< 0.2	-	N
Benzo[a]anthracene	56-55-3	-	< 0.2	-	N
Chrysene	218-01-9	-	< 0.2	-	N
3,3'-Dichlorobenzidine	91-94-1	-	< 0.6	-	N
bis(2-Ethylhexyl)phthalate	117-81-7	-	< 0.2	-	N
Di-n-octylphthalate	117-84-0	-	< 0.2	-	N
Benzo[b]fluoranthene	205-99-2	-	< 0.2	-	N
Benzo[k]fluoranthene	207-08-9	-	< 0.2	-	N
Benzo[a]pyrene	50-32-8	-	< 0.2	-	N
Indeno[1,2,3-cd]pyrene	193-39-5	-	< 0.6	-	N
Dibenzo[a,h]anthracene	53-70-3	-	< 0.6	-	N
Benzo[g,h,i]perylene	191-24-2	-	< 0.6	-	N
Coronene	191-07-1*	-	< 0.3	-	N

Internal Standards	% Area
1,4-Dichlorobenzene-d4	90
Naphthalene-d8	92
Acenaphthene-d10	90
Phenanthrene-d10	94
Chrysene-d12	95
Perylene-d12	90

Surrogates	% Rec
2-Fluorophenol	81
Phenol-d5	93
Nitrobenzene-d5	82
2-Fluorobiphenyl	95
2,4,6-Tribromophenol	89
Terphenyl-d14	98

This analysis was conducted on an 'As Received' basis.

Concentrations are reported on a dry weight basis.

Where individual results are flagged see report notes for status.
Results corrected to dry weight at 105°C where appropriate, in accordance with the MCERTS standard.

SVOC (TICs)

Accredited?:No

Customer and Site Details:	Ramboll Environ: Zeon Chemicals ESA		
Sample Details:	WS18 1.60	**Job Number:**	S16_3918
LIMS ID Number:	CL1616335		
		Multiplier:	0.2
Date Booked in:	13-May-16	**Dilution Factor:**	1
Date Extracted:	17/5	**GPC (Y/N):**	N
Date Analysed:	20-May-16	**Matrix:**	Soil
QC Batch Number:	110	**Method:**	Ultrasonic
Directory/Quant File:	052016.GC11\ 0	**Operator:**	0

Tentatively Identified Compounds	CAS #	R.T.	Concentration mg/kg	% Fit	Accr. code
Non detected			<2.1		N

The compounds listed above have been tentatively identified by a computer based library search.
Compounds identified in the sample are not reported if they also occur in the method blank.
The % fit is an indication of the reliability of the compound assignment.
Due to the similarity between mass spectra of some isomeric compounds assignments may not be correct.
Other compounds may also be present but identification was not possible.
Concentrations are semi-quantitative, assume a response factor of 1 and use the nearest internal standard.
Concentrations are reported on a dry weight basis.

Where individual results are flagged see report notes for status.
Results corrected to dry weight at 105°C where appropriate, in accordance with the MCERTS standard.

SVOC (TICs)

Accredited?:No

Customer and Site Details:	Ramboll Environ: Zeon Chemicals ESA		
Sample Details:	WS20 0.30	**Job Number:**	S16_3918
LIMS ID Number:	CL1616336		
		Multiplier:	0.2
Date Booked in:	13-May-16	**Dilution Factor:**	1
Date Extracted:	17/5	**GPC (Y/N):**	N
Date Analysed:	20-May-16	**Matrix:**	Soil
QC Batch Number:	110	**Method:**	Ultrasonic
Directory/Quant File:	052016.GC11\ 0	**Operator:**	0

Tentatively Identified Compounds	CAS #	R.T.	Concentration mg/kg	% Fit	Accr. code
Pyran-4-carbonitrile, 4-(4-methoxyphenyl)-tetrahydro-	999226-01-3	13.52	3.820	76	N
5-Methoxy-6-methylpyrido[2,3-c]phenazine	999390-19-8	6.87	1.693	64	N
n-Hexadecanoic aci	000057-10-3	5.98	1.090	99	N
Isophthalic acid, octyl tridec-2-ynyl ester	999719-94-3	6.77	1.087	64	N
(-)-1.beta.H,7.alpha.H,10.alpha.H-Guaia-4,11-dien-3-one	999230-12-1	5.54	0.976	90	N
Octadecanoic acid	000057-11-4	6.51	0.821	99	N
1,1,2-Trimethyl-2-(2-methoxy-5-methylphenyl)cyclopentane	999270-02-9	6.33	0.627	53	N
Unknown peak	-	16.55	0.570	-	N
3-Dodecene, (E)-	007206-14-6	3.35	0.512	87	N
Unknown peak	-	5.45	0.467	-	N
O,2-Propano-11-nor-.dealto.(8)-THC	999555-41-1	7.69	0.445	90	N
Phenol, 4-nonyl-	000104-40-5	5.36	0.408	90	N
tetradecanamide	999255-79-5	7.19	0.394	68	N

The compounds listed above have been tentatively identified by a computer based library search.
Compounds identified in the sample are not reported if they also occur in the method blank.
The % fit is an indication of the reliability of the compound assignment.
Due to the similarity between mass spectra of some isomeric compounds assignments may not be correct.
Other compounds may also be present but identification was not possible.
Concentrations are semi-quantitative, assume a response factor of 1 and use the nearest internal standard.
Concentrations are reported on a dry weight basis.

Where individual results are flagged see report notes for status.
Results corrected to dry weight at 105°C where appropriate, in accordance with the MCERTS standard.

SVOC (TICs)

Accredited?:No

Customer and Site Details:	Ramboll Environ: Zeon Chemicals ESA		
Sample Details:	WS20 1.80	**Job Number:**	S16_3918
LIMS ID Number:	CL1616338		
		Multiplier:	0.2
Date Booked in:	13-May-16	**Dilution Factor:**	1
Date Extracted:	17/5	**GPC (Y/N):**	N
Date Analysed:	20-May-16	**Matrix:**	Soil
QC Batch Number:	110	**Method:**	Ultrasonic
Directory/Quant File:	052016.GC11\ 0	**Operator:**	0

Tentatively Identified Compounds	CAS #	R.T.	Concentration mg/kg	% Fit	Accr. code
Non deteted			<1.9		N

The compounds listed above have been tentatively identified by a computer based library search.
Compounds identified in the sample are not reported if they also occur in the method blank.
The % fit is an indication of the reliability of the compound assignment.
Due to the similarity between mass spectra of some isomeric compounds assignments may not be correct.
Other compounds may also be present but identification was not possible.
Concentrations are semi-quantitative, assume a response factor of 1 and use the nearest internal standard.
Concentrations are reported on a dry weight basis.

Where individual results are flagged see report notes for status.
Results corrected to dry weight at 105°C where appropriate, in accordance with the MCERTS standard.

SVOC (TICs)

Accredited?:No

Customer and Site Details:	Ramboll Environ: Zeon Chemicals ESA		
Sample Details:	WS20 2.50 (NVM)	**Job Number:**	S16_3918
LIMS ID Number:	CL1616339		
		Multiplier:	0.2
Date Booked in:	13-May-16	**Dilution Factor:**	1
Date Extracted:	17/5	**GPC (Y/N):**	N
Date Analysed:	20-May-16	**Matrix:**	Soil
QC Batch Number:	110	**Method:**	Ultrasonic
Directory/Quant File:	052016.GC11\ 0	**Operator:**	0

Tentatively Identified Compounds	CAS #	R.T.	Concentration mg/kg	% Fit	Accr. code
Non detected			<1.7		N

The compounds listed above have been tentatively identified by a computer based library search.
Compounds identified in the sample are not reported if they also occur in the method blank.
The % fit is an indication of the reliability of the compound assignment.
Due to the similarity between mass spectra of some isomeric compounds assignments may not be correct.
Other compounds may also be present but identification was not possible.
Concentrations are semi-quantitative, assume a response factor of 1 and use the nearest internal standard.
Concentrations are reported on a dry weight basis.

Where individual results are flagged see report notes for status.
Results corrected to dry weight at 105°C where appropriate, in accordance with the MCERTS standard.

SVOC (TICs)

Accredited?:No

Customer and Site Details:	Ramboll Environ: Zeon Chemicals ESA		
Sample Details:	WS19 0.65	**Job Number:**	S16_3918
LIMS ID Number:	CL1616340		
		Multiplier:	1
Date Booked in:	13-May-16	**Dilution Factor:**	5
Date Extracted:	17/5	**GPC (Y/N):**	N
Date Analysed:	20-May-16	**Matrix:**	Soil
QC Batch Number:	110	**Method:**	Ultrasonic
Directory/Quant File:	052016.GC11\ 0	**Operator:**	0

Tentatively Identified Compounds	CAS #	R.T.	Concentration mg/kg	% Fit	Accr. code
19-Norabietatriene	019407-18-2	6.25	212.917	98	N
Oleic Acid	000112-80-1	6.49	114.183	99	N
Phenol, nonyl-	025154-52-3	5.34	100.022	95	N
Phenol, 4-(2,2,3,3-tetramethylbutyl)- (CAS)	054932-78-4	5.46	86.613	72	N
1-(4-Methoxyphenyl)-3-methylazetidin-2-one	127756-65-4	5.53	31.659	50	N
1-Amino-3,4-dihydro-3-methyl-4-phenyl-2-naphthalenecarbon	999348-85-4	6.18	20.438	90	N
4,4'-ISOPROPYLIDENEBIS(2-T-BUTYL)PHENOL	999555-38-2	7.71	16.348	91	N
Unknown peak	-	9.30	11.518	-	N
Nonadecane	000629-92-5	9.46	10.293	96	N
Octadecane	000593-45-3	10.31	8.532	90	N
Nonadecane, 9-methyl-	013287-24-6	7.44	8.518	93	N
Unknown peak	-	9.09	8.359	-	N
Heneicosane	000629-94-7	8.99	8.330	93	N
Docosane	000629-97-0	8.15	7.785	93	N
Unknown peak	-	5.94	7.247	-	N
1-Propene, 2-methyl-, trimer	007756-94-7	2.80	7.225	56	N
Octadecane	000593-45-3	8.33	6.848	93	N
EICOSANE	000112-95-8	8.86	6.494	97	N
Cholestane	000481-21-0	9.75	6.292	90	N
Unknown peak	-	5.72	6.177	-	N

The compounds listed above have been tentatively identified by a computer based library search.
Compounds identified in the sample are not reported if they also occur in the method blank.
The % fit is an indication of the reliability of the compound assignment.
Due to the similarity between mass spectra of some isomeric compounds assignments may not be correct.
Other compounds may also be present but identification was not possible.
Concentrations are semi-quantitative, assume a response factor of 1 and use the nearest internal standard.
Concentrations are reported on a dry weight basis.

Where individual results are flagged see report notes for status.
Results corrected to dry weight at 105°C where appropriate, in accordance with the MCERTS standard.

SVOC (TICs)

Accredited?:No

Customer and Site Details:	Ramboll Environ: Zeon Chemicals ESA		
Sample Details:	WS21 0.75	**Job Number:**	S16_3918
LIMS ID Number:	CL1616341		
		Multiplier:	0.2
Date Booked in:	13-May-16	**Dilution Factor:**	1
Date Extracted:	17/5/16	**GPC (Y/N):**	N
Date Analysed:	20-May-16	**Matrix:**	Soil
QC Batch Number:	110	**Method:**	Ultrasonic
Directory/Quant File:	052016.GC11\ 0	**Operator:**	0

Tentatively Identified Compounds	CAS #	R.T.	Concentration mg/kg	% Fit	Accr. code
Naphthalene, 1,6-dimethyl-4-(1-methylethyl)-	000483-78-3	13.60	0.969	87	N
Naphthalene, 1,6-dimethyl-4-(1-methylethyl)-	000483-78-3	13.28	0.782	87	N
Hexadecanoic acid	000057-10-3	5.98	0.751	99	N
Azulene, 1,4-dimethyl-7-(1-methylethyl)-	000489-84-9	13.03	0.536	55	N
.gamma.-Sitosterol	000083-47-6	12.78	0.459	99	N

The compounds listed above have been tentatively identified by a computer based library search.
Compounds identified in the sample are not reported if they also occur in the method blank.
The % fit is an indication of the reliability of the compound assignment.
Due to the similarity between mass spectra of some isomeric compounds assignments may not be correct.
Other compounds may also be present but identification was not possible.
Concentrations are semi-quantitative, assume a response factor of 1 and use the nearest internal standard.
Concentrations are reported on a dry weight basis.

Where individual results are flagged see report notes for status.
Results corrected to dry weight at 105°C where appropriate, in accordance with the MCERTS standard.

SVOC (TICs)

Accredited?:No

Customer and Site Details:	Ramboll Environ: Zeon Chemicals ESA		
Sample Details:	WS21 1.40	**Job Number:**	S16_3918
LIMS ID Number:	CL1616342		
		Multiplier:	0.2
Date Booked in:	13-May-16	**Dilution Factor:**	1
Date Extracted:	17/5/16	**GPC (Y/N):**	N
Date Analysed:	20-May-16	**Matrix:**	Soil
QC Batch Number:	110	**Method:**	Ultrasonic
Directory/Quant File:	052016.GC11\ 0	**Operator:**	0

Tentatively Identified Compounds	CAS #	R.T.	Concentration mg/kg	% Fit	Accr. code
9-Octadecenamide, (Z)-	000301-02-0	7.19	0.774	99	N
13-Docosenamide, (Z)-	000112-84-5	9.15	0.755	91	N
Squalene	007683-64-9	9.33	0.438	99	N

The compounds listed above have been tentatively identified by a computer based library search.
Compounds identified in the sample are not reported if they also occur in the method blank.
The % fit is an indication of the reliability of the compound assignment.
Due to the similarity between mass spectra of some isomeric compounds assignments may not be correct.
Other compounds may also be present but identification was not possible.
Concentrations are semi-quantitative, assume a response factor of 1 and use the nearest internal standard.
Concentrations are reported on a dry weight basis.

SVOC (TICs)

Accredited?:No

Customer and Site Details:	Ramboll Environ: Zeon Chemicals ESA		
Sample Details:	WS11 0.30 (NVM)	**Job Number:**	S16_3918
LIMS ID Number:	CL1616343		
		Multiplier:	0.2
Date Booked in:	13-May-16	**Dilution Factor:**	1
Date Extracted:	17-May-16	**GPC (Y/N):**	N
Date Analysed:	20-May-16	**Matrix:**	Soil
QC Batch Number:	110	**Method:**	Ultrasonic
Directory/Quant File:	052016.GC11\ 0	**Operator:**	0

Tentatively Identified Compounds	CAS #	R.T.	Concentration mg/kg	% Fit	Accr. code
Non detected			<1.7		N

The compounds listed above have been tentatively identified by a computer based library search.
Compounds identified in the sample are not reported if they also occur in the method blank.
The % fit is an indication of the reliability of the compound assignment.
Due to the similarity between mass spectra of some isomeric compounds assignments may not be correct.
Other compounds may also be present but identification was not possible.
Concentrations are semi-quantitative, assume a response factor of 1 and use the nearest internal standard.
Concentrations are reported on a dry weight basis.

Where individual results are flagged see report notes for status.
Results corrected to dry weight at 105°C where appropriate, in accordance with the MCERTS standard.

SVOC (TICs)

Accredited?:No

Customer and Site Details:	Ramboll Environ: Zeon Chemicals ESA		
Sample Details:	WS12 0.30 (NVM)	**Job Number:**	S16_3918
LIMS ID Number:	CL1616344		
		Multiplier:	0.2
Date Booked in:	13-May-16	**Dilution Factor:**	1
Date Extracted:	17-May-16	**GPC (Y/N):**	N
Date Analysed:	20-May-16	**Matrix:**	Soil
QC Batch Number:	110	**Method:**	Ultrasonic
Directory/Quant File:	052016.GC11\ 0	**Operator:**	0

Tentatively Identified Compounds	CAS #	R.T.	Concentration mg/kg	% Fit	Accr. code
4,4'-Ethylenebis(2,6-di-tert-butylphenol)	001516-94-5	9.08	1.387	95	N
Heptadecane, 2,6,10,15-tetramethyl-	054833-48-6	5.28	1.357	91	N
Hexadecane, 2,6,10,14-tetramethyl-	000638-36-8	5.57	1.234	96	N
Dodecane, 4,6-dimethyl-	061141-72-8	4.53	1.193	76	N
Eicosane	000112-95-8	6.08	1.092	94	N
Unknown peak	-	5.95	1.005	-	N
Phytol	000150-86-7	6.42	0.951	53	N
Dodecane, 4,6-dimethyl	061141-72-8	3.88	0.844	87	N
Nonadecane	000629-92-5	6.26	0.821	90	N
Tetradecane	000629-59-4	5.42	0.816	87	N
Unknown peak	-	5.85	0.763	-	N
2-(2'-Methyl-1'-propenyl)-4-(trimethylsilyl)furan	999164-44-5	5.72	0.730	53	N
Octadecane	000593-45-3	6.02	0.726	64	N
Hexadecane	000544-76-3	6.55	0.705	53	N
Heptadecane	000629-78-7	4.98	0.683	90	N
2,10-Dimethylethylanthracen	999198-05-4	6.31	0.644	81	N
Unknown peak	-	5.48	0.608	-	N
14-.BETA.-H-PREGNA	999427-18-1	6.19	0.591	93	N

The compounds listed above have been tentatively identified by a computer based library search.
Compounds identified in the sample are not reported if they also occur in the method blank.
The % fit is an indication of the reliability of the compound assignment.
Due to the similarity between mass spectra of some isomeric compounds assignments may not be correct.
Other compounds may also be present but identification was not possible.
Concentrations are semi-quantitative, assume a response factor of 1 and use the nearest internal standard.
Concentrations are reported on a dry weight basis.

Where individual results are flagged see report notes for status.
Results corrected to dry weight at 105°C where appropriate, in accordance with the MCERTS standard.

Gasoline Range Organics
(BTEX and Aliphatic Carbon Ranges)

Customer and Site Details: Ramboll Environ : Zeon Chemicals ESA
Job Number: S16_3918
Directory: E:\TES\DATA\2016\0519HSA_GC9\051916 2016-05-19 12-17-14\012F1201.D
Method: Headspace GCFID
Accreditation Code: N

Matrix: Soil
Date Booked in: 13-May-16
Date extracted: 18-May-16
Date Analysed: 19-May-16, 15:4

*** Sample data with an asterisk are not UKAS accredited.**

		Concentration, (mg/kg) - as dry weight.					Aliphatics				
Sample ID	Client ID	Benzene	Toluene	Ethyl benzene	m/p-Xylene	o-Xylene	C5 - C6	>C6 - C7	>C7 - C8	>C8 - C10	Total GRO
CL1616335	WS18 1.60	<0.014	<0.014	<0.014	<0.014	<0.014	<0.3	<0.3	<0.3	<0.3	<0.3
CL1616336	WS20 0.30	<0.013	<0.013	<0.013	<0.013	<0.013	<0.3	<0.3	<0.3	<0.3	<0.3
CL1616338	WS20 1.80	<0.012	<0.012	<0.012	<0.012	<0.012	<0.2	<0.2	<0.2	<0.2	<0.2
* CL1616339	WS20 2.50 (NVM)	<0.011	<0.011	<0.011	<0.011	<0.011	<0.2	<0.2	<0.2	<0.2	<0.2
CL1616340	WS19 0.65	<0.014	<0.014	<0.014	<0.014	<0.014	<0.3	<0.3	<0.3	2.2	2.7
CL1616341	WS21 0.75	<0.013	<0.013	<0.013	<0.013	<0.013	<0.3	<0.3	<0.3	<0.3	<0.3
CL1616342	WS21 1.40	<0.013	<0.013	<0.013	<0.013	<0.013	<0.3	<0.3	<0.3	<0.3	<0.3
* CL1616343	WS11 0.30 (NVM)	<0.011	<0.011	<0.011	<0.011	<0.011	<0.2	<0.2	<0.2	0.3	0.4
* CL1616344	WS12 0.30 (NVM)	<0.011	<0.011	<0.011	<0.011	<0.011	<0.2	<0.2	<0.2	<0.2	<0.2

Note: Benzene elutes between C6 and C7, toluene elutes between C7 and C8, ethyl benzene and the xylenes elute between C8 and C9.
Each BTEX compound is deducted from the appropriate band to give the aliphatic fractions, however aromatic compounds may still be contributing to these fractions

Where individual results are flagged see report notes for status.
Results corrected to dry weight at 105°C where appropriate, in accordance with the MCERTS standard.

ALIPHATIC / AROMATIC FRACTION BY GC/FID

Customer and Site Details: Ramboll Environ : Zeon Chemicals ESA
Job Number: S16_3918M
QC Batch Number: 160602
Directory: D:\TES\DATA\Y2016\052016TPH_GC4\052016 2016-05-20 09-51-11\063B1901.D
Method: Ultra Sonic

Separation: Silica gel
Eluents: Hexane, DCM

Matrix: Soil
Date Booked ir 13-May-16
Date Extracted 20-May-16
Date Analysed 20-May-16, 13:57:40

This sample data is not MCERTS accredited.
*** This sample data is not ISO17025 accredited.**

		Concentration, (mg/kg) - as dry weight.											
		>C8 - C10		>C10 - C12		>C12 - C16		>C16 - C21		>C21 - C35		>C8 - C40	
Sample ID	**Client ID**	**Aliphatics**	**Aromatics**	**Aliphatics**	**Aromatics**	**Aliphatics**	**Aromatics**	**Aliphatics**	**Aromatics**	**Aliphatics**	**Aromatics**	**Aliphatics**	**Aromatics**
CL1616335	WS18 1.60	<6	<6	<6	<6	<6	6.75	9.41	<6	549	256	561	271

Where individual results are flagged see report notes for status.
Results corrected to dry weight at 105°C where appropriate, in accordance with the MCERTS standard.

ALIPHATIC / AROMATIC FRACTION BY GC/FID

Customer and Site Details: Ramboll Environ : Zeon Chemicals ESA
Job Number: S16_3918M
QC Batch Number: 160585
Directory: D:\TES\DATA\Y2016\051716TPH_GC3\051716C 2016-05-18 13-34-19\064B4501.D
Method: Ultra Sonic

Separation: Silica gel
Eluents: Hexane, DCM

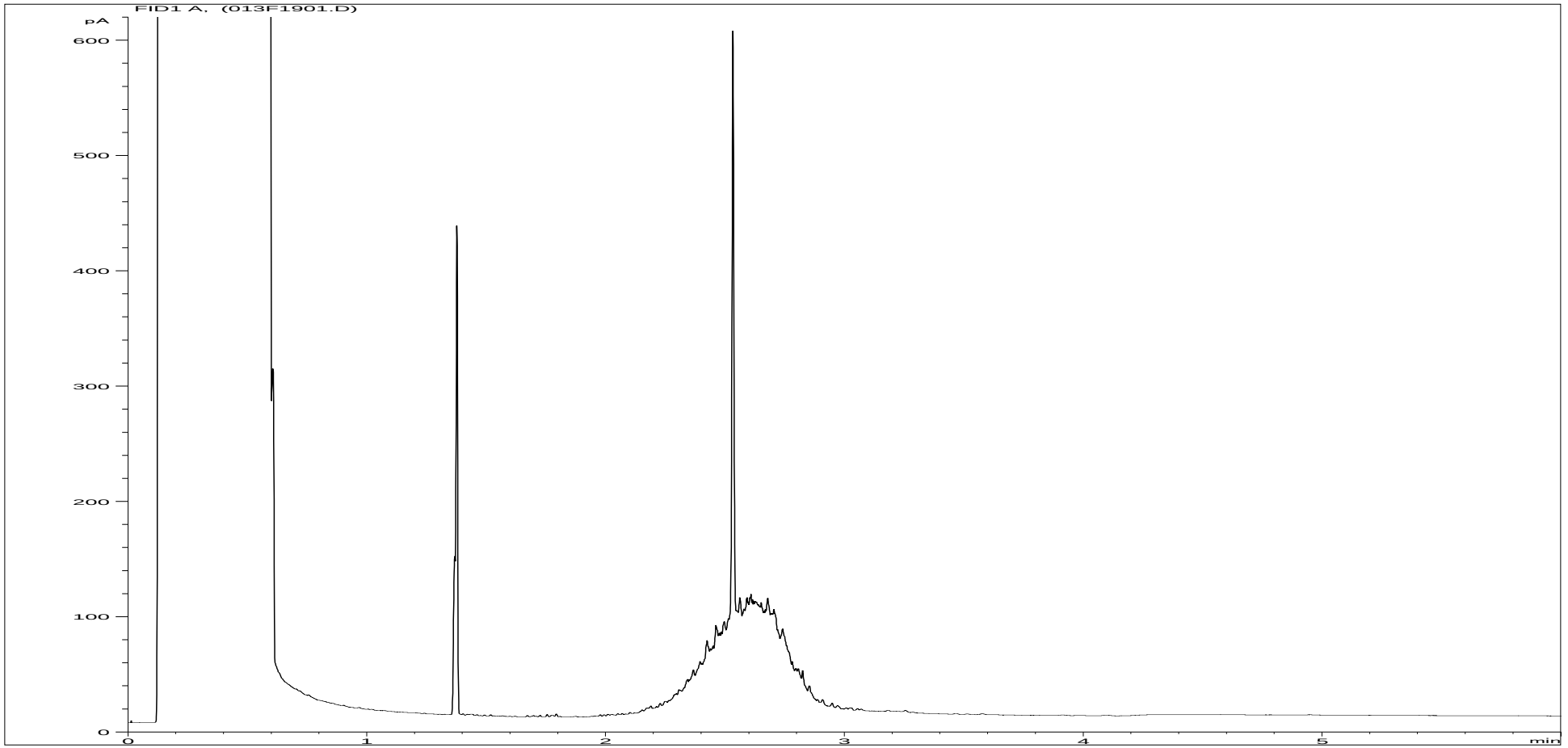
Matrix: Soil
Date Booked ir 13-May-16
Date Extracted 17-May-16
Date Analysed 18-May-16, 23:20:02

This sample data is not MCERTS accredited.
*** This sample data is not ISO17025 accredited.**

		Concentration, (mg/kg) - as dry weight.											
		>C8 - C10		>C10 - C12		>C12 - C16		>C16 - C21		>C21 - C35		>C8 - C40	
Sample ID	Client ID	Aliphatics	Aromatics	Aliphatics	Aromatics	Aliphatics	Aromatics	Aliphatics	Aromatics	Aliphatics	Aromatics	Aliphatics	Aromatics
CL1616336	WS20 0.30	<5	<5	<5	<5	<5	<5	10.6	5.89	173	78	186	91.1
CL1616338	WS20 1.80	<5	<5	<5	<5	<5	8.26	<5	<5	14.7	12.9	<25	<25
* CL1616339	WS20 2.50 (NVM)	<5	<5	<5	<5	<5	<5	<5	<5	17.9	<9.92	<23	<23
CL1616340	WS19 0.65	10.03	<5	15.3	53	268	77.7	1420	691	14100	4130	16000	5010
CL1616341	WS21 0.75	<5	<5	<5	<5	<5	<5	<5	<5	23.7	32.1	27	42.6
CL1616342	WS21 1.40	<5	<5	<5	<5	<5	<5	<5	<5	<10.95	<10.95	<25	<25
* CL1616343	WS11 0.30 (NVM)	<5	<5	<5	<5	<5	<5	9.53	4.81	10.8	<9.98	23.1	<23
* CL1616344	WS12 0.30 (NVM)	<5	<5	<5	<5	74.2	26	106.4	45.8	276	134	491	217

Where individual results are flagged see report notes for status.
Results corrected to dry weight at 105°C where appropriate, in accordance with the MCERTS standard.

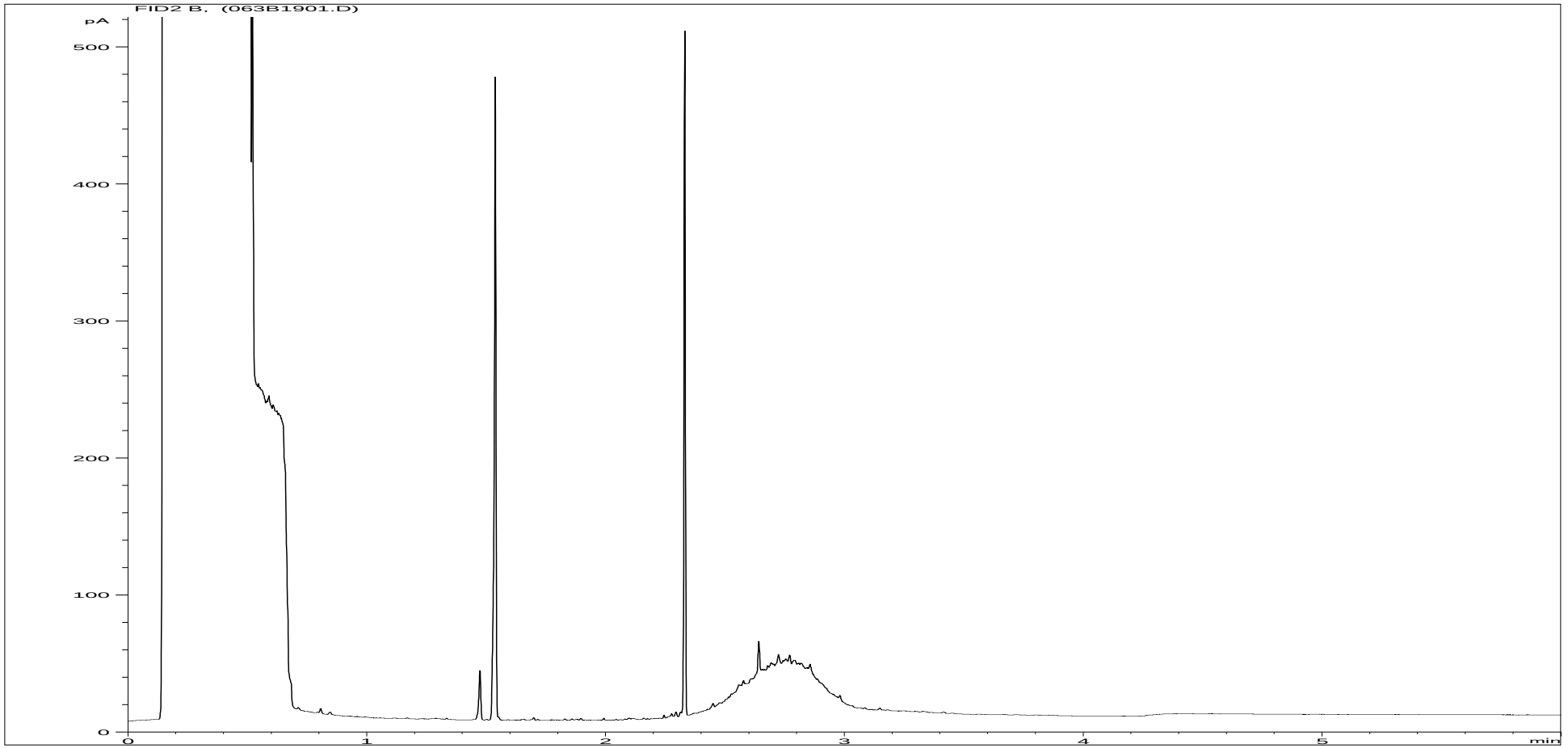
Petroleum Hydrocarbons (C8 to C40) by GC/FID Aliphatics Fraction.



Sample ID:	CL1616335ALI	**Job Number:**	S16_3918M
Multiplier:	16	**Client:**	Ramboll Environ
Dilution:	1	**Site:**	Zeon Chemicals ESA
Acquisition Method:	5UL_RUNF.M	**Client Sample Ref:**	WS18 1.60
Acquisition Date/Time:	20-May-16, 13:57:40		
Datafile:	D:\TES\DATA\Y2016\052016TPH_GC4\052016 2016-05-20 09-51-11\013F1901.D		

Where individual results are flagged see report notes for status.
Results corrected to dry weight at 105°C where appropriate, in accordance with the MCERTS standard.

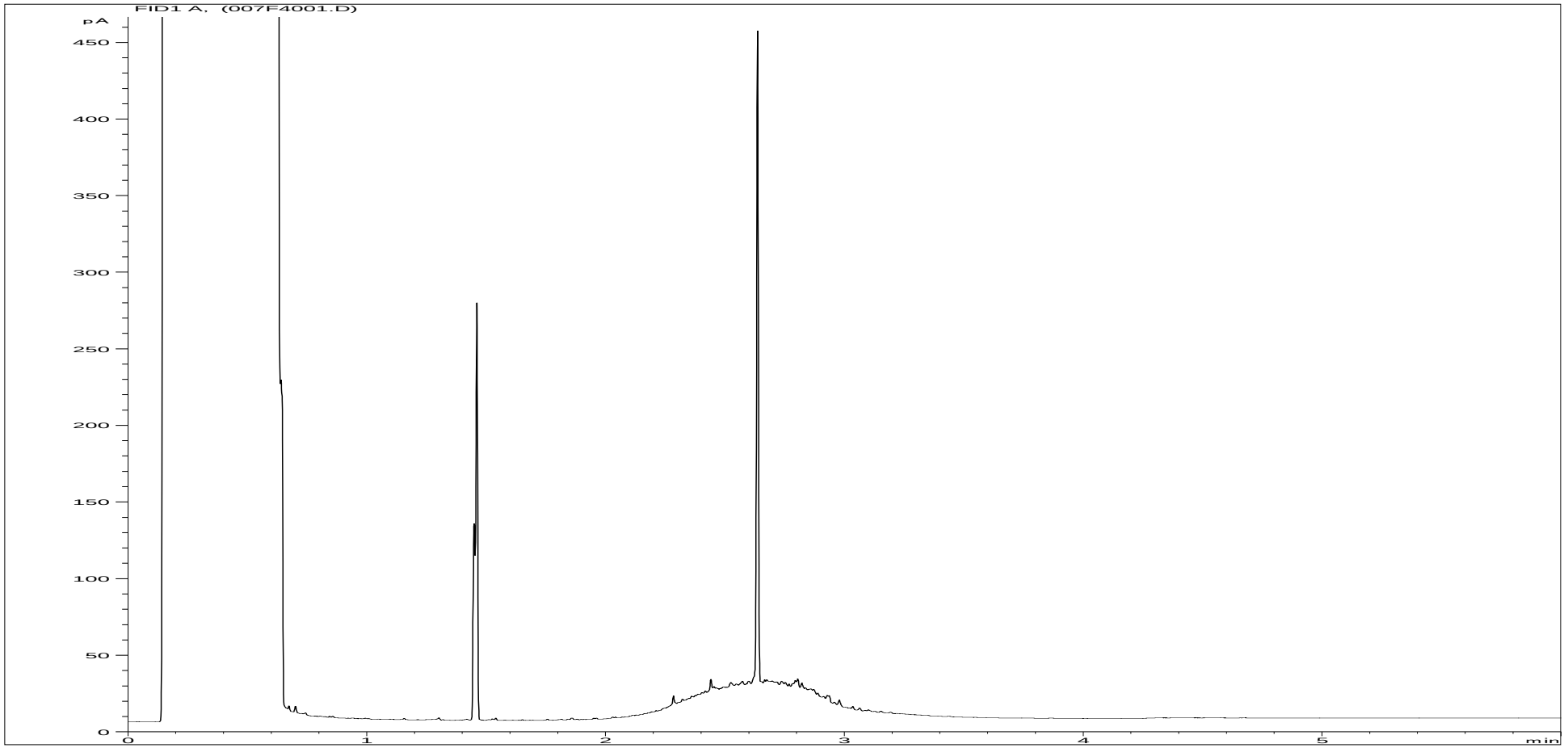
Petroleum Hydrocarbons (C8 to C40) by GC/FID Aromatics Fraction.



Sample ID:	CL1616335ARO	**Job Number:**	S16_3918M
Multiplier:	15.92	**Client:**	Ramboll Environ
Dilution:	1	**Site:**	Zeon Chemicals ESA
Acquisition Method:	5UL_RUNF.M	**Client Sample Ref:**	WS18 1.60
Acquisition Date/Time:	20-May-16, 13:57:40		
Datafile:	D:\TES\DATA\Y2016\052016TPH_GC4\052016 2016-05-20 09-51-11\063B1901.D		

Where individual results are flagged see report notes for status.
Results corrected to dry weight at 105°C where appropriate, in accordance with the MCERTS standard.

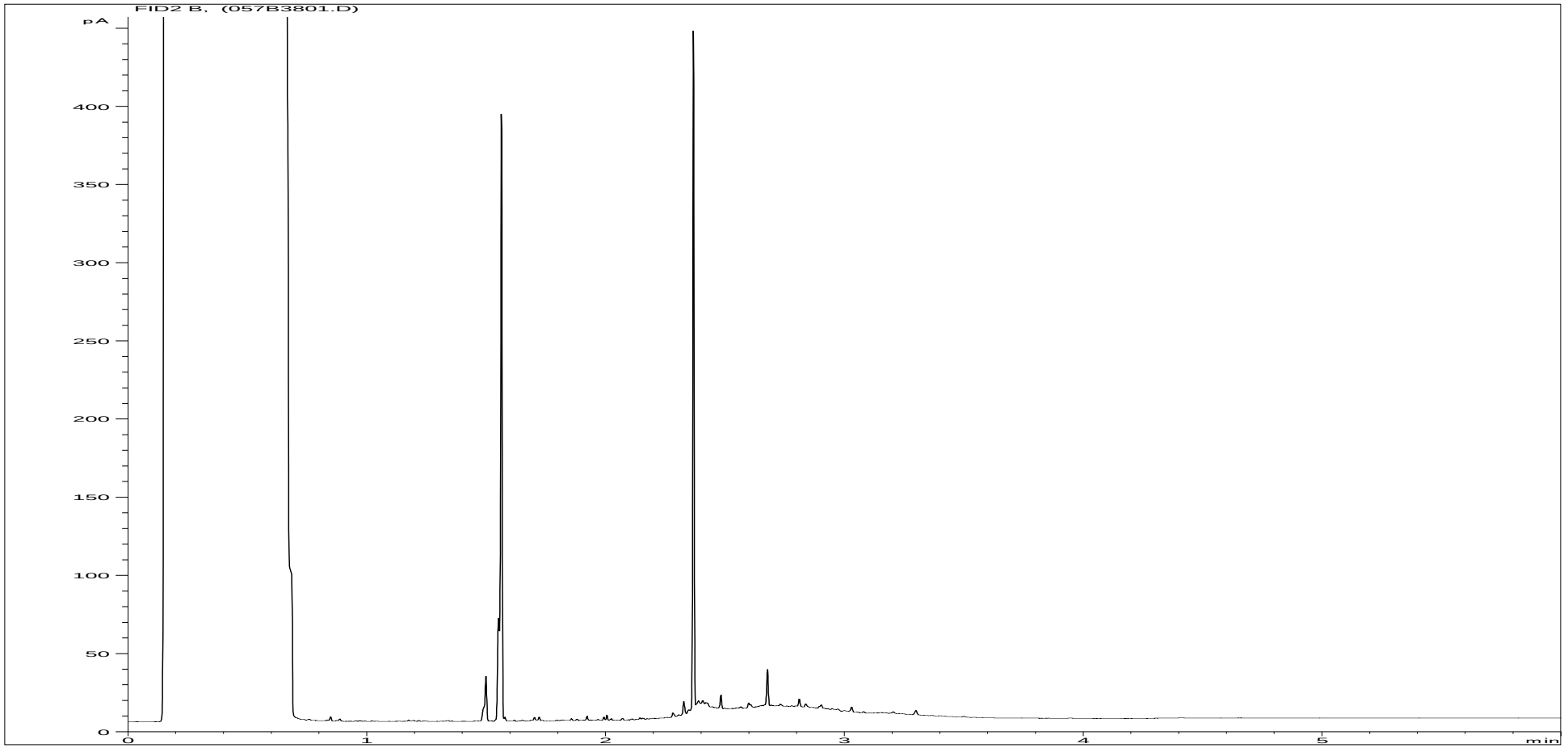
Petroleum Hydrocarbons (C8 to C40) by GC/FID Aliphatics Fraction.



Sample ID:	CL1616336ALI	**Job Number:**	S16_3918M
Multiplier:	16	**Client:**	Ramboll Environ
Dilution:	1	**Site:**	Zeon Chemicals ESA
Acquisition Method:	5UL_RUNF.M	**Client Sample Ref:**	WS20 0.30
Acquisition Date/Time:	18-May-16, 22:14:20		
Datafile:	D:\TES\DATA\Y2016\051716TPH_GC3\051716C 2016-05-18 13-34-19\007F4001.D		

Where individual results are flagged see report notes for status.
Results corrected to dry weight at 105°C where appropriate, in accordance with the MCERTS standard.

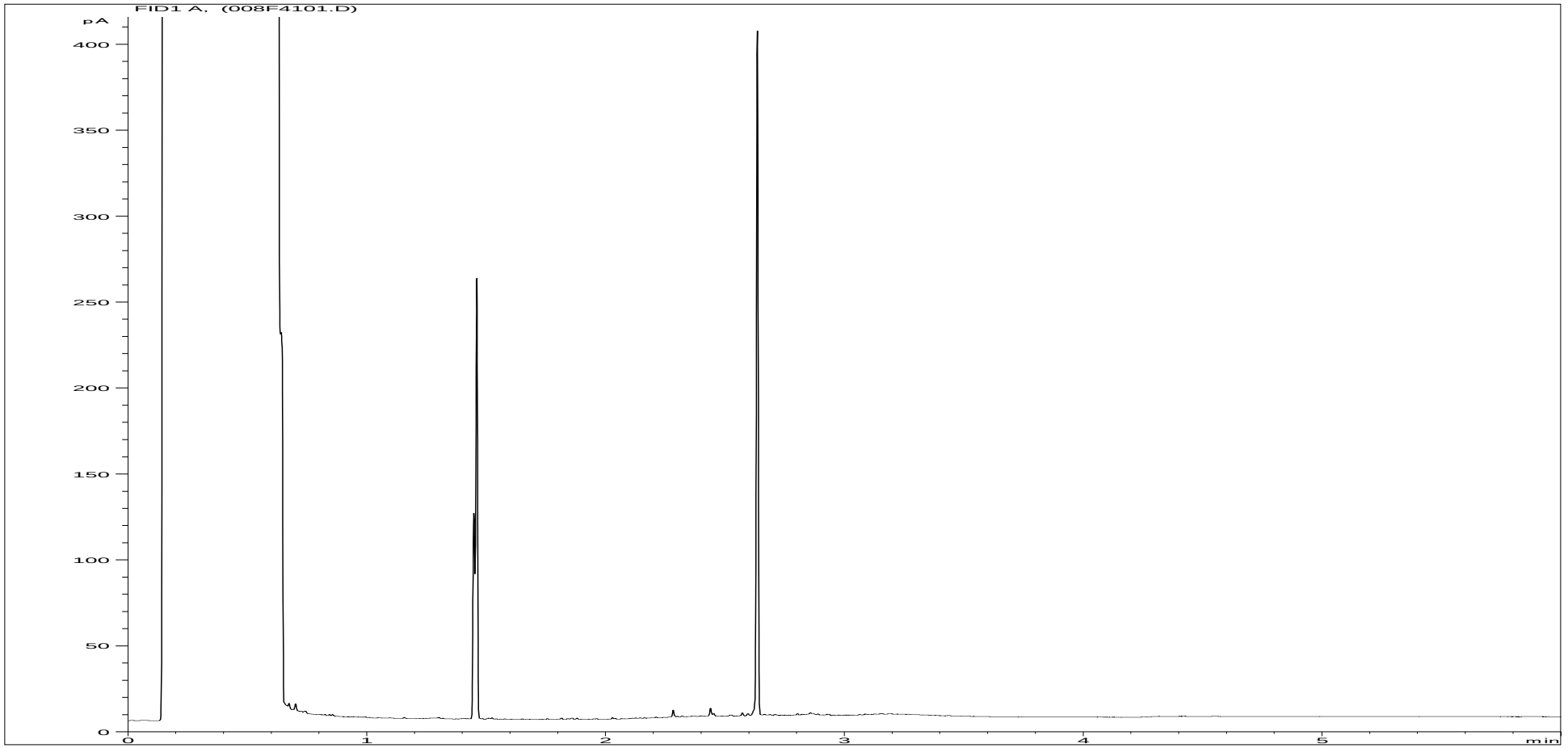
Petroleum Hydrocarbons (C8 to C40) by GC/FID Aromatics Fraction.



Sample ID:	CL1616336ARO	**Job Number:**	S16_3918M
Multiplier:	11.68	**Client:**	Ramboll Environ
Dilution:	1	**Site:**	Zeon Chemicals ESA
Acquisition Method:	5UL_RUNF.M	**Client Sample Ref:**	WS20 0.30
Acquisition Date/Time:	18-May-16, 21:48:00		
Datafile:	D:\TES\DATA\Y2016\051716TPH_GC3\051716C 2016-05-18 13-34-19\057B3801.D		

Where individual results are flagged see report notes for status.
Results corrected to dry weight at 105°C where appropriate, in accordance with the MCERTS standard.

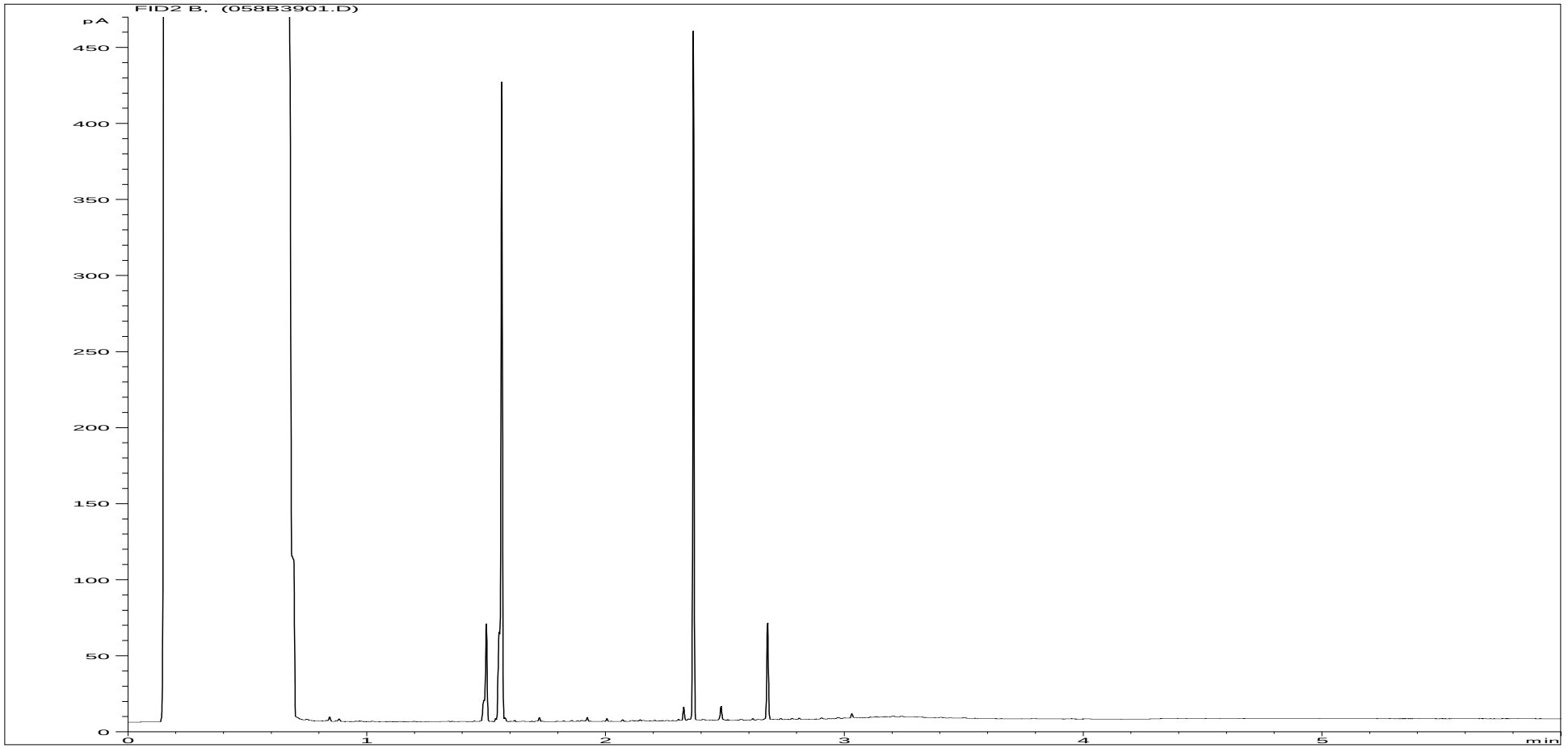
Petroleum Hydrocarbons (C8 to C40) by GC/FID Aliphatics Fraction.



Sample ID:	CL1616338ALI	**Job Number:**	S16_3918M
Multiplier:	15.84	**Client:**	Ramboll Environ
Dilution:	1	**Site:**	Zeon Chemicals ESA
Acquisition Method:	5UL_RUNF.M	**Client Sample Ref:**	WS20 1.80
Acquisition Date/Time:	18-May-16, 22:27:29		
Datafile:	D:\TES\DATA\Y2016\051716TPH_GC3\051716C 2016-05-18 13-34-19\008F4101.D		

Where individual results are flagged see report notes for status.
Results corrected to dry weight at 105°C where appropriate, in accordance with the MCERTS standard.

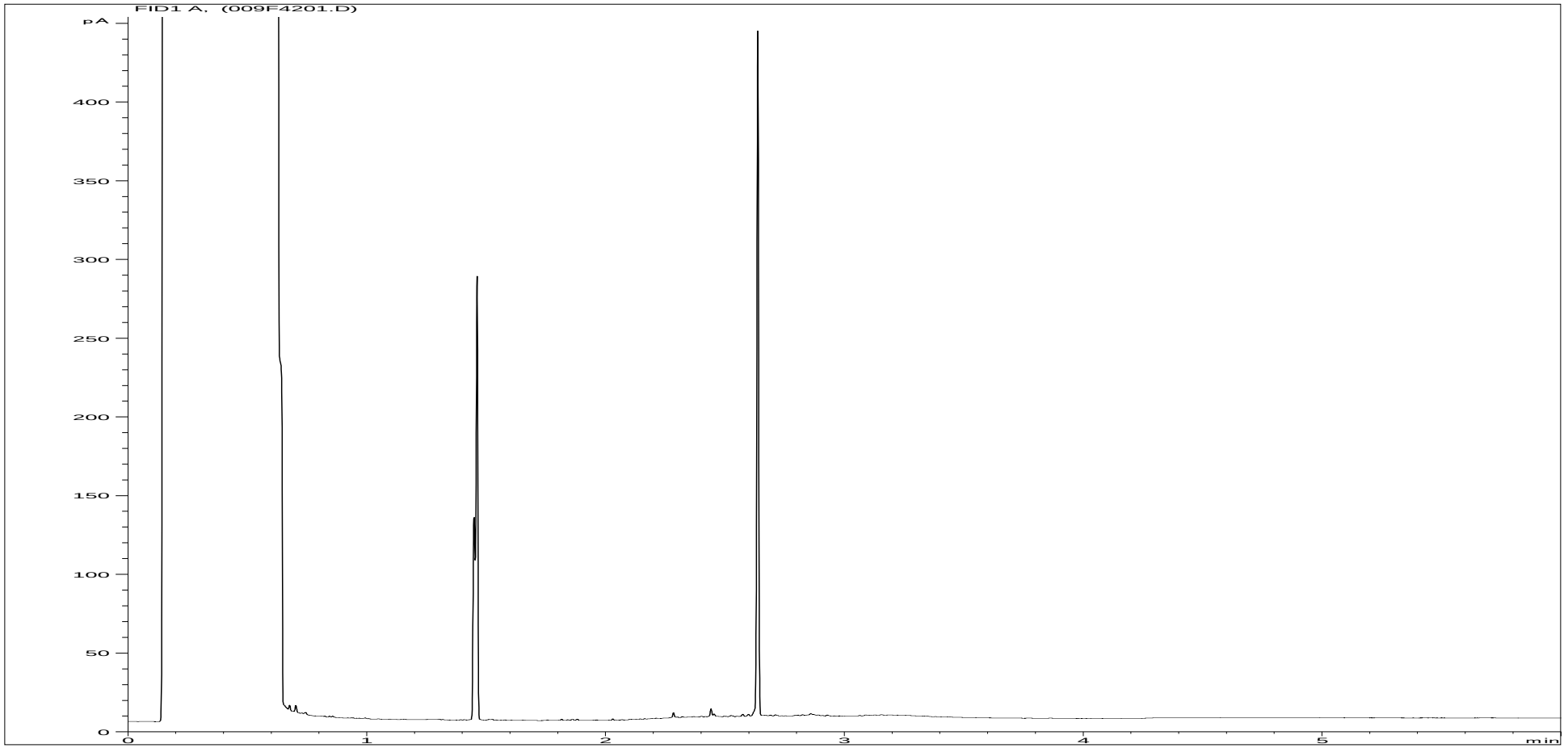
Petroleum Hydrocarbons (C8 to C40) by GC/FID Aromatics Fraction.



Sample ID:	CL1616338ARO	**Job Number:**	S16_3918M
Multiplier:	11.84	**Client:**	Ramboll Environ
Dilution:	1	**Site:**	Zeon Chemicals ESA
Acquisition Method:	5UL_RUNF.M	**Client Sample Ref:**	WS20 1.80
Acquisition Date/Time:	18-May-16, 22:01:11		
Datafile:	D:\TES\DATA\Y2016\051716TPH_GC3\051716C 2016-05-18 13-34-19\058B3901.D		

Where individual results are flagged see report notes for status.
Results corrected to dry weight at 105°C where appropriate, in accordance with the MCERTS standard.

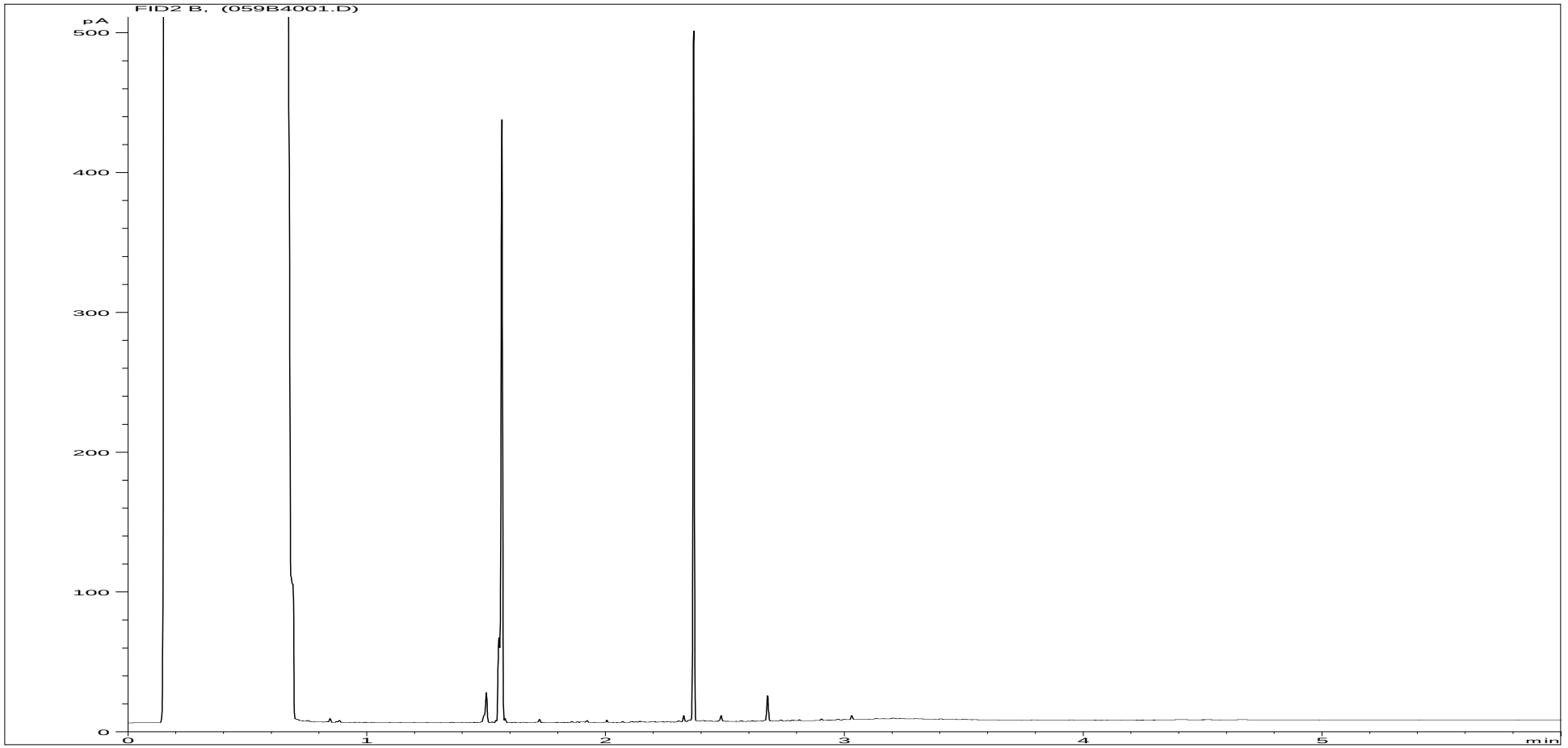
Petroleum Hydrocarbons (C8 to C40) by GC/FID Aliphatics Fraction.



Sample ID:	CL1616339ALI	**Job Number:**	S16_3918M
Multiplier:	16	**Client:**	Ramboll Environ
Dilution:	1	**Site:**	Zeon Chemicals ESA
Acquisition Method:	5UL_RUNF.M	**Client Sample Ref:**	WS20 2.50 (NVM)
Acquisition Date/Time:	18-May-16, 22:40:38		
Datafile:	D:\TES\DATA\Y2016\051716TPH_GC3\051716C 2016-05-18 13-34-19\009F4201.D		

Where individual results are flagged see report notes for status.
Results corrected to dry weight at 105°C where appropriate, in accordance with the MCERTS standard.

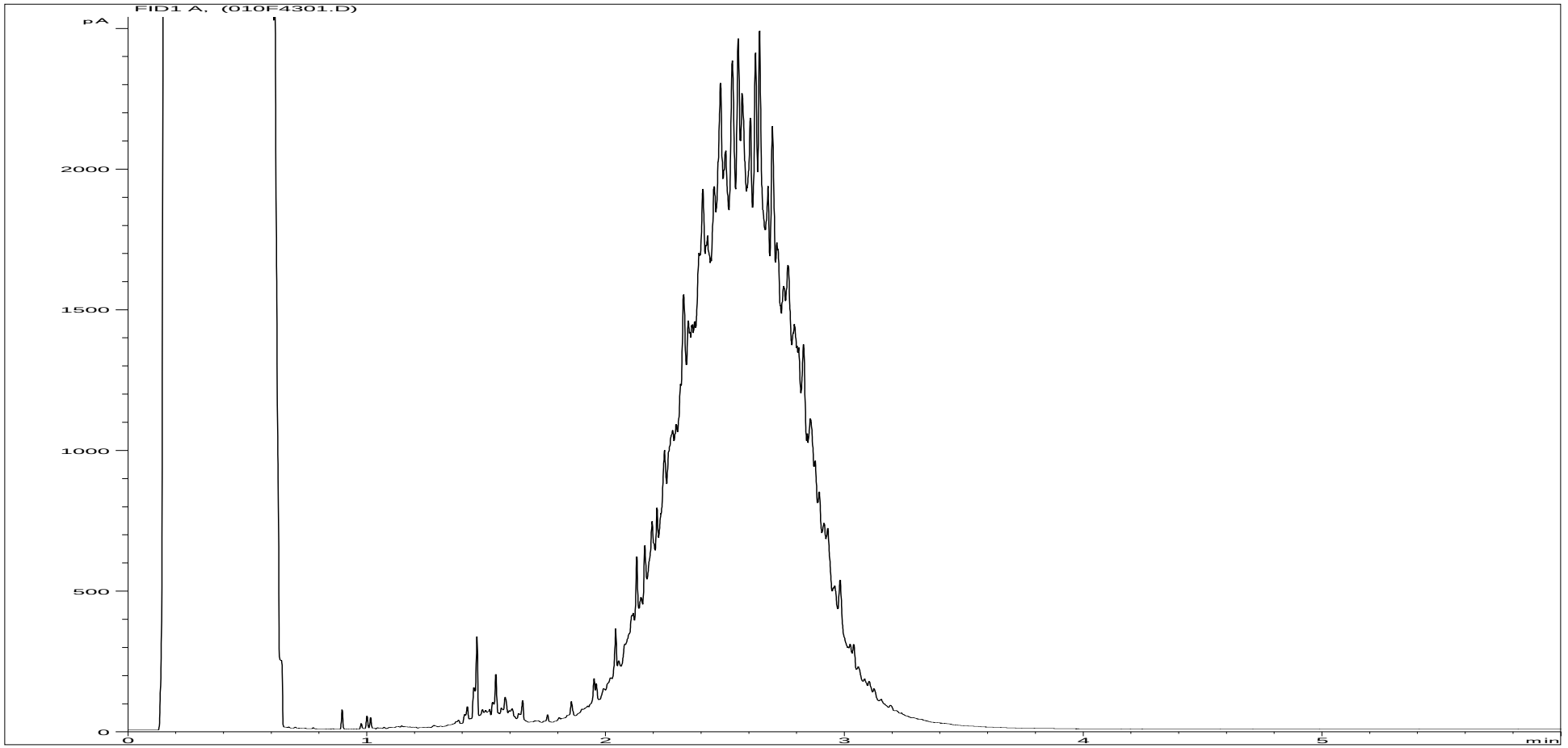
Petroleum Hydrocarbons (C8 to C40) by GC/FID Aromatics Fraction.



Sample ID:	CL1616339ARO	**Job Number:**	S16_3918M
Multiplier:	11.92	**Client:**	Ramboll Environ
Dilution:	1	**Site:**	Zeon Chemicals ESA
Acquisition Method:	5UL_RUNF.M	**Client Sample Ref:**	WS20 2.50 (NVM)
Acquisition Date/Time:	18-May-16, 22:14:21		
Datafile:	D:\TES\DATA\Y2016\051716TPH_GC3\051716C 2016-05-18 13-34-19\059B4001.D		

Where individual results are flagged see report notes for status.
Results corrected to dry weight at 105°C where appropriate, in accordance with the MCERTS standard.

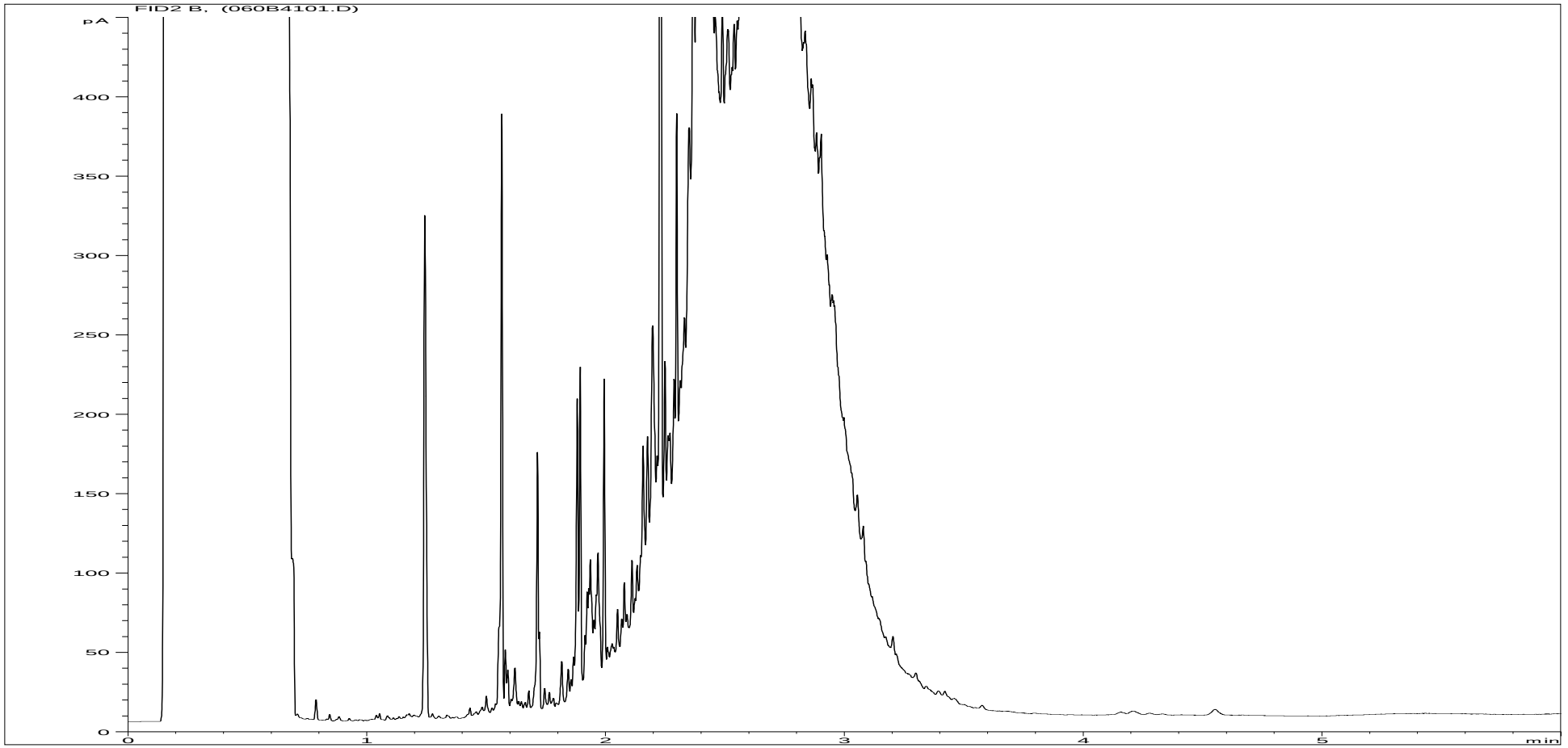
Petroleum Hydrocarbons (C8 to C40) by GC/FID Aliphatics Fraction.



Sample ID:	CL1616340ALI	**Job Number:**	S16_3918M
Multiplier:	16	**Client:**	Ramboll Environ
Dilution:	1	**Site:**	Zeon Chemicals ESA
Acquisition Method:	5UL_RUNF.M	**Client Sample Ref:**	WS19 0.65
Acquisition Date/Time:	18-May-16, 22:53:47		
Datafile:	D:\TES\DATA\Y2016\051716TPH_GC3\051716C 2016-05-18 13-34-19\010F4301.D		

Where individual results are flagged see report notes for status.
Results corrected to dry weight at 105°C where appropriate, in accordance with the MCERTS standard.

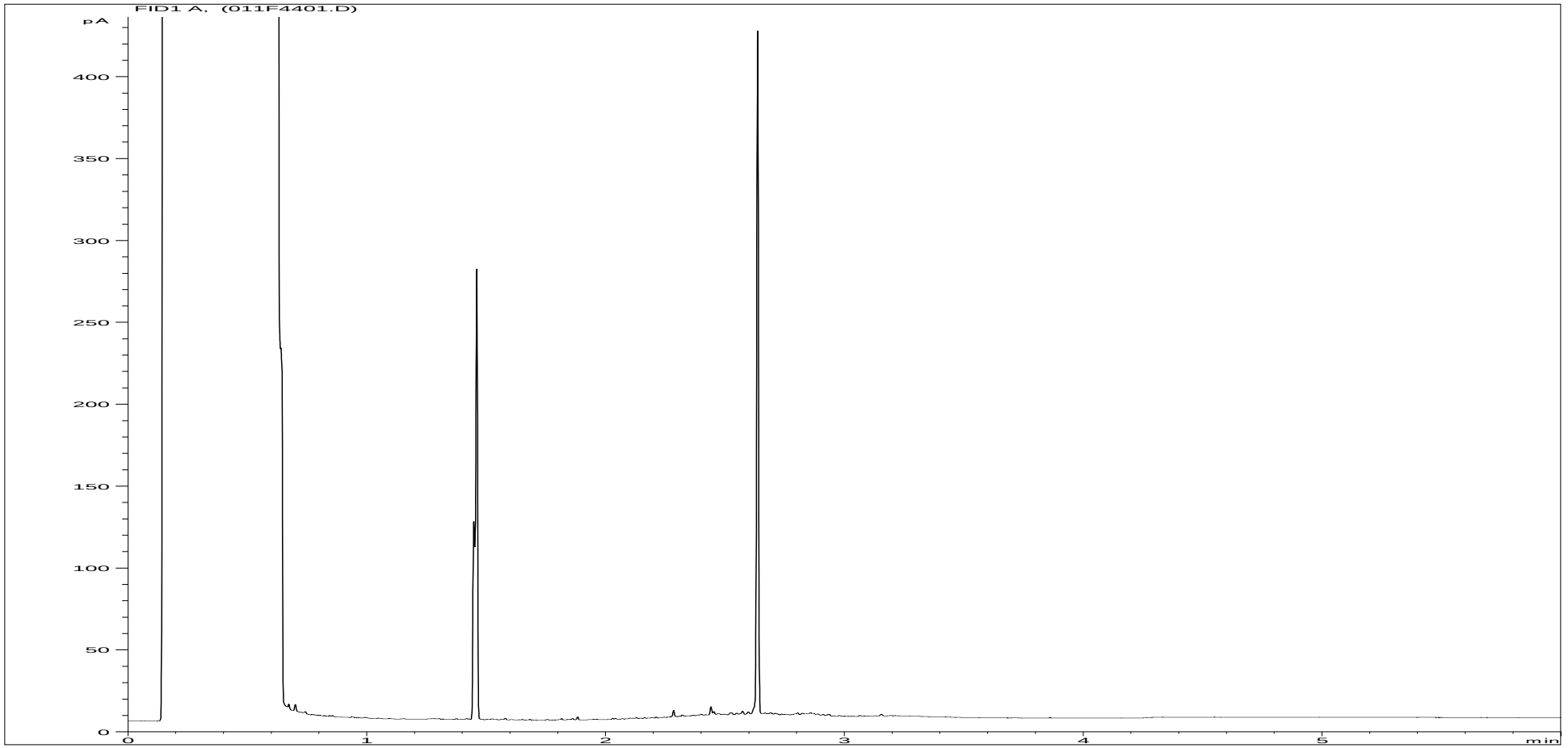
Petroleum Hydrocarbons (C8 to C40) by GC/FID Aromatics Fraction.



Sample ID:	CL1616340ARO	**Job Number:**	S16_3918M
Multiplier:	11.84	**Client:**	Ramboll Environ
Dilution:	1	**Site:**	Zeon Chemicals ESA
Acquisition Method:	5UL_RUNF.M	**Client Sample Ref:**	WS19 0.65
Acquisition Date/Time:	18-May-16, 22:27:29		
Datafile:	D:\TES\DATA\Y2016\051716TPH_GC3\051716C 2016-05-18 13-34-19\060B4101.D		

Where individual results are flagged see report notes for status.
Results corrected to dry weight at 105°C where appropriate, in accordance with the MCERTS standard.

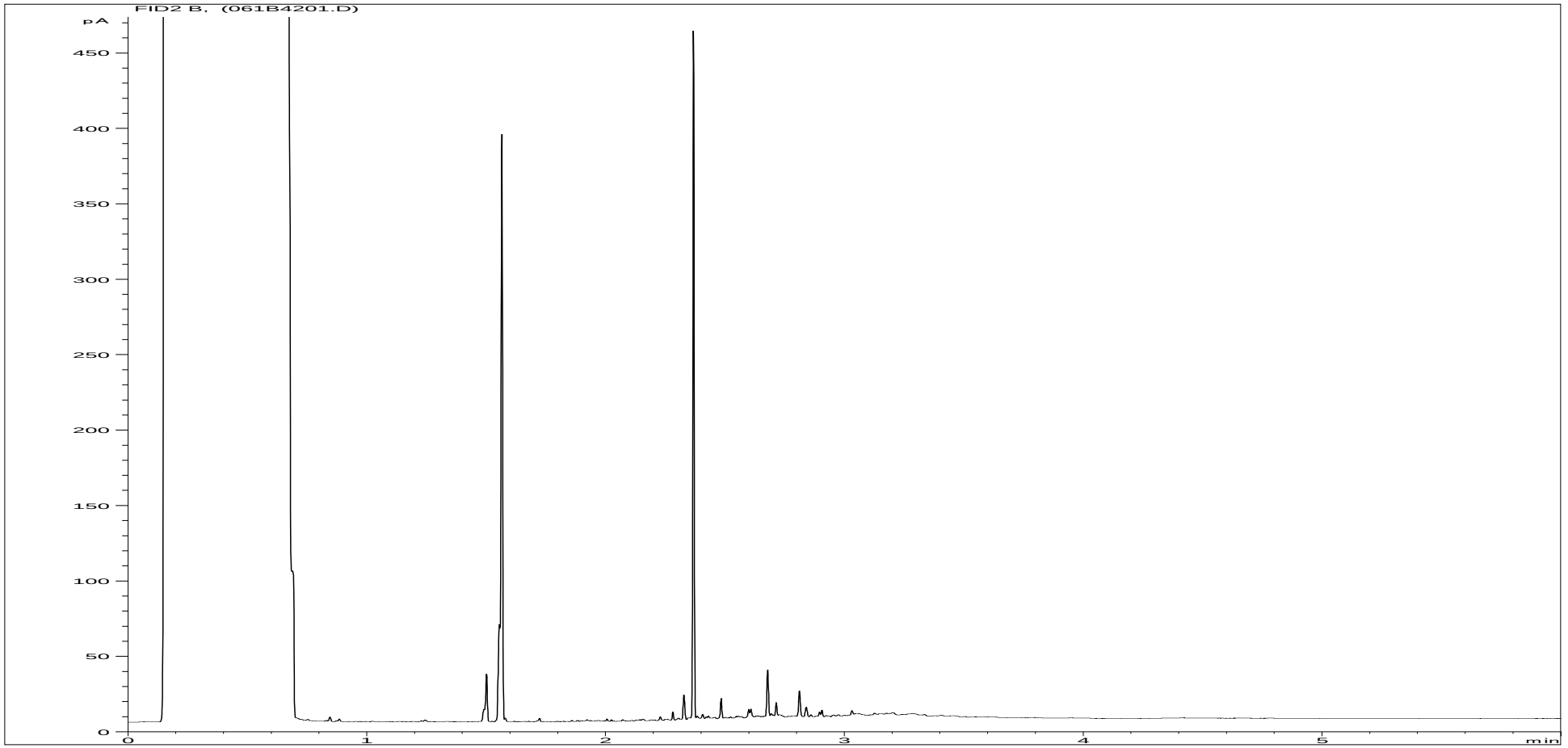
Petroleum Hydrocarbons (C8 to C40) by GC/FID Aliphatics Fraction.



Sample ID:	CL1616341ALI	**Job Number:**	S16_3918M
Multiplier:	15.84	**Client:**	Ramboll Environ
Dilution:	1	**Site:**	Zeon Chemicals ESA
Acquisition Method:	5UL_RUNF.M	**Client Sample Ref:**	WS21 0.75
Acquisition Date/Time:	18-May-16, 23:06:54		
Datafile:	D:\TES\DATA\Y2016\051716TPH_GC3\051716C 2016-05-18 13-34-19\011F4401.D		

Where individual results are flagged see report notes for status.
Results corrected to dry weight at 105°C where appropriate, in accordance with the MCERTS standard.

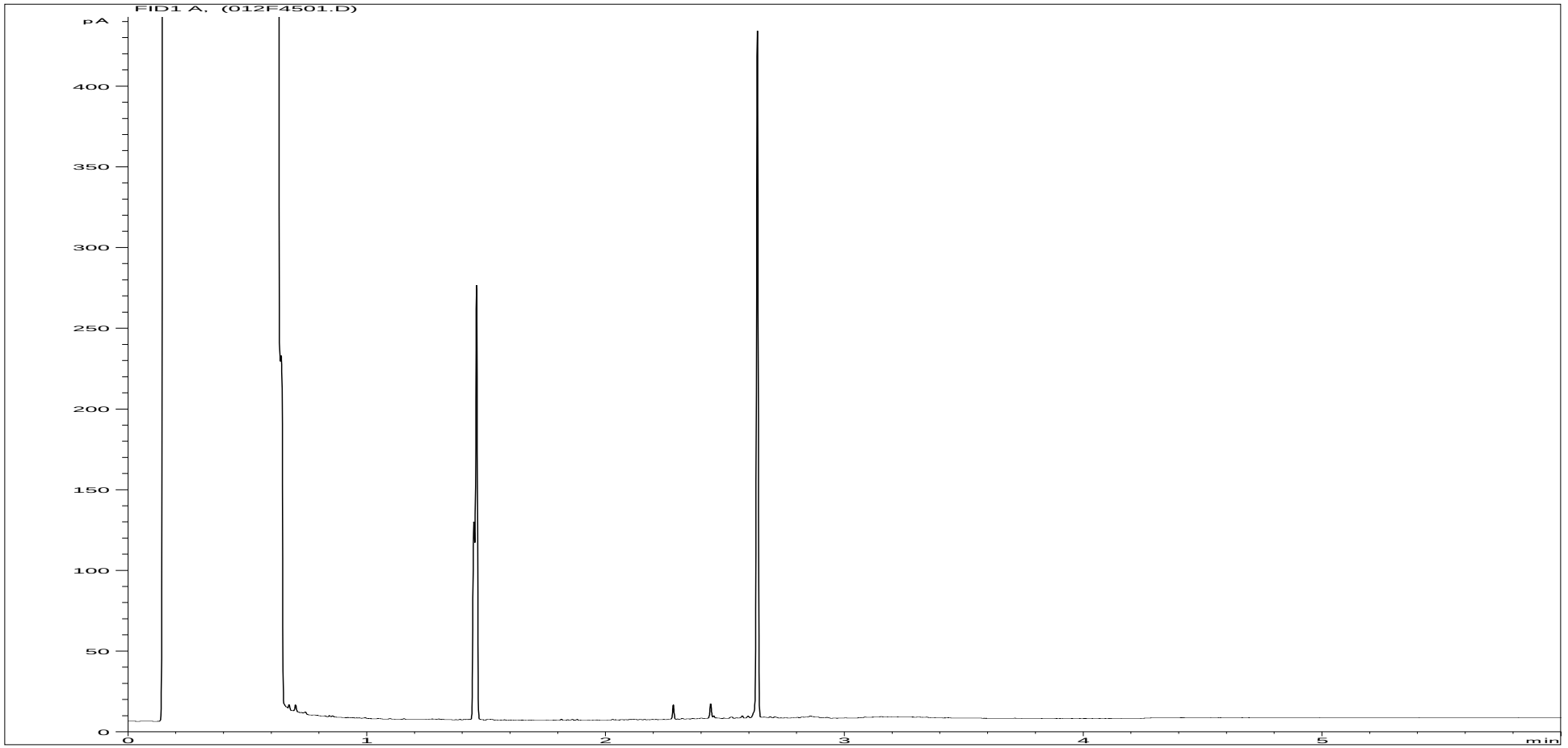
Petroleum Hydrocarbons (C8 to C40) by GC/FID Aromatics Fraction.



Sample ID:	CL1616341ARO	**Job Number:**	S16_3918M
Multiplier:	11.68	**Client:**	Ramboll Environ
Dilution:	1	**Site:**	Zeon Chemicals ESA
Acquisition Method:	5UL_RUNF.M	**Client Sample Ref:**	WS21 0.75
Acquisition Date/Time:	18-May-16, 22:40:38		
Datafile:	D:\TES\DATA\Y2016\051716TPH_GC3\051716C 2016-05-18 13-34-19\061B4201.D		

Where individual results are flagged see report notes for status.
Results corrected to dry weight at 105°C where appropriate, in accordance with the MCERTS standard.

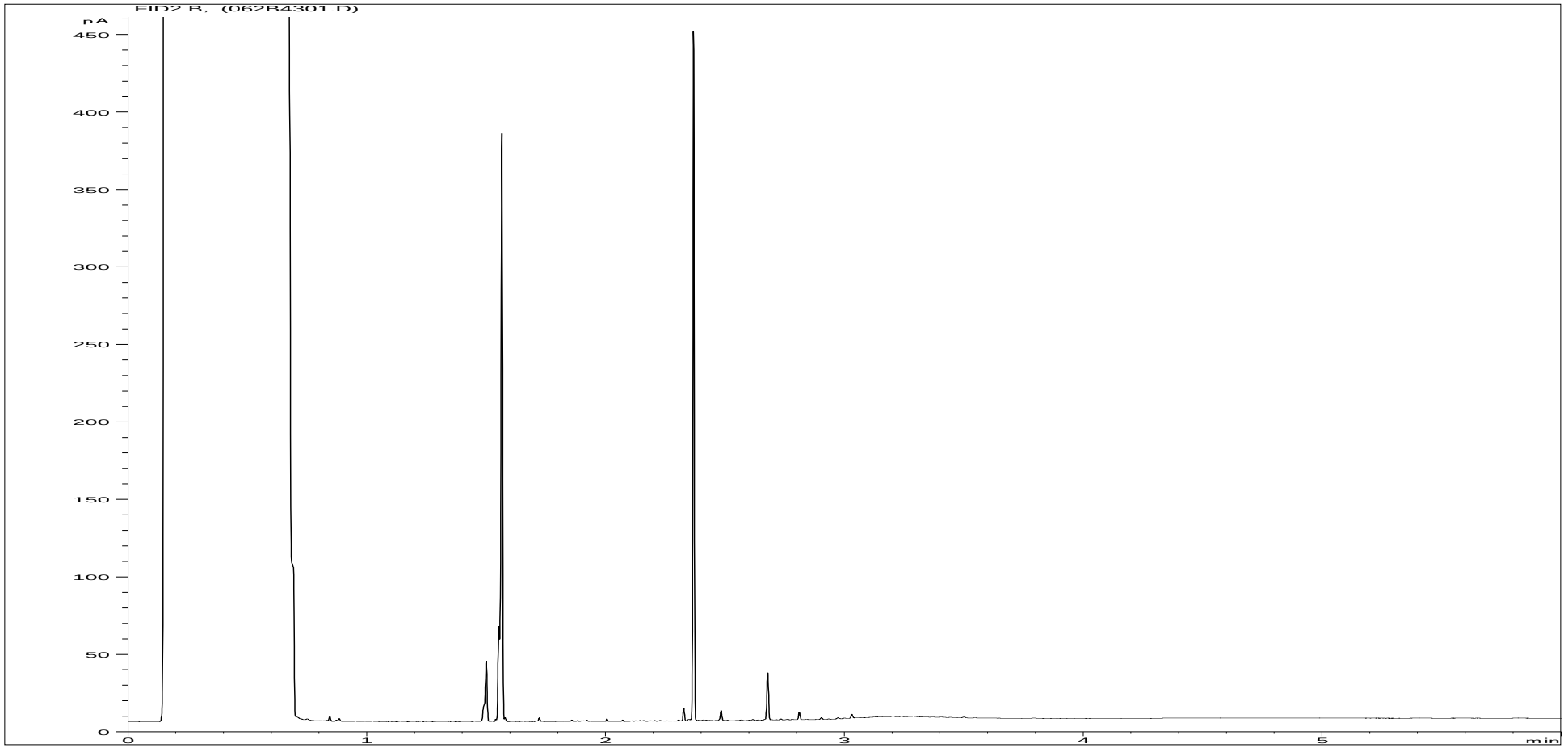
Petroleum Hydrocarbons (C8 to C40) by GC/FID Aliphatics Fraction.



Sample ID:	CL1616342ALI	**Job Number:**	S16_3918M
Multiplier:	15.92	**Client:**	Ramboll Environ
Dilution:	1	**Site:**	Zeon Chemicals ESA
Acquisition Method:	5UL_RUNF.M	**Client Sample Ref:**	WS21 1.40
Acquisition Date/Time:	18-May-16, 23:20:02		
Datafile:	D:\TES\DATA\Y2016\051716TPH_GC3\051716C 2016-05-18 13-34-19\012F4501.D		

Where individual results are flagged see report notes for status.
Results corrected to dry weight at 105°C where appropriate, in accordance with the MCERTS standard.

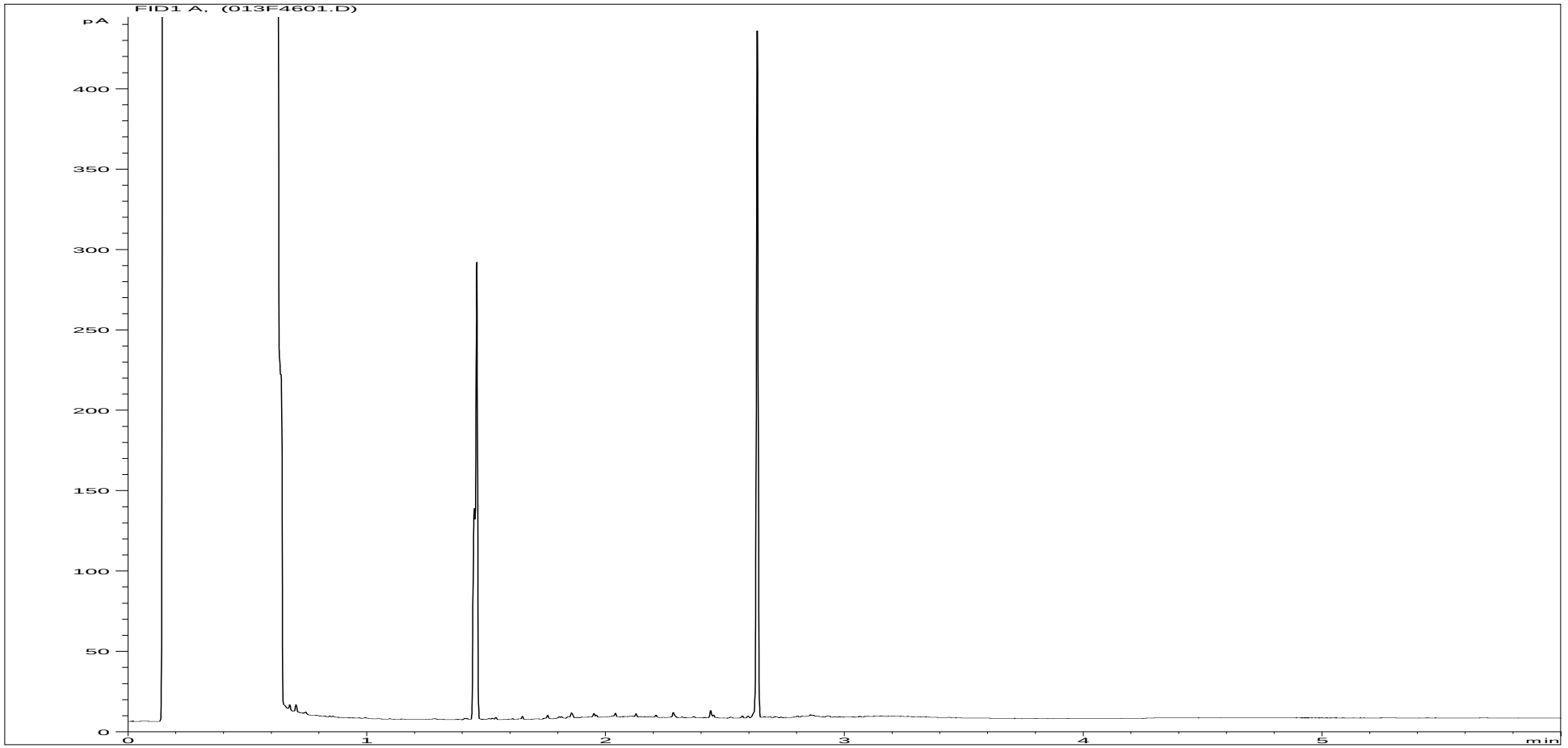
Petroleum Hydrocarbons (C8 to C40) by GC/FID Aromatics Fraction.



Sample ID:	CL1616342ARO	**Job Number:**	S16_3918M
Multiplier:	11.84	**Client:**	Ramboll Environ
Dilution:	1	**Site:**	Zeon Chemicals ESA
Acquisition Method:	5UL_RUNF.M	**Client Sample Ref:**	WS21 1.40
Acquisition Date/Time:	18-May-16, 22:53:47		
Datafile:	D:\TES\DATA\Y2016\051716TPH_GC3\051716C 2016-05-18 13-34-19\062B4301.D		

Where individual results are flagged see report notes for status.
Results corrected to dry weight at 105°C where appropriate, in accordance with the MCERTS standard.

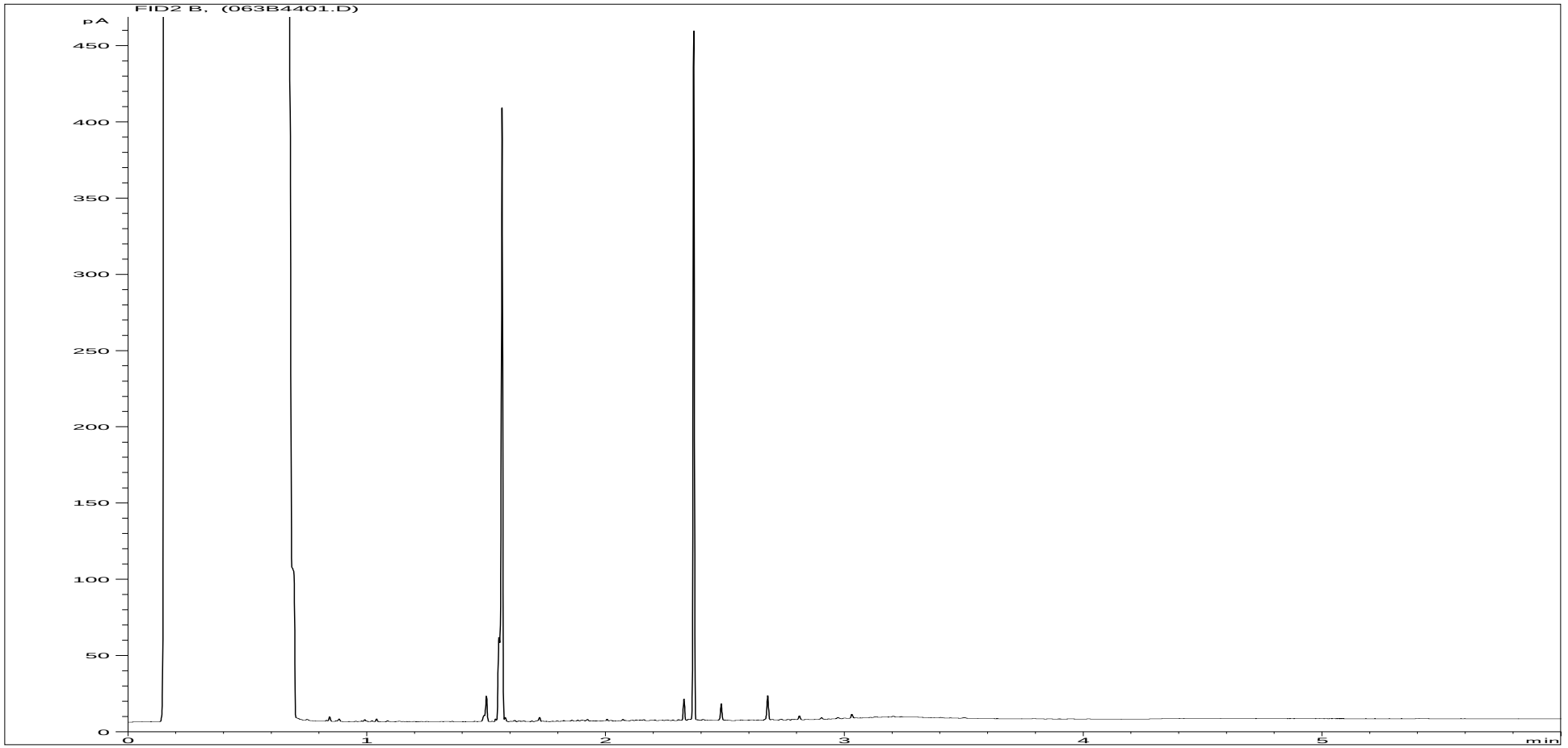
Petroleum Hydrocarbons (C8 to C40) by GC/FID Aliphatics Fraction.



Sample ID:	CL1616343ALI	**Job Number:**	S16_3918M
Multiplier:	16	**Client:**	Ramboll Environ
Dilution:	1	**Site:**	Zeon Chemicals ESA
Acquisition Method:	5UL_RUNF.M	**Client Sample Ref:**	WS11 0.30 (NVM)
Acquisition Date/Time:	18-May-16, 23:33:11		
Datafile:	D:\TES\DATA\Y2016\051716TPH_GC3\051716C 2016-05-18 13-34-19\013F4601.D		

Where individual results are flagged see report notes for status.
Results corrected to dry weight at 105°C where appropriate, in accordance with the MCERTS standard.

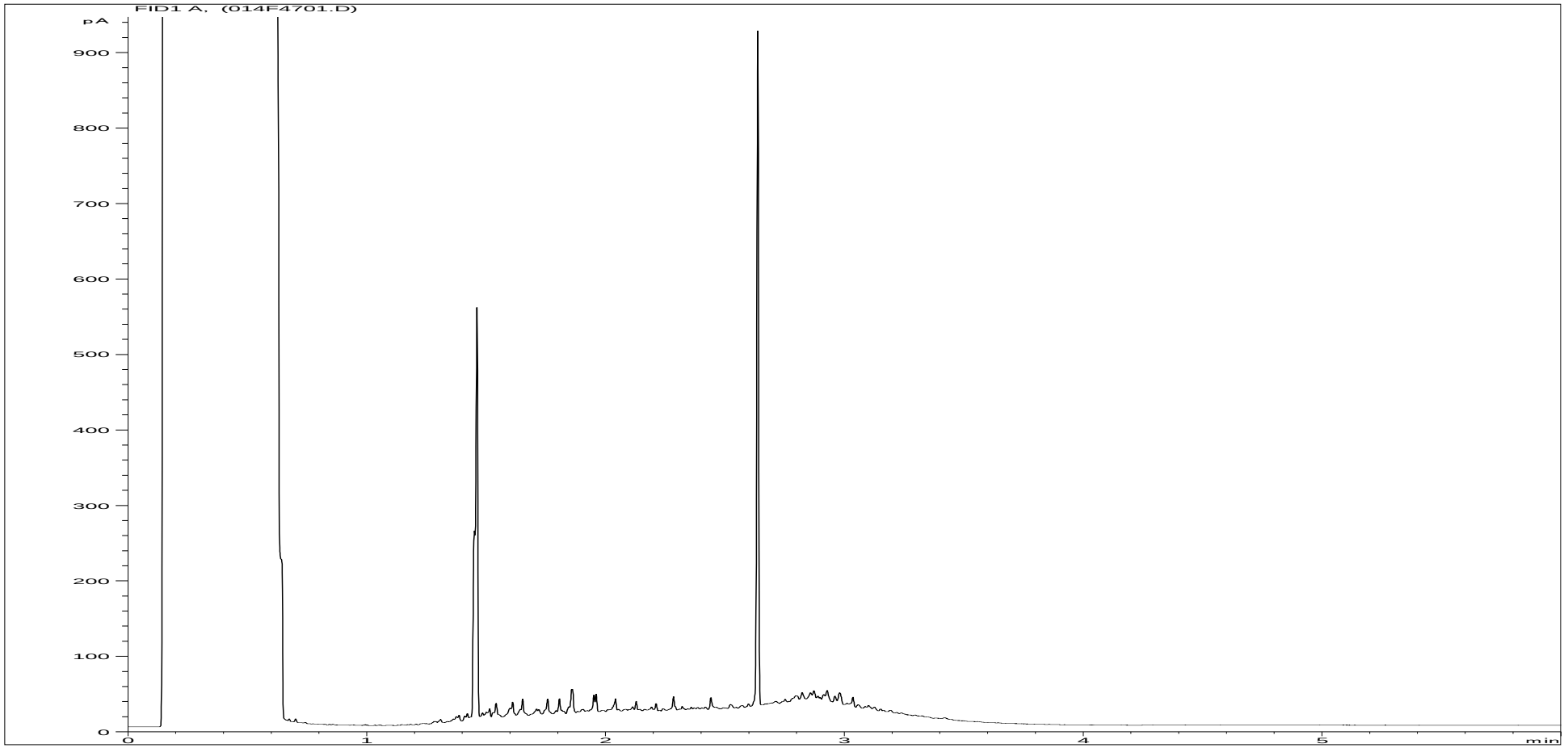
Petroleum Hydrocarbons (C8 to C40) by GC/FID Aromatics Fraction.



Sample ID:	CL1616343ARO	**Job Number:**	S16_3918M
Multiplier:	11.92	**Client:**	Ramboll Environ
Dilution:	1	**Site:**	Zeon Chemicals ESA
Acquisition Method:	5UL_RUNF.M	**Client Sample Ref:**	WS11 0.30 (NVM)
Acquisition Date/Time:	18-May-16, 23:06:54		
Datafile:	D:\TES\DATA\Y2016\051716TPH_GC3\051716C 2016-05-18 13-34-19\063B4401.D		

Where individual results are flagged see report notes for status.
Results corrected to dry weight at 105°C where appropriate, in accordance with the MCERTS standard.

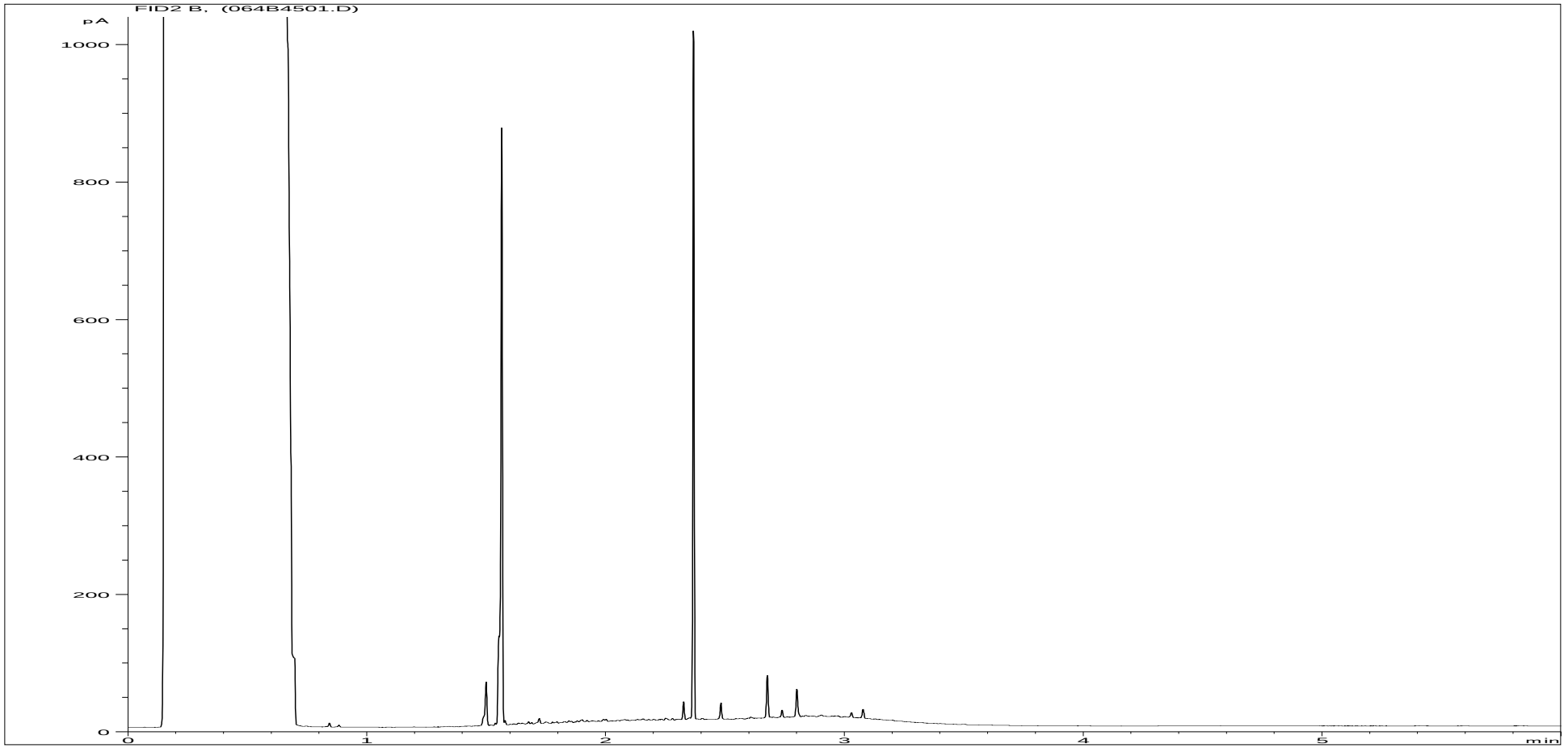
Petroleum Hydrocarbons (C8 to C40) by GC/FID Aliphatics Fraction.



Sample ID:	CL1616344ALI	**Job Number:**	S16_3918M
Multiplier:	15.76	**Client:**	Ramboll Environ
Dilution:	1	**Site:**	Zeon Chemicals ESA
Acquisition Method:	5UL_RUNF.M	**Client Sample Ref:**	WS12 0.30 (NVM)
Acquisition Date/Time:	18-May-16, 23:46:21		
Datafile:	D:\TES\DATA\Y2016\051716TPH_GC3\051716C 2016-05-18 13-34-19\014F4701.D		

Where individual results are flagged see report notes for status.
Results corrected to dry weight at 105°C where appropriate, in accordance with the MCERTS standard.

Petroleum Hydrocarbons (C8 to C40) by GC/FID Aromatics Fraction.



Sample ID:	CL1616344ARO	**Job Number:**	S16_3918M
Multiplier:	11.46	**Client:**	Ramboll Environ
Dilution:	1	**Site:**	Zeon Chemicals ESA
Acquisition Method:	5UL_RUNF.M	**Client Sample Ref:**	WS12 0.30 (NVM)
Acquisition Date/Time:	18-May-16, 23:20:02		
Datafile:	D:\TES\DATA\Y2016\051716TPH_GC3\051716C 2016-05-18 13-34-19\064B4501.D		

Where individual results are flagged see report notes for status.
Results corrected to dry weight at 105°C where appropriate, in accordance with the MCERTS standard.

Volatile Organic Compounds by HSA-GCMS

Accredited?: Yes

Customer and Site Details: Ramboll Environ: Zeon Chemicals ESA
Sample Details: WS18 1.60
LIMS ID Number: CL1616335
Job Number: S16_3918M

Directory/Quant file: 518VOC.MS19\ Initial Calibration
Date Booked in: 13-May-16
Date Analysed: 18-May-16
Operator: PR

Matrix: Soil
Method: Headspace
Multiplier: 1.1
Position: 13

Target Compounds	CAS #	R.T. (min.)	Concentration µg/kg	% Fit	Accr. code
Dichlorodifluoromethane	75-71-8 **	-	< 1	-	N
Chloromethane	74-87-3 *	-	< 4	-	N
Vinyl Chloride	75-01-4	-	< 1	-	UM
Bromomethane	74-83-9	-	< 1	-	UM
Chloroethane	75-00-3	1.79	56	M	UM
Trichlorofluoromethane	75-69-4	-	< 1	-	UM
1,1-Dichloroethene	75-35-48 *	-	< 1	-	N
trans 1,2-Dichloroethene	156-60-5	-	< 1	-	UM
1,1-Dichloroethane	75-34-3	-	< 1	-	UM
MTBE	1634-04-4	-	< 1	-	UM
2,2-Dichloropropane	594-20-7	-	< 1	-	UM
cis 1,2-Dichloroethene	156-59-2	-	< 8	-	UM
Bromochloromethane	74-97-5	-	< 1	-	UM
Chloroform	67-66-3	-	< 1	-	UM
1,1,1-Trichloroethane	71-55-6	-	< 1	-	UM
Carbon Tetrachloride	56-23-5	-	< 1	-	UM
1,1-Dichloropropene	563-58-6	-	< 1	-	UM
Benzene	71-43-2	-	< 1	-	UM
1,2-Dichloroethane	107-06-2	-	< 1	-	UM
Trichloroethene	79-01-6 **	-	< 1	-	N
1,2-Dichloropropane	78-87-5	-	< 1	-	UM
Dibromomethane	74-95-3	-	< 1	-	UM
Bromodichloromethane	75-27-4	-	< 1	-	UM
cis 1,3-Dichloropropene	10061-01-5	-	< 1	-	UM
Toluene	108-88-3	-	< 8	-	UM
trans 1,3-Dichloropropene	10061-02-6	-	< 1	-	UM
1,1,2-Trichloroethane	79-00-5	-	< 1	-	UM
Tetrachloroethene	127-18-4	-	< 4	-	UM
1,3-Dichloropropane	142-28-9	-	< 1	-	UM
Dibromochloromethane	124-48-1	-	< 1	-	UM
1,2-Dibromoethane	106-93-4	-	< 1	-	UM
Chlorobenzene	108-90-7	-	< 1	-	UM
Ethylbenzene	100-41-4	-	< 3	-	UM
1,1,1,2-Tetrachloroethane	630-20-6	-	< 1	-	UM
m and p-Xylene	108-38-3/106-42-3	-	< 6	-	UM

Target Compounds	CAS #	R.T. (min.)	Concentration µg/kg	% Fit	Accr. code
o-Xylene	95-47-6	-	< 3	-	UM
Styrene	100-42-5	-	< 1	-	UM
Bromoform	75-25-2	-	< 1	-	UM
iso-Propylbenzene	98-82-8	-	< 1	-	UM
1,1,2,2-Tetrachloroethane	79-34-5 **	-	< 1	-	N
Propylbenzene	103-65-1	-	< 1	-	UM
Bromobenzene	108-86-1	-	< 1	-	UM
1,2,3-Trichloropropane	96-18-4	-	< 1	-	UM
2-Chlorotoluene	95-49-8	-	< 1	-	UM
1,3,5-Trimethylbenzene	108-67-8	-	< 1	-	UM
4-Chlorotoluene	106-43-4	-	< 1	-	UM
tert-Butylbenzene	98-06-6	-	< 1	-	UM
1,2,4-Trimethylbenzene	95-63-6	-	< 1	-	UM
sec-Butylbenzene	135-98-8	-	< 1	-	UM
p-Isopropyltoluene	99-87-6	-	< 1	-	UM
1,3-Dichlorobenzene	541-73-1	-	< 1	-	UM
1,4-Dichlorobenzene	106-46-7	-	< 1	-	UM
n-Butylbenzene	104-51-8 *	-	< 1	-	N
1,2-Dichlorobenzene	95-50-1	-	< 1	-	UM
1,2-Dibromo-3-chloropropane	96-12-8	-	< 1	-	UM
1,2,4-Trichlorobenzene	120-82-1 *	-	< 4	-	N
Hexachlorobutadiene	87-68-3 **	-	< 3	-	N
Naphthalene	91-20-3	-	< 8	-	UM
1,2,3-Trichlorobenzene	87-61-6	-	< 4	-	UM

Concentrations are reported on a dry weight basis
Compounds marked ** are not UKAS or Mcerts accredited
"M" denotes that % fit has been manually interpreted
This analysis was conducted on an 'As Received' basis.

Internal standards	R.T.	Area %	Surrogates	% Rec
Pentafluorobenzene	4.04	92	Dibromofluoromethane	100
1,4-Difluorobenzene	4.39	83	Toluene-d8	93
Chlorobenzene-d5	5.50	60		
Bromofluorobenzene	5.89	44		
1,4-Dichlorobenzene-d4	6.29	31		
Naphthalene-d8	7.13	15		

Where individual results are flagged see report notes for status.
Results corrected to dry weight at 105°C where appropriate, in accordance with the MCERTS standard.

Volatile Organic Compounds by HSA-GCMS

Accredited?: Yes

Customer and Site Details: Ramboll Environ: Zeon Chemicals ESA
Sample Details: WS20 0.30
LIMS ID Number: CL1616336
Job Number: S16_3918M

Directory/Quant file: 518VOC.MS19\ Initial Calibration
Date Booked in: 13-May-16
Date Analysed: 18-May-16
Operator: PR

Matrix: Soil
Method: Headspace
Multiplier: 0.96
Position: 14

Target Compounds	CAS #	R.T. (min.)	Concentration µg/kg	% Fit	Accr. code
Dichlorodifluoromethane	75-71-8 **	-	< 1	-	N
Chloromethane	74-87-3 *	-	< 4	-	N
Vinyl Chloride	75-01-4	-	< 1	-	UM
Bromomethane	74-83-9	-	< 1	-	UM
Chloroethane	75-00-3	-	< 3	-	UM
Trichlorofluoromethane	75-69-4	-	< 1	-	UM
1,1-Dichloroethene	75-35-48 *	-	< 1	-	N
trans 1,2-Dichloroethene	156-60-5	-	< 1	-	UM
1,1-Dichloroethane	75-34-3	-	< 1	-	UM
MTBE	1634-04-4	-	< 1	-	UM
2,2-Dichloropropane	594-20-7	-	< 1	-	UM
cis 1,2-Dichloroethene	156-59-2	-	< 6	-	UM
Bromochloromethane	74-97-5	-	< 1	-	UM
Chloroform	67-66-3	-	< 1	-	UM
1,1,1-Trichloroethane	71-55-6	-	< 1	-	UM
Carbon Tetrachloride	56-23-5	-	< 1	-	UM
1,1-Dichloropropene	563-58-6	-	< 1	-	UM
Benzene	71-43-2	-	< 1	-	UM
1,2-Dichloroethane	107-06-2	-	< 1	-	UM
Trichloroethene	79-01-6 **	-	< 1	-	N
1,2-Dichloropropane	78-87-5	-	< 1	-	UM
Dibromomethane	74-95-3	-	< 1	-	UM
Bromodichloromethane	75-27-4	-	< 1	-	UM
cis 1,3-Dichloropropene	10061-01-5	-	< 1	-	UM
Toluene	108-88-3	-	< 6	-	UM
trans 1,3-Dichloropropene	10061-02-6	-	< 1	-	UM
1,1,2-Trichloroethane	79-00-5	-	< 1	-	UM
Tetrachloroethene	127-18-4	-	< 4	-	UM
1,3-Dichloropropane	142-28-9	-	< 1	-	UM
Dibromochloromethane	124-48-1	-	< 1	-	UM
1,2-Dibromoethane	106-93-4	-	< 1	-	UM
Chlorobenzene	108-90-7	-	< 1	-	UM
Ethylbenzene	100-41-4	-	< 3	-	UM
1,1,1,2-Tetrachloroethane	630-20-6	-	< 1	-	UM
m and p-Xylene	108-38-3/106-42-3	-	< 5	-	UM

Target Compounds	CAS #	R.T. (min.)	Concentration µg/kg	% Fit	Accr. code
o-Xylene	95-47-6	-	< 3	-	UM
Styrene	100-42-5	-	< 1	-	UM
Bromoform	75-25-2	-	< 1	-	UM
iso-Propylbenzene	98-82-8	-	< 1	-	UM
1,1,2,2-Tetrachloroethane	79-34-5 **	-	< 1	-	N
Propylbenzene	103-65-1	-	< 1	-	UM
Bromobenzene	108-86-1	-	< 1	-	UM
1,2,3-Trichloropropane	96-18-4	-	< 1	-	UM
2-Chlorotoluene	95-49-8	-	< 1	-	UM
1,3,5-Trimethylbenzene	108-67-8	-	< 1	-	UM
4-Chlorotoluene	106-43-4	-	< 1	-	UM
tert-Butylbenzene	98-06-6	-	< 1	-	UM
1,2,4-Trimethylbenzene	95-63-6	-	< 1	-	UM
sec-Butylbenzene	135-98-8	-	< 1	-	UM
p-Isopropyltoluene	99-87-6	-	< 1	-	UM
1,3-Dichlorobenzene	541-73-1	-	< 1	-	UM
1,4-Dichlorobenzene	106-46-7	-	< 1	-	UM
n-Butylbenzene	104-51-8 *	-	< 1	-	N
1,2-Dichlorobenzene	95-50-1	-	< 1	-	UM
1,2-Dibromo-3-chloropropane	96-12-8	-	< 1	-	UM
1,2,4-Trichlorobenzene	120-82-1 *	-	< 4	-	N
Hexachlorobutadiene	87-68-3 **	-	< 3	-	N
Naphthalene	91-20-3	-	< 6	-	UM
1,2,3-Trichlorobenzene	87-61-6	-	< 4	-	UM

Concentrations are reported on a dry weight basis
Compounds marked ** are not UKAS or Mcerts accredited
"M" denotes that % fit has been manually interpreted
This analysis was conducted on an 'As Received' basis.

Internal standards	R.T.	Area %	Surrogates	% Rec
Pentafluorobenzene	4.04	96	Dibromofluoromethane	102
1,4-Difluorobenzene	4.39	91	Toluene-d8	94
Chlorobenzene-d5	5.50	76		
Bromofluorobenzene	5.89	62		
1,4-Dichlorobenzene-d4	6.29	50		
Naphthalene-d8	7.12	17		

Where individual results are flagged see report notes for status.
Results corrected to dry weight at 105°C where appropriate, in accordance with the MCERTS standard.

Volatile Organic Compounds by HSA-GCMS

Accredited?: Yes

Customer and Site Details: Ramboll Environ: Zeon Chemicals ESA
Sample Details: WS20 1.80
LIMS ID Number: CL1616338
Job Number: S16_3918M

Directory/Quant file: 518VOC.MS19\ Initial Calibration
Date Booked in: 13-May-16
Date Analysed: 18-May-16
Operator: PR

Matrix: Soil
Method: Headspace
Multiplier: 0.92
Position: 15

Target Compounds	CAS #	R.T. (min.)	Concentration µg/kg	% Fit	Accr. code
Dichlorodifluoromethane	75-71-8 **	-	< 1	-	N
Chloromethane	74-87-3 *	-	< 4	-	N
Vinyl Chloride	75-01-4	-	< 1	-	UM
Bromomethane	74-83-9	-	< 1	-	UM
Chloroethane	75-00-3	-	< 2	-	UM
Trichlorofluoromethane	75-69-4	-	< 1	-	UM
1,1-Dichloroethene	75-35-48 *	-	< 1	-	N
trans 1,2-Dichloroethene	156-60-5	-	< 1	-	UM
1,1-Dichloroethane	75-34-3	-	< 1	-	UM
MTBE	1634-04-4	-	< 1	-	UM
2,2-Dichloropropane	594-20-7	-	< 1	-	UM
cis 1,2-Dichloroethene	156-59-2	-	< 6	-	UM
Bromochloromethane	74-97-5	-	< 1	-	UM
Chloroform	67-66-3	-	< 1	-	UM
1,1,1-Trichloroethane	71-55-6	-	< 1	-	UM
Carbon Tetrachloride	56-23-5	-	< 1	-	UM
1,1-Dichloropropene	563-58-6	-	< 1	-	UM
Benzene	71-43-2	-	< 1	-	UM
1,2-Dichloroethane	107-06-2	-	< 1	-	UM
Trichloroethene	79-01-6 **	-	< 1	-	N
1,2-Dichloropropane	78-87-5	-	< 1	-	UM
Dibromomethane	74-95-3	-	< 1	-	UM
Bromodichloromethane	75-27-4	-	< 1	-	UM
cis 1,3-Dichloropropene	10061-01-5	-	< 1	-	UM
Toluene	108-88-3	-	< 6	-	UM
trans 1,3-Dichloropropene	10061-02-6	-	< 1	-	UM
1,1,2-Trichloroethane	79-00-5	-	< 1	-	UM
Tetrachloroethene	127-18-4	-	< 4	-	UM
1,3-Dichloropropane	142-28-9	-	< 1	-	UM
Dibromochloromethane	124-48-1	-	< 1	-	UM
1,2-Dibromoethane	106-93-4	-	< 1	-	UM
Chlorobenzene	108-90-7	-	< 1	-	UM
Ethylbenzene	100-41-4	-	< 2	-	UM
1,1,1,2-Tetrachloroethane	630-20-6	-	< 1	-	UM
m and p-Xylene	108-38-3/106-42-3	-	< 5	-	UM

Target Compounds	CAS #	R.T. (min.)	Concentration µg/kg	% Fit	Accr. code
o-Xylene	95-47-6	-	< 2	-	UM
Styrene	100-42-5	-	< 1	-	UM
Bromoform	75-25-2	-	< 1	-	UM
iso-Propylbenzene	98-82-8	-	< 1	-	UM
1,1,2,2-Tetrachloroethane	79-34-5 **	-	< 1	-	N
Propylbenzene	103-65-1	-	< 1	-	UM
Bromobenzene	108-86-1	-	< 1	-	UM
1,2,3-Trichloropropane	96-18-4	-	< 1	-	UM
2-Chlorotoluene	95-49-8	-	< 1	-	UM
1,3,5-Trimethylbenzene	108-67-8	-	< 1	-	UM
4-Chlorotoluene	106-43-4	-	< 1	-	UM
tert-Butylbenzene	98-06-6	-	< 1	-	UM
1,2,4-Trimethylbenzene	95-63-6	-	< 1	-	UM
sec-Butylbenzene	135-98-8	-	< 1	-	UM
p-Isopropyltoluene	99-87-6	-	< 1	-	UM
1,3-Dichlorobenzene	541-73-1	-	< 1	-	UM
1,4-Dichlorobenzene	106-46-7	-	< 1	-	UM
n-Butylbenzene	104-51-8 *	-	< 1	-	N
1,2-Dichlorobenzene	95-50-1	-	< 1	-	UM
1,2-Dibromo-3-chloropropane	96-12-8	-	< 1	-	UM
1,2,4-Trichlorobenzene	120-82-1 *	-	< 4	-	N
Hexachlorobutadiene	87-68-3 **	-	< 2	-	N
Naphthalene	91-20-3	-	< 6	-	UM
1,2,3-Trichlorobenzene	87-61-6	-	< 4	-	UM

Concentrations are reported on a dry weight basis
Compounds marked ** are not UKAS or Mcerts accredited
"M" denotes that % fit has been manually interpreted
This analysis was conducted on an 'As Received' basis.

Internal standards	R.T.	Area %	Surrogates	% Rec
Pentafluorobenzene	4.04	100	Dibromofluoromethane	101
1,4-Difluorobenzene	4.39	99	Toluene-d8	99
Chlorobenzene-d5	5.50	98		
Bromofluorobenzene	5.89	94		
1,4-Dichlorobenzene-d4	6.29	92		
Naphthalene-d8	7.12	85		

Where individual results are flagged see report notes for status.
Results corrected to dry weight at 105°C where appropriate, in accordance with the MCERTS standard.

Volatile Organic Compounds by HSA-GCMS

Accredited?: No

Customer and Site Details: Ramboll Environ: Zeon Chemicals ESA
Sample Details: WS20 2.50 (NVM)
LIMS ID Number: CL1616339
Job Number: S16_3918M

Directory/Quant file: 518VOC.MS19\ Initial Calibration
Date Booked in: 13-May-16
Date Analysed: 18-May-16
Operator: PR

Matrix: Soil
Method: Headspace
Multiplier: 1.06
Position: 16

Target Compounds	CAS #	R.T. (min.)	Concentration µg/kg	% Fit	Accr. code
Dichlorodifluoromethane	75-71-8	-	< 1	-	N
Chloromethane	74-87-3	-	< 3	-	N
Vinyl Chloride	75-01-4	-	< 1	-	N
Bromomethane	74-83-9	-	< 1	-	N
Chloroethane	75-00-3	-	< 2	-	N
Trichlorofluoromethane	75-69-4	-	< 1	-	N
1,1-Dichloroethene	75-35-48	-	< 1	-	N
trans 1,2-Dichloroethene	156-60-5	-	< 1	-	N
1,1-Dichloroethane	75-34-3	-	< 1	-	N
MTBE	1634-04-4	-	< 1	-	N
2,2-Dichloropropane	594-20-7	-	< 1	-	N
cis 1,2-Dichloroethene	156-59-2	-	< 6	-	N
Bromochloromethane	74-97-5	-	< 1	-	N
Chloroform	67-66-3	-	< 1	-	N
1,1,1-Trichloroethane	71-55-6	-	< 1	-	N
Carbon Tetrachloride	56-23-5	-	< 1	-	N
1,1-Dichloropropene	563-58-6	-	< 1	-	N
Benzene	71-43-2	-	< 1	-	N
1,2-Dichloroethane	107-06-2	-	< 1	-	N
Trichloroethene	79-01-6	-	< 1	-	N
1,2-Dichloropropane	78-87-5	-	< 1	-	N
Dibromomethane	74-95-3	-	< 1	-	N
Bromodichloromethane	75-27-4	-	< 1	-	N
cis 1,3-Dichloropropene	10061-01-5	-	< 1	-	N
Toluene	108-88-3	-	< 6	-	N
trans 1,3-Dichloropropene	10061-02-6	-	< 1	-	N
1,1,2-Trichloroethane	79-00-5	-	< 1	-	N
Tetrachloroethene	127-18-4	-	< 3	-	N
1,3-Dichloropropane	142-28-9	-	< 1	-	N
Dibromochloromethane	124-48-1	-	< 1	-	N
1,2-Dibromoethane	106-93-4	-	< 1	-	N
Chlorobenzene	108-90-7	-	< 1	-	N
Ethylbenzene	100-41-4	-	< 2	-	N
1,1,1,2-Tetrachloroethane	630-20-6	-	< 1	-	N
m and p-Xylene	108-38-3/106-42-3	-	< 5	-	N

Target Compounds	CAS #	R.T. (min.)	Concentration µg/kg	% Fit	Accr. code
o-Xylene	95-47-6	-	< 2	-	N
Styrene	100-42-5	-	< 1	-	N
Bromoform	75-25-2	-	< 1	-	N
iso-Propylbenzene	98-82-8	-	< 1	-	N
1,1,2,2-Tetrachloroethane	79-34-5 **	-	< 1	-	N
Propylbenzene	103-65-1	-	< 1	-	N
Bromobenzene	108-86-1	-	< 1	-	N
1,2,3-Trichloropropane	96-18-4	-	< 1	-	N
2-Chlorotoluene	95-49-8	-	< 1	-	N
1,3,5-Trimethylbenzene	108-67-8	-	< 1	-	N
4-Chlorotoluene	106-43-4	-	< 1	-	N
tert-Butylbenzene	98-06-6	-	< 1	-	N
1,2,4-Trimethylbenzene	95-63-6	-	< 1	-	N
sec-Butylbenzene	135-98-8	-	< 1	-	N
p-Isopropyltoluene	99-87-6	-	< 1	-	N
1,3-Dichlorobenzene	541-73-1	-	< 1	-	N
1,4-Dichlorobenzene	106-46-7	-	< 1	-	N
n-Butylbenzene	104-51-8 *	-	< 1	-	N
1,2-Dichlorobenzene	95-50-1	-	< 1	-	N
1,2-Dibromo-3-chloropropane	96-12-8	-	< 1	-	N
1,2,4-Trichlorobenzene	120-82-1 *	-	< 3	-	N
Hexachlorobutadiene	87-68-3 **	-	< 2	-	N
Naphthalene	91-20-3	-	< 6	-	N
1,2,3-Trichlorobenzene	87-61-6	-	< 3	-	N

Concentrations are reported on a dry weight basis
Compounds marked ** are not UKAS or Mcerts accredited
"M" denotes that % fit has been manually interpreted
This analysis was conducted on an 'As Received' basis.

Internal standards	R.T.	Area %	Surrogates	% Rec
Pentafluorobenzene	4.04	101	Dibromofluoromethane	99
1,4-Difluorobenzene	4.39	101	Toluene-d8	98
Chlorobenzene-d5	5.50	97		
Bromofluorobenzene	5.89	93		
1,4-Dichlorobenzene-d4	6.29	86		
Naphthalene-d8	7.12	66		

Where individual results are flagged see report notes for status.
Results corrected to dry weight at 105°C where appropriate, in accordance with the MCERTS standard.

Volatile Organic Compounds by HSA-GCMS

Accredited?: Yes

Customer and Site Details: Ramboll Environ: Zeon Chemicals ESA
Sample Details: WS19 0.65
LIMS ID Number: CL1616340
Job Number: S16_3918M

Directory/Quant file: 518VOC.MS19\ Initial Calibration
Date Booked in: 13-May-16
Date Analysed: 18-May-16
Operator: PR

Matrix: Soil
Method: Headspace
Multiplier: 1
Position: 17

Target Compounds	CAS #	R.T. (min.)	Concentration µg/kg	% Fit	Accr. code
Dichlorodifluoromethane	75-71-8 **	-	< 1	-	N
Chloromethane	74-87-3 *	-	< 4	-	N
Vinyl Chloride	75-01-4	-	< 1	-	UM
Bromomethane	74-83-9	-	< 1	-	UM
Chloroethane	75-00-3	-	< 3	-	UM
Trichlorofluoromethane	75-69-4	-	< 1	-	UM
1,1-Dichloroethene	75-35-48 *	-	< 1	-	N
trans 1,2-Dichloroethene	156-60-5	-	< 1	-	UM
1,1-Dichloroethane	75-34-3	-	< 1	-	UM
MTBE	1634-04-4	-	< 1	-	UM
2,2-Dichloropropane	594-20-7	-	< 1	-	UM
cis 1,2-Dichloroethene	156-59-2	-	< 7	-	UM
Bromochloromethane	74-97-5	-	< 1	-	UM
Chloroform	67-66-3	-	< 1	-	UM
1,1,1-Trichloroethane	71-55-6	-	< 1	-	UM
Carbon Tetrachloride	56-23-5	-	< 1	-	UM
1,1-Dichloropropene	563-58-6	-	< 1	-	UM
Benzene	71-43-2	4.23	11	M	UM
1,2-Dichloroethane	107-06-2	-	< 1	-	UM
Trichloroethene	79-01-6 **	-	< 1	-	N
1,2-Dichloropropane	78-87-5	-	< 1	-	UM
Dibromomethane	74-95-3	-	< 1	-	UM
Bromodichloromethane	75-27-4	-	< 1	-	UM
cis 1,3-Dichloropropene	10061-01-5	-	< 1	-	UM
Toluene	108-88-3	4.99	19	M	UM
trans 1,3-Dichloropropene	10061-02-6	-	< 1	-	UM
1,1,2-Trichloroethane	79-00-5	-	< 1	-	UM
Tetrachloroethene	127-18-4	-	< 4	-	UM
1,3-Dichloropropane	142-28-9	-	< 1	-	UM
Dibromochloromethane	124-48-1	-	< 1	-	UM
1,2-Dibromoethane	106-93-4	-	< 1	-	UM
Chlorobenzene	108-90-7	-	< 1	-	UM
Ethylbenzene	100-41-4	-	< 3	-	UM
1,1,1,2-Tetrachloroethane	630-20-6	-	< 1	-	UM
m and p-Xylene	108-38-3/106-42-3	5.55	16	M	UM

Target Compounds	CAS #	R.T. (min.)	Concentration µg/kg	% Fit	Accr. code
o-Xylene	95-47-6	5.69	8	M	UM
Styrene	100-42-5	-	< 1	-	UM
Bromoform	75-25-2	-	< 1	-	UM
iso-Propylbenzene	98-82-8	-	< 1	-	UM
1,1,2,2-Tetrachloroethane	79-34-5 **	-	< 1	-	N
Propylbenzene	103-65-1	-	< 1	-	UM
Bromobenzene	108-86-1	-	< 1	-	UM
1,2,3-Trichloropropane	96-18-4	-	< 1	-	UM
2-Chlorotoluene	95-49-8	-	< 1	-	UM
1,3,5-Trimethylbenzene	108-67-8	-	< 1	-	UM
4-Chlorotoluene	106-43-4	-	< 1	-	UM
tert-Butylbenzene	98-06-6	-	< 1	-	UM
1,2,4-Trimethylbenzene	95-63-6	-	< 1	-	UM
sec-Butylbenzene	135-98-8	-	< 1	-	UM
p-Isopropyltoluene	99-87-6	-	< 1	-	UM
1,3-Dichlorobenzene	541-73-1	-	< 1	-	UM
1,4-Dichlorobenzene	106-46-7	-	< 1	-	UM
n-Butylbenzene	104-51-8 *	-	< 1	-	N
1,2-Dichlorobenzene	95-50-1	-	< 1	-	UM
1,2-Dibromo-3-chloropropane	96-12-8	-	< 1	-	UM
1,2,4-Trichlorobenzene	120-82-1 *	-	< 4	-	N
Hexachlorobutadiene	87-68-3 **	-	< 3	-	N
Naphthalene	91-20-3	7.14	52	M	UM
1,2,3-Trichlorobenzene	87-61-6	-	< 4	-	UM

Concentrations are reported on a dry weight basis
Compounds marked ** are not UKAS or Mcerts accredited
"M" denotes that % fit has been manually interpreted
This analysis was conducted on an 'As Received' basis.

Internal standards	R.T.	Area %	Surrogates	% Rec
Pentafluorobenzene	4.04	42	Dibromofluoromethane	73
1,4-Difluorobenzene	4.39	28	Toluene-d8	63
Chlorobenzene-d5	5.50	9		
Bromofluorobenzene	5.89	8		
1,4-Dichlorobenzene-d4	6.29	4		
Naphthalene-d8	7.12	2		

Where individual results are flagged see report notes for status.
Results corrected to dry weight at 105°C where appropriate, in accordance with the MCERTS standard.

Volatile Organic Compounds by HSA-GCMS

Accredited?: Yes

Customer and Site Details: Ramboll Environ: Zeon Chemicals ESA
Sample Details: WS21 0.75
LIMS ID Number: CL1616341
Job Number: S16_3918M

Directory/Quant file: 518VOC.MS19\ Initial Calibration
Date Booked in: 13-May-16
Date Analysed: 18-May-16
Operator: PR

Matrix: Soil
Method: Headspace
Multiplier: 0.98
Position: 18

Target Compounds	CAS #	R.T. (min.)	Concentration µg/kg	% Fit	Accr. code
Dichlorodifluoromethane	75-71-8 **	-	< 1	-	N
Chloromethane	74-87-3 *	-	< 4	-	N
Vinyl Chloride	75-01-4	-	< 1	-	UM
Bromomethane	74-83-9	-	< 1	-	UM
Chloroethane	75-00-3	-	< 3	-	UM
Trichlorofluoromethane	75-69-4	-	< 1	-	UM
1,1-Dichloroethene	75-35-48 *	-	< 1	-	N
trans 1,2-Dichloroethene	156-60-5	-	< 1	-	UM
1,1-Dichloroethane	75-34-3	-	< 1	-	UM
MTBE	1634-04-4	-	< 1	-	UM
2,2-Dichloropropane	594-20-7	-	< 1	-	UM
cis 1,2-Dichloroethene	156-59-2	-	< 6	-	UM
Bromochloromethane	74-97-5	-	< 1	-	UM
Chloroform	67-66-3	-	< 1	-	UM
1,1,1-Trichloroethane	71-55-6	-	< 1	-	UM
Carbon Tetrachloride	56-23-5	-	< 1	-	UM
1,1-Dichloropropene	563-58-6	-	< 1	-	UM
Benzene	71-43-2	-	< 1	-	UM
1,2-Dichloroethane	107-06-2	-	< 1	-	UM
Trichloroethene	79-01-6 **	-	< 1	-	N
1,2-Dichloropropane	78-87-5	-	< 1	-	UM
Dibromomethane	74-95-3	-	< 1	-	UM
Bromodichloromethane	75-27-4	-	< 1	-	UM
cis 1,3-Dichloropropene	10061-01-5	-	< 1	-	UM
Toluene	108-88-3	-	< 6	-	UM
trans 1,3-Dichloropropene	10061-02-6	-	< 1	-	UM
1,1,2-Trichloroethane	79-00-5	-	< 1	-	UM
Tetrachloroethene	127-18-4	-	< 4	-	UM
1,3-Dichloropropane	142-28-9	-	< 1	-	UM
Dibromochloromethane	124-48-1	-	< 1	-	UM
1,2-Dibromoethane	106-93-4	-	< 1	-	UM
Chlorobenzene	108-90-7	-	< 1	-	UM
Ethylbenzene	100-41-4	-	< 3	-	UM
1,1,1,2-Tetrachloroethane	630-20-6	-	< 1	-	UM
m and p-Xylene	108-38-3/106-42-3	-	< 5	-	UM

Target Compounds	CAS #	R.T. (min.)	Concentration µg/kg	% Fit	Accr. code
o-Xylene	95-47-6	-	< 3	-	UM
Styrene	100-42-5	-	< 1	-	UM
Bromoform	75-25-2	-	< 1	-	UM
iso-Propylbenzene	98-82-8	-	< 1	-	UM
1,1,2,2-Tetrachloroethane	79-34-5 **	-	< 1	-	N
Propylbenzene	103-65-1	-	< 1	-	UM
Bromobenzene	108-86-1	-	< 1	-	UM
1,2,3-Trichloropropane	96-18-4	-	< 1	-	UM
2-Chlorotoluene	95-49-8	-	< 1	-	UM
1,3,5-Trimethylbenzene	108-67-8	-	< 1	-	UM
4-Chlorotoluene	106-43-4	-	< 1	-	UM
tert-Butylbenzene	98-06-6	-	< 1	-	UM
1,2,4-Trimethylbenzene	95-63-6	-	< 1	-	UM
sec-Butylbenzene	135-98-8	-	< 1	-	UM
p-Isopropyltoluene	99-87-6	-	< 1	-	UM
1,3-Dichlorobenzene	541-73-1	-	< 1	-	UM
1,4-Dichlorobenzene	106-46-7	-	< 1	-	UM
n-Butylbenzene	104-51-8 *	-	< 1	-	N
1,2-Dichlorobenzene	95-50-1	-	< 1	-	UM
1,2-Dibromo-3-chloropropane	96-12-8	-	< 1	-	UM
1,2,4-Trichlorobenzene	120-82-1 *	-	< 4	-	N
Hexachlorobutadiene	87-68-3 **	-	< 3	-	N
Naphthalene	91-20-3	-	< 6	-	UM
1,2,3-Trichlorobenzene	87-61-6	-	< 4	-	UM

Concentrations are reported on a dry weight basis
Compounds marked ** are not UKAS or Mcerts accredited
"M" denotes that % fit has been manually interpreted
This analysis was conducted on an 'As Received' basis.

Internal standards	R.T.	Area %	Surrogates	% Rec
Pentafluorobenzene	4.04	100	Dibromofluoromethane	106
1,4-Difluorobenzene	4.39	98	Toluene-d8	97
Chlorobenzene-d5	5.50	93		
Bromofluorobenzene	5.89	82		
1,4-Dichlorobenzene-d4	6.29	75		
Naphthalene-d8	7.12	49		

Where individual results are flagged see report notes for status.
Results corrected to dry weight at 105°C where appropriate, in accordance with the MCERTS standard.

Volatile Organic Compounds by HSA-GCMS

Accredited?: Yes

Customer and Site Details: Ramboll Environ: Zeon Chemicals ESA
Sample Details: WS21 1.40
LIMS ID Number: CL1616342
Job Number: S16_3918M

Directory/Quant file: 518VOC.MS19\ Initial Calibration
Date Booked in: 13-May-16
Date Analysed: 18-May-16
Operator: PR

Matrix: Soil
Method: Headspace
Multiplier: 0.94
Position: 19

Target Compounds	CAS #	R.T. (min.)	Concentration µg/kg	% Fit	Accr. code
Dichlorodifluoromethane	75-71-8 **	-	< 1	-	N
Chloromethane	74-87-3 *	-	< 4	-	N
Vinyl Chloride	75-01-4	-	< 1	-	UM
Bromomethane	74-83-9	-	< 1	-	UM
Chloroethane	75-00-3	-	< 3	-	UM
Trichlorofluoromethane	75-69-4	-	< 1	-	UM
1,1-Dichloroethene	75-35-48 *	-	< 1	-	N
trans 1,2-Dichloroethene	156-60-5	-	< 1	-	UM
1,1-Dichloroethane	75-34-3	-	< 1	-	UM
MTBE	1634-04-4	-	< 1	-	UM
2,2-Dichloropropane	594-20-7	-	< 1	-	UM
cis 1,2-Dichloroethene	156-59-2	-	< 6	-	UM
Bromochloromethane	74-97-5	-	< 1	-	UM
Chloroform	67-66-3	-	< 1	-	UM
1,1,1-Trichloroethane	71-55-6	-	< 1	-	UM
Carbon Tetrachloride	56-23-5	-	< 1	-	UM
1,1-Dichloropropene	563-58-6	-	< 1	-	UM
Benzene	71-43-2	-	< 1	-	UM
1,2-Dichloroethane	107-06-2	-	< 1	-	UM
Trichloroethene	79-01-6 **	-	< 1	-	N
1,2-Dichloropropane	78-87-5	-	< 1	-	UM
Dibromomethane	74-95-3	-	< 1	-	UM
Bromodichloromethane	75-27-4	-	< 1	-	UM
cis 1,3-Dichloropropene	10061-01-5	-	< 1	-	UM
Toluene	108-88-3	-	< 6	-	UM
trans 1,3-Dichloropropene	10061-02-6	-	< 1	-	UM
1,1,2-Trichloroethane	79-00-5	-	< 1	-	UM
Tetrachloroethene	127-18-4	-	< 4	-	UM
1,3-Dichloropropane	142-28-9	-	< 1	-	UM
Dibromochloromethane	124-48-1	-	< 1	-	UM
1,2-Dibromoethane	106-93-4	-	< 1	-	UM
Chlorobenzene	108-90-7	-	< 1	-	UM
Ethylbenzene	100-41-4	-	< 3	-	UM
1,1,1,2-Tetrachloroethane	630-20-6	-	< 1	-	UM
m and p-Xylene	108-38-3/106-42-3	-	< 5	-	UM

Target Compounds	CAS #	R.T. (min.)	Concentration µg/kg	% Fit	Accr. code
o-Xylene	95-47-6	-	< 3	-	UM
Styrene	100-42-5	-	< 1	-	UM
Bromoform	75-25-2	-	< 1	-	UM
iso-Propylbenzene	98-82-8	-	< 1	-	UM
1,1,2,2-Tetrachloroethane	79-34-5 **	-	< 1	-	N
Propylbenzene	103-65-1	-	< 1	-	UM
Bromobenzene	108-86-1	-	< 1	-	UM
1,2,3-Trichloropropane	96-18-4	-	< 1	-	UM
2-Chlorotoluene	95-49-8	-	< 1	-	UM
1,3,5-Trimethylbenzene	108-67-8	-	< 1	-	UM
4-Chlorotoluene	106-43-4	-	< 1	-	UM
tert-Butylbenzene	98-06-6	-	< 1	-	UM
1,2,4-Trimethylbenzene	95-63-6	-	< 1	-	UM
sec-Butylbenzene	135-98-8	-	< 1	-	UM
p-Isopropyltoluene	99-87-6	-	< 1	-	UM
1,3-Dichlorobenzene	541-73-1	-	< 1	-	UM
1,4-Dichlorobenzene	106-46-7	-	< 1	-	UM
n-Butylbenzene	104-51-8 *	-	< 1	-	N
1,2-Dichlorobenzene	95-50-1	-	< 1	-	UM
1,2-Dibromo-3-chloropropane	96-12-8	-	< 1	-	UM
1,2,4-Trichlorobenzene	120-82-1 *	-	< 4	-	N
Hexachlorobutadiene	87-68-3 **	-	< 3	-	N
Naphthalene	91-20-3	-	< 6	-	UM
1,2,3-Trichlorobenzene	87-61-6	-	< 4	-	UM

Concentrations are reported on a dry weight basis
Compounds marked ** are not UKAS or Mcerts accredited
"M" denotes that % fit has been manually interpreted
This analysis was conducted on an 'As Received' basis.

Internal standards	R.T.	Area %	Surrogates	% Rec
Pentafluorobenzene	4.04	95	Dibromofluoromethane	110
1,4-Difluorobenzene	4.39	94	Toluene-d8	97
Chlorobenzene-d5	5.50	91		
Bromofluorobenzene	5.89	86		
1,4-Dichlorobenzene-d4	6.29	82		
Naphthalene-d8	7.13	80		

Where individual results are flagged see report notes for status.
Results corrected to dry weight at 105°C where appropriate, in accordance with the MCERTS standard.

Volatile Organic Compounds by HSA-GCMS

Accredited?: No

Customer and Site Details: Ramboll Environ: Zeon Chemicals ESA
Sample Details: WS11 0.30 (NVM)
LIMS ID Number: CL1616343
Job Number: S16_3918M

Directory/Quant file: 518VOC.MS19\ Initial Calibration
Date Booked in: 13-May-16
Date Analysed: 18-May-16
Operator: PR

Matrix: Soil
Method: Headspace
Multiplier: 0.97
Position: 20

Target Compounds	CAS #	R.T. (min.)	Concentration µg/kg	% Fit	Accr. code
Dichlorodifluoromethane	75-71-8	-	< 1	-	N
Chloromethane	74-87-3	-	< 3	-	N
Vinyl Chloride	75-01-4	-	< 1	-	N
Bromomethane	74-83-9	-	< 1	-	N
Chloroethane	75-00-3	-	< 2	-	N
Trichlorofluoromethane	75-69-4	-	< 1	-	N
1,1-Dichloroethene	75-35-48	-	< 1	-	N
trans 1,2-Dichloroethene	156-60-5	-	< 1	-	N
1,1-Dichloroethane	75-34-3	-	< 1	-	N
MTBE	1634-04-4	-	< 1	-	N
2,2-Dichloropropane	594-20-7	-	< 1	-	N
cis 1,2-Dichloroethene	156-59-2	-	< 6	-	N
Bromochloromethane	74-97-5	-	< 1	-	N
Chloroform	67-66-3	-	< 1	-	N
1,1,1-Trichloroethane	71-55-6	-	< 1	-	N
Carbon Tetrachloride	56-23-5	-	< 1	-	N
1,1-Dichloropropene	563-58-6	-	< 1	-	N
Benzene	71-43-2	4.23	1	M	N
1,2-Dichloroethane	107-06-2	-	< 1	-	N
Trichloroethene	79-01-6	-	< 1	-	N
1,2-Dichloropropane	78-87-5	-	< 1	-	N
Dibromomethane	74-95-3	-	< 1	-	N
Bromodichloromethane	75-27-4	-	< 1	-	N
cis 1,3-Dichloropropene	10061-01-5	-	< 1	-	N
Toluene	108-88-3	-	< 6	-	N
trans 1,3-Dichloropropene	10061-02-6	-	< 1	-	N
1,1,2-Trichloroethane	79-00-5	-	< 1	-	N
Tetrachloroethene	127-18-4	-	< 3	-	N
1,3-Dichloropropane	142-28-9	-	< 1	-	N
Dibromochloromethane	124-48-1	-	< 1	-	N
1,2-Dibromoethane	106-93-4	-	< 1	-	N
Chlorobenzene	108-90-7	-	< 1	-	N
Ethylbenzene	100-41-4	-	< 2	-	N
1,1,1,2-Tetrachloroethane	630-20-6	-	< 1	-	N
m and p-Xylene	108-38-3/106-42-3	-	< 5	-	N

Target Compounds	CAS #	R.T. (min.)	Concentration µg/kg	% Fit	Accr. code
o-Xylene	95-47-6	5.69	5	M	N
Styrene	100-42-5	-	< 1	-	N
Bromoform	75-25-2	-	< 1	-	N
iso-Propylbenzene	98-82-8	-	< 1	-	N
1,1,2,2-Tetrachloroethane	79-34-5 **	-	< 1	-	N
Propylbenzene	103-65-1	5.95	14	60	N
Bromobenzene	108-86-1	-	< 1	-	N
1,2,3-Trichloropropane	96-18-4	-	< 1	-	N
2-Chlorotoluene	95-49-8	-	< 1	-	N
1,3,5-Trimethylbenzene	108-67-8	5.99	33	81	N
4-Chlorotoluene	106-43-4	-	< 1	-	N
tert-Butylbenzene	98-06-6	-	< 1	-	N
1,2,4-Trimethylbenzene	95-63-6	6.13	151	96	N
sec-Butylbenzene	135-98-8	-	< 1	-	N
p-Isopropyltoluene	99-87-6	6.22	2	M	N
1,3-Dichlorobenzene	541-73-1	-	< 1	-	N
1,4-Dichlorobenzene	106-46-7	-	< 1	-	N
n-Butylbenzene	104-51-8 *	-	< 1	-	N
1,2-Dichlorobenzene	95-50-1	-	< 1	-	N
1,2-Dibromo-3-chloropropane	96-12-8	-	< 1	-	N
1,2,4-Trichlorobenzene	120-82-1 *	-	< 3	-	N
Hexachlorobutadiene	87-68-3 **	-	< 2	-	N
Naphthalene	91-20-3	-	< 6	-	N
1,2,3-Trichlorobenzene	87-61-6	-	< 3	-	N

Concentrations are reported on a dry weight basis
Compounds marked ** are not UKAS or Mcerts accredited
"M" denotes that % fit has been manually interpreted
This analysis was conducted on an 'As Received' basis.

Internal standards	R.T.	Area %	Surrogates	% Rec
Pentafluorobenzene	4.04	98	Dibromofluoromethane	77
1,4-Difluorobenzene	4.39	95	Toluene-d8	98
Chlorobenzene-d5	5.50	91		
Bromofluorobenzene	5.89	85		
1,4-Dichlorobenzene-d4	6.29	84		
Naphthalene-d8	7.13	62		

Where individual results are flagged see report notes for status.
Results corrected to dry weight at 105°C where appropriate, in accordance with the MCERTS standard.

Volatile Organic Compounds by HSA-GCMS

Accredited?: No

Customer and Site Details: Ramboll Environ: Zeon Chemicals ESA
Sample Details: WS12 0.30 (NVM)
LIMS ID Number: CL1616344
Job Number: S16_3918M

Directory/Quant file: 518VOC.MS19\ Initial Calibration
Date Booked in: 13-May-16
Date Analysed: 19-May-16
Operator: PR

Matrix: Soil
Method: Headspace
Multiplier: 1.01
Position: 21

Target Compounds	CAS #	R.T. (min.)	Concentration µg/kg	% Fit	Accr. code
Dichlorodifluoromethane	75-71-8	-	< 1	-	N
Chloromethane	74-87-3	-	< 3	-	N
Vinyl Chloride	75-01-4	-	< 1	-	N
Bromomethane	74-83-9	-	< 1	-	N
Chloroethane	75-00-3	-	< 2	-	N
Trichlorofluoromethane	75-69-4	-	< 1	-	N
1,1-Dichloroethene	75-35-48	-	< 1	-	N
trans 1,2-Dichloroethene	156-60-5	-	< 1	-	N
1,1-Dichloroethane	75-34-3	-	< 1	-	N
MTBE	1634-04-4	-	< 1	-	N
2,2-Dichloropropane	594-20-7	-	< 1	-	N
cis 1,2-Dichloroethene	156-59-2	-	< 6	-	N
Bromochloromethane	74-97-5	-	< 1	-	N
Chloroform	67-66-3	-	< 1	-	N
1,1,1-Trichloroethane	71-55-6	-	< 1	-	N
Carbon Tetrachloride	56-23-5	-	< 1	-	N
1,1-Dichloropropene	563-58-6	-	< 1	-	N
Benzene	71-43-2	4.23	1	M	N
1,2-Dichloroethane	107-06-2	-	< 1	-	N
Trichloroethene	79-01-6	4.51	2	M	N
1,2-Dichloropropane	78-87-5	-	< 1	-	N
Dibromomethane	74-95-3	-	< 1	-	N
Bromodichloromethane	75-27-4	-	< 1	-	N
cis 1,3-Dichloropropene	10061-01-5	-	< 1	-	N
Toluene	108-88-3	-	< 6	-	N
trans 1,3-Dichloropropene	10061-02-6	-	< 1	-	N
1,1,2-Trichloroethane	79-00-5	-	< 1	-	N
Tetrachloroethene	127-18-4	-	< 3	-	N
1,3-Dichloropropane	142-28-9	-	< 1	-	N
Dibromochloromethane	124-48-1	-	< 1	-	N
1,2-Dibromoethane	106-93-4	-	< 1	-	N
Chlorobenzene	108-90-7	-	< 1	-	N
Ethylbenzene	100-41-4	-	< 2	-	N
1,1,1,2-Tetrachloroethane	630-20-6	-	< 1	-	N
m and p-Xylene	108-38-3/106-42-3	-	< 5	-	N

Target Compounds	CAS #	R.T. (min.)	Concentration µg/kg	% Fit	Accr. code
o-Xylene	95-47-6	-	< 2	-	N
Styrene	100-42-5	-	< 1	-	N
Bromoform	75-25-2	-	< 1	-	N
iso-Propylbenzene	98-82-8	-	< 1	-	N
1,1,2,2-Tetrachloroethane	79-34-5 **	-	< 1	-	N
Propylbenzene	103-65-1	-	< 1	-	N
Bromobenzene	108-86-1	-	< 1	-	N
1,2,3-Trichloropropane	96-18-4	-	< 1	-	N
2-Chlorotoluene	95-49-8	-	< 1	-	N
1,3,5-Trimethylbenzene	108-67-8	6.00	7	M	N
4-Chlorotoluene	106-43-4	-	< 1	-	N
tert-Butylbenzene	98-06-6	-	< 1	-	N
1,2,4-Trimethylbenzene	95-63-6	6.13	27	84	N
sec-Butylbenzene	135-98-8	-	< 1	-	N
p-Isopropyltoluene	99-87-6	-	< 1	-	N
1,3-Dichlorobenzene	541-73-1	-	< 1	-	N
1,4-Dichlorobenzene	106-46-7	-	< 1	-	N
n-Butylbenzene	104-51-8 *	-	< 1	-	N
1,2-Dichlorobenzene	95-50-1	-	< 1	-	N
1,2-Dibromo-3-chloropropane	96-12-8	-	< 1	-	N
1,2,4-Trichlorobenzene	120-82-1 *	-	< 3	-	N
Hexachlorobutadiene	87-68-3 **	-	< 2	-	N
Naphthalene	91-20-3	-	< 6	-	N
1,2,3-Trichlorobenzene	87-61-6	-	< 3	-	N

Concentrations are reported on a dry weight basis
Compounds marked ** are not UKAS or Mcerts accredited
"M" denotes that % fit has been manually interpreted
This analysis was conducted on an 'As Received' basis.

Internal standards	R.T.	Area %	Surrogates	% Rec
Pentafluorobenzene	4.04	99	Dibromofluoromethane	96
1,4-Difluorobenzene	4.39	95	Toluene-d8	97
Chlorobenzene-d5	5.50	86		
Bromofluorobenzene	5.89	77		
1,4-Dichlorobenzene-d4	6.29	68		
Naphthalene-d8	7.12	64		

Where individual results are flagged see report notes for status.
Results corrected to dry weight at 105°C where appropriate, in accordance with the MCERTS standard.

TICs by HSA-GCMS

Accredited?: No

Customer and Site Details:	Ramboll Environ: Zeon Chemicals ESA		**Date Booked in:**	13-May-16
Sample Details:	WS18 1.60		**Date Analysed:**	18-May-16
LIMS ID Number:	CL1616335		**Matrix:**	Soil
Job Number:	S16_3918		**Ext Method:**	Headspace
Directory/Quant file:	518VOC.MS19\	Initial Calibration	**Dilution:**	1.1
Operator:	PR		**Position:**	13

Tentatively Identified Compounds	CAS No	R.T. (min.)	Concentration µg/kg	% Fit	Accr. code
None Detected			<7		N

The compounds listed above have been tentatively identified by a computer based library search.
Compounds identified in the sample are not reported if they also occur in the method blank.
The % fit is an indication of the reliability of the compound assignment.
Due to the similarity between mass spectra of some isomeric compounds, assignments may not be correct.
Other compounds may also be present but identification was not possible.
Concentrations are semi-quantitative, assume a response factor of 1 and use the nearest internal standard.

Compounds marked ** are not UKAS or Mcerts accredited
"M" denotes that % fit has been manually interpreted

Where individual results are flagged see report notes for status.
Results corrected to dry weight at 105°C where appropriate, in accordance with the MCERTS standard.

TICs by HSA-GCMS

Accredited?: No

Customer and Site Details:	Ramboll Environ: Zeon Chemicals ESA		**Date Booked in:**	13-May-16
Sample Details:	WS20 0.30		**Date Analysed:**	18-May-16
LIMS ID Number:	CL1616336		**Matrix:**	Soil
Job Number:	S16_3918		**Ext Method:**	Headspace
Directory/Quant file:	518VOC.MS19\	Initial Calibration	**Dilution:**	0.96
Operator:	PR		**Position:**	14

Tentatively Identified Compounds	CAS No	R.T. (min.)	Concentration µg/kg	% Fit	Accr. code
None Detected			<6		N

The compounds listed above have been tentatively identified by a computer based library search.
Compounds identified in the sample are not reported if they also occur in the method blank.
The % fit is an indication of the reliability of the compound assignment.
Due to the similarity between mass spectra of some isomeric compounds, assignments may not be correct.
Other compounds may also be present but identification was not possible.
Concentrations are semi-quantitative, assume a response factor of 1 and use the nearest internal standard.

Compounds marked ** are not UKAS or Mcerts accredited
"M" denotes that % fit has been manually interpreted

Where individual results are flagged see report notes for status.
Results corrected to dry weight at 105°C where appropriate, in accordance with the MCERTS standard.

TICs by HSA-GCMS

Accredited?: No

Customer and Site Details:	Ramboll Environ: Zeon Chemicals ESA		**Date Booked in:**	13-May-16
Sample Details:	WS20 1.80		**Date Analysed:**	18-May-16
LIMS ID Number:	CL1616338		**Matrix:**	Soil
Job Number:	S16_3918		**Ext Method:**	Headspace
Directory/Quant file:	518VOC.MS19\	Initial Calibration	**Dilution:**	0.92
Operator:	PR		**Position:**	15

Tentatively Identified Compounds	CAS No	R.T. (min.)	Concentration µg/kg	% Fit	Accr. code
None Detected			<6		N

The compounds listed above have been tentatively identified by a computer based library search.
Compounds identified in the sample are not reported if they also occur in the method blank.
The % fit is an indication of the reliability of the compound assignment.
Due to the similarity between mass spectra of some isomeric compounds, assignments may not be correct.
Other compounds may also be present but identification was not possible.
Concentrations are semi-quantitative, assume a response factor of 1 and use the nearest internal standard.

Compounds marked ** are not UKAS or Mcerts accredited
"M" denotes that % fit has been manually interpreted

Where individual results are flagged see report notes for status.
Results corrected to dry weight at 105°C where appropriate, in accordance with the MCERTS standard.

TICs by HSA-GCMS

Accredited?: No

Customer and Site Details:	Ramboll Environ: Zeon Chemicals ESA		**Date Booked in:**	13-May-16
Sample Details:	WS20 2.50 (NVM)		**Date Analysed:**	18-May-16
LIMS ID Number:	CL1616339		**Matrix:**	Soil
Job Number:	S16_3918		**Ext Method:**	Headspace
Directory/Quant file:	518VOC.MS19\	Initial Calibration	**Dilution:**	1.06
Operator:	PR		**Position:**	16

Tentatively Identified Compounds	CAS No	R.T. (min.)	Concentration µg/kg	% Fit	Accr. code
None Detected			<6		N

The compounds listed above have been tentatively identified by a computer based library search.
Compounds identified in the sample are not reported if they also occur in the method blank.
The % fit is an indication of the reliability of the compound assignment.
Due to the similarity between mass spectra of some isomeric compounds, assignments may not be correct.
Other compounds may also be present but identification was not possible.
Concentrations are semi-quantitative, assume a response factor of 1 and use the nearest internal standard.

Compounds marked ** are not UKAS or Mcerts accredited
"M" denotes that % fit has been manually interpreted

Where individual results are flagged see report notes for status.
Results corrected to dry weight at 105°C where appropriate, in accordance with the MCERTS standard.

TICs by HSA-GCMS

Accredited?: No

Customer and Site Details:	Ramboll Environ: Zeon Chemicals ESA		**Date Booked in:**	13-May-16
Sample Details:	WS19 0.65		**Date Analysed:**	18-May-16
LIMS ID Number:	CL1616340		**Matrix:**	Soil
Job Number:	S16_3918		**Ext Method:**	Headspace
Directory/Quant file:	518VOC.MS19\	Initial Calibration	**Dilution:**	1
Operator:	PR		**Position:**	17

Tentatively Identified Compounds	CAS No	R.T. (min.)	Concentration µg/kg	% Fit	Accr. code
None Detected			<7		N

The compounds listed above have been tentatively identified by a computer based library search.
Compounds identified in the sample are not reported if they also occur in the method blank.
The % fit is an indication of the reliability of the compound assignment.
Due to the similarity between mass spectra of some isomeric compounds, assignments may not be correct.
Other compounds may also be present but identification was not possible.
Concentrations are semi-quantitative, assume a response factor of 1 and use the nearest internal standard.

Compounds marked ** are not UKAS or Mcerts accredited
"M" denotes that % fit has been manually interpreted

Where individual results are flagged see report notes for status.
Results corrected to dry weight at 105°C where appropriate, in accordance with the MCERTS standard.

TICs by HSA-GCMS

Accredited?: No

Customer and Site Details:	Ramboll Environ: Zeon Chemicals ESA		**Date Booked in:**	13-May-16
Sample Details:	WS21 0.75		**Date Analysed:**	18-May-16
LIMS ID Number:	CL1616341		**Matrix:**	Soil
Job Number:	S16_3918		**Ext Method:**	Headspace
Directory/Quant file:	518VOC.MS19\	Initial Calibration	**Dilution:**	0.98
Operator:	PR		**Position:**	18

Tentatively Identified Compounds	CAS No	R.T. (min.)	Concentration µg/kg	% Fit	Accr. code
None Detected					N

The compounds listed above have been tentatively identified by a computer based library search.
Compounds identified in the sample are not reported if they also occur in the method blank.
The % fit is an indication of the reliability of the compound assignment.
Due to the similarity between mass spectra of some isomeric compounds, assignments may not be correct.
Other compounds may also be present but identification was not possible.
Concentrations are semi-quantitative, assume a response factor of 1 and use the nearest internal standard.

Compounds marked ** are not UKAS or Mcerts accredited
"M" denotes that % fit has been manually interpreted

Where individual results are flagged see report notes for status.
Results corrected to dry weight at 105°C where appropriate, in accordance with the MCERTS standard.

TICs by HSA-GCMS

Accredited?: No

Customer and Site Details:	Ramboll Environ: Zeon Chemicals ESA		**Date Booked in:**	13-May-16
Sample Details:	WS21 1.40		**Date Analysed:**	18-May-16
LIMS ID Number:	CL1616342		**Matrix:**	Soil
Job Number:	S16_3918		**Ext Method:**	Headspace
Directory/Quant file:	518VOC.MS19\	Initial Calibration	**Dilution:**	0.94
Operator:	PR		**Position:**	19

Tentatively Identified Compounds	CAS No	R.T. (min.)	Concentration µg/kg	% Fit	Accr. code
None Detected			<6		N

The compounds listed above have been tentatively identified by a computer based library search.
Compounds identified in the sample are not reported if they also occur in the method blank.
The % fit is an indication of the reliability of the compound assignment.
Due to the similarity between mass spectra of some isomeric compounds, assignments may not be correct.
Other compounds may also be present but identification was not possible.
Concentrations are semi-quantitative, assume a response factor of 1 and use the nearest internal standard.

Compounds marked ** are not UKAS or Mcerts accredited
"M" denotes that % fit has been manually interpreted

Where individual results are flagged see report notes for status.
Results corrected to dry weight at 105°C where appropriate, in accordance with the MCERTS standard.

TICs by HSA-GCMS

Accredited?: No

Customer and Site Details:	Ramboll Environ: Zeon Chemicals ESA		**Date Booked in:**	13-May-16
Sample Details:	WS11 0.30 (NVM)		**Date Analysed:**	18-May-16
LIMS ID Number:	CL1616343		**Matrix:**	Soil
Job Number:	S16_3918		**Ext Method:**	Headspace
Directory/Quant file:	518VOC.MS19\	Initial Calibration	**Dilution:**	0.97
Operator:	PR		**Position:**	20

Tentatively Identified Compounds	CAS No	R.T. (min.)	Concentration µg/kg	% Fit	Accr. code
Unidentified Peak		1.61	102		N
Unidentified Peak		2.92	98		N

The compounds listed above have been tentatively identified by a computer based library search.
Compounds identified in the sample are not reported if they also occur in the method blank.
The % fit is an indication of the reliability of the compound assignment.
Due to the similarity between mass spectra of some isomeric compounds, assignments may not be correct.
Other compounds may also be present but identification was not possible.
Concentrations are semi-quantitative, assume a response factor of 1 and use the nearest internal standard.

Compounds marked ** are not UKAS or Mcerts accredited
"M" denotes that % fit has been manually interpreted

Where individual results are flagged see report notes for status.
Results corrected to dry weight at 105°C where appropriate, in accordance with the MCERTS standard.

TICs by HSA-GCMS

Accredited?: No

Customer and Site Details:	Ramboll Environ: Zeon Chemicals ESA		**Date Booked in:**	13-May-16
Sample Details:	WS12 0.30 (NVM)		**Date Analysed:**	19-May-16
LIMS ID Number:	CL1616344		**Matrix:**	Soil
Job Number:	S16_3918		**Ext Method:**	Headspace
Directory/Quant file:	518VOC.MS19\	Initial Calibration	**Dilution:**	1.01
Operator:	PR		**Position:**	21

Tentatively Identified Compounds	CAS No	R.T. (min.)	Concentration µg/kg	% Fit	Accr. code
Octane, 2,6-dimethyl-	002051-30-1	6.98	574	78	N
Sulfurous acid, dodecyl pentyl ester	1000309-14-5	7.45	495	53	N
Oxirane, [(dodecyloxy)methyl]-	002461-18-9	6.76	349	59	N
Sulfurous acid, 2-ethylhexyl hexyl ester	1000309-20-2	7.90	340	72	N
Nonane, 3,7-dimethyl-	017302-32-8	7.56	332	59	N
Unidentified Peak		7.32	270		N
Decane, 2,4-dimethyl-	002801-84-5	6.70	237	53	N
Unidentified Peak		7.18	220		N
Pentadecane	000629-62-9	8.14	215	76	N
Unidentified Peak		6.90	206		N
Unidentified Peak		2.92	129		N
Unidentified Peak		1.64	123		N

The compounds listed above have been tentatively identified by a computer based library search.
Compounds identified in the sample are not reported if they also occur in the method blank.
The % fit is an indication of the reliability of the compound assignment.
Due to the similarity between mass spectra of some isomeric compounds, assignments may not be correct.
Other compounds may also be present but identification was not possible.
Concentrations are semi-quantitative, assume a response factor of 1 and use the nearest internal standard.

Compounds marked ** are not UKAS or Mcerts accredited
"M" denotes that % fit has been manually interpreted

Where individual results are flagged see report notes for status.
Results corrected to dry weight at 105°C where appropriate, in accordance with the MCERTS standard.

TICs by HSA-GCMS

Accredited?: No

Customer and Site Details:	Ramboll Environ: Zeon Chemicals ESA		**Date Booked in:**	13-May-16
Sample Details:	WS12 0.30 (NVM)		**Date Analysed:**	19-May-16
LIMS ID Number:	CL1616344		**Matrix:**	Soil
Job Number:	S16_3918		**Ext Method:**	Headspace
Directory/Quant file:	518VOC.MS19\	Initial Calibration	**Dilution:**	1.01
Operator:	PR		**Position:**	21

Tentatively Identified Compounds	CAS No	R.T. (min.)	Concentration µg/kg	% Fit	Accr. code
Octane, 2,6-dimethyl-	002051-30-1	6.98	574	78	N
Sulfurous acid, dodecyl pentyl ester	1000309-14-5	7.45	495	53	N
Oxirane, [(dodecyloxy)methyl]-	002461-18-9	6.76	349	59	N
Sulfurous acid, 2-ethylhexyl hexyl ester	1000309-20-2	7.90	340	72	N
Nonane, 3,7-dimethyl-	017302-32-8	7.56	332	59	N
Unidentified Peak		7.32	270		N
Decane, 2,4-dimethyl-	002801-84-5	6.70	237	53	N
Unidentified Peak		7.18	220		N
Pentadecane	000629-62-9	8.14	215	76	N
Unidentified Peak		6.90	206		N
Unidentified Peak		2.92	129		N
Unidentified Peak		1.64	123		N

The compounds listed above have been tentatively identified by a computer based library search.
Compounds identified in the sample are not reported if they also occur in the method blank.
The % fit is an indication of the reliability of the compound assignment.
Due to the similarity between mass spectra of some isomeric compounds, assignments may not be correct.
Other compounds may also be present but identification was not possible.
Concentrations are semi-quantitative, assume a response factor of 1 and use the nearest internal standard.

Compounds marked ** are not UKAS or Mcerts accredited
"M" denotes that % fit has been manually interpreted

Where individual results are flagged see report notes for status.
Results corrected to dry weight at 105°C where appropriate, in accordance with the MCERTS standard.

ASBESTOS ANALYSIS RESULTS - SOIL ANALYSIS

ESG Asbestos Limited Certificate of Analysis for Asbestos in Soils, Sediments and Aggregates

1089

Detection limit of Method SCI-ASB-020 is 0.001%

Sampling has been carried out by a third party

Client:	ESG Environmental Chemistry	**Page 1 of 1**	
Address:	Etwall House, Bretby Business Park, Ashby Road, Burton upon Trent	**Report No:**	**ANO-0488-12493**
For the attention of:	Ramboll Environ	**Report Date:**	**16/05/2016**
Site Address:	Zeon Chemicals ESA	**Project Number:**	**S163918**

Sample Number	Sample Date	Sample Location & Matrix	Test Date	Total Sample Dry Weight (g)	Weight of <2mm Fraction (g)	Asbestos(g) in >8mm+>2mm	Asbestos(g) in <2mm	% Asbestos by weight of Total Dried Sample	Asbestos Fibre Types Identified
CL/1616341	11/05/16	WS21 0.75	16/05/2016					Screen Only	NAIIS
CL/1616343	11/05/16	WS11 0.30	16/05/2016					Screen Only	NAIIS

Keys

NAACR = Not Analysed at Clients Request

NAIIS = No Asbestos Identified in Sample (Screens Only)

*** visible to naked eye**

NADIS = No Asbestos Detected in Sample (ID & Quant Only)

Name:	Laura Atkins	Authorised Signatory:
Position:	Lab Analyst	

The sample analysis for the above results was carried out using the procedures detailed in ESG Asbestos Limited in house method (SCI-ASB-020) based on HSE document MDHS 90 - Asbestos Contaminated Land - Draft 5 - November 1997 (withdrawn). Fibre identification was carried out using ESG Asbestos Limited in house method of transmitted/polarised light microscopy and centre stop dispersion staining (SCI-ASB-007), based on HSE's HSG 248. The analysis of fine fraction for asbestos content only includes fibres and does not discriminate non-asbestos fibres. All fibres are assumed, unless specified, to be amphiboles. All tests were carried out at ESG Asbestos Laboratory, Ashbourne House, Bretby Business Park, Ashby Road, Burton-upon-Trent, Staffordshire. DE15 0XD, UKAS Laboratory Number 1089.

Where individual results are flagged see report notes for status.

Analytical and Deviating Sample Overview

Customer Ramboll Environ
Site Zeon Chemicals ESA
Report No S163918M

Consignment No S55897
Date Logged 13-May-2016

Report Due 09-Jun-2016

ID Number	Description	MethodID	CustServ	GROHSA	ICPBOR	ICPMSS									ICPSOIL			ICPWSS	MCertS	PAHMSUS	PHSOIL	SFAPI		Sub002a	SVOCMSUS	TMSS
		Sampled	REPORT A	GRO (AA) by HSA GC-FID	Boron (H20 Soluble)	Arsenic (MS)	Cadmium (MS)	Chromium (MS)	Copper (MS)	Lead (MS)	Mercury (MS)	Nickel (MS)	Selenium (MS)	Vanadium (MS)	Zinc (MS)	Barium.	Beryllium.	Iron	SO4-- (H2O sol) mg/l	MCertS Analysis	PAH (17) by GCMS	pH units (AR)	Cyanide(Total) (AR)	Phenol Index.(AR)	^Asbestos Screen	SVOC + TICs by GCMS (AR)	Tot.Moisture @ 105C
																									✓		
CL/1616335	WS18 1.60	11/05/16																									
CL/1616336	WS20 0.30	11/05/16																									
CL/1616337	WS20 1.20	11/05/16																									
CL/1616338	WS20 1.80	11/05/16																									
CL/1616339	WS20 2.50	11/05/16																									
CL/1616340	WS19 0.65	11/05/16																									
CL/1616341	WS21 0.75	11/05/16																									
CL/1616342	WS21 1.40	11/05/16																									
CL/1616343	WS11 0.30	11/05/16																									
CL/1616344	WS12 0.30	11/05/16																									

Note: For analysis where the scheduled turnaround is greater than the holding time we will do our utmost to prioritise these samples. However, it is possible that samples could become deviant whilst being processed in the laboratory.

In this instance please contact the laboratory immediately should you wish to discuss how you would like us to proceed. If you do not respond within 24 hours, we will proceed as originally requested.

Deviating Sample Key

A	The sample was received in an inappropriate container for this analysis
B	The sample was received without the correct preservation for this analysis
C	Headspace present in the sample container
D	The sampling date was not supplied so holding time may be compromised - applicable to all analysis
E	Sample processing did not commence within the appropriate holding time
F	Sample processing did not commence within the appropriate handling time

Requested Analysis Key

	Analysis Required
	Analysis dependant upon trigger result - **Note: due date may be affected if triggered**
	No analysis scheduled
^	Analysis Subcontracted - **Note: due date may vary**

Where individual results are flagged see report notes for status.
The integrity of data for samples/analysis that have been categorised as Deviating may be compromised. Data may not be representative of the sample at the time of sampling.

Analytical and Deviating Sample Overview

Customer Ramboll Environ
Site Zeon Chemicals ESA
Report No S163918M

Consignment No S55897
Date Logged 13-May-2016

Report Due 09-Jun-2016

ID Number	Description	Sampled	MethodID	TPHUSSI	VOCHSAS	WSLM59
				TPH by GCFID (AR/Si)	VOC + TICs HSA-GCMS	Total Organic Carbon
CL/1616335	WS18 1.60	11/05/16				
CL/1616336	WS20 0.30	11/05/16				
CL/1616337	WS20 1.20	11/05/16				
CL/1616338	WS20 1.80	11/05/16				
CL/1616339	WS20 2.50	11/05/16				
CL/1616340	WS19 0.65	11/05/16				
CL/1616341	WS21 0.75	11/05/16				
CL/1616342	WS21 1.40	11/05/16				
CL/1616343	WS11 0.30	11/05/16				
CL/1616344	WS12 0.30	11/05/16				

Note: For analysis where the scheduled turnaround is greater than the holding time we will do our utmost to prioritise these samples. However, it is possible that samples could become deviant whilst being processed in the laboratory.

In this instance please contact the laboratory immediately should you wish to discuss how you would like us to proceed. If you do not respond within 24 hours, we will proceed as originally requested.

Deviating Sample Key	
A	The sample was received in an inappropriate container for this analysis
B	The sample was received without the correct preservation for this analysis
C	Headspace present in the sample container
D	The sampling date was not supplied so holding time may be compromised - applicable to all analysis
E	Sample processing did not commence within the appropriate holding time
F	Sample processing did not commence within the appropriate handling time

Requested Analysis Key	
	Analysis Required
	Analysis dependant upon trigger result - **Note: due date may be affected if triggered**
	No analysis scheduled
^	Analysis Subcontracted - **Note: due date may vary**

Where individual results are flagged see report notes for status.
The integrity of data for samples/analysis that have been categorised as Deviating may be compromised. Data may not be representative of the sample at the time of sampling.

Report Number : EFS/163918

Additional Report Notes

Method Code	Sample ID	The following information should be taken into consideration when using the data contained within this report
GROHSA	CL1616340	Due to matrix interference, the Internal Standard recovery for this Test is below the required QMS specification. This has been confirmed by repeating the analysis. All other Laboratory Process Controls meet the requirements of the QMS. These circumstances should be taken into consideration when utilising the data.
VOCHSAS	CL1616335, 36, 40	Due to matrix interference, the Internal Standard recovery for this Test is below the required QMS specification. This has been confirmed by historical data. All other Laboratory Process Controls meet the requirements of the QMS. These circumstances should be taken into consideration when utilising the data.
SVOCMSUS	CL1616639	The matrix of this sample has been found to interfere with the result for this test. The sample has therefore been diluted to improve the signal to noise ratio but in doing so, the detection limit for this test has been elevated.

Method Descriptions

Matrix	MethodID	Analysis Basis	Method Description
Soil	GROHSA	As Received	Determination of Total Gasoline Range Organics Hydrocarbons (GRO) by Headspace GCFID
Soil	ICPBOR	Oven Dried @ < 35°C	Determination of Boron in soil samples by hot water extraction followed by ICPOES detection
Soil	ICPMSS	Oven Dried @ < 35°C	Determination of Metals in soil samples by aqua regia digestion followed by ICPMS
Soil	ICPSOIL	Oven Dried @ < 35°C	Determination of Metals in soil samples by aqua regia digestion followed by ICPOES detection
Soil	ICPWSS	Oven Dried @ < 35°C	Determination of Water Soluble Sulphate in soil samples by water extraction followed by ICPOES detection
Soil	PAHMSUS	As Received	Determination of Polycyclic Aromatic Hydrocarbons (PAH) by hexane/acetone extraction followed by GCMS detection
Soil	PHSOIL	As Received	Determination of pH of 2.5:1 deionised water to soil extracts using pH probe.
Soil	SFAPI	As Received	Segmented flow analysis with colorimetric detection
Soil	SubCon*	*	Contact Laboratory for details of the methodology used by the sub-contractor.
Soil	SVOCMSUS	As Received	Determination of Semi Volatile Organic Compounds in soil samples by Dichloromethane/Acetone extraction followed by GCMS detection
Soil	TMSS	As Received	Determination of the Total Moisture content at 105ºC by loss on oven drying gravimetric analysis (% based upon wet weight)
Soil	TPHUSSI	As Received	Determination of hexane/acetone extractable Hydrocarbons in soil with GCFID detection including quantitation of Aromatic and Aliphatic fractions.
Soil	VOCHSAS	As Received	Determination of Volatile Organic Compounds (VOC) by Headspace GCMS
Soil	WSLM59	Oven Dried @ < 35°C	Determination of Organic Carbon in soil using sulphurous Acid digestion followed by high temperature combustion and IR detection

Report Notes

Generic Notes

Soil/Solid Analysis

Unless stated otherwise,
- Results expressed as mg/kg have been calculated on the basis indicated in the Method Description table.
  All results on MCERTS reports are reported on a 105ºC dry weight basis with the exception of pH and conductivity.
- Sulphate analysis not conducted in accordance with BS1377
- Water Soluble Sulphate is on a 2:1 water:soil extract

Waters Analysis

Unless stated otherwise results are expressed as mg/l

Nil: Where "Nil" has been entered against Total Alkalinity or Total Acidity this indicates that a measurement was not required due to the inherent pH of the sample.

Oil analysis specific

Unless stated otherwise,
- Results are expressed as mg/kg
- SG is expressed as g/cm^3@ 15^{o}C

Gas (Tedlar bag) Analysis

Unless stated otherwise, results are expressed as ug/l

Asbestos Analysis

CH Denotes Chrysotile **TR** Denotes Tremolite
CR Denotes Crocidolite **AC** Denotes Actinolite
AM Denotes Amosite **AN** Denotes Anthophylite
NAIIS No Asbestos Identified in Sample
NADIS No Asbestos Detected In Sample

Symbol Reference

^ Sub-contracted analysis.
$$ Unable to analyse due to the nature of the sample
¶ Samples submitted for this analyte were not preserved on site in accordance with laboratory protocols. This may have resulted in deterioration of the sample(s) during transit to the laboratory. Consequently the reported data may not represent the concentration of the target analyte present in the sample at the time of sampling
¥ Results for guidance only due to possible interference
& Blank corrected result
I.S Insufficient sample to complete requested analysis
I.S(g) Insufficient sample to re-analyse, results for guidance only
Intf Unable to analyse due to interferences
N.D Not determined **N.Det** Not detected
N.F No Flow
NS Information Not Supplied
Req Analysis requested, see attached sheets for results
Þ Raised detection limit due to nature of the sample
***** All accreditation has been removed by the laboratory for this result
‡ MCERTS accreditation has been removed for this result
§ accreditation has been removed for this result as it is a non-accredited matrix

Note: The Laboratory may only claim that data is accredited when all of the requirements of our Quality System have been met. Where these requirements have not been met the laboratory may elect to include the data in its final report and remove the accreditation from individual data items if it believes that the validity of the data has not been affected. If further details are required of the circumstances which have led to the removal of accreditation then please do not hesitate to contact the laboratory.

Sample Descriptions

Client : Ramboll Environ

Site : Zeon Chemicals ESA

Report Number : S16_3918

Note: major constituent in upper case

Lab ID Number	Client ID	Description
CL/1616335	WS18 1.60	Brown Stone SILT
CL/1616336	WS20 0.30	Brown Stone CLAY
CL/1616337	WS20 1.20	Brown CLAY
CL/1616338	WS20 1.80	Brown Stone CLAY
CL/1616339	WS20 2.50 (NVM)	Brown Silt STONE
CL/1616340	WS19 0.65	Grey Stone SILT Oil
CL/1616341	WS21 0.75	Brown Stone CLAY
CL/1616342	WS21 1.40	Brown CLAY
CL/1616343	WS11 0.30 (NVM)	Brown Silt STONE
CL/1616344	WS12 0.30 (NVM)	Brown Silt STONE

Our Ref: EFS/163925M (Ver. 2)
Your Ref: UK15-21370

June 7, 2016

Environmental Chemistry
ESG
Bretby Business Park
Ashby Road
Burton-on-Trent
Staffordshire
DE15 0YZ

Telephone: 01283 554400
Facsimile: 01283 554422

Lucy Cleverley
Ramboll Environ
8 Village Way
Cardiff
CF15 2NE

For the attention of Lucy Cleverley

Dear Lucy Cleverley

Sample Analysis - Zeon Chemicals ESA

Samples from the above site have been analysed in accordance with the schedule supplied.
The sample details and the results of analyses for these samples are given in the appended report.

An invoice for this work will follow under a separate cover.

Where appropriate the samples will be kept until 27/06/16 when they will be discarded. Please call 01283 554547 for an extension of this date.
Please be aware that our policy for the retention of paper based laboratory records and analysis reports is 6 years.

The work was carried out in accordance with Environmental Scientifics Group Ltd (Laboratory and Analytical) Standard Terms and Conditions of Contract.

If I can be of any further assistance please do not hesitate to contact me.

Yours sincerely

for ESG

JMColbourne

J Colbourne
Project Co-ordinator
01283 554547

Environmental Chemistry, ESG, P.O. Box 100, Burton-upon-trent, DE15 0XD Tel: 01283 554400 Fax: 01283 554422
Environmental Scientifics Group Limited.
Registered No: 2880501

TEST REPORT

1252

Report No. EFS/163925M (Ver. 2)

Ramboll Environ
8 Village Way
Cardiff
CF15 2NE

Site: Zeon Chemicals ESA

The 6 samples described in this report were registered for analysis by ESG on 16-May-2016. This report supersedes any versions previously issued by the laboratory.
The analysis was completed by: 07-Jun-2016

Tests where the accreditation is set to N or No, and any individual data items marked with a * are not UKAS or MCERTS accredited. Any opinions or interpretations expressed herein are outside the scope of any UKAS accreditation held by ESG.

The following tables are contained in this report:

On behalf of ESG :
Declan Burns — Managing Director, Multi-Sector Services

Date of Issue: 07-Jun-2016

Accreditation Codes: **N** (Not Accredited), **U** (UKAS), **UM** (UKAS & MCERTS)
Tests marked '^' have been subcontracted to another laboratory.
(NVM) - denotes the sample matrix is dissimilar to matrices upon which the MCERTS validation was based, and is therefore not accredited for MCERTS.
All results are reported on a dry weight basis at 105^{o}C unless otherwise stated. (except QC samples)
ESG accepts no responsibility for any sampling not carried out by our personnel.

			Units :	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	pH Units
			Method Codes :	GROHSA	ICPBOR	ICPMSS	ICPMSS	ICPMSS	ICPMSS	ICPMSS	ICPMSS	ICPMSS	ICPMSS	ICPMSS	ICPSOIL	ICPSOIL	ICPSOIL	ICPWSS	PHSOIL
			Method Reporting Limits :	0.2	0.5	0.3	0.2	1.2	1.6	0.7	0.5	2	0.5	16	1	0.1	36	10	
			Accreditation Code:		UM	UM	UM	UM	UM	UM	UM	UM	UM	UM	UM	UM	UM	UM	UM
LAB ID Number CL/	Client Sample Description	Sample Date	GRO (AA) by HSA GC-FID	Boron (H20 Soluble)	Arsenic (MS)	Cadmium (MS)	Chromium (MS)	Copper (MS)	Lead (MS)	Mercury (MS)	Nickel (MS)	Selenium (MS)	Zinc (MS)	Barium.	Beryllium.	Iron	SO4-- (H2O sol) mg/l	pH units (AR)	
1616358	WS4 0.9	12-May-16	Req	1.3	85.8	0.70	16.7	168	67.9	<0.52	118.9	0.7	119.1	372	1.71	26000	68	8.1	
1616359	WS4 1.8	12-May-16	Req	5	15.1	0.78	32.0	27.6	79.2	<0.5	31.0	0.7	202.5	108	1.13	32200	94	7.9	
1616360	WS4 2.4	12-May-16	Req	4.9	9.9	<0.21	31.4	14.9	25.4	<0.5	29.9	<0.5	102.7	52.9	1.04	32800	39	7.9	
1616361	WS3 0.8	12-May-16	Req	3.8	14.0	0.27	36.5	22	32.9	<0.52	42	0.8	101.8		1.5		50	8.6	
1616362	WS3 3.5	12-May-16	Req	4.6	7.8	0.2	30.6	9.9	20.9	<0.5	29	<0.5	82		0.948		48	8.5	
1616363	WS5 0.9	12-May-16	Req	2.5	14.3	0.79	26.9	36.7	183.7	<0.51	44	0.7	271		1.08		105	8.4	

ESG

Bretby Business Park, Ashby Road

Burton-on-Trent, Staffordshire, DE15 0YZ

Tel +44 (0) 1283 554400

Fax +44 (0) 1283 554422

Client Name Ramboll Environ

Contact Lucy Cleverley

Zeon Chemicals ESA

Sample Analysis

Date Printed	**07-Jun-2016**
Report Number	**EFS/163925M**
Table Number	**1**

Where individual results are flagged see report notes for status.
Results corrected to dry weight at 105°C where appropriate, in accordance with the MCERTS standard.

		Units :	mg/kg	mg/kg		mg/kg	%	mg/kg	µg/kg	mg/kg	mg/kg	% M/M	mg/kg						
		Method Codes :	SFAPI	SFAPI	Sub002a	SVOCMSUS	TMSS	TPHUSSI	VOCHSAS	ALCHSAFID	ICPMSS	WSLM59	PAHMSUS						
		Method Reporting Limits :	0.5	0.5			0.2	20		40	0.6	0.04							
		Accreditation Code:	UM	U	U		U				N	N							
LAB ID Number CL/	**Client Sample Description**	**Sample Date**	**Cyanide(Total) (AR)**	**Phenol Index.(AR)**	**^Asbestos Screen**	**SVOC + TICs by GCMS (AR)**	**Tot.Moisture @ 105C**	**TPH by GCFID (AR/Si)**	**VOC + TICs HSA-GCMS**	**Alcohols by HSA-FID o**	**Vanadium (MS)**	**Total Organic Carbon**	**PAH (17) by GCMS**						
1616358	WS4 0.9	12-May-16	<0.7	<0.7		Req	23.1	Req	Req		34	>26	Req						
1616359	WS4 1.8	12-May-16	<0.7	<0.7		Req	32.2	Req	Req		40.5	3.94	Req						
1616360	WS4 2.4	12-May-16	<0.6	<0.6		Req	20.3	Req	Req		39.3	0.69	Req						
1616361	WS3 0.8	12-May-16	<0.7	<0.7	NAIIS		25.9	Req	Req	Req	48		Req						
1616362	WS3 3.5	12-May-16	<0.7	<0.7		Req	24.0	Req	Req	Req	39.8		Req						
1616363	WS5 0.9	12-May-16	<0.6	<0.6	NAIIS		20.9	Req	Req		32.7		Req						

ESG

Bretby Business Park, Ashby Road

Burton-on-Trent, Staffordshire, DE15 0YZ

Tel +44 (0) 1283 554400

Fax +44 (0) 1283 554422

Client Name **Ramboll Environ**

Contact Lucy Cleverley

Zeon Chemicals ESA

Sample Analysis

Date Printed	**07-Jun-2016**
Report Number	**EFS/163925M**
Table Number	**1**

Where individual results are flagged see report notes for status.
Results corrected to dry weight at 105°C where appropriate, in accordance with the MCERTS standard.

Alcohols by Headspace GC-FID

Customer and Site Details: Ramboll Environ: Zeon Chemicals ESA
Job Number: S16_3925
Accreditation Code: N

Matrix: SOIL

Date Booked in: 16-May-16
Date extracted: 16-May-16
Date Analysed: 17-May-16

This sample data is not accredited.

		Concentration, (mg/kg) - as dry weight.							
Sample ID	**Client ID**	**Methanol**	**Ethanol**	**iso-Propanol**	**tert-Butanol**	**1-Propanol**	**sec-Butanol**	**iso-Butanol**	**n-Butanol**
CL1616361	WS3 0.8	<54	<54	<54	<54	<54	<54	<54	<54
CL1616362	WS3 3.5	<53	<53	<53	<53	<53	<53	<53	<53

Where individual results are flagged see report notes for status.
Results corrected to dry weight at 105°C where appropriate, in accordance with the MCERTS standard.

Polycyclic Aromatic Hydrocarbons
GC/MS (SIM)

Customer and Site Details:	Ramboll Environ: Zeon Chemicals ESA		
Sample Details:	WS4 0.9	**Job Number:**	S16_3925M
LIMS ID Number:	CL1616358	**Date Booked in:**	16-May-16
QC Batch Number:	160593	**Date Extracted:**	18-May-16
Quantitation File:	Initial Calibration	**Date Analysed:**	18-May-16
Directory:	1816PAHMS20\	**Matrix:**	Soil
Dilution:	1.0	**Ext Method:**	Ultrasonic

Accredited?: Yes

Target Compounds	CAS #	R.T. (min)	Concentration mg/kg	% Fit	Accr. code
Naphthalene	91-20-3	-	< 0.10	-	**UM**
Acenaphthylene	208-96-8	-	< 0.10	-	U
Acenaphthene	83-32-9	-	< 0.10	-	UM
Fluorene	86-73-7	-	< 0.10	-	UM
Phenanthrene	85-01-8	-	< 0.10	-	UM
Anthracene	120-12-7	-	< 0.10	-	U
Fluoranthene	206-44-0	-	< 0.10	-	UM
Pyrene	129-00-0	-	< 0.10	-	UM
Benzo[a]anthracene	56-55-3	-	< 0.10	-	UM
Chrysene	218-01-9	-	< 0.10	-	UM
Benzo[b]fluoranthene	205-99-2	-	< 0.10	-	UM
Benzo[k]fluoranthene	207-08-9	-	< 0.10	-	UM
Benzo[a]pyrene	50-32-8	-	< 0.10	-	UM
Indeno[1,2,3-cd]pyrene	193-39-5	-	< 0.10	-	UM
Dibenzo[a,h]anthracene	53-70-3	-	< 0.10	-	UM
Benzo[g,h,i]perylene	191-24-2	-	< 0.10	-	UM
Coronene	191-07-1 *	-	< 0.10	-	N
Total (USEPA16) PAHs	-	-	< 1.66	-	N

* Denotes compound is not UKAS accredited

"M" denotes that % fit has been manually interpreted

Internal Standards	% Area
1,4-Dichlorobenzene-d4	NA
Naphthalene-d8	93
Acenaphthene-d10	93
Phenanthrene-d10	91
Chrysene-d12	82
Perylene-d12	82

Surrogates	% Rec
Nitrobenzene-d5	NA
2-Fluorobiphenyl	95
Terphenyl-d14	70

Concentrations are reported on a dry weight basis.

The Total PAH result is the sum of non-rounded individual PAH results and therefore may differ to the sum of the rounded individual PAH results printed above. By convention, where any one or more result is a "less than", the total is expressed as a "less than" and includes the "less than" concentration within the total.

Polycyclic Aromatic Hydrocarbons
GC/MS (SIM)

Customer and Site Details:	Ramboll Environ: Zeon Chemicals ESA		
Sample Details:	WS4 1.8	**Job Number:**	S16_3925M
LIMS ID Number:	CL1616359	**Date Booked in:**	16-May-16
QC Batch Number:	160593	**Date Extracted:**	18-May-16
Quantitation File:	Initial Calibration	**Date Analysed:**	18-May-16
Directory:	1816PAHMS20\	**Matrix:**	Soil
Dilution:	1.0	**Ext Method:**	Ultrasonic

Accredited?: Yes

Target Compounds	CAS #	R.T. (min)	Concentration mg/kg	% Fit	Accr. code
Naphthalene	91-20-3	-	< 0.12	-	**UM**
Acenaphthylene	208-96-8	-	< 0.12	-	U
Acenaphthene	83-32-9	-	< 0.12	-	UM
Fluorene	86-73-7	-	< 0.12	-	UM
Phenanthrene	85-01-8	-	< 0.12	-	UM
Anthracene	120-12-7	-	< 0.12	-	U
Fluoranthene	206-44-0	-	< 0.12	-	UM
Pyrene	129-00-0	-	< 0.12	-	UM
Benzo[a]anthracene	56-55-3	-	< 0.12	-	UM
Chrysene	218-01-9	-	< 0.12	-	UM
Benzo[b]fluoranthene	205-99-2	-	< 0.12	-	UM
Benzo[k]fluoranthene	207-08-9	-	< 0.12	-	UM
Benzo[a]pyrene	50-32-8	-	< 0.12	-	UM
Indeno[1,2,3-cd]pyrene	193-39-5	-	< 0.12	-	UM
Dibenzo[a,h]anthracene	53-70-3	-	< 0.12	-	UM
Benzo[g,h,i]perylene	191-24-2	-	< 0.12	-	UM
Coronene	191-07-1 *	-	< 0.12	-	N
Total (USEPA16) PAHs	-	-	< 1.89	-	N

* Denotes compound is not UKAS accredited

"M" denotes that % fit has been manually interpreted

Internal Standards	% Area
1,4-Dichlorobenzene-d4	NA
Naphthalene-d8	98
Acenaphthene-d10	97
Phenanthrene-d10	96
Chrysene-d12	82
Perylene-d12	80

Surrogates	% Rec
Nitrobenzene-d5	NA
2-Fluorobiphenyl	96
Terphenyl-d14	72

Concentrations are reported on a dry weight basis.

The Total PAH result is the sum of non-rounded individual PAH results and therefore may differ to the sum of the rounded individual PAH results printed above. By convention, where any one or more result is a "less than", the total is expressed as a "less than" and includes the "less than" concentration within the total.

Polycyclic Aromatic Hydrocarbons
GC/MS (SIM)

Customer and Site Details:	Ramboll Environ: Zeon Chemicals ESA		
Sample Details:	WS4 2.4	**Job Number:**	S16_3925M
LIMS ID Number:	CL1616360	**Date Booked in:**	16-May-16
QC Batch Number:	160593	**Date Extracted:**	18-May-16
Quantitation File:	Initial Calibration	**Date Analysed:**	18-May-16
Directory:	1816PAHMS20\	**Matrix:**	Soil
Dilution:	1.0	**Ext Method:**	Ultrasonic

Accredited?: Yes

Target Compounds	CAS #	R.T. (min)	Concentration mg/kg	% Fit	Accr. code
Naphthalene	91-20-3	-	< 0.10	-	**UM**
Acenaphthylene	208-96-8	-	< 0.10	-	U
Acenaphthene	83-32-9	-	< 0.10	-	UM
Fluorene	86-73-7	-	< 0.10	-	UM
Phenanthrene	85-01-8	-	< 0.10	-	UM
Anthracene	120-12-7	-	< 0.10	-	U
Fluoranthene	206-44-0	-	< 0.10	-	UM
Pyrene	129-00-0	-	< 0.10	-	UM
Benzo[a]anthracene	56-55-3	-	< 0.10	-	UM
Chrysene	218-01-9	-	< 0.10	-	UM
Benzo[b]fluoranthene	205-99-2	-	< 0.10	-	UM
Benzo[k]fluoranthene	207-08-9	-	< 0.10	-	UM
Benzo[a]pyrene	50-32-8	-	< 0.10	-	UM
Indeno[1,2,3-cd]pyrene	193-39-5	-	< 0.10	-	UM
Dibenzo[a,h]anthracene	53-70-3	-	< 0.10	-	UM
Benzo[g,h,i]perylene	191-24-2	-	< 0.10	-	UM
Coronene	191-07-1 *	-	< 0.10	-	N
Total (USEPA16) PAHs	-	-	< 1.61	-	N

* Denotes compound is not UKAS accredited

"M" denotes that % fit has been manually interpreted

Internal Standards	% Area
1,4-Dichlorobenzene-d4	NA
Naphthalene-d8	94
Acenaphthene-d10	94
Phenanthrene-d10	94
Chrysene-d12	82
Perylene-d12	78

Surrogates	% Rec
Nitrobenzene-d5	NA
2-Fluorobiphenyl	96
Terphenyl-d14	72

Concentrations are reported on a dry weight basis.

The Total PAH result is the sum of non-rounded individual PAH results and therefore may differ to the sum of the rounded individual PAH results printed above. By convention, where any one or more result is a "less than", the total is expressed as a "less than" and includes the "less than" concentration within the total.

Polycyclic Aromatic Hydrocarbons
GC/MS (SIM)

Customer and Site Details:	Ramboll Environ: Zeon Chemicals ESA		
Sample Details:	WS3 0.8	**Job Number:**	S16_3925M
LIMS ID Number:	CL1616361	**Date Booked in:**	16-May-16
QC Batch Number:	160593	**Date Extracted:**	18-May-16
Quantitation File:	Initial Calibration	**Date Analysed:**	18-May-16
Directory:	1816PAHMS20\	**Matrix:**	Soil
Dilution:	1.0	**Ext Method:**	Ultrasonic

Accredited?: Yes

Target Compounds	CAS #	R.T. (min)	Concentration mg/kg	% Fit	Accr. code
Naphthalene	91-20-3	-	< 0.11	-	**UM**
Acenaphthylene	208-96-8	-	< 0.11	-	U
Acenaphthene	83-32-9	-	< 0.11	-	UM
Fluorene	86-73-7	-	< 0.11	-	UM
Phenanthrene	85-01-8	-	< 0.11	-	UM
Anthracene	120-12-7	-	< 0.11	-	U
Fluoranthene	206-44-0	6.19	0.10	98	UM
Pyrene	129-00-0	6.46	0.11	98	UM
Benzo[a]anthracene	56-55-3	8.05	0.11	92	UM
Chrysene	218-01-9	8.10	0.15	94	UM
Benzo[b]fluoranthene	205-99-2	9.53	0.12	96	UM
Benzo[k]fluoranthene	207-08-9	-	< 0.11	-	UM
Benzo[a]pyrene	50-32-8	-	< 0.11	-	UM
Indeno[1,2,3-cd]pyrene	193-39-5	-	< 0.11	-	UM
Dibenzo[a,h]anthracene	53-70-3	-	< 0.11	-	UM
Benzo[g,h,i]perylene	191-24-2	-	< 0.11	-	UM
Coronene	191-07-1 *	-	< 0.11	-	N
Total (USEPA16) PAHs	-	-	< 1.81	-	N

* Denotes compound is not UKAS accredited

"M" denotes that % fit has been manually interpreted

Internal Standards	% Area
1,4-Dichlorobenzene-d4	NA
Naphthalene-d8	96
Acenaphthene-d10	96
Phenanthrene-d10	95
Chrysene-d12	87
Perylene-d12	86

Surrogates	% Rec
Nitrobenzene-d5	NA
2-Fluorobiphenyl	96
Terphenyl-d14	73

Concentrations are reported on a dry weight basis.

The Total PAH result is the sum of non-rounded individual PAH results and therefore may differ to the sum of the rounded individual PAH results printed above. By convention, where any one or more result is a "less than", the total is expressed as a "less than" and includes the "less than" concentration within the total.

Polycyclic Aromatic Hydrocarbons
GC/MS (SIM)

Customer and Site Details:	Ramboll Environ: Zeon Chemicals ESA		
Sample Details:	WS3 3.5	**Job Number:**	S16_3925M
LIMS ID Number:	CL1616362	**Date Booked in:**	16-May-16
QC Batch Number:	160593	**Date Extracted:**	18-May-16
Quantitation File:	Initial Calibration	**Date Analysed:**	18-May-16
Directory:	1816PAHMS20\	**Matrix:**	Soil
Dilution:	1.0	**Ext Method:**	Ultrasonic

Accredited?: Yes

Target Compounds	CAS #	R.T. (min)	Concentration mg/kg	% Fit	Accr. code
Naphthalene	91-20-3	-	< 0.11	-	**UM**
Acenaphthylene	208-96-8	-	< 0.11	-	U
Acenaphthene	83-32-9	-	< 0.11	-	UM
Fluorene	86-73-7	-	< 0.11	-	UM
Phenanthrene	85-01-8	-	< 0.11	-	UM
Anthracene	120-12-7	-	< 0.11	-	U
Fluoranthene	206-44-0	-	< 0.11	-	UM
Pyrene	129-00-0	-	< 0.11	-	UM
Benzo[a]anthracene	56-55-3	-	< 0.11	-	UM
Chrysene	218-01-9	-	< 0.11	-	UM
Benzo[b]fluoranthene	205-99-2	-	< 0.11	-	UM
Benzo[k]fluoranthene	207-08-9	-	< 0.11	-	UM
Benzo[a]pyrene	50-32-8	-	< 0.11	-	UM
Indeno[1,2,3-cd]pyrene	193-39-5	-	< 0.11	-	UM
Dibenzo[a,h]anthracene	53-70-3	-	< 0.11	-	UM
Benzo[g,h,i]perylene	191-24-2	-	< 0.11	-	UM
Coronene	191-07-1 *	-	< 0.11	-	N
Total (USEPA16) PAHs	-	-	< 1.68	-	N

* Denotes compound is not UKAS accredited

"M" denotes that % fit has been manually interpreted

Internal Standards	% Area
1,4-Dichlorobenzene-d4	NA
Naphthalene-d8	103
Acenaphthene-d10	103
Phenanthrene-d10	105
Chrysene-d12	98
Perylene-d12	94

Surrogates	% Rec
Nitrobenzene-d5	NA
2-Fluorobiphenyl	98
Terphenyl-d14	76

Concentrations are reported on a dry weight basis.

The Total PAH result is the sum of non-rounded individual PAH results and therefore may differ to the sum of the rounded individual PAH results printed above. By convention, where any one or more result is a "less than", the total is expressed as a "less than" and includes the "less than" concentration within the total.

Polycyclic Aromatic Hydrocarbons
GC/MS (SIM)

Customer and Site Details:	Ramboll Environ: Zeon Chemicals ESA		
Sample Details:	WS5 0.9	**Job Number:**	S16_3925M
LIMS ID Number:	CL1616363	**Date Booked in:**	16-May-16
QC Batch Number:	160593	**Date Extracted:**	18-May-16
Quantitation File:	Initial Calibration	**Date Analysed:**	19-May-16
Directory:	1816PAHMS20\	**Matrix:**	Soil
Dilution:	1.0	**Ext Method:**	Ultrasonic

Accredited?: Yes

Target Compounds	CAS #	R.T. (min)	Concentration mg/kg	% Fit	Accr. code
Naphthalene	91-20-3	2.79	0.15	95	**UM**
Acenaphthylene	208-96-8	3.83	0.10	62	U
Acenaphthene	83-32-9	-	< 0.10	-	UM
Fluorene	86-73-7	-	< 0.10	-	UM
Phenanthrene	85-01-8	5.00	1.15	98	UM
Anthracene	120-12-7	5.04	0.29	96	U
Fluoranthene	206-44-0	6.19	2.77	100	UM
Pyrene	129-00-0	6.45	2.00	97	UM
Benzo[a]anthracene	56-55-3	8.05	1.91	94	UM
Chrysene	218-01-9	8.10	2.29	96	UM
Benzo[b]fluoranthene	205-99-2	9.53	2.77	99	UM
Benzo[k]fluoranthene	207-08-9	9.57	1.00	99	UM
Benzo[a]pyrene	50-32-8	9.95	1.50	98	UM
Indeno[1,2,3-cd]pyrene	193-39-5	11.30	1.00	94	UM
Dibenzo[a,h]anthracene	53-70-3	11.34	0.30	88	UM
Benzo[g,h,i]perylene	191-24-2	11.58	0.92	96	UM
Coronene	191-07-1 *	13.22	0.23	56	N
Total (USEPA16) PAHs	-	-	< 18.69	-	N

* Denotes compound is not UKAS accredited

"M" denotes that % fit has been manually interpreted

Internal Standards	% Area
1,4-Dichlorobenzene-d4	NA
Naphthalene-d8	102
Acenaphthene-d10	102
Phenanthrene-d10	104
Chrysene-d12	102
Perylene-d12	104

Surrogates	% Rec
Nitrobenzene-d5	NA
2-Fluorobiphenyl	95
Terphenyl-d14	72

Concentrations are reported on a dry weight basis.

The Total PAH result is the sum of non-rounded individual PAH results and therefore may differ to the sum of the rounded individual PAH results printed above. By convention, where any one or more result is a "less than", the total is expressed as a "less than" and includes the "less than" concentration within the total.

Semi-Volatile Organic Compounds

Accredited?: Yes

Customer and Site Details:	Ramboll Environ: Zeon Chemicals ESA			**Matrix:**	Soil	**QC Batch Number:**	110
Sample Details:	WS4 0.9	**Date Booked in:**	16-May-16	**Ext Method:**	Ultrasonic	**Multiplier:**	0.2
LIMS ID Number:	CL1616358	**Date Extracted:**	17-May-16	**Operator:**		**Dilution Factor:**	1
Job Number:	S16_3925M	**Date Analysed:**	20-May-16	**Directory/Quant File:**	052016.GC11\	**GPC (Y/N)**	N

Target Compounds	CAS #	R.T. (min)	Concentration mg/kg	% Fit	Accr. code
Phenol	108-95-2	-	< 0.1	-	U
bis(2-Chloroethyl)ether	111-44-4	-	< 0.1	-	U
2-Chlorophenol	95-57-8	-	< 0.1	-	U
1,3-Dichlorobenzene	541-73-1	-	< 0.1	-	U
1,4-Dichlorobenzene	106-46-7	-	< 0.1	-	U
Benzyl alcohol	100-51-6	-	< 0.7	-	U
1,2-Dichlorobenzene	95-50-1	-	< 0.1	-	U
2-Methylphenol	95-48-7	-	< 0.1	-	U
bis(2-Chloroisopropyl)ether	108-60-1	-	< 0.7	-	U
Hexachloroethane	67-72-1	-	< 0.1	-	U
N-Nitroso-di-n-propylamine	621-64-7*	-	< 1.2	-	N
3- & 4-Methylphenol	108-39-4/106-44-5	-	< 0.1	-	U
Nitrobenzene	98-95-3	-	< 0.7	-	U
Isophorone	78-59-1*	-	< 0.1	-	N
2-Nitrophenol	88-75-5	-	< 0.1	-	U
2,4-Dimethylphenol	105-67-9	-	< 0.1	-	U
Benzoic Acid	65-85-0*	-	< 0.7	-	N
bis(2-Chloroethoxy)methane	111-91-1	-	< 0.1	-	U
2,4-Dichlorophenol	120-83-2	-	< 0.1	-	U
1,2,4-Trichlorobenzene	120-82-1*	-	< 0.1	-	N
Naphthalene	91-20-3	-	< 0.1	-	U
4-Chlorophenol	106-48-9	-	< 0.7	-	U
4-Chloroaniline	106-47-8*	-	< 0.7	-	N
Hexachlorobutadiene	87-68-3*	-	< 0.1	-	N
4-Chloro-3-methylphenol	59-50-7	-	< 0.1	-	U
2-Methylnaphthalene	91-57-6	-	< 0.1	-	U
1-Methylnaphthalene	90-12-0	-	< 0.1	-	U
Hexachlorocyclopentadiene	77-47-4*	-	< 0.1	-	N
2,4,6-Trichlorophenol	88-06-2	-	< 0.1	-	U
2,4,5-Trichlorophenol	95-95-4	-	< 0.1	-	U
2-Chloronaphthalene	91-58-7	-	< 0.1	-	U
Biphenyl	92-52-4	-	< 0.1	-	U
Diphenyl ether	101-84-8	-	< 0.1	-	U
2-Nitroaniline	88-74-4*	-	< 0.7	-	N
Acenaphthylene	208-96-8	-	< 0.1	-	U
Dimethylphthalate	131-11-3	-	< 0.1	-	U
2,6-Dinitrotoluene	606-20-2	-	< 0.7	-	U
Acenaphthene	83-32-9	-	< 0.1	-	U
3-Nitroaniline	99-09-2*	-	< 18.9	-	N

Target Compounds	CAS #	R.T.	Concentration mg/kg	% Fit	Accr. code
2,4-Dinitrophenol	51-28-5*	-	< 0.7	-	N
Dibenzofuran	132-64-9	-	< 0.1	-	U
4-Nitrophenol	100-02-7*	-	< 0.7	-	N
2,4-Dinitrotoluene	121-14-2	-	< 0.3	-	U
Fluorene	86-73-7	-	< 0.1	-	U
Diethylphthalate	84-66-2	-	< 0.1	-	U
4-Chlorophenyl-phenylether	7005-72-3	-	< 0.1	-	U
4,6-Dinitro-2-methylphenol	534-52-1*	-	< 0.3	-	N
4-Nitroaniline	100-01-6*	-	< 0.8	-	N
N-Nitrosodiphenylamine	86-30-6*	-	< 0.1	-	N
4-Bromophenyl-phenylether	101-55-3	-	< 0.1	-	U
Hexachlorobenzene	118-74-1	-	< 0.1	-	U
Pentachlorophenol	87-86-5*	-	< 0.7	-	N
Phenanthrene	85-01-8	-	< 0.1	-	U
Anthracene	120-12-7	-	< 0.1	-	U
Di-n-butylphthalate	84-74-2	-	< 0.1	-	U
Fluoranthene	206-44-0	-	< 0.3	-	U
Pyrene	129-00-0	-	< 0.3	-	U
Butylbenzylphthalate	85-68-7	-	< 0.3	-	U
Benzo[a]anthracene	56-55-3	-	< 0.3	-	U
Chrysene	218-01-9	-	< 0.3	-	U
3,3'-Dichlorobenzidine	91-94-1*	-	< 0.7	-	N
bis(2-Ethylhexyl)phthalate	117-81-7	-	< 0.3	-	U
Di-n-octylphthalate	117-84-0	-	< 0.3	-	U
Benzo[b]fluoranthene	205-99-2	-	< 0.3	-	U
Benzo[k]fluoranthene	207-08-9	-	< 0.3	-	U
Benzo[a]pyrene	50-32-8	-	< 0.3	-	U
Indeno[1,2,3-cd]pyrene	193-39-5	-	< 0.7	-	U
Dibenzo[a,h]anthracene	53-70-3	-	< 0.7	-	U
Benzo[g,h,i]perylene	191-24-2	-	< 0.7	-	U
Coronene	191-07-1*	-	< 0.4	-	N

Internal Standards	% Area
1,4-Dichlorobenzene-d4	92
Naphthalene-d8	94
Acenaphthene-d10	94
Phenanthrene-d10	94
Chrysene-d12	99
Perylene-d12	94

Surrogates	% Rec
2-Fluorophenol	69
Phenol-d5	53
Nitrobenzene-d5	73
2-Fluorobiphenyl	84
2,4,6-Tribromophenol	45
Terphenyl-d14	77

This analysis was conducted on an 'As Received' basis.

Concentrations are reported on a dry weight basis.

Where individual results are flagged see report notes for status.
Results corrected to dry weight at 105°C where appropriate, in accordance with the MCERTS standard.

Semi-Volatile Organic Compounds

Accredited?: Yes

Customer and Site Details:	Ramboll Environ: Zeon Chemicals ESA			**Matrix:**	Soil	**QC Batch Number:**	110
Sample Details:	WS4 1.8	**Date Booked in:**	16-May-16	**Ext Method:**	Ultrasonic	**Multiplier:**	0.2
LIMS ID Number:	CL1616359	**Date Extracted:**	17-May-16	**Operator:**		**Dilution Factor:**	1
Job Number:	S16_3925M	**Date Analysed:**	20-May-16	**Directory/Quant File:**	052016.GC11\	**GPC (Y/N)**	N

Target Compounds	CAS #	R.T. (min)	Concentration mg/kg	% Fit	Accr. code
Phenol	108-95-2	-	< 0.1	-	U
bis(2-Chloroethyl)ether	111-44-4	-	< 0.1	-	U
2-Chlorophenol	95-57-8	-	< 0.1	-	U
1,3-Dichlorobenzene	541-73-1	-	< 0.1	-	U
1,4-Dichlorobenzene	106-46-7	-	< 0.1	-	U
Benzyl alcohol	100-51-6	-	< 0.7	-	U
1,2-Dichlorobenzene	95-50-1	-	< 0.1	-	U
2-Methylphenol	95-48-7	-	< 0.1	-	U
bis(2-Chloroisopropyl)ether	108-60-1	-	< 0.7	-	U
Hexachloroethane	67-72-1	-	< 0.1	-	U
N-Nitroso-di-n-propylamine	621-64-7*	-	< 1.3	-	N
3- & 4-Methylphenol	108-39-4/106-44-5	-	< 0.1	-	U
Nitrobenzene	98-95-3	-	< 0.7	-	U
Isophorone	78-59-1*	-	< 0.1	-	N
2-Nitrophenol	88-75-5	-	< 0.1	-	U
2,4-Dimethylphenol	105-67-9	-	< 0.1	-	U
Benzoic Acid	65-85-0*	-	< 0.7	-	N
bis(2-Chloroethoxy)methane	111-91-1	-	< 0.1	-	U
2,4-Dichlorophenol	120-83-2	-	< 0.1	-	U
1,2,4-Trichlorobenzene	120-82-1*	-	< 0.1	-	N
Naphthalene	91-20-3	-	< 0.1	-	U
4-Chlorophenol	106-48-9	-	< 0.7	-	U
4-Chloroaniline	106-47-8*	-	< 0.7	-	N
Hexachlorobutadiene	87-68-3*	-	< 0.1	-	N
4-Chloro-3-methylphenol	59-50-7	-	< 0.1	-	U
2-Methylnaphthalene	91-57-6	-	< 0.1	-	U
1-Methylnaphthalene	90-12-0	-	< 0.1	-	U
Hexachlorocyclopentadiene	77-47-4*	-	< 0.1	-	N
2,4,6-Trichlorophenol	88-06-2	-	< 0.1	-	U
2,4,5-Trichlorophenol	95-95-4	-	< 0.1	-	U
2-Chloronaphthalene	91-58-7	-	< 0.1	-	U
Biphenyl	92-52-4	-	< 0.1	-	U
Diphenyl ether	101-84-8	-	< 0.1	-	U
2-Nitroaniline	88-74-4*	-	< 0.7	-	N
Acenaphthylene	208-96-8	-	< 0.1	-	U
Dimethylphthalate	131-11-3	-	< 0.1	-	U
2,6-Dinitrotoluene	606-20-2	-	< 0.7	-	U
Acenaphthene	83-32-9	-	< 0.1	-	U
3-Nitroaniline	99-09-2*	-	< 21.4	-	N

Target Compounds	CAS #	R.T.	Concentration mg/kg	% Fit	Accr. code
2,4-Dinitrophenol	51-28-5*	-	< 0.7	-	N
Dibenzofuran	132-64-9	-	< 0.1	-	U
4-Nitrophenol	100-02-7*	-	< 0.7	-	N
2,4-Dinitrotoluene	121-14-2	-	< 0.3	-	U
Fluorene	86-73-7	-	< 0.1	-	U
Diethylphthalate	84-66-2	-	< 0.1	-	U
4-Chlorophenyl-phenylether	7005-72-3	-	< 0.1	-	U
4,6-Dinitro-2-methylphenol	534-52-1*	-	< 0.3	-	N
4-Nitroaniline	100-01-6*	-	< 0.9	-	N
N-Nitrosodiphenylamine	86-30-6*	-	< 0.1	-	N
4-Bromophenyl-phenylether	101-55-3	-	< 0.1	-	U
Hexachlorobenzene	118-74-1	-	< 0.1	-	U
Pentachlorophenol	87-86-5*	-	< 0.7	-	N
Phenanthrene	85-01-8	-	< 0.1	-	U
Anthracene	120-12-7	-	< 0.1	-	U
Di-n-butylphthalate	84-74-2	-	< 0.1	-	U
Fluoranthene	206-44-0	-	< 0.3	-	U
Pyrene	129-00-0	-	< 0.3	-	U
Butylbenzylphthalate	85-68-7	-	< 0.3	-	U
Benzo[a]anthracene	56-55-3	-	< 0.3	-	U
Chrysene	218-01-9	-	< 0.3	-	U
3,3'-Dichlorobenzidine	91-94-1*	-	< 0.7	-	N
bis(2-Ethylhexyl)phthalate	117-81-7	-	< 0.3	-	U
Di-n-octylphthalate	117-84-0	-	< 0.3	-	U
Benzo[b]fluoranthene	205-99-2	-	< 0.3	-	U
Benzo[k]fluoranthene	207-08-9	-	< 0.3	-	U
Benzo[a]pyrene	50-32-8	-	< 0.3	-	U
Indeno[1,2,3-cd]pyrene	193-39-5	-	< 0.7	-	U
Dibenzo[a,h]anthracene	53-70-3	-	< 0.7	-	U
Benzo[g,h,i]perylene	191-24-2	-	< 0.7	-	U
Coronene	191-07-1*	-	< 0.4	-	N

Internal Standards	% Area
1,4-Dichlorobenzene-d4	90
Naphthalene-d8	92
Acenaphthene-d10	92
Phenanthrene-d10	92
Chrysene-d12	98
Perylene-d12	95

Surrogates	% Rec
2-Fluorophenol	82
Phenol-d5	83
Nitrobenzene-d5	84
2-Fluorobiphenyl	92
2,4,6-Tribromophenol	88
Terphenyl-d14	93

This analysis was conducted on an 'As Received' basis.

Concentrations are reported on a dry weight basis.

Where individual results are flagged see report notes for status.
Results corrected to dry weight at 105°C where appropriate, in accordance with the MCERTS standard.

Semi-Volatile Organic Compounds

Accredited?: Yes

Customer and Site Details:	Ramboll Environ: Zeon Chemicals ESA			**Matrix:**	Soil	**QC Batch Number:**	110
Sample Details:	WS4 2.4	**Date Booked in:**	16-May-16	**Ext Method:**	Ultrasonic	**Multiplier:**	0.2
LIMS ID Number:	CL1616360	**Date Extracted:**	17-May-16	**Operator:**		**Dilution Factor:**	1
Job Number:	S16_3925M	**Date Analysed:**	20-May-16	**Directory/Quant File:**	052016.GC11\	**GPC (Y/N)**	N

Target Compounds	CAS #	R.T. (min)	Concentration mg/kg	% Fit	Accr. code
Phenol	108-95-2	-	< 0.1	-	U
bis(2-Chloroethyl)ether	111-44-4	-	< 0.1	-	U
2-Chlorophenol	95-57-8	-	< 0.1	-	U
1,3-Dichlorobenzene	541-73-1	-	< 0.1	-	U
1,4-Dichlorobenzene	106-46-7	-	< 0.1	-	U
Benzyl alcohol	100-51-6	-	< 0.6	-	U
1,2-Dichlorobenzene	95-50-1	-	< 0.1	-	U
2-Methylphenol	95-48-7	-	< 0.1	-	U
bis(2-Chloroisopropyl)ether	108-60-1	-	< 0.6	-	U
Hexachloroethane	67-72-1	-	< 0.1	-	U
N-Nitroso-di-n-propylamine	621-64-7*	-	< 1.1	-	N
3- & 4-Methylphenol	108-39-4/106-44-5	-	< 0.1	-	U
Nitrobenzene	98-95-3	-	< 0.6	-	U
Isophorone	78-59-1*	-	< 0.1	-	N
2-Nitrophenol	88-75-5	-	< 0.1	-	U
2,4-Dimethylphenol	105-67-9	-	< 0.1	-	U
Benzoic Acid	65-85-0*	-	< 0.6	-	N
bis(2-Chloroethoxy)methane	111-91-1	-	< 0.1	-	U
2,4-Dichlorophenol	120-83-2	-	< 0.1	-	U
1,2,4-Trichlorobenzene	120-82-1*	-	< 0.1	-	N
Naphthalene	91-20-3	-	< 0.1	-	U
4-Chlorophenol	106-48-9	-	< 0.6	-	U
4-Chloroaniline	106-47-8*	-	< 0.6	-	N
Hexachlorobutadiene	87-68-3*	-	< 0.1	-	N
4-Chloro-3-methylphenol	59-50-7	-	< 0.1	-	U
2-Methylnaphthalene	91-57-6	-	< 0.1	-	U
1-Methylnaphthalene	90-12-0	-	< 0.1	-	U
Hexachlorocyclopentadiene	77-47-4*	-	< 0.1	-	N
2,4,6-Trichlorophenol	88-06-2	-	< 0.1	-	U
2,4,5-Trichlorophenol	95-95-4	-	< 0.1	-	U
2-Chloronaphthalene	91-58-7	-	< 0.1	-	U
Biphenyl	92-52-4	-	< 0.1	-	U
Diphenyl ether	101-84-8	-	< 0.1	-	U
2-Nitroaniline	88-74-4*	-	< 0.6	-	N
Acenaphthylene	208-96-8	-	< 0.1	-	U
Dimethylphthalate	131-11-3	-	< 0.1	-	U
2,6-Dinitrotoluene	606-20-2	-	< 0.6	-	U
Acenaphthene	83-32-9	-	< 0.1	-	U
3-Nitroaniline	99-09-2*	-	< 18.2	-	N

Target Compounds	CAS #	R.T.	Concentration mg/kg	% Fit	Accr. code
2,4-Dinitrophenol	51-28-5*	-	< 0.6	-	N
Dibenzofuran	132-64-9	-	< 0.1	-	U
4-Nitrophenol	100-02-7*	-	< 0.6	-	N
2,4-Dinitrotoluene	121-14-2	-	< 0.3	-	U
Fluorene	86-73-7	-	< 0.1	-	U
Diethylphthalate	84-66-2	-	< 0.1	-	U
4-Chlorophenyl-phenylether	7005-72-3	-	< 0.1	-	U
4,6-Dinitro-2-methylphenol	534-52-1*	-	< 0.3	-	N
4-Nitroaniline	100-01-6*	-	< 0.8	-	N
N-Nitrosodiphenylamine	86-30-6*	-	< 0.1	-	N
4-Bromophenyl-phenylether	101-55-3	-	< 0.1	-	U
Hexachlorobenzene	118-74-1	-	< 0.1	-	U
Pentachlorophenol	87-86-5*	-	< 0.6	-	N
Phenanthrene	85-01-8	-	< 0.1	-	U
Anthracene	120-12-7	-	< 0.1	-	U
Di-n-butylphthalate	84-74-2	-	< 0.1	-	U
Fluoranthene	206-44-0	-	< 0.3	-	U
Pyrene	129-00-0	-	< 0.3	-	U
Butylbenzylphthalate	85-68-7	-	< 0.3	-	U
Benzo[a]anthracene	56-55-3	-	< 0.3	-	U
Chrysene	218-01-9	-	< 0.3	-	U
3,3'-Dichlorobenzidine	91-94-1*	-	< 0.6	-	N
bis(2-Ethylhexyl)phthalate	117-81-7	-	< 0.3	-	U
Di-n-octylphthalate	117-84-0	-	< 0.3	-	U
Benzo[b]fluoranthene	205-99-2	-	< 0.3	-	U
Benzo[k]fluoranthene	207-08-9	-	< 0.3	-	U
Benzo[a]pyrene	50-32-8	-	< 0.3	-	U
Indeno[1,2,3-cd]pyrene	193-39-5	-	< 0.6	-	U
Dibenzo[a,h]anthracene	53-70-3	-	< 0.6	-	U
Benzo[g,h,i]perylene	191-24-2	-	< 0.6	-	U
Coronene	191-07-1*	-	< 0.4	-	N

Internal Standards	% Area
1,4-Dichlorobenzene-d4	89
Naphthalene-d8	92
Acenaphthene-d10	88
Phenanthrene-d10	94
Chrysene-d12	95
Perylene-d12	89

Surrogates	% Rec
2-Fluorophenol	72
Phenol-d5	87
Nitrobenzene-d5	84
2-Fluorobiphenyl	97
2,4,6-Tribromophenol	84
Terphenyl-d14	99

This analysis was conducted on an 'As Received' basis.

Concentrations are reported on a dry weight basis.

Where individual results are flagged see report notes for status.
Results corrected to dry weight at 105°C where appropriate, in accordance with the MCERTS standard.

Semi-Volatile Organic Compounds

Accredited?: Yes

Customer and Site Details:	Ramboll Environ: Zeon Chemicals ESA			**Matrix:**	Soil	**QC Batch Number:**	110
Sample Details:	REQ ANAL ERROR	**Date Booked in:**	13-May-16	**Ext Method:**	Ultrasonic	**Multiplier:**	0.2
LIMS ID Number:	CL1616362	**Date Extracted:**	17-May-16	**Operator:**		**Dilution Factor:**	1
Job Number:	S16_3918M	**Date Analysed:**	20-May-16	**Directory/Quant File:**	052016.GC11\	**GPC (Y/N)**	N

Target Compounds	CAS #	R.T. (min)	Concentration mg/kg	% Fit	Accr. code
Phenol	108-95-2	-	< 0.1	-	U
bis(2-Chloroethyl)ether	111-44-4	-	< 0.1	-	U
2-Chlorophenol	95-57-8	-	< 0.1	-	U
1,3-Dichlorobenzene	541-73-1	-	< 0.1	-	U
1,4-Dichlorobenzene	106-46-7	-	< 0.1	-	U
Benzyl alcohol	100-51-6	-	< 0.7	-	U
1,2-Dichlorobenzene	95-50-1	-	< 0.1	-	U
2-Methylphenol	95-48-7	-	< 0.1	-	U
bis(2-Chloroisopropyl)ether	108-60-1	-	< 0.7	-	U
Hexachloroethane	67-72-1	-	< 0.1	-	U
N-Nitroso-di-n-propylamine	621-64-7*	-	< 1.2	-	N
3- & 4-Methylphenol	108-39-4/106-44-5	-	< 0.1	-	U
Nitrobenzene	98-95-3	-	< 0.7	-	U
Isophorone	78-59-1*	-	< 0.1	-	N
2-Nitrophenol	88-75-5	-	< 0.1	-	U
2,4-Dimethylphenol	105-67-9	-	< 0.1	-	U
Benzoic Acid	65-85-0*	-	< 0.7	-	N
bis(2-Chloroethoxy)methane	111-91-1	-	< 0.1	-	U
2,4-Dichlorophenol	120-83-2	-	< 0.1	-	U
1,2,4-Trichlorobenzene	120-82-1*	-	< 0.1	-	N
Naphthalene	91-20-3	-	< 0.1	-	U
4-Chlorophenol	106-48-9	-	< 0.7	-	U
4-Chloroaniline	106-47-8*	-	< 0.7	-	N
Hexachlorobutadiene	87-68-3*	-	< 0.1	-	N
4-Chloro-3-methylphenol	59-50-7	-	< 0.1	-	U
2-Methylnaphthalene	91-57-6	-	< 0.1	-	U
1-Methylnaphthalene	90-12-0	-	< 0.1	-	U
Hexachlorocyclopentadiene	77-47-4*	-	< 0.1	-	N
2,4,6-Trichlorophenol	88-06-2	-	< 0.1	-	U
2,4,5-Trichlorophenol	95-95-4	-	< 0.1	-	U
2-Chloronaphthalene	91-58-7	-	< 0.1	-	U
Biphenyl	92-52-4	-	< 0.1	-	U
Diphenyl ether	101-84-8	-	< 0.1	-	U
2-Nitroaniline	88-74-4*	-	< 0.7	-	N
Acenaphthylene	208-96-8	-	< 0.1	-	U
Dimethylphthalate	131-11-3	-	< 0.1	-	U
2,6-Dinitrotoluene	606-20-2	-	< 0.7	-	U
Acenaphthene	83-32-9	-	< 0.1	-	U
3-Nitroaniline	99-09-2*	-	< 19.1	-	N

Target Compounds	CAS #	R.T.	Concentration mg/kg	% Fit	Accr. code
2,4-Dinitrophenol	51-28-5*	-	< 0.7	-	N
Dibenzofuran	132-64-9	-	< 0.1	-	U
4-Nitrophenol	100-02-7*	-	< 0.7	-	N
2,4-Dinitrotoluene	121-14-2	-	< 0.3	-	U
Fluorene	86-73-7	-	< 0.1	-	U
Diethylphthalate	84-66-2	-	< 0.1	-	U
4-Chlorophenyl-phenylether	7005-72-3	-	< 0.1	-	U
4,6-Dinitro-2-methylphenol	534-52-1*	-	< 0.3	-	N
4-Nitroaniline	100-01-6*	-	< 0.8	-	N
N-Nitrosodiphenylamine	86-30-6*	-	< 0.1	-	N
4-Bromophenyl-phenylether	101-55-3	-	< 0.1	-	U
Hexachlorobenzene	118-74-1	-	< 0.1	-	U
Pentachlorophenol	87-86-5*	-	< 0.7	-	N
Phenanthrene	85-01-8	-	< 0.1	-	U
Anthracene	120-12-7	-	< 0.1	-	U
Di-n-butylphthalate	84-74-2	-	< 0.1	-	U
Fluoranthene	206-44-0	-	< 0.3	-	U
Pyrene	129-00-0	-	< 0.3	-	U
Butylbenzylphthalate	85-68-7	-	< 0.3	-	U
Benzo[a]anthracene	56-55-3	-	< 0.3	-	U
Chrysene	218-01-9	-	< 0.3	-	U
3,3'-Dichlorobenzidine	91-94-1*	-	< 0.7	-	N
bis(2-Ethylhexyl)phthalate	117-81-7	-	< 0.3	-	U
Di-n-octylphthalate	117-84-0	-	< 0.3	-	U
Benzo[b]fluoranthene	205-99-2	-	< 0.3	-	U
Benzo[k]fluoranthene	207-08-9	-	< 0.3	-	U
Benzo[a]pyrene	50-32-8	-	< 0.3	-	U
Indeno[1,2,3-cd]pyrene	193-39-5	-	< 0.7	-	U
Dibenzo[a,h]anthracene	53-70-3	-	< 0.7	-	U
Benzo[g,h,i]perylene	191-24-2	-	< 0.7	-	U
Coronene	191-07-1*	-	< 0.4	-	N

Internal Standards	% Area
1,4-Dichlorobenzene-d4	91
Naphthalene-d8	90
Acenaphthene-d10	90
Phenanthrene-d10	90
Chrysene-d12	93
Perylene-d12	86

Surrogates	% Rec
2-Fluorophenol	94
Phenol-d5	77
Nitrobenzene-d5	81
2-Fluorobiphenyl	93
2,4,6-Tribromophenol	83
Terphenyl-d14	98

This analysis was conducted on an 'As Received' basis.

Concentrations are reported on a dry weight basis.

Where individual results are flagged see report notes for status.
Results corrected to dry weight at 105°C where appropriate, in accordance with the MCERTS standard.

SVOC (TICs)

Accredited?:No

Customer and Site Details:	Ramboll Environ: Zeon Chemicals ESA		
Sample Details:	WS4 0.9	**Job Number:**	S16_3925
LIMS ID Number:	CL1616358		
		Multiplier:	0.2
Date Booked in:	16-May-16	**Dilution Factor:**	1
Date Extracted:	17-May-16	**GPC (Y/N):**	N
Date Analysed:	20-May-16	**Matrix:**	Soil
QC Batch Number:	110	**Method:**	Ultrasonic
Directory/Quant File:	052016.GC11\ 0	**Operator:**	0

Tentatively Identified Compounds	CAS #	R.T.	Concentration mg/kg	% Fit	Accr. code
Non detected			<2.0		N

The compounds listed above have been tentatively identified by a computer based library search.
Compounds identified in the sample are not reported if they also occur in the method blank.
The % fit is an indication of the reliability of the compound assignment.
Due to the similarity between mass spectra of some isomeric compounds assignments may not be correct.
Other compounds may also be present but identification was not possible.
Concentrations are semi-quantitative, assume a response factor of 1 and use the nearest internal standard.
Concentrations are reported on a dry weight basis.

Where individual results are flagged see report notes for status.
Results corrected to dry weight at 105°C where appropriate, in accordance with the MCERTS standard.

SVOC (TICs)

Accredited?:No

Customer and Site Details:	Ramboll Environ: Zeon Chemicals ESA		
Sample Details:	WS4 1.8	**Job Number:**	S16_3925
LIMS ID Number:	CL1616359		
		Multiplier:	0.2
Date Booked in:	16-May-16	**Dilution Factor:**	1
Date Extracted:	17-May-16	**GPC (Y/N):**	N
Date Analysed:	20-May-16	**Matrix:**	Soil
QC Batch Number:	110	**Method:**	Ultrasonic
Directory/Quant File:	052016.GC11\ 0	**Operator:**	0

Tentatively Identified Compounds	CAS #	R.T.	Concentration mg/kg	% Fit	Accr. code
Non detected			<2.2		N

The compounds listed above have been tentatively identified by a computer based library search.
Compounds identified in the sample are not reported if they also occur in the method blank.
The % fit is an indication of the reliability of the compound assignment.
Due to the similarity between mass spectra of some isomeric compounds assignments may not be correct.
Other compounds may also be present but identification was not possible.
Concentrations are semi-quantitative, assume a response factor of 1 and use the nearest internal standard.
Concentrations are reported on a dry weight basis.

Where individual results are flagged see report notes for status.
Results corrected to dry weight at 105°C where appropriate, in accordance with the MCERTS standard.

SVOC (TICs)

Accredited?:No

Customer and Site Details:	Ramboll Environ: Zeon Chemicals ESA		
Sample Details:	WS4 2.4	**Job Number:**	S16_3925
LIMS ID Number:	CL1616360		
		Multiplier:	0.2
Date Booked in:	16-May-16	**Dilution Factor:**	1
Date Extracted:	17-May-16	**GPC (Y/N):**	N
Date Analysed:	20-May-16	**Matrix:**	Soil
QC Batch Number:	110	**Method:**	Ultrasonic
Directory/Quant File:	052016.GC11\ 0	**Operator:**	0

Tentatively Identified Compounds	CAS #	R.T.	Concentration mg/kg	% Fit	Accr. code
Tetradecane	000629-59-4	5.28	1.329	78	N
Azulene, 4,6,8-trimethyl	000941-81-1	5.04	1.259	83	N
5(10H)-Pyrido[3,4-b]quinolone, 7-methoxy-	999252-46-2	6.40	1.057	80	N
Hexadecane, 2,6,10,14-tetramethyl	000638-36-8	5.57	1.033	81	N
4-Methylnaphtho[1,2-b]thiophene	067388-11-8	5.84	1.026	90	N
Unknown peak	-	5.74	1.024	-	N
Unknown peak	-	5.40	0.988	-	N
Unknown peak	-	6.01	0.961	-	N
Sulfurous acid, pentyl tridecyl ester	999541-21-0	4.53	0.957	80	N
Cyclohexane, 1,2,4,5-tetraethyl-, (1.alpha.,2.alpha.,4.alpha.,5	061142-24-3	5.51	0.945	62	N
2,8-Dimethyldibenzothiophene	001207-15-4	6.15	0.910	89	N
3,4-Dimethylbenzo[4,5]imidazo[1,2-a]pyridin-1-ol	999213-40-4	6.23	0.854	50	N
Unknown peak	-	5.95	0.767	-	N
Unknown peak	-	5.79	0.765	-	N
2,2,5,6-Tetramethyl-2,3-dihydropyran-4-thione	999107-44-0	4.97	0.707	90	N
2,6-Dimethyldibenzothiophene	089816-75-1	6.10	0.705	91	N
Undecane, 3-methyl-	001002-43-3	4.11	0.693	64	N
Hexadecanoic acid, butyl ester	000111-06-8	6.58	0.645	86	N
Anthracene, 9,10-dimethyl-	000781-43-1	6.31	0.593	64	N

The compounds listed above have been tentatively identified by a computer based library search.
Compounds identified in the sample are not reported if they also occur in the method blank.
The % fit is an indication of the reliability of the compound assignment.
Due to the similarity between mass spectra of some isomeric compounds assignments may not be correct.
Other compounds may also be present but identification was not possible.
Concentrations are semi-quantitative, assume a response factor of 1 and use the nearest internal standard.
Concentrations are reported on a dry weight basis.

Where individual results are flagged see report notes for status.
Results corrected to dry weight at 105°C where appropriate, in accordance with the MCERTS standard.

SVOC (TICs)

Accredited?:No

Customer and Site Details:	Ramboll Environ: Zeon Chemicals ESA		
Sample Details:	REQ ANAL ERROR	**Job Number:**	S16_3918
LIMS ID Number:	CL1616362		
		Multiplier:	0.2
Date Booked in:	13-May-16	**Dilution Factor:**	1
Date Extracted:	17-May-16	**GPC (Y/N):**	N
Date Analysed:	20-May-16	**Matrix:**	Soil
QC Batch Number:	110	**Method:**	Ultrasonic
Directory/Quant File:	052016.GC11\ 0	**Operator:**	0

Tentatively Identified Compounds	CAS #	R.T.	Concentration mg/kg	% Fit	Accr. code
9-Octadecenamide, (Z)-	000301-02-0	7.19	0.724	99	N
1H-Pyrrole-2,5-dione, 1-(hydroxymethyl)	005063-96-7	5.86	0.481	53	N

The compounds listed above have been tentatively identified by a computer based library search.
Compounds identified in the sample are not reported if they also occur in the method blank.
The % fit is an indication of the reliability of the compound assignment.
Due to the similarity between mass spectra of some isomeric compounds assignments may not be correct.
Other compounds may also be present but identification was not possible.
Concentrations are semi-quantitative, assume a response factor of 1 and use the nearest internal standard.
Concentrations are reported on a dry weight basis.

Where individual results are flagged see report notes for status.
Results corrected to dry weight at 105°C where appropriate, in accordance with the MCERTS standard.

Gasoline Range Organics
(BTEX and Aliphatic Carbon Ranges)

Customer and Site Details: Ramboll Environ : Zeon Chemicals ESA
Job Number: S16_3925
Directory: E:\TES\DATA\2016\0518HSA_GC9\051816 2016-05-18 12-38-11\047F4701.D
Method: Headspace GCFID
Accreditation Code: UM

Matrix: Soil
Date Booked in: 16-May-16
Date extracted: 18-May-16
Date Analysed: 19-May-16, 02:0

*** Sample data with an asterisk are not UKAS accredited.**

		Concentration, (mg/kg) - as dry weight.					Aliphatics				
Sample ID	**Client ID**	**Benzene**	**Toluene**	**Ethyl benzene**	**m/p-Xylene**	**o-Xylene**	**C5 - C6**	**>C6 - C7**	**>C7 - C8**	**>C8 - C10**	**Total GRO**
CL1616358	WS4 0.9	<0.007	<0.007	<0.007	<0.007	<0.007	<0.1	<0.1	<0.1	<0.1	<0.1
CL1616359	WS4 1.8	<0.015	<0.015	<0.015	<0.015	<0.015	<0.3	<0.3	<0.3	<0.3	<0.3
CL1616360	WS4 2.4	<0.013	<0.013	<0.013	<0.013	<0.013	<0.3	<0.3	<0.3	0.4	0.4
CL1616361	WS3 0.8	<0.013	<0.013	<0.013	<0.013	<0.013	<0.3	<0.3	<0.3	<0.3	<0.3
CL1616362	WS3 3.5	<0.013	<0.013	<0.013	<0.013	<0.013	<0.3	<0.3	<0.3	<0.3	0.3
CL1616363	WS5 0.9	<0.013	<0.013	<0.013	<0.013	<0.013	<0.3	<0.3	<0.3	<0.3	<0.3

Note: Benzene elutes between C6 and C7, toluene elutes between C7 and C8, ethyl benzene and the xylenes elute between C8 and C9.
Each BTEX compound is deducted from the appropriate band to give the aliphatic fractions, however aromatic compounds may still be contributing to these fractions

Where individual results are flagged see report notes for status.
Results corrected to dry weight at 105°C where appropriate, in accordance with the MCERTS standard.

ALIPHATIC / AROMATIC FRACTION BY GC/FID

Customer and Site Details: Ramboll Environ : Zeon Chemicals ESA
Job Number: S16_3925M
QC Batch Number: 160585
Directory: D:\TES\DATA\Y2016\051716TPH_GC3\051716C 2016-05-18 13-34-19\083B5101.D
Method: Ultra Sonic

Separation: Silica gel
Eluents: Hexane, DCM

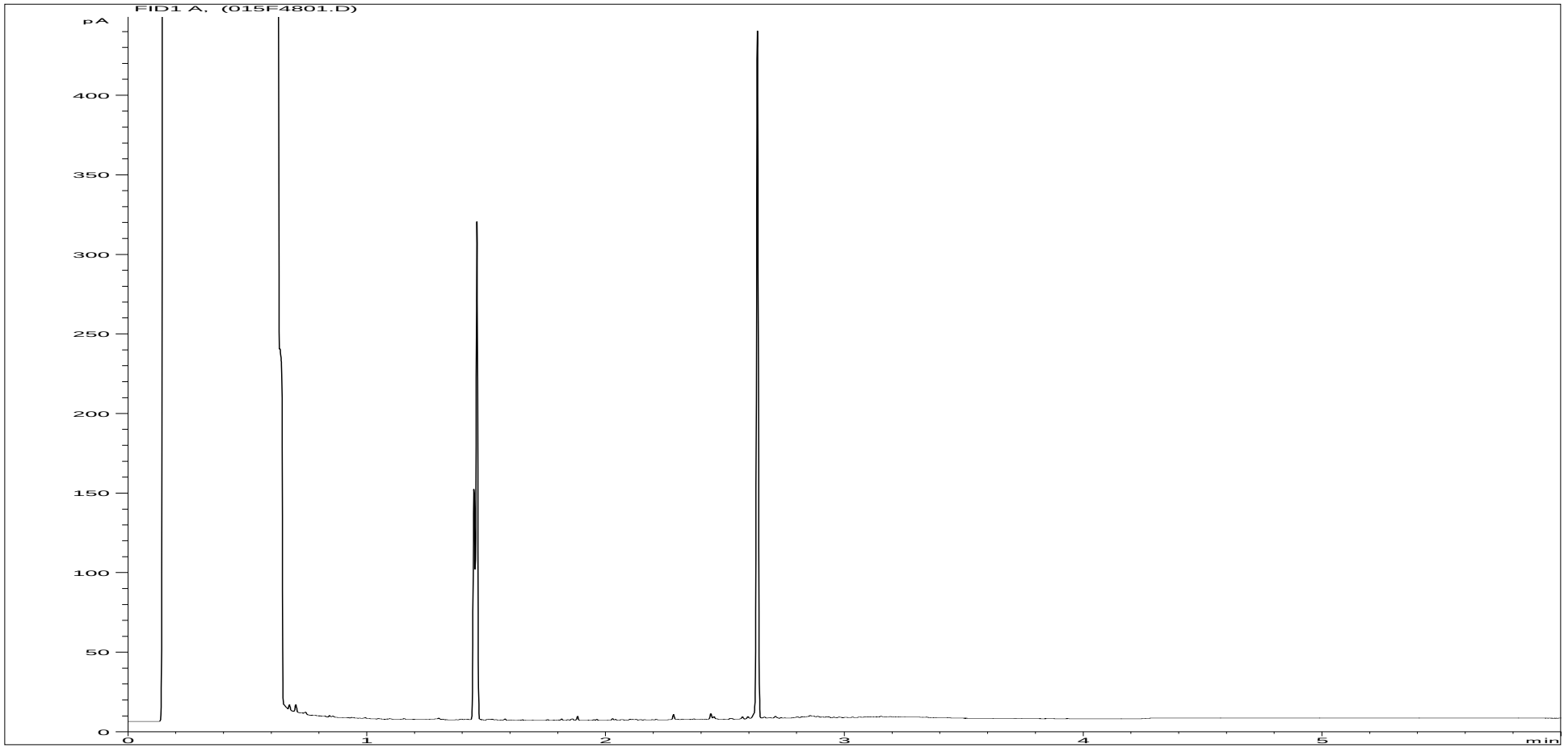
Matrix: Soil
Date Booked ir 16-May-16
Date Extracted 17-May-16
Date Analysed 19-May-16, 00:38:55

This sample data is not MCERTS accredited.
*** This sample data is not ISO17025 accredited.**

		Concentration, (mg/kg) - as dry weight.											
		>C8 - C10		>C10 - C12		>C12 - C16		>C16 - C21		>C21 - C35		>C8 - C40	
Sample ID	**Client ID**	**Aliphatics**	**Aromatics**	**Aliphatics**	**Aromatics**	**Aliphatics**	**Aromatics**	**Aliphatics**	**Aromatics**	**Aliphatics**	**Aromatics**	**Aliphatics**	**Aromatics**
CL1616358	WS4 0.9	<5	<5	<5	<5	<5	<5	<5	<5	<11.39	15.2	<26	<26
CL1616359	WS4 1.8	<6	<6	<6	<6	<6	<6	<6	<6	<12.92	<12.92	<29	<29
CL1616360	WS4 2.4	<5	<5	9.99	<5	38.8	16.2	40.3	31.9	15.7	13.4	106.4	63
CL1616361	WS3 0.8	<5	<5	<5	<5	<5	<5	<5	<5	<11.82	<11.82	<27	<27
CL1616362	WS3 3.5	<5	<5	<5	<5	<5	<5	<5	<5	<11.53	<11.53	<26	<26
CL1616363	WS5 0.9	<5	<5	<5	<5	<5	<5	6.6	7.62	31.2	38.9	46.1	49.2

Where individual results are flagged see report notes for status.
Results corrected to dry weight at 105°C where appropriate, in accordance with the MCERTS standard.

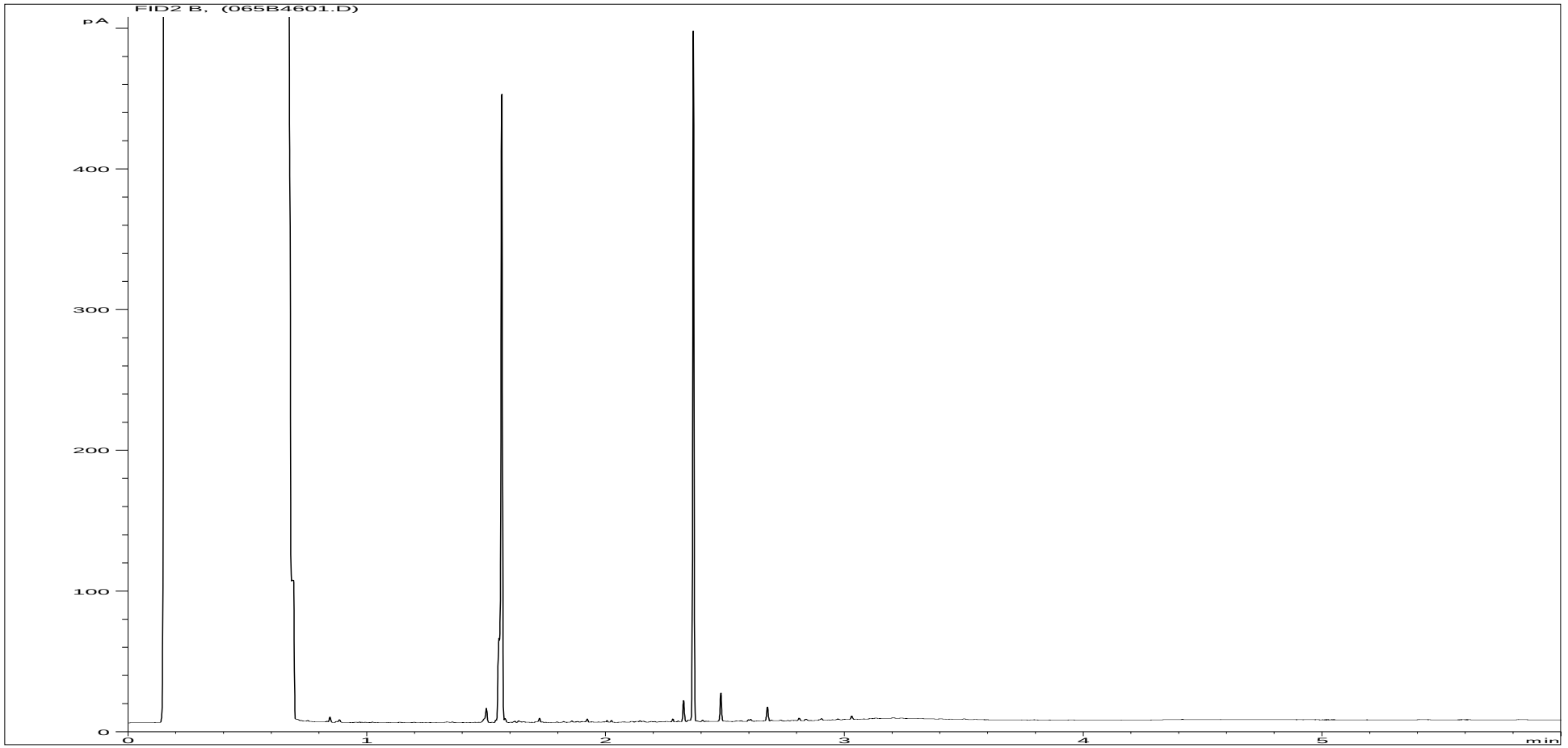
Petroleum Hydrocarbons (C8 to C40) by GC/FID Aliphatics Fraction.



Sample ID:	CL1616358ALI	**Job Number:**	S16_3925M
Multiplier:	16	**Client:**	Ramboll Environ
Dilution:	1	**Site:**	Zeon Chemicals ESA
Acquisition Method:	5UL_RUNF.M	**Client Sample Ref:**	WS4 0.9
Acquisition Date/Time:	18-May-16, 23:59:28		
Datafile:	D:\TES\DATA\Y2016\051716TPH_GC3\051716C 2016-05-18 13-34-19\015F4801.D		

Where individual results are flagged see report notes for status.
Results corrected to dry weight at 105°C where appropriate, in accordance with the MCERTS standard.

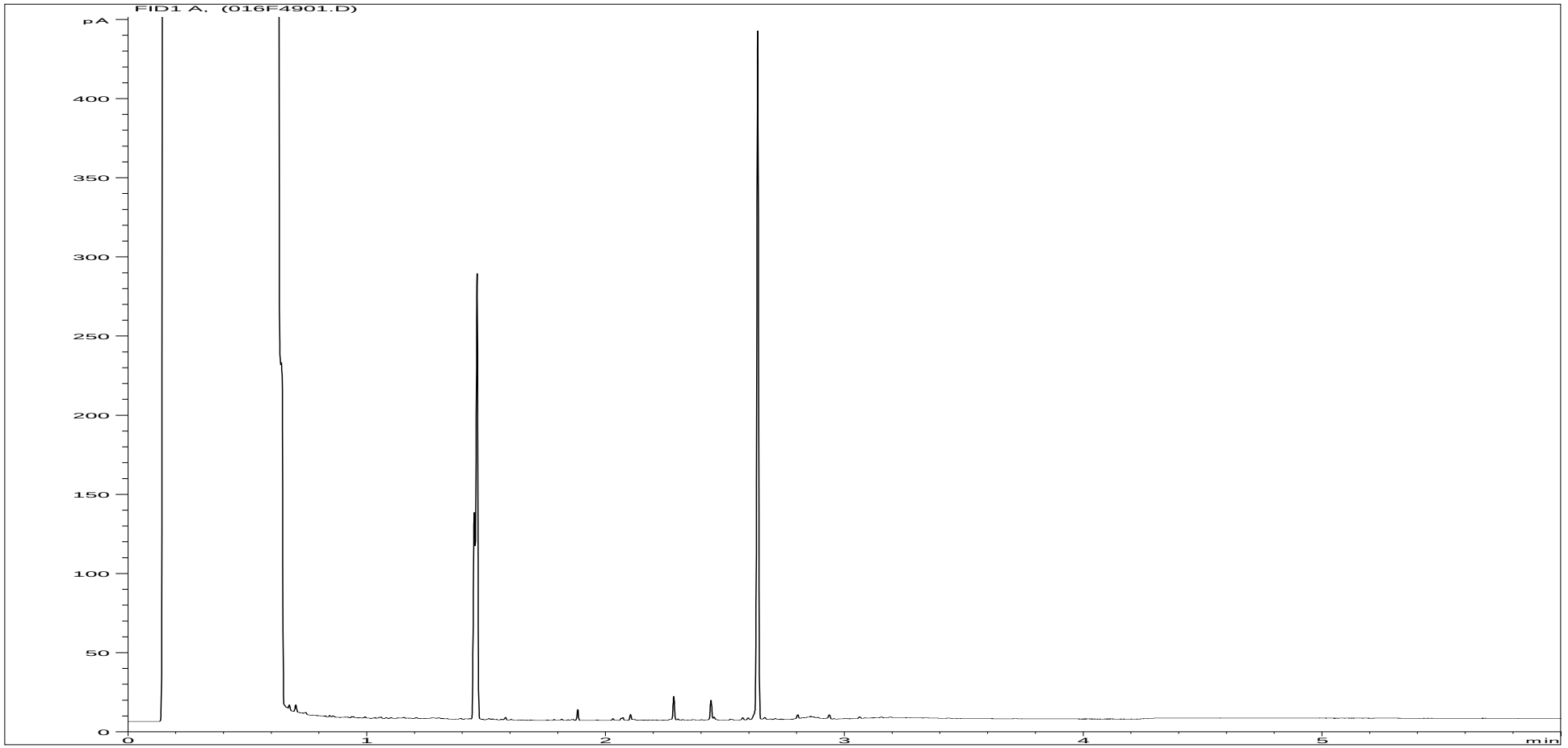
Petroleum Hydrocarbons (C8 to C40) by GC/FID Aromatics Fraction.



Sample ID:	CL1616358ARO	**Job Number:**	S16_3925M
Multiplier:	11.76	**Client:**	Ramboll Environ
Dilution:	1	**Site:**	Zeon Chemicals ESA
Acquisition Method:	5UL_RUNF.M	**Client Sample Ref:**	WS4 0.9
Acquisition Date/Time:	18-May-16, 23:33:11		
Datafile:	D:\TES\DATA\Y2016\051716TPH_GC3\051716C 2016-05-18 13-34-19\065B4601.D		

Where individual results are flagged see report notes for status.
Results corrected to dry weight at 105°C where appropriate, in accordance with the MCERTS standard.

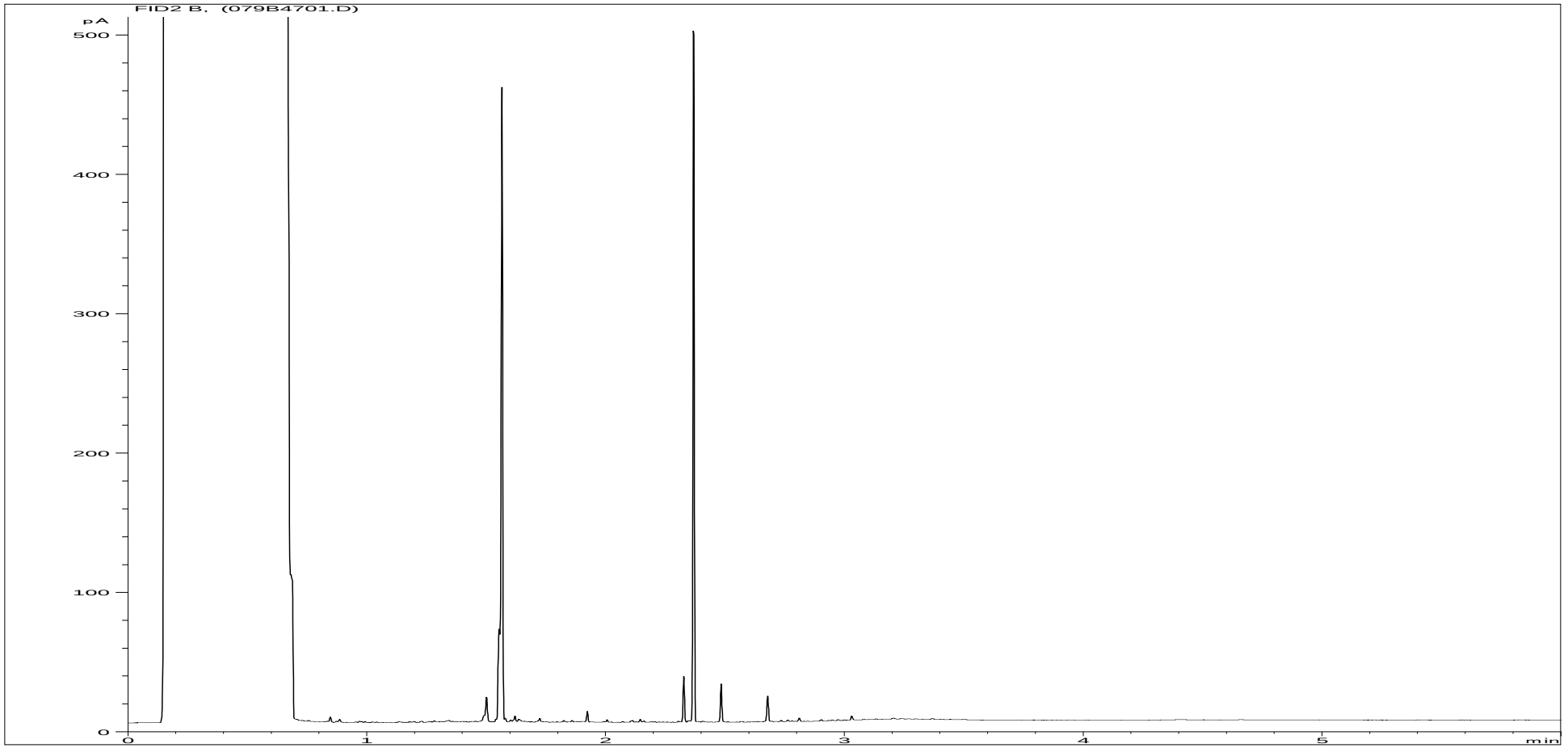
Petroleum Hydrocarbons (C8 to C40) by GC/FID Aliphatics Fraction.



Sample ID:	CL1616359ALI	**Job Number:**	S16_3925M
Multiplier:	15.92	**Client:**	Ramboll Environ
Dilution:	1	**Site:**	Zeon Chemicals ESA
Acquisition Method:	5UL_RUNF.M	**Client Sample Ref:**	WS4 1.8
Acquisition Date/Time:	19-May-16, 00:12:37		
Datafile:	D:\TES\DATA\Y2016\051716TPH_GC3\051716C 2016-05-18 13-34-19\016F4901.D		

Where individual results are flagged see report notes for status.
Results corrected to dry weight at 105°C where appropriate, in accordance with the MCERTS standard.

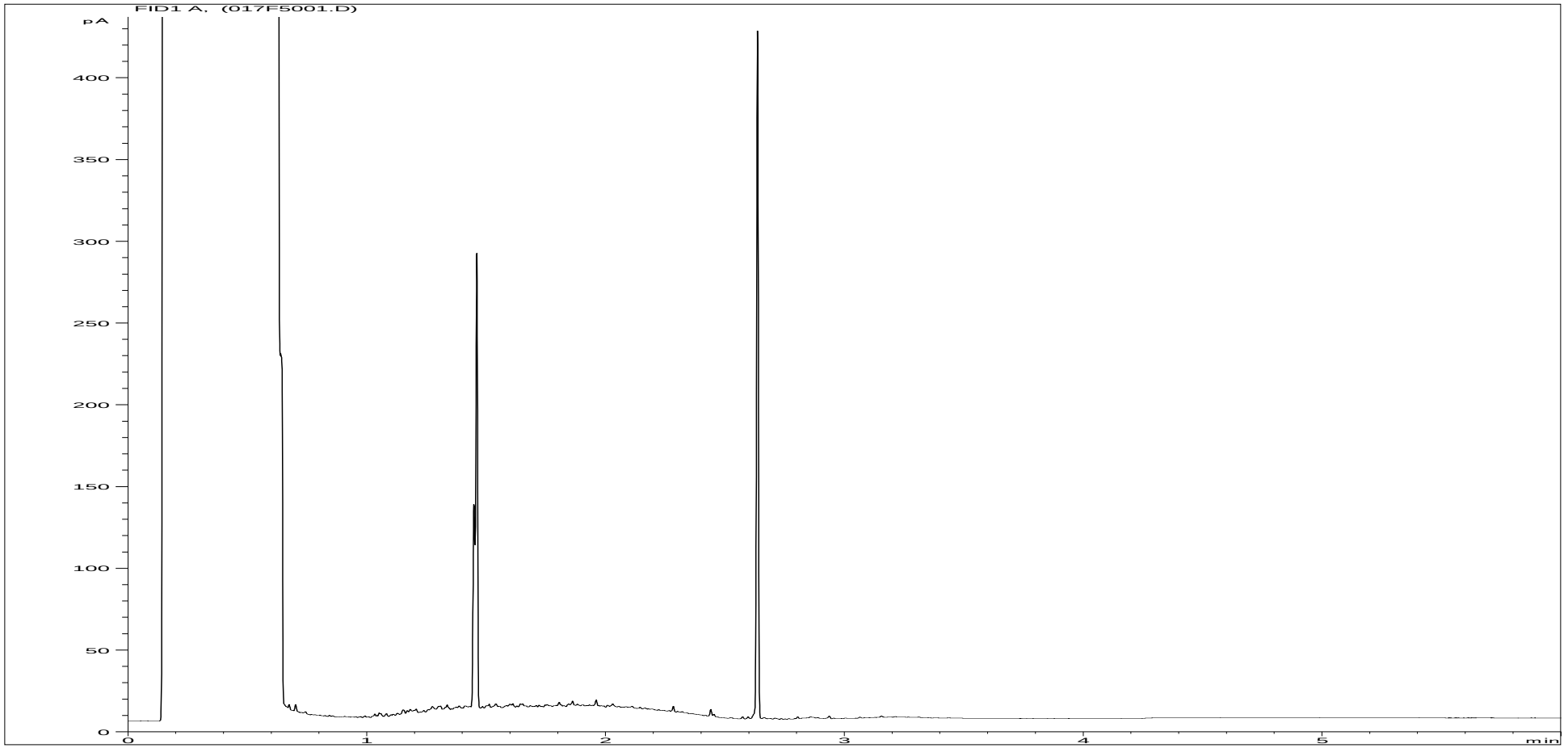
Petroleum Hydrocarbons (C8 to C40) by GC/FID Aromatics Fraction.



Sample ID:	CL1616359ARO	**Job Number:**	S16_3925M
Multiplier:	11.76	**Client:**	Ramboll Environ
Dilution:	1	**Site:**	Zeon Chemicals ESA
Acquisition Method:	5UL_RUNF.M	**Client Sample Ref:**	WS4 1.8
Acquisition Date/Time:	18-May-16, 23:46:21		
Datafile:	D:\TES\DATA\Y2016\051716TPH_GC3\051716C 2016-05-18 13-34-19\079B4701.D		

Where individual results are flagged see report notes for status.
Results corrected to dry weight at 105°C where appropriate, in accordance with the MCERTS standard.

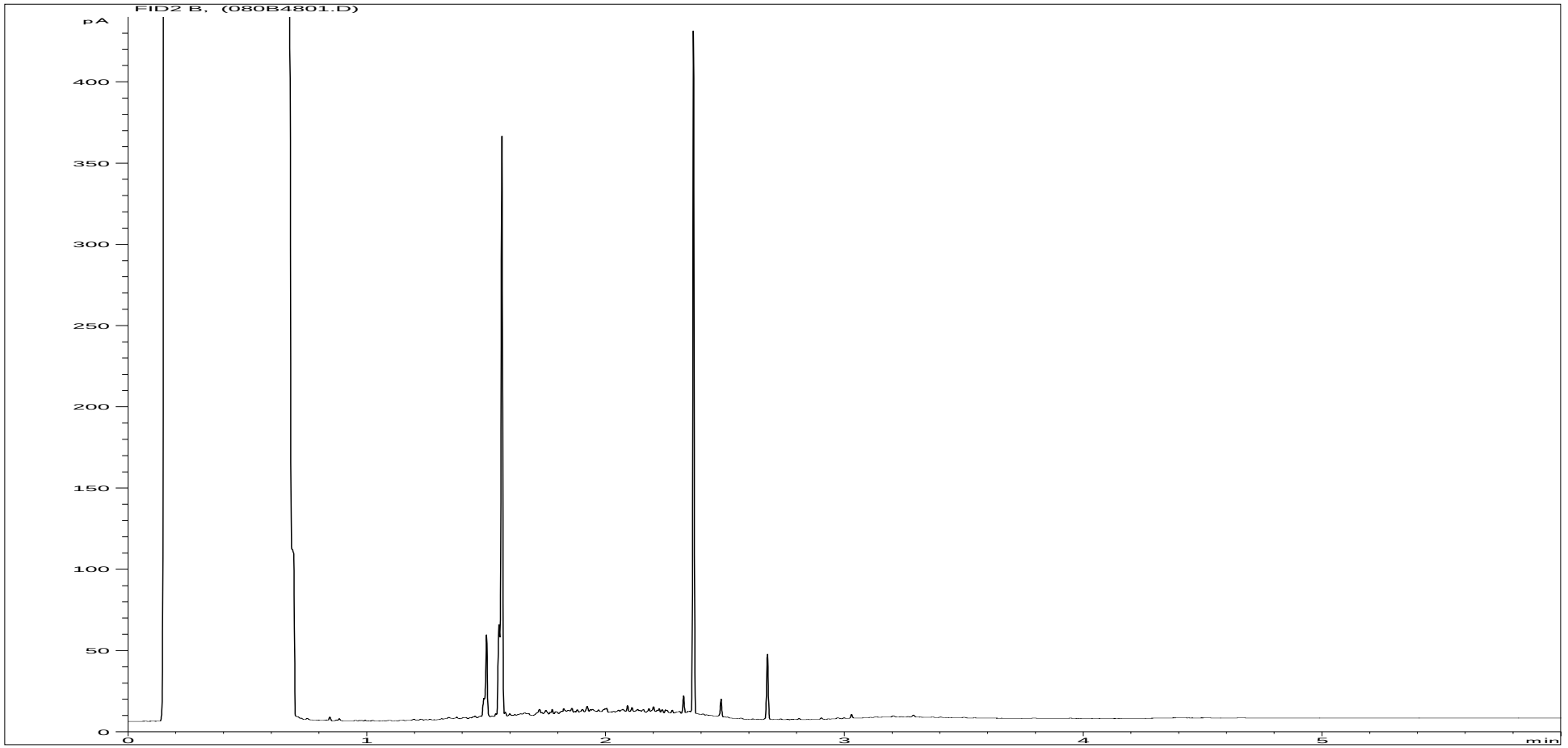
Petroleum Hydrocarbons (C8 to C40) by GC/FID Aliphatics Fraction.



Sample ID:	CL1616360ALI	**Job Number:**	S16_3925M
Multiplier:	15.92	**Client:**	Ramboll Environ
Dilution:	1	**Site:**	Zeon Chemicals ESA
Acquisition Method:	5UL_RUNF.M	**Client Sample Ref:**	WS4 2.4
Acquisition Date/Time:	19-May-16, 00:25:46		
Datafile:	D:\TES\DATA\Y2016\051716TPH_GC3\051716C 2016-05-18 13-34-19\017F5001.D		

Where individual results are flagged see report notes for status.
Results corrected to dry weight at 105°C where appropriate, in accordance with the MCERTS standard.

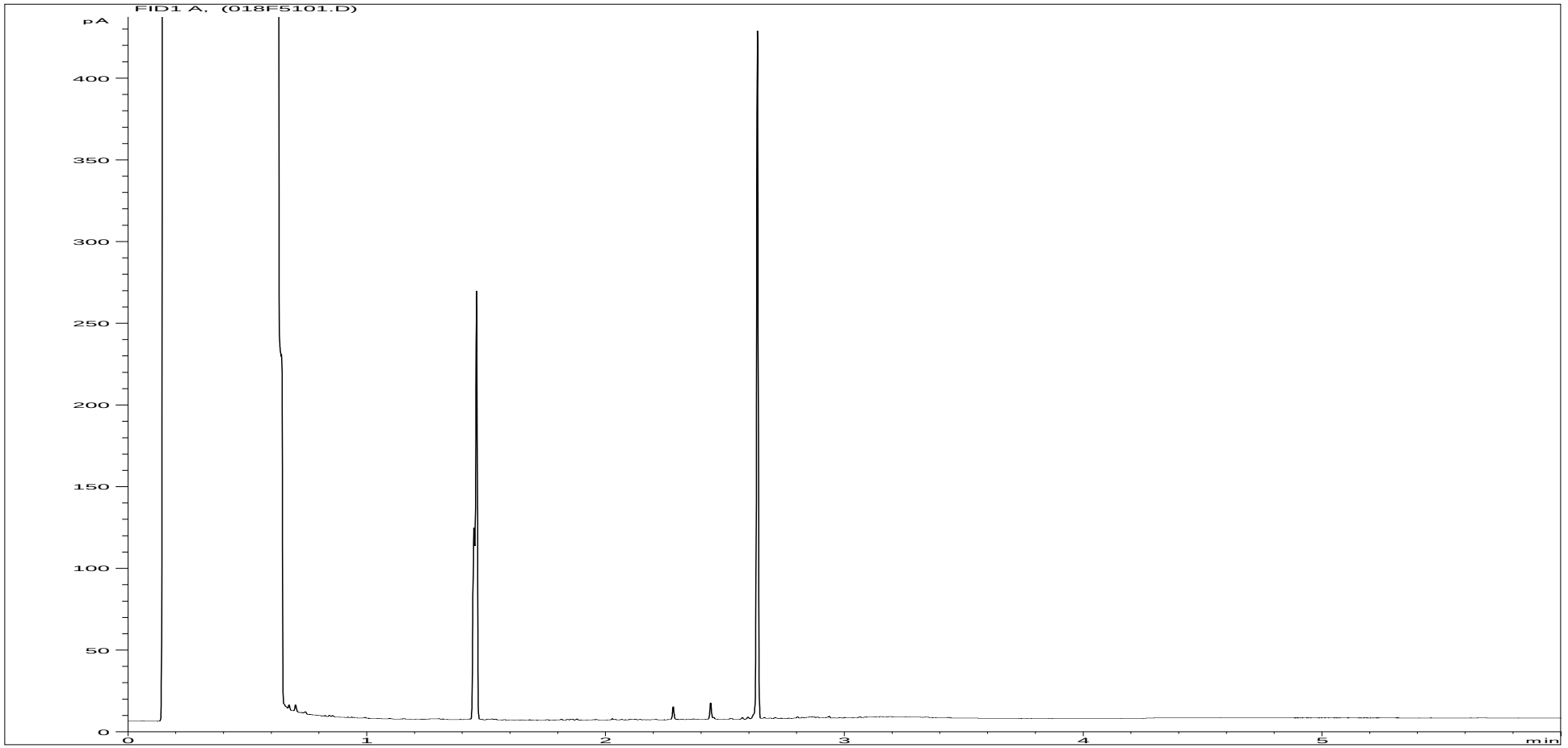
Petroleum Hydrocarbons (C8 to C40) by GC/FID Aromatics Fraction.



Sample ID:	CL1616360ARO	**Job Number:**	S16_3925M
Multiplier:	11.68	**Client:**	Ramboll Environ
Dilution:	1	**Site:**	Zeon Chemicals ESA
Acquisition Method:	5UL_RUNF.M	**Client Sample Ref:**	WS4 2.4
Acquisition Date/Time:	18-May-16, 23:59:28		
Datafile:	D:\TES\DATA\Y2016\051716TPH_GC3\051716C 2016-05-18 13-34-19\080B4801.D		

Where individual results are flagged see report notes for status.
Results corrected to dry weight at 105°C where appropriate, in accordance with the MCERTS standard.

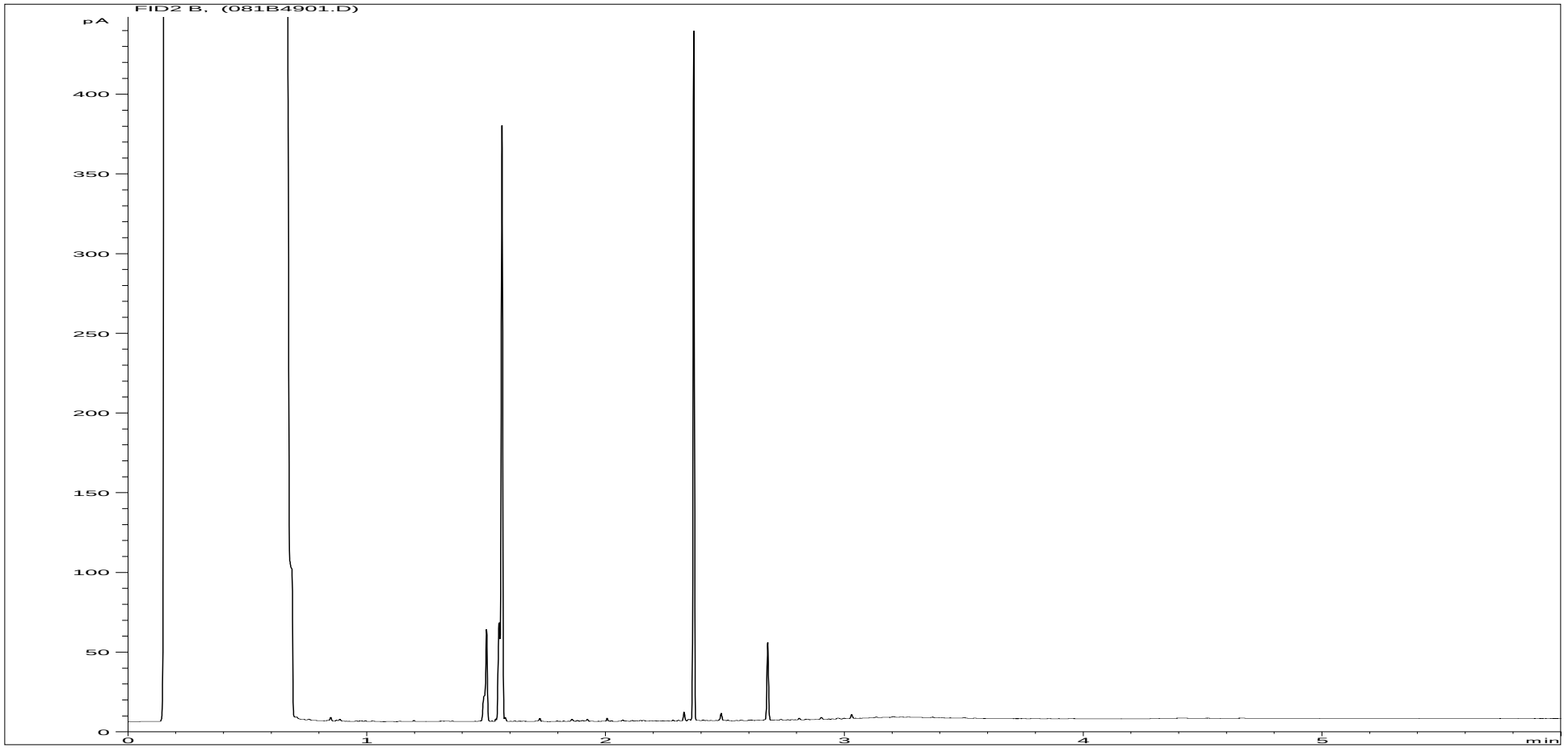
Petroleum Hydrocarbons (C8 to C40) by GC/FID Aliphatics Fraction.



Sample ID:	CL1616361ALI	**Job Number:**	S16_3925M
Multiplier:	15.92	**Client:**	Ramboll Environ
Dilution:	1	**Site:**	Zeon Chemicals ESA
Acquisition Method:	5UL_RUNF.M	**Client Sample Ref:**	WS3 0.8
Acquisition Date/Time:	19-May-16, 00:38:55		
Datafile:	D:\TES\DATA\Y2016\051716TPH_GC3\051716C 2016-05-18 13-34-19\018F5101.D		

Where individual results are flagged see report notes for status.
Results corrected to dry weight at 105°C where appropriate, in accordance with the MCERTS standard.

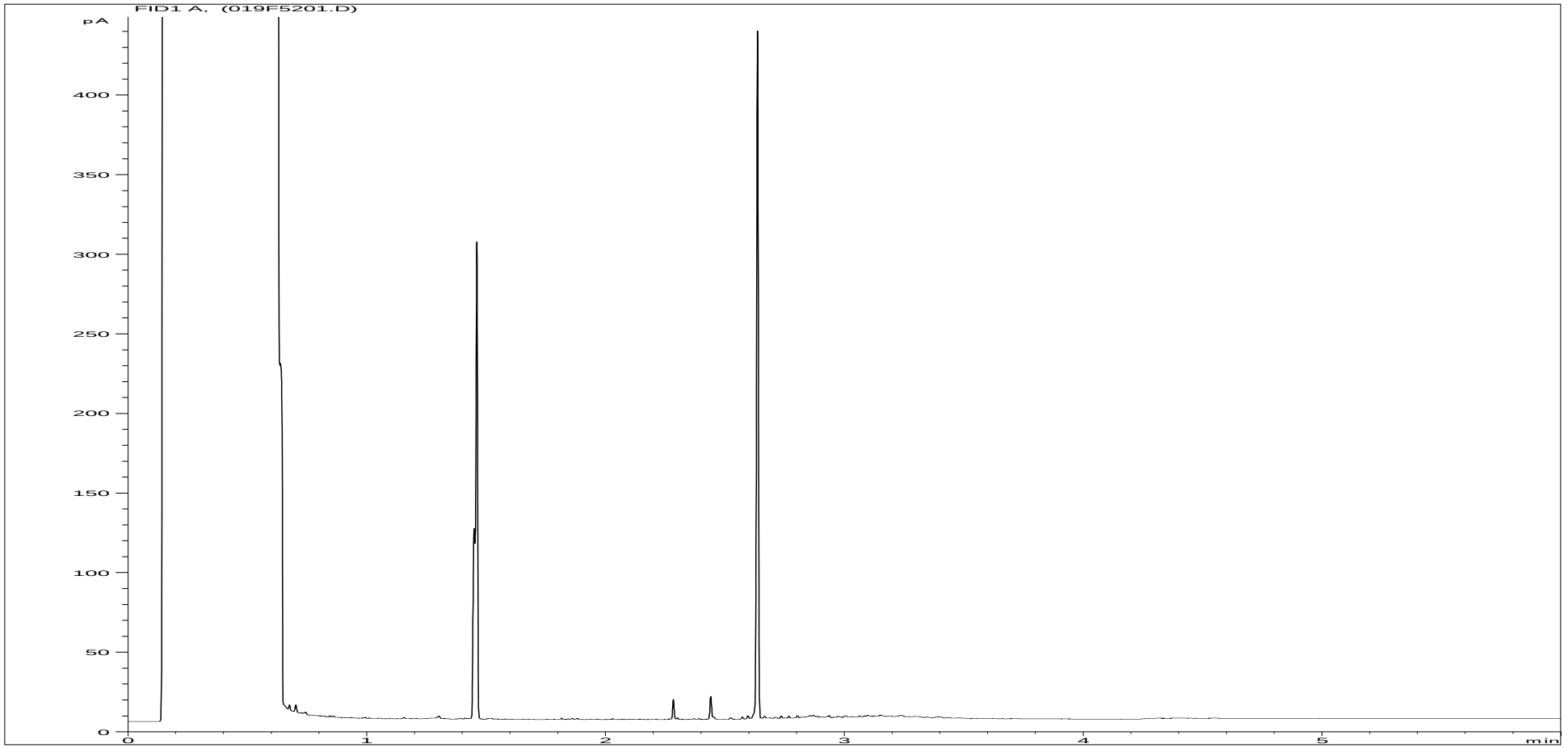
Petroleum Hydrocarbons (C8 to C40) by GC/FID Aromatics Fraction.



Sample ID:	CL1616361ARO	**Job Number:**	S16_3925M
Multiplier:	11.68	**Client:**	Ramboll Environ
Dilution:	1	**Site:**	Zeon Chemicals ESA
Acquisition Method:	5UL_RUNF.M	**Client Sample Ref:**	WS3 0.8
Acquisition Date/Time:	19-May-16, 00:12:37		
Datafile:	D:\TES\DATA\Y2016\051716TPH_GC3\051716C 2016-05-18 13-34-19\081B4901.D		

Where individual results are flagged see report notes for status.
Results corrected to dry weight at 105°C where appropriate, in accordance with the MCERTS standard.

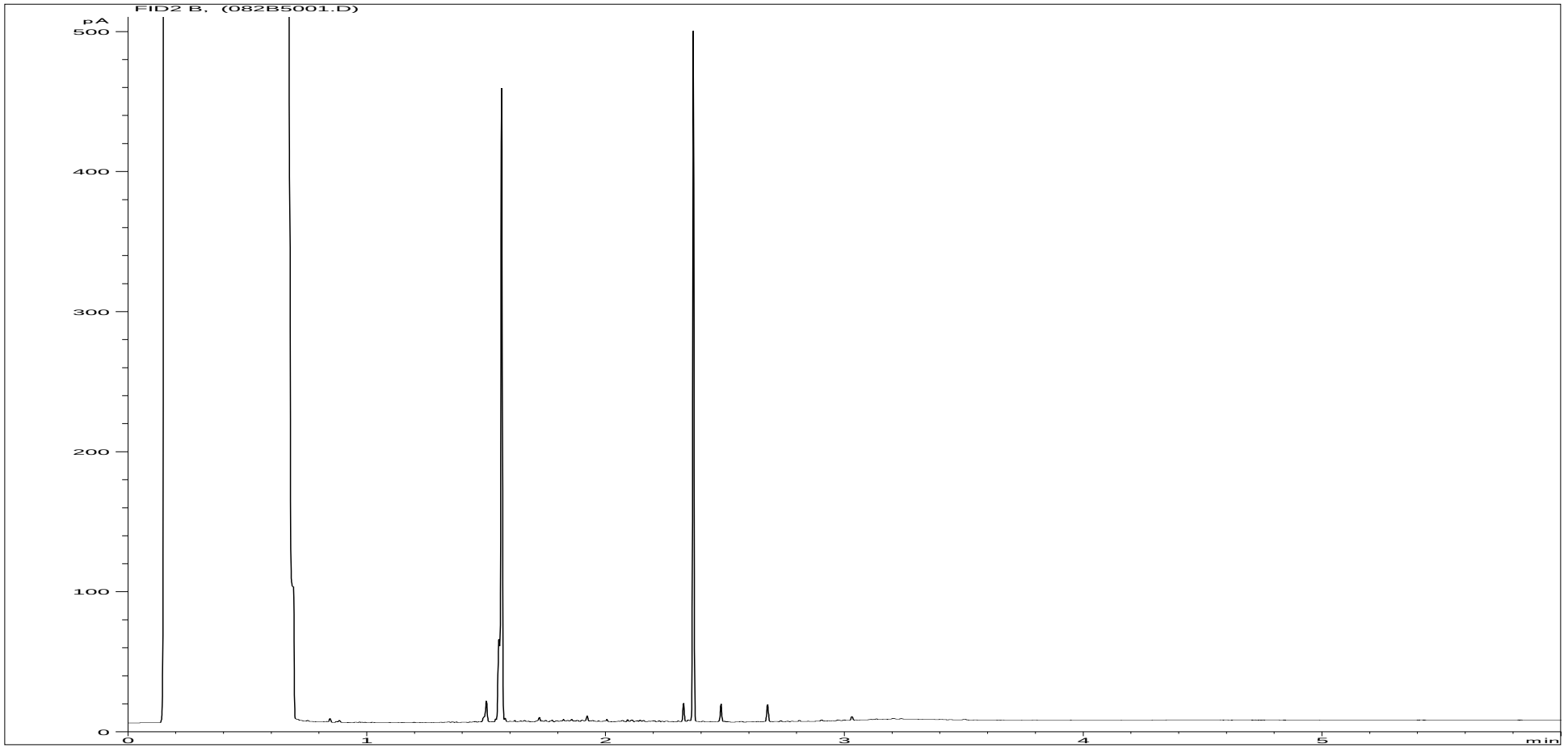
Petroleum Hydrocarbons (C8 to C40) by GC/FID Aliphatics Fraction.



Sample ID:	CL1616362ALI	**Job Number:**	S16_3925M
Multiplier:	15.84	**Client:**	Ramboll Environ
Dilution:	1	**Site:**	Zeon Chemicals ESA
Acquisition Method:	5UL_RUNF.M	**Client Sample Ref:**	WS3 3.5
Acquisition Date/Time:	19-May-16, 00:52:02		
Datafile:	D:\TES\DATA\Y2016\051716TPH_GC3\051716C 2016-05-18 13-34-19\019F5201.D		

Where individual results are flagged see report notes for status.
Results corrected to dry weight at 105°C where appropriate, in accordance with the MCERTS standard.

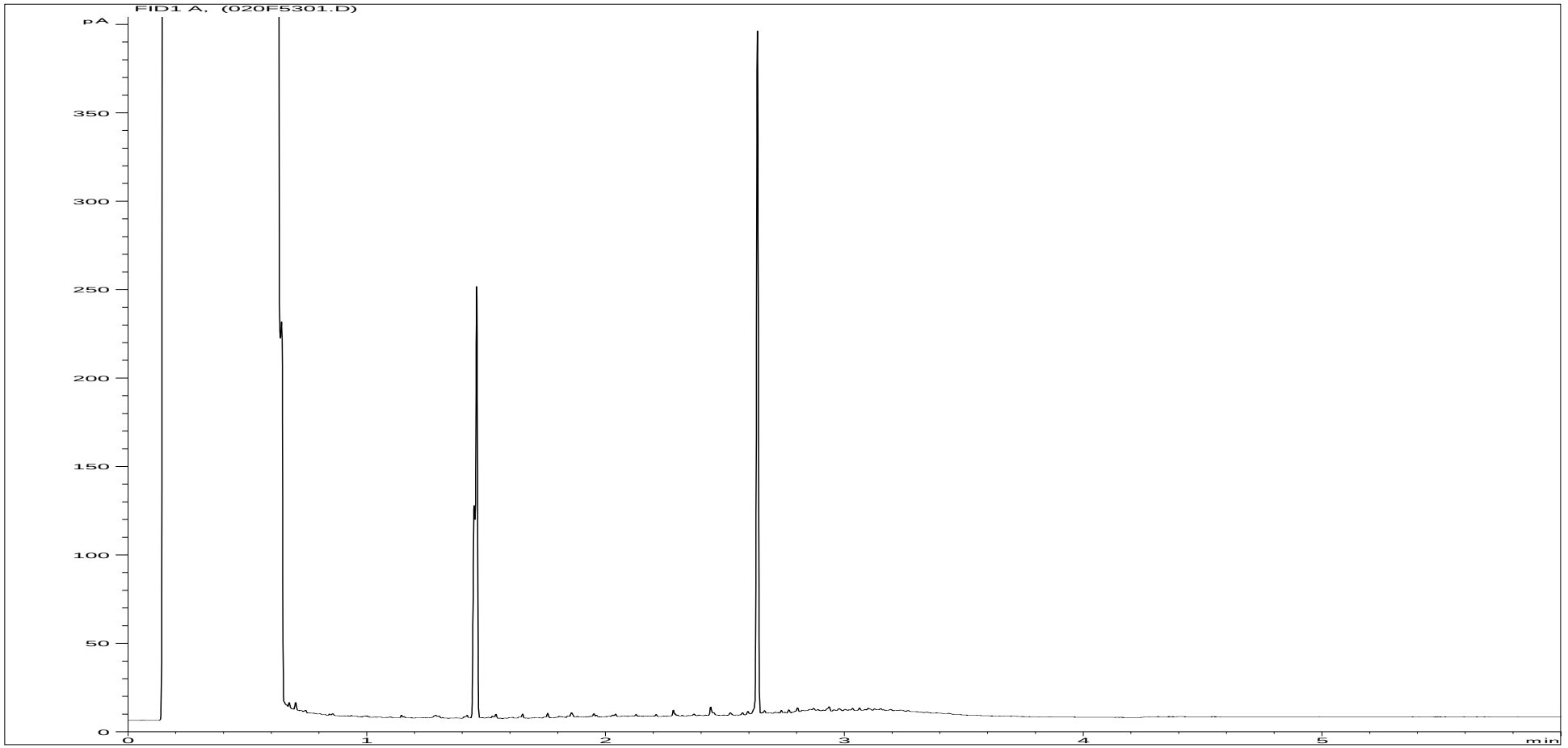
Petroleum Hydrocarbons (C8 to C40) by GC/FID Aromatics Fraction.



Sample ID:	CL1616362ARO	**Job Number:**	S16_3925M
Multiplier:	11.76	**Client:**	Ramboll Environ
Dilution:	1	**Site:**	Zeon Chemicals ESA
Acquisition Method:	5UL_RUNF.M	**Client Sample Ref:**	WS3 3.5
Acquisition Date/Time:	19-May-16, 00:25:46		
Datafile:	D:\TES\DATA\Y2016\051716TPH_GC3\051716C 2016-05-18 13-34-19\082B5001.D		

Where individual results are flagged see report notes for status.
Results corrected to dry weight at 105°C where appropriate, in accordance with the MCERTS standard.

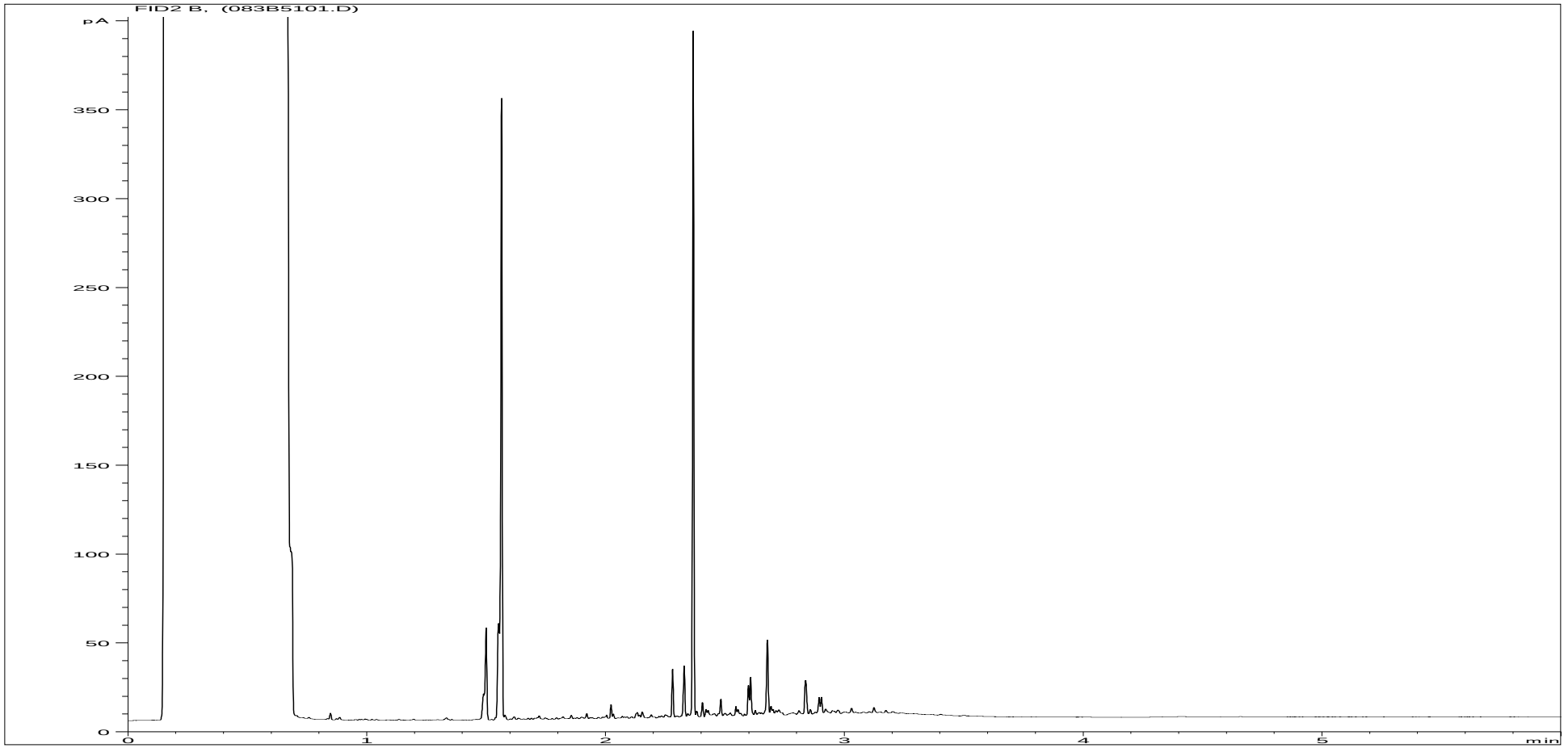
Petroleum Hydrocarbons (C8 to C40) by GC/FID Aliphatics Fraction.



Sample ID:	CL1616363ALI	**Job Number:**	S16_3925M
Multiplier:	15.92	**Client:**	Ramboll Environ
Dilution:	1	**Site:**	Zeon Chemicals ESA
Acquisition Method:	5UL_RUNF.M	**Client Sample Ref:**	WS5 0.9
Acquisition Date/Time:	19-May-16, 01:04:54		
Datafile:	D:\TES\DATA\Y2016\051716TPH_GC3\051716C 2016-05-18 13-34-19\020F5301.D		

Where individual results are flagged see report notes for status.
Results corrected to dry weight at 105°C where appropriate, in accordance with the MCERTS standard.

Petroleum Hydrocarbons (C8 to C40) by GC/FID Aromatics Fraction.



Sample ID:	CL1616363ARO	**Job Number:**	S16_3925M
Multiplier:	11.84	**Client:**	Ramboll Environ
Dilution:	1	**Site:**	Zeon Chemicals ESA
Acquisition Method:	5UL_RUNF.M	**Client Sample Ref:**	WS5 0.9
Acquisition Date/Time:	19-May-16, 00:38:55		
Datafile:	D:\TES\DATA\Y2016\051716TPH_GC3\051716C 2016-05-18 13-34-19\083B5101.D		

Where individual results are flagged see report notes for status.
Results corrected to dry weight at 105°C where appropriate, in accordance with the MCERTS standard.

Volatile Organic Compounds by HSA-GCMS

Accredited?: Yes

Customer and Site Details: Ramboll Environ: Zeon Chemicals ESA
Sample Details: WS4 0.9
LIMS ID Number: CL1616358
Job Number: S16_3925M

Directory/Quant file: 517VOC.MS19\ Initial Calibration
Date Booked in: 16-May-16
Date Analysed: 18-May-16
Operator:

Matrix: Soil
Method: Headspace
Multiplier: 1
Position: 1

Target Compounds	CAS #	R.T. (min.)	Concentration µg/kg	% Fit	Accr. code
Dichlorodifluoromethane	75-71-8 **	-	< 1	-	N
Chloromethane	74-87-3 *	-	< 4	-	N
Vinyl Chloride	75-01-4	-	< 1	-	UM
Bromomethane	74-83-9	-	< 1	-	UM
Chloroethane	75-00-3	-	< 3	-	UM
Trichlorofluoromethane	75-69-4	-	< 1	-	UM
1,1-Dichloroethene	75-35-48 *	-	< 1	-	N
trans 1,2-Dichloroethene	156-60-5	-	< 1	-	UM
1,1-Dichloroethane	75-34-3	-	< 1	-	UM
MTBE	1634-04-4	-	< 1	-	UM
2,2-Dichloropropane	594-20-7	-	< 1	-	UM
cis 1,2-Dichloroethene	156-59-2	-	< 7	-	UM
Bromochloromethane	74-97-5	-	< 1	-	UM
Chloroform	67-66-3	-	< 1	-	UM
1,1,1-Trichloroethane	71-55-6	-	< 1	-	UM
Carbon Tetrachloride	56-23-5	-	< 1	-	UM
1,1-Dichloropropene	563-58-6	-	< 1	-	UM
Benzene	71-43-2	4.23	4	M	UM
1,2-Dichloroethane	107-06-2	-	< 1	-	UM
Trichloroethene	79-01-6 **	-	< 1	-	N
1,2-Dichloropropane	78-87-5	-	< 1	-	UM
Dibromomethane	74-95-3	-	< 1	-	UM
Bromodichloromethane	75-27-4	-	< 1	-	UM
cis 1,3-Dichloropropene	10061-01-5	-	< 1	-	UM
Toluene	108-88-3	4.99	10	M	UM
trans 1,3-Dichloropropene	10061-02-6	-	< 1	-	UM
1,1,2-Trichloroethane	79-00-5	-	< 1	-	UM
Tetrachloroethene	127-18-4	-	< 4	-	UM
1,3-Dichloropropane	142-28-9	-	< 1	-	UM
Dibromochloromethane	124-48-1	-	< 1	-	UM
1,2-Dibromoethane	106-93-4	-	< 1	-	UM
Chlorobenzene	108-90-7	-	< 1	-	UM
Ethylbenzene	100-41-4	-	< 3	-	UM
1,1,1,2-Tetrachloroethane	630-20-6	-	< 1	-	UM
m and p-Xylene	108-38-3/106-42-3	-	< 5	-	UM

Target Compounds	CAS #	R.T. (min.)	Concentration µg/kg	% Fit	Accr. code
o-Xylene	95-47-6	-	< 3	-	UM
Styrene	100-42-5	-	< 1	-	UM
Bromoform	75-25-2	-	< 1	-	UM
iso-Propylbenzene	98-82-8	-	< 1	-	UM
1,1,2,2-Tetrachloroethane	79-34-5 **	-	< 1	-	N
Propylbenzene	103-65-1	-	< 1	-	UM
Bromobenzene	108-86-1	-	< 1	-	UM
1,2,3-Trichloropropane	96-18-4	-	< 1	-	UM
2-Chlorotoluene	95-49-8	-	< 1	-	UM
1,3,5-Trimethylbenzene	108-67-8	-	< 1	-	UM
4-Chlorotoluene	106-43-4	-	< 1	-	UM
tert-Butylbenzene	98-06-6	-	< 1	-	UM
1,2,4-Trimethylbenzene	95-63-6	-	< 1	-	UM
sec-Butylbenzene	135-98-8	-	< 1	-	UM
p-Isopropyltoluene	99-87-6	-	< 1	-	UM
1,3-Dichlorobenzene	541-73-1	-	< 1	-	UM
1,4-Dichlorobenzene	106-46-7	-	< 1	-	UM
n-Butylbenzene	104-51-8 *	-	< 1	-	N
1,2-Dichlorobenzene	95-50-1	-	< 1	-	UM
1,2-Dibromo-3-chloropropane	96-12-8	-	< 1	-	UM
1,2,4-Trichlorobenzene	120-82-1 *	-	< 4	-	N
Hexachlorobutadiene	87-68-3 **	-	< 3	-	N
Naphthalene	91-20-3	-	< 7	-	UM
1,2,3-Trichlorobenzene	87-61-6	-	< 4	-	UM

Concentrations are reported on a dry weight basis
Compounds marked ** are not UKAS or Mcerts accredited
"M" denotes that % fit has been manually interpreted
This analysis was conducted on an 'As Received' basis.

Internal standards	R.T.	Area %	Surrogates	% Rec
Pentafluorobenzene	4.04	67	Dibromofluoromethane	124
1,4-Difluorobenzene	4.39	57	Toluene-d8	98
Chlorobenzene-d5	5.50	34		
Bromofluorobenzene	5.89	21		
1,4-Dichlorobenzene-d4	6.29	16		
Naphthalene-d8	7.13	2		

Where individual results are flagged see report notes for status.
Results corrected to dry weight at 105°C where appropriate, in accordance with the MCERTS standard.

Volatile Organic Compounds by HSA-GCMS

Accredited?: Yes

Customer and Site Details: Ramboll Environ: Zeon Chemicals ESA
Sample Details: WS4 1.8
LIMS ID Number: CL1616359
Job Number: S16_3925M

Directory/Quant file: 517VOC.MS19\ Initial Calibration
Date Booked in: 16-May-16
Date Analysed: 18-May-16
Operator:

Matrix: Soil
Method: Headspace
Multiplier: 1
Position: 2

Target Compounds	CAS #	R.T. (min.)	Concentration µg/kg	% Fit	Accr. code
Dichlorodifluoromethane	75-71-8 **	-	< 1	-	N
Chloromethane	74-87-3 *	-	< 4	-	N
Vinyl Chloride	75-01-4	-	< 1	-	UM
Bromomethane	74-83-9	-	< 1	-	UM
Chloroethane	75-00-3	-	< 3	-	UM
Trichlorofluoromethane	75-69-4	-	< 1	-	UM
1,1-Dichloroethene	75-35-48 *	-	< 1	-	N
trans 1,2-Dichloroethene	156-60-5	-	< 1	-	UM
1,1-Dichloroethane	75-34-3	-	< 1	-	UM
MTBE	1634-04-4	-	< 1	-	UM
2,2-Dichloropropane	594-20-7	-	< 1	-	UM
cis 1,2-Dichloroethene	156-59-2	-	< 7	-	UM
Bromochloromethane	74-97-5	-	< 1	-	UM
Chloroform	67-66-3	-	< 1	-	UM
1,1,1-Trichloroethane	71-55-6	-	< 1	-	UM
Carbon Tetrachloride	56-23-5	-	< 1	-	UM
1,1-Dichloropropene	563-58-6	-	< 1	-	UM
Benzene	71-43-2	-	< 1	-	UM
1,2-Dichloroethane	107-06-2	-	< 1	-	UM
Trichloroethene	79-01-6 **	-	< 1	-	N
1,2-Dichloropropane	78-87-5	-	< 1	-	UM
Dibromomethane	74-95-3	-	< 1	-	UM
Bromodichloromethane	75-27-4	-	< 1	-	UM
cis 1,3-Dichloropropene	10061-01-5	-	< 1	-	UM
Toluene	108-88-3	-	< 7	-	UM
trans 1,3-Dichloropropene	10061-02-6	-	< 1	-	UM
1,1,2-Trichloroethane	79-00-5	-	< 1	-	UM
Tetrachloroethene	127-18-4	-	< 4	-	UM
1,3-Dichloropropane	142-28-9	-	< 1	-	UM
Dibromochloromethane	124-48-1	-	< 1	-	UM
1,2-Dibromoethane	106-93-4	-	< 1	-	UM
Chlorobenzene	108-90-7	-	< 1	-	UM
Ethylbenzene	100-41-4	-	< 3	-	UM
1,1,1,2-Tetrachloroethane	630-20-6	-	< 1	-	UM
m and p-Xylene	108-38-3/106-42-3	-	< 6	-	UM

Target Compounds	CAS #	R.T. (min.)	Concentration µg/kg	% Fit	Accr. code
o-Xylene	95-47-6	-	< 3	-	UM
Styrene	100-42-5	-	< 1	-	UM
Bromoform	75-25-2	-	< 1	-	UM
iso-Propylbenzene	98-82-8	-	< 1	-	UM
1,1,2,2-Tetrachloroethane	79-34-5 **	-	< 1	-	N
Propylbenzene	103-65-1	-	< 1	-	UM
Bromobenzene	108-86-1	-	< 1	-	UM
1,2,3-Trichloropropane	96-18-4	-	< 1	-	UM
2-Chlorotoluene	95-49-8	-	< 1	-	UM
1,3,5-Trimethylbenzene	108-67-8	-	< 1	-	UM
4-Chlorotoluene	106-43-4	-	< 1	-	UM
tert-Butylbenzene	98-06-6	-	< 1	-	UM
1,2,4-Trimethylbenzene	95-63-6	-	< 1	-	UM
sec-Butylbenzene	135-98-8	-	< 1	-	UM
p-Isopropyltoluene	99-87-6	-	< 1	-	UM
1,3-Dichlorobenzene	541-73-1	-	< 1	-	UM
1,4-Dichlorobenzene	106-46-7	-	< 1	-	UM
n-Butylbenzene	104-51-8 *	-	< 1	-	N
1,2-Dichlorobenzene	95-50-1	-	< 1	-	UM
1,2-Dibromo-3-chloropropane	96-12-8	-	< 1	-	UM
1,2,4-Trichlorobenzene	120-82-1 *	-	< 4	-	N
Hexachlorobutadiene	87-68-3 **	-	< 3	-	N
Naphthalene	91-20-3	-	< 7	-	UM
1,2,3-Trichlorobenzene	87-61-6	-	< 4	-	UM

Concentrations are reported on a dry weight basis
Compounds marked ** are not UKAS or Mcerts accredited
"M" denotes that % fit has been manually interpreted
This analysis was conducted on an 'As Received' basis.

Internal standards	R.T.	Area %	Surrogates	% Rec
Pentafluorobenzene	4.04	100	Dibromofluoromethane	105
1,4-Difluorobenzene	4.39	98	Toluene-d8	98
Chlorobenzene-d5	5.50	88		
Bromofluorobenzene	5.89	78		
1,4-Dichlorobenzene-d4	6.29	63		
Naphthalene-d8	7.12	34		

Where individual results are flagged see report notes for status.
Results corrected to dry weight at 105°C where appropriate, in accordance with the MCERTS standard.

Volatile Organic Compounds by HSA-GCMS

Accredited?: Yes

Customer and Site Details: Ramboll Environ: Zeon Chemicals ESA
Sample Details: WS4 2.4
LIMS ID Number: CL1616360
Job Number: S16_3925M

Directory/Quant file: 517VOC.MS19\ Initial Calibration
Date Booked in: 16-May-16
Date Analysed: 18-May-16
Operator:

Matrix: Soil
Method: Headspace
Multiplier: 0.99
Position: 3

Target Compounds	CAS #	R.T. (min.)	Concentration µg/kg	% Fit	Accr. code
Dichlorodifluoromethane	75-71-8 **	-	< 1	-	N
Chloromethane	74-87-3 *	-	< 4	-	N
Vinyl Chloride	75-01-4	-	< 1	-	UM
Bromomethane	74-83-9	-	< 1	-	UM
Chloroethane	75-00-3	-	< 3	-	UM
Trichlorofluoromethane	75-69-4	-	< 1	-	UM
1,1-Dichloroethene	75-35-48 *	-	< 1	-	N
trans 1,2-Dichloroethene	156-60-5	-	< 1	-	UM
1,1-Dichloroethane	75-34-3	-	< 1	-	UM
MTBE	1634-04-4	-	< 1	-	UM
2,2-Dichloropropane	594-20-7	-	< 1	-	UM
cis 1,2-Dichloroethene	156-59-2	-	< 6	-	UM
Bromochloromethane	74-97-5	-	< 1	-	UM
Chloroform	67-66-3	-	< 1	-	UM
1,1,1-Trichloroethane	71-55-6	-	< 1	-	UM
Carbon Tetrachloride	56-23-5	-	< 1	-	UM
1,1-Dichloropropene	563-58-6	-	< 1	-	UM
Benzene	71-43-2	-	< 1	-	UM
1,2-Dichloroethane	107-06-2	-	< 1	-	UM
Trichloroethene	79-01-6 **	-	< 1	-	N
1,2-Dichloropropane	78-87-5	-	< 1	-	UM
Dibromomethane	74-95-3	-	< 1	-	UM
Bromodichloromethane	75-27-4	-	< 1	-	UM
cis 1,3-Dichloropropene	10061-01-5	-	< 1	-	UM
Toluene	108-88-3	-	< 6	-	UM
trans 1,3-Dichloropropene	10061-02-6	-	< 1	-	UM
1,1,2-Trichloroethane	79-00-5	-	< 1	-	UM
Tetrachloroethene	127-18-4	-	< 4	-	UM
1,3-Dichloropropane	142-28-9	-	< 1	-	UM
Dibromochloromethane	124-48-1	-	< 1	-	UM
1,2-Dibromoethane	106-93-4	-	< 1	-	UM
Chlorobenzene	108-90-7	-	< 1	-	UM
Ethylbenzene	100-41-4	-	< 3	-	UM
1,1,1,2-Tetrachloroethane	630-20-6	-	< 1	-	UM
m and p-Xylene	108-38-3/106-42-3	-	< 5	-	UM

Target Compounds	CAS #	R.T. (min.)	Concentration µg/kg	% Fit	Accr. code
o-Xylene	95-47-6	-	< 3	-	UM
Styrene	100-42-5	-	< 1	-	UM
Bromoform	75-25-2	-	< 1	-	UM
iso-Propylbenzene	98-82-8	-	< 1	-	UM
1,1,2,2-Tetrachloroethane	79-34-5 **	-	< 1	-	N
Propylbenzene	103-65-1	-	< 1	-	UM
Bromobenzene	108-86-1	-	< 1	-	UM
1,2,3-Trichloropropane	96-18-4	-	< 1	-	UM
2-Chlorotoluene	95-49-8	-	< 1	-	UM
1,3,5-Trimethylbenzene	108-67-8	-	< 1	-	UM
4-Chlorotoluene	106-43-4	-	< 1	-	UM
tert-Butylbenzene	98-06-6	-	< 1	-	UM
1,2,4-Trimethylbenzene	95-63-6	-	< 1	-	UM
sec-Butylbenzene	135-98-8	-	< 1	-	UM
p-Isopropyltoluene	99-87-6	-	< 1	-	UM
1,3-Dichlorobenzene	541-73-1	-	< 1	-	UM
1,4-Dichlorobenzene	106-46-7	-	< 1	-	UM
n-Butylbenzene	104-51-8 *	-	< 1	-	N
1,2-Dichlorobenzene	95-50-1	-	< 1	-	UM
1,2-Dibromo-3-chloropropane	96-12-8	-	< 1	-	UM
1,2,4-Trichlorobenzene	120-82-1 *	-	< 4	-	N
Hexachlorobutadiene	87-68-3 **	-	< 3	-	N
Naphthalene	91-20-3	-	< 6	-	UM
1,2,3-Trichlorobenzene	87-61-6	-	< 4	-	UM

Concentrations are reported on a dry weight basis
Compounds marked ** are not UKAS or Mcerts accredited
"M" denotes that % fit has been manually interpreted
This analysis was conducted on an 'As Received' basis.

Internal standards	R.T.	Area %	Surrogates	% Rec
Pentafluorobenzene	4.04	92	Dibromofluoromethane	108
1,4-Difluorobenzene	4.39	91	Toluene-d8	98
Chlorobenzene-d5	5.50	86		
Bromofluorobenzene	5.89	86		
1,4-Dichlorobenzene-d4	6.29	94		
Naphthalene-d8	7.13	105		

Where individual results are flagged see report notes for status.
Results corrected to dry weight at 105°C where appropriate, in accordance with the MCERTS standard.

Volatile Organic Compounds by HSA-GCMS

Accredited?: Yes

Customer and Site Details: Ramboll Environ: Zeon Chemicals ESA
Sample Details: WS3 0.8
LIMS ID Number: CL1616361
Job Number: S16_3925M

Directory/Quant file: 517VOC.MS19\ Initial Calibration
Date Booked in: 16-May-16
Date Analysed: 18-May-16
Operator:

Matrix: Soil
Method: Headspace
Multiplier: 0.94
Position: 4

Target Compounds	CAS #	R.T. (min.)	Concentration µg/kg	% Fit	Accr. code
Dichlorodifluoromethane	75-71-8 **	-	< 1	-	N
Chloromethane	74-87-3 *	-	< 4	-	N
Vinyl Chloride	75-01-4	-	< 1	-	UM
Bromomethane	74-83-9	-	< 1	-	UM
Chloroethane	75-00-3	-	< 3	-	UM
Trichlorofluoromethane	75-69-4	-	< 1	-	UM
1,1-Dichloroethene	75-35-48 *	-	< 1	-	N
trans 1,2-Dichloroethene	156-60-5	-	< 1	-	UM
1,1-Dichloroethane	75-34-3	-	< 1	-	UM
MTBE	1634-04-4	-	< 1	-	UM
2,2-Dichloropropane	594-20-7	-	< 1	-	UM
cis 1,2-Dichloroethene	156-59-2	-	< 7	-	UM
Bromochloromethane	74-97-5	-	< 1	-	UM
Chloroform	67-66-3	-	< 1	-	UM
1,1,1-Trichloroethane	71-55-6	-	< 1	-	UM
Carbon Tetrachloride	56-23-5	-	< 1	-	UM
1,1-Dichloropropene	563-58-6	-	< 1	-	UM
Benzene	71-43-2	4.23	3	M	UM
1,2-Dichloroethane	107-06-2	-	< 1	-	UM
Trichloroethene	79-01-6 **	-	< 1	-	N
1,2-Dichloropropane	78-87-5	-	< 1	-	UM
Dibromomethane	74-95-3	-	< 1	-	UM
Bromodichloromethane	75-27-4	-	< 1	-	UM
cis 1,3-Dichloropropene	10061-01-5	-	< 1	-	UM
Toluene	108-88-3	-	< 7	-	UM
trans 1,3-Dichloropropene	10061-02-6	-	< 1	-	UM
1,1,2-Trichloroethane	79-00-5	-	< 1	-	UM
Tetrachloroethene	127-18-4	-	< 4	-	UM
1,3-Dichloropropane	142-28-9	-	< 1	-	UM
Dibromochloromethane	124-48-1	-	< 1	-	UM
1,2-Dibromoethane	106-93-4	-	< 1	-	UM
Chlorobenzene	108-90-7	-	< 1	-	UM
Ethylbenzene	100-41-4	-	< 3	-	UM
1,1,1,2-Tetrachloroethane	630-20-6	-	< 1	-	UM
m and p-Xylene	108-38-3/106-42-3	-	< 5	-	UM

Target Compounds	CAS #	R.T. (min.)	Concentration µg/kg	% Fit	Accr. code
o-Xylene	95-47-6	-	< 3	-	UM
Styrene	100-42-5	-	< 1	-	UM
Bromoform	75-25-2	-	< 1	-	UM
iso-Propylbenzene	98-82-8	-	< 1	-	UM
1,1,2,2-Tetrachloroethane	79-34-5 **	-	< 1	-	N
Propylbenzene	103-65-1	-	< 1	-	UM
Bromobenzene	108-86-1	-	< 1	-	UM
1,2,3-Trichloropropane	96-18-4	-	< 1	-	UM
2-Chlorotoluene	95-49-8	-	< 1	-	UM
1,3,5-Trimethylbenzene	108-67-8	-	< 1	-	UM
4-Chlorotoluene	106-43-4	-	< 1	-	UM
tert-Butylbenzene	98-06-6	-	< 1	-	UM
1,2,4-Trimethylbenzene	95-63-6	-	< 1	-	UM
sec-Butylbenzene	135-98-8	-	< 1	-	UM
p-Isopropyltoluene	99-87-6	-	< 1	-	UM
1,3-Dichlorobenzene	541-73-1	-	< 1	-	UM
1,4-Dichlorobenzene	106-46-7	-	< 1	-	UM
n-Butylbenzene	104-51-8 *	-	< 1	-	N
1,2-Dichlorobenzene	95-50-1	-	< 1	-	UM
1,2-Dibromo-3-chloropropane	96-12-8	-	< 1	-	UM
1,2,4-Trichlorobenzene	120-82-1 *	-	< 4	-	N
Hexachlorobutadiene	87-68-3 **	-	< 3	-	N
Naphthalene	91-20-3	-	< 7	-	UM
1,2,3-Trichlorobenzene	87-61-6	-	< 4	-	UM

Concentrations are reported on a dry weight basis
Compounds marked ** are not UKAS or Mcerts accredited
"M" denotes that % fit has been manually interpreted
This analysis was conducted on an 'As Received' basis.

Internal standards	R.T.	Area %	Surrogates	% Rec
Pentafluorobenzene	4.04	87	Dibromofluoromethane	115
1,4-Difluorobenzene	4.39	82	Toluene-d8	100
Chlorobenzene-d5	5.50	62		
Bromofluorobenzene	5.89	47		
1,4-Dichlorobenzene-d4	6.29	34		
Naphthalene-d8	7.13	9		

Where individual results are flagged see report notes for status.
Results corrected to dry weight at 105°C where appropriate, in accordance with the MCERTS standard.

Volatile Organic Compounds by HSA-GCMS

Accredited?: Yes

Customer and Site Details: Ramboll Environ: Zeon Chemicals ESA
Sample Details: WS3 3.5
LIMS ID Number: CL1616362
Job Number: S16_3925M

Directory/Quant file: 517VOC.MS19\ Initial Calibration
Date Booked in: 16-May-16
Date Analysed: 18-May-16
Operator:

Matrix: Soil
Method: Headspace
Multiplier: 0.92
Position: 5

Target Compounds	CAS #	R.T. (min.)	Concentration µg/kg	% Fit	Accr. code
Dichlorodifluoromethane	75-71-8 **	-	< 1	-	N
Chloromethane	74-87-3 *	-	< 4	-	N
Vinyl Chloride	75-01-4	-	< 1	-	UM
Bromomethane	74-83-9	-	< 1	-	UM
Chloroethane	75-00-3	-	< 3	-	UM
Trichlorofluoromethane	75-69-4	-	< 1	-	UM
1,1-Dichloroethene	75-35-48 *	-	< 1	-	N
trans 1,2-Dichloroethene	156-60-5	-	< 1	-	UM
1,1-Dichloroethane	75-34-3	-	< 1	-	UM
MTBE	1634-04-4	-	< 1	-	UM
2,2-Dichloropropane	594-20-7	-	< 1	-	UM
cis 1,2-Dichloroethene	156-59-2	-	< 7	-	UM
Bromochloromethane	74-97-5	-	< 1	-	UM
Chloroform	67-66-3	-	< 1	-	UM
1,1,1-Trichloroethane	71-55-6	-	< 1	-	UM
Carbon Tetrachloride	56-23-5	-	< 1	-	UM
1,1-Dichloropropene	563-58-6	-	< 1	-	UM
Benzene	71-43-2	-	< 1	-	UM
1,2-Dichloroethane	107-06-2	-	< 1	-	UM
Trichloroethene	79-01-6 **	-	< 1	-	N
1,2-Dichloropropane	78-87-5	-	< 1	-	UM
Dibromomethane	74-95-3	-	< 1	-	UM
Bromodichloromethane	75-27-4	-	< 1	-	UM
cis 1,3-Dichloropropene	10061-01-5	-	< 1	-	UM
Toluene	108-88-3	-	< 7	-	UM
trans 1,3-Dichloropropene	10061-02-6	-	< 1	-	UM
1,1,2-Trichloroethane	79-00-5	-	< 1	-	UM
Tetrachloroethene	127-18-4	-	< 4	-	UM
1,3-Dichloropropane	142-28-9	-	< 1	-	UM
Dibromochloromethane	124-48-1	-	< 1	-	UM
1,2-Dibromoethane	106-93-4	-	< 1	-	UM
Chlorobenzene	108-90-7	-	< 1	-	UM
Ethylbenzene	100-41-4	-	< 3	-	UM
1,1,1,2-Tetrachloroethane	630-20-6	-	< 1	-	UM
m and p-Xylene	108-38-3/106-42-3	-	< 5	-	UM

Target Compounds	CAS #	R.T. (min.)	Concentration µg/kg	% Fit	Accr. code
o-Xylene	95-47-6	-	< 3	-	UM
Styrene	100-42-5	-	< 1	-	UM
Bromoform	75-25-2	-	< 1	-	UM
iso-Propylbenzene	98-82-8	-	< 1	-	UM
1,1,2,2-Tetrachloroethane	79-34-5 **	-	< 1	-	N
Propylbenzene	103-65-1	-	< 1	-	UM
Bromobenzene	108-86-1	-	< 1	-	UM
1,2,3-Trichloropropane	96-18-4	-	< 1	-	UM
2-Chlorotoluene	95-49-8	-	< 1	-	UM
1,3,5-Trimethylbenzene	108-67-8	-	< 1	-	UM
4-Chlorotoluene	106-43-4	-	< 1	-	UM
tert-Butylbenzene	98-06-6	-	< 1	-	UM
1,2,4-Trimethylbenzene	95-63-6	-	< 1	-	UM
sec-Butylbenzene	135-98-8	-	< 1	-	UM
p-Isopropyltoluene	99-87-6	-	< 1	-	UM
1,3-Dichlorobenzene	541-73-1	-	< 1	-	UM
1,4-Dichlorobenzene	106-46-7	-	< 1	-	UM
n-Butylbenzene	104-51-8 *	-	< 1	-	N
1,2-Dichlorobenzene	95-50-1	-	< 1	-	UM
1,2-Dibromo-3-chloropropane	96-12-8	-	< 1	-	UM
1,2,4-Trichlorobenzene	120-82-1 *	-	< 4	-	N
Hexachlorobutadiene	87-68-3 **	-	< 3	-	N
Naphthalene	91-20-3	-	< 7	-	UM
1,2,3-Trichlorobenzene	87-61-6	-	< 4	-	UM

Concentrations are reported on a dry weight basis
Compounds marked ** are not UKAS or Mcerts accredited
"M" denotes that % fit has been manually interpreted
This analysis was conducted on an 'As Received' basis.

Internal standards	R.T.	Area %	Surrogates	% Rec
Pentafluorobenzene	4.04	109	Dibromofluoromethane	100
1,4-Difluorobenzene	4.39	110	Toluene-d8	99
Chlorobenzene-d5	5.50	107		
Bromofluorobenzene	5.89	106		
1,4-Dichlorobenzene-d4	6.29	110		
Naphthalene-d8	7.13	128		

Where individual results are flagged see report notes for status.
Results corrected to dry weight at 105°C where appropriate, in accordance with the MCERTS standard.

Volatile Organic Compounds by HSA-GCMS

Accredited?: Yes

Customer and Site Details: Ramboll Environ: Zeon Chemicals ESA
Sample Details: WS5 0.9
LIMS ID Number: CL1616363
Job Number: S16_3925M

Directory/Quant file: 517VOC.MS19\ Initial Calibration
Date Booked in: 16-May-16
Date Analysed: 18-May-16
Operator:

Matrix: Soil
Method: Headspace
Multiplier: 0.91
Position: 6

Target Compounds	CAS #	R.T. (min.)	Concentration µg/kg	% Fit	Accr. code
Dichlorodifluoromethane	75-71-8 **	-	< 1	-	N
Chloromethane	74-87-3 *	-	< 4	-	N
Vinyl Chloride	75-01-4	-	< 1	-	UM
Bromomethane	74-83-9	-	< 1	-	UM
Chloroethane	75-00-3	-	< 3	-	UM
Trichlorofluoromethane	75-69-4	-	< 1	-	UM
1,1-Dichloroethene	75-35-48 *	-	< 1	-	N
trans 1,2-Dichloroethene	156-60-5	-	< 1	-	UM
1,1-Dichloroethane	75-34-3	-	< 1	-	UM
MTBE	1634-04-4	-	< 1	-	UM
2,2-Dichloropropane	594-20-7	-	< 1	-	UM
cis 1,2-Dichloroethene	156-59-2	-	< 6	-	UM
Bromochloromethane	74-97-5	-	< 1	-	UM
Chloroform	67-66-3	-	< 1	-	UM
1,1,1-Trichloroethane	71-55-6	-	< 1	-	UM
Carbon Tetrachloride	56-23-5	-	< 1	-	UM
1,1-Dichloropropene	563-58-6	-	< 1	-	UM
Benzene	71-43-2	4.23	24	58	UM
1,2-Dichloroethane	107-06-2	-	< 1	-	UM
Trichloroethene	79-01-6 **	-	< 1	-	N
1,2-Dichloropropane	78-87-5	-	< 1	-	UM
Dibromomethane	74-95-3	-	< 1	-	UM
Bromodichloromethane	75-27-4	-	< 1	-	UM
cis 1,3-Dichloropropene	10061-01-5	-	< 1	-	UM
Toluene	108-88-3	4.99	23	90	UM
trans 1,3-Dichloropropene	10061-02-6	-	< 1	-	UM
1,1,2-Trichloroethane	79-00-5	-	< 1	-	UM
Tetrachloroethene	127-18-4	-	< 4	-	UM
1,3-Dichloropropane	142-28-9	-	< 1	-	UM
Dibromochloromethane	124-48-1	-	< 1	-	UM
1,2-Dibromoethane	106-93-4	-	< 1	-	UM
Chlorobenzene	108-90-7	-	< 1	-	UM
Ethylbenzene	100-41-4	-	< 3	-	UM
1,1,1,2-Tetrachloroethane	630-20-6	-	< 1	-	UM
m and p-Xylene	108-38-3/106-42-3	-	< 5	-	UM

Target Compounds	CAS #	R.T. (min.)	Concentration µg/kg	% Fit	Accr. code
o-Xylene	95-47-6	-	< 3	-	UM
Styrene	100-42-5	-	< 1	-	UM
Bromoform	75-25-2	-	< 1	-	UM
iso-Propylbenzene	98-82-8	-	< 1	-	UM
1,1,2,2-Tetrachloroethane	79-34-5 **	-	< 1	-	N
Propylbenzene	103-65-1	-	< 1	-	UM
Bromobenzene	108-86-1	-	< 1	-	UM
1,2,3-Trichloropropane	96-18-4	-	< 1	-	UM
2-Chlorotoluene	95-49-8	-	< 1	-	UM
1,3,5-Trimethylbenzene	108-67-8	-	< 1	-	UM
4-Chlorotoluene	106-43-4	-	< 1	-	UM
tert-Butylbenzene	98-06-6	-	< 1	-	UM
1,2,4-Trimethylbenzene	95-63-6	-	< 1	-	UM
sec-Butylbenzene	135-98-8	-	< 1	-	UM
p-Isopropyltoluene	99-87-6	-	< 1	-	UM
1,3-Dichlorobenzene	541-73-1	-	< 1	-	UM
1,4-Dichlorobenzene	106-46-7	-	< 1	-	UM
n-Butylbenzene	104-51-8 *	-	< 1	-	N
1,2-Dichlorobenzene	95-50-1	-	< 1	-	UM
1,2-Dibromo-3-chloropropane	96-12-8	-	< 1	-	UM
1,2,4-Trichlorobenzene	120-82-1 *	-	< 4	-	N
Hexachlorobutadiene	87-68-3 **	-	< 3	-	N
Naphthalene	91-20-3	-	< 6	-	UM
1,2,3-Trichlorobenzene	87-61-6	-	< 4	-	UM

Concentrations are reported on a dry weight basis
Compounds marked ** are not UKAS or Mcerts accredited
"M" denotes that % fit has been manually interpreted
This analysis was conducted on an 'As Received' basis.

Internal standards	R.T.	Area %	Surrogates	% Rec
Pentafluorobenzene	4.04	69	Dibromofluoromethane	96
1,4-Difluorobenzene	4.39	60	Toluene-d8	87
Chlorobenzene-d5	5.50	30		
Bromofluorobenzene	5.89	18		
1,4-Dichlorobenzene-d4	6.29	12		
Naphthalene-d8	7.13	4		

Where individual results are flagged see report notes for status.
Results corrected to dry weight at 105°C where appropriate, in accordance with the MCERTS standard.

TICs by HSA-GCMS

Accredited?: No

Customer and Site Details:	Ramboll Environ: Zeon Chemicals ESA		**Date Booked in:**	16-May-16
Sample Details:	WS4 0.9		**Date Analysed:**	18-May-16
LIMS ID Number:	CL1616358		**Matrix:**	Soil
Job Number:	S16_3925		**Ext Method:**	Headspace
Directory/Quant file:	517VOC.MS19\	Initial Calibration	**Dilution:**	1
Operator:	0		**Position:**	1

Tentatively Identified Compounds	CAS No	R.T. (min.)	Concentration µg/kg	% Fit	Accr. code
None Detected			<7		N

The compounds listed above have been tentatively identified by a computer based library search.
Compounds identified in the sample are not reported if they also occur in the method blank.
The % fit is an indication of the reliability of the compound assignment.
Due to the similarity between mass spectra of some isomeric compounds, assignments may not be correct.
Other compounds may also be present but identification was not possible.
Concentrations are semi-quantitative, assume a response factor of 1 and use the nearest internal standard.

Compounds marked ** are not UKAS or Mcerts accredited
"M" denotes that % fit has been manually interpreted

Where individual results are flagged see report notes for status.
Results corrected to dry weight at 105°C where appropriate, in accordance with the MCERTS standard.

TICs by HSA-GCMS

Accredited?: No

Customer and Site Details:	Ramboll Environ: Zeon Chemicals ESA		**Date Booked in:**	16-May-16
Sample Details:	WS4 1.8		**Date Analysed:**	18-May-16
LIMS ID Number:	CL1616359		**Matrix:**	Soil
Job Number:	S16_3925		**Ext Method:**	Headspace
Directory/Quant file:	517VOC.MS19\	Initial Calibration	**Dilution:**	1
Operator:	0		**Position:**	2

Tentatively Identified Compounds	CAS No	R.T. (min.)	Concentration µg/kg	% Fit	Accr. code
None Detected			<7		N

The compounds listed above have been tentatively identified by a computer based library search.
Compounds identified in the sample are not reported if they also occur in the method blank.
The % fit is an indication of the reliability of the compound assignment.
Due to the similarity between mass spectra of some isomeric compounds, assignments may not be correct.
Other compounds may also be present but identification was not possible.
Concentrations are semi-quantitative, assume a response factor of 1 and use the nearest internal standard.

Compounds marked ** are not UKAS or Mcerts accredited
"M" denotes that % fit has been manually interpreted

Where individual results are flagged see report notes for status.
Results corrected to dry weight at 105°C where appropriate, in accordance with the MCERTS standard.

TICs by HSA-GCMS

Accredited?: No

Customer and Site Details:	Ramboll Environ: Zeon Chemicals ESA		**Date Booked in:**	16-May-16
Sample Details:	WS4 2.4		**Date Analysed:**	18-May-16
LIMS ID Number:	CL1616360		**Matrix:**	Soil
Job Number:	S16_3925		**Ext Method:**	Headspace
Directory/Quant file:	517VOC.MS19\	Initial Calibration	**Dilution:**	0.99
Operator:	0		**Position:**	3

Tentatively Identified Compounds	CAS No	R.T. (min.)	Concentration µg/kg	% Fit	Accr. code
None Detected			<6		N

The compounds listed above have been tentatively identified by a computer based library search.
Compounds identified in the sample are not reported if they also occur in the method blank.
The % fit is an indication of the reliability of the compound assignment.
Due to the similarity between mass spectra of some isomeric compounds, assignments may not be correct.
Other compounds may also be present but identification was not possible.
Concentrations are semi-quantitative, assume a response factor of 1 and use the nearest internal standard.

Compounds marked ** are not UKAS or Mcerts accredited
"M" denotes that % fit has been manually interpreted

Where individual results are flagged see report notes for status.
Results corrected to dry weight at 105°C where appropriate, in accordance with the MCERTS standard.

TICs by HSA-GCMS

Accredited?: No

Customer and Site Details:	Ramboll Environ: Zeon Chemicals ESA		**Date Booked in:**	16-May-16
Sample Details:	WS3 0.8		**Date Analysed:**	18-May-16
LIMS ID Number:	CL1616361		**Matrix:**	Soil
Job Number:	S16_3925		**Ext Method:**	Headspace
Directory/Quant file:	517VOC.MS19\	Initial Calibration	**Dilution:**	0.94
Operator:	0		**Position:**	4

Tentatively Identified Compounds	CAS No	R.T. (min.)	Concentration µg/kg	% Fit	Accr. code
None Detected			<7		N

The compounds listed above have been tentatively identified by a computer based library search.
Compounds identified in the sample are not reported if they also occur in the method blank.
The % fit is an indication of the reliability of the compound assignment.
Due to the similarity between mass spectra of some isomeric compounds, assignments may not be correct.
Other compounds may also be present but identification was not possible.
Concentrations are semi-quantitative, assume a response factor of 1 and use the nearest internal standard.

Compounds marked ** are not UKAS or Mcerts accredited
"M" denotes that % fit has been manually interpreted

Where individual results are flagged see report notes for status.
Results corrected to dry weight at 105°C where appropriate, in accordance with the MCERTS standard.

TICs by HSA-GCMS

Accredited?: No

Customer and Site Details:	Ramboll Environ: Zeon Chemicals ESA		**Date Booked in:**	16-May-16
Sample Details:	WS3 3.5		**Date Analysed:**	18-May-16
LIMS ID Number:	CL1616362		**Matrix:**	Soil
Job Number:	S16_3925		**Ext Method:**	Headspace
Directory/Quant file:	517VOC.MS19\	Initial Calibration	**Dilution:**	0.92
Operator:	0		**Position:**	5

Tentatively Identified Compounds	CAS No	R.T. (min.)	Concentration µg/kg	% Fit	Accr. code
Oxalic acid, butyl 6-ethyloct-3-yl ester	1000309-34-2	6.69	338	53	N
Unidentified Peak		6.38	292		N
Cyclohexane, 2-butyl-1,1,3-trimethyl-	054676-39-0	7.00	269	83	N

The compounds listed above have been tentatively identified by a computer based library search.
Compounds identified in the sample are not reported if they also occur in the method blank.
The % fit is an indication of the reliability of the compound assignment.
Due to the similarity between mass spectra of some isomeric compounds, assignments may not be correct.
Other compounds may also be present but identification was not possible.
Concentrations are semi-quantitative, assume a response factor of 1 and use the nearest internal standard.

Compounds marked ** are not UKAS or Mcerts accredited
"M" denotes that % fit has been manually interpreted

Where individual results are flagged see report notes for status.
Results corrected to dry weight at 105°C where appropriate, in accordance with the MCERTS standard.

TICs by HSA-GCMS

Accredited?: No

Customer and Site Details:	Ramboll Environ: Zeon Chemicals ESA		**Date Booked in:**	16-May-16
Sample Details:	WS5 0.9		**Date Analysed:**	18-May-16
LIMS ID Number:	CL1616363		**Matrix:**	Soil
Job Number:	S16_3925		**Ext Method:**	Headspace
Directory/Quant file:	517VOC.MS19\	Initial Calibration	**Dilution:**	0.91
Operator:	0		**Position:**	6

Tentatively Identified Compounds	CAS No	R.T. (min.)	Concentration µg/kg	% Fit	Accr. code
None Detected			<6		N

The compounds listed above have been tentatively identified by a computer based library search.
Compounds identified in the sample are not reported if they also occur in the method blank.
The % fit is an indication of the reliability of the compound assignment.
Due to the similarity between mass spectra of some isomeric compounds, assignments may not be correct.
Other compounds may also be present but identification was not possible.
Concentrations are semi-quantitative, assume a response factor of 1 and use the nearest internal standard.

Compounds marked ** are not UKAS or Mcerts accredited
"M" denotes that % fit has been manually interpreted

Where individual results are flagged see report notes for status.
Results corrected to dry weight at 105°C where appropriate, in accordance with the MCERTS standard.

ASBESTOS ANALYSIS RESULTS - SOIL ANALYSIS

ESG Asbestos Limited Certificate of Analysis for Asbestos in Soils, Sediments and Aggregates

1089

Detection limit of Method SCI-ASB-020 is 0.001%

Sampling has been carried out by a third party

Client:	ESG Environmental Chemistry	**Page 1 of 1**	
Address:	Etwall House, Bretby Business Park, Ashby Road, Burton upon Trent	**Report No:**	**ANO-0488-12500**
For the attention of:	Ramboll Environ	**Report Date:**	**17/05/2016**
Site Address:	Zeon Chemicals ESA	**Project Number:**	**S163925**

Sample Number	Sample Date	Sample Location & Matrix	Test Date	Total Sample Dry Weight (g)	Weight of <2mm Fraction (g)	Asbestos(g) in >8mm+>2mm	Asbestos(g) in <2mm	% Asbestos by weight of Total Dried Sample	Asbestos Fibre Types Identified
CL/1616361	12/05/16	WS3 0.8	17/05/2016					Screen Only	NAIIS
CL/1616363	12/05/16	WS5 0.9	17/05/2016					Screen Only	NAIIS

Keys

NAACR = Not Analysed at Clients Request

NAIIS = No Asbestos Identified in Sample (Screens Only)

*** visible to naked eye**

NADIS = No Asbestos Detected in Sample (ID & Quant Only)

Name:	Chris Mackie	Authorised Signatory:
Position:	Lab Analyst	

The sample analysis for the above results was carried out using the procedures detailed in ESG Asbestos Limited in house method (SCI-ASB-020) based on HSE document MDHS 90 - Asbestos Contaminated Land - Draft 5 - November 1997 (withdrawn). Fibre identification was carried out using ESG Asbestos Limited in house method of transmitted/polarised light microscopy and centre stop dispersion staining (SCI-ASB-007), based on HSE's HSG 248. The analysis of fine fraction for asbestos content only includes fibres and does not discriminate non-asbestos fibres. All fibres are assumed, unless specified, to be amphiboles. All tests were carried out at ESG Asbestos Laboratory, Ashbourne House, Bretby Business Park, Ashby Road, Burton-upon-Trent, Staffordshire. DE15 0XD, UKAS Laboratory Number 1089.

Where individual results are flagged see report notes for status.

Analytical and Deviating Sample Overview

Customer **Ramboll Environ**
Site **Zeon Chemicals ESA**
Report No **S163925M**

Consignment No S55891
Date Logged 16-May-2016

Report Due 09-Jun-2016

ID Number	Description	MethodID	ALCHSAFID	CustServ	GROHSA	ICPBOR	ICPMSS									ICPSOIL			ICPWSS	MCertS	PAHMSUS	PHSOIL	SFAPI		Sub002a	SVOCMSUS
		Sampled	Alcohols by HSA-FID o	REPORT A	GRO (AA) by HSA GC-FID	Boron (H20 Soluble)	Arsenic (MS)	Cadmium (MS)	Chromium (MS)	Copper (MS)	Lead (MS)	Mercury (MS)	Nickel (MS)	Selenium (MS)	Vanadium (MS)	Zinc (MS)	Barium.	Beryllium.	Iron	SO4-- (H2O sol) mg/l	MCertS Analysis	PAH (17) by GCMS	pH units (AR)	Cyanide(Total) (AR)	Phenol Index.(AR)	^Asbestos Screen	SVOC + TICs by GCMS (AR)
					✓	✓	✓	✓	✓	✓	✓	✓	✓	✓		✓	✓	✓	✓	✓		✓	✓	✓	✓	✓	✓
CL/1616358	WS4 0.9	12/05/16																									
CL/1616359	WS4 1.8	12/05/16																									
CL/1616360	WS4 2.4	12/05/16																									
CL/1616361	WS3 0.8	12/05/16																									
CL/1616362	WS3 3.5	12/05/16																									
CL/1616363	WS5 0.9	12/05/16																									

Note: For analysis where the scheduled turnaround is greater than the holding time we will do our utmost to prioritise these samples. However, it is possible that samples could become deviant whilst being processed in the laboratory.

In this instance please contact the laboratory immediately should you wish to discuss how you would like us to proceed. If you do not respond within 24 hours, we will proceed as originally requested.

Deviating Sample Key

A	The sample was received in an inappropriate container for this analysis
B	The sample was received without the correct preservation for this analysis
C	Headspace present in the sample container
D	The sampling date was not supplied so holding time may be compromised - applicable to all analysis
E	Sample processing did not commence within the appropriate holding time
F	Sample processing did not commence within the appropriate handling time

Requested Analysis Key

	Analysis Required
	Analysis dependant upon trigger result - **Note: due date may be affected if triggered**
	No analysis scheduled
^	Analysis Subcontracted - **Note: due date may vary**

Where individual results are flagged see report notes for status.
The integrity of data for samples/analysis that have been categorised as Deviating may be compromised. Data may not be representative of the sample at the time of sampling.

Analytical and Deviating Sample Overview

Customer Ramboll Environ
Site Zeon Chemicals ESA
Report No S163925M

Consignment No S55891
Date Logged 16-May-2016

Report Due 09-Jun-2016

ID Number	Description	MethodID	TMSS	TPHUSSI	VOCHSAS	WSLM59
		Sampled	Tot.Moisture @ 105C	TPH by GCFID (AR/Si)	VOC + TICs HSA-GCMS	Total Organic Carbon
			✓	✓	✓	
CL/1616358	WS4 0.9	12/05/16				
CL/1616359	WS4 1.8	12/05/16				
CL/1616360	WS4 2.4	12/05/16				
CL/1616361	WS3 0.8	12/05/16				
CL/1616362	WS3 3.5	12/05/16				
CL/1616363	WS5 0.9	12/05/16				

Note: For analysis where the scheduled turnaround is greater than the holding time we will do our utmost to prioritise these samples. However, it is possible that samples could become deviant whilst being processed in the laboratory.

In this instance please contact the laboratory immediately should you wish to discuss how you would like us to proceed. If you do not respond within 24 hours, we will proceed as originally requested.

Deviating Sample Key	
A	The sample was received in an inappropriate container for this analysis
B	The sample was received without the correct preservation for this analysis
C	Headspace present in the sample container
D	The sampling date was not supplied so holding time may be compromised - applicable to all analysis
E	Sample processing did not commence within the appropriate holding time
F	Sample processing did not commence within the appropriate handling time

Requested Analysis Key	
	Analysis Required
	Analysis dependant upon trigger result - **Note: due date may be affected if triggered**
	No analysis scheduled
^	Analysis Subcontracted - **Note: due date may vary**

Where individual results are flagged see report notes for status.
The integrity of data for samples/analysis that have been categorised as Deviating may be compromised. Data may not be representative of the sample at the time of sampling.

Report Number : EFS/163925

Additional Report Notes

Method Code	Sample ID	The following information should be taken into consideration when using the data contained within this report
VOCHSAS	CL1616358, 61, 63	Due to matrix interference, the Internal Standard recovery for this Test is below the required QMS specification. This has been confirmed by historical data. All other Laboratory Process Controls meet the requirements of the QMS. These circumstances should be taken into consideration when utilising the data.

Method Descriptions

Matrix	MethodID	Analysis Basis	Method Description
Soil	ALCHSAFID	As Received	Determination of Alcohols in soils by Headspace GCFID
Soil	GROHSA	As Received	Determination of Total Gasoline Range Organics Hydrocarbons (GRO) by Headspace GCFID
Soil	ICPBOR	Oven Dried @ < 35°C	Determination of Boron in soil samples by hot water extraction followed by ICPOES detection
Soil	ICPMSS	Oven Dried @ < 35°C	Determination of Metals in soil samples by aqua regia digestion followed by ICPMS
Soil	ICPSOIL	Oven Dried @ < 35°C	Determination of Metals in soil samples by aqua regia digestion followed by ICPOES detection
Soil	ICPWSS	Oven Dried @ < 35°C	Determination of Water Soluble Sulphate in soil samples by water extraction followed by ICPOES detection
Soil	PAHMSUS	As Received	Determination of Polycyclic Aromatic Hydrocarbons (PAH) by hexane/acetone extraction followed by GCMS detection
Soil	PHSOIL	As Received	Determination of pH of 2.5:1 deionised water to soil extracts using pH probe.
Soil	SFAPI	As Received	Segmented flow analysis with colorimetric detection
Soil	SubCon*	*	Contact Laboratory for details of the methodology used by the sub-contractor.
Soil	SVOCMSUS	As Received	Determination of Semi Volatile Organic Compounds in soil samples by Dichloromethane/Acetone extraction followed by GCMS detection
Soil	TMSS	As Received	Determination of the Total Moisture content at 105ºC by loss on oven drying gravimetric analysis (% based upon wet weight)
Soil	TPHUSSI	As Received	Determination of hexane/acetone extractable Hydrocarbons in soil with GCFID detection including quantitation of Aromatic and Aliphatic fractions.
Soil	VOCHSAS	As Received	Determination of Volatile Organic Compounds (VOC) by Headspace GCMS
Soil	WSLM59	Oven Dried @ < 35°C	Determination of Organic Carbon in soil using sulphurous Acid digestion followed by high temperature combustion and IR detection

Report Notes

Generic Notes

Soil/Solid Analysis

Unless stated otherwise,
- Results expressed as mg/kg have been calculated on the basis indicated in the Method Description table.
  All results on MCERTS reports are reported on a 105ºC dry weight basis with the exception of pH and conductivity.
- Sulphate analysis not conducted in accordance with BS1377
- Water Soluble Sulphate is on a 2:1 water:soil extract

Waters Analysis

Unless stated otherwise results are expressed as mg/l

Nil: Where "Nil" has been entered against Total Alkalinity or Total Acidity this indicates that a measurement was not required due to the inherent pH of the sample.

Oil analysis specific

Unless stated otherwise,
- Results are expressed as mg/kg
- SG is expressed as g/cm^3@ 15^{o}C

Gas (Tedlar bag) Analysis

Unless stated otherwise, results are expressed as ug/l

Asbestos Analysis

CH Denotes Chrysotile **TR** Denotes Tremolite
CR Denotes Crocidolite **AC** Denotes Actinolite
AM Denotes Amosite **AN** Denotes Anthophylite
NAIIS No Asbestos Identified in Sample
NADIS No Asbestos Detected In Sample

Symbol Reference

^ Sub-contracted analysis.
$$ Unable to analyse due to the nature of the sample
¶ Samples submitted for this analyte were not preserved on site in accordance with laboratory protocols. This may have resulted in deterioration of the sample(s) during transit to the laboratory. Consequently the reported data may not represent the concentration of the target analyte present in the sample at the time of sampling
¥ Results for guidance only due to possible interference
& Blank corrected result
I.S Insufficient sample to complete requested analysis
I.S(g) Insufficient sample to re-analyse, results for guidance only
Intf Unable to analyse due to interferences
N.D Not determined **N.Det** Not detected
N.F No Flow
NS Information Not Supplied
Req Analysis requested, see attached sheets for results
Þ Raised detection limit due to nature of the sample
***** All accreditation has been removed by the laboratory for this result
‡ MCERTS accreditation has been removed for this result
§ accreditation has been removed for this result as it is a non-accredited matrix

Note: The Laboratory may only claim that data is accredited when all of the requirements of our Quality System have been met. Where these requirements have not been met the laboratory may elect to include the data in its final report and remove the accreditation from individual data items if it believes that the validity of the data has not been affected. If further details are required of the circumstances which have led to the removal of accreditation then please do not hesitate to contact the laboratory.

Sample Descriptions

Client : Ramboll Environ

Site : Zeon Chemicals ESA

Report Number : S16_3925

Note: major constituent in upper case

Lab ID Number	Client ID	Description
CL/1616358	WS4 0.9	Grey/Black Stone SILT
CL/1616359	WS4 1.8	Brown SILT
CL/1616360	WS4 2.4	Brown CLAY
CL/1616361	WS3 0.8	Brown MADE GROUND
CL/1616362	WS3 3.5	Brown CLAY
CL/1616363	WS5 0.9	Brown MADE GROUND

Our Ref: EFS/163927M (Ver. 1)
Your Ref: UK15-21370

May 23, 2016

Environmental Chemistry
ESG
Bretby Business Park
Ashby Road
Burton-on-Trent
Staffordshire
DE15 0YZ

Telephone: 01283 554400
Facsimile: 01283 554422

Lucy Cleverley
Ramboll Environ
8 Village Way
Cardiff
CF15 2NE

For the attention of Lucy Cleverley

Dear Lucy Cleverley

Sample Analysis - Zeon Chemicals Polyblock

Samples from the above site have been analysed in accordance with the schedule supplied.
The sample details and the results of analyses for these samples are given in the appended report.

An invoice for this work will follow under a separate cover.

Where appropriate the samples will be kept until 27/06/16 when they will be discarded. Please call 01283 554547 for an extension of this date.
Please be aware that our policy for the retention of paper based laboratory records and analysis reports is 6 years.

The work was carried out in accordance with Environmental Scientifics Group Ltd (Laboratory and Analytical) Standard Terms and Conditions of Contract.

If I can be of any further assistance please do not hesitate to contact me.

Yours sincerely

for ESG

JMColbourne

J Colbourne
Project Co-ordinator
01283 554547

Environmental Chemistry, ESG, P.O. Box 100, Burton-upon-trent, DE15 0XD Tel: 01283 554400 Fax: 01283 554422
Environmental Scientifics Group Limited.
Registered No: 2880501

TEST REPORT

1252

Report No. EFS/163927M (Ver. 1)

Ramboll Environ
8 Village Way
Cardiff
CF15 2NE

Site: Zeon Chemicals Polyblock

The 3 samples described in this report were registered for analysis by ESG on 16-May-2016. This report supersedes any versions previously issued by the laboratory.
The analysis was completed by: 23-May-2016

Tests where the accreditation is set to N or No, and any individual data items marked with a * are not UKAS or MCERTS accredited. Any opinions or interpretations expressed herein are outside the scope of any UKAS accreditation held by ESG.

The following tables are contained in this report:

On behalf of
ESG :
Declan Burns

Managing Director
Multi-Sector Services

Date of Issue: 23-May-2016

Accreditation Codes: **N** (Not Accredited), **U** (UKAS), **UM** (UKAS & MCERTS)
Tests marked '^' have been subcontracted to another laboratory.
(NVM) - denotes the sample matrix is dissimilar to matrices upon which the MCERTS validation was based, and is therefore not accredited for MCERTS.
All results are reported on a dry weight basis at 105^{o}C unless otherwise stated. (except QC samples)
ESG accepts no responsibility for any sampling not carried out by our personnel.

Units :			mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	pH Units	mg/kg	mg/kg
Method Codes :			GROHSA	ICPBOR	ICPMSS	ICPMSS	ICPMSS	ICPMSS	ICPMSS	ICPMSS	ICPMSS	ICPMSS	ICPMSS	ICPSOIL	ICPWSS	PHSOIL	SFAPI	SFAPI
Method Reporting Limits :			0.2	0.5	0.3	0.2	1.2	1.6	0.7	0.5	2	0.5	16	0.1	10		0.5	0.5
Accreditation Code:				UM	UM	UM	UM	UM	UM	UM	UM	UM	UM	UM	UM	UM	UM	U
LAB ID Number CL/	**Client Sample Description**	**Sample Date**	**GRO (AA) by HSA GC-FID**	**Boron (H20 Soluble)**	**Arsenic (MS)**	**Cadmium (MS)**	**Chromium (MS)**	**Copper (MS)**	**Lead (MS)**	**Mercury (MS)**	**Nickel (MS)**	**Selenium (MS)**	**Zinc (MS)**	**Beryllium.**	**SO4-- (H2O sol) mg/l**	**pH units (AR)**	**Cyanide(Total) (AR)**	**Phenol Index.(AR)**
1616366	WS27 0.70	10-May-16	Req	1.4	10.1	0.7	27.6	31.5	58.8	<0.53	31.0	<0.5	139.3	0.882	182	8.1	<0.7	<0.7
1616367	WS24 0.40	11-May-16	Req	1.6	8.7	0.67	25.2	20.7	56.6	<0.5	25.0	<0.5	113.5	0.585	326	10.9	<0.6	<0.6
1616368	WS24 1.00	11-May-16	Req	3.2	16.5	2.14	39	41	522.4	<0.50	31.2	0.6	548	1.14	159	8.3	<0.6	<0.6

ESG

Bretby Business Park, Ashby Road

Burton-on-Trent, Staffordshire, DE15 0YZ

Tel +44 (0) 1283 554400

Fax +44 (0) 1283 554422

Client Name Ramboll Environ

Contact Lucy Cleverley

Zeon Chemicals Polyblock

Sample Analysis

Date Printed	**23-May-2016**
Report Number	**EFS/163927M**
Table Number	**1**

Where individual results are flagged see report notes for status.
Results corrected to dry weight at 105°C where appropriate, in accordance with the MCERTS standard.

Units :			mg/kg	%	mg/kg	µg/kg	mg/kg	% M/M	mg/kg									
Method Codes :		Sub002a	SVOCMSUS	TMSS	TPHUSSI	VOCHSAS	ICPMSS	WSLM59	PAHMSUS									
Method Reporting Limits :				0.2	20		0.6	0.04										
Accreditation Code:		U		U			N	N										
LAB ID Number CL/	**Client Sample Description**	**Sample Date**	**^Asbestos Screen**	**SVOC + TICs by GCMS (AR)**	**Tot.Moisture @ 105C**	**TPH by GCFID (AR/Si)**	**VOC + TICs HSA-GCMS**	**Vanadium (MS)**	**Total Organic Carbon**	**PAH (17) by GCMS**								
1616366	WS27 0.70	**10-May-16**	NAIIS	Req	25.6	Req	Req	32.2		Req								
1616367	WS24 0.40	**11-May-16**	AM	Req	21.8	Req	Req	23.8	7.0	Req								
1616368	WS24 1.00	**11-May-16**			22.6	Req	Req	43.9		Req								

ESG

Bretby Business Park, Ashby Road

Burton-on-Trent, Staffordshire, DE15 0YZ

Tel +44 (0) 1283 554400

Fax +44 (0) 1283 554422

Client Name **Ramboll Environ**

Contact Lucy Cleverley

Zeon Chemicals Polyblock

Sample Analysis

Date Printed	**23-May-2016**
Report Number	**EFS/163927M**
Table Number	**1**

Where individual results are flagged see report notes for status.
Results corrected to dry weight at 105°C where appropriate, in accordance with the MCERTS standard.

Polycyclic Aromatic Hydrocarbons
GC/MS (SIM)

Customer and Site Details:	Ramboll Environ: Zeon Chemicals Polyblock		
Sample Details:	WS27 0.70	**Job Number:**	S16_3927M
LIMS ID Number:	CL1616366	**Date Booked in:**	16-May-16
QC Batch Number:	160584	**Date Extracted:**	17-May-16
Quantitation File:	Initial Calibration	**Date Analysed:**	18-May-16
Directory:	1716PAHMS20\	**Matrix:**	Soil
Dilution:	1.0	**Ext Method:**	Ultrasonic

Accredited?: Yes

Target Compounds	CAS #	R.T. (min)	Concentration mg/kg	% Fit	Accr. code
Naphthalene	91-20-3	-	< 0.11	-	**UM**
Acenaphthylene	208-96-8	-	< 0.11	-	U
Acenaphthene	83-32-9	-	< 0.11	-	UM
Fluorene	86-73-7	-	< 0.11	-	UM
Phenanthrene	85-01-8	-	< 0.11	-	UM
Anthracene	120-12-7	-	< 0.11	-	U
Fluoranthene	206-44-0	6.24	0.12	88	UM
Pyrene	129-00-0	-	< 0.11	-	UM
Benzo[a]anthracene	56-55-3	-	< 0.11	-	UM
Chrysene	218-01-9	8.15	0.10	96	UM
Benzo[b]fluoranthene	205-99-2	9.59	0.16	95	UM
Benzo[k]fluoranthene	207-08-9	-	< 0.11	-	UM
Benzo[a]pyrene	50-32-8	-	< 0.11	-	UM
Indeno[1,2,3-cd]pyrene	193-39-5	-	< 0.11	-	UM
Dibenzo[a,h]anthracene	53-70-3	-	< 0.11	-	UM
Benzo[g,h,i]perylene	191-24-2	-	< 0.11	-	UM
Coronene	191-07-1 *	-	< 0.11	-	N
Total (USEPA16) PAHs	-	-	< 1.81	-	N

* Denotes compound is not UKAS accredited

"M" denotes that % fit has been manually interpreted

Internal Standards	% Area
1,4-Dichlorobenzene-d4	NA
Naphthalene-d8	97
Acenaphthene-d10	97
Phenanthrene-d10	102
Chrysene-d12	101
Perylene-d12	104

Surrogates	% Rec
Nitrobenzene-d5	NA
2-Fluorobiphenyl	104
Terphenyl-d14	83

Concentrations are reported on a dry weight basis.

The Total PAH result is the sum of non-rounded individual PAH results and therefore may differ to the sum of the rounded individual PAH results printed above. By convention, where any one or more result is a "less than", the total is expressed as a "less than" and includes the "less than" concentration within the total.

Polycyclic Aromatic Hydrocarbons
GC/MS (SIM)

Customer and Site Details:	Ramboll Environ: Zeon Chemicals Polyblock		
Sample Details:	WS24 0.40	**Job Number:**	S16_3927M
LIMS ID Number:	CL1616367	**Date Booked in:**	16-May-16
QC Batch Number:	160584	**Date Extracted:**	17-May-16
Quantitation File:	Initial Calibration	**Date Analysed:**	18-May-16
Directory:	1716PAHMS20\	**Matrix:**	Soil
Dilution:	1.0	**Ext Method:**	Ultrasonic

Accredited?: Yes

Target Compounds	CAS #	R.T. (min)	Concentration mg/kg	% Fit	Accr. code
Naphthalene	91-20-3	-	< 0.10	-	**UM**
Acenaphthylene	208-96-8	-	< 0.10	-	U
Acenaphthene	83-32-9	-	< 0.10	-	UM
Fluorene	86-73-7	-	< 0.10	-	UM
Phenanthrene	85-01-8	-	< 0.10	-	UM
Anthracene	120-12-7	-	< 0.10	-	U
Fluoranthene	206-44-0	-	< 0.10	-	UM
Pyrene	129-00-0	-	< 0.10	-	UM
Benzo[a]anthracene	56-55-3	-	< 0.10	-	UM
Chrysene	218-01-9	-	< 0.10	-	UM
Benzo[b]fluoranthene	205-99-2	-	< 0.10	-	UM
Benzo[k]fluoranthene	207-08-9	-	< 0.10	-	UM
Benzo[a]pyrene	50-32-8	-	< 0.10	-	UM
Indeno[1,2,3-cd]pyrene	193-39-5	-	< 0.10	-	UM
Dibenzo[a,h]anthracene	53-70-3	-	< 0.10	-	UM
Benzo[g,h,i]perylene	191-24-2	-	< 0.10	-	UM
Coronene	191-07-1 *	-	< 0.10	-	N
Total (USEPA16) PAHs	-	-	< 1.64	-	N

* Denotes compound is not UKAS accredited

"M" denotes that % fit has been manually interpreted

Internal Standards	% Area
1,4-Dichlorobenzene-d4	NA
Naphthalene-d8	95
Acenaphthene-d10	96
Phenanthrene-d10	100
Chrysene-d12	96
Perylene-d12	95

Surrogates	% Rec
Nitrobenzene-d5	NA
2-Fluorobiphenyl	91
Terphenyl-d14	72

Concentrations are reported on a dry weight basis.

The Total PAH result is the sum of non-rounded individual PAH results and therefore may differ to the sum of the rounded individual PAH results printed above. By convention, where any one or more result is a "less than", the total is expressed as a "less than" and includes the "less than" concentration within the total.

Polycyclic Aromatic Hydrocarbons
GC/MS (SIM)

Customer and Site Details:	Ramboll Environ: Zeon Chemicals Polyblock		
Sample Details:	WS24 1.00	**Job Number:**	S16_3927M
LIMS ID Number:	CL1616368	**Date Booked in:**	16-May-16
QC Batch Number:	160584	**Date Extracted:**	17-May-16
Quantitation File:	Initial Calibration	**Date Analysed:**	18-May-16
Directory:	1716PAHMS20\	**Matrix:**	Soil
Dilution:	1.0	**Ext Method:**	Ultrasonic

Accredited?: Yes

Target Compounds	CAS #	R.T. (min)	Concentration mg/kg	% Fit	Accr. code
Naphthalene	91-20-3	-	< 0.10	-	**UM**
Acenaphthylene	208-96-8	-	< 0.10	-	U
Acenaphthene	83-32-9	-	< 0.10	-	UM
Fluorene	86-73-7	-	< 0.10	-	UM
Phenanthrene	85-01-8	5.03	0.19	97	UM
Anthracene	120-12-7	-	< 0.10	-	U
Fluoranthene	206-44-0	6.24	0.25	99	UM
Pyrene	129-00-0	6.50	0.19	99	UM
Benzo[a]anthracene	56-55-3	8.10	0.14	92	UM
Chrysene	218-01-9	8.15	0.19	94	UM
Benzo[b]fluoranthene	205-99-2	9.59	0.21	96	UM
Benzo[k]fluoranthene	207-08-9	-	< 0.10	-	UM
Benzo[a]pyrene	50-32-8	10.00	0.10	88	UM
Indeno[1,2,3-cd]pyrene	193-39-5	-	< 0.10	-	UM
Dibenzo[a,h]anthracene	53-70-3	-	< 0.10	-	UM
Benzo[g,h,i]perylene	191-24-2	-	< 0.10	-	UM
Coronene	191-07-1 *	-	< 0.10	-	N
Total (USEPA16) PAHs	-	-	< 2.21	-	N

* Denotes compound is not UKAS accredited

"M" denotes that % fit has been manually interpreted

Internal Standards	% Area
1,4-Dichlorobenzene-d4	NA
Naphthalene-d8	98
Acenaphthene-d10	98
Phenanthrene-d10	100
Chrysene-d12	93
Perylene-d12	91

Surrogates	% Rec
Nitrobenzene-d5	NA
2-Fluorobiphenyl	97
Terphenyl-d14	76

Concentrations are reported on a dry weight basis.

The Total PAH result is the sum of non-rounded individual PAH results and therefore may differ to the sum of the rounded individual PAH results printed above. By convention, where any one or more result is a "less than", the total is expressed as a "less than" and includes the "less than" concentration within the total.

Semi-Volatile Organic Compounds

Accredited?: Yes

Customer and Site Details:	Ramboll Environ: Zeon Chemicals Polyblock			**Matrix:**	Soil	**QC Batch Number:**	110
Sample Details:	WS27 0.70	**Date Booked in:**	16-May-16	**Ext Method:**	Ultrasonic	**Multiplier:**	0.2
LIMS ID Number:	CL1616366	**Date Extracted:**	17-May-16	**Operator:**		**Dilution Factor:**	1
Job Number:	S16_3927M	**Date Analysed:**	20-May-16	**Directory/Quant File:**	052016.GC11\	**GPC (Y/N)**	N

Target Compounds	CAS #	R.T. (min)	Concentration mg/kg	% Fit	Accr. code
Phenol	108-95-2	-	< 0.1	-	U
bis(2-Chloroethyl)ether	111-44-4	-	< 0.1	-	U
2-Chlorophenol	95-57-8	-	< 0.1	-	U
1,3-Dichlorobenzene	541-73-1	-	< 0.1	-	U
1,4-Dichlorobenzene	106-46-7	-	< 0.1	-	U
Benzyl alcohol	100-51-6	-	< 0.7	-	U
1,2-Dichlorobenzene	95-50-1	-	< 0.1	-	U
2-Methylphenol	95-48-7	-	< 0.1	-	U
bis(2-Chloroisopropyl)ether	108-60-1	-	< 0.7	-	U
Hexachloroethane	67-72-1	-	< 0.1	-	U
N-Nitroso-di-n-propylamine	621-64-7*	-	< 1.2	-	N
3- & 4-Methylphenol	108-39-4/106-44-5	-	< 0.1	-	U
Nitrobenzene	98-95-3	-	< 0.7	-	U
Isophorone	78-59-1*	-	< 0.1	-	N
2-Nitrophenol	88-75-5	-	< 0.1	-	U
2,4-Dimethylphenol	105-67-9	-	< 0.1	-	U
Benzoic Acid	65-85-0*	-	< 0.7	-	N
bis(2-Chloroethoxy)methane	111-91-1	-	< 0.1	-	U
2,4-Dichlorophenol	120-83-2	-	< 0.1	-	U
1,2,4-Trichlorobenzene	120-82-1*	-	< 0.1	-	N
Naphthalene	91-20-3	-	< 0.1	-	U
4-Chlorophenol	106-48-9	-	< 0.7	-	U
4-Chloroaniline	106-47-8*	-	< 0.7	-	N
Hexachlorobutadiene	87-68-3*	-	< 0.1	-	N
4-Chloro-3-methylphenol	59-50-7	-	< 0.1	-	U
2-Methylnaphthalene	91-57-6	-	< 0.1	-	U
1-Methylnaphthalene	90-12-0	-	< 0.1	-	U
Hexachlorocyclopentadiene	77-47-4*	-	< 0.1	-	N
2,4,6-Trichlorophenol	88-06-2	-	< 0.1	-	U
2,4,5-Trichlorophenol	95-95-4	-	< 0.1	-	U
2-Chloronaphthalene	91-58-7	-	< 0.1	-	U
Biphenyl	92-52-4	-	< 0.1	-	U
Diphenyl ether	101-84-8	-	< 0.1	-	U
2-Nitroaniline	88-74-4*	-	< 0.7	-	N
Acenaphthylene	208-96-8	-	< 0.1	-	U
Dimethylphthalate	131-11-3	-	< 0.1	-	U
2,6-Dinitrotoluene	606-20-2	-	< 0.7	-	U
Acenaphthene	83-32-9	-	< 0.1	-	U
3-Nitroaniline	99-09-2*	-	< 19.5	-	N

Target Compounds	CAS #	R.T.	Concentration mg/kg	% Fit	Accr. code
2,4-Dinitrophenol	51-28-5*	-	< 0.7	-	N
Dibenzofuran	132-64-9	-	< 0.1	-	U
4-Nitrophenol	100-02-7*	-	< 0.7	-	N
2,4-Dinitrotoluene	121-14-2	-	< 0.3	-	U
Fluorene	86-73-7	-	< 0.1	-	U
Diethylphthalate	84-66-2	-	< 0.1	-	U
4-Chlorophenyl-phenylether	7005-72-3	-	< 0.1	-	U
4,6-Dinitro-2-methylphenol	534-52-1*	-	< 0.3	-	N
4-Nitroaniline	100-01-6*	-	< 0.8	-	N
N-Nitrosodiphenylamine	86-30-6*	-	< 0.1	-	N
4-Bromophenyl-phenylether	101-55-3	-	< 0.1	-	U
Hexachlorobenzene	118-74-1	-	< 0.1	-	U
Pentachlorophenol	87-86-5*	-	< 0.7	-	N
Phenanthrene	85-01-8	-	< 0.1	-	U
Anthracene	120-12-7	-	< 0.1	-	U
Di-n-butylphthalate	84-74-2	-	< 0.1	-	U
Fluoranthene	206-44-0	-	< 0.3	-	U
Pyrene	129-00-0	-	< 0.3	-	U
Butylbenzylphthalate	85-68-7	-	< 0.3	-	U
Benzo[a]anthracene	56-55-3	-	< 0.3	-	U
Chrysene	218-01-9	-	< 0.3	-	U
3,3'-Dichlorobenzidine	91-94-1*	-	< 0.7	-	N
bis(2-Ethylhexyl)phthalate	117-81-7	-	< 0.3	-	U
Di-n-octylphthalate	117-84-0	-	< 0.3	-	U
Benzo[b]fluoranthene	205-99-2	-	< 0.3	-	U
Benzo[k]fluoranthene	207-08-9	-	< 0.3	-	U
Benzo[a]pyrene	50-32-8	-	< 0.3	-	U
Indeno[1,2,3-cd]pyrene	193-39-5	-	< 0.7	-	U
Dibenzo[a,h]anthracene	53-70-3	-	< 0.7	-	U
Benzo[g,h,i]perylene	191-24-2	-	< 0.7	-	U
Coronene	191-07-1*	-	< 0.4	-	N

Internal Standards	% Area
1,4-Dichlorobenzene-d4	96
Naphthalene-d8	83
Acenaphthene-d10	97
Phenanthrene-d10	96
Chrysene-d12	104
Perylene-d12	103

Surrogates	% Rec
2-Fluorophenol	69
Phenol-d5	89
Nitrobenzene-d5	90
2-Fluorobiphenyl	87
2,4,6-Tribromophenol	71
Terphenyl-d14	89

This analysis was conducted on an 'As Received' basis.

Concentrations are reported on a dry weight basis.

Where individual results are flagged see report notes for status.
Results corrected to dry weight at 105°C where appropriate, in accordance with the MCERTS standard.

Semi-Volatile Organic Compounds

Accredited?: Yes

Customer and Site Details:	Ramboll Environ: Zeon Chemicals Polyblock			**Matrix:**	Soil	**QC Batch Number:**	110
Sample Details:	WS24 0.40	**Date Booked in:**	16-May-16	**Ext Method:**	Ultrasonic	**Multiplier:**	0.2
LIMS ID Number:	CL1616367	**Date Extracted:**	17-May-16	**Operator:**		**Dilution Factor:**	1
Job Number:	S16_3927M	**Date Analysed:**	20-May-16	**Directory/Quant File:**	052016.GC11\	**GPC (Y/N)**	N

Target Compounds	CAS #	R.T. (min)	Concentration mg/kg	% Fit	Accr. code
Phenol	108-95-2	-	< 0.1	-	U
bis(2-Chloroethyl)ether	111-44-4	-	< 0.1	-	U
2-Chlorophenol	95-57-8	-	< 0.1	-	U
1,3-Dichlorobenzene	541-73-1	-	< 0.1	-	U
1,4-Dichlorobenzene	106-46-7	-	< 0.1	-	U
Benzyl alcohol	100-51-6	-	< 0.6	-	U
1,2-Dichlorobenzene	95-50-1	-	< 0.1	-	U
2-Methylphenol	95-48-7	-	< 0.1	-	U
bis(2-Chloroisopropyl)ether	108-60-1	-	< 0.6	-	U
Hexachloroethane	67-72-1	-	< 0.1	-	U
N-Nitroso-di-n-propylamine	621-64-7*	-	< 1.2	-	N
3- & 4-Methylphenol	108-39-4/106-44-5	-	< 0.1	-	U
Nitrobenzene	98-95-3	-	< 0.6	-	U
Isophorone	78-59-1*	-	< 0.1	-	N
2-Nitrophenol	88-75-5	-	< 0.1	-	U
2,4-Dimethylphenol	105-67-9	-	< 0.1	-	U
Benzoic Acid	65-85-0*	-	< 0.6	-	N
bis(2-Chloroethoxy)methane	111-91-1	-	< 0.1	-	U
2,4-Dichlorophenol	120-83-2	-	< 0.1	-	U
1,2,4-Trichlorobenzene	120-82-1*	-	< 0.1	-	N
Naphthalene	91-20-3	-	< 0.1	-	U
4-Chlorophenol	106-48-9	-	< 0.6	-	U
4-Chloroaniline	106-47-8*	-	< 0.6	-	N
Hexachlorobutadiene	87-68-3*	-	< 0.1	-	N
4-Chloro-3-methylphenol	59-50-7	-	< 0.1	-	U
2-Methylnaphthalene	91-57-6	-	< 0.1	-	U
1-Methylnaphthalene	90-12-0	-	< 0.1	-	U
Hexachlorocyclopentadiene	77-47-4*	-	< 0.1	-	N
2,4,6-Trichlorophenol	88-06-2	-	< 0.1	-	U
2,4,5-Trichlorophenol	95-95-4	-	< 0.1	-	U
2-Chloronaphthalene	91-58-7	-	< 0.1	-	U
Biphenyl	92-52-4	-	< 0.1	-	U
Diphenyl ether	101-84-8	-	< 0.1	-	U
2-Nitroaniline	88-74-4*	-	< 0.6	-	N
Acenaphthylene	208-96-8	-	< 0.1	-	U
Dimethylphthalate	131-11-3	-	< 0.1	-	U
2,6-Dinitrotoluene	606-20-2	-	< 0.6	-	U
Acenaphthene	83-32-9	-	< 0.1	-	U
3-Nitroaniline	99-09-2*	-	< 18.5	-	N

Target Compounds	CAS #	R.T.	Concentration mg/kg	% Fit	Accr. code
2,4-Dinitrophenol	51-28-5*	-	< 0.6	-	N
Dibenzofuran	132-64-9	-	< 0.1	-	U
4-Nitrophenol	100-02-7*	-	< 0.6	-	N
2,4-Dinitrotoluene	121-14-2	-	< 0.3	-	U
Fluorene	86-73-7	-	< 0.1	-	U
Diethylphthalate	84-66-2	-	< 0.1	-	U
4-Chlorophenyl-phenylether	7005-72-3	-	< 0.1	-	U
4,6-Dinitro-2-methylphenol	534-52-1*	-	< 0.3	-	N
4-Nitroaniline	100-01-6*	-	< 0.8	-	N
N-Nitrosodiphenylamine	86-30-6*	-	< 0.1	-	N
4-Bromophenyl-phenylether	101-55-3	-	< 0.1	-	U
Hexachlorobenzene	118-74-1	-	< 0.1	-	U
Pentachlorophenol	87-86-5*	-	< 0.6	-	N
Phenanthrene	85-01-8	-	< 0.1	-	U
Anthracene	120-12-7	-	< 0.1	-	U
Di-n-butylphthalate	84-74-2	-	< 0.1	-	U
Fluoranthene	206-44-0	-	< 0.3	-	U
Pyrene	129-00-0	-	< 0.3	-	U
Butylbenzylphthalate	85-68-7	-	< 0.3	-	U
Benzo[a]anthracene	56-55-3	-	< 0.3	-	U
Chrysene	218-01-9	-	< 0.3	-	U
3,3'-Dichlorobenzidine	91-94-1*	-	< 0.6	-	N
bis(2-Ethylhexyl)phthalate	117-81-7	-	< 0.3	-	U
Di-n-octylphthalate	117-84-0	-	< 0.3	-	U
Benzo[b]fluoranthene	205-99-2	-	< 0.3	-	U
Benzo[k]fluoranthene	207-08-9	-	< 0.3	-	U
Benzo[a]pyrene	50-32-8	-	< 0.3	-	U
Indeno[1,2,3-cd]pyrene	193-39-5	-	< 0.6	-	U
Dibenzo[a,h]anthracene	53-70-3	-	< 0.6	-	U
Benzo[g,h,i]perylene	191-24-2	-	< 0.6	-	U
Coronene	191-07-1*	-	< 0.4	-	N

Internal Standards	% Area
1,4-Dichlorobenzene-d4	93
Naphthalene-d8	86
Acenaphthene-d10	94
Phenanthrene-d10	95
Chrysene-d12	100
Perylene-d12	90

Surrogates	% Rec
2-Fluorophenol	69
Phenol-d5	86
Nitrobenzene-d5	82
2-Fluorobiphenyl	86
2,4,6-Tribromophenol	63
Terphenyl-d14	90

This analysis was conducted on an 'As Received' basis.

Concentrations are reported on a dry weight basis.

Where individual results are flagged see report notes for status.
Results corrected to dry weight at 105°C where appropriate, in accordance with the MCERTS standard.

SVOC (TICs)

Accredited?:No

Customer and Site Details:	Ramboll Environ: Zeon Chemicals Polyblock		
Sample Details:	WS27 0.70	**Job Number:**	S16_3927
LIMS ID Number:	CL1616366		
		Multiplier:	0.2
Date Booked in:	16-May-16	**Dilution Factor:**	1
Date Extracted:	17-May-16	**GPC (Y/N):**	N
Date Analysed:	20-May-16	**Matrix:**	Soil
QC Batch Number:	110	**Method:**	Ultrasonic
Directory/Quant File:	052016.GC11\ 0	**Operator:**	0

Tentatively Identified Compounds	CAS #	R.T.	Concentration mg/kg	% Fit	Accr. code
Non detected			<2.0		N

The compounds listed above have been tentatively identified by a computer based library search.
Compounds identified in the sample are not reported if they also occur in the method blank.
The % fit is an indication of the reliability of the compound assignment.
Due to the similarity between mass spectra of some isomeric compounds assignments may not be correct.
Other compounds may also be present but identification was not possible.
Concentrations are semi-quantitative, assume a response factor of 1 and use the nearest internal standard.
Concentrations are reported on a dry weight basis.

Where individual results are flagged see report notes for status.
Results corrected to dry weight at 105°C where appropriate, in accordance with the MCERTS standard.

SVOC (TICs)

Accredited?:No

Customer and Site Details:	Ramboll Environ: Zeon Chemicals Polyblock		
Sample Details:	WS24 0.40	**Job Number:**	S16_3927
LIMS ID Number:	CL1616367		
		Multiplier:	0.2
Date Booked in:	16-May-16	**Dilution Factor:**	1
Date Extracted:	17-May-16	**GPC (Y/N):**	N
Date Analysed:	20-May-16	**Matrix:**	Soil
QC Batch Number:	110	**Method:**	Ultrasonic
Directory/Quant File:	052016.GC11\ 0	**Operator:**	0

Tentatively Identified Compounds	CAS #	R.T.	Concentration mg/kg	% Fit	Accr. code
Cyclodecane	000293-96-9	3.89	1.083	91	N
9,9-Dimethoxybicyclo[3.3.1]nona-2,4-dione	117132-08-8	6.64	0.422	53	N

The compounds listed above have been tentatively identified by a computer based library search.
Compounds identified in the sample are not reported if they also occur in the method blank.
The % fit is an indication of the reliability of the compound assignment.
Due to the similarity between mass spectra of some isomeric compounds assignments may not be correct.
Other compounds may also be present but identification was not possible.
Concentrations are semi-quantitative, assume a response factor of 1 and use the nearest internal standard.
Concentrations are reported on a dry weight basis.

Where individual results are flagged see report notes for status.
Results corrected to dry weight at 105°C where appropriate, in accordance with the MCERTS standard.

Gasoline Range Organics
(BTEX and Aliphatic Carbon Ranges)

Customer and Site Details: Ramboll Environ : Zeon Chemicals Polyblock
Job Number: S16_3927
Directory: E:\TES\DATA\2016\0517HSA_GC9\051716A 2016-05-17 16-30-14\122B1601.D
Method: Headspace GCFID
Accreditation Code: UM

Matrix: Soil
Date Booked in: 16-May-16
Date extracted: 17-May-16
Date Analysed: 17-May-16, 21:0

*** Sample data with an asterisk are not UKAS accredited.**

		Concentration, (mg/kg) - as dry weight.					Aliphatics				
Sample ID	**Client ID**	**Benzene**	**Toluene**	**Ethyl benzene**	**m/p-Xylene**	**o-Xylene**	**C5 - C6**	**>C6 - C7**	**>C7 - C8**	**>C8 - C10**	**Total GRO**
CL1616366	WS27 0.70	<0.013	<0.013	<0.013	<0.013	<0.013	<0.3	<0.3	<0.3	<0.3	<0.3
CL1616367	WS24 0.40	<0.013	<0.013	<0.013	<0.013	<0.013	<0.3	<0.3	<0.3	<0.3	<0.3
CL1616368	WS24 1.00	<0.013	<0.013	<0.013	<0.013	<0.013	<0.3	<0.3	<0.3	<0.3	<0.3

Note: Benzene elutes between C6 and C7, toluene elutes between C7 and C8, ethyl benzene and the xylenes elute between C8 and C9.
Each BTEX compound is deducted from the appropriate band to give the aliphatic fractions, however aromatic compounds may still be contributing to these fractions

Where individual results are flagged see report notes for status.
Results corrected to dry weight at 105°C where appropriate, in accordance with the MCERTS standard.

ALIPHATIC / AROMATIC FRACTION BY GC/FID

Customer and Site Details: Ramboll Environ : Zeon Chemicals Polyblock
Job Number: S16_3927M
QC Batch Number: 160584
Directory: D:\TES\DATA\Y2016\051716TPH_GC3\051716C 2016-05-18 13-34-19\088B5801.D
Method: Ultra Sonic

Separation: Silica gel
Eluents: Hexane, DCM

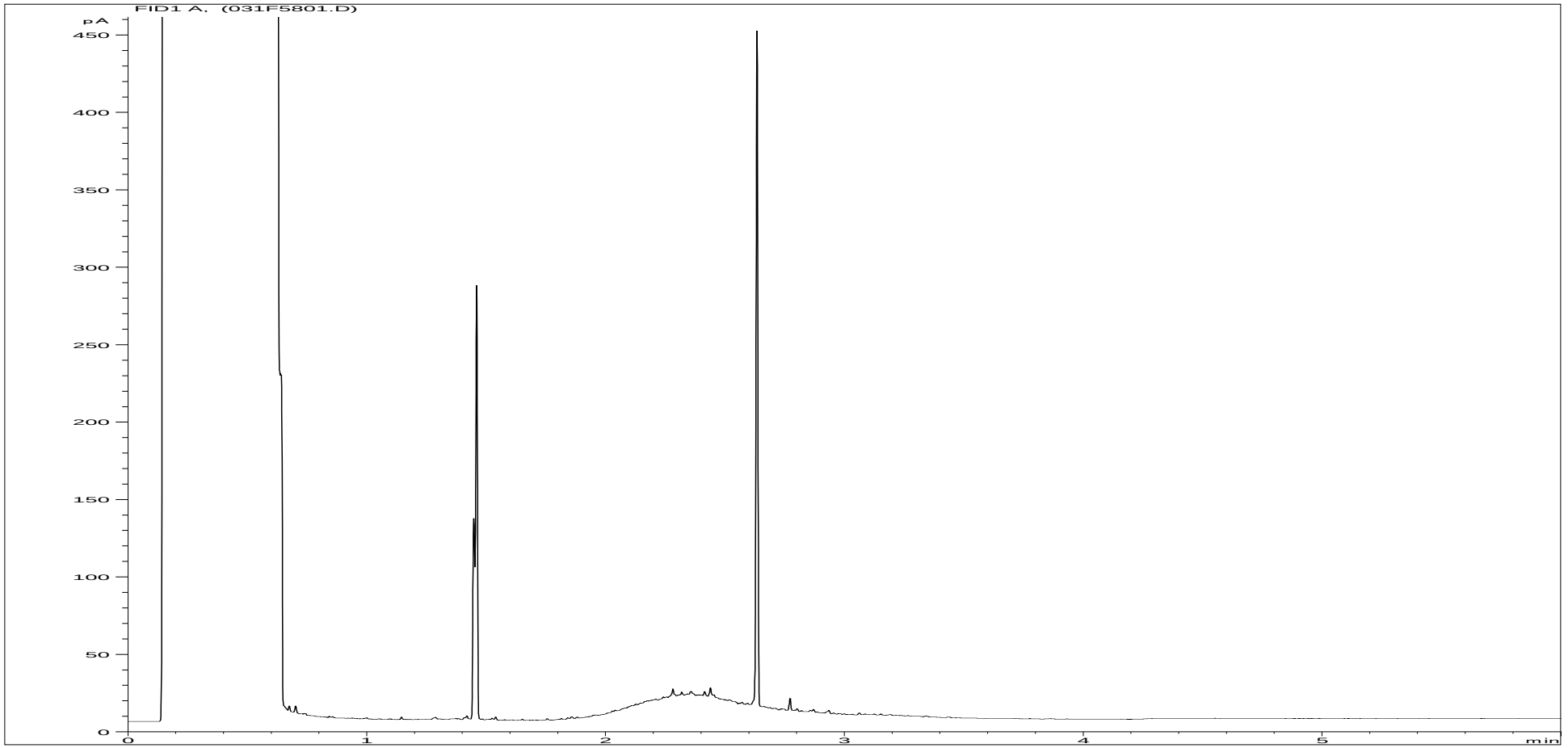
Matrix: Soil
Date Booked ir 16-May-16
Date Extracted 17-May-16
Date Analysed 19-May-16, 02:10:17

This sample data is not MCERTS accredited.
*** This sample data is not ISO17025 accredited.**

		Concentration, (mg/kg) - as dry weight.											
		>C8 - C10		>C10 - C12		>C12 - C16		>C16 - C21		>C21 - C35		>C8 - C40	
Sample ID	**Client ID**	**Aliphatics**	**Aromatics**	**Aliphatics**	**Aromatics**	**Aliphatics**	**Aromatics**	**Aliphatics**	**Aromatics**	**Aliphatics**	**Aromatics**	**Aliphatics**	**Aromatics**
CL1616366	WS27 0.70	<5*	<5	<5	<5	<5	<5	31	7.08	98.4	28.4	133	36.7
CL1616367	WS24 0.40	<5*	<5	<5	<5	<5	<5	22.5	<5	94.4	23.9	121	29.7
CL1616368	WS24 1.00	<5*	<5	<5	<5	<5	<5	<5	<5	<11.32	<11.32	<26	<26

Where individual results are flagged see report notes for status.
Results corrected to dry weight at 105°C where appropriate, in accordance with the MCERTS standard.

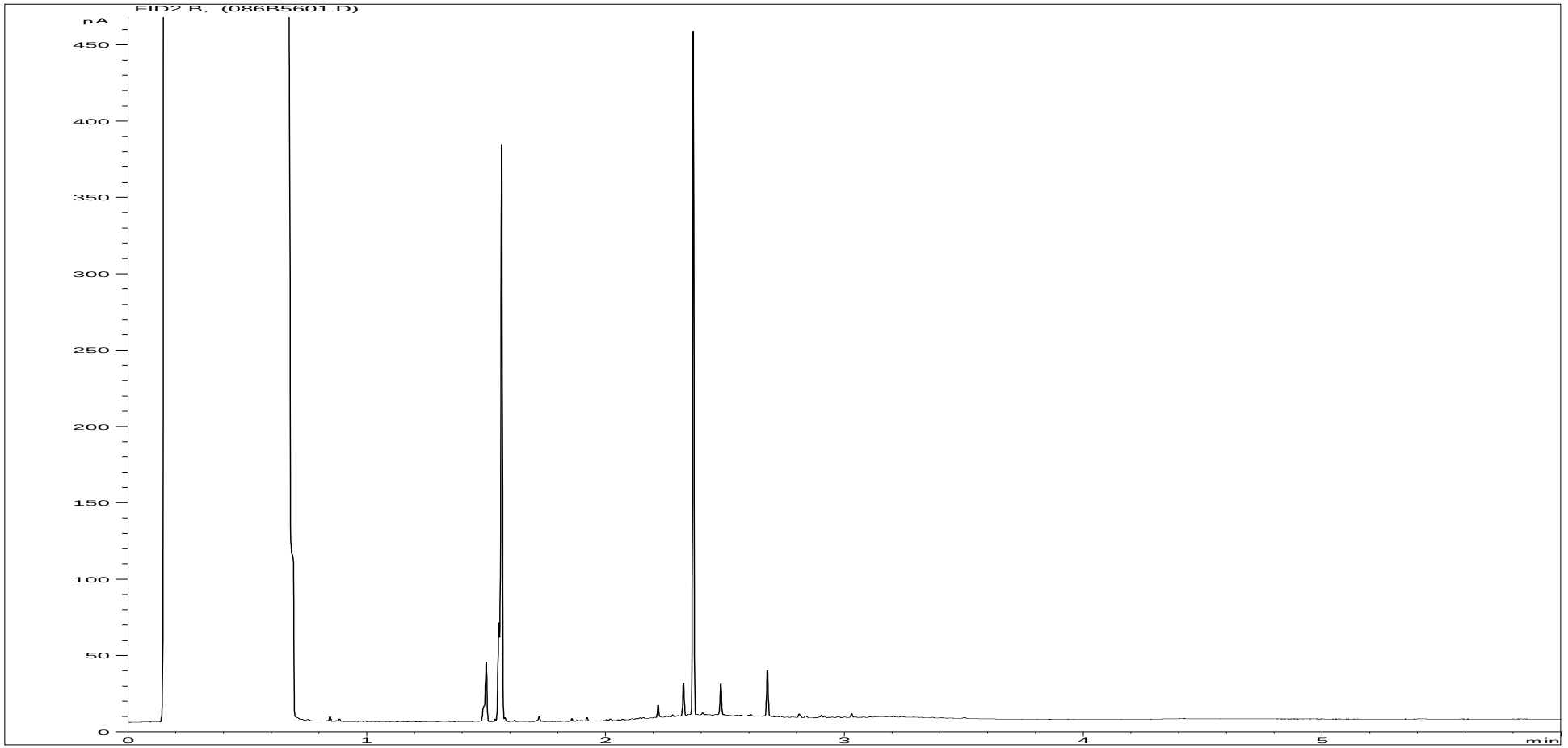
Petroleum Hydrocarbons (C8 to C40) by GC/FID Aliphatics Fraction.



Sample ID:	CL1616366ALI	**Job Number:**	S16_3927M
Multiplier:	15.92	**Client:**	Ramboll Environ
Dilution:	1	**Site:**	Zeon Chemicals Polyblock
Acquisition Method:	5UL_RUNF.M	**Client Sample Ref:**	WS27 0.70
Acquisition Date/Time:	19-May-16, 02:10:17		
Datafile:	D:\TES\DATA\Y2016\051716TPH_GC3\051716C 2016-05-18 13-34-19\031F5801.D		

Where individual results are flagged see report notes for status.
Results corrected to dry weight at 105°C where appropriate, in accordance with the MCERTS standard.

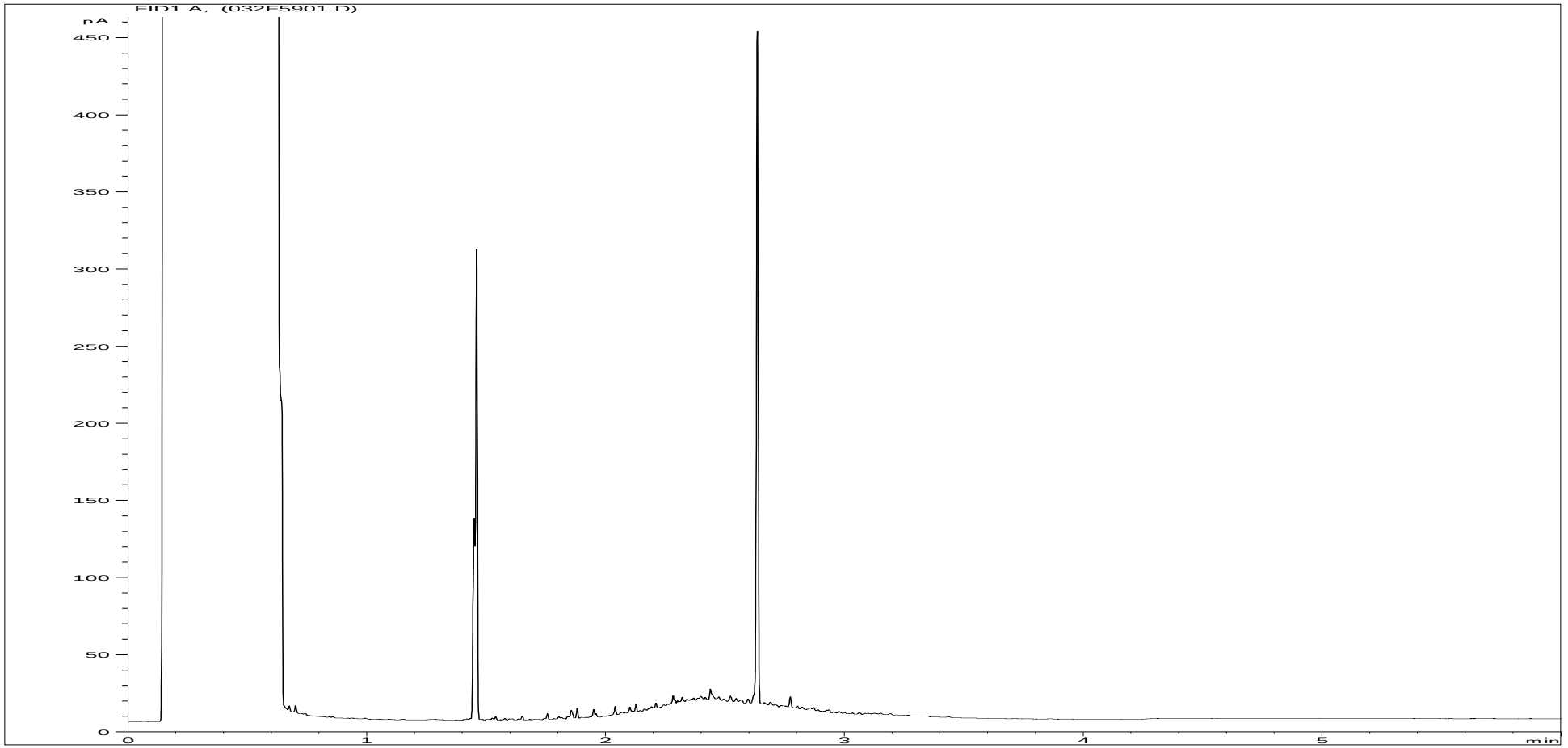
Petroleum Hydrocarbons (C8 to C40) by GC/FID Aromatics Fraction.



Sample ID:	CL1616366ARO	**Job Number:**	S16_3927M
Multiplier:	11.68	**Client:**	Ramboll Environ
Dilution:	1	**Site:**	Zeon Chemicals Polyblock
Acquisition Method:	5UL_RUNF.M	**Client Sample Ref:**	WS27 0.70
Acquisition Date/Time:	19-May-16, 01:44:04		
Datafile:	D:\TES\DATA\Y2016\051716TPH_GC3\051716C 2016-05-18 13-34-19\086B5601.D		

Where individual results are flagged see report notes for status.
Results corrected to dry weight at 105°C where appropriate, in accordance with the MCERTS standard.

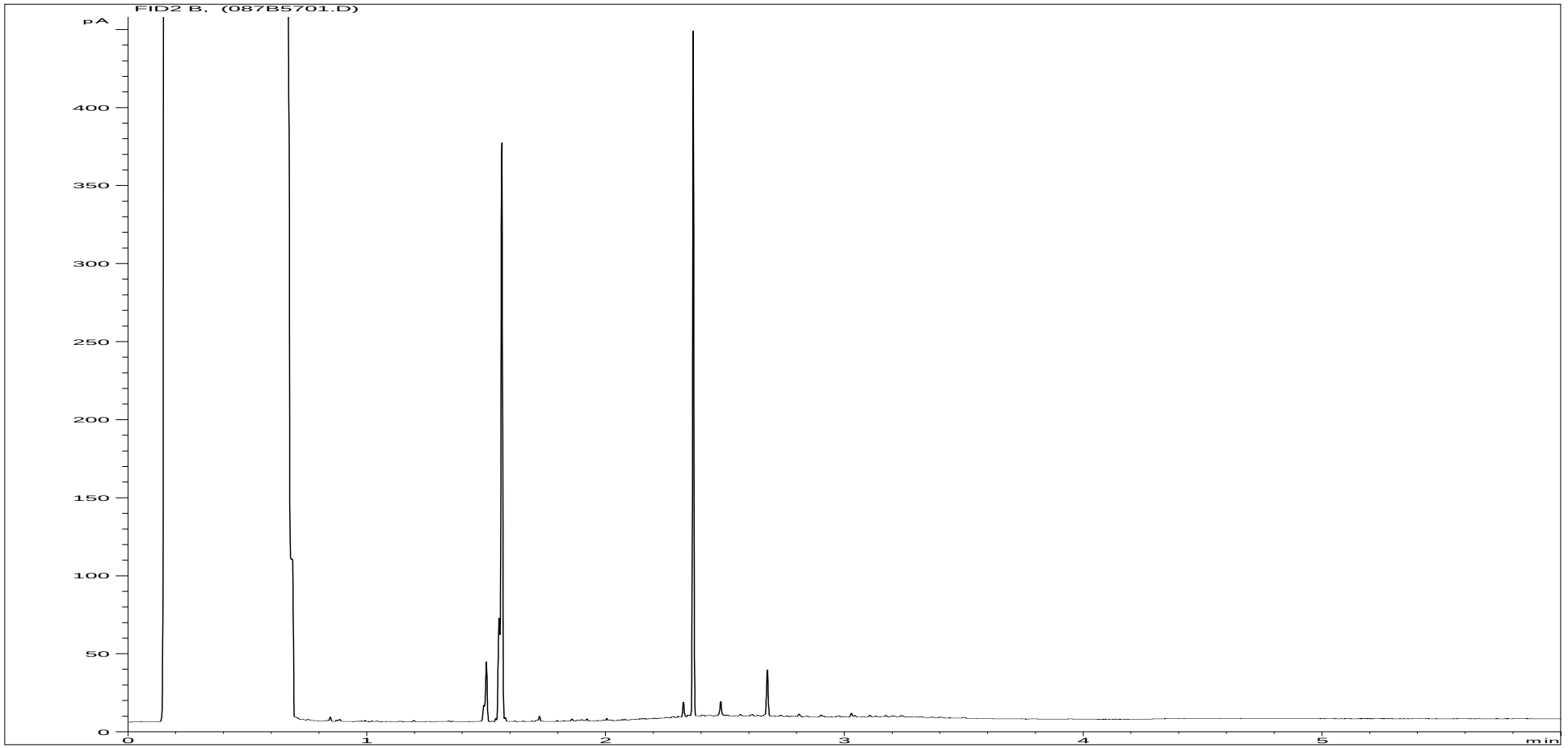
Petroleum Hydrocarbons (C8 to C40) by GC/FID Aliphatics Fraction.



Sample ID:	CL1616367ALI	**Job Number:**	S16_3927M
Multiplier:	15.76	**Client:**	Ramboll Environ
Dilution:	1	**Site:**	Zeon Chemicals Polyblock
Acquisition Method:	5UL_RUNF.M	**Client Sample Ref:**	WS24 0.40
Acquisition Date/Time:	19-May-16, 02:23:22		
Datafile:	D:\TES\DATA\Y2016\051716TPH_GC3\051716C 2016-05-18 13-34-19\032F5901.D		

Where individual results are flagged see report notes for status.
Results corrected to dry weight at 105°C where appropriate, in accordance with the MCERTS standard.

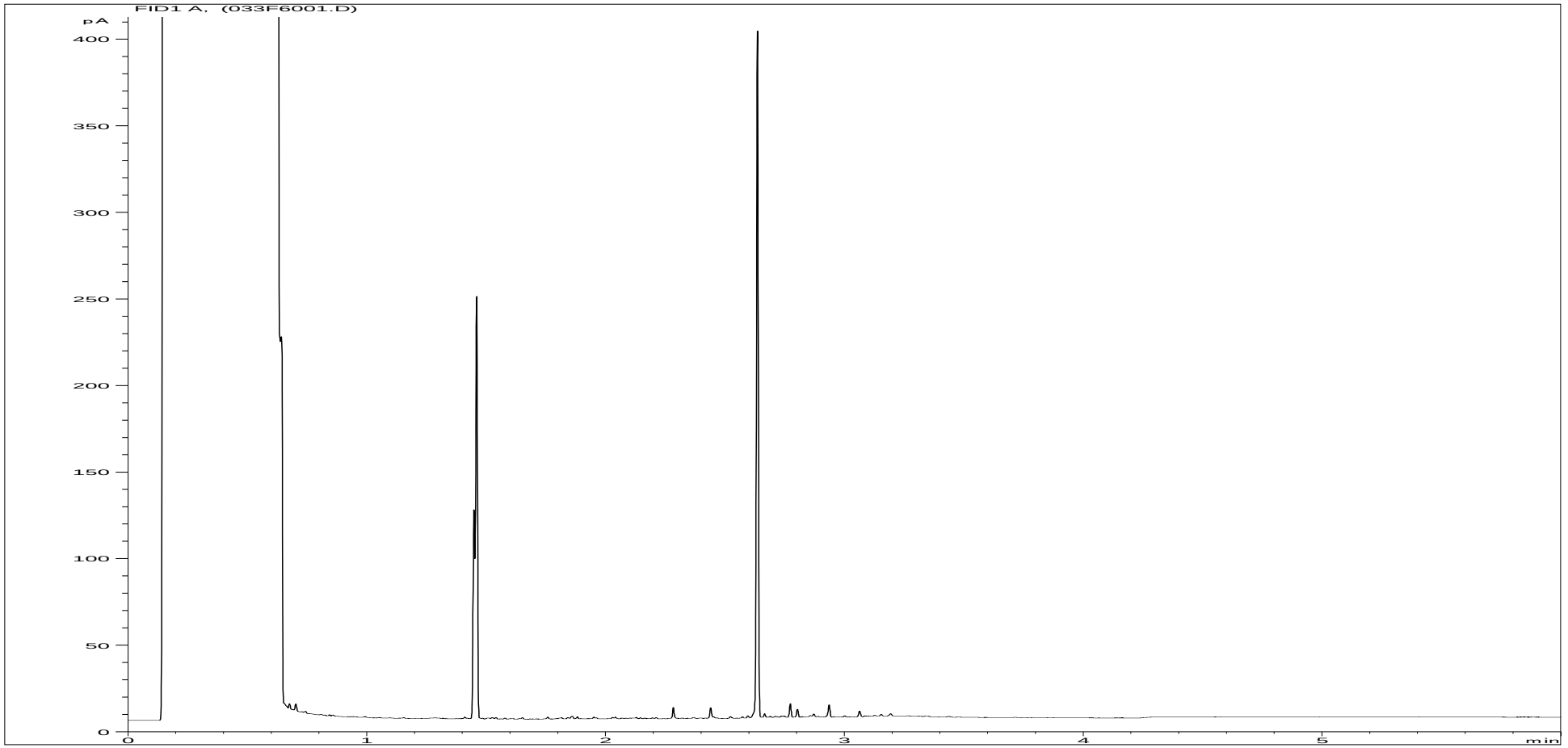
Petroleum Hydrocarbons (C8 to C40) by GC/FID Aromatics Fraction.



Sample ID:	CL1616367ARO	**Job Number:**	S16_3927M
Multiplier:	11.52	**Client:**	Ramboll Environ
Dilution:	1	**Site:**	Zeon Chemicals Polyblock
Acquisition Method:	5UL_RUNF.M	**Client Sample Ref:**	WS24 0.40
Acquisition Date/Time:	19-May-16, 01:57:11		
Datafile:	D:\TES\DATA\Y2016\051716TPH_GC3\051716C 2016-05-18 13-34-19\087B5701.D		

Where individual results are flagged see report notes for status.
Results corrected to dry weight at 105°C where appropriate, in accordance with the MCERTS standard.

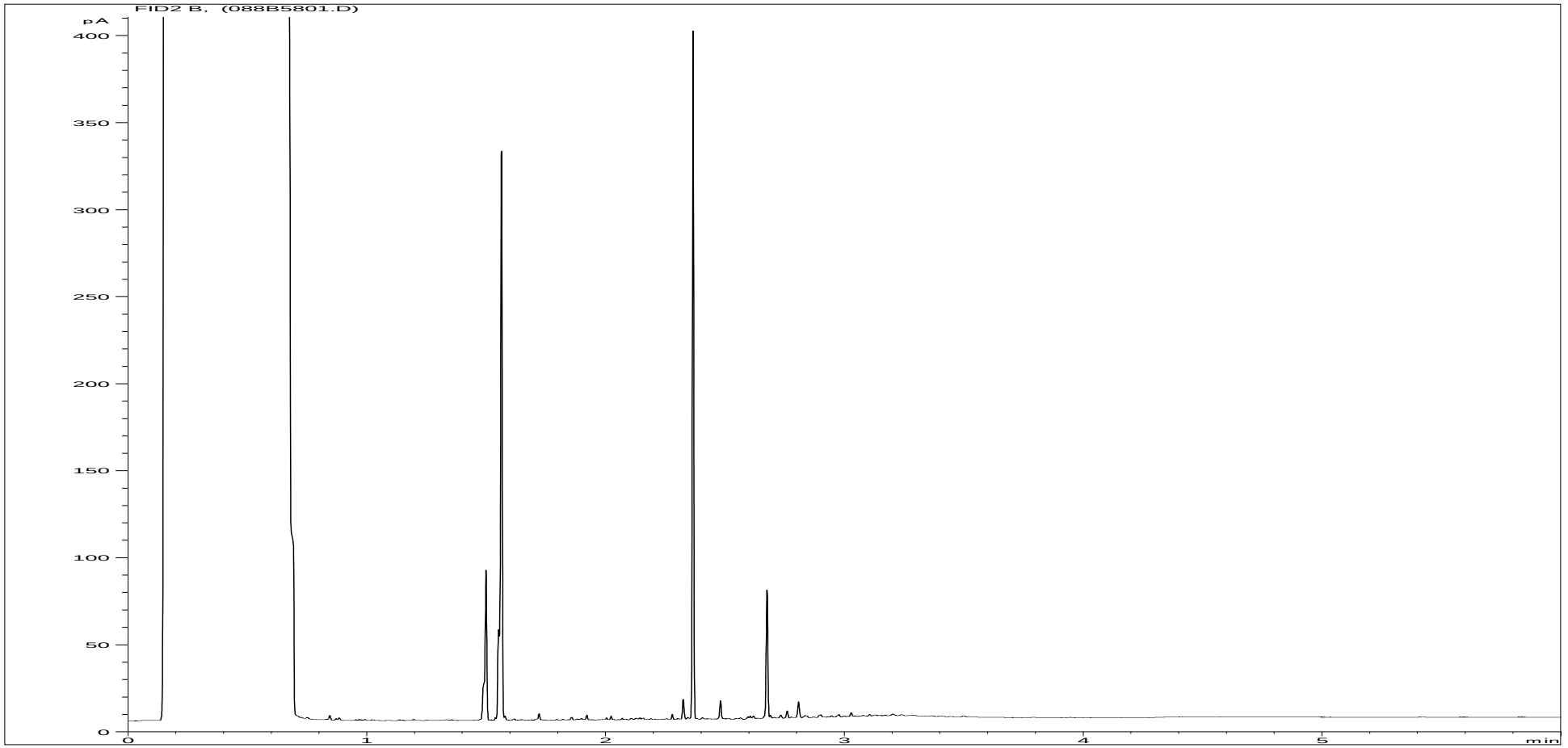
Petroleum Hydrocarbons (C8 to C40) by GC/FID Aliphatics Fraction.



Sample ID:	CL1616368ALI	**Job Number:**	S16_3927M
Multiplier:	15.84	**Client:**	Ramboll Environ
Dilution:	1	**Site:**	Zeon Chemicals Polyblock
Acquisition Method:	5UL_RUNF.M	**Client Sample Ref:**	WS24 1.00
Acquisition Date/Time:	19-May-16, 02:36:12		
Datafile:	D:\TES\DATA\Y2016\051716TPH_GC3\051716C 2016-05-18 13-34-19\033F6001.D		

Where individual results are flagged see report notes for status.
Results corrected to dry weight at 105°C where appropriate, in accordance with the MCERTS standard.

Petroleum Hydrocarbons (C8 to C40) by GC/FID Aromatics Fraction.



Sample ID:	CL1616368ARO	**Job Number:**	S16_3927M
Multiplier:	11.68	**Client:**	Ramboll Environ
Dilution:	1	**Site:**	Zeon Chemicals Polyblock
Acquisition Method:	5UL_RUNF.M	**Client Sample Ref:**	WS24 1.00
Acquisition Date/Time:	19-May-16, 02:10:17		
Datafile:	D:\TES\DATA\Y2016\051716TPH_GC3\051716C 2016-05-18 13-34-19\088B5801.D		

Where individual results are flagged see report notes for status.
Results corrected to dry weight at 105°C where appropriate, in accordance with the MCERTS standard.

Volatile Organic Compounds by HSA-GCMS

Accredited?: Yes

Customer and Site Details: Ramboll Environ: Zeon Chemicals Polyblock
Sample Details: WS27 0.70
LIMS ID Number: CL1616366
Job Number: S16_3927M

Directory/Quant file: 517VOC.MS19\ Initial Calibration
Date Booked in: 16-May-16
Date Analysed: 18-May-16
Operator:

Matrix: Soil
Method: Headspace
Multiplier: 0.97
Position: 7

Target Compounds	CAS #	R.T. (min.)	Concentration µg/kg	% Fit	Accr. code
Dichlorodifluoromethane	75-71-8 **	-	< 1	-	N
Chloromethane	74-87-3 *	-	< 4	-	N
Vinyl Chloride	75-01-4	-	< 1	-	UM
Bromomethane	74-83-9	-	< 1	-	UM
Chloroethane	75-00-3	-	< 3	-	UM
Trichlorofluoromethane	75-69-4	-	< 1	-	UM
1,1-Dichloroethene	75-35-48 *	-	< 1	-	N
trans 1,2-Dichloroethene	156-60-5	-	< 1	-	UM
1,1-Dichloroethane	75-34-3	-	< 1	-	UM
MTBE	1634-04-4	-	< 1	-	UM
2,2-Dichloropropane	594-20-7	-	< 1	-	UM
cis 1,2-Dichloroethene	156-59-2	-	< 7	-	UM
Bromochloromethane	74-97-5	-	< 1	-	UM
Chloroform	67-66-3	3.98	1	M	UM
1,1,1-Trichloroethane	71-55-6	-	< 1	-	UM
Carbon Tetrachloride	56-23-5	-	< 1	-	UM
1,1-Dichloropropene	563-58-6	-	< 1	-	UM
Benzene	71-43-2	-	< 1	-	UM
1,2-Dichloroethane	107-06-2	-	< 1	-	UM
Trichloroethene	79-01-6 **	-	< 1	-	N
1,2-Dichloropropane	78-87-5	-	< 1	-	UM
Dibromomethane	74-95-3	-	< 1	-	UM
Bromodichloromethane	75-27-4	-	< 1	-	UM
cis 1,3-Dichloropropene	10061-01-5	-	< 1	-	UM
Toluene	108-88-3	-	< 7	-	UM
trans 1,3-Dichloropropene	10061-02-6	-	< 1	-	UM
1,1,2-Trichloroethane	79-00-5	-	< 1	-	UM
Tetrachloroethene	127-18-4	-	< 4	-	UM
1,3-Dichloropropane	142-28-9	-	< 1	-	UM
Dibromochloromethane	124-48-1	-	< 1	-	UM
1,2-Dibromoethane	106-93-4	-	< 1	-	UM
Chlorobenzene	108-90-7	-	< 1	-	UM
Ethylbenzene	100-41-4	-	< 3	-	UM
1,1,1,2-Tetrachloroethane	630-20-6	-	< 1	-	UM
m and p-Xylene	108-38-3/106-42-3	-	< 5	-	UM

Target Compounds	CAS #	R.T. (min.)	Concentration µg/kg	% Fit	Accr. code
o-Xylene	95-47-6	-	< 3	-	UM
Styrene	100-42-5	-	< 1	-	UM
Bromoform	75-25-2	-	< 1	-	UM
iso-Propylbenzene	98-82-8	-	< 1	-	UM
1,1,2,2-Tetrachloroethane	79-34-5 **	-	< 1	-	N
Propylbenzene	103-65-1	-	< 1	-	UM
Bromobenzene	108-86-1	-	< 1	-	UM
1,2,3-Trichloropropane	96-18-4	-	< 1	-	UM
2-Chlorotoluene	95-49-8	-	< 1	-	UM
1,3,5-Trimethylbenzene	108-67-8	-	< 1	-	UM
4-Chlorotoluene	106-43-4	-	< 1	-	UM
tert-Butylbenzene	98-06-6	-	< 1	-	UM
1,2,4-Trimethylbenzene	95-63-6	-	< 1	-	UM
sec-Butylbenzene	135-98-8	-	< 1	-	UM
p-Isopropyltoluene	99-87-6	-	< 1	-	UM
1,3-Dichlorobenzene	541-73-1	-	< 1	-	UM
1,4-Dichlorobenzene	106-46-7	-	< 1	-	UM
n-Butylbenzene	104-51-8 *	-	< 1	-	N
1,2-Dichlorobenzene	95-50-1	-	< 1	-	UM
1,2-Dibromo-3-chloropropane	96-12-8	-	< 1	-	UM
1,2,4-Trichlorobenzene	120-82-1 *	-	< 4	-	N
Hexachlorobutadiene	87-68-3 **	-	< 3	-	N
Naphthalene	91-20-3	-	< 7	-	UM
1,2,3-Trichlorobenzene	87-61-6	-	< 4	-	UM

Concentrations are reported on a dry weight basis
Compounds marked ** are not UKAS or Mcerts accredited
"M" denotes that % fit has been manually interpreted
This analysis was conducted on an 'As Received' basis.

Internal standards	R.T.	Area %	Surrogates	% Rec
Pentafluorobenzene	4.04	106	Dibromofluoromethane	98
1,4-Difluorobenzene	4.39	104	Toluene-d8	97
Chlorobenzene-d5	5.50	85		
Bromofluorobenzene	5.89	69		
1,4-Dichlorobenzene-d4	6.29	51		
Naphthalene-d8	7.12	17		

Where individual results are flagged see report notes for status.
Results corrected to dry weight at 105°C where appropriate, in accordance with the MCERTS standard.

Volatile Organic Compounds by HSA-GCMS

Accredited?: Yes

Customer and Site Details: Ramboll Environ: Zeon Chemicals Polyblock
Sample Details: WS24 0.40
LIMS ID Number: CL1616367
Job Number: S16_3927M

Directory/Quant file: 517VOC.MS19\ Initial Calibration
Date Booked in: 16-May-16
Date Analysed: 18-May-16
Operator:

Matrix: Soil
Method: Headspace
Multiplier: 1
Position: 8

Target Compounds	CAS #	R.T. (min.)	Concentration µg/kg	% Fit	Accr. code
Dichlorodifluoromethane	75-71-8 **	-	< 1	-	N
Chloromethane	74-87-3 *	-	< 4	-	N
Vinyl Chloride	75-01-4	-	< 1	-	UM
Bromomethane	74-83-9	-	< 1	-	UM
Chloroethane	75-00-3	-	< 3	-	UM
Trichlorofluoromethane	75-69-4	-	< 1	-	UM
1,1-Dichloroethene	75-35-48 *	-	< 1	-	N
trans 1,2-Dichloroethene	156-60-5	-	< 1	-	UM
1,1-Dichloroethane	75-34-3	-	< 1	-	UM
MTBE	1634-04-4	-	< 1	-	UM
2,2-Dichloropropane	594-20-7	-	< 1	-	UM
cis 1,2-Dichloroethene	156-59-2	-	< 6	-	UM
Bromochloromethane	74-97-5	-	< 1	-	UM
Chloroform	67-66-3	-	< 1	-	UM
1,1,1-Trichloroethane	71-55-6	-	< 1	-	UM
Carbon Tetrachloride	56-23-5	-	< 1	-	UM
1,1-Dichloropropene	563-58-6	-	< 1	-	UM
Benzene	71-43-2	4.23	4	M	UM
1,2-Dichloroethane	107-06-2	-	< 1	-	UM
Trichloroethene	79-01-6 **	-	< 1	-	N
1,2-Dichloropropane	78-87-5	-	< 1	-	UM
Dibromomethane	74-95-3	-	< 1	-	UM
Bromodichloromethane	75-27-4	-	< 1	-	UM
cis 1,3-Dichloropropene	10061-01-5	-	< 1	-	UM
Toluene	108-88-3	4.99	8	M	UM
trans 1,3-Dichloropropene	10061-02-6	-	< 1	-	UM
1,1,2-Trichloroethane	79-00-5	-	< 1	-	UM
Tetrachloroethene	127-18-4	-	< 4	-	UM
1,3-Dichloropropane	142-28-9	-	< 1	-	UM
Dibromochloromethane	124-48-1	-	< 1	-	UM
1,2-Dibromoethane	106-93-4	-	< 1	-	UM
Chlorobenzene	108-90-7	-	< 1	-	UM
Ethylbenzene	100-41-4	5.51	3	M	UM
1,1,1,2-Tetrachloroethane	630-20-6	-	< 1	-	UM
m and p-Xylene	108-38-3/106-42-3	5.55	8	M	UM

Target Compounds	CAS #	R.T. (min.)	Concentration µg/kg	% Fit	Accr. code
o-Xylene	95-47-6	5.69	4	M	UM
Styrene	100-42-5	-	< 1	-	UM
Bromoform	75-25-2	-	< 1	-	UM
iso-Propylbenzene	98-82-8	-	< 1	-	UM
1,1,2,2-Tetrachloroethane	79-34-5 **	-	< 1	-	N
Propylbenzene	103-65-1	5.95	3	M	UM
Bromobenzene	108-86-1	-	< 1	-	UM
1,2,3-Trichloropropane	96-18-4	-	< 1	-	UM
2-Chlorotoluene	95-49-8	-	< 1	-	UM
1,3,5-Trimethylbenzene	108-67-8	5.99	6	M	UM
4-Chlorotoluene	106-43-4	-	< 1	-	UM
tert-Butylbenzene	98-06-6	-	< 1	-	UM
1,2,4-Trimethylbenzene	95-63-6	6.13	20	M	UM
sec-Butylbenzene	135-98-8	-	< 1	-	UM
p-Isopropyltoluene	99-87-6	-	< 1	-	UM
1,3-Dichlorobenzene	541-73-1	-	< 1	-	UM
1,4-Dichlorobenzene	106-46-7	-	< 1	-	UM
n-Butylbenzene	104-51-8 *	-	< 1	-	N
1,2-Dichlorobenzene	95-50-1	-	< 1	-	UM
1,2-Dibromo-3-chloropropane	96-12-8	-	< 1	-	UM
1,2,4-Trichlorobenzene	120-82-1 *	-	< 4	-	N
Hexachlorobutadiene	87-68-3 **	-	< 3	-	N
Naphthalene	91-20-3	-	< 6	-	UM
1,2,3-Trichlorobenzene	87-61-6	-	< 4	-	UM

Concentrations are reported on a dry weight basis
Compounds marked ** are not UKAS or Mcerts accredited
"M" denotes that % fit has been manually interpreted
This analysis was conducted on an 'As Received' basis.

Internal standards	R.T.	Area %	Surrogates	% Rec
Pentafluorobenzene	4.04	109	Dibromofluoromethane	37
1,4-Difluorobenzene	4.39	109	Toluene-d8	99
Chlorobenzene-d5	5.50	99		
Bromofluorobenzene	5.89	89		
1,4-Dichlorobenzene-d4	6.29	76		
Naphthalene-d8	7.13	45		

Where individual results are flagged see report notes for status.
Results corrected to dry weight at 105°C where appropriate, in accordance with the MCERTS standard.

Volatile Organic Compounds by HSA-GCMS

Accredited?: Yes

Customer and Site Details: Ramboll Environ: Zeon Chemicals Polyblock
Sample Details: WS24 1.00
LIMS ID Number: CL1616368
Job Number: S16_3927M

Directory/Quant file: 517VOC.MS19\ Initial Calibration
Date Booked in: 16-May-16
Date Analysed: 18-May-16
Operator:

Matrix: Soil
Method: Headspace
Multiplier: 1.03
Position: 9

Target Compounds	CAS #	R.T. (min.)	Concentration µg/kg	% Fit	Accr. code
Dichlorodifluoromethane	75-71-8 **	-	< 1	-	N
Chloromethane	74-87-3 *	-	< 4	-	N
Vinyl Chloride	75-01-4	-	< 1	-	UM
Bromomethane	74-83-9	-	< 1	-	UM
Chloroethane	75-00-3	-	< 3	-	UM
Trichlorofluoromethane	75-69-4	-	< 1	-	UM
1,1-Dichloroethene	75-35-48 *	-	< 1	-	N
trans 1,2-Dichloroethene	156-60-5	-	< 1	-	UM
1,1-Dichloroethane	75-34-3	-	< 1	-	UM
MTBE	1634-04-4	-	< 1	-	UM
2,2-Dichloropropane	594-20-7	-	< 1	-	UM
cis 1,2-Dichloroethene	156-59-2	-	< 6	-	UM
Bromochloromethane	74-97-5	-	< 1	-	UM
Chloroform	67-66-3	-	< 1	-	UM
1,1,1-Trichloroethane	71-55-6	-	< 1	-	UM
Carbon Tetrachloride	56-23-5	-	< 1	-	UM
1,1-Dichloropropene	563-58-6	-	< 1	-	UM
Benzene	71-43-2	4.23	8	58	UM
1,2-Dichloroethane	107-06-2	-	< 1	-	UM
Trichloroethene	79-01-6 **	-	< 1	-	N
1,2-Dichloropropane	78-87-5	-	< 1	-	UM
Dibromomethane	74-95-3	-	< 1	-	UM
Bromodichloromethane	75-27-4	-	< 1	-	UM
cis 1,3-Dichloropropene	10061-01-5	-	< 1	-	UM
Toluene	108-88-3	4.99	10	M	UM
trans 1,3-Dichloropropene	10061-02-6	-	< 1	-	UM
1,1,2-Trichloroethane	79-00-5	-	< 1	-	UM
Tetrachloroethene	127-18-4	-	< 4	-	UM
1,3-Dichloropropane	142-28-9	-	< 1	-	UM
Dibromochloromethane	124-48-1	-	< 1	-	UM
1,2-Dibromoethane	106-93-4	-	< 1	-	UM
Chlorobenzene	108-90-7	-	< 1	-	UM
Ethylbenzene	100-41-4	-	< 3	-	UM
1,1,1,2-Tetrachloroethane	630-20-6	-	< 1	-	UM
m and p-Xylene	108-38-3/106-42-3	5.55	9	M	UM

Target Compounds	CAS #	R.T. (min.)	Concentration µg/kg	% Fit	Accr. code
o-Xylene	95-47-6	-	< 3	-	UM
Styrene	100-42-5	-	< 1	-	UM
Bromoform	75-25-2	-	< 1	-	UM
iso-Propylbenzene	98-82-8	-	< 1	-	UM
1,1,2,2-Tetrachloroethane	79-34-5 **	-	< 1	-	N
Propylbenzene	103-65-1	-	< 1	-	UM
Bromobenzene	108-86-1	-	< 1	-	UM
1,2,3-Trichloropropane	96-18-4	-	< 1	-	UM
2-Chlorotoluene	95-49-8	-	< 1	-	UM
1,3,5-Trimethylbenzene	108-67-8	-	< 1	-	UM
4-Chlorotoluene	106-43-4	-	< 1	-	UM
tert-Butylbenzene	98-06-6	-	< 1	-	UM
1,2,4-Trimethylbenzene	95-63-6	-	< 1	-	UM
sec-Butylbenzene	135-98-8	-	< 1	-	UM
p-Isopropyltoluene	99-87-6	-	< 1	-	UM
1,3-Dichlorobenzene	541-73-1	-	< 1	-	UM
1,4-Dichlorobenzene	106-46-7	-	< 1	-	UM
n-Butylbenzene	104-51-8 *	-	< 1	-	N
1,2-Dichlorobenzene	95-50-1	-	< 1	-	UM
1,2-Dibromo-3-chloropropane	96-12-8	-	< 1	-	UM
1,2,4-Trichlorobenzene	120-82-1 *	-	< 4	-	N
Hexachlorobutadiene	87-68-3 **	-	< 3	-	N
Naphthalene	91-20-3	-	< 6	-	UM
1,2,3-Trichlorobenzene	87-61-6	-	< 4	-	UM

Concentrations are reported on a dry weight basis
Compounds marked ** are not UKAS or Mcerts accredited
"M" denotes that % fit has been manually interpreted
This analysis was conducted on an 'As Received' basis.

Internal standards	R.T.	Area %	Surrogates	% Rec
Pentafluorobenzene	4.04	91	Dibromofluoromethane	97
1,4-Difluorobenzene	4.39	84	Toluene-d8	93
Chlorobenzene-d5	5.50	59		
Bromofluorobenzene	5.89	43		
1,4-Dichlorobenzene-d4	6.29	30		
Naphthalene-d8	7.13	13		

Where individual results are flagged see report notes for status.
Results corrected to dry weight at 105°C where appropriate, in accordance with the MCERTS standard.

TICs by HSA-GCMS

Accredited?: No

Customer and Site Details:	Ramboll Environ: Zeon Chemicals Polyblock		**Date Booked in:**	16-May-16
Sample Details:	WS27 0.70		**Date Analysed:**	18-May-16
LIMS ID Number:	CL1616366		**Matrix:**	Soil
Job Number:	S16_3927		**Ext Method:**	Headspace
Directory/Quant file:	517VOC.MS19\	Initial Calibration	**Dilution:**	0.97
Operator:	0		**Position:**	7

Tentatively Identified Compounds	CAS No	R.T. (min.)	Concentration µg/kg	% Fit	Accr. code
None Detected			<7		N

The compounds listed above have been tentatively identified by a computer based library search.
Compounds identified in the sample are not reported if they also occur in the method blank.
The % fit is an indication of the reliability of the compound assignment.
Due to the similarity between mass spectra of some isomeric compounds, assignments may not be correct.
Other compounds may also be present but identification was not possible.
Concentrations are semi-quantitative, assume a response factor of 1 and use the nearest internal standard.

Compounds marked ** are not UKAS or Mcerts accredited
"M" denotes that % fit has been manually interpreted

Where individual results are flagged see report notes for status.
Results corrected to dry weight at 105°C where appropriate, in accordance with the MCERTS standard.

TICs by HSA-GCMS

Accredited?: No

Customer and Site Details:	Ramboll Environ: Zeon Chemicals Polyblock		**Date Booked in:**	16-May-16
Sample Details:	WS24 0.40		**Date Analysed:**	18-May-16
LIMS ID Number:	CL1616367		**Matrix:**	Soil
Job Number:	S16_3927		**Ext Method:**	Headspace
Directory/Quant file:	517VOC.MS19\	Initial Calibration	**Dilution:**	1
Operator:	0		**Position:**	8

Tentatively Identified Compounds	CAS No	R.T. (min.)	Concentration µg/kg	% Fit	Accr. code
1-Dodecene	000112-41-4	7.24	370	53	N

The compounds listed above have been tentatively identified by a computer based library search.
Compounds identified in the sample are not reported if they also occur in the method blank.
The % fit is an indication of the reliability of the compound assignment.
Due to the similarity between mass spectra of some isomeric compounds, assignments may not be correct.
Other compounds may also be present but identification was not possible.
Concentrations are semi-quantitative, assume a response factor of 1 and use the nearest internal standard.

Compounds marked ** are not UKAS or Mcerts accredited
"M" denotes that % fit has been manually interpreted

Where individual results are flagged see report notes for status.
Results corrected to dry weight at 105°C where appropriate, in accordance with the MCERTS standard.

TICs by HSA-GCMS

Accredited?: No

Customer and Site Details:	Ramboll Environ: Zeon Chemicals Polyblock		**Date Booked in:**	16-May-16
Sample Details:	WS24 1.00		**Date Analysed:**	18-May-16
LIMS ID Number:	CL1616368		**Matrix:**	Soil
Job Number:	S16_3927		**Ext Method:**	Headspace
Directory/Quant file:	517VOC.MS19\	Initial Calibration	**Dilution:**	1.03
Operator:	0		**Position:**	9

Tentatively Identified Compounds	CAS No	R.T. (min.)	Concentration µg/kg	% Fit	Accr. code
None Detected			<6		N

The compounds listed above have been tentatively identified by a computer based library search.
Compounds identified in the sample are not reported if they also occur in the method blank.
The % fit is an indication of the reliability of the compound assignment.
Due to the similarity between mass spectra of some isomeric compounds, assignments may not be correct.
Other compounds may also be present but identification was not possible.
Concentrations are semi-quantitative, assume a response factor of 1 and use the nearest internal standard.

Compounds marked ** are not UKAS or Mcerts accredited
"M" denotes that % fit has been manually interpreted

Where individual results are flagged see report notes for status.
Results corrected to dry weight at 105°C where appropriate, in accordance with the MCERTS standard.

ASBESTOS ANALYSIS RESULTS - SOIL ANALYSIS

ESG Asbestos Limited Certificate of Analysis for Asbestos in Soils, Sediments and Aggregates

1089

Detection limit of Method SCI-ASB-020 is 0.001%

Sampling has been carried out by a third party

Client:	ESG Environmental Chemistry	**Page 1 of 1**	
Address:	Etwall House, Bretby Business Park, Ashby Road, Burton upon Trent	**Report No:**	**ANO-0488-12501**
For the attention of:	Ramboll Environ	**Report Date:**	**17/05/2016**
Site Address:	Zeon Chemicals Polyblock	**Project Number:**	**S163927**

Sample Number	Sample Date	Sample Location & Matrix	Test Date	Total Sample Dry Weight (g)	Weight of <2mm Fraction (g)	Asbestos(g) in >8mm+>2mm	Asbestos(g) in <2mm	% Asbestos by weight of Total Dried Sample	Asbestos Fibre Types Identified
CL/1616366	10/05/16	WS27 0.70	17/05/2016					Screen Only	NAIIS
CL/1616367	11/05/16	WS24 0.40	17/05/2016					Screen & ID	Amosite(Free Fibres)

Keys

NAACR = Not Analysed at Clients Request

NAIIS = No Asbestos Identified in Sample (Screens Only)

*** visible to naked eye**

NADIS = No Asbestos Detected in Sample (ID & Quant Only)

Name:	Laura Atkins	Authorised Signatory:
Position:	Lab Analyst	

The sample analysis for the above results was carried out using the procedures detailed in ESG Asbestos Limited in house method (SCI-ASB-020) based on HSE document MDHS 90 - Asbestos Contaminated Land - Draft 5 - November 1997 (withdrawn). Fibre identification was carried out using ESG Asbestos Limited in house method of transmitted/polarised light microscopy and centre stop dispersion staining (SCI-ASB-007), based on HSE's HSG 248. The analysis of fine fraction for asbestos content only includes fibres and does not discriminate non-asbestos fibres. All fibres are assumed, unless specified, to be amphiboles. All tests were carried out at ESG Asbestos Laboratory, Ashbourne House, Bretby Business Park, Ashby Road, Burton-upon-Trent, Staffordshire. DE15 0XD, UKAS Laboratory Number 1089.

Where individual results are flagged see report notes for status.

Analytical and Deviating Sample Overview

Customer **Ramboll Environ**
Site **Zeon Chemicals Polyblock**
Report No **S163927M**

Consignment No S55898
Date Logged 16-May-2016

Report Due 20-May-2016

ID Number	Description	MethodID	CustServ	GROHSA	ICPBOR	ICPMSS									ICPSOIL	ICPWSS	MCertS	PAHMSUS	PHSOIL	SFAPI		Sub002a	SVOCMSUS	TMSS	TPHUSSI	VOCHSAS	WSLM59
		Sampled	REPORT A	GRO (AA) by HSA GC-FID	Boron (H20 Soluble)	Arsenic (MS)	Cadmium (MS)	Chromium (MS)	Copper (MS)	Lead (MS)	Mercury (MS)	Nickel (MS)	Selenium (MS)	Vanadium (MS)	Zinc (MS)	Beryllium.	SO4-- (H2O sol) mg/l	MCertS Analysis	PAH (17) by GCMS	pH units (AR)	Cyanide(Total) (AR)	Phenol Index.(AR)	^Asbestos Screen	SVOC + TICs by GCMS (AR)	Tot.Moisture @ 105C	TPH by GCFID (AR/Si)	VOC + TICs HSA-GCMS	Total Organic Carbon
				✓	✓	✓	✓	✓	✓	✓	✓	✓	✓		✓	✓	✓		✓	✓	✓	✓	✓	✓	✓	✓	✓	
CL/1616366	WS27 0.70	10/05/16																										
CL/1616367	WS24 0.40	11/05/16																										
CL/1616368	WS24 1.00	11/05/16																										

Note: For analysis where the scheduled turnaround is greater than the holding time we will do our utmost to prioritise these samples. However, it is possible that samples could become deviant whilst being processed in the laboratory.

In this instance please contact the laboratory immediately should you wish to discuss how you would like us to proceed. If you do not respond within 24 hours, we will proceed as originally requested.

Deviating Sample Key

A	The sample was received in an inappropriate container for this analysis
B	The sample was received without the correct preservation for this analysis
C	Headspace present in the sample container
D	The sampling date was not supplied so holding time may be compromised - applicable to all analysis
E	Sample processing did not commence within the appropriate holding time
F	Sample processing did not commence within the appropriate handling time

Requested Analysis Key

	Analysis Required
	Analysis dependant upon trigger result - **Note: due date may be affected if triggered**
	No analysis scheduled
^	Analysis Subcontracted - **Note: due date may vary**

Where individual results are flagged see report notes for status.
The integrity of data for samples/analysis that have been categorised as Deviating may be compromised. Data may not be representative of the sample at the time of sampling.

Analytical and Deviating Sample Overview

Customer Ramboll Environ
Site Zeon Chemicals Polyblock
Report No S163927M

Consignment No S55898
Date Logged 16-May-2016

Report Due 20-May-2016

ID Number	Description	MethodID	WSLM59
		Sampled	Total Organic Carbon
CL/1616366	WS27 0.70	10/05/16	
CL/1616367	WS24 0.40	11/05/16	
CL/1616368	WS24 1.00	11/05/16	

Note: For analysis where the scheduled turnaround is greater than the holding time we will do our utmost to prioritise these samples. However, it is possible that samples could become deviant whilst being processed in the laboratory.

In this instance please contact the laboratory immediately should you wish to discuss how you would like us to proceed. If you do not respond within 24 hours, we will proceed as originally requested.

Deviating Sample Key	
A	The sample was received in an inappropriate container for this analysis
B	The sample was received without the correct preservation for this analysis
C	Headspace present in the sample container
D	The sampling date was not supplied so holding time may be compromised - applicable to all analysis
E	Sample processing did not commence within the appropriate holding time
F	Sample processing did not commence within the appropriate handling time

Requested Analysis Key	
	Analysis Required
	Analysis dependant upon trigger result - **Note: due date may be affected if triggered**
	No analysis scheduled
^	Analysis Subcontracted - **Note: due date may vary**

Where individual results are flagged see report notes for status.
The integrity of data for samples/analysis that have been categorised as Deviating may be compromised. Data may not be representative of the sample at the time of sampling.

Report Number : EFS/163927

Additional Report Notes

Method Code	Sample ID	The following information should be taken into consideration when using the data contained within this report
TPHUSSI	CL1616366 CL1616367 CL1616368	The Primary process control result associated with this Test has not wholly met the requirements of the Laboratory Quality Management System (QMS). The Laboratory believes that the validity of the data has not been affected but in line with our QMS policy we have removed accreditation from the affected analytes C8-10 from the aliphatic fraction . These circumstances should be taken into consideration when utilising the data.

Method Descriptions

Matrix	MethodID	Analysis Basis	Method Description
Soil	GROHSA	As Received	Determination of Total Gasoline Range Organics Hydrocarbons (GRO) by Headspace GCFID
Soil	ICPBOR	Oven Dried @ < 35°C	Determination of Boron in soil samples by hot water extraction followed by ICPOES detection
Soil	ICPMSS	Oven Dried @ < 35°C	Determination of Metals in soil samples by aqua regia digestion followed by ICPMS
Soil	ICPSOIL	Oven Dried @ < 35°C	Determination of Metals in soil samples by aqua regia digestion followed by ICPOES detection
Soil	ICPWSS	Oven Dried @ < 35°C	Determination of Water Soluble Sulphate in soil samples by water extraction followed by ICPOES detection
Soil	PAHMSUS	As Received	Determination of Polycyclic Aromatic Hydrocarbons (PAH) by hexane/acetone extraction followed by GCMS detection
Soil	PHSOIL	As Received	Determination of pH of 2.5:1 deionised water to soil extracts using pH probe.
Soil	SFAPI	As Received	Segmented flow analysis with colorimetric detection
Soil	SubCon*	*	Contact Laboratory for details of the methodology used by the sub-contractor.
Soil	SVOCMSUS	As Received	Determination of Semi Volatile Organic Compounds in soil samples by Dichloromethane/Acetone extraction followed by GCMS detection
Soil	TMSS	As Received	Determination of the Total Moisture content at 105ºC by loss on oven drying gravimetric analysis (% based upon wet weight)
Soil	TPHUSSI	As Received	Determination of hexane/acetone extractable Hydrocarbons in soil with GCFID detection including quantitation of Aromatic and Aliphatic fractions.
Soil	VOCHSAS	As Received	Determination of Volatile Organic Compounds (VOC) by Headspace GCMS
Soil	WSLM59	Oven Dried @ < 35°C	Determination of Organic Carbon in soil using sulphurous Acid digestion followed by high temperature combustion and IR detection

Report Notes

Generic Notes

Soil/Solid Analysis

Unless stated otherwise,
- Results expressed as mg/kg have been calculated on the basis indicated in the Method Description table.
  All results on MCERTS reports are reported on a 105ºC dry weight basis with the exception of pH and conductivity.
- Sulphate analysis not conducted in accordance with BS1377
- Water Soluble Sulphate is on a 2:1 water:soil extract

Waters Analysis

Unless stated otherwise results are expressed as mg/l

Nil: Where "Nil" has been entered against Total Alkalinity or Total Acidity this indicates that a measurement was not required due to the inherent pH of the sample.

Oil analysis specific

Unless stated otherwise,
- Results are expressed as mg/kg
- SG is expressed as g/cm^3@ 15^{o}C

Gas (Tedlar bag) Analysis

Unless stated otherwise, results are expressed as ug/l

Asbestos Analysis

CH Denotes Chrysotile **TR** Denotes Tremolite
CR Denotes Crocidolite **AC** Denotes Actinolite
AM Denotes Amosite **AN** Denotes Anthophylite
NAIIS No Asbestos Identified in Sample
NADIS No Asbestos Detected In Sample

Symbol Reference

^ Sub-contracted analysis.
$$ Unable to analyse due to the nature of the sample
¶ Samples submitted for this analyte were not preserved on site in accordance with laboratory protocols. This may have resulted in deterioration of the sample(s) during transit to the laboratory. Consequently the reported data may not represent the concentration of the target analyte present in the sample at the time of sampling
¥ Results for guidance only due to possible interference
& Blank corrected result
I.S Insufficient sample to complete requested analysis
I.S(g) Insufficient sample to re-analyse, results for guidance only
Intf Unable to analyse due to interferences
N.D Not determined **N.Det** Not detected
N.F No Flow
NS Information Not Supplied
Req Analysis requested, see attached sheets for results
Þ Raised detection limit due to nature of the sample
***** All accreditation has been removed by the laboratory for this result
‡ MCERTS accreditation has been removed for this result
§ accreditation has been removed for this result as it is a non-accredited matrix

Note: The Laboratory may only claim that data is accredited when all of the requirements of our Quality System have been met. Where these requirements have not been met the laboratory may elect to include the data in its final report and remove the accreditation from individual data items if it believes that the validity of the data has not been affected. If further details are required of the circumstances which have led to the removal of accreditation then please do not hesitate to contact the laboratory.

Sample Descriptions

Client : Ramboll Environ

Site : Zeon Chemicals Polyblock

Report Number : S16_3927

Note: major constituent in upper case

Lab ID Number	Client ID	Description
CL/1616366	WS27 0.70	Brown Stone CLAY
CL/1616367	WS24 0.40	Brown Stone CLAY
CL/1616368	WS24 1.00	Brown Stone SILT

Our Ref: EFS/163958M (Ver. 2)
Your Ref: UK15-21370

June 14, 2016

Environmental Chemistry
ESG
Bretby Business Park
Ashby Road
Burton-on-Trent
Staffordshire
DE15 0YZ

Telephone: 01283 554400
Facsimile: 01283 554422

Lucy Cleverley
Ramboll Environ
8 Village Way
Cardiff
CF15 2NE

For the attention of Lucy Cleverley

Dear Lucy Cleverley

Sample Analysis - Zeon Chemicals ESA

Samples from the above site have been analysed in accordance with the schedule supplied.
The sample details and the results of analyses for these samples are given in the appended report.

An invoice for this work will follow under a separate cover.

Where appropriate the samples will be kept until 27/06/16 when they will be discarded. Please call 01283 554547 for an extension of this date.
Please be aware that our policy for the retention of paper based laboratory records and analysis reports is 6 years.

The work was carried out in accordance with Environmental Scientifics Group Ltd (Laboratory and Analytical) Standard Terms and Conditions of Contract.

If I can be of any further assistance please do not hesitate to contact me.

Yours sincerely

for ESG

JMColbourne

J Colbourne
Project Co-ordinator
01283 554547

Environmental Chemistry, ESG, P.O. Box 100, Burton-upon-trent, DE15 0XD Tel: 01283 554400 Fax: 01283 554422
Environmental Scientifics Group Limited.
Registered No: 2880501

TEST REPORT

1252

Report No. EFS/163958M (Ver. 2)

Ramboll Environ
8 Village Way
Cardiff
CF15 2NE

Site: Zeon Chemicals ESA

The 10 samples described in this report were registered for analysis by ESG on 16-May-2016. This report supersedes any versions previously issued by the laboratory.
The analysis was completed by: 14-Jun-2016

Tests where the accreditation is set to N or No, and any individual data items marked with a * are not UKAS or MCERTS accredited. Any opinions or interpretations expressed herein are outside the scope of any UKAS accreditation held by ESG.

The following tables are contained in this report:

On behalf of
ESG :
Declan Burns

Managing Director
Multi-Sector Services

Date of Issue: 14-Jun-2016

Accreditation Codes: **N** (Not Accredited), **U** (UKAS), **UM** (UKAS & MCERTS)
Tests marked '^' have been subcontracted to another laboratory.
(NVM) - denotes the sample matrix is dissimilar to matrices upon which the MCERTS validation was based, and is therefore not accredited for MCERTS.
All results are reported on a dry weight basis at 105^{o}C unless otherwise stated. (except QC samples)
ESG accepts no responsibility for any sampling not carried out by our personnel.

Units :			mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
Method Codes :			AMMAR	GROHSA	ICPBOR	ICPMSS	ICPMSS	ICPMSS	ICPMSS	ICPMSS	ICPMSS	ICPMSS	ICPMSS	ICPMSS	ICPSOIL	ICPSOIL	ICPSOIL	ICPWSS
Method Reporting Limits :			0.5	0.2	0.5	0.3	0.2	1.2	1.6	0.7	0.5	2	0.5	16	1	0.1	36	10
Accreditation Code:			UM		UM	UM	UM	UM	UM	UM	UM	UM	UM	UM	UM	UM	UM	UM
LAB ID Number CL/	**Client Sample Description**	**Sample Date**	**Exchange.Ammonium AR**	**GRO (AA) by HSA GC-FID**	**Boron (H20 Soluble)**	**Arsenic (MS)**	**Cadmium (MS)**	**Chromium (MS)**	**Copper (MS)**	**Lead (MS)**	**Mercury (MS)**	**Nickel (MS)**	**Selenium (MS)**	**Zinc (MS)**	**Barium.**	**Beryllium.**	**Iron**	**SO4-- (H2O sol) mg/l**
1616445	WS6 1.0	12-May-16		Req	1.9	6.6	0.41	23.2	13.4	40.8	<0.5	17.6	<0.5	93.5		217		70
1616446	WS6 2.0	12-May-16	57.0	Req	1.4	7.2	0.68	23	14.5	23.1	<0.5	15.8	<0.5	122.0		0.514		111
1616447	WS10 0.2	12-May-16	0.8	Req	2	15.0	1.2	42.7	33	50.8	<0.5	34	0.9	202.8	209	1.42	36100	33
1616448	WS7 0.3	13-May-16		Req	<0.5	16.6	0.40	12.9	73.6	31.0	1.52	45	1	58.6		1.75		47
1616449	WS7 0.8	13-May-16		Req	2	13.6	0.29	45.3	26.9	33.3	<0.5	37.9	<0.5	123.8		1.51		<20
1616450	WS2 0.3	13-May-16		Req	1.2	6.0	0.34	14.5	89.3	38.3	<0.51	43.4	0.5	268.0		1.89		37
1616451	WS2 2.0	13-May-16		Req	5.0	16	0.27	34.3	16.1	31.4	<0.5	32.2	<0.5	108.8		1.09		47
1616452	WS1 3.0	13-May-16	1.5	Req	5.9	15.1	0.23	47.6	16.8	29.1	<0.5	40.5	<0.5	128.4		1.52		20
1616453	WS1 4.0	13-May-16		Req	3.8	12.6	0.21	26.6	8.4	17.7	<0.5	23.7	<0.5	76.2		0.833		101
1616454	WS9 0.3	13-May-16		Req	4.8	13.0	2.07	27.6	25	329.9	<0.52	22.8	<0.5	710		0.808		115

ESG

Bretby Business Park, Ashby Road

Burton-on-Trent, Staffordshire, DE15 0YZ

Tel +44 (0) 1283 554400

Fax +44 (0) 1283 554422

Client Name **Ramboll Environ**

Contact Lucy Cleverley

Zeon Chemicals ESA

Sample Analysis

Date Printed	**14-Jun-2016**
Report Number	**EFS/163958M**
Table Number	**1**

Where individual results are flagged see report notes for status.
Results corrected to dry weight at 105°C where appropriate, in accordance with the MCERTS standard.

		Units :	pH Units	mg/kg	mg/kg		mg/kg	%	mg/kg	µg/kg	mg/kg	mg/kg	mg/kg	µg/kg	% M/M	mg/kg	mg/kg	
		Method Codes :	PHSOIL	SFAPI	SFAPI	Sub002a	SVOCMSUS	TMSS	TPHUSSI	VOCHSAS	ALCHSAFID	Forms	ICPMSS	PCBUSECDAR	WSLM59	PAHMSUS	PHEHPLC	
		Method Reporting Limits :		0.5	0.5			0.2	20		40	0.4	0.6		0.04			
		Accreditation Code:	UM	UM	U	U		U				N	N		N		N	
LAB ID Number CL/	**Client Sample Description**	**Sample Date**	**pH units (AR)**	**Cyanide(Total) (AR)**	**Phenol Index.(AR)**	**^Asbestos Screen**	**SVOC + TICs by GCMS (AR)**	**Tot.Moisture @ 105C**	**TPH by GCFID (AR/Si)**	**VOC + TICs HSA-GCMS**	**Alcohols by HSA-FID o**	**Formaldehyde.**	**Vanadium (MS)**	**PCB-7 Congeners Analysis**	**Total Organic Carbon**	**PAH (17) by GCMS**	**Catechol**	
1616445	WS6 1.0	**12-May-16**	7.8	<0.6	<0.6		Req	17.8	Req	Req	Req		30.4	Req	1.22	Req		
1616446	WS6 2.0	**12-May-16**	7.8	<0.6	<0.6		Req	21.1	Req	Req	Req		23.7			Req		
1616447	WS10 0.2	**12-May-16**	7.9	<0.6	<0.6		Req	21.6	Req	Req	Req	<6	50.4		2.39	Req	<0.4	
1616448	WS7 0.3	**13-May-16**	7.9	<0.6	<0.6	NAIIS	Req	21.1	Req	Req			30.4			Req		
1616449	WS7 0.8	**13-May-16**	8.0	<0.6	<0.6			18.1	Req	Req			49.8			Req		
1616450	WS2 0.3	**13-May-16**	8.0	<0.6	<0.6	NAIIS		20.2	Req	Req			25.5			Req		
1616451	WS2 2.0	**13-May-16**	8.0	<0.6	<0.6		Req	22.2	Req	Req			44.7			Req		
1616452	WS1 3.0	**13-May-16**		<0.6	<0.6		Req	20.0	Req	Req			56.7		0.93	Req		
1616453	WS1 4.0	**13-May-16**	8.8	<0.7	<0.7		Req	27.8	Req	Req			30.9			Req		
1616454	WS9 0.3	**13-May-16**	7.9	<0.6	<0.6	AM	Req	18.1	Req	Req			31.8		3.39	Req		

ESG

Bretby Business Park, Ashby Road

Burton-on-Trent, Staffordshire, DE15 0YZ

Tel +44 (0) 1283 554400

Fax +44 (0) 1283 554422

Client Name **Ramboll Environ**

Contact Lucy Cleverley

Zeon Chemicals ESA

Sample Analysis

Date Printed	**14-Jun-2016**
Report Number	**EFS/163958M**
Table Number	**1**

Where individual results are flagged see report notes for status.
Results corrected to dry weight at 105°C where appropriate, in accordance with the MCERTS standard.

Alcohols by Headspace GC-FID

Customer and Site Details: Ramboll Environ: Zeon Chemicals ESA
Job Number: S16_3958
Accreditation Code: N

Matrix: SOIL

Date Booked in: 16-May-16
Date extracted: 16-May-16
Date Analysed: 17-May-16

This sample data is not accredited.

		Concentration, (mg/kg) - as dry weight.							
Sample ID	**Client ID**	**Methanol**	**Ethanol**	**iso-Propanol**	**tert-Butanol**	**1-Propanol**	**sec-Butanol**	**iso-Butanol**	**n-Butanol**
CL1616445	WS6 1.0	<49	<49	<49	<49	<49	<49	<49	<49
CL1616446	WS6 2.0	<51	<51	<51	<51	<51	<51	<51	<51
CL1616447	WS10 0.2	<51	<51	<51	<51	<51	<51	<51	<51

Where individual results are flagged see report notes for status.
Results corrected to dry weight at 105°C where appropriate, in accordance with the MCERTS standard.

Polycyclic Aromatic Hydrocarbons
GC/MS (SIM)

Customer and Site Details:	Ramboll Environ: Zeon Chemicals ESA		
Sample Details:	WS6 1.0	**Job Number:**	S16_3958M
LIMS ID Number:	CL1616445	**Date Booked in:**	16-May-16
QC Batch Number:	160592	**Date Extracted:**	18-May-16
Quantitation File:	Initial Calibration	**Date Analysed:**	19-May-16
Directory:	1916PAHMS14\	**Matrix:**	Soil
Dilution:	1.0	**Ext Method:**	Ultrasonic

Accredited?: Yes

Target Compounds	CAS #	R.T. (min)	Concentration mg/kg	% Fit	Accr. code
Naphthalene	91-20-3	-	< 0.10	-	**UM**
Acenaphthylene	208-96-8	-	< 0.10	-	U
Acenaphthene	83-32-9	3.83	0.11	81	UM
Fluorene	86-73-7	4.15	0.28	79	UM
Phenanthrene	85-01-8	4.85	0.90	91	UM
Anthracene	120-12-7	-	< 0.10	-	U
Fluoranthene	206-44-0	6.01	0.11	85	UM
Pyrene	129-00-0	6.26	0.11	80	UM
Benzo[a]anthracene	56-55-3	-	< 0.10	-	UM
Chrysene	218-01-9	-	< 0.10	-	UM
Benzo[b]fluoranthene	205-99-2	-	< 0.10	-	UM
Benzo[k]fluoranthene	207-08-9	-	< 0.10	-	UM
Benzo[a]pyrene	50-32-8	-	< 0.10	-	UM
Indeno[1,2,3-cd]pyrene	193-39-5	-	< 0.10	-	UM
Dibenzo[a,h]anthracene	53-70-3	-	< 0.10	-	UM
Benzo[g,h,i]perylene	191-24-2	-	< 0.10	-	UM
Coronene	191-07-1 *	-	< 0.10	-	N
Total (USEPA16) PAHs	-	-	< 2.58	-	N

* Denotes compound is not UKAS accredited

"M" denotes that % fit has been manually interpreted

Internal Standards	% Area
1,4-Dichlorobenzene-d4	NA
Naphthalene-d8	95
Acenaphthene-d10	98
Phenanthrene-d10	96
Chrysene-d12	88
Perylene-d12	84

Surrogates	% Rec
Nitrobenzene-d5	NA
2-Fluorobiphenyl	87
Terphenyl-d14	67

Concentrations are reported on a dry weight basis.

The Total PAH result is the sum of non-rounded individual PAH results and therefore may differ to the sum of the rounded individual PAH results printed above. By convention, where any one or more result is a "less than", the total is expressed as a "less than" and includes the "less than" concentration within the total.

Polycyclic Aromatic Hydrocarbons
GC/MS (SIM)

Customer and Site Details:	Ramboll Environ: Zeon Chemicals ESA		
Sample Details:	WS6 2.0	**Job Number:**	S16_3958M
LIMS ID Number:	CL1616446	**Date Booked in:**	16-May-16
QC Batch Number:	160592	**Date Extracted:**	18-May-16
Quantitation File:	Initial Calibration	**Date Analysed:**	19-May-16
Directory:	1916PAHMS14\	**Matrix:**	Soil
Dilution:	1.0	**Ext Method:**	Ultrasonic

Accredited?: Yes

Target Compounds	CAS #	R.T. (min)	Concentration mg/kg	% Fit	Accr. code
Naphthalene	91-20-3	-	< 0.10	-	**UM**
Acenaphthylene	208-96-8	-	< 0.10	-	U
Acenaphthene	83-32-9	-	< 0.10	-	UM
Fluorene	86-73-7	4.15	0.28	84	UM
Phenanthrene	85-01-8	-	< 0.10	-	UM
Anthracene	120-12-7	-	< 0.10	-	U
Fluoranthene	206-44-0	-	< 0.10	-	UM
Pyrene	129-00-0	6.26	0.16	62	UM
Benzo[a]anthracene	56-55-3	-	< 0.10	-	UM
Chrysene	218-01-9	-	< 0.10	-	UM
Benzo[b]fluoranthene	205-99-2	-	< 0.10	-	UM
Benzo[k]fluoranthene	207-08-9	-	< 0.10	-	UM
Benzo[a]pyrene	50-32-8	-	< 0.10	-	UM
Indeno[1,2,3-cd]pyrene	193-39-5	-	< 0.10	-	UM
Dibenzo[a,h]anthracene	53-70-3	-	< 0.10	-	UM
Benzo[g,h,i]perylene	191-24-2	-	< 0.10	-	UM
Coronene	191-07-1 *	-	< 0.10	-	N
Total (USEPA16) PAHs	-	-	< 1.86	-	N

* Denotes compound is not UKAS accredited

"M" denotes that % fit has been manually interpreted

Internal Standards	% Area
1,4-Dichlorobenzene-d4	NA
Naphthalene-d8	92
Acenaphthene-d10	97
Phenanthrene-d10	94
Chrysene-d12	91
Perylene-d12	98

Surrogates	% Rec
Nitrobenzene-d5	NA
2-Fluorobiphenyl	86
Terphenyl-d14	67

Concentrations are reported on a dry weight basis.

The Total PAH result is the sum of non-rounded individual PAH results and therefore may differ to the sum of the rounded individual PAH results printed above. By convention, where any one or more result is a "less than", the total is expressed as a "less than" and includes the "less than" concentration within the total.

Polycyclic Aromatic Hydrocarbons
GC/MS (SIM)

Customer and Site Details:	Ramboll Environ: Zeon Chemicals ESA		
Sample Details:	WS10 0.2	**Job Number:**	S16_3958M
LIMS ID Number:	CL1616447	**Date Booked in:**	16-May-16
QC Batch Number:	160592	**Date Extracted:**	18-May-16
Quantitation File:	Initial Calibration	**Date Analysed:**	19-May-16
Directory:	1916PAHMS14\	**Matrix:**	Soil
Dilution:	1.0	**Ext Method:**	Ultrasonic

Accredited?: Yes

Target Compounds	CAS #	R.T. (min)	Concentration mg/kg	% Fit	Accr. code
Naphthalene	91-20-3	-	< 0.10	-	**UM**
Acenaphthylene	208-96-8	-	< 0.10	-	U
Acenaphthene	83-32-9	-	< 0.10	-	UM
Fluorene	86-73-7	-	< 0.10	-	UM
Phenanthrene	85-01-8	-	< 0.10	-	UM
Anthracene	120-12-7	-	< 0.10	-	U
Fluoranthene	206-44-0	-	< 0.10	-	UM
Pyrene	129-00-0	-	< 0.10	-	UM
Benzo[a]anthracene	56-55-3	-	< 0.10	-	UM
Chrysene	218-01-9	-	< 0.10	-	UM
Benzo[b]fluoranthene	205-99-2	-	< 0.10	-	UM
Benzo[k]fluoranthene	207-08-9	-	< 0.10	-	UM
Benzo[a]pyrene	50-32-8	-	< 0.10	-	UM
Indeno[1,2,3-cd]pyrene	193-39-5	-	< 0.10	-	UM
Dibenzo[a,h]anthracene	53-70-3	-	< 0.10	-	UM
Benzo[g,h,i]perylene	191-24-2	-	< 0.10	-	UM
Coronene	191-07-1 *	-	< 0.10	-	N
Total (USEPA16) PAHs	-	-	< 1.63	-	N

* Denotes compound is not UKAS accredited

"M" denotes that % fit has been manually interpreted

Internal Standards	% Area
1,4-Dichlorobenzene-d4	NA
Naphthalene-d8	87
Acenaphthene-d10	89
Phenanthrene-d10	86
Chrysene-d12	79
Perylene-d12	75

Surrogates	% Rec
Nitrobenzene-d5	NA
2-Fluorobiphenyl	92
Terphenyl-d14	69

Concentrations are reported on a dry weight basis.

The Total PAH result is the sum of non-rounded individual PAH results and therefore may differ to the sum of the rounded individual PAH results printed above. By convention, where any one or more result is a "less than", the total is expressed as a "less than" and includes the "less than" concentration within the total.

Polycyclic Aromatic Hydrocarbons
GC/MS (SIM)

Customer and Site Details:	Ramboll Environ: Zeon Chemicals ESA		
Sample Details:	WS7 0.3	**Job Number:**	S16_3958M
LIMS ID Number:	CL1616448	**Date Booked in:**	16-May-16
QC Batch Number:	160592	**Date Extracted:**	18-May-16
Quantitation File:	Initial Calibration	**Date Analysed:**	19-May-16
Directory:	1916PAHMS14\	**Matrix:**	Soil
Dilution:	1.0	**Ext Method:**	Ultrasonic

Accredited?: Yes

Target Compounds	CAS #	R.T. (min)	Concentration mg/kg	% Fit	Accr. code
Naphthalene	91-20-3	-	< 0.10	-	**UM**
Acenaphthylene	208-96-8	-	< 0.10	-	U
Acenaphthene	83-32-9	-	< 0.10	-	UM
Fluorene	86-73-7	-	< 0.10	-	UM
Phenanthrene	85-01-8	4.85	0.39	97	UM
Anthracene	120-12-7	-	< 0.10	-	U
Fluoranthene	206-44-0	6.01	1.17	89	UM
Pyrene	129-00-0	6.26	0.85	93	UM
Benzo[a]anthracene	56-55-3	7.82	0.84	89	UM
Chrysene	218-01-9	7.87	1.00	97	UM
Benzo[b]fluoranthene	205-99-2	9.29	1.48	97	UM
Benzo[k]fluoranthene	207-08-9	9.32	0.50	96	UM
Benzo[a]pyrene	50-32-8	9.69	0.60	94	UM
Indeno[1,2,3-cd]pyrene	193-39-5	11.03	0.61	95	UM
Dibenzo[a,h]anthracene	53-70-3	11.07	0.10	82	UM
Benzo[g,h,i]perylene	191-24-2	11.31	0.42	95	UM
Coronene	191-07-1 *	12.87	0.14	57	N
Total (USEPA16) PAHs	-	-	< 8.50	-	N

* Denotes compound is not UKAS accredited

"M" denotes that % fit has been manually interpreted

Internal Standards	% Area
1,4-Dichlorobenzene-d4	NA
Naphthalene-d8	96
Acenaphthene-d10	95
Phenanthrene-d10	91
Chrysene-d12	92
Perylene-d12	95

Surrogates	% Rec
Nitrobenzene-d5	NA
2-Fluorobiphenyl	94
Terphenyl-d14	73

Concentrations are reported on a dry weight basis.

The Total PAH result is the sum of non-rounded individual PAH results and therefore may differ to the sum of the rounded individual PAH results printed above. By convention, where any one or more result is a "less than", the total is expressed as a "less than" and includes the "less than" concentration within the total.

Polycyclic Aromatic Hydrocarbons
GC/MS (SIM)

Customer and Site Details:	Ramboll Environ: Zeon Chemicals ESA		
Sample Details:	WS7 0.8	**Job Number:**	S16_3958M
LIMS ID Number:	CL1616449	**Date Booked in:**	16-May-16
QC Batch Number:	160592	**Date Extracted:**	18-May-16
Quantitation File:	Initial Calibration	**Date Analysed:**	19-May-16
Directory:	1916PAHMS14\	**Matrix:**	Soil
Dilution:	1.0	**Ext Method:**	Ultrasonic

Accredited?: Yes

Target Compounds	CAS #	R.T. (min)	Concentration mg/kg	% Fit	Accr. code
Naphthalene	91-20-3	-	< 0.10	-	**UM**
Acenaphthylene	208-96-8	-	< 0.10	-	U
Acenaphthene	83-32-9	-	< 0.10	-	UM
Fluorene	86-73-7	-	< 0.10	-	UM
Phenanthrene	85-01-8	-	< 0.10	-	UM
Anthracene	120-12-7	-	< 0.10	-	U
Fluoranthene	206-44-0	-	< 0.10	-	UM
Pyrene	129-00-0	-	< 0.10	-	UM
Benzo[a]anthracene	56-55-3	-	< 0.10	-	UM
Chrysene	218-01-9	-	< 0.10	-	UM
Benzo[b]fluoranthene	205-99-2	-	< 0.10	-	UM
Benzo[k]fluoranthene	207-08-9	-	< 0.10	-	UM
Benzo[a]pyrene	50-32-8	-	< 0.10	-	UM
Indeno[1,2,3-cd]pyrene	193-39-5	-	< 0.10	-	UM
Dibenzo[a,h]anthracene	53-70-3	-	< 0.10	-	UM
Benzo[g,h,i]perylene	191-24-2	-	< 0.10	-	UM
Coronene	191-07-1 *	-	< 0.10	-	N
Total (USEPA16) PAHs	-	-	< 1.56	-	N

* Denotes compound is not UKAS accredited

"M" denotes that % fit has been manually interpreted

Internal Standards	% Area
1,4-Dichlorobenzene-d4	NA
Naphthalene-d8	92
Acenaphthene-d10	93
Phenanthrene-d10	89
Chrysene-d12	78
Perylene-d12	70

Surrogates	% Rec
Nitrobenzene-d5	NA
2-Fluorobiphenyl	95
Terphenyl-d14	72

Concentrations are reported on a dry weight basis.

The Total PAH result is the sum of non-rounded individual PAH results and therefore may differ to the sum of the rounded individual PAH results printed above. By convention, where any one or more result is a "less than", the total is expressed as a "less than" and includes the "less than" concentration within the total.

Polycyclic Aromatic Hydrocarbons
GC/MS (SIM)

Customer and Site Details:	Ramboll Environ: Zeon Chemicals ESA		
Sample Details:	WS2 0.3	**Job Number:**	S16_3958M
LIMS ID Number:	CL1616450	**Date Booked in:**	16-May-16
QC Batch Number:	160592	**Date Extracted:**	18-May-16
Quantitation File:	Initial Calibration	**Date Analysed:**	19-May-16
Directory:	1916PAHMS14\	**Matrix:**	Soil
Dilution:	1.0	**Ext Method:**	Ultrasonic

Accredited?: Yes

Target Compounds	CAS #	R.T. (min)	Concentration mg/kg	% Fit	Accr. code
Naphthalene	91-20-3	-	< 0.10	-	**UM**
Acenaphthylene	208-96-8	-	< 0.10	-	U
Acenaphthene	83-32-9	-	< 0.10	-	UM
Fluorene	86-73-7	-	< 0.10	-	UM
Phenanthrene	85-01-8	4.85	0.30	97	UM
Anthracene	120-12-7	-	< 0.10	-	U
Fluoranthene	206-44-0	6.01	0.36	87	UM
Pyrene	129-00-0	6.26	0.30	92	UM
Benzo[a]anthracene	56-55-3	7.82	0.19	78	UM
Chrysene	218-01-9	7.86	0.28	72	UM
Benzo[b]fluoranthene	205-99-2	9.29	0.28	62	UM
Benzo[k]fluoranthene	207-08-9	-	< 0.10	-	UM
Benzo[a]pyrene	50-32-8	9.69	0.15	98	UM
Indeno[1,2,3-cd]pyrene	193-39-5	11.03	0.11	91	UM
Dibenzo[a,h]anthracene	53-70-3	-	< 0.10	-	UM
Benzo[g,h,i]perylene	191-24-2	11.30	0.11	93	UM
Coronene	191-07-1 *	-	< 0.10	-	N
Total (USEPA16) PAHs	-	-	< 2.78	-	N

* Denotes compound is not UKAS accredited

"M" denotes that % fit has been manually interpreted

Internal Standards	% Area
1,4-Dichlorobenzene-d4	NA
Naphthalene-d8	90
Acenaphthene-d10	91
Phenanthrene-d10	88
Chrysene-d12	83
Perylene-d12	83

Surrogates	% Rec
Nitrobenzene-d5	NA
2-Fluorobiphenyl	94
Terphenyl-d14	70

Concentrations are reported on a dry weight basis.

The Total PAH result is the sum of non-rounded individual PAH results and therefore may differ to the sum of the rounded individual PAH results printed above. By convention, where any one or more result is a "less than", the total is expressed as a "less than" and includes the "less than" concentration within the total.

Polycyclic Aromatic Hydrocarbons
GC/MS (SIM)

Customer and Site Details:	Ramboll Environ: Zeon Chemicals ESA		
Sample Details:	WS2 2.0	**Job Number:**	S16_3958M
LIMS ID Number:	CL1616451	**Date Booked in:**	16-May-16
QC Batch Number:	160592	**Date Extracted:**	18-May-16
Quantitation File:	Initial Calibration	**Date Analysed:**	19-May-16
Directory:	1916PAHMS14\	**Matrix:**	Soil
Dilution:	1.0	**Ext Method:**	Ultrasonic

Accredited?: Yes

Target Compounds	CAS #	R.T. (min)	Concentration mg/kg	% Fit	Accr. code
Naphthalene	91-20-3	-	< 0.10	-	**UM**
Acenaphthylene	208-96-8	-	< 0.10	-	U
Acenaphthene	83-32-9	-	< 0.10	-	UM
Fluorene	86-73-7	-	< 0.10	-	UM
Phenanthrene	85-01-8	-	< 0.10	-	UM
Anthracene	120-12-7	-	< 0.10	-	U
Fluoranthene	206-44-0	-	< 0.10	-	UM
Pyrene	129-00-0	-	< 0.10	-	UM
Benzo[a]anthracene	56-55-3	-	< 0.10	-	UM
Chrysene	218-01-9	-	< 0.10	-	UM
Benzo[b]fluoranthene	205-99-2	-	< 0.10	-	UM
Benzo[k]fluoranthene	207-08-9	-	< 0.10	-	UM
Benzo[a]pyrene	50-32-8	-	< 0.10	-	UM
Indeno[1,2,3-cd]pyrene	193-39-5	-	< 0.10	-	UM
Dibenzo[a,h]anthracene	53-70-3	-	< 0.10	-	UM
Benzo[g,h,i]perylene	191-24-2	-	< 0.10	-	UM
Coronene	191-07-1 *	-	< 0.10	-	N
Total (USEPA16) PAHs	-	-	< 1.65	-	N

* Denotes compound is not UKAS accredited

"M" denotes that % fit has been manually interpreted

Internal Standards	% Area
1,4-Dichlorobenzene-d4	NA
Naphthalene-d8	94
Acenaphthene-d10	94
Phenanthrene-d10	90
Chrysene-d12	78
Perylene-d12	71

Surrogates	% Rec
Nitrobenzene-d5	NA
2-Fluorobiphenyl	95
Terphenyl-d14	70

Concentrations are reported on a dry weight basis.

The Total PAH result is the sum of non-rounded individual PAH results and therefore may differ to the sum of the rounded individual PAH results printed above. By convention, where any one or more result is a "less than", the total is expressed as a "less than" and includes the "less than" concentration within the total.

Polycyclic Aromatic Hydrocarbons
GC/MS (SIM)

Customer and Site Details:	Ramboll Environ: Zeon Chemicals ESA		
Sample Details:	WS1 3.0	**Job Number:**	S16_3958M
LIMS ID Number:	CL1616452	**Date Booked in:**	16-May-16
QC Batch Number:	160592	**Date Extracted:**	18-May-16
Quantitation File:	Initial Calibration	**Date Analysed:**	19-May-16
Directory:	1916PAHMS14\	**Matrix:**	Soil
Dilution:	1.0	**Ext Method:**	Ultrasonic

Accredited?: Yes

Target Compounds	CAS #	R.T. (min)	Concentration mg/kg	% Fit	Accr. code
Naphthalene	91-20-3	-	< 0.10	-	**UM**
Acenaphthylene	208-96-8	-	< 0.10	-	U
Acenaphthene	83-32-9	-	< 0.10	-	UM
Fluorene	86-73-7	-	< 0.10	-	UM
Phenanthrene	85-01-8	-	< 0.10	-	UM
Anthracene	120-12-7	-	< 0.10	-	U
Fluoranthene	206-44-0	-	< 0.10	-	UM
Pyrene	129-00-0	-	< 0.10	-	UM
Benzo[a]anthracene	56-55-3	-	< 0.10	-	UM
Chrysene	218-01-9	-	< 0.10	-	UM
Benzo[b]fluoranthene	205-99-2	-	< 0.10	-	UM
Benzo[k]fluoranthene	207-08-9	-	< 0.10	-	UM
Benzo[a]pyrene	50-32-8	-	< 0.10	-	UM
Indeno[1,2,3-cd]pyrene	193-39-5	-	< 0.10	-	UM
Dibenzo[a,h]anthracene	53-70-3	-	< 0.10	-	UM
Benzo[g,h,i]perylene	191-24-2	-	< 0.10	-	UM
Coronene	191-07-1 *	-	< 0.10	-	N
Total (USEPA16) PAHs	-	-	< 1.60	-	N

* Denotes compound is not UKAS accredited

"M" denotes that % fit has been manually interpreted

Internal Standards	% Area
1,4-Dichlorobenzene-d4	NA
Naphthalene-d8	95
Acenaphthene-d10	94
Phenanthrene-d10	91
Chrysene-d12	84
Perylene-d12	78

Surrogates	% Rec
Nitrobenzene-d5	NA
2-Fluorobiphenyl	94
Terphenyl-d14	71

Concentrations are reported on a dry weight basis.

The Total PAH result is the sum of non-rounded individual PAH results and therefore may differ to the sum of the rounded individual PAH results printed above. By convention, where any one or more result is a "less than", the total is expressed as a "less than" and includes the "less than" concentration within the total.

Polycyclic Aromatic Hydrocarbons
GC/MS (SIM)

Customer and Site Details:	Ramboll Environ: Zeon Chemicals ESA		
Sample Details:	WS1 4.0	**Job Number:**	S16_3958M
LIMS ID Number:	CL1616453	**Date Booked in:**	16-May-16
QC Batch Number:	160592	**Date Extracted:**	18-May-16
Quantitation File:	Initial Calibration	**Date Analysed:**	19-May-16
Directory:	1916PAHMS14\	**Matrix:**	Soil
Dilution:	1.0	**Ext Method:**	Ultrasonic

Accredited?: Yes

Target Compounds	CAS #	R.T. (min)	Concentration mg/kg	% Fit	Accr. code
Naphthalene	91-20-3	-	< 0.11	-	**UM**
Acenaphthylene	208-96-8	-	< 0.11	-	U
Acenaphthene	83-32-9	-	< 0.11	-	UM
Fluorene	86-73-7	-	< 0.11	-	UM
Phenanthrene	85-01-8	-	< 0.11	-	UM
Anthracene	120-12-7	-	< 0.11	-	U
Fluoranthene	206-44-0	-	< 0.11	-	UM
Pyrene	129-00-0	-	< 0.11	-	UM
Benzo[a]anthracene	56-55-3	-	< 0.11	-	UM
Chrysene	218-01-9	-	< 0.11	-	UM
Benzo[b]fluoranthene	205-99-2	-	< 0.11	-	UM
Benzo[k]fluoranthene	207-08-9	-	< 0.11	-	UM
Benzo[a]pyrene	50-32-8	-	< 0.11	-	UM
Indeno[1,2,3-cd]pyrene	193-39-5	-	< 0.11	-	UM
Dibenzo[a,h]anthracene	53-70-3	-	< 0.11	-	UM
Benzo[g,h,i]perylene	191-24-2	-	< 0.11	-	UM
Coronene	191-07-1 *	-	< 0.11	-	N
Total (USEPA16) PAHs	-	-	< 1.77	-	N

* Denotes compound is not UKAS accredited

"M" denotes that % fit has been manually interpreted

Internal Standards	% Area
1,4-Dichlorobenzene-d4	NA
Naphthalene-d8	97
Acenaphthene-d10	96
Phenanthrene-d10	93
Chrysene-d12	80
Perylene-d12	71

Surrogates	% Rec
Nitrobenzene-d5	NA
2-Fluorobiphenyl	94
Terphenyl-d14	70

Concentrations are reported on a dry weight basis.

The Total PAH result is the sum of non-rounded individual PAH results and therefore may differ to the sum of the rounded individual PAH results printed above. By convention, where any one or more result is a "less than", the total is expressed as a "less than" and includes the "less than" concentration within the total.

Polycyclic Aromatic Hydrocarbons
GC/MS (SIM)

Customer and Site Details:	Ramboll Environ: Zeon Chemicals ESA		
Sample Details:	WS9 0.3	**Job Number:**	S16_3958M
LIMS ID Number:	CL1616454	**Date Booked in:**	16-May-16
QC Batch Number:	160592	**Date Extracted:**	18-May-16
Quantitation File:	Initial Calibration	**Date Analysed:**	19-May-16
Directory:	1916PAHMS14\	**Matrix:**	Soil
Dilution:	1.0	**Ext Method:**	Ultrasonic

Accredited?: Yes

Target Compounds	CAS #	R.T. (min)	Concentration mg/kg	% Fit	Accr. code
Naphthalene	91-20-3	2.69	0.18	96	**UM**
Acenaphthylene	208-96-8	-	< 0.10	-	U
Acenaphthene	83-32-9	3.84	0.10	76	UM
Fluorene	86-73-7	-	< 0.10	-	UM
Phenanthrene	85-01-8	4.85	0.59	98	UM
Anthracene	120-12-7	4.89	0.27	96	U
Fluoranthene	206-44-0	6.01	1.49	95	UM
Pyrene	129-00-0	6.26	1.32	93	UM
Benzo[a]anthracene	56-55-3	7.82	1.00	95	UM
Chrysene	218-01-9	7.87	1.11	98	UM
Benzo[b]fluoranthene	205-99-2	9.28	1.29	97	UM
Benzo[k]fluoranthene	207-08-9	9.32	0.48	96	UM
Benzo[a]pyrene	50-32-8	9.69	0.87	98	UM
Indeno[1,2,3-cd]pyrene	193-39-5	11.03	0.62	93	UM
Dibenzo[a,h]anthracene	53-70-3	11.07	0.10	81	UM
Benzo[g,h,i]perylene	191-24-2	11.31	0.54	97	UM
Coronene	191-07-1 *	12.87	0.15	94	N
Total (USEPA16) PAHs	-	-	< 10.15	-	N

* Denotes compound is not UKAS accredited

"M" denotes that % fit has been manually interpreted

Internal Standards	% Area
1,4-Dichlorobenzene-d4	NA
Naphthalene-d8	92
Acenaphthene-d10	93
Phenanthrene-d10	90
Chrysene-d12	83
Perylene-d12	84

Surrogates	% Rec
Nitrobenzene-d5	NA
2-Fluorobiphenyl	93
Terphenyl-d14	69

Concentrations are reported on a dry weight basis.

The Total PAH result is the sum of non-rounded individual PAH results and therefore may differ to the sum of the rounded individual PAH results printed above. By convention, where any one or more result is a "less than", the total is expressed as a "less than" and includes the "less than" concentration within the total.

Polychlorinated Biphenyls (congeners)

Customer and Site Details:	Ramboll Environ: Zeon Chemicals ESA	**Matrix:**	SOIL
Job Number:	S16_3958M	**Date Booked in:**	16-May-16
QC Batch Number:	160589	**Date Extracted:**	18-May-16
Directory:	0519PCB.GC8	**Date Analysed:**	20-May-16
Method:	Ultrasonic		
Accreditation code:	N		

			Concentration, (µg/kg)						
	Sample ID	**Customer ID**	**PCB28**	**PCB52**	**PCB101**	**PCB118**	**PCB153**	**PCB138**	**PCB180**
*	CL1616445	WS6 1.0	<6.1	<6.1	<6.1	<6.1	<6.1	<6.1	<6.1

Where individual results are flagged see report notes for status.
Results corrected to dry weight at 105°C where appropriate, in accordance with the MCERTS standard.

Semi-Volatile Organic Compounds

Accredited?: Yes

Customer and Site Details:	Ramboll Environ: Zeon Chemicals ESA			**Matrix:**	Soil	**QC Batch Number:**	111
Sample Details:	WS6 1.0	**Date Booked in:**	16-May-16	**Ext Method:**	Ultrasonic	**Multiplier:**	0.2
LIMS ID Number:	CL1616445	**Date Extracted:**	18-May-16	**Operator:**		**Dilution Factor:**	1
Job Number:	S16_3958M	**Date Analysed:**	21-May-16	**Directory/Quant File:**	052016.GC11\	**GPC (Y/N)**	N

Target Compounds	CAS #	R.T. (min)	Concentration mg/kg	% Fit	Accr. code
Phenol	108-95-2	-	< 0.1	-	U
bis(2-Chloroethyl)ether	111-44-4	-	< 0.1	-	U
2-Chlorophenol	95-57-8	-	< 0.1	-	U
1,3-Dichlorobenzene	541-73-1	-	< 0.1	-	U
1,4-Dichlorobenzene	106-46-7	-	< 0.1	-	U
Benzyl alcohol	100-51-6	-	< 0.6	-	U
1,2-Dichlorobenzene	95-50-1	-	< 0.1	-	U
2-Methylphenol	95-48-7	-	< 0.1	-	U
bis(2-Chloroisopropyl)ether	108-60-1	-	< 0.6	-	U
Hexachloroethane	67-72-1	-	< 0.1	-	U
N-Nitroso-di-n-propylamine	621-64-7*	-	< 1.1	-	N
3- & 4-Methylphenol	108-39-4/106-44-5	-	< 0.1	-	U
Nitrobenzene	98-95-3	-	< 0.6	-	U
Isophorone	78-59-1*	-	< 0.1	-	N
2-Nitrophenol	88-75-5	-	< 0.1	-	U
2,4-Dimethylphenol	105-67-9	-	< 0.1	-	U
Benzoic Acid	65-85-0*	-	< 0.6	-	N
bis(2-Chloroethoxy)methane	111-91-1	-	< 0.1	-	U
2,4-Dichlorophenol	120-83-2	-	< 0.1	-	U
1,2,4-Trichlorobenzene	120-82-1*	-	< 0.1	-	N
Naphthalene	91-20-3	-	< 0.1	-	U
4-Chlorophenol	106-48-9	-	< 0.6	-	U
4-Chloroaniline	106-47-8*	-	< 0.6	-	N
Hexachlorobutadiene	87-68-3*	-	< 0.1	-	N
4-Chloro-3-methylphenol	59-50-7	-	< 0.1	-	U
2-Methylnaphthalene	91-57-6	4.06	0.1	100	U
1-Methylnaphthalene	90-12-0	4.12	0.2	94	U
Hexachlorocyclopentadiene	77-47-4*	-	< 0.1	-	N
2,4,6-Trichlorophenol	88-06-2	-	< 0.1	-	U
2,4,5-Trichlorophenol	95-95-4	-	< 0.1	-	U
2-Chloronaphthalene	91-58-7	-	< 0.1	-	U
Biphenyl	92-52-4	-	< 0.1	-	U
Diphenyl ether	101-84-8	-	< 0.1	-	U
2-Nitroaniline	88-74-4*	-	< 0.6	-	N
Acenaphthylene	208-96-8	-	< 0.1	-	U
Dimethylphthalate	131-11-3	-	< 0.1	-	U
2,6-Dinitrotoluene	606-20-2	-	< 0.6	-	U
Acenaphthene	83-32-9	-	< 0.1	-	U
3-Nitroaniline	99-09-2*	-	< 17.6	-	N

Target Compounds	CAS #	R.T.	Concentration mg/kg	% Fit	Accr. code
2,4-Dinitrophenol	51-28-5*	-	< 0.6	-	N
Dibenzofuran	132-64-9	-	< 0.1	-	U
4-Nitrophenol	100-02-7*	-	< 0.6	-	N
2,4-Dinitrotoluene	121-14-2	-	< 0.2	-	U
Fluorene	86-73-7	-	< 0.1	-	U
Diethylphthalate	84-66-2	-	< 0.1	-	U
4-Chlorophenyl-phenylether	7005-72-3	-	< 0.1	-	U
4,6-Dinitro-2-methylphenol	534-52-1*	-	< 0.2	-	N
4-Nitroaniline	100-01-6*	-	< 0.7	-	N
N-Nitrosodiphenylamine	86-30-6*	-	< 0.1	-	N
4-Bromophenyl-phenylether	101-55-3	-	< 0.1	-	U
Hexachlorobenzene	118-74-1	-	< 0.1	-	U
Pentachlorophenol	87-86-5*	-	< 0.6	-	N
Phenanthrene	85-01-8	5.65	0.2	79	U
Anthracene	120-12-7	-	< 0.1	-	U
Di-n-butylphthalate	84-74-2	-	< 0.1	-	U
Fluoranthene	206-44-0	-	< 0.2	-	U
Pyrene	129-00-0	-	< 0.2	-	U
Butylbenzylphthalate	85-68-7	-	< 0.2	-	U
Benzo[a]anthracene	56-55-3	-	< 0.2	-	U
Chrysene	218-01-9	-	< 0.2	-	U
3,3'-Dichlorobenzidine	91-94-1*	-	< 0.6	-	N
bis(2-Ethylhexyl)phthalate	117-81-7	-	< 0.2	-	U
Di-n-octylphthalate	117-84-0	-	< 0.2	-	U
Benzo[b]fluoranthene	205-99-2	-	< 0.2	-	U
Benzo[k]fluoranthene	207-08-9	-	< 0.2	-	U
Benzo[a]pyrene	50-32-8	-	< 0.2	-	U
Indeno[1,2,3-cd]pyrene	193-39-5	-	< 0.6	-	U
Dibenzo[a,h]anthracene	53-70-3	-	< 0.6	-	U
Benzo[g,h,i]perylene	191-24-2	-	< 0.6	-	U
Coronene	191-07-1*	-	< 0.4	-	N

Internal Standards	% Area
1,4-Dichlorobenzene-d4	89
Naphthalene-d8	87
Acenaphthene-d10	92
Phenanthrene-d10	96
Chrysene-d12	95
Perylene-d12	90

Surrogates	% Rec
2-Fluorophenol	63
Phenol-d5	79
Nitrobenzene-d5	90
2-Fluorobiphenyl	94
2,4,6-Tribromophenol	87
Terphenyl-d14	96

This analysis was conducted on an 'As Received' basis.

Concentrations are reported on a dry weight basis.

Where individual results are flagged see report notes for status.
Results corrected to dry weight at 105°C where appropriate, in accordance with the MCERTS standard.

Semi-Volatile Organic Compounds

Accredited?: Yes

Customer and Site Details:	Ramboll Environ: Zeon Chemicals ESA			**Matrix:**	Soil	**QC Batch Number:**	111
Sample Details:	WS6 2.0	**Date Booked in:**	16-May-16	**Ext Method:**	Ultrasonic	**Multiplier:**	0.2
LIMS ID Number:	CL1616446	**Date Extracted:**	18-May-16	**Operator:**		**Dilution Factor:**	1
Job Number:	S16_3958M	**Date Analysed:**	21-May-16	**Directory/Quant File:**	052016.GC11\	**GPC (Y/N)**	N

Target Compounds	CAS #	R.T. (min)	Concentration mg/kg	% Fit	Accr. code
Phenol	108-95-2	-	< 0.1	-	U
bis(2-Chloroethyl)ether	111-44-4	-	< 0.1	-	U
2-Chlorophenol	95-57-8	-	< 0.1	-	U
1,3-Dichlorobenzene	541-73-1	-	< 0.1	-	U
1,4-Dichlorobenzene	106-46-7	-	< 0.1	-	U
Benzyl alcohol	100-51-6	-	< 0.6	-	U
1,2-Dichlorobenzene	95-50-1	-	< 0.1	-	U
2-Methylphenol	95-48-7	-	< 0.1	-	U
bis(2-Chloroisopropyl)ether	108-60-1	-	< 0.6	-	U
Hexachloroethane	67-72-1	-	< 0.1	-	U
N-Nitroso-di-n-propylamine	621-64-7*	-	< 1.1	-	N
3- & 4-Methylphenol	108-39-4/106-44-5	-	< 0.1	-	U
Nitrobenzene	98-95-3	-	< 0.6	-	U
Isophorone	78-59-1*	-	< 0.1	-	N
2-Nitrophenol	88-75-5	-	< 0.1	-	U
2,4-Dimethylphenol	105-67-9	-	< 0.1	-	U
Benzoic Acid	65-85-0*	-	< 0.6	-	N
bis(2-Chloroethoxy)methane	111-91-1	-	< 0.1	-	U
2,4-Dichlorophenol	120-83-2	-	< 0.1	-	U
1,2,4-Trichlorobenzene	120-82-1*	-	< 0.1	-	N
Naphthalene	91-20-3	-	< 0.1	-	U
4-Chlorophenol	106-48-9	-	< 0.6	-	U
4-Chloroaniline	106-47-8*	-	< 0.6	-	N
Hexachlorobutadiene	87-68-3*	-	< 0.1	-	N
4-Chloro-3-methylphenol	59-50-7	-	< 0.1	-	U
2-Methylnaphthalene	91-57-6	4.07	0.1	M	U
1-Methylnaphthalene	90-12-0	4.13	0.3	M	U
Hexachlorocyclopentadiene	77-47-4*	-	< 0.1	-	N
2,4,6-Trichlorophenol	88-06-2	-	< 0.1	-	U
2,4,5-Trichlorophenol	95-95-4	-	< 0.1	-	U
2-Chloronaphthalene	91-58-7	-	< 0.1	-	U
Biphenyl	92-52-4	-	< 0.1	-	U
Diphenyl ether	101-84-8	-	< 0.1	-	U
2-Nitroaniline	88-74-4*	-	< 0.6	-	N
Acenaphthylene	208-96-8	-	< 0.1	-	U
Dimethylphthalate	131-11-3	-	< 0.1	-	U
2,6-Dinitrotoluene	606-20-2	-	< 0.6	-	U
Acenaphthene	83-32-9	-	< 0.1	-	U
3-Nitroaniline	99-09-2*	-	< 18.4	-	N

Target Compounds	CAS #	R.T.	Concentration mg/kg	% Fit	Accr. code
2,4-Dinitrophenol	51-28-5*	-	< 0.6	-	N
Dibenzofuran	132-64-9	-	< 0.1	-	U
4-Nitrophenol	100-02-7*	-	< 0.6	-	N
2,4-Dinitrotoluene	121-14-2	-	< 0.3	-	U
Fluorene	86-73-7	-	< 0.1	-	U
Diethylphthalate	84-66-2	-	< 0.1	-	U
4-Chlorophenyl-phenylether	7005-72-3	-	< 0.1	-	U
4,6-Dinitro-2-methylphenol	534-52-1*	-	< 0.3	-	N
4-Nitroaniline	100-01-6*	-	< 0.8	-	N
N-Nitrosodiphenylamine	86-30-6*	-	< 0.1	-	N
4-Bromophenyl-phenylether	101-55-3	-	< 0.1	-	U
Hexachlorobenzene	118-74-1	-	< 0.1	-	U
Pentachlorophenol	87-86-5*	-	< 0.6	-	N
Phenanthrene	85-01-8	5.67	0.4	M	U
Anthracene	120-12-7	-	< 0.1	-	U
Di-n-butylphthalate	84-74-2	-	< 0.1	-	U
Fluoranthene	206-44-0	-	< 0.3	-	U
Pyrene	129-00-0	-	< 0.3	-	U
Butylbenzylphthalate	85-68-7	-	< 0.3	-	U
Benzo[a]anthracene	56-55-3	-	< 0.3	-	U
Chrysene	218-01-9	-	< 0.3	-	U
3,3'-Dichlorobenzidine	91-94-1*	-	< 0.6	-	N
bis(2-Ethylhexyl)phthalate	117-81-7	-	< 0.3	-	U
Di-n-octylphthalate	117-84-0	-	< 0.3	-	U
Benzo[b]fluoranthene	205-99-2	-	< 0.3	-	U
Benzo[k]fluoranthene	207-08-9	-	< 0.3	-	U
Benzo[a]pyrene	50-32-8	-	< 0.3	-	U
Indeno[1,2,3-cd]pyrene	193-39-5	-	< 0.6	-	U
Dibenzo[a,h]anthracene	53-70-3	-	< 0.6	-	U
Benzo[g,h,i]perylene	191-24-2	-	< 0.6	-	U
Coronene	191-07-1*	-	< 0.4	-	N

Internal Standards	% Area
1,4-Dichlorobenzene-d4	84
Naphthalene-d8	81
Acenaphthene-d10	90
Phenanthrene-d10	94
Chrysene-d12	100
Perylene-d12	89

Surrogates	% Rec
2-Fluorophenol	82
Phenol-d5	74
Nitrobenzene-d5	97
2-Fluorobiphenyl	90
2,4,6-Tribromophenol	92
Terphenyl-d14	99

This analysis was conducted on an 'As Received' basis.

Concentrations are reported on a dry weight basis.

Where individual results are flagged see report notes for status.
Results corrected to dry weight at 105°C where appropriate, in accordance with the MCERTS standard.

Semi-Volatile Organic Compounds

Accredited?: Yes

Customer and Site Details:	Ramboll Environ: Zeon Chemicals ESA			**Matrix:**	Soil	**QC Batch Number:**	111
Sample Details:	WS10 0.2	**Date Booked in:**	16-May-16	**Ext Method:**	Ultrasonic	**Multiplier:**	0.2
LIMS ID Number:	CL1616447	**Date Extracted:**	18-May-16	**Operator:**		**Dilution Factor:**	1
Job Number:	S16_3958M	**Date Analysed:**	21-May-16	**Directory/Quant File:**	052016.GC11\	**GPC (Y/N)**	N

Target Compounds	CAS #	R.T. (min)	Concentration mg/kg	% Fit	Accr. code
Phenol	108-95-2	-	< 0.1	-	U
bis(2-Chloroethyl)ether	111-44-4	-	< 0.1	-	U
2-Chlorophenol	95-57-8	-	< 0.1	-	U
1,3-Dichlorobenzene	541-73-1	-	< 0.1	-	U
1,4-Dichlorobenzene	106-46-7	-	< 0.1	-	U
Benzyl alcohol	100-51-6	-	< 0.6	-	U
1,2-Dichlorobenzene	95-50-1	-	< 0.1	-	U
2-Methylphenol	95-48-7	-	< 0.1	-	U
bis(2-Chloroisopropyl)ether	108-60-1	-	< 0.6	-	U
Hexachloroethane	67-72-1	-	< 0.1	-	U
N-Nitroso-di-n-propylamine	621-64-7*	-	< 1.1	-	N
3- & 4-Methylphenol	108-39-4/106-44-5	-	< 0.1	-	U
Nitrobenzene	98-95-3	-	< 0.6	-	U
Isophorone	78-59-1*	-	< 0.1	-	N
2-Nitrophenol	88-75-5	-	< 0.1	-	U
2,4-Dimethylphenol	105-67-9	-	< 0.1	-	U
Benzoic Acid	65-85-0*	-	< 0.6	-	N
bis(2-Chloroethoxy)methane	111-91-1	-	< 0.1	-	U
2,4-Dichlorophenol	120-83-2	-	< 0.1	-	U
1,2,4-Trichlorobenzene	120-82-1*	-	< 0.1	-	N
Naphthalene	91-20-3	-	< 0.1	-	U
4-Chlorophenol	106-48-9	-	< 0.6	-	U
4-Chloroaniline	106-47-8*	-	< 0.6	-	N
Hexachlorobutadiene	87-68-3*	-	< 0.1	-	N
4-Chloro-3-methylphenol	59-50-7	-	< 0.1	-	U
2-Methylnaphthalene	91-57-6	-	< 0.1	-	U
1-Methylnaphthalene	90-12-0	-	< 0.1	-	U
Hexachlorocyclopentadiene	77-47-4*	-	< 0.1	-	N
2,4,6-Trichlorophenol	88-06-2	-	< 0.1	-	U
2,4,5-Trichlorophenol	95-95-4	-	< 0.1	-	U
2-Chloronaphthalene	91-58-7	-	< 0.1	-	U
Biphenyl	92-52-4	-	< 0.1	-	U
Diphenyl ether	101-84-8	-	< 0.1	-	U
2-Nitroaniline	88-74-4*	-	< 0.6	-	N
Acenaphthylene	208-96-8	-	< 0.1	-	U
Dimethylphthalate	131-11-3	-	< 0.1	-	U
2,6-Dinitrotoluene	606-20-2	-	< 0.6	-	U
Acenaphthene	83-32-9	-	< 0.1	-	U
3-Nitroaniline	99-09-2*	-	< 18.5	-	N

Target Compounds	CAS #	R.T.	Concentration mg/kg	% Fit	Accr. code
2,4-Dinitrophenol	51-28-5*	-	< 0.6	-	N
Dibenzofuran	132-64-9	-	< 0.1	-	U
4-Nitrophenol	100-02-7*	-	< 0.6	-	N
2,4-Dinitrotoluene	121-14-2	-	< 0.3	-	U
Fluorene	86-73-7	-	< 0.1	-	U
Diethylphthalate	84-66-2	-	< 0.1	-	U
4-Chlorophenyl-phenylether	7005-72-3	-	< 0.1	-	U
4,6-Dinitro-2-methylphenol	534-52-1*	-	< 0.3	-	N
4-Nitroaniline	100-01-6*	-	< 0.8	-	N
N-Nitrosodiphenylamine	86-30-6*	-	< 0.1	-	N
4-Bromophenyl-phenylether	101-55-3	-	< 0.1	-	U
Hexachlorobenzene	118-74-1	-	< 0.1	-	U
Pentachlorophenol	87-86-5*	-	< 0.6	-	N
Phenanthrene	85-01-8	-	< 0.1	-	U
Anthracene	120-12-7	-	< 0.1	-	U
Di-n-butylphthalate	84-74-2	-	< 0.1	-	U
Fluoranthene	206-44-0	-	< 0.3	-	U
Pyrene	129-00-0	-	< 0.3	-	U
Butylbenzylphthalate	85-68-7	-	< 0.3	-	U
Benzo[a]anthracene	56-55-3	-	< 0.3	-	U
Chrysene	218-01-9	-	< 0.3	-	U
3,3'-Dichlorobenzidine	91-94-1*	-	< 0.6	-	N
bis(2-Ethylhexyl)phthalate	117-81-7	-	< 0.3	-	U
Di-n-octylphthalate	117-84-0	-	< 0.3	-	U
Benzo[b]fluoranthene	205-99-2	-	< 0.3	-	U
Benzo[k]fluoranthene	207-08-9	-	< 0.3	-	U
Benzo[a]pyrene	50-32-8	-	< 0.3	-	U
Indeno[1,2,3-cd]pyrene	193-39-5	-	< 0.6	-	U
Dibenzo[a,h]anthracene	53-70-3	-	< 0.6	-	U
Benzo[g,h,i]perylene	191-24-2	-	< 0.6	-	U
Coronene	191-07-1*	-	< 0.4	-	N

Internal Standards	% Area
1,4-Dichlorobenzene-d4	79
Naphthalene-d8	70
Acenaphthene-d10	81
Phenanthrene-d10	86
Chrysene-d12	87
Perylene-d12	83

Surrogates	% Rec
2-Fluorophenol	79
Phenol-d5	62
Nitrobenzene-d5	92
2-Fluorobiphenyl	91
2,4,6-Tribromophenol	74
Terphenyl-d14	98

This analysis was conducted on an 'As Received' basis.

Concentrations are reported on a dry weight basis.

Where individual results are flagged see report notes for status.
Results corrected to dry weight at 105°C where appropriate, in accordance with the MCERTS standard.

Semi-Volatile Organic Compounds

Accredited?: Yes

Customer and Site Details:	Ramboll Environ: Zeon Chemicals ESA			**Matrix:**	Soil	**QC Batch Number:**	111
Sample Details:	WS7 0.3	**Date Booked in:**	16-May-16	**Ext Method:**	Ultrasonic	**Multiplier:**	0.2
LIMS ID Number:	CL1616448	**Date Extracted:**	18-May-16	**Operator:**		**Dilution Factor:**	1
Job Number:	S16_3958M	**Date Analysed:**	21-May-16	**Directory/Quant File:**	052016.GC11\	**GPC (Y/N)**	N

Target Compounds	CAS #	R.T. (min)	Concentration mg/kg	% Fit	Accr. code
Phenol	108-95-2	-	< 0.1	-	U
bis(2-Chloroethyl)ether	111-44-4	-	< 0.1	-	U
2-Chlorophenol	95-57-8	-	< 0.1	-	U
1,3-Dichlorobenzene	541-73-1	-	< 0.1	-	U
1,4-Dichlorobenzene	106-46-7	-	< 0.1	-	U
Benzyl alcohol	100-51-6	-	< 0.6	-	U
1,2-Dichlorobenzene	95-50-1	-	< 0.1	-	U
2-Methylphenol	95-48-7	-	< 0.1	-	U
bis(2-Chloroisopropyl)ether	108-60-1	-	< 0.6	-	U
Hexachloroethane	67-72-1	-	< 0.1	-	U
N-Nitroso-di-n-propylamine	621-64-7*	-	< 1.1	-	N
3- & 4-Methylphenol	108-39-4/106-44-5	-	< 0.1	-	U
Nitrobenzene	98-95-3	-	< 0.6	-	U
Isophorone	78-59-1*	-	< 0.1	-	N
2-Nitrophenol	88-75-5	-	< 0.1	-	U
2,4-Dimethylphenol	105-67-9	-	< 0.1	-	U
Benzoic Acid	65-85-0*	-	< 0.6	-	N
bis(2-Chloroethoxy)methane	111-91-1	-	< 0.1	-	U
2,4-Dichlorophenol	120-83-2	-	< 0.1	-	U
1,2,4-Trichlorobenzene	120-82-1*	-	< 0.1	-	N
Naphthalene	91-20-3	-	< 0.1	-	U
4-Chlorophenol	106-48-9	-	< 0.6	-	U
4-Chloroaniline	106-47-8*	-	< 0.6	-	N
Hexachlorobutadiene	87-68-3*	-	< 0.1	-	N
4-Chloro-3-methylphenol	59-50-7	-	< 0.1	-	U
2-Methylnaphthalene	91-57-6	-	< 0.1	-	U
1-Methylnaphthalene	90-12-0	-	< 0.1	-	U
Hexachlorocyclopentadiene	77-47-4*	-	< 0.1	-	N
2,4,6-Trichlorophenol	88-06-2	-	< 0.1	-	U
2,4,5-Trichlorophenol	95-95-4	-	< 0.1	-	U
2-Chloronaphthalene	91-58-7	-	< 0.1	-	U
Biphenyl	92-52-4	-	< 0.1	-	U
Diphenyl ether	101-84-8	-	< 0.1	-	U
2-Nitroaniline	88-74-4*	-	< 0.6	-	N
Acenaphthylene	208-96-8	-	< 0.1	-	U
Dimethylphthalate	131-11-3	-	< 0.1	-	U
2,6-Dinitrotoluene	606-20-2	-	< 0.6	-	U
Acenaphthene	83-32-9	-	< 0.1	-	U
3-Nitroaniline	99-09-2*	-	< 18.4	-	N

Target Compounds	CAS #	R.T.	Concentration mg/kg	% Fit	Accr. code
2,4-Dinitrophenol	51-28-5*	-	< 0.6	-	N
Dibenzofuran	132-64-9	-	< 0.1	-	U
4-Nitrophenol	100-02-7*	-	< 0.6	-	N
2,4-Dinitrotoluene	121-14-2	-	< 0.3	-	U
Fluorene	86-73-7	-	< 0.1	-	U
Diethylphthalate	84-66-2	-	< 0.1	-	U
4-Chlorophenyl-phenylether	7005-72-3	-	< 0.1	-	U
4,6-Dinitro-2-methylphenol	534-52-1*	-	< 0.3	-	N
4-Nitroaniline	100-01-6*	-	< 0.8	-	N
N-Nitrosodiphenylamine	86-30-6*	-	< 0.1	-	N
4-Bromophenyl-phenylether	101-55-3	-	< 0.1	-	U
Hexachlorobenzene	118-74-1	-	< 0.1	-	U
Pentachlorophenol	87-86-5*	-	< 0.6	-	N
Phenanthrene	85-01-8	5.65	0.8	91	U
Anthracene	120-12-7	5.68	0.3	95	U
Di-n-butylphthalate	84-74-2	-	< 0.1	-	U
Fluoranthene	206-44-0	6.43	3.0	90	U
Pyrene	129-00-0	6.60	1.8	91	U
Butylbenzylphthalate	85-68-7	-	< 0.3	-	U
Benzo[a]anthracene	56-55-3	7.80	1.9	94	U
Chrysene	218-01-9	7.84	2.3	96	U
3,3'-Dichlorobenzidine	91-94-1*	-	< 0.6	-	N
bis(2-Ethylhexyl)phthalate	117-81-7	-	< 0.3	-	U
Di-n-octylphthalate	117-84-0	-	< 0.3	-	U
Benzo[b]fluoranthene	205-99-2	9.40	3.4	97	U
Benzo[k]fluoranthene	207-08-9	9.43	1.4	96	U
Benzo[a]pyrene	50-32-8	9.95	1.8	95	U
Indeno[1,2,3-cd]pyrene	193-39-5	12.07	1.6	76	U
Dibenzo[a,h]anthracene	53-70-3	-	< 0.6	-	U
Benzo[g,h,i]perylene	191-24-2	12.49	1.0	92	U
Coronene	191-07-1*	14.65	0.4	94	N

Internal Standards	% Area
1,4-Dichlorobenzene-d4	89
Naphthalene-d8	81
Acenaphthene-d10	91
Phenanthrene-d10	94
Chrysene-d12	107
Perylene-d12	105

Surrogates	% Rec
2-Fluorophenol	63
Phenol-d5	73
Nitrobenzene-d5	83
2-Fluorobiphenyl	84
2,4,6-Tribromophenol	68
Terphenyl-d14	82

This analysis was conducted on an 'As Received' basis.

Concentrations are reported on a dry weight basis.

Where individual results are flagged see report notes for status.
Results corrected to dry weight at 105°C where appropriate, in accordance with the MCERTS standard.

Semi-Volatile Organic Compounds

Accredited?: Yes

Customer and Site Details:	Ramboll Environ: Zeon Chemicals ESA			**Matrix:**	Soil	**QC Batch Number:**	111
Sample Details:	WS2 2.0	**Date Booked in:**	16-May-16	**Ext Method:**	Ultrasonic	**Multiplier:**	0.2
LIMS ID Number:	CL1616451	**Date Extracted:**	18-May-16	**Operator:**		**Dilution Factor:**	1
Job Number:	S16_3958M	**Date Analysed:**	21-May-16	**Directory/Quant File:**	052016.GC11\	**GPC (Y/N)**	N

Target Compounds	CAS #	R.T. (min)	Concentration mg/kg	% Fit	Accr. code
Phenol	108-95-2	-	< 0.1	-	U
bis(2-Chloroethyl)ether	111-44-4	-	< 0.1	-	U
2-Chlorophenol	95-57-8	-	< 0.1	-	U
1,3-Dichlorobenzene	541-73-1	-	< 0.1	-	U
1,4-Dichlorobenzene	106-46-7	-	< 0.1	-	U
Benzyl alcohol	100-51-6	-	< 0.6	-	U
1,2-Dichlorobenzene	95-50-1	-	< 0.1	-	U
2-Methylphenol	95-48-7	-	< 0.1	-	U
bis(2-Chloroisopropyl)ether	108-60-1	-	< 0.6	-	U
Hexachloroethane	67-72-1	-	< 0.1	-	U
N-Nitroso-di-n-propylamine	621-64-7*	-	< 1.2	-	N
3- & 4-Methylphenol	108-39-4/106-44-5	-	< 0.1	-	U
Nitrobenzene	98-95-3	-	< 0.6	-	U
Isophorone	78-59-1*	-	< 0.1	-	N
2-Nitrophenol	88-75-5	-	< 0.1	-	U
2,4-Dimethylphenol	105-67-9	-	< 0.1	-	U
Benzoic Acid	65-85-0*	-	< 0.6	-	N
bis(2-Chloroethoxy)methane	111-91-1	-	< 0.1	-	U
2,4-Dichlorophenol	120-83-2	-	< 0.1	-	U
1,2,4-Trichlorobenzene	120-82-1*	-	< 0.1	-	N
Naphthalene	91-20-3	-	< 0.1	-	U
4-Chlorophenol	106-48-9	-	< 0.6	-	U
4-Chloroaniline	106-47-8*	-	< 0.6	-	N
Hexachlorobutadiene	87-68-3*	-	< 0.1	-	N
4-Chloro-3-methylphenol	59-50-7	-	< 0.1	-	U
2-Methylnaphthalene	91-57-6	-	< 0.1	-	U
1-Methylnaphthalene	90-12-0	-	< 0.1	-	U
Hexachlorocyclopentadiene	77-47-4*	-	< 0.1	-	N
2,4,6-Trichlorophenol	88-06-2	-	< 0.1	-	U
2,4,5-Trichlorophenol	95-95-4	-	< 0.1	-	U
2-Chloronaphthalene	91-58-7	-	< 0.1	-	U
Biphenyl	92-52-4	-	< 0.1	-	U
Diphenyl ether	101-84-8	-	< 0.1	-	U
2-Nitroaniline	88-74-4*	-	< 0.6	-	N
Acenaphthylene	208-96-8	-	< 0.1	-	U
Dimethylphthalate	131-11-3	-	< 0.1	-	U
2,6-Dinitrotoluene	606-20-2	-	< 0.6	-	U
Acenaphthene	83-32-9	-	< 0.1	-	U
3-Nitroaniline	99-09-2*	-	< 18.6	-	N

Target Compounds	CAS #	R.T.	Concentration mg/kg	% Fit	Accr. code
2,4-Dinitrophenol	51-28-5*	-	< 0.6	-	N
Dibenzofuran	132-64-9	-	< 0.1	-	U
4-Nitrophenol	100-02-7*	-	< 0.6	-	N
2,4-Dinitrotoluene	121-14-2	-	< 0.3	-	U
Fluorene	86-73-7	-	< 0.1	-	U
Diethylphthalate	84-66-2	-	< 0.1	-	U
4-Chlorophenyl-phenylether	7005-72-3	-	< 0.1	-	U
4,6-Dinitro-2-methylphenol	534-52-1*	-	< 0.3	-	N
4-Nitroaniline	100-01-6*	-	< 0.8	-	N
N-Nitrosodiphenylamine	86-30-6*	-	< 0.1	-	N
4-Bromophenyl-phenylether	101-55-3	-	< 0.1	-	U
Hexachlorobenzene	118-74-1	-	< 0.1	-	U
Pentachlorophenol	87-86-5*	-	< 0.6	-	N
Phenanthrene	85-01-8	-	< 0.1	-	U
Anthracene	120-12-7	-	< 0.1	-	U
Di-n-butylphthalate	84-74-2	-	< 0.1	-	U
Fluoranthene	206-44-0	-	< 0.3	-	U
Pyrene	129-00-0	-	< 0.3	-	U
Butylbenzylphthalate	85-68-7	-	< 0.3	-	U
Benzo[a]anthracene	56-55-3	-	< 0.3	-	U
Chrysene	218-01-9	-	< 0.3	-	U
3,3'-Dichlorobenzidine	91-94-1*	-	< 0.6	-	N
bis(2-Ethylhexyl)phthalate	117-81-7	-	< 0.3	-	U
Di-n-octylphthalate	117-84-0	-	< 0.3	-	U
Benzo[b]fluoranthene	205-99-2	-	< 0.3	-	U
Benzo[k]fluoranthene	207-08-9	-	< 0.3	-	U
Benzo[a]pyrene	50-32-8	-	< 0.3	-	U
Indeno[1,2,3-cd]pyrene	193-39-5	-	< 0.6	-	U
Dibenzo[a,h]anthracene	53-70-3	-	< 0.6	-	U
Benzo[g,h,i]perylene	191-24-2	-	< 0.6	-	U
Coronene	191-07-1*	-	< 0.4	-	N

Internal Standards	% Area
1,4-Dichlorobenzene-d4	73
Naphthalene-d8	69
Acenaphthene-d10	73
Phenanthrene-d10	77
Chrysene-d12	78
Perylene-d12	74

Surrogates	% Rec
2-Fluorophenol	93
Phenol-d5	66
Nitrobenzene-d5	89
2-Fluorobiphenyl	N.D
2,4,6-Tribromophenol	80
Terphenyl-d14	100

This analysis was conducted on an 'As Received' basis.

Concentrations are reported on a dry weight basis.

Where individual results are flagged see report notes for status.
Results corrected to dry weight at 105°C where appropriate, in accordance with the MCERTS standard.

Semi-Volatile Organic Compounds

Accredited?: Yes

Customer and Site Details:	Ramboll Environ: Zeon Chemicals ESA			**Matrix:**	Soil	**QC Batch Number:**	111
Sample Details:	WS1 3.0	**Date Booked in:**	16-May-16	**Ext Method:**	Ultrasonic	**Multiplier:**	0.2
LIMS ID Number:	CL1616452	**Date Extracted:**	18-May-16	**Operator:**		**Dilution Factor:**	1
Job Number:	S16_3958M	**Date Analysed:**	21-May-16	**Directory/Quant File:**	052016.GC11\	**GPC (Y/N)**	N

Target Compounds	CAS #	R.T. (min)	Concentration mg/kg	% Fit	Accr. code
Phenol	108-95-2	-	< 0.1	-	U
bis(2-Chloroethyl)ether	111-44-4	-	< 0.1	-	U
2-Chlorophenol	95-57-8	-	< 0.1	-	U
1,3-Dichlorobenzene	541-73-1	-	< 0.1	-	U
1,4-Dichlorobenzene	106-46-7	-	< 0.1	-	U
Benzyl alcohol	100-51-6	-	< 0.6	-	U
1,2-Dichlorobenzene	95-50-1	-	< 0.1	-	U
2-Methylphenol	95-48-7	-	< 0.1	-	U
bis(2-Chloroisopropyl)ether	108-60-1	-	< 0.6	-	U
Hexachloroethane	67-72-1	-	< 0.1	-	U
N-Nitroso-di-n-propylamine	621-64-7*	-	< 1.1	-	N
3- & 4-Methylphenol	108-39-4/106-44-5	-	< 0.1	-	U
Nitrobenzene	98-95-3	-	< 0.6	-	U
Isophorone	78-59-1*	-	< 0.1	-	N
2-Nitrophenol	88-75-5	-	< 0.1	-	U
2,4-Dimethylphenol	105-67-9	-	< 0.1	-	U
Benzoic Acid	65-85-0*	-	< 0.6	-	N
bis(2-Chloroethoxy)methane	111-91-1	-	< 0.1	-	U
2,4-Dichlorophenol	120-83-2	-	< 0.1	-	U
1,2,4-Trichlorobenzene	120-82-1*	-	< 0.1	-	N
Naphthalene	91-20-3	-	< 0.1	-	U
4-Chlorophenol	106-48-9	-	< 0.6	-	U
4-Chloroaniline	106-47-8*	-	< 0.6	-	N
Hexachlorobutadiene	87-68-3*	-	< 0.1	-	N
4-Chloro-3-methylphenol	59-50-7	-	< 0.1	-	U
2-Methylnaphthalene	91-57-6	-	< 0.1	-	U
1-Methylnaphthalene	90-12-0	-	< 0.1	-	U
Hexachlorocyclopentadiene	77-47-4*	-	< 0.1	-	N
2,4,6-Trichlorophenol	88-06-2	-	< 0.1	-	U
2,4,5-Trichlorophenol	95-95-4	-	< 0.1	-	U
2-Chloronaphthalene	91-58-7	-	< 0.1	-	U
Biphenyl	92-52-4	-	< 0.1	-	U
Diphenyl ether	101-84-8	-	< 0.1	-	U
2-Nitroaniline	88-74-4*	-	< 0.6	-	N
Acenaphthylene	208-96-8	-	< 0.1	-	U
Dimethylphthalate	131-11-3	-	< 0.1	-	U
2,6-Dinitrotoluene	606-20-2	-	< 0.6	-	U
Acenaphthene	83-32-9	-	< 0.1	-	U
3-Nitroaniline	99-09-2*	-	< 18.1	-	N

Target Compounds	CAS #	R.T.	Concentration mg/kg	% Fit	Accr. code
2,4-Dinitrophenol	51-28-5*	-	< 0.6	-	N
Dibenzofuran	132-64-9	-	< 0.1	-	U
4-Nitrophenol	100-02-7*	-	< 0.6	-	N
2,4-Dinitrotoluene	121-14-2	-	< 0.3	-	U
Fluorene	86-73-7	-	< 0.1	-	U
Diethylphthalate	84-66-2	-	< 0.1	-	U
4-Chlorophenyl-phenylether	7005-72-3	-	< 0.1	-	U
4,6-Dinitro-2-methylphenol	534-52-1*	-	< 0.3	-	N
4-Nitroaniline	100-01-6*	-	< 0.8	-	N
N-Nitrosodiphenylamine	86-30-6*	-	< 0.1	-	N
4-Bromophenyl-phenylether	101-55-3	-	< 0.1	-	U
Hexachlorobenzene	118-74-1	-	< 0.1	-	U
Pentachlorophenol	87-86-5*	-	< 0.6	-	N
Phenanthrene	85-01-8	-	< 0.1	-	U
Anthracene	120-12-7	-	< 0.1	-	U
Di-n-butylphthalate	84-74-2	-	< 0.1	-	U
Fluoranthene	206-44-0	-	< 0.3	-	U
Pyrene	129-00-0	-	< 0.3	-	U
Butylbenzylphthalate	85-68-7	-	< 0.3	-	U
Benzo[a]anthracene	56-55-3	-	< 0.3	-	U
Chrysene	218-01-9	-	< 0.3	-	U
3,3'-Dichlorobenzidine	91-94-1*	-	< 0.6	-	N
bis(2-Ethylhexyl)phthalate	117-81-7	-	< 0.3	-	U
Di-n-octylphthalate	117-84-0	-	< 0.3	-	U
Benzo[b]fluoranthene	205-99-2	-	< 0.3	-	U
Benzo[k]fluoranthene	207-08-9	-	< 0.3	-	U
Benzo[a]pyrene	50-32-8	-	< 0.3	-	U
Indeno[1,2,3-cd]pyrene	193-39-5	-	< 0.6	-	U
Dibenzo[a,h]anthracene	53-70-3	-	< 0.6	-	U
Benzo[g,h,i]perylene	191-24-2	-	< 0.6	-	U
Coronene	191-07-1*	-	< 0.4	-	N

Internal Standards	% Area
1,4-Dichlorobenzene-d4	79
Naphthalene-d8	74
Acenaphthene-d10	79
Phenanthrene-d10	85
Chrysene-d12	83
Perylene-d12	81

Surrogates	% Rec
2-Fluorophenol	82
Phenol-d5	66
Nitrobenzene-d5	90
2-Fluorobiphenyl	93
2,4,6-Tribromophenol	74
Terphenyl-d14	101

This analysis was conducted on an 'As Received' basis.

Concentrations are reported on a dry weight basis.

Where individual results are flagged see report notes for status.
Results corrected to dry weight at 105°C where appropriate, in accordance with the MCERTS standard.

Semi-Volatile Organic Compounds

Accredited?: Yes

Customer and Site Details:	Ramboll Environ: Zeon Chemicals ESA			**Matrix:**	Soil	**QC Batch Number:**	111
Sample Details:	WS1 4.0	**Date Booked in:**	16-May-16	**Ext Method:**	Ultrasonic	**Multiplier:**	0.2
LIMS ID Number:	CL1616453	**Date Extracted:**	18-May-16	**Operator:**		**Dilution Factor:**	1
Job Number:	S16_3958M	**Date Analysed:**	21-May-16	**Directory/Quant File:**	052016.GC11\	**GPC (Y/N)**	N

Target Compounds	CAS #	R.T. (min)	Concentration mg/kg	% Fit	Accr. code
Phenol	108-95-2	-	< 0.1	-	U
bis(2-Chloroethyl)ether	111-44-4	-	< 0.1	-	U
2-Chlorophenol	95-57-8	-	< 0.1	-	U
1,3-Dichlorobenzene	541-73-1	-	< 0.1	-	U
1,4-Dichlorobenzene	106-46-7	-	< 0.1	-	U
Benzyl alcohol	100-51-6	-	< 0.7	-	U
1,2-Dichlorobenzene	95-50-1	-	< 0.1	-	U
2-Methylphenol	95-48-7	-	< 0.1	-	U
bis(2-Chloroisopropyl)ether	108-60-1	-	< 0.7	-	U
Hexachloroethane	67-72-1	-	< 0.1	-	U
N-Nitroso-di-n-propylamine	621-64-7*	-	< 1.2	-	N
3- & 4-Methylphenol	108-39-4/106-44-5	-	< 0.1	-	U
Nitrobenzene	98-95-3	-	< 0.7	-	U
Isophorone	78-59-1*	-	< 0.1	-	N
2-Nitrophenol	88-75-5	-	< 0.1	-	U
2,4-Dimethylphenol	105-67-9	-	< 0.1	-	U
Benzoic Acid	65-85-0*	-	< 0.7	-	N
bis(2-Chloroethoxy)methane	111-91-1	-	< 0.1	-	U
2,4-Dichlorophenol	120-83-2	-	< 0.1	-	U
1,2,4-Trichlorobenzene	120-82-1*	-	< 0.1	-	N
Naphthalene	91-20-3	-	< 0.1	-	U
4-Chlorophenol	106-48-9	-	< 0.7	-	U
4-Chloroaniline	106-47-8*	-	< 0.7	-	N
Hexachlorobutadiene	87-68-3*	-	< 0.1	-	N
4-Chloro-3-methylphenol	59-50-7	-	< 0.1	-	U
2-Methylnaphthalene	91-57-6	-	< 0.1	-	U
1-Methylnaphthalene	90-12-0	-	< 0.1	-	U
Hexachlorocyclopentadiene	77-47-4*	-	< 0.1	-	N
2,4,6-Trichlorophenol	88-06-2	-	< 0.1	-	U
2,4,5-Trichlorophenol	95-95-4	-	< 0.1	-	U
2-Chloronaphthalene	91-58-7	-	< 0.1	-	U
Biphenyl	92-52-4	-	< 0.1	-	U
Diphenyl ether	101-84-8	-	< 0.1	-	U
2-Nitroaniline	88-74-4*	-	< 0.7	-	N
Acenaphthylene	208-96-8	-	< 0.1	-	U
Dimethylphthalate	131-11-3	-	< 0.1	-	U
2,6-Dinitrotoluene	606-20-2	-	< 0.7	-	U
Acenaphthene	83-32-9	-	< 0.1	-	U
3-Nitroaniline	99-09-2*	-	< 20.1	-	N

Target Compounds	CAS #	R.T.	Concentration mg/kg	% Fit	Accr. code
2,4-Dinitrophenol	51-28-5*	-	< 0.7	-	N
Dibenzofuran	132-64-9	-	< 0.1	-	U
4-Nitrophenol	100-02-7*	-	< 0.7	-	N
2,4-Dinitrotoluene	121-14-2	-	< 0.3	-	U
Fluorene	86-73-7	-	< 0.1	-	U
Diethylphthalate	84-66-2	-	< 0.1	-	U
4-Chlorophenyl-phenylether	7005-72-3	-	< 0.1	-	U
4,6-Dinitro-2-methylphenol	534-52-1*	-	< 0.3	-	N
4-Nitroaniline	100-01-6*	-	< 0.8	-	N
N-Nitrosodiphenylamine	86-30-6*	-	< 0.1	-	N
4-Bromophenyl-phenylether	101-55-3	-	< 0.1	-	U
Hexachlorobenzene	118-74-1	-	< 0.1	-	U
Pentachlorophenol	87-86-5*	-	< 0.7	-	N
Phenanthrene	85-01-8	-	< 0.1	-	U
Anthracene	120-12-7	-	< 0.1	-	U
Di-n-butylphthalate	84-74-2	-	< 0.1	-	U
Fluoranthene	206-44-0	-	< 0.3	-	U
Pyrene	129-00-0	-	< 0.3	-	U
Butylbenzylphthalate	85-68-7	-	< 0.3	-	U
Benzo[a]anthracene	56-55-3	-	< 0.3	-	U
Chrysene	218-01-9	-	< 0.3	-	U
3,3'-Dichlorobenzidine	91-94-1*	-	< 0.7	-	N
bis(2-Ethylhexyl)phthalate	117-81-7	-	< 0.3	-	U
Di-n-octylphthalate	117-84-0	-	< 0.3	-	U
Benzo[b]fluoranthene	205-99-2	-	< 0.3	-	U
Benzo[k]fluoranthene	207-08-9	-	< 0.3	-	U
Benzo[a]pyrene	50-32-8	-	< 0.3	-	U
Indeno[1,2,3-cd]pyrene	193-39-5	-	< 0.7	-	U
Dibenzo[a,h]anthracene	53-70-3	-	< 0.7	-	U
Benzo[g,h,i]perylene	191-24-2	-	< 0.7	-	U
Coronene	191-07-1*	-	< 0.4	-	N

Internal Standards	% Area
1,4-Dichlorobenzene-d4	82
Naphthalene-d8	75
Acenaphthene-d10	80
Phenanthrene-d10	88
Chrysene-d12	89
Perylene-d12	93

Surrogates	% Rec
2-Fluorophenol	72
Phenol-d5	65
Nitrobenzene-d5	87
2-Fluorobiphenyl	91
2,4,6-Tribromophenol	73
Terphenyl-d14	94

This analysis was conducted on an 'As Received' basis.

Concentrations are reported on a dry weight basis.

Where individual results are flagged see report notes for status.
Results corrected to dry weight at 105°C where appropriate, in accordance with the MCERTS standard.

Semi-Volatile Organic Compounds

Accredited?: Yes

Customer and Site Details:	Ramboll Environ: Zeon Chemicals ESA			**Matrix:**	Soil	**QC Batch Number:**	111
Sample Details:	WS9 0.3	**Date Booked in:**	16-May-16	**Ext Method:**	Ultrasonic	**Multiplier:**	0.2
LIMS ID Number:	CL1616454	**Date Extracted:**	18-May-16	**Operator:**		**Dilution Factor:**	1
Job Number:	S16_3958M	**Date Analysed:**	21-May-16	**Directory/Quant File:**	052016.GC11\	**GPC (Y/N)**	N

Target Compounds	CAS #	R.T. (min)	Concentration mg/kg	% Fit	Accr. code
Phenol	108-95-2	-	< 0.1	-	U
bis(2-Chloroethyl)ether	111-44-4	-	< 0.1	-	U
2-Chlorophenol	95-57-8	-	< 0.1	-	U
1,3-Dichlorobenzene	541-73-1	-	< 0.1	-	U
1,4-Dichlorobenzene	106-46-7	-	< 0.1	-	U
Benzyl alcohol	100-51-6	-	< 0.6	-	U
1,2-Dichlorobenzene	95-50-1	-	< 0.1	-	U
2-Methylphenol	95-48-7	-	< 0.1	-	U
bis(2-Chloroisopropyl)ether	108-60-1	-	< 0.6	-	U
Hexachloroethane	67-72-1	-	< 0.1	-	U
N-Nitroso-di-n-propylamine	621-64-7*	-	< 1.1	-	N
3- & 4-Methylphenol	108-39-4/106-44-5	-	< 0.1	-	U
Nitrobenzene	98-95-3	-	< 0.6	-	U
Isophorone	78-59-1*	-	< 0.1	-	N
2-Nitrophenol	88-75-5	-	< 0.1	-	U
2,4-Dimethylphenol	105-67-9	-	< 0.1	-	U
Benzoic Acid	65-85-0*	-	< 0.6	-	N
bis(2-Chloroethoxy)methane	111-91-1	-	< 0.1	-	U
2,4-Dichlorophenol	120-83-2	-	< 0.1	-	U
1,2,4-Trichlorobenzene	120-82-1*	-	< 0.1	-	N
Naphthalene	91-20-3	3.64	0.5	96	U
4-Chlorophenol	106-48-9	-	< 0.6	-	U
4-Chloroaniline	106-47-8*	-	< 0.6	-	N
Hexachlorobutadiene	87-68-3*	-	< 0.1	-	N
4-Chloro-3-methylphenol	59-50-7	-	< 0.1	-	U
2-Methylnaphthalene	91-57-6	-	< 0.1	-	U
1-Methylnaphthalene	90-12-0	-	< 0.1	-	U
Hexachlorocyclopentadiene	77-47-4*	-	< 0.1	-	N
2,4,6-Trichlorophenol	88-06-2	-	< 0.1	-	U
2,4,5-Trichlorophenol	95-95-4	-	< 0.1	-	U
2-Chloronaphthalene	91-58-7	-	< 0.1	-	U
Biphenyl	92-52-4	-	< 0.1	-	U
Diphenyl ether	101-84-8	-	< 0.1	-	U
2-Nitroaniline	88-74-4*	-	< 0.6	-	N
Acenaphthylene	208-96-8	4.62	0.1	93	U
Dimethylphthalate	131-11-3	-	< 0.1	-	U
2,6-Dinitrotoluene	606-20-2	-	< 0.6	-	U
Acenaphthene	83-32-9	4.73	0.5	71	U
3-Nitroaniline	99-09-2*	-	< 17.7	-	N

Target Compounds	CAS #	R.T.	Concentration mg/kg	% Fit	Accr. code
2,4-Dinitrophenol	51-28-5*	-	< 0.6	-	N
Dibenzofuran	132-64-9	-	< 0.1	-	U
4-Nitrophenol	100-02-7*	-	< 0.6	-	N
2,4-Dinitrotoluene	121-14-2	-	< 0.2	-	U
Fluorene	86-73-7	-	< 0.1	-	U
Diethylphthalate	84-66-2	-	< 0.1	-	U
4-Chlorophenyl-phenylether	7005-72-3	-	< 0.1	-	U
4,6-Dinitro-2-methylphenol	534-52-1*	-	< 0.2	-	N
4-Nitroaniline	100-01-6*	-	< 0.7	-	N
N-Nitrosodiphenylamine	86-30-6*	-	< 0.1	-	N
4-Bromophenyl-phenylether	101-55-3	-	< 0.1	-	U
Hexachlorobenzene	118-74-1	-	< 0.1	-	U
Pentachlorophenol	87-86-5*	-	< 0.6	-	N
Phenanthrene	85-01-8	5.65	0.7	99	U
Anthracene	120-12-7	5.68	0.4	92	U
Di-n-butylphthalate	84-74-2	-	< 0.1	-	U
Fluoranthene	206-44-0	6.43	1.8	90	U
Pyrene	129-00-0	6.60	1.6	91	U
Butylbenzylphthalate	85-68-7	-	< 0.2	-	U
Benzo[a]anthracene	56-55-3	7.80	1.0	90	U
Chrysene	218-01-9	7.84	1.0	96	U
3,3'-Dichlorobenzidine	91-94-1*	-	< 0.6	-	N
bis(2-Ethylhexyl)phthalate	117-81-7	7.86	2.1	99	U
Di-n-octylphthalate	117-84-0	-	< 0.2	-	U
Benzo[b]fluoranthene	205-99-2	9.39	1.6	97	U
Benzo[k]fluoranthene	207-08-9	9.41	0.7	97	U
Benzo[a]pyrene	50-32-8	9.95	1.0	94	U
Indeno[1,2,3-cd]pyrene	193-39-5	12.07	0.9	79	U
Dibenzo[a,h]anthracene	53-70-3	-	< 0.6	-	U
Benzo[g,h,i]perylene	191-24-2	12.49	0.7	91	U
Coronene	191-07-1*	-	< 0.4	-	N

Internal Standards	% Area
1,4-Dichlorobenzene-d4	84
Naphthalene-d8	73
Acenaphthene-d10	91
Phenanthrene-d10	90
Chrysene-d12	97
Perylene-d12	95

Surrogates	% Rec
2-Fluorophenol	103
Phenol-d5	87
Nitrobenzene-d5	87
2-Fluorobiphenyl	85
2,4,6-Tribromophenol	91
Terphenyl-d14	86

This analysis was conducted on an 'As Received' basis.

Concentrations are reported on a dry weight basis.

Where individual results are flagged see report notes for status.
Results corrected to dry weight at 105°C where appropriate, in accordance with the MCERTS standard.

SVOC (TICs)

Accredited?:No

Customer and Site Details:	Ramboll Environ: Zeon Chemicals ESA		
Sample Details:	WS6 1.0	**Job Number:**	S16_3958
LIMS ID Number:	CL1616445		
		Multiplier:	0.2
Date Booked in:	16-May-16	**Dilution Factor:**	1
Date Extracted:	18-May-16	**GPC (Y/N):**	N
Date Analysed:	21-May-16	**Matrix:**	Soil
QC Batch Number:	111	**Method:**	Ultrasonic
Directory/Quant File:	052016.GC11\ 0	**Operator:**	0

Tentatively Identified Compounds	CAS #	R.T.	Concentration mg/kg	% Fit	Accr. code
Tridecane, 4-methyl-	026730-12-1	5.29	2.028	87	N
Tridecane	000629-50-5	5.58	1.876	94	N
Naphthalene, 1,6,7-trimethyl-	002245-38-7	4.96	1.489	93	N
9H-Fluorene, 1-methyl-	001730-37-6	5.42	1.168	74	N
Phenanthrene, 4-methyl	000832-64-4	6.02	0.984	50	N
Hexadecane	000544-76-3	5.79	0.946	90	N
1-Acenaphthylenol, 1,2-dihydro-1-methyl-	041002-74-8	5.48	0.850	46	N
9,9-dimethyl-9,-10-dihydroanthacene	042332-94-5	4.65	0.802	90	N
Decane, 2-methyl	006975-98-0	3.88	0.662	64	N
1-(4-Chlorophenyl)-3-(4-chlorophenylthio)-1,3,4-thiadiazole-5-	999338-58-8	13.76	0.563	53	N
Dibenzothiophene, 3-methyl-	016587-52-3	5.85	0.499	91	N
2,6-Dimethyldibenzothiophene	089816-75-1	6.16	0.422	93	N
Naphthalene, 1-methyl-7-(1-methylethyl)-	000490-65-3	5.33	0.379	95	N

The compounds listed above have been tentatively identified by a computer based library search.
Compounds identified in the sample are not reported if they also occur in the method blank.
The % fit is an indication of the reliability of the compound assignment.
Due to the similarity between mass spectra of some isomeric compounds assignments may not be correct.
Other compounds may also be present but identification was not possible.
Concentrations are semi-quantitative, assume a response factor of 1 and use the nearest internal standard.
Concentrations are reported on a dry weight basis.

Where individual results are flagged see report notes for status.
Results corrected to dry weight at 105°C where appropriate, in accordance with the MCERTS standard.

SVOC (TICs)

Accredited?:No

Customer and Site Details:	Ramboll Environ: Zeon Chemicals ESA		
Sample Details:	WS6 2.0	**Job Number:**	S16_3958
LIMS ID Number:	CL1616446		
		Multiplier:	0.2
Date Booked in:	16-May-16	**Dilution Factor:**	1
Date Extracted:	18-May-16	**GPC (Y/N):**	N
Date Analysed:	21-May-16	**Matrix:**	Soil
QC Batch Number:	111	**Method:**	Ultrasonic
Directory/Quant File:	052016.GC11\ 0	**Operator:**	0

Tentatively Identified Compounds	CAS #	R.T.	Concentration mg/kg	% Fit	Accr. code
Pentadecane, 2,6,10,14-tetramethyl-	001921-70-6	5.31	3.543	90	N
Rheadan, 8-methoxy-2,3:10,11-bis[methylenebis(oxy)]-, (8.be	006807-95-0	10.40	3.334	53	N
Bromoacetic acid, octadecyl ester	018992-03-5	4.35	3.312	68	N
Pentadecane, 3-methyl-	002882-96-4	6.29	2.906	50	N
10-Methyl-9(10H)-anthracenone	073653-01-7	6.04	2.691	76	N
[4,5,8-Trimethoxy-3-(prop-2-enyl)-2-naphthyl]methanol	999426-03-7	6.89	2.427	90	N
trans-4a,4b,8,8,2-pentamethyl-1-butylperhydrophenanthrene	091548-78-6	7.14	2.352	93	N
Tetracyclo[5.3.1.1(2,6).1(3,11)]tridecane, 8-chloro-13-hydroxy	999252-55-5	6.57	2.333	94	N
Unknown peak	-	8.66	2.218	-	N
2,5-(Dimethylphenoxy)trimethylsilane	999164-44-3	5.73	1.981	50	N
Unknown peak	-	5.43	1.886	-	N
Cholestane	000481-21-0	9.83	1.864	64	N
Baccharene	036441-74-4	12.48	1.684	72	N
Unknown peak	-	9.58	1.654	-	N
1a,9b-dihydro-1-exo-(phenylsulfonyl)-1H-cyclopropa[1]phenar	106032-07-9	7.33	1.605	59	N
Phenanthrene, 2,5-dimethyl-	003674-66-6	6.34	1.488	95	N
2,7-Dimethyldibenzothiophene	031317-19-8	6.18	1.404	95	N
28-Nor-17.beta.(H)-hopane	036728-72-0	11.23	1.353	53	N
[1S-(1.alpha.,2.beta.,4a.alpha.,8a.alpha.)]-2-[(decahydro-1,2,4	087764-14-5	10.97	1.293	78	N

The compounds listed above have been tentatively identified by a computer based library search.
Compounds identified in the sample are not reported if they also occur in the method blank.
The % fit is an indication of the reliability of the compound assignment.
Due to the similarity between mass spectra of some isomeric compounds assignments may not be correct.
Other compounds may also be present but identification was not possible.
Concentrations are semi-quantitative, assume a response factor of 1 and use the nearest internal standard.
Concentrations are reported on a dry weight basis.

Where individual results are flagged see report notes for status.
Results corrected to dry weight at 105°C where appropriate, in accordance with the MCERTS standard.

SVOC (TICs)

Accredited?:No

Customer and Site Details:	Ramboll Environ: Zeon Chemicals ESA		
Sample Details:	WS10 0.2	**Job Number:**	S16_3958
LIMS ID Number:	CL1616447		
		Multiplier:	0.2
Date Booked in:	16-May-16	**Dilution Factor:**	1
Date Extracted:	18-May-16	**GPC (Y/N):**	N
Date Analysed:	21-May-16	**Matrix:**	Soil
QC Batch Number:	111	**Method:**	Ultrasonic
Directory/Quant File:	052016.GC11\ 0	**Operator:**	0

Tentatively Identified Compounds	CAS #	R.T.	Concentration mg/kg	% Fit	Accr. code
Stigmast-5-en-3-ol, (3.beta.,24S)-	000083-47-6	12.79	0.589	96	N

The compounds listed above have been tentatively identified by a computer based library search.
Compounds identified in the sample are not reported if they also occur in the method blank.
The % fit is an indication of the reliability of the compound assignment.
Due to the similarity between mass spectra of some isomeric compounds assignments may not be correct.
Other compounds may also be present but identification was not possible.
Concentrations are semi-quantitative, assume a response factor of 1 and use the nearest internal standard.
Concentrations are reported on a dry weight basis.

SVOC (TICs)

Accredited?:No

Customer and Site Details:	Ramboll Environ: Zeon Chemicals ESA		
Sample Details:	WS7 0.3	**Job Number:**	S16_3958
LIMS ID Number:	CL1616448		
		Multiplier:	0.2
Date Booked in:	16-May-16	**Dilution Factor:**	1
Date Extracted:	18-May-16	**GPC (Y/N):**	N
Date Analysed:	21-May-16	**Matrix:**	Soil
QC Batch Number:	111	**Method:**	Ultrasonic
Directory/Quant File:	052016.GC11\ 0	**Operator:**	0

Tentatively Identified Compounds	CAS #	R.T.	Concentration mg/kg	% Fit	Accr. code
Benzo[e]pyrene	000192-97-2	9.86	1.408	94	N
4-(N-(4-ethylphenyl)amino)-5,6-dimethyl-7H-pyrrolo[2.3-d]pyri	100633-84-9	10.38	0.506	83	N
1,2:4,5-Dibenzopyrene	000192-65-4	14.11	0.474	98	N
Undecane	001120-21-4	4.54	0.411	89	N
3,4,4,6-Tetramethyl-2-(p-ethoxyphenylimino)-tetrahydro-1,3-o	053004-26-5	11.89	0.403	86	N

The compounds listed above have been tentatively identified by a computer based library search.
Compounds identified in the sample are not reported if they also occur in the method blank.
The % fit is an indication of the reliability of the compound assignment.
Due to the similarity between mass spectra of some isomeric compounds assignments may not be correct.
Other compounds may also be present but identification was not possible.
Concentrations are semi-quantitative, assume a response factor of 1 and use the nearest internal standard.
Concentrations are reported on a dry weight basis.

Where individual results are flagged see report notes for status.
Results corrected to dry weight at 105°C where appropriate, in accordance with the MCERTS standard.

SVOC (TICs)

Accredited?:No

Customer and Site Details:	Ramboll Environ: Zeon Chemicals ESA		
Sample Details:	WS2 2.0	**Job Number:**	S16_3958
LIMS ID Number:	CL1616451		
		Multiplier:	0.2
Date Booked in:	16-May-16	**Dilution Factor:**	1
Date Extracted:	18-May-16	**GPC (Y/N):**	N
Date Analysed:	21-May-16	**Matrix:**	Soil
QC Batch Number:	111	**Method:**	Ultrasonic
Directory/Quant File:	052016.GC11\ 0	**Operator:**	0

Tentatively Identified Compounds	CAS #	R.T.	Concentration mg/kg	% Fit	Accr. code
Non detected			<1.9		N

The compounds listed above have been tentatively identified by a computer based library search.
Compounds identified in the sample are not reported if they also occur in the method blank.
The % fit is an indication of the reliability of the compound assignment.
Due to the similarity between mass spectra of some isomeric compounds assignments may not be correct.
Other compounds may also be present but identification was not possible.
Concentrations are semi-quantitative, assume a response factor of 1 and use the nearest internal standard.
Concentrations are reported on a dry weight basis.

Where individual results are flagged see report notes for status.
Results corrected to dry weight at 105°C where appropriate, in accordance with the MCERTS standard.

SVOC (TICs)

Accredited?:No

Customer and Site Details:	Ramboll Environ: Zeon Chemicals ESA		
Sample Details:	WS1 3.0	**Job Number:**	S16_3958
LIMS ID Number:	CL1616452		
		Multiplier:	0.2
Date Booked in:	16-May-16	**Dilution Factor:**	1
Date Extracted:	18-May-16	**GPC (Y/N):**	N
Date Analysed:	21-May-16	**Matrix:**	Soil
QC Batch Number:	111	**Method:**	Ultrasonic
Directory/Quant File:	052016.GC11\ 0	**Operator:**	0

Tentatively Identified Compounds	CAS #	R.T.	Concentration mg/kg	% Fit	Accr. code
Non detected			<1.9		N

The compounds listed above have been tentatively identified by a computer based library search.
Compounds identified in the sample are not reported if they also occur in the method blank.
The % fit is an indication of the reliability of the compound assignment.
Due to the similarity between mass spectra of some isomeric compounds assignments may not be correct.
Other compounds may also be present but identification was not possible.
Concentrations are semi-quantitative, assume a response factor of 1 and use the nearest internal standard.
Concentrations are reported on a dry weight basis.

Where individual results are flagged see report notes for status.
Results corrected to dry weight at 105°C where appropriate, in accordance with the MCERTS standard.

SVOC (TICs)

Accredited?:No

Customer and Site Details:	Ramboll Environ: Zeon Chemicals ESA		
Sample Details:	WS1 4.0	**Job Number:**	S16_3958
LIMS ID Number:	CL1616453		
		Multiplier:	0.2
Date Booked in:	16-May-16	**Dilution Factor:**	1
Date Extracted:	18-May-16	**GPC (Y/N):**	N
Date Analysed:	21-May-16	**Matrix:**	Soil
QC Batch Number:	111	**Method:**	Ultrasonic
Directory/Quant File:	052016.GC11\ 0	**Operator:**	0

Tentatively Identified Compounds	CAS #	R.T.	Concentration mg/kg	% Fit	Accr. code
Non detected			<2.1		N

The compounds listed above have been tentatively identified by a computer based library search.
Compounds identified in the sample are not reported if they also occur in the method blank.
The % fit is an indication of the reliability of the compound assignment.
Due to the similarity between mass spectra of some isomeric compounds assignments may not be correct.
Other compounds may also be present but identification was not possible.
Concentrations are semi-quantitative, assume a response factor of 1 and use the nearest internal standard.
Concentrations are reported on a dry weight basis.

Where individual results are flagged see report notes for status.
Results corrected to dry weight at 105°C where appropriate, in accordance with the MCERTS standard.

SVOC (TICs)

Accredited?:No

Customer and Site Details:	Ramboll Environ: Zeon Chemicals ESA		
Sample Details:	WS9 0.3	**Job Number:**	S16_3958
LIMS ID Number:	CL1616454		
		Multiplier:	0.2
Date Booked in:	16-May-16	**Dilution Factor:**	1
Date Extracted:	18-May-16	**GPC (Y/N):**	N
Date Analysed:	21-May-16	**Matrix:**	Soil
QC Batch Number:	111	**Method:**	Ultrasonic
Directory/Quant File:	052016.GC11\ 0	**Operator:**	0

Tentatively Identified Compounds	CAS #	R.T.	Concentration mg/kg	% Fit	Accr. code
4,4'-Ethylenebis(2,6-di-tert-butylphenol)	001516-94-5	9.08	1.090	94	N
Benzo[e]pyrene	000192-97-2	9.85	1.079	98	N
11H-benzo[a]fluorene	000238-84-6	6.94	0.537	92	N
Phenanthrene, 2-methyl-	002531-84-2	5.95	0.477	97	N
7-Methoxy-1-methyl-2-ethyl-3H,4-hydro-pyrido[3,4-b]indole	999298-24-0	8.36	0.441	97	N
Cyclopenta[cd]pyren	027208-37-3	7.56	0.441	70	N
4H-Cyclopenta[def]phenanthrene	000203-64-5	6.02	0.420	81	N
Phenanthrene, 2,5-dimethyl-	003674-66-6	6.31	0.380	95	N

The compounds listed above have been tentatively identified by a computer based library search.
Compounds identified in the sample are not reported if they also occur in the method blank.
The % fit is an indication of the reliability of the compound assignment.
Due to the similarity between mass spectra of some isomeric compounds assignments may not be correct.
Other compounds may also be present but identification was not possible.
Concentrations are semi-quantitative, assume a response factor of 1 and use the nearest internal standard.
Concentrations are reported on a dry weight basis.

Where individual results are flagged see report notes for status.
Results corrected to dry weight at 105°C where appropriate, in accordance with the MCERTS standard.

Gasoline Range Organics
(BTEX and Aliphatic Carbon Ranges)

Customer and Site Details: Ramboll Environ : Zeon Chemicals ESA
Job Number: S16_3958
Directory: E:\TES\DATA\2016\0518HSA_GC9\051816 2016-05-18 12-38-11\067F6701.D
Method: Headspace GCFID
Accreditation Code: UM

Matrix: Soil
Date Booked in: 16-May-16
Date extracted: 20-May-16
Date Analysed: 19-May-16, 07:4

*** Sample data with an asterisk are not UKAS accredited.**

		Concentration, (mg/kg) - as dry weight.					Aliphatics				
Sample ID	**Client ID**	**Benzene**	**Toluene**	**Ethyl benzene**	**m/p-Xylene**	**o-Xylene**	**C5 - C6**	**>C6 - C7**	**>C7 - C8**	**>C8 - C10**	**Total GRO**
CL1616445	WS6 1.0	<0.012	<0.012	0.040	0.112	0.060	<0.2	<0.2	<0.2	7.9	8.3
CL1616446	WS6 2.0	<0.013	<0.013	0.174	0.335	0.137	<0.3	<0.3	0.7	13.6	15.1
CL1616447	WS10 0.2	<0.013	<0.013	<0.013	<0.013	<0.013	<0.3	<0.3	<0.3	<0.3	<0.3
CL1616448	WS7 0.3	<0.013	<0.013	<0.013	<0.013	<0.013	<0.3	<0.3	<0.3	<0.3	<0.3
CL1616449	WS7 0.8	<0.012	<0.012	<0.012	<0.012	<0.012	<0.2	<0.2	<0.2	<0.2	<0.2
CL1616450	WS2 0.3	<0.013	<0.013	<0.013	<0.013	<0.013	<0.3	<0.3	<0.3	<0.3	<0.3
CL1616451	WS2 2.0	<0.013	<0.013	<0.013	<0.013	<0.013	<0.3	<0.3	<0.3	<0.3	<0.3
CL1616452	WS1 3.0	<0.013	<0.013	<0.013	<0.013	<0.013	<0.3	<0.3	<0.3	<0.3	<0.3
CL1616453	WS1 4.0	<0.014	<0.014	<0.014	<0.014	<0.014	<0.3	<0.3	<0.3	<0.3	<0.3
CL1616454	WS9 0.3	<0.012	<0.012	<0.012	<0.012	<0.012	<0.2	<0.2	<0.2	<0.2	<0.2

Note: Benzene elutes between C6 and C7, toluene elutes between C7 and C8, ethyl benzene and the xylenes elute between C8 and C9.
Each BTEX compound is deducted from the appropriate band to give the aliphatic fractions, however aromatic compounds may still be contributing to these fractions

Where individual results are flagged see report notes for status.
Results corrected to dry weight at 105°C where appropriate, in accordance with the MCERTS standard.

ALIPHATIC / AROMATIC FRACTION BY GC/FID

Customer and Site Details: Ramboll Environ : Zeon Chemicals ESA
Job Number: S16_3958M
QC Batch Number: 160592
Directory: D:\TES\DATA\Y2016\051916TPH_GC14\051916 2016-05-19 09-06-42\089B4801.D
Method: Ultra Sonic

Separation: Silica gel
Eluents: Hexane, DCM

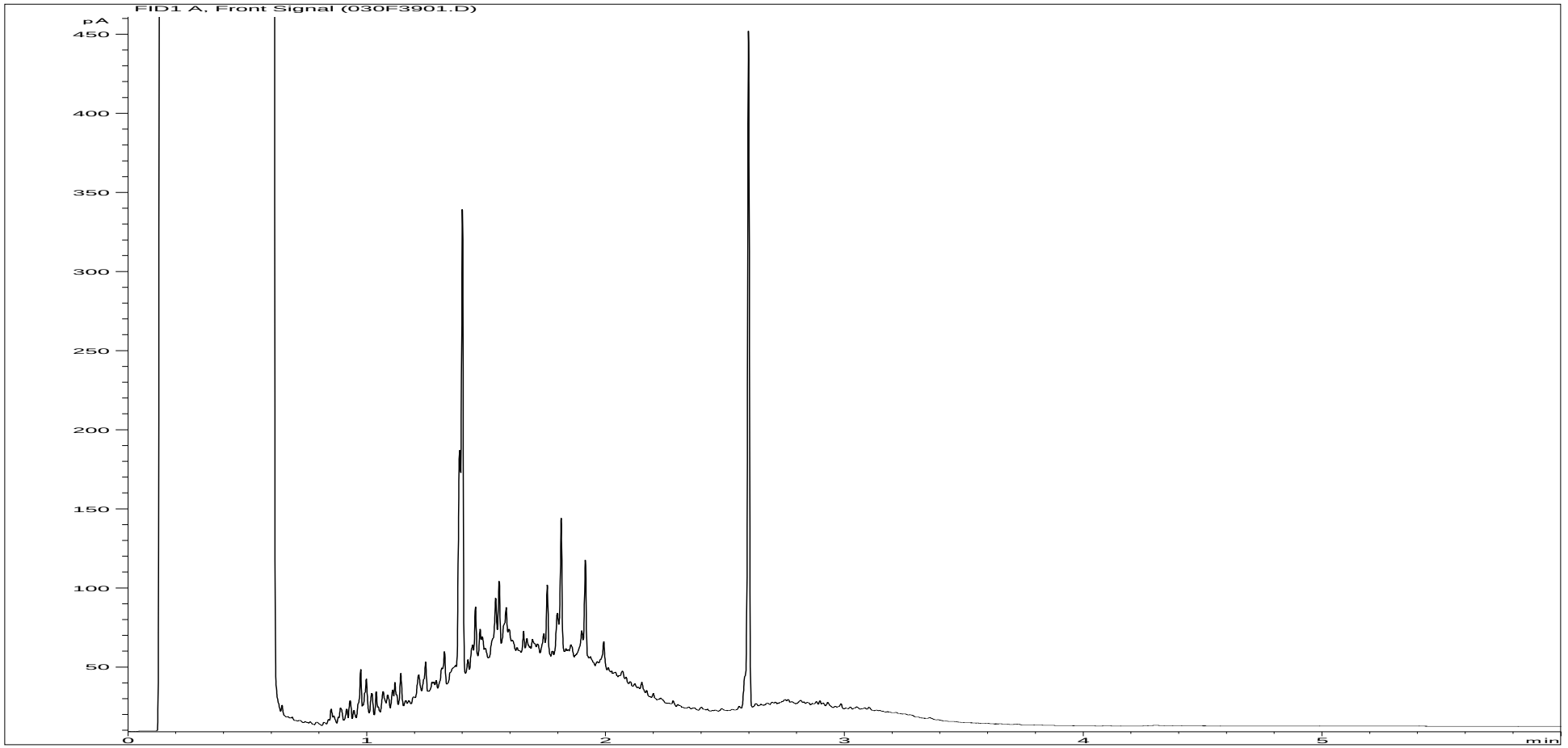
Matrix: Soil
Date Booked ir 16-May-16
Date Extracted 18-May-16
Date Analysed 19-May-16, 18:38:41

This sample data is not MCERTS accredited.
*** This sample data is not ISO17025 accredited.**

		Concentration, (mg/kg) - as dry weight.											
		>C8 - C10		>C10 - C12		>C12 - C16		>C16 - C21		>C21 - C35		>C8 - C40	
Sample ID	**Client ID**	**Aliphatics**	**Aromatics**	**Aliphatics**	**Aromatics**	**Aliphatics**	**Aromatics**	**Aliphatics**	**Aromatics**	**Aliphatics**	**Aromatics**	**Aliphatics**	**Aromatics**
CL1616445	WS6 1.0	7	<5	55.1	11.6	260	153	243	209	141	99.0*	714	483
CL1616446	WS6 2.0	24.5	<5	394	24.7	1880	417	2610	939	3300	1710*	8470	3090
CL1616447	WS10 0.2	<5	<5	<5	<5	<5	<5	<5	<5	<11.17	<11.17*	<26	<26
CL1616448	WS7 0.3	<5	<5	<5	<5	<5	<5	<5	5.63	13	30.2*	<25	43.6
CL1616449	WS7 0.8	<5	<5	<5	<5	<5	<5	<5	<5	<10.70	<10.70*	<24	<24
CL1616450	WS2 0.3	<5	<5	<5	<5	<5	<5	<5	<5	38.6	20.6*	54.3	31.7
CL1616451	WS2 2.0	<5	<5	<5	<5	<5	<5	<5	<5	<11.26	<11.26*	<26	<26
CL1616452	WS1 3.0	<5	<5	<5	<5	<5	<5	7.9	<5	39.1	<10.95*	58.9	<25
CL1616453	WS1 4.0	<6	<6	<6	<6	<6	<6	<6	<6	<12.13	<12.13*	<28	<28
CL1616454	WS9 0.3	<5	<5	<5	<5	<5	22.2	9.56	12	35	48.1*	52	91.3

Where individual results are flagged see report notes for status.
Results corrected to dry weight at 105°C where appropriate, in accordance with the MCERTS standard.

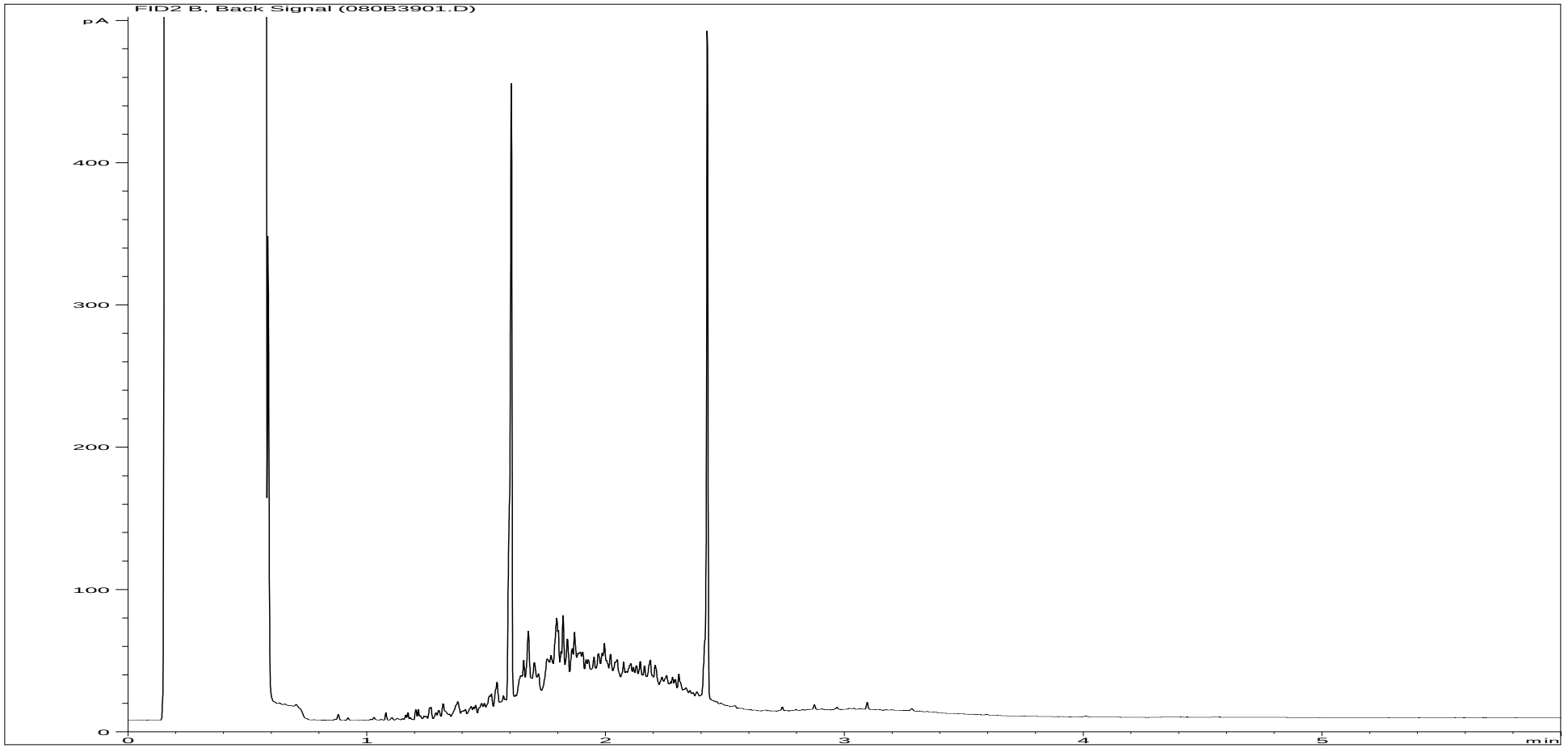
Petroleum Hydrocarbons (C8 to C40) by GC/FID Aliphatics Fraction.



Sample ID:	CL1616445ALI	**Job Number:**	S16_3958M
Multiplier:	15.36	**Client:**	Ramboll Environ
Dilution:	1	**Site:**	Zeon Chemicals ESA
Acquisition Method:	5UL_RUNF.M	**Client Sample Ref:**	WS6 1.0
Acquisition Date/Time:	19-May-16, 16:50:01		
Datafile:	D:\TES\DATA\Y2016\051916TPH_GC14\051916 2016-05-19 09-06-42\030F3901.D		

Where individual results are flagged see report notes for status.
Results corrected to dry weight at 105°C where appropriate, in accordance with the MCERTS standard.

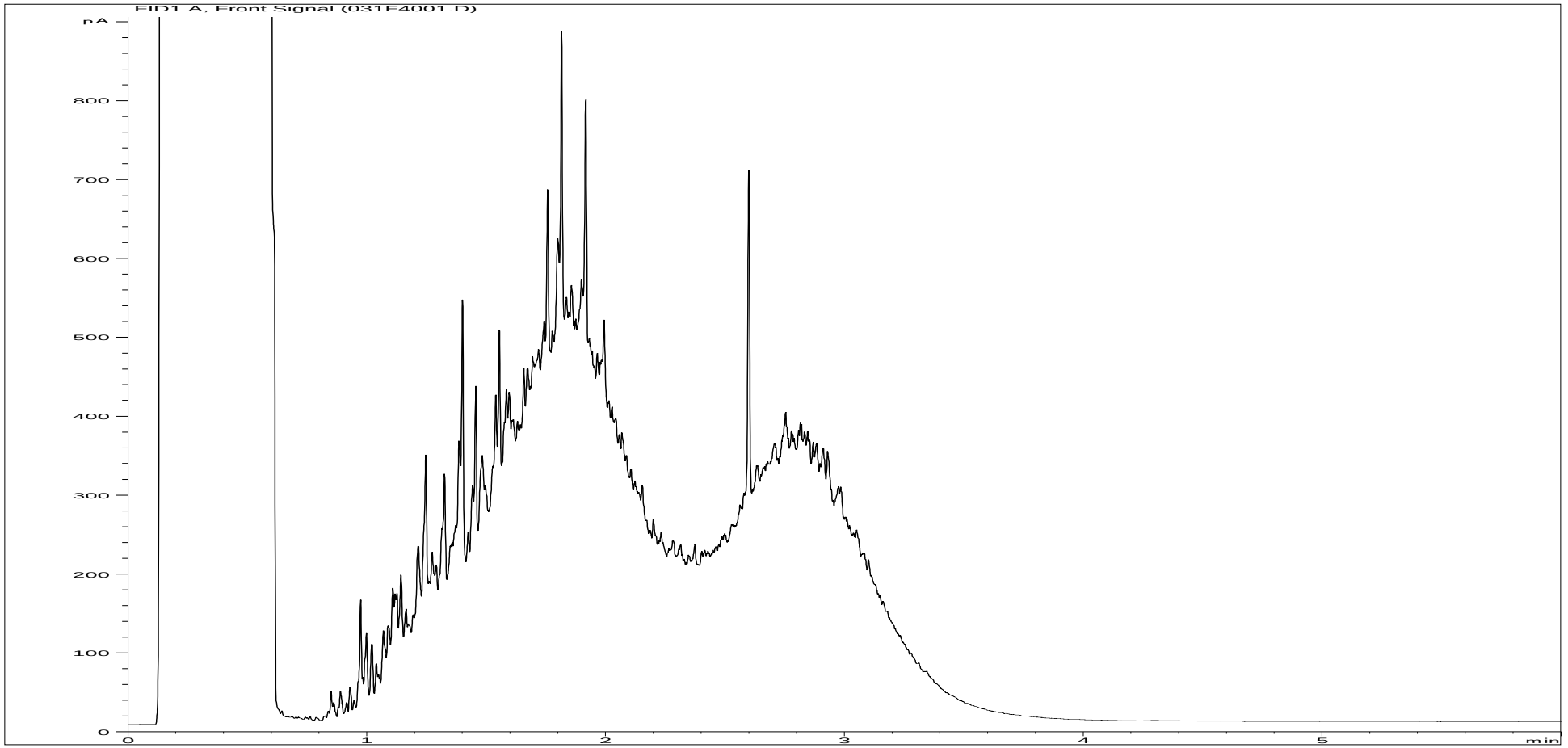
Petroleum Hydrocarbons (C8 to C40) by GC/FID Aromatics Fraction.



Sample ID:	CL1616445ARO	**Job Number:**	S16_3958M
Multiplier:	11.36	**Client:**	Ramboll Environ
Dilution:	1	**Site:**	Zeon Chemicals ESA
Acquisition Method:	5UL_RUNF.M	**Client Sample Ref:**	WS6 1.0
Acquisition Date/Time:	19-May-16, 16:50:01		
Datafile:	D:\TES\DATA\Y2016\051916TPH_GC14\051916 2016-05-19 09-06-42\080B3901.D		

Where individual results are flagged see report notes for status.
Results corrected to dry weight at 105°C where appropriate, in accordance with the MCERTS standard.

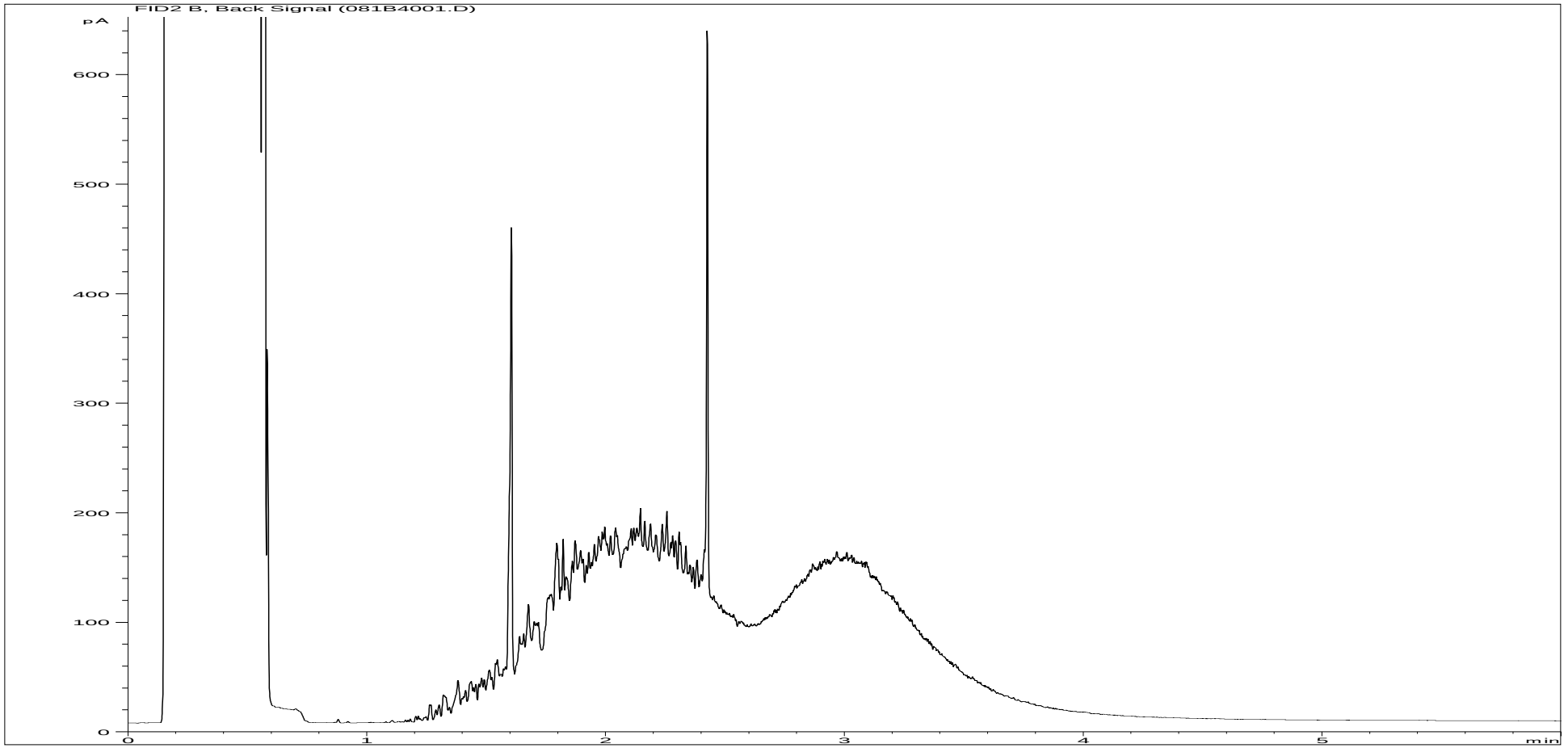
Petroleum Hydrocarbons (C8 to C40) by GC/FID Aliphatics Fraction.



Sample ID:	CL1616446ALI	**Job Number:**	S16_3958M
Multiplier:	15.36	**Client:**	Ramboll Environ
Dilution:	1	**Site:**	Zeon Chemicals ESA
Acquisition Method:	5UL_RUNF.M	**Client Sample Ref:**	WS6 2.0
Acquisition Date/Time:	19-May-16, 17:02:14		
Datafile:	D:\TES\DATA\Y2016\051916TPH_GC14\051916 2016-05-19 09-06-42\031F4001.D		

Where individual results are flagged see report notes for status.
Results corrected to dry weight at 105°C where appropriate, in accordance with the MCERTS standard.

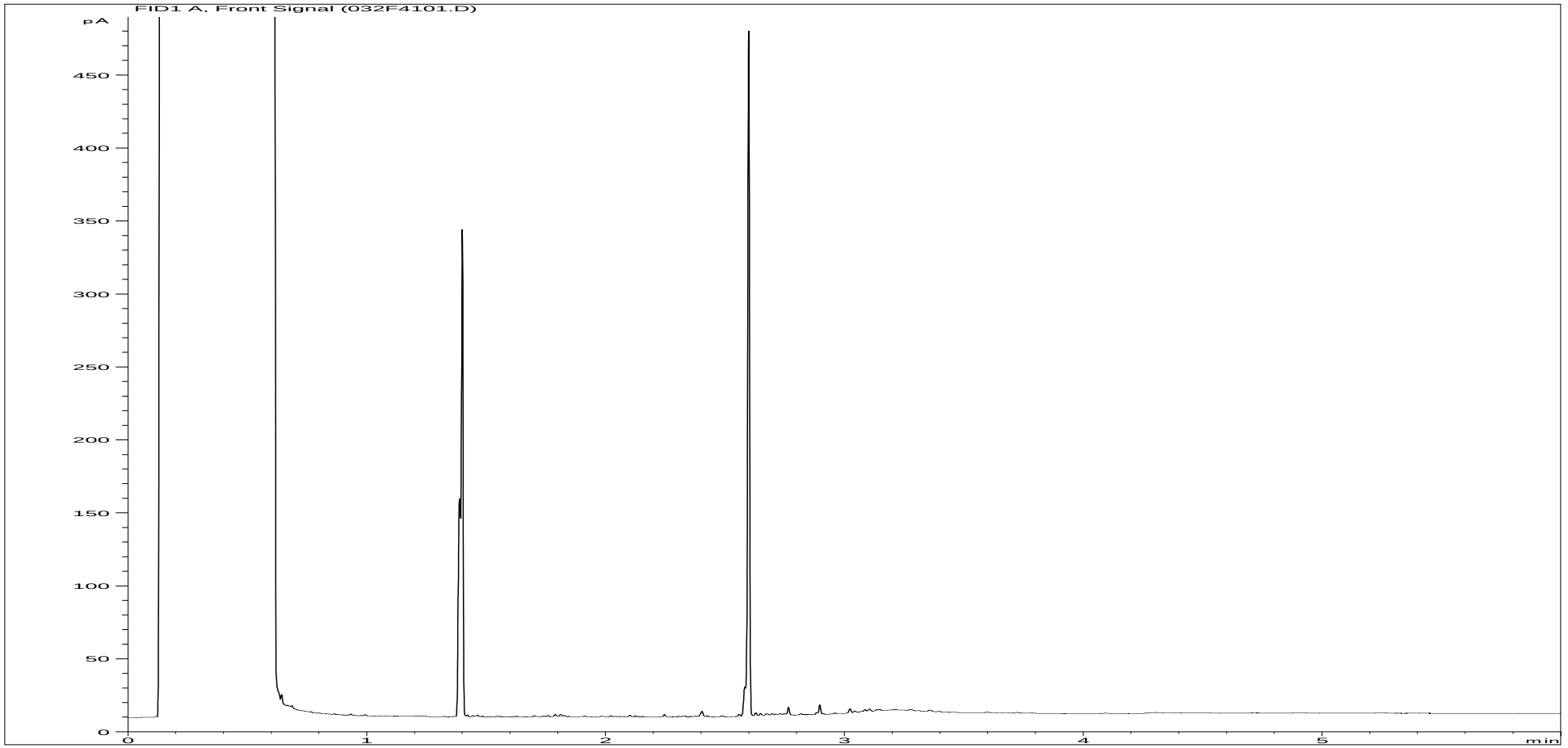
Petroleum Hydrocarbons (C8 to C40) by GC/FID Aromatics Fraction.



Sample ID:	CL1616446ARO	**Job Number:**	S16_3958M
Multiplier:	11.36	**Client:**	Ramboll Environ
Dilution:	1	**Site:**	Zeon Chemicals ESA
Acquisition Method:	5UL_RUNF.M	**Client Sample Ref:**	WS6 2.0
Acquisition Date/Time:	19-May-16, 17:02:14		
Datafile:	D:\TES\DATA\Y2016\051916TPH_GC14\051916 2016-05-19 09-06-42\081B4001.D		

Where individual results are flagged see report notes for status.
Results corrected to dry weight at 105°C where appropriate, in accordance with the MCERTS standard.

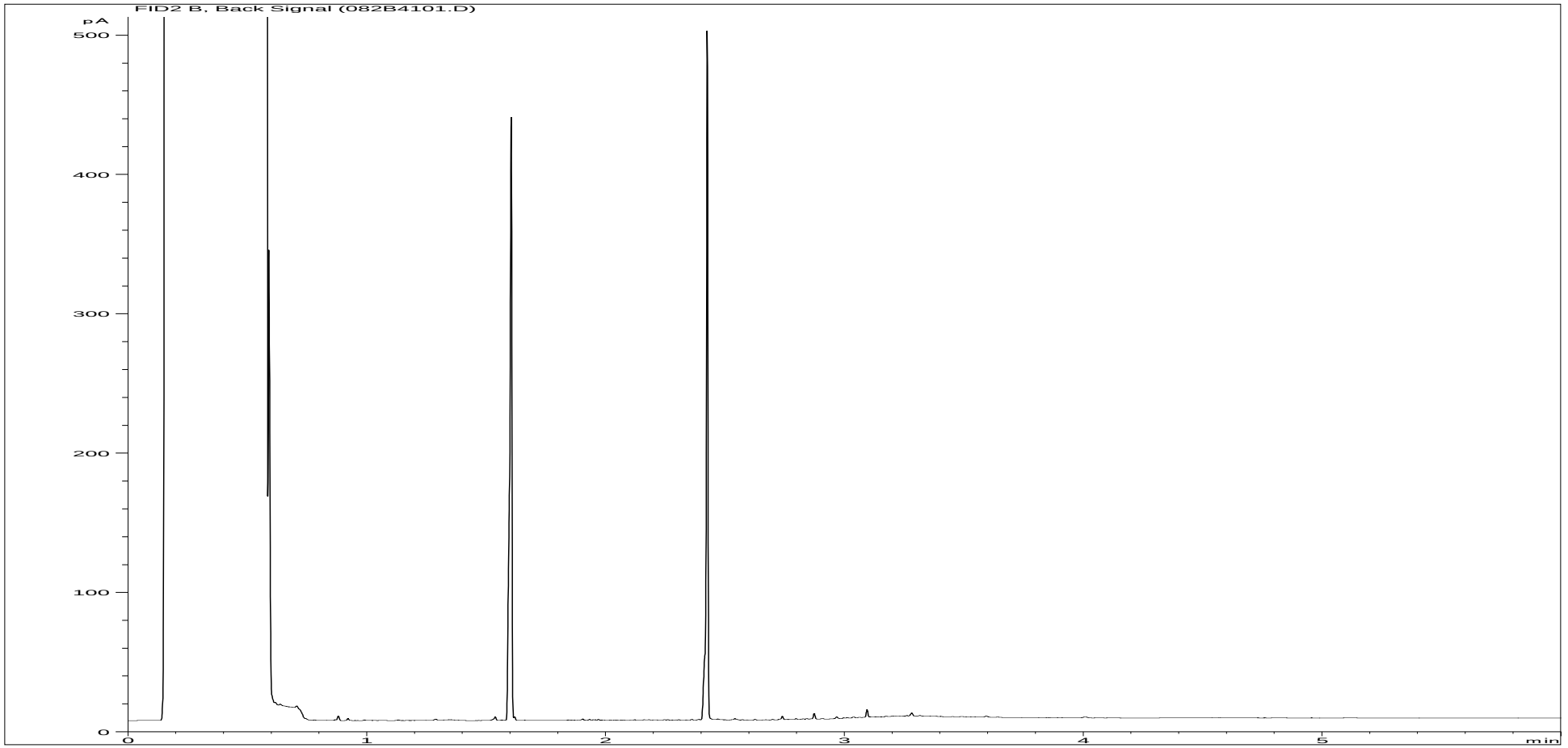
Petroleum Hydrocarbons (C8 to C40) by GC/FID Aliphatics Fraction.



Sample ID:	CL1616447ALI	**Job Number:**	S16_3958M
Multiplier:	15.52	**Client:**	Ramboll Environ
Dilution:	1	**Site:**	Zeon Chemicals ESA
Acquisition Method:	5UL_RUNF.M	**Client Sample Ref:**	WS10 0.2
Acquisition Date/Time:	19-May-16, 17:14:22		
Datafile:	D:\TES\DATA\Y2016\051916TPH_GC14\051916 2016-05-19 09-06-42\032F4101.D		

Where individual results are flagged see report notes for status.
Results corrected to dry weight at 105°C where appropriate, in accordance with the MCERTS standard.

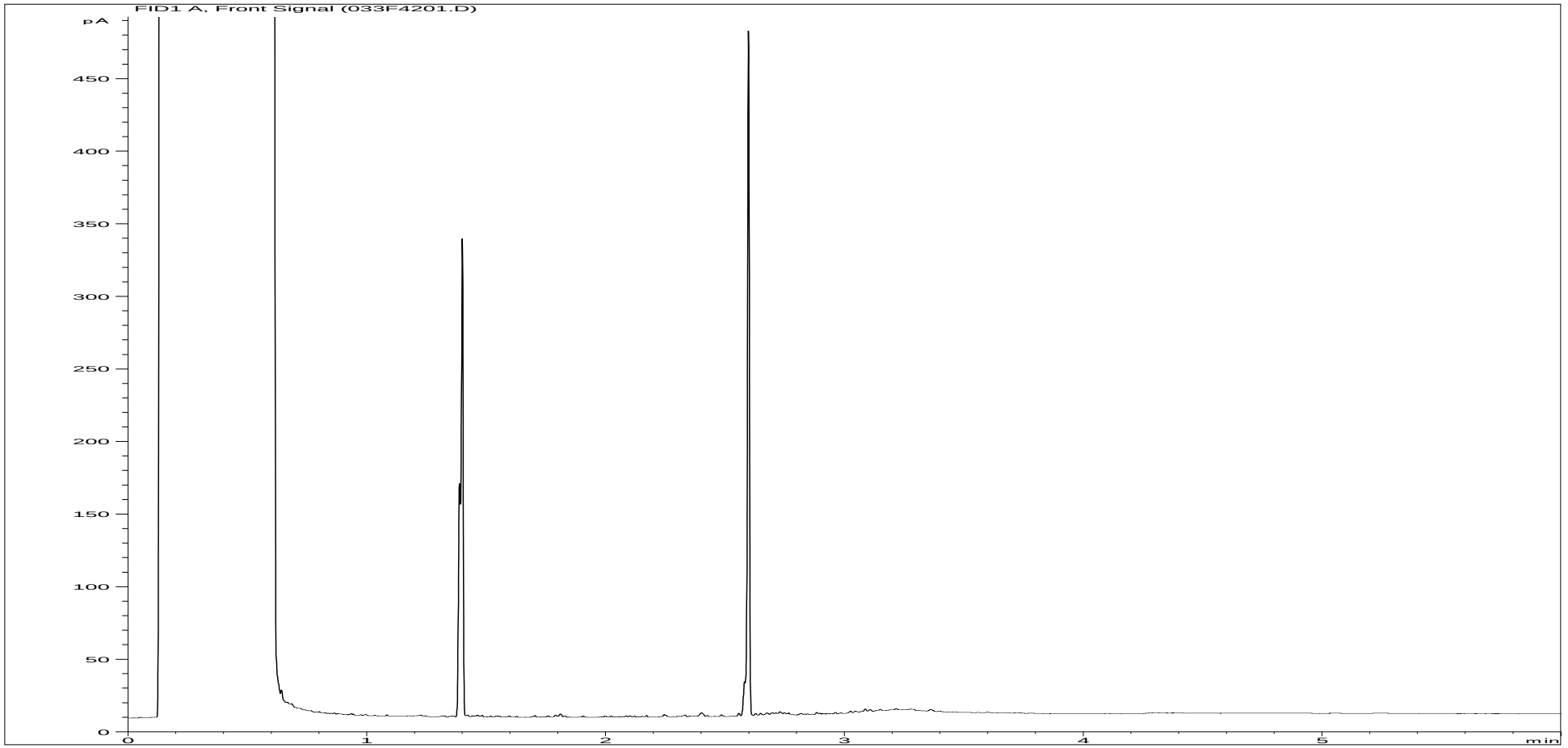
Petroleum Hydrocarbons (C8 to C40) by GC/FID Aromatics Fraction.



Sample ID:	CL1616447ARO	**Job Number:**	S16_3958M
Multiplier:	11.2	**Client:**	Ramboll Environ
Dilution:	1	**Site:**	Zeon Chemicals ESA
Acquisition Method:	5UL_RUNF.M	**Client Sample Ref:**	WS10 0.2
Acquisition Date/Time:	19-May-16, 17:14:22		
Datafile:	D:\TES\DATA\Y2016\051916TPH_GC14\051916 2016-05-19 09-06-42\082B4101.D		

Where individual results are flagged see report notes for status.
Results corrected to dry weight at 105°C where appropriate, in accordance with the MCERTS standard.

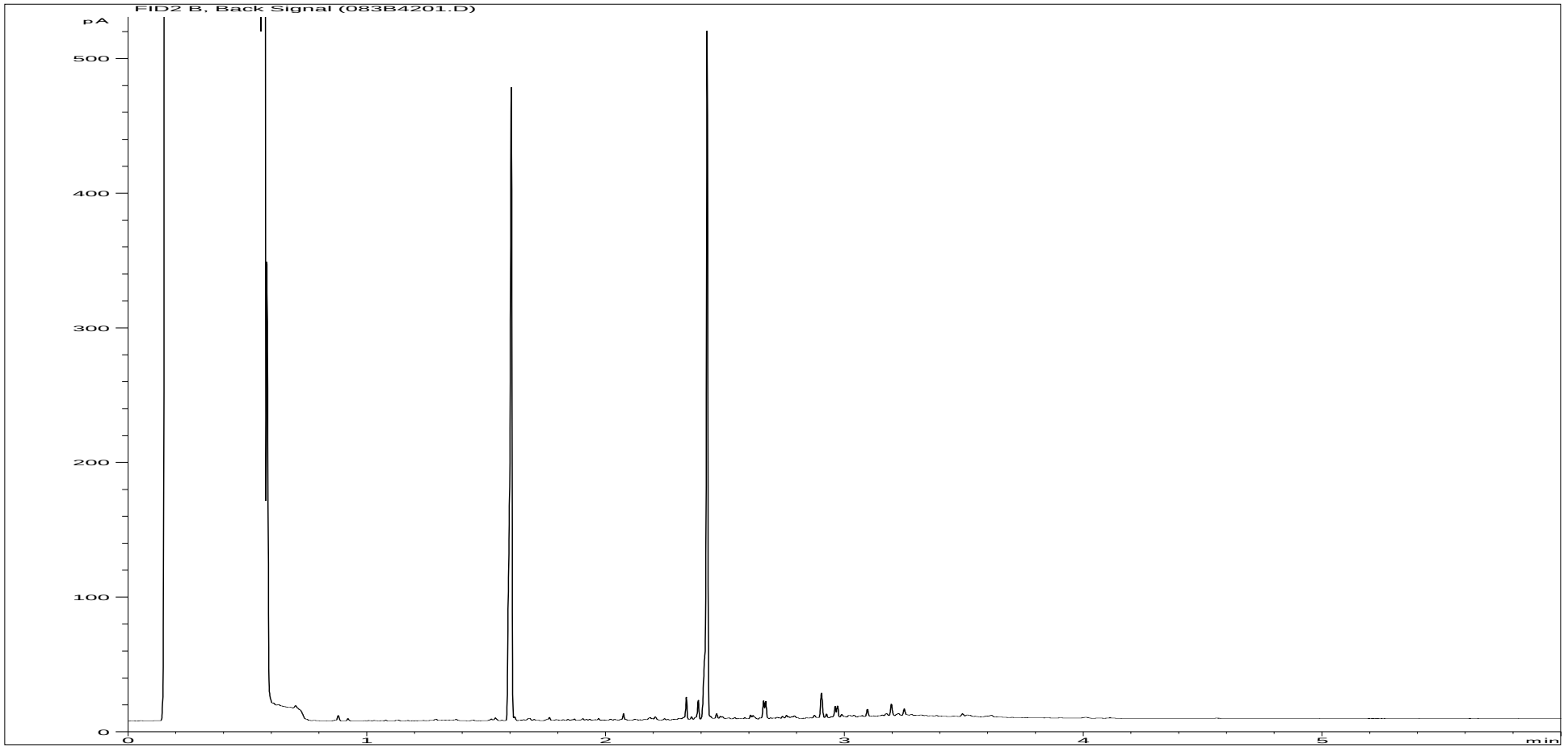
Petroleum Hydrocarbons (C8 to C40) by GC/FID Aliphatics Fraction.



Sample ID:	CL1616448ALI	**Job Number:**	S16_3958M
Multiplier:	15.68	**Client:**	Ramboll Environ
Dilution:	1	**Site:**	Zeon Chemicals ESA
Acquisition Method:	5UL_RUNF.M	**Client Sample Ref:**	WS7 0.3
Acquisition Date/Time:	19-May-16, 17:26:43		
Datafile:	D:\TES\DATA\Y2016\051916TPH_GC14\051916 2016-05-19 09-06-42\033F4201.D		

Where individual results are flagged see report notes for status.
Results corrected to dry weight at 105°C where appropriate, in accordance with the MCERTS standard.

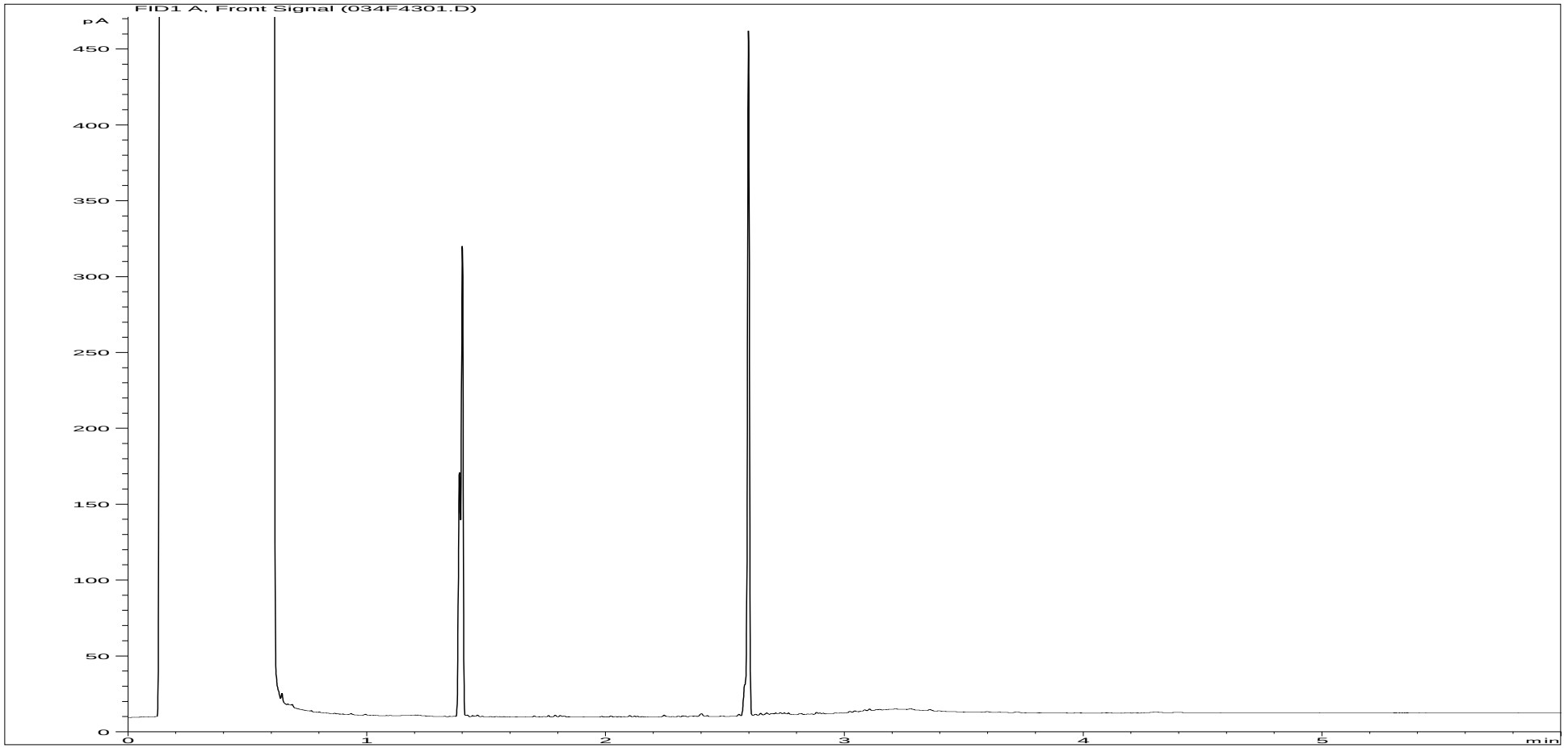
Petroleum Hydrocarbons (C8 to C40) by GC/FID Aromatics Fraction.



Sample ID:	CL1616448ARO	**Job Number:**	S16_3958M
Multiplier:	11.2	**Client:**	Ramboll Environ
Dilution:	1	**Site:**	Zeon Chemicals ESA
Acquisition Method:	5UL_RUNF.M	**Client Sample Ref:**	WS7 0.3
Acquisition Date/Time:	19-May-16, 17:26:43		
Datafile:	D:\TES\DATA\Y2016\051916TPH_GC14\051916 2016-05-19 09-06-42\083B4201.D		

Where individual results are flagged see report notes for status.
Results corrected to dry weight at 105°C where appropriate, in accordance with the MCERTS standard.

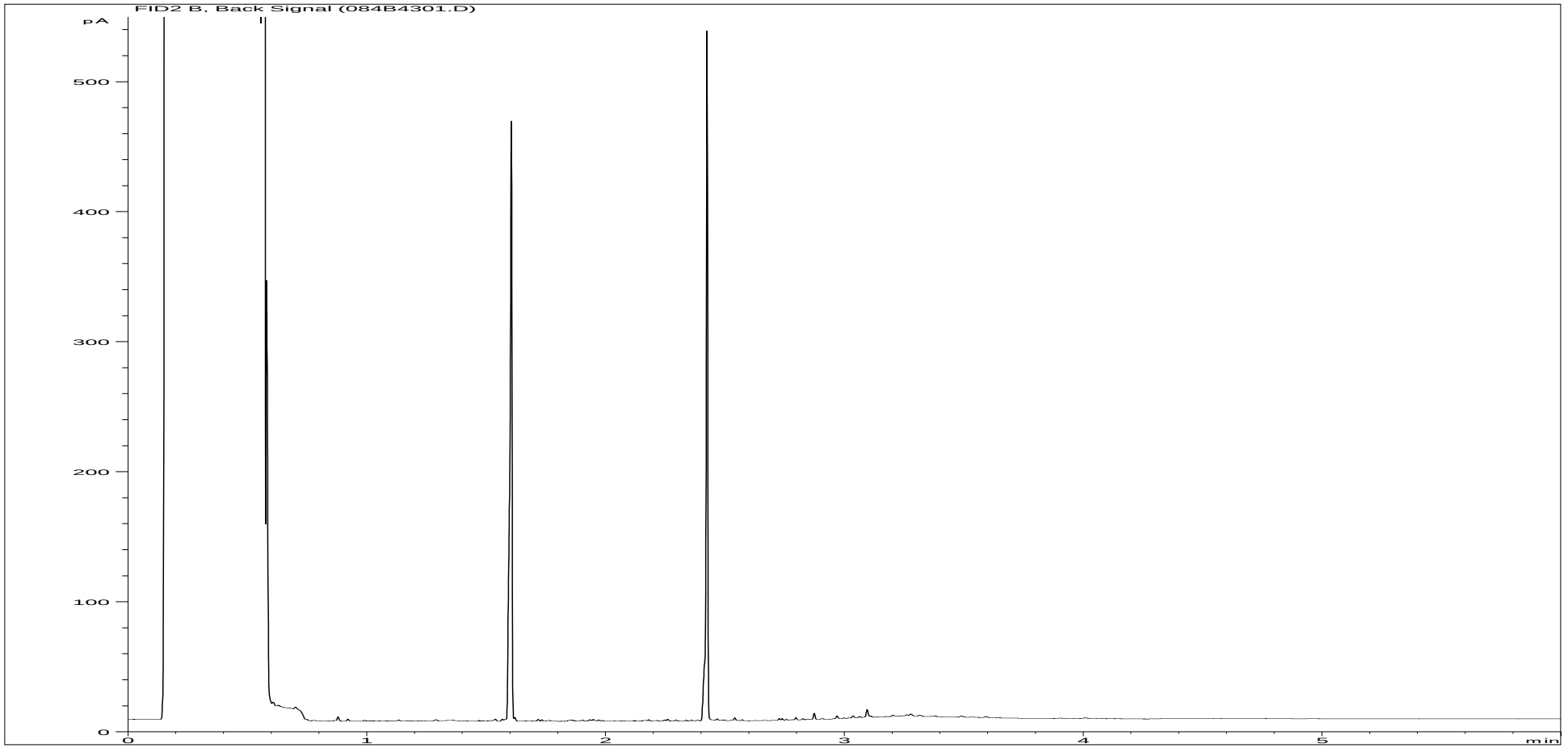
Petroleum Hydrocarbons (C8 to C40) by GC/FID Aliphatics Fraction.



Sample ID:	CL1616449ALI	**Job Number:**	S16_3958M
Multiplier:	15.52	**Client:**	Ramboll Environ
Dilution:	1	**Site:**	Zeon Chemicals ESA
Acquisition Method:	5UL_RUNF.M	**Client Sample Ref:**	WS7 0.8
Acquisition Date/Time:	19-May-16, 17:38:52		
Datafile:	D:\TES\DATA\Y2016\051916TPH_GC14\051916 2016-05-19 09-06-42\034F4301.D		

Where individual results are flagged see report notes for status.
Results corrected to dry weight at 105°C where appropriate, in accordance with the MCERTS standard.

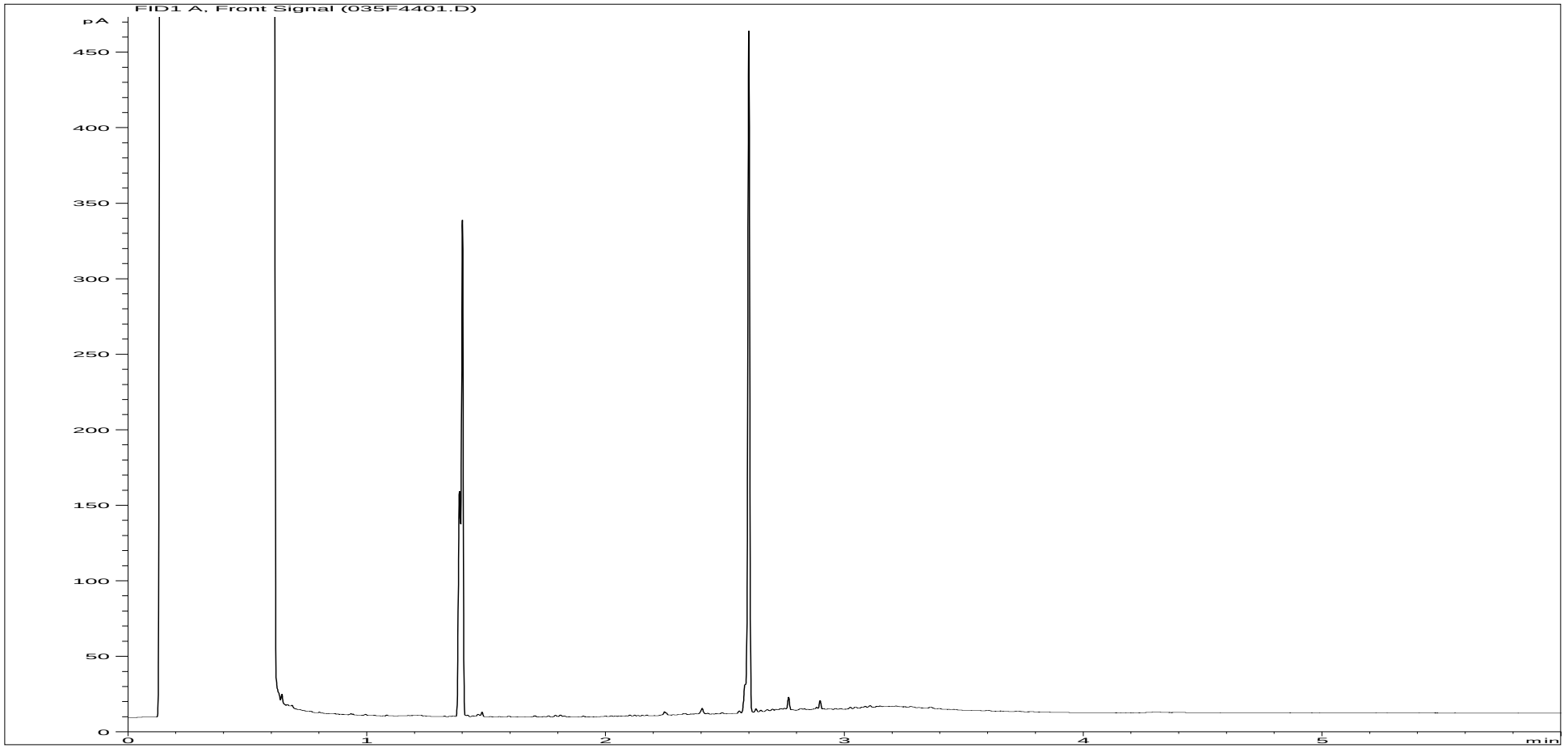
Petroleum Hydrocarbons (C8 to C40) by GC/FID Aromatics Fraction.



Sample ID:	CL1616449ARO	**Job Number:**	S16_3958M
Multiplier:	11.2	**Client:**	Ramboll Environ
Dilution:	1	**Site:**	Zeon Chemicals ESA
Acquisition Method:	5UL_RUNF.M	**Client Sample Ref:**	WS7 0.8
Acquisition Date/Time:	19-May-16, 17:38:52		
Datafile:	D:\TES\DATA\Y2016\051916TPH_GC14\051916 2016-05-19 09-06-42\084B4301.D		

Where individual results are flagged see report notes for status.
Results corrected to dry weight at 105°C where appropriate, in accordance with the MCERTS standard.

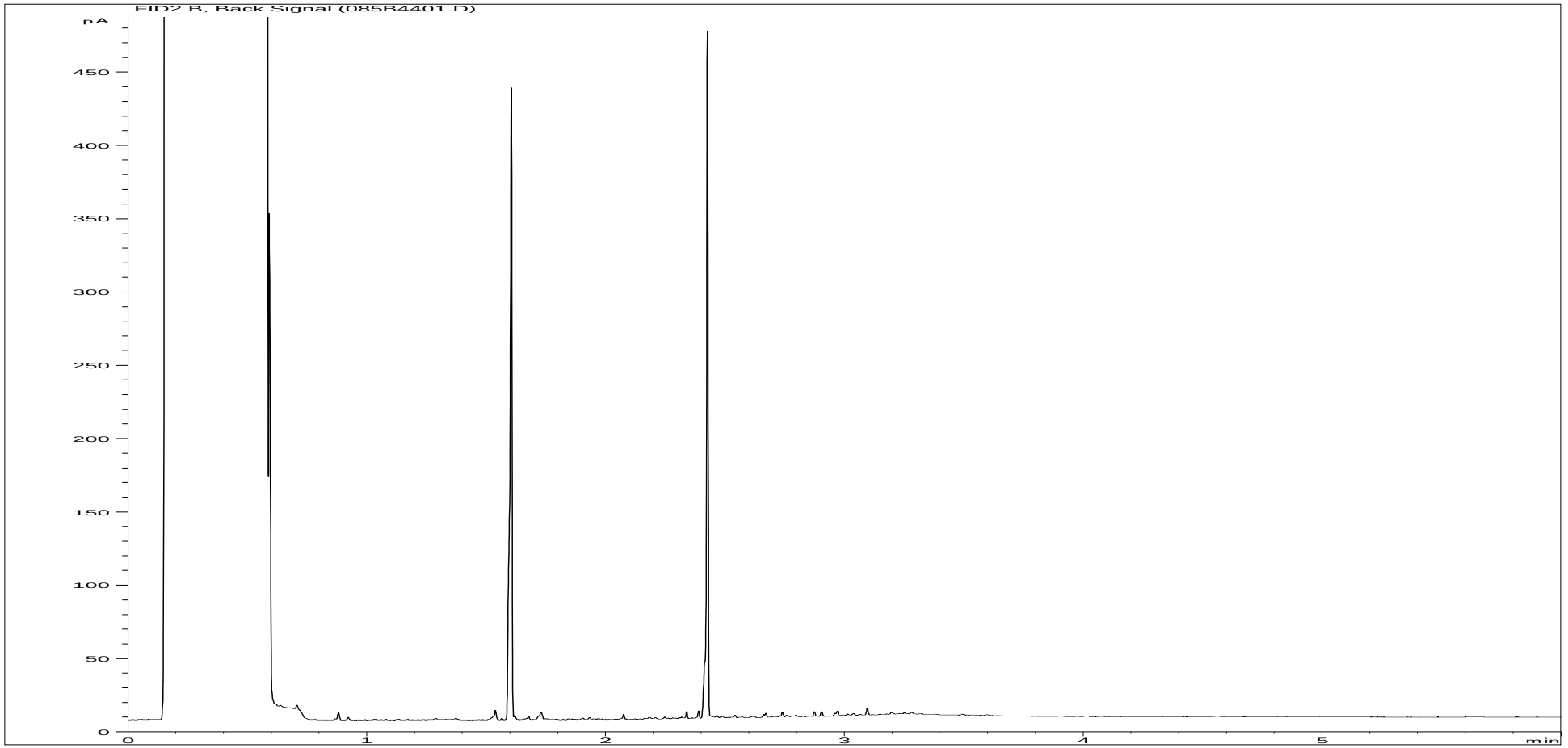
Petroleum Hydrocarbons (C8 to C40) by GC/FID Aliphatics Fraction.



Sample ID:	CL1616450ALI	**Job Number:**	S16_3958M
Multiplier:	15.68	**Client:**	Ramboll Environ
Dilution:	1	**Site:**	Zeon Chemicals ESA
Acquisition Method:	5UL_RUNF.M	**Client Sample Ref:**	WS2 0.3
Acquisition Date/Time:	19-May-16, 17:50:49		
Datafile:	D:\TES\DATA\Y2016\051916TPH_GC14\051916 2016-05-19 09-06-42\035F4401.D		

Where individual results are flagged see report notes for status.
Results corrected to dry weight at 105°C where appropriate, in accordance with the MCERTS standard.

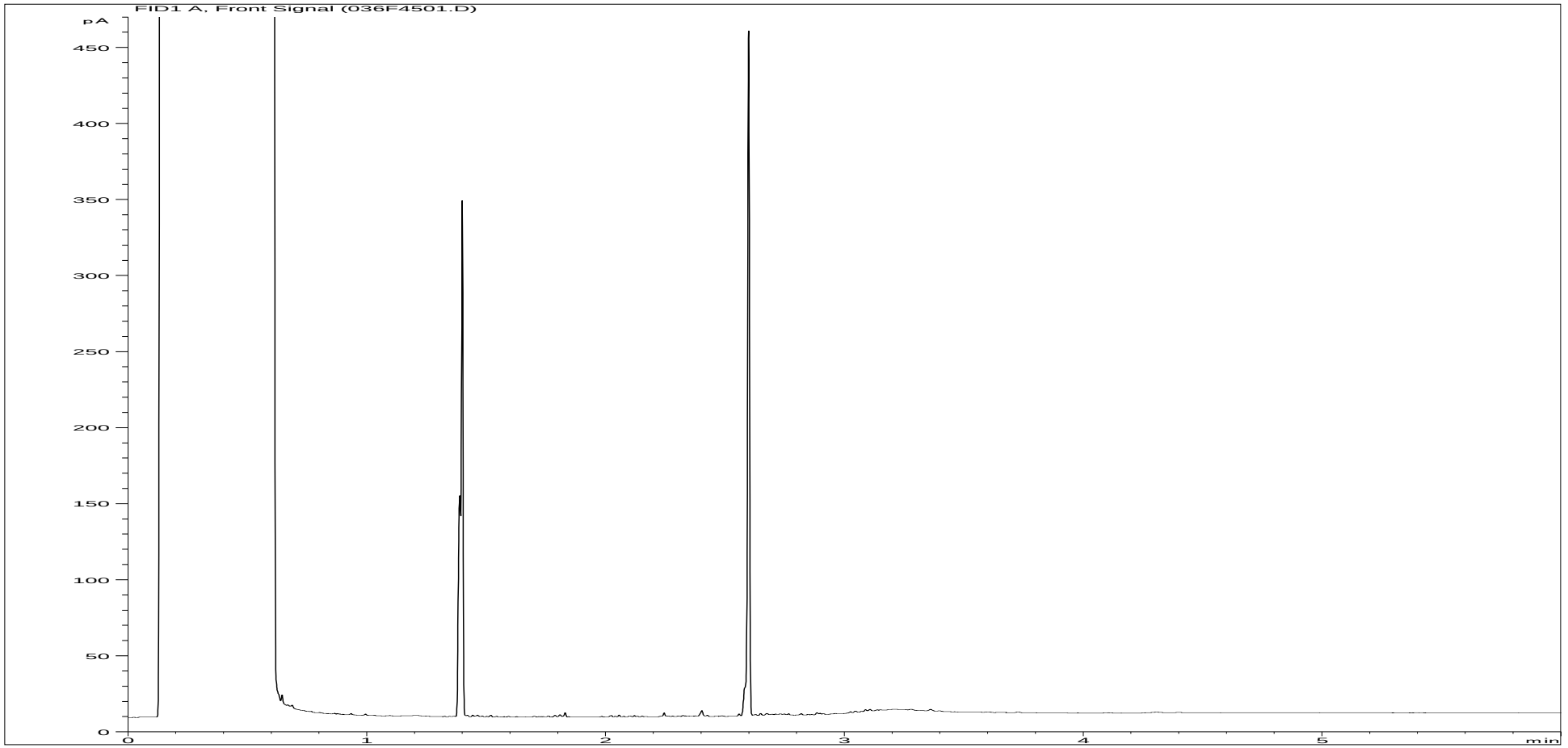
Petroleum Hydrocarbons (C8 to C40) by GC/FID Aromatics Fraction.



Sample ID:	CL1616450ARO	**Job Number:**	S16_3958M
Multiplier:	11.2	**Client:**	Ramboll Environ
Dilution:	1	**Site:**	Zeon Chemicals ESA
Acquisition Method:	5UL_RUNF.M	**Client Sample Ref:**	WS2 0.3
Acquisition Date/Time:	19-May-16, 17:50:49		
Datafile:	D:\TES\DATA\Y2016\051916TPH_GC14\051916 2016-05-19 09-06-42\085B4401.D		

Where individual results are flagged see report notes for status.
Results corrected to dry weight at 105°C where appropriate, in accordance with the MCERTS standard.

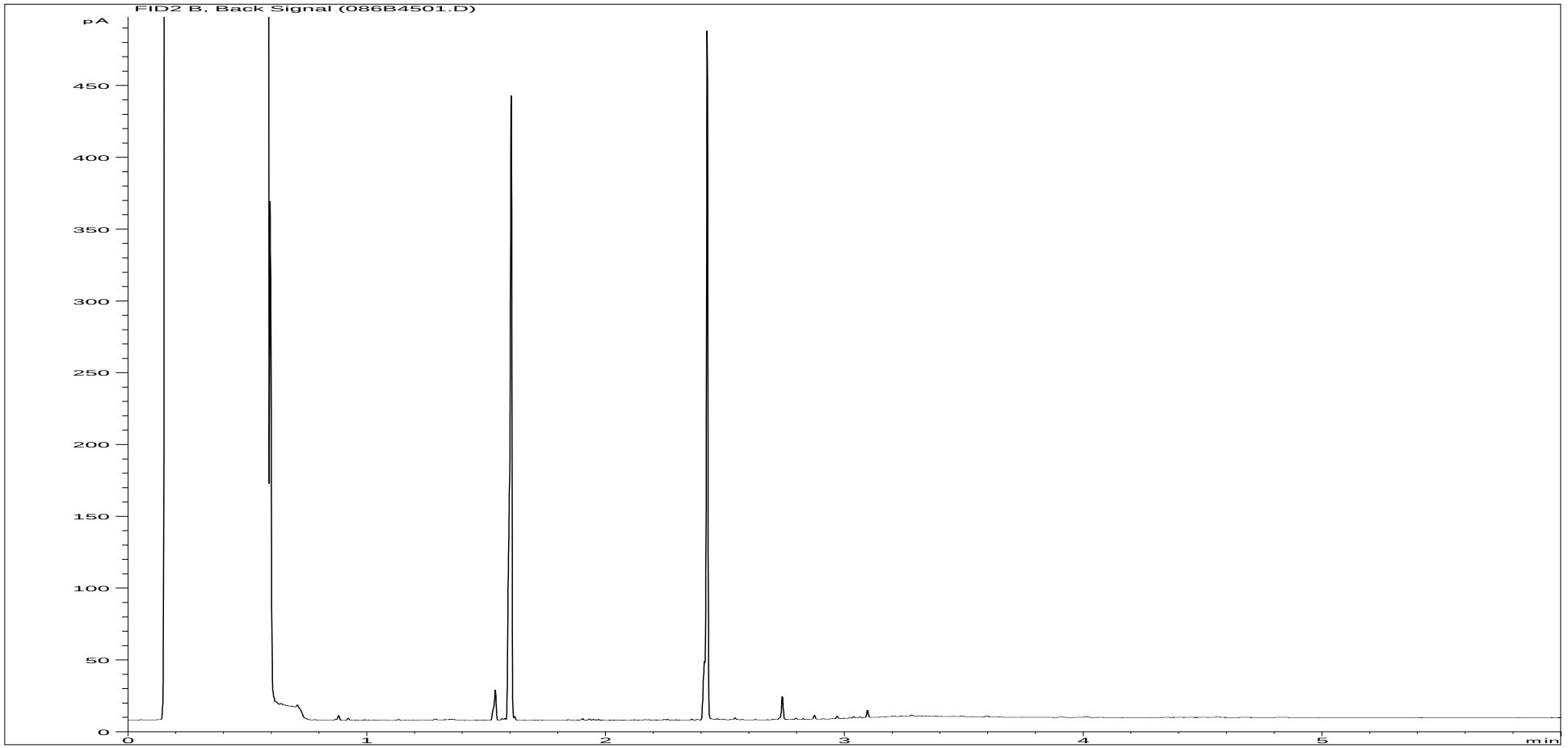
Petroleum Hydrocarbons (C8 to C40) by GC/FID Aliphatics Fraction.



Sample ID:	CL1616451ALI	**Job Number:**	S16_3958M
Multiplier:	15.68	**Client:**	Ramboll Environ
Dilution:	1	**Site:**	Zeon Chemicals ESA
Acquisition Method:	5UL_RUNF.M	**Client Sample Ref:**	WS2 2.0
Acquisition Date/Time:	19-May-16, 18:02:49		
Datafile:	D:\TES\DATA\Y2016\051916TPH_GC14\051916 2016-05-19 09-06-42\036F4501.D		

Where individual results are flagged see report notes for status.
Results corrected to dry weight at 105°C where appropriate, in accordance with the MCERTS standard.

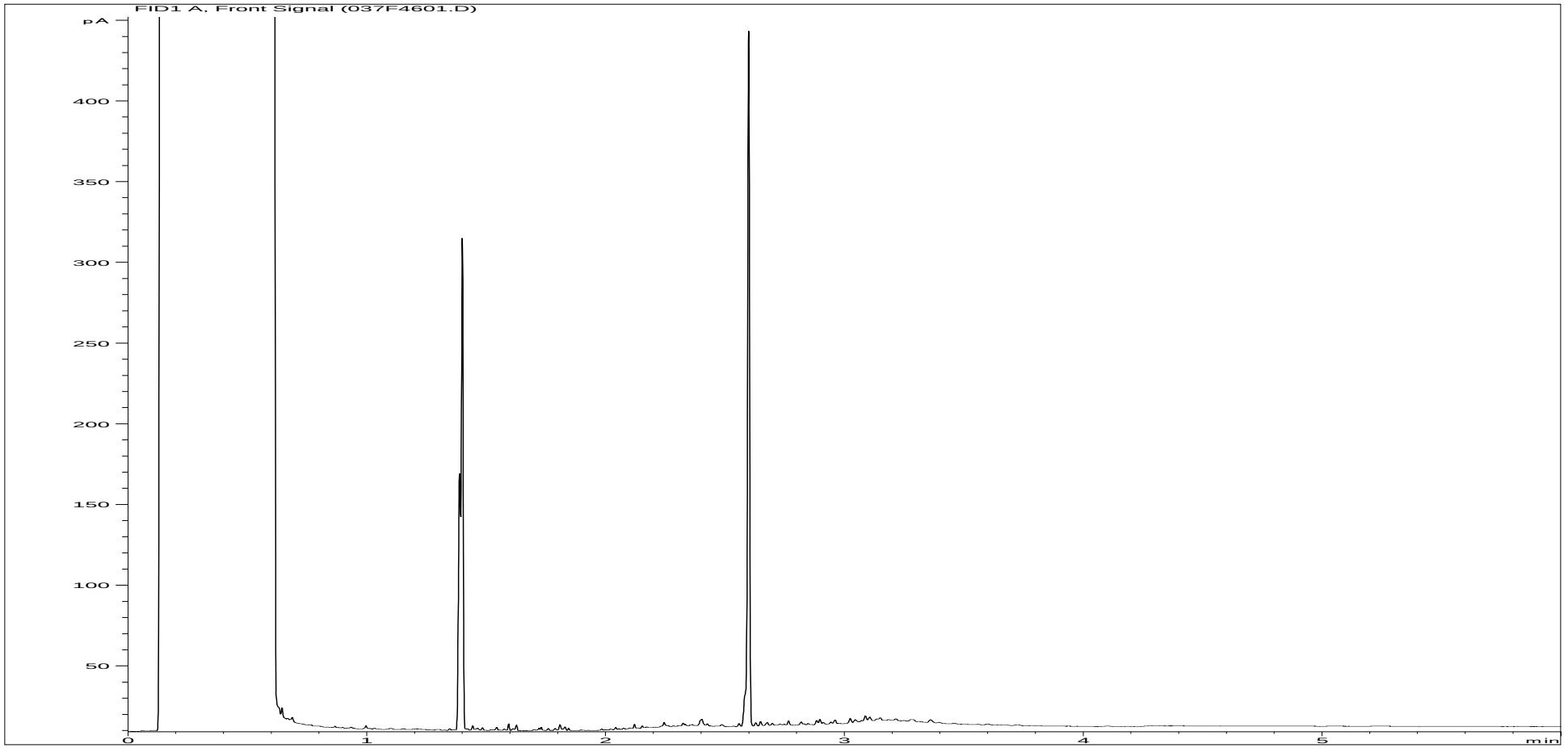
Petroleum Hydrocarbons (C8 to C40) by GC/FID Aromatics Fraction.



Sample ID:	CL1616451ARO	**Job Number:**	S16_3958M
Multiplier:	11.2	**Client:**	Ramboll Environ
Dilution:	1	**Site:**	Zeon Chemicals ESA
Acquisition Method:	5UL_RUNF.M	**Client Sample Ref:**	WS2 2.0
Acquisition Date/Time:	19-May-16, 18:02:49		
Datafile:	D:\TES\DATA\Y2016\051916TPH_GC14\051916 2016-05-19 09-06-42\086B4501.D		

Where individual results are flagged see report notes for status.
Results corrected to dry weight at 105°C where appropriate, in accordance with the MCERTS standard.

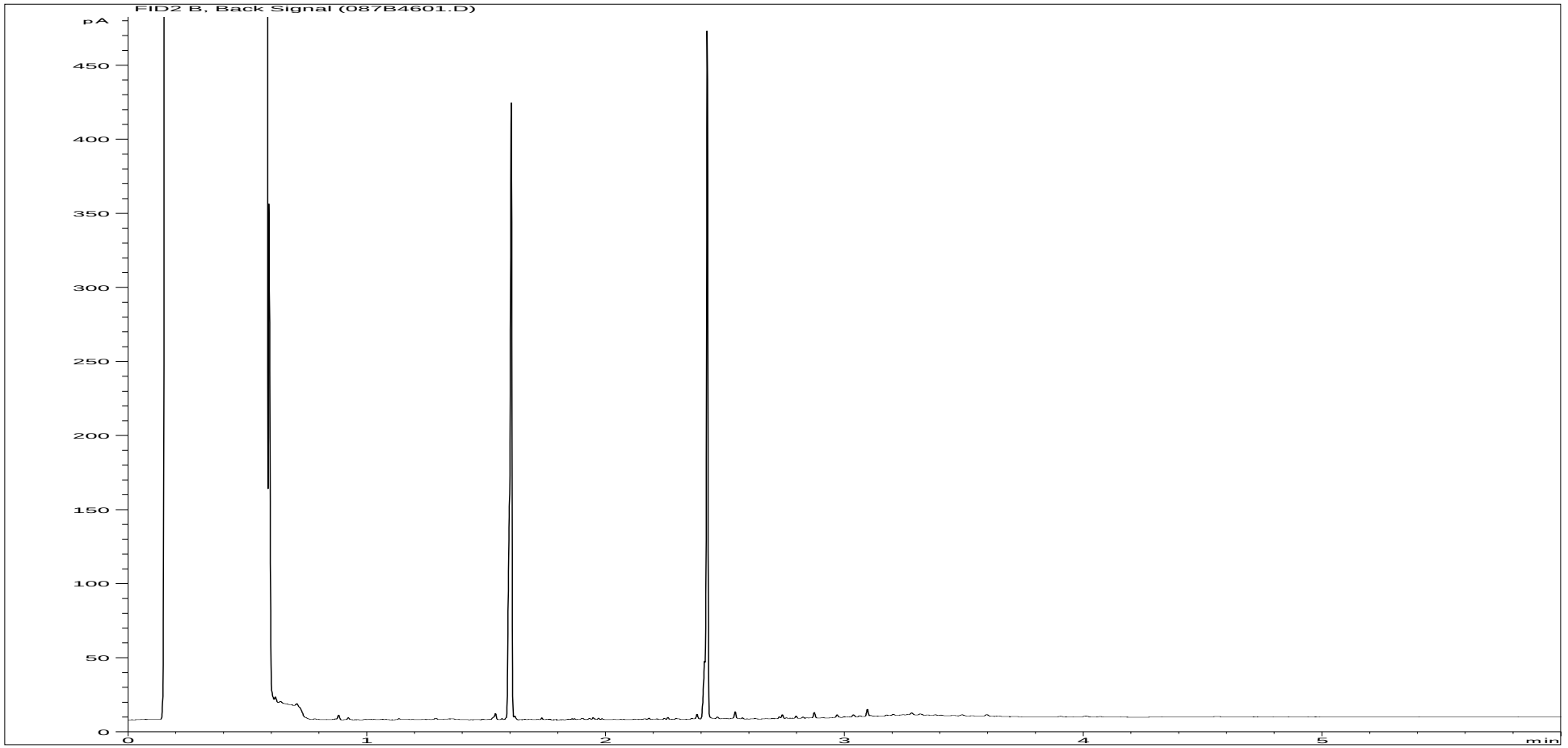
Petroleum Hydrocarbons (C8 to C40) by GC/FID Aliphatics Fraction.



Sample ID:	CL1616452ALI	**Job Number:**	S16_3958M
Multiplier:	15.52	**Client:**	Ramboll Environ
Dilution:	1	**Site:**	Zeon Chemicals ESA
Acquisition Method:	5UL_RUNF.M	**Client Sample Ref:**	WS1 3.0
Acquisition Date/Time:	19-May-16, 18:14:44		
Datafile:	D:\TES\DATA\Y2016\051916TPH_GC14\051916 2016-05-19 09-06-42\037F4601.D		

Where individual results are flagged see report notes for status.
Results corrected to dry weight at 105°C where appropriate, in accordance with the MCERTS standard.

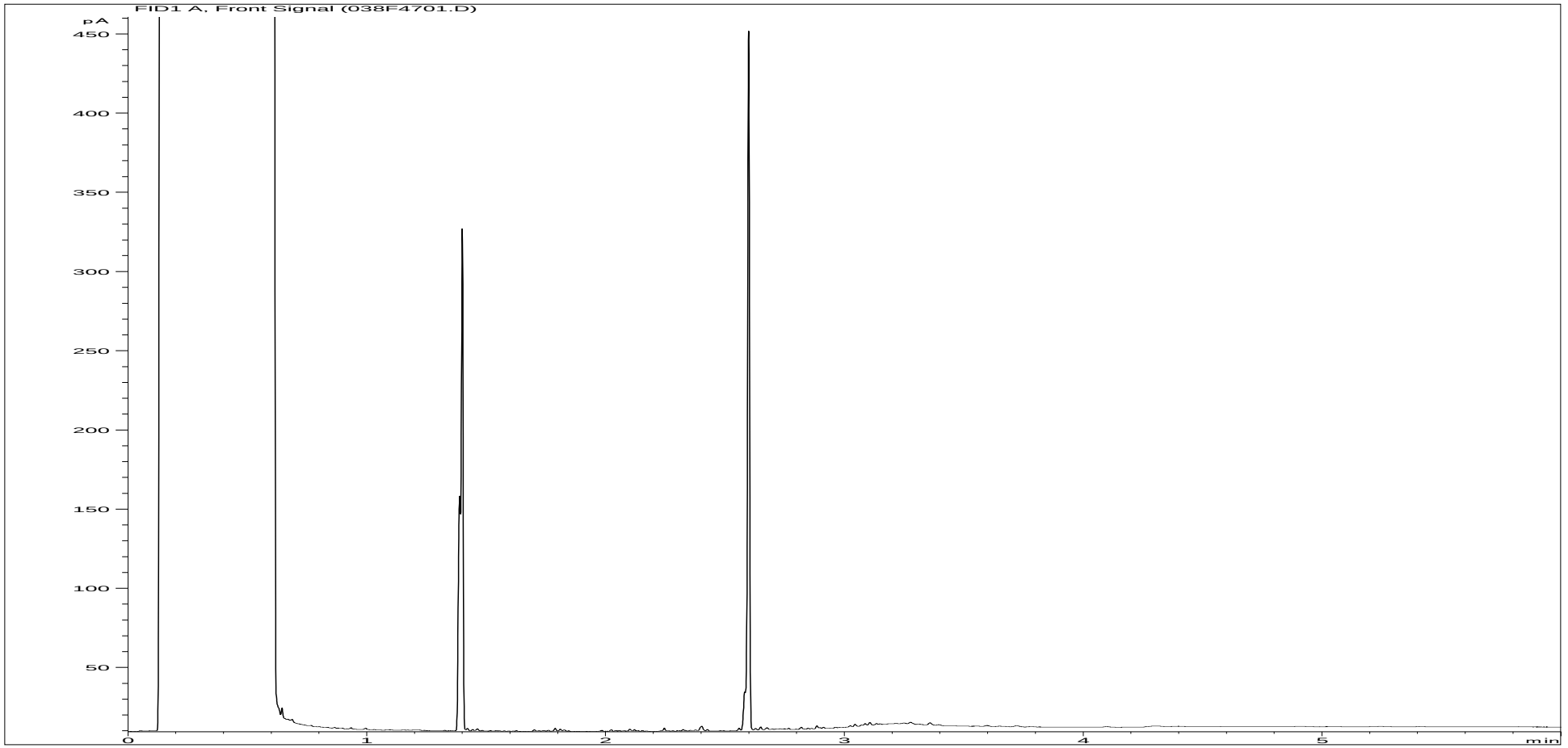
Petroleum Hydrocarbons (C8 to C40) by GC/FID Aromatics Fraction.



Sample ID:	CL1616452ARO	**Job Number:**	S16_3958M
Multiplier:	11.2	**Client:**	Ramboll Environ
Dilution:	1	**Site:**	Zeon Chemicals ESA
Acquisition Method:	5UL_RUNF.M	**Client Sample Ref:**	WS1 3.0
Acquisition Date/Time:	19-May-16, 18:14:44		
Datafile:	D:\TES\DATA\Y2016\051916TPH_GC14\051916 2016-05-19 09-06-42\087B4601.D		

Where individual results are flagged see report notes for status.
Results corrected to dry weight at 105°C where appropriate, in accordance with the MCERTS standard.

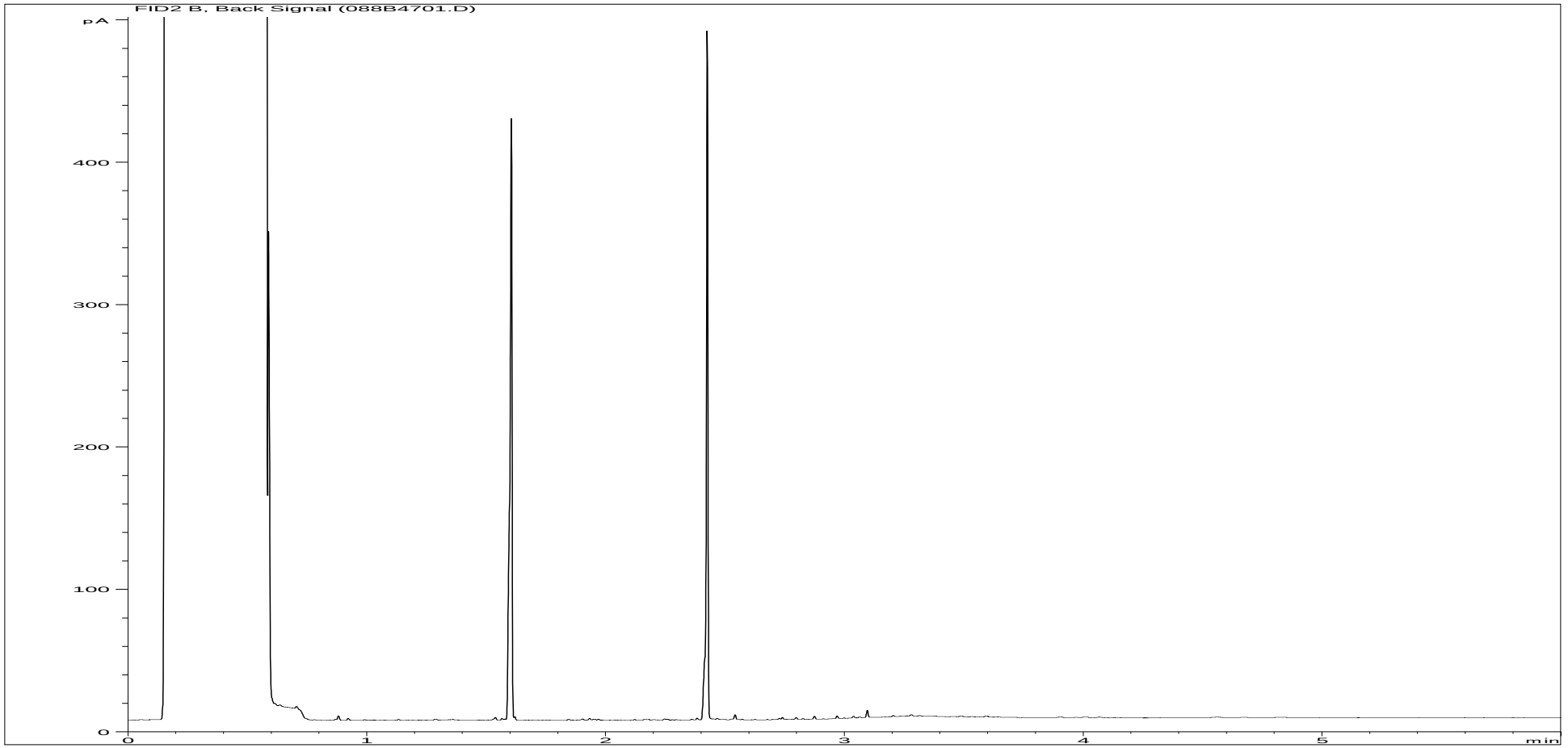
Petroleum Hydrocarbons (C8 to C40) by GC/FID Aliphatics Fraction.



Sample ID:	CL1616453ALI	**Job Number:**	S16_3958M
Multiplier:	15.52	**Client:**	Ramboll Environ
Dilution:	1	**Site:**	Zeon Chemicals ESA
Acquisition Method:	5UL_RUNF.M	**Client Sample Ref:**	WS1 4.0
Acquisition Date/Time:	19-May-16, 18:26:44		
Datafile:	D:\TES\DATA\Y2016\051916TPH_GC14\051916 2016-05-19 09-06-42\038F4701.D		

Where individual results are flagged see report notes for status.
Results corrected to dry weight at 105°C where appropriate, in accordance with the MCERTS standard.

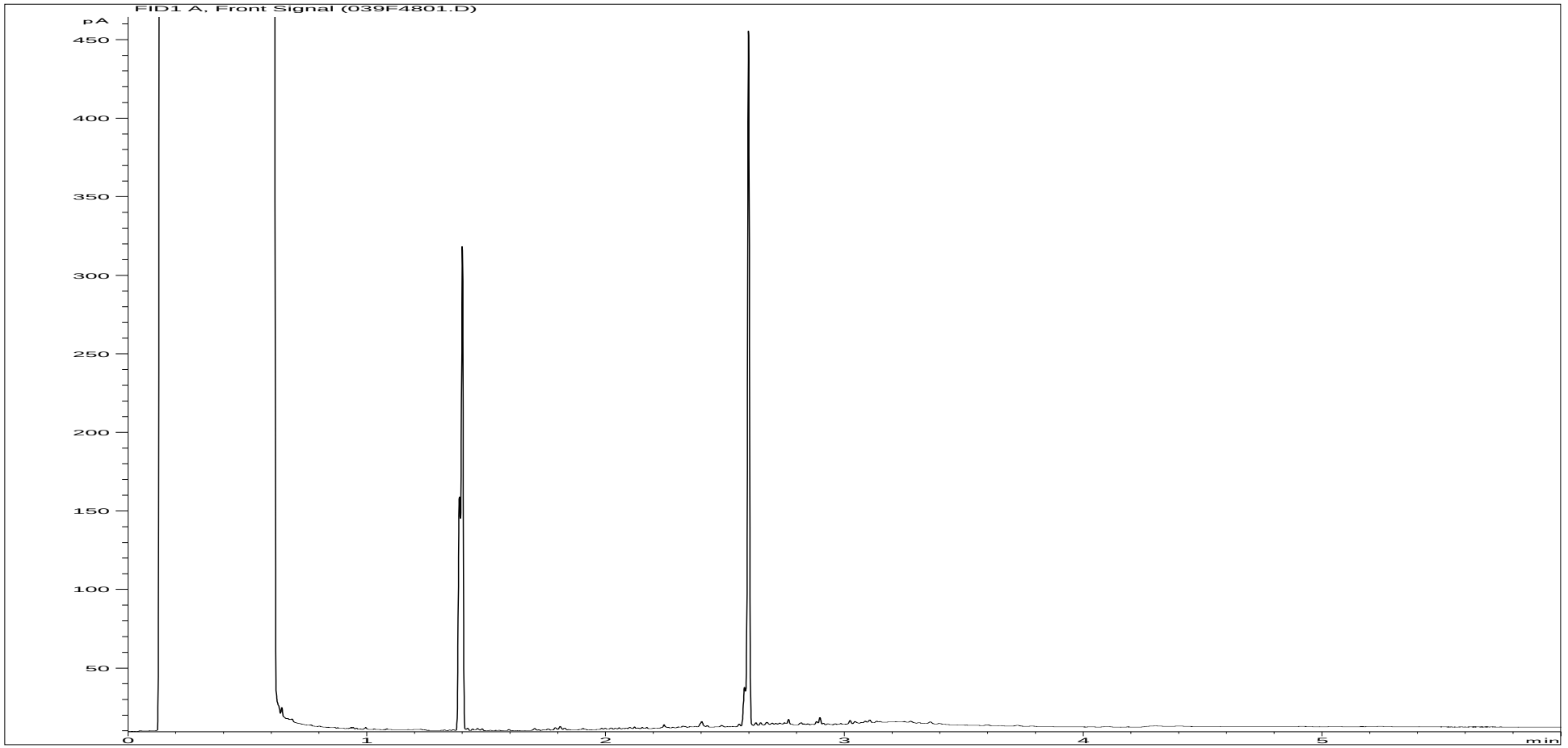
Petroleum Hydrocarbons (C8 to C40) by GC/FID Aromatics Fraction.



Sample ID:	CL1616453ARO	**Job Number:**	S16_3958M
Multiplier:	11.36	**Client:**	Ramboll Environ
Dilution:	1	**Site:**	Zeon Chemicals ESA
Acquisition Method:	5UL_RUNF.M	**Client Sample Ref:**	WS1 4.0
Acquisition Date/Time:	19-May-16, 18:26:44		
Datafile:	D:\TES\DATA\Y2016\051916TPH_GC14\051916 2016-05-19 09-06-42\088B4701.D		

Where individual results are flagged see report notes for status.
Results corrected to dry weight at 105°C where appropriate, in accordance with the MCERTS standard.

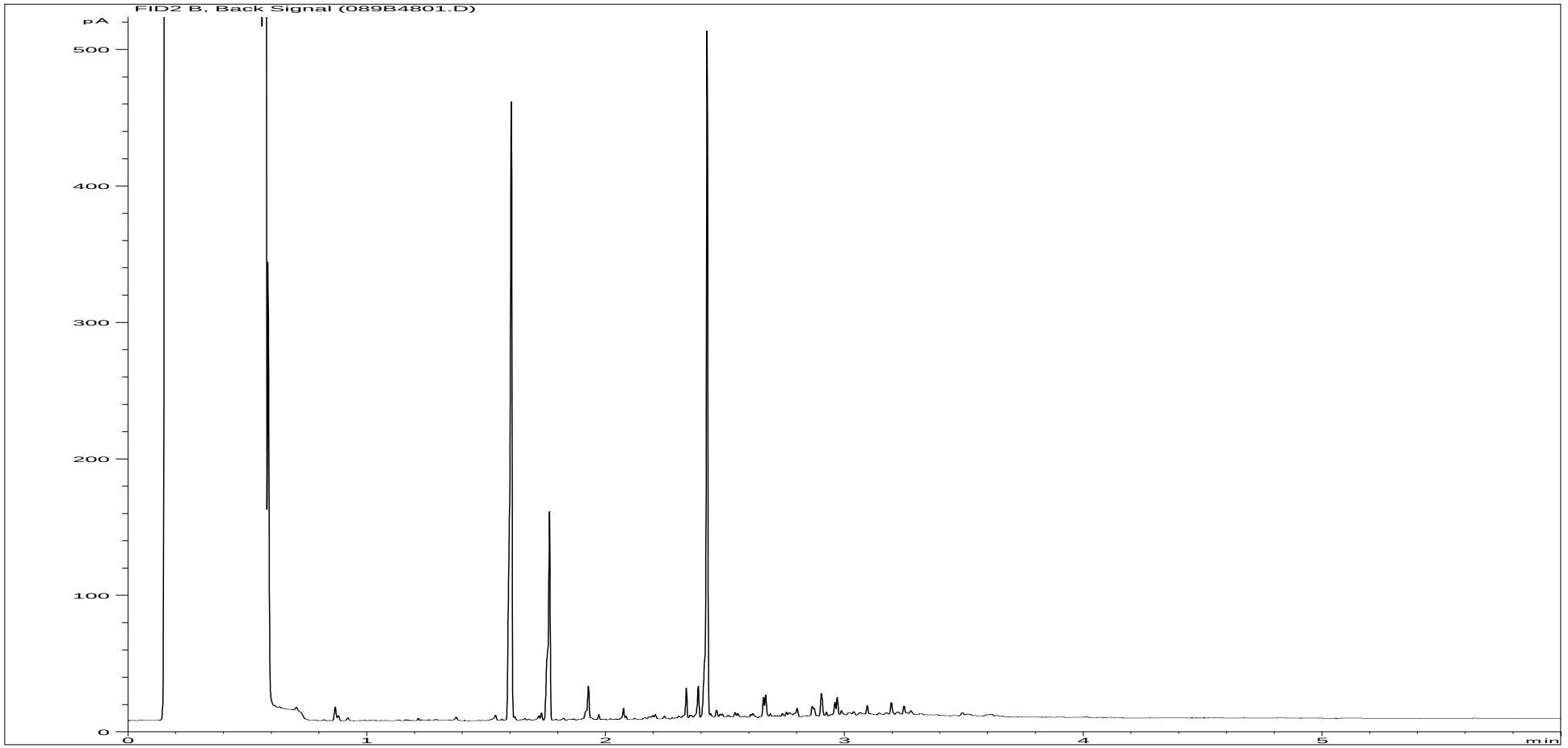
Petroleum Hydrocarbons (C8 to C40) by GC/FID Aliphatics Fraction.



Sample ID:	CL1616454ALI	**Job Number:**	S16_3958M
Multiplier:	15.52	**Client:**	Ramboll Environ
Dilution:	1	**Site:**	Zeon Chemicals ESA
Acquisition Method:	5UL_RUNF.M	**Client Sample Ref:**	WS9 0.3
Acquisition Date/Time:	19-May-16, 18:38:41		
Datafile:	D:\TES\DATA\Y2016\051916TPH_GC14\051916 2016-05-19 09-06-42\039F4801.D		

Where individual results are flagged see report notes for status.
Results corrected to dry weight at 105°C where appropriate, in accordance with the MCERTS standard.

Petroleum Hydrocarbons (C8 to C40) by GC/FID Aromatics Fraction.



Sample ID:	CL1616454ARO	**Job Number:**	S16_3958M
Multiplier:	11.2	**Client:**	Ramboll Environ
Dilution:	1	**Site:**	Zeon Chemicals ESA
Acquisition Method:	5UL_RUNF.M	**Client Sample Ref:**	WS9 0.3
Acquisition Date/Time:	19-May-16, 18:38:41		
Datafile:	D:\TES\DATA\Y2016\051916TPH_GC14\051916 2016-05-19 09-06-42\089B4801.D		

Where individual results are flagged see report notes for status.
Results corrected to dry weight at 105°C where appropriate, in accordance with the MCERTS standard.

Volatile Organic Compounds by HSA-GCMS

Accredited?: Yes

Customer and Site Details: Ramboll Environ: Zeon Chemicals ESA
Sample Details: WS6 1.0
LIMS ID Number: CL1616445
Job Number: S16_3958M

Directory/Quant file: 517VOC.MS19\ Initial Calibration
Date Booked in: 16-May-16
Date Analysed: 18-May-16
Operator:

Matrix: Soil
Method: Headspace
Multiplier: 0.98
Position: 10

Target Compounds	CAS #	R.T. (min.)	Concentration µg/kg	% Fit	Accr. code
Dichlorodifluoromethane	75-71-8 **	-	< 1	-	N
Chloromethane	74-87-3 *	-	< 4	-	N
Vinyl Chloride	75-01-4	-	< 1	-	UM
Bromomethane	74-83-9	-	< 1	-	UM
Chloroethane	75-00-3	-	< 2	-	UM
Trichlorofluoromethane	75-69-4	-	< 1	-	UM
1,1-Dichloroethene	75-35-48 *	-	< 1	-	N
trans 1,2-Dichloroethene	156-60-5	-	< 1	-	UM
1,1-Dichloroethane	75-34-3	-	< 1	-	UM
MTBE	1634-04-4	-	< 1	-	UM
2,2-Dichloropropane	594-20-7	-	< 1	-	UM
cis 1,2-Dichloroethene	156-59-2	-	< 6	-	UM
Bromochloromethane	74-97-5	-	< 1	-	UM
Chloroform	67-66-3	-	< 1	-	UM
1,1,1-Trichloroethane	71-55-6	-	< 1	-	UM
Carbon Tetrachloride	56-23-5	-	< 1	-	UM
1,1-Dichloropropene	563-58-6	-	< 1	-	UM
Benzene	71-43-2	-	< 1	-	UM
1,2-Dichloroethane	107-06-2	-	< 1	-	UM
Trichloroethene	79-01-6 **	-	< 1	-	N
1,2-Dichloropropane	78-87-5	-	< 1	-	UM
Dibromomethane	74-95-3	-	< 1	-	UM
Bromodichloromethane	75-27-4	-	< 1	-	UM
cis 1,3-Dichloropropene	10061-01-5	-	< 1	-	UM
Toluene	108-88-3	-	< 6	-	UM
trans 1,3-Dichloropropene	10061-02-6	-	< 1	-	UM
1,1,2-Trichloroethane	79-00-5	-	< 1	-	UM
Tetrachloroethene	127-18-4	-	< 4	-	UM
1,3-Dichloropropane	142-28-9	-	< 1	-	UM
Dibromochloromethane	124-48-1	-	< 1	-	UM
1,2-Dibromoethane	106-93-4	-	< 1	-	UM
Chlorobenzene	108-90-7	-	< 1	-	UM
Ethylbenzene	100-41-4	-	< 2	-	UM
1,1,1,2-Tetrachloroethane	630-20-6	-	< 1	-	UM
m and p-Xylene	108-38-3/106-42-3	-	< 5	-	UM

Target Compounds	CAS #	R.T. (min.)	Concentration µg/kg	% Fit	Accr. code
o-Xylene	95-47-6	-	< 2	-	UM
Styrene	100-42-5	-	< 1	-	UM
Bromoform	75-25-2	-	< 1	-	UM
iso-Propylbenzene	98-82-8	5.81	10	58	UM
1,1,2,2-Tetrachloroethane	79-34-5 **	-	< 1	-	N
Propylbenzene	103-65-1	-	< 1	-	UM
Bromobenzene	108-86-1	-	< 1	-	UM
1,2,3-Trichloropropane	96-18-4	-	< 1	-	UM
2-Chlorotoluene	95-49-8	-	< 1	-	UM
1,3,5-Trimethylbenzene	108-67-8	-	< 1	-	UM
4-Chlorotoluene	106-43-4	-	< 1	-	UM
tert-Butylbenzene	98-06-6	-	< 1	-	UM
1,2,4-Trimethylbenzene	95-63-6	6.13	176	95	UM
sec-Butylbenzene	135-98-8	6.18	85	58	UM
p-Isopropyltoluene	99-87-6	-	< 1	-	UM
1,3-Dichlorobenzene	541-73-1	-	< 1	-	UM
1,4-Dichlorobenzene	106-46-7	-	< 1	-	UM
n-Butylbenzene	104-51-8 *	6.36	92	72	N
1,2-Dichlorobenzene	95-50-1	-	< 1	-	UM
1,2-Dibromo-3-chloropropane	96-12-8	-	< 1	-	UM
1,2,4-Trichlorobenzene	120-82-1 *	-	< 4	-	N
Hexachlorobutadiene	87-68-3 **	-	< 2	-	N
Naphthalene	91-20-3	7.14	33	M	UM
1,2,3-Trichlorobenzene	87-61-6	-	< 4	-	UM

Concentrations are reported on a dry weight basis
Compounds marked ** are not UKAS or Mcerts accredited
"M" denotes that % fit has been manually interpreted
This analysis was conducted on an 'As Received' basis.

Internal standards	R.T.	Area %	Surrogates	% Rec
Pentafluorobenzene	4.04	107	Dibromofluoromethane	104
1,4-Difluorobenzene	4.39	106	Toluene-d8	97
Chlorobenzene-d5	5.50	100		
Bromofluorobenzene	5.89	125		
1,4-Dichlorobenzene-d4	6.29	97		
Naphthalene-d8	7.12	78		

Where individual results are flagged see report notes for status.
Results corrected to dry weight at 105°C where appropriate, in accordance with the MCERTS standard.

Volatile Organic Compounds by HSA-GCMS

Accredited?: Yes

Customer and Site Details: Ramboll Environ: Zeon Chemicals ESA
Sample Details: WS6 2.0
LIMS ID Number: CL1616446
Job Number: S16_3958M

Directory/Quant file: 517VOC.MS19\ Initial Calibration
Date Booked in: 16-May-16
Date Analysed: 18-May-16
Operator:

Matrix: Soil
Method: Headspace
Multiplier: 1.1
Position: 11

Target Compounds	CAS #	R.T. (min.)	Concentration µg/kg	% Fit	Accr. code
Dichlorodifluoromethane	75-71-8 **	-	< 1	-	N
Chloromethane	74-87-3 *	-	< 4	-	N
Vinyl Chloride	75-01-4	-	< 1	-	UM
Bromomethane	74-83-9	-	< 1	-	UM
Chloroethane	75-00-3	-	< 3	-	UM
Trichlorofluoromethane	75-69-4	-	< 1	-	UM
1,1-Dichloroethene	75-35-48 *	-	< 1	-	N
trans 1,2-Dichloroethene	156-60-5	-	< 1	-	UM
1,1-Dichloroethane	75-34-3	-	< 1	-	UM
MTBE	1634-04-4	-	< 1	-	UM
2,2-Dichloropropane	594-20-7	-	< 1	-	UM
cis 1,2-Dichloroethene	156-59-2	-	< 8	-	UM
Bromochloromethane	74-97-5	-	< 1	-	UM
Chloroform	67-66-3	-	< 1	-	UM
1,1,1-Trichloroethane	71-55-6	-	< 1	-	UM
Carbon Tetrachloride	56-23-5	-	< 1	-	UM
1,1-Dichloropropene	563-58-6	-	< 1	-	UM
Benzene	71-43-2	-	< 1	-	UM
1,2-Dichloroethane	107-06-2	-	< 1	-	UM
Trichloroethene	79-01-6 **	-	< 1	-	N
1,2-Dichloropropane	78-87-5	-	< 1	-	UM
Dibromomethane	74-95-3	-	< 1	-	UM
Bromodichloromethane	75-27-4	-	< 1	-	UM
cis 1,3-Dichloropropene	10061-01-5	-	< 1	-	UM
Toluene	108-88-3	-	< 8	-	UM
trans 1,3-Dichloropropene	10061-02-6	-	< 1	-	UM
1,1,2-Trichloroethane	79-00-5	-	< 1	-	UM
Tetrachloroethene	127-18-4	-	< 4	-	UM
1,3-Dichloropropane	142-28-9	-	< 1	-	UM
Dibromochloromethane	124-48-1	-	< 1	-	UM
1,2-Dibromoethane	106-93-4	-	< 1	-	UM
Chlorobenzene	108-90-7	-	< 1	-	UM
Ethylbenzene	100-41-4	-	< 3	-	UM
1,1,1,2-Tetrachloroethane	630-20-6	-	< 1	-	UM
m and p-Xylene	108-38-3/106-42-3	-	< 5	-	UM

Target Compounds	CAS #	R.T. (min.)	Concentration µg/kg	% Fit	Accr. code
o-Xylene	95-47-6	-	< 3	-	UM
Styrene	100-42-5	-	< 1	-	UM
Bromoform	75-25-2	-	< 1	-	UM
iso-Propylbenzene	98-82-8	-	< 1	-	UM
1,1,2,2-Tetrachloroethane	79-34-5 **	-	< 1	-	N
Propylbenzene	103-65-1	-	< 1	-	UM
Bromobenzene	108-86-1	-	< 1	-	UM
1,2,3-Trichloropropane	96-18-4	-	< 1	-	UM
2-Chlorotoluene	95-49-8	-	< 1	-	UM
1,3,5-Trimethylbenzene	108-67-8	-	< 1	-	UM
4-Chlorotoluene	106-43-4	-	< 1	-	UM
tert-Butylbenzene	98-06-6	-	< 1	-	UM
1,2,4-Trimethylbenzene	95-63-6	6.13	35	M	UM
sec-Butylbenzene	135-98-8	6.18	52	M	UM
p-Isopropyltoluene	99-87-6	-	< 1	-	UM
1,3-Dichlorobenzene	541-73-1	-	< 1	-	UM
1,4-Dichlorobenzene	106-46-7	-	< 1	-	UM
n-Butylbenzene	104-51-8 *	6.36	62	58	N
1,2-Dichlorobenzene	95-50-1	-	< 1	-	UM
1,2-Dibromo-3-chloropropane	96-12-8	-	< 1	-	UM
1,2,4-Trichlorobenzene	120-82-1 *	-	< 4	-	N
Hexachlorobutadiene	87-68-3 **	-	< 3	-	N
Naphthalene	91-20-3	7.14	49	71	UM
1,2,3-Trichlorobenzene	87-61-6	-	< 4	-	UM

Concentrations are reported on a dry weight basis
Compounds marked ** are not UKAS or Mcerts accredited
"M" denotes that % fit has been manually interpreted
This analysis was conducted on an 'As Received' basis.

Internal standards	R.T.	Area %	Surrogates	% Rec
Pentafluorobenzene	4.04	108	Dibromofluoromethane	100
1,4-Difluorobenzene	4.39	110	Toluene-d8	93
Chlorobenzene-d5	5.50	90		
Bromofluorobenzene	5.89	92		
1,4-Dichlorobenzene-d4	6.29	48		
Naphthalene-d8	7.13	25		

Where individual results are flagged see report notes for status.
Results corrected to dry weight at 105°C where appropriate, in accordance with the MCERTS standard.

Volatile Organic Compounds by HSA-GCMS

Accredited?: Yes

Customer and Site Details: Ramboll Environ: Zeon Chemicals ESA
Sample Details: WS10 0.2
LIMS ID Number: CL1616447
Job Number: S16_3958M

Directory/Quant file: 517VOC.MS19\ Initial Calibration
Date Booked in: 16-May-16
Date Analysed: 18-May-16
Operator:

Matrix: Soil
Method: Headspace
Multiplier: 0.99
Position: 12

Target Compounds	CAS #	R.T. (min.)	Concentration µg/kg	% Fit	Accr. code
Dichlorodifluoromethane	75-71-8 **	-	< 1	-	N
Chloromethane	74-87-3 *	-	< 4	-	N
Vinyl Chloride	75-01-4	-	< 1	-	UM
Bromomethane	74-83-9	-	< 1	-	UM
Chloroethane	75-00-3	-	< 3	-	UM
Trichlorofluoromethane	75-69-4	-	< 1	-	UM
1,1-Dichloroethene	75-35-48 *	-	< 1	-	N
trans 1,2-Dichloroethene	156-60-5	-	< 1	-	UM
1,1-Dichloroethane	75-34-3	-	< 1	-	UM
MTBE	1634-04-4	-	< 1	-	UM
2,2-Dichloropropane	594-20-7	-	< 1	-	UM
cis 1,2-Dichloroethene	156-59-2	-	< 6	-	UM
Bromochloromethane	74-97-5	-	< 1	-	UM
Chloroform	67-66-3	-	< 1	-	UM
1,1,1-Trichloroethane	71-55-6	-	< 1	-	UM
Carbon Tetrachloride	56-23-5	-	< 1	-	UM
1,1-Dichloropropene	563-58-6	-	< 1	-	UM
Benzene	71-43-2	-	< 1	-	UM
1,2-Dichloroethane	107-06-2	-	< 1	-	UM
Trichloroethene	79-01-6 **	-	< 1	-	N
1,2-Dichloropropane	78-87-5	-	< 1	-	UM
Dibromomethane	74-95-3	-	< 1	-	UM
Bromodichloromethane	75-27-4	-	< 1	-	UM
cis 1,3-Dichloropropene	10061-01-5	-	< 1	-	UM
Toluene	108-88-3	-	< 6	-	UM
trans 1,3-Dichloropropene	10061-02-6	-	< 1	-	UM
1,1,2-Trichloroethane	79-00-5	-	< 1	-	UM
Tetrachloroethene	127-18-4	-	< 4	-	UM
1,3-Dichloropropane	142-28-9	-	< 1	-	UM
Dibromochloromethane	124-48-1	-	< 1	-	UM
1,2-Dibromoethane	106-93-4	-	< 1	-	UM
Chlorobenzene	108-90-7	-	< 1	-	UM
Ethylbenzene	100-41-4	-	< 3	-	UM
1,1,1,2-Tetrachloroethane	630-20-6	-	< 1	-	UM
m and p-Xylene	108-38-3/106-42-3	-	< 5	-	UM

Target Compounds	CAS #	R.T. (min.)	Concentration µg/kg	% Fit	Accr. code
o-Xylene	95-47-6	-	< 3	-	UM
Styrene	100-42-5	-	< 1	-	UM
Bromoform	75-25-2	-	< 1	-	UM
iso-Propylbenzene	98-82-8	-	< 1	-	UM
1,1,2,2-Tetrachloroethane	79-34-5 **	-	< 1	-	N
Propylbenzene	103-65-1	-	< 1	-	UM
Bromobenzene	108-86-1	-	< 1	-	UM
1,2,3-Trichloropropane	96-18-4	-	< 1	-	UM
2-Chlorotoluene	95-49-8	-	< 1	-	UM
1,3,5-Trimethylbenzene	108-67-8	-	< 1	-	UM
4-Chlorotoluene	106-43-4	-	< 1	-	UM
tert-Butylbenzene	98-06-6	-	< 1	-	UM
1,2,4-Trimethylbenzene	95-63-6	-	< 1	-	UM
sec-Butylbenzene	135-98-8	-	< 1	-	UM
p-Isopropyltoluene	99-87-6	-	< 1	-	UM
1,3-Dichlorobenzene	541-73-1	-	< 1	-	UM
1,4-Dichlorobenzene	106-46-7	-	< 1	-	UM
n-Butylbenzene	104-51-8 *	-	< 1	-	N
1,2-Dichlorobenzene	95-50-1	-	< 1	-	UM
1,2-Dibromo-3-chloropropane	96-12-8	-	< 1	-	UM
1,2,4-Trichlorobenzene	120-82-1 *	-	< 4	-	N
Hexachlorobutadiene	87-68-3 **	-	< 3	-	N
Naphthalene	91-20-3	-	< 6	-	UM
1,2,3-Trichlorobenzene	87-61-6	-	< 4	-	UM

Concentrations are reported on a dry weight basis
Compounds marked ** are not UKAS or Mcerts accredited
"M" denotes that % fit has been manually interpreted
This analysis was conducted on an 'As Received' basis.

Internal standards	R.T.	Area %	Surrogates	% Rec
Pentafluorobenzene	4.04	115	Dibromofluoromethane	96
1,4-Difluorobenzene	4.39	115	Toluene-d8	102
Chlorobenzene-d5	5.50	105		
Bromofluorobenzene	5.89	99		
1,4-Dichlorobenzene-d4	6.29	79		
Naphthalene-d8	7.12	37		

Where individual results are flagged see report notes for status.
Results corrected to dry weight at 105°C where appropriate, in accordance with the MCERTS standard.

Volatile Organic Compounds by HSA-GCMS

Accredited?: Yes

Customer and Site Details: Ramboll Environ: Zeon Chemicals ESA
Sample Details: WS7 0.3
LIMS ID Number: CL1616448
Job Number: S16_3958M

Directory/Quant file: 517VOC.MS19\ Initial Calibration
Date Booked in: 16-May-16
Date Analysed: 18-May-16
Operator:

Matrix: Soil
Method: Headspace
Multiplier: 1.02
Position: 13

Target Compounds	CAS #	R.T. (min.)	Concentration µg/kg	% Fit	Accr. code
Dichlorodifluoromethane	75-71-8 **	-	< 1	-	N
Chloromethane	74-87-3 *	-	< 4	-	N
Vinyl Chloride	75-01-4	-	< 1	-	UM
Bromomethane	74-83-9	-	< 1	-	UM
Chloroethane	75-00-3	-	< 3	-	UM
Trichlorofluoromethane	75-69-4	-	< 1	-	UM
1,1-Dichloroethene	75-35-48 *	-	< 1	-	N
trans 1,2-Dichloroethene	156-60-5	-	< 1	-	UM
1,1-Dichloroethane	75-34-3	-	< 1	-	UM
MTBE	1634-04-4	-	< 1	-	UM
2,2-Dichloropropane	594-20-7	-	< 1	-	UM
cis 1,2-Dichloroethene	156-59-2	-	< 6	-	UM
Bromochloromethane	74-97-5	-	< 1	-	UM
Chloroform	67-66-3	-	< 1	-	UM
1,1,1-Trichloroethane	71-55-6	-	< 1	-	UM
Carbon Tetrachloride	56-23-5	-	< 1	-	UM
1,1-Dichloropropene	563-58-6	-	< 1	-	UM
Benzene	71-43-2	4.23	3	M	UM
1,2-Dichloroethane	107-06-2	-	< 1	-	UM
Trichloroethene	79-01-6 **	-	< 1	-	N
1,2-Dichloropropane	78-87-5	-	< 1	-	UM
Dibromomethane	74-95-3	-	< 1	-	UM
Bromodichloromethane	75-27-4	-	< 1	-	UM
cis 1,3-Dichloropropene	10061-01-5	-	< 1	-	UM
Toluene	108-88-3	-	< 6	-	UM
trans 1,3-Dichloropropene	10061-02-6	-	< 1	-	UM
1,1,2-Trichloroethane	79-00-5	-	< 1	-	UM
Tetrachloroethene	127-18-4	-	< 4	-	UM
1,3-Dichloropropane	142-28-9	-	< 1	-	UM
Dibromochloromethane	124-48-1	-	< 1	-	UM
1,2-Dibromoethane	106-93-4	-	< 1	-	UM
Chlorobenzene	108-90-7	-	< 1	-	UM
Ethylbenzene	100-41-4	-	< 3	-	UM
1,1,1,2-Tetrachloroethane	630-20-6	-	< 1	-	UM
m and p-Xylene	108-38-3/106-42-3	-	< 5	-	UM

Target Compounds	CAS #	R.T. (min.)	Concentration µg/kg	% Fit	Accr. code
o-Xylene	95-47-6	-	< 3	-	UM
Styrene	100-42-5	-	< 1	-	UM
Bromoform	75-25-2	-	< 1	-	UM
iso-Propylbenzene	98-82-8	-	< 1	-	UM
1,1,2,2-Tetrachloroethane	79-34-5 **	-	< 1	-	N
Propylbenzene	103-65-1	-	< 1	-	UM
Bromobenzene	108-86-1	-	< 1	-	UM
1,2,3-Trichloropropane	96-18-4	-	< 1	-	UM
2-Chlorotoluene	95-49-8	-	< 1	-	UM
1,3,5-Trimethylbenzene	108-67-8	-	< 1	-	UM
4-Chlorotoluene	106-43-4	-	< 1	-	UM
tert-Butylbenzene	98-06-6	-	< 1	-	UM
1,2,4-Trimethylbenzene	95-63-6	-	< 1	-	UM
sec-Butylbenzene	135-98-8	-	< 1	-	UM
p-Isopropyltoluene	99-87-6	-	< 1	-	UM
1,3-Dichlorobenzene	541-73-1	-	< 1	-	UM
1,4-Dichlorobenzene	106-46-7	-	< 1	-	UM
n-Butylbenzene	104-51-8 *	-	< 1	-	N
1,2-Dichlorobenzene	95-50-1	-	< 1	-	UM
1,2-Dibromo-3-chloropropane	96-12-8	-	< 1	-	UM
1,2,4-Trichlorobenzene	120-82-1 *	-	< 4	-	N
Hexachlorobutadiene	87-68-3 **	-	< 3	-	N
Naphthalene	91-20-3	-	< 6	-	UM
1,2,3-Trichlorobenzene	87-61-6	-	< 4	-	UM

Concentrations are reported on a dry weight basis
Compounds marked ** are not UKAS or Mcerts accredited
"M" denotes that % fit has been manually interpreted
This analysis was conducted on an 'As Received' basis.

Internal standards	R.T.	Area %	Surrogates	% Rec
Pentafluorobenzene	4.04	76	Dibromofluoromethane	115
1,4-Difluorobenzene	4.39	64	Toluene-d8	99
Chlorobenzene-d5	5.50	39		
Bromofluorobenzene	5.89	24		
1,4-Dichlorobenzene-d4	6.29	19		
Naphthalene-d8	7.13	2		

Where individual results are flagged see report notes for status.
Results corrected to dry weight at 105°C where appropriate, in accordance with the MCERTS standard.

Volatile Organic Compounds by HSA-GCMS

Accredited?: Yes

Customer and Site Details: Ramboll Environ: Zeon Chemicals ESA
Sample Details: WS7 0.8
LIMS ID Number: CL1616449
Job Number: S16_3958M

Directory/Quant file: 517VOC.MS19\ Initial Calibration
Date Booked in: 16-May-16
Date Analysed: 18-May-16
Operator:

Matrix: Soil
Method: Headspace
Multiplier: 1
Position: 14

Target Compounds	CAS #	R.T. (min.)	Concentration µg/kg	% Fit	Accr. code
Dichlorodifluoromethane	75-71-8 **	-	< 1	-	N
Chloromethane	74-87-3 *	-	< 4	-	N
Vinyl Chloride	75-01-4	-	< 1	-	UM
Bromomethane	74-83-9	-	< 1	-	UM
Chloroethane	75-00-3	-	< 2	-	UM
Trichlorofluoromethane	75-69-4	-	< 1	-	UM
1,1-Dichloroethene	75-35-48 *	-	< 1	-	N
trans 1,2-Dichloroethene	156-60-5	-	< 1	-	UM
1,1-Dichloroethane	75-34-3	-	< 1	-	UM
MTBE	1634-04-4	-	< 1	-	UM
2,2-Dichloropropane	594-20-7	-	< 1	-	UM
cis 1,2-Dichloroethene	156-59-2	-	< 6	-	UM
Bromochloromethane	74-97-5	-	< 1	-	UM
Chloroform	67-66-3	-	< 1	-	UM
1,1,1-Trichloroethane	71-55-6	-	< 1	-	UM
Carbon Tetrachloride	56-23-5	-	< 1	-	UM
1,1-Dichloropropene	563-58-6	-	< 1	-	UM
Benzene	71-43-2	-	< 1	-	UM
1,2-Dichloroethane	107-06-2	-	< 1	-	UM
Trichloroethene	79-01-6 **	-	< 1	-	N
1,2-Dichloropropane	78-87-5	-	< 1	-	UM
Dibromomethane	74-95-3	-	< 1	-	UM
Bromodichloromethane	75-27-4	-	< 1	-	UM
cis 1,3-Dichloropropene	10061-01-5	-	< 1	-	UM
Toluene	108-88-3	-	< 6	-	UM
trans 1,3-Dichloropropene	10061-02-6	-	< 1	-	UM
1,1,2-Trichloroethane	79-00-5	-	< 1	-	UM
Tetrachloroethene	127-18-4	-	< 4	-	UM
1,3-Dichloropropane	142-28-9	-	< 1	-	UM
Dibromochloromethane	124-48-1	-	< 1	-	UM
1,2-Dibromoethane	106-93-4	-	< 1	-	UM
Chlorobenzene	108-90-7	-	< 1	-	UM
Ethylbenzene	100-41-4	-	< 2	-	UM
1,1,1,2-Tetrachloroethane	630-20-6	-	< 1	-	UM
m and p-Xylene	108-38-3/106-42-3	-	< 5	-	UM

Target Compounds	CAS #	R.T. (min.)	Concentration µg/kg	% Fit	Accr. code
o-Xylene	95-47-6	-	< 2	-	UM
Styrene	100-42-5	-	< 1	-	UM
Bromoform	75-25-2	-	< 1	-	UM
iso-Propylbenzene	98-82-8	-	< 1	-	UM
1,1,2,2-Tetrachloroethane	79-34-5 **	-	< 1	-	N
Propylbenzene	103-65-1	-	< 1	-	UM
Bromobenzene	108-86-1	-	< 1	-	UM
1,2,3-Trichloropropane	96-18-4	-	< 1	-	UM
2-Chlorotoluene	95-49-8	-	< 1	-	UM
1,3,5-Trimethylbenzene	108-67-8	-	< 1	-	UM
4-Chlorotoluene	106-43-4	-	< 1	-	UM
tert-Butylbenzene	98-06-6	-	< 1	-	UM
1,2,4-Trimethylbenzene	95-63-6	-	< 1	-	UM
sec-Butylbenzene	135-98-8	-	< 1	-	UM
p-Isopropyltoluene	99-87-6	-	< 1	-	UM
1,3-Dichlorobenzene	541-73-1	-	< 1	-	UM
1,4-Dichlorobenzene	106-46-7	-	< 1	-	UM
n-Butylbenzene	104-51-8 *	-	< 1	-	N
1,2-Dichlorobenzene	95-50-1	-	< 1	-	UM
1,2-Dibromo-3-chloropropane	96-12-8	-	< 1	-	UM
1,2,4-Trichlorobenzene	120-82-1 *	-	< 4	-	N
Hexachlorobutadiene	87-68-3 **	-	< 2	-	N
Naphthalene	91-20-3	-	< 6	-	UM
1,2,3-Trichlorobenzene	87-61-6	-	< 4	-	UM

Concentrations are reported on a dry weight basis
Compounds marked ** are not UKAS or Mcerts accredited
"M" denotes that % fit has been manually interpreted
This analysis was conducted on an 'As Received' basis.

Internal standards	R.T.	Area %	Surrogates	% Rec
Pentafluorobenzene	4.04	104	Dibromofluoromethane	98
1,4-Difluorobenzene	4.39	101	Toluene-d8	98
Chlorobenzene-d5	5.50	94		
Bromofluorobenzene	5.89	89		
1,4-Dichlorobenzene-d4	6.29	81		
Naphthalene-d8	7.13	70		

Where individual results are flagged see report notes for status.
Results corrected to dry weight at 105°C where appropriate, in accordance with the MCERTS standard.

Volatile Organic Compounds by HSA-GCMS

Accredited?: Yes

Customer and Site Details: Ramboll Environ: Zeon Chemicals ESA
Sample Details: WS2 0.3
LIMS ID Number: CL1616450
Job Number: S16_3958M

Directory/Quant file: 517VOC.MS19\ Initial Calibration
Date Booked in: 16-May-16
Date Analysed: 18-May-16
Operator:

Matrix: Soil
Method: Headspace
Multiplier: 1.06
Position: 15

Target Compounds	CAS #	R.T. (min.)	Concentration µg/kg	% Fit	Accr. code
Dichlorodifluoromethane	75-71-8 **	-	< 1	-	N
Chloromethane	74-87-3 *	-	< 4	-	N
Vinyl Chloride	75-01-4	-	< 1	-	UM
Bromomethane	74-83-9	-	< 1	-	UM
Chloroethane	75-00-3	-	< 3	-	UM
Trichlorofluoromethane	75-69-4	-	< 1	-	UM
1,1-Dichloroethene	75-35-48 *	-	< 1	-	N
trans 1,2-Dichloroethene	156-60-5	-	< 1	-	UM
1,1-Dichloroethane	75-34-3	-	< 1	-	UM
MTBE	1634-04-4	-	< 1	-	UM
2,2-Dichloropropane	594-20-7	-	< 1	-	UM
cis 1,2-Dichloroethene	156-59-2	-	< 6	-	UM
Bromochloromethane	74-97-5	-	< 1	-	UM
Chloroform	67-66-3	-	< 1	-	UM
1,1,1-Trichloroethane	71-55-6	-	< 1	-	UM
Carbon Tetrachloride	56-23-5	-	< 1	-	UM
1,1-Dichloropropene	563-58-6	-	< 1	-	UM
Benzene	71-43-2	4.23	39	76	UM
1,2-Dichloroethane	107-06-2	-	< 1	-	UM
Trichloroethene	79-01-6 **	-	< 1	-	N
1,2-Dichloropropane	78-87-5	-	< 1	-	UM
Dibromomethane	74-95-3	-	< 1	-	UM
Bromodichloromethane	75-27-4	-	< 1	-	UM
cis 1,3-Dichloropropene	10061-01-5	-	< 1	-	UM
Toluene	108-88-3	4.99	38	91	UM
trans 1,3-Dichloropropene	10061-02-6	-	< 1	-	UM
1,1,2-Trichloroethane	79-00-5	-	< 1	-	UM
Tetrachloroethene	127-18-4	-	< 4	-	UM
1,3-Dichloropropane	142-28-9	-	< 1	-	UM
Dibromochloromethane	124-48-1	-	< 1	-	UM
1,2-Dibromoethane	106-93-4	-	< 1	-	UM
Chlorobenzene	108-90-7	-	< 1	-	UM
Ethylbenzene	100-41-4	5.51	3	M	UM
1,1,1,2-Tetrachloroethane	630-20-6	-	< 1	-	UM
m and p-Xylene	108-38-3/106-42-3	5.55	23	M	UM

Target Compounds	CAS #	R.T. (min.)	Concentration µg/kg	% Fit	Accr. code
o-Xylene	95-47-6	5.70	5	M	UM
Styrene	100-42-5	-	< 1	-	UM
Bromoform	75-25-2	-	< 1	-	UM
iso-Propylbenzene	98-82-8	-	< 1	-	UM
1,1,2,2-Tetrachloroethane	79-34-5 **	-	< 1	-	N
Propylbenzene	103-65-1	-	< 1	-	UM
Bromobenzene	108-86-1	-	< 1	-	UM
1,2,3-Trichloropropane	96-18-4	-	< 1	-	UM
2-Chlorotoluene	95-49-8	-	< 1	-	UM
1,3,5-Trimethylbenzene	108-67-8	-	< 1	-	UM
4-Chlorotoluene	106-43-4	-	< 1	-	UM
tert-Butylbenzene	98-06-6	-	< 1	-	UM
1,2,4-Trimethylbenzene	95-63-6	-	< 1	-	UM
sec-Butylbenzene	135-98-8	-	< 1	-	UM
p-Isopropyltoluene	99-87-6	-	< 1	-	UM
1,3-Dichlorobenzene	541-73-1	-	< 1	-	UM
1,4-Dichlorobenzene	106-46-7	-	< 1	-	UM
n-Butylbenzene	104-51-8 *	-	< 1	-	N
1,2-Dichlorobenzene	95-50-1	-	< 1	-	UM
1,2-Dibromo-3-chloropropane	96-12-8	-	< 1	-	UM
1,2,4-Trichlorobenzene	120-82-1 *	-	< 4	-	N
Hexachlorobutadiene	87-68-3 **	-	< 3	-	N
Naphthalene	91-20-3	-	< 6	-	UM
1,2,3-Trichlorobenzene	87-61-6	-	< 4	-	UM

Concentrations are reported on a dry weight basis
Compounds marked ** are not UKAS or Mcerts accredited
"M" denotes that % fit has been manually interpreted
This analysis was conducted on an 'As Received' basis.

Internal standards	R.T.	Area %	Surrogates	% Rec
Pentafluorobenzene	4.04	73	Dibromofluoromethane	108
1,4-Difluorobenzene	4.39	67	Toluene-d8	88
Chlorobenzene-d5	5.50	38		
Bromofluorobenzene	5.89	24		
1,4-Dichlorobenzene-d4	6.29	18		
Naphthalene-d8	7.13	4		

Where individual results are flagged see report notes for status.
Results corrected to dry weight at 105°C where appropriate, in accordance with the MCERTS standard.

Volatile Organic Compounds by HSA-GCMS

Accredited?: Yes

Customer and Site Details: Ramboll Environ: Zeon Chemicals ESA
Sample Details: WS2 2.0
LIMS ID Number: CL1616451
Job Number: S16_3958M

Directory/Quant file: 517VOC.MS19\ Initial Calibration
Date Booked in: 16-May-16
Date Analysed: 18-May-16
Operator:

Matrix: Soil
Method: Headspace
Multiplier: 0.91
Position: 16

Target Compounds	CAS #	R.T. (min.)	Concentration µg/kg	% Fit	Accr. code
Dichlorodifluoromethane	75-71-8 **	-	< 1	-	N
Chloromethane	74-87-3 *	-	< 4	-	N
Vinyl Chloride	75-01-4	-	< 1	-	UM
Bromomethane	74-83-9	-	< 1	-	UM
Chloroethane	75-00-3	-	< 3	-	UM
Trichlorofluoromethane	75-69-4	-	< 1	-	UM
1,1-Dichloroethene	75-35-48 *	-	< 1	-	N
trans 1,2-Dichloroethene	156-60-5	-	< 1	-	UM
1,1-Dichloroethane	75-34-3	-	< 1	-	UM
MTBE	1634-04-4	-	< 1	-	UM
2,2-Dichloropropane	594-20-7	-	< 1	-	UM
cis 1,2-Dichloroethene	156-59-2	-	< 6	-	UM
Bromochloromethane	74-97-5	-	< 1	-	UM
Chloroform	67-66-3	-	< 1	-	UM
1,1,1-Trichloroethane	71-55-6	-	< 1	-	UM
Carbon Tetrachloride	56-23-5	-	< 1	-	UM
1,1-Dichloropropene	563-58-6	-	< 1	-	UM
Benzene	71-43-2	-	< 1	-	UM
1,2-Dichloroethane	107-06-2	-	< 1	-	UM
Trichloroethene	79-01-6 **	-	< 1	-	N
1,2-Dichloropropane	78-87-5	-	< 1	-	UM
Dibromomethane	74-95-3	-	< 1	-	UM
Bromodichloromethane	75-27-4	-	< 1	-	UM
cis 1,3-Dichloropropene	10061-01-5	-	< 1	-	UM
Toluene	108-88-3	-	< 6	-	UM
trans 1,3-Dichloropropene	10061-02-6	-	< 1	-	UM
1,1,2-Trichloroethane	79-00-5	-	< 1	-	UM
Tetrachloroethene	127-18-4	-	< 4	-	UM
1,3-Dichloropropane	142-28-9	-	< 1	-	UM
Dibromochloromethane	124-48-1	-	< 1	-	UM
1,2-Dibromoethane	106-93-4	-	< 1	-	UM
Chlorobenzene	108-90-7	-	< 1	-	UM
Ethylbenzene	100-41-4	-	< 3	-	UM
1,1,1,2-Tetrachloroethane	630-20-6	-	< 1	-	UM
m and p-Xylene	108-38-3/106-42-3	-	< 5	-	UM

Target Compounds	CAS #	R.T. (min.)	Concentration µg/kg	% Fit	Accr. code
o-Xylene	95-47-6	-	< 3	-	UM
Styrene	100-42-5	-	< 1	-	UM
Bromoform	75-25-2	-	< 1	-	UM
iso-Propylbenzene	98-82-8	-	< 1	-	UM
1,1,2,2-Tetrachloroethane	79-34-5 **	-	< 1	-	N
Propylbenzene	103-65-1	-	< 1	-	UM
Bromobenzene	108-86-1	-	< 1	-	UM
1,2,3-Trichloropropane	96-18-4	-	< 1	-	UM
2-Chlorotoluene	95-49-8	-	< 1	-	UM
1,3,5-Trimethylbenzene	108-67-8	-	< 1	-	UM
4-Chlorotoluene	106-43-4	-	< 1	-	UM
tert-Butylbenzene	98-06-6	-	< 1	-	UM
1,2,4-Trimethylbenzene	95-63-6	-	< 1	-	UM
sec-Butylbenzene	135-98-8	-	< 1	-	UM
p-Isopropyltoluene	99-87-6	-	< 1	-	UM
1,3-Dichlorobenzene	541-73-1	-	< 1	-	UM
1,4-Dichlorobenzene	106-46-7	-	< 1	-	UM
n-Butylbenzene	104-51-8 *	-	< 1	-	N
1,2-Dichlorobenzene	95-50-1	-	< 1	-	UM
1,2-Dibromo-3-chloropropane	96-12-8	-	< 1	-	UM
1,2,4-Trichlorobenzene	120-82-1 *	-	< 4	-	N
Hexachlorobutadiene	87-68-3 **	-	< 3	-	N
Naphthalene	91-20-3	-	< 6	-	UM
1,2,3-Trichlorobenzene	87-61-6	-	< 4	-	UM

Concentrations are reported on a dry weight basis
Compounds marked ** are not UKAS or Mcerts accredited
"M" denotes that % fit has been manually interpreted
This analysis was conducted on an 'As Received' basis.

Internal standards	R.T.	Area %	Surrogates	% Rec
Pentafluorobenzene	4.04	104	Dibromofluoromethane	107
1,4-Difluorobenzene	4.39	105	Toluene-d8	99
Chlorobenzene-d5	5.50	100		
Bromofluorobenzene	5.89	94		
1,4-Dichlorobenzene-d4	6.29	85		
Naphthalene-d8	7.12	60		

Where individual results are flagged see report notes for status.
Results corrected to dry weight at 105°C where appropriate, in accordance with the MCERTS standard.

Volatile Organic Compounds by HSA-GCMS

Accredited?: Yes

Customer and Site Details: Ramboll Environ: Zeon Chemicals ESA
Sample Details: WS1 3.0
LIMS ID Number: CL1616452
Job Number: S16_3958M

Directory/Quant file: 517VOC.MS19\ Initial Calibration
Date Booked in: 16-May-16
Date Analysed: 18-May-16
Operator:

Matrix: Soil
Method: Headspace
Multiplier: 1.04
Position: 17

Target Compounds	CAS #	R.T. (min.)	Concentration µg/kg	% Fit	Accr. code
Dichlorodifluoromethane	75-71-8 **	-	< 1	-	N
Chloromethane	74-87-3 *	-	< 4	-	N
Vinyl Chloride	75-01-4	-	< 1	-	UM
Bromomethane	74-83-9	-	< 1	-	UM
Chloroethane	75-00-3	-	< 3	-	UM
Trichlorofluoromethane	75-69-4	-	< 1	-	UM
1,1-Dichloroethene	75-35-48 *	-	< 1	-	N
trans 1,2-Dichloroethene	156-60-5	-	< 1	-	UM
1,1-Dichloroethane	75-34-3	-	< 1	-	UM
MTBE	1634-04-4	-	< 1	-	UM
2,2-Dichloropropane	594-20-7	-	< 1	-	UM
cis 1,2-Dichloroethene	156-59-2	-	< 6	-	UM
Bromochloromethane	74-97-5	-	< 1	-	UM
Chloroform	67-66-3	-	< 1	-	UM
1,1,1-Trichloroethane	71-55-6	-	< 1	-	UM
Carbon Tetrachloride	56-23-5	-	< 1	-	UM
1,1-Dichloropropene	563-58-6	-	< 1	-	UM
Benzene	71-43-2	-	< 1	-	UM
1,2-Dichloroethane	107-06-2	-	< 1	-	UM
Trichloroethene	79-01-6 **	-	< 1	-	N
1,2-Dichloropropane	78-87-5	-	< 1	-	UM
Dibromomethane	74-95-3	-	< 1	-	UM
Bromodichloromethane	75-27-4	-	< 1	-	UM
cis 1,3-Dichloropropene	10061-01-5	-	< 1	-	UM
Toluene	108-88-3	-	< 6	-	UM
trans 1,3-Dichloropropene	10061-02-6	-	< 1	-	UM
1,1,2-Trichloroethane	79-00-5	-	< 1	-	UM
Tetrachloroethene	127-18-4	-	< 4	-	UM
1,3-Dichloropropane	142-28-9	-	< 1	-	UM
Dibromochloromethane	124-48-1	-	< 1	-	UM
1,2-Dibromoethane	106-93-4	-	< 1	-	UM
Chlorobenzene	108-90-7	-	< 1	-	UM
Ethylbenzene	100-41-4	-	< 3	-	UM
1,1,1,2-Tetrachloroethane	630-20-6	-	< 1	-	UM
m and p-Xylene	108-38-3/106-42-3	-	< 5	-	UM

Target Compounds	CAS #	R.T. (min.)	Concentration µg/kg	% Fit	Accr. code
o-Xylene	95-47-6	-	< 3	-	UM
Styrene	100-42-5	-	< 1	-	UM
Bromoform	75-25-2	-	< 1	-	UM
iso-Propylbenzene	98-82-8	-	< 1	-	UM
1,1,2,2-Tetrachloroethane	79-34-5 **	-	< 1	-	N
Propylbenzene	103-65-1	-	< 1	-	UM
Bromobenzene	108-86-1	-	< 1	-	UM
1,2,3-Trichloropropane	96-18-4	-	< 1	-	UM
2-Chlorotoluene	95-49-8	-	< 1	-	UM
1,3,5-Trimethylbenzene	108-67-8	-	< 1	-	UM
4-Chlorotoluene	106-43-4	-	< 1	-	UM
tert-Butylbenzene	98-06-6	-	< 1	-	UM
1,2,4-Trimethylbenzene	95-63-6	-	< 1	-	UM
sec-Butylbenzene	135-98-8	-	< 1	-	UM
p-Isopropyltoluene	99-87-6	-	< 1	-	UM
1,3-Dichlorobenzene	541-73-1	-	< 1	-	UM
1,4-Dichlorobenzene	106-46-7	-	< 1	-	UM
n-Butylbenzene	104-51-8 *	-	< 1	-	N
1,2-Dichlorobenzene	95-50-1	-	< 1	-	UM
1,2-Dibromo-3-chloropropane	96-12-8	-	< 1	-	UM
1,2,4-Trichlorobenzene	120-82-1 *	-	< 4	-	N
Hexachlorobutadiene	87-68-3 **	-	< 3	-	N
Naphthalene	91-20-3	-	< 6	-	UM
1,2,3-Trichlorobenzene	87-61-6	-	< 4	-	UM

Concentrations are reported on a dry weight basis
Compounds marked ** are not UKAS or Mcerts accredited
"M" denotes that % fit has been manually interpreted
This analysis was conducted on an 'As Received' basis.

Internal standards	R.T.	Area %	Surrogates	% Rec
Pentafluorobenzene	4.04	102	Dibromofluoromethane	100
1,4-Difluorobenzene	4.39	102	Toluene-d8	98
Chlorobenzene-d5	5.50	92		
Bromofluorobenzene	5.89	82		
1,4-Dichlorobenzene-d4	6.29	68		
Naphthalene-d8	7.12	38		

Where individual results are flagged see report notes for status.
Results corrected to dry weight at 105°C where appropriate, in accordance with the MCERTS standard.

Volatile Organic Compounds by HSA-GCMS

Accredited?: Yes

Customer and Site Details: Ramboll Environ: Zeon Chemicals ESA
Sample Details: WS1 4.0
LIMS ID Number: CL1616453
Job Number: S16_3958M

Directory/Quant file: 517VOC.MS19\ Initial Calibration
Date Booked in: 16-May-16
Date Analysed: 18-May-16
Operator:

Matrix: Soil
Method: Headspace
Multiplier: 1.03
Position: 18

Target Compounds	CAS #	R.T. (min.)	Concentration µg/kg	% Fit	Accr. code
Dichlorodifluoromethane	75-71-8 **	-	< 1	-	N
Chloromethane	74-87-3 *	-	< 4	-	N
Vinyl Chloride	75-01-4	-	< 1	-	UM
Bromomethane	74-83-9	-	< 1	-	UM
Chloroethane	75-00-3	-	< 3	-	UM
Trichlorofluoromethane	75-69-4	-	< 1	-	UM
1,1-Dichloroethene	75-35-48 *	-	< 1	-	N
trans 1,2-Dichloroethene	156-60-5	-	< 1	-	UM
1,1-Dichloroethane	75-34-3	-	< 1	-	UM
MTBE	1634-04-4	-	< 1	-	UM
2,2-Dichloropropane	594-20-7	-	< 1	-	UM
cis 1,2-Dichloroethene	156-59-2	-	< 7	-	UM
Bromochloromethane	74-97-5	-	< 1	-	UM
Chloroform	67-66-3	-	< 1	-	UM
1,1,1-Trichloroethane	71-55-6	-	< 1	-	UM
Carbon Tetrachloride	56-23-5	-	< 1	-	UM
1,1-Dichloropropene	563-58-6	-	< 1	-	UM
Benzene	71-43-2	-	< 1	-	UM
1,2-Dichloroethane	107-06-2	-	< 1	-	UM
Trichloroethene	79-01-6 **	-	< 1	-	N
1,2-Dichloropropane	78-87-5	-	< 1	-	UM
Dibromomethane	74-95-3	-	< 1	-	UM
Bromodichloromethane	75-27-4	-	< 1	-	UM
cis 1,3-Dichloropropene	10061-01-5	-	< 1	-	UM
Toluene	108-88-3	-	< 7	-	UM
trans 1,3-Dichloropropene	10061-02-6	-	< 1	-	UM
1,1,2-Trichloroethane	79-00-5	-	< 1	-	UM
Tetrachloroethene	127-18-4	-	< 4	-	UM
1,3-Dichloropropane	142-28-9	-	< 1	-	UM
Dibromochloromethane	124-48-1	-	< 1	-	UM
1,2-Dibromoethane	106-93-4	-	< 1	-	UM
Chlorobenzene	108-90-7	-	< 1	-	UM
Ethylbenzene	100-41-4	-	< 3	-	UM
1,1,1,2-Tetrachloroethane	630-20-6	-	< 1	-	UM
m and p-Xylene	108-38-3/106-42-3	-	< 6	-	UM

Target Compounds	CAS #	R.T. (min.)	Concentration µg/kg	% Fit	Accr. code
o-Xylene	95-47-6	-	< 3	-	UM
Styrene	100-42-5	-	< 1	-	UM
Bromoform	75-25-2	-	< 1	-	UM
iso-Propylbenzene	98-82-8	-	< 1	-	UM
1,1,2,2-Tetrachloroethane	79-34-5 **	-	< 1	-	N
Propylbenzene	103-65-1	-	< 1	-	UM
Bromobenzene	108-86-1	-	< 1	-	UM
1,2,3-Trichloropropane	96-18-4	-	< 1	-	UM
2-Chlorotoluene	95-49-8	-	< 1	-	UM
1,3,5-Trimethylbenzene	108-67-8	-	< 1	-	UM
4-Chlorotoluene	106-43-4	-	< 1	-	UM
tert-Butylbenzene	98-06-6	-	< 1	-	UM
1,2,4-Trimethylbenzene	95-63-6	-	< 1	-	UM
sec-Butylbenzene	135-98-8	-	< 1	-	UM
p-Isopropyltoluene	99-87-6	-	< 1	-	UM
1,3-Dichlorobenzene	541-73-1	-	< 1	-	UM
1,4-Dichlorobenzene	106-46-7	-	< 1	-	UM
n-Butylbenzene	104-51-8 *	-	< 1	-	N
1,2-Dichlorobenzene	95-50-1	-	< 1	-	UM
1,2-Dibromo-3-chloropropane	96-12-8	-	< 1	-	UM
1,2,4-Trichlorobenzene	120-82-1 *	-	< 4	-	N
Hexachlorobutadiene	87-68-3 **	-	< 3	-	N
Naphthalene	91-20-3	-	< 7	-	UM
1,2,3-Trichlorobenzene	87-61-6	-	< 4	-	UM

Concentrations are reported on a dry weight basis
Compounds marked ** are not UKAS or Mcerts accredited
"M" denotes that % fit has been manually interpreted
This analysis was conducted on an 'As Received' basis.

Internal standards	R.T.	Area %	Surrogates	% Rec
Pentafluorobenzene	4.04	107	Dibromofluoromethane	96
1,4-Difluorobenzene	4.39	107	Toluene-d8	96
Chlorobenzene-d5	5.50	90		
Bromofluorobenzene	5.89	78		
1,4-Dichlorobenzene-d4	6.29	64		
Naphthalene-d8	7.12	45		

Where individual results are flagged see report notes for status.
Results corrected to dry weight at 105°C where appropriate, in accordance with the MCERTS standard.

Volatile Organic Compounds by HSA-GCMS

Accredited?: Yes

Customer and Site Details: Ramboll Environ: Zeon Chemicals ESA
Sample Details: WS9 0.3
LIMS ID Number: CL1616454
Job Number: S16_3958M

Directory/Quant file: 517VOC.MS19\ Initial Calibration
Date Booked in: 16-May-16
Date Analysed: 18-May-16
Operator:

Matrix: Soil
Method: Headspace
Multiplier: 1.02
Position: 19

Target Compounds	CAS #	R.T. (min.)	Concentration µg/kg	% Fit	Accr. code
Dichlorodifluoromethane	75-71-8 **	-	< 1	-	N
Chloromethane	74-87-3 *	-	< 4	-	N
Vinyl Chloride	75-01-4	-	< 1	-	UM
Bromomethane	74-83-9	-	< 1	-	UM
Chloroethane	75-00-3	-	< 2	-	UM
Trichlorofluoromethane	75-69-4	-	< 1	-	UM
1,1-Dichloroethene	75-35-48 *	-	< 1	-	N
trans 1,2-Dichloroethene	156-60-5	-	< 1	-	UM
1,1-Dichloroethane	75-34-3	-	< 1	-	UM
MTBE	1634-04-4	-	< 1	-	UM
2,2-Dichloropropane	594-20-7	-	< 1	-	UM
cis 1,2-Dichloroethene	156-59-2	-	< 6	-	UM
Bromochloromethane	74-97-5	-	< 1	-	UM
Chloroform	67-66-3	-	< 1	-	UM
1,1,1-Trichloroethane	71-55-6	-	< 1	-	UM
Carbon Tetrachloride	56-23-5	-	< 1	-	UM
1,1-Dichloropropene	563-58-6	-	< 1	-	UM
Benzene	71-43-2	4.23	2	M	UM
1,2-Dichloroethane	107-06-2	-	< 1	-	UM
Trichloroethene	79-01-6 **	-	< 1	-	N
1,2-Dichloropropane	78-87-5	-	< 1	-	UM
Dibromomethane	74-95-3	-	< 1	-	UM
Bromodichloromethane	75-27-4	-	< 1	-	UM
cis 1,3-Dichloropropene	10061-01-5	-	< 1	-	UM
Toluene	108-88-3	-	< 6	-	UM
trans 1,3-Dichloropropene	10061-02-6	-	< 1	-	UM
1,1,2-Trichloroethane	79-00-5	-	< 1	-	UM
Tetrachloroethene	127-18-4	-	< 4	-	UM
1,3-Dichloropropane	142-28-9	-	< 1	-	UM
Dibromochloromethane	124-48-1	-	< 1	-	UM
1,2-Dibromoethane	106-93-4	-	< 1	-	UM
Chlorobenzene	108-90-7	-	< 1	-	UM
Ethylbenzene	100-41-4	-	< 2	-	UM
1,1,1,2-Tetrachloroethane	630-20-6	-	< 1	-	UM
m and p-Xylene	108-38-3/106-42-3	-	< 5	-	UM

Target Compounds	CAS #	R.T. (min.)	Concentration µg/kg	% Fit	Accr. code
o-Xylene	95-47-6	-	< 2	-	UM
Styrene	100-42-5	-	< 1	-	UM
Bromoform	75-25-2	-	< 1	-	UM
iso-Propylbenzene	98-82-8	-	< 1	-	UM
1,1,2,2-Tetrachloroethane	79-34-5 **	-	< 1	-	N
Propylbenzene	103-65-1	-	< 1	-	UM
Bromobenzene	108-86-1	-	< 1	-	UM
1,2,3-Trichloropropane	96-18-4	-	< 1	-	UM
2-Chlorotoluene	95-49-8	-	< 1	-	UM
1,3,5-Trimethylbenzene	108-67-8	-	< 1	-	UM
4-Chlorotoluene	106-43-4	-	< 1	-	UM
tert-Butylbenzene	98-06-6	-	< 1	-	UM
1,2,4-Trimethylbenzene	95-63-6	-	< 1	-	UM
sec-Butylbenzene	135-98-8	-	< 1	-	UM
p-Isopropyltoluene	99-87-6	-	< 1	-	UM
1,3-Dichlorobenzene	541-73-1	-	< 1	-	UM
1,4-Dichlorobenzene	106-46-7	-	< 1	-	UM
n-Butylbenzene	104-51-8 *	-	< 1	-	N
1,2-Dichlorobenzene	95-50-1	6.43	5	M	UM
1,2-Dibromo-3-chloropropane	96-12-8	-	< 1	-	UM
1,2,4-Trichlorobenzene	120-82-1 *	-	< 4	-	N
Hexachlorobutadiene	87-68-3 **	-	< 2	-	N
Naphthalene	91-20-3	-	< 6	-	UM
1,2,3-Trichlorobenzene	87-61-6	-	< 4	-	UM

Concentrations are reported on a dry weight basis
Compounds marked ** are not UKAS or Mcerts accredited
"M" denotes that % fit has been manually interpreted
This analysis was conducted on an 'As Received' basis.

Internal standards	R.T.	Area %	Surrogates	% Rec
Pentafluorobenzene	4.04	98	Dibromofluoromethane	101
1,4-Difluorobenzene	4.39	95	Toluene-d8	94
Chlorobenzene-d5	5.50	82		
Bromofluorobenzene	5.89	73		
1,4-Dichlorobenzene-d4	6.29	63		
Naphthalene-d8	7.13	39		

Where individual results are flagged see report notes for status.
Results corrected to dry weight at 105°C where appropriate, in accordance with the MCERTS standard.

TICs by HSA-GCMS

Accredited?: No

Customer and Site Details:	Ramboll Environ: Zeon Chemicals ESA		**Date Booked in:**	16-May-16
Sample Details:	WS6 1.0		**Date Analysed:**	18-May-16
LIMS ID Number:	CL1616445		**Matrix:**	Soil
Job Number:	S16_3958		**Ext Method:**	Headspace
Directory/Quant file:	517VOC.MS19\	Initial Calibration	**Dilution:**	0.98
Operator:	0		**Position:**	10

Tentatively Identified Compounds	CAS No	R.T. (min.)	Concentration µg/kg	% Fit	Accr. code
Decane, 4-methyl-	002847-72-5	6.05	2466	87	N
Unidentified Peak		6.45	1196		N
Cycloheptane, methyl-	004126-78-7	5.97	941	70	N
Naphthalene, decahydro-2-methyl-	002958-76-1	6.69	936	96	N
Tridecane, 7-methyl-	026730-14-3	6.98	629	76	N
Undecane, 2,6-dimethyl-	017301-23-4	6.75	584	97	N
Unidentified Peak		6.61	565		N
Cyclohexane, (cyclopentylmethyl)-	004431-89-4	6.59	486	64	N
3-Undecene, 6-methyl-, (E)-	074630-52-7	5.73	483	53	N
Dodecane, 2,6,10-trimethyl-	003891-98-3	7.46	331	87	N
Benzene, 1,2,3,4-tetramethyl-	000488-23-3	6.65	308	83	N
Nonane, 3-methyl-	005911-04-6	5.67	292	87	N
Undecane	001120-21-4	7.90	281	91	N
Unidentified Peak		6.55	279		N
Unidentified Peak		6.53	273		N
Unidentified Peak		6.95	195		N
Benzene, 4-ethyl-1,2-dimethyl-	000934-80-5	6.82	181	81	N
Benzocycloheptatriene	000264-09-5	7.82	160	64	N
Unidentified Peak		6.79	142		N

The compounds listed above have been tentatively identified by a computer based library search.
Compounds identified in the sample are not reported if they also occur in the method blank.
The % fit is an indication of the reliability of the compound assignment.
Due to the similarity between mass spectra of some isomeric compounds, assignments may not be correct.
Other compounds may also be present but identification was not possible.
Concentrations are semi-quantitative, assume a response factor of 1 and use the nearest internal standard.

Compounds marked ** are not UKAS or Mcerts accredited
"M" denotes that % fit has been manually interpreted

Where individual results are flagged see report notes for status.
Results corrected to dry weight at 105°C where appropriate, in accordance with the MCERTS standard.

TICs by HSA-GCMS

Accredited?: No

Customer and Site Details:	Ramboll Environ: Zeon Chemicals ESA		**Date Booked in:**	16-May-16
Sample Details:	WS6 2.0		**Date Analysed:**	18-May-16
LIMS ID Number:	CL1616446		**Matrix:**	Soil
Job Number:	S16_3958		**Ext Method:**	Headspace
Directory/Quant file:	517VOC.MS19\	Initial Calibration	**Dilution:**	1.1
Operator:	0		**Position:**	11

Tentatively Identified Compounds	CAS No	R.T. (min.)	Concentration µg/kg	% Fit	Accr. code
Decane, 4-methyl-	002847-72-5	6.04	1924	87	N
Undecane, 2,6-dimethyl-	017301-23-4	6.75	1294	70	N
Unidentified Peak		6.45	1196		N
Nonane, 4-methyl-	017301-94-9	5.79	918	72	N
Nonane, 3-methyl-	005911-04-6	5.67	857	93	N
Pentadecane, 2,6,10-trimethyl-	003892-00-0	6.98	825	72	N
Cycloheptane, methyl-	004126-78-7	5.97	605	74	N
Unidentified Peak		6.69	554		N
5-Octadecene, (E)-	007206-21-5	6.00	537	53	N
Heptane, 3-ethyl-2-methyl-	014676-29-0	5.73	532	81	N
Carbonic acid, isobutyl pentyl ester	1000314-60-2	5.64	358	53	N
Unidentified Peak		6.79	340		N
Cyclohexane, (1-methylethyl)-	000696-29-7	6.59	278	53	N
Dodecane, 2,6,10-trimethyl-	003891-98-3	7.46	265	86	N
Octane, 4-methyl-	002216-34-4	5.34	253	72	N
Unidentified Peak		6.83	203		N
Unidentified Peak		6.53	202		N
Unidentified Peak		6.95	186		N
Undecane, 4-methyl-	002980-69-0	6.55	154	50	N

The compounds listed above have been tentatively identified by a computer based library search.
Compounds identified in the sample are not reported if they also occur in the method blank.
The % fit is an indication of the reliability of the compound assignment.
Due to the similarity between mass spectra of some isomeric compounds, assignments may not be correct.
Other compounds may also be present but identification was not possible.
Concentrations are semi-quantitative, assume a response factor of 1 and use the nearest internal standard.

Compounds marked ** are not UKAS or Mcerts accredited
"M" denotes that % fit has been manually interpreted

Where individual results are flagged see report notes for status.
Results corrected to dry weight at 105°C where appropriate, in accordance with the MCERTS standard.

TICs by HSA-GCMS

Accredited?: No

Customer and Site Details:	Ramboll Environ: Zeon Chemicals ESA		**Date Booked in:**	16-May-16
Sample Details:	WS10 0.2		**Date Analysed:**	18-May-16
LIMS ID Number:	CL1616447		**Matrix:**	Soil
Job Number:	S16_3958		**Ext Method:**	Headspace
Directory/Quant file:	517VOC.MS19\	Initial Calibration	**Dilution:**	0.99
Operator:	0		**Position:**	12

Tentatively Identified Compounds	CAS No	R.T. (min.)	Concentration µg/kg	% Fit	Accr. code
None Detected			<6		N

The compounds listed above have been tentatively identified by a computer based library search.
Compounds identified in the sample are not reported if they also occur in the method blank.
The % fit is an indication of the reliability of the compound assignment.
Due to the similarity between mass spectra of some isomeric compounds, assignments may not be correct.
Other compounds may also be present but identification was not possible.
Concentrations are semi-quantitative, assume a response factor of 1 and use the nearest internal standard.

Compounds marked ** are not UKAS or Mcerts accredited
"M" denotes that % fit has been manually interpreted

Where individual results are flagged see report notes for status.
Results corrected to dry weight at 105°C where appropriate, in accordance with the MCERTS standard.

TICs by HSA-GCMS

Accredited?: No

Customer and Site Details:	Ramboll Environ: Zeon Chemicals ESA		**Date Booked in:**	16-May-16
Sample Details:	WS7 0.3		**Date Analysed:**	18-May-16
LIMS ID Number:	CL1616448		**Matrix:**	Soil
Job Number:	S16_3958		**Ext Method:**	Headspace
Directory/Quant file:	517VOC.MS19\	Initial Calibration	**Dilution:**	1.02
Operator:	0		**Position:**	13

Tentatively Identified Compounds	CAS No	R.T. (min.)	Concentration µg/kg	% Fit	Accr. code
None Detected			<6		N

The compounds listed above have been tentatively identified by a computer based library search.
Compounds identified in the sample are not reported if they also occur in the method blank.
The % fit is an indication of the reliability of the compound assignment.
Due to the similarity between mass spectra of some isomeric compounds, assignments may not be correct.
Other compounds may also be present but identification was not possible.
Concentrations are semi-quantitative, assume a response factor of 1 and use the nearest internal standard.

Compounds marked ** are not UKAS or Mcerts accredited
"M" denotes that % fit has been manually interpreted

Where individual results are flagged see report notes for status.
Results corrected to dry weight at 105°C where appropriate, in accordance with the MCERTS standard.

TICs by HSA-GCMS

Accredited?: No

Customer and Site Details:	Ramboll Environ: Zeon Chemicals ESA		**Date Booked in:**	16-May-16
Sample Details:	WS7 0.8		**Date Analysed:**	18-May-16
LIMS ID Number:	CL1616449		**Matrix:**	Soil
Job Number:	S16_3958		**Ext Method:**	Headspace
Directory/Quant file:	517VOC.MS19\	Initial Calibration	**Dilution:**	1
Operator:	0		**Position:**	14

Tentatively Identified Compounds	CAS No	R.T. (min.)	Concentration µg/kg	% Fit	Accr. code
None Detected			<6		N

The compounds listed above have been tentatively identified by a computer based library search.
Compounds identified in the sample are not reported if they also occur in the method blank.
The % fit is an indication of the reliability of the compound assignment.
Due to the similarity between mass spectra of some isomeric compounds, assignments may not be correct.
Other compounds may also be present but identification was not possible.
Concentrations are semi-quantitative, assume a response factor of 1 and use the nearest internal standard.

Compounds marked ** are not UKAS or Mcerts accredited
"M" denotes that % fit has been manually interpreted

Where individual results are flagged see report notes for status.
Results corrected to dry weight at 105°C where appropriate, in accordance with the MCERTS standard.

TICs by HSA-GCMS

Accredited?: No

Customer and Site Details:	Ramboll Environ: Zeon Chemicals ESA		**Date Booked in:**	16-May-16
Sample Details:	WS2 0.3		**Date Analysed:**	18-May-16
LIMS ID Number:	CL1616450		**Matrix:**	Soil
Job Number:	S16_3958		**Ext Method:**	Headspace
Directory/Quant file:	517VOC.MS19\	Initial Calibration	**Dilution:**	1.06
Operator:	0		**Position:**	15

Tentatively Identified Compounds	CAS No	R.T. (min.)	Concentration µg/kg	% Fit	Accr. code
None Detected			<6		N

The compounds listed above have been tentatively identified by a computer based library search.
Compounds identified in the sample are not reported if they also occur in the method blank.
The % fit is an indication of the reliability of the compound assignment.
Due to the similarity between mass spectra of some isomeric compounds, assignments may not be correct.
Other compounds may also be present but identification was not possible.
Concentrations are semi-quantitative, assume a response factor of 1 and use the nearest internal standard.

Compounds marked ** are not UKAS or Mcerts accredited
"M" denotes that % fit has been manually interpreted

Where individual results are flagged see report notes for status.
Results corrected to dry weight at 105°C where appropriate, in accordance with the MCERTS standard.

TICs by HSA-GCMS

Accredited?: No

Customer and Site Details:	Ramboll Environ: Zeon Chemicals ESA		**Date Booked in:**	16-May-16
Sample Details:	WS2 2.0		**Date Analysed:**	18-May-16
LIMS ID Number:	CL1616451		**Matrix:**	Soil
Job Number:	S16_3958		**Ext Method:**	Headspace
Directory/Quant file:	517VOC.MS19\	Initial Calibration	**Dilution:**	0.91
Operator:	0		**Position:**	16

Tentatively Identified Compounds	CAS No	R.T. (min.)	Concentration µg/kg	% Fit	Accr. code
None Detected			<6		N

The compounds listed above have been tentatively identified by a computer based library search.
Compounds identified in the sample are not reported if they also occur in the method blank.
The % fit is an indication of the reliability of the compound assignment.
Due to the similarity between mass spectra of some isomeric compounds, assignments may not be correct.
Other compounds may also be present but identification was not possible.
Concentrations are semi-quantitative, assume a response factor of 1 and use the nearest internal standard.

Compounds marked ** are not UKAS or Mcerts accredited
"M" denotes that % fit has been manually interpreted

Where individual results are flagged see report notes for status.
Results corrected to dry weight at 105°C where appropriate, in accordance with the MCERTS standard.

TICs by HSA-GCMS

Accredited?: No

Customer and Site Details:	Ramboll Environ: Zeon Chemicals ESA		**Date Booked in:**	16-May-16
Sample Details:	WS1 3.0		**Date Analysed:**	18-May-16
LIMS ID Number:	CL1616452		**Matrix:**	Soil
Job Number:	S16_3958		**Ext Method:**	Headspace
Directory/Quant file:	517VOC.MS19\	Initial Calibration	**Dilution:**	1.04
Operator:	0		**Position:**	17

Tentatively Identified Compounds	CAS No	R.T. (min.)	Concentration µg/kg	% Fit	Accr. code
None Detected			<6		N

The compounds listed above have been tentatively identified by a computer based library search.
Compounds identified in the sample are not reported if they also occur in the method blank.
The % fit is an indication of the reliability of the compound assignment.
Due to the similarity between mass spectra of some isomeric compounds, assignments may not be correct.
Other compounds may also be present but identification was not possible.
Concentrations are semi-quantitative, assume a response factor of 1 and use the nearest internal standard.

Compounds marked ** are not UKAS or Mcerts accredited
"M" denotes that % fit has been manually interpreted

Where individual results are flagged see report notes for status.
Results corrected to dry weight at 105°C where appropriate, in accordance with the MCERTS standard.

TICs by HSA-GCMS

Accredited?: No

Customer and Site Details:	Ramboll Environ: Zeon Chemicals ESA		**Date Booked in:**	16-May-16
Sample Details:	WS1 4.0		**Date Analysed:**	18-May-16
LIMS ID Number:	CL1616453		**Matrix:**	Soil
Job Number:	S16_3958		**Ext Method:**	Headspace
Directory/Quant file:	517VOC.MS19\	Initial Calibration	**Dilution:**	1.03
Operator:	0		**Position:**	18

Tentatively Identified Compounds	CAS No	R.T. (min.)	Concentration µg/kg	% Fit	Accr. code
None Detected			<7		N

The compounds listed above have been tentatively identified by a computer based library search.
Compounds identified in the sample are not reported if they also occur in the method blank.
The % fit is an indication of the reliability of the compound assignment.
Due to the similarity between mass spectra of some isomeric compounds, assignments may not be correct.
Other compounds may also be present but identification was not possible.
Concentrations are semi-quantitative, assume a response factor of 1 and use the nearest internal standard.

Compounds marked ** are not UKAS or Mcerts accredited
"M" denotes that % fit has been manually interpreted

Where individual results are flagged see report notes for status.
Results corrected to dry weight at 105°C where appropriate, in accordance with the MCERTS standard.

TICs by HSA-GCMS

Accredited?: No

Customer and Site Details:	Ramboll Environ: Zeon Chemicals ESA		**Date Booked in:**	16-May-16
Sample Details:	WS9 0.3		**Date Analysed:**	18-May-16
LIMS ID Number:	CL1616454		**Matrix:**	Soil
Job Number:	S16_3958		**Ext Method:**	Headspace
Directory/Quant file:	517VOC.MS19\	Initial Calibration	**Dilution:**	1.02
Operator:	0		**Position:**	19

Tentatively Identified Compounds	CAS No	R.T. (min.)	Concentration µg/kg	% Fit	Accr. code
None Detected			<6		N

The compounds listed above have been tentatively identified by a computer based library search.
Compounds identified in the sample are not reported if they also occur in the method blank.
The % fit is an indication of the reliability of the compound assignment.
Due to the similarity between mass spectra of some isomeric compounds, assignments may not be correct.
Other compounds may also be present but identification was not possible.
Concentrations are semi-quantitative, assume a response factor of 1 and use the nearest internal standard.

Compounds marked ** are not UKAS or Mcerts accredited
"M" denotes that % fit has been manually interpreted

Where individual results are flagged see report notes for status.
Results corrected to dry weight at 105°C where appropriate, in accordance with the MCERTS standard.

ASBESTOS ANALYSIS RESULTS - SOIL ANALYSIS

ESG Asbestos Limited Certificate of Analysis for Asbestos in Soils, Sediments and Aggregates

1089

Detection limit of Method SCI-ASB-020 is 0.001%

Sampling has been carried out by a third party

Client:	ESG Environmental Chemistry	**Page 1 of 1**	
Address:	Etwall House, Bretby Business Park, Ashby Road, Burton upon Trent	**Report No:**	**ANO-0488-12504**
For the attention of:	Ramboll Environ	**Report Date:**	**17/05/2016**
Site Address:	Zeon Chemicals ESA	**Project Number:**	**S163958**

Sample Number	Sample Date	Sample Location & Matrix	Test Date	Total Sample Dry Weight (g)	Weight of <2mm Fraction (g)	Asbestos(g) in >8mm+>2mm	Asbestos(g) in <2mm	% Asbestos by weight of Total Dried Sample	Asbestos Fibre Types Identified
CL/1616448	13/05/16	WS7 0.3	17/05/2016					Screen Only	NAIIS
CL/1616450	13/05/16	WS2 0.3	17/05/2016					Screen Only	NAIIS
CL/1616454	13/05/16	WS9 0.3	17/05/2016					Screen & ID	Amosite(Free Fibres)

Keys

NAACR = Not Analysed at Clients Request

NAIIS = No Asbestos Identified in Sample (Screens Only)

*** visible to naked eye**

NADIS = No Asbestos Detected in Sample (ID & Quant Only)

Name:	Chris Mackie	Authorised Signatory:
Position:	Lab Analyst	

The sample analysis for the above results was carried out using the procedures detailed in ESG Asbestos Limited in house method (SCI-ASB-020) based on HSE document MDHS 90 - Asbestos Contaminated Land - Draft 5 - November 1997 (withdrawn). Fibre identification was carried out using ESG Asbestos Limited in house method of transmitted/polarised light microscopy and centre stop dispersion staining (SCI-ASB-007), based on HSE's HSG 248. The analysis of fine fraction for asbestos content only includes fibres and does not discriminate non-asbestos fibres. All fibres are assumed, unless specified, to be amphiboles. All tests were carried out at ESG Asbestos Laboratory, Ashbourne House, Bretby Business Park, Ashby Road, Burton-upon-Trent, Staffordshire. DE15 0XD, UKAS Laboratory Number 1089.

Where individual results are flagged see report notes for status.

Sample Analysis | **ESG Environmental Chemistry** | **S163958M**

Analytical and Deviating Sample Overview

Customer Ramboll Environ
Site Zeon Chemicals ESA
Report No S163958M

Consignment No S55950
Date Logged 16-May-2016

Report Due 09-Jun-2016

ID Number	Description	MethodID	ALCHSAFID	AMMAR	CustServ	Forms	GROHSA	ICPBOR	ICPMSS									ICPSOIL			ICPWSS	MCertS	PAHMSUS	PCBUSECDAR	PHEHPLC	PHSOIL
		Sampled	Alcohols by HSA-FID o	Exchange.Ammonium AR	REPORT A	Formaldehyde.	GRO (AA) by HSA GC-FID	Boron (H20 Soluble)	Arsenic (MS)	Cadmium (MS)	Chromium (MS)	Copper (MS)	Lead (MS)	Mercury (MS)	Nickel (MS)	Selenium (MS)	Vanadium (MS)	Zinc (MS)	Barium.	Beryllium.	Iron	SO4-- (H2O sol) mg/l	MCertS Analysis	PAH (17) by GCMS	PCB-7 Congeners Analysis	Phenol - HPLC	pH units (AR)
				✓			✓	✓	✓	✓	✓	✓	✓	✓	✓	✓		✓	✓	✓	✓	✓		✓		✓	✓
CL/1616445	WS6 1.0	12/05/16																								
CL/1616446	WS6 2.0	12/05/16																								
CL/1616447	WS10 0.2	12/05/16																							E	
CL/1616448	WS7 0.3	13/05/16																								
CL/1616449	WS7 0.8	13/05/16																								
CL/1616450	WS2 0.3	13/05/16																								
CL/1616451	WS2 2.0	13/05/16																								
CL/1616452	WS1 3.0	13/05/16																								
CL/1616453	WS1 4.0	13/05/16																								
CL/1616454	WS9 0.3	13/05/16																								

Note: For analysis where the scheduled turnaround is greater than the holding time we will do our utmost to prioritise these samples. However, it is possible that samples could become deviant whilst being processed in the laboratory.

In this instance please contact the laboratory immediately should you wish to discuss how you would like us to proceed. If you do not respond within 24 hours, we will proceed as originally requested.

Deviating Sample Key

A	The sample was received in an inappropriate container for this analysis
B	The sample was received without the correct preservation for this analysis
C	Headspace present in the sample container
D	The sampling date was not supplied so holding time may be compromised - applicable to all analysis
E	Sample processing did not commence within the appropriate holding time
F	Sample processing did not commence within the appropriate handling time

Requested Analysis Key

	Analysis Required
	Analysis dependant upon trigger result - **Note: due date may be affected if triggered**
	No analysis scheduled
^	Analysis Subcontracted - **Note: due date may vary**

Where individual results are flagged see report notes for status.
The integrity of data for samples/analysis that have been categorised as Deviating may be compromised. Data may not be representative of the sample at the time of sampling.

Analytical and Deviating Sample Overview

Customer Ramboll Environ
Site Zeon Chemicals ESA
Report No S163958M

Consignment No S55950
Date Logged 16-May-2016

Report Due 09-Jun-2016

ID Number	Description	MethodID	SFAPI		Sub002a	SVOCMSUS	TMSS	TPHUSSI	VOCHSAS	WSLM59
		Sampled	Cyanide(Total) (AR)	Phenol Index.(AR)	^Asbestos Screen	SVOC + TICs by GCMS (AR)	Tot.Moisture @ 105C	TPH by GCFID (AR/Si)	VOC + TICs HSA-GCMS	Total Organic Carbon
			✓	✓	✓	✓	✓	✓	✓	
CL/1616445	WS6 1.0	12/05/16					E			
CL/1616446	WS6 2.0	12/05/16					E			
CL/1616447	WS10 0.2	12/05/16					E			
CL/1616448	WS7 0.3	13/05/16					E			
CL/1616449	WS7 0.8	13/05/16					E			
CL/1616450	WS2 0.3	13/05/16					E			
CL/1616451	WS2 2.0	13/05/16					E			
CL/1616452	WS1 3.0	13/05/16					E			
CL/1616453	WS1 4.0	13/05/16					E			
CL/1616454	WS9 0.3	13/05/16					E			

Note: For analysis where the scheduled turnaround is greater than the holding time we will do our utmost to prioritise these samples. However, it is possible that samples could become deviant whilst being processed in the laboratory.

In this instance please contact the laboratory immediately should you wish to discuss how you would like us to proceed. If you do not respond within 24 hours, we will proceed as originally requested.

Deviating Sample Key

A	The sample was received in an inappropriate container for this analysis
B	The sample was received without the correct preservation for this analysis
C	Headspace present in the sample container
D	The sampling date was not supplied so holding time may be compromised - applicable to all analysis
E	Sample processing did not commence within the appropriate holding time
F	Sample processing did not commence within the appropriate handling time

Requested Analysis Key

	Analysis Required
	Analysis dependant upon trigger result - **Note: due date may be affected if triggered**
	No analysis scheduled
^	Analysis Subcontracted - **Note: due date may vary**

Where individual results are flagged see report notes for status.
The integrity of data for samples/analysis that have been categorised as Deviating may be compromised. Data may not be representative of the sample at the time of sampling.

Report Number : EFS/163958

Additional Report Notes

Method Code	Sample ID	The following information should be taken into consideration when using the data contained within this report
VOCHSAS	CL1616446, 48, 50	Due to matrix interference, the Internal Standard recovery for this Test is below the required QMS specification. This has been confirmed by historical data. All other Laboratory Process Controls meet the requirements of the QMS. These circumstances should be taken into consideration when utilising the data.
TPHUSSI	CL1616446 TO CL1616454	The Secondary process control result associated with this Test has not wholly met the requirements of the Laboratory Quality Management System (QMS). All other Process controls (including the Primary Process control) are within specification. The Laboratory believes that the validity of the data has not been affected but in line with our QMS policy we have removed accreditation from the affected analytes, C21-35 from the aromatic fraction . These circumstances should be taken into consideration when utilising the data.
GROHSA	CL1616453	Due to matrix interference, the Internal Standard recovery for this Test is below the required QMS specification. This has been confirmed by repeating the analysis. All other Laboratory Process Controls meet the requirements of the QMS. These circumstances should be taken into consideration when utilising the data.
PHEHPLC	CL1616447	The Primary process control result associated with this Test has not wholly met the requirements of the Laboratory Quality Management System (QMS). The Laboratory believes that the validity of the data has not been affected but in line with our QMS policy we have removed accreditation from the affected analyte Catechol . These circumstances should be taken into consideration when utilising the data.

Method Descriptions

Matrix	MethodID	Analysis Basis	Method Description
Soil	ALCHSAFID	As Received	Determination of Alcohols in soils by Headspace GCFID
Soil	AMMAR	As Received	Determination of Exchangeable Ammonium in Soil using potassium chloride extraction, discrete colorimetric detection
Soil	Forms	As Received	Determination of Formaldehyde in soil samples by colorimetry
Soil	GROHSA	As Received	Determination of Total Gasoline Range Organics Hydrocarbons (GRO) by Headspace GCFID
Soil	ICPBOR	Oven Dried @ < 35°C	Determination of Boron in soil samples by hot water extraction followed by ICPOES detection
Soil	ICPMSS	Oven Dried @ < 35°C	Determination of Metals in soil samples by aqua regia digestion followed by ICPMS
Soil	ICPSOIL	Oven Dried @ < 35°C	Determination of Metals in soil samples by aqua regia digestion followed by ICPOES detection
Soil	ICPWSS	Oven Dried @ < 35°C	Determination of Water Soluble Sulphate in soil samples by water extraction followed by ICPOES detection
Soil	PAHMSUS	As Received	Determination of Polycyclic Aromatic Hydrocarbons (PAH) by hexane/acetone extraction followed by GCMS detection
Soil	PCBUSECDAR	As Received	Determination of Polychlorinated Biphenyl (PCB) congeners/aroclors by hexane/acetone extraction followed by GCECD detection
Soil	PHEHPLC	As Received	Determination of Phenols by methanol extraction followed by HPLC detection
Soil	PHSOIL	As Received	Determination of pH of 2.5:1 deionised water to soil extracts using pH probe.
Soil	SFAPI	As Received	Segmented flow analysis with colorimetric detection
Soil	SubCon*	*	Contact Laboratory for details of the methodology used by the sub-contractor.
Soil	SVOCMSUS	As Received	Determination of Semi Volatile Organic Compounds in soil samples by Dichloromethane/Acetone extraction followed by GCMS detection
Soil	TMSS	As Received	Determination of the Total Moisture content at 105ºC by loss on oven drying gravimetric analysis (% based upon wet weight)
Soil	TPHUSSI	As Received	Determination of hexane/acetone extractable Hydrocarbons in soil with GCFID detection including quantitation of Aromatic and Aliphatic fractions.
Soil	VOCHSAS	As Received	Determination of Volatile Organic Compounds (VOC) by Headspace GCMS
Soil	WSLM59	Oven Dried @ < 35°C	Determination of Organic Carbon in soil using sulphurous Acid digestion followed by high temperature combustion and IR detection

Report Notes

Generic Notes

Soil/Solid Analysis

Unless stated otherwise,
- Results expressed as mg/kg have been calculated on the basis indicated in the Method Description table.
  All results on MCERTS reports are reported on a 105ºC dry weight basis with the exception of pH and conductivity.
- Sulphate analysis not conducted in accordance with BS1377
- Water Soluble Sulphate is on a 2:1 water:soil extract

Waters Analysis

Unless stated otherwise results are expressed as mg/l

Nil: Where "Nil" has been entered against Total Alkalinity or Total Acidity this indicates that a measurement was not required due to the inherent pH of the sample.

Oil analysis specific

Unless stated otherwise,
- Results are expressed as mg/kg
- SG is expressed as g/cm^3@ 15^{o}C

Gas (Tedlar bag) Analysis

Unless stated otherwise, results are expressed as ug/l

Asbestos Analysis

CH Denotes Chrysotile **TR** Denotes Tremolite
CR Denotes Crocidolite **AC** Denotes Actinolite
AM Denotes Amosite **AN** Denotes Anthophylite
NAIIS No Asbestos Identified in Sample
NADIS No Asbestos Detected In Sample

Symbol Reference

^ Sub-contracted analysis.
$$ Unable to analyse due to the nature of the sample
¶ Samples submitted for this analyte were not preserved on site in accordance with laboratory protocols. This may have resulted in deterioration of the sample(s) during transit to the laboratory. Consequently the reported data may not represent the concentration of the target analyte present in the sample at the time of sampling
¥ Results for guidance only due to possible interference
& Blank corrected result
I.S Insufficient sample to complete requested analysis
I.S(g) Insufficient sample to re-analyse, results for guidance only
Intf Unable to analyse due to interferences
N.D Not determined **N.Det** Not detected
N.F No Flow
NS Information Not Supplied
Req Analysis requested, see attached sheets for results
Þ Raised detection limit due to nature of the sample
***** All accreditation has been removed by the laboratory for this result
‡ MCERTS accreditation has been removed for this result
§ accreditation has been removed for this result as it is a non-accredited matrix

Note: The Laboratory may only claim that data is accredited when all of the requirements of our Quality System have been met. Where these requirements have not been met the laboratory may elect to include the data in its final report and remove the accreditation from individual data items if it believes that the validity of the data has not been affected. If further details are required of the circumstances which have led to the removal of accreditation then please do not hesitate to contact the laboratory.

Sample Descriptions

Client : Ramboll Environ

Site : Zeon Chemicals ESA

Report Number : S16_3958

Note: major constituent in upper case

Lab ID Number	Client ID	Description
CL/1616445	WS6 1.0	Brown Stone CLAY
CL/1616446	WS6 2.0	Brown Stone CLAY
CL/1616447	WS10 0.2	Brown Stone SILT
CL/1616448	WS7 0.3	Grey Stone SILT
CL/1616449	WS7 0.8	Brown CLAY
CL/1616450	WS2 0.3	Grey Stone SILT
CL/1616451	WS2 2.0	Brown CLAY
CL/1616452	WS1 3.0	Brown CLAY
CL/1616453	WS1 4.0	Brown CLAY
CL/1616454	WS9 0.3	Brown Stone CLAY

Our Ref: EXR/220074 (Ver. 2)
Your Ref: UK17-21370

June 10, 2016

Environmental Chemistry
ESG
Bretby Business Park
Ashby Road
Burton-on-Trent
Staffordshire
DE15 0YZ

Telephone: 01283 554400
Facsimile: 01283 554422

Lucy Cleverley
Ramboll Environ
8 Village Way
Cardiff
CF15 2NE

For the attention of Lucy Cleverley

Dear Lucy Cleverley

Sample Analysis - Zeon Chemicals ESA

Samples from the above site have been analysed in accordance with the schedule supplied.
The sample details and the results of analyses for these samples are given in the appended report.

An invoice for this work will follow under a separate cover.

Please be aware that our policy for the retention of paper based laboratory records and analysis reports is 6 years.

The work was carried out in accordance with Environmental Scientifics Group Ltd (Multi-Sector Services) Standard Terms and Conditions of Contract.

If I can be of any further assistance please do not hesitate to contact me.

Yours sincerely

for ESG

JNColbourne

J Colbourne
Project Co-ordinator
01283 554547

TEST REPORT

UKAS TESTING
1252

Report No. EXR/220074 (Ver. 2)

Ramboll Environ
8 Village Way
Cardiff
CF15 2NE

Site: Zeon Chemicals ESA

The 8 samples described in this report were registered for analysis by ESG on 18-May-2016. This report supersedes any versions previously issued by the laboratory.

The analysis was completed by: 10-Jun-2016

Tests where the accreditation is set to N or No, and any individual data items marked with a * are not UKAS accredited. Opinions and interpretations expressed herein are outside the scope of UKAS accreditation.

The following tables are contained in this report:

On behalf of
ESG :
Declan Burns

Managing Director
Multi-Sector Services

Date of Issue: 10-Jun-2016

Tests marked '^' have been subcontracted to another laboratory.
Where samples have been flagged as deviant on the Analytical and Deviating Sample Overview, for any reason, the data may not be representative of the sample at the point of sampling and the validity of the data may be affected.
ESG accepts no responsibility for any sampling not carried out by our personnel.

		Units :	pH units	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	µg/l	mg/l	mg/l
		Method Codes :	WSLM3	WSLM12	Calc_HD	KONENS	ICPWATVAR	ICPWATVAR	ICPWATVAR	ICPWATVAR	ICPWATVAR	ICPWATVAR	ICPMSW	ICPMSW	ICPMSW	PAHMSW	ICPMSW	ICPMSW
		Method Reporting Limits :			7	1	3	1	1	0.01	1	1	0.001	0.001	0.0001		0.001	0.001
		UKAS Accredited :	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
LAB ID Number EX/	**Client Sample Description**	**Sample Date**	**pH units w**	**Total Alkalinity as CaCO3 w**	**Total Hardness as CaCO3**	**Chloride as Cl w**	**Total Sulphur as SO4 (Dissolved) a**	**Calcium as Ca (Dissolved) a**	**Magnesium as Mg (Dissolved) a**	**Barium as Ba (Dissolved) a**	**Sodium as Na (Dissolved) a**	**Potassium as K (Dissolved) a**	**Nickel as Ni (Dissolved)**	**Chromium as Cr (Dissolved)**	**Cadmium as Cd (Dissolved)**	**PAH GC-MS (16) o**	**Copper as Cu (Dissolved)**	**Lead as Pb (Dissolved)**
1693399	BH101	17-May-16 09:00	7.1	590	638		191	72.5	111				0.004	<0.001	<0.0001	Req	<0.001	<0.001
1693400	BH102	17-May-16 10:00	7.0	553	510		24.2	171	20.1				0.001	<0.001	<0.0001	Req	<0.001	<0.001
1693401	BH103	17-May-16 10:45	7.8	268	158		24.8	51.2	7.4				0.031	<0.001	<0.0001	Req	0.003	<0.001
1693402	BH104	17-May-16 11:20	11.8	1290	<66		<30.0	<10.0	<10.0				0.018	0.003	0.0003	Req	0.009	0.086
1693403	BH105	17-May-16 12:15	7.5	250	886		12.3	337	10.8				0.015	<0.001	<0.0001	Req	<0.001	<0.001
1693404	BH106	17-May-16 13:00	7.3	351	502		28.7	146	33.3				0.036	<0.001	<0.0001	Req	<0.001	0.002
1693405	ZC201	17-May-16 14:45	7.8	263	162	56	21.9	54.1	6.6	0.08	74.4	4.3	0.037	<0.001	<0.0001	Req	<0.001	<0.001
1693406	ZC202	17-May-16 15:20	7.2	275	266		3.0	87.6	11.4				<0.001	<0.001	<0.0001	Req	<0.001	<0.001

ESG

Bretby Business Park, Ashby Road

Burton-on-Trent, Staffordshire, DE15 0YZ

Tel +44 (0) 1283 554400

Fax +44 (0) 1283 554422

Client Name Ramboll Environ

Contact Lucy Cleverley

Zeon Chemicals ESA

Sample Analysis

Date Printed	**10-Jun-2016**
Report Number	**EXR/220074**
Table Number	**1**

Where individual results are flagged see report notes for status.

		Units :	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	µg/l	mg/l	mg/l	mg/l
		Method Codes :	ICPMSW	ICPWATVART	ICPMSW	ICPWATVAR	ICPMSW	ICPMSW	ICPMSW	KONENS	SFAPI	WSLM11	WSLM20	TPHFID-Si	VOCHSAW	ICPWATVAR	GROHSA	ALCHSAFID
		Method Reporting Limits :	0.002	0.01	0.001	0.01	0.0001	0.001	0.001	0.01	0.02	5	2	0.01	1	0.01	0.1	20
		UKAS Accredited :	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No	No	No
LAB ID Number EX/	**Client Sample Description**	**Sample Date**	**Zinc as Zn (Dissolved)**	**Iron as Fe (Total) a**	**Arsenic as As (Dissolved)**	**Boron as B (Dissolved) a**	**Mercury as Hg (Dissolved)**	**Selenium as Se (Dissolved)**	**Vanadium as V (Dissolved)**	**Nitrite as N**	**Cyanide (Total) as CN**	**Chemical Oxygen Demand (Settled)**	**Biochemical Oxygen Demand w**	**TPH by GC(Si) o**	**VOC + TICS HSA-GCMS o**	**Beryllium as Be (Dissolved) a**	**GRO-HSA (AA)**	**Alcohols by HSA-FID o**
1693399	BH101	17-May-16 09:00	0.006		0.017	1.91	<0.0001	0.001	<0.001		<0.02			Req	Req	<0.01	Req	
1693400	BH102	17-May-16 10:00	0.004		<0.001	0.14	<0.0001	0.001	<0.001		<0.02			Req	Req	<0.01	Req	
1693401	BH103	17-May-16 10:45	0.009		0.013	0.08	<0.0001	0.001	0.005		<0.02			Req	Req	<0.01	Req	
1693402	BH104	17-May-16 11:20	0.012		0.03	<0.10	<0.0001	<0.001	0.058		<0.02			Req	Req	<0.10	Req	Req
1693403	BH105	17-May-16 12:15	0.004		0.013	0.05	<0.0001	<0.001	0.001		<0.02			Req	Req	<0.01	Req	
1693404	BH106	17-May-16 13:00	0.006		0.016	0.22	<0.0001	0.003	<0.001		<0.02			Req	Req	<0.01	Req	
1693405	ZC201	17-May-16 14:45	0.004	0.52	0.014	0.08	<0.0001	<0.001	<0.001	<0.01	<0.02	75	18.3	Req	Req	<0.01	Req	
1693406	ZC202	17-May-16 15:20	0.003		0.008	0.06	<0.0001	<0.001	<0.001		0.02			Req	Req	<0.01	Req	Req

ESG

Bretby Business Park, Ashby Road

Burton-on-Trent, Staffordshire, DE15 0YZ

Tel +44 (0) 1283 554400

Fax +44 (0) 1283 554422

Client Name Ramboll Environ

Contact Lucy Cleverley

Zeon Chemicals ESA

Sample Analysis

Date Printed	**10-Jun-2016**
Report Number	**EXR/220074**
Table Number	**1**

		Units :	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l						
		Method Codes :	FORW	SVOCSW	PHEHPLC	PHEHPLC	PHEHPLC	PHEHPLC	PHEHPLCVL	PHEHPLCVL	PHEHPLCVL	PHEHPLCVL						
		Method Reporting Limits :	0.2	0.002	0.1	0.1	0.1	0.1	0.0005	0.0005	0.0005	0.0005						
		UKAS Accredited :	No	No	Yes	Yes	Yes	Yes	No	No	No	No						
LAB ID Number EX/	**Client Sample Description**	**Sample Date**	**Formaldehyde**	**SVOC + TICS**	**Dimethylphenols**	**Phenol**	**Cresols**	**Trimethylphenols**	**Phenol**	**Cresols**	**Dimethylphenols**	**Trimethylphenols**						
1693399	BH101	**17-May-16 09:00**		Req	<0.1	<0.1	<0.1	<0.1										
1693400	BH102	**17-May-16 10:00**							<0.0005	<0.0005	<0.0005	<0.0005						
1693401	BH103	**17-May-16 10:45**							<0.0005	<0.0005	<0.0005	<0.0005						
1693402	BH104	**17-May-16 11:20**		Req	<0.1	<0.1	<0.1	<0.1										
1693403	BH105	**17-May-16 12:15**							0.0094	0.0013	0.0009	0.0052						
1693404	BH106	**17-May-16 13:00**		Req					0.0013	<0.0005	<0.0005	0.0016						
1693405	ZC201	**17-May-16 14:45**	<0.2	Req					<0.0005	<0.0005	<0.0005	<0.0005						
1693406	ZC202	**17-May-16 15:20**		Req					<0.0005	<0.0005	<0.0005	<0.0005						

ESG

Bretby Business Park, Ashby Road

Burton-on-Trent, Staffordshire, DE15 0YZ

Tel +44 (0) 1283 554400

Fax +44 (0) 1283 554422

Client Name **Ramboll Environ**

Contact Lucy Cleverley

Zeon Chemicals ESA

Sample Analysis

Date Printed	**10-Jun-2016**
Report Number	**EXR/220074**
Table Number	**1**

Where individual results are flagged see report notes for status.

Alcohols by Headspace GC-FID

Customer and Site Details: Ramboll Environ: Zeon Chemicals ESA
Job Number: W22_0074
UKAS Accredited?: No

Matrix: Water

Date Booked in: 18-May-16
Date extracted: 24-May-16
Date Analysed: 25-May-16

		Concentration, (mg/l unless stated otherwise)							
Sample ID	**Client ID**	**Methanol**	**Ethanol**	**iso-Propanol**	**tert-Butanol**	**1-Propanol**	**sec-Butanol**	**iso-Butanol**	**n-Butanol**
EX1693402	BH104	75	<20	<20	<20	<20	<20	<20	<20
EX1693406	ZC202	<20	<20	<20	<20	<20	<20	<20	<20

Where individual results are flagged see report notes for status.

Polycyclic Aromatic Hydrocarbons
GC/MS (SIM)

Customer and Site Details:	Ramboll Environ: Zeon Chemicals ESA		
Sample Details:	BH101	**Job Number:**	W22_0074
LIMS ID Number:	EX1693399	**Date Booked in:**	18-May-16
QC Batch Number:	160321	**Date Extracted:**	24-May-16
Quantitation File:	Initial Calibration	**Date Analysed:**	24-May-16
Directory:	416PAH.MS10\	**Matrix:**	Water
Dilution:	1.0	**Ext Method:**	Bottle

UKAS accredited?: Yes

Target Compounds	CAS #	R.T. (min)	Concentration ug/l	% Fit
Naphthalene	91-20-3	-	< 0.020	-
Acenaphthylene	208-96-8	-	< 0.010	-
Acenaphthene	83-32-9	-	< 0.010	-
Fluorene	86-73-7	-	< 0.010	-
Phenanthrene	85-01-8	-	< 0.010	-
Anthracene	120-12-7	-	< 0.010	-
Fluoranthene	206-44-0	-	< 0.010	-
Pyrene	129-00-0	-	< 0.010	-
Benzo[a]anthracene	56-55-3	-	< 0.010	-
Chrysene	218-01-9	-	< 0.010	-
Benzo[b]fluoranthene	205-99-2	-	< 0.010	-
Benzo[k]fluoranthene	207-08-9	-	< 0.010	-
Benzo[a]pyrene	50-32-8	-	< 0.010	-
Indeno[1,2,3-cd]pyrene	193-39-5	-	< 0.010	-
Dibenzo[a,h]anthracene	53-70-3*	-	< 0.010	-
Benzo[g,h,i]perylene	191-24-2	-	< 0.010	-
Total (USEPA16) PAHs	-	-	< 0.170	-

"M" denotes that % fit has been manually interpreted

Internal Standards	% Area
1,4-Dichlorobenzene-d4	NA
Naphthalene-d8	102
Acenaphthene-d10	103
Phenanthrene-d10	102
Chrysene-d12	99
Perylene-d12	91

Surrogates	% Rec
Nitrobenzene-d5	NA
2-Fluorobiphenyl	75
Terphenyl-d14	69

The Total PAH result is the sum of non-rounded individual PAH results and therefore may differ to the sum of the rounded individual PAH results printed above. By convention, where any one or more result is a "less than", the total is expressed as a "less than" and includes the "less than" concentration within the total.

Polycyclic Aromatic Hydrocarbons
GC/MS (SIM)

Customer and Site Details:	Ramboll Environ: Zeon Chemicals ESA		
Sample Details:	BH102	**Job Number:**	W22_0074
LIMS ID Number:	EX1693400	**Date Booked in:**	18-May-16
QC Batch Number:	160321	**Date Extracted:**	24-May-16
Quantitation File:	Initial Calibration	**Date Analysed:**	24-May-16
Directory:	416PAH.MS10\	**Matrix:**	Water
Dilution:	1.0	**Ext Method:**	Bottle

UKAS accredited?: Yes

Target Compounds	CAS #	R.T. (min)	Concentration ug/l	% Fit
Naphthalene	91-20-3	-	< 0.020	-
Acenaphthylene	208-96-8	-	< 0.010	-
Acenaphthene	83-32-9	-	< 0.010	-
Fluorene	86-73-7	-	< 0.010	-
Phenanthrene	85-01-8	-	< 0.010	-
Anthracene	120-12-7	-	< 0.010	-
Fluoranthene	206-44-0	-	< 0.010	-
Pyrene	129-00-0	-	< 0.010	-
Benzo[a]anthracene	56-55-3	-	< 0.010	-
Chrysene	218-01-9	-	< 0.010	-
Benzo[b]fluoranthene	205-99-2	-	< 0.010	-
Benzo[k]fluoranthene	207-08-9	-	< 0.010	-
Benzo[a]pyrene	50-32-8	-	< 0.010	-
Indeno[1,2,3-cd]pyrene	193-39-5	-	< 0.010	-
Dibenzo[a,h]anthracene	53-70-3*	-	< 0.010	-
Benzo[g,h,i]perylene	191-24-2	-	< 0.010	-
Total (USEPA16) PAHs	-	-	< 0.170	-

"M" denotes that % fit has been manually interpreted

Internal Standards	% Area
1,4-Dichlorobenzene-d4	NA
Naphthalene-d8	104
Acenaphthene-d10	104
Phenanthrene-d10	103
Chrysene-d12	102
Perylene-d12	98

Surrogates	% Rec
Nitrobenzene-d5	NA
2-Fluorobiphenyl	79
Terphenyl-d14	70

The Total PAH result is the sum of non-rounded individual PAH results and therefore may differ to the sum of the rounded individual PAH results printed above. By convention, where any one or more result is a "less than", the total is expressed as a "less than" and includes the "less than" concentration within the total.

Polycyclic Aromatic Hydrocarbons
GC/MS (SIM)

Customer and Site Details:	Ramboll Environ: Zeon Chemicals ESA		
Sample Details:	BH103	**Job Number:**	W22_0074
LIMS ID Number:	EX1693401	**Date Booked in:**	18-May-16
QC Batch Number:	160321	**Date Extracted:**	24-May-16
Quantitation File:	Initial Calibration	**Date Analysed:**	24-May-16
Directory:	416PAH.MS10\	**Matrix:**	Water
Dilution:	1.0	**Ext Method:**	Bottle

UKAS accredited?: Yes

Target Compounds	CAS #	R.T. (min)	Concentration ug/l	% Fit
Naphthalene	91-20-3	3.24	0.131	93
Acenaphthylene	208-96-8	-	< 0.010	-
Acenaphthene	83-32-9	-	< 0.010	-
Fluorene	86-73-7	-	< 0.010	-
Phenanthrene	85-01-8	-	< 0.010	-
Anthracene	120-12-7	-	< 0.010	-
Fluoranthene	206-44-0	-	< 0.010	-
Pyrene	129-00-0	-	< 0.010	-
Benzo[a]anthracene	56-55-3	-	< 0.010	-
Chrysene	218-01-9	-	< 0.010	-
Benzo[b]fluoranthene	205-99-2	-	< 0.010	-
Benzo[k]fluoranthene	207-08-9	-	< 0.010	-
Benzo[a]pyrene	50-32-8	-	< 0.010	-
Indeno[1,2,3-cd]pyrene	193-39-5	-	< 0.010	-
Dibenzo[a,h]anthracene	53-70-3*	-	< 0.010	-
Benzo[g,h,i]perylene	191-24-2	-	< 0.010	-
Total (USEPA16) PAHs	-	-	< 0.281	-

"M" denotes that % fit has been manually interpreted

Internal Standards	% Area
1,4-Dichlorobenzene-d4	NA
Naphthalene-d8	104
Acenaphthene-d10	106
Phenanthrene-d10	106
Chrysene-d12	104
Perylene-d12	91

Surrogates	% Rec
Nitrobenzene-d5	NA
2-Fluorobiphenyl	72
Terphenyl-d14	64

The Total PAH result is the sum of non-rounded individual PAH results and therefore may differ to the sum of the rounded individual PAH results printed above. By convention, where any one or more result is a "less than", the total is expressed as a "less than" and includes the "less than" concentration within the total.

Polycyclic Aromatic Hydrocarbons
GC/MS (SIM)

Customer and Site Details:	Ramboll Environ: Zeon Chemicals ESA		
Sample Details:	BH104	**Job Number:**	W22_0074
LIMS ID Number:	EX1693402	**Date Booked in:**	18-May-16
QC Batch Number:	160321	**Date Extracted:**	24-May-16
Quantitation File:	Initial Calibration	**Date Analysed:**	24-May-16
Directory:	416PAH.MS10\	**Matrix:**	Water
Dilution:	1.0	**Ext Method:**	Bottle

UKAS accredited?: Yes

Target Compounds	CAS #	R.T. (min)	Concentration ug/l	% Fit
Naphthalene	91-20-3	3.24	1.580	99
Acenaphthylene	208-96-8	4.29	0.012	86
Acenaphthene	83-32-9	4.41	0.059	99
Fluorene	86-73-7	4.79	0.042	92
Phenanthrene	85-01-8	5.62	0.180	96
Anthracene	120-12-7	5.67	0.022	90
Fluoranthene	206-44-0	6.95	0.275	100
Pyrene	129-00-0	7.24	0.208	98
Benzo[a]anthracene	56-55-3	8.92	0.066	96
Chrysene	218-01-9	8.96	0.080	93
Benzo[b]fluoranthene	205-99-2	10.45	0.094	93
Benzo[k]fluoranthene	207-08-9	10.48	0.024	94
Benzo[a]pyrene	50-32-8	10.87	0.042	95
Indeno[1,2,3-cd]pyrene	193-39-5	12.25	0.026	55
Dibenzo[a,h]anthracene	53-70-3*	-	< 0.010	-
Benzo[g,h,i]perylene	191-24-2	12.54	0.026	69
Total (USEPA16) PAHs	-	-	< 2.746	-

"M" denotes that % fit has been manually interpreted

Internal Standards	% Area
1,4-Dichlorobenzene-d4	NA
Naphthalene-d8	106
Acenaphthene-d10	107
Phenanthrene-d10	109
Chrysene-d12	111
Perylene-d12	110

Surrogates	% Rec
Nitrobenzene-d5	NA
2-Fluorobiphenyl	68
Terphenyl-d14	67

The Total PAH result is the sum of non-rounded individual PAH results and therefore may differ to the sum of the rounded individual PAH results printed above. By convention, where any one or more result is a "less than", the total is expressed as a "less than" and includes the "less than" concentration within the total.

Polycyclic Aromatic Hydrocarbons
GC/MS (SIM)

Customer and Site Details:	Ramboll Environ: Zeon Chemicals ESA		
Sample Details:	BH105	**Job Number:**	W22_0074
LIMS ID Number:	EX1693403	**Date Booked in:**	18-May-16
QC Batch Number:	160321	**Date Extracted:**	24-May-16
Quantitation File:	Initial Calibration	**Date Analysed:**	24-May-16
Directory:	416PAH.MS10\	**Matrix:**	Water
Dilution:	1.0	**Ext Method:**	Bottle

UKAS accredited?: Yes

Target Compounds	CAS #	R.T. (min)	Concentration ug/l	% Fit
Naphthalene	91-20-3	3.24	0.325	94
Acenaphthylene	208-96-8	4.29	0.093	M
Acenaphthene	83-32-9	4.41	0.193	93
Fluorene	86-73-7	4.79	0.226	93
Phenanthrene	85-01-8	5.62	0.059	96
Anthracene	120-12-7	-	< 0.010	-
Fluoranthene	206-44-0	-	< 0.010	-
Pyrene	129-00-0	-	< 0.010	-
Benzo[a]anthracene	56-55-3	-	< 0.010	-
Chrysene	218-01-9	-	< 0.010	-
Benzo[b]fluoranthene	205-99-2	-	< 0.010	-
Benzo[k]fluoranthene	207-08-9	-	< 0.010	-
Benzo[a]pyrene	50-32-8	-	< 0.010	-
Indeno[1,2,3-cd]pyrene	193-39-5	-	< 0.010	-
Dibenzo[a,h]anthracene	53-70-3*	-	< 0.010	-
Benzo[g,h,i]perylene	191-24-2	-	< 0.010	-
Total (USEPA16) PAHs	-	-	< 1.006	-

"M" denotes that % fit has been manually interpreted

Internal Standards	% Area
1,4-Dichlorobenzene-d4	NA
Naphthalene-d8	103
Acenaphthene-d10	109
Phenanthrene-d10	109
Chrysene-d12	111
Perylene-d12	105

Surrogates	% Rec
Nitrobenzene-d5	NA
2-Fluorobiphenyl	65
Terphenyl-d14	67

The Total PAH result is the sum of non-rounded individual PAH results and therefore may differ to the sum of the rounded individual PAH results printed above. By convention, where any one or more result is a "less than", the total is expressed as a "less than" and includes the "less than" concentration within the total.

Polycyclic Aromatic Hydrocarbons
GC/MS (SIM)

Customer and Site Details:	Ramboll Environ: Zeon Chemicals ESA		
Sample Details:	BH106	**Job Number:**	W22_0074
LIMS ID Number:	EX1693404	**Date Booked in:**	18-May-16
QC Batch Number:	160321	**Date Extracted:**	24-May-16
Quantitation File:	Initial Calibration	**Date Analysed:**	24-May-16
Directory:	416PAH.MS10\	**Matrix:**	Water
Dilution:	1.0	**Ext Method:**	Bottle

UKAS accredited?: Yes

Target Compounds	CAS #	R.T. (min)	Concentration ug/l	% Fit
Naphthalene	91-20-3	-	< 0.020	-
Acenaphthylene	208-96-8	-	< 0.010	-
Acenaphthene	83-32-9	4.41	0.032	89
Fluorene	86-73-7	-	< 0.010	-
Phenanthrene	85-01-8	-	< 0.010	-
Anthracene	120-12-7	-	< 0.010	-
Fluoranthene	206-44-0	-	< 0.010	-
Pyrene	129-00-0	-	< 0.010	-
Benzo[a]anthracene	56-55-3	-	< 0.010	-
Chrysene	218-01-9	-	< 0.010	-
Benzo[b]fluoranthene	205-99-2	-	< 0.010	-
Benzo[k]fluoranthene	207-08-9	-	< 0.010	-
Benzo[a]pyrene	50-32-8	-	< 0.010	-
Indeno[1,2,3-cd]pyrene	193-39-5	-	< 0.010	-
Dibenzo[a,h]anthracene	53-70-3*	-	< 0.010	-
Benzo[g,h,i]perylene	191-24-2	-	< 0.010	-
Total (USEPA16) PAHs	-	-	< 0.192	-

"M" denotes that % fit has been manually interpreted

Internal Standards	% Area
1,4-Dichlorobenzene-d4	NA
Naphthalene-d8	105
Acenaphthene-d10	107
Phenanthrene-d10	109
Chrysene-d12	107
Perylene-d12	97

Surrogates	% Rec
Nitrobenzene-d5	NA
2-Fluorobiphenyl	72
Terphenyl-d14	67

The Total PAH result is the sum of non-rounded individual PAH results and therefore may differ to the sum of the rounded individual PAH results printed above. By convention, where any one or more result is a "less than", the total is expressed as a "less than" and includes the "less than" concentration within the total.

Polycyclic Aromatic Hydrocarbons
GC/MS (SIM)

Customer and Site Details:	Ramboll Environ: Zeon Chemicals ESA		
Sample Details:	ZC201	**Job Number:**	W22_0074
LIMS ID Number:	EX1693405	**Date Booked in:**	18-May-16
QC Batch Number:	160321	**Date Extracted:**	24-May-16
Quantitation File:	Initial Calibration	**Date Analysed:**	24-May-16
Directory:	416PAH.MS10\	**Matrix:**	Water
Dilution:	1.0	**Ext Method:**	Bottle

UKAS accredited?: Yes

Target Compounds	CAS #	R.T. (min)	Concentration ug/l	% Fit
Naphthalene	91-20-3	3.24	0.083	93
Acenaphthylene	208-96-8	-	< 0.010	-
Acenaphthene	83-32-9	-	< 0.010	-
Fluorene	86-73-7	-	< 0.010	-
Phenanthrene	85-01-8	-	< 0.010	-
Anthracene	120-12-7	5.69	0.010	86
Fluoranthene	206-44-0	-	< 0.010	-
Pyrene	129-00-0	-	< 0.010	-
Benzo[a]anthracene	56-55-3	-	< 0.010	-
Chrysene	218-01-9	-	< 0.010	-
Benzo[b]fluoranthene	205-99-2	-	< 0.010	-
Benzo[k]fluoranthene	207-08-9	-	< 0.010	-
Benzo[a]pyrene	50-32-8	-	< 0.010	-
Indeno[1,2,3-cd]pyrene	193-39-5	-	< 0.010	-
Dibenzo[a,h]anthracene	53-70-3*	-	< 0.010	-
Benzo[g,h,i]perylene	191-24-2	-	< 0.010	-
Total (USEPA16) PAHs	-	-	< 0.233	-

"M" denotes that % fit has been manually interpreted

Internal Standards	% Area
1,4-Dichlorobenzene-d4	NA
Naphthalene-d8	103
Acenaphthene-d10	104
Phenanthrene-d10	103
Chrysene-d12	103
Perylene-d12	94

Surrogates	% Rec
Nitrobenzene-d5	NA
2-Fluorobiphenyl	61
Terphenyl-d14	65

The Total PAH result is the sum of non-rounded individual PAH results and therefore may differ to the sum of the rounded individual PAH results printed above. By convention, where any one or more result is a "less than", the total is expressed as a "less than" and includes the "less than" concentration within the total.

Polycyclic Aromatic Hydrocarbons
GC/MS (SIM)

Customer and Site Details:	Ramboll Environ: Zeon Chemicals ESA		
Sample Details:	ZC202	**Job Number:**	W22_0074
LIMS ID Number:	EX1693406	**Date Booked in:**	18-May-16
QC Batch Number:	160321	**Date Extracted:**	24-May-16
Quantitation File:	Initial Calibration	**Date Analysed:**	24-May-16
Directory:	416PAH.MS10\	**Matrix:**	Water
Dilution:	1.0	**Ext Method:**	Bottle

UKAS accredited?: Yes

Target Compounds	CAS #	R.T. (min)	Concentration ug/l	% Fit
Naphthalene	91-20-3	3.25	0.034	M
Acenaphthylene	208-96-8	4.29	0.060	M
Acenaphthene	83-32-9	4.41	0.131	81
Fluorene	86-73-7	4.79	0.280	88
Phenanthrene	85-01-8	5.62	0.041	80
Anthracene	120-12-7	5.67	0.036	80
Fluoranthene	206-44-0	6.96	0.018	89
Pyrene	129-00-0	7.24	0.042	99
Benzo[a]anthracene	56-55-3	-	< 0.010	-
Chrysene	218-01-9	-	< 0.010	-
Benzo[b]fluoranthene	205-99-2	-	< 0.010	-
Benzo[k]fluoranthene	207-08-9	-	< 0.010	-
Benzo[a]pyrene	50-32-8	-	< 0.010	-
Indeno[1,2,3-cd]pyrene	193-39-5	-	< 0.010	-
Dibenzo[a,h]anthracene	53-70-3*	-	< 0.010	-
Benzo[g,h,i]perylene	191-24-2	-	< 0.010	-
Total (USEPA16) PAHs	-	-	< 0.722	-

"M" denotes that % fit has been manually interpreted

Internal Standards	% Area
1,4-Dichlorobenzene-d4	NA
Naphthalene-d8	104
Acenaphthene-d10	109
Phenanthrene-d10	108
Chrysene-d12	104
Perylene-d12	95

Surrogates	% Rec
Nitrobenzene-d5	NA
2-Fluorobiphenyl	72
Terphenyl-d14	68

The Total PAH result is the sum of non-rounded individual PAH results and therefore may differ to the sum of the rounded individual PAH results printed above. By convention, where any one or more result is a "less than", the total is expressed as a "less than" and includes the "less than" concentration within the total.

Semi-Volatile Organic Compounds

UKAS accredited?: No

Customer and Site Details:	Ramboll Environ: Zeon Chemicals ESA			**Matrix:**	Water	**QC Batch Number:**	115
Sample Details:	BH101	**Date Booked in:**	18-May-16	**Ext Method:**	Sep. Funnel	**Multiplier:**	0.005
LIMS ID Number:	EX1693399	**Date Extracted:**	09-Jun-16	**Operator:**	SO/RP	**Dilution Factor:**	1
Job Number:	W22_0074	**Date Analysed:**	10-Jun-16	**Directory/Quant File:**	060916_MS16\	**GPC (Y/N)**	N

Target Compounds	CAS #	R.T. (min)	Concentration mg/l	% Fit
Phenol	108-95-2	-	< 0.020	-
bis(2-Chloroethyl)ether	111-44-4	-	< 0.005	-
2-Chlorophenol	95-57-8	-	< 0.020	-
1,3-Dichlorobenzene	541-73-1	-	< 0.005	-
1,4-Dichlorobenzene	106-46-7	-	< 0.005	-
Benzyl alcohol	100-51-6	-	< 0.005	-
1,2-Dichlorobenzene	95-50-1	-	< 0.005	-
2-Methylphenol	95-48-7	-	< 0.005	-
bis(2-Chloroisopropyl)ether	108-60-1	-	< 0.005	-
Hexachloroethane	67-72-1	-	< 0.005	-
N-Nitroso-di-n-propylamine	621-64-7	-	< 0.005	-
3- & 4-Methylphenol	108-39-4/106-44-5	-	< 0.020	-
Nitrobenzene	98-95-3	-	< 0.005	-
Isophorone	78-59-1	-	< 0.005	-
2-Nitrophenol	88-75-5	-	< 0.020	-
2,4-Dimethylphenol	105-67-9	-	< 0.020	-
Benzoic Acid	65-85-0	-	< 0.100	-
bis(2-Chloroethoxy)methane	111-91-1	-	< 0.005	-
2,4-Dichlorophenol	120-83-2	-	< 0.020	-
1,2,4-Trichlorobenzene	120-82-1	-	< 0.005	-
Naphthalene	91-20-3	-	< 0.002	-
4-Chlorophenol	106-48-9	-	< 0.020	-
4-Chloroaniline	106-47-8	-	< 0.005	-
Hexachlorobutadiene	87-68-3	-	< 0.005	-
4-Chloro-3-methylphenol	59-50-7	-	< 0.005	-
2-Methylnaphthalene	91-57-6	-	< 0.002	-
1-Methylnaphthalene	90-12-0	-	< 0.002	-
Hexachlorocyclopentadiene	77-47-4	-	< 0.005	-
2,4,6-Trichlorophenol	88-06-2	-	< 0.020	-
2,4,5-Trichlorophenol	95-95-4	-	< 0.020	-
2-Chloronaphthalene	91-58-7	-	< 0.002	-
Biphenyl	92-52-4	-	< 0.002	-
Diphenyl ether	101-84-8	-	< 0.002	-
2-Nitroaniline	88-74-4	-	< 0.005	-
Acenaphthylene	208-96-8	-	< 0.002	-
Dimethylphthalate	131-11-3	-	< 0.005	-
2,6-Dinitrotoluene	606-20-2	-	< 0.005	-
Acenaphthene	83-32-9	-	< 0.002	-
3-Nitroaniline	99-09-2	-	< 0.005	-

Target Compounds	CAS #	R.T.	Concentration mg/l	% Fit
2,4-Dinitrophenol	51-28-5	-	< 0.010	-
Dibenzofuran	132-64-9	-	< 0.005	-
4-Nitrophenol	100-02-7	-	< 0.050	-
2,4-Dinitrotoluene	121-14-2	-	< 0.005	-
Fluorene	86-73-7	-	< 0.002	-
Diethylphthalate	84-66-2	-	< 0.005	-
4-Chlorophenyl-phenylether	7005-72-3	-	< 0.005	-
4,6-Dinitro-2-methylphenol	534-52-1	-	< 0.050	-
4-Nitroaniline	100-01-6	-	< 0.005	-
N-Nitrosodiphenylamine	86-30-6	-	< 0.005	-
4-Bromophenyl-phenylether	101-55-3	-	< 0.005	-
Hexachlorobenzene	118-74-1	-	< 0.005	-
Pentachlorophenol	87-86-5	-	< 0.050	-
Phenanthrene	85-01-8	-	< 0.002	-
Anthracene	120-12-7	-	< 0.002	-
Di-n-butylphthalate	84-74-2	-	< 0.005	-
Fluoranthene	206-44-0	-	< 0.002	-
Pyrene	129-00-0	-	< 0.002	-
Butylbenzylphthalate	85-68-7	-	< 0.005	-
Benzo[a]anthracene	56-55-3	-	< 0.002	-
Chrysene	218-01-9	-	< 0.002	-
3,3'-Dichlorobenzidine	91-94-1	-	N.D	-
bis(2-Ethylhexyl)phthalate	117-81-7	-	< 0.005	-
Di-n-octylphthalate	117-84-0	-	< 0.002	-
Benzo[b]fluoranthene	205-99-2	-	< 0.002	-
Benzo[k]fluoranthene	207-08-9	-	< 0.002	-
Benzo[a]pyrene	50-32-8	-	< 0.002	-
Indeno[1,2,3-cd]pyrene	193-39-5	-	< 0.002	-
Dibenzo[a,h]anthracene	53-70-3	-	< 0.002	-
Benzo[g,h,i]perylene	191-24-2	-	< 0.002	-
Coronene	191-07-1	-	< 0.050	-

Internal Standards	% Area
1,4-Dichlorobenzene-d4	237
Naphthalene-d8	233
Acenaphthene-d10	237
Phenanthrene-d10	262
Chrysene-d12	349
Perylene-d12	392

Surrogates	% Rec
2-Fluorophenol	3
Phenol-d5	1
Nitrobenzene-d5	79
2-Fluorobiphenyl	87
2,4,6-Tribromophenol	20
Terphenyl-d14	91

Concentrations are reported on a wet weight basis.
"M" denotes that % fit has been manually interpreted

Where individual results are flagged see report notes for status.

Semi-Volatile Organic Compounds

UKAS accredited?: No

Customer and Site Details:	Ramboll Environ: Zeon Chemicals ESA			**Matrix:**	Water	**QC Batch Number:**	115
Sample Details:	BH104	**Date Booked in:**	18-May-16	**Ext Method:**	Sep. Funnel	**Multiplier:**	0.025
LIMS ID Number:	EX1693402	**Date Extracted:**	09-Jun-16	**Operator:**	SO/RP	**Dilution Factor:**	5
Job Number:	W22_0074	**Date Analysed:**	10-Jun-16	**Directory/Quant File:**	060916_MS16\	**GPC (Y/N)**	N

Target Compounds	CAS #	R.T. (min)	Concentration mg/l	% Fit
Phenol	108-95-2	-	< 0.100	-
bis(2-Chloroethyl)ether	111-44-4	-	< 0.025	-
2-Chlorophenol	95-57-8	-	< 0.100	-
1,3-Dichlorobenzene	541-73-1	-	< 0.025	-
1,4-Dichlorobenzene	106-46-7	-	< 0.025	-
Benzyl alcohol	100-51-6	-	< 0.025	-
1,2-Dichlorobenzene	95-50-1	-	< 0.025	-
2-Methylphenol	95-48-7	-	< 0.025	-
bis(2-Chloroisopropyl)ether	108-60-1	-	< 0.025	-
Hexachloroethane	67-72-1	-	< 0.025	-
N-Nitroso-di-n-propylamine	621-64-7	-	< 0.025	-
3- & 4-Methylphenol	108-39-4/106-44-5	-	< 0.100	-
Nitrobenzene	98-95-3	-	< 0.025	-
Isophorone	78-59-1	-	< 0.025	-
2-Nitrophenol	88-75-5	-	< 0.100	-
2,4-Dimethylphenol	105-67-9	-	< 0.100	-
Benzoic Acid	65-85-0	-	< 0.500	-
bis(2-Chloroethoxy)methane	111-91-1	-	< 0.025	-
2,4-Dichlorophenol	120-83-2	-	< 0.100	-
1,2,4-Trichlorobenzene	120-82-1	-	< 0.025	-
Naphthalene	91-20-3	-	< 0.010	-
4-Chlorophenol	106-48-9	-	< 0.100	-
4-Chloroaniline	106-47-8	-	< 0.025	-
Hexachlorobutadiene	87-68-3	-	< 0.025	-
4-Chloro-3-methylphenol	59-50-7	-	< 0.025	-
2-Methylnaphthalene	91-57-6	-	< 0.010	-
1-Methylnaphthalene	90-12-0	-	< 0.010	-
Hexachlorocyclopentadiene	77-47-4	-	< 0.025	-
2,4,6-Trichlorophenol	88-06-2	-	< 0.100	-
2,4,5-Trichlorophenol	95-95-4	-	< 0.100	-
2-Chloronaphthalene	91-58-7	-	< 0.010	-
Biphenyl	92-52-4	-	< 0.010	-
Diphenyl ether	101-84-8	-	< 0.010	-
2-Nitroaniline	88-74-4	-	< 0.025	-
Acenaphthylene	208-96-8	-	< 0.010	-
Dimethylphthalate	131-11-3	-	< 0.025	-
2,6-Dinitrotoluene	606-20-2	-	< 0.025	-
Acenaphthene	83-32-9	-	< 0.010	-
3-Nitroaniline	99-09-2	-	< 0.025	-

Target Compounds	CAS #	R.T.	Concentration mg/l	% Fit
2,4-Dinitrophenol	51-28-5	-	< 0.050	-
Dibenzofuran	132-64-9	-	< 0.025	-
4-Nitrophenol	100-02-7	-	< 0.250	-
2,4-Dinitrotoluene	121-14-2	-	< 0.025	-
Fluorene	86-73-7	-	< 0.010	-
Diethylphthalate	84-66-2	-	< 0.025	-
4-Chlorophenyl-phenylether	7005-72-3	-	< 0.025	-
4,6-Dinitro-2-methylphenol	534-52-1	-	< 0.250	-
4-Nitroaniline	100-01-6	-	< 0.025	-
N-Nitrosodiphenylamine	86-30-6	-	< 0.025	-
4-Bromophenyl-phenylether	101-55-3	-	< 0.025	-
Hexachlorobenzene	118-74-1	-	< 0.025	-
Pentachlorophenol	87-86-5	-	< 0.250	-
Phenanthrene	85-01-8	-	< 0.010	-
Anthracene	120-12-7	-	< 0.010	-
Di-n-butylphthalate	84-74-2	-	< 0.025	-
Fluoranthene	206-44-0	-	< 0.010	-
Pyrene	129-00-0	-	< 0.010	-
Butylbenzylphthalate	85-68-7	-	< 0.025	-
Benzo[a]anthracene	56-55-3	-	< 0.010	-
Chrysene	218-01-9	-	< 0.010	-
3,3'-Dichlorobenzidine	91-94-1	-	N.D	-
bis(2-Ethylhexyl)phthalate	117-81-7	-	< 0.025	-
Di-n-octylphthalate	117-84-0	-	< 0.010	-
Benzo[b]fluoranthene	205-99-2	-	< 0.010	-
Benzo[k]fluoranthene	207-08-9	-	< 0.010	-
Benzo[a]pyrene	50-32-8	-	< 0.010	-
Indeno[1,2,3-cd]pyrene	193-39-5	-	< 0.010	-
Dibenzo[a,h]anthracene	53-70-3	-	< 0.010	-
Benzo[g,h,i]perylene	191-24-2	-	< 0.010	-
Coronene	191-07-1	-	< 0.250	-

Internal Standards	% Area
1,4-Dichlorobenzene-d4	257
Naphthalene-d8	249
Acenaphthene-d10	257
Phenanthrene-d10	281
Chrysene-d12	381
Perylene-d12	436

Surrogates	% Rec
2-Fluorophenol	53
Phenol-d5	33
Nitrobenzene-d5	78
2-Fluorobiphenyl	85
2,4,6-Tribromophenol	87
Terphenyl-d14	85

Concentrations are reported on a wet weight basis.
"M" denotes that % fit has been manually interpreted

Where individual results are flagged see report notes for status.

Semi-Volatile Organic Compounds

UKAS accredited?: No

Customer and Site Details:	Ramboll Environ: Zeon Chemicals ESA			**Matrix:**	Water	**QC Batch Number:**	115
Sample Details:	BH106	**Date Booked in:**	18-May-16	**Ext Method:**	Sep. Funnel	**Multiplier:**	0.005
LIMS ID Number:	EX1693404	**Date Extracted:**	09-Jun-16	**Operator:**	SO/RP	**Dilution Factor:**	1
Job Number:	W22_0074	**Date Analysed:**	10-Jun-16	**Directory/Quant File:**	060916_MS16\	**GPC (Y/N)**	N

Target Compounds	CAS #	R.T. (min)	Concentration mg/l	% Fit
Phenol	108-95-2	-	< 0.020	-
bis(2-Chloroethyl)ether	111-44-4	-	< 0.005	-
2-Chlorophenol	95-57-8	-	< 0.020	-
1,3-Dichlorobenzene	541-73-1	-	< 0.005	-
1,4-Dichlorobenzene	106-46-7	-	< 0.005	-
Benzyl alcohol	100-51-6	-	< 0.005	-
1,2-Dichlorobenzene	95-50-1	-	< 0.005	-
2-Methylphenol	95-48-7	-	< 0.005	-
bis(2-Chloroisopropyl)ether	108-60-1	-	< 0.005	-
Hexachloroethane	67-72-1	-	< 0.005	-
N-Nitroso-di-n-propylamine	621-64-7	-	< 0.005	-
3- & 4-Methylphenol	108-39-4/106-44-5	-	< 0.020	-
Nitrobenzene	98-95-3	-	< 0.005	-
Isophorone	78-59-1	-	< 0.005	-
2-Nitrophenol	88-75-5	-	< 0.020	-
2,4-Dimethylphenol	105-67-9	-	< 0.020	-
Benzoic Acid	65-85-0	-	< 0.100	-
bis(2-Chloroethoxy)methane	111-91-1	-	< 0.005	-
2,4-Dichlorophenol	120-83-2	-	< 0.020	-
1,2,4-Trichlorobenzene	120-82-1	-	< 0.005	-
Naphthalene	91-20-3	-	< 0.002	-
4-Chlorophenol	106-48-9	-	< 0.020	-
4-Chloroaniline	106-47-8	-	< 0.005	-
Hexachlorobutadiene	87-68-3	-	< 0.005	-
4-Chloro-3-methylphenol	59-50-7	-	< 0.005	-
2-Methylnaphthalene	91-57-6	-	< 0.002	-
1-Methylnaphthalene	90-12-0	-	< 0.002	-
Hexachlorocyclopentadiene	77-47-4	-	< 0.005	-
2,4,6-Trichlorophenol	88-06-2	-	< 0.020	-
2,4,5-Trichlorophenol	95-95-4	-	< 0.020	-
2-Chloronaphthalene	91-58-7	-	< 0.002	-
Biphenyl	92-52-4	-	< 0.002	-
Diphenyl ether	101-84-8	-	< 0.002	-
2-Nitroaniline	88-74-4	-	< 0.005	-
Acenaphthylene	208-96-8	-	< 0.002	-
Dimethylphthalate	131-11-3	-	< 0.005	-
2,6-Dinitrotoluene	606-20-2	-	< 0.005	-
Acenaphthene	83-32-9	-	< 0.002	-
3-Nitroaniline	99-09-2	-	< 0.005	-

Target Compounds	CAS #	R.T.	Concentration mg/l	% Fit
2,4-Dinitrophenol	51-28-5	-	< 0.010	-
Dibenzofuran	132-64-9	-	< 0.005	-
4-Nitrophenol	100-02-7	-	< 0.050	-
2,4-Dinitrotoluene	121-14-2	-	< 0.005	-
Fluorene	86-73-7	-	< 0.002	-
Diethylphthalate	84-66-2	-	< 0.005	-
4-Chlorophenyl-phenylether	7005-72-3	-	< 0.005	-
4,6-Dinitro-2-methylphenol	534-52-1	-	< 0.050	-
4-Nitroaniline	100-01-6	-	< 0.005	-
N-Nitrosodiphenylamine	86-30-6	-	< 0.005	-
4-Bromophenyl-phenylether	101-55-3	-	< 0.005	-
Hexachlorobenzene	118-74-1	-	< 0.005	-
Pentachlorophenol	87-86-5	-	< 0.050	-
Phenanthrene	85-01-8	-	< 0.002	-
Anthracene	120-12-7	-	< 0.002	-
Di-n-butylphthalate	84-74-2	-	< 0.005	-
Fluoranthene	206-44-0	-	< 0.002	-
Pyrene	129-00-0	-	< 0.002	-
Butylbenzylphthalate	85-68-7	-	< 0.005	-
Benzo[a]anthracene	56-55-3	-	< 0.002	-
Chrysene	218-01-9	-	< 0.002	-
3,3'-Dichlorobenzidine	91-94-1	-	N.D	-
bis(2-Ethylhexyl)phthalate	117-81-7	-	< 0.005	-
Di-n-octylphthalate	117-84-0	-	< 0.002	-
Benzo[b]fluoranthene	205-99-2	-	< 0.002	-
Benzo[k]fluoranthene	207-08-9	-	< 0.002	-
Benzo[a]pyrene	50-32-8	-	< 0.002	-
Indeno[1,2,3-cd]pyrene	193-39-5	-	< 0.002	-
Dibenzo[a,h]anthracene	53-70-3	-	< 0.002	-
Benzo[g,h,i]perylene	191-24-2	-	< 0.002	-
Coronene	191-07-1	-	< 0.050	-

Internal Standards	% Area
1,4-Dichlorobenzene-d4	252
Naphthalene-d8	246
Acenaphthene-d10	251
Phenanthrene-d10	277
Chrysene-d12	369
Perylene-d12	429

Surrogates	% Rec
2-Fluorophenol	53
Phenol-d5	33
Nitrobenzene-d5	74
2-Fluorobiphenyl	81
2,4,6-Tribromophenol	89
Terphenyl-d14	69

Concentrations are reported on a wet weight basis.
"M" denotes that % fit has been manually interpreted

Where individual results are flagged see report notes for status.

Semi-Volatile Organic Compounds

UKAS accredited?: No

Customer and Site Details:	Ramboll Environ: Zeon Chemicals ESA			**Matrix:**	Water	**QC Batch Number:**	115
Sample Details:	ZC201	**Date Booked in:**	18-May-16	**Ext Method:**	Sep. Funnel	**Multiplier:**	0.005
LIMS ID Number:	EX1693405	**Date Extracted:**	09-Jun-16	**Operator:**	SO/RP	**Dilution Factor:**	1
Job Number:	W22_0074	**Date Analysed:**	10-Jun-16	**Directory/Quant File:**	060916_MS16\	**GPC (Y/N)**	N

Target Compounds	CAS #	R.T. (min)	Concentration mg/l	% Fit
Phenol	108-95-2	-	< 0.020	-
bis(2-Chloroethyl)ether	111-44-4	-	< 0.005	-
2-Chlorophenol	95-57-8	-	< 0.020	-
1,3-Dichlorobenzene	541-73-1	-	< 0.005	-
1,4-Dichlorobenzene	106-46-7	-	< 0.005	-
Benzyl alcohol	100-51-6	-	< 0.005	-
1,2-Dichlorobenzene	95-50-1	-	< 0.005	-
2-Methylphenol	95-48-7	-	< 0.005	-
bis(2-Chloroisopropyl)ether	108-60-1	-	< 0.005	-
Hexachloroethane	67-72-1	-	< 0.005	-
N-Nitroso-di-n-propylamine	621-64-7	-	< 0.005	-
3- & 4-Methylphenol	108-39-4/106-44-5	-	< 0.020	-
Nitrobenzene	98-95-3	-	< 0.005	-
Isophorone	78-59-1	-	< 0.005	-
2-Nitrophenol	88-75-5	-	< 0.020	-
2,4-Dimethylphenol	105-67-9	-	< 0.020	-
Benzoic Acid	65-85-0	-	< 0.100	-
bis(2-Chloroethoxy)methane	111-91-1	-	< 0.005	-
2,4-Dichlorophenol	120-83-2	-	< 0.020	-
1,2,4-Trichlorobenzene	120-82-1	-	< 0.005	-
Naphthalene	91-20-3	-	< 0.002	-
4-Chlorophenol	106-48-9	-	< 0.020	-
4-Chloroaniline	106-47-8	-	< 0.005	-
Hexachlorobutadiene	87-68-3	-	< 0.005	-
4-Chloro-3-methylphenol	59-50-7	-	< 0.005	-
2-Methylnaphthalene	91-57-6	-	< 0.002	-
1-Methylnaphthalene	90-12-0	-	< 0.002	-
Hexachlorocyclopentadiene	77-47-4	-	< 0.005	-
2,4,6-Trichlorophenol	88-06-2	-	< 0.020	-
2,4,5-Trichlorophenol	95-95-4	-	< 0.020	-
2-Chloronaphthalene	91-58-7	-	< 0.002	-
Biphenyl	92-52-4	-	< 0.002	-
Diphenyl ether	101-84-8	-	< 0.002	-
2-Nitroaniline	88-74-4	-	< 0.005	-
Acenaphthylene	208-96-8	-	< 0.002	-
Dimethylphthalate	131-11-3	-	< 0.005	-
2,6-Dinitrotoluene	606-20-2	-	< 0.005	-
Acenaphthene	83-32-9	-	< 0.002	-
3-Nitroaniline	99-09-2	-	< 0.005	-

Target Compounds	CAS #	R.T.	Concentration mg/l	% Fit
2,4-Dinitrophenol	51-28-5	-	< 0.010	-
Dibenzofuran	132-64-9	-	< 0.005	-
4-Nitrophenol	100-02-7	-	< 0.050	-
2,4-Dinitrotoluene	121-14-2	-	< 0.005	-
Fluorene	86-73-7	-	< 0.002	-
Diethylphthalate	84-66-2	-	< 0.005	-
4-Chlorophenyl-phenylether	7005-72-3	-	< 0.005	-
4,6-Dinitro-2-methylphenol	534-52-1	-	< 0.050	-
4-Nitroaniline	100-01-6	-	< 0.005	-
N-Nitrosodiphenylamine	86-30-6	-	< 0.005	-
4-Bromophenyl-phenylether	101-55-3	-	< 0.005	-
Hexachlorobenzene	118-74-1	-	< 0.005	-
Pentachlorophenol	87-86-5	-	< 0.050	-
Phenanthrene	85-01-8	-	< 0.002	-
Anthracene	120-12-7	-	< 0.002	-
Di-n-butylphthalate	84-74-2	-	< 0.005	-
Fluoranthene	206-44-0	-	< 0.002	-
Pyrene	129-00-0	-	< 0.002	-
Butylbenzylphthalate	85-68-7	-	< 0.005	-
Benzo[a]anthracene	56-55-3	-	< 0.002	-
Chrysene	218-01-9	-	< 0.002	-
3,3'-Dichlorobenzidine	91-94-1	-	N.D	-
bis(2-Ethylhexyl)phthalate	117-81-7	-	< 0.005	-
Di-n-octylphthalate	117-84-0	-	< 0.002	-
Benzo[b]fluoranthene	205-99-2	-	< 0.002	-
Benzo[k]fluoranthene	207-08-9	-	< 0.002	-
Benzo[a]pyrene	50-32-8	-	< 0.002	-
Indeno[1,2,3-cd]pyrene	193-39-5	-	< 0.002	-
Dibenzo[a,h]anthracene	53-70-3	-	< 0.002	-
Benzo[g,h,i]perylene	191-24-2	-	< 0.002	-
Coronene	191-07-1	-	< 0.050	-

Internal Standards	% Area
1,4-Dichlorobenzene-d4	248
Naphthalene-d8	244
Acenaphthene-d10	255
Phenanthrene-d10	278
Chrysene-d12	379
Perylene-d12	424

Surrogates	% Rec
2-Fluorophenol	24
Phenol-d5	24
Nitrobenzene-d5	71
2-Fluorobiphenyl	80
2,4,6-Tribromophenol	70
Terphenyl-d14	83

Concentrations are reported on a wet weight basis.
"M" denotes that % fit has been manually interpreted

Where individual results are flagged see report notes for status.

Semi-Volatile Organic Compounds

UKAS accredited?: No

Customer and Site Details:	Ramboll Environ: Zeon Chemicals ESA			**Matrix:**	Water	**QC Batch Number:**	115
Sample Details:	ZC202	**Date Booked in:**	18-May-16	**Ext Method:**	Sep. Funnel	**Multiplier:**	0.005
LIMS ID Number:	EX1693406	**Date Extracted:**	09-Jun-16	**Operator:**	SO/RP	**Dilution Factor:**	1
Job Number:	W22_0074	**Date Analysed:**	10-Jun-16	**Directory/Quant File:**	060916_MS16\	**GPC (Y/N)**	N

Target Compounds	CAS #	R.T. (min)	Concentration mg/l	% Fit
Phenol	108-95-2	-	< 0.020	-
bis(2-Chloroethyl)ether	111-44-4	-	< 0.005	-
2-Chlorophenol	95-57-8	-	< 0.020	-
1,3-Dichlorobenzene	541-73-1	-	< 0.005	-
1,4-Dichlorobenzene	106-46-7	-	< 0.005	-
Benzyl alcohol	100-51-6	-	< 0.005	-
1,2-Dichlorobenzene	95-50-1	-	< 0.005	-
2-Methylphenol	95-48-7	-	< 0.005	-
bis(2-Chloroisopropyl)ether	108-60-1	-	< 0.005	-
Hexachloroethane	67-72-1	-	< 0.005	-
N-Nitroso-di-n-propylamine	621-64-7	-	< 0.005	-
3- & 4-Methylphenol	108-39-4/106-44-5	-	< 0.020	-
Nitrobenzene	98-95-3	-	< 0.005	-
Isophorone	78-59-1	-	< 0.005	-
2-Nitrophenol	88-75-5	-	< 0.020	-
2,4-Dimethylphenol	105-67-9	-	< 0.020	-
Benzoic Acid	65-85-0	-	< 0.100	-
bis(2-Chloroethoxy)methane	111-91-1	-	< 0.005	-
2,4-Dichlorophenol	120-83-2	-	< 0.020	-
1,2,4-Trichlorobenzene	120-82-1	-	< 0.005	-
Naphthalene	91-20-3	-	< 0.002	-
4-Chlorophenol	106-48-9	-	< 0.020	-
4-Chloroaniline	106-47-8	-	< 0.005	-
Hexachlorobutadiene	87-68-3	-	< 0.005	-
4-Chloro-3-methylphenol	59-50-7	-	< 0.005	-
2-Methylnaphthalene	91-57-6	-	< 0.002	-
1-Methylnaphthalene	90-12-0	-	< 0.002	-
Hexachlorocyclopentadiene	77-47-4	-	< 0.005	-
2,4,6-Trichlorophenol	88-06-2	-	< 0.020	-
2,4,5-Trichlorophenol	95-95-4	-	< 0.020	-
2-Chloronaphthalene	91-58-7	-	< 0.002	-
Biphenyl	92-52-4	-	< 0.002	-
Diphenyl ether	101-84-8	-	< 0.002	-
2-Nitroaniline	88-74-4	-	< 0.005	-
Acenaphthylene	208-96-8	-	< 0.002	-
Dimethylphthalate	131-11-3	-	< 0.005	-
2,6-Dinitrotoluene	606-20-2	-	< 0.005	-
Acenaphthene	83-32-9	-	< 0.002	-
3-Nitroaniline	99-09-2	-	< 0.005	-

Target Compounds	CAS #	R.T.	Concentration mg/l	% Fit
2,4-Dinitrophenol	51-28-5	-	< 0.010	-
Dibenzofuran	132-64-9	-	< 0.005	-
4-Nitrophenol	100-02-7	-	< 0.050	-
2,4-Dinitrotoluene	121-14-2	-	< 0.005	-
Fluorene	86-73-7	-	< 0.002	-
Diethylphthalate	84-66-2	-	< 0.005	-
4-Chlorophenyl-phenylether	7005-72-3	-	< 0.005	-
4,6-Dinitro-2-methylphenol	534-52-1	-	< 0.050	-
4-Nitroaniline	100-01-6	-	< 0.005	-
N-Nitrosodiphenylamine	86-30-6	-	< 0.005	-
4-Bromophenyl-phenylether	101-55-3	-	< 0.005	-
Hexachlorobenzene	118-74-1	-	< 0.005	-
Pentachlorophenol	87-86-5	-	< 0.050	-
Phenanthrene	85-01-8	-	< 0.002	-
Anthracene	120-12-7	-	< 0.002	-
Di-n-butylphthalate	84-74-2	-	< 0.005	-
Fluoranthene	206-44-0	-	< 0.002	-
Pyrene	129-00-0	-	< 0.002	-
Butylbenzylphthalate	85-68-7	-	< 0.005	-
Benzo[a]anthracene	56-55-3	-	< 0.002	-
Chrysene	218-01-9	-	< 0.002	-
3,3'-Dichlorobenzidine	91-94-1	-	N.D	-
bis(2-Ethylhexyl)phthalate	117-81-7	-	< 0.005	-
Di-n-octylphthalate	117-84-0	-	< 0.002	-
Benzo[b]fluoranthene	205-99-2	-	< 0.002	-
Benzo[k]fluoranthene	207-08-9	-	< 0.002	-
Benzo[a]pyrene	50-32-8	-	< 0.002	-
Indeno[1,2,3-cd]pyrene	193-39-5	-	< 0.002	-
Dibenzo[a,h]anthracene	53-70-3	-	< 0.002	-
Benzo[g,h,i]perylene	191-24-2	-	< 0.002	-
Coronene	191-07-1	-	< 0.050	-

Internal Standards	% Area
1,4-Dichlorobenzene-d4	241
Naphthalene-d8	239
Acenaphthene-d10	248
Phenanthrene-d10	272
Chrysene-d12	362
Perylene-d12	397

Surrogates	% Rec
2-Fluorophenol	13
Phenol-d5	13
Nitrobenzene-d5	78
2-Fluorobiphenyl	86
2,4,6-Tribromophenol	49
Terphenyl-d14	90

Concentrations are reported on a wet weight basis.
"M" denotes that % fit has been manually interpreted

Where individual results are flagged see report notes for status.

SVOC (TICs)

UKAS accredited?:No

Customer and Site Details:	Ramboll Environ: Zeon Chemicals ESA		
Sample Details:	BH101	**Job Number:**	W22_0074
LIMS ID Number:	EX1693399		
		Multiplier:	0.005
Date Booked in:	18-May-16	**Dilution Factor:**	1
Date Extracted:	09-Jun-16	**GPC (Y/N):**	N
Date Analysed:	10-Jun-16	**Matrix:**	Water
QC Batch Number:	115	**Method:**	Sep. Funnel
Directory/Quant File:	060916_MS16\ 0	**Operator:**	SO/RP

Tentatively Identified Compounds	CAS #	R.T.	Concentration mg/l	% Fit
2-[(trimethylsilyl)oxy]-5-methylacetophenone	097389-69-0	13.15	0.019	52
Benzenesulfonamide	000098-10-2	5.09	0.018	97
Unidentified peak	-	13.43	0.012	-

The compounds listed above have been tentatively identified by a computer based library search.
Compounds identified in the sample are not reported if they also occur in the method blank.
The % fit is an indication of the reliability of the compound assignment.
Due to the similarity between mass spectra of some isomeric compounds assignments may not be correct.
Other compounds may also be present but identification was not possible.
Concentrations are semi-quantitative, assume a response factor of 1 and use the nearest internal standard.

SVOC (TICs)

UKAS accredited?:No

Customer and Site Details:	Ramboll Environ: Zeon Chemicals ESA		
Sample Details:	BH104	**Job Number:**	W22_0074
LIMS ID Number:	EX1693402		
		Multiplier:	0.025
Date Booked in:	18-May-16	**Dilution Factor:**	5
Date Extracted:	09-Jun-16	**GPC (Y/N):**	N
Date Analysed:	10-Jun-16	**Matrix:**	Water
QC Batch Number:	115	**Method:**	Sep. Funnel
Directory/Quant File:	060916_MS16\ 0	**Operator:**	SO/RP

Tentatively Identified Compounds	CAS #	R.T.	Concentration mg/l	% Fit
1-Naphthalene-sulfonic acid	999200-54-5	13.10	0.036	58
Unidentified peak	-	10.70	0.030	-
5-(3-ALLYL-2(3H)-BENZOTHIAZOLYLIDENE)-2-{[5-CYANO-	999723-61-8	13.59	0.029	50
Unidentified peak	-	10.63	0.027	-
Unidentified peak	-	12.62	0.024	-
Unidentified peak	-	3.66	0.021	-
Unidentified peak	-	13.47	0.020	-

The compounds listed above have been tentatively identified by a computer based library search.
Compounds identified in the sample are not reported if they also occur in the method blank.
The % fit is an indication of the reliability of the compound assignment.
Due to the similarity between mass spectra of some isomeric compounds assignments may not be correct.
Other compounds may also be present but identification was not possible.
Concentrations are semi-quantitative, assume a response factor of 1 and use the nearest internal standard.

SVOC (TICs)

UKAS accredited?:No

Customer and Site Details:	Ramboll Environ: Zeon Chemicals ESA		
Sample Details:	BH106	**Job Number:**	W22_0074
LIMS ID Number:	EX1693404		
		Multiplier:	0.005
Date Booked in:	18-May-16	**Dilution Factor:**	1
Date Extracted:	09-Jun-16	**GPC (Y/N):**	N
Date Analysed:	10-Jun-16	**Matrix:**	Water
QC Batch Number:	115	**Method:**	Sep. Funnel
Directory/Quant File:	060916_MS16\ 0	**Operator:**	SO/RP

Tentatively Identified Compounds	CAS #	R.T.	Concentration mg/l	% Fit
5,8-Epoxy-15-nor-labdane	999399-43-3	13.13	0.032	91

The compounds listed above have been tentatively identified by a computer based library search.
Compounds identified in the sample are not reported if they also occur in the method blank.
The % fit is an indication of the reliability of the compound assignment.
Due to the similarity between mass spectra of some isomeric compounds assignments may not be correct.
Other compounds may also be present but identification was not possible.
Concentrations are semi-quantitative, assume a response factor of 1 and use the nearest internal standard.

SVOC (TICs)

UKAS accredited?:No

Customer and Site Details:	Ramboll Environ: Zeon Chemicals ESA		
Sample Details:	ZC201	**Job Number:**	W22_0074
LIMS ID Number:	EX1693405		
		Multiplier:	0.005
Date Booked in:	18-May-16	**Dilution Factor:**	1
Date Extracted:	09-Jun-16	**GPC (Y/N):**	N
Date Analysed:	10-Jun-16	**Matrix:**	Water
QC Batch Number:	115	**Method:**	Sep. Funnel
Directory/Quant File:	060916_MS16\ 0	**Operator:**	SO/RP

Tentatively Identified Compounds	CAS #	R.T.	Concentration mg/l	% Fit
5,8-Epoxy-15-nor-labdane	999399-43-3	12.81	0.014	93

The compounds listed above have been tentatively identified by a computer based library search.
Compounds identified in the sample are not reported if they also occur in the method blank.
The % fit is an indication of the reliability of the compound assignment.
Due to the similarity between mass spectra of some isomeric compounds assignments may not be correct.
Other compounds may also be present but identification was not possible.
Concentrations are semi-quantitative, assume a response factor of 1 and use the nearest internal standard.

SVOC (TICs)

UKAS accredited?:No

Customer and Site Details:	Ramboll Environ: Zeon Chemicals ESA		
Sample Details:	ZC202	**Job Number:**	W22_0074
LIMS ID Number:	EX1693406		
		Multiplier:	0.005
Date Booked in:	18-May-16	**Dilution Factor:**	1
Date Extracted:	09-Jun-16	**GPC (Y/N):**	N
Date Analysed:	10-Jun-16	**Matrix:**	Water
QC Batch Number:	115	**Method:**	Sep. Funnel
Directory/Quant File:	060916_MS16\ 0	**Operator:**	SO/RP

Tentatively Identified Compounds	CAS #	R.T.	Concentration mg/l	% Fit
5,8-Epoxy-15-nor-labdane	999399-43-3	13.00	0.020	92

The compounds listed above have been tentatively identified by a computer based library search.
Compounds identified in the sample are not reported if they also occur in the method blank.
The % fit is an indication of the reliability of the compound assignment.
Due to the similarity between mass spectra of some isomeric compounds assignments may not be correct.
Other compounds may also be present but identification was not possible.
Concentrations are semi-quantitative, assume a response factor of 1 and use the nearest internal standard.

Gasoline Range Organics
(BTEX and Aliphatic Carbon Ranges)

Customer and Site Details: Ramboll Environ : Zeon Chemicals ESA
Job Number: W22_0074
Directory: E:\TES\DATA\2016\0520HSA_GC9\052016 2016-05-20 13-26-28\146B4601.D
Method: Headspace GCFID

Matrix: Water
Date Booked in: 18-May-16
Date extracted: 20-May-16
Date Analysed: 21-May-16, 04:0

*** Sample data with an asterisk are not UKAS accredited.**

			Concentration, (mg/l)					Aliphatics				
	Sample ID	Client ID	Benzene	Toluene	Ethyl benzene	m/p-Xylene	o-Xylene	C5 - C6	>C6 - C7	>C7 - C8	>C8 - C10	Total GRO
*	EX1693399	BH101	<0.005	<0.005	<0.005	<0.005	<0.005	<0.1	<0.1	<0.1	<0.1	<0.1
*	EX1693400	BH102	<0.005	<0.005	<0.005	<0.005	<0.005	<0.1	<0.1	<0.1	<0.1	<0.1
*	EX1693401	BH103	<0.005	<0.005	<0.005	<0.005	<0.005	<0.1	<0.1	<0.1	<0.1	<0.1
*	EX1693402	BH104	<0.005	<0.005	<0.005	<0.005	<0.005	<0.1	<0.1	<0.1	<0.1	<0.1
*	EX1693403	BH105	<0.005	<0.005	<0.005	<0.005	<0.005	<0.1	<0.1	<0.1	<0.1	<0.1
*	EX1693404	BH106	<0.005	<0.005	<0.005	<0.005	<0.005	<0.1	<0.1	<0.1	<0.1	<0.1
*	EX1693405	ZC201	<0.005	<0.005	<0.005	<0.005	<0.005	<0.1	<0.1	<0.1	<0.1	<0.1
*	EX1693406	ZC202	<0.005	<0.005	<0.005	<0.005	<0.005	<0.1	<0.1	<0.1	<0.1	<0.1

Note: Benzene elutes between C6 and C7, toluene elutes between C7 and C8, ethyl benzene and the xylenes elute between C8 and C9.

Each BTEX compound is deducted from the appropriate band to give the aliphatic fractions, however aromatic compounds may still be contributing to these fractions

Where individual results are flagged see report notes for status.

ALIPHATIC / AROMATIC FRACTION BY GC/FID

Customer and Site Details: Ramboll Environ : Zeon Chemicals ESA
Job Number: W22_0074
QC Batch Number: 160321
Directory: D:\TES\DATA\Y2016\052516TPH_GC4\052516 2016-05-25 09-44-58\063B3301.D
Method: Bottle

Separation: Silica gel
Eluents: Hexane, DCM

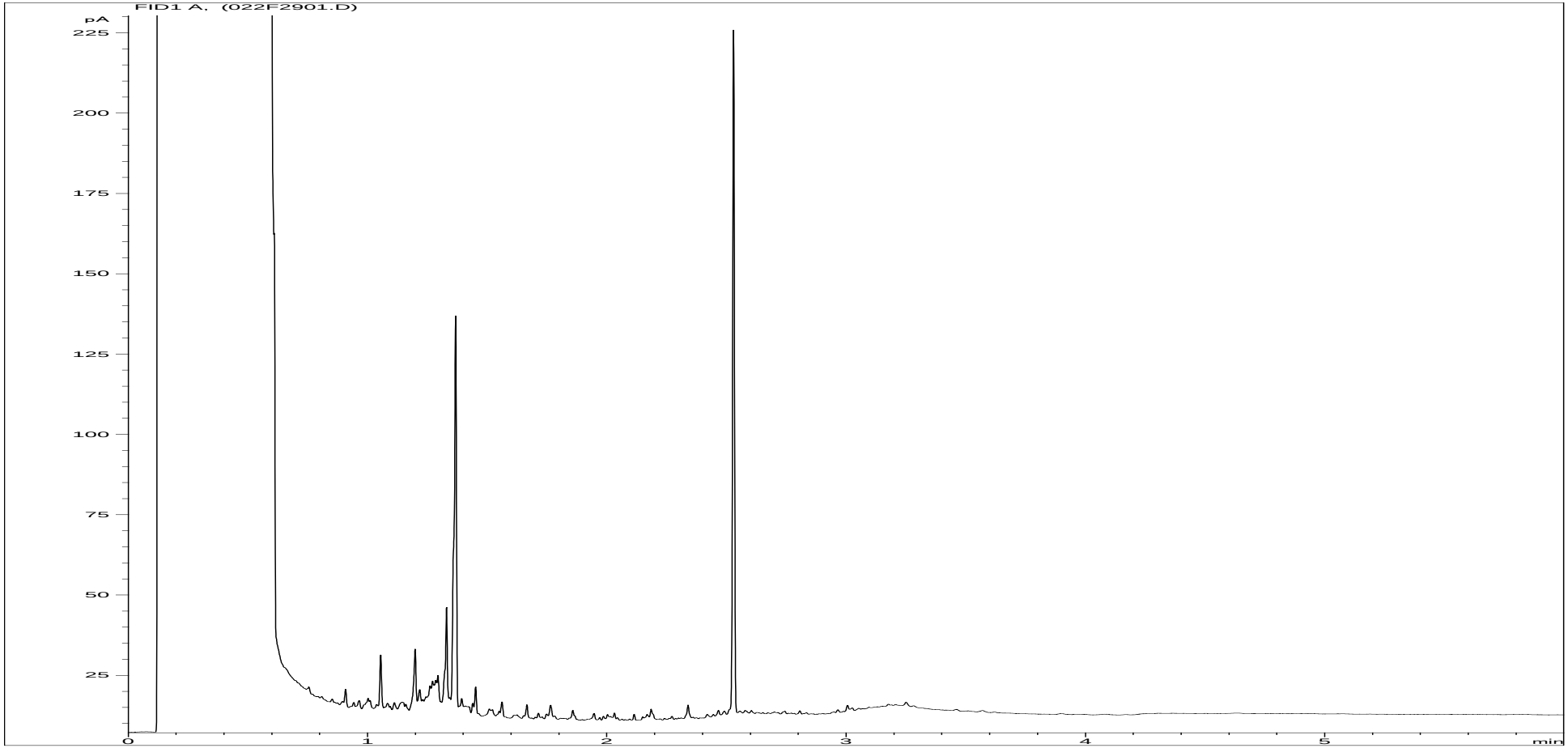
Matrix: Water
Date Booked in 18-May-16
Date Extracted 24-May-16
Date Analysed 25-May-16, 18:18:50

*** This sample data is not UKAS accredited.**

		Concentration, (mg/l)											
		>C8 - C10		>C10 - C12		>C12 - C16		>C16 - C21		>C21 - C35		>C8 - C40	
Sample ID	**Client ID**	**Aliphatics**	**Aromatics**	**Aliphatics**	**Aromatics**	**Aliphatics**	**Aromatics**	**Aliphatics**	**Aromatics**	**Aliphatics**	**Aromatics**	**Aliphatics**	**Aromatics**
EX1693399	BH101	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	0.012	<0.01	0.032	<0.01
EX1693400	BH102	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	0.01	<0.01
EX1693401	BH103	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
EX1693402	BH104	<0.01	0.012	<0.01	0.021	<0.01	<0.01	<0.01	0.015	<0.01	0.025	0.014	0.082
EX1693403	BH105	<0.01	<0.01	<0.01	0.02	<0.01	0.055	<0.01	0.021	<0.01	<0.01	<0.01	0.113
EX1693404	BH106	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
EX1693405	ZC201	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	0.011	<0.01
EX1693406	ZC202	<0.01	<0.01	<0.01	<0.01	<0.01	0.058	<0.01	0.036	<0.01	<0.01	0.011	0.109

Where individual results are flagged see report notes for status.

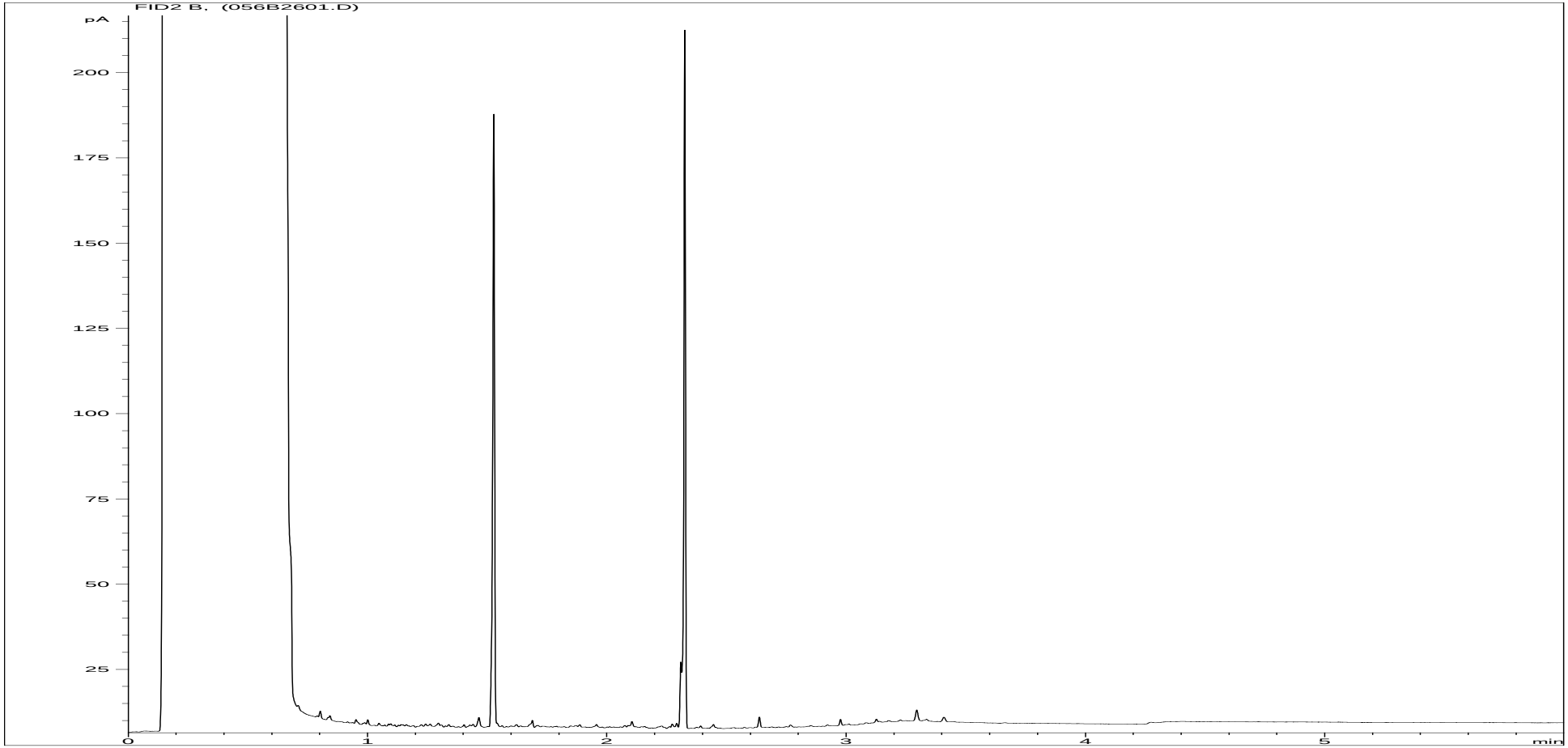
Petroleum Hydrocarbons (C8 to C40) by GC/FID Aliphatics Fraction.



Sample ID:	EX1693399ALI	**Job Number:**	W22_0074
Multiplier:	0.0198	**Client:**	Ramboll Environ
Dilution:	1	**Site:**	Zeon Chemicals ESA
Acquisition Method:	5UL_RUNF.M	**Client Sample Ref:**	BH101
Acquisition Date/Time:	25-May-16, 17:25:06		
Datafile:	D:\TES\DATA\Y2016\052516TPH_GC4\052516 2016-05-25 09-44-58\022F2901.D		

Where individual results are flagged see report notes for status.

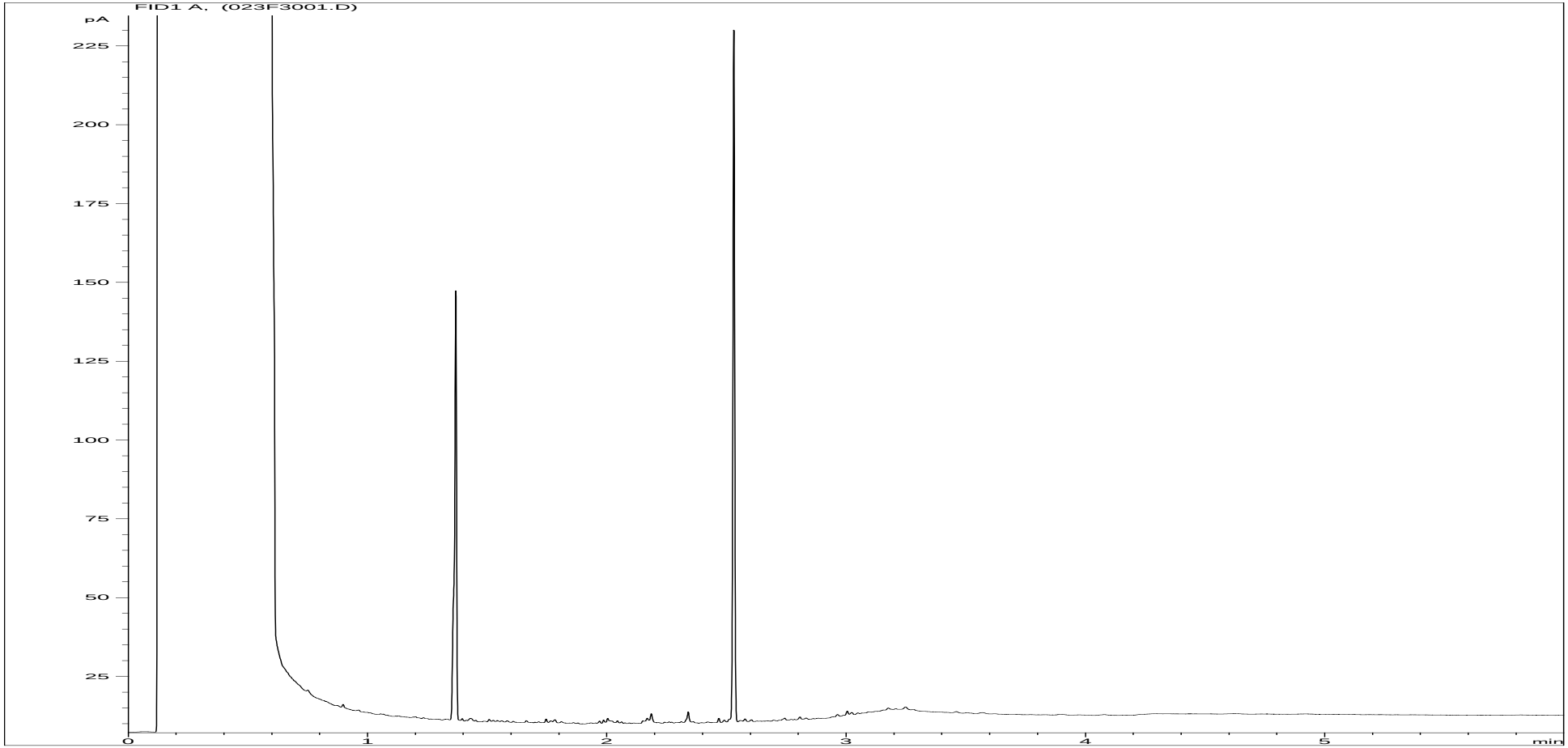
Petroleum Hydrocarbons (C8 to C40) by GC/FID Aromatics Fraction.



Sample ID:	EX1693399ARO	**Job Number:**	W22_0074
Multiplier:	0.015	**Client:**	Ramboll Environ
Dilution:	1	**Site:**	Zeon Chemicals ESA
Acquisition Method:	5UL_RUNF.M	**Client Sample Ref:**	BH101
Acquisition Date/Time:	25-May-16, 16:44:30		
Datafile:	D:\TES\DATA\Y2016\052516TPH_GC4\052516 2016-05-25 09-44-58\056B2601.D		

Where individual results are flagged see report notes for status.

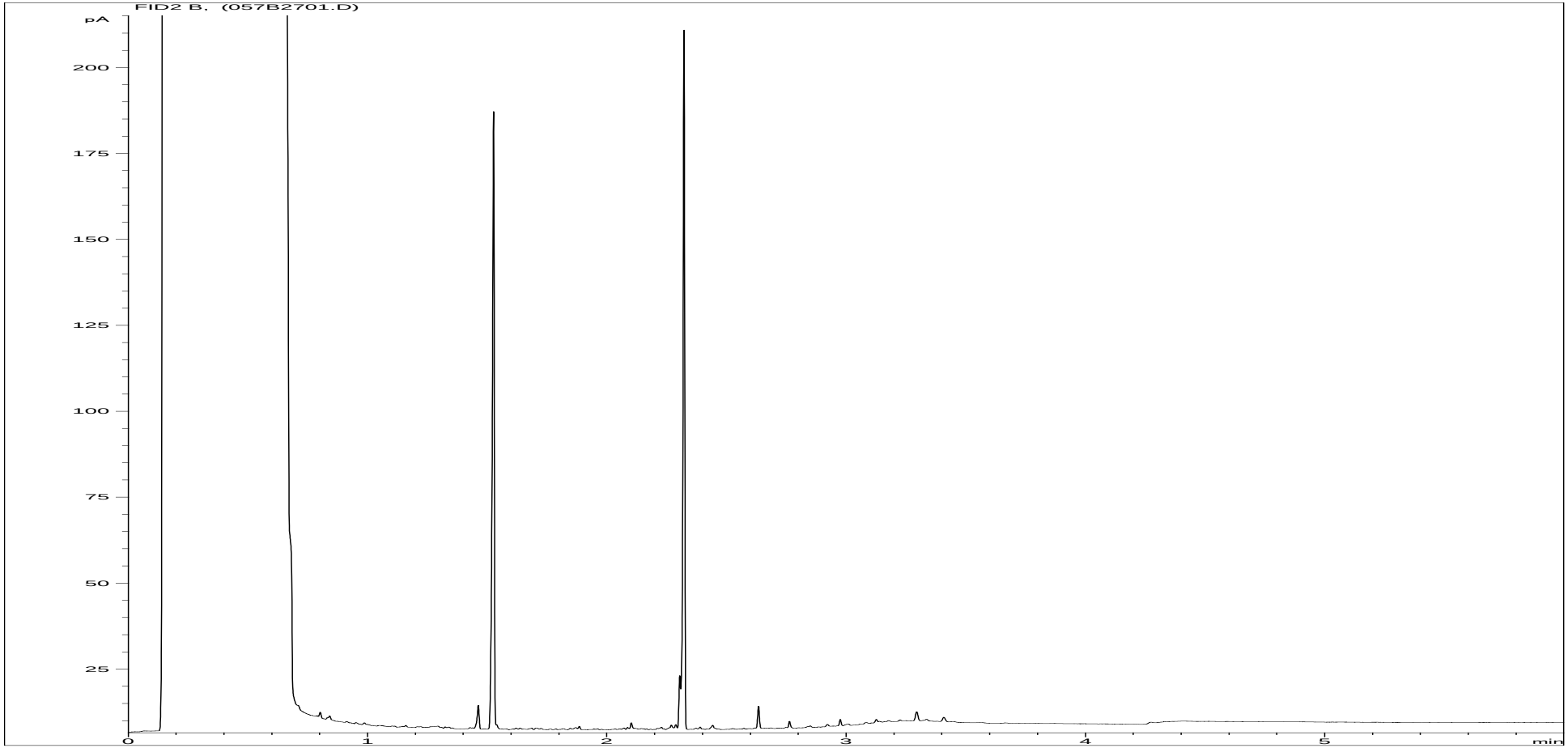
Petroleum Hydrocarbons (C8 to C40) by GC/FID Aliphatics Fraction.



Sample ID:	EX1693400ALI	**Job Number:**	W22_0074
Multiplier:	0.02	**Client:**	Ramboll Environ
Dilution:	1	**Site:**	Zeon Chemicals ESA
Acquisition Method:	5UL_RUNF.M	**Client Sample Ref:**	BH102
Acquisition Date/Time:	25-May-16, 17:38:31		
Datafile:	D:\TES\DATA\Y2016\052516TPH_GC4\052516 2016-05-25 09-44-58\023F3001.D		

Where individual results are flagged see report notes for status.

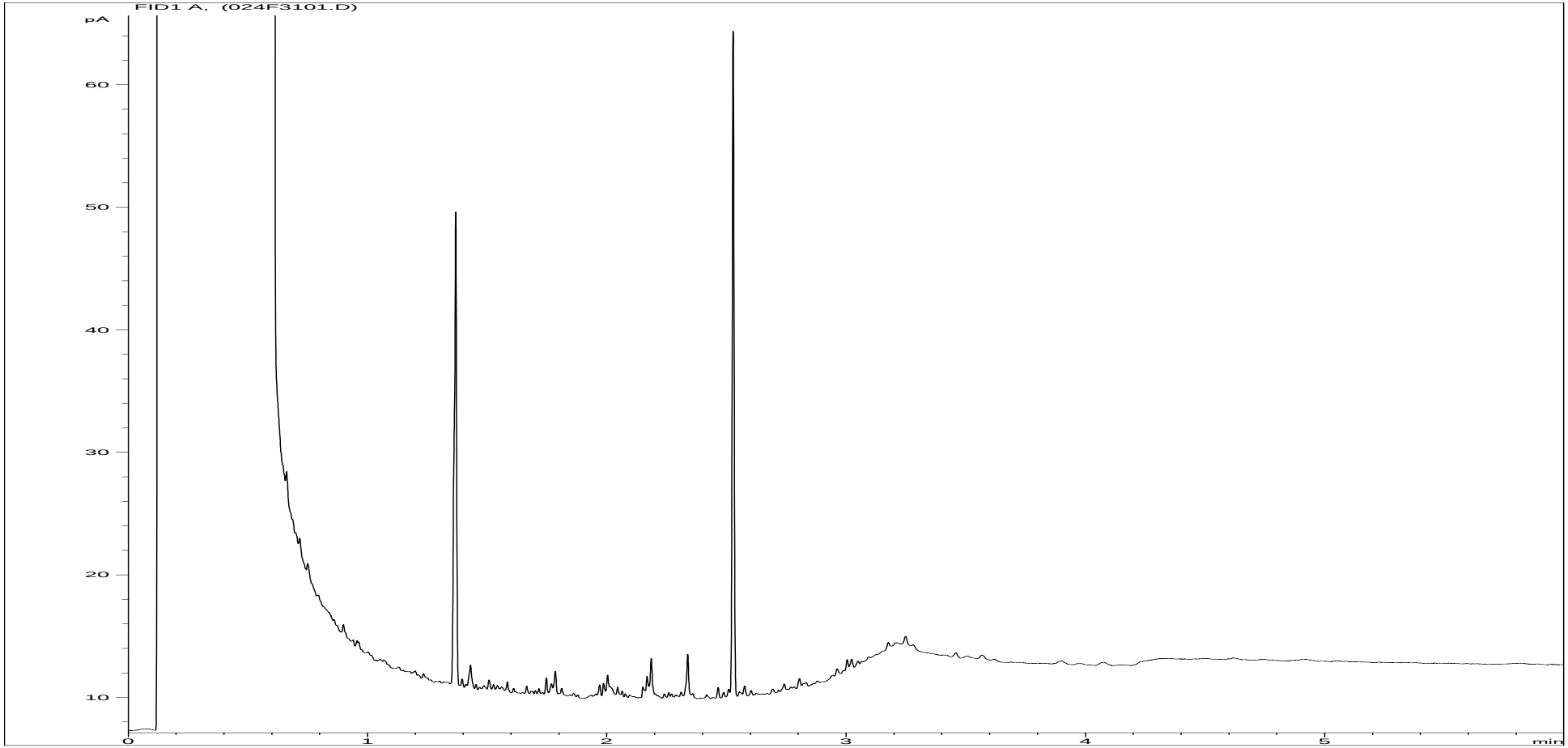
Petroleum Hydrocarbons (C8 to C40) by GC/FID Aromatics Fraction.



Sample ID:	EX1693400ARO	**Job Number:**	W22_0074
Multiplier:	0.0148	**Client:**	Ramboll Environ
Dilution:	1	**Site:**	Zeon Chemicals ESA
Acquisition Method:	5UL_RUNF.M	**Client Sample Ref:**	BH102
Acquisition Date/Time:	25-May-16, 16:57:59		
Datafile:	D:\TES\DATA\Y2016\052516TPH_GC4\052516 2016-05-25 09-44-58\057B2701.D		

Where individual results are flagged see report notes for status.

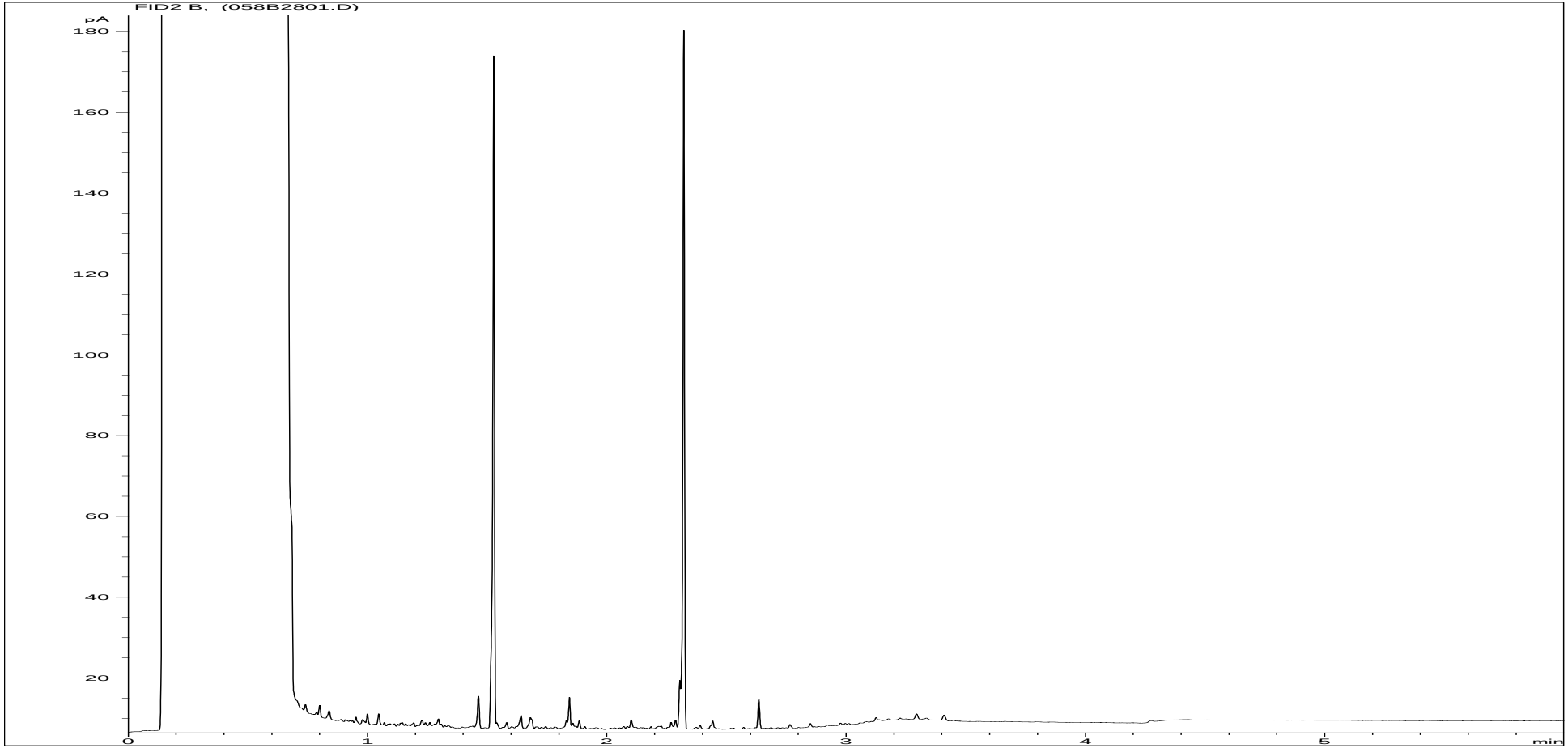
Petroleum Hydrocarbons (C8 to C40) by GC/FID Aliphatics Fraction.



Sample ID:	EX1693401ALI	**Job Number:**	W22_0074
Multiplier:	0.02	**Client:**	Ramboll Environ
Dilution:	1	**Site:**	Zeon Chemicals ESA
Acquisition Method:	5UL_RUNF.M	**Client Sample Ref:**	BH103
Acquisition Date/Time:	25-May-16, 17:51:54		
Datafile:	D:\TES\DATA\Y2016\052516TPH_GC4\052516 2016-05-25 09-44-58\024F3101.D		

Where individual results are flagged see report notes for status.

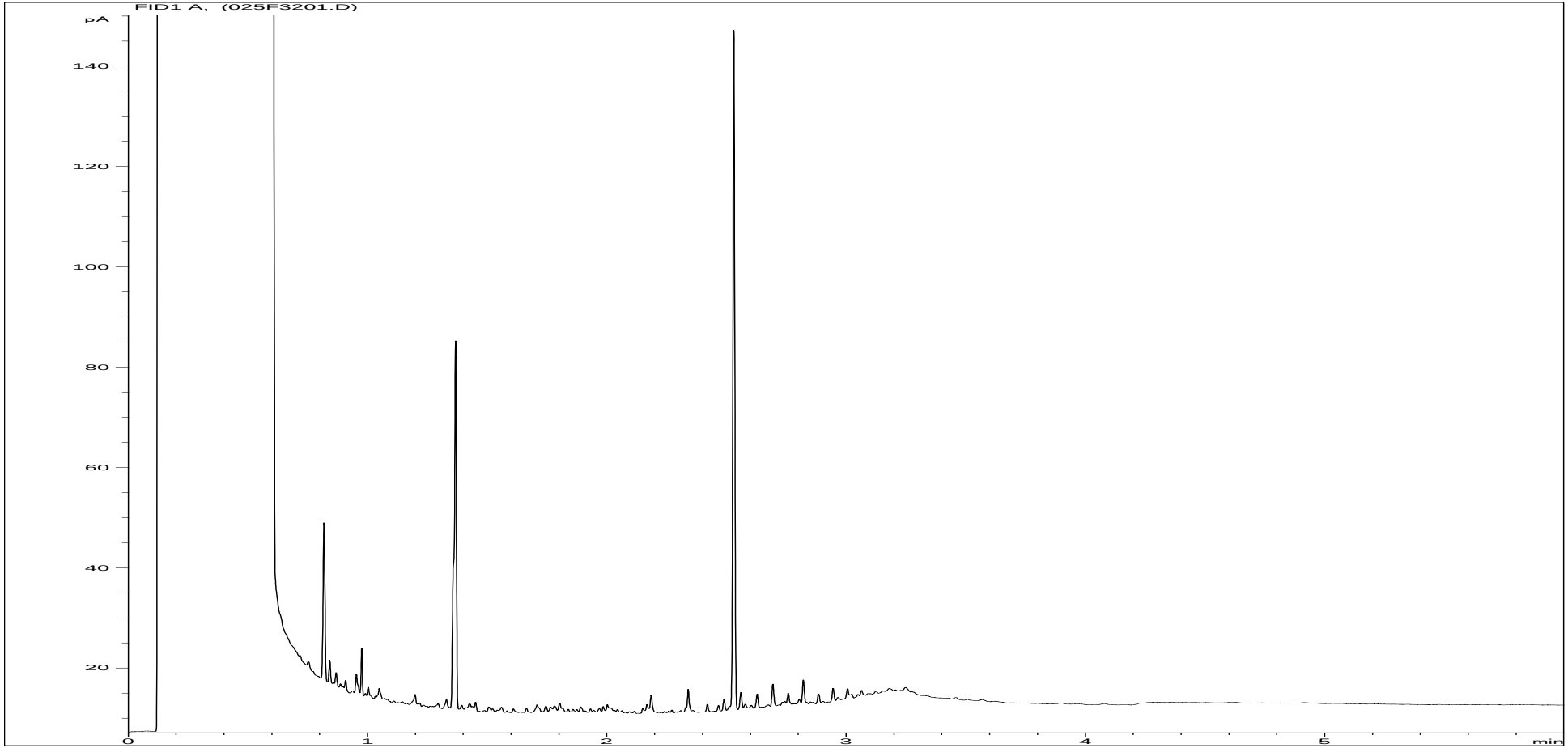
Petroleum Hydrocarbons (C8 to C40) by GC/FID Aromatics Fraction.



Sample ID:	EX1693401ARO	**Job Number:**	W22_0074
Multiplier:	0.0148	**Client:**	Ramboll Environ
Dilution:	1	**Site:**	Zeon Chemicals ESA
Acquisition Method:	5UL_RUNF.M	**Client Sample Ref:**	BH103
Acquisition Date/Time:	25-May-16, 17:11:33		
Datafile:	D:\TES\DATA\Y2016\052516TPH_GC4\052516 2016-05-25 09-44-58\058B2801.D		

Where individual results are flagged see report notes for status.

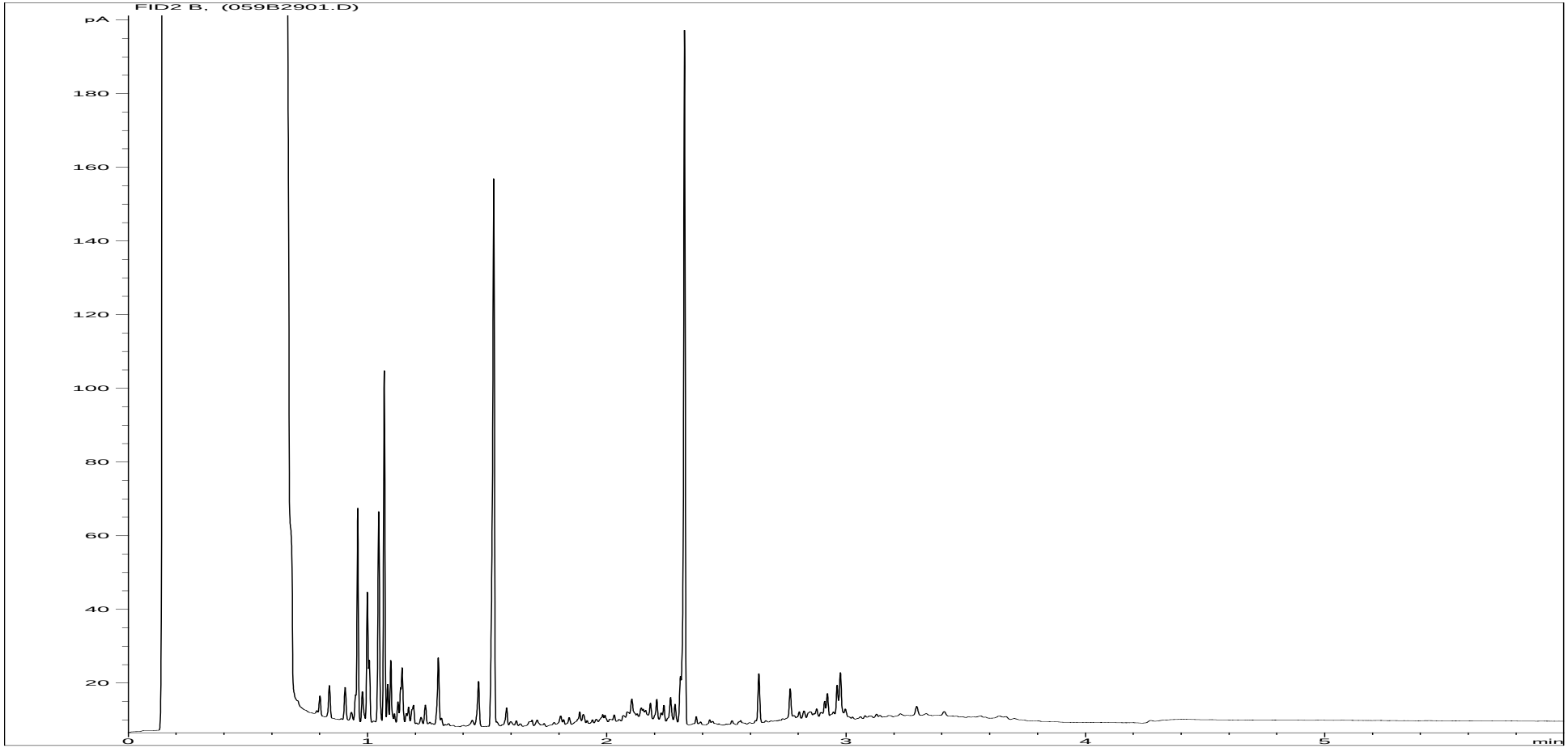
Petroleum Hydrocarbons (C8 to C40) by GC/FID Aliphatics Fraction.



Sample ID:	EX1693402ALI	**Job Number:**	W22_0074
Multiplier:	0.0198	**Client:**	Ramboll Environ
Dilution:	1	**Site:**	Zeon Chemicals ESA
Acquisition Method:	5UL_RUNF.M	**Client Sample Ref:**	BH104
Acquisition Date/Time:	25-May-16, 18:05:15		
Datafile:	D:\TES\DATA\Y2016\052516TPH_GC4\052516 2016-05-25 09-44-58\025F3201.D		

Where individual results are flagged see report notes for status.

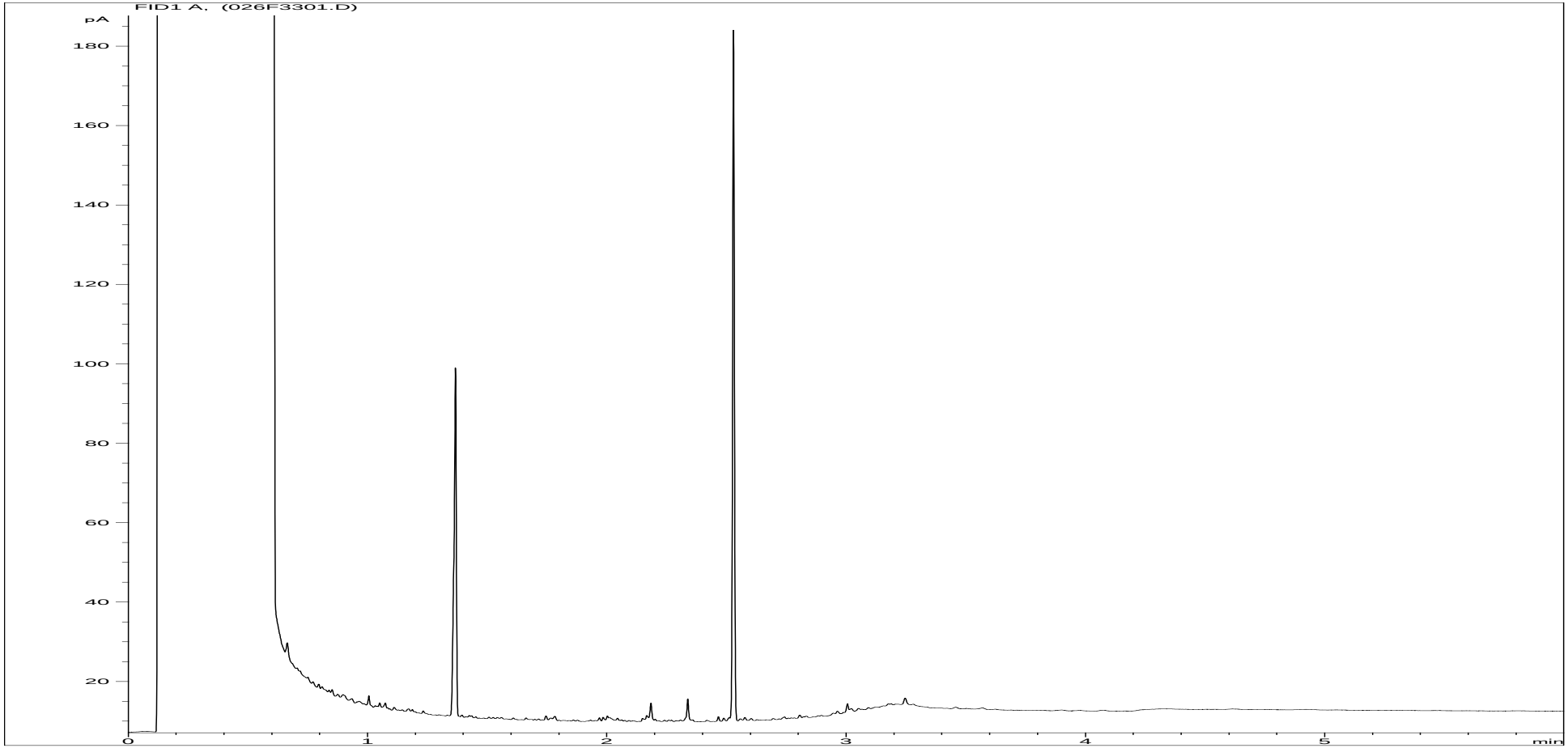
Petroleum Hydrocarbons (C8 to C40) by GC/FID Aromatics Fraction.



Sample ID:	EX1693402ARO	**Job Number:**	W22_0074
Multiplier:	0.0148	**Client:**	Ramboll Environ
Dilution:	1	**Site:**	Zeon Chemicals ESA
Acquisition Method:	5UL_RUNF.M	**Client Sample Ref:**	BH104
Acquisition Date/Time:	25-May-16, 17:25:06		
Datafile:	D:\TES\DATA\Y2016\052516TPH_GC4\052516 2016-05-25 09-44-58\059B2901.D		

Where individual results are flagged see report notes for status.

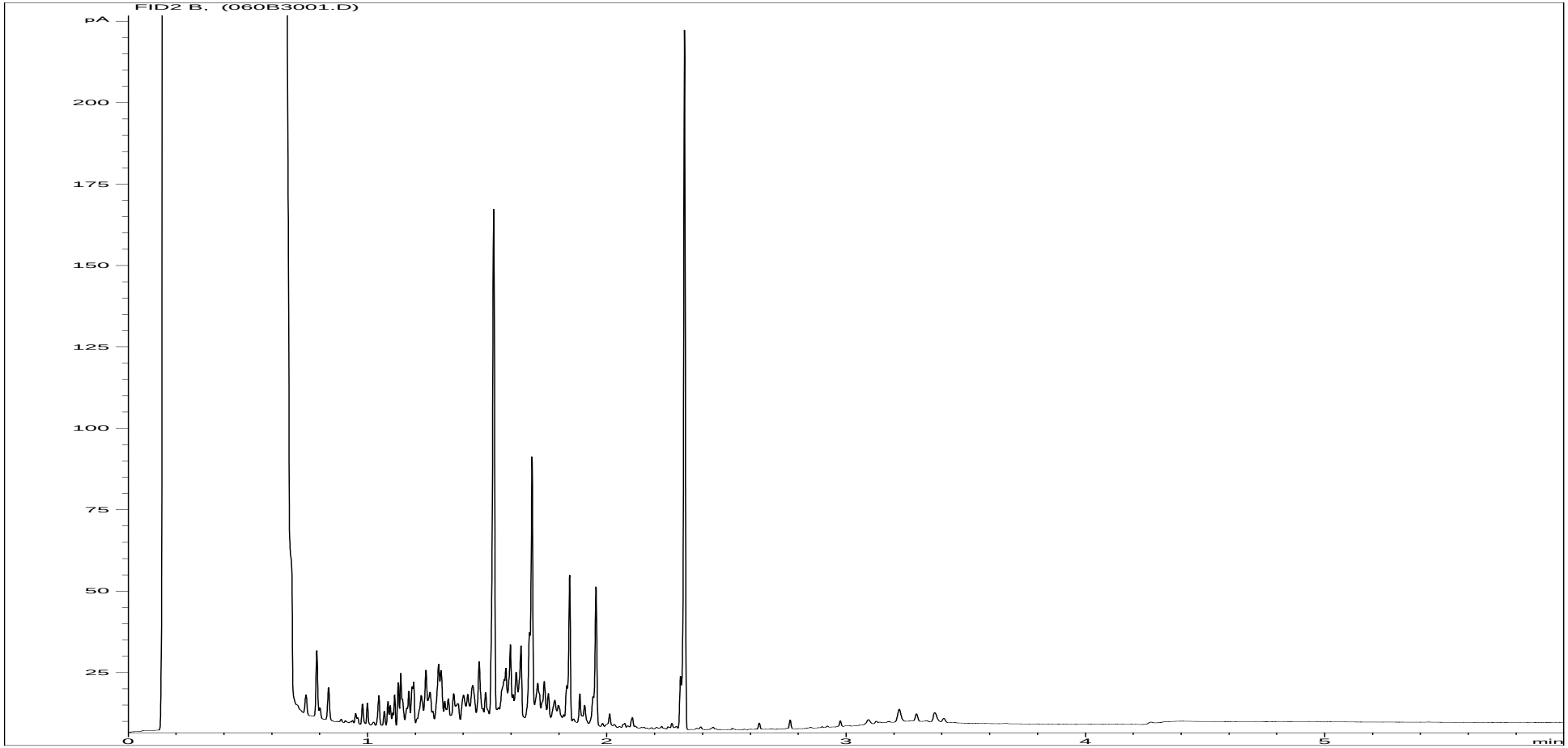
Petroleum Hydrocarbons (C8 to C40) by GC/FID Aliphatics Fraction.



Sample ID:	EX1693403ALI	**Job Number:**	W22_0074
Multiplier:	0.0198	**Client:**	Ramboll Environ
Dilution:	1	**Site:**	Zeon Chemicals ESA
Acquisition Method:	5UL_RUNF.M	**Client Sample Ref:**	BH105
Acquisition Date/Time:	25-May-16, 18:18:50		
Datafile:	D:\TES\DATA\Y2016\052516TPH_GC4\052516 2016-05-25 09-44-58\026F3301.D		

Where individual results are flagged see report notes for status.

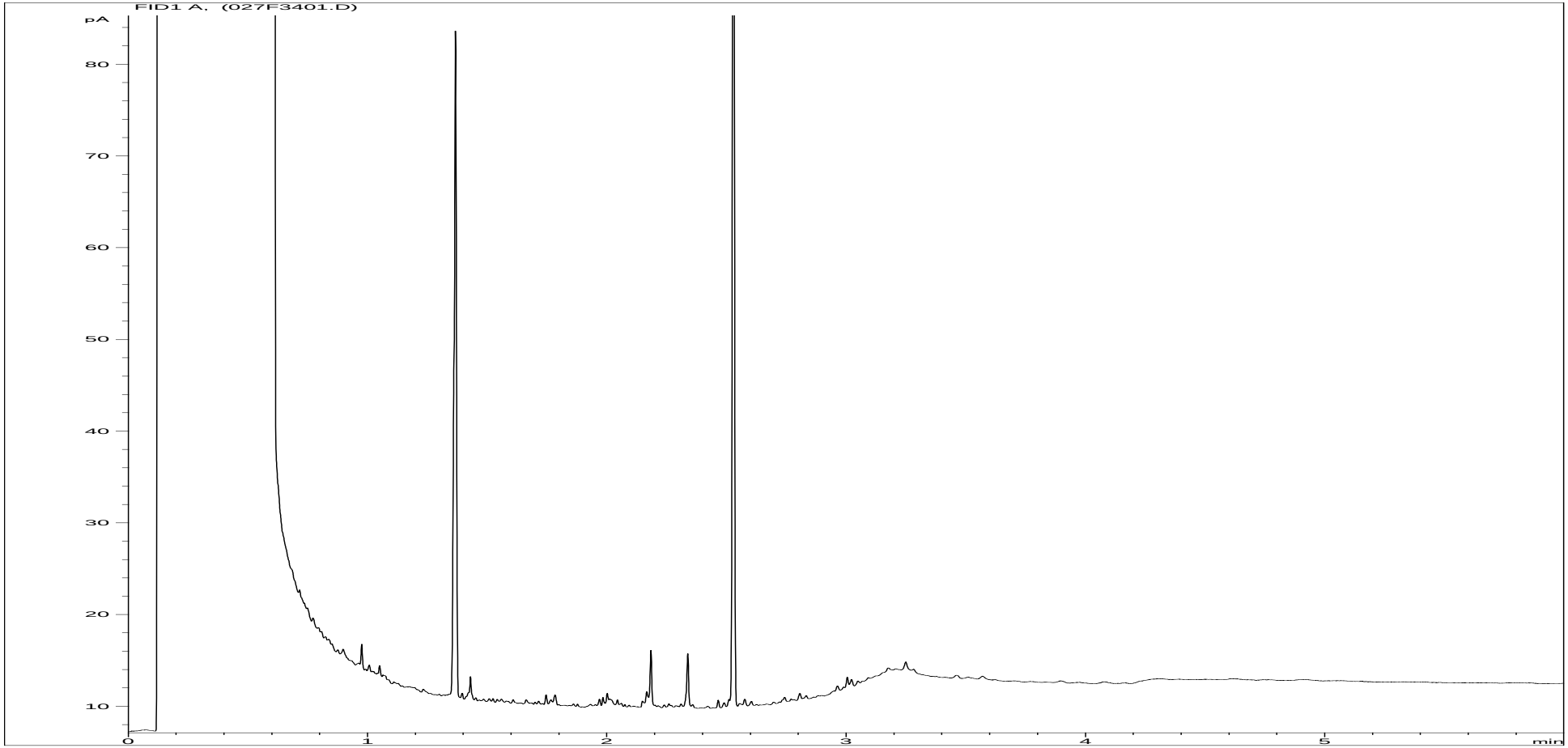
Petroleum Hydrocarbons (C8 to C40) by GC/FID Aromatics Fraction.



Sample ID:	EX1693403ARO	**Job Number:**	W22_0074
Multiplier:	0.015	**Client:**	Ramboll Environ
Dilution:	1	**Site:**	Zeon Chemicals ESA
Acquisition Method:	5UL_RUNF.M	**Client Sample Ref:**	BH105
Acquisition Date/Time:	25-May-16, 17:38:31		
Datafile:	D:\TES\DATA\Y2016\052516TPH_GC4\052516 2016-05-25 09-44-58\060B3001.D		

Where individual results are flagged see report notes for status.

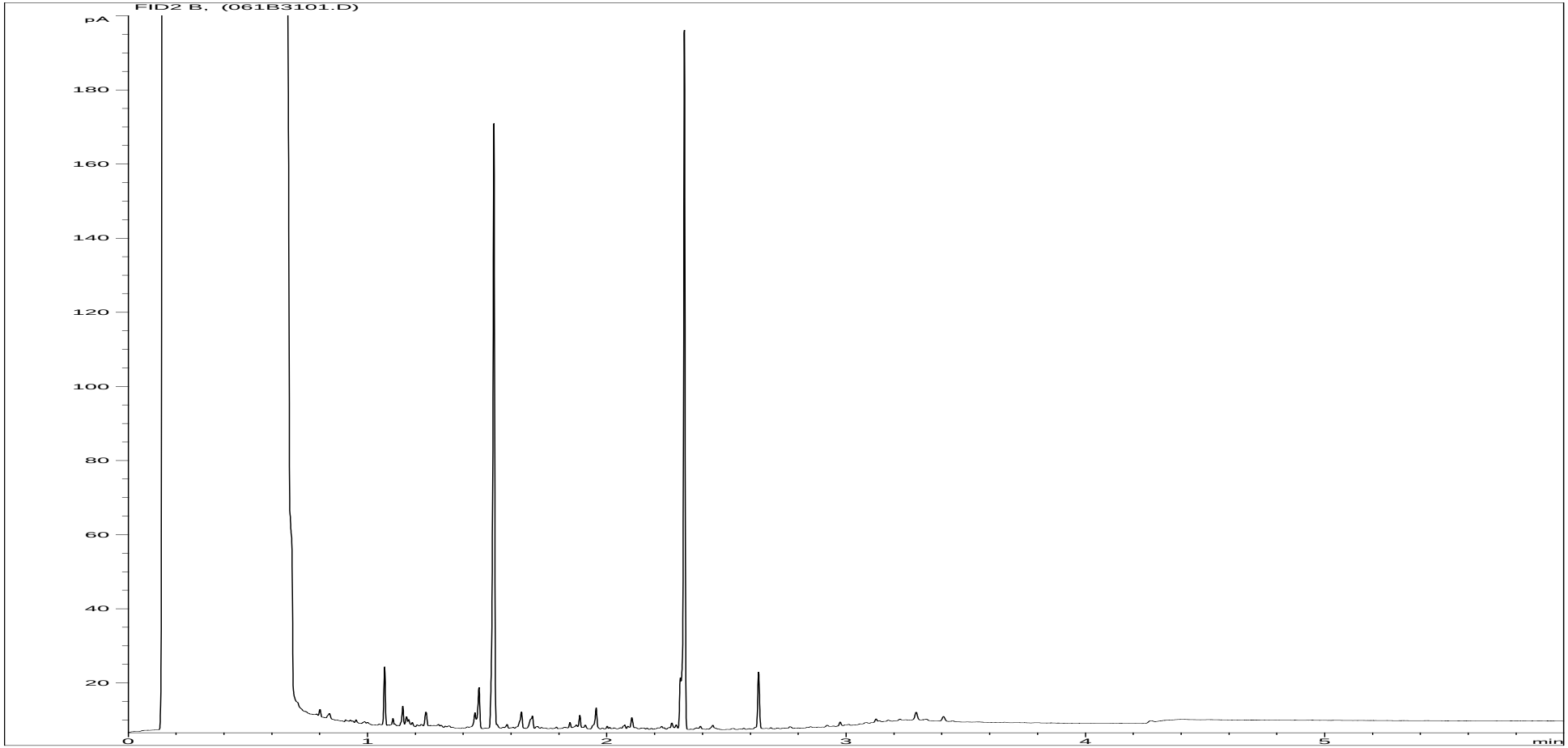
Petroleum Hydrocarbons (C8 to C40) by GC/FID Aliphatics Fraction.



Sample ID:	EX1693404ALI	**Job Number:**	W22_0074
Multiplier:	0.0198	**Client:**	Ramboll Environ
Dilution:	1	**Site:**	Zeon Chemicals ESA
Acquisition Method:	5UL_RUNF.M	**Client Sample Ref:**	BH106
Acquisition Date/Time:	25-May-16, 18:32:19		
Datafile:	D:\TES\DATA\Y2016\052516TPH_GC4\052516 2016-05-25 09-44-58\027F3401.D		

Where individual results are flagged see report notes for status.

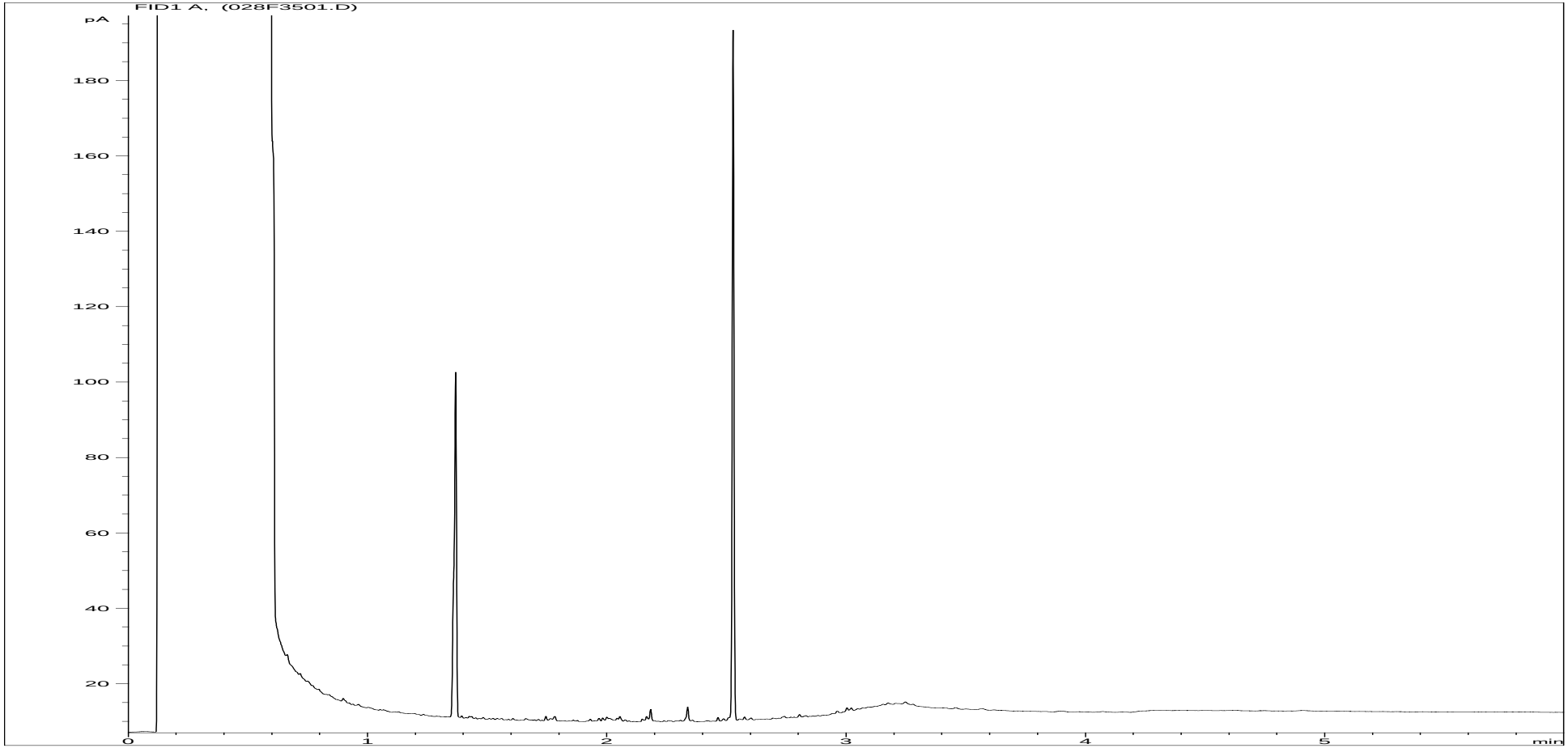
Petroleum Hydrocarbons (C8 to C40) by GC/FID Aromatics Fraction.



Sample ID:	EX1693404ARO	**Job Number:**	W22_0074
Multiplier:	0.0148	**Client:**	Ramboll Environ
Dilution:	1	**Site:**	Zeon Chemicals ESA
Acquisition Method:	5UL_RUNF.M	**Client Sample Ref:**	BH106
Acquisition Date/Time:	25-May-16, 17:51:54		
Datafile:	D:\TES\DATA\Y2016\052516TPH_GC4\052516 2016-05-25 09-44-58\061B3101.D		

Where individual results are flagged see report notes for status.

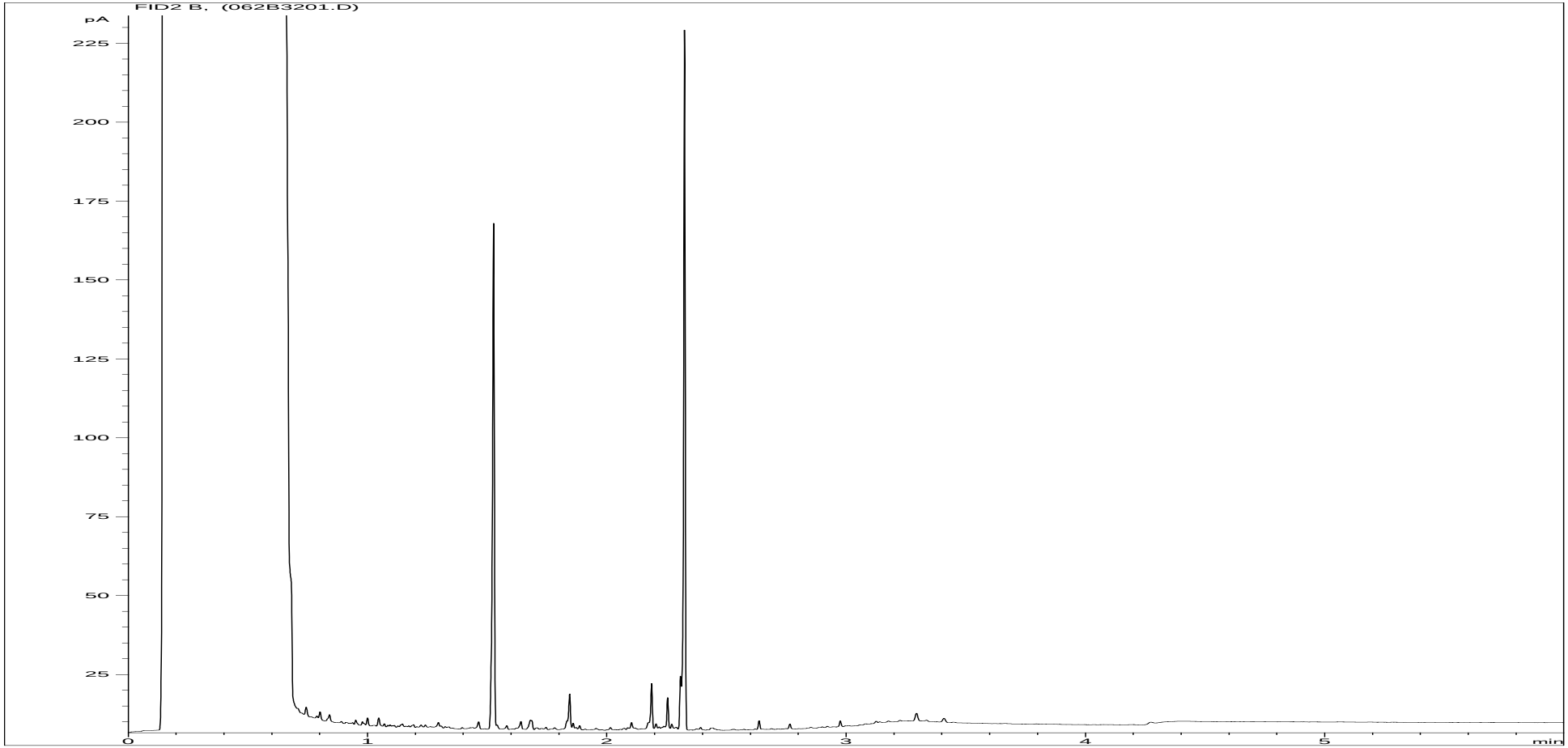
Petroleum Hydrocarbons (C8 to C40) by GC/FID Aliphatics Fraction.



Sample ID:	EX1693405ALI	**Job Number:**	W22_0074
Multiplier:	0.0198	**Client:**	Ramboll Environ
Dilution:	1	**Site:**	Zeon Chemicals ESA
Acquisition Method:	5UL_RUNF.M	**Client Sample Ref:**	ZC201
Acquisition Date/Time:	25-May-16, 18:45:46		
Datafile:	D:\TES\DATA\Y2016\052516TPH_GC4\052516 2016-05-25 09-44-58\028F3501.D		

Where individual results are flagged see report notes for status.

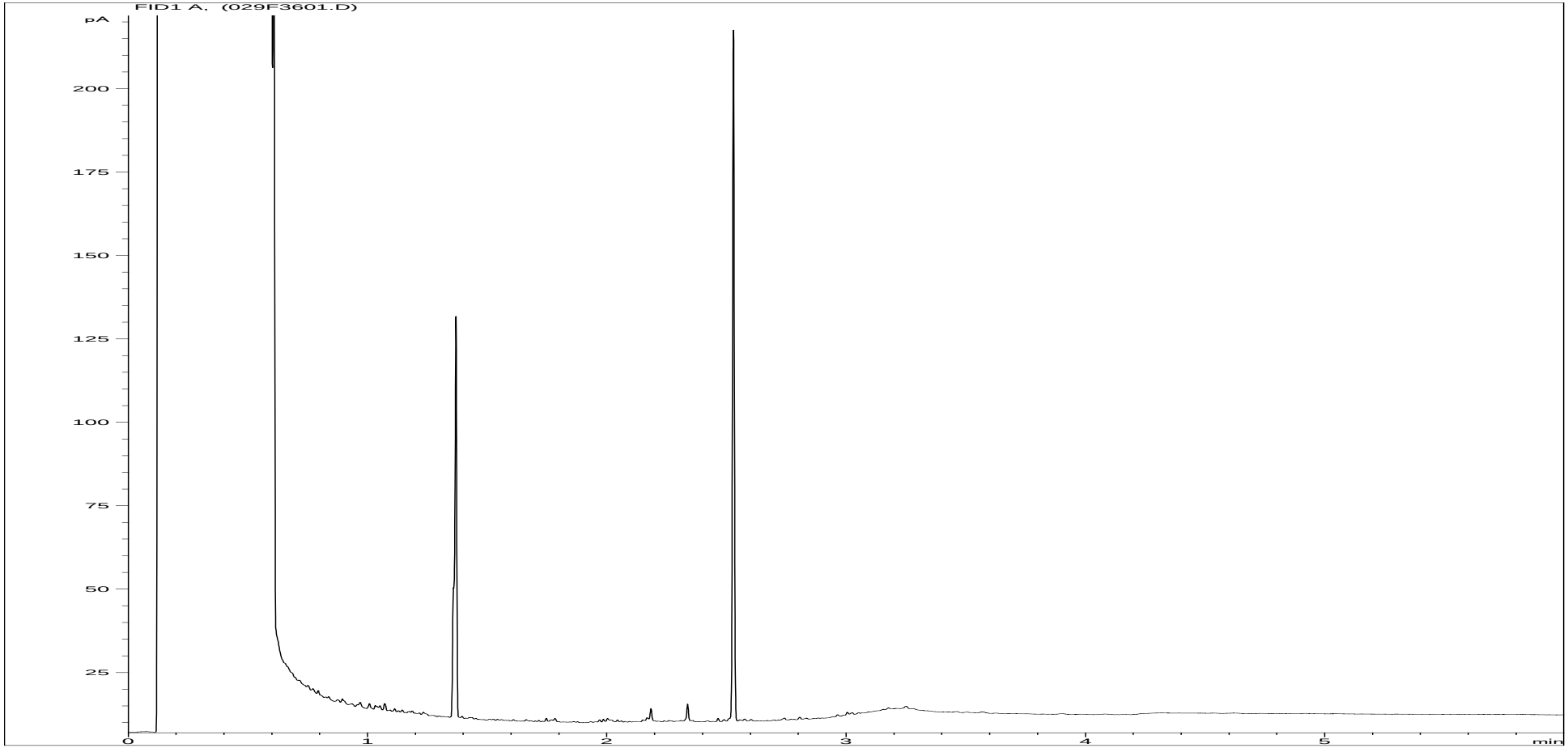
Petroleum Hydrocarbons (C8 to C40) by GC/FID Aromatics Fraction.



Sample ID:	EX1693405ARO	**Job Number:**	W22_0074
Multiplier:	0.015	**Client:**	Ramboll Environ
Dilution:	1	**Site:**	Zeon Chemicals ESA
Acquisition Method:	5UL_RUNF.M	**Client Sample Ref:**	ZC201
Acquisition Date/Time:	25-May-16, 18:05:15		
Datafile:	D:\TES\DATA\Y2016\052516TPH_GC4\052516 2016-05-25 09-44-58\062B3201.D		

Where individual results are flagged see report notes for status.

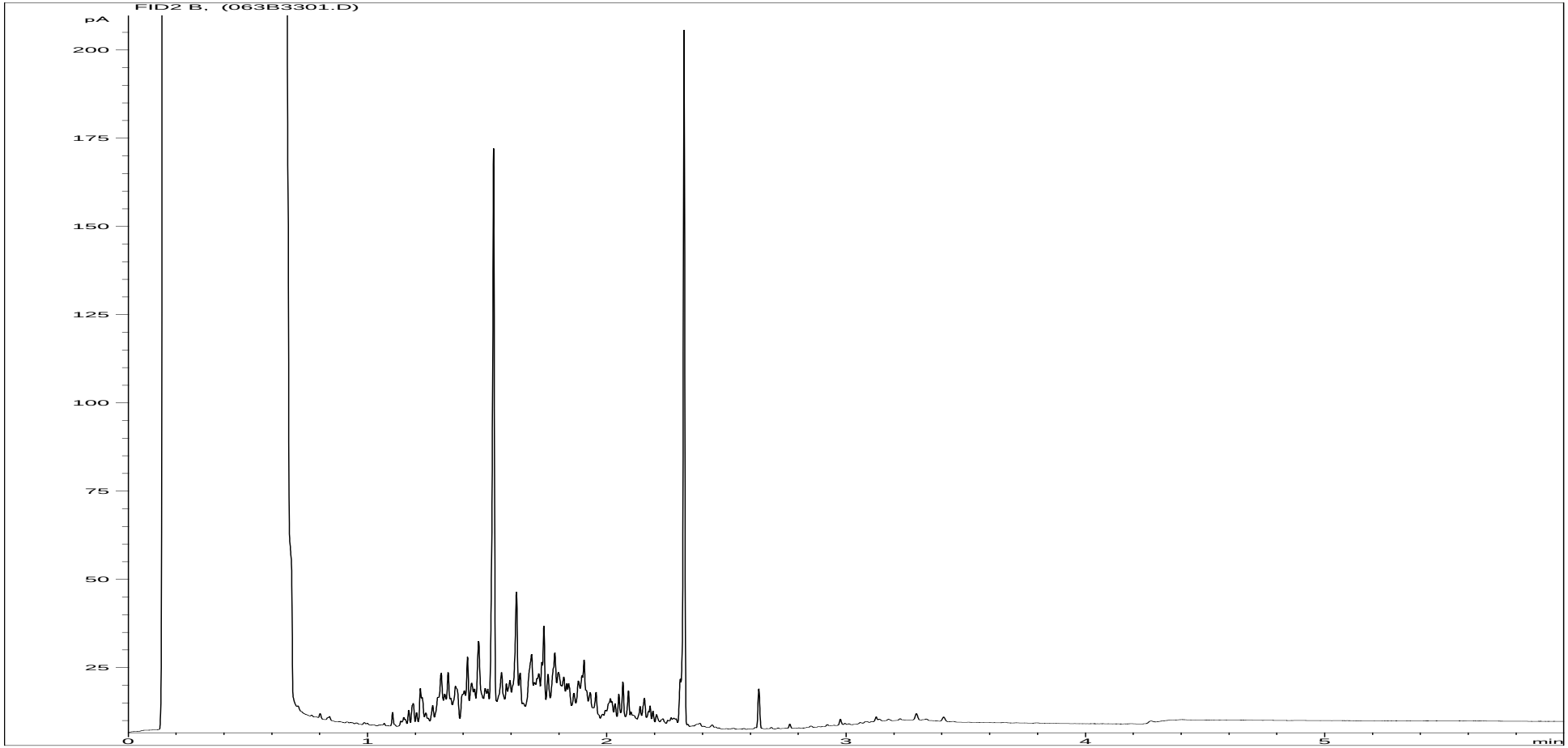
Petroleum Hydrocarbons (C8 to C40) by GC/FID Aliphatics Fraction.



Sample ID:	EX1693406ALI	**Job Number:**	W22_0074
Multiplier:	0.02	**Client:**	Ramboll Environ
Dilution:	1	**Site:**	Zeon Chemicals ESA
Acquisition Method:	5UL_RUNF.M	**Client Sample Ref:**	ZC202
Acquisition Date/Time:	25-May-16, 18:59:13		
Datafile:	D:\TES\DATA\Y2016\052516TPH_GC4\052516 2016-05-25 09-44-58\029F3601.D		

Where individual results are flagged see report notes for status.

Petroleum Hydrocarbons (C8 to C40) by GC/FID Aromatics Fraction.



Sample ID:	EX1693406ARO	**Job Number:**	W22_0074
Multiplier:	0.0146	**Client:**	Ramboll Environ
Dilution:	1	**Site:**	Zeon Chemicals ESA
Acquisition Method:	5UL_RUNF.M	**Client Sample Ref:**	ZC202
Acquisition Date/Time:	25-May-16, 18:18:50		
Datafile:	D:\TES\DATA\Y2016\052516TPH_GC4\052516 2016-05-25 09-44-58\063B3301.D		

Where individual results are flagged see report notes for status.

Volatile Organic Compounds by HSA-GCMS

UKAS accredited?: Yes

Customer and Site Details:	Ramboll Environ: Zeon Chemicals ESA	**Directory/Quant file:**	2016\052416\ Initial Calibration	**Matrix:**	Water
Sample Details:	BH101	**Date Booked in:**	18-May-16	**Method:**	Headspace
LIMS ID Number:	EX1693399	**Date Analysed:**	24-May-16	**Multiplier:**	1
Job Number:	W22_0074	**Operator:**	PR	**Position:**	4

Target Compounds	CAS #	R.T. (min.)	Concentration µg/l	% Fit
Dichlorodifluoromethane	75-71-8 *	-	< 1	-
Chloromethane	74-87-3	-	< 1	-
Vinyl Chloride	75-01-4	-	< 1	-
Bromomethane	74-83-9 *	-	< 5	-
Chloroethane	75-00-3	-	< 5	-
Trichlorofluoromethane	75-69-4	-	< 1	-
1,1-Dichloroethene	75-35-4	-	< 1	-
trans 1,2-Dichloroethene	156-60-5	-	< 1	-
1,1-Dichloroethane	75-34-3	-	< 1	-
2,2-Dichloropropane	594-20-7 *	-	< 1	-
cis 1,2-Dichloroethene	156-59-2	-	< 1	-
Bromochloromethane	74-97-5	-	< 1	-
Chloroform	67-66-3	-	< 1	-
1,1,1-Trichloroethane	71-55-6	-	< 1	-
Carbon Tetrachloride	56-23-5	-	< 1	-
1,1-Dichloropropene	563-58-6	-	< 1	-
Benzene	71-43-2	-	< 1	-
1,2-Dichloroethane	107-06-2	-	< 1	-
Trichloroethene	79-01-6	-	< 5	-
1,2-Dichloropropane	78-87-5	-	< 1	-
Dibromomethane	74-95-3	-	< 1	-
Bromodichloromethane	75-27-4	-	< 1	-
cis 1,3-Dichloropropene	10061-01-5 *	-	< 1	-
Toluene	108-88-3	-	< 1	-
trans 1,3-Dichloropropene	10061-02-6 *	-	< 1	-
1,1,2-Trichloroethane	79-00-5	-	< 1	-
Tetrachloroethene	127-18-4	-	< 5	-
1,3-Dichloropropane	142-28-9	-	< 1	-
Dibromochloromethane	124-48-1	-	< 1	-
1,2-Dibromoethane	106-93-4	-	< 1	-
Chlorobenzene	108-90-7	-	< 1	-
Ethylbenzene	100-41-4	-	< 1	-
1,1,1,2-Tetrachloroethane	630-20-6	-	< 1	-
m and p-Xylene	108-38-3/106-42-3	-	< 1	-
o-Xylene	95-47-6	-	< 1	-

Target Compounds	CAS #	R.T. (min.)	Concentration µg/l	% Fit
Styrene	100-42-5 *	-	< 1	-
Bromoform	75-25-2	-	< 1	-
iso-Propylbenzene	98-82-8	-	< 1	-
1,1,2,2-Tetrachloroethane	79-34-5 *	-	< 1	-
Propylbenzene	103-65-1	-	< 1	-
Bromobenzene	108-86-1	-	< 1	-
1,2,3-Trichloropropane	96-18-4	-	< 1	-
2-Chlorotoluene	95-49-8	-	< 1	-
1,3,5-Trimethylbenzene	108-67-8	-	< 1	-
4-Chlorotoluene	106-43-4	-	< 1	-
tert-Butylbenzene	98-06-6	-	< 1	-
1,2,4-Trimethylbenzene	95-63-6 *	-	< 1	-
sec-Butylbenzene	135-98-8	-	< 1	-
p-Isopropyltoluene	99-87-6 *	-	< 1	-
1,3-Dichlorobenzene	541-73-1	-	< 1	-
1,4-Dichlorobenzene	106-46-7	-	< 1	-
n-Butylbenzene	104-51-8	-	< 1	-
1,2-Dichlorobenzene	95-50-1	-	< 5	-
1,2-Dibromo-3-chloropropane	96-12-8 *	-	< 5	-
1,2,4-Trichlorobenzene	120-82-1	-	< 5	-
Hexachlorobutadiene	87-68-3	-	< 5	-
Naphthalene	91-20-3	-	< 5	-
1,2,3-Trichlorobenzene	87-61-6	-	< 5	-

Compounds marked * are not UKAS accredited
"M" denotes that % fit has been manually interpreted

Internal standards	R.T.	Area %	Surrogates	% Rec
Pentafluorobenzene	3.62	107	Dibromofluoromethane	110
1,4-Difluorobenzene	3.97	111	Toluene-d8	100
Chlorobenzene-d5	5.12	111	Bromofluorobenzene	97
1,4-Dichlorobenzene-d4	5.92	103		

Where individual results are flagged see report notes for status.

Volatile Organic Compounds by HSA-GCMS

UKAS accredited?: Yes

Customer and Site Details:	Ramboll Environ: Zeon Chemicals ESA	**Directory/Quant file:**	2016\052416\ Initial Calibration	**Matrix:**	Water
Sample Details:	BH102	**Date Booked in:**	18-May-16	**Method:**	Headspace
LIMS ID Number:	EX1693400	**Date Analysed:**	24-May-16	**Multiplier:**	1
Job Number:	W22_0074	**Operator:**	PR	**Position:**	5

Target Compounds	CAS #	R.T. (min.)	Concentration µg/l	% Fit
Dichlorodifluoromethane	75-71-8 *	-	< 1	-
Chloromethane	74-87-3	-	< 1	-
Vinyl Chloride	75-01-4	-	< 1	-
Bromomethane	74-83-9 *	-	< 5	-
Chloroethane	75-00-3	-	< 5	-
Trichlorofluoromethane	75-69-4	-	< 1	-
1,1-Dichloroethene	75-35-4	-	< 1	-
trans 1,2-Dichloroethene	156-60-5	-	< 1	-
1,1-Dichloroethane	75-34-3	-	< 1	-
2,2-Dichloropropane	594-20-7 *	-	< 1	-
cis 1,2-Dichloroethene	156-59-2	-	< 1	-
Bromochloromethane	74-97-5	-	< 1	-
Chloroform	67-66-3	-	< 1	-
1,1,1-Trichloroethane	71-55-6	-	< 1	-
Carbon Tetrachloride	56-23-5	-	< 1	-
1,1-Dichloropropene	563-58-6	-	< 1	-
Benzene	71-43-2	-	< 1	-
1,2-Dichloroethane	107-06-2	-	< 1	-
Trichloroethene	79-01-6	-	< 5	-
1,2-Dichloropropane	78-87-5	-	< 1	-
Dibromomethane	74-95-3	-	< 1	-
Bromodichloromethane	75-27-4	-	< 1	-
cis 1,3-Dichloropropene	10061-01-5 *	-	< 1	-
Toluene	108-88-3	-	< 1	-
trans 1,3-Dichloropropene	10061-02-6 *	-	< 1	-
1,1,2-Trichloroethane	79-00-5	-	< 1	-
Tetrachloroethene	127-18-4	-	< 5	-
1,3-Dichloropropane	142-28-9	-	< 1	-
Dibromochloromethane	124-48-1	-	< 1	-
1,2-Dibromoethane	106-93-4	-	< 1	-
Chlorobenzene	108-90-7	-	< 1	-
Ethylbenzene	100-41-4	-	< 1	-
1,1,1,2-Tetrachloroethane	630-20-6	-	< 1	-
m and p-Xylene	108-38-3/106-42-3	-	< 1	-
o-Xylene	95-47-6	-	< 1	-

Target Compounds	CAS #	R.T. (min.)	Concentration µg/l	% Fit
Styrene	100-42-5 *	-	< 1	-
Bromoform	75-25-2	-	< 1	-
iso-Propylbenzene	98-82-8	-	< 1	-
1,1,2,2-Tetrachloroethane	79-34-5 *	-	< 1	-
Propylbenzene	103-65-1	-	< 1	-
Bromobenzene	108-86-1	-	< 1	-
1,2,3-Trichloropropane	96-18-4	-	< 1	-
2-Chlorotoluene	95-49-8	-	< 1	-
1,3,5-Trimethylbenzene	108-67-8	-	< 1	-
4-Chlorotoluene	106-43-4	-	< 1	-
tert-Butylbenzene	98-06-6	-	< 1	-
1,2,4-Trimethylbenzene	95-63-6 *	-	< 1	-
sec-Butylbenzene	135-98-8	-	< 1	-
p-Isopropyltoluene	99-87-6 *	-	< 1	-
1,3-Dichlorobenzene	541-73-1	-	< 1	-
1,4-Dichlorobenzene	106-46-7	-	< 1	-
n-Butylbenzene	104-51-8	-	< 1	-
1,2-Dichlorobenzene	95-50-1	-	< 5	-
1,2-Dibromo-3-chloropropane	96-12-8 *	-	< 5	-
1,2,4-Trichlorobenzene	120-82-1	-	< 5	-
Hexachlorobutadiene	87-68-3	-	< 5	-
Naphthalene	91-20-3	-	< 5	-
1,2,3-Trichlorobenzene	87-61-6	-	< 5	-

Compounds marked * are not UKAS accredited
"M" denotes that % fit has been manually interpreted

Internal standards	R.T.	Area %	Surrogates	% Rec
Pentafluorobenzene	3.62	98	Dibromofluoromethane	116
1,4-Difluorobenzene	3.97	103	Toluene-d8	100
Chlorobenzene-d5	5.12	105	Bromofluorobenzene	97
1,4-Dichlorobenzene-d4	5.92	98		

Where individual results are flagged see report notes for status.

Volatile Organic Compounds by HSA-GCMS

UKAS accredited?: Yes

Customer and Site Details:	Ramboll Environ: Zeon Chemicals ESA	**Directory/Quant file:**	2016\052416\ Initial Calibration	**Matrix:**	Water
Sample Details:	BH103	**Date Booked in:**	18-May-16	**Method:**	Headspace
LIMS ID Number:	EX1693401	**Date Analysed:**	24-May-16	**Multiplier:**	1
Job Number:	W22_0074	**Operator:**	PR	**Position:**	6

Target Compounds	CAS #	R.T. (min.)	Concentration µg/l	% Fit
Dichlorodifluoromethane	75-71-8 *	-	< 1	-
Chloromethane	74-87-3	-	< 1	-
Vinyl Chloride	75-01-4	-	< 1	-
Bromomethane	74-83-9 *	-	< 5	-
Chloroethane	75-00-3	-	< 5	-
Trichlorofluoromethane	75-69-4	-	< 1	-
1,1-Dichloroethene	75-35-4	-	< 1	-
trans 1,2-Dichloroethene	156-60-5	-	< 1	-
1,1-Dichloroethane	75-34-3	-	< 1	-
2,2-Dichloropropane	594-20-7 *	-	< 1	-
cis 1,2-Dichloroethene	156-59-2	-	< 1	-
Bromochloromethane	74-97-5	-	< 1	-
Chloroform	67-66-3	-	< 1	-
1,1,1-Trichloroethane	71-55-6	-	< 1	-
Carbon Tetrachloride	56-23-5	-	< 1	-
1,1-Dichloropropene	563-58-6	-	< 1	-
Benzene	71-43-2	-	< 1	-
1,2-Dichloroethane	107-06-2	-	< 1	-
Trichloroethene	79-01-6	-	< 5	-
1,2-Dichloropropane	78-87-5	-	< 1	-
Dibromomethane	74-95-3	-	< 1	-
Bromodichloromethane	75-27-4	-	< 1	-
cis 1,3-Dichloropropene	10061-01-5 *	-	< 1	-
Toluene	108-88-3	-	< 1	-
trans 1,3-Dichloropropene	10061-02-6 *	-	< 1	-
1,1,2-Trichloroethane	79-00-5	-	< 1	-
Tetrachloroethene	127-18-4	-	< 5	-
1,3-Dichloropropane	142-28-9	-	< 1	-
Dibromochloromethane	124-48-1	-	< 1	-
1,2-Dibromoethane	106-93-4	-	< 1	-
Chlorobenzene	108-90-7	-	< 1	-
Ethylbenzene	100-41-4	-	< 1	-
1,1,1,2-Tetrachloroethane	630-20-6	-	< 1	-
m and p-Xylene	108-38-3/106-42-3	-	< 1	-
o-Xylene	95-47-6	-	< 1	-

Target Compounds	CAS #	R.T. (min.)	Concentration µg/l	% Fit
Styrene	100-42-5 *	-	< 1	-
Bromoform	75-25-2	-	< 1	-
iso-Propylbenzene	98-82-8	-	< 1	-
1,1,2,2-Tetrachloroethane	79-34-5 *	-	< 1	-
Propylbenzene	103-65-1	-	< 1	-
Bromobenzene	108-86-1	-	< 1	-
1,2,3-Trichloropropane	96-18-4	-	< 1	-
2-Chlorotoluene	95-49-8	-	< 1	-
1,3,5-Trimethylbenzene	108-67-8	-	< 1	-
4-Chlorotoluene	106-43-4	-	< 1	-
tert-Butylbenzene	98-06-6	-	< 1	-
1,2,4-Trimethylbenzene	95-63-6 *	-	< 1	-
sec-Butylbenzene	135-98-8	-	< 1	-
p-Isopropyltoluene	99-87-6 *	-	< 1	-
1,3-Dichlorobenzene	541-73-1	-	< 1	-
1,4-Dichlorobenzene	106-46-7	-	< 1	-
n-Butylbenzene	104-51-8	-	< 1	-
1,2-Dichlorobenzene	95-50-1	-	< 5	-
1,2-Dibromo-3-chloropropane	96-12-8 *	-	< 5	-
1,2,4-Trichlorobenzene	120-82-1	-	< 5	-
Hexachlorobutadiene	87-68-3	-	< 5	-
Naphthalene	91-20-3	-	< 5	-
1,2,3-Trichlorobenzene	87-61-6	-	< 5	-

Compounds marked * are not UKAS accredited
"M" denotes that % fit has been manually interpreted

Internal standards	R.T.	Area %	Surrogates	% Rec
Pentafluorobenzene	3.62	103	Dibromofluoromethane	108
1,4-Difluorobenzene	3.97	108	Toluene-d8	99
Chlorobenzene-d5	5.12	107	Bromofluorobenzene	96
1,4-Dichlorobenzene-d4	5.92	99		

Where individual results are flagged see report notes for status.

Volatile Organic Compounds by HSA-GCMS

UKAS accredited?: No

Customer and Site Details:	Ramboll Environ: Zeon Chemicals ESA	**Directory/Quant file:**	2016\052416\ Initial Calibration	**Matrix:**	Water
Sample Details:	BH104	**Date Booked in:**	18-May-16	**Method:**	Headspace
LIMS ID Number:	EX1693402	**Date Analysed:**	24-May-16	**Multiplier:**	1
Job Number:	W22_0074	**Operator:**	PR	**Position:**	7

Target Compounds	CAS #	R.T. (min.)	Concentration µg/l	% Fit
Dichlorodifluoromethane	75-71-8 *	-	< 1	-
Chloromethane	74-87-3	-	< 1	-
Vinyl Chloride	75-01-4	-	< 1	-
Bromomethane	74-83-9 *	-	< 5	-
Chloroethane	75-00-3	-	< 5	-
Trichlorofluoromethane	75-69-4	-	< 1	-
1,1-Dichloroethene	75-35-4	-	< 1	-
trans 1,2-Dichloroethene	156-60-5	-	< 1	-
1,1-Dichloroethane	75-34-3	-	< 1	-
2,2-Dichloropropane	594-20-7 *	-	< 1	-
cis 1,2-Dichloroethene	156-59-2	-	< 1	-
Bromochloromethane	74-97-5	-	< 1	-
Chloroform	67-66-3	-	< 1	-
1,1,1-Trichloroethane	71-55-6	-	< 1	-
Carbon Tetrachloride	56-23-5	-	< 1	-
1,1-Dichloropropene	563-58-6	-	< 1	-
Benzene	71-43-2	-	< 1	-
1,2-Dichloroethane	107-06-2	-	< 1	-
Trichloroethene	79-01-6	-	< 5	-
1,2-Dichloropropane	78-87-5	-	< 1	-
Dibromomethane	74-95-3	-	< 1	-
Bromodichloromethane	75-27-4	-	< 1	-
cis 1,3-Dichloropropene	10061-01-5 *	-	< 1	-
Toluene	108-88-3	-	< 1	-
trans 1,3-Dichloropropene	10061-02-6 *	-	< 1	-
1,1,2-Trichloroethane	79-00-5	-	< 1	-
Tetrachloroethene	127-18-4	-	< 5	-
1,3-Dichloropropane	142-28-9	-	< 1	-
Dibromochloromethane	124-48-1	-	< 1	-
1,2-Dibromoethane	106-93-4	-	< 1	-
Chlorobenzene	108-90-7	-	< 1	-
Ethylbenzene	100-41-4	-	< 1	-
1,1,1,2-Tetrachloroethane	630-20-6	-	< 1	-
m and p-Xylene	108-38-3/106-42-3	-	< 1	-
o-Xylene	95-47-6	-	< 1	-

Target Compounds	CAS #	R.T. (min.)	Concentration µg/l	% Fit
Styrene	100-42-5 *	-	< 1	-
Bromoform	75-25-2	-	< 1	-
iso-Propylbenzene	98-82-8	-	< 1	-
1,1,2,2-Tetrachloroethane	79-34-5 *	-	< 1	-
Propylbenzene	103-65-1	-	< 1	-
Bromobenzene	108-86-1	-	< 1	-
1,2,3-Trichloropropane	96-18-4	-	< 1	-
2-Chlorotoluene	95-49-8	-	< 1	-
1,3,5-Trimethylbenzene	108-67-8	-	< 1	-
4-Chlorotoluene	106-43-4	-	< 1	-
tert-Butylbenzene	98-06-6	-	< 1	-
1,2,4-Trimethylbenzene	95-63-6 *	-	< 1	-
sec-Butylbenzene	135-98-8	-	< 1	-
p-Isopropyltoluene	99-87-6 *	-	< 1	-
1,3-Dichlorobenzene	541-73-1	-	< 1	-
1,4-Dichlorobenzene	106-46-7	-	< 1	-
n-Butylbenzene	104-51-8	-	< 1	-
1,2-Dichlorobenzene	95-50-1	-	< 5	-
1,2-Dibromo-3-chloropropane	96-12-8 *	-	< 5	-
1,2,4-Trichlorobenzene	120-82-1	-	< 5	-
Hexachlorobutadiene	87-68-3	-	< 5	-
Naphthalene	91-20-3	-	< 5	-
1,2,3-Trichlorobenzene	87-61-6	-	< 5	-

Compounds marked * are not UKAS accredited
"M" denotes that % fit has been manually interpreted

Internal standards	R.T.	Area %	Surrogates	% Rec
Pentafluorobenzene	3.62	88	Dibromofluoromethane	1
1,4-Difluorobenzene	3.97	90	Toluene-d8	100
Chlorobenzene-d5	5.12	92	Bromofluorobenzene	98
1,4-Dichlorobenzene-d4	5.92	89		

Where individual results are flagged see report notes for status.

Volatile Organic Compounds by HSA-GCMS

UKAS accredited?: Yes

Customer and Site Details:	Ramboll Environ: Zeon Chemicals ESA	**Directory/Quant file:**	2016\052416\ Initial Calibration	**Matrix:**	Water
Sample Details:	BH105	**Date Booked in:**	18-May-16	**Method:**	Headspace
LIMS ID Number:	EX1693403	**Date Analysed:**	24-May-16	**Multiplier:**	1
Job Number:	W22_0074	**Operator:**	PR	**Position:**	8

Target Compounds	CAS #	R.T. (min.)	Concentration µg/l	% Fit
Dichlorodifluoromethane	75-71-8 *	-	< 1	-
Chloromethane	74-87-3	-	< 1	-
Vinyl Chloride	75-01-4	-	< 1	-
Bromomethane	74-83-9 *	-	< 5	-
Chloroethane	75-00-3	-	< 5	-
Trichlorofluoromethane	75-69-4	-	< 1	-
1,1-Dichloroethene	75-35-4	-	< 1	-
trans 1,2-Dichloroethene	156-60-5	-	< 1	-
1,1-Dichloroethane	75-34-3	-	< 1	-
2,2-Dichloropropane	594-20-7 *	-	< 1	-
cis 1,2-Dichloroethene	156-59-2	-	< 1	-
Bromochloromethane	74-97-5	-	< 1	-
Chloroform	67-66-3	-	< 1	-
1,1,1-Trichloroethane	71-55-6	-	< 1	-
Carbon Tetrachloride	56-23-5	-	< 1	-
1,1-Dichloropropene	563-58-6	-	< 1	-
Benzene	71-43-2	-	< 1	-
1,2-Dichloroethane	107-06-2	3.80	1	M
Trichloroethene	79-01-6	-	< 5	-
1,2-Dichloropropane	78-87-5	-	< 1	-
Dibromomethane	74-95-3	-	< 1	-
Bromodichloromethane	75-27-4	-	< 1	-
cis 1,3-Dichloropropene	10061-01-5 *	-	< 1	-
Toluene	108-88-3	-	< 1	-
trans 1,3-Dichloropropene	10061-02-6 *	-	< 1	-
1,1,2-Trichloroethane	79-00-5	-	< 1	-
Tetrachloroethene	127-18-4	-	< 5	-
1,3-Dichloropropane	142-28-9	-	< 1	-
Dibromochloromethane	124-48-1	-	< 1	-
1,2-Dibromoethane	106-93-4	-	< 1	-
Chlorobenzene	108-90-7	-	< 1	-
Ethylbenzene	100-41-4	5.15	2	82
1,1,1,2-Tetrachloroethane	630-20-6	-	< 1	-
m and p-Xylene	108-38-3/106-42-3	-	< 1	-
o-Xylene	95-47-6	-	< 1	-

Target Compounds	CAS #	R.T. (min.)	Concentration µg/l	% Fit
Styrene	100-42-5 *	-	< 1	-
Bromoform	75-25-2	-	< 1	-
iso-Propylbenzene	98-82-8	-	< 1	-
1,1,2,2-Tetrachloroethane	79-34-5 *	-	< 1	-
Propylbenzene	103-65-1	-	< 1	-
Bromobenzene	108-86-1	-	< 1	-
1,2,3-Trichloropropane	96-18-4	-	< 1	-
2-Chlorotoluene	95-49-8	-	< 1	-
1,3,5-Trimethylbenzene	108-67-8	-	< 1	-
4-Chlorotoluene	106-43-4	-	< 1	-
tert-Butylbenzene	98-06-6	-	< 1	-
1,2,4-Trimethylbenzene	95-63-6 *	-	< 1	-
sec-Butylbenzene	135-98-8	-	< 1	-
p-Isopropyltoluene	99-87-6 *	-	< 1	-
1,3-Dichlorobenzene	541-73-1	-	< 1	-
1,4-Dichlorobenzene	106-46-7	-	< 1	-
n-Butylbenzene	104-51-8	-	< 1	-
1,2-Dichlorobenzene	95-50-1	-	< 5	-
1,2-Dibromo-3-chloropropane	96-12-8 *	-	< 5	-
1,2,4-Trichlorobenzene	120-82-1	-	< 5	-
Hexachlorobutadiene	87-68-3	-	< 5	-
Naphthalene	91-20-3	-	< 5	-
1,2,3-Trichlorobenzene	87-61-6	-	< 5	-

Compounds marked * are not UKAS accredited
"M" denotes that % fit has been manually interpreted

Internal standards	R.T.	Area %	Surrogates	% Rec
Pentafluorobenzene	3.62	95	Dibromofluoromethane	109
1,4-Difluorobenzene	3.97	101	Toluene-d8	100
Chlorobenzene-d5	5.12	102	Bromofluorobenzene	98
1,4-Dichlorobenzene-d4	5.92	97		

Where individual results are flagged see report notes for status.

Volatile Organic Compounds by HSA-GCMS

UKAS accredited?: Yes

Customer and Site Details:	Ramboll Environ: Zeon Chemicals ESA	**Directory/Quant file:**	2016\052416\ Initial Calibration	**Matrix:**	Water
Sample Details:	BH106	**Date Booked in:**	18-May-16	**Method:**	Headspace
LIMS ID Number:	EX1693404	**Date Analysed:**	24-May-16	**Multiplier:**	1
Job Number:	W22_0074	**Operator:**	PR	**Position:**	9

Target Compounds	CAS #	R.T. (min.)	Concentration µg/l	% Fit
Dichlorodifluoromethane	75-71-8 *	-	< 1	-
Chloromethane	74-87-3	-	< 1	-
Vinyl Chloride	75-01-4	-	< 1	-
Bromomethane	74-83-9 *	-	< 5	-
Chloroethane	75-00-3	-	< 5	-
Trichlorofluoromethane	75-69-4	-	< 1	-
1,1-Dichloroethene	75-35-4	-	< 1	-
trans 1,2-Dichloroethene	156-60-5	-	< 1	-
1,1-Dichloroethane	75-34-3	-	< 1	-
2,2-Dichloropropane	594-20-7 *	-	< 1	-
cis 1,2-Dichloroethene	156-59-2	-	< 1	-
Bromochloromethane	74-97-5	-	< 1	-
Chloroform	67-66-3	-	< 1	-
1,1,1-Trichloroethane	71-55-6	-	< 1	-
Carbon Tetrachloride	56-23-5	-	< 1	-
1,1-Dichloropropene	563-58-6	-	< 1	-
Benzene	71-43-2	-	< 1	-
1,2-Dichloroethane	107-06-2	-	< 1	-
Trichloroethene	79-01-6	-	< 5	-
1,2-Dichloropropane	78-87-5	-	< 1	-
Dibromomethane	74-95-3	-	< 1	-
Bromodichloromethane	75-27-4	-	< 1	-
cis 1,3-Dichloropropene	10061-01-5 *	-	< 1	-
Toluene	108-88-3	-	< 1	-
trans 1,3-Dichloropropene	10061-02-6 *	-	< 1	-
1,1,2-Trichloroethane	79-00-5	-	< 1	-
Tetrachloroethene	127-18-4	-	< 5	-
1,3-Dichloropropane	142-28-9	-	< 1	-
Dibromochloromethane	124-48-1	-	< 1	-
1,2-Dibromoethane	106-93-4	-	< 1	-
Chlorobenzene	108-90-7	-	< 1	-
Ethylbenzene	100-41-4	-	< 1	-
1,1,1,2-Tetrachloroethane	630-20-6	-	< 1	-
m and p-Xylene	108-38-3/106-42-3	-	< 1	-
o-Xylene	95-47-6	-	< 1	-

Target Compounds	CAS #	R.T. (min.)	Concentration µg/l	% Fit
Styrene	100-42-5 *	-	< 1	-
Bromoform	75-25-2	-	< 1	-
iso-Propylbenzene	98-82-8	-	< 1	-
1,1,2,2-Tetrachloroethane	79-34-5 *	-	< 1	-
Propylbenzene	103-65-1	-	< 1	-
Bromobenzene	108-86-1	-	< 1	-
1,2,3-Trichloropropane	96-18-4	-	< 1	-
2-Chlorotoluene	95-49-8	-	< 1	-
1,3,5-Trimethylbenzene	108-67-8	-	< 1	-
4-Chlorotoluene	106-43-4	-	< 1	-
tert-Butylbenzene	98-06-6	-	< 1	-
1,2,4-Trimethylbenzene	95-63-6 *	-	< 1	-
sec-Butylbenzene	135-98-8	-	< 1	-
p-Isopropyltoluene	99-87-6 *	-	< 1	-
1,3-Dichlorobenzene	541-73-1	-	< 1	-
1,4-Dichlorobenzene	106-46-7	-	< 1	-
n-Butylbenzene	104-51-8	-	< 1	-
1,2-Dichlorobenzene	95-50-1	-	< 5	-
1,2-Dibromo-3-chloropropane	96-12-8 *	-	< 5	-
1,2,4-Trichlorobenzene	120-82-1	-	< 5	-
Hexachlorobutadiene	87-68-3	-	< 5	-
Naphthalene	91-20-3	-	< 5	-
1,2,3-Trichlorobenzene	87-61-6	-	< 5	-

Compounds marked * are not UKAS accredited
"M" denotes that % fit has been manually interpreted

Internal standards	R.T.	Area %	Surrogates	% Rec
Pentafluorobenzene	3.62	96	Dibromofluoromethane	112
1,4-Difluorobenzene	3.97	101	Toluene-d8	99
Chlorobenzene-d5	5.12	102	Bromofluorobenzene	97
1,4-Dichlorobenzene-d4	5.92	97		

Where individual results are flagged see report notes for status.

Volatile Organic Compounds by HSA-GCMS

UKAS accredited?: Yes

Customer and Site Details:	Ramboll Environ: Zeon Chemicals ESA	**Directory/Quant file:**	2016\052416\ Initial Calibration	**Matrix:**	Water
Sample Details:	ZC201	**Date Booked in:**	18-May-16	**Method:**	Headspace
LIMS ID Number:	EX1693405	**Date Analysed:**	24-May-16	**Multiplier:**	1
Job Number:	W22_0074	**Operator:**	PR	**Position:**	10

Target Compounds	CAS #	R.T. (min.)	Concentration µg/l	% Fit
Dichlorodifluoromethane	75-71-8 *	-	< 1	-
Chloromethane	74-87-3	-	< 1	-
Vinyl Chloride	75-01-4	-	< 1	-
Bromomethane	74-83-9 *	-	< 5	-
Chloroethane	75-00-3	-	< 5	-
Trichlorofluoromethane	75-69-4	-	< 1	-
1,1-Dichloroethene	75-35-4	-	< 1	-
trans 1,2-Dichloroethene	156-60-5	-	< 1	-
1,1-Dichloroethane	75-34-3	-	< 1	-
2,2-Dichloropropane	594-20-7 *	-	< 1	-
cis 1,2-Dichloroethene	156-59-2	-	< 1	-
Bromochloromethane	74-97-5	-	< 1	-
Chloroform	67-66-3	-	< 1	-
1,1,1-Trichloroethane	71-55-6	-	< 1	-
Carbon Tetrachloride	56-23-5	-	< 1	-
1,1-Dichloropropene	563-58-6	-	< 1	-
Benzene	71-43-2	-	< 1	-
1,2-Dichloroethane	107-06-2	-	< 1	-
Trichloroethene	79-01-6	-	< 5	-
1,2-Dichloropropane	78-87-5	-	< 1	-
Dibromomethane	74-95-3	-	< 1	-
Bromodichloromethane	75-27-4	-	< 1	-
cis 1,3-Dichloropropene	10061-01-5 *	-	< 1	-
Toluene	108-88-3	-	< 1	-
trans 1,3-Dichloropropene	10061-02-6 *	-	< 1	-
1,1,2-Trichloroethane	79-00-5	-	< 1	-
Tetrachloroethene	127-18-4	-	< 5	-
1,3-Dichloropropane	142-28-9	-	< 1	-
Dibromochloromethane	124-48-1	-	< 1	-
1,2-Dibromoethane	106-93-4	-	< 1	-
Chlorobenzene	108-90-7	-	< 1	-
Ethylbenzene	100-41-4	-	< 1	-
1,1,1,2-Tetrachloroethane	630-20-6	-	< 1	-
m and p-Xylene	108-38-3/106-42-3	-	< 1	-
o-Xylene	95-47-6	-	< 1	-

Target Compounds	CAS #	R.T. (min.)	Concentration µg/l	% Fit
Styrene	100-42-5 *	-	< 1	-
Bromoform	75-25-2	-	< 1	-
iso-Propylbenzene	98-82-8	-	< 1	-
1,1,2,2-Tetrachloroethane	79-34-5 *	-	< 1	-
Propylbenzene	103-65-1	-	< 1	-
Bromobenzene	108-86-1	-	< 1	-
1,2,3-Trichloropropane	96-18-4	-	< 1	-
2-Chlorotoluene	95-49-8	-	< 1	-
1,3,5-Trimethylbenzene	108-67-8	-	< 1	-
4-Chlorotoluene	106-43-4	-	< 1	-
tert-Butylbenzene	98-06-6	-	< 1	-
1,2,4-Trimethylbenzene	95-63-6 *	-	< 1	-
sec-Butylbenzene	135-98-8	-	< 1	-
p-Isopropyltoluene	99-87-6 *	-	< 1	-
1,3-Dichlorobenzene	541-73-1	-	< 1	-
1,4-Dichlorobenzene	106-46-7	-	< 1	-
n-Butylbenzene	104-51-8	-	< 1	-
1,2-Dichlorobenzene	95-50-1	-	< 5	-
1,2-Dibromo-3-chloropropane	96-12-8 *	-	< 5	-
1,2,4-Trichlorobenzene	120-82-1	-	< 5	-
Hexachlorobutadiene	87-68-3	-	< 5	-
Naphthalene	91-20-3	-	< 5	-
1,2,3-Trichlorobenzene	87-61-6	-	< 5	-

Compounds marked * are not UKAS accredited
"M" denotes that % fit has been manually interpreted

Internal standards	R.T.	Area %	Surrogates	% Rec
Pentafluorobenzene	3.62	108	Dibromofluoromethane	105
1,4-Difluorobenzene	3.97	112	Toluene-d8	100
Chlorobenzene-d5	5.12	112	Bromofluorobenzene	96
1,4-Dichlorobenzene-d4	5.92	102		

Where individual results are flagged see report notes for status.

Volatile Organic Compounds by HSA-GCMS

UKAS accredited?: Yes

Customer and Site Details:	Ramboll Environ: Zeon Chemicals ESA	**Directory/Quant file:**	2016\052416\ Initial Calibration	**Matrix:**	Water
Sample Details:	ZC202	**Date Booked in:**	18-May-16	**Method:**	Headspace
LIMS ID Number:	EX1693406	**Date Analysed:**	24-May-16	**Multiplier:**	1
Job Number:	W22_0074	**Operator:**	PR	**Position:**	11

Target Compounds	CAS #	R.T. (min.)	Concentration µg/l	% Fit
Dichlorodifluoromethane	75-71-8 *	-	< 1	-
Chloromethane	74-87-3	-	< 1	-
Vinyl Chloride	75-01-4	-	< 1	-
Bromomethane	74-83-9 *	-	< 5	-
Chloroethane	75-00-3	-	< 5	-
Trichlorofluoromethane	75-69-4	-	< 1	-
1,1-Dichloroethene	75-35-4	-	< 1	-
trans 1,2-Dichloroethene	156-60-5	-	< 1	-
1,1-Dichloroethane	75-34-3	-	< 1	-
2,2-Dichloropropane	594-20-7 *	-	< 1	-
cis 1,2-Dichloroethene	156-59-2	-	< 1	-
Bromochloromethane	74-97-5	-	< 1	-
Chloroform	67-66-3	-	< 1	-
1,1,1-Trichloroethane	71-55-6	-	< 1	-
Carbon Tetrachloride	56-23-5	-	< 1	-
1,1-Dichloropropene	563-58-6	-	< 1	-
Benzene	71-43-2	-	< 1	-
1,2-Dichloroethane	107-06-2	-	< 1	-
Trichloroethene	79-01-6	-	< 5	-
1,2-Dichloropropane	78-87-5	-	< 1	-
Dibromomethane	74-95-3	-	< 1	-
Bromodichloromethane	75-27-4	-	< 1	-
cis 1,3-Dichloropropene	10061-01-5 *	-	< 1	-
Toluene	108-88-3	-	< 1	-
trans 1,3-Dichloropropene	10061-02-6 *	-	< 1	-
1,1,2-Trichloroethane	79-00-5	-	< 1	-
Tetrachloroethene	127-18-4	-	< 5	-
1,3-Dichloropropane	142-28-9	-	< 1	-
Dibromochloromethane	124-48-1	-	< 1	-
1,2-Dibromoethane	106-93-4	-	< 1	-
Chlorobenzene	108-90-7	-	< 1	-
Ethylbenzene	100-41-4	-	< 1	-
1,1,1,2-Tetrachloroethane	630-20-6	-	< 1	-
m and p-Xylene	108-38-3/106-42-3	-	< 1	-
o-Xylene	95-47-6	-	< 1	-

Target Compounds	CAS #	R.T. (min.)	Concentration µg/l	% Fit
Styrene	100-42-5 *	-	< 1	-
Bromoform	75-25-2	-	< 1	-
iso-Propylbenzene	98-82-8	-	< 1	-
1,1,2,2-Tetrachloroethane	79-34-5 *	-	< 1	-
Propylbenzene	103-65-1	-	< 1	-
Bromobenzene	108-86-1	-	< 1	-
1,2,3-Trichloropropane	96-18-4	-	< 1	-
2-Chlorotoluene	95-49-8	-	< 1	-
1,3,5-Trimethylbenzene	108-67-8	-	< 1	-
4-Chlorotoluene	106-43-4	-	< 1	-
tert-Butylbenzene	98-06-6	-	< 1	-
1,2,4-Trimethylbenzene	95-63-6 *	-	< 1	-
sec-Butylbenzene	135-98-8	-	< 1	-
p-Isopropyltoluene	99-87-6 *	-	< 1	-
1,3-Dichlorobenzene	541-73-1	-	< 1	-
1,4-Dichlorobenzene	106-46-7	-	< 1	-
n-Butylbenzene	104-51-8	-	< 1	-
1,2-Dichlorobenzene	95-50-1	-	< 5	-
1,2-Dibromo-3-chloropropane	96-12-8 *	-	< 5	-
1,2,4-Trichlorobenzene	120-82-1	-	< 5	-
Hexachlorobutadiene	87-68-3	-	< 5	-
Naphthalene	91-20-3	-	< 5	-
1,2,3-Trichlorobenzene	87-61-6	-	< 5	-

Compounds marked * are not UKAS accredited
"M" denotes that % fit has been manually interpreted

Internal standards	R.T.	Area %	Surrogates	% Rec
Pentafluorobenzene	3.62	89	Dibromofluoromethane	112
1,4-Difluorobenzene	3.97	94	Toluene-d8	100
Chlorobenzene-d5	5.12	95	Bromofluorobenzene	96
1,4-Dichlorobenzene-d4	5.92	89		

Where individual results are flagged see report notes for status.

TICs by HSA-GCMS

UKAS accredited?: No

Customer and Site Details:	Ramboll Environ: Zeon Chemicals ESA		**Date Booked in:**	18-May-16
Sample Details:	BH101		**Date Analysed:**	24-May-16
LIMS ID Number:	EX1693399		**Matrix:**	Water
Job Number:	W22_0074		**Ext Method:**	Headspace
Directory/Quant file:	2016\052416\	Initial Calibration	**Dilution:**	1
Operator:	PR		**Position:**	4

Tentatively Identified Compounds	CAS No	R.T. (min.)	Concentration µg/l	% Fit
None Detected			<5	

The compounds listed above have been tentatively identified by a computer based library search.
Compounds identified in the sample are not reported if they also occur in the method blank.
The % fit is an indication of the reliability of the compound assignment.
Due to the similarity between mass spectra of some isomeric compounds, assignments may not be correct.
Other compounds may also be present but identification was not possible.
Concentrations are semi-quantitative, assume a response factor of 1 and use the nearest internal standard.
Compounds marked * are not UKAS accredited
"M" denotes that % fit has been manually interpreted

Where individual results are flagged see report notes for status.

TICs by HSA-GCMS

UKAS accredited?: No

Customer and Site Details:	Ramboll Environ: Zeon Chemicals ESA		**Date Booked in:**	18-May-16
Sample Details:	BH102		**Date Analysed:**	24-May-16
LIMS ID Number:	EX1693400		**Matrix:**	Water
Job Number:	W22_0074		**Ext Method:**	Headspace
Directory/Quant file:	2016\052416\	Initial Calibration	**Dilution:**	1
Operator:	PR		**Position:**	5

Tentatively Identified Compounds	CAS No	R.T. (min.)	Concentration µg/l	% Fit
None Detected			<5	

The compounds listed above have been tentatively identified by a computer based library search.
Compounds identified in the sample are not reported if they also occur in the method blank.
The % fit is an indication of the reliability of the compound assignment.
Due to the similarity between mass spectra of some isomeric compounds, assignments may not be correct.
Other compounds may also be present but identification was not possible.
Concentrations are semi-quantitative, assume a response factor of 1 and use the nearest internal standard.
Compounds marked * are not UKAS accredited
"M" denotes that % fit has been manually interpreted

Where individual results are flagged see report notes for status.

TICs by HSA-GCMS

UKAS accredited?: No

Customer and Site Details:	Ramboll Environ: Zeon Chemicals ESA		**Date Booked in:**	18-May-16
Sample Details:	BH103		**Date Analysed:**	24-May-16
LIMS ID Number:	EX1693401		**Matrix:**	Water
Job Number:	W22_0074		**Ext Method:**	Headspace
Directory/Quant file:	2016\052416\	Initial Calibration	**Dilution:**	1
Operator:	PR		**Position:**	6

Tentatively Identified Compounds	CAS No	R.T. (min.)	Concentration µg/l	% Fit
None Detected			<5	

The compounds listed above have been tentatively identified by a computer based library search.
Compounds identified in the sample are not reported if they also occur in the method blank.
The % fit is an indication of the reliability of the compound assignment.
Due to the similarity between mass spectra of some isomeric compounds, assignments may not be correct.
Other compounds may also be present but identification was not possible.
Concentrations are semi-quantitative, assume a response factor of 1 and use the nearest internal standard.
Compounds marked * are not UKAS accredited
"M" denotes that % fit has been manually interpreted

Where individual results are flagged see report notes for status.

TICs by HSA-GCMS

UKAS accredited?: No

Customer and Site Details:	Ramboll Environ: Zeon Chemicals ESA		**Date Booked in:**	18-May-16
Sample Details:	BH104		**Date Analysed:**	24-May-16
LIMS ID Number:	EX1693402		**Matrix:**	Water
Job Number:	W22_0074		**Ext Method:**	Headspace
Directory/Quant file:	2016\052416\	Initial Calibration	**Dilution:**	1
Operator:	PR		**Position:**	7

Tentatively Identified Compounds	CAS No	R.T. (min.)	Concentration µg/l	% Fit
Indane	000496-11-7	6.02	11	76
Benzene, 1,2,3-trimethyl-	000526-73-8	5.66	7	95

The compounds listed above have been tentatively identified by a computer based library search.
Compounds identified in the sample are not reported if they also occur in the method blank.
The % fit is an indication of the reliability of the compound assignment.
Due to the similarity between mass spectra of some isomeric compounds, assignments may not be correct.
Other compounds may also be present but identification was not possible.
Concentrations are semi-quantitative, assume a response factor of 1 and use the nearest internal standard.
Compounds marked * are not UKAS accredited
"M" denotes that % fit has been manually interpreted

TICs by HSA-GCMS

UKAS accredited?: No

Customer and Site Details:	Ramboll Environ: Zeon Chemicals ESA		**Date Booked in:**	18-May-16
Sample Details:	BH105		**Date Analysed:**	24-May-16
LIMS ID Number:	EX1693403		**Matrix:**	Water
Job Number:	W22_0074		**Ext Method:**	Headspace
Directory/Quant file:	2016\052416\	Initial Calibration	**Dilution:**	1
Operator:	PR		**Position:**	8

Tentatively Identified Compounds	CAS No	R.T. (min.)	Concentration µg/l	% Fit
None Detected			<5	

The compounds listed above have been tentatively identified by a computer based library search.
Compounds identified in the sample are not reported if they also occur in the method blank.
The % fit is an indication of the reliability of the compound assignment.
Due to the similarity between mass spectra of some isomeric compounds, assignments may not be correct.
Other compounds may also be present but identification was not possible.
Concentrations are semi-quantitative, assume a response factor of 1 and use the nearest internal standard.
Compounds marked * are not UKAS accredited
"M" denotes that % fit has been manually interpreted

Where individual results are flagged see report notes for status.

TICs by HSA-GCMS

UKAS accredited?: No

Customer and Site Details:	Ramboll Environ: Zeon Chemicals ESA		**Date Booked in:**	18-May-16
Sample Details:	BH106		**Date Analysed:**	24-May-16
LIMS ID Number:	EX1693404		**Matrix:**	Water
Job Number:	W22_0074		**Ext Method:**	Headspace
Directory/Quant file:	2016\052416\	Initial Calibration	**Dilution:**	1
Operator:	PR		**Position:**	9

Tentatively Identified Compounds	CAS No	R.T. (min.)	Concentration µg/l	% Fit
None Detected			<5	

The compounds listed above have been tentatively identified by a computer based library search.
Compounds identified in the sample are not reported if they also occur in the method blank.
The % fit is an indication of the reliability of the compound assignment.
Due to the similarity between mass spectra of some isomeric compounds, assignments may not be correct.
Other compounds may also be present but identification was not possible.
Concentrations are semi-quantitative, assume a response factor of 1 and use the nearest internal standard.
Compounds marked * are not UKAS accredited
"M" denotes that % fit has been manually interpreted

Where individual results are flagged see report notes for status.

TICs by HSA-GCMS

UKAS accredited?: No

Customer and Site Details:	Ramboll Environ: Zeon Chemicals ESA		**Date Booked in:**	18-May-16
Sample Details:	ZC201		**Date Analysed:**	24-May-16
LIMS ID Number:	EX1693405		**Matrix:**	Water
Job Number:	W22_0074		**Ext Method:**	Headspace
Directory/Quant file:	2016\052416\	Initial Calibration	**Dilution:**	1
Operator:	PR		**Position:**	10

Tentatively Identified Compounds	CAS No	R.T. (min.)	Concentration µg/l	% Fit
None Detected			<5	

The compounds listed above have been tentatively identified by a computer based library search.
Compounds identified in the sample are not reported if they also occur in the method blank.
The % fit is an indication of the reliability of the compound assignment.
Due to the similarity between mass spectra of some isomeric compounds, assignments may not be correct.
Other compounds may also be present but identification was not possible.
Concentrations are semi-quantitative, assume a response factor of 1 and use the nearest internal standard.
Compounds marked * are not UKAS accredited
"M" denotes that % fit has been manually interpreted

Where individual results are flagged see report notes for status.

TICs by HSA-GCMS

UKAS accredited?: No

Customer and Site Details:	Ramboll Environ: Zeon Chemicals ESA		**Date Booked in:**	18-May-16
Sample Details:	ZC202		**Date Analysed:**	24-May-16
LIMS ID Number:	EX1693406		**Matrix:**	Water
Job Number:	W22_0074		**Ext Method:**	Headspace
Directory/Quant file:	2016\052416\	Initial Calibration	**Dilution:**	1
Operator:	PR		**Position:**	11

Tentatively Identified Compounds	CAS No	R.T. (min.)	Concentration µg/l	% Fit
None Detected			<5	

The compounds listed above have been tentatively identified by a computer based library search.
Compounds identified in the sample are not reported if they also occur in the method blank.
The % fit is an indication of the reliability of the compound assignment.
Due to the similarity between mass spectra of some isomeric compounds, assignments may not be correct.
Other compounds may also be present but identification was not possible.
Concentrations are semi-quantitative, assume a response factor of 1 and use the nearest internal standard.
Compounds marked * are not UKAS accredited
"M" denotes that % fit has been manually interpreted

Where individual results are flagged see report notes for status.

Analytical and Deviating Sample Overview

Customer Ramboll Environ
Site Zeon Chemicals ESA
Report No W220074

Consignment No W104155
Date Logged 18-May-2016

Report Due 13-Jun-2016

ID Number	Description	Matrix Type	Sampled	Alcohols by HSA-FID	Total Hardness as CaCO3 (CALC)	Report A	Formaldehyde.	GRO-HSA GCFID (AA)	Nickel as Ni MS (Dissolved)	Chromium as Cr MS (Dissolved)	Cadmium as Cd MS (Dissolved)	Copper as Cu MS (Dissolved)	Lead as Pb MS (Dissolved)	Zinc as Zn MS (Dissolved)	Arsenic as As MS (Dissolved)	Mercury as Hg MS (Dissolved)	Selenium as Se MS (Dissolved)	Vanadium as V MS (Dissolved)	Total Sulphur as SO4 (Diss) VAR	Calcium as Ca (Dissolved) VAR	Magnesium as Mg (Dissolved) VAR
		MethodID		ALCHSAFID	Calc_HD	CUSTSERV	FORW	GROHSA	ICPMSW										ICPWATVAR		
	Test Method Accredited to ISO17025				✓				✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
EX/1693399	BH101	Groundwater	17/05/16																		
EX/1693400	BH102	Groundwater	17/05/16																		
EX/1693401	BH103	Groundwater	17/05/16																		
EX/1693402	BH104	Groundwater	17/05/16																		
EX/1693403	BH105	Groundwater	17/05/16																		
EX/1693404	BH106	Groundwater	17/05/16																		
EX/1693405	ZC201	Groundwater	17/05/16																		
EX/1693406	ZC202	Groundwater	17/05/16																		

Note: For analysis where the scheduled turnaround is greater than the holding time we will do our utmost to prioritise these samples. However, it is possible that samples could become deviant whilst being processed in the laboratory.

In this instance please contact the laboratory immediately should you wish to discuss how you would like us to proceed. If you do not respond within 24 hours, we will proceed as originally requested.

Deviating Sample Key

A	The sample was received in an inappropriate container for this analysis
B	The sample was received without the correct preservation for this analysis
C	Headspace present in the sample container
D	The sampling date was not supplied so holding time may be compromised - applicable to all analysis
E	Sample processing did not commence within the appropriate holding time
F	Sample processing did not commence within the appropriate handling time

Requested Analysis Key

	Analysis Required
	Analysis dependant upon trigger result - **Note: due date may be affected if triggered**
	No analysis scheduled
^	Analysis Subcontracted - **Note: due date may vary**

The integrity of data for samples/analysis that have been categorised as Deviating may be compromised. Data may not be representative of the sample at the time of sampling.
Where individual results are flagged see report notes for status.

Sample Analysis

ESG Environmental Chemistry
Analytical and Deviating Sample Overview

W220074

Customer Ramboll Environ
Site Zeon Chemicals ESA
Report No W220074

Consignment No W104155
Date Logged 18-May-2016

Report Due 13-Jun-2016

ID Number	Description	MethodID	Matrix Type	Sampled	ICPWATVAR Barium as Ba (Dissolved) VAR	ICPWATVAR Sodium as Na (Dissolved) VAR	ICPWATVAR Potassium as K (Dissolved) VAR	ICPWATVAR Boron as B (Dissolved) VAR	ICPWATVAR Beryllium as Be (Dissolved) VAR	ICPWATVART Iron as Fe (Total) VAR	KONENS Chloride as Cl (Kone)	KONENS Nitrite as N (Kone)	PAHMSW PAH GC-MS (16)	PHEHPLC Phenols by HPLC Analysis	PHENPLCVL Phenols by HPLC (Low Level)	SFAPI Cyanide (Total) as CN SFA	SVOCSW SVOC + TICS	TPHFID-Si TPH by GC(Si)	VOCHSAW VOC + TICS HSA-GCMS	WSLM11 Chemical Oxygen Demand (Settled)	WSLM12 Total Alkalinity as CaCO3	WSLM20 Biochemical Oxygen Demand	WSLM3 pH units
	Test Method Accredited to ISO17025				✓	✓	✓	✓		✓	✓	✓	✓			✓		✓	✓	✓	✓	✓	✓
EX/1693399	BH101		Groundwater	17/05/16										E									
EX/1693400	BH102		Groundwater	17/05/16																			
EX/1693401	BH103		Groundwater	17/05/16																			
EX/1693402	BH104		Groundwater	17/05/16										E									
EX/1693403	BH105		Groundwater	17/05/16																			
EX/1693404	BH106		Groundwater	17/05/16																			
EX/1693405	ZC201		Groundwater	17/05/16																			
EX/1693406	ZC202		Groundwater	17/05/16																			

Note: For analysis where the scheduled turnaround is greater than the holding time we will do our utmost to prioritise these samples. However, it is possible that samples could become deviant whilst being processed in the laboratory.

In this instance please contact the laboratory immediately should you wish to discuss how you would like us to proceed. If you do not respond within 24 hours, we will proceed as originally requested.

Deviating Sample Key

A	The sample was received in an inappropriate container for this analysis
B	The sample was received without the correct preservation for this analysis
C	Headspace present in the sample container
D	The sampling date was not supplied so holding time may be compromised - applicable to all analysis
E	Sample processing did not commence within the appropriate holding time
F	Sample processing did not commence within the appropriate handling time

Requested Analysis Key

	Analysis Required
	Analysis dependant upon trigger result - **Note: due date may be affected if triggered**
	No analysis scheduled
^	Analysis Subcontracted - **Note: due date may vary**

The integrity of data for samples/analysis that have been categorised as Deviating may be compromised. Data may not be representative of the sample at the time of sampling.
Where individual results are flagged see report notes for status.

Customer Ramboll Environ
Site Zeon Chemicals ESA
Report No W220074

Consignment No W104155
Date Logged 18-May-2016

Report Due 13-Jun-2016

ID Number	Description	Matrix Type	Sampled	pH units
		MethodID		WSLM3
	Test Method Accredited to ISO17025			✓
EX/1693399	BH101	Groundwater	17/05/16	
EX/1693400	BH102	Groundwater	17/05/16	
EX/1693401	BH103	Groundwater	17/05/16	
EX/1693402	BH104	Groundwater	17/05/16	
EX/1693403	BH105	Groundwater	17/05/16	
EX/1693404	BH106	Groundwater	17/05/16	
EX/1693405	ZC201	Groundwater	17/05/16	
EX/1693406	ZC202	Groundwater	17/05/16	

Note: For analysis where the scheduled turnaround is greater than the holding time we will do our utmost to prioritise these samples. However, it is possible that samples could become deviant whilst being processed in the laboratory.

In this instance please contact the laboratory immediately should you wish to discuss how you would like us to proceed. If you do not respond within 24 hours, we will proceed as originally requested.

Deviating Sample Key	
A	The sample was received in an inappropriate container for this analysis
B	The sample was received without the correct preservation for this analysis
C	Headspace present in the sample container
D	The sampling date was not supplied so holding time may be compromised - applicable to all analysis
E	Sample processing did not commence within the appropriate holding time
F	Sample processing did not commence within the appropriate handling time

Requested Analysis Key	
	Analysis Required
	Analysis dependant upon trigger result - **Note: due date may be affected if triggered**
	No analysis scheduled
^	Analysis Subcontracted - **Note: due date may vary**

The integrity of data for samples/analysis that have been categorised as Deviating may be compromised. Data may not be representative of the sample at the time of sampling.
Where individual results are flagged see report notes for status.

Report Number : W/EXR/220074

Additional Report Notes

Method Code	Sample ID	The following information should be taken into consideration when using the data contained within this report
ICPWATVAR	EX/1693402	The matrix of this sample has been found to interfere with the result for this test. The sample has therefore been diluted to improve the signal to noise ratio but in doing so, the detection limit for this test has been elevated.
WSLM20	EX/1693405	Based on the sample history/appearance/smell, a dilution was applied prior to testing. Unfortunately the result is above our accredited range for this sample volume. The non-accredited value is given but should be used for guidance only.

Method Descriptions

Matrix	MethodID	Analysis Basis	Method Description
Water	ALCHSAFID	As Received	Determination of Alcohols in water by Headspace GCFID
Water	Calc_HD	As Received	Calculation based on Dissolved metals analysis by ICPOES
Water	FORW	As Received	Determination of Formaldehyde in water samples by colorimetry
Water	GROHSA	As Received	Determination of Total Gasoline Range Organics Hydrocarbons (GRO) by Headspace FID
Water	ICPMSW	As Received	Direct quantitative determination of Metals in water samples using ICPMS
Water	ICPWATVAR	As Received	Direct determination of Metals and Sulphate in water samples using ICPOES
Water	ICPWATVART	As Received	Determination of Total Metals in water samples using nitric acid digestion and ICPOES quantitation
Water	KONENS	As Received	Direct analysis using discrete colorimetric analysis
Water	PAHMSW	As Received	Determination of PolyAromatic Hydrocarbons in water by pentane extraction GCMS quantitation
Water	PHEHPLC	As Received	Determination of Phenols by HPLC
Water	PHEHPLCVL	As Received	Determination of Phenols by HPLC
Water	SFAPI	As Received	Segmented flow analysis with colorimetric detection
Water	SVOCSW	As Received	Determination of Semi Volatile Organic Compounds (SVOC) by DCM extraction followed by GCMS detection
Water	TPHFID-Si	As Received	Determination of speciated pentane extractable hydrocarbons in water by GCFID
Water	VOCHSAW	As Received	Determination of Volatile Organics Compounds by Headspace GCMS
Water	WSLM11	As Received	Acid Dichromate oxidation of the sample followed by colorimetric analysis.
Water	WSLM12	As Received	Titration with Sulphuric Acid to required pH
Water	WSLM20	As Received	Determination of Biological Oxygen Demand using 5 day incubation and dissolved oxygen probe
Water	WSLM3	As Received	Determination of the pH of water samples by pH probe

Report Notes

Generic Notes

Soil/Solid Analysis

Unless stated otherwise,
- Results expressed as mg/kg have been calculated on the basis indicated in the Method Description table.
  All results on MCERTS reports are reported on a 105ºC dry weight basis with the exception of pH and conductivity.
- Sulphate analysis not conducted in accordance with BS1377
- Water Soluble Sulphate is on a 2:1 water:soil extract

Waters Analysis

Unless stated otherwise results are expressed as mg/l
Nil: Where "Nil" has been entered against Total Alkalinity or Total Acidity this indicates that a measurement was not required due to the inherent pH of the sample.

Oil analysis specific

Unless stated otherwise,
- Results are expressed as mg/kg
- SG is expressed as g/cm^3@ 15^{o}C

Gas (Tedlar bag) Analysis

Unless stated otherwise, results are expressed as ug/l

Asbestos Analysis

CH Denotes Chrysotile **TR** Denotes Tremolite
CR Denotes Crocidolite **AC** Denotes Actinolite
AM Denotes Amosite **AN** Denotes Anthophylite
NAIIS No Asbestos Identified in Sample
NADIS No Asbestos Detected In Sample

Symbol Reference

^ Sub-contracted analysis.
$$ Unable to analyse due to the nature of the sample
¶ Samples submitted for this analyte were not preserved on site in accordance with laboratory protocols. This may have resulted in deterioration of the sample(s) during transit to the laboratory. Consequently the reported data may not represent the concentration of the target analyte present in the sample at the time of sampling
¥ Results for guidance only due to possible interference
& Blank corrected result
I.S Insufficient sample to complete requested analysis
I.S(g) Insufficient sample to re-analyse, results for guidance only
Intf Unable to analyse due to interferences
N.D Not determined **N.Det** Not detected
N.F No Flow
NS Information Not Supplied
Req Analysis requested, see attached sheets for results
Þ Raised detection limit due to nature of the sample
***** All accreditation has been removed by the laboratory for this result
‡ MCERTS accreditation has been removed for this result
§ accreditation has been removed for this result as it is a non-accredited matrix

Note: The Laboratory may only claim that data is accredited when all of the requirements of our Quality System have been met. Where these requirements have not been met the laboratory may elect to include the data in its final report and remove the accreditation from individual data items if it believes that the validity of the data has not been affected. If further details are required of the circumstances which have led to the removal of accreditation then please do not hesitate to contact the laboratory.

Sample Descriptions

Client : Ramboll Environ
Site : Zeon Chemicals ESA
Report Number : W22_0074

Lab ID Number	Client ID	Description
EX/1693399	BH101	Groundwater
EX/1693400	BH102	Groundwater
EX/1693401	BH103	Groundwater
EX/1693402	BH104	Groundwater
EX/1693403	BH105	Groundwater
EX/1693404	BH106	Groundwater
EX/1693405	ZC201	Groundwater
EX/1693406	ZC202	Groundwater

Our Ref: EXR/220078 (Ver. 1)
Your Ref: UK15-21370

May 25, 2016

Environmental Chemistry
ESG
Bretby Business Park
Ashby Road
Burton-on-Trent
Staffordshire
DE15 0YZ

Telephone: 01283 554400
Facsimile: 01283 554422

Lucy Cleverley
Ramboll Environ
8 Village Way
Cardiff
CF15 2NE

For the attention of Lucy Cleverley

Dear Lucy Cleverley

Sample Analysis - Zeon Chemicals ESA

Samples from the above site have been analysed in accordance with the schedule supplied.
The sample details and the results of analyses for these samples are given in the appended report.

An invoice for this work will follow under a separate cover.

Please be aware that our policy for the retention of paper based laboratory records and analysis reports is 6 years.

The work was carried out in accordance with Environmental Scientifics Group Ltd (Multi-Sector Services) Standard Terms and Conditions of Contract.

If I can be of any further assistance please do not hesitate to contact me.

Yours sincerely

for ESG

JNColbourne

J Colbourne
Project Co-ordinator
01283 554547

TEST REPORT

UKAS TESTING
1252

Report No. EXR/220078 (Ver. 1)

Ramboll Environ
8 Village Way
Cardiff
CF15 2NE

Site: Zeon Chemicals ESA

The 3 samples described in this report were registered for analysis by ESG on 18-May-2016. This report supersedes any versions previously issued by the laboratory.

The analysis was completed by: 25-May-2016

Tests where the accreditation is set to N or No, and any individual data items marked with a * are not UKAS accredited. Opinions and interpretations expressed herein are outside the scope of UKAS accreditation.

The following tables are contained in this report:

On behalf of
ESG :
Declan Burns

Managing Director
Multi-Sector Services

Date of Issue: 25-May-2016

Tests marked '^' have been subcontracted to another laboratory.
Where samples have been flagged as deviant on the Analytical and Deviating Sample Overview, for any reason, the data may not be representative of the sample at the point of sampling and the validity of the data may be affected.
ESG accepts no responsibility for any sampling not carried out by our personnel.

Where individual results are flagged see report notes for status.

		Units :	µg/l															
		Method Codes :	VOCHSAW															
		Method Reporting Limits :	1															
		UKAS Accredited :	Yes															
LAB ID Number EX/	**Client Sample Description**	**Sample Date**	**VOC + TICS HSA-GCMS o**															
1693419	BH7	**16-May-16 13:00**	Req															
1693420	BH8	**16-May-16 14:00**	Req															
1693421	BH9	**16-May-16 15:00**	Req															

ESG

Bretby Business Park, Ashby Road

Burton-on-Trent, Staffordshire, DE15 0YZ

Tel +44 (0) 1283 554400

Fax +44 (0) 1283 554422

Client Name	**Ramboll Environ**
Contact	Lucy Cleverley

Zeon Chemicals ESA

Sample Analysis

Date Printed	**25-May-2016**
Report Number	**EXR/220078**
Table Number	**1**

Where individual results are flagged see report notes for status.

Volatile Organic Compounds by HSA-GCMS

UKAS accredited?: Yes

Customer and Site Details:	Ramboll Environ: Zeon Chemicals ESA	**Directory/Quant file:**	2016\052416\ Initial Calibration	**Matrix:**	Water
Sample Details:	BH7	**Date Booked in:**	18-May-16	**Method:**	Headspace
LIMS ID Number:	EX1693419	**Date Analysed:**	25-May-16	**Multiplier:**	1
Job Number:	W22_0078	**Operator:**	PR	**Position:**	3

Target Compounds	CAS #	R.T. (min.)	Concentration µg/l	% Fit
Dichlorodifluoromethane	75-71-8 *	-	< 1	-
Chloromethane	74-87-3	-	< 1	-
Vinyl Chloride	75-01-4	-	< 1	-
Bromomethane	74-83-9 *	-	< 5	-
Chloroethane	75-00-3	-	< 5	-
Trichlorofluoromethane	75-69-4	-	< 1	-
1,1-Dichloroethene	75-35-4	-	< 1	-
trans 1,2-Dichloroethene	156-60-5	-	< 1	-
1,1-Dichloroethane	75-34-3	-	< 1	-
2,2-Dichloropropane	594-20-7 *	-	< 1	-
cis 1,2-Dichloroethene	156-59-2	-	< 1	-
Bromochloromethane	74-97-5	-	< 1	-
Chloroform	67-66-3	3.51	12	97
1,1,1-Trichloroethane	71-55-6	-	< 1	-
Carbon Tetrachloride	56-23-5	-	< 1	-
1,1-Dichloropropene	563-58-6	-	< 1	-
Benzene	71-43-2	-	< 1	-
1,2-Dichloroethane	107-06-2	-	< 1	-
Trichloroethene	79-01-6	-	< 5	-
1,2-Dichloropropane	78-87-5	-	< 1	-
Dibromomethane	74-95-3	-	< 1	-
Bromodichloromethane	75-27-4	4.31	1	90
cis 1,3-Dichloropropene	10061-01-5 *	-	< 1	-
Toluene	108-88-3	-	< 1	-
trans 1,3-Dichloropropene	10061-02-6 *	-	< 1	-
1,1,2-Trichloroethane	79-00-5	-	< 1	-
Tetrachloroethene	127-18-4	-	< 5	-
1,3-Dichloropropane	142-28-9	-	< 1	-
Dibromochloromethane	124-48-1	-	< 1	-
1,2-Dibromoethane	106-93-4	-	< 1	-
Chlorobenzene	108-90-7	-	< 1	-
Ethylbenzene	100-41-4	-	< 1	-
1,1,1,2-Tetrachloroethane	630-20-6	-	< 1	-
m and p-Xylene	108-38-3/106-42-3	-	< 1	-
o-Xylene	95-47-6	-	< 1	-

Target Compounds	CAS #	R.T. (min.)	Concentration µg/l	% Fit
Styrene	100-42-5	-	< 1	-
Bromoform	75-25-2	-	< 1	-
iso-Propylbenzene	98-82-8	-	< 1	-
1,1,2,2-Tetrachloroethane	79-34-5 *	-	< 1	-
Propylbenzene	103-65-1	-	< 1	-
Bromobenzene	108-86-1	-	< 1	-
1,2,3-Trichloropropane	96-18-4	-	< 1	-
2-Chlorotoluene	95-49-8	-	< 1	-
1,3,5-Trimethylbenzene	108-67-8	-	< 1	-
4-Chlorotoluene	106-43-4	-	< 1	-
tert-Butylbenzene	98-06-6	-	< 1	-
1,2,4-Trimethylbenzene	95-63-6	-	< 1	-
sec-Butylbenzene	135-98-8	-	< 1	-
p-Isopropyltoluene	99-87-6	-	< 1	-
1,3-Dichlorobenzene	541-73-1	-	< 1	-
1,4-Dichlorobenzene	106-46-7	-	< 1	-
n-Butylbenzene	104-51-8	-	< 1	-
1,2-Dichlorobenzene	95-50-1	-	< 5	-
1,2-Dibromo-3-chloropropane	96-12-8 *	-	< 5	-
1,2,4-Trichlorobenzene	120-82-1	-	< 5	-
Hexachlorobutadiene	87-68-3	-	< 5	-
Naphthalene	91-20-3	-	< 5	-
1,2,3-Trichlorobenzene	87-61-6	-	< 5	-

Compounds marked * are not UKAS accredited
"M" denotes that % fit has been manually interpreted

Internal standards	R.T.	Area %	Surrogates	% Rec
Pentafluorobenzene	3.62	87	Dibromofluoromethane	107
1,4-Difluorobenzene	3.97	94	Toluene-d8	99
Chlorobenzene-d5	5.12	95	Bromofluorobenzene	95
1,4-Dichlorobenzene-d4	5.92	86		

Where individual results are flagged see report notes for status.

Volatile Organic Compounds by HSA-GCMS

UKAS accredited?: Yes

Customer and Site Details:	Ramboll Environ: Zeon Chemicals ESA	**Directory/Quant file:**	2016\052416\ Initial Calibration	**Matrix:**	Water
Sample Details:	BH8	**Date Booked in:**	18-May-16	**Method:**	Headspace
LIMS ID Number:	EX1693420	**Date Analysed:**	25-May-16	**Multiplier:**	1
Job Number:	W22_0078	**Operator:**	PR	**Position:**	4

Target Compounds	CAS #	R.T. (min.)	Concentration µg/l	% Fit
Dichlorodifluoromethane	75-71-8 *	-	< 1	-
Chloromethane	74-87-3	-	< 1	-
Vinyl Chloride	75-01-4	-	< 1	-
Bromomethane	74-83-9 *	-	< 5	-
Chloroethane	75-00-3	-	< 5	-
Trichlorofluoromethane	75-69-4	-	< 1	-
1,1-Dichloroethene	75-35-4	-	< 1	-
trans 1,2-Dichloroethene	156-60-5	-	< 1	-
1,1-Dichloroethane	75-34-3	-	< 1	-
2,2-Dichloropropane	594-20-7 *	-	< 1	-
cis 1,2-Dichloroethene	156-59-2	-	< 1	-
Bromochloromethane	74-97-5	-	< 1	-
Chloroform	67-66-3	3.51	2	86
1,1,1-Trichloroethane	71-55-6	-	< 1	-
Carbon Tetrachloride	56-23-5	-	< 1	-
1,1-Dichloropropene	563-58-6	-	< 1	-
Benzene	71-43-2	-	< 1	-
1,2-Dichloroethane	107-06-2	-	< 1	-
Trichloroethene	79-01-6	-	< 5	-
1,2-Dichloropropane	78-87-5	-	< 1	-
Dibromomethane	74-95-3	-	< 1	-
Bromodichloromethane	75-27-4	-	< 1	-
cis 1,3-Dichloropropene	10061-01-5 *	-	< 1	-
Toluene	108-88-3	-	< 1	-
trans 1,3-Dichloropropene	10061-02-6 *	-	< 1	-
1,1,2-Trichloroethane	79-00-5	-	< 1	-
Tetrachloroethene	127-18-4	-	< 5	-
1,3-Dichloropropane	142-28-9	-	< 1	-
Dibromochloromethane	124-48-1	-	< 1	-
1,2-Dibromoethane	106-93-4	-	< 1	-
Chlorobenzene	108-90-7	-	< 1	-
Ethylbenzene	100-41-4	-	< 1	-
1,1,1,2-Tetrachloroethane	630-20-6	-	< 1	-
m and p-Xylene	108-38-3/106-42-3	-	< 1	-
o-Xylene	95-47-6	-	< 1	-

Target Compounds	CAS #	R.T. (min.)	Concentration µg/l	% Fit
Styrene	100-42-5	-	< 1	-
Bromoform	75-25-2	-	< 1	-
iso-Propylbenzene	98-82-8	-	< 1	-
1,1,2,2-Tetrachloroethane	79-34-5 *	-	< 1	-
Propylbenzene	103-65-1	-	< 1	-
Bromobenzene	108-86-1	-	< 1	-
1,2,3-Trichloropropane	96-18-4	-	< 1	-
2-Chlorotoluene	95-49-8	-	< 1	-
1,3,5-Trimethylbenzene	108-67-8	-	< 1	-
4-Chlorotoluene	106-43-4	-	< 1	-
tert-Butylbenzene	98-06-6	-	< 1	-
1,2,4-Trimethylbenzene	95-63-6	-	< 1	-
sec-Butylbenzene	135-98-8	-	< 1	-
p-Isopropyltoluene	99-87-6	-	< 1	-
1,3-Dichlorobenzene	541-73-1	-	< 1	-
1,4-Dichlorobenzene	106-46-7	-	< 1	-
n-Butylbenzene	104-51-8	-	< 1	-
1,2-Dichlorobenzene	95-50-1	-	< 5	-
1,2-Dibromo-3-chloropropane	96-12-8 *	-	< 5	-
1,2,4-Trichlorobenzene	120-82-1	-	< 5	-
Hexachlorobutadiene	87-68-3	-	< 5	-
Naphthalene	91-20-3	-	< 5	-
1,2,3-Trichlorobenzene	87-61-6	-	< 5	-

Compounds marked * are not UKAS accredited
"M" denotes that % fit has been manually interpreted

Internal standards	R.T.	Area %	Surrogates	% Rec
Pentafluorobenzene	3.62	84	Dibromofluoromethane	118
1,4-Difluorobenzene	3.97	90	Toluene-d8	99
Chlorobenzene-d5	5.12	92	Bromofluorobenzene	95
1,4-Dichlorobenzene-d4	5.92	83		

Where individual results are flagged see report notes for status.

Volatile Organic Compounds by HSA-GCMS

UKAS accredited?: Yes

Customer and Site Details:	Ramboll Environ: Zeon Chemicals ESA	**Directory/Quant file:**	2016\052416\ Initial Calibration	**Matrix:**	Water
Sample Details:	BH9	**Date Booked in:**	18-May-16	**Method:**	Headspace
LIMS ID Number:	EX1693421	**Date Analysed:**	25-May-16	**Multiplier:**	1
Job Number:	W22_0078	**Operator:**	PR	**Position:**	5

Target Compounds	CAS #	R.T. (min.)	Concentration µg/l	% Fit
Dichlorodifluoromethane	75-71-8 *	-	< 1	-
Chloromethane	74-87-3	-	< 1	-
Vinyl Chloride	75-01-4	-	< 1	-
Bromomethane	74-83-9 *	-	< 5	-
Chloroethane	75-00-3	-	< 5	-
Trichlorofluoromethane	75-69-4	-	< 1	-
1,1-Dichloroethene	75-35-4	-	< 1	-
trans 1,2-Dichloroethene	156-60-5	-	< 1	-
1,1-Dichloroethane	75-34-3	-	< 1	-
2,2-Dichloropropane	594-20-7 *	-	< 1	-
cis 1,2-Dichloroethene	156-59-2	-	< 1	-
Bromochloromethane	74-97-5	-	< 1	-
Chloroform	67-66-3	-	< 1	-
1,1,1-Trichloroethane	71-55-6	-	< 1	-
Carbon Tetrachloride	56-23-5	-	< 1	-
1,1-Dichloropropene	563-58-6	-	< 1	-
Benzene	71-43-2	-	< 1	-
1,2-Dichloroethane	107-06-2	-	< 1	-
Trichloroethene	79-01-6	-	< 5	-
1,2-Dichloropropane	78-87-5	-	< 1	-
Dibromomethane	74-95-3	-	< 1	-
Bromodichloromethane	75-27-4	-	< 1	-
cis 1,3-Dichloropropene	10061-01-5 *	-	< 1	-
Toluene	108-88-3	-	< 1	-
trans 1,3-Dichloropropene	10061-02-6 *	-	< 1	-
1,1,2-Trichloroethane	79-00-5	-	< 1	-
Tetrachloroethene	127-18-4	-	< 5	-
1,3-Dichloropropane	142-28-9	-	< 1	-
Dibromochloromethane	124-48-1	-	< 1	-
1,2-Dibromoethane	106-93-4	-	< 1	-
Chlorobenzene	108-90-7	-	< 1	-
Ethylbenzene	100-41-4	-	< 1	-
1,1,1,2-Tetrachloroethane	630-20-6	-	< 1	-
m and p-Xylene	108-38-3/106-42-3	-	< 1	-
o-Xylene	95-47-6	-	< 1	-

Target Compounds	CAS #	R.T. (min.)	Concentration µg/l	% Fit
Styrene	100-42-5	-	< 1	-
Bromoform	75-25-2	-	< 1	-
iso-Propylbenzene	98-82-8	-	< 1	-
1,1,2,2-Tetrachloroethane	79-34-5 *	-	< 1	-
Propylbenzene	103-65-1	-	< 1	-
Bromobenzene	108-86-1	-	< 1	-
1,2,3-Trichloropropane	96-18-4	-	< 1	-
2-Chlorotoluene	95-49-8	-	< 1	-
1,3,5-Trimethylbenzene	108-67-8	-	< 1	-
4-Chlorotoluene	106-43-4	-	< 1	-
tert-Butylbenzene	98-06-6	-	< 1	-
1,2,4-Trimethylbenzene	95-63-6	-	< 1	-
sec-Butylbenzene	135-98-8	-	< 1	-
p-Isopropyltoluene	99-87-6	-	< 1	-
1,3-Dichlorobenzene	541-73-1	-	< 1	-
1,4-Dichlorobenzene	106-46-7	-	< 1	-
n-Butylbenzene	104-51-8	-	< 1	-
1,2-Dichlorobenzene	95-50-1	-	< 5	-
1,2-Dibromo-3-chloropropane	96-12-8 *	-	< 5	-
1,2,4-Trichlorobenzene	120-82-1	-	< 5	-
Hexachlorobutadiene	87-68-3	-	< 5	-
Naphthalene	91-20-3	-	< 5	-
1,2,3-Trichlorobenzene	87-61-6	-	< 5	-

Compounds marked * are not UKAS accredited
"M" denotes that % fit has been manually interpreted

Internal standards	R.T.	Area %	Surrogates	% Rec
Pentafluorobenzene	3.62	93	Dibromofluoromethane	118
1,4-Difluorobenzene	3.97	100	Toluene-d8	100
Chlorobenzene-d5	5.12	101	Bromofluorobenzene	92
1,4-Dichlorobenzene-d4	5.92	87		

Where individual results are flagged see report notes for status.

TICs by HSA-GCMS

UKAS accredited?: No

Customer and Site Details:	Ramboll Environ: Zeon Chemicals ESA		**Date Booked in:**	18-May-16
Sample Details:	BH7		**Date Analysed:**	25-May-16
LIMS ID Number:	EX1693419		**Matrix:**	Water
Job Number:	W22_0078		**Ext Method:**	Headspace
Directory/Quant file:	2016\052416\	Initial Calibration	**Dilution:**	1
Operator:	PR		**Position:**	3

Tentatively Identified Compounds	CAS No	R.T. (min.)	Concentration µg/l	% Fit
None Detected			<5	

The compounds listed above have been tentatively identified by a computer based library search.
Compounds identified in the sample are not reported if they also occur in the method blank.
The % fit is an indication of the reliability of the compound assignment.
Due to the similarity between mass spectra of some isomeric compounds, assignments may not be correct.
Other compounds may also be present but identification was not possible.
Concentrations are semi-quantitative, assume a response factor of 1 and use the nearest internal standard.
Compounds marked * are not UKAS accredited
"M" denotes that % fit has been manually interpreted

Where individual results are flagged see report notes for status.

TICs by HSA-GCMS

UKAS accredited?: No

Customer and Site Details:	Ramboll Environ: Zeon Chemicals ESA		**Date Booked in:**	18-May-16
Sample Details:	BH8		**Date Analysed:**	25-May-16
LIMS ID Number:	EX1693420		**Matrix:**	Water
Job Number:	W22_0078		**Ext Method:**	Headspace
Directory/Quant file:	2016\052416\	Initial Calibration	**Dilution:**	1
Operator:	PR		**Position:**	4

Tentatively Identified Compounds	CAS No	R.T. (min.)	Concentration µg/l	% Fit
None Detected			<5	

The compounds listed above have been tentatively identified by a computer based library search.
Compounds identified in the sample are not reported if they also occur in the method blank.
The % fit is an indication of the reliability of the compound assignment.
Due to the similarity between mass spectra of some isomeric compounds, assignments may not be correct.
Other compounds may also be present but identification was not possible.
Concentrations are semi-quantitative, assume a response factor of 1 and use the nearest internal standard.
Compounds marked * are not UKAS accredited
"M" denotes that % fit has been manually interpreted

Where individual results are flagged see report notes for status.

TICs by HSA-GCMS

UKAS accredited?: No

Customer and Site Details:	Ramboll Environ: Zeon Chemicals ESA		**Date Booked in:**	18-May-16
Sample Details:	BH9		**Date Analysed:**	25-May-16
LIMS ID Number:	EX1693421		**Matrix:**	Water
Job Number:	W22_0078		**Ext Method:**	Headspace
Directory/Quant file:	2016\052416\	Initial Calibration	**Dilution:**	1
Operator:	PR		**Position:**	5

Tentatively Identified Compounds	CAS No	R.T. (min.)	Concentration µg/l	% Fit
Cyclohexene, 4-ethenyl-	000100-40-3	4.95	26	96

The compounds listed above have been tentatively identified by a computer based library search.
Compounds identified in the sample are not reported if they also occur in the method blank.
The % fit is an indication of the reliability of the compound assignment.
Due to the similarity between mass spectra of some isomeric compounds, assignments may not be correct.
Other compounds may also be present but identification was not possible.
Concentrations are semi-quantitative, assume a response factor of 1 and use the nearest internal standard.
Compounds marked * are not UKAS accredited
"M" denotes that % fit has been manually interpreted

Where individual results are flagged see report notes for status.

Customer Ramboll Environ
Site Zeon Chemicals ESA
Report No W220078

Consignment No W104156
Date Logged 18-May-2016

Report Due 25-May-2016

ID Number	Description	Matrix Type	Sampled	CUSTSERV Report A	VOCHSAW VOC + TICS HSA-GCMS
					✓
EX/1693419	BH7	Groundwater	16/05/16		
EX/1693420	BH8	Groundwater	16/05/16		
EX/1693421	BH9	Groundwater	16/05/16		

Note: For analysis where the scheduled turnaround is greater than the holding time we will do our utmost to prioritise these samples. However, it is possible that samples could become deviant whilst being processed in the laboratory.

In this instance please contact the laboratory immediately should you wish to discuss how you would like us to proceed. If you do not respond within 24 hours, we will proceed as originally requested.

Deviating Sample Key	
A	The sample was received in an inappropriate container for this analysis
B	The sample was received without the correct preservation for this analysis
C	Headspace present in the sample container
D	The sampling date was not supplied so holding time may be compromised - applicable to all analysis
E	Sample processing did not commence within the appropriate holding time
F	Sample processing did not commence within the appropriate handling time

Requested Analysis Key	
	Analysis Required
	Analysis dependant upon trigger result - **Note: due date may be affected if triggered**
	No analysis scheduled
^	Analysis Subcontracted - **Note: due date may vary**

The integrity of data for samples/analysis that have been categorised as Deviating may be compromised. Data may not be representative of the sample at the time of sampling.
Where individual results are flagged see report notes for status.

Method Descriptions

Matrix	MethodID	Analysis Basis	Method Description
Water	VOCHSAW	As Received	Determination of Volatile Organics Compounds by Headspace GCMS

Report Notes

Generic Notes

Soil/Solid Analysis

Unless stated otherwise,
- Results expressed as mg/kg have been calculated on the basis indicated in the Method Description table.
  All results on MCERTS reports are reported on a 105ºC dry weight basis with the exception of pH and conductivity.
- Sulphate analysis not conducted in accordance with BS1377
- Water Soluble Sulphate is on a 2:1 water:soil extract

Waters Analysis

Unless stated otherwise results are expressed as mg/l
Nil: Where "Nil" has been entered against Total Alkalinity or Total Acidity this indicates that a measurement was not required due to the inherent pH of the sample.

Oil analysis specific

Unless stated otherwise,
- Results are expressed as mg/kg
- SG is expressed as g/cm^3@ 15^{o}C

Gas (Tedlar bag) Analysis

Unless stated otherwise, results are expressed as ug/l

Asbestos Analysis

CH Denotes Chrysotile **TR** Denotes Tremolite
CR Denotes Crocidolite **AC** Denotes Actinolite
AM Denotes Amosite **AN** Denotes Anthophylite
NAIIS No Asbestos Identified in Sample
NADIS No Asbestos Detected In Sample

Symbol Reference

^ Sub-contracted analysis.
$$ Unable to analyse due to the nature of the sample
¶ Samples submitted for this analyte were not preserved on site in accordance with laboratory protocols. This may have resulted in deterioration of the sample(s) during transit to the laboratory. Consequently the reported data may not represent the concentration of the target analyte present in the sample at the time of sampling
¥ Results for guidance only due to possible interference
& Blank corrected result
I.S Insufficient sample to complete requested analysis
I.S(g) Insufficient sample to re-analyse, results for guidance only
Intf Unable to analyse due to interferences
N.D Not determined **N.Det** Not detected
N.F No Flow
NS Information Not Supplied
Req Analysis requested, see attached sheets for results
Þ Raised detection limit due to nature of the sample
***** All accreditation has been removed by the laboratory for this result
‡ MCERTS accreditation has been removed for this result
§ accreditation has been removed for this result as it is a non-accredited matrix

Note: The Laboratory may only claim that data is accredited when all of the requirements of our Quality System have been met. Where these requirements have not been met the laboratory may elect to include the data in its final report and remove the accreditation from individual data items if it believes that the validity of the data has not been affected. If further details are required of the circumstances which have led to the removal of accreditation then please do not hesitate to contact the laboratory.

Sample Descriptions

Client : Ramboll Environ
Site : Zeon Chemicals ESA
Report Number : W22_0078

Lab ID Number	Client ID	Description
EX/1693419	BH7	Groundwater
EX/1693420	BH8	Groundwater
EX/1693421	BH9	Groundwater

Our Ref: EXR/220220 (Ver. 3)
Your Ref: UK15-21370

June 17, 2016

Environmental Chemistry
ESG
Bretby Business Park
Ashby Road
Burton-on-Trent
Staffordshire
DE15 0YZ

Telephone: 01283 554400
Facsimile: 01283 554422

Lucy Cleverley
Ramboll Environ
8 Village Way
Cardiff
CF15 2NE

For the attention of Lucy Cleverley

Dear Lucy Cleverley

Sample Analysis - Zeon Chemicals ESA

Samples from the above site have been analysed in accordance with the schedule supplied.
The sample details and the results of analyses for these samples are given in the appended report.

An invoice for this work will follow under a separate cover.

Please be aware that our policy for the retention of paper based laboratory records and analysis reports is 6 years.

The work was carried out in accordance with Environmental Scientifics Group Ltd (Multi-Sector Services) Standard Terms and Conditions of Contract.

If I can be of any further assistance please do not hesitate to contact me.

Yours sincerely

for ESG

JNColbourne

J Colbourne
Project Co-ordinator
01283 554547

TEST REPORT

UKAS TESTING
1252

Report No. EXR/220220 (Ver. 3)

Ramboll Environ
8 Village Way
Cardiff
CF15 2NE

Site: Zeon Chemicals ESA

The 8 samples described in this report were registered for analysis by ESG on 19-May-2016. This report supersedes any versions previously issued by the laboratory.

The analysis was completed by: 17-Jun-2016

Tests where the accreditation is set to N or No, and any individual data items marked with a * are not UKAS accredited. Opinions and interpretations expressed herein are outside the scope of UKAS accreditation.

The following tables are contained in this report:

On behalf of ESG :
Declan Burns
Managing Director
Multi-Sector Services

Date of Issue: 17-Jun-2016

Tests marked '^' have been subcontracted to another laboratory.

Where samples have been flagged as deviant on the Analytical and Deviating Sample Overview, for any reason, the data may not be representative of the sample at the point of sampling and the validity of the data may be affected. ESG accepts no responsibility for any sampling not carried out by our personnel.

		Units :	pH units	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	µg/l	mg/l	mg/l
		Method Codes :	WSLM3	WSLM12	Calc_HD	KONENS	ICPWATVAR	ICPWATVAR	ICPWATVAR	ICPWATVAR	ICPWATVAR	ICPWATVAR	ICPMSW	ICPMSW	ICPMSW	PAHMSW	ICPMSW	ICPMSW
		Method Reporting Limits :			7	1	3	1	1	0.01	1	1	0.001	0.001	0.0001		0.001	0.001
		UKAS Accredited :	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
LAB ID Number EX/	**Client Sample Description**	**Sample Date**	**pH units w**	**Total Alkalinity as CaCO3 w**	**Total Hardness as CaCO3**	**Chloride as Cl w**	**Total Sulphur as SO4 (Dissolved) a**	**Calcium as Ca (Dissolved) a**	**Magnesium as Mg (Dissolved) a**	**Barium as Ba (Dissolved) a**	**Sodium as Na (Dissolved) a**	**Potassium as K (Dissolved) a**	**Nickel as Ni (Dissolved)**	**Chromium as Cr (Dissolved)**	**Cadmium as Cd (Dissolved)**	**PAH GC-MS (16) o**	**Copper as Cu (Dissolved)**	**Lead as Pb (Dissolved)**
1694486	ZC203	18-May-16 08:15	7.0	230	1100	5870	7.0	258	110	1.59	3363	31.5	0.002	<0.001	<0.0001	Req	<0.001	<0.001
1694487	ZC204	18-May-16 09:30	7.0	189	933	1300	<3.0	279	57.4	0.19	315	10.4	0.005	<0.001	<0.0001	Req	<0.001	<0.001
1694488	ZC205	18-May-16 10:00	7.3	475	359	43	9.3	124	12.0	0.06	70.5	5.9	0.016	<0.001	<0.0001	Req	<0.001	<0.001
1694489	ZC206	18-May-16 11:00	7.1	301	432	278	24.0	141	19.4	0.06	134	4	0.052	<0.001	<0.0001	Req	<0.001	<0.001
1694490	ZC207	18-May-16 11:45	7.2	327	254	108	<3.0	68.4	20.3	0.06	80.7	6	0.016	<0.001	<0.0001	Req	<0.001	<0.001
1694491	ZC208	18-May-16 12:30	7.3	272	248	110	<3.0	49.6	30.1	0.26	67.9	6.9	0.018	<0.001	<0.0001	Req	<0.001	<0.001
1694492	ZC209	18-May-16 14:00	7.6	1180	689	3000	184	59.8	131				0.001	0.001	<0.0001	Req	<0.001	<0.001
1694493	ZC209A	18-May-16 14:15																

ESG

Bretby Business Park, Ashby Road

Burton-on-Trent, Staffordshire, DE15 0YZ

Tel +44 (0) 1283 554400

Fax +44 (0) 1283 554422

Client Name	**Ramboll Environ**
Contact	Lucy Cleverley

Zeon Chemicals ESA

Sample Analysis

Date Printed	**16-Jun-2016**
Report Number	**EXR/220220**
Table Number	**1**

Where individual results are flagged see report notes for status.

Units :			mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	µg/l	mg/l	mg/l	mg/l
Method Codes :			ICPMSW	ICPWATVART	ICPMSW	ICPWATVAR	ICPMSW	ICPMSW	ICPMSW	KONENS	SFAPI	WSLM11	WSLM20	TPHFID-Si	VOCHSAW	ICPWATVAR	GROHSA	ALCHSAFID
Method Reporting Limits :			0.002	0.01	0.001	0.01	0.0001	0.001	0.001	0.01	0.02	5	2	0.01	1	0.01	0.1	20
UKAS Accredited :			Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No	No	No
LAB ID Number EX/	**Client Sample Description**	**Sample Date**	**Zinc as Zn (Dissolved)**	**Iron as Fe (Total) a**	**Arsenic as As (Dissolved)**	**Boron as B (Dissolved) a**	**Mercury as Hg (Dissolved)**	**Selenium as Se (Dissolved)**	**Vanadium as V (Dissolved)**	**Nitrite as N**	**Cyanide (Total) as CN**	**Chemical Oxygen Demand (Settled)**	**Biochemical Oxygen Demand w**	**TPH by GC(Si) o**	**VOC + TICS HSA-GCMS o**	**Beryllium as Be (Dissolved) a**	**GRO-HSA (AA)**	**Alcohols by HSA-FID o**
1694486	ZC203	18-May-16 08:15	<0.002	0.78	0.001	0.09	<0.0001	0.002	<0.001	<0.01	<0.02	34	4.2	Req	Req	<0.01	Req	Req
1694487	ZC204	18-May-16 09:30	<0.002	5.69	0.005	0.12	<0.0001	0.018	<0.001	<0.01	<0.02	22	<2.9	Req	Req	<0.01	Req	
1694488	ZC205	18-May-16 10:00	<0.002	10.2	0.009	0.05	<0.0001	<0.001	<0.001	0.05	<0.02	47	3.7	Req	Req	<0.01	Req	
1694489	ZC206	18-May-16 11:00	<0.002	2.52	0.021	0.14	<0.0001	<0.001	<0.001	<0.01	<0.02	39	3.7	Req	Req	<0.01	Req	
1694490	ZC207	18-May-16 11:45	<0.002	4.71	0.03	0.23	<0.0001	<0.001	<0.001	<0.01	<0.02	16	2.0	Req	Req	<0.01	Req	
1694491	ZC208	18-May-16 12:30	<0.002	0.14	0.011	0.37	<0.0001	<0.001	<0.001	<0.01	<0.02	11	<2.0	Req	Req	<0.01	Req	
1694492	ZC209	18-May-16 14:00	0.002		0.017	2.15	<0.0001	0.013	0.006	<0.01	<0.02	67	<2.0	Req	Req	<0.01	Req	
1694493	ZC209A	18-May-16 14:15													Req			

ESG

Bretby Business Park, Ashby Road

Burton-on-Trent, Staffordshire, DE15 0YZ

Tel +44 (0) 1283 554400

Fax +44 (0) 1283 554422

Client Name Ramboll Environ

Contact Lucy Cleverley

Zeon Chemicals ESA

Sample Analysis

Date Printed	**16-Jun-2016**
Report Number	**EXR/220220**
Table Number	**1**

Where individual results are flagged see report notes for status.

		Units :	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l									
		Method Codes :	Sub005	Sub005	SVOCSW	PHEHPLC	PHEHPLC	PHEHPLC	PHEHPLC	PHEHPLC									
		Method Reporting Limits :			0.002	0.1	0.1	0.1	0.1										
		UKAS Accredited :			No	Yes	Yes	Yes	Yes	No									
LAB ID Number EX/	**Client Sample Description**	**Sample Date**	**^Anionic Detergents**	**^Cationic Detergents**	**SVOC + TICS**	**Dimethylphenols**	**Phenol**	**Cresols**	**Trimethylphenols**	**Catechol**									
1694486	ZC203	**18-May-16 08:15**	4.3	<1.0		<0.1	<0.1	<0.1	<0.1										
1694487	ZC204	**18-May-16 09:30**				<0.1	<0.1	<0.1	<0.1	<0.1									
1694488	ZC205	**18-May-16 10:00**			Req	<0.1	<0.1	<0.1	<0.1										
1694489	ZC206	**18-May-16 11:00**				<0.1	<0.1	<0.1	<0.1										
1694490	ZC207	**18-May-16 11:45**				<0.1	<0.1	<0.1	<0.1	<0.1									
1694491	ZC208	**18-May-16 12:30**				<0.1	<0.1	<0.1	<0.1	<0.1									
1694492	ZC209	**18-May-16 14:00**				<0.1	<0.1	<0.1	<0.1										
1694493	ZC209A	**18-May-16 14:15**																	

ESG

Bretby Business Park, Ashby Road

Burton-on-Trent, Staffordshire, DE15 0YZ

Tel +44 (0) 1283 554400

Fax +44 (0) 1283 554422

Client Name **Ramboll Environ**

Contact Lucy Cleverley

Zeon Chemicals ESA

Sample Analysis

Date Printed	**16-Jun-2016**
Report Number	**EXR/220220**
Table Number	**1**

Alcohols by Headspace GC-FID

Customer and Site Details: Ramboll Environ: Zeon Chemicals ESA
Job Number: W22_0220
UKAS Accredited?: No

Matrix: Water

Date Booked in: 19-May-16
Date extracted: 24-May-16
Date Analysed: 25-May-16

		Concentration, (mg/l unless stated otherwise)							
Sample ID	**Client ID**	**Methanol**	**Ethanol**	**iso-Propanol**	**tert-Butanol**	**1-Propanol**	**sec-Butanol**	**iso-Butanol**	**n-Butanol**
EX1694486	ZC203	<20	<20	<20	<20	<20	<20	<20	<20

Where individual results are flagged see report notes for status.

Polycyclic Aromatic Hydrocarbons
GC/MS (SIM)

Customer and Site Details:	Ramboll Environ: Zeon Chemicals ESA		
Sample Details:	ZC203	**Job Number:**	W22_0220
LIMS ID Number:	EX1694486	**Date Booked in:**	19-May-16
QC Batch Number:	160325	**Date Extracted:**	24-May-16
Quantitation File:	Initial Calibration	**Date Analysed:**	25-May-16
Directory:	416MS17.PAH\	**Matrix:**	Water
Dilution:	1.0	**Ext Method:**	Bottle

UKAS accredited?: Yes

Target Compounds	CAS #	R.T. (min)	Concentration ug/l	% Fit
Naphthalene	91-20-3	3.08	0.083	51
Acenaphthylene	208-96-8	4.11	0.065	M
Acenaphthene	83-32-9	4.23	0.180	86
Fluorene	86-73-7	4.58	0.351	92
Phenanthrene	85-01-8	5.38	0.035	77
Anthracene	120-12-7	5.42	0.024	M
Fluoranthene	206-44-0	6.66	0.033	90
Pyrene	129-00-0	6.93	0.040	99
Benzo[a]anthracene	56-55-3	-	< 0.010	-
Chrysene	218-01-9	-	< 0.010	-
Benzo[b]fluoranthene	205-99-2	-	< 0.010	-
Benzo[k]fluoranthene	207-08-9	-	< 0.010	-
Benzo[a]pyrene	50-32-8	-	< 0.010	-
Indeno[1,2,3-cd]pyrene	193-39-5*	-	< 0.010	-
Dibenzo[a,h]anthracene	53-70-3	-	< 0.010	-
Benzo[g,h,i]perylene	191-24-2	-	< 0.010	-
Total (USEPA16) PAHs	-	-	< 0.891	-

"M" denotes that % fit has been manually interpreted

Internal Standards	% Area
1,4-Dichlorobenzene-d4	NA
Naphthalene-d8	111
Acenaphthene-d10	111
Phenanthrene-d10	114
Chrysene-d12	104
Perylene-d12	100

Surrogates	% Rec
Nitrobenzene-d5	NA
2-Fluorobiphenyl	57
Terphenyl-d14	60

The Total PAH result is the sum of non-rounded individual PAH results and therefore may differ to the sum of the rounded individual PAH results printed above. By convention, where any one or more result is a "less than", the total is expressed as a "less than" and includes the "less than" concentration within the total.

Polycyclic Aromatic Hydrocarbons
GC/MS (SIM)

Customer and Site Details:	Ramboll Environ: Zeon Chemicals ESA		
Sample Details:	ZC204	**Job Number:**	W22_0220
LIMS ID Number:	EX1694487	**Date Booked in:**	19-May-16
QC Batch Number:	160325	**Date Extracted:**	24-May-16
Quantitation File:	Initial Calibration	**Date Analysed:**	25-May-16
Directory:	416MS17.PAH\	**Matrix:**	Water
Dilution:	1.0	**Ext Method:**	Bottle

UKAS accredited?: Yes

Target Compounds	CAS #	R.T. (min)	Concentration ug/l	% Fit
Naphthalene	91-20-3	3.07	0.032	68
Acenaphthylene	208-96-8	4.11	0.048	62
Acenaphthene	83-32-9	4.23	0.416	95
Fluorene	86-73-7	4.58	0.061	89
Phenanthrene	85-01-8	-	< 0.010	-
Anthracene	120-12-7	5.42	0.027	73
Fluoranthene	206-44-0	6.66	0.032	97
Pyrene	129-00-0	6.93	0.023	99
Benzo[a]anthracene	56-55-3	-	< 0.010	-
Chrysene	218-01-9	-	< 0.010	-
Benzo[b]fluoranthene	205-99-2	-	< 0.010	-
Benzo[k]fluoranthene	207-08-9	-	< 0.010	-
Benzo[a]pyrene	50-32-8	-	< 0.010	-
Indeno[1,2,3-cd]pyrene	193-39-5*	-	< 0.010	-
Dibenzo[a,h]anthracene	53-70-3	-	< 0.010	-
Benzo[g,h,i]perylene	191-24-2	-	< 0.010	-
Total (USEPA16) PAHs	-	-	< 0.729	-

"M" denotes that % fit has been manually interpreted

Internal Standards	% Area
1,4-Dichlorobenzene-d4	NA
Naphthalene-d8	100
Acenaphthene-d10	100
Phenanthrene-d10	101
Chrysene-d12	83
Perylene-d12	74

Surrogates	% Rec
Nitrobenzene-d5	NA
2-Fluorobiphenyl	50
Terphenyl-d14	59

The Total PAH result is the sum of non-rounded individual PAH results and therefore may differ to the sum of the rounded individual PAH results printed above. By convention, where any one or more result is a "less than", the total is expressed as a "less than" and includes the "less than" concentration within the total.

Polycyclic Aromatic Hydrocarbons
GC/MS (SIM)

Customer and Site Details:	Ramboll Environ: Zeon Chemicals ESA		
Sample Details:	ZC205	**Job Number:**	W22_0220
LIMS ID Number:	EX1694488	**Date Booked in:**	19-May-16
QC Batch Number:	160325	**Date Extracted:**	24-May-16
Quantitation File:	Initial Calibration	**Date Analysed:**	25-May-16
Directory:	416MS17.PAH\	**Matrix:**	Water
Dilution:	1.0	**Ext Method:**	Bottle

UKAS accredited?: Yes

Target Compounds	CAS #	R.T. (min)	Concentration ug/l	% Fit
Naphthalene	91-20-3	3.07	0.024	91
Acenaphthylene	208-96-8	-	< 0.010	-
Acenaphthene	83-32-9	-	< 0.010	-
Fluorene	86-73-7	-	< 0.010	-
Phenanthrene	85-01-8	-	< 0.010	-
Anthracene	120-12-7	-	< 0.010	-
Fluoranthene	206-44-0	-	< 0.010	-
Pyrene	129-00-0	-	< 0.010	-
Benzo[a]anthracene	56-55-3	-	< 0.010	-
Chrysene	218-01-9	-	< 0.010	-
Benzo[b]fluoranthene	205-99-2	-	< 0.010	-
Benzo[k]fluoranthene	207-08-9	-	< 0.010	-
Benzo[a]pyrene	50-32-8	-	< 0.010	-
Indeno[1,2,3-cd]pyrene	193-39-5*	-	< 0.010	-
Dibenzo[a,h]anthracene	53-70-3	-	< 0.010	-
Benzo[g,h,i]perylene	191-24-2	-	< 0.010	-
Total (USEPA16) PAHs	-	-	< 0.174	-

"M" denotes that % fit has been manually interpreted

Internal Standards	% Area
1,4-Dichlorobenzene-d4	NA
Naphthalene-d8	101
Acenaphthene-d10	99
Phenanthrene-d10	102
Chrysene-d12	83
Perylene-d12	72

Surrogates	% Rec
Nitrobenzene-d5	NA
2-Fluorobiphenyl	42
Terphenyl-d14	53

The Total PAH result is the sum of non-rounded individual PAH results and therefore may differ to the sum of the rounded individual PAH results printed above. By convention, where any one or more result is a "less than", the total is expressed as a "less than" and includes the "less than" concentration within the total.

Polycyclic Aromatic Hydrocarbons
GC/MS (SIM)

Customer and Site Details:	Ramboll Environ: Zeon Chemicals ESA		
Sample Details:	ZC206	**Job Number:**	W22_0220
LIMS ID Number:	EX1694489	**Date Booked in:**	19-May-16
QC Batch Number:	160325	**Date Extracted:**	24-May-16
Quantitation File:	Initial Calibration	**Date Analysed:**	25-May-16
Directory:	416MS17.PAH\	**Matrix:**	Water
Dilution:	1.0	**Ext Method:**	Bottle

UKAS accredited?: Yes

Target Compounds	CAS #	R.T. (min)	Concentration ug/l	% Fit
Naphthalene	91-20-3	-	< 0.020	-
Acenaphthylene	208-96-8	-	< 0.010	-
Acenaphthene	83-32-9	-	< 0.010	-
Fluorene	86-73-7	-	< 0.010	-
Phenanthrene	85-01-8	5.38	0.010	94
Anthracene	120-12-7	-	< 0.010	-
Fluoranthene	206-44-0	-	< 0.010	-
Pyrene	129-00-0	-	< 0.010	-
Benzo[a]anthracene	56-55-3	-	< 0.010	-
Chrysene	218-01-9	-	< 0.010	-
Benzo[b]fluoranthene	205-99-2	-	< 0.010	-
Benzo[k]fluoranthene	207-08-9	-	< 0.010	-
Benzo[a]pyrene	50-32-8	-	< 0.010	-
Indeno[1,2,3-cd]pyrene	193-39-5*	-	< 0.010	-
Dibenzo[a,h]anthracene	53-70-3	-	< 0.010	-
Benzo[g,h,i]perylene	191-24-2	-	< 0.010	-
Total (USEPA16) PAHs	-	-	< 0.170	-

"M" denotes that % fit has been manually interpreted

Internal Standards	% Area
1,4-Dichlorobenzene-d4	NA
Naphthalene-d8	100
Acenaphthene-d10	100
Phenanthrene-d10	102
Chrysene-d12	85
Perylene-d12	78

Surrogates	% Rec
Nitrobenzene-d5	NA
2-Fluorobiphenyl	65
Terphenyl-d14	63

The Total PAH result is the sum of non-rounded individual PAH results and therefore may differ to the sum of the rounded individual PAH results printed above. By convention, where any one or more result is a "less than", the total is expressed as a "less than" and includes the "less than" concentration within the total.

Polycyclic Aromatic Hydrocarbons
GC/MS (SIM)

Customer and Site Details:	Ramboll Environ: Zeon Chemicals ESA		
Sample Details:	ZC207	**Job Number:**	W22_0220
LIMS ID Number:	EX1694490	**Date Booked in:**	19-May-16
QC Batch Number:	160325	**Date Extracted:**	24-May-16
Quantitation File:	Initial Calibration	**Date Analysed:**	25-May-16
Directory:	416MS17.PAH\	**Matrix:**	Water
Dilution:	1.0	**Ext Method:**	Bottle

UKAS accredited?: Yes

Target Compounds	CAS #	R.T. (min)	Concentration ug/l	% Fit
Naphthalene	91-20-3	3.07	4.170	99
Acenaphthylene	208-96-8	-	< 0.010	-
Acenaphthene	83-32-9	4.23	0.034	79
Fluorene	86-73-7	4.58	0.020	98
Phenanthrene	85-01-8	5.38	0.029	96
Anthracene	120-12-7	5.42	0.019	97
Fluoranthene	206-44-0	6.64	0.062	M
Pyrene	129-00-0	6.92	0.047	M
Benzo[a]anthracene	56-55-3	-	< 0.010	-
Chrysene	218-01-9	-	< 0.010	-
Benzo[b]fluoranthene	205-99-2	-	< 0.010	-
Benzo[k]fluoranthene	207-08-9	-	< 0.010	-
Benzo[a]pyrene	50-32-8	-	< 0.010	-
Indeno[1,2,3-cd]pyrene	193-39-5*	-	< 0.010	-
Dibenzo[a,h]anthracene	53-70-3	-	< 0.010	-
Benzo[g,h,i]perylene	191-24-2	-	< 0.010	-
Total (USEPA16) PAHs	-	-	< 4.471	-

"M" denotes that % fit has been manually interpreted

Internal Standards	% Area
1,4-Dichlorobenzene-d4	NA
Naphthalene-d8	93
Acenaphthene-d10	94
Phenanthrene-d10	95
Chrysene-d12	87
Perylene-d12	79

Surrogates	% Rec
Nitrobenzene-d5	NA
2-Fluorobiphenyl	140
Terphenyl-d14	129

The Total PAH result is the sum of non-rounded individual PAH results and therefore may differ to the sum of the rounded individual PAH results printed above. By convention, where any one or more result is a "less than", the total is expressed as a "less than" and includes the "less than" concentration within the total.

Polycyclic Aromatic Hydrocarbons
GC/MS (SIM)

Customer and Site Details:	Ramboll Environ: Zeon Chemicals ESA		
Sample Details:	ZC208	**Job Number:**	W22_0220
LIMS ID Number:	EX1694491	**Date Booked in:**	19-May-16
QC Batch Number:	160325	**Date Extracted:**	24-May-16
Quantitation File:	Initial Calibration	**Date Analysed:**	25-May-16
Directory:	416MS17.PAH\	**Matrix:**	Water
Dilution:	1.0	**Ext Method:**	Bottle

UKAS accredited?: Yes

Target Compounds	CAS #	R.T. (min)	Concentration ug/l	% Fit
Naphthalene	91-20-3	3.07	0.064	89
Acenaphthylene	208-96-8	-	< 0.010	-
Acenaphthene	83-32-9	4.23	0.013	91
Fluorene	86-73-7	-	< 0.010	-
Phenanthrene	85-01-8	-	< 0.010	-
Anthracene	120-12-7	-	< 0.010	-
Fluoranthene	206-44-0	-	< 0.010	-
Pyrene	129-00-0	-	< 0.010	-
Benzo[a]anthracene	56-55-3	-	< 0.010	-
Chrysene	218-01-9	-	< 0.010	-
Benzo[b]fluoranthene	205-99-2	-	< 0.010	-
Benzo[k]fluoranthene	207-08-9	-	< 0.010	-
Benzo[a]pyrene	50-32-8	-	< 0.010	-
Indeno[1,2,3-cd]pyrene	193-39-5*	-	< 0.010	-
Dibenzo[a,h]anthracene	53-70-3	-	< 0.010	-
Benzo[g,h,i]perylene	191-24-2	-	< 0.010	-
Total (USEPA16) PAHs	-	-	< 0.217	-

"M" denotes that % fit has been manually interpreted

Internal Standards	% Area
1,4-Dichlorobenzene-d4	NA
Naphthalene-d8	90
Acenaphthene-d10	87
Phenanthrene-d10	88
Chrysene-d12	78
Perylene-d12	71

Surrogates	% Rec
Nitrobenzene-d5	NA
2-Fluorobiphenyl	80
Terphenyl-d14	70

The Total PAH result is the sum of non-rounded individual PAH results and therefore may differ to the sum of the rounded individual PAH results printed above. By convention, where any one or more result is a "less than", the total is expressed as a "less than" and includes the "less than" concentration within the total.

Polycyclic Aromatic Hydrocarbons
GC/MS (SIM)

Customer and Site Details:	Ramboll Environ: Zeon Chemicals ESA		
Sample Details:	ZC209	**Job Number:**	W22_0220
LIMS ID Number:	EX1694492	**Date Booked in:**	19-May-16
QC Batch Number:	160325	**Date Extracted:**	24-May-16
Quantitation File:	Initial Calibration	**Date Analysed:**	25-May-16
Directory:	416MS17.PAH\	**Matrix:**	Water
Dilution:	1.0	**Ext Method:**	Bottle

UKAS accredited?: Yes

Target Compounds	CAS #	R.T. (min)	Concentration ug/l	% Fit
Naphthalene	91-20-3	-	< 0.020	-
Acenaphthylene	208-96-8	-	< 0.010	-
Acenaphthene	83-32-9	-	< 0.010	-
Fluorene	86-73-7	-	< 0.010	-
Phenanthrene	85-01-8	-	< 0.010	-
Anthracene	120-12-7	-	< 0.010	-
Fluoranthene	206-44-0	6.66	0.015	98
Pyrene	129-00-0	6.93	0.012	97
Benzo[a]anthracene	56-55-3	8.59	0.018	84
Chrysene	218-01-9	8.63	0.012	95
Benzo[b]fluoranthene	205-99-2	10.09	0.018	87
Benzo[k]fluoranthene	207-08-9	-	< 0.010	-
Benzo[a]pyrene	50-32-8	10.51	0.011	59
Indeno[1,2,3-cd]pyrene	193-39-5*	-	< 0.010	-
Dibenzo[a,h]anthracene	53-70-3	-	< 0.010	-
Benzo[g,h,i]perylene	191-24-2	-	< 0.010	-
Total (USEPA16) PAHs	-	-	< 0.196	-

"M" denotes that % fit has been manually interpreted

Internal Standards	% Area
1,4-Dichlorobenzene-d4	NA
Naphthalene-d8	95
Acenaphthene-d10	92
Phenanthrene-d10	93
Chrysene-d12	81
Perylene-d12	73

Surrogates	% Rec
Nitrobenzene-d5	NA
2-Fluorobiphenyl	69
Terphenyl-d14	66

The Total PAH result is the sum of non-rounded individual PAH results and therefore may differ to the sum of the rounded individual PAH results printed above. By convention, where any one or more result is a "less than", the total is expressed as a "less than" and includes the "less than" concentration within the total.

Semi-Volatile Organic Compounds

UKAS accredited?: No

Customer and Site Details:	Ramboll Environ: Zeon Chemicals ESA			**Matrix:**	Water	**QC Batch Number:**	102
Sample Details:	ZC205	**Date Booked in:**	19-May-16	**Ext Method:**	Sep. Funnel	**Multiplier:**	0.005
LIMS ID Number:	EX1694488	**Date Extracted:**	21-May-16	**Operator:**	SO/RP	**Dilution Factor:**	1
Job Number:	W22_0220	**Date Analysed:**	23-May-16	**Directory/Quant File:**	052316_MS16\	**GPC (Y/N)**	N

Target Compounds	CAS #	R.T. (min)	Concentration mg/l	% Fit
Phenol	108-95-2	-	< 0.020	-
bis(2-Chloroethyl)ether	111-44-4	-	< 0.005	-
2-Chlorophenol	95-57-8	-	< 0.020	-
1,3-Dichlorobenzene	541-73-1	-	< 0.005	-
1,4-Dichlorobenzene	106-46-7	-	< 0.005	-
Benzyl alcohol	100-51-6	-	< 0.005	-
1,2-Dichlorobenzene	95-50-1	-	< 0.005	-
2-Methylphenol	95-48-7	-	< 0.005	-
bis(2-Chloroisopropyl)ether	108-60-1	-	< 0.005	-
Hexachloroethane	67-72-1	-	< 0.005	-
N-Nitroso-di-n-propylamine	621-64-7	-	< 0.005	-
3- & 4-Methylphenol	108-39-4/106-44-5	-	< 0.020	-
Nitrobenzene	98-95-3	-	< 0.005	-
Isophorone	78-59-1	-	< 0.005	-
2-Nitrophenol	88-75-5	-	< 0.020	-
2,4-Dimethylphenol	105-67-9	-	< 0.020	-
Benzoic Acid	65-85-0	-	< 0.100	-
bis(2-Chloroethoxy)methane	111-91-1	-	< 0.005	-
2,4-Dichlorophenol	120-83-2	-	< 0.020	-
1,2,4-Trichlorobenzene	120-82-1	-	< 0.005	-
Naphthalene	91-20-3	-	< 0.002	-
4-Chlorophenol	106-48-9	-	< 0.020	-
4-Chloroaniline	106-47-8	-	< 0.005	-
Hexachlorobutadiene	87-68-3	-	< 0.005	-
4-Chloro-3-methylphenol	59-50-7	-	< 0.005	-
2-Methylnaphthalene	91-57-6	-	< 0.002	-
1-Methylnaphthalene	90-12-0	-	< 0.002	-
Hexachlorocyclopentadiene	77-47-4	-	< 0.005	-
2,4,6-Trichlorophenol	88-06-2	-	< 0.020	-
2,4,5-Trichlorophenol	95-95-4	-	< 0.020	-
2-Chloronaphthalene	91-58-7	-	< 0.002	-
Biphenyl	92-52-4	-	< 0.002	-
Diphenyl ether	101-84-8	-	< 0.002	-
2-Nitroaniline	88-74-4	-	< 0.005	-
Acenaphthylene	208-96-8	-	< 0.002	-
Dimethylphthalate	131-11-3	-	< 0.005	-
2,6-Dinitrotoluene	606-20-2	-	< 0.005	-
Acenaphthene	83-32-9	-	< 0.002	-
3-Nitroaniline	99-09-2	-	< 0.005	-

Target Compounds	CAS #	R.T.	Concentration mg/l	% Fit
2,4-Dinitrophenol	51-28-5	-	< 0.010	-
Dibenzofuran	132-64-9	-	< 0.005	-
4-Nitrophenol	100-02-7	-	< 0.050	-
2,4-Dinitrotoluene	121-14-2	-	< 0.005	-
Fluorene	86-73-7	-	< 0.002	-
Diethylphthalate	84-66-2	-	< 0.005	-
4-Chlorophenyl-phenylether	7005-72-3	-	< 0.005	-
4,6-Dinitro-2-methylphenol	534-52-1	-	< 0.050	-
4-Nitroaniline	100-01-6	-	< 0.005	-
N-Nitrosodiphenylamine	86-30-6	-	< 0.005	-
4-Bromophenyl-phenylether	101-55-3	-	< 0.005	-
Hexachlorobenzene	118-74-1	-	< 0.005	-
Pentachlorophenol	87-86-5	-	< 0.050	-
Phenanthrene	85-01-8	-	< 0.002	-
Anthracene	120-12-7	-	< 0.002	-
Di-n-butylphthalate	84-74-2	-	< 0.005	-
Fluoranthene	206-44-0	-	< 0.002	-
Pyrene	129-00-0	-	< 0.002	-
Butylbenzylphthalate	85-68-7	-	< 0.005	-
Benzo[a]anthracene	56-55-3	-	< 0.002	-
Chrysene	218-01-9	-	< 0.002	-
3,3'-Dichlorobenzidine	91-94-1	-	N.D	-
bis(2-Ethylhexyl)phthalate	117-81-7	-	< 0.005	-
Di-n-octylphthalate	117-84-0	-	< 0.002	-
Benzo[b]fluoranthene	205-99-2	-	< 0.002	-
Benzo[k]fluoranthene	207-08-9	-	< 0.002	-
Benzo[a]pyrene	50-32-8	-	< 0.002	-
Indeno[1,2,3-cd]pyrene	193-39-5	-	< 0.002	-
Dibenzo[a,h]anthracene	53-70-3	-	< 0.002	-
Benzo[g,h,i]perylene	191-24-2	-	< 0.002	-
Coronene	191-07-1	-	< 0.050	-

Internal Standards	% Area
1,4-Dichlorobenzene-d4	79
Naphthalene-d8	80
Acenaphthene-d10	85
Phenanthrene-d10	91
Chrysene-d12	98
Perylene-d12	80

Surrogates	% Rec
2-Fluorophenol	17
Phenol-d5	12
Nitrobenzene-d5	91
2-Fluorobiphenyl	99
2,4,6-Tribromophenol	40
Terphenyl-d14	105

Concentrations are reported on a wet weight basis.
"M" denotes that % fit has been manually interpreted

Where individual results are flagged see report notes for status.

SVOC (TICs)

UKAS accredited?:No

Customer and Site Details:	Ramboll Environ: Zeon Chemicals ESA		
Sample Details:	ZC205	**Job Number:**	W22_0220
LIMS ID Number:	EX1694488		
		Multiplier:	0.005
Date Booked in:	19-May-16	**Dilution Factor:**	1
Date Extracted:	21-May-16	**GPC (Y/N):**	N
Date Analysed:	23-May-16	**Matrix:**	Water
QC Batch Number:	102	**Method:**	Sep. Funnel
Directory/Quant File:	052316_MS16\ 0	**Operator:**	SO/RP

Tentatively Identified Compounds	CAS #	R.T.	Concentration mg/l	% Fit
None detected			<0.05	

The compounds listed above have been tentatively identified by a computer based library search.
Compounds identified in the sample are not reported if they also occur in the method blank.
The % fit is an indication of the reliability of the compound assignment.
Due to the similarity between mass spectra of some isomeric compounds assignments may not be correct.
Other compounds may also be present but identification was not possible.
Concentrations are semi-quantitative, assume a response factor of 1 and use the nearest internal standard.

Gasoline Range Organics
(BTEX and Aliphatic Carbon Ranges)

Customer and Site Details: Ramboll Environ : Zeon Chemicals ESA
Job Number: W22_0220
Directory: E:\TES\DATA\2016\0523HSA_GC9\052316 2016-05-23 10-37-18\122B2201.D
Method: Headspace GCFID

Matrix: Water
Date Booked in: 19-May-16
Date extracted: 23-May-16
Date Analysed: 23-May-16, 18:4

*** Sample data with an asterisk are not UKAS accredited.**

			Concentration, (mg/l)					Aliphatics				
	Sample ID	Client ID	Benzene	Toluene	Ethyl benzene	m/p-Xylene	o-Xylene	C5 - C6	>C6 - C7	>C7 - C8	>C8 - C10	Total GRO
*	EX1694486	ZC203	<0.005	<0.005	<0.005	<0.005	<0.005	<0.1	<0.1	<0.1	<0.1	<0.1
*	EX1694487	ZC204	<0.005	<0.005	<0.005	<0.005	<0.005	<0.1	<0.1	<0.1	<0.1	<0.1
*	EX1694488	ZC205	<0.005	<0.005	<0.005	<0.005	<0.005	<0.1	<0.1	<0.1	<0.1	<0.1
*	EX1694489	ZC206	<0.005	<0.005	<0.005	<0.005	<0.005	<0.1	<0.1	<0.1	<0.1	<0.1
*	EX1694490	ZC207	<0.005	<0.005	<0.005	<0.005	<0.005	<0.1	<0.1	<0.1	<0.1	0.1
*	EX1694491	ZC208	<0.005	<0.005	<0.005	<0.005	<0.005	<0.1	0.2	<0.1	<0.1	0.3
*	EX1694492	ZC209	0.007	<0.005	<0.005	<0.005	<0.005	<0.1	<0.1	<0.1	<0.1	<0.1

Note: Benzene elutes between C6 and C7, toluene elutes between C7 and C8, ethyl benzene and the xylenes elute between C8 and C9.

Each BTEX compound is deducted from the appropriate band to give the aliphatic fractions, however aromatic compounds may still be contributing to these fractions

Where individual results are flagged see report notes for status.

ALIPHATIC / AROMATIC FRACTION BY GC/FID

Customer and Site Details: Ramboll Environ : Zeon Chemicals ESA
Job Number: W22_0220
QC Batch Number: 160325
Directory: D:\TES\DATA\Y2016\052516TPH_GC14\052516 2016-05-25 11-15-44\100B5401.D
Method: Bottle

Separation: Silica gel
Eluents: Hexane, DCM

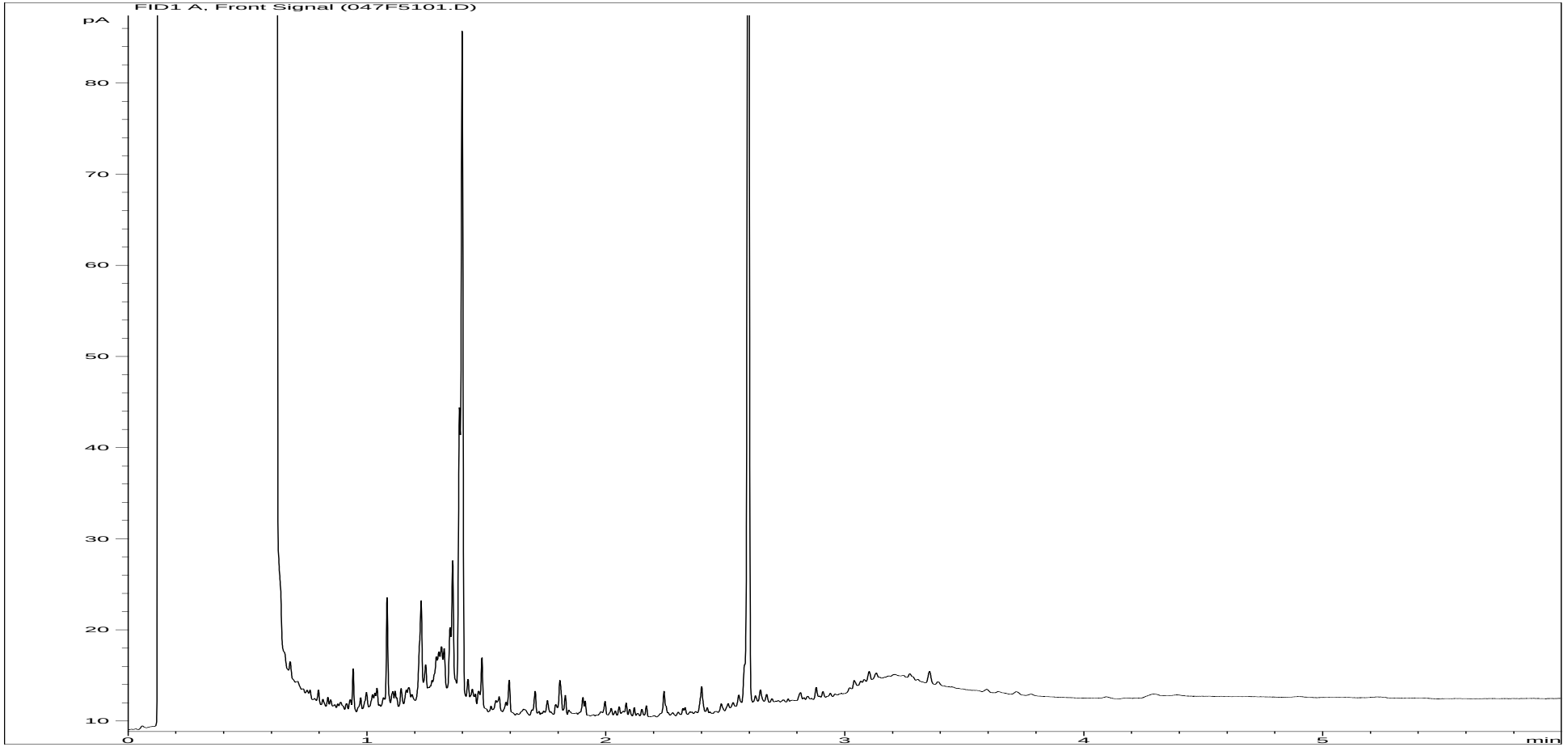
Matrix: Water
Date Booked in 19-May-16
Date Extracted 24-May-16
Date Analysed 25-May-16, 21:42:08

*** This sample data is not UKAS accredited.**

		Concentration, (mg/l)											
		>C8 - C10		>C10 - C12		>C12 - C16		>C16 - C21		>C21 - C35		>C8 - C40	
Sample ID	**Client ID**	**Aliphatics**	**Aromatics**	**Aliphatics**	**Aromatics**	**Aliphatics**	**Aromatics**	**Aliphatics**	**Aromatics**	**Aliphatics**	**Aromatics**	**Aliphatics**	**Aromatics**
EX1694486	ZC203	<0.01	<0.01	<0.01	<0.01	0.011	0.041	<0.01	0.023	<0.01	<0.01	0.024	0.076
EX1694487	ZC204	<0.01	<0.01	<0.01	<0.01	<0.01	0.021	<0.01	<0.01	<0.01	<0.01	<0.01	0.036
EX1694488	ZC205	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	0.02	<0.01	0.091	0.016	0.115	0.027
EX1694489	ZC206	<0.01	<0.01	<0.01	<0.01	0.055	<0.01	0.022	0.012	0.092	0.012	0.177	0.03
EX1694490	ZC207	0.016	0.015	0.176	0.856	<0.01	<0.01	<0.01	0.033	<0.01	0.017	0.199	0.92
EX1694491	ZC208	<0.01	<0.01	<0.01	0.015	<0.01	<0.01	0.01	<0.01	<0.01	<0.01	0.022	0.025
EX1694492	ZC209	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	0.014	<0.01

Where individual results are flagged see report notes for status.

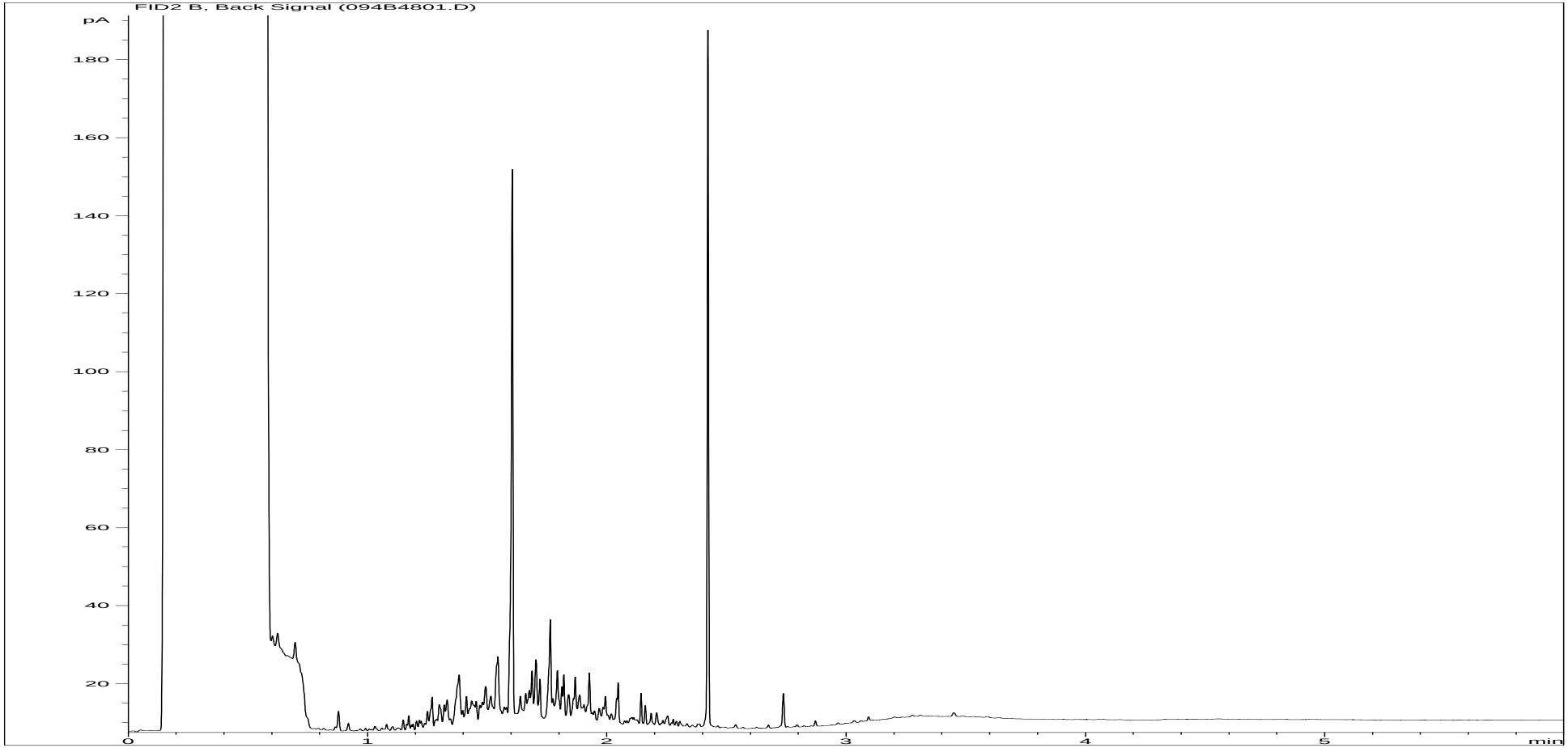
Petroleum Hydrocarbons (C8 to C40) by GC/FID Aliphatics Fraction.



Sample ID:	EX1694486ALI	**Job Number:**	W22_0220
Multiplier:	0.0194	**Client:**	Ramboll Environ
Dilution:	1	**Site:**	Zeon Chemicals ESA
Acquisition Method:	5UL_RUNF.M	**Client Sample Ref:**	ZC203
Acquisition Date/Time:	25-May-16, 21:06:44		
Datafile:	D:\TES\DATA\Y2016\052516TPH_GC14\052516 2016-05-25 11-15-44\047F5101.D		

Where individual results are flagged see report notes for status.

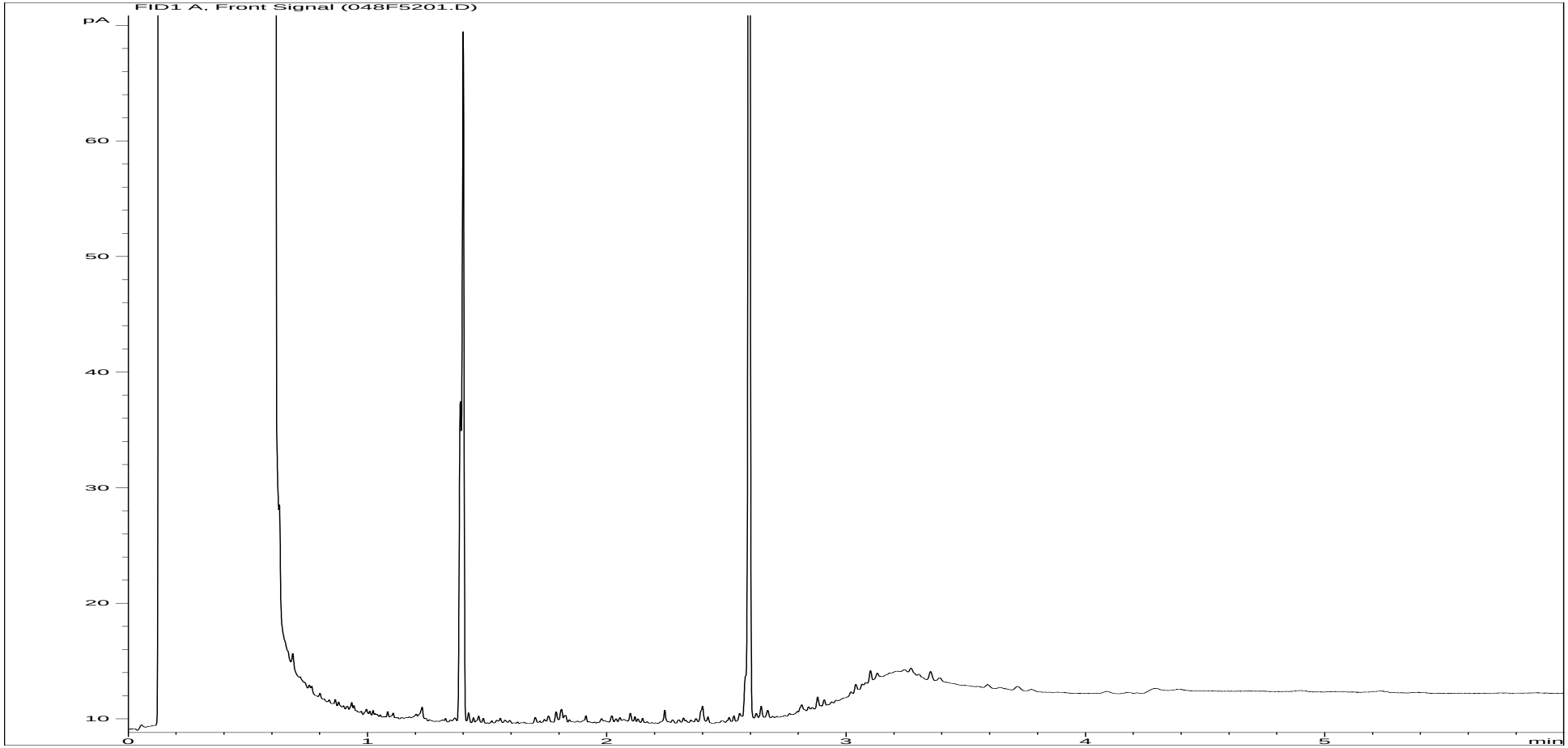
Petroleum Hydrocarbons (C8 to C40) by GC/FID Aromatics Fraction.



Sample ID:	EX1694486ARO	**Job Number:**	W22_0220
Multiplier:	0.0152	**Client:**	Ramboll Environ
Dilution:	1	**Site:**	Zeon Chemicals ESA
Acquisition Method:	5UL_RUNF.M	**Client Sample Ref:**	ZC203
Acquisition Date/Time:	25-May-16, 20:31:10		
Datafile:	D:\TES\DATA\Y2016\052516TPH_GC14\052516 2016-05-25 11-15-44\094B4801.D		

Where individual results are flagged see report notes for status.

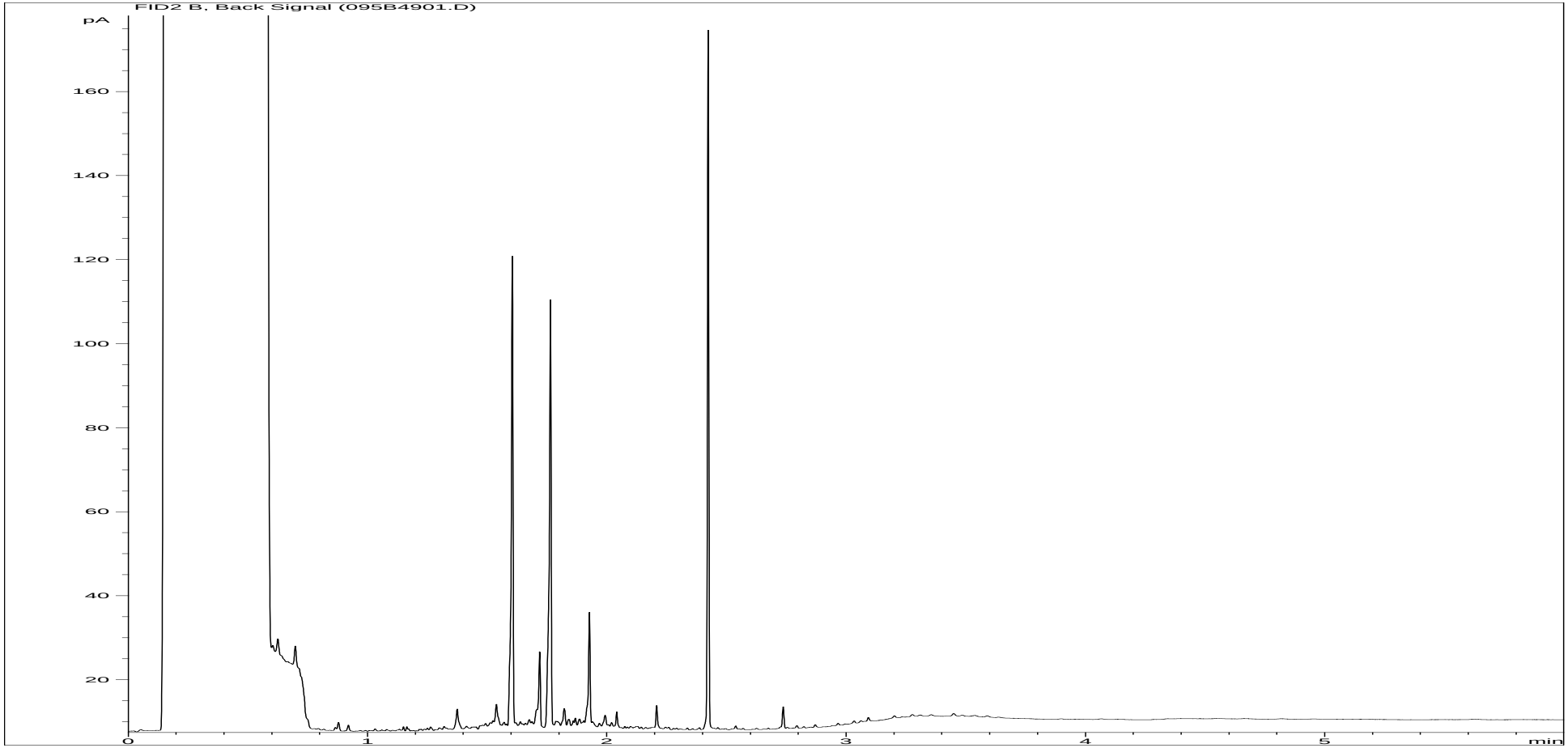
Petroleum Hydrocarbons (C8 to C40) by GC/FID Aliphatics Fraction.



Sample ID:	EX1694487ALI	**Job Number:**	W22_0220
Multiplier:	0.02	**Client:**	Ramboll Environ
Dilution:	1	**Site:**	Zeon Chemicals ESA
Acquisition Method:	5UL_RUNF.M	**Client Sample Ref:**	ZC204
Acquisition Date/Time:	25-May-16, 21:18:27		
Datafile:	D:\TES\DATA\Y2016\052516TPH_GC14\052516 2016-05-25 11-15-44\048F5201.D		

Where individual results are flagged see report notes for status.

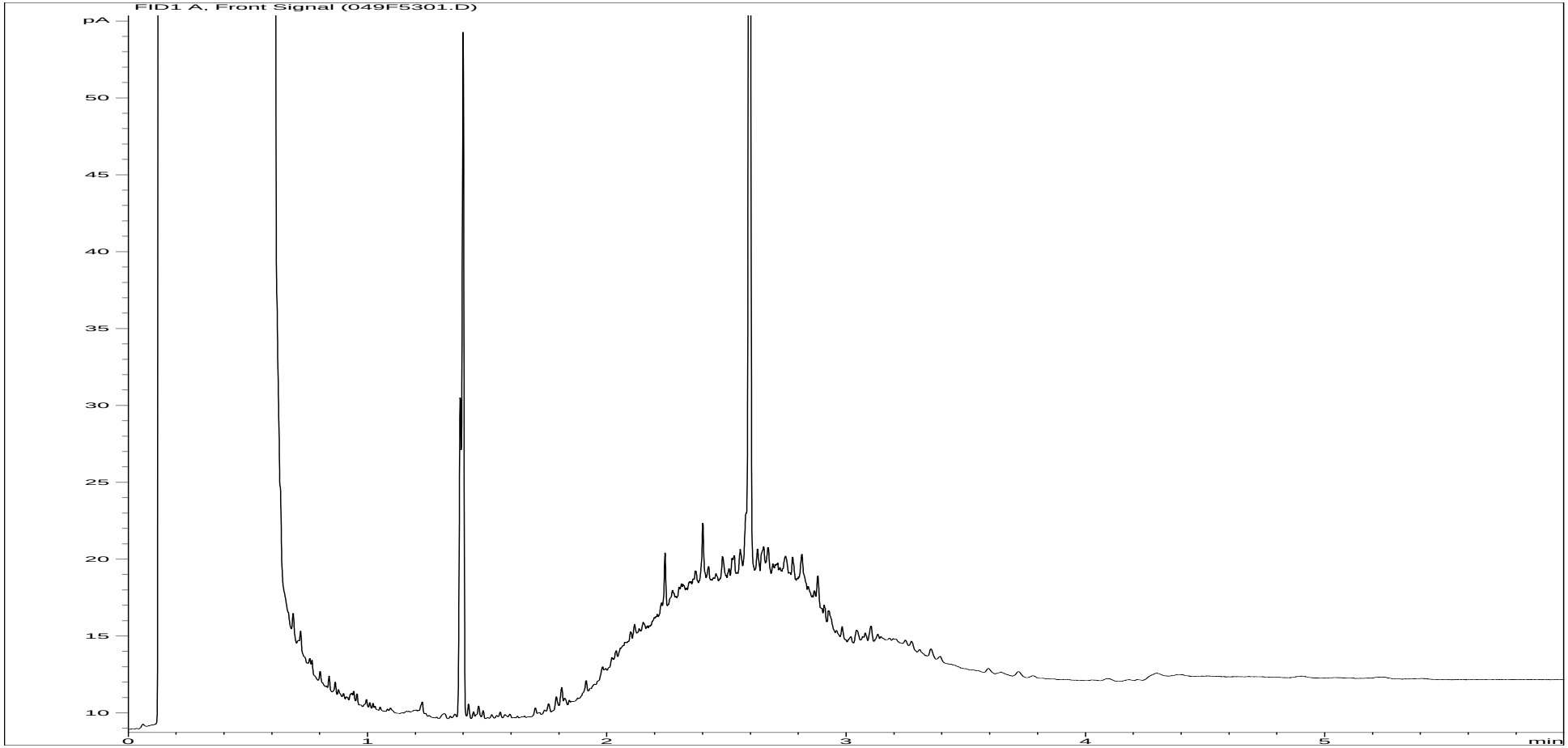
Petroleum Hydrocarbons (C8 to C40) by GC/FID Aromatics Fraction.



Sample ID:	EX1694487ARO	**Job Number:**	W22_0220
Multiplier:	0.0152	**Client:**	Ramboll Environ
Dilution:	1	**Site:**	Zeon Chemicals ESA
Acquisition Method:	5UL_RUNF.M	**Client Sample Ref:**	ZC204
Acquisition Date/Time:	25-May-16, 20:43:04		
Datafile:	D:\TES\DATA\Y2016\052516TPH_GC14\052516 2016-05-25 11-15-44\095B4901.D		

Where individual results are flagged see report notes for status.

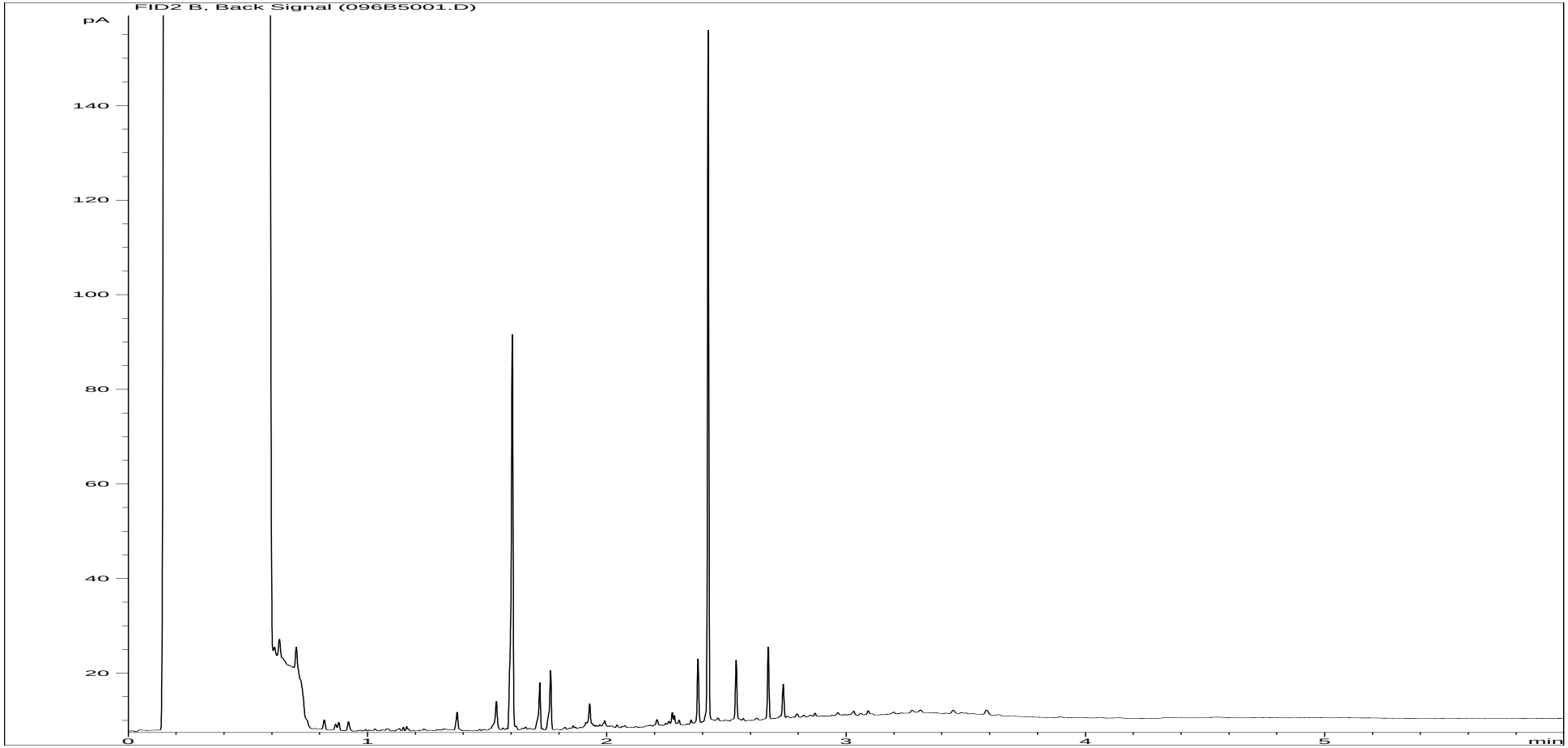
Petroleum Hydrocarbons (C8 to C40) by GC/FID Aliphatics Fraction.



Sample ID:	EX1694488ALI	**Job Number:**	W22_0220
Multiplier:	0.0196	**Client:**	Ramboll Environ
Dilution:	1	**Site:**	Zeon Chemicals ESA
Acquisition Method:	5UL_RUNF.M	**Client Sample Ref:**	ZC205
Acquisition Date/Time:	25-May-16, 21:30:19		
Datafile:	D:\TES\DATA\Y2016\052516TPH_GC14\052516 2016-05-25 11-15-44\049F5301.D		

Where individual results are flagged see report notes for status.

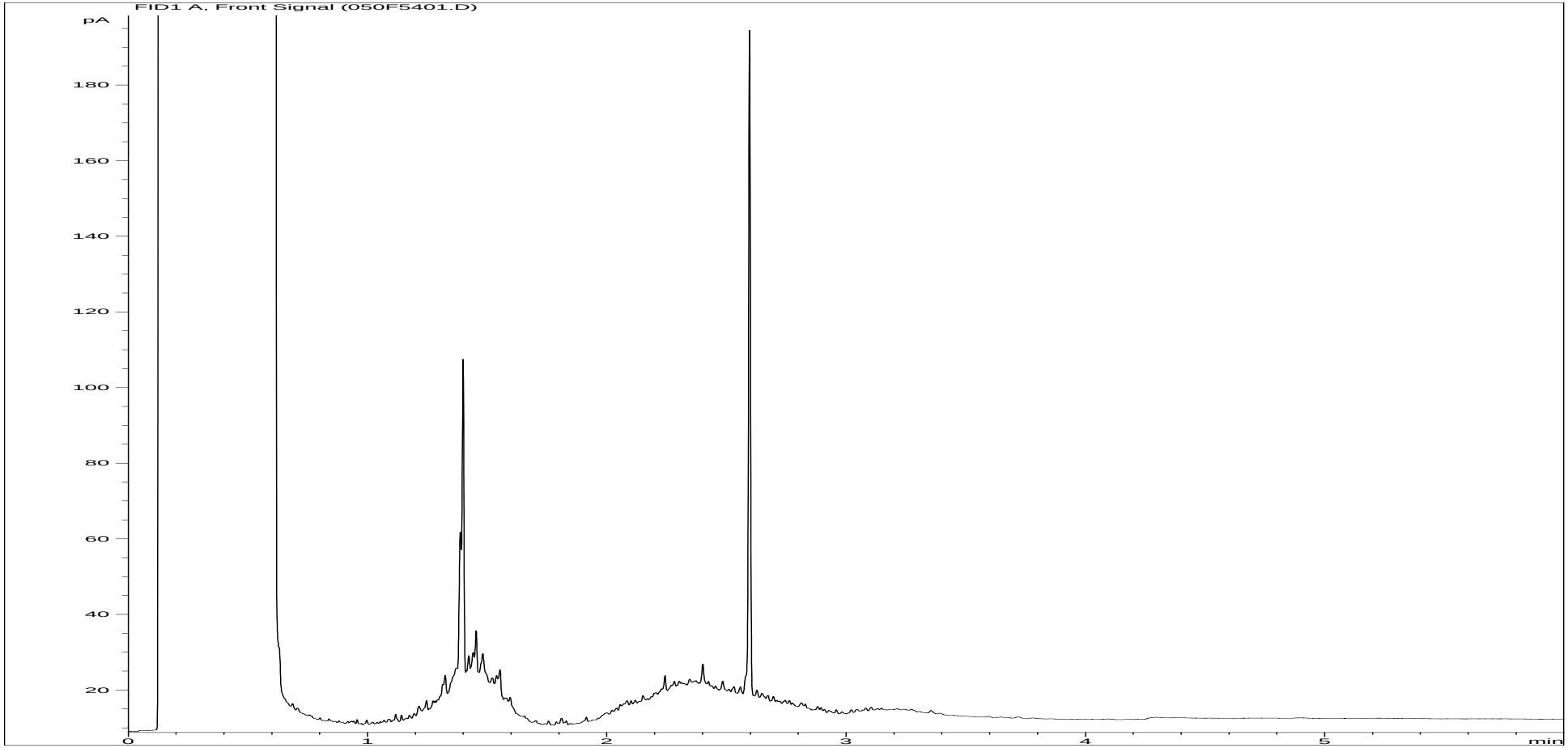
Petroleum Hydrocarbons (C8 to C40) by GC/FID Aromatics Fraction.



Sample ID:	EX1694488ARO	**Job Number:**	W22_0220
Multiplier:	0.015	**Client:**	Ramboll Environ
Dilution:	1	**Site:**	Zeon Chemicals ESA
Acquisition Method:	5UL_RUNF.M	**Client Sample Ref:**	ZC205
Acquisition Date/Time:	25-May-16, 20:54:55		
Datafile:	D:\TES\DATA\Y2016\052516TPH_GC14\052516 2016-05-25 11-15-44\096B5001.D		

Where individual results are flagged see report notes for status.

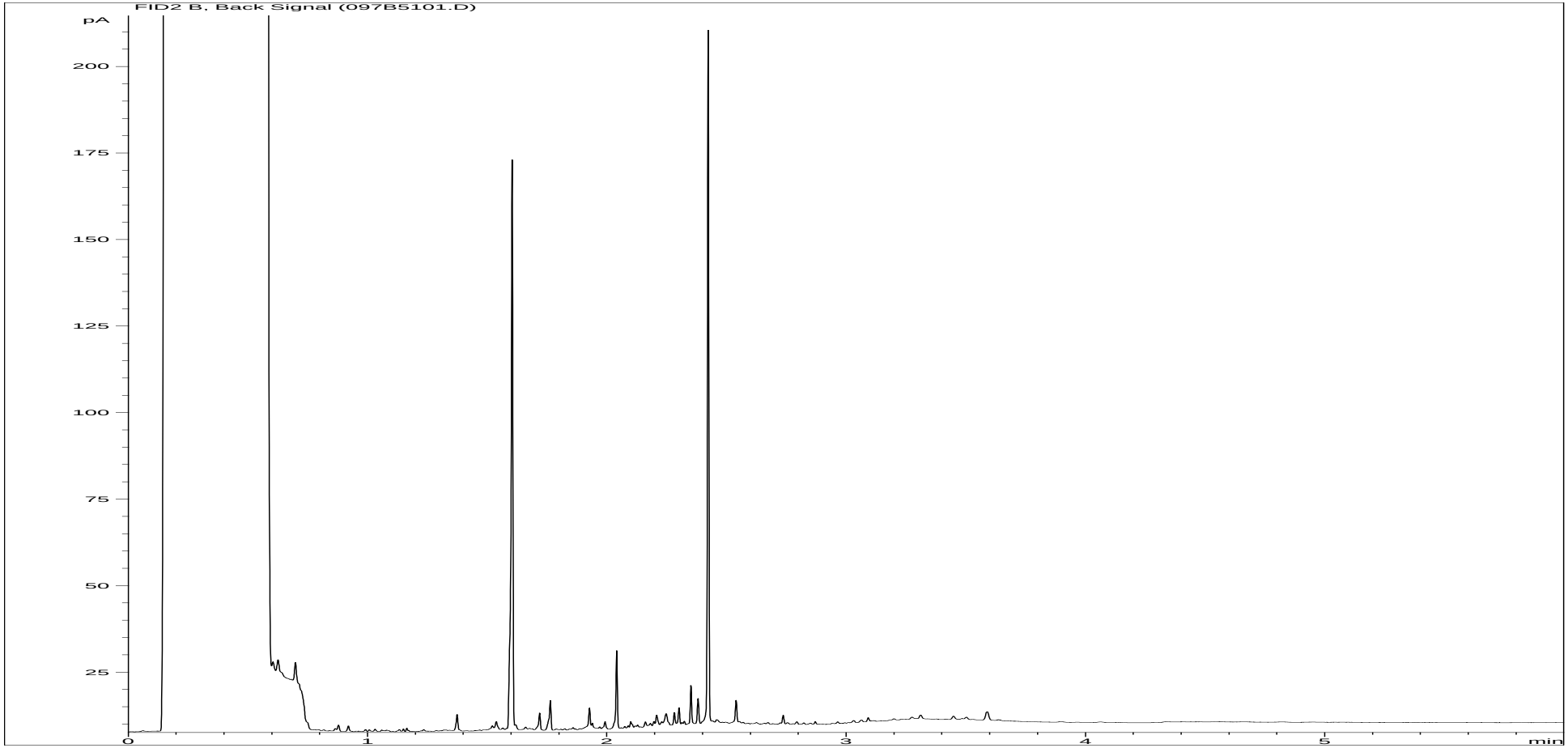
Petroleum Hydrocarbons (C8 to C40) by GC/FID Aliphatics Fraction.



Sample ID:	EX1694489ALI	**Job Number:**	W22_0220
Multiplier:	0.0198	**Client:**	Ramboll Environ
Dilution:	1	**Site:**	Zeon Chemicals ESA
Acquisition Method:	5UL_RUNF.M	**Client Sample Ref:**	ZC206
Acquisition Date/Time:	25-May-16, 21:42:08		
Datafile:	D:\TES\DATA\Y2016\052516TPH_GC14\052516 2016-05-25 11-15-44\050F5401.D		

Where individual results are flagged see report notes for status.

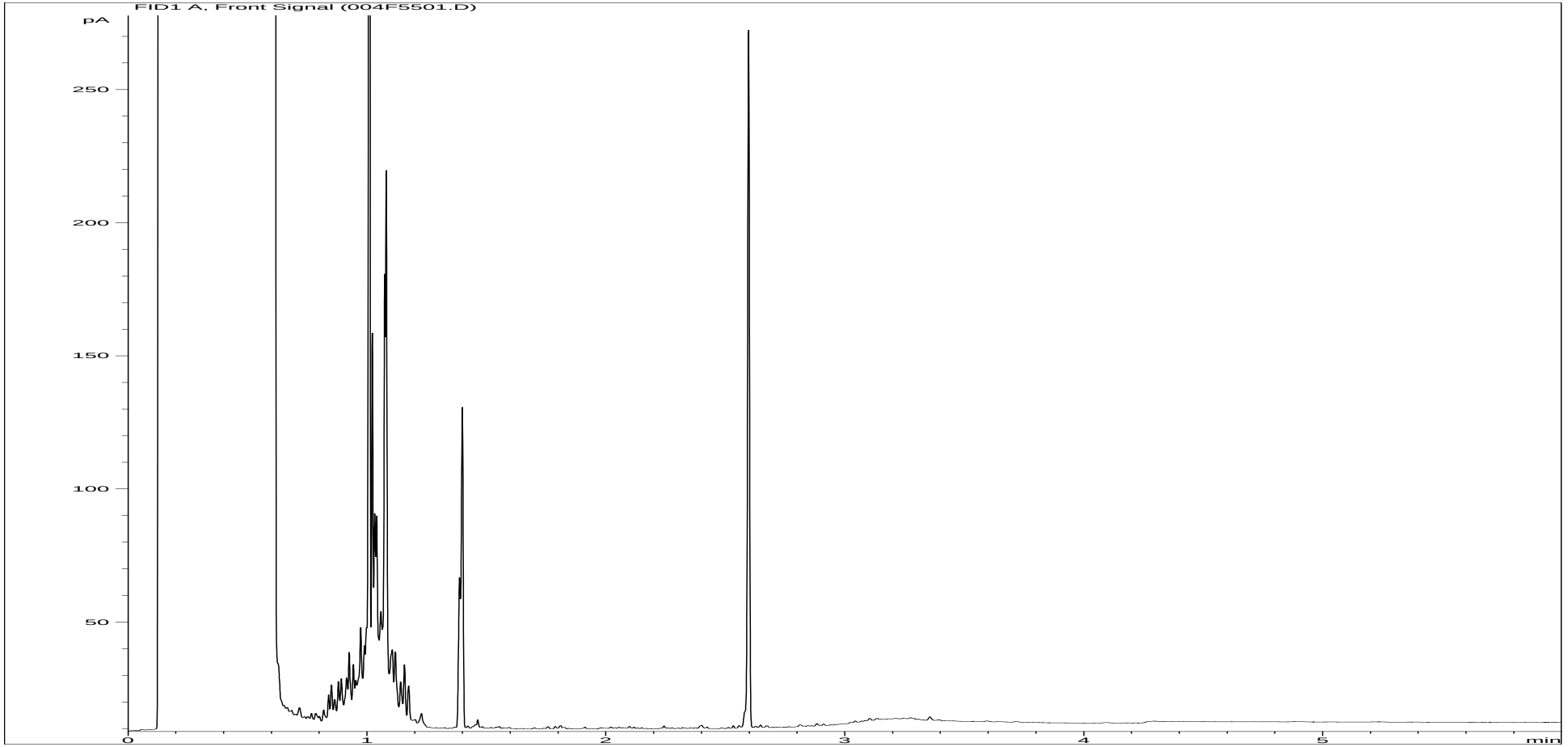
Petroleum Hydrocarbons (C8 to C40) by GC/FID Aromatics Fraction.



Sample ID:	EX1694489ARO	**Job Number:**	W22_0220
Multiplier:	0.0152	**Client:**	Ramboll Environ
Dilution:	1	**Site:**	Zeon Chemicals ESA
Acquisition Method:	5UL_RUNF.M	**Client Sample Ref:**	ZC206
Acquisition Date/Time:	25-May-16, 21:06:44		
Datafile:	D:\TES\DATA\Y2016\052516TPH_GC14\052516 2016-05-25 11-15-44\097B5101.D		

Where individual results are flagged see report notes for status.

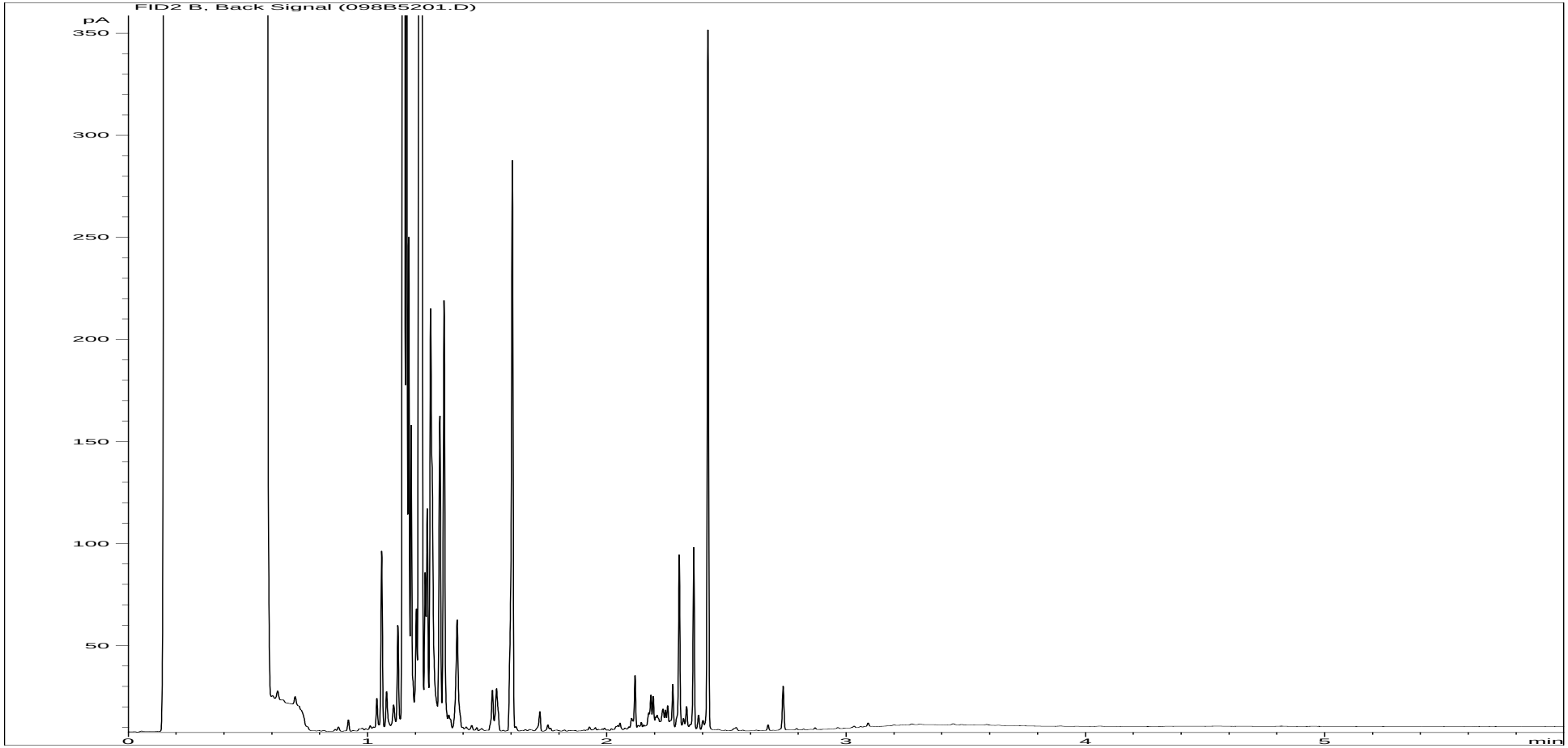
Petroleum Hydrocarbons (C8 to C40) by GC/FID Aliphatics Fraction.



Sample ID:	EX1694490ALI	**Job Number:**	W22_0220
Multiplier:	0.0196	**Client:**	Ramboll Environ
Dilution:	1	**Site:**	Zeon Chemicals ESA
Acquisition Method:	5UL_RUNF.M	**Client Sample Ref:**	ZC207
Acquisition Date/Time:	25-May-16, 21:53:57		
Datafile:	D:\TES\DATA\Y2016\052516TPH_GC14\052516 2016-05-25 11-15-44\004F5501.D		

Where individual results are flagged see report notes for status.

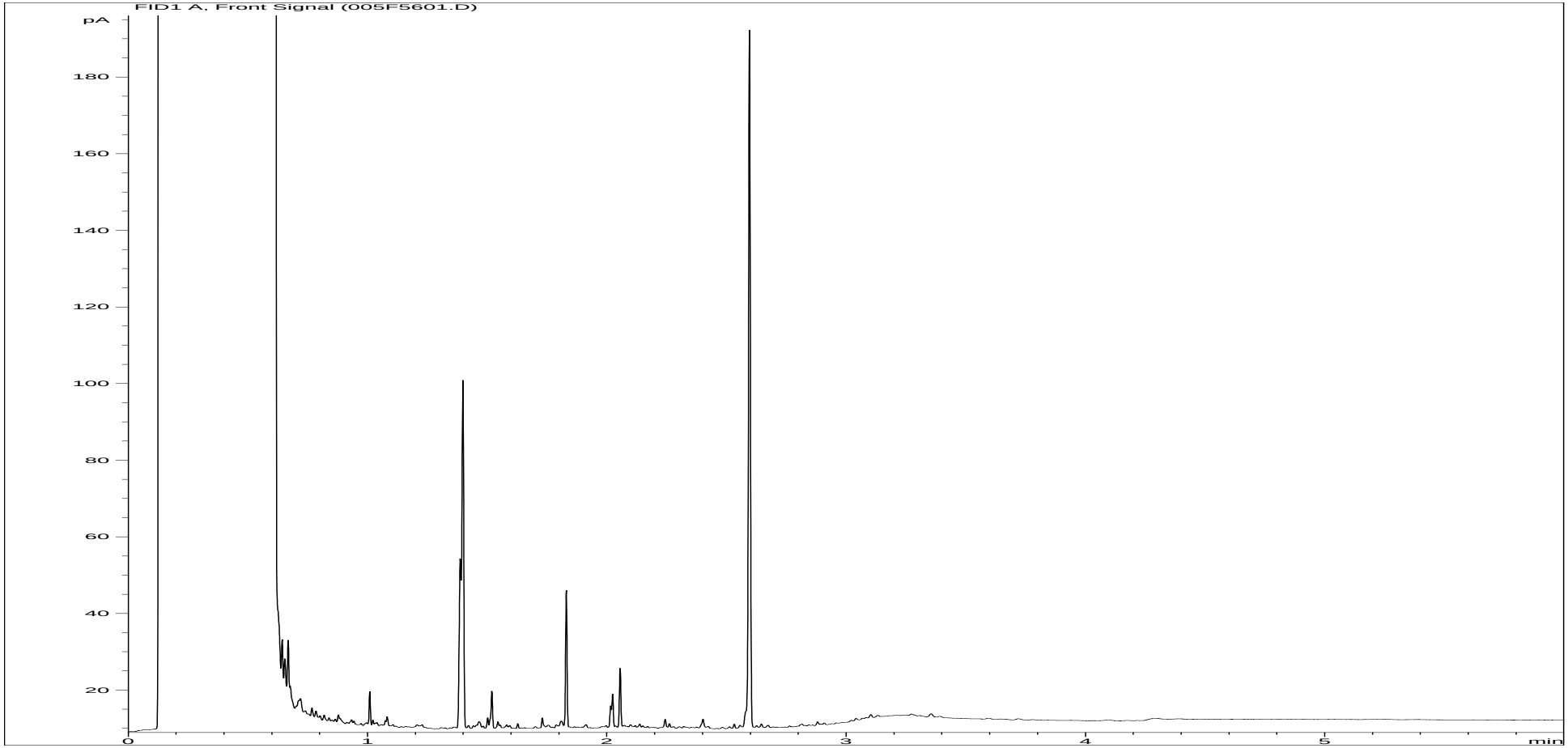
Petroleum Hydrocarbons (C8 to C40) by GC/FID Aromatics Fraction.



Sample ID:	EX1694490ARO	**Job Number:**	W22_0220
Multiplier:	0.015	**Client:**	Ramboll Environ
Dilution:	1	**Site:**	Zeon Chemicals ESA
Acquisition Method:	5UL_RUNF.M	**Client Sample Ref:**	ZC207
Acquisition Date/Time:	25-May-16, 21:18:27		
Datafile:	D:\TES\DATA\Y2016\052516TPH_GC14\052516 2016-05-25 11-15-44\098B5201.D		

Where individual results are flagged see report notes for status.

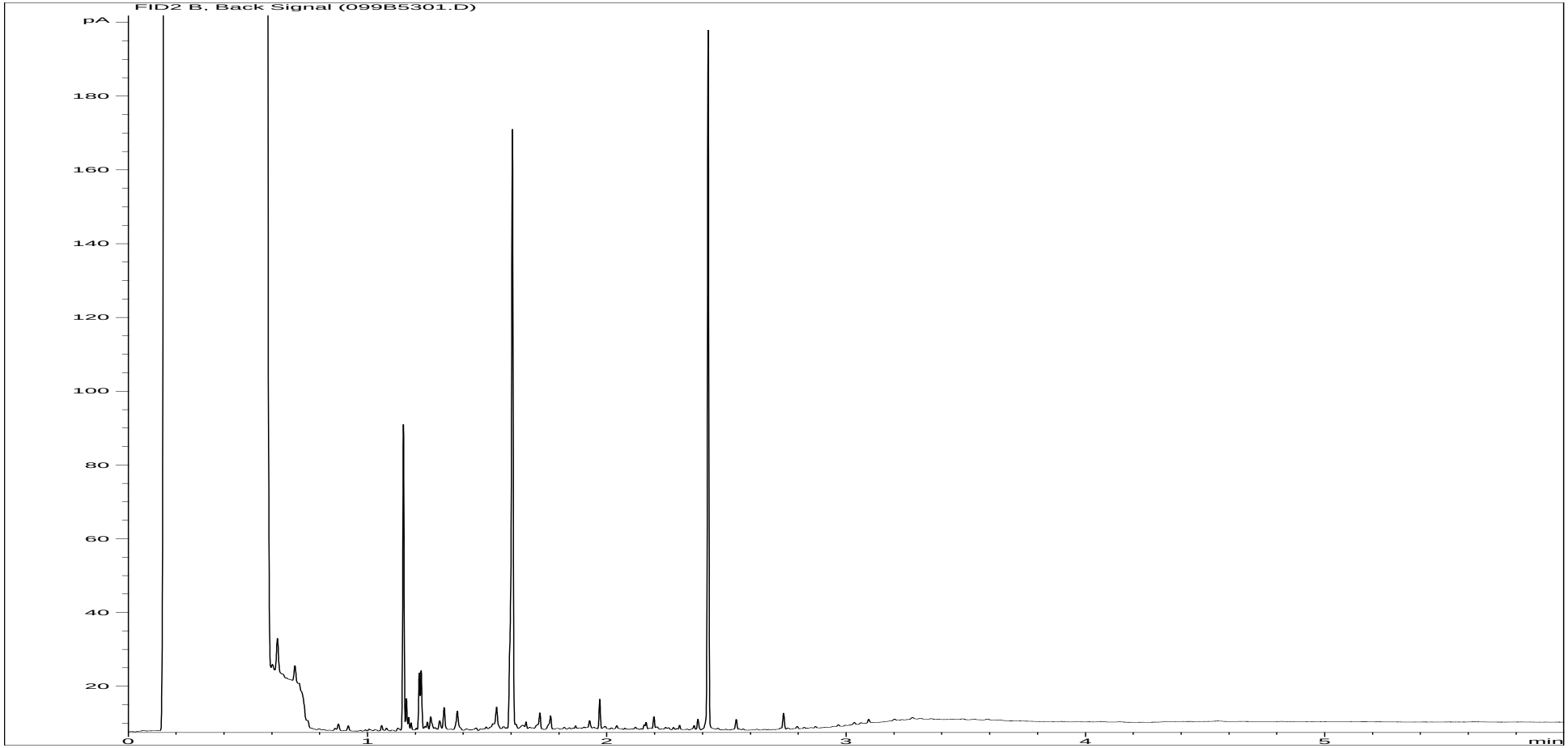
Petroleum Hydrocarbons (C8 to C40) by GC/FID Aliphatics Fraction.



Sample ID:	EX1694491ALI	**Job Number:**	W22_0220
Multiplier:	0.0196	**Client:**	Ramboll Environ
Dilution:	1	**Site:**	Zeon Chemicals ESA
Acquisition Method:	5UL_RUNF.M	**Client Sample Ref:**	ZC208
Acquisition Date/Time:	25-May-16, 22:05:44		
Datafile:	D:\TES\DATA\Y2016\052516TPH_GC14\052516 2016-05-25 11-15-44\005F5601.D		

Where individual results are flagged see report notes for status.

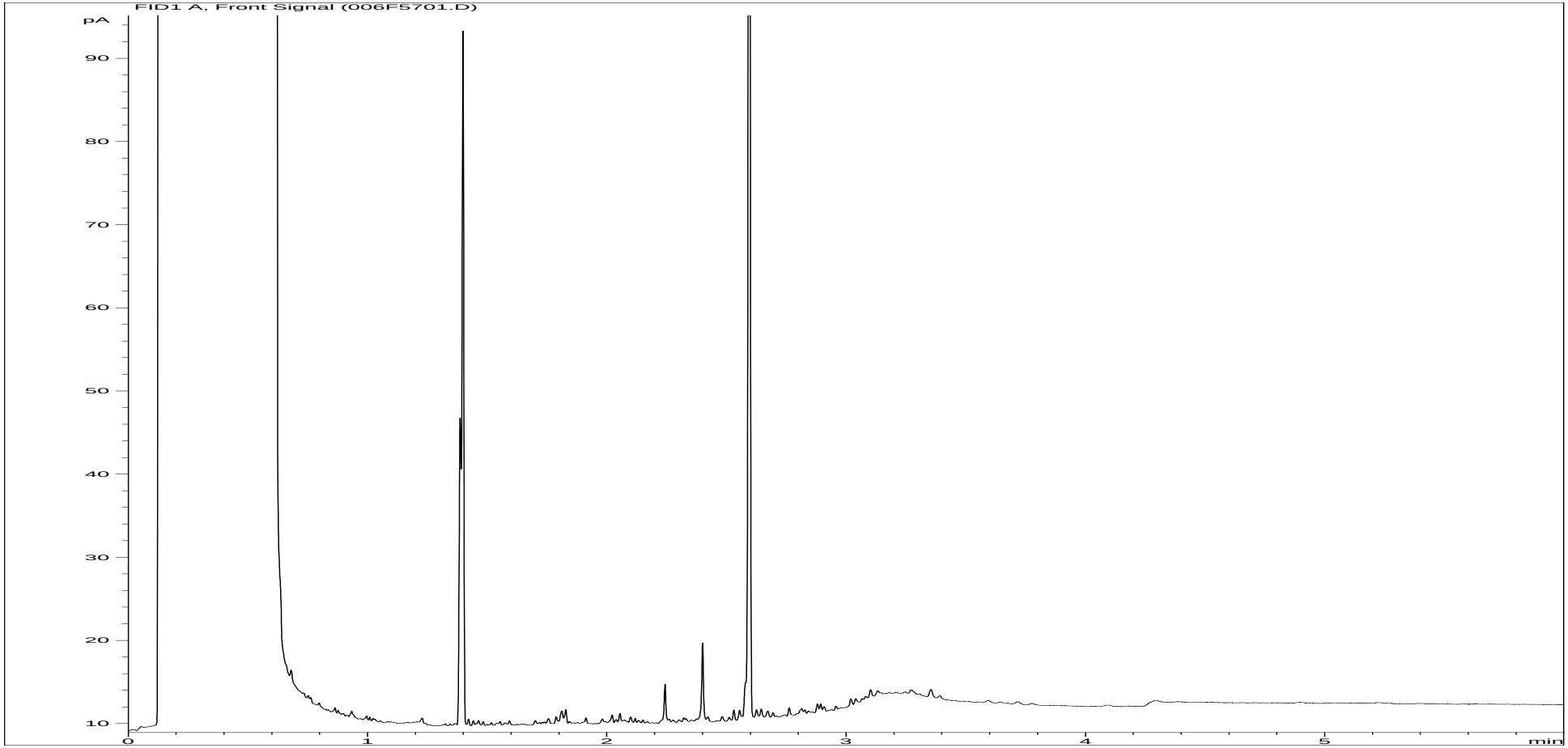
Petroleum Hydrocarbons (C8 to C40) by GC/FID Aromatics Fraction.



Sample ID:	EX1694491ARO	**Job Number:**	W22_0220
Multiplier:	0.015	**Client:**	Ramboll Environ
Dilution:	1	**Site:**	Zeon Chemicals ESA
Acquisition Method:	5UL_RUNF.M	**Client Sample Ref:**	ZC208
Acquisition Date/Time:	25-May-16, 21:30:19		
Datafile:	D:\TES\DATA\Y2016\052516TPH_GC14\052516 2016-05-25 11-15-44\099B5301.D		

Where individual results are flagged see report notes for status.

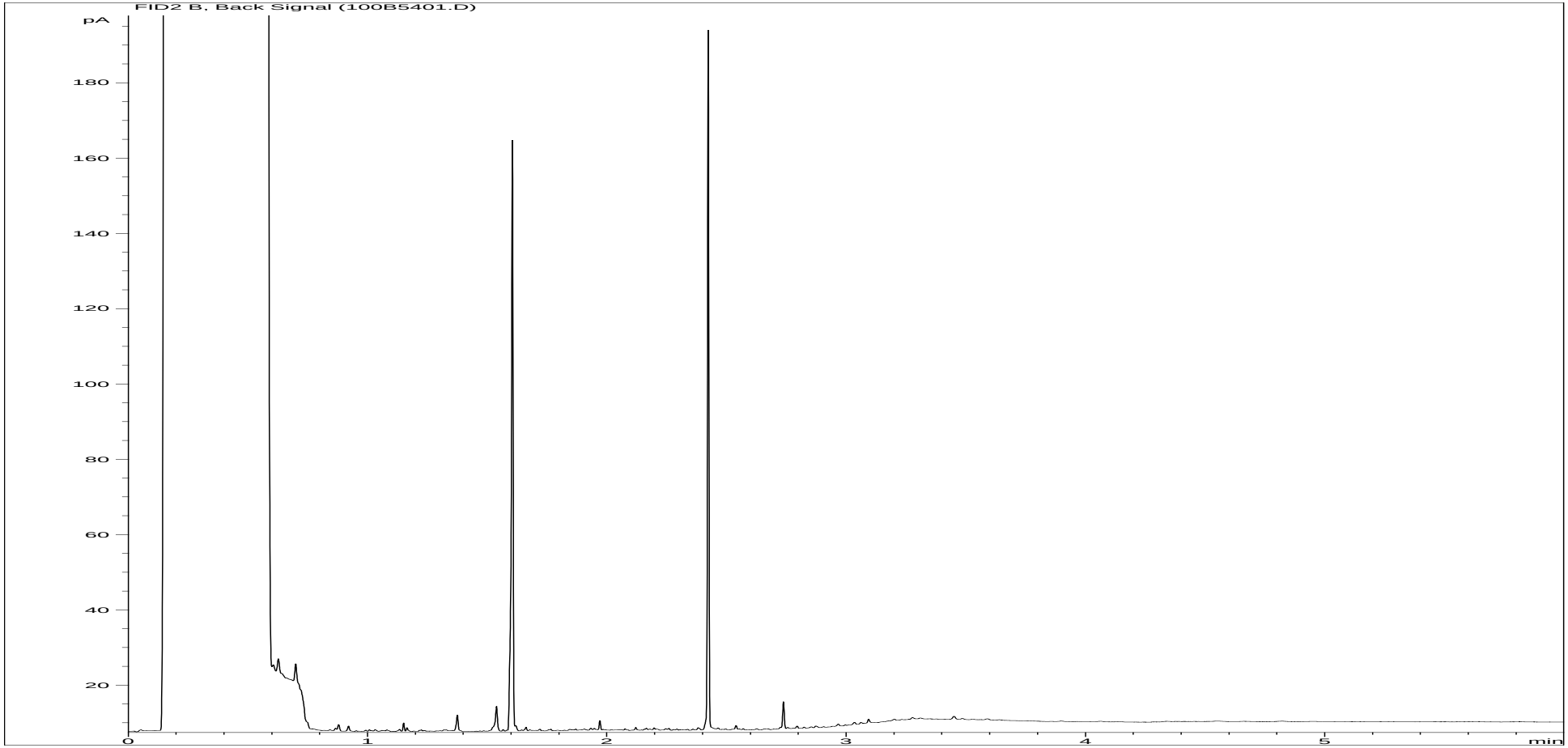
Petroleum Hydrocarbons (C8 to C40) by GC/FID Aliphatics Fraction.



Sample ID:	EX1694492ALI	**Job Number:**	W22_0220
Multiplier:	0.0196	**Client:**	Ramboll Environ
Dilution:	1	**Site:**	Zeon Chemicals ESA
Acquisition Method:	5UL_RUNF.M	**Client Sample Ref:**	ZC209
Acquisition Date/Time:	25-May-16, 22:17:40		
Datafile:	D:\TES\DATA\Y2016\052516TPH_GC14\052516 2016-05-25 11-15-44\006F5701.D		

Where individual results are flagged see report notes for status.

Petroleum Hydrocarbons (C8 to C40) by GC/FID Aromatics Fraction.



Sample ID:	EX1694492ARO	**Job Number:**	W22_0220
Multiplier:	0.0152	**Client:**	Ramboll Environ
Dilution:	1	**Site:**	Zeon Chemicals ESA
Acquisition Method:	5UL_RUNF.M	**Client Sample Ref:**	ZC209
Acquisition Date/Time:	25-May-16, 21:42:08		
Datafile:	D:\TES\DATA\Y2016\052516TPH_GC14\052516 2016-05-25 11-15-44\100B5401.D		

Where individual results are flagged see report notes for status.

Volatile Organic Compounds by HSA-GCMS

UKAS accredited?: Yes

Customer and Site Details:	Ramboll Environ: Zeon Chemicals ESA	**Directory/Quant file:**	2016\052416\ Initial Calibration	**Matrix:**	Water
Sample Details:	ZC203	**Date Booked in:**	19-May-16	**Method:**	Headspace
LIMS ID Number:	EX1694486	**Date Analysed:**	25-May-16	**Multiplier:**	1
Job Number:	W22_0220	**Operator:**	PR	**Position:**	28

Target Compounds	CAS #	R.T. (min.)	Concentration µg/l	% Fit
Dichlorodifluoromethane	75-71-8 *	-	< 1	-
Chloromethane	74-87-3	-	< 1	-
Vinyl Chloride	75-01-4	-	< 1	-
Bromomethane	74-83-9 *	-	< 5	-
Chloroethane	75-00-3	-	< 5	-
Trichlorofluoromethane	75-69-4	-	< 1	-
1,1-Dichloroethene	75-35-4	-	< 1	-
trans 1,2-Dichloroethene	156-60-5	-	< 1	-
1,1-Dichloroethane	75-34-3	2.93	2	53
2,2-Dichloropropane	594-20-7 *	-	< 1	-
cis 1,2-Dichloroethene	156-59-2	-	< 1	-
Bromochloromethane	74-97-5	-	< 1	-
Chloroform	67-66-3	-	< 1	-
1,1,1-Trichloroethane	71-55-6	-	< 1	-
Carbon Tetrachloride	56-23-5	-	< 1	-
1,1-Dichloropropene	563-58-6	-	< 1	-
Benzene	71-43-2	-	< 1	-
1,2-Dichloroethane	107-06-2	-	< 1	-
Trichloroethene	79-01-6	-	< 5	-
1,2-Dichloropropane	78-87-5	-	< 1	-
Dibromomethane	74-95-3	-	< 1	-
Bromodichloromethane	75-27-4	-	< 1	-
cis 1,3-Dichloropropene	10061-01-5 *	-	< 1	-
Toluene	108-88-3	-	< 1	-
trans 1,3-Dichloropropene	10061-02-6 *	-	< 1	-
1,1,2-Trichloroethane	79-00-5	-	< 1	-
Tetrachloroethene	127-18-4	-	< 5	-
1,3-Dichloropropane	142-28-9	-	< 1	-
Dibromochloromethane	124-48-1	-	< 1	-
1,2-Dibromoethane	106-93-4	-	< 1	-
Chlorobenzene	108-90-7	-	< 1	-
Ethylbenzene	100-41-4	-	< 1	-
1,1,1,2-Tetrachloroethane	630-20-6	-	< 1	-
m and p-Xylene	108-38-3/106-42-3	5.20	1	81
o-Xylene	95-47-6	-	< 1	-

Target Compounds	CAS #	R.T. (min.)	Concentration µg/l	% Fit
Styrene	100-42-5 *	-	< 1	-
Bromoform	75-25-2	-	< 1	-
iso-Propylbenzene	98-82-8	-	< 1	-
1,1,2,2-Tetrachloroethane	79-34-5 *	-	< 1	-
Propylbenzene	103-65-1	-	< 1	-
Bromobenzene	108-86-1	-	< 1	-
1,2,3-Trichloropropane	96-18-4	-	< 1	-
2-Chlorotoluene	95-49-8	-	< 1	-
1,3,5-Trimethylbenzene	108-67-8	-	< 1	-
4-Chlorotoluene	106-43-4	-	< 1	-
tert-Butylbenzene	98-06-6	-	< 1	-
1,2,4-Trimethylbenzene	95-63-6 *	-	< 1	-
sec-Butylbenzene	135-98-8	-	< 1	-
p-Isopropyltoluene	99-87-6 *	-	< 1	-
1,3-Dichlorobenzene	541-73-1	-	< 1	-
1,4-Dichlorobenzene	106-46-7	-	< 1	-
n-Butylbenzene	104-51-8	-	< 1	-
1,2-Dichlorobenzene	95-50-1	-	< 5	-
1,2-Dibromo-3-chloropropane	96-12-8 *	-	< 5	-
1,2,4-Trichlorobenzene	120-82-1	-	< 5	-
Hexachlorobutadiene	87-68-3	-	< 5	-
Naphthalene	91-20-3	-	< 5	-
1,2,3-Trichlorobenzene	87-61-6	-	< 5	-

Compounds marked * are not UKAS accredited
"M" denotes that % fit has been manually interpreted

Internal standards	R.T.	Area %	Surrogates	% Rec
Pentafluorobenzene	3.62	63	Dibromofluoromethane	111
1,4-Difluorobenzene	3.97	68	Toluene-d8	100
Chlorobenzene-d5	5.12	68	Bromofluorobenzene	92
1,4-Dichlorobenzene-d4	5.92	59		

Where individual results are flagged see report notes for status.

Volatile Organic Compounds by HSA-GCMS

UKAS accredited?: Yes

Customer and Site Details:	Ramboll Environ: Zeon Chemicals ESA	**Directory/Quant file:**	2016\052416\ Initial Calibration	**Matrix:**	Water
Sample Details:	ZC204	**Date Booked in:**	19-May-16	**Method:**	Headspace
LIMS ID Number:	EX1694487	**Date Analysed:**	25-May-16	**Multiplier:**	1
Job Number:	W22_0220	**Operator:**	PR	**Position:**	29

Target Compounds	CAS #	R.T. (min.)	Concentration µg/l	% Fit
Dichlorodifluoromethane	75-71-8 *	-	< 1	-
Chloromethane	74-87-3	-	< 1	-
Vinyl Chloride	75-01-4	-	< 1	-
Bromomethane	74-83-9 *	-	< 5	-
Chloroethane	75-00-3	-	< 5	-
Trichlorofluoromethane	75-69-4	-	< 1	-
1,1-Dichloroethene	75-35-4	-	< 1	-
trans 1,2-Dichloroethene	156-60-5	-	< 1	-
1,1-Dichloroethane	75-34-3	-	< 1	-
2,2-Dichloropropane	594-20-7 *	-	< 1	-
cis 1,2-Dichloroethene	156-59-2	-	< 1	-
Bromochloromethane	74-97-5	-	< 1	-
Chloroform	67-66-3	-	< 1	-
1,1,1-Trichloroethane	71-55-6	-	< 1	-
Carbon Tetrachloride	56-23-5	-	< 1	-
1,1-Dichloropropene	563-58-6	-	< 1	-
Benzene	71-43-2	-	< 1	-
1,2-Dichloroethane	107-06-2	-	< 1	-
Trichloroethene	79-01-6	-	< 5	-
1,2-Dichloropropane	78-87-5	-	< 1	-
Dibromomethane	74-95-3	-	< 1	-
Bromodichloromethane	75-27-4	-	< 1	-
cis 1,3-Dichloropropene	10061-01-5 *	-	< 1	-
Toluene	108-88-3	-	< 1	-
trans 1,3-Dichloropropene	10061-02-6 *	-	< 1	-
1,1,2-Trichloroethane	79-00-5	-	< 1	-
Tetrachloroethene	127-18-4	-	< 5	-
1,3-Dichloropropane	142-28-9	-	< 1	-
Dibromochloromethane	124-48-1	-	< 1	-
1,2-Dibromoethane	106-93-4	-	< 1	-
Chlorobenzene	108-90-7	-	< 1	-
Ethylbenzene	100-41-4	-	< 1	-
1,1,1,2-Tetrachloroethane	630-20-6	-	< 1	-
m and p-Xylene	108-38-3/106-42-3	-	< 1	-
o-Xylene	95-47-6	-	< 1	-

Target Compounds	CAS #	R.T. (min.)	Concentration µg/l	% Fit
Styrene	100-42-5 *	-	< 1	-
Bromoform	75-25-2	-	< 1	-
iso-Propylbenzene	98-82-8	-	< 1	-
1,1,2,2-Tetrachloroethane	79-34-5 *	-	< 1	-
Propylbenzene	103-65-1	-	< 1	-
Bromobenzene	108-86-1	-	< 1	-
1,2,3-Trichloropropane	96-18-4	-	< 1	-
2-Chlorotoluene	95-49-8	-	< 1	-
1,3,5-Trimethylbenzene	108-67-8	-	< 1	-
4-Chlorotoluene	106-43-4	-	< 1	-
tert-Butylbenzene	98-06-6	-	< 1	-
1,2,4-Trimethylbenzene	95-63-6 *	-	< 1	-
sec-Butylbenzene	135-98-8	-	< 1	-
p-Isopropyltoluene	99-87-6 *	-	< 1	-
1,3-Dichlorobenzene	541-73-1	-	< 1	-
1,4-Dichlorobenzene	106-46-7	-	< 1	-
n-Butylbenzene	104-51-8	-	< 1	-
1,2-Dichlorobenzene	95-50-1	-	< 5	-
1,2-Dibromo-3-chloropropane	96-12-8 *	-	< 5	-
1,2,4-Trichlorobenzene	120-82-1	-	< 5	-
Hexachlorobutadiene	87-68-3	-	< 5	-
Naphthalene	91-20-3	-	< 5	-
1,2,3-Trichlorobenzene	87-61-6	-	< 5	-

Compounds marked * are not UKAS accredited
"M" denotes that % fit has been manually interpreted

Internal standards	R.T.	Area %	Surrogates	% Rec
Pentafluorobenzene	3.62	100	Dibromofluoromethane	113
1,4-Difluorobenzene	3.97	107	Toluene-d8	100
Chlorobenzene-d5	5.12	107	Bromofluorobenzene	95
1,4-Dichlorobenzene-d4	5.92	95		

Where individual results are flagged see report notes for status.

Volatile Organic Compounds by HSA-GCMS

UKAS accredited?: Yes

Customer and Site Details:	Ramboll Environ: Zeon Chemicals ESA	**Directory/Quant file:**	2016\052416\ Initial Calibration	**Matrix:**	Water
Sample Details:	ZC205	**Date Booked in:**	19-May-16	**Method:**	Headspace
LIMS ID Number:	EX1694488	**Date Analysed:**	25-May-16	**Multiplier:**	1
Job Number:	W22_0220	**Operator:**	PR	**Position:**	30

Target Compounds	CAS #	R.T. (min.)	Concentration µg/l	% Fit
Dichlorodifluoromethane	75-71-8 *	-	< 1	-
Chloromethane	74-87-3	-	< 1	-
Vinyl Chloride	75-01-4	-	< 1	-
Bromomethane	74-83-9 *	-	< 5	-
Chloroethane	75-00-3	-	< 5	-
Trichlorofluoromethane	75-69-4	-	< 1	-
1,1-Dichloroethene	75-35-4	-	< 1	-
trans 1,2-Dichloroethene	156-60-5	-	< 1	-
1,1-Dichloroethane	75-34-3	-	< 1	-
2,2-Dichloropropane	594-20-7 *	-	< 1	-
cis 1,2-Dichloroethene	156-59-2	-	< 1	-
Bromochloromethane	74-97-5	-	< 1	-
Chloroform	67-66-3	-	< 1	-
1,1,1-Trichloroethane	71-55-6	-	< 1	-
Carbon Tetrachloride	56-23-5	-	< 1	-
1,1-Dichloropropene	563-58-6	-	< 1	-
Benzene	71-43-2	-	< 1	-
1,2-Dichloroethane	107-06-2	-	< 1	-
Trichloroethene	79-01-6	-	< 5	-
1,2-Dichloropropane	78-87-5	-	< 1	-
Dibromomethane	74-95-3	-	< 1	-
Bromodichloromethane	75-27-4	-	< 1	-
cis 1,3-Dichloropropene	10061-01-5 *	-	< 1	-
Toluene	108-88-3	-	< 1	-
trans 1,3-Dichloropropene	10061-02-6 *	-	< 1	-
1,1,2-Trichloroethane	79-00-5	-	< 1	-
Tetrachloroethene	127-18-4	-	< 5	-
1,3-Dichloropropane	142-28-9	-	< 1	-
Dibromochloromethane	124-48-1	-	< 1	-
1,2-Dibromoethane	106-93-4	-	< 1	-
Chlorobenzene	108-90-7	-	< 1	-
Ethylbenzene	100-41-4	-	< 1	-
1,1,1,2-Tetrachloroethane	630-20-6	-	< 1	-
m and p-Xylene	108-38-3/106-42-3	-	< 1	-
o-Xylene	95-47-6	-	< 1	-

Target Compounds	CAS #	R.T. (min.)	Concentration µg/l	% Fit
Styrene	100-42-5 *	-	< 1	-
Bromoform	75-25-2	-	< 1	-
iso-Propylbenzene	98-82-8	-	< 1	-
1,1,2,2-Tetrachloroethane	79-34-5 *	-	< 1	-
Propylbenzene	103-65-1	-	< 1	-
Bromobenzene	108-86-1	-	< 1	-
1,2,3-Trichloropropane	96-18-4	-	< 1	-
2-Chlorotoluene	95-49-8	-	< 1	-
1,3,5-Trimethylbenzene	108-67-8	-	< 1	-
4-Chlorotoluene	106-43-4	-	< 1	-
tert-Butylbenzene	98-06-6	-	< 1	-
1,2,4-Trimethylbenzene	95-63-6 *	-	< 1	-
sec-Butylbenzene	135-98-8	-	< 1	-
p-Isopropyltoluene	99-87-6 *	-	< 1	-
1,3-Dichlorobenzene	541-73-1	-	< 1	-
1,4-Dichlorobenzene	106-46-7	-	< 1	-
n-Butylbenzene	104-51-8	-	< 1	-
1,2-Dichlorobenzene	95-50-1	-	< 5	-
1,2-Dibromo-3-chloropropane	96-12-8 *	-	< 5	-
1,2,4-Trichlorobenzene	120-82-1	-	< 5	-
Hexachlorobutadiene	87-68-3	-	< 5	-
Naphthalene	91-20-3	-	< 5	-
1,2,3-Trichlorobenzene	87-61-6	-	< 5	-

Compounds marked * are not UKAS accredited
"M" denotes that % fit has been manually interpreted

Internal standards	R.T.	Area %	Surrogates	% Rec
Pentafluorobenzene	3.62	74	Dibromofluoromethane	119
1,4-Difluorobenzene	3.97	80	Toluene-d8	101
Chlorobenzene-d5	5.12	83	Bromofluorobenzene	97
1,4-Dichlorobenzene-d4	5.92	76		

Where individual results are flagged see report notes for status.

Volatile Organic Compounds by HSA-GCMS

UKAS accredited?: Yes

Customer and Site Details:	Ramboll Environ: Zeon Chemicals ESA	**Directory/Quant file:**	2016\052416\ Initial Calibration	**Matrix:**	Water
Sample Details:	ZC206	**Date Booked in:**	19-May-16	**Method:**	Headspace
LIMS ID Number:	EX1694489	**Date Analysed:**	25-May-16	**Multiplier:**	1
Job Number:	W22_0220	**Operator:**	PR	**Position:**	31

Target Compounds	CAS #	R.T. (min.)	Concentration µg/l	% Fit
Dichlorodifluoromethane	75-71-8 *	-	< 1	-
Chloromethane	74-87-3	-	< 1	-
Vinyl Chloride	75-01-4	-	< 1	-
Bromomethane	74-83-9 *	-	< 5	-
Chloroethane	75-00-3	-	< 5	-
Trichlorofluoromethane	75-69-4	-	< 1	-
1,1-Dichloroethene	75-35-4	-	< 1	-
trans 1,2-Dichloroethene	156-60-5	-	< 1	-
1,1-Dichloroethane	75-34-3	-	< 1	-
2,2-Dichloropropane	594-20-7 *	-	< 1	-
cis 1,2-Dichloroethene	156-59-2	-	< 1	-
Bromochloromethane	74-97-5	-	< 1	-
Chloroform	67-66-3	-	< 1	-
1,1,1-Trichloroethane	71-55-6	-	< 1	-
Carbon Tetrachloride	56-23-5	-	< 1	-
1,1-Dichloropropene	563-58-6	-	< 1	-
Benzene	71-43-2	-	< 1	-
1,2-Dichloroethane	107-06-2	-	< 1	-
Trichloroethene	79-01-6	-	< 5	-
1,2-Dichloropropane	78-87-5	-	< 1	-
Dibromomethane	74-95-3	-	< 1	-
Bromodichloromethane	75-27-4	-	< 1	-
cis 1,3-Dichloropropene	10061-01-5 *	-	< 1	-
Toluene	108-88-3	-	< 1	-
trans 1,3-Dichloropropene	10061-02-6 *	-	< 1	-
1,1,2-Trichloroethane	79-00-5	-	< 1	-
Tetrachloroethene	127-18-4	-	< 5	-
1,3-Dichloropropane	142-28-9	-	< 1	-
Dibromochloromethane	124-48-1	-	< 1	-
1,2-Dibromoethane	106-93-4	-	< 1	-
Chlorobenzene	108-90-7	-	< 1	-
Ethylbenzene	100-41-4	-	< 1	-
1,1,1,2-Tetrachloroethane	630-20-6	-	< 1	-
m and p-Xylene	108-38-3/106-42-3	-	< 1	-
o-Xylene	95-47-6	-	< 1	-

Target Compounds	CAS #	R.T. (min.)	Concentration µg/l	% Fit
Styrene	100-42-5 *	-	< 1	-
Bromoform	75-25-2	-	< 1	-
iso-Propylbenzene	98-82-8	-	< 1	-
1,1,2,2-Tetrachloroethane	79-34-5 *	-	< 1	-
Propylbenzene	103-65-1	-	< 1	-
Bromobenzene	108-86-1	-	< 1	-
1,2,3-Trichloropropane	96-18-4	-	< 1	-
2-Chlorotoluene	95-49-8	-	< 1	-
1,3,5-Trimethylbenzene	108-67-8	-	< 1	-
4-Chlorotoluene	106-43-4	-	< 1	-
tert-Butylbenzene	98-06-6	-	< 1	-
1,2,4-Trimethylbenzene	95-63-6 *	-	< 1	-
sec-Butylbenzene	135-98-8	-	< 1	-
p-Isopropyltoluene	99-87-6 *	-	< 1	-
1,3-Dichlorobenzene	541-73-1	-	< 1	-
1,4-Dichlorobenzene	106-46-7	-	< 1	-
n-Butylbenzene	104-51-8	-	< 1	-
1,2-Dichlorobenzene	95-50-1	-	< 5	-
1,2-Dibromo-3-chloropropane	96-12-8 *	-	< 5	-
1,2,4-Trichlorobenzene	120-82-1	-	< 5	-
Hexachlorobutadiene	87-68-3	-	< 5	-
Naphthalene	91-20-3	-	< 5	-
1,2,3-Trichlorobenzene	87-61-6	-	< 5	-

Compounds marked * are not UKAS accredited
"M" denotes that % fit has been manually interpreted

Internal standards	R.T.	Area %	Surrogates	% Rec
Pentafluorobenzene	3.62	95	Dibromofluoromethane	116
1,4-Difluorobenzene	3.97	101	Toluene-d8	100
Chlorobenzene-d5	5.12	102	Bromofluorobenzene	95
1,4-Dichlorobenzene-d4	5.92	93		

Where individual results are flagged see report notes for status.

Volatile Organic Compounds by HSA-GCMS

UKAS accredited?: Yes

Customer and Site Details:	Ramboll Environ: Zeon Chemicals ESA	**Directory/Quant file:**	2016\052416\ Initial Calibration	**Matrix:**	Water
Sample Details:	ZC207	**Date Booked in:**	19-May-16	**Method:**	Headspace
LIMS ID Number:	EX1694490	**Date Analysed:**	25-May-16	**Multiplier:**	1
Job Number:	W22_0220	**Operator:**	PR	**Position:**	32

Target Compounds	CAS #	R.T. (min.)	Concentration µg/l	% Fit
Dichlorodifluoromethane	75-71-8 *	-	< 1	-
Chloromethane	74-87-3	-	< 1	-
Vinyl Chloride	75-01-4	-	< 1	-
Bromomethane	74-83-9 *	-	< 5	-
Chloroethane	75-00-3	-	< 5	-
Trichlorofluoromethane	75-69-4	-	< 1	-
1,1-Dichloroethene	75-35-4	-	< 1	-
trans 1,2-Dichloroethene	156-60-5	-	< 1	-
1,1-Dichloroethane	75-34-3	-	< 1	-
2,2-Dichloropropane	594-20-7 *	-	< 1	-
cis 1,2-Dichloroethene	156-59-2	-	< 1	-
Bromochloromethane	74-97-5	-	< 1	-
Chloroform	67-66-3	-	< 1	-
1,1,1-Trichloroethane	71-55-6	-	< 1	-
Carbon Tetrachloride	56-23-5	-	< 1	-
1,1-Dichloropropene	563-58-6	-	< 1	-
Benzene	71-43-2	-	< 1	-
1,2-Dichloroethane	107-06-2	-	< 1	-
Trichloroethene	79-01-6	-	< 5	-
1,2-Dichloropropane	78-87-5	-	< 1	-
Dibromomethane	74-95-3	-	< 1	-
Bromodichloromethane	75-27-4	-	< 1	-
cis 1,3-Dichloropropene	10061-01-5 *	-	< 1	-
Toluene	108-88-3	-	< 1	-
trans 1,3-Dichloropropene	10061-02-6 *	-	< 1	-
1,1,2-Trichloroethane	79-00-5	-	< 1	-
Tetrachloroethene	127-18-4	-	< 5	-
1,3-Dichloropropane	142-28-9	-	< 1	-
Dibromochloromethane	124-48-1	-	< 1	-
1,2-Dibromoethane	106-93-4	-	< 1	-
Chlorobenzene	108-90-7	-	< 1	-
Ethylbenzene	100-41-4	-	< 1	-
1,1,1,2-Tetrachloroethane	630-20-6	-	< 1	-
m and p-Xylene	108-38-3/106-42-3	-	< 1	-
o-Xylene	95-47-6	-	< 1	-

Target Compounds	CAS #	R.T. (min.)	Concentration µg/l	% Fit
Styrene	100-42-5 *	-	< 1	-
Bromoform	75-25-2	-	< 1	-
iso-Propylbenzene	98-82-8	-	< 1	-
1,1,2,2-Tetrachloroethane	79-34-5 *	-	< 1	-
Propylbenzene	103-65-1	-	< 1	-
Bromobenzene	108-86-1	-	< 1	-
1,2,3-Trichloropropane	96-18-4	-	< 1	-
2-Chlorotoluene	95-49-8	-	< 1	-
1,3,5-Trimethylbenzene	108-67-8	-	< 1	-
4-Chlorotoluene	106-43-4	-	< 1	-
tert-Butylbenzene	98-06-6	-	< 1	-
1,2,4-Trimethylbenzene	95-63-6 *	-	< 1	-
sec-Butylbenzene	135-98-8	-	< 1	-
p-Isopropyltoluene	99-87-6 *	-	< 1	-
1,3-Dichlorobenzene	541-73-1	-	< 1	-
1,4-Dichlorobenzene	106-46-7	-	< 1	-
n-Butylbenzene	104-51-8	-	< 1	-
1,2-Dichlorobenzene	95-50-1	-	< 5	-
1,2-Dibromo-3-chloropropane	96-12-8 *	-	< 5	-
1,2,4-Trichlorobenzene	120-82-1	-	< 5	-
Hexachlorobutadiene	87-68-3	-	< 5	-
Naphthalene	91-20-3	6.73	9	99
1,2,3-Trichlorobenzene	87-61-6	-	< 5	-

Compounds marked * are not UKAS accredited
"M" denotes that % fit has been manually interpreted

Internal standards	R.T.	Area %	Surrogates	% Rec
Pentafluorobenzene	3.62	71	Dibromofluoromethane	120
1,4-Difluorobenzene	3.97	80	Toluene-d8	100
Chlorobenzene-d5	5.12	86	Bromofluorobenzene	102
1,4-Dichlorobenzene-d4	5.92	88		

Where individual results are flagged see report notes for status.

Volatile Organic Compounds by HSA-GCMS

UKAS accredited?: Yes

Customer and Site Details:	Ramboll Environ: Zeon Chemicals ESA	**Directory/Quant file:**	2016\052416\ Initial Calibration	**Matrix:**	Water
Sample Details:	ZC208	**Date Booked in:**	19-May-16	**Method:**	Headspace
LIMS ID Number:	EX1694491	**Date Analysed:**	25-May-16	**Multiplier:**	1
Job Number:	W22_0220	**Operator:**	PR	**Position:**	1

Target Compounds	CAS #	R.T. (min.)	Concentration µg/l	% Fit
Dichlorodifluoromethane	75-71-8 *	-	< 1	-
Chloromethane	74-87-3	-	< 1	-
Vinyl Chloride	75-01-4	-	< 1	-
Bromomethane	74-83-9 *	-	< 5	-
Chloroethane	75-00-3	-	< 5	-
Trichlorofluoromethane	75-69-4	-	< 1	-
1,1-Dichloroethene	75-35-4	-	< 1	-
trans 1,2-Dichloroethene	156-60-5	-	< 1	-
1,1-Dichloroethane	75-34-3	-	< 1	-
2,2-Dichloropropane	594-20-7 *	-	< 1	-
cis 1,2-Dichloroethene	156-59-2	-	< 1	-
Bromochloromethane	74-97-5	-	< 1	-
Chloroform	67-66-3	-	< 1	-
1,1,1-Trichloroethane	71-55-6	-	< 1	-
Carbon Tetrachloride	56-23-5	-	< 1	-
1,1-Dichloropropene	563-58-6	-	< 1	-
Benzene	71-43-2	-	< 1	-
1,2-Dichloroethane	107-06-2	-	< 1	-
Trichloroethene	79-01-6	-	< 5	-
1,2-Dichloropropane	78-87-5	-	< 1	-
Dibromomethane	74-95-3	-	< 1	-
Bromodichloromethane	75-27-4	-	< 1	-
cis 1,3-Dichloropropene	10061-01-5 *	-	< 1	-
Toluene	108-88-3	-	< 1	-
trans 1,3-Dichloropropene	10061-02-6 *	-	< 1	-
1,1,2-Trichloroethane	79-00-5	-	< 1	-
Tetrachloroethene	127-18-4	-	< 5	-
1,3-Dichloropropane	142-28-9	-	< 1	-
Dibromochloromethane	124-48-1	-	< 1	-
1,2-Dibromoethane	106-93-4	-	< 1	-
Chlorobenzene	108-90-7	-	< 1	-
Ethylbenzene	100-41-4	-	< 1	-
1,1,1,2-Tetrachloroethane	630-20-6	-	< 1	-
m and p-Xylene	108-38-3/106-42-3	-	< 1	-
o-Xylene	95-47-6	-	< 1	-

Target Compounds	CAS #	R.T. (min.)	Concentration µg/l	% Fit
Styrene	100-42-5 *	-	< 1	-
Bromoform	75-25-2	-	< 1	-
iso-Propylbenzene	98-82-8	-	< 1	-
1,1,2,2-Tetrachloroethane	79-34-5 *	-	< 1	-
Propylbenzene	103-65-1	-	< 1	-
Bromobenzene	108-86-1	-	< 1	-
1,2,3-Trichloropropane	96-18-4	-	< 1	-
2-Chlorotoluene	95-49-8	-	< 1	-
1,3,5-Trimethylbenzene	108-67-8	-	< 1	-
4-Chlorotoluene	106-43-4	-	< 1	-
tert-Butylbenzene	98-06-6	-	< 1	-
1,2,4-Trimethylbenzene	95-63-6 *	-	< 1	-
sec-Butylbenzene	135-98-8	-	< 1	-
p-Isopropyltoluene	99-87-6 *	-	< 1	-
1,3-Dichlorobenzene	541-73-1	-	< 1	-
1,4-Dichlorobenzene	106-46-7	-	< 1	-
n-Butylbenzene	104-51-8	-	< 1	-
1,2-Dichlorobenzene	95-50-1	-	< 5	-
1,2-Dibromo-3-chloropropane	96-12-8 *	-	< 5	-
1,2,4-Trichlorobenzene	120-82-1	-	< 5	-
Hexachlorobutadiene	87-68-3	-	< 5	-
Naphthalene	91-20-3	-	< 5	-
1,2,3-Trichlorobenzene	87-61-6	-	< 5	-

Compounds marked * are not UKAS accredited
"M" denotes that % fit has been manually interpreted

Internal standards	R.T.	Area %	Surrogates	% Rec
Pentafluorobenzene	3.62	89	Dibromofluoromethane	114
1,4-Difluorobenzene	3.97	96	Toluene-d8	100
Chlorobenzene-d5	5.12	97	Bromofluorobenzene	97
1,4-Dichlorobenzene-d4	5.92	89		

Where individual results are flagged see report notes for status.

Volatile Organic Compounds by HSA-GCMS

UKAS accredited?: Yes

Customer and Site Details:	Ramboll Environ: Zeon Chemicals ESA	**Directory/Quant file:**	2016\052416\ Initial Calibration	**Matrix:**	Water
Sample Details:	ZC209	**Date Booked in:**	19-May-16	**Method:**	Headspace
LIMS ID Number:	EX1694492	**Date Analysed:**	25-May-16	**Multiplier:**	1
Job Number:	W22_0220	**Operator:**	PR	**Position:**	2

Target Compounds	CAS #	R.T. (min.)	Concentration µg/l	% Fit
Dichlorodifluoromethane	75-71-8 *	-	< 1	-
Chloromethane	74-87-3	-	< 1	-
Vinyl Chloride	75-01-4	1.01	418	83
Bromomethane	74-83-9 *	-	< 5	-
Chloroethane	75-00-3	-	< 5	-
Trichlorofluoromethane	75-69-4	-	< 1	-
1,1-Dichloroethene	75-35-4	-	< 1	-
trans 1,2-Dichloroethene	156-60-5	2.59	5	M
1,1-Dichloroethane	75-34-3	2.93	16	98
2,2-Dichloropropane	594-20-7 *	-	< 1	-
cis 1,2-Dichloroethene	156-59-2	3.32	45	77
Bromochloromethane	74-97-5	-	< 1	-
Chloroform	67-66-3	-	< 1	-
1,1,1-Trichloroethane	71-55-6	-	< 1	-
Carbon Tetrachloride	56-23-5	-	< 1	-
1,1-Dichloropropene	563-58-6	-	< 1	-
Benzene	71-43-2	3.78	8	95
1,2-Dichloroethane	107-06-2	3.80	1	M
Trichloroethene	79-01-6	-	< 5	-
1,2-Dichloropropane	78-87-5	-	< 1	-
Dibromomethane	74-95-3	-	< 1	-
Bromodichloromethane	75-27-4	-	< 1	-
cis 1,3-Dichloropropene	10061-01-5 *	-	< 1	-
Toluene	108-88-3	-	< 1	-
trans 1,3-Dichloropropene	10061-02-6 *	-	< 1	-
1,1,2-Trichloroethane	79-00-5	-	< 1	-
Tetrachloroethene	127-18-4	-	< 5	-
1,3-Dichloropropane	142-28-9	-	< 1	-
Dibromochloromethane	124-48-1	-	< 1	-
1,2-Dibromoethane	106-93-4	-	< 1	-
Chlorobenzene	108-90-7	5.13	3	96
Ethylbenzene	100-41-4	-	< 1	-
1,1,1,2-Tetrachloroethane	630-20-6	-	< 1	-
m and p-Xylene	108-38-3/106-42-3	-	< 1	-
o-Xylene	95-47-6	-	< 1	-

Target Compounds	CAS #	R.T. (min.)	Concentration µg/l	% Fit
Styrene	100-42-5 *	-	< 1	-
Bromoform	75-25-2	-	< 1	-
iso-Propylbenzene	98-82-8	-	< 1	-
1,1,2,2-Tetrachloroethane	79-34-5 *	-	< 1	-
Propylbenzene	103-65-1	-	< 1	-
Bromobenzene	108-86-1	-	< 1	-
1,2,3-Trichloropropane	96-18-4	-	< 1	-
2-Chlorotoluene	95-49-8	-	< 1	-
1,3,5-Trimethylbenzene	108-67-8	-	< 1	-
4-Chlorotoluene	106-43-4	-	< 1	-
tert-Butylbenzene	98-06-6	-	< 1	-
1,2,4-Trimethylbenzene	95-63-6 *	-	< 1	-
sec-Butylbenzene	135-98-8	-	< 1	-
p-Isopropyltoluene	99-87-6 *	-	< 1	-
1,3-Dichlorobenzene	541-73-1	-	< 1	-
1,4-Dichlorobenzene	106-46-7	-	< 1	-
n-Butylbenzene	104-51-8	-	< 1	-
1,2-Dichlorobenzene	95-50-1	-	< 5	-
1,2-Dibromo-3-chloropropane	96-12-8 *	-	< 5	-
1,2,4-Trichlorobenzene	120-82-1	-	< 5	-
Hexachlorobutadiene	87-68-3	-	< 5	-
Naphthalene	91-20-3	-	< 5	-
1,2,3-Trichlorobenzene	87-61-6	-	< 5	-

Compounds marked * are not UKAS accredited
"M" denotes that % fit has been manually interpreted

Internal standards	R.T.	Area %	Surrogates	% Rec
Pentafluorobenzene	3.62	90	Dibromofluoromethane	115
1,4-Difluorobenzene	3.97	97	Toluene-d8	101
Chlorobenzene-d5	5.12	99	Bromofluorobenzene	96
1,4-Dichlorobenzene-d4	5.92	88		

Where individual results are flagged see report notes for status.

Volatile Organic Compounds by HSA-GCMS

UKAS accredited?: Yes

Customer and Site Details:	Ramboll Environ: Zeon Chemicals ESA	**Directory/Quant file:**	0525VOC.MS8\ Initial Calibration	**Matrix:**	Water
Sample Details:	ZC209A	**Date Booked in:**	19-May-16	**Method:**	Headspace
LIMS ID Number:	EX1694493	**Date Analysed:**	25-May-16	**Multiplier:**	1
Job Number:	W22_0220	**Operator:**	PR	**Position:**	12

Target Compounds	CAS #	R.T. (min.)	Concentration µg/l	% Fit
Dichlorodifluoromethane	75-71-8 *	-	< 1	-
Chloromethane	74-87-3	-	< 1	-
Vinyl Chloride	75-01-4	-	< 1	-
Bromomethane	74-83-9 *	-	< 5	-
Chloroethane	75-00-3	-	< 5	-
Trichlorofluoromethane	75-69-4	-	< 1	-
1,1-Dichloroethene	75-35-4	-	< 1	-
trans 1,2-Dichloroethene	156-60-5	-	< 1	-
1,1-Dichloroethane	75-34-3	-	< 1	-
2,2-Dichloropropane	594-20-7 *	-	< 1	-
cis 1,2-Dichloroethene	156-59-2	-	< 1	-
Bromochloromethane	74-97-5	-	< 1	-
Chloroform	67-66-3	-	< 1	-
1,1,1-Trichloroethane	71-55-6	-	< 1	-
Carbon Tetrachloride	56-23-5	-	< 1	-
1,1-Dichloropropene	563-58-6	-	< 1	-
Benzene	71-43-2	-	< 1	-
1,2-Dichloroethane	107-06-2	-	< 1	-
Trichloroethene	79-01-6 *	-	< 5	-
1,2-Dichloropropane	78-87-5	-	< 1	-
Dibromomethane	74-95-3	-	< 1	-
Bromodichloromethane	75-27-4	-	< 1	-
cis 1,3-Dichloropropene	10061-01-5 *	-	< 1	-
Toluene	108-88-3	-	< 1	-
trans 1,3-Dichloropropene	10061-02-6 *	-	< 1	-
1,1,2-Trichloroethane	79-00-5	-	< 1	-
Tetrachloroethene	127-18-4	-	< 5	-
1,3-Dichloropropane	142-28-9	-	< 1	-
Dibromochloromethane	124-48-1	-	< 1	-
1,2-Dibromoethane	106-93-4	-	< 1	-
Chlorobenzene	108-90-7	-	< 1	-
Ethylbenzene	100-41-4	-	< 1	-
1,1,1,2-Tetrachloroethane	630-20-6	-	< 1	-
m and p-Xylene	108-38-3/106-42-3	-	< 1	-
o-Xylene	95-47-6	-	< 1	-

Target Compounds	CAS #	R.T. (min.)	Concentration µg/l	% Fit
Styrene	100-42-5	-	< 1	-
Bromoform	75-25-2	-	< 1	-
iso-Propylbenzene	98-82-8	-	< 1	-
1,1,2,2-Tetrachloroethane	79-34-5 *	-	< 1	-
Propylbenzene	103-65-1	-	< 1	-
Bromobenzene	108-86-1	-	< 1	-
1,2,3-Trichloropropane	96-18-4	-	< 1	-
2-Chlorotoluene	95-49-8	-	< 1	-
1,3,5-Trimethylbenzene	108-67-8	-	< 1	-
4-Chlorotoluene	106-43-4	-	< 1	-
tert-Butylbenzene	98-06-6	-	< 1	-
1,2,4-Trimethylbenzene	95-63-6	-	< 1	-
sec-Butylbenzene	135-98-8	-	< 1	-
p-Isopropyltoluene	99-87-6	-	< 1	-
1,3-Dichlorobenzene	541-73-1	-	< 1	-
1,4-Dichlorobenzene	106-46-7	-	< 1	-
n-Butylbenzene	104-51-8	-	< 1	-
1,2-Dichlorobenzene	95-50-1	-	< 5	-
1,2-Dibromo-3-chloropropane	96-12-8 *	-	< 5	-
1,2,4-Trichlorobenzene	120-82-1	-	< 5	-
Hexachlorobutadiene	87-68-3	-	< 5	-
Naphthalene	91-20-3	-	< 5	-
1,2,3-Trichlorobenzene	87-61-6	-	< 5	-

Compounds marked * are not UKAS accredited
"M" denotes that % fit has been manually interpreted

Internal standards	R.T.	Area %	Surrogates	% Rec
Pentafluorobenzene	3.32	99	Dibromofluoromethane	111
1,4-Difluorobenzene	3.69	100	Toluene-d8	99
Chlorobenzene-d5	4.85	101	Bromofluorobenzene	97
1,4-Dichlorobenzene-d4	5.64	94		

Where individual results are flagged see report notes for status.

TICs by HSA-GCMS

UKAS accredited?: No

Customer and Site Details:	Ramboll Environ: Zeon Chemicals ESA		**Date Booked in:**	19-May-16
Sample Details:	ZC203		**Date Analysed:**	25-May-16
LIMS ID Number:	EX1694486		**Matrix:**	Water
Job Number:	W22_0220		**Ext Method:**	Headspace
Directory/Quant file:	2016\052416\	Initial Calibration	**Dilution:**	1
Operator:	PR		**Position:**	28

Tentatively Identified Compounds	CAS No	R.T. (min.)	Concentration µg/l	% Fit
None Detected			<5	

The compounds listed above have been tentatively identified by a computer based library search.
Compounds identified in the sample are not reported if they also occur in the method blank.
The % fit is an indication of the reliability of the compound assignment.
Due to the similarity between mass spectra of some isomeric compounds, assignments may not be correct.
Other compounds may also be present but identification was not possible.
Concentrations are semi-quantitative, assume a response factor of 1 and use the nearest internal standard.
Compounds marked * are not UKAS accredited
"M" denotes that % fit has been manually interpreted

Where individual results are flagged see report notes for status.

TICs by HSA-GCMS

UKAS accredited?: No

Customer and Site Details:	Ramboll Environ: Zeon Chemicals ESA		**Date Booked in:**	19-May-16
Sample Details:	ZC204		**Date Analysed:**	25-May-16
LIMS ID Number:	EX1694487		**Matrix:**	Water
Job Number:	W22_0220		**Ext Method:**	Headspace
Directory/Quant file:	2016\052416\	Initial Calibration	**Dilution:**	1
Operator:	PR		**Position:**	29

Tentatively Identified Compounds	CAS No	R.T. (min.)	Concentration µg/l	% Fit
None Detected			<5	

The compounds listed above have been tentatively identified by a computer based library search.
Compounds identified in the sample are not reported if they also occur in the method blank.
The % fit is an indication of the reliability of the compound assignment.
Due to the similarity between mass spectra of some isomeric compounds, assignments may not be correct.
Other compounds may also be present but identification was not possible.
Concentrations are semi-quantitative, assume a response factor of 1 and use the nearest internal standard.
Compounds marked * are not UKAS accredited
"M" denotes that % fit has been manually interpreted

Where individual results are flagged see report notes for status.

TICs by HSA-GCMS

UKAS accredited?: No

Customer and Site Details:	Ramboll Environ: Zeon Chemicals ESA		**Date Booked in:**	19-May-16
Sample Details:	ZC205		**Date Analysed:**	25-May-16
LIMS ID Number:	EX1694488		**Matrix:**	Water
Job Number:	W22_0220		**Ext Method:**	Headspace
Directory/Quant file:	2016\052416\	Initial Calibration	**Dilution:**	1
Operator:	PR		**Position:**	30

Tentatively Identified Compounds	CAS No	R.T. (min.)	Concentration µg/l	% Fit
None Detected			<5	

The compounds listed above have been tentatively identified by a computer based library search.
Compounds identified in the sample are not reported if they also occur in the method blank.
The % fit is an indication of the reliability of the compound assignment.
Due to the similarity between mass spectra of some isomeric compounds, assignments may not be correct.
Other compounds may also be present but identification was not possible.
Concentrations are semi-quantitative, assume a response factor of 1 and use the nearest internal standard.
Compounds marked * are not UKAS accredited
"M" denotes that % fit has been manually interpreted

Where individual results are flagged see report notes for status.

TICs by HSA-GCMS

UKAS accredited?: No

Customer and Site Details:	Ramboll Environ: Zeon Chemicals ESA		**Date Booked in:**	19-May-16
Sample Details:	ZC206		**Date Analysed:**	25-May-16
LIMS ID Number:	EX1694489		**Matrix:**	Water
Job Number:	W22_0220		**Ext Method:**	Headspace
Directory/Quant file:	2016\052416\	Initial Calibration	**Dilution:**	1
Operator:	PR		**Position:**	31

Tentatively Identified Compounds	CAS No	R.T. (min.)	Concentration µg/l	% Fit
None Detected			<5	

The compounds listed above have been tentatively identified by a computer based library search.
Compounds identified in the sample are not reported if they also occur in the method blank.
The % fit is an indication of the reliability of the compound assignment.
Due to the similarity between mass spectra of some isomeric compounds, assignments may not be correct.
Other compounds may also be present but identification was not possible.
Concentrations are semi-quantitative, assume a response factor of 1 and use the nearest internal standard.
Compounds marked * are not UKAS accredited
"M" denotes that % fit has been manually interpreted

Where individual results are flagged see report notes for status.

TICs by HSA-GCMS

UKAS accredited?: No

Customer and Site Details:	Ramboll Environ: Zeon Chemicals ESA		**Date Booked in:**	19-May-16
Sample Details:	ZC207		**Date Analysed:**	25-May-16
LIMS ID Number:	EX1694490		**Matrix:**	Water
Job Number:	W22_0220		**Ext Method:**	Headspace
Directory/Quant file:	2016\052416\	Initial Calibration	**Dilution:**	1
Operator:	PR		**Position:**	32

Tentatively Identified Compounds	CAS No	R.T. (min.)	Concentration µg/l	% Fit
Indane	000496-11-7	6.02	1116	93
Benzene, 1-ethenyl-3-ethyl-	007525-62-4	6.21	246	87
Benzene, 1-ethyl-2,4-dimethyl-	000874-41-9	6.16	146	97
Benzene, 1,2-diethyl-	000135-01-3	6.00	66	96
1-Phenyl-1-butene	000824-90-8	6.48	49	91
Benzene, (2-methyl-1-propenyl)-	000768-49-0	6.18	37	91
Benzene, 1-ethenyl-4-ethyl-	003454-07-7	6.42	24	94
Benzene, 1-ethyl-2-methyl-	000611-14-3	5.73	20	94

The compounds listed above have been tentatively identified by a computer based library search.
Compounds identified in the sample are not reported if they also occur in the method blank.
The % fit is an indication of the reliability of the compound assignment.
Due to the similarity between mass spectra of some isomeric compounds, assignments may not be correct.
Other compounds may also be present but identification was not possible.
Concentrations are semi-quantitative, assume a response factor of 1 and use the nearest internal standard.
Compounds marked * are not UKAS accredited
"M" denotes that % fit has been manually interpreted

Where individual results are flagged see report notes for status.

TICs by HSA-GCMS

UKAS accredited?: No

Customer and Site Details:	Ramboll Environ: Zeon Chemicals ESA		**Date Booked in:**	19-May-16
Sample Details:	ZC208		**Date Analysed:**	25-May-16
LIMS ID Number:	EX1694491		**Matrix:**	Water
Job Number:	W22_0220		**Ext Method:**	Headspace
Directory/Quant file:	2016\052416\	Initial Calibration	**Dilution:**	1
Operator:	PR		**Position:**	1

Tentatively Identified Compounds	CAS No	R.T. (min.)	Concentration µg/l	% Fit
Cyclohexane, methyl-	000108-87-2	4.16	14	87
Cyclopentane, 1,2-dimethyl-	002452-99-5	3.86	12	87
Cyclopentane, methyl-	000096-37-7	3.24	7	80

The compounds listed above have been tentatively identified by a computer based library search.
Compounds identified in the sample are not reported if they also occur in the method blank.
The % fit is an indication of the reliability of the compound assignment.
Due to the similarity between mass spectra of some isomeric compounds, assignments may not be correct.
Other compounds may also be present but identification was not possible.
Concentrations are semi-quantitative, assume a response factor of 1 and use the nearest internal standard.
Compounds marked * are not UKAS accredited
"M" denotes that % fit has been manually interpreted

Where individual results are flagged see report notes for status.

TICs by HSA-GCMS

UKAS accredited?: No

Customer and Site Details:	Ramboll Environ: Zeon Chemicals ESA		**Date Booked in:**	19-May-16
Sample Details:	ZC209		**Date Analysed:**	25-May-16
LIMS ID Number:	EX1694492		**Matrix:**	Water
Job Number:	W22_0220		**Ext Method:**	Headspace
Directory/Quant file:	2016\052416\	Initial Calibration	**Dilution:**	1
Operator:	PR		**Position:**	2

Tentatively Identified Compounds	CAS No	R.T. (min.)	Concentration µg/l	% Fit
None Detected			<5	

The compounds listed above have been tentatively identified by a computer based library search.
Compounds identified in the sample are not reported if they also occur in the method blank.
The % fit is an indication of the reliability of the compound assignment.
Due to the similarity between mass spectra of some isomeric compounds, assignments may not be correct.
Other compounds may also be present but identification was not possible.
Concentrations are semi-quantitative, assume a response factor of 1 and use the nearest internal standard.
Compounds marked * are not UKAS accredited
"M" denotes that % fit has been manually interpreted

Where individual results are flagged see report notes for status.

TICs by HSA-GCMS

UKAS accredited?: No

Customer and Site Details:	Ramboll Environ: Zeon Chemicals ESA		**Date Booked in:**	19-May-16
Sample Details:	ZC209A		**Date Analysed:**	25-May-16
LIMS ID Number:	EX1694493		**Matrix:**	Water
Job Number:	W22_0220		**Ext Method:**	Headspace
Directory/Quant file:	0525VOC.MS8\	Initial Calibration	**Dilution:**	1
Operator:	PR		**Position:**	12

Tentatively Identified Compounds	CAS No	R.T. (min.)	Concentration µg/l	% Fit
None Detected			<5	

The compounds listed above have been tentatively identified by a computer based library search.
Compounds identified in the sample are not reported if they also occur in the method blank.
The % fit is an indication of the reliability of the compound assignment.
Due to the similarity between mass spectra of some isomeric compounds, assignments may not be correct.
Other compounds may also be present but identification was not possible.
Concentrations are semi-quantitative, assume a response factor of 1 and use the nearest internal standard.
Compounds marked * are not UKAS accredited
"M" denotes that % fit has been manually interpreted

Where individual results are flagged see report notes for status.

Sample Analysis

ESG Environmental Chemistry
Analytical and Deviating Sample Overview

W220220

Customer Ramboll Environ
Site Zeon Chemicals ESA
Report No W220220

Consignment No W104220
Date Logged 19-May-2016

Report Due 13-Jun-2016

ID Number	Description	Matrix Type	Sampled	MethodID	ALCHSAFID	Calc_HD	CUSTSERV	GROHSA	ICPMSW										ICPWATVAR			
					Alcohols by HSA-FID	Total Hardness as CaCO3 (CALC)	Report A	GRO-HSA GCFID (AA)	Nickel as Ni MS (Dissolved)	Chromium as Cr MS (Dissolved)	Cadmium as Cd MS (Dissolved)	Copper as Cu MS (Dissolved)	Lead as Pb MS (Dissolved)	Zinc as Zn MS (Dissolved)	Arsenic as As MS (Dissolved)	Mercury as Hg MS (Dissolved)	Selenium as Se MS (Dissolved)	Vanadium as V MS (Dissolved)	Total Sulphur as SO4 (Diss) VAR	Calcium as Ca (Dissolved) VAR	Magnesium as Mg (Dissolved) VAR	Barium as Ba (Dissolved) VAR
Test Method Accredited to ISO17025						✓			✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
EX/1694486	ZC203	Groundwater	18/05/16																			
EX/1694487	ZC204	Groundwater	18/05/16																			
EX/1694488	ZC205	Groundwater	18/05/16																			
EX/1694489	ZC206	Groundwater	18/05/16																			
EX/1694490	ZC207	Groundwater	18/05/16																			
EX/1694491	ZC208	Groundwater	18/05/16																			
EX/1694492	ZC209	Groundwater	18/05/16																			
EX/1694493	ZC209A	Groundwater	18/05/16																			

Note: For analysis where the scheduled turnaround is greater than the holding time we will do our utmost to prioritise these samples. However, it is possible that samples could become deviant whilst being processed in the laboratory.

In this instance please contact the laboratory immediately should you wish to discuss how you would like us to proceed. If you do not respond within 24 hours, we will proceed as originally requested.

Deviating Sample Key

A	The sample was received in an inappropriate container for this analysis
B	The sample was received without the correct preservation for this analysis
C	Headspace present in the sample container
D	The sampling date was not supplied so holding time may be compromised - applicable to all analysis
E	Sample processing did not commence within the appropriate holding time
F	Sample processing did not commence within the appropriate handling time

Requested Analysis Key

	Analysis Required
	Analysis dependant upon trigger result - **Note: due date may be affected if triggered**
	No analysis scheduled
^	Analysis Subcontracted - **Note: due date may vary**

The integrity of data for samples/analysis that have been categorised as Deviating may be compromised. Data may not be representative of the sample at the time of sampling.
Where individual results are flagged see report notes for status.

Analytical and Deviating Sample Overview

Customer Ramboll Environ
Site Zeon Chemicals ESA
Report No W220220

Consignment No W104220
Date Logged 19-May-2016

Report Due 13-Jun-2016

ID Number	Description	Matrix Type	Sampled	ICPWATVAR: Sodium as Na (Dissolved) VAR	ICPWATVAR: Potassium as K (Dissolved) VAR	ICPWATVAR: Boron as B (Dissolved) VAR	ICPWATVAR: Beryllium as Be (Dissolved) VAR	ICPWATVART: Iron as Fe (Total) VAR	KONENS: Chloride as Cl (Kone)	KONENS: Nitrite as N (Kone)	PAHMSW: PAH GC-MS (16)	PHEHPLC: Phenols by HPLC Analysis	SFAPI: Cyanide (Total) as CN SFA	SUB005: ^Anionic Detergents	SUB005: ^Cationic Detergents	SVOCSW: SVOC + TICS	TPHFID-Si: TPH by GC(Si)	VOCHSAW: VOC + TICS HSA-GCMS	WSLM11: Chemical Oxygen Demand (Settled)	WSLM12: Total Alkalinity as CaCO3	WSLM20: Biochemical Oxygen Demand	WSLM3: pH units
Test Method Accredited to ISO17025				✓	✓	✓		✓	✓	✓	✓		✓				✓	✓	✓	✓	✓	✓
EX/1694486	ZC203	Groundwater	18/05/16																			
EX/1694487	ZC204	Groundwater	18/05/16																			
EX/1694488	ZC205	Groundwater	18/05/16																			
EX/1694489	ZC206	Groundwater	18/05/16																			
EX/1694490	ZC207	Groundwater	18/05/16																			
EX/1694491	ZC208	Groundwater	18/05/16																			
EX/1694492	ZC209	Groundwater	18/05/16																			
EX/1694493	ZC209A	Groundwater	18/05/16																			

Note: For analysis where the scheduled turnaround is greater than the holding time we will do our utmost to prioritise these samples. However, it is possible that samples could become deviant whilst being processed in the laboratory.

In this instance please contact the laboratory immediately should you wish to discuss how you would like us to proceed. If you do not respond within 24 hours, we will proceed as originally requested.

Deviating Sample Key

A	The sample was received in an inappropriate container for this analysis
B	The sample was received without the correct preservation for this analysis
C	Headspace present in the sample container
D	The sampling date was not supplied so holding time may be compromised - applicable to all analysis
E	Sample processing did not commence within the appropriate holding time
F	Sample processing did not commence within the appropriate handling time

Requested Analysis Key

	Analysis Required
	Analysis dependant upon trigger result - **Note: due date may be affected if triggered**
	No analysis scheduled
^	Analysis Subcontracted - **Note: due date may vary**

The integrity of data for samples/analysis that have been categorised as Deviating may be compromised. Data may not be representative of the sample at the time of sampling.
Where individual results are flagged see report notes for status.

Customer Ramboll Environ
Site Zeon Chemicals ESA
Report No W220220

Consignment No W104220
Date Logged 19-May-2016

Report Due 13-Jun-2016

ID Number	Description	Matrix Type	Sampled	pH units
		MethodID		WSLM3
	Test Method Accredited to ISO17025			✓
EX/1694486	ZC203	Groundwater	18/05/16	
EX/1694487	ZC204	Groundwater	18/05/16	
EX/1694488	ZC205	Groundwater	18/05/16	
EX/1694489	ZC206	Groundwater	18/05/16	
EX/1694490	ZC207	Groundwater	18/05/16	
EX/1694491	ZC208	Groundwater	18/05/16	
EX/1694492	ZC209	Groundwater	18/05/16	
EX/1694493	ZC209A	Groundwater	18/05/16	

Note: For analysis where the scheduled turnaround is greater than the holding time we will do our utmost to prioritise these samples. However, it is possible that samples could become deviant whilst being processed in the laboratory.

In this instance please contact the laboratory immediately should you wish to discuss how you would like us to proceed. If you do not respond within 24 hours, we will proceed as originally requested.

Deviating Sample Key	
A	The sample was received in an inappropriate container for this analysis
B	The sample was received without the correct preservation for this analysis
C	Headspace present in the sample container
D	The sampling date was not supplied so holding time may be compromised - applicable to all analysis
E	Sample processing did not commence within the appropriate holding time
F	Sample processing did not commence within the appropriate handling time

Requested Analysis Key	
	Analysis Required
	Analysis dependant upon trigger result - **Note: due date may be affected if triggered**
	No analysis scheduled
^	Analysis Subcontracted - **Note: due date may vary**

The integrity of data for samples/analysis that have been categorised as Deviating may be compromised. Data may not be representative of the sample at the time of sampling.
Where individual results are flagged see report notes for status.

Report Number : W/EXR/220220

Additional Report Notes

Method Code	Sample ID	The following information should be taken into consideration when using the data contained within this report
WSLM20	EX/1694487	Based on the sample history/appearance/smell, a dilution was applied prior to testing. Unfortunately the result is below our lower range for this sample volume, therefore the detection limit has been raised.
PAHMSW	EX1694486 TO 1694492	The Secondary process control result associated with this Test has not wholly met the requirements of the Laboratory Quality Management System (QMS). All other Process controls (including the Primary Process control) are within specification. The Laboratory believes that the validity of the data has not been affected but in line with our QMS policy we have removed accreditation from the affected analyte - Indeno[1,2,3-cd] pyrene. These circumstances should be taken into consideration when utilising the data.
VOCHSAW	EX1694486 TO 1694493	The Primary process control result associated with this Test has not wholly met the requirements of the Laboratory Quality Management System (QMS). The Laboratory believes that the validity of the data has not been affected but in line with our QMS policy we have removed accreditation from the affected analytes (Styrene, 1,2,4-Trimethylbenzene and p-Isopropyltoluene) . These circumstances should be taken into consideration when utilising the data.

Method Descriptions

Matrix	MethodID	Analysis Basis	Method Description
Water	ALCHSAFID	As Received	Determination of Alcohols in water by Headspace GCFID
Water	Calc_HD	As Received	Calculation based on Dissolved metals analysis by ICPOES
Water	GROHSA	As Received	Determination of Total Gasoline Range Organics Hydrocarbons (GRO) by Headspace FID
Water	ICPMSW	As Received	Direct quantitative determination of Metals in water samples using ICPMS
Water	ICPWATVAR	As Received	Direct determination of Metals and Sulphate in water samples using ICPOES
Water	ICPWATVART	As Received	Determination of Total Metals in water samples using nitric acid digestion and ICPOES quantitation
Water	KONENS	As Received	Direct analysis using discrete colorimetric analysis
Water	PAHMSW	As Received	Determination of PolyAromatic Hydrocarbons in water by pentane extraction GCMS quantitation
Water	PHEHPLC	As Received	Determination of Phenols by HPLC
Water	SFAPI	As Received	Segmented flow analysis with colorimetric detection
Water	SubCon*	*	Contact Laboratory for details of the methodology used by the sub-contractor.
Water	SVOCSW	As Received	Determination of Semi Volatile Organic Compounds (SVOC) by DCM extraction followed by GCMS detection
Water	TPHFID-Si	As Received	Determination of speciated pentane extractable hydrocarbons in water by GCFID
Water	VOCHSAW	As Received	Determination of Volatile Organics Compounds by Headspace GCMS
Water	WSLM11	As Received	Acid Dichromate oxidation of the sample followed by colorimetric analysis.
Water	WSLM12	As Received	Titration with Sulphuric Acid to required pH
Water	WSLM20	As Received	Determination of Biological Oxygen Demand using 5 day incubation and dissolved oxygen probe
Water	WSLM3	As Received	Determination of the pH of water samples by pH probe

Where individual results are flagged see report notes for status.

Report Notes

Generic Notes

Soil/Solid Analysis

Unless stated otherwise,
- Results expressed as mg/kg have been calculated on the basis indicated in the Method Description table.
  All results on MCERTS reports are reported on a 105ºC dry weight basis with the exception of pH and conductivity.
- Sulphate analysis not conducted in accordance with BS1377
- Water Soluble Sulphate is on a 2:1 water:soil extract

Waters Analysis

Unless stated otherwise results are expressed as mg/l
Nil: Where "Nil" has been entered against Total Alkalinity or Total Acidity this indicates that a measurement was not required due to the inherent pH of the sample.

Oil analysis specific

Unless stated otherwise,
- Results are expressed as mg/kg
- SG is expressed as g/cm^3@ 15^{o}C

Gas (Tedlar bag) Analysis

Unless stated otherwise, results are expressed as ug/l

Asbestos Analysis

CH Denotes Chrysotile **TR** Denotes Tremolite
CR Denotes Crocidolite **AC** Denotes Actinolite
AM Denotes Amosite **AN** Denotes Anthophylite
NAIIS No Asbestos Identified in Sample
NADIS No Asbestos Detected In Sample

Symbol Reference

^ Sub-contracted analysis.
$$ Unable to analyse due to the nature of the sample
¶ Samples submitted for this analyte were not preserved on site in accordance with laboratory protocols. This may have resulted in deterioration of the sample(s) during transit to the laboratory. Consequently the reported data may not represent the concentration of the target analyte present in the sample at the time of sampling
¥ Results for guidance only due to possible interference
& Blank corrected result
I.S Insufficient sample to complete requested analysis
I.S(g) Insufficient sample to re-analyse, results for guidance only
Intf Unable to analyse due to interferences
N.D Not determined **N.Det** Not detected
N.F No Flow
NS Information Not Supplied
Req Analysis requested, see attached sheets for results
Þ Raised detection limit due to nature of the sample
***** All accreditation has been removed by the laboratory for this result
‡ MCERTS accreditation has been removed for this result
§ accreditation has been removed for this result as it is a non-accredited matrix

Note: The Laboratory may only claim that data is accredited when all of the requirements of our Quality System have been met. Where these requirements have not been met the laboratory may elect to include the data in its final report and remove the accreditation from individual data items if it believes that the validity of the data has not been affected. If further details are required of the circumstances which have led to the removal of accreditation then please do not hesitate to contact the laboratory.

Sample Descriptions

Client : Ramboll Environ
Site : Zeon Chemicals ESA
Report Number : W22_0220

Lab ID Number	Client ID	Description
EX/1694486	ZC203	Groundwater
EX/1694487	ZC204	Groundwater
EX/1694488	ZC205	Groundwater
EX/1694489	ZC206	Groundwater
EX/1694490	ZC207	Groundwater
EX/1694491	ZC208	Groundwater
EX/1694492	ZC209	Groundwater
EX/1694493	ZC209A	Groundwater

Our Ref: EXR/220278 (Ver. 3)
Your Ref: UK15-21370

June 10, 2016

Environmental Chemistry
ESG
Bretby Business Park
Ashby Road
Burton-on-Trent
Staffordshire
DE15 0YZ

Telephone: 01283 554400
Facsimile: 01283 554422

Lucy Cleverley
Ramboll Environ
8 Village Way
Cardiff
CF15 2NE

For the attention of Lucy Cleverley

Dear Lucy Cleverley

Sample Analysis - Zeon Chemicals ESA

Samples from the above site have been analysed in accordance with the schedule supplied.
The sample details and the results of analyses for these samples are given in the appended report.

An invoice for this work will follow under a separate cover.

Please be aware that our policy for the retention of paper based laboratory records and analysis reports is 6 years.

The work was carried out in accordance with Environmental Scientifics Group Ltd (Multi-Sector Services) Standard Terms and Conditions of Contract.

If I can be of any further assistance please do not hesitate to contact me.

Yours sincerely

for ESG

JNColbourne

J Colbourne
Project Co-ordinator
01283 554547

TEST REPORT

UKAS TESTING
1252

Report No. EXR/220278 (Ver. 3)

Ramboll Environ
8 Village Way
Cardiff
CF15 2NE

Site: Zeon Chemicals ESA

The 6 samples described in this report were registered for analysis by ESG on 20-May-2016. This report supersedes any versions previously issued by the laboratory.

The analysis was completed by: 10-Jun-2016

Tests where the accreditation is set to N or No, and any individual data items marked with a * are not UKAS accredited. Opinions and interpretations expressed herein are outside the scope of UKAS accreditation.

The following tables are contained in this report:

On behalf of
ESG :
Declan Burns

Managing Director
Multi-Sector Services

Date of Issue: 10-Jun-2016

Tests marked '^' have been subcontracted to another laboratory.
Where samples have been flagged as deviant on the Analytical and Deviating Sample Overview, for any reason, the data may not be representative of the sample at the point of sampling and the validity of the data may be affected.
ESG accepts no responsibility for any sampling not carried out by our personnel.

Units :			pH units	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	µg/l	mg/l	mg/l
Method Codes :			WSLM3	WSLM12	Calc_HD	KONENS	ICPWATVAR	ICPWATVAR	ICPWATVAR	ICPWATVAR	ICPWATVAR	ICPWATVAR	ICPMSW	ICPMSW	ICPMSW	PAHMSW	ICPMSW	ICPMSW
Method Reporting Limits :					7	1	3	1	1	0.01	1	1	0.001	0.001	0.0001		0.001	0.001
UKAS Accredited :			Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
LAB ID Number EX/	**Client Sample Description**	**Sample Date**	**pH units w**	**Total Alkalinity as CaCO3 w**	**Total Hardness as CaCO3**	**Chloride as Cl w**	**Total Sulphur as SO4 (Dissolved) a**	**Calcium as Ca (Dissolved) a**	**Magnesium as Mg (Dissolved) a**	**Barium as Ba (Dissolved) a**	**Sodium as Na (Dissolved) a**	**Potassium as K (Dissolved) a**	**Nickel as Ni (Dissolved)**	**Chromium as Cr (Dissolved)**	**Cadmium as Cd (Dissolved)**	**PAH GC-MS (16) o**	**Copper as Cu (Dissolved)**	**Lead as Pb (Dissolved)**
1694880	ZC210	19-May-16 09:15	7.2	424	217	119	<3.0	68.1	11.5	0.06	87.6	4.8	0.004	<0.001	<0.0001	Req	<0.001	<0.001
1694881	ZC211	19-May-16 10:15	6.8	345	243	39	5.6	86.1	6.9	0.05	67.3	7.3	0.006	<0.001	<0.0001	Req	<0.001	<0.001
1694882	ZC211A	19-May-16 10:30	6.9	339	244	40	5.8	86.1	7.0				0.006	<0.001	<0.0001	Req	<0.001	<0.001
1694883	ZC213	19-May-16 11:45	7.0	357	415	170	37.0	134	19.5	0.05	89.5	8.2	0.039	<0.001	0.0014	Req	0.019	0.008
1694884	ZC213A	19-May-16 12:00	7.0	346	416	181	38.4	134	19.7				0.042	<0.001	0.001	Req	0.013	0.006
1694885	ZC214	19-May-16 13:25	7.0	369	332	34	<3.0	105	17.0	0.09	23.1	7.4	0.001	<0.001	<0.0001	Req	<0.001	<0.001

ESG

Bretby Business Park, Ashby Road

Burton-on-Trent, Staffordshire, DE15 0YZ

Tel +44 (0) 1283 554400

Fax +44 (0) 1283 554422

Client Name	**Ramboll Environ**
Contact	Lucy Cleverley

Zeon Chemicals ESA

Sample Analysis

Date Printed	**10-Jun-2016**
Report Number	**EXR/220278**
Table Number	**1**

Where individual results are flagged see report notes for status.

		Units :	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	µg/l	mg/l	mg/l	mg/l
		Method Codes :	ICPMSW	ICPWATVART	ICPMSW	ICPWATVAR	ICPMSW	ICPMSW	ICPMSW	KONENS	SFAPI	WSLM11	WSLM20	TPHFID-Si	VOCHSAW	ICPWATVAR	GROHSA	SVOCSW
		Method Reporting Limits :	0.002	0.01	0.001	0.01	0.0001	0.001	0.001	0.01	0.02	5	2	0.01	1	0.01	0.1	0.002
		UKAS Accredited :	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No	No	No
LAB ID Number EX/	**Client Sample Description**	**Sample Date**	**Zinc as Zn (Dissolved)**	**Iron as Fe (Total) a**	**Arsenic as As (Dissolved)**	**Boron as B (Dissolved) a**	**Mercury as Hg (Dissolved)**	**Selenium as Se (Dissolved)**	**Vanadium as V (Dissolved)**	**Nitrite as N**	**Cyanide (Total) as CN**	**Chemical Oxygen Demand (Settled)**	**Biochemical Oxygen Demand w**	**TPH by GC(Si) o**	**VOC + TICS HSA-GCMS o**	**Beryllium as Be (Dissolved) a**	**GRO-HSA (AA)**	**SVOC + TICS**
1694880	ZC210	19-May-16 09:15	<0.002	9.67	0.011	0.11	<0.0001	<0.001	<0.001	<0.01	<0.02	13	<2.0	Req	Req	<0.01	Req	Req
1694881	ZC211	19-May-16 10:15	<0.002	2.75	0.01	0.05	<0.0001	<0.001	0.002	<0.01	<0.02	205	68.1	Req	Req	<0.01	Req	Req
1694882	ZC211A	19-May-16 10:30	<0.002		0.01	0.05	<0.0001	<0.001	0.002	<0.01	<0.02	209	286.0	Req	Req	<0.01	Req	Req
1694883	ZC213	19-May-16 11:45	0.159	0.70	0.002	0.14	<0.0001	<0.001	<0.001	<0.01	<0.02	45	<2.0	Req	Req	<0.01	Req	
1694884	ZC213A	19-May-16 12:00	0.117		0.003	0.14	<0.0001	<0.001	<0.001	<0.01	<0.02	42	<2.0	Req	Req	<0.01	Req	
1694885	ZC214	19-May-16 13:25	<0.002	2.96	0.013	0.14	<0.0001	<0.001	<0.001	<0.01	<0.02	13	<2.0	Req	Req	<0.01	Req	Req

ESG

Bretby Business Park, Ashby Road

Burton-on-Trent, Staffordshire, DE15 0YZ

Tel +44 (0) 1283 554400

Fax +44 (0) 1283 554422

Client Name	**Ramboll Environ**
Contact	Lucy Cleverley

Zeon Chemicals ESA

Sample Analysis

Date Printed	**10-Jun-2016**
Report Number	**EXR/220278**
Table Number	**1**

Where individual results are flagged see report notes for status.

Units :			mg/l	mg/l	mg/l	mg/l	mg/l											
Method Codes :			PHEHPLCVL	PHEHPLCVL	PHEHPLCVL	PHEHPLC	PHEHPLCVL											
Method Reporting Limits :			0.0005	0.0005	0.0005		0.0005											
UKAS Accredited :			No	No	No	No	No											
LAB ID Number EX/	**Client Sample Description**	**Sample Date**	**Phenol**	**Cresols**	**Dimethylphenols**	**Catechol**	**Trimethylphenols**											
1694880	ZC210	**19-May-16 09:15**	<0.0005	<0.0005	<0.0005	<0.1	<0.0005											
1694881	ZC211	**19-May-16 10:15**	0.0049	0.0368	<0.0025		<0.0025											
1694882	ZC211A	**19-May-16 10:30**	0.0048	0.0364	<0.0025		<0.0025											
1694883	ZC213	**19-May-16 11:45**	<0.0005	<0.0005	<0.0005		<0.0005											
1694884	ZC213A	**19-May-16 12:00**	<0.0005	<0.0005	<0.0005		<0.0005											
1694885	ZC214	**19-May-16 13:25**	<0.0005	0.0006	<0.0005		<0.0005											

ESG

Bretby Business Park, Ashby Road

Burton-on-Trent, Staffordshire, DE15 0YZ

Tel +44 (0) 1283 554400

Fax +44 (0) 1283 554422

Client Name **Ramboll Environ**

Contact Lucy Cleverley

Zeon Chemicals ESA

Sample Analysis

Date Printed	**10-Jun-2016**
Report Number	**EXR/220278**
Table Number	**1**

Polycyclic Aromatic Hydrocarbons
GC/MS (SIM)

Customer and Site Details:	Ramboll Environ: Zeon Chemicals ESA		
Sample Details:	ZC210	**Job Number:**	W22_0278
LIMS ID Number:	EX1694880	**Date Booked in:**	20-May-16
QC Batch Number:	160322	**Date Extracted:**	24-May-16
Quantitation File:	Initial Calibration	**Date Analysed:**	25-May-16
Directory:	416PAH.MS10\	**Matrix:**	Water
Dilution:	1.0	**Ext Method:**	Bottle

UKAS accredited?: Yes

Target Compounds	CAS #	R.T. (min)	Concentration ug/l	% Fit
Naphthalene	91-20-3	3.24	0.093	56
Acenaphthylene	208-96-8	4.29	0.097	M
Acenaphthene	83-32-9	4.41	0.284	94
Fluorene	86-73-7	4.79	0.025	M
Phenanthrene	85-01-8	5.62	0.028	96
Anthracene	120-12-7	5.67	0.018	95
Fluoranthene	206-44-0	6.95	0.033	91
Pyrene	129-00-0	7.23	0.030	94
Benzo[a]anthracene	56-55-3	-	< 0.010	-
Chrysene	218-01-9	-	< 0.010	-
Benzo[b]fluoranthene	205-99-2	-	< 0.010	-
Benzo[k]fluoranthene	207-08-9	-	< 0.010	-
Benzo[a]pyrene	50-32-8	-	< 0.010	-
Indeno[1,2,3-cd]pyrene	193-39-5	-	< 0.010	-
Dibenzo[a,h]anthracene	53-70-3*	-	< 0.010	-
Benzo[g,h,i]perylene	191-24-2	-	< 0.010	-
Total (USEPA16) PAHs	-	-	< 0.688	-

"M" denotes that % fit has been manually interpreted

Internal Standards	% Area
1,4-Dichlorobenzene-d4	NA
Naphthalene-d8	105
Acenaphthene-d10	110
Phenanthrene-d10	108
Chrysene-d12	104
Perylene-d12	98

Surrogates	% Rec
Nitrobenzene-d5	NA
2-Fluorobiphenyl	78
Terphenyl-d14	68

The Total PAH result is the sum of non-rounded individual PAH results and therefore may differ to the sum of the rounded individual PAH results printed above. By convention, where any one or more result is a "less than", the total is expressed as a "less than" and includes the "less than" concentration within the total.

Polycyclic Aromatic Hydrocarbons
GC/MS (SIM)

Customer and Site Details:	Ramboll Environ: Zeon Chemicals ESA		
Sample Details:	ZC211	**Job Number:**	W22_0278
LIMS ID Number:	EX1694881	**Date Booked in:**	20-May-16
QC Batch Number:	160322	**Date Extracted:**	24-May-16
Quantitation File:	Initial Calibration	**Date Analysed:**	25-May-16
Directory:	416PAH.MS10\	**Matrix:**	Water
Dilution:	1.0	**Ext Method:**	Bottle

UKAS accredited?: Yes

Target Compounds	CAS #	R.T. (min)	Concentration ug/l	% Fit
Naphthalene	91-20-3	3.24	0.635	73
Acenaphthylene	208-96-8	-	< 0.010	-
Acenaphthene	83-32-9	4.38	0.047	84
Fluorene	86-73-7	4.79	0.028	83
Phenanthrene	85-01-8	-	< 0.010	-
Anthracene	120-12-7	-	< 0.010	-
Fluoranthene	206-44-0	-	< 0.010	-
Pyrene	129-00-0	-	< 0.010	-
Benzo[a]anthracene	56-55-3	-	< 0.010	-
Chrysene	218-01-9	-	< 0.010	-
Benzo[b]fluoranthene	205-99-2	-	< 0.010	-
Benzo[k]fluoranthene	207-08-9	-	< 0.010	-
Benzo[a]pyrene	50-32-8	-	< 0.010	-
Indeno[1,2,3-cd]pyrene	193-39-5	-	< 0.010	-
Dibenzo[a,h]anthracene	53-70-3*	-	< 0.010	-
Benzo[g,h,i]perylene	191-24-2	-	< 0.010	-
Total (USEPA16) PAHs	-	-	< 0.840	-

"M" denotes that % fit has been manually interpreted

Internal Standards	% Area
1,4-Dichlorobenzene-d4	NA
Naphthalene-d8	105
Acenaphthene-d10	101
Phenanthrene-d10	104
Chrysene-d12	115
Perylene-d12	112

Surrogates	% Rec
Nitrobenzene-d5	NA
2-Fluorobiphenyl	83
Terphenyl-d14	65

The Total PAH result is the sum of non-rounded individual PAH results and therefore may differ to the sum of the rounded individual PAH results printed above. By convention, where any one or more result is a "less than", the total is expressed as a "less than" and includes the "less than" concentration within the total.

Polycyclic Aromatic Hydrocarbons
GC/MS (SIM)

Customer and Site Details:	Ramboll Environ: Zeon Chemicals ESA		
Sample Details:	ZC211A	**Job Number:**	W22_0278
LIMS ID Number:	EX1694882	**Date Booked in:**	20-May-16
QC Batch Number:	160322	**Date Extracted:**	24-May-16
Quantitation File:	Initial Calibration	**Date Analysed:**	25-May-16
Directory:	416PAH.MS10\	**Matrix:**	Water
Dilution:	1.0	**Ext Method:**	Bottle

UKAS accredited?: Yes

Target Compounds	CAS #	R.T. (min)	Concentration ug/l	% Fit
Naphthalene	91-20-3	3.24	0.662	M
Acenaphthylene	208-96-8	-	< 0.010	-
Acenaphthene	83-32-9	4.38	0.052	78
Fluorene	86-73-7	4.79	0.034	88
Phenanthrene	85-01-8	-	< 0.010	-
Anthracene	120-12-7	-	< 0.010	-
Fluoranthene	206-44-0	-	< 0.010	-
Pyrene	129-00-0	-	< 0.010	-
Benzo[a]anthracene	56-55-3	-	< 0.010	-
Chrysene	218-01-9	-	< 0.010	-
Benzo[b]fluoranthene	205-99-2	-	< 0.010	-
Benzo[k]fluoranthene	207-08-9	-	< 0.010	-
Benzo[a]pyrene	50-32-8	-	< 0.010	-
Indeno[1,2,3-cd]pyrene	193-39-5	-	< 0.010	-
Dibenzo[a,h]anthracene	53-70-3*	-	< 0.010	-
Benzo[g,h,i]perylene	191-24-2	-	< 0.010	-
Total (USEPA16) PAHs	-	-	< 0.878	-

"M" denotes that % fit has been manually interpreted

Internal Standards	% Area
1,4-Dichlorobenzene-d4	NA
Naphthalene-d8	100
Acenaphthene-d10	99
Phenanthrene-d10	103
Chrysene-d12	114
Perylene-d12	111

Surrogates	% Rec
Nitrobenzene-d5	NA
2-Fluorobiphenyl	85
Terphenyl-d14	70

The Total PAH result is the sum of non-rounded individual PAH results and therefore may differ to the sum of the rounded individual PAH results printed above. By convention, where any one or more result is a "less than", the total is expressed as a "less than" and includes the "less than" concentration within the total.

Polycyclic Aromatic Hydrocarbons
GC/MS (SIM)

Customer and Site Details:	Ramboll Environ: Zeon Chemicals ESA		
Sample Details:	ZC213	**Job Number:**	W22_0278
LIMS ID Number:	EX1694883	**Date Booked in:**	20-May-16
QC Batch Number:	160322	**Date Extracted:**	24-May-16
Quantitation File:	Initial Calibration	**Date Analysed:**	25-May-16
Directory:	416PAH.MS10\	**Matrix:**	Water
Dilution:	1.0	**Ext Method:**	Bottle

UKAS accredited?: Yes

Target Compounds	CAS #	R.T. (min)	Concentration ug/l	% Fit
Naphthalene	91-20-3	-	< 0.020	-
Acenaphthylene	208-96-8	-	< 0.010	-
Acenaphthene	83-32-9	4.38	0.029	M
Fluorene	86-73-7	-	< 0.010	-
Phenanthrene	85-01-8	-	< 0.010	-
Anthracene	120-12-7	-	< 0.010	-
Fluoranthene	206-44-0	-	< 0.010	-
Pyrene	129-00-0	-	< 0.010	-
Benzo[a]anthracene	56-55-3	-	< 0.010	-
Chrysene	218-01-9	-	< 0.010	-
Benzo[b]fluoranthene	205-99-2	-	< 0.010	-
Benzo[k]fluoranthene	207-08-9	-	< 0.010	-
Benzo[a]pyrene	50-32-8	-	< 0.010	-
Indeno[1,2,3-cd]pyrene	193-39-5	-	< 0.010	-
Dibenzo[a,h]anthracene	53-70-3*	-	< 0.010	-
Benzo[g,h,i]perylene	191-24-2	-	< 0.010	-
Total (USEPA16) PAHs	-	-	< 0.189	-

"M" denotes that % fit has been manually interpreted

Internal Standards	% Area
1,4-Dichlorobenzene-d4	NA
Naphthalene-d8	99
Acenaphthene-d10	103
Phenanthrene-d10	108
Chrysene-d12	107
Perylene-d12	97

Surrogates	% Rec
Nitrobenzene-d5	NA
2-Fluorobiphenyl	85
Terphenyl-d14	71

The Total PAH result is the sum of non-rounded individual PAH results and therefore may differ to the sum of the rounded individual PAH results printed above. By convention, where any one or more result is a "less than", the total is expressed as a "less than" and includes the "less than" concentration within the total.

Polycyclic Aromatic Hydrocarbons
GC/MS (SIM)

Customer and Site Details:	Ramboll Environ: Zeon Chemicals ESA		
Sample Details:	ZC213A	**Job Number:**	W22_0278
LIMS ID Number:	EX1694884	**Date Booked in:**	20-May-16
QC Batch Number:	160322	**Date Extracted:**	24-May-16
Quantitation File:	Initial Calibration	**Date Analysed:**	25-May-16
Directory:	416PAH.MS10\	**Matrix:**	Water
Dilution:	1.0	**Ext Method:**	Bottle

UKAS accredited?: Yes

Target Compounds	CAS #	R.T. (min)	Concentration ug/l	% Fit
Naphthalene	91-20-3	-	< 0.020	-
Acenaphthylene	208-96-8	-	< 0.010	-
Acenaphthene	83-32-9	4.38	0.029	M
Fluorene	86-73-7	-	< 0.010	-
Phenanthrene	85-01-8	-	< 0.010	-
Anthracene	120-12-7	-	< 0.010	-
Fluoranthene	206-44-0	-	< 0.010	-
Pyrene	129-00-0	-	< 0.010	-
Benzo[a]anthracene	56-55-3	-	< 0.010	-
Chrysene	218-01-9	-	< 0.010	-
Benzo[b]fluoranthene	205-99-2	-	< 0.010	-
Benzo[k]fluoranthene	207-08-9	-	< 0.010	-
Benzo[a]pyrene	50-32-8	-	< 0.010	-
Indeno[1,2,3-cd]pyrene	193-39-5	-	< 0.010	-
Dibenzo[a,h]anthracene	53-70-3*	-	< 0.010	-
Benzo[g,h,i]perylene	191-24-2	-	< 0.010	-
Total (USEPA16) PAHs	-	-	< 0.189	-

"M" denotes that % fit has been manually interpreted

Internal Standards	% Area
1,4-Dichlorobenzene-d4	NA
Naphthalene-d8	103
Acenaphthene-d10	105
Phenanthrene-d10	107
Chrysene-d12	105
Perylene-d12	96

Surrogates	% Rec
Nitrobenzene-d5	NA
2-Fluorobiphenyl	82
Terphenyl-d14	72

The Total PAH result is the sum of non-rounded individual PAH results and therefore may differ to the sum of the rounded individual PAH results printed above. By convention, where any one or more result is a "less than", the total is expressed as a "less than" and includes the "less than" concentration within the total.

Polycyclic Aromatic Hydrocarbons
GC/MS (SIM)

Customer and Site Details:	Ramboll Environ: Zeon Chemicals ESA		
Sample Details:	ZC214	**Job Number:**	W22_0278
LIMS ID Number:	EX1694885	**Date Booked in:**	20-May-16
QC Batch Number:	160322	**Date Extracted:**	24-May-16
Quantitation File:	Initial Calibration	**Date Analysed:**	25-May-16
Directory:	416PAH.MS10\	**Matrix:**	Water
Dilution:	1.0	**Ext Method:**	Bottle

UKAS accredited?: Yes

Target Compounds	CAS #	R.T. (min)	Concentration ug/l	% Fit
Naphthalene	91-20-3	3.26	0.176	M
Acenaphthylene	208-96-8	4.29	0.197	M
Acenaphthene	83-32-9	4.41	0.494	93
Fluorene	86-73-7	4.79	1.280	95
Phenanthrene	85-01-8	5.62	0.376	97
Anthracene	120-12-7	5.67	0.052	98
Fluoranthene	206-44-0	6.95	0.014	97
Pyrene	129-00-0	7.23	0.036	97
Benzo[a]anthracene	56-55-3	-	< 0.010	-
Chrysene	218-01-9	-	< 0.010	-
Benzo[b]fluoranthene	205-99-2	-	< 0.010	-
Benzo[k]fluoranthene	207-08-9	-	< 0.010	-
Benzo[a]pyrene	50-32-8	-	< 0.010	-
Indeno[1,2,3-cd]pyrene	193-39-5	-	< 0.010	-
Dibenzo[a,h]anthracene	53-70-3*	-	< 0.010	-
Benzo[g,h,i]perylene	191-24-2	-	< 0.010	-
Total (USEPA16) PAHs	-	-	< 2.705	-

"M" denotes that % fit has been manually interpreted

Internal Standards	% Area
1,4-Dichlorobenzene-d4	NA
Naphthalene-d8	108
Acenaphthene-d10	116
Phenanthrene-d10	108
Chrysene-d12	134
Perylene-d12	129

Surrogates	% Rec
Nitrobenzene-d5	NA
2-Fluorobiphenyl	72
Terphenyl-d14	71

The Total PAH result is the sum of non-rounded individual PAH results and therefore may differ to the sum of the rounded individual PAH results printed above. By convention, where any one or more result is a "less than", the total is expressed as a "less than" and includes the "less than" concentration within the total.

Semi-Volatile Organic Compounds

UKAS accredited?: No

Customer and Site Details:	Ramboll Environ: Zeon Chemicals ESA			**Matrix:**	Water	**QC Batch Number:**	104
Sample Details:	ZC210	**Date Booked in:**	20-May-16	**Ext Method:**	Sep. Funnel	**Multiplier:**	0.005
LIMS ID Number:	EX1694880	**Date Extracted:**	25-May-16	**Operator:**	SO/RP	**Dilution Factor:**	1
Job Number:	W22_0278	**Date Analysed:**	25-May-16	**Directory/Quant File:**	052516_MS16\	**GPC (Y/N)**	N

Target Compounds	CAS #	R.T. (min)	Concentration mg/l	% Fit
Phenol	108-95-2	-	< 0.020	-
bis(2-Chloroethyl)ether	111-44-4	-	< 0.005	-
2-Chlorophenol	95-57-8	-	< 0.020	-
1,3-Dichlorobenzene	541-73-1	-	< 0.005	-
1,4-Dichlorobenzene	106-46-7	-	< 0.005	-
Benzyl alcohol	100-51-6	-	< 0.005	-
1,2-Dichlorobenzene	95-50-1	-	< 0.005	-
2-Methylphenol	95-48-7	-	< 0.005	-
bis(2-Chloroisopropyl)ether	108-60-1	-	< 0.005	-
Hexachloroethane	67-72-1	-	< 0.005	-
N-Nitroso-di-n-propylamine	621-64-7	-	< 0.005	-
3- & 4-Methylphenol	108-39-4/106-44-5	-	< 0.020	-
Nitrobenzene	98-95-3	-	< 0.005	-
Isophorone	78-59-1	-	< 0.005	-
2-Nitrophenol	88-75-5	-	< 0.020	-
2,4-Dimethylphenol	105-67-9	-	< 0.020	-
Benzoic Acid	65-85-0	-	< 0.100	-
bis(2-Chloroethoxy)methane	111-91-1	-	< 0.005	-
2,4-Dichlorophenol	120-83-2	-	< 0.020	-
1,2,4-Trichlorobenzene	120-82-1	-	< 0.005	-
Naphthalene	91-20-3	-	< 0.002	-
4-Chlorophenol	106-48-9	-	< 0.020	-
4-Chloroaniline	106-47-8	-	< 0.005	-
Hexachlorobutadiene	87-68-3	-	< 0.005	-
4-Chloro-3-methylphenol	59-50-7	-	< 0.005	-
2-Methylnaphthalene	91-57-6*	-	< 0.002	-
1-Methylnaphthalene	90-12-0	-	< 0.002	-
Hexachlorocyclopentadiene	77-47-4	-	< 0.005	-
2,4,6-Trichlorophenol	88-06-2	-	< 0.020	-
2,4,5-Trichlorophenol	95-95-4	-	< 0.020	-
2-Chloronaphthalene	91-58-7	-	< 0.002	-
Biphenyl	92-52-4	-	< 0.002	-
Diphenyl ether	101-84-8	-	< 0.002	-
2-Nitroaniline	88-74-4	-	< 0.005	-
Acenaphthylene	208-96-8	-	< 0.002	-
Dimethylphthalate	131-11-3	-	< 0.005	-
2,6-Dinitrotoluene	606-20-2	-	< 0.005	-
Acenaphthene	83-32-9	-	< 0.002	-
3-Nitroaniline	99-09-2	-	< 0.005	-

Target Compounds	CAS #	R.T.	Concentration mg/l	% Fit
2,4-Dinitrophenol	51-28-5	-	< 0.010	-
Dibenzofuran	132-64-9	-	< 0.005	-
4-Nitrophenol	100-02-7	-	< 0.050	-
2,4-Dinitrotoluene	121-14-2	-	< 0.005	-
Fluorene	86-73-7	-	< 0.002	-
Diethylphthalate	84-66-2	-	< 0.005	-
4-Chlorophenyl-phenylether	7005-72-3	-	< 0.005	-
4,6-Dinitro-2-methylphenol	534-52-1	-	< 0.050	-
4-Nitroaniline	100-01-6	-	< 0.005	-
N-Nitrosodiphenylamine	86-30-6	-	< 0.005	-
4-Bromophenyl-phenylether	101-55-3	-	< 0.005	-
Hexachlorobenzene	118-74-1	-	< 0.005	-
Pentachlorophenol	87-86-5	-	< 0.050	-
Phenanthrene	85-01-8	-	< 0.002	-
Anthracene	120-12-7	-	< 0.002	-
Di-n-butylphthalate	84-74-2	-	< 0.005	-
Fluoranthene	206-44-0	-	< 0.002	-
Pyrene	129-00-0	-	< 0.002	-
Butylbenzylphthalate	85-68-7	-	< 0.005	-
Benzo[a]anthracene	56-55-3	-	< 0.002	-
Chrysene	218-01-9	-	< 0.002	-
3,3'-Dichlorobenzidine	91-94-1	-	< 0.020	-
bis(2-Ethylhexyl)phthalate	117-81-7	-	< 0.005	-
Di-n-octylphthalate	117-84-0*	-	< 0.002	-
Benzo[b]fluoranthene	205-99-2	-	< 0.002	-
Benzo[k]fluoranthene	207-08-9	-	< 0.002	-
Benzo[a]pyrene	50-32-8	-	< 0.002	-
Indeno[1,2,3-cd]pyrene	193-39-5	-	< 0.002	-
Dibenzo[a,h]anthracene	53-70-3*	-	< 0.002	-
Benzo[g,h,i]perylene	191-24-2*	-	< 0.002	-
Coronene	191-07-1	-	< 0.050	-

Internal Standards	% Area
1,4-Dichlorobenzene-d4	56
Naphthalene-d8	57
Acenaphthene-d10	57
Phenanthrene-d10	64
Chrysene-d12	78
Perylene-d12	70

Surrogates	% Rec
2-Fluorophenol	24
Phenol-d5	17
Nitrobenzene-d5	89
2-Fluorobiphenyl	97
2,4,6-Tribromophenol	52
Terphenyl-d14	100

Concentrations are reported on a wet weight basis.
"M" denotes that % fit has been manually interpreted

Where individual results are flagged see report notes for status.

Semi-Volatile Organic Compounds

UKAS accredited?: No

Customer and Site Details:	Ramboll Environ: Zeon Chemicals ESA			**Matrix:**	Water	**QC Batch Number:**	104
Sample Details:	ZC211	**Date Booked in:**	20-May-16	**Ext Method:**	Sep. Funnel	**Multiplier:**	0.005
LIMS ID Number:	EX1694881	**Date Extracted:**	25-May-16	**Operator:**	SO/RP	**Dilution Factor:**	1
Job Number:	W22_0278	**Date Analysed:**	25-May-16	**Directory/Quant File:**	052516_MS16\	**GPC (Y/N)**	N

Target Compounds	CAS #	R.T. (min)	Concentration mg/l	% Fit
Phenol	108-95-2	-	< 0.020	-
bis(2-Chloroethyl)ether	111-44-4	-	< 0.005	-
2-Chlorophenol	95-57-8	-	< 0.020	-
1,3-Dichlorobenzene	541-73-1	-	< 0.005	-
1,4-Dichlorobenzene	106-46-7	-	< 0.005	-
Benzyl alcohol	100-51-6	-	< 0.005	-
1,2-Dichlorobenzene	95-50-1	-	< 0.005	-
2-Methylphenol	95-48-7	-	< 0.005	-
bis(2-Chloroisopropyl)ether	108-60-1	-	< 0.005	-
Hexachloroethane	67-72-1	-	< 0.005	-
N-Nitroso-di-n-propylamine	621-64-7	-	< 0.005	-
3- & 4-Methylphenol	108-39-4/106-44-5	-	< 0.020	-
Nitrobenzene	98-95-3	-	< 0.005	-
Isophorone	78-59-1	-	< 0.005	-
2-Nitrophenol	88-75-5	-	< 0.020	-
2,4-Dimethylphenol	105-67-9	-	< 0.020	-
Benzoic Acid	65-85-0	-	< 0.100	-
bis(2-Chloroethoxy)methane	111-91-1	-	< 0.005	-
2,4-Dichlorophenol	120-83-2	-	< 0.020	-
1,2,4-Trichlorobenzene	120-82-1	-	< 0.005	-
Naphthalene	91-20-3	-	< 0.002	-
4-Chlorophenol	106-48-9	-	< 0.020	-
4-Chloroaniline	106-47-8	-	< 0.005	-
Hexachlorobutadiene	87-68-3	-	< 0.005	-
4-Chloro-3-methylphenol	59-50-7	-	< 0.005	-
2-Methylnaphthalene	91-57-6*	-	< 0.002	-
1-Methylnaphthalene	90-12-0	-	< 0.002	-
Hexachlorocyclopentadiene	77-47-4	-	< 0.005	-
2,4,6-Trichlorophenol	88-06-2	-	< 0.020	-
2,4,5-Trichlorophenol	95-95-4	-	< 0.020	-
2-Chloronaphthalene	91-58-7	-	< 0.002	-
Biphenyl	92-52-4	-	< 0.002	-
Diphenyl ether	101-84-8	-	< 0.002	-
2-Nitroaniline	88-74-4	-	< 0.005	-
Acenaphthylene	208-96-8	-	< 0.002	-
Dimethylphthalate	131-11-3	-	< 0.005	-
2,6-Dinitrotoluene	606-20-2	-	< 0.005	-
Acenaphthene	83-32-9	-	< 0.002	-
3-Nitroaniline	99-09-2	-	< 0.005	-

Target Compounds	CAS #	R.T.	Concentration mg/l	% Fit
2,4-Dinitrophenol	51-28-5	-	< 0.010	-
Dibenzofuran	132-64-9	-	< 0.005	-
4-Nitrophenol	100-02-7	-	< 0.050	-
2,4-Dinitrotoluene	121-14-2	-	< 0.005	-
Fluorene	86-73-7	-	< 0.002	-
Diethylphthalate	84-66-2	-	< 0.005	-
4-Chlorophenyl-phenylether	7005-72-3	-	< 0.005	-
4,6-Dinitro-2-methylphenol	534-52-1	-	< 0.050	-
4-Nitroaniline	100-01-6	-	< 0.005	-
N-Nitrosodiphenylamine	86-30-6	-	< 0.005	-
4-Bromophenyl-phenylether	101-55-3	-	< 0.005	-
Hexachlorobenzene	118-74-1	-	< 0.005	-
Pentachlorophenol	87-86-5	-	< 0.050	-
Phenanthrene	85-01-8	-	< 0.002	-
Anthracene	120-12-7	-	< 0.002	-
Di-n-butylphthalate	84-74-2	-	< 0.005	-
Fluoranthene	206-44-0	-	< 0.002	-
Pyrene	129-00-0	-	< 0.002	-
Butylbenzylphthalate	85-68-7	-	< 0.005	-
Benzo[a]anthracene	56-55-3	-	< 0.002	-
Chrysene	218-01-9	-	< 0.002	-
3,3'-Dichlorobenzidine	91-94-1	-	< 0.020	-
bis(2-Ethylhexyl)phthalate	117-81-7	-	< 0.005	-
Di-n-octylphthalate	117-84-0*	-	< 0.002	-
Benzo[b]fluoranthene	205-99-2	-	< 0.002	-
Benzo[k]fluoranthene	207-08-9	-	< 0.002	-
Benzo[a]pyrene	50-32-8	-	< 0.002	-
Indeno[1,2,3-cd]pyrene	193-39-5	-	< 0.002	-
Dibenzo[a,h]anthracene	53-70-3*	-	< 0.002	-
Benzo[g,h,i]perylene	191-24-2*	-	< 0.002	-
Coronene	191-07-1	-	< 0.050	-

Internal Standards	% Area
1,4-Dichlorobenzene-d4	56
Naphthalene-d8	57
Acenaphthene-d10	54
Phenanthrene-d10	62
Chrysene-d12	82
Perylene-d12	76

Surrogates	% Rec
2-Fluorophenol	21
Phenol-d5	16
Nitrobenzene-d5	84
2-Fluorobiphenyl	110
2,4,6-Tribromophenol	56
Terphenyl-d14	89

Concentrations are reported on a wet weight basis.
"M" denotes that % fit has been manually interpreted

Where individual results are flagged see report notes for status.

Semi-Volatile Organic Compounds

UKAS accredited?: No

Customer and Site Details:	Ramboll Environ: Zeon Chemicals ESA			**Matrix:**	Water	**QC Batch Number:**	104
Sample Details:	ZC211A	**Date Booked in:**	20-May-16	**Ext Method:**	Sep. Funnel	**Multiplier:**	0.005
LIMS ID Number:	EX1694882	**Date Extracted:**	25-May-16	**Operator:**	SO/RP	**Dilution Factor:**	1
Job Number:	W22_0278	**Date Analysed:**	26-May-16	**Directory/Quant File:**	052516_MS16\	**GPC (Y/N)**	N

Target Compounds	CAS #	R.T. (min)	Concentration mg/l	% Fit
Phenol	108-95-2	-	< 0.020	-
bis(2-Chloroethyl)ether	111-44-4	-	< 0.005	-
2-Chlorophenol	95-57-8	-	< 0.020	-
1,3-Dichlorobenzene	541-73-1	-	< 0.005	-
1,4-Dichlorobenzene	106-46-7	-	< 0.005	-
Benzyl alcohol	100-51-6	-	< 0.005	-
1,2-Dichlorobenzene	95-50-1	-	< 0.005	-
2-Methylphenol	95-48-7	-	< 0.005	-
bis(2-Chloroisopropyl)ether	108-60-1	-	< 0.005	-
Hexachloroethane	67-72-1	-	< 0.005	-
N-Nitroso-di-n-propylamine	621-64-7	-	< 0.005	-
3- & 4-Methylphenol	108-39-4/106-44-5	-	< 0.020	-
Nitrobenzene	98-95-3	-	< 0.005	-
Isophorone	78-59-1	-	< 0.005	-
2-Nitrophenol	88-75-5	-	< 0.020	-
2,4-Dimethylphenol	105-67-9	-	< 0.020	-
Benzoic Acid	65-85-0	-	< 0.100	-
bis(2-Chloroethoxy)methane	111-91-1	-	< 0.005	-
2,4-Dichlorophenol	120-83-2	-	< 0.020	-
1,2,4-Trichlorobenzene	120-82-1	-	< 0.005	-
Naphthalene	91-20-3	-	< 0.002	-
4-Chlorophenol	106-48-9	-	< 0.020	-
4-Chloroaniline	106-47-8	-	< 0.005	-
Hexachlorobutadiene	87-68-3	-	< 0.005	-
4-Chloro-3-methylphenol	59-50-7	-	< 0.005	-
2-Methylnaphthalene	91-57-6*	-	< 0.002	-
1-Methylnaphthalene	90-12-0	-	< 0.002	-
Hexachlorocyclopentadiene	77-47-4	-	< 0.005	-
2,4,6-Trichlorophenol	88-06-2	-	< 0.020	-
2,4,5-Trichlorophenol	95-95-4	-	< 0.020	-
2-Chloronaphthalene	91-58-7	-	< 0.002	-
Biphenyl	92-52-4	-	< 0.002	-
Diphenyl ether	101-84-8	-	< 0.002	-
2-Nitroaniline	88-74-4	-	< 0.005	-
Acenaphthylene	208-96-8	-	< 0.002	-
Dimethylphthalate	131-11-3	-	< 0.005	-
2,6-Dinitrotoluene	606-20-2	-	< 0.005	-
Acenaphthene	83-32-9	-	< 0.002	-
3-Nitroaniline	99-09-2	-	< 0.005	-

Target Compounds	CAS #	R.T.	Concentration mg/l	% Fit
2,4-Dinitrophenol	51-28-5	-	< 0.010	-
Dibenzofuran	132-64-9	-	< 0.005	-
4-Nitrophenol	100-02-7	-	< 0.050	-
2,4-Dinitrotoluene	121-14-2	-	< 0.005	-
Fluorene	86-73-7	-	< 0.002	-
Diethylphthalate	84-66-2	-	< 0.005	-
4-Chlorophenyl-phenylether	7005-72-3	-	< 0.005	-
4,6-Dinitro-2-methylphenol	534-52-1	-	< 0.050	-
4-Nitroaniline	100-01-6	-	< 0.005	-
N-Nitrosodiphenylamine	86-30-6	-	< 0.005	-
4-Bromophenyl-phenylether	101-55-3	-	< 0.005	-
Hexachlorobenzene	118-74-1	-	< 0.005	-
Pentachlorophenol	87-86-5	-	< 0.050	-
Phenanthrene	85-01-8	-	< 0.002	-
Anthracene	120-12-7	-	< 0.002	-
Di-n-butylphthalate	84-74-2	-	< 0.005	-
Fluoranthene	206-44-0	-	< 0.002	-
Pyrene	129-00-0	-	< 0.002	-
Butylbenzylphthalate	85-68-7	-	< 0.005	-
Benzo[a]anthracene	56-55-3	-	< 0.002	-
Chrysene	218-01-9	-	< 0.002	-
3,3'-Dichlorobenzidine	91-94-1	-	< 0.020	-
bis(2-Ethylhexyl)phthalate	117-81-7	-	< 0.005	-
Di-n-octylphthalate	117-84-0*	-	< 0.002	-
Benzo[b]fluoranthene	205-99-2	-	< 0.002	-
Benzo[k]fluoranthene	207-08-9	-	< 0.002	-
Benzo[a]pyrene	50-32-8	-	< 0.002	-
Indeno[1,2,3-cd]pyrene	193-39-5	-	< 0.002	-
Dibenzo[a,h]anthracene	53-70-3*	-	< 0.002	-
Benzo[g,h,i]perylene	191-24-2*	-	< 0.002	-
Coronene	191-07-1	-	< 0.050	-

Internal Standards	% Area
1,4-Dichlorobenzene-d4	62
Naphthalene-d8	64
Acenaphthene-d10	63
Phenanthrene-d10	72
Chrysene-d12	96
Perylene-d12	94

Surrogates	% Rec
2-Fluorophenol	22
Phenol-d5	18
Nitrobenzene-d5	82
2-Fluorobiphenyl	122
2,4,6-Tribromophenol	63
Terphenyl-d14	96

Concentrations are reported on a wet weight basis.
"M" denotes that % fit has been manually interpreted

Where individual results are flagged see report notes for status.

Semi-Volatile Organic Compounds

UKAS accredited?: No

Customer and Site Details:	Ramboll Environ: Zeon Chemicals ESA			**Matrix:**	Water	**QC Batch Number:**	104
Sample Details:	ZC214	**Date Booked in:**	20-May-16	**Ext Method:**	Sep. Funnel	**Multiplier:**	0.005
LIMS ID Number:	EX1694885	**Date Extracted:**	25-May-16	**Operator:**	SO/RP	**Dilution Factor:**	1
Job Number:	W22_0278	**Date Analysed:**	26-May-16	**Directory/Quant File:**	052516_MS16\	**GPC (Y/N)**	N

Target Compounds	CAS #	R.T. (min)	Concentration mg/l	% Fit
Phenol	108-95-2	-	< 0.020	-
bis(2-Chloroethyl)ether	111-44-4	-	< 0.005	-
2-Chlorophenol	95-57-8	-	< 0.020	-
1,3-Dichlorobenzene	541-73-1	-	< 0.005	-
1,4-Dichlorobenzene	106-46-7	-	< 0.005	-
Benzyl alcohol	100-51-6	-	< 0.005	-
1,2-Dichlorobenzene	95-50-1	-	< 0.005	-
2-Methylphenol	95-48-7	-	< 0.005	-
bis(2-Chloroisopropyl)ether	108-60-1	-	< 0.005	-
Hexachloroethane	67-72-1	-	< 0.005	-
N-Nitroso-di-n-propylamine	621-64-7	-	< 0.005	-
3- & 4-Methylphenol	108-39-4/106-44-5	-	< 0.020	-
Nitrobenzene	98-95-3	-	< 0.005	-
Isophorone	78-59-1	-	< 0.005	-
2-Nitrophenol	88-75-5	-	< 0.020	-
2,4-Dimethylphenol	105-67-9	-	< 0.020	-
Benzoic Acid	65-85-0	-	< 0.100	-
bis(2-Chloroethoxy)methane	111-91-1	-	< 0.005	-
2,4-Dichlorophenol	120-83-2	-	< 0.020	-
1,2,4-Trichlorobenzene	120-82-1	-	< 0.005	-
Naphthalene	91-20-3	-	< 0.002	-
4-Chlorophenol	106-48-9	-	< 0.020	-
4-Chloroaniline	106-47-8	-	< 0.005	-
Hexachlorobutadiene	87-68-3	-	< 0.005	-
4-Chloro-3-methylphenol	59-50-7	-	< 0.005	-
2-Methylnaphthalene	91-57-6*	-	< 0.002	-
1-Methylnaphthalene	90-12-0	4.33	0.009	97
Hexachlorocyclopentadiene	77-47-4	-	< 0.005	-
2,4,6-Trichlorophenol	88-06-2	-	< 0.020	-
2,4,5-Trichlorophenol	95-95-4	-	< 0.020	-
2-Chloronaphthalene	91-58-7	-	< 0.002	-
Biphenyl	92-52-4	-	< 0.002	-
Diphenyl ether	101-84-8	-	< 0.002	-
2-Nitroaniline	88-74-4	-	< 0.005	-
Acenaphthylene	208-96-8	-	< 0.002	-
Dimethylphthalate	131-11-3	-	< 0.005	-
2,6-Dinitrotoluene	606-20-2	-	< 0.005	-
Acenaphthene	83-32-9	-	< 0.002	-
3-Nitroaniline	99-09-2	-	< 0.005	-

Target Compounds	CAS #	R.T.	Concentration mg/l	% Fit
2,4-Dinitrophenol	51-28-5	-	< 0.010	-
Dibenzofuran	132-64-9	-	< 0.005	-
4-Nitrophenol	100-02-7	-	< 0.050	-
2,4-Dinitrotoluene	121-14-2	-	< 0.005	-
Fluorene	86-73-7	-	< 0.002	-
Diethylphthalate	84-66-2	-	< 0.005	-
4-Chlorophenyl-phenylether	7005-72-3	-	< 0.005	-
4,6-Dinitro-2-methylphenol	534-52-1	-	< 0.050	-
4-Nitroaniline	100-01-6	-	< 0.005	-
N-Nitrosodiphenylamine	86-30-6	-	< 0.005	-
4-Bromophenyl-phenylether	101-55-3	-	< 0.005	-
Hexachlorobenzene	118-74-1	-	< 0.005	-
Pentachlorophenol	87-86-5	-	< 0.050	-
Phenanthrene	85-01-8	-	< 0.002	-
Anthracene	120-12-7	-	< 0.002	-
Di-n-butylphthalate	84-74-2	-	< 0.005	-
Fluoranthene	206-44-0	-	< 0.002	-
Pyrene	129-00-0	-	< 0.002	-
Butylbenzylphthalate	85-68-7	-	< 0.005	-
Benzo[a]anthracene	56-55-3	-	< 0.002	-
Chrysene	218-01-9	-	< 0.002	-
3,3'-Dichlorobenzidine	91-94-1	-	< 0.020	-
bis(2-Ethylhexyl)phthalate	117-81-7	-	< 0.005	-
Di-n-octylphthalate	117-84-0*	-	< 0.002	-
Benzo[b]fluoranthene	205-99-2	-	< 0.002	-
Benzo[k]fluoranthene	207-08-9	-	< 0.002	-
Benzo[a]pyrene	50-32-8	-	< 0.002	-
Indeno[1,2,3-cd]pyrene	193-39-5	-	< 0.002	-
Dibenzo[a,h]anthracene	53-70-3*	-	< 0.002	-
Benzo[g,h,i]perylene	191-24-2*	-	< 0.002	-
Coronene	191-07-1	-	< 0.050	-

Internal Standards	% Area
1,4-Dichlorobenzene-d4	56
Naphthalene-d8	54
Acenaphthene-d10	56
Phenanthrene-d10	62
Chrysene-d12	74
Perylene-d12	68

Surrogates	% Rec
2-Fluorophenol	4
Phenol-d5	2
Nitrobenzene-d5	89
2-Fluorobiphenyl	94
2,4,6-Tribromophenol	30
Terphenyl-d14	97

Concentrations are reported on a wet weight basis.
"M" denotes that % fit has been manually interpreted

Where individual results are flagged see report notes for status.

SVOC (TICs)

UKAS accredited?:No

Customer and Site Details:	Ramboll Environ: Zeon Chemicals ESA		
Sample Details:	ZC210	**Job Number:**	W22_0278
LIMS ID Number:	EX1694880		
		Multiplier:	0.005
Date Booked in:	20-May-16	**Dilution Factor:**	1
Date Extracted:	25-May-16	**GPC (Y/N):**	N
Date Analysed:	25-May-16	**Matrix:**	Water
QC Batch Number:	104	**Method:**	Sep. Funnel
Directory/Quant File:	052516_MS16\ 0	**Operator:**	SO/RP

Tentatively Identified Compounds	CAS #	R.T.	Concentration mg/l	% Fit
Nonane	000111-84-2	2.57	0.036	95

The compounds listed above have been tentatively identified by a computer based library search.
Compounds identified in the sample are not reported if they also occur in the method blank.
The % fit is an indication of the reliability of the compound assignment.
Due to the similarity between mass spectra of some isomeric compounds assignments may not be correct.
Other compounds may also be present but identification was not possible.
Concentrations are semi-quantitative, assume a response factor of 1 and use the nearest internal standard.

SVOC (TICs)

UKAS accredited?:No

Customer and Site Details:	Ramboll Environ: Zeon Chemicals ESA		
Sample Details:	ZC211	**Job Number:**	W22_0278
LIMS ID Number:	EX1694881		
		Multiplier:	0.005
Date Booked in:	20-May-16	**Dilution Factor:**	1
Date Extracted:	25-May-16	**GPC (Y/N):**	N
Date Analysed:	25-May-16	**Matrix:**	Water
QC Batch Number:	104	**Method:**	Sep. Funnel
Directory/Quant File:	052516_MS16\ 0	**Operator:**	SO/RP

Tentatively Identified Compounds	CAS #	R.T.	Concentration mg/l	% Fit
Decanoic acid	000334-48-5	4.66	6.633	96
19-Norabietatriene	019407-18-2	6.48	0.054	98
Sulfur	013798-23-7	5.12	0.021	93
1-Decanol	000112-30-1	4.11	0.018	91
7-HYDROXYDIBENZ[B,F][1,4]OXAZEPIN-11(10H)-ONE	060287-11-8	6.55	0.018	52
2,5-Cyclohexadiene-1,4-dione, 2,6-bis(1,1-dimethylethyl)-	000719-22-2	4.81	0.018	91
2,5,8,11-Tetraoxatetradecan-13-ol, 4,7,10-trimethyl-	020324-34-9	6.00	0.016	50
2,6-Bis(4-bromophenyl)-4-tert-butylanisole	999731-17-9	5.73	0.010	64
2-Thiophenemethanethiol	006258-63-5	13.37	0.010	52

The compounds listed above have been tentatively identified by a computer based library search.
Compounds identified in the sample are not reported if they also occur in the method blank.
The % fit is an indication of the reliability of the compound assignment.
Due to the similarity between mass spectra of some isomeric compounds assignments may not be correct.
Other compounds may also be present but identification was not possible.
Concentrations are semi-quantitative, assume a response factor of 1 and use the nearest internal standard.

SVOC (TICs)

UKAS accredited?:No

Customer and Site Details:	Ramboll Environ: Zeon Chemicals ESA		
Sample Details:	ZC211A	**Job Number:**	W22_0278
LIMS ID Number:	EX1694882		
		Multiplier:	0.005
Date Booked in:	20-May-16	**Dilution Factor:**	1
Date Extracted:	25-May-16	**GPC (Y/N):**	N
Date Analysed:	26-May-16	**Matrix:**	Water
QC Batch Number:	104	**Method:**	Sep. Funnel
Directory/Quant File:	052516_MS16\ 0	**Operator:**	SO/RP

Tentatively Identified Compounds	CAS #	R.T.	Concentration mg/l	% Fit
Decanoic acid	000334-48-5	4.68	6.836	96
Octanoic Acid	000124-07-2	3.90	0.040	95
19-Norabietatriene	019407-18-2	6.48	0.036	99
1-Decanol	000112-30-1	4.11	0.024	91
Butyl aldoxime, 3-methyl-, anti	005775-74-6	6.01	0.020	64
Sulfur	013798-23-7	5.12	0.018	93
2,5-Cyclohexadiene-1,4-dione, 2,6-bis(1,1-dimethylethyl)-	000719-22-2	4.80	0.016	91
Decanoic acid, decyl ester	001654-86-0	6.80	0.014	93
2H-Indol-2-one, 1,3-dihydro-1-methyl-	000061-70-1	5.20	0.013	62

The compounds listed above have been tentatively identified by a computer based library search.
Compounds identified in the sample are not reported if they also occur in the method blank.
The % fit is an indication of the reliability of the compound assignment.
Due to the similarity between mass spectra of some isomeric compounds assignments may not be correct.
Other compounds may also be present but identification was not possible.
Concentrations are semi-quantitative, assume a response factor of 1 and use the nearest internal standard.

SVOC (TICs)

UKAS accredited?:No

Customer and Site Details:	Ramboll Environ: Zeon Chemicals ESA		
Sample Details:	ZC214	**Job Number:**	W22_0278
LIMS ID Number:	EX1694885		
		Multiplier:	0.005
Date Booked in:	20-May-16	**Dilution Factor:**	1
Date Extracted:	25-May-16	**GPC (Y/N):**	N
Date Analysed:	26-May-16	**Matrix:**	Water
QC Batch Number:	104	**Method:**	Sep. Funnel
Directory/Quant File:	052516_MS16\ 0	**Operator:**	SO/RP

Tentatively Identified Compounds	CAS #	R.T.	Concentration mg/l	% Fit
Unknown peak	-	2.68	0.068	-
Nonane	000111-84-2	2.56	0.030	95
N-(Ethylidene)ethanamine - N-oxide	999005-59-9	2.98	0.023	64
Nonadecane	000629-92-5	5.77	0.019	93
Unknown peak	-	12.92	0.018	-
dimethyltbenzo[b]hiophene	000000-00-0	4.73	0.015	72
Methyldibenzothiophene	030995-64-3	6.19	0.015	74
Unknown peak	-	13.61	0.015	-
Naphthalene, 2,3,6-trimethyl- $$ 2,3,6-Trimethylnaphthalene	000829-26-5	5.12	0.013	95
9H-Fluorene, 9-methyl-	002523-37-7	5.61	0.010	64

The compounds listed above have been tentatively identified by a computer based library search.
Compounds identified in the sample are not reported if they also occur in the method blank.
The % fit is an indication of the reliability of the compound assignment.
Due to the similarity between mass spectra of some isomeric compounds assignments may not be correct.
Other compounds may also be present but identification was not possible.
Concentrations are semi-quantitative, assume a response factor of 1 and use the nearest internal standard.

Gasoline Range Organics
(BTEX and Aliphatic Carbon Ranges)

Customer and Site Details: Ramboll Environ : Zeon Chemicals ESA
Job Number: W22_0278
Directory: E:\TES\DATA\2016\0526HSA_GC9\052616 2016-05-26 15-53-50\112B1201.D
Method: Headspace GCFID

Matrix: Water
Date Booked in: 20-May-16
Date extracted: 26-May-16
Date Analysed: 26-May-16, 19:1

*** Sample data with an asterisk are not UKAS accredited.**

			Concentration, (mg/l)					Aliphatics				
	Sample ID	Client ID	Benzene	Toluene	Ethyl benzene	m/p-Xylene	o-Xylene	C5 - C6	>C6 - C7	>C7 - C8	>C8 - C10	Total GRO
*	EX1694880	ZC210	<0.005	<0.005	<0.005	<0.005	<0.005	<0.1	<0.1	<0.1	<0.1	0.1
*	EX1694881	ZC211	<0.005	<0.005	<0.005	<0.005	<0.005	<0.1	<0.1	<0.1	<0.1	<0.1
*	EX1694882	ZC211A	<0.005	<0.005	<0.005	<0.005	<0.005	<0.1	<0.1	<0.1	<0.1	<0.1
*	EX1694883	ZC213	<0.005	<0.005	<0.005	<0.005	<0.005	<0.1	<0.1	<0.1	<0.1	<0.1
*	EX1694884	ZC213A	<0.005	<0.005	<0.005	<0.005	<0.005	<0.1	<0.1	<0.1	<0.1	<0.1
*	EX1694885	ZC214	<0.005	<0.005	<0.005	<0.005	<0.005	<0.1	<0.1	<0.1	<0.1	<0.1

Note: Benzene elutes between C6 and C7, toluene elutes between C7 and C8, ethyl benzene and the xylenes elute between C8 and C9.

Each BTEX compound is deducted from the appropriate band to give the aliphatic fractions, however aromatic compounds may still be contributing to these fractions

Where individual results are flagged see report notes for status.

ALIPHATIC / AROMATIC FRACTION BY GC/FID

Customer and Site Details: Ramboll Environ : Zeon Chemicals ESA
Job Number: W22_0278
QC Batch Number: 160324
Directory: D:\TES\DATA\Y2016\052516TPH_GC4\052516 2016-05-25 09-44-58\090B6401.D
Method: Bottle

Separation: Silica gel
Eluents: Hexane, DCM

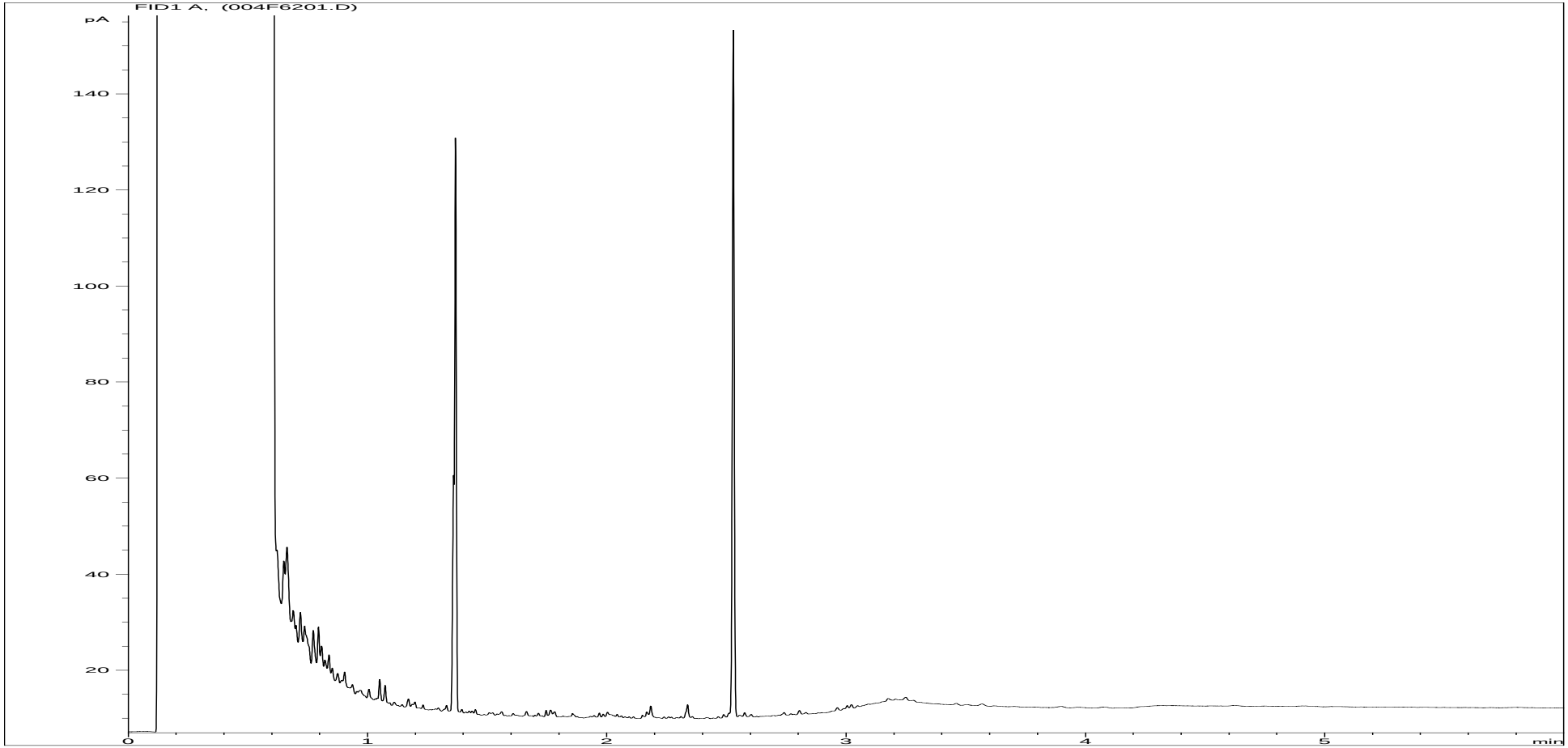
Matrix: Water
Date Booked in 20-May-16
Date Extracted 23-May-16
Date Analysed 26-May-16, 01:12:21

*** This sample data is not UKAS accredited.**

		Concentration, (mg/l)											
		>C8 - C10		>C10 - C12		>C12 - C16		>C16 - C21		>C21 - C35		>C8 - C40	
Sample ID	**Client ID**	**Aliphatics**	**Aromatics**	**Aliphatics**	**Aromatics**	**Aliphatics**	**Aromatics**	**Aliphatics**	**Aromatics**	**Aliphatics**	**Aromatics**	**Aliphatics**	**Aromatics**
EX1694880	ZC210	<0.01	<0.01	<0.01	<0.01	<0.01	0.05	<0.01	0.011	<0.01	<0.01	<0.01	0.074
EX1694881	ZC211	<0.01	<0.01	<0.01	<0.01	<0.01	0.01	<0.01	0.052	<0.01	0.013	0.016	0.083
EX1694882	ZC211A	<0.01	<0.01	<0.01	<0.01	<0.01	0.016	<0.01	0.094	<0.01	0.057	0.019	0.175
EX1694883	ZC213	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	0.02
EX1694884	ZC213A	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	0.017
EX1694885	ZC214	<0.01	<0.01	0.064	0.066	0.238	0.21	0.266	0.18	0.073	0.082	0.646	0.548

Where individual results are flagged see report notes for status.

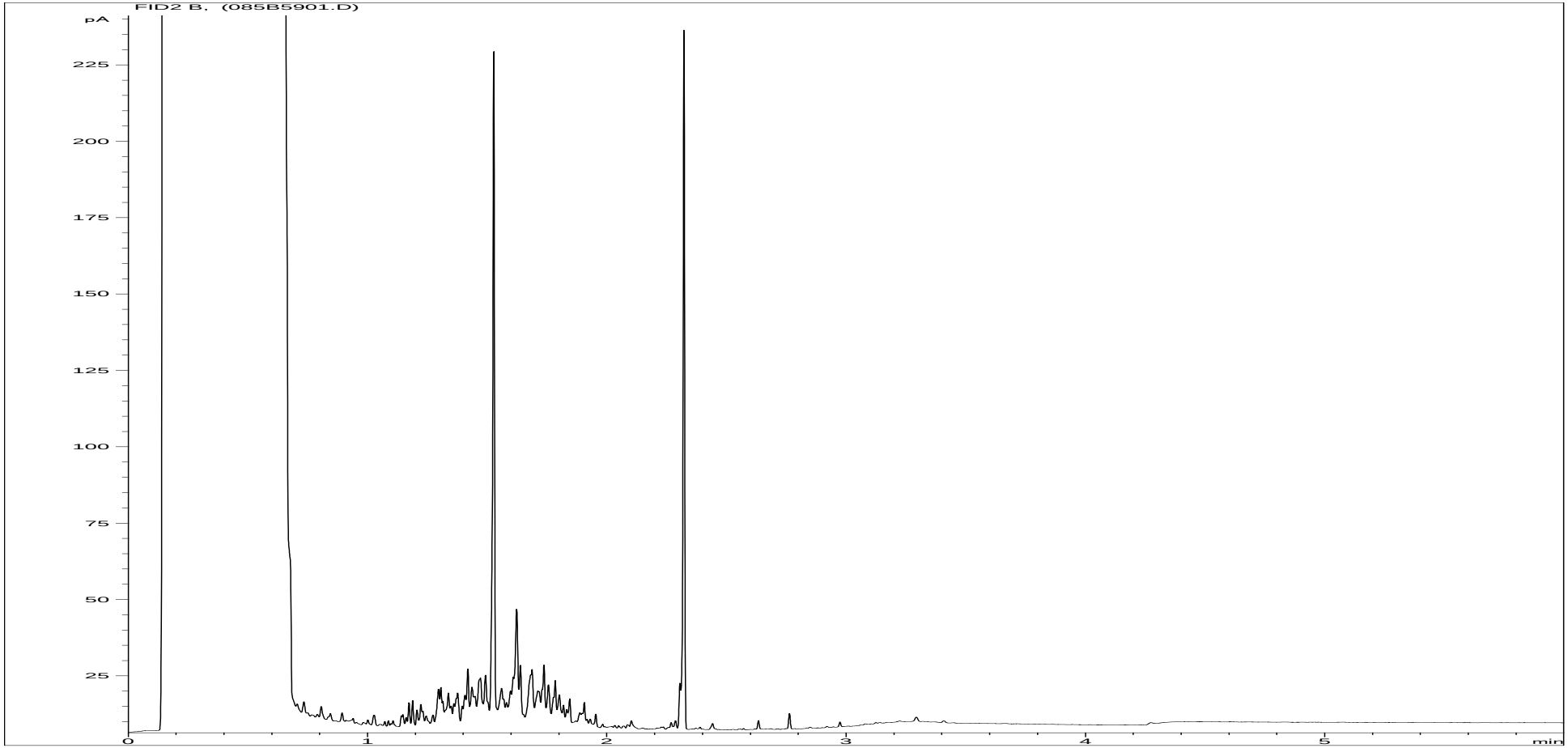
Petroleum Hydrocarbons (C8 to C40) by GC/FID Aliphatics Fraction.



Sample ID:	EX1694880ALI	**Job Number:**	W22_0278
Multiplier:	0.02	**Client:**	Ramboll Environ
Dilution:	1	**Site:**	Zeon Chemicals ESA
Acquisition Method:	5UL_RUNF.M	**Client Sample Ref:**	ZC210
Acquisition Date/Time:	26-May-16, 00:45:37		
Datafile:	D:\TES\DATA\Y2016\052516TPH_GC4\052516 2016-05-25 09-44-58\004F6201.D		

Where individual results are flagged see report notes for status.

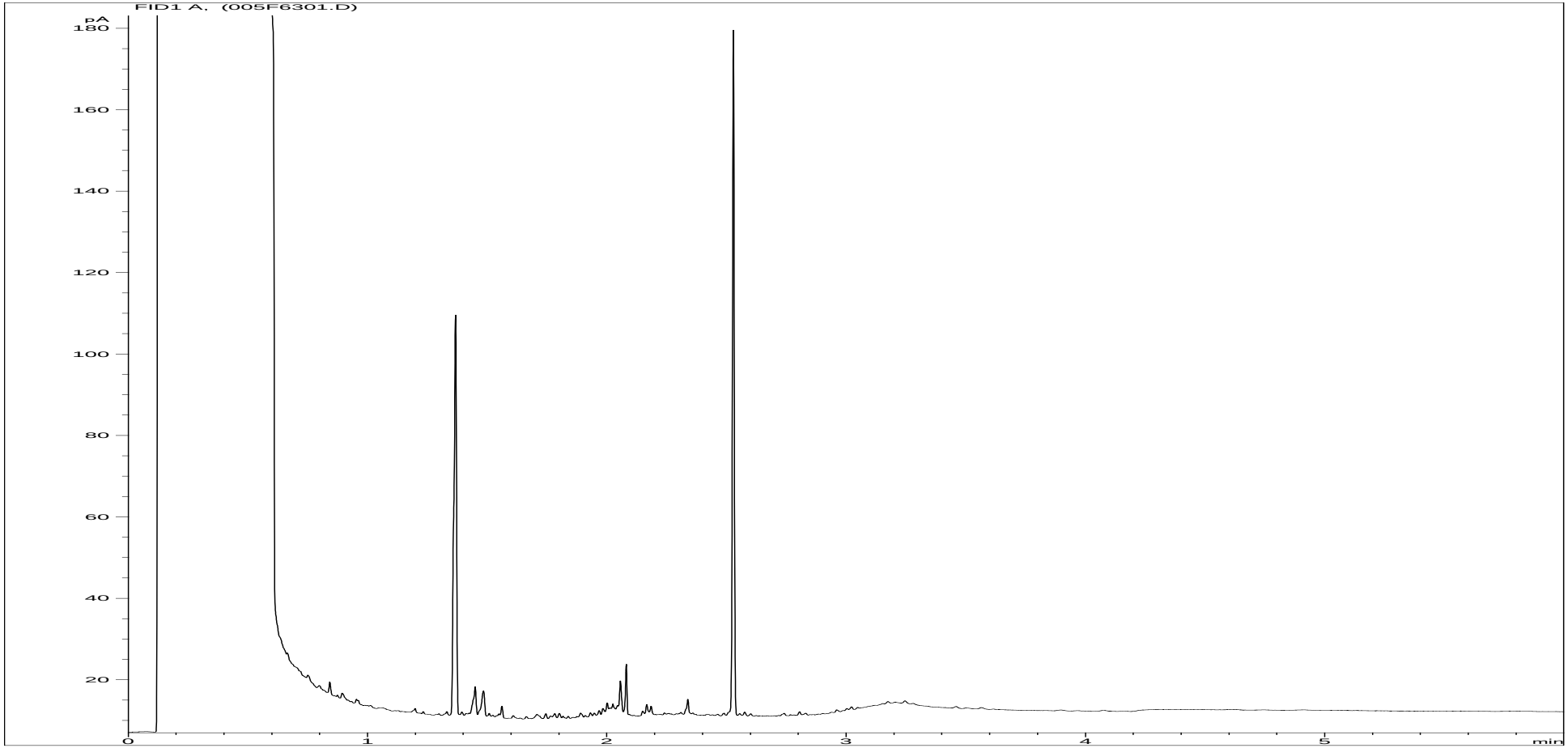
Petroleum Hydrocarbons (C8 to C40) by GC/FID Aromatics Fraction.



Sample ID:	EX1694880ARO	**Job Number:**	W22_0278
Multiplier:	0.015	**Client:**	Ramboll Environ
Dilution:	1	**Site:**	Zeon Chemicals ESA
Acquisition Method:	5UL_RUNF.M	**Client Sample Ref:**	ZC210
Acquisition Date/Time:	26-May-16, 00:05:41		
Datafile:	D:\TES\DATA\Y2016\052516TPH_GC4\052516 2016-05-25 09-44-58\085B5901.D		

Where individual results are flagged see report notes for status.

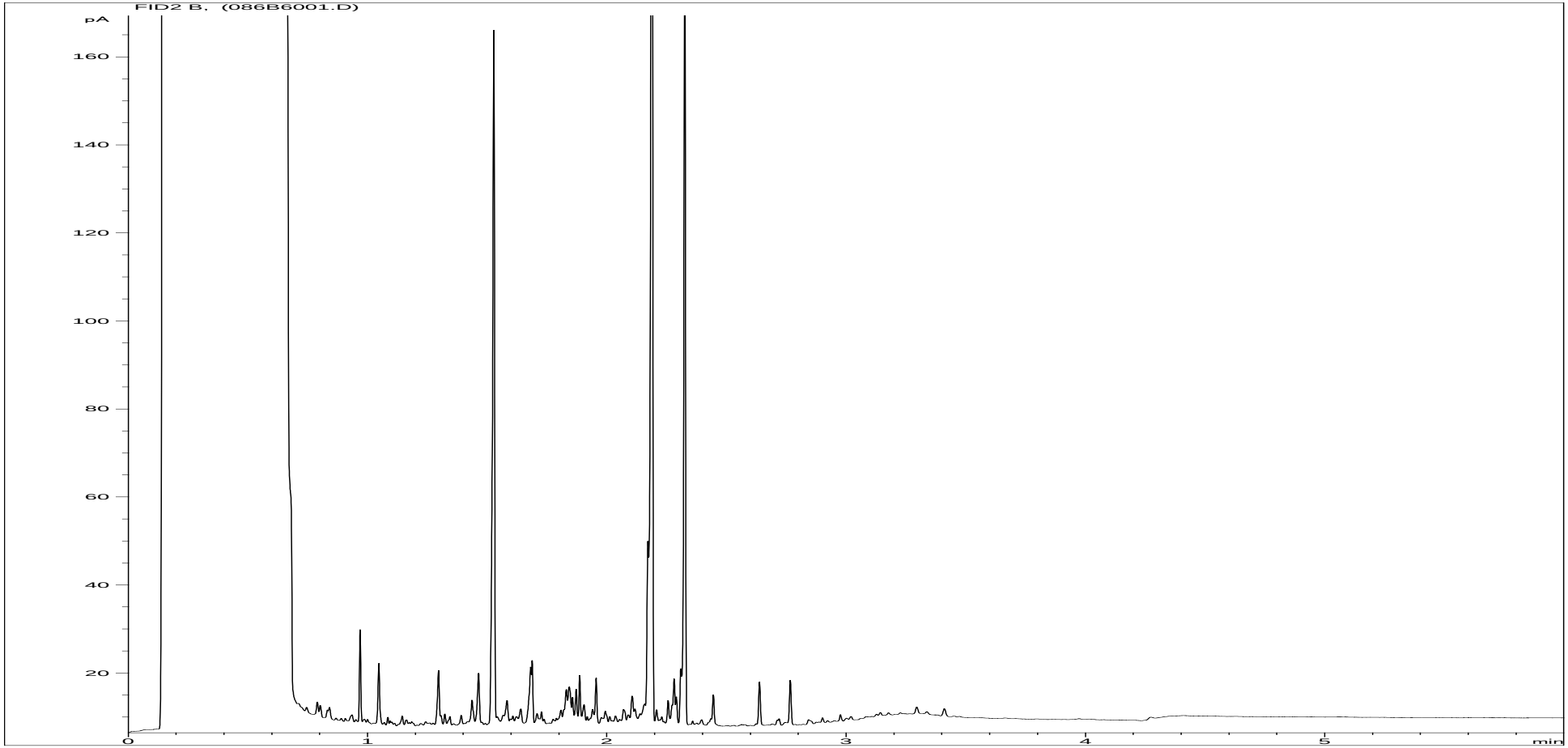
Petroleum Hydrocarbons (C8 to C40) by GC/FID Aliphatics Fraction.



Sample ID:	EX1694881ALI	**Job Number:**	W22_0278
Multiplier:	0.0198	**Client:**	Ramboll Environ
Dilution:	1	**Site:**	Zeon Chemicals ESA
Acquisition Method:	5UL_RUNF.M	**Client Sample Ref:**	ZC211
Acquisition Date/Time:	26-May-16, 00:59:02		
Datafile:	D:\TES\DATA\Y2016\052516TPH_GC4\052516 2016-05-25 09-44-58\005F6301.D		

Where individual results are flagged see report notes for status.

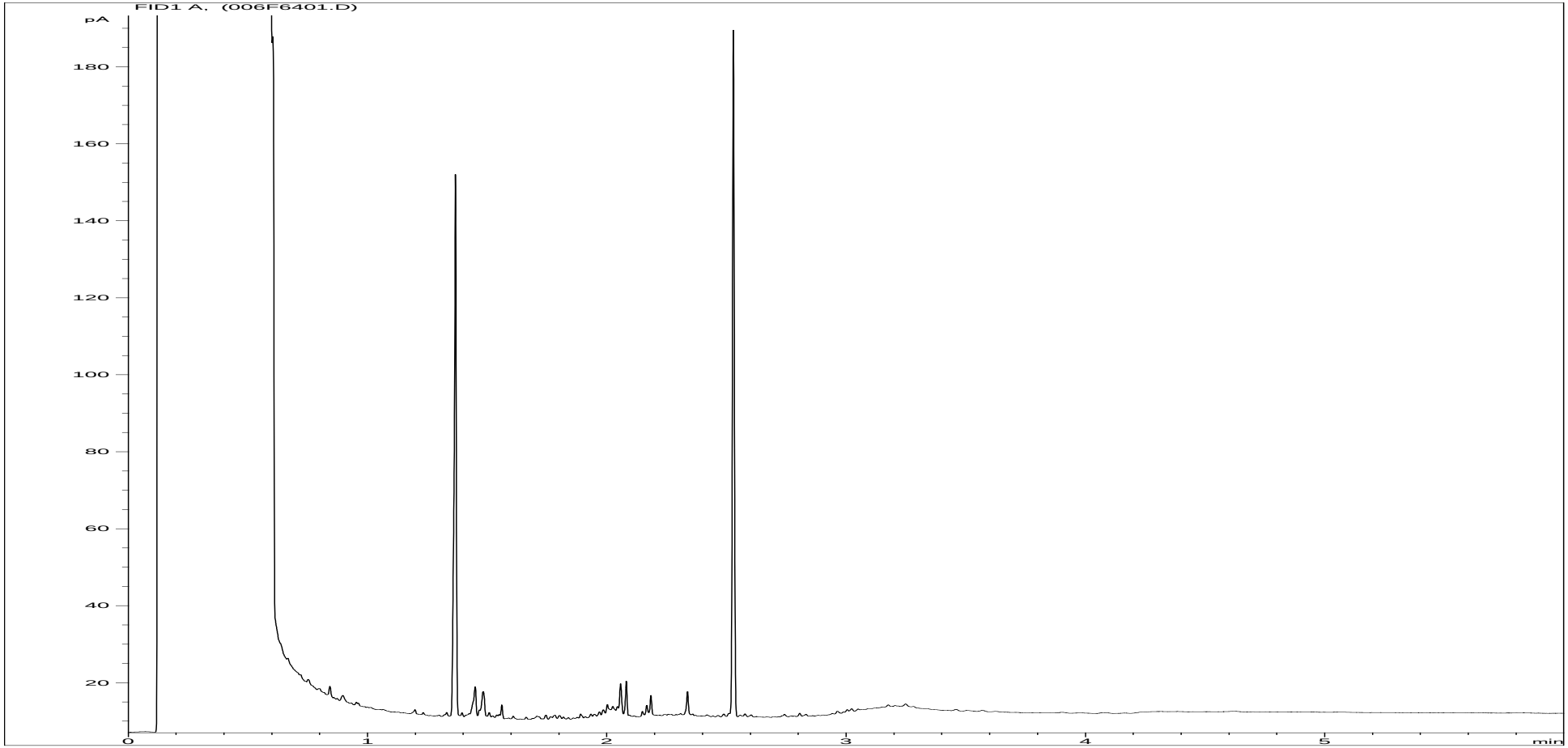
Petroleum Hydrocarbons (C8 to C40) by GC/FID Aromatics Fraction.



Sample ID:	EX1694881ARO	**Job Number:**	W22_0278
Multiplier:	0.015	**Client:**	Ramboll Environ
Dilution:	1	**Site:**	Zeon Chemicals ESA
Acquisition Method:	5UL_RUNF.M	**Client Sample Ref:**	ZC211
Acquisition Date/Time:	26-May-16, 00:19:06		
Datafile:	D:\TES\DATA\Y2016\052516TPH_GC4\052516 2016-05-25 09-44-58\086B6001.D		

Where individual results are flagged see report notes for status.

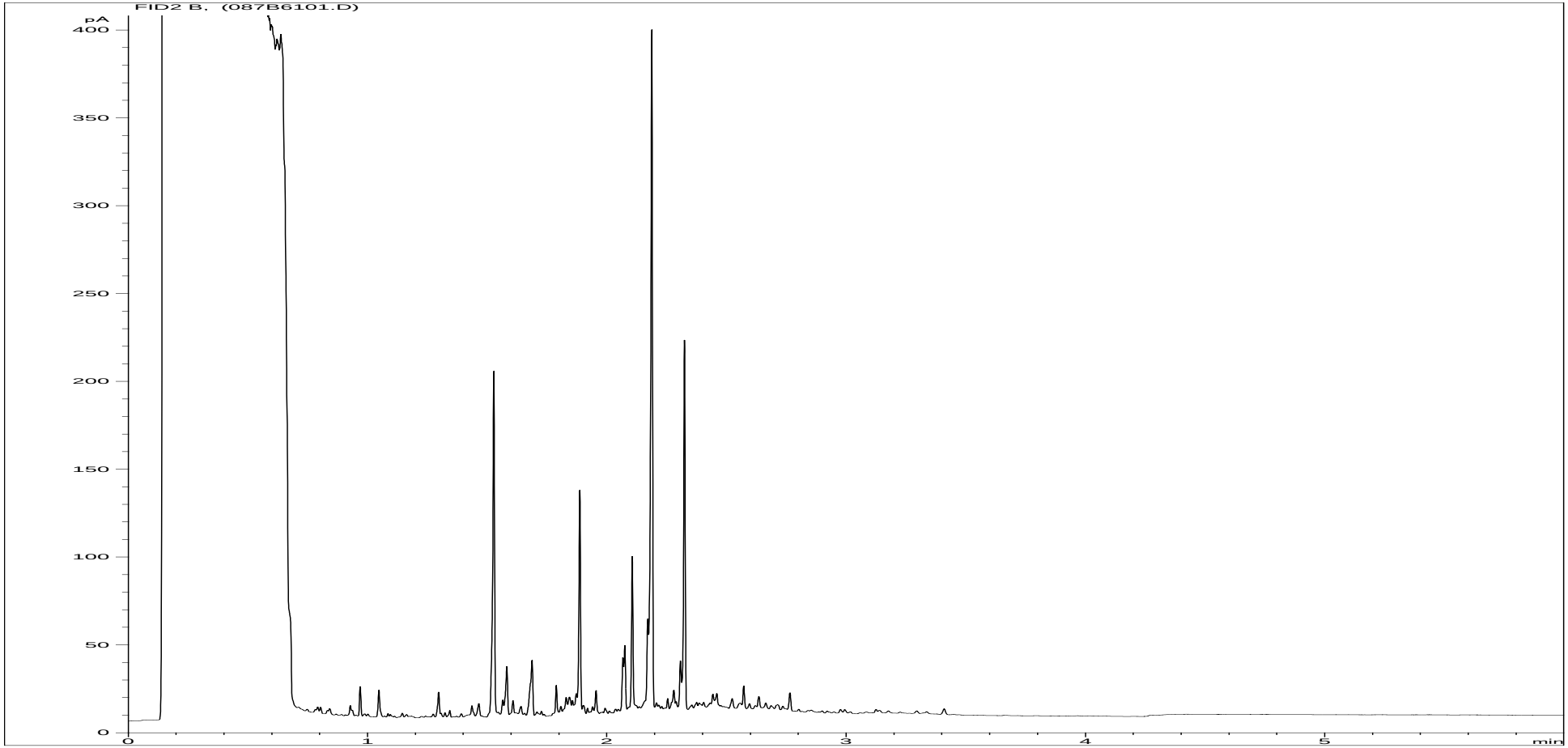
Petroleum Hydrocarbons (C8 to C40) by GC/FID Aliphatics Fraction.



Sample ID:	EX1694882ALI	**Job Number:**	W22_0278
Multiplier:	0.02	**Client:**	Ramboll Environ
Dilution:	1	**Site:**	Zeon Chemicals ESA
Acquisition Method:	5UL_RUNF.M	**Client Sample Ref:**	ZC211A
Acquisition Date/Time:	26-May-16, 01:12:21		
Datafile:	D:\TES\DATA\Y2016\052516TPH_GC4\052516 2016-05-25 09-44-58\006F6401.D		

Where individual results are flagged see report notes for status.

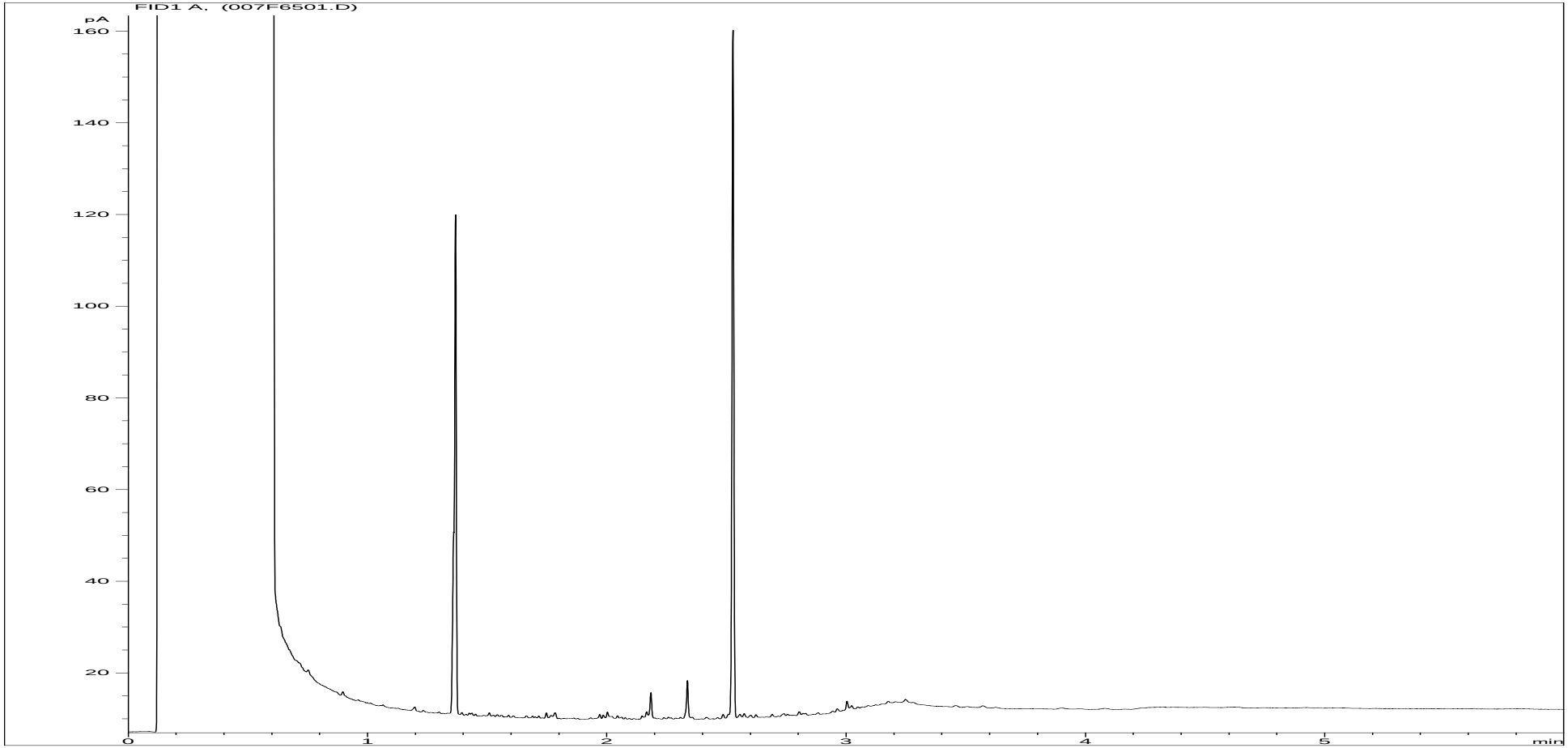
Petroleum Hydrocarbons (C8 to C40) by GC/FID Aromatics Fraction.



Sample ID:	EX1694882ARO	**Job Number:**	W22_0278
Multiplier:	0.0154	**Client:**	Ramboll Environ
Dilution:	1	**Site:**	Zeon Chemicals ESA
Acquisition Method:	5UL_RUNF.M	**Client Sample Ref:**	ZC211A
Acquisition Date/Time:	26-May-16, 00:32:24		
Datafile:	D:\TES\DATA\Y2016\052516TPH_GC4\052516 2016-05-25 09-44-58\087B6101.D		

Where individual results are flagged see report notes for status.

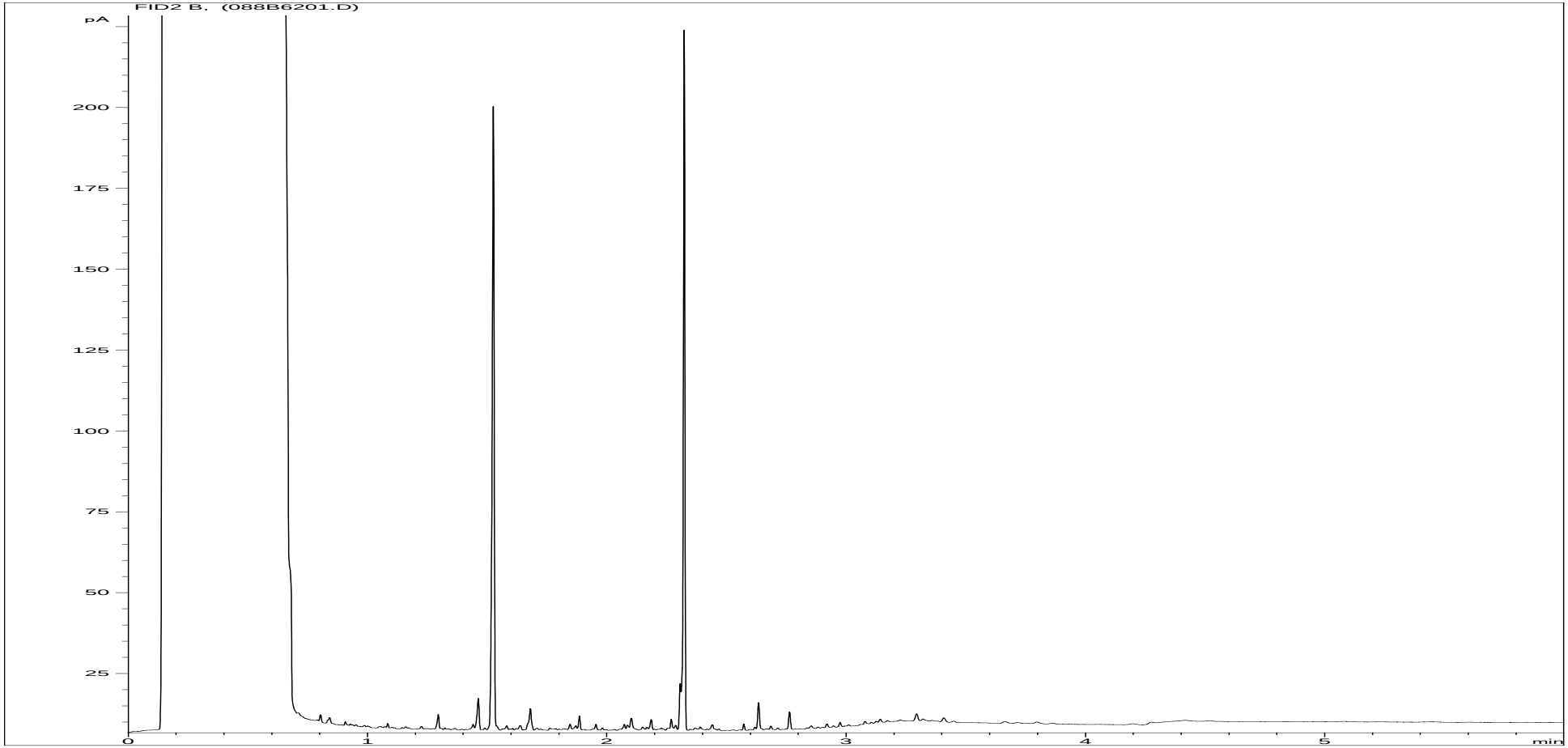
Petroleum Hydrocarbons (C8 to C40) by GC/FID Aliphatics Fraction.



Sample ID:	EX1694883ALI	**Job Number:**	W22_0278
Multiplier:	0.02	**Client:**	Ramboll Environ
Dilution:	1	**Site:**	Zeon Chemicals ESA
Acquisition Method:	5UL_RUNF.M	**Client Sample Ref:**	ZC213
Acquisition Date/Time:	26-May-16, 01:25:46		
Datafile:	D:\TES\DATA\Y2016\052516TPH_GC4\052516 2016-05-25 09-44-58\007F6501.D		

Where individual results are flagged see report notes for status.

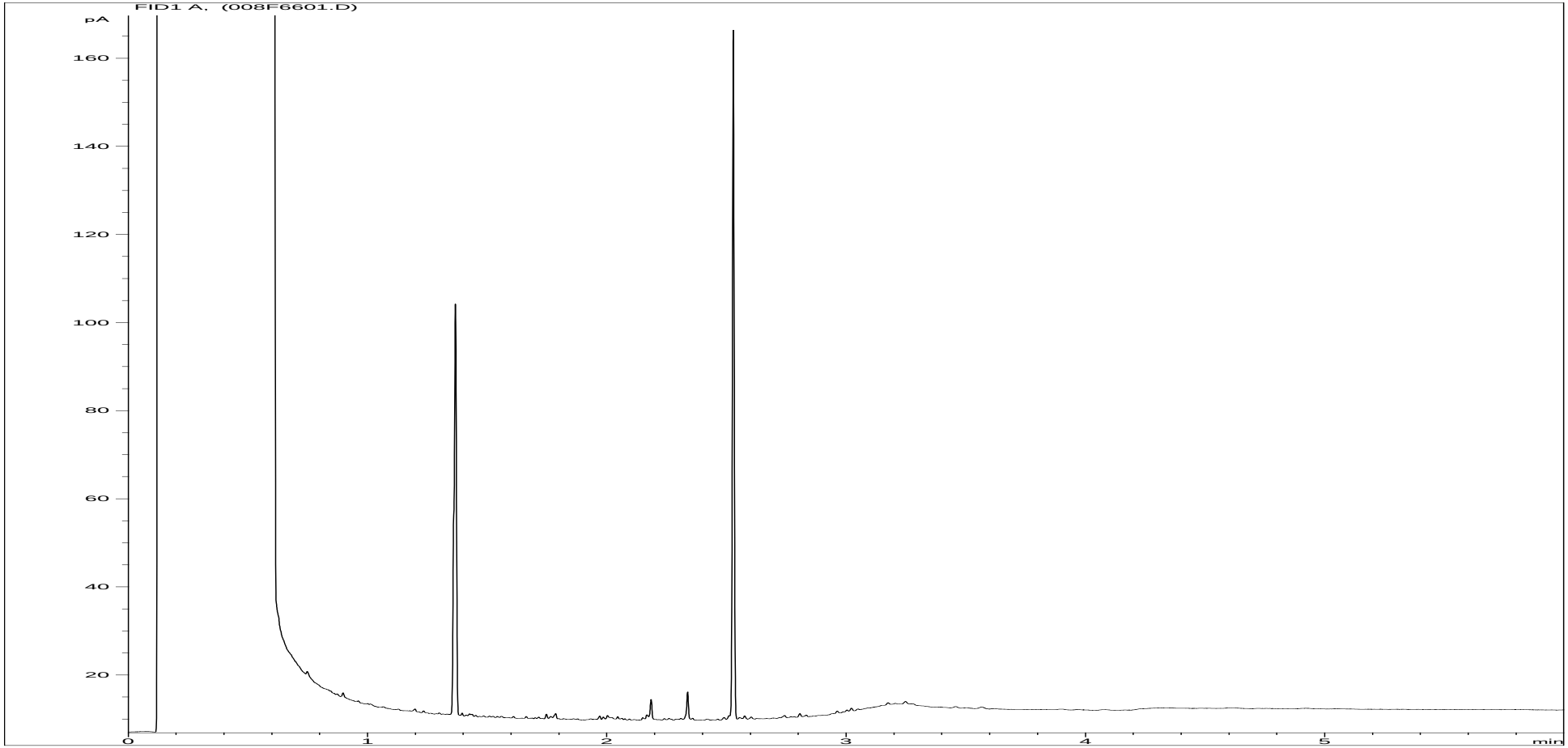
Petroleum Hydrocarbons (C8 to C40) by GC/FID Aromatics Fraction.



Sample ID:	EX1694883ARO	**Job Number:**	W22_0278
Multiplier:	0.015	**Client:**	Ramboll Environ
Dilution:	1	**Site:**	Zeon Chemicals ESA
Acquisition Method:	5UL_RUNF.M	**Client Sample Ref:**	ZC213
Acquisition Date/Time:	26-May-16, 00:45:37		
Datafile:	D:\TES\DATA\Y2016\052516TPH_GC4\052516 2016-05-25 09-44-58\088B6201.D		

Where individual results are flagged see report notes for status.

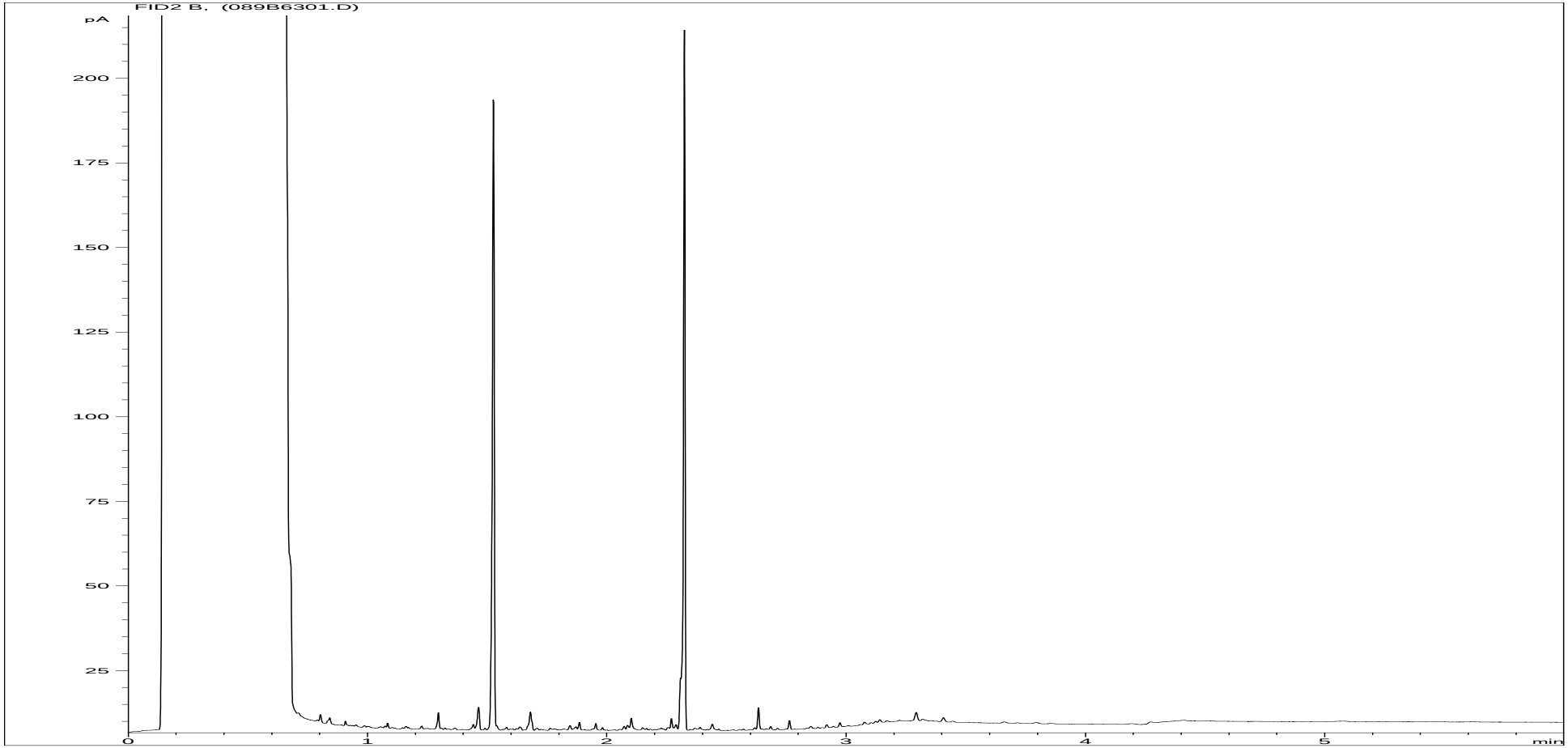
Petroleum Hydrocarbons (C8 to C40) by GC/FID Aliphatics Fraction.



Sample ID:	EX1694884ALI	**Job Number:**	W22_0278
Multiplier:	0.02	**Client:**	Ramboll Environ
Dilution:	1	**Site:**	Zeon Chemicals ESA
Acquisition Method:	5UL_RUNF.M	**Client Sample Ref:**	ZC213A
Acquisition Date/Time:	26-May-16, 01:38:45		
Datafile:	D:\TES\DATA\Y2016\052516TPH_GC4\052516 2016-05-25 09-44-58\008F6601.D		

Where individual results are flagged see report notes for status.

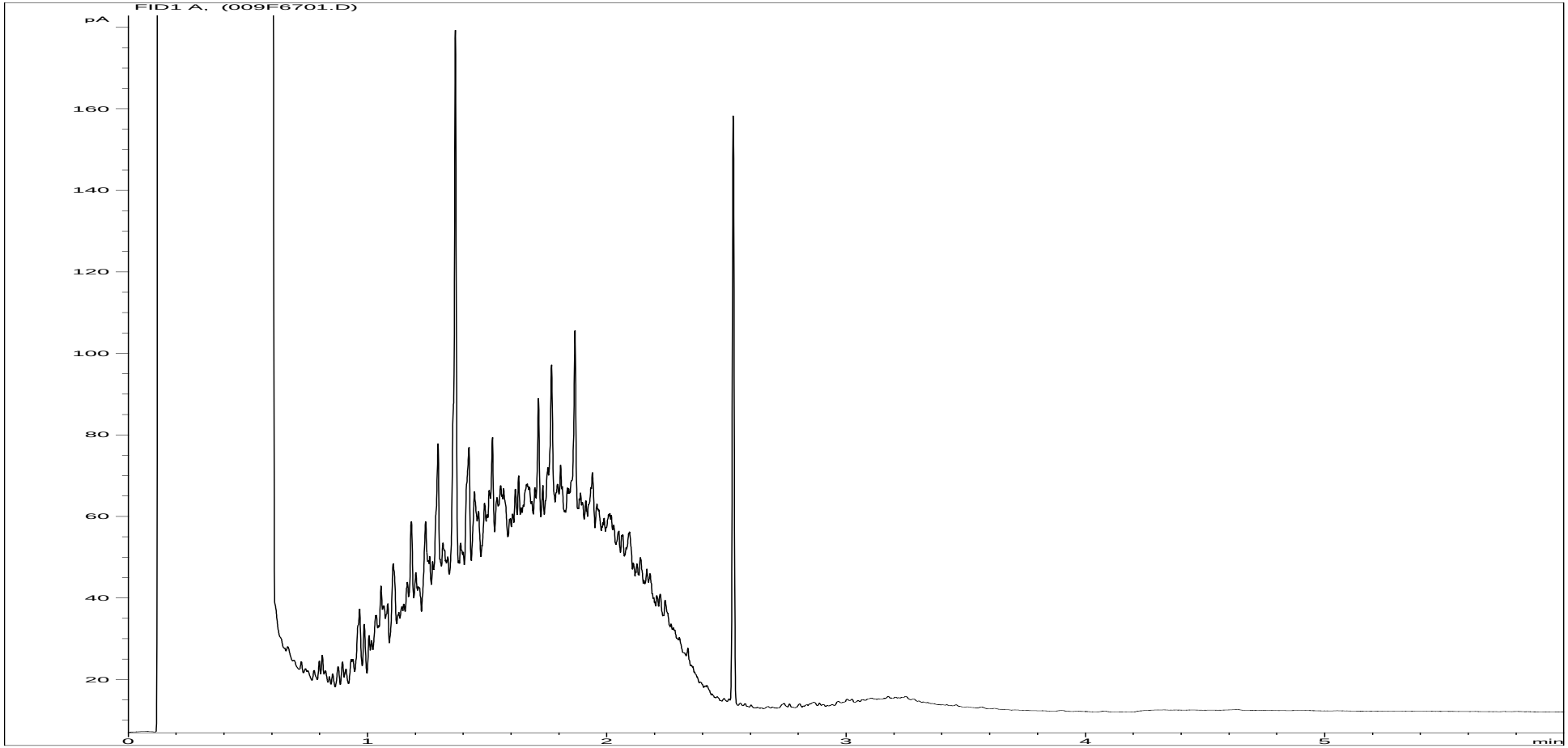
Petroleum Hydrocarbons (C8 to C40) by GC/FID Aromatics Fraction.



Sample ID:	EX1694884ARO	**Job Number:**	W22_0278
Multiplier:	0.0152	**Client:**	Ramboll Environ
Dilution:	1	**Site:**	Zeon Chemicals ESA
Acquisition Method:	5UL_RUNF.M	**Client Sample Ref:**	ZC213A
Acquisition Date/Time:	26-May-16, 00:59:02		
Datafile:	D:\TES\DATA\Y2016\052516TPH_GC4\052516 2016-05-25 09-44-58\089B6301.D		

Where individual results are flagged see report notes for status.

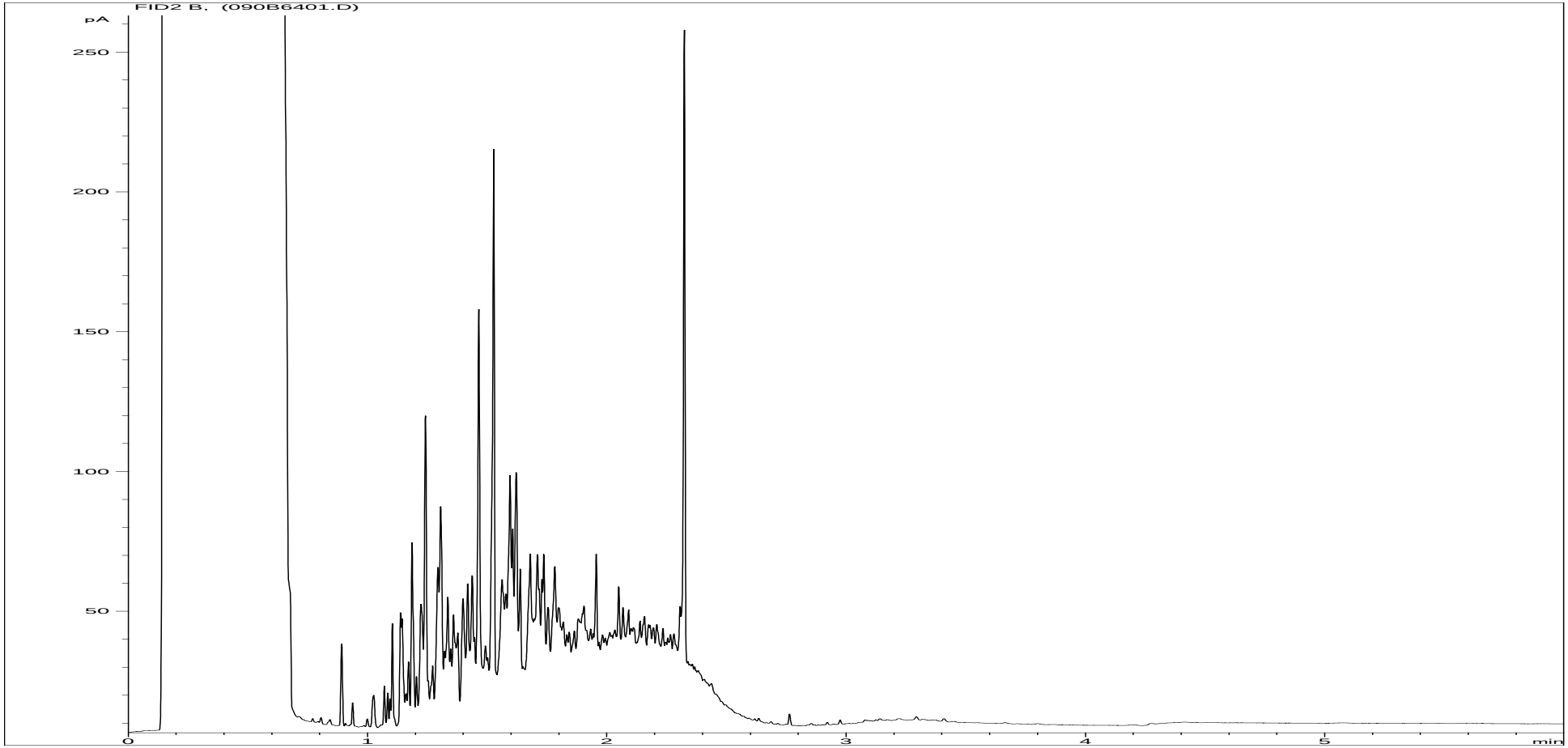
Petroleum Hydrocarbons (C8 to C40) by GC/FID Aliphatics Fraction.



Sample ID:	EX1694885ALI	**Job Number:**	W22_0278
Multiplier:	0.0198	**Client:**	Ramboll Environ
Dilution:	1	**Site:**	Zeon Chemicals ESA
Acquisition Method:	5UL_RUNF.M	**Client Sample Ref:**	ZC214
Acquisition Date/Time:	26-May-16, 01:51:44		
Datafile:	D:\TES\DATA\Y2016\052516TPH_GC4\052516 2016-05-25 09-44-58\009F6701.D		

Where individual results are flagged see report notes for status.

Petroleum Hydrocarbons (C8 to C40) by GC/FID Aromatics Fraction.



Sample ID:	EX1694885ARO	**Job Number:**	W22_0278
Multiplier:	0.0152	**Client:**	Ramboll Environ
Dilution:	1	**Site:**	Zeon Chemicals ESA
Acquisition Method:	5UL_RUNF.M	**Client Sample Ref:**	ZC214
Acquisition Date/Time:	26-May-16, 01:12:21		
Datafile:	D:\TES\DATA\Y2016\052516TPH_GC4\052516 2016-05-25 09-44-58\090B6401.D		

Where individual results are flagged see report notes for status.

Volatile Organic Compounds by HSA-GCMS

UKAS accredited?: Yes

Customer and Site Details:	Ramboll Environ: Zeon Chemicals ESA	**Directory/Quant file:**	0525VOC.MS8\ Initial Calibration	**Matrix:**	Water
Sample Details:	ZC210	**Date Booked in:**	20-May-16	**Method:**	Headspace
LIMS ID Number:	EX1694880	**Date Analysed:**	25-May-16	**Multiplier:**	1
Job Number:	W22_0278	**Operator:**	PR	**Position:**	13

Target Compounds	CAS #	R.T. (min.)	Concentration µg/l	% Fit
Dichlorodifluoromethane	75-71-8 *	-	< 1	-
Chloromethane	74-87-3	-	< 1	-
Vinyl Chloride	75-01-4	-	< 1	-
Bromomethane	74-83-9 *	-	< 5	-
Chloroethane	75-00-3	-	< 5	-
Trichlorofluoromethane	75-69-4	-	< 1	-
1,1-Dichloroethene	75-35-4	-	< 1	-
trans 1,2-Dichloroethene	156-60-5	-	< 1	-
1,1-Dichloroethane	75-34-3	-	< 1	-
2,2-Dichloropropane	594-20-7 *	-	< 1	-
cis 1,2-Dichloroethene	156-59-2	-	< 1	-
Bromochloromethane	74-97-5	-	< 1	-
Chloroform	67-66-3	-	< 1	-
1,1,1-Trichloroethane	71-55-6	-	< 1	-
Carbon Tetrachloride	56-23-5	-	< 1	-
1,1-Dichloropropene	563-58-6	-	< 1	-
Benzene	71-43-2	-	< 1	-
1,2-Dichloroethane	107-06-2	-	< 1	-
Trichloroethene	79-01-6 *	-	< 5	-
1,2-Dichloropropane	78-87-5	-	< 1	-
Dibromomethane	74-95-3	-	< 1	-
Bromodichloromethane	75-27-4	-	< 1	-
cis 1,3-Dichloropropene	10061-01-5 *	-	< 1	-
Toluene	108-88-3	-	< 1	-
trans 1,3-Dichloropropene	10061-02-6 *	-	< 1	-
1,1,2-Trichloroethane	79-00-5	-	< 1	-
Tetrachloroethene	127-18-4	-	< 5	-
1,3-Dichloropropane	142-28-9	-	< 1	-
Dibromochloromethane	124-48-1	-	< 1	-
1,2-Dibromoethane	106-93-4	-	< 1	-
Chlorobenzene	108-90-7	-	< 1	-
Ethylbenzene	100-41-4	-	< 1	-
1,1,1,2-Tetrachloroethane	630-20-6	-	< 1	-
m and p-Xylene	108-38-3/106-42-3	-	< 1	-
o-Xylene	95-47-6	-	< 1	-

Target Compounds	CAS #	R.T. (min.)	Concentration µg/l	% Fit
Styrene	100-42-5	-	< 1	-
Bromoform	75-25-2	-	< 1	-
iso-Propylbenzene	98-82-8	-	< 1	-
1,1,2,2-Tetrachloroethane	79-34-5 *	-	< 1	-
Propylbenzene	103-65-1	-	< 1	-
Bromobenzene	108-86-1	-	< 1	-
1,2,3-Trichloropropane	96-18-4	-	< 1	-
2-Chlorotoluene	95-49-8	-	< 1	-
1,3,5-Trimethylbenzene	108-67-8	-	< 1	-
4-Chlorotoluene	106-43-4	-	< 1	-
tert-Butylbenzene	98-06-6	-	< 1	-
1,2,4-Trimethylbenzene	95-63-6	-	< 1	-
sec-Butylbenzene	135-98-8	-	< 1	-
p-Isopropyltoluene	99-87-6	-	< 1	-
1,3-Dichlorobenzene	541-73-1	-	< 1	-
1,4-Dichlorobenzene	106-46-7	-	< 1	-
n-Butylbenzene	104-51-8	-	< 1	-
1,2-Dichlorobenzene	95-50-1	-	< 5	-
1,2-Dibromo-3-chloropropane	96-12-8 *	-	< 5	-
1,2,4-Trichlorobenzene	120-82-1	-	< 5	-
Hexachlorobutadiene	87-68-3	-	< 5	-
Naphthalene	91-20-3	-	< 5	-
1,2,3-Trichlorobenzene	87-61-6	-	< 5	-

Compounds marked * are not UKAS accredited
"M" denotes that % fit has been manually interpreted

Internal standards	R.T.	Area %	Surrogates	% Rec
Pentafluorobenzene	3.32	97	Dibromofluoromethane	106
1,4-Difluorobenzene	3.68	98	Toluene-d8	99
Chlorobenzene-d5	4.85	99	Bromofluorobenzene	96
1,4-Dichlorobenzene-d4	5.65	89		

Where individual results are flagged see report notes for status.

Volatile Organic Compounds by HSA-GCMS

UKAS accredited?: Yes

Customer and Site Details:	Ramboll Environ: Zeon Chemicals ESA	**Directory/Quant file:**	0525VOC.MS8\ Initial Calibration	**Matrix:**	Water
Sample Details:	ZC211	**Date Booked in:**	20-May-16	**Method:**	Headspace
LIMS ID Number:	EX1694881	**Date Analysed:**	25-May-16	**Multiplier:**	1
Job Number:	W22_0278	**Operator:**	PR	**Position:**	14

Target Compounds	CAS #	R.T. (min.)	Concentration µg/l	% Fit
Dichlorodifluoromethane	75-71-8 *	-	< 1	-
Chloromethane	74-87-3	-	< 1	-
Vinyl Chloride	75-01-4	-	< 1	-
Bromomethane	74-83-9 *	-	< 5	-
Chloroethane	75-00-3	-	< 5	-
Trichlorofluoromethane	75-69-4	-	< 1	-
1,1-Dichloroethene	75-35-4	-	< 1	-
trans 1,2-Dichloroethene	156-60-5	-	< 1	-
1,1-Dichloroethane	75-34-3	-	< 1	-
2,2-Dichloropropane	594-20-7 *	-	< 1	-
cis 1,2-Dichloroethene	156-59-2	-	< 1	-
Bromochloromethane	74-97-5	-	< 1	-
Chloroform	67-66-3	-	< 1	-
1,1,1-Trichloroethane	71-55-6	-	< 1	-
Carbon Tetrachloride	56-23-5	-	< 1	-
1,1-Dichloropropene	563-58-6	-	< 1	-
Benzene	71-43-2	-	< 1	-
1,2-Dichloroethane	107-06-2	-	< 1	-
Trichloroethene	79-01-6 *	-	< 5	-
1,2-Dichloropropane	78-87-5	-	< 1	-
Dibromomethane	74-95-3	-	< 1	-
Bromodichloromethane	75-27-4	-	< 1	-
cis 1,3-Dichloropropene	10061-01-5 *	-	< 1	-
Toluene	108-88-3	-	< 1	-
trans 1,3-Dichloropropene	10061-02-6 *	-	< 1	-
1,1,2-Trichloroethane	79-00-5	-	< 1	-
Tetrachloroethene	127-18-4	-	< 5	-
1,3-Dichloropropane	142-28-9	-	< 1	-
Dibromochloromethane	124-48-1	-	< 1	-
1,2-Dibromoethane	106-93-4	-	< 1	-
Chlorobenzene	108-90-7	-	< 1	-
Ethylbenzene	100-41-4	-	< 1	-
1,1,1,2-Tetrachloroethane	630-20-6	-	< 1	-
m and p-Xylene	108-38-3/106-42-3	-	< 1	-
o-Xylene	95-47-6	-	< 1	-

Target Compounds	CAS #	R.T. (min.)	Concentration µg/l	% Fit
Styrene	100-42-5	-	< 1	-
Bromoform	75-25-2	-	< 1	-
iso-Propylbenzene	98-82-8	-	< 1	-
1,1,2,2-Tetrachloroethane	79-34-5 *	-	< 1	-
Propylbenzene	103-65-1	-	< 1	-
Bromobenzene	108-86-1	-	< 1	-
1,2,3-Trichloropropane	96-18-4	-	< 1	-
2-Chlorotoluene	95-49-8	-	< 1	-
1,3,5-Trimethylbenzene	108-67-8	-	< 1	-
4-Chlorotoluene	106-43-4	-	< 1	-
tert-Butylbenzene	98-06-6	5.62	1	65
1,2,4-Trimethylbenzene	95-63-6	-	< 1	-
sec-Butylbenzene	135-98-8	-	< 1	-
p-Isopropyltoluene	99-87-6	5.62	1	90
1,3-Dichlorobenzene	541-73-1	-	< 1	-
1,4-Dichlorobenzene	106-46-7	-	< 1	-
n-Butylbenzene	104-51-8	-	< 1	-
1,2-Dichlorobenzene	95-50-1	-	< 5	-
1,2-Dibromo-3-chloropropane	96-12-8 *	-	< 5	-
1,2,4-Trichlorobenzene	120-82-1	-	< 5	-
Hexachlorobutadiene	87-68-3	-	< 5	-
Naphthalene	91-20-3	-	< 5	-
1,2,3-Trichlorobenzene	87-61-6	-	< 5	-

Compounds marked * are not UKAS accredited
"M" denotes that % fit has been manually interpreted

Internal standards	R.T.	Area %	Surrogates	% Rec
Pentafluorobenzene	3.32	97	Dibromofluoromethane	111
1,4-Difluorobenzene	3.68	96	Toluene-d8	100
Chlorobenzene-d5	4.84	97	Bromofluorobenzene	96
1,4-Dichlorobenzene-d4	5.64	88		

Where individual results are flagged see report notes for status.

Volatile Organic Compounds by HSA-GCMS

UKAS accredited?: Yes

Customer and Site Details:	Ramboll Environ: Zeon Chemicals ESA	**Directory/Quant file:**	0525VOC.MS8\ Initial Calibration	**Matrix:**	Water
Sample Details:	ZC211A	**Date Booked in:**	20-May-16	**Method:**	Headspace
LIMS ID Number:	EX1694882	**Date Analysed:**	25-May-16	**Multiplier:**	1
Job Number:	W22_0278	**Operator:**	PR	**Position:**	15

Target Compounds	CAS #	R.T. (min.)	Concentration µg/l	% Fit
Dichlorodifluoromethane	75-71-8 *	-	< 1	-
Chloromethane	74-87-3	-	< 1	-
Vinyl Chloride	75-01-4	-	< 1	-
Bromomethane	74-83-9 *	-	< 5	-
Chloroethane	75-00-3	-	< 5	-
Trichlorofluoromethane	75-69-4	-	< 1	-
1,1-Dichloroethene	75-35-4	-	< 1	-
trans 1,2-Dichloroethene	156-60-5	-	< 1	-
1,1-Dichloroethane	75-34-3	-	< 1	-
2,2-Dichloropropane	594-20-7 *	-	< 1	-
cis 1,2-Dichloroethene	156-59-2	-	< 1	-
Bromochloromethane	74-97-5	-	< 1	-
Chloroform	67-66-3	-	< 1	-
1,1,1-Trichloroethane	71-55-6	-	< 1	-
Carbon Tetrachloride	56-23-5	-	< 1	-
1,1-Dichloropropene	563-58-6	-	< 1	-
Benzene	71-43-2	-	< 1	-
1,2-Dichloroethane	107-06-2	-	< 1	-
Trichloroethene	79-01-6 *	-	< 5	-
1,2-Dichloropropane	78-87-5	-	< 1	-
Dibromomethane	74-95-3	-	< 1	-
Bromodichloromethane	75-27-4	-	< 1	-
cis 1,3-Dichloropropene	10061-01-5 *	-	< 1	-
Toluene	108-88-3	-	< 1	-
trans 1,3-Dichloropropene	10061-02-6 *	-	< 1	-
1,1,2-Trichloroethane	79-00-5	-	< 1	-
Tetrachloroethene	127-18-4	-	< 5	-
1,3-Dichloropropane	142-28-9	-	< 1	-
Dibromochloromethane	124-48-1	-	< 1	-
1,2-Dibromoethane	106-93-4	-	< 1	-
Chlorobenzene	108-90-7	-	< 1	-
Ethylbenzene	100-41-4	-	< 1	-
1,1,1,2-Tetrachloroethane	630-20-6	-	< 1	-
m and p-Xylene	108-38-3/106-42-3	-	< 1	-
o-Xylene	95-47-6	-	< 1	-

Target Compounds	CAS #	R.T. (min.)	Concentration µg/l	% Fit
Styrene	100-42-5	-	< 1	-
Bromoform	75-25-2	-	< 1	-
iso-Propylbenzene	98-82-8	-	< 1	-
1,1,2,2-Tetrachloroethane	79-34-5 *	-	< 1	-
Propylbenzene	103-65-1	-	< 1	-
Bromobenzene	108-86-1	-	< 1	-
1,2,3-Trichloropropane	96-18-4	-	< 1	-
2-Chlorotoluene	95-49-8	-	< 1	-
1,3,5-Trimethylbenzene	108-67-8	-	< 1	-
4-Chlorotoluene	106-43-4	-	< 1	-
tert-Butylbenzene	98-06-6	-	< 1	-
1,2,4-Trimethylbenzene	95-63-6	-	< 1	-
sec-Butylbenzene	135-98-8	-	< 1	-
p-Isopropyltoluene	99-87-6	5.62	1	92
1,3-Dichlorobenzene	541-73-1	-	< 1	-
1,4-Dichlorobenzene	106-46-7	-	< 1	-
n-Butylbenzene	104-51-8	-	< 1	-
1,2-Dichlorobenzene	95-50-1	-	< 5	-
1,2-Dibromo-3-chloropropane	96-12-8 *	-	< 5	-
1,2,4-Trichlorobenzene	120-82-1	-	< 5	-
Hexachlorobutadiene	87-68-3	-	< 5	-
Naphthalene	91-20-3	-	< 5	-
1,2,3-Trichlorobenzene	87-61-6	-	< 5	-

Compounds marked * are not UKAS accredited
"M" denotes that % fit has been manually interpreted

Internal standards	R.T.	Area %	Surrogates	% Rec
Pentafluorobenzene	3.32	95	Dibromofluoromethane	112
1,4-Difluorobenzene	3.68	95	Toluene-d8	100
Chlorobenzene-d5	4.85	95	Bromofluorobenzene	96
1,4-Dichlorobenzene-d4	5.64	89		

Where individual results are flagged see report notes for status.

Volatile Organic Compounds by HSA-GCMS

UKAS accredited?: Yes

Customer and Site Details:	Ramboll Environ: Zeon Chemicals ESA	**Directory/Quant file:**	0525VOC.MS8\ Initial Calibration	**Matrix:**	Water
Sample Details:	ZC213	**Date Booked in:**	20-May-16	**Method:**	Headspace
LIMS ID Number:	EX1694883	**Date Analysed:**	25-May-16	**Multiplier:**	1
Job Number:	W22_0278	**Operator:**	PR	**Position:**	16

Target Compounds	CAS #	R.T. (min.)	Concentration µg/l	% Fit
Dichlorodifluoromethane	75-71-8 *	-	< 1	-
Chloromethane	74-87-3	-	< 1	-
Vinyl Chloride	75-01-4	-	< 1	-
Bromomethane	74-83-9 *	-	< 5	-
Chloroethane	75-00-3	-	< 5	-
Trichlorofluoromethane	75-69-4	-	< 1	-
1,1-Dichloroethene	75-35-4	-	< 1	-
trans 1,2-Dichloroethene	156-60-5	-	< 1	-
1,1-Dichloroethane	75-34-3	-	< 1	-
2,2-Dichloropropane	594-20-7 *	-	< 1	-
cis 1,2-Dichloroethene	156-59-2	-	< 1	-
Bromochloromethane	74-97-5	-	< 1	-
Chloroform	67-66-3	-	< 1	-
1,1,1-Trichloroethane	71-55-6	-	< 1	-
Carbon Tetrachloride	56-23-5	-	< 1	-
1,1-Dichloropropene	563-58-6	-	< 1	-
Benzene	71-43-2	-	< 1	-
1,2-Dichloroethane	107-06-2	-	< 1	-
Trichloroethene	79-01-6 *	-	< 5	-
1,2-Dichloropropane	78-87-5	-	< 1	-
Dibromomethane	74-95-3	-	< 1	-
Bromodichloromethane	75-27-4	-	< 1	-
cis 1,3-Dichloropropene	10061-01-5 *	-	< 1	-
Toluene	108-88-3	-	< 1	-
trans 1,3-Dichloropropene	10061-02-6 *	-	< 1	-
1,1,2-Trichloroethane	79-00-5	-	< 1	-
Tetrachloroethene	127-18-4	-	< 5	-
1,3-Dichloropropane	142-28-9	-	< 1	-
Dibromochloromethane	124-48-1	-	< 1	-
1,2-Dibromoethane	106-93-4	-	< 1	-
Chlorobenzene	108-90-7	-	< 1	-
Ethylbenzene	100-41-4	-	< 1	-
1,1,1,2-Tetrachloroethane	630-20-6	-	< 1	-
m and p-Xylene	108-38-3/106-42-3	-	< 1	-
o-Xylene	95-47-6	-	< 1	-

Target Compounds	CAS #	R.T. (min.)	Concentration µg/l	% Fit
Styrene	100-42-5	-	< 1	-
Bromoform	75-25-2	-	< 1	-
iso-Propylbenzene	98-82-8	-	< 1	-
1,1,2,2-Tetrachloroethane	79-34-5 *	-	< 1	-
Propylbenzene	103-65-1	-	< 1	-
Bromobenzene	108-86-1	-	< 1	-
1,2,3-Trichloropropane	96-18-4	-	< 1	-
2-Chlorotoluene	95-49-8	-	< 1	-
1,3,5-Trimethylbenzene	108-67-8	-	< 1	-
4-Chlorotoluene	106-43-4	-	< 1	-
tert-Butylbenzene	98-06-6	-	< 1	-
1,2,4-Trimethylbenzene	95-63-6	-	< 1	-
sec-Butylbenzene	135-98-8	-	< 1	-
p-Isopropyltoluene	99-87-6	-	< 1	-
1,3-Dichlorobenzene	541-73-1	-	< 1	-
1,4-Dichlorobenzene	106-46-7	-	< 1	-
n-Butylbenzene	104-51-8	-	< 1	-
1,2-Dichlorobenzene	95-50-1	-	< 5	-
1,2-Dibromo-3-chloropropane	96-12-8 *	-	< 5	-
1,2,4-Trichlorobenzene	120-82-1	-	< 5	-
Hexachlorobutadiene	87-68-3	-	< 5	-
Naphthalene	91-20-3	-	< 5	-
1,2,3-Trichlorobenzene	87-61-6	-	< 5	-

Compounds marked * are not UKAS accredited
"M" denotes that % fit has been manually interpreted

Internal standards	R.T.	Area %	Surrogates	% Rec
Pentafluorobenzene	3.32	93	Dibromofluoromethane	113
1,4-Difluorobenzene	3.68	93	Toluene-d8	101
Chlorobenzene-d5	4.85	95	Bromofluorobenzene	97
1,4-Dichlorobenzene-d4	5.65	89		

Where individual results are flagged see report notes for status.

Volatile Organic Compounds by HSA-GCMS

UKAS accredited?: Yes

Customer and Site Details:	Ramboll Environ: Zeon Chemicals ESA	**Directory/Quant file:**	0525VOC.MS8\ Initial Calibration	**Matrix:**	Water
Sample Details:	ZC213A	**Date Booked in:**	20-May-16	**Method:**	Headspace
LIMS ID Number:	EX1694884	**Date Analysed:**	25-May-16	**Multiplier:**	1
Job Number:	W22_0278	**Operator:**	PR	**Position:**	17

Target Compounds	CAS #	R.T. (min.)	Concentration µg/l	% Fit
Dichlorodifluoromethane	75-71-8 *	-	< 1	-
Chloromethane	74-87-3	-	< 1	-
Vinyl Chloride	75-01-4	-	< 1	-
Bromomethane	74-83-9 *	-	< 5	-
Chloroethane	75-00-3	-	< 5	-
Trichlorofluoromethane	75-69-4	-	< 1	-
1,1-Dichloroethene	75-35-4	-	< 1	-
trans 1,2-Dichloroethene	156-60-5	-	< 1	-
1,1-Dichloroethane	75-34-3	-	< 1	-
2,2-Dichloropropane	594-20-7 *	-	< 1	-
cis 1,2-Dichloroethene	156-59-2	-	< 1	-
Bromochloromethane	74-97-5	-	< 1	-
Chloroform	67-66-3	-	< 1	-
1,1,1-Trichloroethane	71-55-6	-	< 1	-
Carbon Tetrachloride	56-23-5	-	< 1	-
1,1-Dichloropropene	563-58-6	-	< 1	-
Benzene	71-43-2	-	< 1	-
1,2-Dichloroethane	107-06-2	-	< 1	-
Trichloroethene	79-01-6 *	-	< 5	-
1,2-Dichloropropane	78-87-5	-	< 1	-
Dibromomethane	74-95-3	-	< 1	-
Bromodichloromethane	75-27-4	-	< 1	-
cis 1,3-Dichloropropene	10061-01-5 *	-	< 1	-
Toluene	108-88-3	-	< 1	-
trans 1,3-Dichloropropene	10061-02-6 *	-	< 1	-
1,1,2-Trichloroethane	79-00-5	-	< 1	-
Tetrachloroethene	127-18-4	-	< 5	-
1,3-Dichloropropane	142-28-9	-	< 1	-
Dibromochloromethane	124-48-1	-	< 1	-
1,2-Dibromoethane	106-93-4	-	< 1	-
Chlorobenzene	108-90-7	-	< 1	-
Ethylbenzene	100-41-4	-	< 1	-
1,1,1,2-Tetrachloroethane	630-20-6	-	< 1	-
m and p-Xylene	108-38-3/106-42-3	-	< 1	-
o-Xylene	95-47-6	-	< 1	-

Target Compounds	CAS #	R.T. (min.)	Concentration µg/l	% Fit
Styrene	100-42-5	-	< 1	-
Bromoform	75-25-2	-	< 1	-
iso-Propylbenzene	98-82-8	-	< 1	-
1,1,2,2-Tetrachloroethane	79-34-5 *	-	< 1	-
Propylbenzene	103-65-1	-	< 1	-
Bromobenzene	108-86-1	-	< 1	-
1,2,3-Trichloropropane	96-18-4	-	< 1	-
2-Chlorotoluene	95-49-8	-	< 1	-
1,3,5-Trimethylbenzene	108-67-8	-	< 1	-
4-Chlorotoluene	106-43-4	-	< 1	-
tert-Butylbenzene	98-06-6	-	< 1	-
1,2,4-Trimethylbenzene	95-63-6	-	< 1	-
sec-Butylbenzene	135-98-8	-	< 1	-
p-Isopropyltoluene	99-87-6	-	< 1	-
1,3-Dichlorobenzene	541-73-1	-	< 1	-
1,4-Dichlorobenzene	106-46-7	-	< 1	-
n-Butylbenzene	104-51-8	-	< 1	-
1,2-Dichlorobenzene	95-50-1	-	< 5	-
1,2-Dibromo-3-chloropropane	96-12-8 *	-	< 5	-
1,2,4-Trichlorobenzene	120-82-1	-	< 5	-
Hexachlorobutadiene	87-68-3	-	< 5	-
Naphthalene	91-20-3	-	< 5	-
1,2,3-Trichlorobenzene	87-61-6	-	< 5	-

Compounds marked * are not UKAS accredited
"M" denotes that % fit has been manually interpreted

Internal standards	R.T.	Area %	Surrogates	% Rec
Pentafluorobenzene	3.32	91	Dibromofluoromethane	117
1,4-Difluorobenzene	3.68	93	Toluene-d8	100
Chlorobenzene-d5	4.85	93	Bromofluorobenzene	95
1,4-Dichlorobenzene-d4	5.64	85		

Where individual results are flagged see report notes for status.

Volatile Organic Compounds by HSA-GCMS

UKAS accredited?: Yes

Customer and Site Details:	Ramboll Environ: Zeon Chemicals ESA	**Directory/Quant file:**	0525VOC.MS8\ Initial Calibration	**Matrix:**	Water
Sample Details:	ZC214	**Date Booked in:**	20-May-16	**Method:**	Headspace
LIMS ID Number:	EX1694885	**Date Analysed:**	25-May-16	**Multiplier:**	1
Job Number:	W22_0278	**Operator:**	PR	**Position:**	18

Target Compounds	CAS #	R.T. (min.)	Concentration µg/l	% Fit
Dichlorodifluoromethane	75-71-8 *	-	< 1	-
Chloromethane	74-87-3	-	< 1	-
Vinyl Chloride	75-01-4	-	< 1	-
Bromomethane	74-83-9 *	-	< 5	-
Chloroethane	75-00-3	-	< 5	-
Trichlorofluoromethane	75-69-4	-	< 1	-
1,1-Dichloroethene	75-35-4	-	< 1	-
trans 1,2-Dichloroethene	156-60-5	-	< 1	-
1,1-Dichloroethane	75-34-3	-	< 1	-
2,2-Dichloropropane	594-20-7 *	-	< 1	-
cis 1,2-Dichloroethene	156-59-2	-	< 1	-
Bromochloromethane	74-97-5	-	< 1	-
Chloroform	67-66-3	-	< 1	-
1,1,1-Trichloroethane	71-55-6	-	< 1	-
Carbon Tetrachloride	56-23-5	-	< 1	-
1,1-Dichloropropene	563-58-6	-	< 1	-
Benzene	71-43-2	-	< 1	-
1,2-Dichloroethane	107-06-2	-	< 1	-
Trichloroethene	79-01-6 *	-	< 5	-
1,2-Dichloropropane	78-87-5	-	< 1	-
Dibromomethane	74-95-3	-	< 1	-
Bromodichloromethane	75-27-4	-	< 1	-
cis 1,3-Dichloropropene	10061-01-5 *	-	< 1	-
Toluene	108-88-3	-	< 1	-
trans 1,3-Dichloropropene	10061-02-6 *	-	< 1	-
1,1,2-Trichloroethane	79-00-5	-	< 1	-
Tetrachloroethene	127-18-4	-	< 5	-
1,3-Dichloropropane	142-28-9	-	< 1	-
Dibromochloromethane	124-48-1	-	< 1	-
1,2-Dibromoethane	106-93-4	-	< 1	-
Chlorobenzene	108-90-7	-	< 1	-
Ethylbenzene	100-41-4	-	< 1	-
1,1,1,2-Tetrachloroethane	630-20-6	-	< 1	-
m and p-Xylene	108-38-3/106-42-3	-	< 1	-
o-Xylene	95-47-6	-	< 1	-

Target Compounds	CAS #	R.T. (min.)	Concentration µg/l	% Fit
Styrene	100-42-5	-	< 1	-
Bromoform	75-25-2	-	< 1	-
iso-Propylbenzene	98-82-8	5.19	3	98
1,1,2,2-Tetrachloroethane	79-34-5 *	-	< 1	-
Propylbenzene	103-65-1	-	< 1	-
Bromobenzene	108-86-1	-	< 1	-
1,2,3-Trichloropropane	96-18-4	-	< 1	-
2-Chlorotoluene	95-49-8	-	< 1	-
1,3,5-Trimethylbenzene	108-67-8	-	< 1	-
4-Chlorotoluene	106-43-4	-	< 1	-
tert-Butylbenzene	98-06-6	-	< 1	-
1,2,4-Trimethylbenzene	95-63-6	-	< 1	-
sec-Butylbenzene	135-98-8	-	< 1	-
p-Isopropyltoluene	99-87-6	-	< 1	-
1,3-Dichlorobenzene	541-73-1	-	< 1	-
1,4-Dichlorobenzene	106-46-7	-	< 1	-
n-Butylbenzene	104-51-8	-	< 1	-
1,2-Dichlorobenzene	95-50-1	-	< 5	-
1,2-Dibromo-3-chloropropane	96-12-8 *	-	< 5	-
1,2,4-Trichlorobenzene	120-82-1	-	< 5	-
Hexachlorobutadiene	87-68-3	-	< 5	-
Naphthalene	91-20-3	-	< 5	-
1,2,3-Trichlorobenzene	87-61-6	-	< 5	-

Compounds marked * are not UKAS accredited
"M" denotes that % fit has been manually interpreted

Internal standards	R.T.	Area %	Surrogates	% Rec
Pentafluorobenzene	3.32	92	Dibromofluoromethane	114
1,4-Difluorobenzene	3.68	93	Toluene-d8	101
Chlorobenzene-d5	4.85	94	Bromofluorobenzene	97
1,4-Dichlorobenzene-d4	5.64	88		

Where individual results are flagged see report notes for status.

TICs by HSA-GCMS

UKAS accredited?: No

Customer and Site Details:	Ramboll Environ: Zeon Chemicals ESA		**Date Booked in:**	20-May-16
Sample Details:	ZC210		**Date Analysed:**	25-May-16
LIMS ID Number:	EX1694880		**Matrix:**	Water
Job Number:	W22_0278		**Ext Method:**	Headspace
Directory/Quant file:	0525VOC.MS8\	Initial Calibration	**Dilution:**	1
Operator:	PR		**Position:**	13

Tentatively Identified Compounds	CAS No	R.T. (min.)	Concentration µg/l	% Fit
Cyclohexane, methyl-	000108-87-2	3.87	12	64

The compounds listed above have been tentatively identified by a computer based library search.
Compounds identified in the sample are not reported if they also occur in the method blank.
The % fit is an indication of the reliability of the compound assignment.
Due to the similarity between mass spectra of some isomeric compounds, assignments may not be correct.
Other compounds may also be present but identification was not possible.
Concentrations are semi-quantitative, assume a response factor of 1 and use the nearest internal standard.
Compounds marked * are not UKAS accredited
"M" denotes that % fit has been manually interpreted

Where individual results are flagged see report notes for status.

TICs by HSA-GCMS

UKAS accredited?: No

Customer and Site Details:	Ramboll Environ: Zeon Chemicals ESA		**Date Booked in:**	20-May-16
Sample Details:	ZC211		**Date Analysed:**	25-May-16
LIMS ID Number:	EX1694881		**Matrix:**	Water
Job Number:	W22_0278		**Ext Method:**	Headspace
Directory/Quant file:	0525VOC.MS8\	Initial Calibration	**Dilution:**	1
Operator:	PR		**Position:**	14

Tentatively Identified Compounds	CAS No	R.T. (min.)	Concentration µg/l	% Fit
Unidentified Peak		6.15	7	

The compounds listed above have been tentatively identified by a computer based library search.
Compounds identified in the sample are not reported if they also occur in the method blank.
The % fit is an indication of the reliability of the compound assignment.
Due to the similarity between mass spectra of some isomeric compounds, assignments may not be correct.
Other compounds may also be present but identification was not possible.
Concentrations are semi-quantitative, assume a response factor of 1 and use the nearest internal standard.
Compounds marked * are not UKAS accredited
"M" denotes that % fit has been manually interpreted

Where individual results are flagged see report notes for status.

TICs by HSA-GCMS

UKAS accredited?: No

Customer and Site Details:	Ramboll Environ: Zeon Chemicals ESA		**Date Booked in:**	20-May-16
Sample Details:	ZC211A		**Date Analysed:**	25-May-16
LIMS ID Number:	EX1694882		**Matrix:**	Water
Job Number:	W22_0278		**Ext Method:**	Headspace
Directory/Quant file:	0525VOC.MS8\	Initial Calibration	**Dilution:**	1
Operator:	PR		**Position:**	15

Tentatively Identified Compounds	CAS No	R.T. (min.)	Concentration µg/l	% Fit
4-Acetyl-1-methylcyclohexene	006090-09-1	6.15	7	62

The compounds listed above have been tentatively identified by a computer based library search.
Compounds identified in the sample are not reported if they also occur in the method blank.
The % fit is an indication of the reliability of the compound assignment.
Due to the similarity between mass spectra of some isomeric compounds, assignments may not be correct.
Other compounds may also be present but identification was not possible.
Concentrations are semi-quantitative, assume a response factor of 1 and use the nearest internal standard.
Compounds marked * are not UKAS accredited
"M" denotes that % fit has been manually interpreted

TICs by HSA-GCMS

UKAS accredited?: No

Customer and Site Details:	Ramboll Environ: Zeon Chemicals ESA		**Date Booked in:**	20-May-16
Sample Details:	ZC213		**Date Analysed:**	25-May-16
LIMS ID Number:	EX1694883		**Matrix:**	Water
Job Number:	W22_0278		**Ext Method:**	Headspace
Directory/Quant file:	0525VOC.MS8\	Initial Calibration	**Dilution:**	1
Operator:	PR		**Position:**	16

Tentatively Identified Compounds	CAS No	R.T. (min.)	Concentration µg/l	% Fit
None Detected			<5	

The compounds listed above have been tentatively identified by a computer based library search.
Compounds identified in the sample are not reported if they also occur in the method blank.
The % fit is an indication of the reliability of the compound assignment.
Due to the similarity between mass spectra of some isomeric compounds, assignments may not be correct.
Other compounds may also be present but identification was not possible.
Concentrations are semi-quantitative, assume a response factor of 1 and use the nearest internal standard.
Compounds marked * are not UKAS accredited
"M" denotes that % fit has been manually interpreted

Where individual results are flagged see report notes for status.

TICs by HSA-GCMS

UKAS accredited?: No

Customer and Site Details:	Ramboll Environ: Zeon Chemicals ESA		**Date Booked in:**	20-May-16
Sample Details:	ZC213A		**Date Analysed:**	25-May-16
LIMS ID Number:	EX1694884		**Matrix:**	Water
Job Number:	W22_0278		**Ext Method:**	Headspace
Directory/Quant file:	0525VOC.MS8\	Initial Calibration	**Dilution:**	1
Operator:	PR		**Position:**	17

Tentatively Identified Compounds	CAS No	R.T. (min.)	Concentration µg/l	% Fit
None Detected			<5	

The compounds listed above have been tentatively identified by a computer based library search.
Compounds identified in the sample are not reported if they also occur in the method blank.
The % fit is an indication of the reliability of the compound assignment.
Due to the similarity between mass spectra of some isomeric compounds, assignments may not be correct.
Other compounds may also be present but identification was not possible.
Concentrations are semi-quantitative, assume a response factor of 1 and use the nearest internal standard.
Compounds marked * are not UKAS accredited
"M" denotes that % fit has been manually interpreted

Where individual results are flagged see report notes for status.

TICs by HSA-GCMS

UKAS accredited?: No

Customer and Site Details:	Ramboll Environ: Zeon Chemicals ESA		**Date Booked in:**	20-May-16
Sample Details:	ZC214		**Date Analysed:**	25-May-16
LIMS ID Number:	EX1694885		**Matrix:**	Water
Job Number:	W22_0278		**Ext Method:**	Headspace
Directory/Quant file:	0525VOC.MS8\	Initial Calibration	**Dilution:**	1
Operator:	PR		**Position:**	18

Tentatively Identified Compounds	CAS No	R.T. (min.)	Concentration µg/l	% Fit
Benzene, 1,2,4,5-tetramethyl-	000095-93-2	6.17	15	97
Benzocycloheptatriene	000264-09-5	6.88	15	90
1,4-Methanonaphthalen-9-ol, 1,2,3,4-tetrahydro-	055255-94-2	6.32	10	59
1,3-Cyclopentadiene, 5-(trans-2-ethyl-3-methylcyclopropylidene)-	079209-36-2	6.10	8	78
1-Phenyl-1-butene	000824-90-8	5.92	8	81
Pyrazine, trimethyl-1-propenyl-, (E)-	055138-79-9	7.44	8	64
Naphthalene, 1,3-dimethyl-	000575-41-7	7.59	8	81
Unidentified Peak		6.36	7	
Hexadecane, 2,6,10,14-tetramethyl-	000638-36-8	6.72	7	59

The compounds listed above have been tentatively identified by a computer based library search.
Compounds identified in the sample are not reported if they also occur in the method blank.
The % fit is an indication of the reliability of the compound assignment.
Due to the similarity between mass spectra of some isomeric compounds, assignments may not be correct.
Other compounds may also be present but identification was not possible.
Concentrations are semi-quantitative, assume a response factor of 1 and use the nearest internal standard.
Compounds marked * are not UKAS accredited
"M" denotes that % fit has been manually interpreted

Where individual results are flagged see report notes for status.

Sample Analysis

ESG Environmental Chemistry
Analytical and Deviating Sample Overview

W220278

Customer Ramboll Environ
Site Zeon Chemicals ESA
Report No W220278

Consignment No W104282
Date Logged 20-May-2016

Report Due 13-Jun-2016

ID Number	Description	Matrix Type	Sampled	MethodID	Calc_HD	CUSTSERV	GROHSA	ICPMSW										ICPWATVAR				
					Total Hardness as CaCO3 (CALC)	Report A	GRO-HSA GCFID (AA)	Nickel as Ni MS (Dissolved)	Chromium as Cr MS (Dissolved)	Cadmium as Cd MS (Dissolved)	Copper as Cu MS (Dissolved)	Lead as Pb MS (Dissolved)	Zinc as Zn MS (Dissolved)	Arsenic as As MS (Dissolved)	Mercury as Hg MS (Dissolved)	Selenium as Se MS (Dissolved)	Vanadium as V MS (Dissolved)	Total Sulphur as SO4 (Diss) VAR	Calcium as Ca (Dissolved) VAR	Magnesium as Mg (Dissolved) VAR	Barium as Ba (Dissolved) VAR	Sodium as Na (Dissolved) VAR
Test Method Accredited to ISO17025					✓			✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
EX/1694880	ZC210	Groundwater	19/05/16																			
EX/1694881	ZC211	Groundwater	19/05/16																			
EX/1694882	ZC211A	Groundwater	19/05/16																			
EX/1694883	ZC213	Groundwater	19/05/16																			
EX/1694884	ZC213A	Groundwater	19/05/16																			
EX/1694885	ZC214	Groundwater	19/05/16																			

Note: For analysis where the scheduled turnaround is greater than the holding time we will do our utmost to prioritise these samples. However, it is possible that samples could become deviant whilst being processed in the laboratory.

In this instance please contact the laboratory immediately should you wish to discuss how you would like us to proceed. If you do not respond within 24 hours, we will proceed as originally requested.

Deviating Sample Key	
A	The sample was received in an inappropriate container for this analysis
B	The sample was received without the correct preservation for this analysis
C	Headspace present in the sample container
D	The sampling date was not supplied so holding time may be compromised - applicable to all analysis
E	Sample processing did not commence within the appropriate holding time
F	Sample processing did not commence within the appropriate handling time

Requested Analysis Key	
	Analysis Required
	Analysis dependant upon trigger result - **Note: due date may be affected if triggered**
	No analysis scheduled
^	Analysis Subcontracted - **Note: due date may vary**

The integrity of data for samples/analysis that have been categorised as Deviating may be compromised. Data may not be representative of the sample at the time of sampling.
Where individual results are flagged see report notes for status.

Customer Ramboll Environ
Site Zeon Chemicals ESA
Report No W220278

Consignment No W104282
Date Logged 20-May-2016

Report Due 13-Jun-2016

ID Number	Description	Matrix Type	Sampled	MethodID	ICPWATVAR			ICPWATVART	KONENS		PAHMSW	PHEHPLC	PHEHPLCVL	SFAPI	SVOCSW	TPHFID-Si	VOCHSAW	WSLM11	WSLM12	WSLM20	WSLM3
					Potassium as K (Dissolved) VAR	Boron as B (Dissolved) VAR	Beryllium as Be (Dissolved) VAR	Iron as Fe (Total) VAR	Chloride as Cl (Kone)	Nitrite as N (Kone)	PAH GC-MS (16)	Phenols by HPLC Analysis	Phenols by HPLC (Low Level)	Cyanide (Total) as CN SFA	SVOC + TICS	TPH by GC(Si)	VOC + TICS HSA-GCMS	Chemical Oxygen Demand (Settled)	Total Alkalinity as CaCO3	Biochemical Oxygen Demand	pH units
Test Method Accredited to ISO17025					✓	✓		✓	✓	✓	✓			✓		✓	✓	✓	✓	✓	✓
EX/1694880	ZC210	Groundwater	19/05/16									E									
EX/1694881	ZC211	Groundwater	19/05/16																		
EX/1694882	ZC211A	Groundwater	19/05/16																		
EX/1694883	ZC213	Groundwater	19/05/16																		
EX/1694884	ZC213A	Groundwater	19/05/16																		
EX/1694885	ZC214	Groundwater	19/05/16																		

Note: For analysis where the scheduled turnaround is greater than the holding time we will do our utmost to prioritise these samples. However, it is possible that samples could become deviant whilst being processed in the laboratory.

In this instance please contact the laboratory immediately should you wish to discuss how you would like us to proceed. If you do not respond within 24 hours, we will proceed as originally requested.

Deviating Sample Key

A	The sample was received in an inappropriate container for this analysis
B	The sample was received without the correct preservation for this analysis
C	Headspace present in the sample container
D	The sampling date was not supplied so holding time may be compromised - applicable to all analysis
E	Sample processing did not commence within the appropriate holding time
F	Sample processing did not commence within the appropriate handling time

Requested Analysis Key

	Analysis Required
	Analysis dependant upon trigger result - **Note: due date may be affected if triggered**
	No analysis scheduled
^	Analysis Subcontracted - **Note: due date may vary**

The integrity of data for samples/analysis that have been categorised as Deviating may be compromised. Data may not be representative of the sample at the time of sampling.
Where individual results are flagged see report notes for status.

Report Number : W/EXR/220278

Additional Report Notes

Method Code	Sample ID	The following information should be taken into consideration when using the data contained within this report
SVOCSW	EX1694885	Due to matrix interference, the Surrogate recovery for this Test is below the required QMS specification. All other Laboratory Process Controls meet the requirements of the QMS. These circumstances should be taken into consideration when utilising the data.
PHEHPLCVL	EX1694881-4882	The matrix of this sample has been found to interfere with the result for this test. The sample has therefore been diluted to improve the signal to noise ratio but in doing so, the detection limit for this test has been elevated.

Method Descriptions

Matrix	MethodID	Analysis Basis	Method Description
Water	Calc_HD	As Received	Calculation based on Dissolved metals analysis by ICPOES
Water	GROHSA	As Received	Determination of Total Gasoline Range Organics Hydrocarbons (GRO) by Headspace FID
Water	ICPMSW	As Received	Direct quantitative determination of Metals in water samples using ICPMS
Water	ICPWATVAR	As Received	Direct determination of Metals and Sulphate in water samples using ICPOES
Water	ICPWATVART	As Received	Determination of Total Metals in water samples using nitric acid digestion and ICPOES quantitation
Water	KONENS	As Received	Direct analysis using discrete colorimetric analysis
Water	PAHMSW	As Received	Determination of PolyAromatic Hydrocarbons in water by pentane extraction GCMS quantitation
Water	PHEHPLC	As Received	Determination of Phenols by HPLC
Water	PHEHPLCVL	As Received	Determination of Phenols by HPLC
Water	SFAPI	As Received	Segmented flow analysis with colorimetric detection
Water	SVOCSW	As Received	Determination of Semi Volatile Organic Compounds (SVOC) by DCM extraction followed by GCMS detection
Water	TPHFID-Si	As Received	Determination of speciated pentane extractable hydrocarbons in water by GCFID
Water	VOCHSAW	As Received	Determination of Volatile Organics Compounds by Headspace GCMS
Water	WSLM11	As Received	Acid Dichromate oxidation of the sample followed by colorimetric analysis.
Water	WSLM12	As Received	Titration with Sulphuric Acid to required pH
Water	WSLM20	As Received	Determination of Biological Oxygen Demand using 5 day incubation and dissolved oxygen probe
Water	WSLM3	As Received	Determination of the pH of water samples by pH probe

Report Notes

Generic Notes

Soil/Solid Analysis

Unless stated otherwise,
- Results expressed as mg/kg have been calculated on the basis indicated in the Method Description table.
  All results on MCERTS reports are reported on a 105ºC dry weight basis with the exception of pH and conductivity.
- Sulphate analysis not conducted in accordance with BS1377
- Water Soluble Sulphate is on a 2:1 water:soil extract

Waters Analysis

Unless stated otherwise results are expressed as mg/l
Nil: Where "Nil" has been entered against Total Alkalinity or Total Acidity this indicates that a measurement was not required due to the inherent pH of the sample.

Oil analysis specific

Unless stated otherwise,
- Results are expressed as mg/kg
- SG is expressed as g/cm^3@ 15^{o}C

Gas (Tedlar bag) Analysis

Unless stated otherwise, results are expressed as ug/l

Asbestos Analysis

CH Denotes Chrysotile **TR** Denotes Tremolite
CR Denotes Crocidolite **AC** Denotes Actinolite
AM Denotes Amosite **AN** Denotes Anthophylite
NAIIS No Asbestos Identified in Sample
NADIS No Asbestos Detected In Sample

Symbol Reference

^ Sub-contracted analysis.
$$ Unable to analyse due to the nature of the sample
¶ Samples submitted for this analyte were not preserved on site in accordance with laboratory protocols. This may have resulted in deterioration of the sample(s) during transit to the laboratory. Consequently the reported data may not represent the concentration of the target analyte present in the sample at the time of sampling
¥ Results for guidance only due to possible interference
& Blank corrected result
I.S Insufficient sample to complete requested analysis
I.S(g) Insufficient sample to re-analyse, results for guidance only
Intf Unable to analyse due to interferences
N.D Not determined **N.Det** Not detected
N.F No Flow
NS Information Not Supplied
Req Analysis requested, see attached sheets for results
Þ Raised detection limit due to nature of the sample
***** All accreditation has been removed by the laboratory for this result
‡ MCERTS accreditation has been removed for this result
§ accreditation has been removed for this result as it is a non-accredited matrix

Note: The Laboratory may only claim that data is accredited when all of the requirements of our Quality System have been met. Where these requirements have not been met the laboratory may elect to include the data in its final report and remove the accreditation from individual data items if it believes that the validity of the data has not been affected. If further details are required of the circumstances which have led to the removal of accreditation then please do not hesitate to contact the laboratory.

Sample Descriptions

Client : Ramboll Environ
Site : Zeon Chemicals ESA
Report Number : W22_0278

Lab ID Number	Client ID	Description
EX/1694880	ZC210	Groundwater
EX/1694881	ZC211	Groundwater
EX/1694882	ZC211A	Groundwater
EX/1694883	ZC213	Groundwater
EX/1694884	ZC213A	Groundwater
EX/1694885	ZC214	Groundwater

Our Ref: EXR/220376 (Ver. 1)
Your Ref: UK15-21370

June 1, 2016

Environmental Chemistry
ESG
Bretby Business Park
Ashby Road
Burton-on-Trent
Staffordshire
DE15 0YZ

Telephone: 01283 554400
Facsimile: 01283 554422

Lucy Cleverley
Ramboll Environ
8 Village Way
Cardiff
CF15 2NE

For the attention of Lucy Cleverley

Dear Lucy Cleverley

Sample Analysis - Zeon Chemicals ESA

Samples from the above site have been analysed in accordance with the schedule supplied.
The sample details and the results of analyses for these samples are given in the appended report.

An invoice for this work will follow under a separate cover.

Please be aware that our policy for the retention of paper based laboratory records and analysis reports is 6 years.

The work was carried out in accordance with Environmental Scientifics Group Ltd (Multi-Sector Services) Standard Terms and Conditions of Contract.

If I can be of any further assistance please do not hesitate to contact me.

Yours sincerely

for ESG

JNColbourne

J Colbourne
Project Co-ordinator
01283 554547

TEST REPORT

1252

Report No. EXR/220376 (Ver. 1)

Ramboll Environ
8 Village Way
Cardiff
CF15 2NE

Site: Zeon Chemicals ESA

The 9 samples described in this report were registered for analysis by ESG on 21-May-2016. This report supersedes any versions previously issued by the laboratory.

The analysis was completed by: 01-Jun-2016

Tests where the accreditation is set to N or No, and any individual data items marked with a * are not UKAS accredited. Opinions and interpretations expressed herein are outside the scope of UKAS accreditation.

The following tables are contained in this report:

On behalf of
ESG :
Declan Burns

Managing Director
Multi-Sector Services

Date of Issue: 01-Jun-2016

Tests marked '^' have been subcontracted to another laboratory.
Where samples have been flagged as deviant on the Analytical and Deviating Sample Overview, for any reason, the data may not be representative of the sample at the point of sampling and the validity of the data may be affected.
ESG accepts no responsibility for any sampling not carried out by our personnel.

			Units :	pH units	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	µg/l	mg/l	mg/l	mg/l	mg/l	mg/l
			Method Codes :	WSLM3	WSLM12	WSLM17	Calc_HD	ICPWATVAR	ICPWATVAR	ICPWATVAR	ICPMSW	ICPMSW	ICPMSW	PAHMSW	ICPMSW	ICPMSW	ICPMSW	ICPMSW	ICPWATVAR
			Method Reporting Limits :			2	7	3	1	1	0.001	0.001	0.0001		0.001	0.001	0.002	0.001	0.01
			UKAS Accredited :	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
LAB ID Number EX/	Client Sample Description	Sample Date		pH units w	Total Alkalinity as CaCO3 w	Total Acidity as CaCO3 w	Total Hardness as CaCO3	Total Sulphur as SO4 (Dissolved) a	Calcium as Ca (Dissolved) a	Magnesium as Mg (Dissolved) a	Nickel as Ni (Dissolved)	Chromium as Cr (Dissolved)	Cadmium as Cd (Dissolved)	PAH GC-MS (16) o	Copper as Cu (Dissolved)	Lead as Pb (Dissolved)	Zinc as Zn (Dissolved)	Arsenic as As (Dissolved)	Boron as B (Dissolved) a
1695427	WS15	20-May-16 09:00		7.1	205	Nil	219	32.0	69.5	11.1	0.009	<0.001	<0.0001	Req	0.003	<0.001	0.029	0.001	0.15
1695428	WS17	20-May-16 09:40		7.1	410	Nil	451	33.4	163	10.7	0.012	<0.001	<0.0001	Req	<0.001	<0.001	0.003	0.014	0.04
1695429	WS17A	20-May-16 09:50		7.0	395	Nil	457	33.9	165	10.9	0.012	<0.001	<0.0001	Req	<0.001	<0.001	0.042	0.014	0.04
1695430	WS21	20-May-16 10:15		7.4	282	Nil	556	80.9	174	29.6	0.033	<0.001	0.0005	Req	0.01	0.001	0.036	0.002	0.23
1695431	WS6	20-May-16 11:00		7.2	320	Nil	339	6.6	115	12.6	0.004	<0.001	<0.0001	Req	<0.001	<0.001	0.002	0.008	0.09
1695432	WS3	20-May-16 11:00																	
1695433	WS4	20-May-16 11:30		7.0	396	Nil	384	25.9	121	19.9	0.006	<0.001	<0.0001	Req	0.004	<0.001	0.008	0.002	0.18
1695434	WS1	20-May-16 12:30		7.6	549	Nil	188	12.8	34.2	25.0	0.004	<0.001	<0.0001	Req	<0.001	<0.001	<0.002	0.005	1.15
1695435	WS1A	20-May-16 12:30		7.6	501	Nil	209	17.6	39.4	26.8	0.004	<0.001	<0.0001	Req	<0.001	<0.001	0.002	0.004	1.05

ESG

Bretby Business Park, Ashby Road

Burton-on-Trent, Staffordshire, DE15 0YZ

Tel +44 (0) 1283 554400

Fax +44 (0) 1283 554422

Client Name Ramboll Environ

Contact Lucy Cleverley

Zeon Chemicals ESA

Sample Analysis

Date Printed	**01-Jun-2016**
Report Number	**EXR/220376**
Table Number	**1**

Where individual results are flagged see report notes for status.

Units :			mg/l	mg/l	mg/l	mg/l	mg/l	µg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l		
Method Codes :			ICPMSW	ICPMSW	ICPMSW	SFAPI	TPHFID-Si	VOCHSAW	ICPWATVAR	GROHSA	ALCHSAFID	SVOCSW	PHEHPLCVL	PHEHPLCVL	PHEHPLCVL	PHEHPLCVL		
Method Reporting Limits :			0.0001	0.001	0.001	0.02	0.01	1	0.01	0.1	20	0.002	0.0005	0.0005	0.0005	0.0005		
UKAS Accredited :			Yes	Yes	Yes	Yes	Yes	Yes	No	No	No	No	No	No	No	No		
LAB ID Number EX/	**Client Sample Description**	**Sample Date**	**Mercury as Hg (Dissolved)**	**Selenium as Se (Dissolved)**	**Vanadium as V (Dissolved)**	**Cyanide (Total) as CN**	**TPH by GC(Si) o**	**VOC + TICS HSA-GCMS o**	**Beryllium as Be (Dissolved) a**	**GRO-HSA (AA)**	**Alcohols by HSA-FID o**	**SVOC + TICS**	**Phenol**	**Cresols**	**Dimethylphenols**	**Trimethylphenols**		
1695427	WS15	20-May-16 09:00	<0.0001	<0.001	<0.001	<0.02	Req	Req	<0.01	Req		Req	<0.0005	<0.0005	<0.0005	<0.0005		
1695428	WS17	20-May-16 09:40	<0.0001	<0.001	0.006	<0.02	Req	Req	<0.01	Req		Req	<0.0025	<0.0025	<0.0025	<0.0025		
1695429	WS17A	20-May-16 09:50	<0.0001	<0.001	0.006	<0.02	Req	Req	<0.01	Req			<0.0025	<0.0025	<0.0025	<0.0025		
1695430	WS21	20-May-16 10:15	<0.0001	<0.001	<0.001	<0.02	Req	Req	<0.01	Req		Req	<0.0005	<0.0005	<0.0005	<0.0005		
1695431	WS6	20-May-16 11:00	<0.0001	<0.001	<0.001	<0.02	Req	Req	<0.01	Req	Req		$$	$$	$$	$$		
1695432	WS3	20-May-16 11:00					Req	Req		Req								
1695433	WS4	20-May-16 11:30	<0.0001	0.008	<0.001	<0.02	Req	Req	<0.01	Req		Req	<0.0005	<0.0005	<0.0005	<0.0005		
1695434	WS1	20-May-16 12:30	<0.0001	<0.001	0.004	<0.02	Req	Req	<0.01	Req		Req	<0.0005	0.0006	0.0009	<0.0005		
1695435	WS1A	20-May-16 12:30	<0.0001	<0.001	0.003	<0.02	Req	Req	<0.01	Req			<0.0005	0.0006	0.0008	<0.0005		

ESG

Bretby Business Park, Ashby Road

Burton-on-Trent, Staffordshire, DE15 0YZ

Tel +44 (0) 1283 554400

Fax +44 (0) 1283 554422

Client Name **Ramboll Environ**

Contact Lucy Cleverley

Zeon Chemicals ESA

Sample Analysis

Date Printed	**01-Jun-2016**
Report Number	**EXR/220376**
Table Number	**1**

Alcohols by Headspace GC-FID

Customer and Site Details: Ramboll Environ: Zeon Chemicals ESA
Job Number: W22_0376
UKAS Accredited?: No

Matrix: Water

Date Booked in: 21-May-16
Date extracted: 24-May-16
Date Analysed: 25-May-16

		Concentration, (mg/l unless stated otherwise)							
Sample ID	**Client ID**	**Methanol**	**Ethanol**	**iso-Propanol**	**tert-Butanol**	**1-Propanol**	**sec-Butanol**	**iso-Butanol**	**n-Butanol**
EX1695431	WS6	<20	<20	<20	<20	<20	<20	<20	<20

Where individual results are flagged see report notes for status.

Polycyclic Aromatic Hydrocarbons
GC/MS (SIM)

Customer and Site Details:	Ramboll Environ: Zeon Chemicals ESA		
Sample Details:	WS15	**Job Number:**	W22_0376
LIMS ID Number:	EX1695427	**Date Booked in:**	21-May-16
QC Batch Number:	160333	**Date Extracted:**	26-May-16
Quantitation File:	Initial Calibration	**Date Analysed:**	27-May-16
Directory:	616PAH.MS10\	**Matrix:**	Water
Dilution:	1.0	**Ext Method:**	Bottle

UKAS accredited?: Yes

Target Compounds	CAS #	R.T. (min)	Concentration ug/l	% Fit
Naphthalene	91-20-3	3.23	0.036	89
Acenaphthylene	208-96-8	-	< 0.010	-
Acenaphthene	83-32-9	-	< 0.010	-
Fluorene	86-73-7	-	< 0.010	-
Phenanthrene	85-01-8	5.60	0.024	97
Anthracene	120-12-7	-	< 0.010	-
Fluoranthene	206-44-0	6.93	0.019	95
Pyrene	129-00-0	7.21	0.020	94
Benzo[a]anthracene	56-55-3	8.90	0.018	56
Chrysene	218-01-9	8.94	0.016	79
Benzo[b]fluoranthene	205-99-2	10.41	0.014	80
Benzo[k]fluoranthene	207-08-9	-	< 0.010	-
Benzo[a]pyrene	50-32-8	-	< 0.010	-
Indeno[1,2,3-cd]pyrene	193-39-5	-	< 0.010	-
Dibenzo[a,h]anthracene	53-70-3	-	< 0.010	-
Benzo[g,h,i]perylene	191-24-2	-	< 0.010	-
Total (USEPA16) PAHs	-	-	< 0.237	-

"M" denotes that % fit has been manually interpreted

Internal Standards	% Area
1,4-Dichlorobenzene-d4	NA
Naphthalene-d8	99
Acenaphthene-d10	100
Phenanthrene-d10	100
Chrysene-d12	103
Perylene-d12	103

Surrogates	% Rec
Nitrobenzene-d5	NA
2-Fluorobiphenyl	74
Terphenyl-d14	68

The Total PAH result is the sum of non-rounded individual PAH results and therefore may differ to the sum of the rounded individual PAH results printed above. By convention, where any one or more result is a "less than", the total is expressed as a "less than" and includes the "less than" concentration within the total.

Polycyclic Aromatic Hydrocarbons
GC/MS (SIM)

Customer and Site Details:	Ramboll Environ: Zeon Chemicals ESA		
Sample Details:	WS17	**Job Number:**	W22_0376
LIMS ID Number:	EX1695428	**Date Booked in:**	21-May-16
QC Batch Number:	160333	**Date Extracted:**	26-May-16
Quantitation File:	Initial Calibration	**Date Analysed:**	27-May-16
Directory:	616PAH.MS10\	**Matrix:**	Water
Dilution:	1.0	**Ext Method:**	Bottle

UKAS accredited?: Yes

Target Compounds	CAS #	R.T. (min)	Concentration ug/l	% Fit
Naphthalene	91-20-3	3.23	0.151	92
Acenaphthylene	208-96-8	-	< 0.010	-
Acenaphthene	83-32-9	4.40	0.035	74
Fluorene	86-73-7	4.77	0.035	70
Phenanthrene	85-01-8	5.61	0.073	74
Anthracene	120-12-7	-	< 0.010	-
Fluoranthene	206-44-0	6.93	0.026	65
Pyrene	129-00-0	7.21	0.024	100
Benzo[a]anthracene	56-55-3	8.89	0.020	78
Chrysene	218-01-9	8.93	0.014	50
Benzo[b]fluoranthene	205-99-2	10.41	0.012	70
Benzo[k]fluoranthene	207-08-9	-	< 0.010	-
Benzo[a]pyrene	50-32-8	-	< 0.010	-
Indeno[1,2,3-cd]pyrene	193-39-5	-	< 0.010	-
Dibenzo[a,h]anthracene	53-70-3	-	< 0.010	-
Benzo[g,h,i]perylene	191-24-2	-	< 0.010	-
Total (USEPA16) PAHs	-	-	< 0.460	-

"M" denotes that % fit has been manually interpreted

Internal Standards	% Area
1,4-Dichlorobenzene-d4	NA
Naphthalene-d8	93
Acenaphthene-d10	98
Phenanthrene-d10	96
Chrysene-d12	98
Perylene-d12	97

Surrogates	% Rec
Nitrobenzene-d5	NA
2-Fluorobiphenyl	132
Terphenyl-d14	121

The Total PAH result is the sum of non-rounded individual PAH results and therefore may differ to the sum of the rounded individual PAH results printed above. By convention, where any one or more result is a "less than", the total is expressed as a "less than" and includes the "less than" concentration within the total.

Polycyclic Aromatic Hydrocarbons
GC/MS (SIM)

Customer and Site Details:	Ramboll Environ: Zeon Chemicals ESA		
Sample Details:	WS17A	**Job Number:**	W22_0376
LIMS ID Number:	EX1695429	**Date Booked in:**	21-May-16
QC Batch Number:	160333	**Date Extracted:**	26-May-16
Quantitation File:	Initial Calibration	**Date Analysed:**	27-May-16
Directory:	616PAH.MS10\	**Matrix:**	Water
Dilution:	1.0	**Ext Method:**	Bottle

UKAS accredited?: Yes

Target Compounds	CAS #	R.T. (min)	Concentration ug/l	% Fit
Naphthalene	91-20-3	3.23	0.128	93
Acenaphthylene	208-96-8	-	< 0.010	-
Acenaphthene	83-32-9	4.40	0.034	81
Fluorene	86-73-7	4.77	0.032	80
Phenanthrene	85-01-8	5.61	0.064	72
Anthracene	120-12-7	-	< 0.010	-
Fluoranthene	206-44-0	6.93	0.019	65
Pyrene	129-00-0	7.21	0.019	95
Benzo[a]anthracene	56-55-3	8.90	0.016	81
Chrysene	218-01-9	8.94	0.011	74
Benzo[b]fluoranthene	205-99-2	-	< 0.010	-
Benzo[k]fluoranthene	207-08-9	-	< 0.010	-
Benzo[a]pyrene	50-32-8	-	< 0.010	-
Indeno[1,2,3-cd]pyrene	193-39-5	-	< 0.010	-
Dibenzo[a,h]anthracene	53-70-3	-	< 0.010	-
Benzo[g,h,i]perylene	191-24-2	-	< 0.010	-
Total (USEPA16) PAHs	-	-	< 0.403	-

"M" denotes that % fit has been manually interpreted

Internal Standards	% Area
1,4-Dichlorobenzene-d4	NA
Naphthalene-d8	95
Acenaphthene-d10	101
Phenanthrene-d10	99
Chrysene-d12	100
Perylene-d12	99

Surrogates	% Rec
Nitrobenzene-d5	NA
2-Fluorobiphenyl	57
Terphenyl-d14	62

The Total PAH result is the sum of non-rounded individual PAH results and therefore may differ to the sum of the rounded individual PAH results printed above. By convention, where any one or more result is a "less than", the total is expressed as a "less than" and includes the "less than" concentration within the total.

Polycyclic Aromatic Hydrocarbons
GC/MS (SIM)

Customer and Site Details:	Ramboll Environ: Zeon Chemicals ESA		
Sample Details:	WS21	**Job Number:**	W22_0376
LIMS ID Number:	EX1695430	**Date Booked in:**	21-May-16
QC Batch Number:	160333	**Date Extracted:**	26-May-16
Quantitation File:	Initial Calibration	**Date Analysed:**	27-May-16
Directory:	616PAH.MS10\	**Matrix:**	Water
Dilution:	1.0	**Ext Method:**	Bottle

UKAS accredited?: Yes

Target Compounds	CAS #	R.T. (min)	Concentration ug/l	% Fit
Naphthalene	91-20-3	-	< 0.020	-
Acenaphthylene	208-96-8	-	< 0.010	-
Acenaphthene	83-32-9	-	< 0.010	-
Fluorene	86-73-7	-	< 0.010	-
Phenanthrene	85-01-8	5.60	0.011	98
Anthracene	120-12-7	-	< 0.010	-
Fluoranthene	206-44-0	6.93	0.017	65
Pyrene	129-00-0	7.21	0.017	96
Benzo[a]anthracene	56-55-3	8.90	0.016	65
Chrysene	218-01-9	-	< 0.010	-
Benzo[b]fluoranthene	205-99-2	10.42	0.011	91
Benzo[k]fluoranthene	207-08-9	-	< 0.010	-
Benzo[a]pyrene	50-32-8	-	< 0.010	-
Indeno[1,2,3-cd]pyrene	193-39-5	-	< 0.010	-
Dibenzo[a,h]anthracene	53-70-3	-	< 0.010	-
Benzo[g,h,i]perylene	191-24-2	-	< 0.010	-
Total (USEPA16) PAHs	-	-	< 0.192	-

"M" denotes that % fit has been manually interpreted

Internal Standards	% Area
1,4-Dichlorobenzene-d4	NA
Naphthalene-d8	98
Acenaphthene-d10	101
Phenanthrene-d10	104
Chrysene-d12	110
Perylene-d12	108

Surrogates	% Rec
Nitrobenzene-d5	NA
2-Fluorobiphenyl	81
Terphenyl-d14	77

The Total PAH result is the sum of non-rounded individual PAH results and therefore may differ to the sum of the rounded individual PAH results printed above. By convention, where any one or more result is a "less than", the total is expressed as a "less than" and includes the "less than" concentration within the total.

Polycyclic Aromatic Hydrocarbons
GC/MS (SIM)

Customer and Site Details:	Ramboll Environ: Zeon Chemicals ESA		
Sample Details:	WS6	**Job Number:**	W22_0376
LIMS ID Number:	EX1695431	**Date Booked in:**	21-May-16
QC Batch Number:		**Date Extracted:**	
Quantitation File:	Initial Calibration	**Date Analysed:**	27-May-16
Directory:	616PAH.MS10\	**Matrix:**	Water
Dilution:	100.0	**Ext Method:**	Bottle

UKAS accredited?: Yes

Target Compounds	CAS #	R.T. (min)	Concentration ug/l	% Fit
Naphthalene	91-20-3	3.25	5.510	M
Acenaphthylene	208-96-8	4.28	8.750	61
Acenaphthene	83-32-9	4.40	11.000	89
Fluorene	86-73-7	4.77	50.000	M
Phenanthrene	85-01-8	5.61	87.600	M
Anthracene	120-12-7	5.65	9.440	64
Fluoranthene	206-44-0	6.93	5.120	90
Pyrene	129-00-0	7.21	9.970	88
Benzo[a]anthracene	56-55-3	8.89	2.430	M
Chrysene	218-01-9	8.94	3.460	M
Benzo[b]fluoranthene	205-99-2	-	< 1.000	-
Benzo[k]fluoranthene	207-08-9	-	< 1.000	-
Benzo[a]pyrene	50-32-8	-	< 1.000	-
Indeno[1,2,3-cd]pyrene	193-39-5	-	< 1.000	-
Dibenzo[a,h]anthracene	53-70-3*	-	< 1.000	-
Benzo[g,h,i]perylene	191-24-2	-	< 1.000	-
Total (USEPA16) PAHs	-	-	< 199.280	-

"M" denotes that % fit has been manually interpreted

Internal Standards	% Area
1,4-Dichlorobenzene-d4	NA
Naphthalene-d8	86
Acenaphthene-d10	94
Phenanthrene-d10	90
Chrysene-d12	92
Perylene-d12	91

Surrogates	% Rec
Nitrobenzene-d5	NA
2-Fluorobiphenyl	100
Terphenyl-d14	100

The Total PAH result is the sum of non-rounded individual PAH results and therefore may differ to the sum of the rounded individual PAH results printed above. By convention, where any one or more result is a "less than", the total is expressed as a "less than" and includes the "less than" concentration within the total.

Polycyclic Aromatic Hydrocarbons
GC/MS (SIM)

Customer and Site Details:	Ramboll Environ: Zeon Chemicals ESA		
Sample Details:	WS4	**Job Number:**	W22_0376
LIMS ID Number:	EX1695433	**Date Booked in:**	21-May-16
QC Batch Number:	160333	**Date Extracted:**	26-May-16
Quantitation File:	Initial Calibration	**Date Analysed:**	27-May-16
Directory:	616PAH.MS10\	**Matrix:**	Water
Dilution:	1.0	**Ext Method:**	Bottle

UKAS accredited?: Yes

Target Compounds	CAS #	R.T. (min)	Concentration ug/l	% Fit
Naphthalene	91-20-3	-	< 0.020	-
Acenaphthylene	208-96-8	-	< 0.010	-
Acenaphthene	83-32-9	4.39	0.087	89
Fluorene	86-73-7	4.77	0.228	90
Phenanthrene	85-01-8	5.60	0.119	97
Anthracene	120-12-7	-	< 0.010	-
Fluoranthene	206-44-0	6.93	0.020	65
Pyrene	129-00-0	7.21	0.028	61
Benzo[a]anthracene	56-55-3	-	< 0.010	-
Chrysene	218-01-9	-	< 0.010	-
Benzo[b]fluoranthene	205-99-2	-	< 0.010	-
Benzo[k]fluoranthene	207-08-9	-	< 0.010	-
Benzo[a]pyrene	50-32-8	-	< 0.010	-
Indeno[1,2,3-cd]pyrene	193-39-5	-	< 0.010	-
Dibenzo[a,h]anthracene	53-70-3	-	< 0.010	-
Benzo[g,h,i]perylene	191-24-2	-	< 0.010	-
Total (USEPA16) PAHs	-	-	< 0.602	-

"M" denotes that % fit has been manually interpreted

Internal Standards	% Area
1,4-Dichlorobenzene-d4	NA
Naphthalene-d8	124
Acenaphthene-d10	136
Phenanthrene-d10	144
Chrysene-d12	161
Perylene-d12	176

Surrogates	% Rec
Nitrobenzene-d5	NA
2-Fluorobiphenyl	74
Terphenyl-d14	76

The Total PAH result is the sum of non-rounded individual PAH results and therefore may differ to the sum of the rounded individual PAH results printed above. By convention, where any one or more result is a "less than", the total is expressed as a "less than" and includes the "less than" concentration within the total.

Polycyclic Aromatic Hydrocarbons
GC/MS (SIM)

Customer and Site Details:	Ramboll Environ: Zeon Chemicals ESA		
Sample Details:	WS1	**Job Number:**	W22_0376
LIMS ID Number:	EX1695434	**Date Booked in:**	21-May-16
QC Batch Number:	160333	**Date Extracted:**	26-May-16
Quantitation File:	Initial Calibration	**Date Analysed:**	27-May-16
Directory:	616PAH.MS10\	**Matrix:**	Water
Dilution:	1.0	**Ext Method:**	Bottle

UKAS accredited?: Yes

Target Compounds	CAS #	R.T. (min)	Concentration ug/l	% Fit
Naphthalene	91-20-3	-	< 0.020	-
Acenaphthylene	208-96-8	-	< 0.010	-
Acenaphthene	83-32-9	-	< 0.010	-
Fluorene	86-73-7	-	< 0.010	-
Phenanthrene	85-01-8	5.60	0.014	77
Anthracene	120-12-7	-	< 0.010	-
Fluoranthene	206-44-0	-	< 0.010	-
Pyrene	129-00-0	-	< 0.010	-
Benzo[a]anthracene	56-55-3	-	< 0.010	-
Chrysene	218-01-9	-	< 0.010	-
Benzo[b]fluoranthene	205-99-2	-	< 0.010	-
Benzo[k]fluoranthene	207-08-9	-	< 0.010	-
Benzo[a]pyrene	50-32-8	-	< 0.010	-
Indeno[1,2,3-cd]pyrene	193-39-5	-	< 0.010	-
Dibenzo[a,h]anthracene	53-70-3	-	< 0.010	-
Benzo[g,h,i]perylene	191-24-2	-	< 0.010	-
Total (USEPA16) PAHs	-	-	< 0.174	-

"M" denotes that % fit has been manually interpreted

Internal Standards	% Area
1,4-Dichlorobenzene-d4	NA
Naphthalene-d8	127
Acenaphthene-d10	138
Phenanthrene-d10	143
Chrysene-d12	160
Perylene-d12	173

Surrogates	% Rec
Nitrobenzene-d5	NA
2-Fluorobiphenyl	73
Terphenyl-d14	76

The Total PAH result is the sum of non-rounded individual PAH results and therefore may differ to the sum of the rounded individual PAH results printed above. By convention, where any one or more result is a "less than", the total is expressed as a "less than" and includes the "less than" concentration within the total.

Polycyclic Aromatic Hydrocarbons
GC/MS (SIM)

Customer and Site Details:	Ramboll Environ: Zeon Chemicals ESA		
Sample Details:	WS1A	**Job Number:**	W22_0376
LIMS ID Number:	EX1695435	**Date Booked in:**	21-May-16
QC Batch Number:	160333	**Date Extracted:**	26-May-16
Quantitation File:	Initial Calibration	**Date Analysed:**	27-May-16
Directory:	616PAH.MS10\	**Matrix:**	Water
Dilution:	1.0	**Ext Method:**	Bottle

UKAS accredited?: Yes

Target Compounds	CAS #	R.T. (min)	Concentration ug/l	% Fit
Naphthalene	91-20-3	3.23	0.024	82
Acenaphthylene	208-96-8	-	< 0.010	-
Acenaphthene	83-32-9	-	< 0.010	-
Fluorene	86-73-7	4.77	0.011	M
Phenanthrene	85-01-8	5.60	0.015	85
Anthracene	120-12-7	-	< 0.010	-
Fluoranthene	206-44-0	-	< 0.010	-
Pyrene	129-00-0	-	< 0.010	-
Benzo[a]anthracene	56-55-3	8.90	0.011	65
Chrysene	218-01-9	-	< 0.010	-
Benzo[b]fluoranthene	205-99-2	-	< 0.010	-
Benzo[k]fluoranthene	207-08-9	-	< 0.010	-
Benzo[a]pyrene	50-32-8	-	< 0.010	-
Indeno[1,2,3-cd]pyrene	193-39-5	-	< 0.010	-
Dibenzo[a,h]anthracene	53-70-3	-	< 0.010	-
Benzo[g,h,i]perylene	191-24-2	-	< 0.010	-
Total (USEPA16) PAHs	-	-	< 0.181	-

"M" denotes that % fit has been manually interpreted

Internal Standards	% Area
1,4-Dichlorobenzene-d4	NA
Naphthalene-d8	125
Acenaphthene-d10	135
Phenanthrene-d10	137
Chrysene-d12	147
Perylene-d12	156

Surrogates	% Rec
Nitrobenzene-d5	NA
2-Fluorobiphenyl	159
Terphenyl-d14	144

The Total PAH result is the sum of non-rounded individual PAH results and therefore may differ to the sum of the rounded individual PAH results printed above. By convention, where any one or more result is a "less than", the total is expressed as a "less than" and includes the "less than" concentration within the total.

Semi-Volatile Organic Compounds

UKAS accredited?: No

Customer and Site Details:	Ramboll Environ: Zeon Chemicals ESA			**Matrix:**	Water	**QC Batch Number:**	105
Sample Details:	WS15	**Date Booked in:**	21-May-16	**Ext Method:**	Sep. Funnel	**Multiplier:**	0.005
LIMS ID Number:	EX1695427	**Date Extracted:**	25-May-16	**Operator:**	RP/SO	**Dilution Factor:**	1
Job Number:	W22_0376	**Date Analysed:**	26-May-16	**Directory/Quant File:**	052516.GC11\	**GPC (Y/N)**	N

Target Compounds	CAS #	R.T. (min)	Concentration mg/l	% Fit
Phenol	108-95-2	-	< 0.020	-
bis(2-Chloroethyl)ether	111-44-4	-	< 0.005	-
2-Chlorophenol	95-57-8	-	< 0.020	-
1,3-Dichlorobenzene	541-73-1	-	< 0.005	-
1,4-Dichlorobenzene	106-46-7	-	< 0.005	-
Benzyl alcohol	100-51-6	-	< 0.005	-
1,2-Dichlorobenzene	95-50-1	-	< 0.005	-
2-Methylphenol	95-48-7	-	< 0.005	-
bis(2-Chloroisopropyl)ether	108-60-1	-	< 0.005	-
Hexachloroethane	67-72-1	-	< 0.005	-
N-Nitroso-di-n-propylamine	621-64-7	-	< 0.005	-
3- & 4-Methylphenol	108-39-4/106-44-5	-	< 0.020	-
Nitrobenzene	98-95-3	-	< 0.005	-
Isophorone	78-59-1	-	< 0.005	-
2-Nitrophenol	88-75-5	-	< 0.020	-
2,4-Dimethylphenol	105-67-9	-	< 0.020	-
Benzoic Acid	65-85-0	-	< 0.100	-
bis(2-Chloroethoxy)methane	111-91-1	-	< 0.005	-
2,4-Dichlorophenol	120-83-2	-	< 0.020	-
1,2,4-Trichlorobenzene	120-82-1	-	< 0.005	-
Naphthalene	91-20-3	-	< 0.002	-
4-Chlorophenol	106-48-9	-	< 0.020	-
4-Chloroaniline	106-47-8	-	< 0.005	-
Hexachlorobutadiene	87-68-3	-	< 0.005	-
4-Chloro-3-methylphenol	59-50-7	-	< 0.005	-
2-Methylnaphthalene	91-57-6	-	< 0.002	-
1-Methylnaphthalene	90-12-0	-	< 0.002	-
Hexachlorocyclopentadiene	77-47-4	-	< 0.005	-
2,4,6-Trichlorophenol	88-06-2	-	< 0.020	-
2,4,5-Trichlorophenol	95-95-4	-	< 0.020	-
2-Chloronaphthalene	91-58-7	-	< 0.002	-
Biphenyl	92-52-4	-	< 0.002	-
Diphenyl ether	101-84-8	-	< 0.002	-
2-Nitroaniline	88-74-4	-	< 0.005	-
Acenaphthylene	208-96-8	-	< 0.002	-
Dimethylphthalate	131-11-3	-	< 0.005	-
2,6-Dinitrotoluene	606-20-2	-	< 0.005	-
Acenaphthene	83-32-9	-	< 0.002	-
3-Nitroaniline	99-09-2	-	< 0.005	-

Target Compounds	CAS #	R.T.	Concentration mg/l	% Fit
2,4-Dinitrophenol	51-28-5	-	< 0.010	-
Dibenzofuran	132-64-9	-	< 0.005	-
4-Nitrophenol	100-02-7	-	< 0.050	-
2,4-Dinitrotoluene	121-14-2	-	< 0.005	-
Fluorene	86-73-7	-	< 0.002	-
Diethylphthalate	84-66-2	-	< 0.005	-
4-Chlorophenyl-phenylether	7005-72-3	-	< 0.005	-
4,6-Dinitro-2-methylphenol	534-52-1	-	< 0.050	-
4-Nitroaniline	100-01-6	-	< 0.005	-
N-Nitrosodiphenylamine	86-30-6	-	< 0.005	-
4-Bromophenyl-phenylether	101-55-3	-	< 0.005	-
Hexachlorobenzene	118-74-1	-	< 0.005	-
Pentachlorophenol	87-86-5	-	< 0.050	-
Phenanthrene	85-01-8	-	< 0.002	-
Anthracene	120-12-7	-	< 0.002	-
Di-n-butylphthalate	84-74-2	-	< 0.005	-
Fluoranthene	206-44-0	-	< 0.002	-
Pyrene	129-00-0	-	< 0.002	-
Butylbenzylphthalate	85-68-7	-	< 0.005	-
Benzo[a]anthracene	56-55-3	-	< 0.002	-
Chrysene	218-01-9	-	< 0.002	-
3,3'-Dichlorobenzidine	91-94-1	-	N.D	-
bis(2-Ethylhexyl)phthalate	117-81-7	-	< 0.005	-
Di-n-octylphthalate	117-84-0	-	< 0.002	-
Benzo[b]fluoranthene	205-99-2	-	< 0.002	-
Benzo[k]fluoranthene	207-08-9	-	< 0.002	-
Benzo[a]pyrene	50-32-8	-	< 0.002	-
Indeno[1,2,3-cd]pyrene	193-39-5	-	< 0.002	-
Dibenzo[a,h]anthracene	53-70-3	-	< 0.002	-
Benzo[g,h,i]perylene	191-24-2	-	< 0.002	-
Coronene	191-07-1	-	< 0.050	-

Internal Standards	% Area
1,4-Dichlorobenzene-d4	91
Naphthalene-d8	119
Acenaphthene-d10	122
Phenanthrene-d10	123
Chrysene-d12	125
Perylene-d12	136

Surrogates	% Rec
2-Fluorophenol	46
Phenol-d5	32
Nitrobenzene-d5	71
2-Fluorobiphenyl	88
2,4,6-Tribromophenol	79
Terphenyl-d14	92

Concentrations are reported on a wet weight basis.
"M" denotes that % fit has been manually interpreted

Where individual results are flagged see report notes for status.

Semi-Volatile Organic Compounds

UKAS accredited?: No

Customer and Site Details:	Ramboll Environ: Zeon Chemicals ESA			**Matrix:**	Water	**QC Batch Number:**	105
Sample Details:	WS17	**Date Booked in:**	21-May-16	**Ext Method:**	Sep. Funnel	**Multiplier:**	0.005
LIMS ID Number:	EX1695428	**Date Extracted:**	25-May-16	**Operator:**	RP/SO	**Dilution Factor:**	1
Job Number:	W22_0376	**Date Analysed:**	26-May-16	**Directory/Quant File:**	052516.GC11\	**GPC (Y/N)**	N

Target Compounds	CAS #	R.T. (min)	Concentration mg/l	% Fit
Phenol	108-95-2	-	< 0.020	-
bis(2-Chloroethyl)ether	111-44-4	-	< 0.005	-
2-Chlorophenol	95-57-8	-	< 0.020	-
1,3-Dichlorobenzene	541-73-1	-	< 0.005	-
1,4-Dichlorobenzene	106-46-7	-	< 0.005	-
Benzyl alcohol	100-51-6	-	< 0.005	-
1,2-Dichlorobenzene	95-50-1	-	< 0.005	-
2-Methylphenol	95-48-7	-	< 0.005	-
bis(2-Chloroisopropyl)ether	108-60-1	-	< 0.005	-
Hexachloroethane	67-72-1	-	< 0.005	-
N-Nitroso-di-n-propylamine	621-64-7	-	< 0.005	-
3- & 4-Methylphenol	108-39-4/106-44-5	-	< 0.020	-
Nitrobenzene	98-95-3	-	< 0.005	-
Isophorone	78-59-1	-	< 0.005	-
2-Nitrophenol	88-75-5	-	< 0.020	-
2,4-Dimethylphenol	105-67-9	-	< 0.020	-
Benzoic Acid	65-85-0	-	< 0.100	-
bis(2-Chloroethoxy)methane	111-91-1	-	< 0.005	-
2,4-Dichlorophenol	120-83-2	-	< 0.020	-
1,2,4-Trichlorobenzene	120-82-1	-	< 0.005	-
Naphthalene	91-20-3	-	< 0.002	-
4-Chlorophenol	106-48-9	-	< 0.020	-
4-Chloroaniline	106-47-8	-	< 0.005	-
Hexachlorobutadiene	87-68-3	-	< 0.005	-
4-Chloro-3-methylphenol	59-50-7	-	< 0.005	-
2-Methylnaphthalene	91-57-6	-	< 0.002	-
1-Methylnaphthalene	90-12-0	-	< 0.002	-
Hexachlorocyclopentadiene	77-47-4	-	< 0.005	-
2,4,6-Trichlorophenol	88-06-2	-	< 0.020	-
2,4,5-Trichlorophenol	95-95-4	-	< 0.020	-
2-Chloronaphthalene	91-58-7	-	< 0.002	-
Biphenyl	92-52-4	-	< 0.002	-
Diphenyl ether	101-84-8	-	< 0.002	-
2-Nitroaniline	88-74-4	-	< 0.005	-
Acenaphthylene	208-96-8	-	< 0.002	-
Dimethylphthalate	131-11-3	-	< 0.005	-
2,6-Dinitrotoluene	606-20-2	-	< 0.005	-
Acenaphthene	83-32-9	-	< 0.002	-
3-Nitroaniline	99-09-2	-	< 0.005	-

Target Compounds	CAS #	R.T.	Concentration mg/l	% Fit
2,4-Dinitrophenol	51-28-5	-	< 0.010	-
Dibenzofuran	132-64-9	-	< 0.005	-
4-Nitrophenol	100-02-7	-	< 0.050	-
2,4-Dinitrotoluene	121-14-2	-	< 0.005	-
Fluorene	86-73-7	-	< 0.002	-
Diethylphthalate	84-66-2	-	< 0.005	-
4-Chlorophenyl-phenylether	7005-72-3	-	< 0.005	-
4,6-Dinitro-2-methylphenol	534-52-1	-	< 0.050	-
4-Nitroaniline	100-01-6	-	< 0.005	-
N-Nitrosodiphenylamine	86-30-6	-	< 0.005	-
4-Bromophenyl-phenylether	101-55-3	-	< 0.005	-
Hexachlorobenzene	118-74-1	-	< 0.005	-
Pentachlorophenol	87-86-5	-	< 0.050	-
Phenanthrene	85-01-8	-	< 0.002	-
Anthracene	120-12-7	-	< 0.002	-
Di-n-butylphthalate	84-74-2	-	< 0.005	-
Fluoranthene	206-44-0	-	< 0.002	-
Pyrene	129-00-0	-	< 0.002	-
Butylbenzylphthalate	85-68-7	-	< 0.005	-
Benzo[a]anthracene	56-55-3	-	< 0.002	-
Chrysene	218-01-9	-	< 0.002	-
3,3'-Dichlorobenzidine	91-94-1	-	N.D	-
bis(2-Ethylhexyl)phthalate	117-81-7	-	< 0.005	-
Di-n-octylphthalate	117-84-0	-	< 0.002	-
Benzo[b]fluoranthene	205-99-2	-	< 0.002	-
Benzo[k]fluoranthene	207-08-9	-	< 0.002	-
Benzo[a]pyrene	50-32-8	-	< 0.002	-
Indeno[1,2,3-cd]pyrene	193-39-5	-	< 0.002	-
Dibenzo[a,h]anthracene	53-70-3	-	< 0.002	-
Benzo[g,h,i]perylene	191-24-2	-	< 0.002	-
Coronene	191-07-1	-	< 0.050	-

Internal Standards	% Area
1,4-Dichlorobenzene-d4	107
Naphthalene-d8	118
Acenaphthene-d10	124
Phenanthrene-d10	129
Chrysene-d12	139
Perylene-d12	163

Surrogates	% Rec
2-Fluorophenol	47
Phenol-d5	32
Nitrobenzene-d5	85
2-Fluorobiphenyl	82
2,4,6-Tribromophenol	100
Terphenyl-d14	63

Concentrations are reported on a wet weight basis.
"M" denotes that % fit has been manually interpreted

Where individual results are flagged see report notes for status.

Semi-Volatile Organic Compounds

UKAS accredited?: No

Customer and Site Details:	Ramboll Environ: Zeon Chemicals ESA			**Matrix:**	Water	**QC Batch Number:**	105
Sample Details:	WS21	**Date Booked in:**	21-May-16	**Ext Method:**	Sep. Funnel	**Multiplier:**	0.005
LIMS ID Number:	EX1695430	**Date Extracted:**	25-May-16	**Operator:**	RP/SO	**Dilution Factor:**	1
Job Number:	W22_0376	**Date Analysed:**	26-May-16	**Directory/Quant File:**	052516.GC11\	**GPC (Y/N)**	N

Target Compounds	CAS #	R.T. (min)	Concentration mg/l	% Fit
Phenol	108-95-2	-	< 0.020	-
bis(2-Chloroethyl)ether	111-44-4	-	< 0.005	-
2-Chlorophenol	95-57-8	-	< 0.020	-
1,3-Dichlorobenzene	541-73-1	-	< 0.005	-
1,4-Dichlorobenzene	106-46-7	-	< 0.005	-
Benzyl alcohol	100-51-6	-	< 0.005	-
1,2-Dichlorobenzene	95-50-1	-	< 0.005	-
2-Methylphenol	95-48-7	-	< 0.005	-
bis(2-Chloroisopropyl)ether	108-60-1	-	< 0.005	-
Hexachloroethane	67-72-1	-	< 0.005	-
N-Nitroso-di-n-propylamine	621-64-7	-	< 0.005	-
3- & 4-Methylphenol	108-39-4/106-44-5	-	< 0.020	-
Nitrobenzene	98-95-3	-	< 0.005	-
Isophorone	78-59-1	-	< 0.005	-
2-Nitrophenol	88-75-5	-	< 0.020	-
2,4-Dimethylphenol	105-67-9	-	< 0.020	-
Benzoic Acid	65-85-0	-	< 0.100	-
bis(2-Chloroethoxy)methane	111-91-1	-	< 0.005	-
2,4-Dichlorophenol	120-83-2	-	< 0.020	-
1,2,4-Trichlorobenzene	120-82-1	-	< 0.005	-
Naphthalene	91-20-3	-	< 0.002	-
4-Chlorophenol	106-48-9	-	< 0.020	-
4-Chloroaniline	106-47-8	-	< 0.005	-
Hexachlorobutadiene	87-68-3	-	< 0.005	-
4-Chloro-3-methylphenol	59-50-7	-	< 0.005	-
2-Methylnaphthalene	91-57-6	-	< 0.002	-
1-Methylnaphthalene	90-12-0	-	< 0.002	-
Hexachlorocyclopentadiene	77-47-4	-	< 0.005	-
2,4,6-Trichlorophenol	88-06-2	-	< 0.020	-
2,4,5-Trichlorophenol	95-95-4	-	< 0.020	-
2-Chloronaphthalene	91-58-7	-	< 0.002	-
Biphenyl	92-52-4	-	< 0.002	-
Diphenyl ether	101-84-8	-	< 0.002	-
2-Nitroaniline	88-74-4	-	< 0.005	-
Acenaphthylene	208-96-8	-	< 0.002	-
Dimethylphthalate	131-11-3	-	< 0.005	-
2,6-Dinitrotoluene	606-20-2	-	< 0.005	-
Acenaphthene	83-32-9	-	< 0.002	-
3-Nitroaniline	99-09-2	-	< 0.005	-

Target Compounds	CAS #	R.T.	Concentration mg/l	% Fit
2,4-Dinitrophenol	51-28-5	-	< 0.010	-
Dibenzofuran	132-64-9	-	< 0.005	-
4-Nitrophenol	100-02-7	-	< 0.050	-
2,4-Dinitrotoluene	121-14-2	-	< 0.005	-
Fluorene	86-73-7	-	< 0.002	-
Diethylphthalate	84-66-2	-	< 0.005	-
4-Chlorophenyl-phenylether	7005-72-3	-	< 0.005	-
4,6-Dinitro-2-methylphenol	534-52-1	-	< 0.050	-
4-Nitroaniline	100-01-6	-	< 0.005	-
N-Nitrosodiphenylamine	86-30-6	-	< 0.005	-
4-Bromophenyl-phenylether	101-55-3	-	< 0.005	-
Hexachlorobenzene	118-74-1	-	< 0.005	-
Pentachlorophenol	87-86-5	-	< 0.050	-
Phenanthrene	85-01-8	-	< 0.002	-
Anthracene	120-12-7	-	< 0.002	-
Di-n-butylphthalate	84-74-2	-	< 0.005	-
Fluoranthene	206-44-0	-	< 0.002	-
Pyrene	129-00-0	-	< 0.002	-
Butylbenzylphthalate	85-68-7	-	< 0.005	-
Benzo[a]anthracene	56-55-3	-	< 0.002	-
Chrysene	218-01-9	-	< 0.002	-
3,3'-Dichlorobenzidine	91-94-1	-	N.D	-
bis(2-Ethylhexyl)phthalate	117-81-7	-	< 0.005	-
Di-n-octylphthalate	117-84-0	-	< 0.002	-
Benzo[b]fluoranthene	205-99-2	-	< 0.002	-
Benzo[k]fluoranthene	207-08-9	-	< 0.002	-
Benzo[a]pyrene	50-32-8	-	< 0.002	-
Indeno[1,2,3-cd]pyrene	193-39-5	-	< 0.002	-
Dibenzo[a,h]anthracene	53-70-3	-	< 0.002	-
Benzo[g,h,i]perylene	191-24-2	-	< 0.002	-
Coronene	191-07-1	-	< 0.050	-

Internal Standards	% Area
1,4-Dichlorobenzene-d4	96
Naphthalene-d8	121
Acenaphthene-d10	125
Phenanthrene-d10	128
Chrysene-d12	135
Perylene-d12	153

Surrogates	% Rec
2-Fluorophenol	32
Phenol-d5	22
Nitrobenzene-d5	78
2-Fluorobiphenyl	87
2,4,6-Tribromophenol	66
Terphenyl-d14	75

Concentrations are reported on a wet weight basis.
"M" denotes that % fit has been manually interpreted

Where individual results are flagged see report notes for status.

Semi-Volatile Organic Compounds

UKAS accredited?: No

Customer and Site Details:	Ramboll Environ: Zeon Chemicals ESA			**Matrix:**	Water	**QC Batch Number:**	105
Sample Details:	WS4	**Date Booked in:**	21-May-16	**Ext Method:**	Sep. Funnel	**Multiplier:**	0.005
LIMS ID Number:	EX1695433	**Date Extracted:**	25-May-16	**Operator:**	RP/SO	**Dilution Factor:**	1
Job Number:	W22_0376	**Date Analysed:**	26-May-16	**Directory/Quant File:**	052516.GC11\	**GPC (Y/N)**	N

Target Compounds	CAS #	R.T. (min)	Concentration mg/l	% Fit
Phenol	108-95-2	-	< 0.020	-
bis(2-Chloroethyl)ether	111-44-4	-	< 0.005	-
2-Chlorophenol	95-57-8	-	< 0.020	-
1,3-Dichlorobenzene	541-73-1	-	< 0.005	-
1,4-Dichlorobenzene	106-46-7	-	< 0.005	-
Benzyl alcohol	100-51-6	-	< 0.005	-
1,2-Dichlorobenzene	95-50-1	-	< 0.005	-
2-Methylphenol	95-48-7	-	< 0.005	-
bis(2-Chloroisopropyl)ether	108-60-1	-	< 0.005	-
Hexachloroethane	67-72-1	-	< 0.005	-
N-Nitroso-di-n-propylamine	621-64-7	-	< 0.005	-
3- & 4-Methylphenol	108-39-4/106-44-5	-	< 0.020	-
Nitrobenzene	98-95-3	-	< 0.005	-
Isophorone	78-59-1	-	< 0.005	-
2-Nitrophenol	88-75-5	-	< 0.020	-
2,4-Dimethylphenol	105-67-9	-	< 0.020	-
Benzoic Acid	65-85-0	-	< 0.100	-
bis(2-Chloroethoxy)methane	111-91-1	-	< 0.005	-
2,4-Dichlorophenol	120-83-2	-	< 0.020	-
1,2,4-Trichlorobenzene	120-82-1	-	< 0.005	-
Naphthalene	91-20-3	-	< 0.002	-
4-Chlorophenol	106-48-9	-	< 0.020	-
4-Chloroaniline	106-47-8	-	< 0.005	-
Hexachlorobutadiene	87-68-3	-	< 0.005	-
4-Chloro-3-methylphenol	59-50-7	-	< 0.005	-
2-Methylnaphthalene	91-57-6	-	< 0.002	-
1-Methylnaphthalene	90-12-0	-	< 0.002	-
Hexachlorocyclopentadiene	77-47-4	-	< 0.005	-
2,4,6-Trichlorophenol	88-06-2	-	< 0.020	-
2,4,5-Trichlorophenol	95-95-4	-	< 0.020	-
2-Chloronaphthalene	91-58-7	-	< 0.002	-
Biphenyl	92-52-4	-	< 0.002	-
Diphenyl ether	101-84-8	-	< 0.002	-
2-Nitroaniline	88-74-4	-	< 0.005	-
Acenaphthylene	208-96-8	-	< 0.002	-
Dimethylphthalate	131-11-3	-	< 0.005	-
2,6-Dinitrotoluene	606-20-2	-	< 0.005	-
Acenaphthene	83-32-9	-	< 0.002	-
3-Nitroaniline	99-09-2	-	< 0.005	-

Target Compounds	CAS #	R.T.	Concentration mg/l	% Fit
2,4-Dinitrophenol	51-28-5	-	< 0.010	-
Dibenzofuran	132-64-9	-	< 0.005	-
4-Nitrophenol	100-02-7	-	< 0.050	-
2,4-Dinitrotoluene	121-14-2	-	< 0.005	-
Fluorene	86-73-7	-	< 0.002	-
Diethylphthalate	84-66-2	-	< 0.005	-
4-Chlorophenyl-phenylether	7005-72-3	-	< 0.005	-
4,6-Dinitro-2-methylphenol	534-52-1	-	< 0.050	-
4-Nitroaniline	100-01-6	-	< 0.005	-
N-Nitrosodiphenylamine	86-30-6	-	< 0.005	-
4-Bromophenyl-phenylether	101-55-3	-	< 0.005	-
Hexachlorobenzene	118-74-1	-	< 0.005	-
Pentachlorophenol	87-86-5	-	< 0.050	-
Phenanthrene	85-01-8	-	< 0.002	-
Anthracene	120-12-7	-	< 0.002	-
Di-n-butylphthalate	84-74-2	-	< 0.005	-
Fluoranthene	206-44-0	-	< 0.002	-
Pyrene	129-00-0	-	< 0.002	-
Butylbenzylphthalate	85-68-7	-	< 0.005	-
Benzo[a]anthracene	56-55-3	-	< 0.002	-
Chrysene	218-01-9	-	< 0.002	-
3,3'-Dichlorobenzidine	91-94-1	-	N.D	-
bis(2-Ethylhexyl)phthalate	117-81-7	-	< 0.005	-
Di-n-octylphthalate	117-84-0	-	< 0.002	-
Benzo[b]fluoranthene	205-99-2	-	< 0.002	-
Benzo[k]fluoranthene	207-08-9	-	< 0.002	-
Benzo[a]pyrene	50-32-8	-	< 0.002	-
Indeno[1,2,3-cd]pyrene	193-39-5	-	< 0.002	-
Dibenzo[a,h]anthracene	53-70-3	-	< 0.002	-
Benzo[g,h,i]perylene	191-24-2	-	< 0.002	-
Coronene	191-07-1	-	< 0.050	-

Internal Standards	% Area
1,4-Dichlorobenzene-d4	102
Naphthalene-d8	124
Acenaphthene-d10	128
Phenanthrene-d10	130
Chrysene-d12	140
Perylene-d12	160

Surrogates	% Rec
2-Fluorophenol	1
Phenol-d5	1
Nitrobenzene-d5	78
2-Fluorobiphenyl	84
2,4,6-Tribromophenol	8
Terphenyl-d14	75

Concentrations are reported on a wet weight basis.
"M" denotes that % fit has been manually interpreted

Where individual results are flagged see report notes for status.

Semi-Volatile Organic Compounds

UKAS accredited?: No

Customer and Site Details:	Ramboll Environ: Zeon Chemicals ESA			**Matrix:**	Water	**QC Batch Number:**	105
Sample Details:	WS1	**Date Booked in:**	21-May-16	**Ext Method:**	Sep. Funnel	**Multiplier:**	0.005
LIMS ID Number:	EX1695434	**Date Extracted:**	25-May-16	**Operator:**	RP/SO	**Dilution Factor:**	1
Job Number:	W22_0376	**Date Analysed:**	26-May-16	**Directory/Quant File:**	052516.GC11\	**GPC (Y/N)**	N

Target Compounds	CAS #	R.T. (min)	Concentration mg/l	% Fit
Phenol	108-95-2	-	< 0.020	-
bis(2-Chloroethyl)ether	111-44-4	-	< 0.005	-
2-Chlorophenol	95-57-8	-	< 0.020	-
1,3-Dichlorobenzene	541-73-1	-	< 0.005	-
1,4-Dichlorobenzene	106-46-7	-	< 0.005	-
Benzyl alcohol	100-51-6	-	< 0.005	-
1,2-Dichlorobenzene	95-50-1	-	< 0.005	-
2-Methylphenol	95-48-7	-	< 0.005	-
bis(2-Chloroisopropyl)ether	108-60-1	-	< 0.005	-
Hexachloroethane	67-72-1	-	< 0.005	-
N-Nitroso-di-n-propylamine	621-64-7	-	< 0.005	-
3- & 4-Methylphenol	108-39-4/106-44-5	-	< 0.020	-
Nitrobenzene	98-95-3	-	< 0.005	-
Isophorone	78-59-1	-	< 0.005	-
2-Nitrophenol	88-75-5	-	< 0.020	-
2,4-Dimethylphenol	105-67-9	-	< 0.020	-
Benzoic Acid	65-85-0	-	< 0.100	-
bis(2-Chloroethoxy)methane	111-91-1	-	< 0.005	-
2,4-Dichlorophenol	120-83-2	-	< 0.020	-
1,2,4-Trichlorobenzene	120-82-1	-	< 0.005	-
Naphthalene	91-20-3	-	< 0.002	-
4-Chlorophenol	106-48-9	-	< 0.020	-
4-Chloroaniline	106-47-8	-	< 0.005	-
Hexachlorobutadiene	87-68-3	-	< 0.005	-
4-Chloro-3-methylphenol	59-50-7	-	< 0.005	-
2-Methylnaphthalene	91-57-6	-	< 0.002	-
1-Methylnaphthalene	90-12-0	-	< 0.002	-
Hexachlorocyclopentadiene	77-47-4	-	< 0.005	-
2,4,6-Trichlorophenol	88-06-2	-	< 0.020	-
2,4,5-Trichlorophenol	95-95-4	-	< 0.020	-
2-Chloronaphthalene	91-58-7	-	< 0.002	-
Biphenyl	92-52-4	-	< 0.002	-
Diphenyl ether	101-84-8	-	< 0.002	-
2-Nitroaniline	88-74-4	-	< 0.005	-
Acenaphthylene	208-96-8	-	< 0.002	-
Dimethylphthalate	131-11-3	-	< 0.005	-
2,6-Dinitrotoluene	606-20-2	-	< 0.005	-
Acenaphthene	83-32-9	-	< 0.002	-
3-Nitroaniline	99-09-2	-	< 0.005	-

Target Compounds	CAS #	R.T.	Concentration mg/l	% Fit
2,4-Dinitrophenol	51-28-5	-	< 0.010	-
Dibenzofuran	132-64-9	-	< 0.005	-
4-Nitrophenol	100-02-7	-	< 0.050	-
2,4-Dinitrotoluene	121-14-2	-	< 0.005	-
Fluorene	86-73-7	-	< 0.002	-
Diethylphthalate	84-66-2	-	< 0.005	-
4-Chlorophenyl-phenylether	7005-72-3	-	< 0.005	-
4,6-Dinitro-2-methylphenol	534-52-1	-	< 0.050	-
4-Nitroaniline	100-01-6	-	< 0.005	-
N-Nitrosodiphenylamine	86-30-6	-	< 0.005	-
4-Bromophenyl-phenylether	101-55-3	-	< 0.005	-
Hexachlorobenzene	118-74-1	-	< 0.005	-
Pentachlorophenol	87-86-5	-	< 0.050	-
Phenanthrene	85-01-8	-	< 0.002	-
Anthracene	120-12-7	-	< 0.002	-
Di-n-butylphthalate	84-74-2	-	< 0.005	-
Fluoranthene	206-44-0	-	< 0.002	-
Pyrene	129-00-0	-	< 0.002	-
Butylbenzylphthalate	85-68-7	-	< 0.005	-
Benzo[a]anthracene	56-55-3	-	< 0.002	-
Chrysene	218-01-9	-	< 0.002	-
3,3'-Dichlorobenzidine	91-94-1	-	N.D	-
bis(2-Ethylhexyl)phthalate	117-81-7	-	< 0.005	-
Di-n-octylphthalate	117-84-0	-	< 0.002	-
Benzo[b]fluoranthene	205-99-2	-	< 0.002	-
Benzo[k]fluoranthene	207-08-9	-	< 0.002	-
Benzo[a]pyrene	50-32-8	-	< 0.002	-
Indeno[1,2,3-cd]pyrene	193-39-5	-	< 0.002	-
Dibenzo[a,h]anthracene	53-70-3	-	< 0.002	-
Benzo[g,h,i]perylene	191-24-2	-	< 0.002	-
Coronene	191-07-1	-	< 0.050	-

Internal Standards	% Area
1,4-Dichlorobenzene-d4	88
Naphthalene-d8	115
Acenaphthene-d10	119
Phenanthrene-d10	119
Chrysene-d12	124
Perylene-d12	134

Surrogates	% Rec
2-Fluorophenol	41
Phenol-d5	32
Nitrobenzene-d5	82
2-Fluorobiphenyl	90
2,4,6-Tribromophenol	68
Terphenyl-d14	90

Concentrations are reported on a wet weight basis.
"M" denotes that % fit has been manually interpreted

Where individual results are flagged see report notes for status.

SVOC (TICs)

UKAS accredited?:No

Customer and Site Details:	Ramboll Environ: Zeon Chemicals ESA		
Sample Details:	WS15	**Job Number:**	W22_0376
LIMS ID Number:	EX1695427		
		Multiplier:	0.005
Date Booked in:	21-May-16	**Dilution Factor:**	1
Date Extracted:	25-May-16	**GPC (Y/N):**	N
Date Analysed:	26-May-16	**Matrix:**	Water
QC Batch Number:	105	**Method:**	Sep. Funnel
Directory/Quant File:	052516.GC11\ 0	**Operator:**	RP/SO

Tentatively Identified Compounds	CAS #	R.T.	Concentration mg/l	% Fit
Decanoic acid	000334-48-5	4.49	0.011	96

The compounds listed above have been tentatively identified by a computer based library search.
Compounds identified in the sample are not reported if they also occur in the method blank.
The % fit is an indication of the reliability of the compound assignment.
Due to the similarity between mass spectra of some isomeric compounds assignments may not be correct.
Other compounds may also be present but identification was not possible.
Concentrations are semi-quantitative, assume a response factor of 1 and use the nearest internal standard.

SVOC (TICs)

UKAS accredited?:No

Customer and Site Details:	Ramboll Environ: Zeon Chemicals ESA		
Sample Details:	WS17	**Job Number:**	W22_0376
LIMS ID Number:	EX1695428		
		Multiplier:	0.005
Date Booked in:	21-May-16	**Dilution Factor:**	1
Date Extracted:	25-May-16	**GPC (Y/N):**	N
Date Analysed:	26-May-16	**Matrix:**	Water
QC Batch Number:	105	**Method:**	Sep. Funnel
Directory/Quant File:	052516.GC11\ 0	**Operator:**	RP/SO

Tentatively Identified Compounds	CAS #	R.T.	Concentration mg/l	% Fit
(-)-1.beta.H,7.alpha.H,10.alpha.H-Guaia-4,11-dien-3-one	999230-12-1	5.87	0.357	91
4-tert-Butylphenyl acetate	003056-64-2	5.77	0.198	78
Silane, hexyl-	001072-14-6	9.24	0.156	53
Butanamide, 3-methyl-	000541-46-8	7.89	0.154	53
2,2-Diethyl-3-(phenylmethyl)tetrahydrofuran	999230-06-3	5.70	0.121	83
Benzoic acid, 2-(methylthio)-	003724-10-5	5.39	0.098	97
8-Amino-4,7-dimethoxy-6-methylisoquinoline	999228-29-1	6.16	0.094	91
4,6-Dimethyl-2-(2-methylcyclohexyl)phenol	000719-49-3	6.03	0.089	74
BuOP4H	999472-82-8	6.88	0.079	56
1-aza-2-phenyl-4-methoxycarbonyl-cyclopent-1-ene	031594-55-5	12.81	0.066	64
Phenol, 4-(1,1,3,3-tetramethylbutyl)-	000140-66-9	5.63	0.059	78
2-Propanol, 1-[1-methyl-2-(2-propenyloxy)ethoxy]-	055956-25-7	11.00	0.059	50
TRIPROPYLENE GLYCOL 1	999157-71-7	5.32	0.051	64
TRIPROPYLENE GLYCOL 6	999157-72-2	6.10	0.046	64
4-Isopropyl-1-methylcyclohexanol	003901-95-9	3.73	0.023	58
Unidentified peak	-	5.59	0.022	-
Unidentified peak	-	3.11	0.018	-
Unidentified peak	-	7.19	0.017	-
3,6-D-it-Butyl-9-methyl-9H-xanthene-2,7-diol	999555-18-2	8.25	0.013	90

The compounds listed above have been tentatively identified by a computer based library search.
Compounds identified in the sample are not reported if they also occur in the method blank.
The % fit is an indication of the reliability of the compound assignment.
Due to the similarity between mass spectra of some isomeric compounds assignments may not be correct.
Other compounds may also be present but identification was not possible.
Concentrations are semi-quantitative, assume a response factor of 1 and use the nearest internal standard.

SVOC (TICs)

UKAS accredited?:No

Customer and Site Details:	Ramboll Environ: Zeon Chemicals ESA		
Sample Details:	WS21	**Job Number:**	W22_0376
LIMS ID Number:	EX1695430		
		Multiplier:	0.005
Date Booked in:	21-May-16	**Dilution Factor:**	1
Date Extracted:	25-May-16	**GPC (Y/N):**	N
Date Analysed:	26-May-16	**Matrix:**	Water
QC Batch Number:	105	**Method:**	Sep. Funnel
Directory/Quant File:	052516.GC11\ 0	**Operator:**	RP/SO

Tentatively Identified Compounds	CAS #	R.T.	Concentration mg/l	% Fit
None detected			<0.05	

The compounds listed above have been tentatively identified by a computer based library search.
Compounds identified in the sample are not reported if they also occur in the method blank.
The % fit is an indication of the reliability of the compound assignment.
Due to the similarity between mass spectra of some isomeric compounds assignments may not be correct.
Other compounds may also be present but identification was not possible.
Concentrations are semi-quantitative, assume a response factor of 1 and use the nearest internal standard.

SVOC (TICs)

UKAS accredited?:No

Customer and Site Details:	Ramboll Environ: Zeon Chemicals ESA		
Sample Details:	WS4	**Job Number:**	W22_0376
LIMS ID Number:	EX1695433		
		Multiplier:	0.005
Date Booked in:	21-May-16	**Dilution Factor:**	1
Date Extracted:	25-May-16	**GPC (Y/N):**	N
Date Analysed:	26-May-16	**Matrix:**	Water
QC Batch Number:	105	**Method:**	Sep. Funnel
Directory/Quant File:	052516.GC11\ 0	**Operator:**	RP/SO

Tentatively Identified Compounds	CAS #	R.T.	Concentration mg/l	% Fit
Phenol, 4-nonyl-	000104-40-5	5.67	0.014	95
Benzaldehyde, O-methyloxime	003376-32-7	5.76	0.012	59
2-Fluoro.beta.-benzoquinone	999030-38-1	2.80	0.011	89

The compounds listed above have been tentatively identified by a computer based library search.
Compounds identified in the sample are not reported if they also occur in the method blank.
The % fit is an indication of the reliability of the compound assignment.
Due to the similarity between mass spectra of some isomeric compounds assignments may not be correct.
Other compounds may also be present but identification was not possible.
Concentrations are semi-quantitative, assume a response factor of 1 and use the nearest internal standard.

SVOC (TICs)

UKAS accredited?:No

Customer and Site Details:	Ramboll Environ: Zeon Chemicals ESA		
Sample Details:	WS1	**Job Number:**	W22_0376
LIMS ID Number:	EX1695434		
		Multiplier:	0.005
Date Booked in:	21-May-16	**Dilution Factor:**	1
Date Extracted:	25-May-16	**GPC (Y/N):**	N
Date Analysed:	26-May-16	**Matrix:**	Water
QC Batch Number:	105	**Method:**	Sep. Funnel
Directory/Quant File:	052516.GC11\ 0	**Operator:**	RP/SO

Tentatively Identified Compounds	CAS #	R.T.	Concentration mg/l	% Fit
NoNe detected			<0.05	

The compounds listed above have been tentatively identified by a computer based library search.
Compounds identified in the sample are not reported if they also occur in the method blank.
The % fit is an indication of the reliability of the compound assignment.
Due to the similarity between mass spectra of some isomeric compounds assignments may not be correct.
Other compounds may also be present but identification was not possible.
Concentrations are semi-quantitative, assume a response factor of 1 and use the nearest internal standard.

Gasoline Range Organics
(BTEX and Aliphatic Carbon Ranges)

Customer and Site Details: Ramboll Environ : Zeon Chemicals ESA
Job Number: W22_0376
Directory: E:\TES\DATA\2016\0526HSA_GC9\052616 2016-05-26 15-53-50\166B6601.D
Method: Headspace GCFID

Matrix: Water
Date Booked in: 21-May-16
Date extracted: 29-May-16
Date Analysed: 27-May-16, 10:4

*** Sample data with an asterisk are not UKAS accredited.**

			Concentration, (mg/l)					Aliphatics				
	Sample ID	Client ID	Benzene	Toluene	Ethyl benzene	m/p-Xylene	o-Xylene	C5 - C6	>C6 - C7	>C7 - C8	>C8 - C10	Total GRO
*	EX1695427	WS15	<0.005	<0.005	<0.005	<0.005	<0.005	<0.1	<0.1	<0.1	<0.1	<0.1
*	EX1695428	WS17	<0.005	<0.005	<0.005	<0.005	<0.005	<0.1	<0.1	<0.1	<0.1	<0.1
*	EX1695429	WS17A	<0.005	<0.005	<0.005	<0.005	<0.005	<0.1	<0.1	<0.1	<0.1	<0.1
*	EX1695430	WS21	<0.005	<0.005	<0.005	<0.005	<0.005	<0.1	<0.1	<0.1	<0.1	<0.1
*	EX1695431	WS6	<0.005	<0.005	0.051	0.126	0.062	<0.1	<0.1	0.2	4.3	4.7
*	EX1695432	WS3	<0.005	<0.005	<0.005	<0.005	<0.005	<0.1	<0.1	<0.1	<0.1	<0.1
*	EX1695433	WS4	<0.005	<0.005	<0.005	<0.005	<0.005	<0.1	<0.1	<0.1	<0.1	<0.1
*	EX1695434	WS1	<0.005	<0.005	<0.005	<0.005	<0.005	<0.1	<0.1	<0.1	<0.1	<0.1
*	EX1695435	WS1A	<0.005	<0.005	<0.005	<0.005	<0.005	<0.1	<0.1	<0.1	<0.1	<0.1

Note: Benzene elutes between C6 and C7, toluene elutes between C7 and C8, ethyl benzene and the xylenes elute between C8 and C9.

Each BTEX compound is deducted from the appropriate band to give the aliphatic fractions, however aromatic compounds may still be contributing to these fractions

Where individual results are flagged see report notes for status.

ALIPHATIC / AROMATIC FRACTION BY GC/FID

Customer and Site Details: Ramboll Environ : Zeon Chemicals ESA
Job Number: W22_0376
QC Batch Number: 160333
Directory: D:\TES\DATA\Y2016\053116TPH_GC14\053116 2016-05-31 12-09-58\031F1501.D
Method: Bottle

Separation: Silica gel
Eluents: Hexane, DCM

Matrix: Water
Date Booked in 21-May-16
Date Extracted 26-May-16
Date Analysed 31-May-16, 15:00:44

*** This sample data is not UKAS accredited.**

		Concentration, (mg/l)											
		>C8 - C10		>C10 - C12		>C12 - C16		>C16 - C21		>C21 - C35		>C8 - C40	
Sample ID	**Client ID**	**Aliphatics**	**Aromatics**	**Aliphatics**	**Aromatics**	**Aliphatics**	**Aromatics**	**Aliphatics**	**Aromatics**	**Aliphatics**	**Aromatics**	**Aliphatics**	**Aromatics**
EX1695431	WS6	3.52	0.178	30.8	3.31	175	43	347	84.8	576	191	1180	348

Where individual results are flagged see report notes for status.

ALIPHATIC / AROMATIC FRACTION BY GC/FID

Customer and Site Details: Ramboll Environ : Zeon Chemicals ESA
Job Number: W22_0376
QC Batch Number: 160333
Directory: D:\TES\DATA\Y2016\052616TPH_GC17\052716 2016-05-27 15-32-41\085B3901.D
Method: Bottle

Separation: Silica gel
Eluents: Hexane, DCM

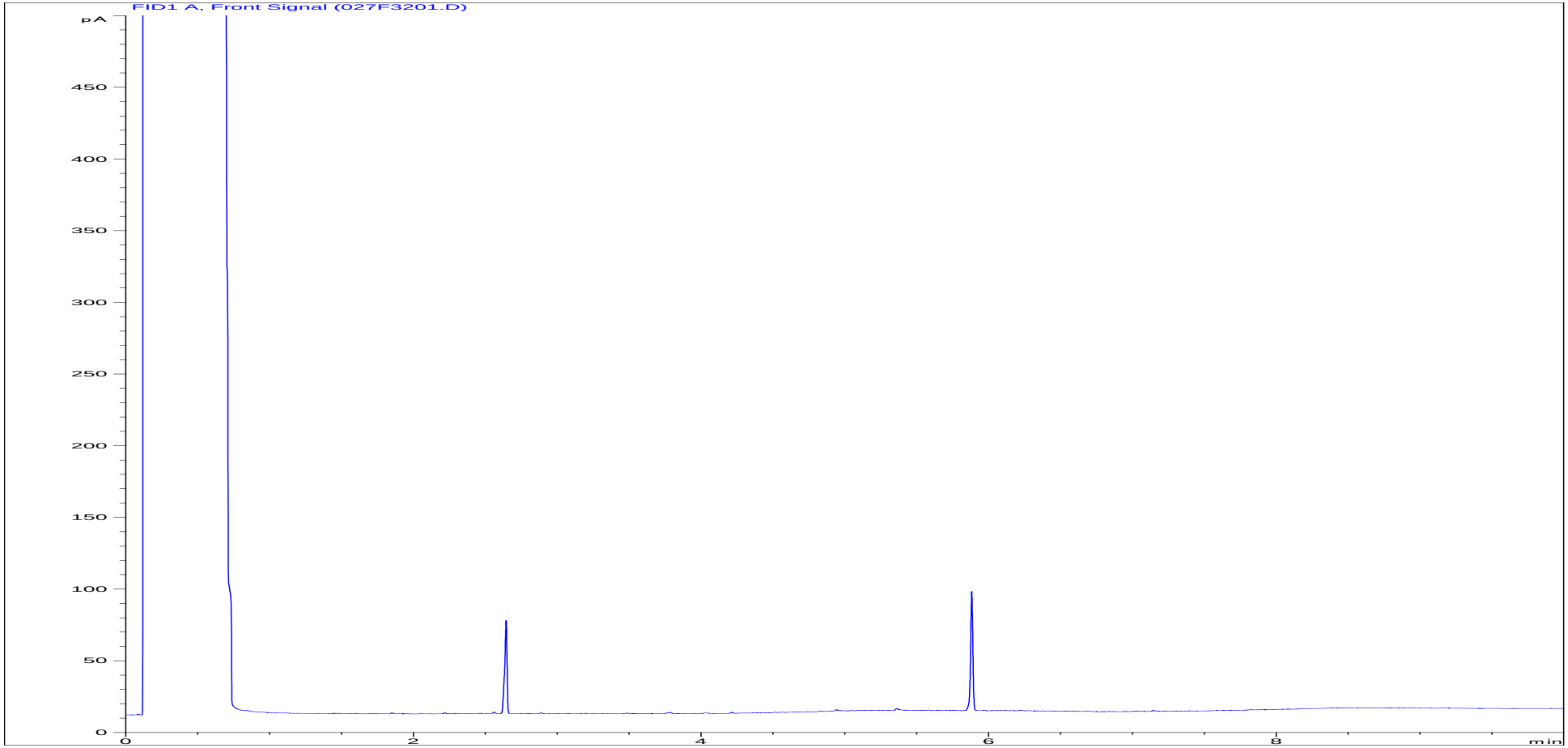
Matrix: Water
Date Booked in 21-May-16
Date Extracted 26-May-16
Date Analysed 28-May-16, 03:00:46

*** This sample data is not UKAS accredited.**

		Concentration, (mg/l)											
		>C8 - C10		>C10 - C12		>C12 - C16		>C16 - C21		>C21 - C35		>C8 - C40	
Sample ID	**Client ID**	**Aliphatics**	**Aromatics**	**Aliphatics**	**Aromatics**	**Aliphatics**	**Aromatics**	**Aliphatics**	**Aromatics**	**Aliphatics**	**Aromatics**	**Aliphatics**	**Aromatics**
EX1695427	WS15	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01*	0.01	<0.01	0.062*	0.014	0.082	0.017
EX1695428	WS17	<0.01	<0.01	<0.01	0.023	<0.01	<0.01*	<0.01	1.08	0.018*	0.075	0.028	1.19
EX1695429	WS17A	<0.01	<0.01	<0.01	0.022	<0.01	0.01*	<0.01	1.15	0.014*	0.056	0.023	1.24
EX1695430	WS21	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01*	<0.01	<0.01	0.064*	0.015	0.082	0.027
EX1695432	WS3	<0.01	<0.01	<0.01	<0.01	0.018	<0.01*	0.052	0.014	0.108*	0.048	0.183	0.075
EX1695433	WS4	<0.01	<0.01	0.019	0.011	0.06	0.065*	0.073	0.059	0.064*	0.039	0.219	0.178
EX1695434	WS1	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01*	0.015	<0.01	0.105*	0.032	0.148	0.044
EX1695435	WS1A	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01*	<0.01	<0.01	0.069*	0.024	0.092	0.033

Where individual results are flagged see report notes for status.

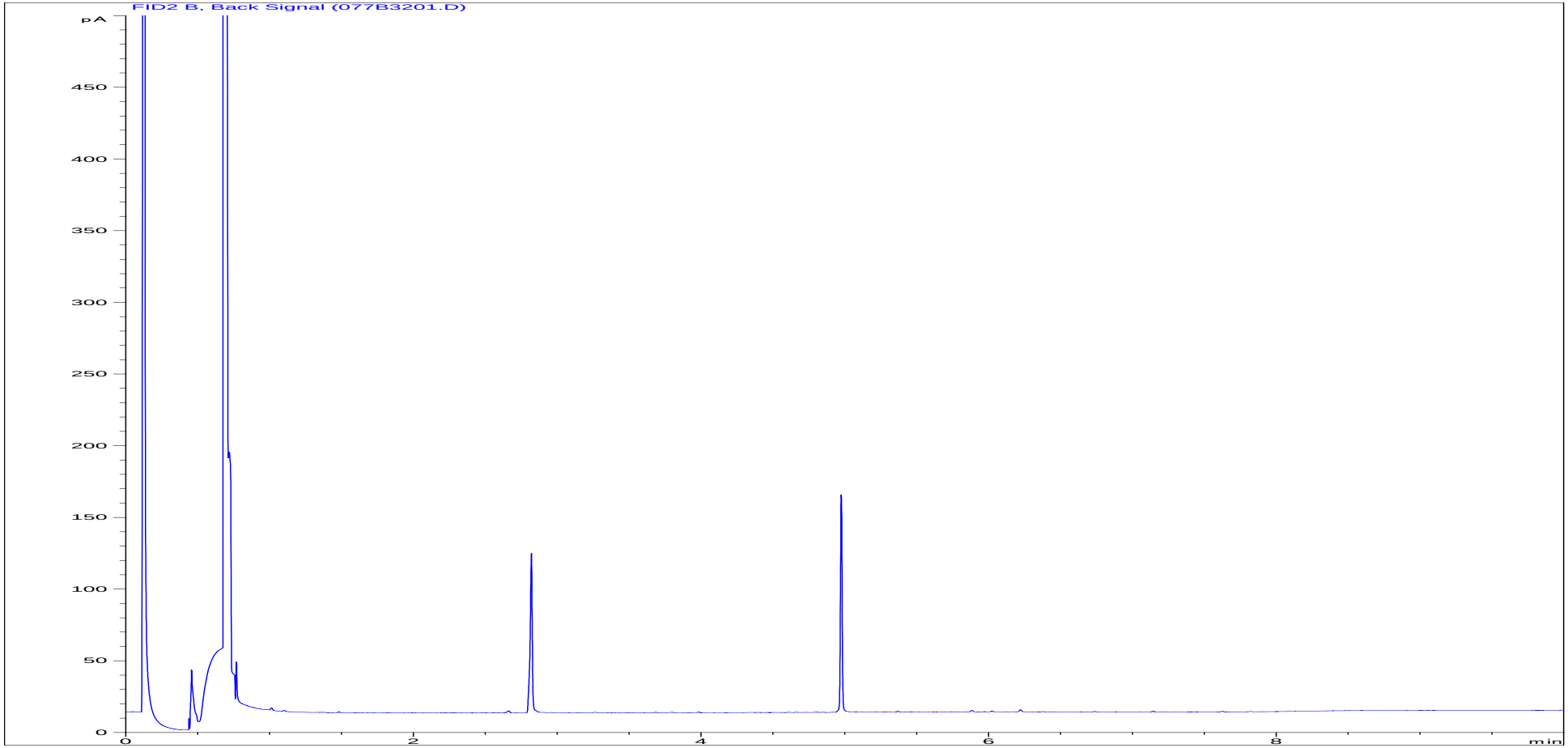
Petroleum Hydrocarbons (C8 to C40) by GC/FID Aliphatics Fraction.



Sample ID:	EX1695427ALI	**Job Number:**	W22_0376
Multiplier:	0.0194	**Client:**	Ramboll Environ
Dilution:	1	**Site:**	Zeon Chemicals ESA
Acquisition Method:	TPH_RUNF.M	**Client Sample Ref:**	WS15
Acquisition Date/Time:	28-May-16, 00:58:18		
Datafile:	D:\TES\DATA\Y2016\052616TPH_GC17\052716 2016-05-27 15-32-41\027F3201.D		

Where individual results are flagged see report notes for status.

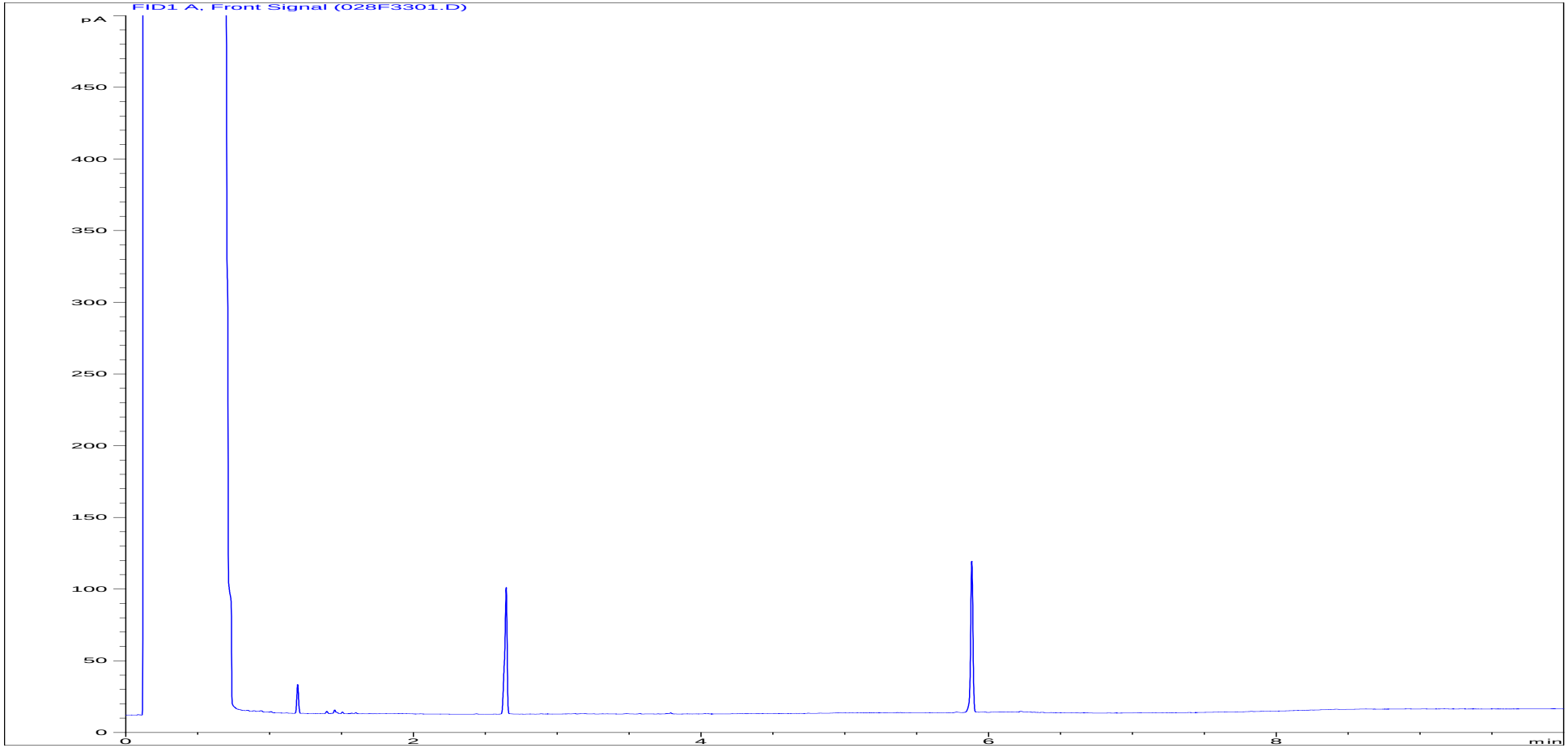
Petroleum Hydrocarbons (C8 to C40) by GC/FID Aromatics Fraction.



Sample ID:	EX1695427ARO	**Job Number:**	W22_0376
Multiplier:	0.015	**Client:**	Ramboll Environ
Dilution:	1	**Site:**	Zeon Chemicals ESA
Acquisition Method:	TPH_RUNF.M	**Client Sample Ref:**	WS15
Acquisition Date/Time:	28-May-16, 00:58:18		
Datafile:	D:\TES\DATA\Y2016\052616TPH_GC17\052716 2016-05-27 15-32-41\077B3201.D		

Where individual results are flagged see report notes for status.

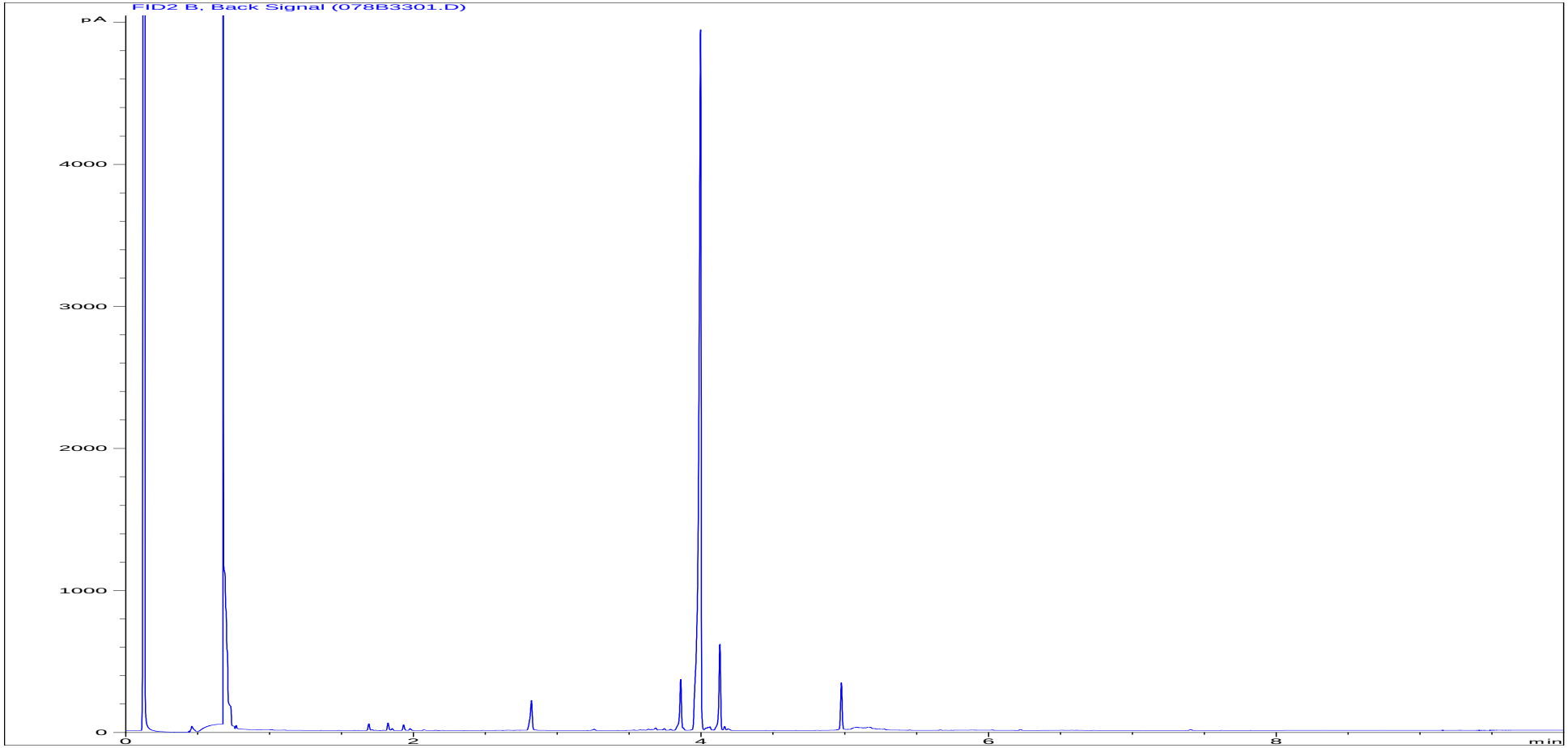
Petroleum Hydrocarbons (C8 to C40) by GC/FID Aliphatics Fraction.



Sample ID:	EX1695428ALI	**Job Number:**	W22_0376
Multiplier:	0.0194	**Client:**	Ramboll Environ
Dilution:	1	**Site:**	Zeon Chemicals ESA
Acquisition Method:	TPH_RUNF.M	**Client Sample Ref:**	WS17
Acquisition Date/Time:	28-May-16, 01:15:48		
Datafile:	D:\TES\DATA\Y2016\052616TPH_GC17\052716 2016-05-27 15-32-41\028F3301.D		

Where individual results are flagged see report notes for status.

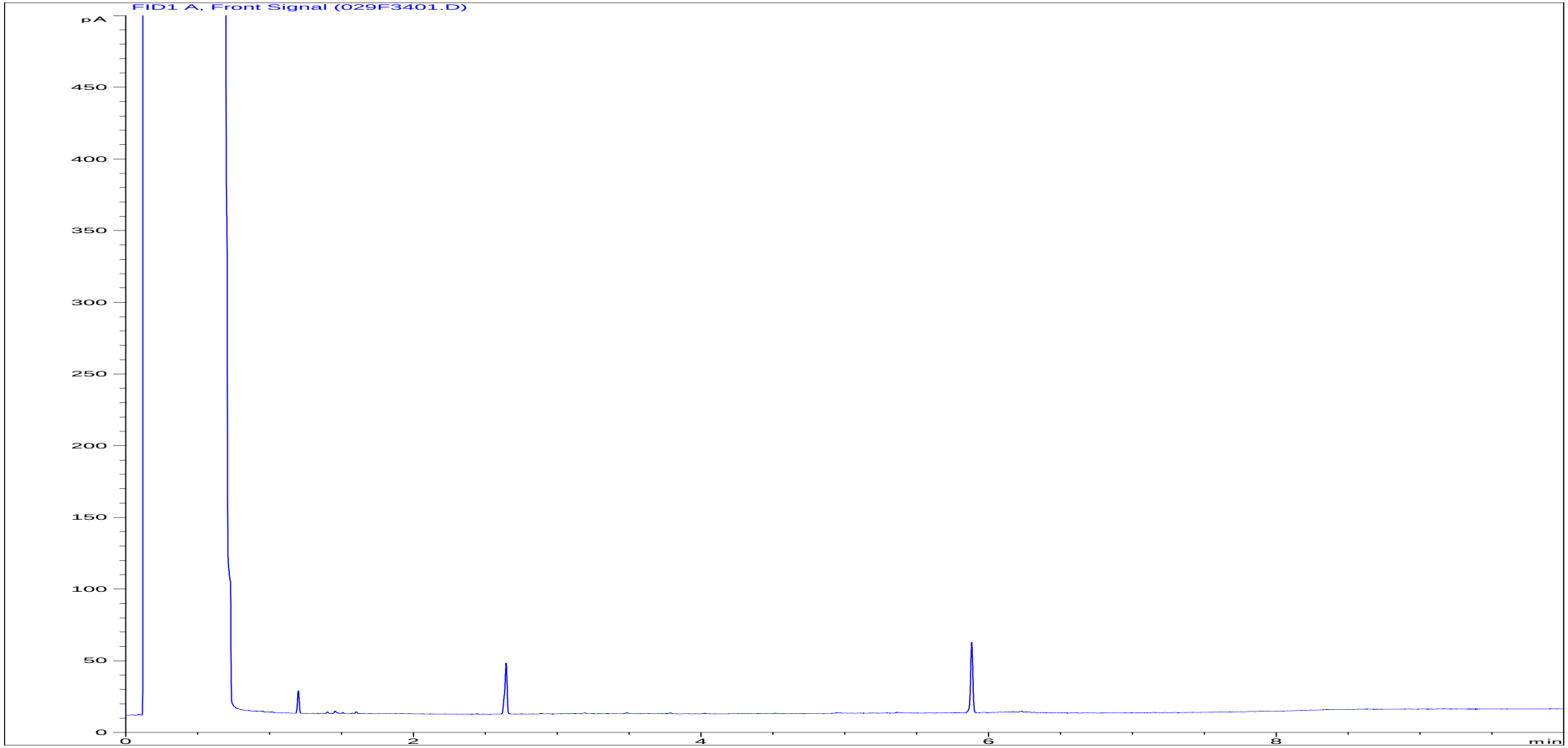
Petroleum Hydrocarbons (C8 to C40) by GC/FID Aromatics Fraction.



Sample ID:	EX1695428ARO	**Job Number:**	W22_0376
Multiplier:	0.015	**Client:**	Ramboll Environ
Dilution:	1	**Site:**	Zeon Chemicals ESA
Acquisition Method:	TPH_RUNF.M	**Client Sample Ref:**	WS17
Acquisition Date/Time:	28-May-16, 01:15:48		
Datafile:	D:\TES\DATA\Y2016\052616TPH_GC17\052716 2016-05-27 15-32-41\078B3301.D		

Where individual results are flagged see report notes for status.

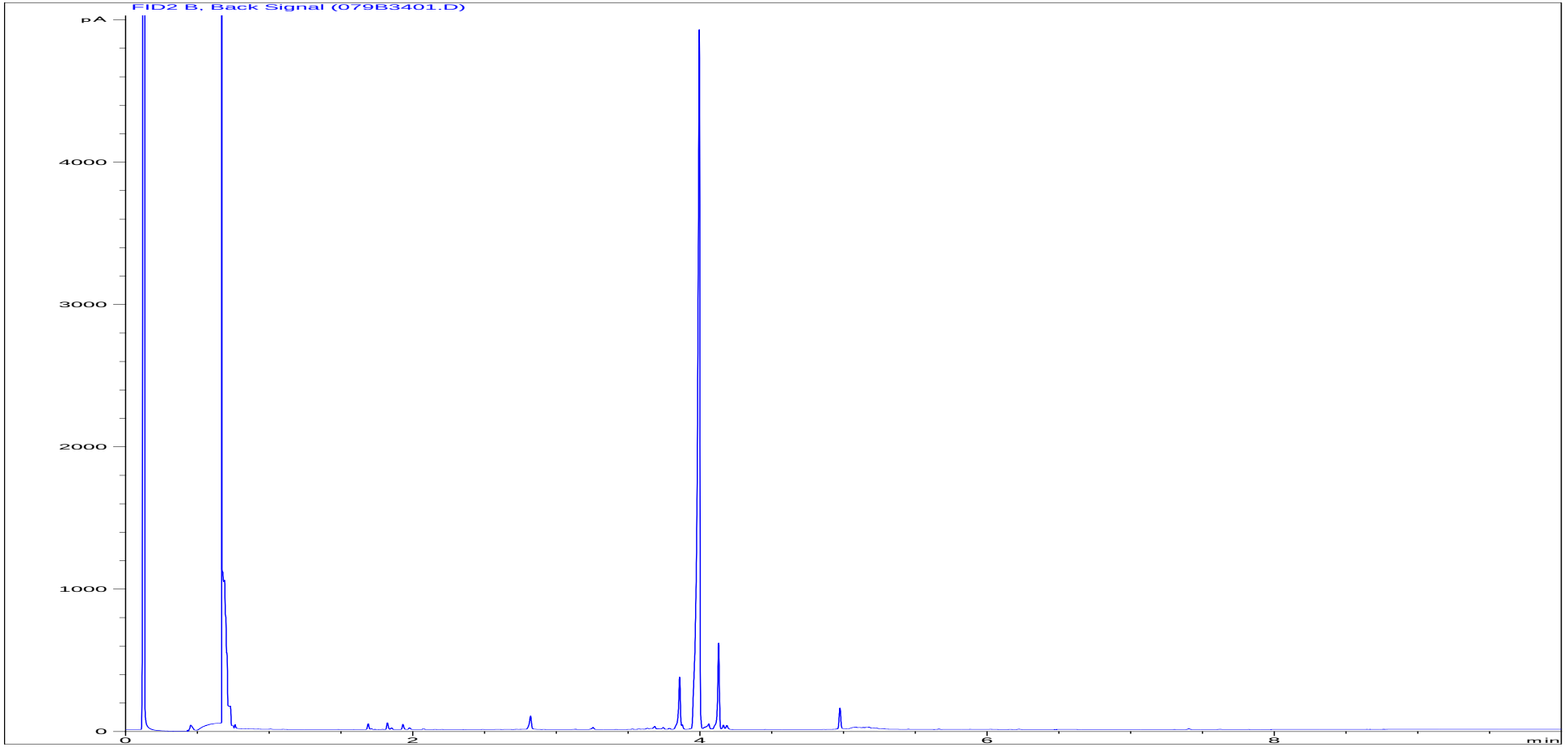
Petroleum Hydrocarbons (C8 to C40) by GC/FID Aliphatics Fraction.



Sample ID:	EX1695429ALI	**Job Number:**	W22_0376
Multiplier:	0.0192	**Client:**	Ramboll Environ
Dilution:	1	**Site:**	Zeon Chemicals ESA
Acquisition Method:	TPH_RUNF.M	**Client Sample Ref:**	WS17A
Acquisition Date/Time:	28-May-16, 01:33:29		
Datafile:	D:\TES\DATA\Y2016\052616TPH_GC17\052716 2016-05-27 15-32-41\029F3401.D		

Where individual results are flagged see report notes for status.

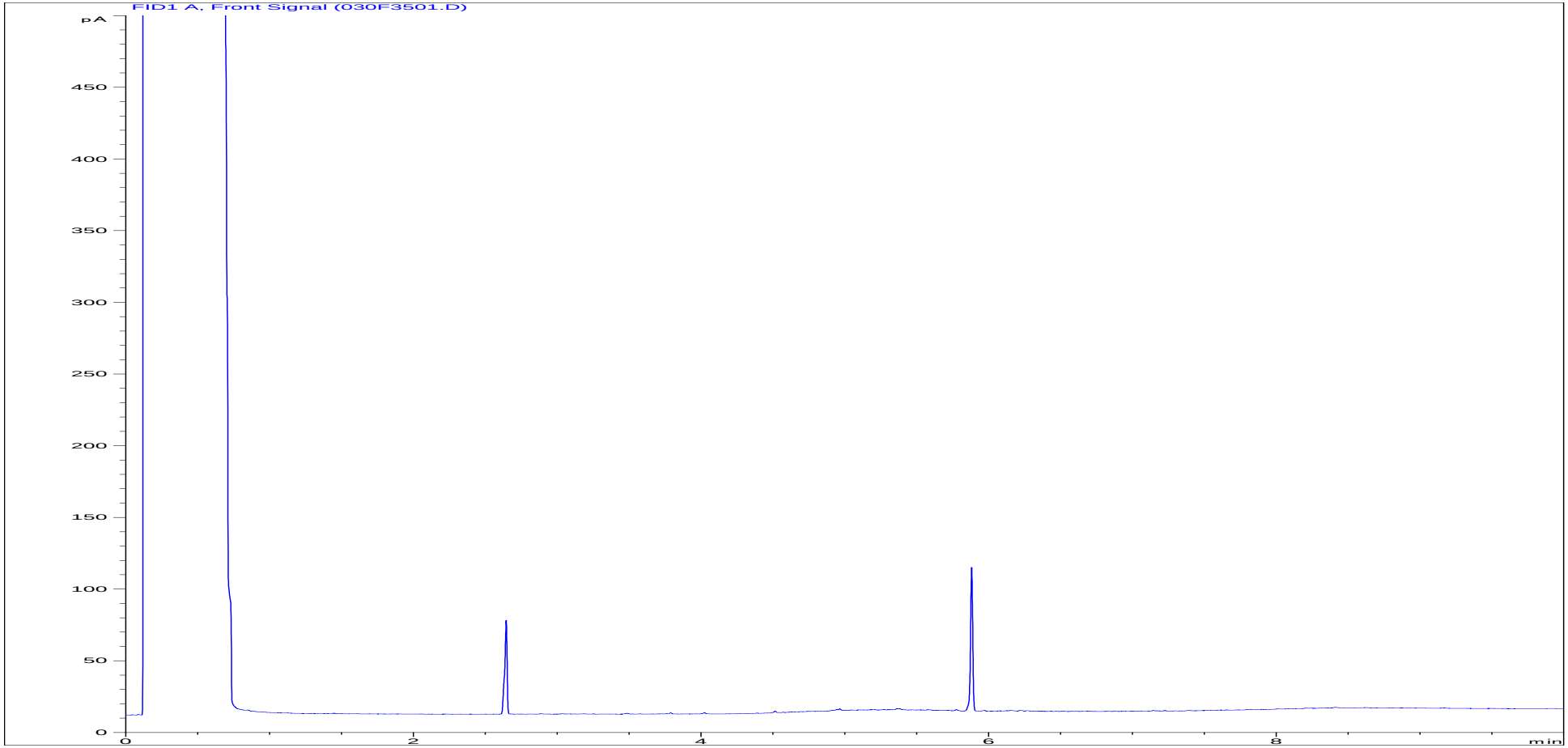
Petroleum Hydrocarbons (C8 to C40) by GC/FID Aromatics Fraction.



Sample ID:	EX1695429ARO	**Job Number:**	W22_0376
Multiplier:	0.0156	**Client:**	Ramboll Environ
Dilution:	1	**Site:**	Zeon Chemicals ESA
Acquisition Method:	TPH_RUNF.M	**Client Sample Ref:**	WS17A
Acquisition Date/Time:	28-May-16, 01:33:29		
Datafile:	D:\TES\DATA\Y2016\052616TPH_GC17\052716 2016-05-27 15-32-41\079B3401.D		

Where individual results are flagged see report notes for status.

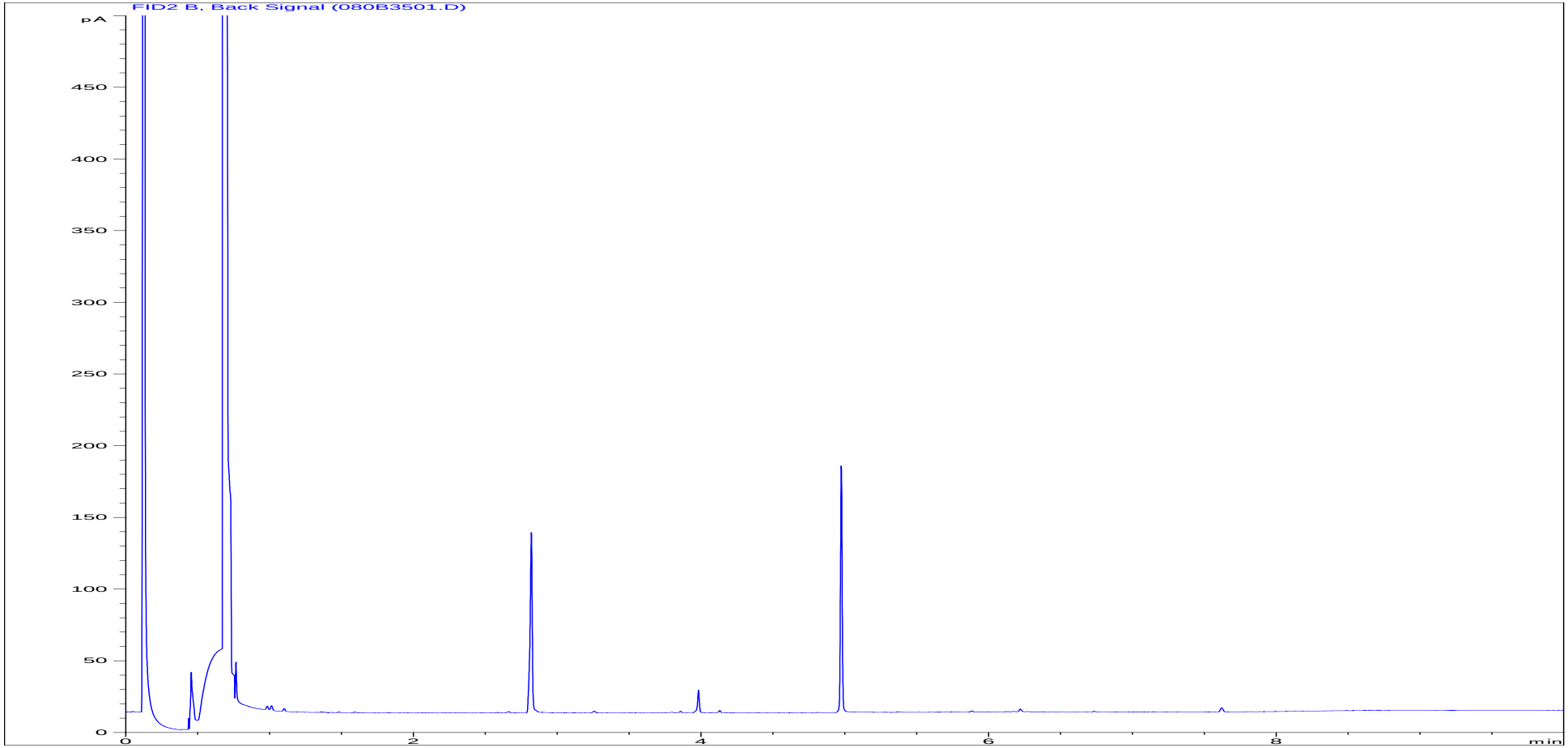
Petroleum Hydrocarbons (C8 to C40) by GC/FID Aliphatics Fraction.



Sample ID:	EX1695430ALI	**Job Number:**	W22_0376
Multiplier:	0.0192	**Client:**	Ramboll Environ
Dilution:	1	**Site:**	Zeon Chemicals ESA
Acquisition Method:	TPH_RUNF.M	**Client Sample Ref:**	WS21
Acquisition Date/Time:	28-May-16, 01:50:54		
Datafile:	D:\TES\DATA\Y2016\052616TPH_GC17\052716 2016-05-27 15-32-41\030F3501.D		

Where individual results are flagged see report notes for status.

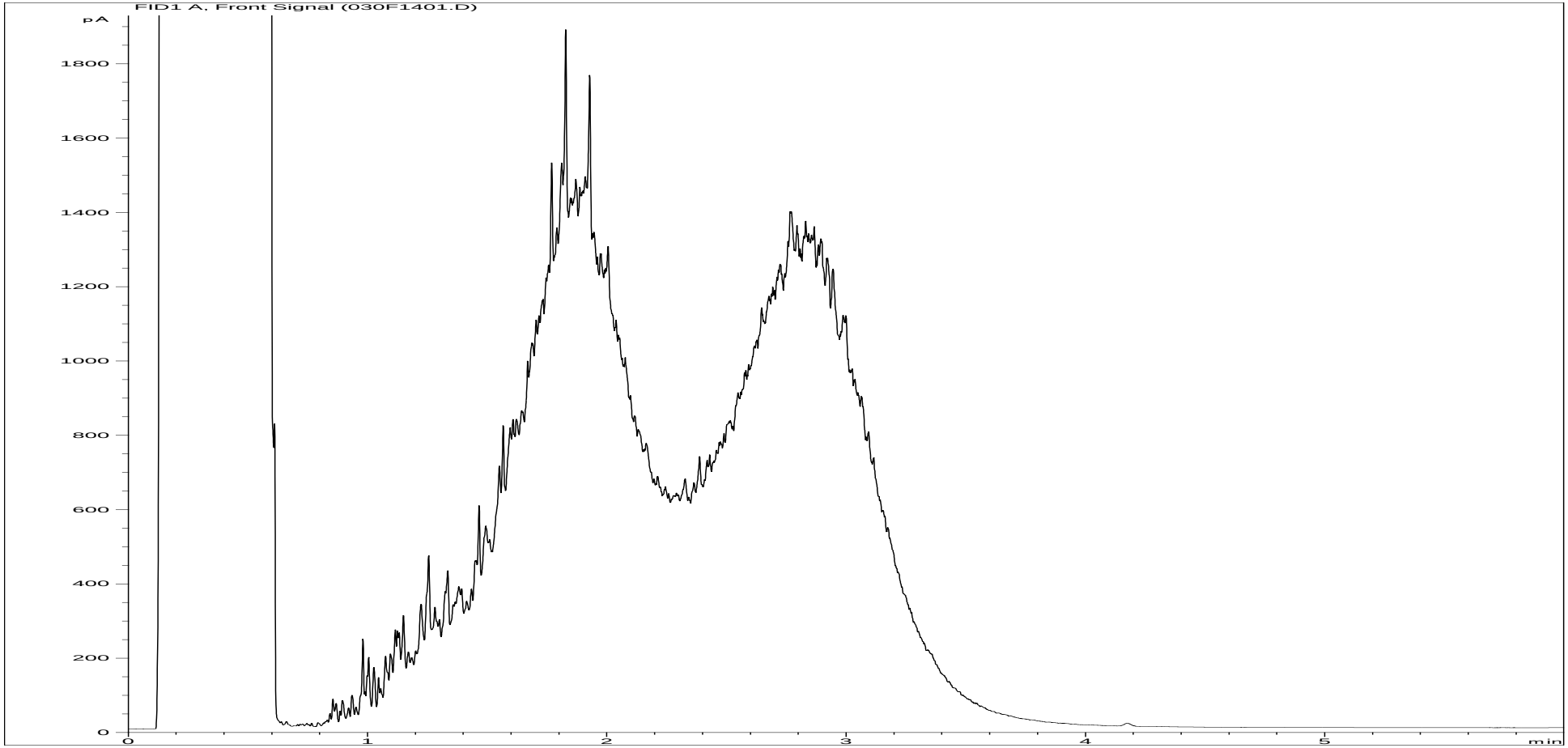
Petroleum Hydrocarbons (C8 to C40) by GC/FID Aromatics Fraction.



Sample ID:	EX1695430ARO	**Job Number:**	W22_0376
Multiplier:	0.015	**Client:**	Ramboll Environ
Dilution:	1	**Site:**	Zeon Chemicals ESA
Acquisition Method:	TPH_RUNF.M	**Client Sample Ref:**	WS21
Acquisition Date/Time:	28-May-16, 01:50:54		
Datafile:	D:\TES\DATA\Y2016\052616TPH_GC17\052716 2016-05-27 15-32-41\080B3501.D		

Where individual results are flagged see report notes for status.

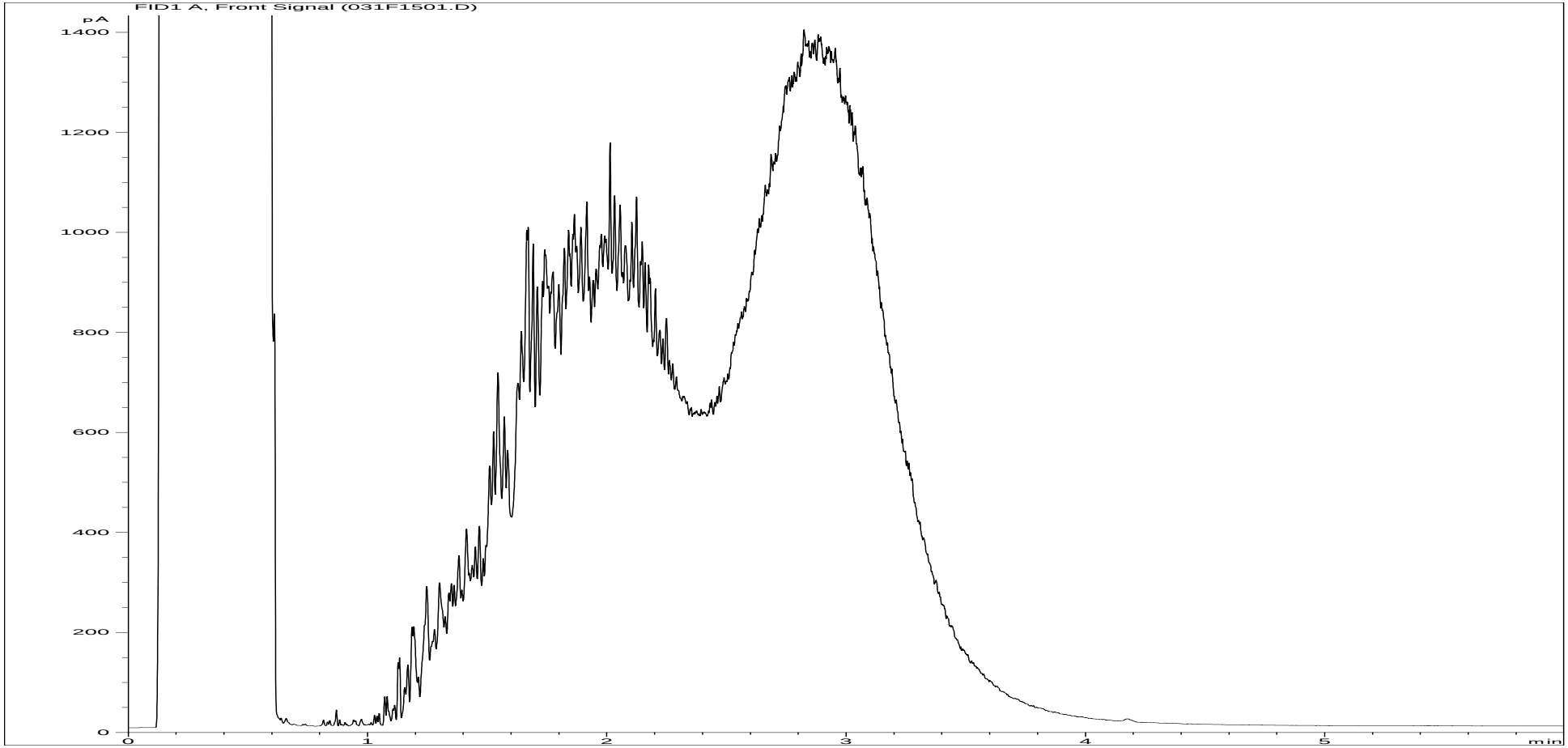
Petroleum Hydrocarbons (C8 to C40) by GC/FID Aliphatics Fraction.



Sample ID:	EX1695431ALI	**Job Number:**	W22_0376
Multiplier:	0.0194	**Client:**	Ramboll Environ
Dilution:	50	**Site:**	Zeon Chemicals ESA
Acquisition Method:	5UL_RUNF.M	**Client Sample Ref:**	WS6
Acquisition Date/Time:	31-May-16, 14:48:57		
Datafile:	D:\TES\DATA\Y2016\053116TPH_GC14\053116 2016-05-31 12-09-58\030F1401.D		

Where individual results are flagged see report notes for status.

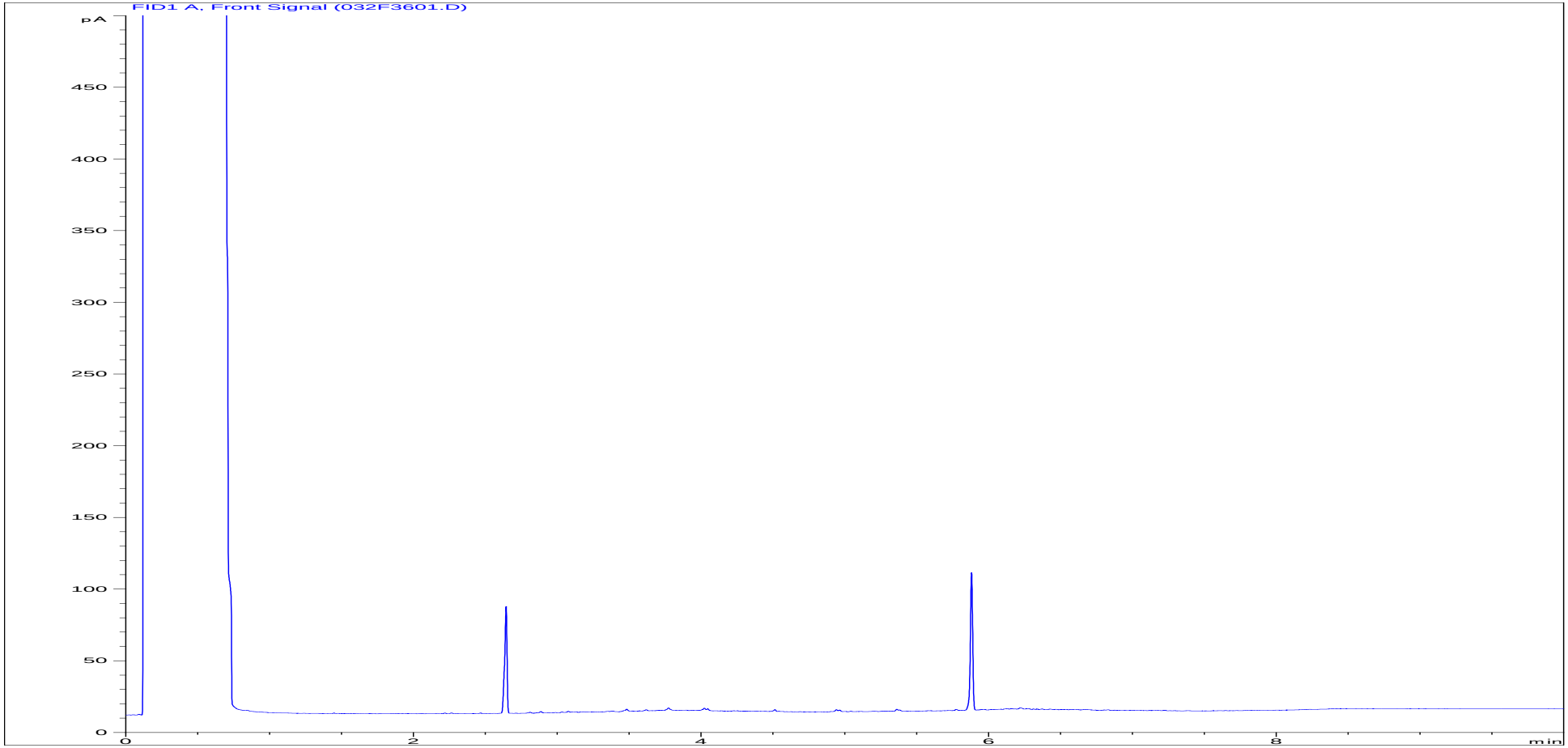
Petroleum Hydrocarbons (C8 to C40) by GC/FID Aromatics Fraction.



Sample ID:	EX1695431ARO	**Job Number:**	W22_0376
Multiplier:	0.0152	**Client:**	Ramboll Environ
Dilution:	20	**Site:**	Zeon Chemicals ESA
Acquisition Method:	5UL_RUNF.M	**Client Sample Ref:**	WS6
Acquisition Date/Time:	31-May-16, 15:00:44		
Datafile:	D:\TES\DATA\Y2016\053116TPH_GC14\053116 2016-05-31 12-09-58\031F1501.D		

Where individual results are flagged see report notes for status.

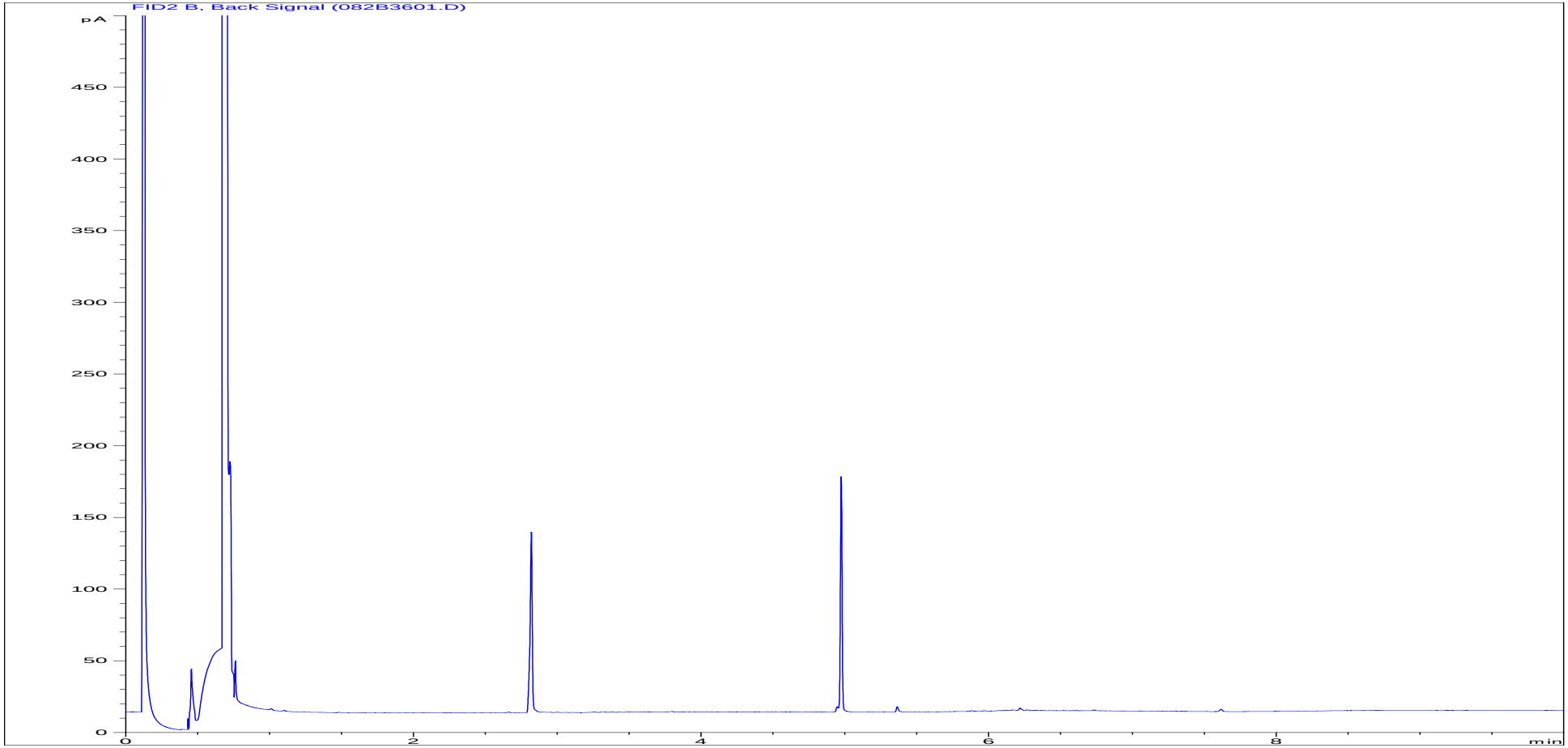
Petroleum Hydrocarbons (C8 to C40) by GC/FID Aliphatics Fraction.



Sample ID:	EX1695432ALI	**Job Number:**	W22_0376
Multiplier:	0.0302	**Client:**	Ramboll Environ
Dilution:	1	**Site:**	Zeon Chemicals ESA
Acquisition Method:	TPH_RUNF.M	**Client Sample Ref:**	WS3
Acquisition Date/Time:	28-May-16, 02:08:20		
Datafile:	D:\TES\DATA\Y2016\052616TPH_GC17\052716 2016-05-27 15-32-41\032F3601.D		

Where individual results are flagged see report notes for status.

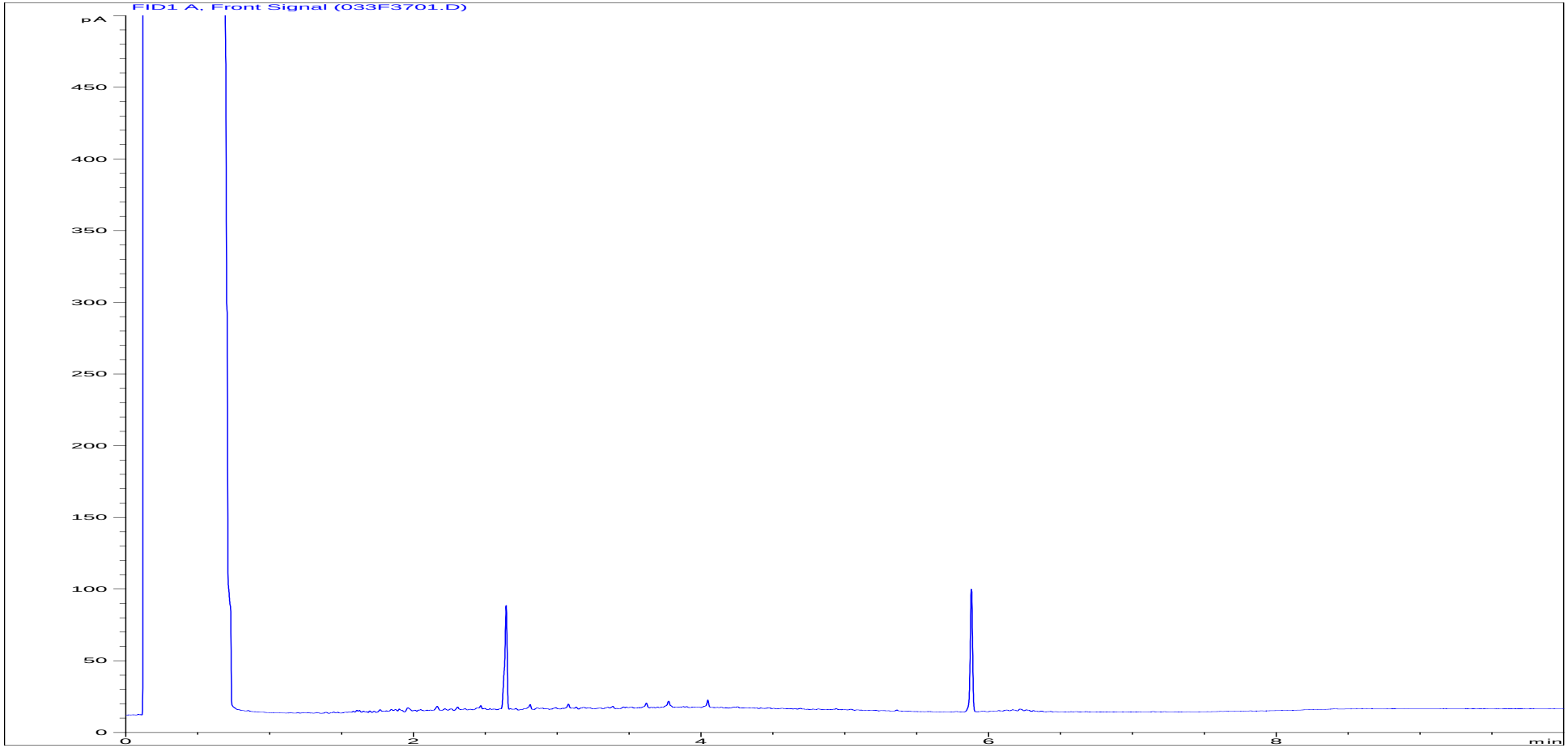
Petroleum Hydrocarbons (C8 to C40) by GC/FID Aromatics Fraction.



Sample ID:	EX1695432ARO	**Job Number:**	W22_0376
Multiplier:	0.0231	**Client:**	Ramboll Environ
Dilution:	1	**Site:**	Zeon Chemicals ESA
Acquisition Method:	TPH_RUNF.M	**Client Sample Ref:**	WS3
Acquisition Date/Time:	28-May-16, 02:08:20		
Datafile:	D:\TES\DATA\Y2016\052616TPH_GC17\052716 2016-05-27 15-32-41\082B3601.D		

Where individual results are flagged see report notes for status.

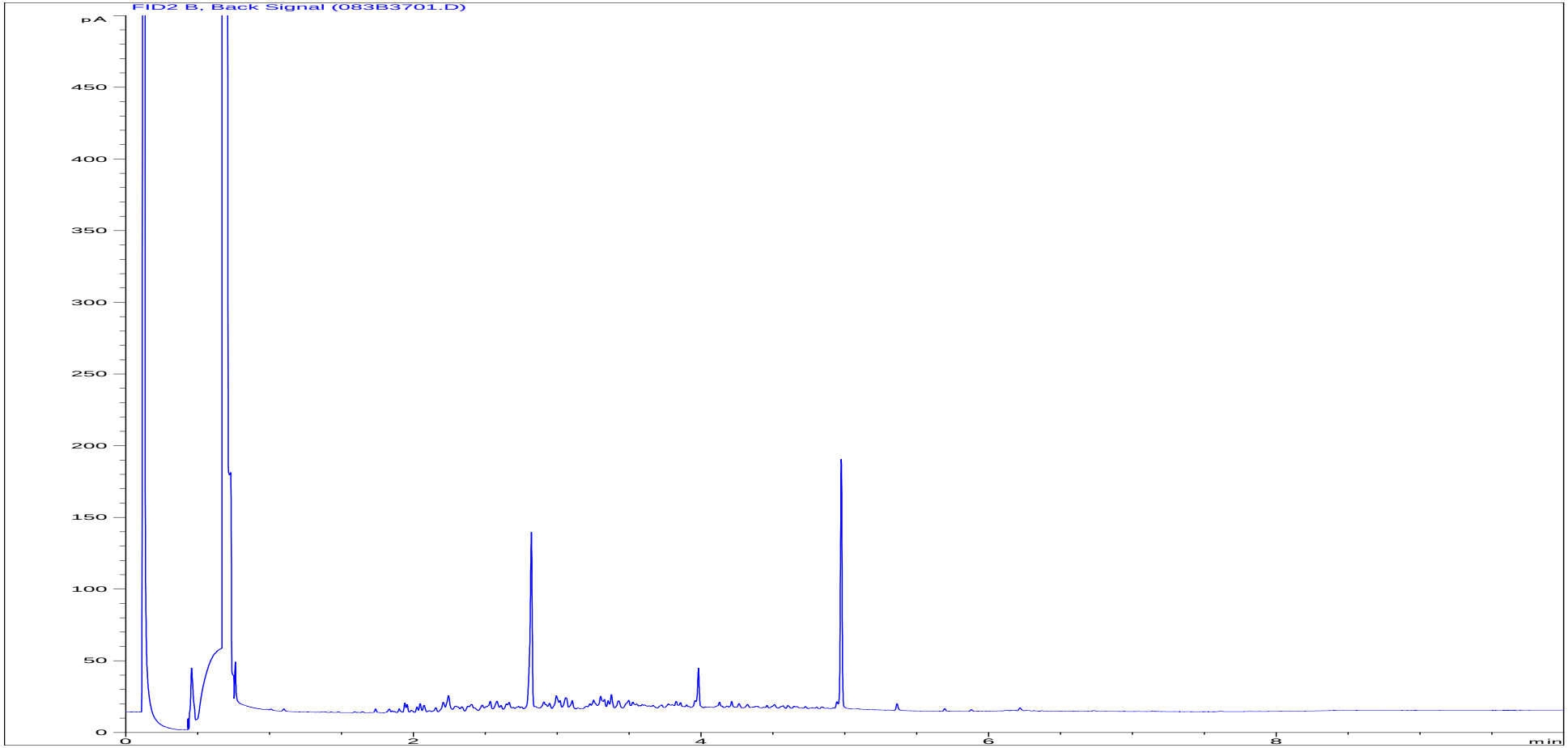
Petroleum Hydrocarbons (C8 to C40) by GC/FID Aliphatics Fraction.



Sample ID:	EX1695433ALI	**Job Number:**	W22_0376
Multiplier:	0.0196	**Client:**	Ramboll Environ
Dilution:	1	**Site:**	Zeon Chemicals ESA
Acquisition Method:	TPH_RUNF.M	**Client Sample Ref:**	WS4
Acquisition Date/Time:	28-May-16, 02:25:44		
Datafile:	D:\TES\DATA\Y2016\052616TPH_GC17\052716 2016-05-27 15-32-41\033F3701.D		

Where individual results are flagged see report notes for status.

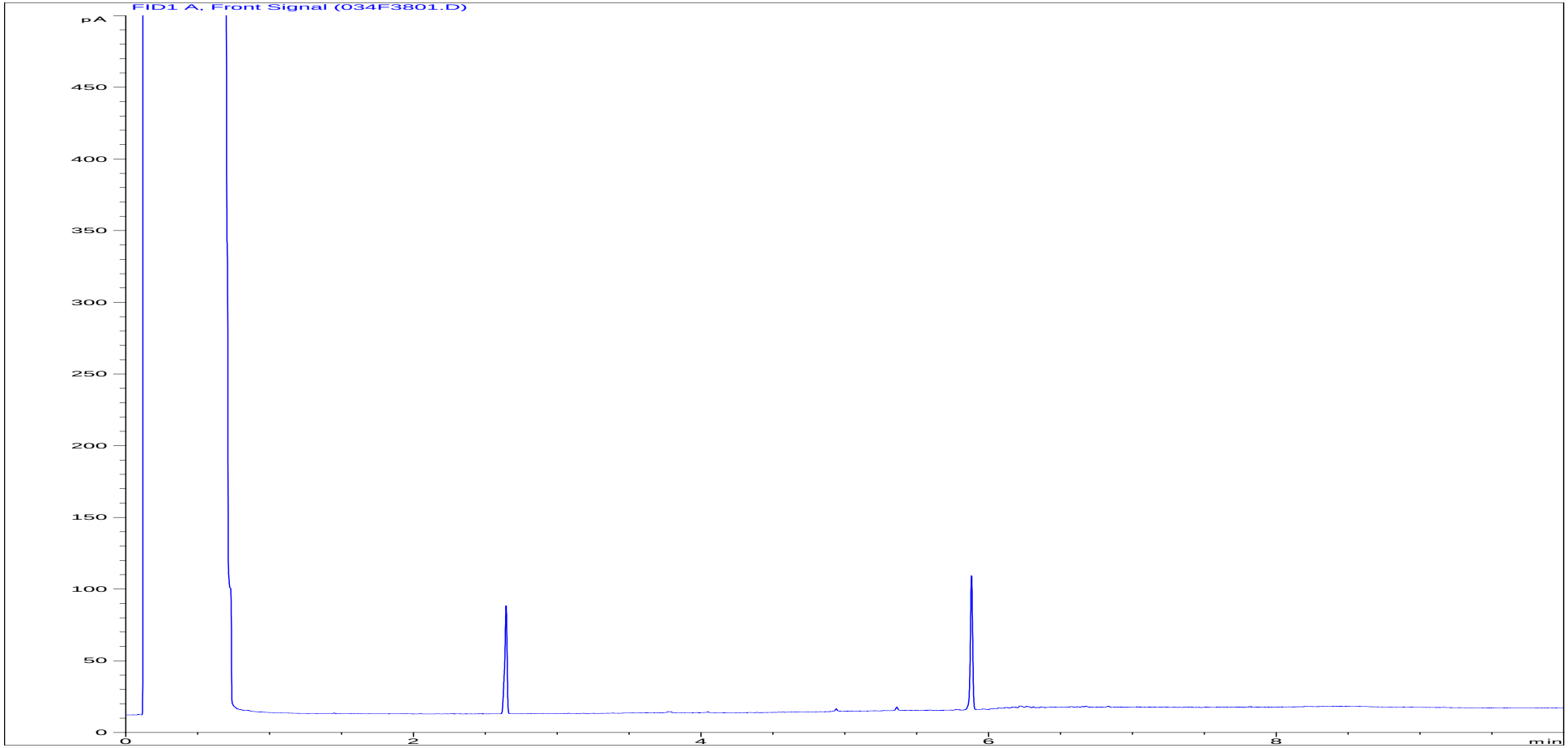
Petroleum Hydrocarbons (C8 to C40) by GC/FID Aromatics Fraction.



Sample ID:	EX1695433ARO	**Job Number:**	W22_0376
Multiplier:	0.015	**Client:**	Ramboll Environ
Dilution:	1	**Site:**	Zeon Chemicals ESA
Acquisition Method:	TPH_RUNF.M	**Client Sample Ref:**	WS4
Acquisition Date/Time:	28-May-16, 02:25:44		
Datafile:	D:\TES\DATA\Y2016\052616TPH_GC17\052716 2016-05-27 15-32-41\083B3701.D		

Where individual results are flagged see report notes for status.

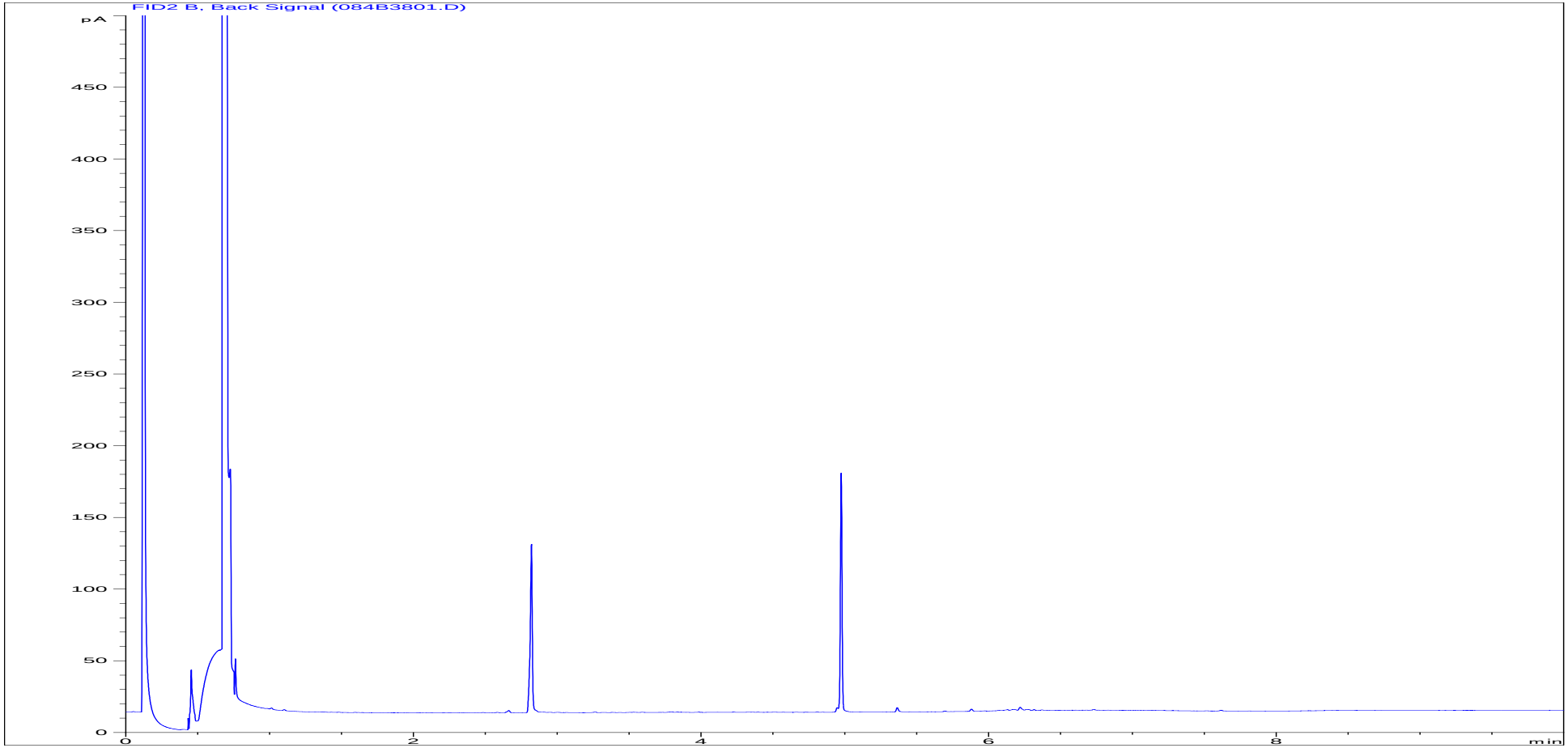
Petroleum Hydrocarbons (C8 to C40) by GC/FID Aliphatics Fraction.



Sample ID:	EX1695434ALI	**Job Number:**	W22_0376
Multiplier:	0.0194	**Client:**	Ramboll Environ
Dilution:	1	**Site:**	Zeon Chemicals ESA
Acquisition Method:	TPH_RUNF.M	**Client Sample Ref:**	WS1
Acquisition Date/Time:	28-May-16, 02:43:21		
Datafile:	D:\TES\DATA\Y2016\052616TPH_GC17\052716 2016-05-27 15-32-41\034F3801.D		

Where individual results are flagged see report notes for status.

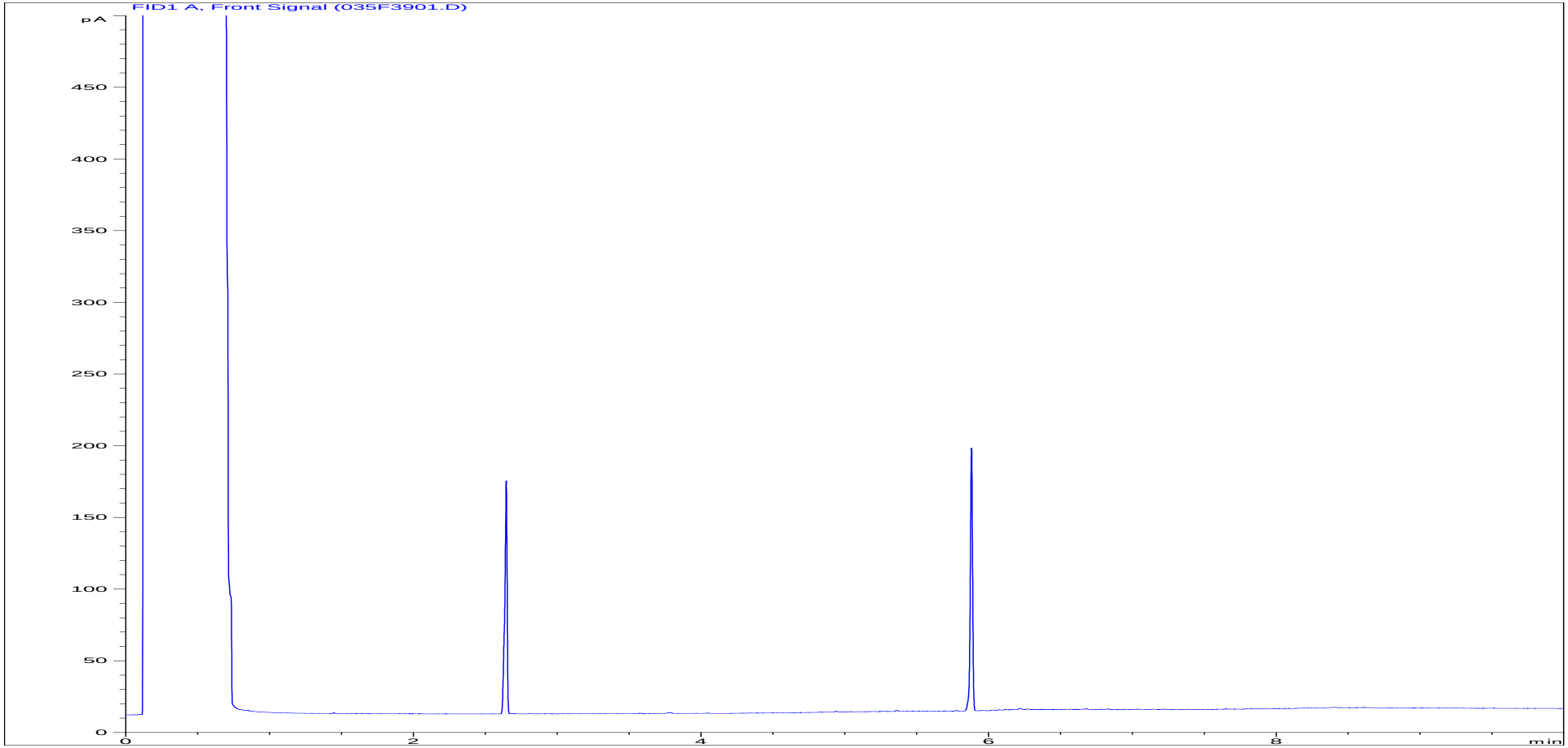
Petroleum Hydrocarbons (C8 to C40) by GC/FID Aromatics Fraction.



Sample ID:	EX1695434ARO	**Job Number:**	W22_0376
Multiplier:	0.015	**Client:**	Ramboll Environ
Dilution:	1	**Site:**	Zeon Chemicals ESA
Acquisition Method:	TPH_RUNF.M	**Client Sample Ref:**	WS1
Acquisition Date/Time:	28-May-16, 02:43:21		
Datafile:	D:\TES\DATA\Y2016\052616TPH_GC17\052716 2016-05-27 15-32-41\084B3801.D		

Where individual results are flagged see report notes for status.

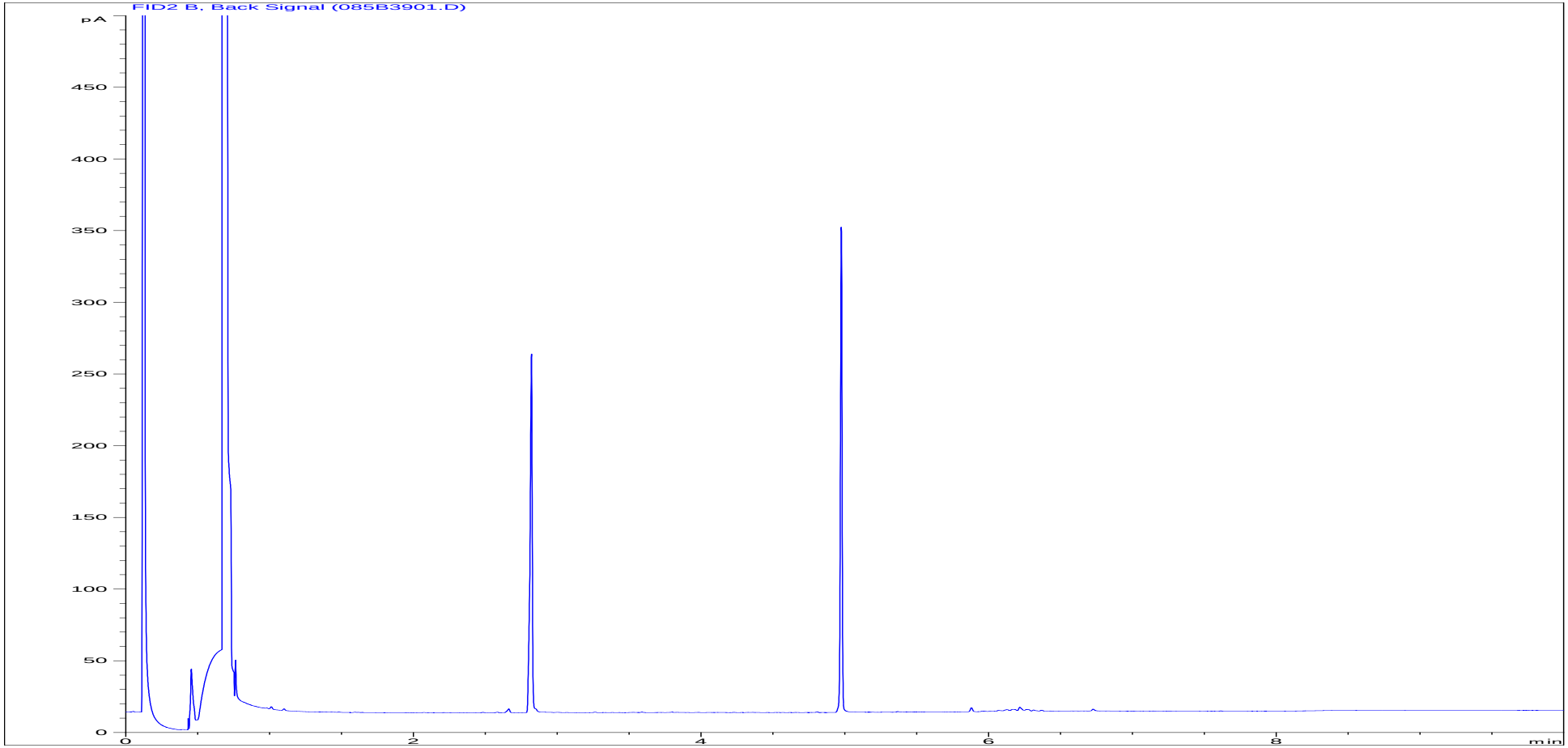
Petroleum Hydrocarbons (C8 to C40) by GC/FID Aliphatics Fraction.



Sample ID:	EX1695435ALI	**Job Number:**	W22_0376
Multiplier:	0.0194	**Client:**	Ramboll Environ
Dilution:	1	**Site:**	Zeon Chemicals ESA
Acquisition Method:	TPH_RUNF.M	**Client Sample Ref:**	WS1A
Acquisition Date/Time:	28-May-16, 03:00:46		
Datafile:	D:\TES\DATA\Y2016\052616TPH_GC17\052716 2016-05-27 15-32-41\035F3901.D		

Where individual results are flagged see report notes for status.

Petroleum Hydrocarbons (C8 to C40) by GC/FID Aromatics Fraction.



Sample ID:	EX1695435ARO	**Job Number:**	W22_0376
Multiplier:	0.0152	**Client:**	Ramboll Environ
Dilution:	1	**Site:**	Zeon Chemicals ESA
Acquisition Method:	TPH_RUNF.M	**Client Sample Ref:**	WS1A
Acquisition Date/Time:	28-May-16, 03:00:46		
Datafile:	D:\TES\DATA\Y2016\052616TPH_GC17\052716 2016-05-27 15-32-41\085B3901.D		

Where individual results are flagged see report notes for status.

Volatile Organic Compounds by HSA-GCMS

UKAS accredited?: Yes

Customer and Site Details:	Ramboll Environ: Zeon Chemicals ESA	**Directory/Quant file:**	2016\052616\ Initial Calibration	**Matrix:**	Water
Sample Details:	WS15	**Date Booked in:**	21-May-16	**Method:**	Headspace
LIMS ID Number:	EX1695427	**Date Analysed:**	27-May-16	**Multiplier:**	1
Job Number:	W22_0376	**Operator:**	PR	**Position:**	2

Target Compounds	CAS #	R.T. (min.)	Concentration µg/l	% Fit
Dichlorodifluoromethane	75-71-8 *	-	< 1	-
Chloromethane	74-87-3	-	< 1	-
Vinyl Chloride	75-01-4	-	< 1	-
Bromomethane	74-83-9 *	-	< 5	-
Chloroethane	75-00-3	-	< 5	-
Trichlorofluoromethane	75-69-4	-	< 1	-
1,1-Dichloroethene	75-35-4	-	< 1	-
trans 1,2-Dichloroethene	156-60-5	-	< 1	-
1,1-Dichloroethane	75-34-3	-	< 1	-
2,2-Dichloropropane	594-20-7 *	-	< 1	-
cis 1,2-Dichloroethene	156-59-2	-	< 1	-
Bromochloromethane	74-97-5	-	< 1	-
Chloroform	67-66-3	-	< 1	-
1,1,1-Trichloroethane	71-55-6	-	< 1	-
Carbon Tetrachloride	56-23-5	-	< 1	-
1,1-Dichloropropene	563-58-6 *	-	< 1	-
Benzene	71-43-2	-	< 1	-
1,2-Dichloroethane	107-06-2	-	< 1	-
Trichloroethene	79-01-6	-	< 5	-
1,2-Dichloropropane	78-87-5	-	< 1	-
Dibromomethane	74-95-3	-	< 1	-
Bromodichloromethane	75-27-4	-	< 1	-
cis 1,3-Dichloropropene	10061-01-5 *	-	< 1	-
Toluene	108-88-3	-	< 1	-
trans 1,3-Dichloropropene	10061-02-6 *	-	< 1	-
1,1,2-Trichloroethane	79-00-5	-	< 1	-
Tetrachloroethene	127-18-4	-	< 5	-
1,3-Dichloropropane	142-28-9	-	< 1	-
Dibromochloromethane	124-48-1	-	< 1	-
1,2-Dibromoethane	106-93-4	-	< 1	-
Chlorobenzene	108-90-7	-	< 1	-
Ethylbenzene	100-41-4	-	< 1	-
1,1,1,2-Tetrachloroethane	630-20-6 *	-	< 1	-
m and p-Xylene	108-38-3/106-42-3	-	< 1	-
o-Xylene	95-47-6	-	< 1	-

Target Compounds	CAS #	R.T. (min.)	Concentration µg/l	% Fit
Styrene	100-42-5	-	< 1	-
Bromoform	75-25-2	-	< 1	-
iso-Propylbenzene	98-82-8	-	< 1	-
1,1,2,2-Tetrachloroethane	79-34-5 *	-	< 1	-
Propylbenzene	103-65-1	-	< 1	-
Bromobenzene	108-86-1	-	< 1	-
1,2,3-Trichloropropane	96-18-4	-	< 1	-
2-Chlorotoluene	95-49-8	-	< 1	-
1,3,5-Trimethylbenzene	108-67-8 *	-	< 1	-
4-Chlorotoluene	106-43-4	-	< 1	-
tert-Butylbenzene	98-06-6 *	-	< 1	-
1,2,4-Trimethylbenzene	95-63-6	-	< 1	-
sec-Butylbenzene	135-98-8	-	< 1	-
p-Isopropyltoluene	99-87-6	-	< 1	-
1,3-Dichlorobenzene	541-73-1	-	< 1	-
1,4-Dichlorobenzene	106-46-7	-	< 1	-
n-Butylbenzene	104-51-8	-	< 1	-
1,2-Dichlorobenzene	95-50-1	-	< 5	-
1,2-Dibromo-3-chloropropane	96-12-8 *	-	< 5	-
1,2,4-Trichlorobenzene	120-82-1	-	< 5	-
Hexachlorobutadiene	87-68-3	-	< 5	-
Naphthalene	91-20-3	-	< 5	-
1,2,3-Trichlorobenzene	87-61-6	-	< 5	-

Compounds marked * are not UKAS accredited
"M" denotes that % fit has been manually interpreted

Internal standards	R.T.	Area %	Surrogates	% Rec
Pentafluorobenzene	3.62	91	Dibromofluoromethane	120
1,4-Difluorobenzene	3.97	99	Toluene-d8	99
Chlorobenzene-d5	5.12	101	Bromofluorobenzene	95
1,4-Dichlorobenzene-d4	5.92	90		

Where individual results are flagged see report notes for status.

Volatile Organic Compounds by HSA-GCMS

UKAS accredited?: Yes

Customer and Site Details:	Ramboll Environ: Zeon Chemicals ESA	**Directory/Quant file:**	2016\052616\ Initial Calibration	**Matrix:**	Water
Sample Details:	WS17	**Date Booked in:**	21-May-16	**Method:**	Headspace
LIMS ID Number:	EX1695428	**Date Analysed:**	27-May-16	**Multiplier:**	1
Job Number:	W22_0376	**Operator:**	PR	**Position:**	3

Target Compounds	CAS #	R.T. (min.)	Concentration µg/l	% Fit
Dichlorodifluoromethane	75-71-8 *	-	< 1	-
Chloromethane	74-87-3	-	< 1	-
Vinyl Chloride	75-01-4	-	< 1	-
Bromomethane	74-83-9 *	-	< 5	-
Chloroethane	75-00-3	-	< 5	-
Trichlorofluoromethane	75-69-4	-	< 1	-
1,1-Dichloroethene	75-35-4	-	< 1	-
trans 1,2-Dichloroethene	156-60-5	-	< 1	-
1,1-Dichloroethane	75-34-3	-	< 1	-
2,2-Dichloropropane	594-20-7 *	-	< 1	-
cis 1,2-Dichloroethene	156-59-2	-	< 1	-
Bromochloromethane	74-97-5	-	< 1	-
Chloroform	67-66-3	-	< 1	-
1,1,1-Trichloroethane	71-55-6	-	< 1	-
Carbon Tetrachloride	56-23-5	-	< 1	-
1,1-Dichloropropene	563-58-6 *	-	< 1	-
Benzene	71-43-2	-	< 1	-
1,2-Dichloroethane	107-06-2	-	< 1	-
Trichloroethene	79-01-6	-	< 5	-
1,2-Dichloropropane	78-87-5	-	< 1	-
Dibromomethane	74-95-3	-	< 1	-
Bromodichloromethane	75-27-4	-	< 1	-
cis 1,3-Dichloropropene	10061-01-5 *	-	< 1	-
Toluene	108-88-3	-	< 1	-
trans 1,3-Dichloropropene	10061-02-6 *	-	< 1	-
1,1,2-Trichloroethane	79-00-5	-	< 1	-
Tetrachloroethene	127-18-4	-	< 5	-
1,3-Dichloropropane	142-28-9	-	< 1	-
Dibromochloromethane	124-48-1	-	< 1	-
1,2-Dibromoethane	106-93-4	-	< 1	-
Chlorobenzene	108-90-7	-	< 1	-
Ethylbenzene	100-41-4	-	< 1	-
1,1,1,2-Tetrachloroethane	630-20-6 *	-	< 1	-
m and p-Xylene	108-38-3/106-42-3	-	< 1	-
o-Xylene	95-47-6	-	< 1	-

Target Compounds	CAS #	R.T. (min.)	Concentration µg/l	% Fit
Styrene	100-42-5	-	< 1	-
Bromoform	75-25-2	-	< 1	-
iso-Propylbenzene	98-82-8	-	< 1	-
1,1,2,2-Tetrachloroethane	79-34-5 *	-	< 1	-
Propylbenzene	103-65-1	-	< 1	-
Bromobenzene	108-86-1	-	< 1	-
1,2,3-Trichloropropane	96-18-4	-	< 1	-
2-Chlorotoluene	95-49-8	-	< 1	-
1,3,5-Trimethylbenzene	108-67-8 *	-	< 1	-
4-Chlorotoluene	106-43-4	-	< 1	-
tert-Butylbenzene	98-06-6 *	-	< 1	-
1,2,4-Trimethylbenzene	95-63-6	-	< 1	-
sec-Butylbenzene	135-98-8	-	< 1	-
p-Isopropyltoluene	99-87-6	-	< 1	-
1,3-Dichlorobenzene	541-73-1	-	< 1	-
1,4-Dichlorobenzene	106-46-7	-	< 1	-
n-Butylbenzene	104-51-8	-	< 1	-
1,2-Dichlorobenzene	95-50-1	-	< 5	-
1,2-Dibromo-3-chloropropane	96-12-8 *	-	< 5	-
1,2,4-Trichlorobenzene	120-82-1	-	< 5	-
Hexachlorobutadiene	87-68-3	-	< 5	-
Naphthalene	91-20-3	-	< 5	-
1,2,3-Trichlorobenzene	87-61-6	-	< 5	-

Compounds marked * are not UKAS accredited
"M" denotes that % fit has been manually interpreted

Internal standards	R.T.	Area %	Surrogates	% Rec
Pentafluorobenzene	3.62	107	Dibromofluoromethane	117
1,4-Difluorobenzene	3.97	112	Toluene-d8	100
Chlorobenzene-d5	5.12	111	Bromofluorobenzene	96
1,4-Dichlorobenzene-d4	5.92	103		

Where individual results are flagged see report notes for status.

Volatile Organic Compounds by HSA-GCMS

UKAS accredited?: Yes

Customer and Site Details:	Ramboll Environ: Zeon Chemicals ESA	**Directory/Quant file:**	2016\052616\ Initial Calibration	**Matrix:**	Water
Sample Details:	WS17A	**Date Booked in:**	21-May-16	**Method:**	Headspace
LIMS ID Number:	EX1695429	**Date Analysed:**	27-May-16	**Multiplier:**	1
Job Number:	W22_0376	**Operator:**	PR	**Position:**	4

Target Compounds	CAS #	R.T. (min.)	Concentration µg/l	% Fit
Dichlorodifluoromethane	75-71-8 *	-	< 1	-
Chloromethane	74-87-3	-	< 1	-
Vinyl Chloride	75-01-4	-	< 1	-
Bromomethane	74-83-9 *	-	< 5	-
Chloroethane	75-00-3	-	< 5	-
Trichlorofluoromethane	75-69-4	-	< 1	-
1,1-Dichloroethene	75-35-4	-	< 1	-
trans 1,2-Dichloroethene	156-60-5	-	< 1	-
1,1-Dichloroethane	75-34-3	-	< 1	-
2,2-Dichloropropane	594-20-7 *	-	< 1	-
cis 1,2-Dichloroethene	156-59-2	-	< 1	-
Bromochloromethane	74-97-5	-	< 1	-
Chloroform	67-66-3	-	< 1	-
1,1,1-Trichloroethane	71-55-6	-	< 1	-
Carbon Tetrachloride	56-23-5	-	< 1	-
1,1-Dichloropropene	563-58-6 *	-	< 1	-
Benzene	71-43-2	-	< 1	-
1,2-Dichloroethane	107-06-2	-	< 1	-
Trichloroethene	79-01-6	-	< 5	-
1,2-Dichloropropane	78-87-5	-	< 1	-
Dibromomethane	74-95-3	-	< 1	-
Bromodichloromethane	75-27-4	-	< 1	-
cis 1,3-Dichloropropene	10061-01-5 *	-	< 1	-
Toluene	108-88-3	-	< 1	-
trans 1,3-Dichloropropene	10061-02-6 *	-	< 1	-
1,1,2-Trichloroethane	79-00-5	-	< 1	-
Tetrachloroethene	127-18-4	-	< 5	-
1,3-Dichloropropane	142-28-9	-	< 1	-
Dibromochloromethane	124-48-1	-	< 1	-
1,2-Dibromoethane	106-93-4	-	< 1	-
Chlorobenzene	108-90-7	-	< 1	-
Ethylbenzene	100-41-4	-	< 1	-
1,1,1,2-Tetrachloroethane	630-20-6 *	-	< 1	-
m and p-Xylene	108-38-3/106-42-3	-	< 1	-
o-Xylene	95-47-6	-	< 1	-

Target Compounds	CAS #	R.T. (min.)	Concentration µg/l	% Fit
Styrene	100-42-5	-	< 1	-
Bromoform	75-25-2	-	< 1	-
iso-Propylbenzene	98-82-8	-	< 1	-
1,1,2,2-Tetrachloroethane	79-34-5 *	-	< 1	-
Propylbenzene	103-65-1	-	< 1	-
Bromobenzene	108-86-1	-	< 1	-
1,2,3-Trichloropropane	96-18-4	-	< 1	-
2-Chlorotoluene	95-49-8	-	< 1	-
1,3,5-Trimethylbenzene	108-67-8 *	-	< 1	-
4-Chlorotoluene	106-43-4	-	< 1	-
tert-Butylbenzene	98-06-6 *	-	< 1	-
1,2,4-Trimethylbenzene	95-63-6	-	< 1	-
sec-Butylbenzene	135-98-8	-	< 1	-
p-Isopropyltoluene	99-87-6	-	< 1	-
1,3-Dichlorobenzene	541-73-1	-	< 1	-
1,4-Dichlorobenzene	106-46-7	-	< 1	-
n-Butylbenzene	104-51-8	-	< 1	-
1,2-Dichlorobenzene	95-50-1	-	< 5	-
1,2-Dibromo-3-chloropropane	96-12-8 *	-	< 5	-
1,2,4-Trichlorobenzene	120-82-1	-	< 5	-
Hexachlorobutadiene	87-68-3	-	< 5	-
Naphthalene	91-20-3	-	< 5	-
1,2,3-Trichlorobenzene	87-61-6	-	< 5	-

Compounds marked * are not UKAS accredited
"M" denotes that % fit has been manually interpreted

Internal standards	R.T.	Area %	Surrogates	% Rec
Pentafluorobenzene	3.62	94	Dibromofluoromethane	120
1,4-Difluorobenzene	3.97	102	Toluene-d8	100
Chlorobenzene-d5	5.12	101	Bromofluorobenzene	90
1,4-Dichlorobenzene-d4	5.92	90		

Where individual results are flagged see report notes for status.

Volatile Organic Compounds by HSA-GCMS

UKAS accredited?: Yes

Customer and Site Details:	Ramboll Environ: Zeon Chemicals ESA	**Directory/Quant file:**	2016\052616\ Initial Calibration	**Matrix:**	Water
Sample Details:	WS21	**Date Booked in:**	21-May-16	**Method:**	Headspace
LIMS ID Number:	EX1695430	**Date Analysed:**	27-May-16	**Multiplier:**	1
Job Number:	W22_0376	**Operator:**	PR	**Position:**	5

Target Compounds	CAS #	R.T. (min.)	Concentration µg/l	% Fit
Dichlorodifluoromethane	75-71-8 *	-	< 1	-
Chloromethane	74-87-3	-	< 1	-
Vinyl Chloride	75-01-4	-	< 1	-
Bromomethane	74-83-9 *	-	< 5	-
Chloroethane	75-00-3	-	< 5	-
Trichlorofluoromethane	75-69-4	-	< 1	-
1,1-Dichloroethene	75-35-4	-	< 1	-
trans 1,2-Dichloroethene	156-60-5	-	< 1	-
1,1-Dichloroethane	75-34-3	-	< 1	-
2,2-Dichloropropane	594-20-7 *	-	< 1	-
cis 1,2-Dichloroethene	156-59-2	-	< 1	-
Bromochloromethane	74-97-5	-	< 1	-
Chloroform	67-66-3	-	< 1	-
1,1,1-Trichloroethane	71-55-6	-	< 1	-
Carbon Tetrachloride	56-23-5	-	< 1	-
1,1-Dichloropropene	563-58-6 *	-	< 1	-
Benzene	71-43-2	-	< 1	-
1,2-Dichloroethane	107-06-2	-	< 1	-
Trichloroethene	79-01-6	-	< 5	-
1,2-Dichloropropane	78-87-5	-	< 1	-
Dibromomethane	74-95-3	-	< 1	-
Bromodichloromethane	75-27-4	-	< 1	-
cis 1,3-Dichloropropene	10061-01-5 *	-	< 1	-
Toluene	108-88-3	-	< 1	-
trans 1,3-Dichloropropene	10061-02-6 *	-	< 1	-
1,1,2-Trichloroethane	79-00-5	-	< 1	-
Tetrachloroethene	127-18-4	-	< 5	-
1,3-Dichloropropane	142-28-9	-	< 1	-
Dibromochloromethane	124-48-1	-	< 1	-
1,2-Dibromoethane	106-93-4	-	< 1	-
Chlorobenzene	108-90-7	-	< 1	-
Ethylbenzene	100-41-4	-	< 1	-
1,1,1,2-Tetrachloroethane	630-20-6 *	-	< 1	-
m and p-Xylene	108-38-3/106-42-3	-	< 1	-
o-Xylene	95-47-6	-	< 1	-

Target Compounds	CAS #	R.T. (min.)	Concentration µg/l	% Fit
Styrene	100-42-5	-	< 1	-
Bromoform	75-25-2	-	< 1	-
iso-Propylbenzene	98-82-8	-	< 1	-
1,1,2,2-Tetrachloroethane	79-34-5 *	-	< 1	-
Propylbenzene	103-65-1	-	< 1	-
Bromobenzene	108-86-1	-	< 1	-
1,2,3-Trichloropropane	96-18-4	-	< 1	-
2-Chlorotoluene	95-49-8	-	< 1	-
1,3,5-Trimethylbenzene	108-67-8 *	-	< 1	-
4-Chlorotoluene	106-43-4	-	< 1	-
tert-Butylbenzene	98-06-6 *	-	< 1	-
1,2,4-Trimethylbenzene	95-63-6	-	< 1	-
sec-Butylbenzene	135-98-8	-	< 1	-
p-Isopropyltoluene	99-87-6	-	< 1	-
1,3-Dichlorobenzene	541-73-1	-	< 1	-
1,4-Dichlorobenzene	106-46-7	-	< 1	-
n-Butylbenzene	104-51-8	-	< 1	-
1,2-Dichlorobenzene	95-50-1	-	< 5	-
1,2-Dibromo-3-chloropropane	96-12-8 *	-	< 5	-
1,2,4-Trichlorobenzene	120-82-1	-	< 5	-
Hexachlorobutadiene	87-68-3	-	< 5	-
Naphthalene	91-20-3	-	< 5	-
1,2,3-Trichlorobenzene	87-61-6	-	< 5	-

Compounds marked * are not UKAS accredited
"M" denotes that % fit has been manually interpreted

Internal standards	R.T.	Area %	Surrogates	% Rec
Pentafluorobenzene	3.62	104	Dibromofluoromethane	114
1,4-Difluorobenzene	3.97	111	Toluene-d8	99
Chlorobenzene-d5	5.12	109	Bromofluorobenzene	95
1,4-Dichlorobenzene-d4	5.92	97		

Where individual results are flagged see report notes for status.

Volatile Organic Compounds by HSA-GCMS

UKAS accredited?: No

Customer and Site Details:	Ramboll Environ: Zeon Chemicals ESA	**Directory/Quant file:**	2016\052616\ Initial Calibration	**Matrix:**	Water
Sample Details:	WS6	**Date Booked in:**	21-May-16	**Method:**	Headspace
LIMS ID Number:	EX1695431	**Date Analysed:**	27-May-16	**Multiplier:**	1
Job Number:	W22_0376	**Operator:**	PR	**Position:**	6

Target Compounds	CAS #	R.T. (min.)	Concentration µg/l	% Fit
Dichlorodifluoromethane	75-71-8 *	-	< 1	-
Chloromethane	74-87-3	-	< 1	-
Vinyl Chloride	75-01-4	-	< 1	-
Bromomethane	74-83-9 *	-	< 5	-
Chloroethane	75-00-3	-	< 5	-
Trichlorofluoromethane	75-69-4	-	< 1	-
1,1-Dichloroethene	75-35-4	-	< 1	-
trans 1,2-Dichloroethene	156-60-5	-	< 1	-
1,1-Dichloroethane	75-34-3	-	< 1	-
2,2-Dichloropropane	594-20-7 *	-	< 1	-
cis 1,2-Dichloroethene	156-59-2	-	< 1	-
Bromochloromethane	74-97-5	-	< 1	-
Chloroform	67-66-3	-	< 1	-
1,1,1-Trichloroethane	71-55-6	-	< 1	-
Carbon Tetrachloride	56-23-5	-	< 1	-
1,1-Dichloropropene	563-58-6 *	-	< 1	-
Benzene	71-43-2	-	< 1	-
1,2-Dichloroethane	107-06-2	-	< 1	-
Trichloroethene	79-01-6	-	< 5	-
1,2-Dichloropropane	78-87-5	-	< 1	-
Dibromomethane	74-95-3	-	< 1	-
Bromodichloromethane	75-27-4	-	< 1	-
cis 1,3-Dichloropropene	10061-01-5 *	-	< 1	-
Toluene	108-88-3	-	< 1	-
trans 1,3-Dichloropropene	10061-02-6 *	-	< 1	-
1,1,2-Trichloroethane	79-00-5	-	< 1	-
Tetrachloroethene	127-18-4	-	< 5	-
1,3-Dichloropropane	142-28-9	-	< 1	-
Dibromochloromethane	124-48-1	-	< 1	-
1,2-Dibromoethane	106-93-4	-	< 1	-
Chlorobenzene	108-90-7	-	< 1	-
Ethylbenzene	100-41-4	-	< 1	-
1,1,1,2-Tetrachloroethane	630-20-6 *	-	< 1	-
m and p-Xylene	108-38-3/106-42-3	-	< 1	-
o-Xylene	95-47-6	-	< 1	-

Target Compounds	CAS #	R.T. (min.)	Concentration µg/l	% Fit
Styrene	100-42-5	-	< 1	-
Bromoform	75-25-2	-	< 1	-
iso-Propylbenzene	98-82-8	-	< 1	-
1,1,2,2-Tetrachloroethane	79-34-5 *	-	< 1	-
Propylbenzene	103-65-1	-	< 1	-
Bromobenzene	108-86-1	-	< 1	-
1,2,3-Trichloropropane	96-18-4	-	< 1	-
2-Chlorotoluene	95-49-8	-	< 1	-
1,3,5-Trimethylbenzene	108-67-8 *	5.46	2	M
4-Chlorotoluene	106-43-4	-	< 1	-
tert-Butylbenzene	98-06-6 *	-	< 1	-
1,2,4-Trimethylbenzene	95-63-6	5.79	5	M
sec-Butylbenzene	135-98-8	-	< 1	-
p-Isopropyltoluene	99-87-6	-	< 1	-
1,3-Dichlorobenzene	541-73-1	-	< 1	-
1,4-Dichlorobenzene	106-46-7	-	< 1	-
n-Butylbenzene	104-51-8	-	< 1	-
1,2-Dichlorobenzene	95-50-1	-	< 5	-
1,2-Dibromo-3-chloropropane	96-12-8 *	-	< 5	-
1,2,4-Trichlorobenzene	120-82-1	-	< 5	-
Hexachlorobutadiene	87-68-3	-	< 5	-
Naphthalene	91-20-3	-	< 5	-
1,2,3-Trichlorobenzene	87-61-6	-	< 5	-

Compounds marked * are not UKAS accredited
"M" denotes that % fit has been manually interpreted

Internal standards	R.T.	Area %	Surrogates	% Rec
Pentafluorobenzene	3.62	96	Dibromofluoromethane	116
1,4-Difluorobenzene	3.97	96	Toluene-d8	73
Chlorobenzene-d5	5.12	53	Bromofluorobenzene	70
1,4-Dichlorobenzene-d4	5.92	18		

Where individual results are flagged see report notes for status.

Volatile Organic Compounds by HSA-GCMS

UKAS accredited?: Yes

Customer and Site Details:	Ramboll Environ: Zeon Chemicals ESA	**Directory/Quant file:**	2016\052616\ Initial Calibration	**Matrix:**	Water
Sample Details:	WS3	**Date Booked in:**	21-May-16	**Method:**	Headspace
LIMS ID Number:	EX1695432	**Date Analysed:**	27-May-16	**Multiplier:**	1
Job Number:	W22_0376	**Operator:**	PR	**Position:**	7

Target Compounds	CAS #	R.T. (min.)	Concentration µg/l	% Fit
Dichlorodifluoromethane	75-71-8 *	-	< 1	-
Chloromethane	74-87-3	-	< 1	-
Vinyl Chloride	75-01-4	-	< 1	-
Bromomethane	74-83-9 *	-	< 5	-
Chloroethane	75-00-3	-	< 5	-
Trichlorofluoromethane	75-69-4	-	< 1	-
1,1-Dichloroethene	75-35-4	-	< 1	-
trans 1,2-Dichloroethene	156-60-5	-	< 1	-
1,1-Dichloroethane	75-34-3	-	< 1	-
2,2-Dichloropropane	594-20-7 *	-	< 1	-
cis 1,2-Dichloroethene	156-59-2	-	< 1	-
Bromochloromethane	74-97-5	-	< 1	-
Chloroform	67-66-3	-	< 1	-
1,1,1-Trichloroethane	71-55-6	-	< 1	-
Carbon Tetrachloride	56-23-5	-	< 1	-
1,1-Dichloropropene	563-58-6 *	-	< 1	-
Benzene	71-43-2	-	< 1	-
1,2-Dichloroethane	107-06-2	-	< 1	-
Trichloroethene	79-01-6	-	< 5	-
1,2-Dichloropropane	78-87-5	-	< 1	-
Dibromomethane	74-95-3	-	< 1	-
Bromodichloromethane	75-27-4	-	< 1	-
cis 1,3-Dichloropropene	10061-01-5 *	-	< 1	-
Toluene	108-88-3	-	< 1	-
trans 1,3-Dichloropropene	10061-02-6 *	-	< 1	-
1,1,2-Trichloroethane	79-00-5	-	< 1	-
Tetrachloroethene	127-18-4	-	< 5	-
1,3-Dichloropropane	142-28-9	-	< 1	-
Dibromochloromethane	124-48-1	-	< 1	-
1,2-Dibromoethane	106-93-4	-	< 1	-
Chlorobenzene	108-90-7	-	< 1	-
Ethylbenzene	100-41-4	-	< 1	-
1,1,1,2-Tetrachloroethane	630-20-6 *	-	< 1	-
m and p-Xylene	108-38-3/106-42-3	-	< 1	-
o-Xylene	95-47-6	-	< 1	-

Target Compounds	CAS #	R.T. (min.)	Concentration µg/l	% Fit
Styrene	100-42-5	-	< 1	-
Bromoform	75-25-2	-	< 1	-
iso-Propylbenzene	98-82-8	-	< 1	-
1,1,2,2-Tetrachloroethane	79-34-5 *	-	< 1	-
Propylbenzene	103-65-1	-	< 1	-
Bromobenzene	108-86-1	-	< 1	-
1,2,3-Trichloropropane	96-18-4	-	< 1	-
2-Chlorotoluene	95-49-8	-	< 1	-
1,3,5-Trimethylbenzene	108-67-8 *	-	< 1	-
4-Chlorotoluene	106-43-4	-	< 1	-
tert-Butylbenzene	98-06-6 *	-	< 1	-
1,2,4-Trimethylbenzene	95-63-6	-	< 1	-
sec-Butylbenzene	135-98-8	-	< 1	-
p-Isopropyltoluene	99-87-6	-	< 1	-
1,3-Dichlorobenzene	541-73-1	-	< 1	-
1,4-Dichlorobenzene	106-46-7	-	< 1	-
n-Butylbenzene	104-51-8	-	< 1	-
1,2-Dichlorobenzene	95-50-1	-	< 5	-
1,2-Dibromo-3-chloropropane	96-12-8 *	-	< 5	-
1,2,4-Trichlorobenzene	120-82-1	-	< 5	-
Hexachlorobutadiene	87-68-3	-	< 5	-
Naphthalene	91-20-3	-	< 5	-
1,2,3-Trichlorobenzene	87-61-6	-	< 5	-

Compounds marked * are not UKAS accredited
"M" denotes that % fit has been manually interpreted

Internal standards	R.T.	Area %	Surrogates	% Rec
Pentafluorobenzene	3.62	116	Dibromofluoromethane	110
1,4-Difluorobenzene	3.97	121	Toluene-d8	99
Chlorobenzene-d5	5.12	120	Bromofluorobenzene	92
1,4-Dichlorobenzene-d4	5.92	110		

Where individual results are flagged see report notes for status.

Volatile Organic Compounds by HSA-GCMS

UKAS accredited?: Yes

Customer and Site Details:	Ramboll Environ: Zeon Chemicals ESA	**Directory/Quant file:**	2016\052616\ Initial Calibration	**Matrix:**	Water
Sample Details:	WS4	**Date Booked in:**	21-May-16	**Method:**	Headspace
LIMS ID Number:	EX1695433	**Date Analysed:**	27-May-16	**Multiplier:**	1
Job Number:	W22_0376	**Operator:**	PR	**Position:**	8

Target Compounds	CAS #	R.T. (min.)	Concentration µg/l	% Fit
Dichlorodifluoromethane	75-71-8 *	-	< 1	-
Chloromethane	74-87-3	-	< 1	-
Vinyl Chloride	75-01-4	-	< 1	-
Bromomethane	74-83-9 *	-	< 5	-
Chloroethane	75-00-3	-	< 5	-
Trichlorofluoromethane	75-69-4	-	< 1	-
1,1-Dichloroethene	75-35-4	-	< 1	-
trans 1,2-Dichloroethene	156-60-5	-	< 1	-
1,1-Dichloroethane	75-34-3	-	< 1	-
2,2-Dichloropropane	594-20-7 *	-	< 1	-
cis 1,2-Dichloroethene	156-59-2	-	< 1	-
Bromochloromethane	74-97-5	-	< 1	-
Chloroform	67-66-3	-	< 1	-
1,1,1-Trichloroethane	71-55-6	-	< 1	-
Carbon Tetrachloride	56-23-5	-	< 1	-
1,1-Dichloropropene	563-58-6 *	-	< 1	-
Benzene	71-43-2	-	< 1	-
1,2-Dichloroethane	107-06-2	-	< 1	-
Trichloroethene	79-01-6	-	< 5	-
1,2-Dichloropropane	78-87-5	-	< 1	-
Dibromomethane	74-95-3	-	< 1	-
Bromodichloromethane	75-27-4	-	< 1	-
cis 1,3-Dichloropropene	10061-01-5 *	-	< 1	-
Toluene	108-88-3	-	< 1	-
trans 1,3-Dichloropropene	10061-02-6 *	-	< 1	-
1,1,2-Trichloroethane	79-00-5	-	< 1	-
Tetrachloroethene	127-18-4	-	< 5	-
1,3-Dichloropropane	142-28-9	-	< 1	-
Dibromochloromethane	124-48-1	-	< 1	-
1,2-Dibromoethane	106-93-4	-	< 1	-
Chlorobenzene	108-90-7	-	< 1	-
Ethylbenzene	100-41-4	-	< 1	-
1,1,1,2-Tetrachloroethane	630-20-6 *	-	< 1	-
m and p-Xylene	108-38-3/106-42-3	-	< 1	-
o-Xylene	95-47-6	-	< 1	-

Target Compounds	CAS #	R.T. (min.)	Concentration µg/l	% Fit
Styrene	100-42-5	-	< 1	-
Bromoform	75-25-2	-	< 1	-
iso-Propylbenzene	98-82-8	-	< 1	-
1,1,2,2-Tetrachloroethane	79-34-5 *	-	< 1	-
Propylbenzene	103-65-1	-	< 1	-
Bromobenzene	108-86-1	-	< 1	-
1,2,3-Trichloropropane	96-18-4	-	< 1	-
2-Chlorotoluene	95-49-8	-	< 1	-
1,3,5-Trimethylbenzene	108-67-8 *	-	< 1	-
4-Chlorotoluene	106-43-4	-	< 1	-
tert-Butylbenzene	98-06-6 *	-	< 1	-
1,2,4-Trimethylbenzene	95-63-6	-	< 1	-
sec-Butylbenzene	135-98-8	-	< 1	-
p-Isopropyltoluene	99-87-6	-	< 1	-
1,3-Dichlorobenzene	541-73-1	-	< 1	-
1,4-Dichlorobenzene	106-46-7	-	< 1	-
n-Butylbenzene	104-51-8	-	< 1	-
1,2-Dichlorobenzene	95-50-1	-	< 5	-
1,2-Dibromo-3-chloropropane	96-12-8 *	-	< 5	-
1,2,4-Trichlorobenzene	120-82-1	-	< 5	-
Hexachlorobutadiene	87-68-3	-	< 5	-
Naphthalene	91-20-3	-	< 5	-
1,2,3-Trichlorobenzene	87-61-6	-	< 5	-

Compounds marked * are not UKAS accredited
"M" denotes that % fit has been manually interpreted

Internal standards	R.T.	Area %	Surrogates	% Rec
Pentafluorobenzene	3.62	108	Dibromofluoromethane	115
1,4-Difluorobenzene	3.97	115	Toluene-d8	99
Chlorobenzene-d5	5.12	114	Bromofluorobenzene	95
1,4-Dichlorobenzene-d4	5.92	102		

Where individual results are flagged see report notes for status.

Volatile Organic Compounds by HSA-GCMS

UKAS accredited?: Yes

Customer and Site Details:	Ramboll Environ: Zeon Chemicals ESA	**Directory/Quant file:**	2016\052616\ Initial Calibration	**Matrix:**	Water
Sample Details:	WS1	**Date Booked in:**	21-May-16	**Method:**	Headspace
LIMS ID Number:	EX1695434	**Date Analysed:**	27-May-16	**Multiplier:**	1
Job Number:	W22_0376	**Operator:**	PR	**Position:**	9

Target Compounds	CAS #	R.T. (min.)	Concentration µg/l	% Fit
Dichlorodifluoromethane	75-71-8 *	-	< 1	-
Chloromethane	74-87-3	-	< 1	-
Vinyl Chloride	75-01-4	-	< 1	-
Bromomethane	74-83-9 *	-	< 5	-
Chloroethane	75-00-3	-	< 5	-
Trichlorofluoromethane	75-69-4	-	< 1	-
1,1-Dichloroethene	75-35-4	-	< 1	-
trans 1,2-Dichloroethene	156-60-5	-	< 1	-
1,1-Dichloroethane	75-34-3	-	< 1	-
2,2-Dichloropropane	594-20-7 *	-	< 1	-
cis 1,2-Dichloroethene	156-59-2	-	< 1	-
Bromochloromethane	74-97-5	-	< 1	-
Chloroform	67-66-3	-	< 1	-
1,1,1-Trichloroethane	71-55-6	-	< 1	-
Carbon Tetrachloride	56-23-5	-	< 1	-
1,1-Dichloropropene	563-58-6 *	-	< 1	-
Benzene	71-43-2	-	< 1	-
1,2-Dichloroethane	107-06-2	-	< 1	-
Trichloroethene	79-01-6	-	< 5	-
1,2-Dichloropropane	78-87-5	-	< 1	-
Dibromomethane	74-95-3	-	< 1	-
Bromodichloromethane	75-27-4	-	< 1	-
cis 1,3-Dichloropropene	10061-01-5 *	-	< 1	-
Toluene	108-88-3	-	< 1	-
trans 1,3-Dichloropropene	10061-02-6 *	-	< 1	-
1,1,2-Trichloroethane	79-00-5	-	< 1	-
Tetrachloroethene	127-18-4	-	< 5	-
1,3-Dichloropropane	142-28-9	-	< 1	-
Dibromochloromethane	124-48-1	-	< 1	-
1,2-Dibromoethane	106-93-4	-	< 1	-
Chlorobenzene	108-90-7	-	< 1	-
Ethylbenzene	100-41-4	-	< 1	-
1,1,1,2-Tetrachloroethane	630-20-6 *	-	< 1	-
m and p-Xylene	108-38-3/106-42-3	-	< 1	-
o-Xylene	95-47-6	-	< 1	-

Target Compounds	CAS #	R.T. (min.)	Concentration µg/l	% Fit
Styrene	100-42-5	-	< 1	-
Bromoform	75-25-2	-	< 1	-
iso-Propylbenzene	98-82-8	-	< 1	-
1,1,2,2-Tetrachloroethane	79-34-5 *	-	< 1	-
Propylbenzene	103-65-1	-	< 1	-
Bromobenzene	108-86-1	-	< 1	-
1,2,3-Trichloropropane	96-18-4	-	< 1	-
2-Chlorotoluene	95-49-8	-	< 1	-
1,3,5-Trimethylbenzene	108-67-8 *	-	< 1	-
4-Chlorotoluene	106-43-4	-	< 1	-
tert-Butylbenzene	98-06-6 *	-	< 1	-
1,2,4-Trimethylbenzene	95-63-6	-	< 1	-
sec-Butylbenzene	135-98-8	-	< 1	-
p-Isopropyltoluene	99-87-6	-	< 1	-
1,3-Dichlorobenzene	541-73-1	-	< 1	-
1,4-Dichlorobenzene	106-46-7	-	< 1	-
n-Butylbenzene	104-51-8	-	< 1	-
1,2-Dichlorobenzene	95-50-1	-	< 5	-
1,2-Dibromo-3-chloropropane	96-12-8 *	-	< 5	-
1,2,4-Trichlorobenzene	120-82-1	-	< 5	-
Hexachlorobutadiene	87-68-3	-	< 5	-
Naphthalene	91-20-3	-	< 5	-
1,2,3-Trichlorobenzene	87-61-6	-	< 5	-

Compounds marked * are not UKAS accredited
"M" denotes that % fit has been manually interpreted

Internal standards	R.T.	Area %	Surrogates	% Rec
Pentafluorobenzene	3.62	113	Dibromofluoromethane	113
1,4-Difluorobenzene	3.97	121	Toluene-d8	99
Chlorobenzene-d5	5.12	117	Bromofluorobenzene	92
1,4-Dichlorobenzene-d4	5.93	100		

Where individual results are flagged see report notes for status.

Volatile Organic Compounds by HSA-GCMS

UKAS accredited?: Yes

Customer and Site Details:	Ramboll Environ: Zeon Chemicals ESA	**Directory/Quant file:**	2016\052616\ Initial Calibration	**Matrix:**	Water
Sample Details:	WS1A	**Date Booked in:**	21-May-16	**Method:**	Headspace
LIMS ID Number:	EX1695435	**Date Analysed:**	27-May-16	**Multiplier:**	1
Job Number:	W22_0376	**Operator:**	PR	**Position:**	10

Target Compounds	CAS #	R.T. (min.)	Concentration µg/l	% Fit
Dichlorodifluoromethane	75-71-8 *	-	< 1	-
Chloromethane	74-87-3	-	< 1	-
Vinyl Chloride	75-01-4	-	< 1	-
Bromomethane	74-83-9 *	-	< 5	-
Chloroethane	75-00-3	-	< 5	-
Trichlorofluoromethane	75-69-4	-	< 1	-
1,1-Dichloroethene	75-35-4	-	< 1	-
trans 1,2-Dichloroethene	156-60-5	-	< 1	-
1,1-Dichloroethane	75-34-3	-	< 1	-
2,2-Dichloropropane	594-20-7 *	-	< 1	-
cis 1,2-Dichloroethene	156-59-2	-	< 1	-
Bromochloromethane	74-97-5	-	< 1	-
Chloroform	67-66-3	-	< 1	-
1,1,1-Trichloroethane	71-55-6	-	< 1	-
Carbon Tetrachloride	56-23-5	-	< 1	-
1,1-Dichloropropene	563-58-6 *	-	< 1	-
Benzene	71-43-2	-	< 1	-
1,2-Dichloroethane	107-06-2	-	< 1	-
Trichloroethene	79-01-6	-	< 5	-
1,2-Dichloropropane	78-87-5	-	< 1	-
Dibromomethane	74-95-3	-	< 1	-
Bromodichloromethane	75-27-4	-	< 1	-
cis 1,3-Dichloropropene	10061-01-5 *	-	< 1	-
Toluene	108-88-3	-	< 1	-
trans 1,3-Dichloropropene	10061-02-6 *	-	< 1	-
1,1,2-Trichloroethane	79-00-5	-	< 1	-
Tetrachloroethene	127-18-4	-	< 5	-
1,3-Dichloropropane	142-28-9	-	< 1	-
Dibromochloromethane	124-48-1	-	< 1	-
1,2-Dibromoethane	106-93-4	-	< 1	-
Chlorobenzene	108-90-7	-	< 1	-
Ethylbenzene	100-41-4	-	< 1	-
1,1,1,2-Tetrachloroethane	630-20-6 *	-	< 1	-
m and p-Xylene	108-38-3/106-42-3	-	< 1	-
o-Xylene	95-47-6	-	< 1	-

Target Compounds	CAS #	R.T. (min.)	Concentration µg/l	% Fit
Styrene	100-42-5	-	< 1	-
Bromoform	75-25-2	-	< 1	-
iso-Propylbenzene	98-82-8	-	< 1	-
1,1,2,2-Tetrachloroethane	79-34-5 *	-	< 1	-
Propylbenzene	103-65-1	-	< 1	-
Bromobenzene	108-86-1	-	< 1	-
1,2,3-Trichloropropane	96-18-4	-	< 1	-
2-Chlorotoluene	95-49-8	-	< 1	-
1,3,5-Trimethylbenzene	108-67-8 *	-	< 1	-
4-Chlorotoluene	106-43-4	-	< 1	-
tert-Butylbenzene	98-06-6 *	-	< 1	-
1,2,4-Trimethylbenzene	95-63-6	-	< 1	-
sec-Butylbenzene	135-98-8	-	< 1	-
p-Isopropyltoluene	99-87-6	-	< 1	-
1,3-Dichlorobenzene	541-73-1	-	< 1	-
1,4-Dichlorobenzene	106-46-7	-	< 1	-
n-Butylbenzene	104-51-8	-	< 1	-
1,2-Dichlorobenzene	95-50-1	-	< 5	-
1,2-Dibromo-3-chloropropane	96-12-8 *	-	< 5	-
1,2,4-Trichlorobenzene	120-82-1	-	< 5	-
Hexachlorobutadiene	87-68-3	-	< 5	-
Naphthalene	91-20-3	-	< 5	-
1,2,3-Trichlorobenzene	87-61-6	-	< 5	-

Compounds marked * are not UKAS accredited
"M" denotes that % fit has been manually interpreted

Internal standards	R.T.	Area %	Surrogates	% Rec
Pentafluorobenzene	3.62	108	Dibromofluoromethane	112
1,4-Difluorobenzene	3.97	115	Toluene-d8	98
Chlorobenzene-d5	5.12	113	Bromofluorobenzene	91
1,4-Dichlorobenzene-d4	5.92	99		

Where individual results are flagged see report notes for status.

TICs by HSA-GCMS

UKAS accredited?: No

Customer and Site Details:	Ramboll Environ: Zeon Chemicals ESA		**Date Booked in:**	21-May-16
Sample Details:	WS15		**Date Analysed:**	27-May-16
LIMS ID Number:	EX1695427		**Matrix:**	Water
Job Number:	W22_0376		**Ext Method:**	Headspace
Directory/Quant file:	2016\052616\	Initial Calibration	**Dilution:**	1
Operator:	PR		**Position:**	2

Tentatively Identified Compounds	CAS No	R.T. (min.)	Concentration µg/l	% Fit
2-Bromo-5-chlorobenzoic acid	021739-93-5	1.19	14	64
Tetracyclo[3.3.1.1(1,8).0(2,4)]decane	1000185-58-7	6.70	9	52

The compounds listed above have been tentatively identified by a computer based library search.
Compounds identified in the sample are not reported if they also occur in the method blank.
The % fit is an indication of the reliability of the compound assignment.
Due to the similarity between mass spectra of some isomeric compounds, assignments may not be correct.
Other compounds may also be present but identification was not possible.
Concentrations are semi-quantitative, assume a response factor of 1 and use the nearest internal standard.
Compounds marked * are not UKAS accredited
"M" denotes that % fit has been manually interpreted

Where individual results are flagged see report notes for status.

TICs by HSA-GCMS

UKAS accredited?: No

Customer and Site Details:	Ramboll Environ: Zeon Chemicals ESA		**Date Booked in:**	21-May-16
Sample Details:	WS17		**Date Analysed:**	27-May-16
LIMS ID Number:	EX1695428		**Matrix:**	Water
Job Number:	W22_0376		**Ext Method:**	Headspace
Directory/Quant file:	2016\052616\	Initial Calibration	**Dilution:**	1
Operator:	PR		**Position:**	3

Tentatively Identified Compounds	CAS No	R.T. (min.)	Concentration µg/l	% Fit
Unidentified Peak		5.83	15	

The compounds listed above have been tentatively identified by a computer based library search.
Compounds identified in the sample are not reported if they also occur in the method blank.
The % fit is an indication of the reliability of the compound assignment.
Due to the similarity between mass spectra of some isomeric compounds, assignments may not be correct.
Other compounds may also be present but identification was not possible.
Concentrations are semi-quantitative, assume a response factor of 1 and use the nearest internal standard.
Compounds marked * are not UKAS accredited
"M" denotes that % fit has been manually interpreted

Where individual results are flagged see report notes for status.

TICs by HSA-GCMS

UKAS accredited?: No

Customer and Site Details:	Ramboll Environ: Zeon Chemicals ESA		**Date Booked in:**	21-May-16
Sample Details:	WS17A		**Date Analysed:**	27-May-16
LIMS ID Number:	EX1695429		**Matrix:**	Water
Job Number:	W22_0376		**Ext Method:**	Headspace
Directory/Quant file:	2016\052616\	Initial Calibration	**Dilution:**	1
Operator:	PR		**Position:**	4

Tentatively Identified Compounds	CAS No	R.T. (min.)	Concentration µg/l	% Fit
Unidentified Peak		5.83	15	

The compounds listed above have been tentatively identified by a computer based library search.
Compounds identified in the sample are not reported if they also occur in the method blank.
The % fit is an indication of the reliability of the compound assignment.
Due to the similarity between mass spectra of some isomeric compounds, assignments may not be correct.
Other compounds may also be present but identification was not possible.
Concentrations are semi-quantitative, assume a response factor of 1 and use the nearest internal standard.
Compounds marked * are not UKAS accredited
"M" denotes that % fit has been manually interpreted

TICs by HSA-GCMS

UKAS accredited?: No

Customer and Site Details:	Ramboll Environ: Zeon Chemicals ESA		**Date Booked in:**	21-May-16
Sample Details:	WS21		**Date Analysed:**	27-May-16
LIMS ID Number:	EX1695430		**Matrix:**	Water
Job Number:	W22_0376		**Ext Method:**	Headspace
Directory/Quant file:	2016\052616\	Initial Calibration	**Dilution:**	1
Operator:	PR		**Position:**	5

Tentatively Identified Compounds	CAS No	R.T. (min.)	Concentration µg/l	% Fit
Unidentified Peak		6.69	10	

The compounds listed above have been tentatively identified by a computer based library search.
Compounds identified in the sample are not reported if they also occur in the method blank.
The % fit is an indication of the reliability of the compound assignment.
Due to the similarity between mass spectra of some isomeric compounds, assignments may not be correct.
Other compounds may also be present but identification was not possible.
Concentrations are semi-quantitative, assume a response factor of 1 and use the nearest internal standard.
Compounds marked * are not UKAS accredited
"M" denotes that % fit has been manually interpreted

Where individual results are flagged see report notes for status.

TICs by HSA-GCMS

UKAS accredited?: No

Customer and Site Details:	Ramboll Environ: Zeon Chemicals ESA		**Date Booked in:**	21-May-16
Sample Details:	WS6		**Date Analysed:**	27-May-16
LIMS ID Number:	EX1695431		**Matrix:**	Water
Job Number:	W22_0376		**Ext Method:**	Headspace
Directory/Quant file:	2016\052616\	Initial Calibration	**Dilution:**	1
Operator:	PR		**Position:**	6

Tentatively Identified Compounds	CAS No	R.T. (min.)	Concentration µg/l	% Fit
Decane, 4-methyl-	002847-72-5	5.74	309	87
9-Borabicyclo[3.3.1]nonane, 9-hydroxy-	063366-65-4	6.05	303	64
Cycloheptane, methyl-	004126-78-7	5.65	286	86
Cyclohexane, butyl-	001678-93-9	5.86	232	81
Octane, 3,6-dimethyl-	015869-94-0	5.35	138	91
Cyclohexane, (1-ethylpropyl)-	026321-98-2	6.27	126	52
Undecane, 2,6-dimethyl-	017301-23-4	6.48	112	83
Unidentified Peak		5.31	94	
Bis(2-ethylhexyl) methylenesuccinate	002287-83-4	6.73	84	59
Unidentified Peak		5.58	82	
Sulfurous acid, decyl 2-pentyl ester	1000309-15-9	6.16	80	50
Cyclododecane	000294-62-2	6.52	67	70
Cyclohexane, 2-butyl-1,1,3-trimethyl-	054676-39-0	6.67	66	87
Heptafluorobutanoic acid, heptadecyl ester	1000282-97-3	5.70	63	80
Unidentified Peak		6.22	58	
Unidentified Peak		6.35	53	
Cyclohexane, 1-ethyl-4-methyl-, cis-	004926-78-7	5.21	52	59
Pyrazol-4-amine, 1,5-dimethyl-	121983-36-6	4.93	52	59
Unidentified Peak		5.00	51	

The compounds listed above have been tentatively identified by a computer based library search.
Compounds identified in the sample are not reported if they also occur in the method blank.
The % fit is an indication of the reliability of the compound assignment.
Due to the similarity between mass spectra of some isomeric compounds, assignments may not be correct.
Other compounds may also be present but identification was not possible.
Concentrations are semi-quantitative, assume a response factor of 1 and use the nearest internal standard.
Compounds marked * are not UKAS accredited
"M" denotes that % fit has been manually interpreted

Where individual results are flagged see report notes for status.

TICs by HSA-GCMS

UKAS accredited?: No

Customer and Site Details:	Ramboll Environ: Zeon Chemicals ESA		**Date Booked in:**	21-May-16
Sample Details:	WS3		**Date Analysed:**	27-May-16
LIMS ID Number:	EX1695432		**Matrix:**	Water
Job Number:	W22_0376		**Ext Method:**	Headspace
Directory/Quant file:	2016\052616\	Initial Calibration	**Dilution:**	1
Operator:	PR		**Position:**	7

Tentatively Identified Compounds	CAS No	R.T. (min.)	Concentration µg/l	% Fit
None Detected			<5	

The compounds listed above have been tentatively identified by a computer based library search.
Compounds identified in the sample are not reported if they also occur in the method blank.
The % fit is an indication of the reliability of the compound assignment.
Due to the similarity between mass spectra of some isomeric compounds, assignments may not be correct.
Other compounds may also be present but identification was not possible.
Concentrations are semi-quantitative, assume a response factor of 1 and use the nearest internal standard.
Compounds marked * are not UKAS accredited
"M" denotes that % fit has been manually interpreted

Where individual results are flagged see report notes for status.

TICs by HSA-GCMS

UKAS accredited?: No

Customer and Site Details:	Ramboll Environ: Zeon Chemicals ESA		**Date Booked in:**	21-May-16
Sample Details:	WS4		**Date Analysed:**	27-May-16
LIMS ID Number:	EX1695433		**Matrix:**	Water
Job Number:	W22_0376		**Ext Method:**	Headspace
Directory/Quant file:	2016\052616\	Initial Calibration	**Dilution:**	1
Operator:	PR		**Position:**	8

Tentatively Identified Compounds	CAS No	R.T. (min.)	Concentration µg/l	% Fit
None Detected			<5	

The compounds listed above have been tentatively identified by a computer based library search.
Compounds identified in the sample are not reported if they also occur in the method blank.
The % fit is an indication of the reliability of the compound assignment.
Due to the similarity between mass spectra of some isomeric compounds, assignments may not be correct.
Other compounds may also be present but identification was not possible.
Concentrations are semi-quantitative, assume a response factor of 1 and use the nearest internal standard.
Compounds marked * are not UKAS accredited
"M" denotes that % fit has been manually interpreted

Where individual results are flagged see report notes for status.

TICs by HSA-GCMS

UKAS accredited?: No

Customer and Site Details:	Ramboll Environ: Zeon Chemicals ESA		**Date Booked in:**	21-May-16
Sample Details:	WS1		**Date Analysed:**	27-May-16
LIMS ID Number:	EX1695434		**Matrix:**	Water
Job Number:	W22_0376		**Ext Method:**	Headspace
Directory/Quant file:	2016\052616\	Initial Calibration	**Dilution:**	1
Operator:	PR		**Position:**	9

Tentatively Identified Compounds	CAS No	R.T. (min.)	Concentration µg/l	% Fit
Unidentified Peak		6.69	9	

The compounds listed above have been tentatively identified by a computer based library search.
Compounds identified in the sample are not reported if they also occur in the method blank.
The % fit is an indication of the reliability of the compound assignment.
Due to the similarity between mass spectra of some isomeric compounds, assignments may not be correct.
Other compounds may also be present but identification was not possible.
Concentrations are semi-quantitative, assume a response factor of 1 and use the nearest internal standard.
Compounds marked * are not UKAS accredited
"M" denotes that % fit has been manually interpreted

Where individual results are flagged see report notes for status.

TICs by HSA-GCMS

UKAS accredited?: No

Customer and Site Details:	Ramboll Environ: Zeon Chemicals ESA		**Date Booked in:**	21-May-16
Sample Details:	WS1A		**Date Analysed:**	27-May-16
LIMS ID Number:	EX1695435		**Matrix:**	Water
Job Number:	W22_0376		**Ext Method:**	Headspace
Directory/Quant file:	2016\052616\	Initial Calibration	**Dilution:**	1
Operator:	PR		**Position:**	10

Tentatively Identified Compounds	CAS No	R.T. (min.)	Concentration µg/l	% Fit
Unidentified Peak		6.69	8	

The compounds listed above have been tentatively identified by a computer based library search.
Compounds identified in the sample are not reported if they also occur in the method blank.
The % fit is an indication of the reliability of the compound assignment.
Due to the similarity between mass spectra of some isomeric compounds, assignments may not be correct.
Other compounds may also be present but identification was not possible.
Concentrations are semi-quantitative, assume a response factor of 1 and use the nearest internal standard.
Compounds marked * are not UKAS accredited
"M" denotes that % fit has been manually interpreted

Where individual results are flagged see report notes for status.

Sample Analysis

ESG Environmental Chemistry
Analytical and Deviating Sample Overview

W220376

Customer Ramboll Environ
Site Zeon Chemicals ESA
Report No W220376

Consignment No W104338
Date Logged 21-May-2016

Report Due 31-May-2016

ID Number	Description	Matrix Type	Sampled	Alcohols by HSA-FID	Total Hardness as CaCO3 (CALC)	Report A	GRO-HSA GCFID (AA)	Nickel as Ni MS (Dissolved)	Chromium as Cr MS (Dissolved)	Cadmium as Cd MS (Dissolved)	Copper as Cu MS (Dissolved)	Lead as Pb MS (Dissolved)	Zinc as Zn MS (Dissolved)	Arsenic as As MS (Dissolved)	Mercury as Hg MS (Dissolved)	Selenium as Se MS (Dissolved)	Vanadium as V MS (Dissolved)	Total Sulphur as SO4 (Diss) VAR	Calcium as Ca (Dissolved) VAR	Magnesium as Mg (Dissolved) VAR	Boron as B (Dissolved) VAR
MethodID				ALCHSAFID	Calc_HD	CUSTSERV	GROHSA	ICPMSW										ICPWATVAR			
					✓			✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
EX/1695427	WS15	Groundwater	20/05/16																		
EX/1695428	WS17	Groundwater	20/05/16																		
EX/1695429	WS17A	Groundwater	20/05/16																		
EX/1695430	WS21	Groundwater	20/05/16																		
EX/1695431	WS6	Groundwater	20/05/16																		
EX/1695432	WS3	Groundwater	20/05/16																		
EX/1695433	WS4	Groundwater	20/05/16																		
EX/1695434	WS1	Groundwater	20/05/16																		
EX/1695435	WS1A	Groundwater	20/05/16																		

Note: For analysis where the scheduled turnaround is greater than the holding time we will do our utmost to prioritise these samples. However, it is possible that samples could become deviant whilst being processed in the laboratory.

In this instance please contact the laboratory immediately should you wish to discuss how you would like us to proceed. If you do not respond within 24 hours, we will proceed as originally requested.

Deviating Sample Key	
A	The sample was received in an inappropriate container for this analysis
B	The sample was received without the correct preservation for this analysis
C	Headspace present in the sample container
D	The sampling date was not supplied so holding time may be compromised - applicable to all analysis
E	Sample processing did not commence within the appropriate holding time
F	Sample processing did not commence within the appropriate handling time

Requested Analysis Key	
	Analysis Required
	Analysis dependant upon trigger result - **Note: due date may be affected if triggered**
	No analysis scheduled
^	Analysis Subcontracted - **Note: due date may vary**

The integrity of data for samples/analysis that have been categorised as Deviating may be compromised. Data may not be representative of the sample at the time of sampling.
Where individual results are flagged see report notes for status.

ESG Environmental Chemistry
Analytical and Deviating Sample Overview

Customer Ramboll Environ
Site Zeon Chemicals ESA
Report No W220376

Consignment No W104338
Date Logged 21-May-2016

Report Due 31-May-2016

ID Number	Description	Matrix Type	Sampled	ICPWATVAR	PAHMSW	PHERPLCVL	SFAPI	SVOCSW	TPHFID-SI	VOCHSAW	WSLM12	WSLM17	WSLM3
		MethodID		Beryllium as Be (Dissolved) VAR	PAH GC-MS (16)	Phenols by HPLC (Low Level)	Cyanide (Total) as CN SFA	SVOC + TICS	TPH by GC(Si)	VOC + TICS HSA-GCMS	Total Alkalinity as CaCO3	Total Acidity as CaCO3	pH units
					✓		✓		✓	✓	✓	✓	✓
EX/1695427	WS15	Groundwater	20/05/16										
EX/1695428	WS17	Groundwater	20/05/16										
EX/1695429	WS17A	Groundwater	20/05/16										
EX/1695430	WS21	Groundwater	20/05/16										
EX/1695431	WS6	Groundwater	20/05/16										
EX/1695432	WS3	Groundwater	20/05/16										
EX/1695433	WS4	Groundwater	20/05/16										
EX/1695434	WS1	Groundwater	20/05/16										
EX/1695435	WS1A	Groundwater	20/05/16										

Note: For analysis where the scheduled turnaround is greater than the holding time we will do our utmost to prioritise these samples. However, it is possible that samples could become deviant whilst being processed in the laboratory.

In this instance please contact the laboratory immediately should you wish to discuss how you would like us to proceed. If you do not respond within 24 hours, we will proceed as originally requested.

Deviating Sample Key	
A	The sample was received in an inappropriate container for this analysis
B	The sample was received without the correct preservation for this analysis
C	Headspace present in the sample container
D	The sampling date was not supplied so holding time may be compromised - applicable to all analysis
E	Sample processing did not commence within the appropriate holding time
F	Sample processing did not commence within the appropriate handling time

Requested Analysis Key	
	Analysis Required
	Analysis dependant upon trigger result - **Note: due date may be affected if triggered**
	No analysis scheduled
^	Analysis Subcontracted - **Note: due date may vary**

The integrity of data for samples/analysis that have been categorised as Deviating may be compromised. Data may not be representative of the sample at the time of sampling.
Where individual results are flagged see report notes for status.

Report Number : W/EXR/220376

Additional Report Notes

Method Code	Sample ID	The following information should be taken into consideration when using the data contained within this report
PAHMSW	EX1695431	The matrix of this sample has been found to interfere with the result for this test. The sample has therefore been diluted to improve the signal to noise ratio but in doing so, the detection limit for this test has been elevated.
TPHFID-Si	EX1695427 TO EX1695435	The Secondary process control result associated with this Test has not wholly met the requirements of the Laboratory Quality Management System (QMS). All other Process controls (including the Primary Process control) are within specification. The Laboratory believes that the validity of the data has not been affected but in line with our QMS policy we have removed accreditation from the affected analytes c21-c35 From the aliphatic fraction and c12-c16 from the aromatic fraction . These circumstances should be taken into consideration when utilising the data.
PHEHPLCVL	EX1695428-5429	The matrix of this sample has been found to interfere with the result for this test. The sample has therefore been diluted to improve the signal to noise ratio but in doing so, the detection limit for this test has been elevated.
TPHFID-Si	EX1695431	The matrix of this sample has been found to interfere with the result for this test. The sample has therefore been diluted to improve the signal to noise ratio but in doing so, the detection limit for this test has been elevated.

Method Descriptions

Matrix	MethodID	Analysis Basis	Method Description
Water	ALCHSAFID	As Received	Determination of Alcohols in water by Headspace GCFID
Water	Calc_HD	As Received	Calculation based on Dissolved metals analysis by ICPOES
Water	GROHSA	As Received	Determination of Total Gasoline Range Organics Hydrocarbons (GRO) by Headspace FID
Water	ICPMSW	As Received	Direct quantitative determination of Metals in water samples using ICPMS
Water	ICPWATVAR	As Received	Direct determination of Metals and Sulphate in water samples using ICPOES
Water	PAHMSW	As Received	Determination of PolyAromatic Hydrocarbons in water by pentane extraction GCMS quantitation
Water	PHEHPLCVL	As Received	Determination of Phenols by HPLC
Water	SFAPI	As Received	Segmented flow analysis with colorimetric detection
Water	SVOCSW	As Received	Determination of Semi Volatile Organic Compounds (SVOC) by DCM extraction followed by GCMS detection
Water	TPHFID-Si	As Received	Determination of speciated pentane extractable hydrocarbons in water by GCFID
Water	VOCHSAW	As Received	Determination of Volatile Organics Compounds by Headspace GCMS
Water	WSLM12	As Received	Titration with Sulphuric Acid to required pH
Water	WSLM17	As Received	Titration with Sodium Hydroxide to required pH
Water	WSLM3	As Received	Determination of the pH of water samples by pH probe

Report Notes

Generic Notes

Soil/Solid Analysis

Unless stated otherwise,
- Results expressed as mg/kg have been calculated on the basis indicated in the Method Description table.
  All results on MCERTS reports are reported on a 105ºC dry weight basis with the exception of pH and conductivity.
- Sulphate analysis not conducted in accordance with BS1377
- Water Soluble Sulphate is on a 2:1 water:soil extract

Waters Analysis

Unless stated otherwise results are expressed as mg/l
Nil: Where "Nil" has been entered against Total Alkalinity or Total Acidity this indicates that a measurement was not required due to the inherent pH of the sample.

Oil analysis specific

Unless stated otherwise,
- Results are expressed as mg/kg
- SG is expressed as g/cm^3@ 15^{o}C

Gas (Tedlar bag) Analysis

Unless stated otherwise, results are expressed as ug/l

Asbestos Analysis

CH Denotes Chrysotile **TR** Denotes Tremolite
CR Denotes Crocidolite **AC** Denotes Actinolite
AM Denotes Amosite **AN** Denotes Anthophylite
NAIIS No Asbestos Identified in Sample
NADIS No Asbestos Detected In Sample

Symbol Reference

^ Sub-contracted analysis.
$$ Unable to analyse due to the nature of the sample
¶ Samples submitted for this analyte were not preserved on site in accordance with laboratory protocols. This may have resulted in deterioration of the sample(s) during transit to the laboratory. Consequently the reported data may not represent the concentration of the target analyte present in the sample at the time of sampling
¥ Results for guidance only due to possible interference
& Blank corrected result
I.S Insufficient sample to complete requested analysis
I.S(g) Insufficient sample to re-analyse, results for guidance only
Intf Unable to analyse due to interferences
N.D Not determined **N.Det** Not detected
N.F No Flow
NS Information Not Supplied
Req Analysis requested, see attached sheets for results
Þ Raised detection limit due to nature of the sample
***** All accreditation has been removed by the laboratory for this result
‡ MCERTS accreditation has been removed for this result
§ accreditation has been removed for this result as it is a non-accredited matrix

Note: The Laboratory may only claim that data is accredited when all of the requirements of our Quality System have been met. Where these requirements have not been met the laboratory may elect to include the data in its final report and remove the accreditation from individual data items if it believes that the validity of the data has not been affected. If further details are required of the circumstances which have led to the removal of accreditation then please do not hesitate to contact the laboratory.

Sample Descriptions

Client : Ramboll Environ
Site : Zeon Chemicals ESA
Report Number : W22_0376

Lab ID Number	Client ID	Description
EX/1695427	WS15	Groundwater
EX/1695428	WS17	Groundwater
EX/1695429	WS17A	Groundwater
EX/1695430	WS21	Groundwater
EX/1695431	WS6	Groundwater
EX/1695432	WS3	Groundwater
EX/1695433	WS4	Groundwater
EX/1695434	WS1	Groundwater
EX/1695435	WS1A	Groundwater

Our Ref: EXR/220377 (Ver. 1)
Your Ref: UK15-21370

June 1, 2016

Environmental Chemistry
ESG
Bretby Business Park
Ashby Road
Burton-on-Trent
Staffordshire
DE15 0YZ

Telephone: 01283 554400
Facsimile: 01283 554422

Lucy Cleverley
Ramboll Environ
8 Village Way
Cardiff
CF15 2NE

For the attention of Lucy Cleverley

Dear Lucy Cleverley

Sample Analysis - Zeon Chemicals ESA

Samples from the above site have been analysed in accordance with the schedule supplied.
The sample details and the results of analyses for these samples are given in the appended report.

An invoice for this work will follow under a separate cover.

Please be aware that our policy for the retention of paper based laboratory records and analysis reports is 6 years.

The work was carried out in accordance with Environmental Scientifics Group Ltd (Multi-Sector Services) Standard Terms and Conditions of Contract.

If I can be of any further assistance please do not hesitate to contact me.

Yours sincerely

for ESG

JNColbourne

J Colbourne
Project Co-ordinator
01283 554547

TEST REPORT

UKAS TESTING
1252

Report No. EXR/220377 (Ver. 1)

Ramboll Environ
8 Village Way
Cardiff
CF15 2NE

Site: Zeon Chemicals ESA

The 2 samples described in this report were registered for analysis by ESG on 21-May-2016. This report supersedes any versions previously issued by the laboratory.

The analysis was completed by: 01-Jun-2016

Tests where the accreditation is set to N or No, and any individual data items marked with a * are not UKAS accredited. Opinions and interpretations expressed herein are outside the scope of UKAS accreditation.

The following tables are contained in this report:

On behalf of
ESG :
Declan Burns

Managing Director
Multi-Sector Services

Date of Issue: 01-Jun-2016

Tests marked '^' have been subcontracted to another laboratory.
Where samples have been flagged as deviant on the Analytical and Deviating Sample Overview, for any reason, the data may not be representative of the sample at the point of sampling and the validity of the data may be affected.
ESG accepts no responsibility for any sampling not carried out by our personnel.

Where individual results are flagged see report notes for status.

Units :			pH units	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	µg/l	mg/l	mg/l	mg/l	mg/l	mg/l
Method Codes :			WSLM3	WSLM12	WSLM17	Calc_HD	ICPWATVAR	ICPWATVAR	ICPWATVAR	ICPMSW	ICPMSW	ICPMSW	PAHMSW	ICPMSW	ICPMSW	ICPMSW	ICPMSW	ICPWATVAR
Method Reporting Limits :					2	7	3	1	1	0.001	0.001	0.0001		0.001	0.001	0.002	0.001	0.01
UKAS Accredited :			Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
LAB ID Number EX/	**Client Sample Description**	**Sample Date**	**pH units w**	**Total Alkalinity as CaCO3 w**	**Total Acidity as CaCO3 w**	**Total Hardness as CaCO3**	**Total Sulphur as SO4 (Dissolved) a**	**Calcium as Ca (Dissolved) a**	**Magnesium as Mg (Dissolved) a**	**Nickel as Ni (Dissolved)**	**Chromium as Cr (Dissolved)**	**Cadmium as Cd (Dissolved)**	**PAH GC-MS (16) o**	**Copper as Cu (Dissolved)**	**Lead as Pb (Dissolved)**	**Zinc as Zn (Dissolved)**	**Arsenic as As (Dissolved)**	**Boron as B (Dissolved) a**
1695436	WS30	20-May-16 09:10	7.3	484	Nil	326	12.1	106	14.9	0.022	<0.001	<0.0001	Req	<0.001	<0.001	<0.002	0.009	0.07
1695437	WS28	20-May-16 09:10																

ESG

Bretby Business Park, Ashby Road

Burton-on-Trent, Staffordshire, DE15 0YZ

Tel +44 (0) 1283 554400

Fax +44 (0) 1283 554422

Client Name	**Ramboll Environ**
Contact	Lucy Cleverley

Zeon Chemicals ESA

Sample Analysis

Date Printed	**01-Jun-2016**
Report Number	**EXR/220377**
Table Number	**1**

Where individual results are flagged see report notes for status.

Units :			mg/l	mg/l	mg/l	mg/l	mg/l	µg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l			
Method Codes :			ICPMSW	ICPMSW	ICPMSW	SFAPI	TPHFID-Si	VOCHSAW	ICPWATVAR	GROHSA	SVOCSW	PHEHPLCVL	PHEHPLCVL	PHEHPLCVL	PHEHPLCVL			
Method Reporting Limits :			0.0001	0.001	0.001	0.02	0.01	1	0.01	0.1	0.002	0.0005	0.0005	0.0005	0.0005			
UKAS Accredited :			Yes	Yes	Yes	Yes	Yes	Yes	No	No	No	No	No	No	No			
LAB ID Number EX/	**Client Sample Description**	**Sample Date**	**Mercury as Hg (Dissolved)**	**Selenium as Se (Dissolved)**	**Vanadium as V (Dissolved)**	**Cyanide (Total) as CN**	**TPH by GC(Si) o**	**VOC + TICS HSA-GCMS o**	**Beryllium as Be (Dissolved) a**	**GRO-HSA (AA)**	**SVOC + TICS**	**Phenol**	**Cresols**	**Dimethylphenols**	**Trimethylphenols**			
1695436	WS30	**20-May-16 09:10**	<0.0001	<0.001	<0.001	<0.02	Req	Req	<0.01	Req	Req	0.0028	0.0216	<0.0025	<0.0025			
1695437	WS28	**20-May-16 09:10**					Req	Req		Req								

ESG

Bretby Business Park, Ashby Road

Burton-on-Trent, Staffordshire, DE15 0YZ

Tel +44 (0) 1283 554400

Fax +44 (0) 1283 554422

Client Name	**Ramboll Environ**
Contact	Lucy Cleverley

Zeon Chemicals ESA

Sample Analysis

Date Printed	**01-Jun-2016**
Report Number	**EXR/220377**
Table Number	**1**

Polycyclic Aromatic Hydrocarbons
GC/MS (SIM)

Customer and Site Details:	Ramboll Environ: Zeon Chemicals ESA		
Sample Details:	WS30	**Job Number:**	W22_0377
LIMS ID Number:	EX1695436	**Date Booked in:**	21-May-16
QC Batch Number:	160333	**Date Extracted:**	26-May-16
Quantitation File:	Initial Calibration	**Date Analysed:**	27-May-16
Directory:	616PAH.MS10\	**Matrix:**	Water
Dilution:	1.0	**Ext Method:**	Bottle

UKAS accredited?: Yes

Target Compounds	CAS #	R.T. (min)	Concentration ug/l	% Fit
Naphthalene	91-20-3	3.23	0.144	95
Acenaphthylene	208-96-8	-	< 0.010	-
Acenaphthene	83-32-9	-	< 0.010	-
Fluorene	86-73-7	-	< 0.010	-
Phenanthrene	85-01-8	5.60	0.026	92
Anthracene	120-12-7	-	< 0.010	-
Fluoranthene	206-44-0	6.93	0.014	74
Pyrene	129-00-0	7.21	0.015	84
Benzo[a]anthracene	56-55-3	-	< 0.010	-
Chrysene	218-01-9	-	< 0.010	-
Benzo[b]fluoranthene	205-99-2	-	< 0.010	-
Benzo[k]fluoranthene	207-08-9	-	< 0.010	-
Benzo[a]pyrene	50-32-8	-	< 0.010	-
Indeno[1,2,3-cd]pyrene	193-39-5	-	< 0.010	-
Dibenzo[a,h]anthracene	53-70-3	-	< 0.010	-
Benzo[g,h,i]perylene	191-24-2	-	< 0.010	-
Total (USEPA16) PAHs	-	-	< 0.319	-

"M" denotes that % fit has been manually interpreted

Internal Standards	% Area
1,4-Dichlorobenzene-d4	NA
Naphthalene-d8	132
Acenaphthene-d10	141
Phenanthrene-d10	143
Chrysene-d12	150
Perylene-d12	158

Surrogates	% Rec
Nitrobenzene-d5	NA
2-Fluorobiphenyl	67
Terphenyl-d14	72

The Total PAH result is the sum of non-rounded individual PAH results and therefore may differ to the sum of the rounded individual PAH results printed above. By convention, where any one or more result is a "less than", the total is expressed as a "less than" and includes the "less than" concentration within the total.

Semi-Volatile Organic Compounds

UKAS accredited?: No

Customer and Site Details:	Ramboll Environ: Zeon Chemicals ESA			**Matrix:**	Water	**QC Batch Number:**	105
Sample Details:	WS30	**Date Booked in:**	21-May-16	**Ext Method:**	Sep. Funnel	**Multiplier:**	0.005
LIMS ID Number:	EX1695436	**Date Extracted:**	25-May-16	**Operator:**	RP/SO	**Dilution Factor:**	1
Job Number:	W22_0377	**Date Analysed:**	26-May-16	**Directory/Quant File:**	052516.GC11\	**GPC (Y/N)**	N

Target Compounds	CAS #	R.T. (min)	Concentration mg/l	% Fit
Phenol	108-95-2	-	< 0.020	-
bis(2-Chloroethyl)ether	111-44-4	-	< 0.005	-
2-Chlorophenol	95-57-8	-	< 0.020	-
1,3-Dichlorobenzene	541-73-1	-	< 0.005	-
1,4-Dichlorobenzene	106-46-7	-	< 0.005	-
Benzyl alcohol	100-51-6	-	< 0.005	-
1,2-Dichlorobenzene	95-50-1	-	< 0.005	-
2-Methylphenol	95-48-7	-	< 0.005	-
bis(2-Chloroisopropyl)ether	108-60-1	-	< 0.005	-
Hexachloroethane	67-72-1	-	< 0.005	-
N-Nitroso-di-n-propylamine	621-64-7	-	< 0.005	-
3- & 4-Methylphenol	108-39-4/106-44-5	-	< 0.020	-
Nitrobenzene	98-95-3	-	< 0.005	-
Isophorone	78-59-1	-	< 0.005	-
2-Nitrophenol	88-75-5	-	< 0.020	-
2,4-Dimethylphenol	105-67-9	-	< 0.020	-
Benzoic Acid	65-85-0	-	< 0.100	-
bis(2-Chloroethoxy)methane	111-91-1	-	< 0.005	-
2,4-Dichlorophenol	120-83-2	-	< 0.020	-
1,2,4-Trichlorobenzene	120-82-1	-	< 0.005	-
Naphthalene	91-20-3	-	< 0.002	-
4-Chlorophenol	106-48-9	-	< 0.020	-
4-Chloroaniline	106-47-8	-	< 0.005	-
Hexachlorobutadiene	87-68-3	-	< 0.005	-
4-Chloro-3-methylphenol	59-50-7	-	< 0.005	-
2-Methylnaphthalene	91-57-6	-	< 0.002	-
1-Methylnaphthalene	90-12-0	-	< 0.002	-
Hexachlorocyclopentadiene	77-47-4	-	< 0.005	-
2,4,6-Trichlorophenol	88-06-2	-	< 0.020	-
2,4,5-Trichlorophenol	95-95-4	-	< 0.020	-
2-Chloronaphthalene	91-58-7	-	< 0.002	-
Biphenyl	92-52-4	-	< 0.002	-
Diphenyl ether	101-84-8	-	< 0.002	-
2-Nitroaniline	88-74-4	-	< 0.005	-
Acenaphthylene	208-96-8	-	< 0.002	-
Dimethylphthalate	131-11-3	-	< 0.005	-
2,6-Dinitrotoluene	606-20-2	-	< 0.005	-
Acenaphthene	83-32-9	-	< 0.002	-
3-Nitroaniline	99-09-2	-	< 0.005	-

Target Compounds	CAS #	R.T.	Concentration mg/l	% Fit
2,4-Dinitrophenol	51-28-5	-	< 0.010	-
Dibenzofuran	132-64-9	-	< 0.005	-
4-Nitrophenol	100-02-7	-	< 0.050	-
2,4-Dinitrotoluene	121-14-2	-	< 0.005	-
Fluorene	86-73-7	-	< 0.002	-
Diethylphthalate	84-66-2	-	< 0.005	-
4-Chlorophenyl-phenylether	7005-72-3	-	< 0.005	-
4,6-Dinitro-2-methylphenol	534-52-1	-	< 0.050	-
4-Nitroaniline	100-01-6	-	< 0.005	-
N-Nitrosodiphenylamine	86-30-6	-	< 0.005	-
4-Bromophenyl-phenylether	101-55-3	-	< 0.005	-
Hexachlorobenzene	118-74-1	-	< 0.005	-
Pentachlorophenol	87-86-5	-	< 0.050	-
Phenanthrene	85-01-8	-	< 0.002	-
Anthracene	120-12-7	-	< 0.002	-
Di-n-butylphthalate	84-74-2	-	< 0.005	-
Fluoranthene	206-44-0	-	< 0.002	-
Pyrene	129-00-0	-	< 0.002	-
Butylbenzylphthalate	85-68-7	-	< 0.005	-
Benzo[a]anthracene	56-55-3	-	< 0.002	-
Chrysene	218-01-9	-	< 0.002	-
3,3'-Dichlorobenzidine	91-94-1	-	N.D	-
bis(2-Ethylhexyl)phthalate	117-81-7	-	< 0.005	-
Di-n-octylphthalate	117-84-0	-	< 0.002	-
Benzo[b]fluoranthene	205-99-2	-	< 0.002	-
Benzo[k]fluoranthene	207-08-9	-	< 0.002	-
Benzo[a]pyrene	50-32-8	-	< 0.002	-
Indeno[1,2,3-cd]pyrene	193-39-5	-	< 0.002	-
Dibenzo[a,h]anthracene	53-70-3	-	< 0.002	-
Benzo[g,h,i]perylene	191-24-2	-	< 0.002	-
Coronene	191-07-1	-	< 0.050	-

Internal Standards	% Area
1,4-Dichlorobenzene-d4	114
Naphthalene-d8	116
Acenaphthene-d10	119
Phenanthrene-d10	119
Chrysene-d12	121
Perylene-d12	129

Surrogates	% Rec
2-Fluorophenol	44
Phenol-d5	30
Nitrobenzene-d5	86
2-Fluorobiphenyl	91
2,4,6-Tribromophenol	91
Terphenyl-d14	69

Concentrations are reported on a wet weight basis.
"M" denotes that % fit has been manually interpreted

Where individual results are flagged see report notes for status.

SVOC (TICs)

UKAS accredited?:No

Customer and Site Details:	Ramboll Environ: Zeon Chemicals ESA		
Sample Details:	WS30	**Job Number:**	W22_0377
LIMS ID Number:	EX1695436		
		Multiplier:	0.005
Date Booked in:	21-May-16	**Dilution Factor:**	1
Date Extracted:	25-May-16	**GPC (Y/N):**	N
Date Analysed:	26-May-16	**Matrix:**	Water
QC Batch Number:	105	**Method:**	Sep. Funnel
Directory/Quant File:	052516.GC11\ 0	**Operator:**	RP/SO

Tentatively Identified Compounds	CAS #	R.T.	Concentration mg/l	% Fit
Hexanoic acid	000142-62-1	3.10	0.364	90
Octadecanoic acid, 2-methyl-, methyl ester	002490-22-4	4.33	0.142	64
Unidentified peak	-	4.41	0.047	-
Benzeneacetic acid	000103-82-2	4.12	0.018	91
Decanedioic acid, didecyl ester	002432-89-5	6.57	0.018	95
2,5-Cyclohexadiene-1,4-dione, 2,6-bis(1,1-dimethylethyl)-	000719-22-2	4.90	0.012	97
Dodecanoic acid	000143-07-7	5.15	0.011	96
Unidentified peak	-	4.25	0.011	-
Unidentified peak	-	4.74	0.011	-

The compounds listed above have been tentatively identified by a computer based library search.
Compounds identified in the sample are not reported if they also occur in the method blank.
The % fit is an indication of the reliability of the compound assignment.
Due to the similarity between mass spectra of some isomeric compounds assignments may not be correct.
Other compounds may also be present but identification was not possible.
Concentrations are semi-quantitative, assume a response factor of 1 and use the nearest internal standard.

Gasoline Range Organics
(BTEX and Aliphatic Carbon Ranges)

Customer and Site Details: Ramboll Environ : Zeon Chemicals ESA
Job Number: W22_0377
Directory: E:\TES\DATA\2016\0526HSA_GC9\052616 2016-05-26 15-53-50\157B5701.D
Method: Headspace GCFID

Matrix: Water
Date Booked in: 21-May-16
Date extracted: 26-May-16
Date Analysed: 27-May-16, 08:1

*** Sample data with an asterisk are not UKAS accredited.**

			Concentration, (mg/l)					Aliphatics				
	Sample ID	Client ID	Benzene	Toluene	Ethyl benzene	m/p-Xylene	o-Xylene	C5 - C6	>C6 - C7	>C7 - C8	>C8 - C10	Total GRO
*	EX1695436	WS30	<0.005	<0.005	<0.005	<0.005	<0.005	<0.1	<0.1	<0.1	<0.1	<0.1
*	EX1695437	WS28	<0.005	<0.005	<0.005	<0.005	<0.005	<0.1	<0.1	<0.1	<0.1	<0.1

Note: Benzene elutes between C6 and C7, toluene elutes between C7 and C8, ethyl benzene and the xylenes elute between C8 and C9.

Each BTEX compound is deducted from the appropriate band to give the aliphatic fractions, however aromatic compounds may still be contributing to these fractions

Where individual results are flagged see report notes for status.

ALIPHATIC / AROMATIC FRACTION BY GC/FID

Customer and Site Details: Ramboll Environ : Zeon Chemicals ESA
Job Number: W22_0377
QC Batch Number: 160333
Directory: D:\TES\DATA\Y2016\052616TPH_GC17\052716 2016-05-27 15-32-41\087B4101.D
Method: Bottle

Separation: Silica gel
Eluents: Hexane, DCM

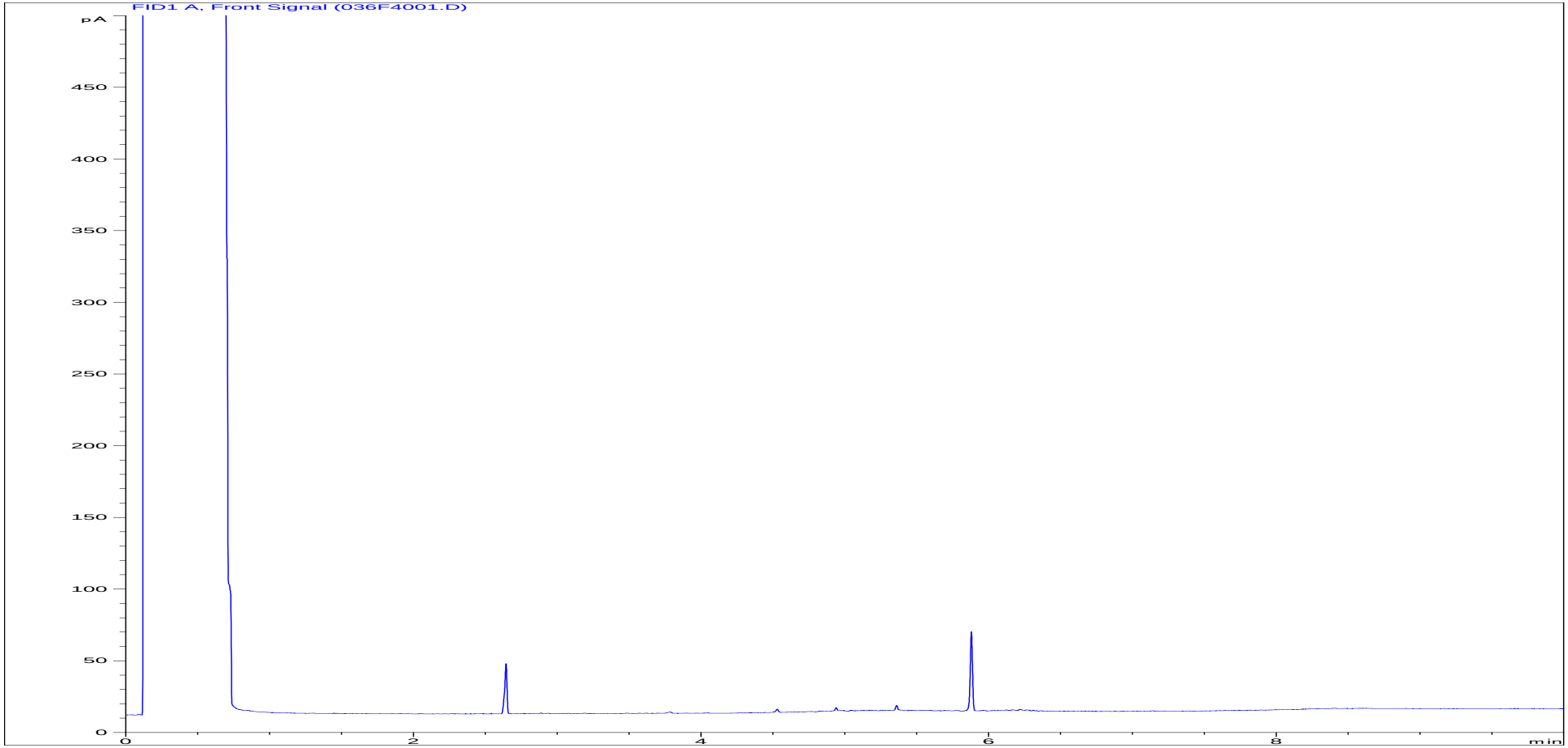
Matrix: Water
Date Booked in 21-May-16
Date Extracted 26-May-16
Date Analysed 28-May-16, 03:35:29

*** This sample data is not UKAS accredited.**

		Concentration, (mg/l)											
		>C8 - C10		>C10 - C12		>C12 - C16		>C16 - C21		>C21 - C35		>C8 - C40	
Sample ID	**Client ID**	**Aliphatics**	**Aromatics**	**Aliphatics**	**Aromatics**	**Aliphatics**	**Aromatics**	**Aliphatics**	**Aromatics**	**Aliphatics**	**Aromatics**	**Aliphatics**	**Aromatics**
EX1695436	WS30	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	0.013	0.027	0.061	0.017	0.082	0.054
EX1695437	WS28	<0.01	0.014	<0.01	<0.01	<0.01	<0.01	0.056	0.015	0.544	0.136	0.73	0.199

Where individual results are flagged see report notes for status.

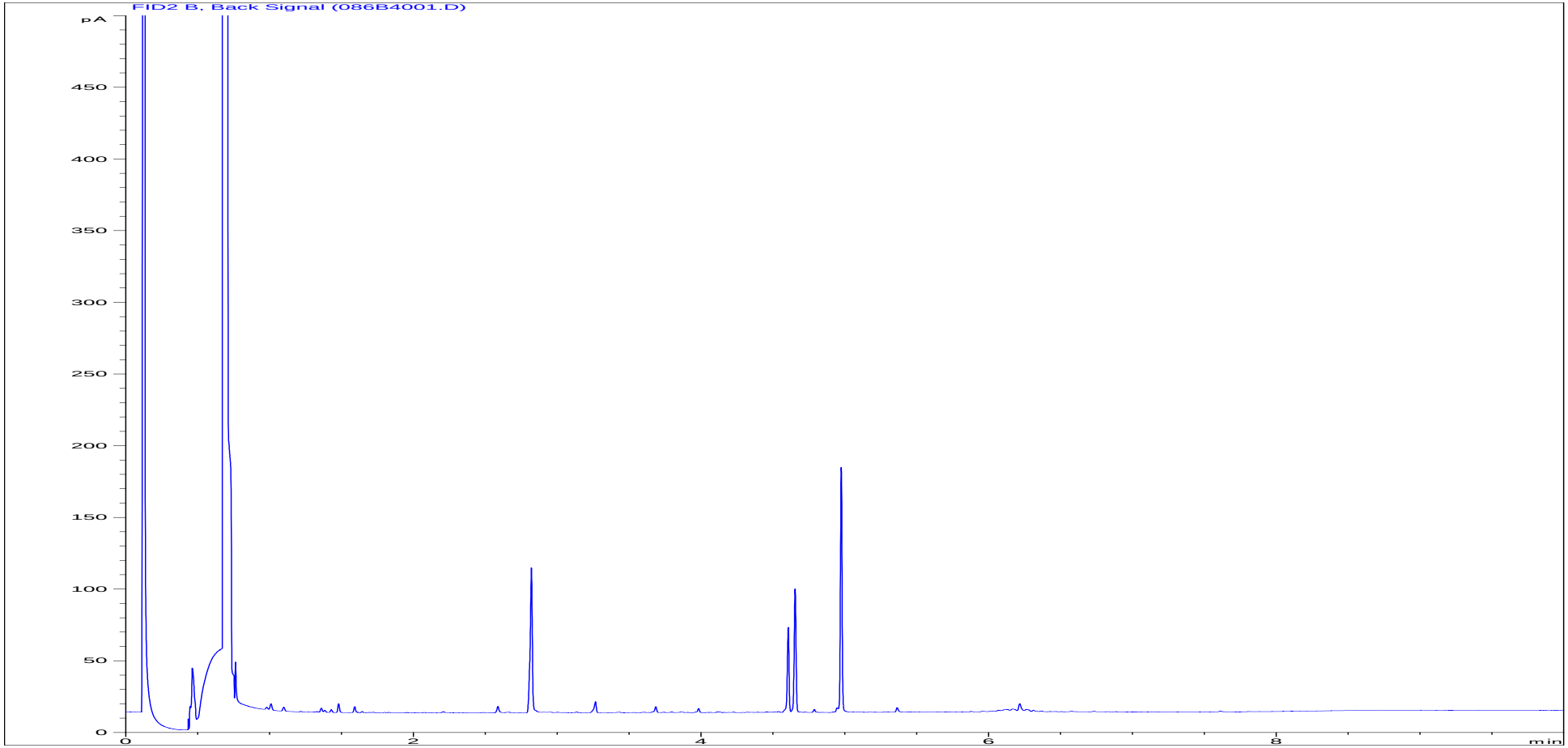
Petroleum Hydrocarbons (C8 to C40) by GC/FID Aliphatics Fraction.



Sample ID:	EX1695436ALI	**Job Number:**	W22_0377
Multiplier:	0.0194	**Client:**	Ramboll Environ
Dilution:	1	**Site:**	Zeon Chemicals ESA
Acquisition Method:	TPH_RUNF.M	**Client Sample Ref:**	WS30
Acquisition Date/Time:	28-May-16, 03:18:10		
Datafile:	D:\TES\DATA\Y2016\052616TPH_GC17\052716 2016-05-27 15-32-41\036F4001.D		

Where individual results are flagged see report notes for status.

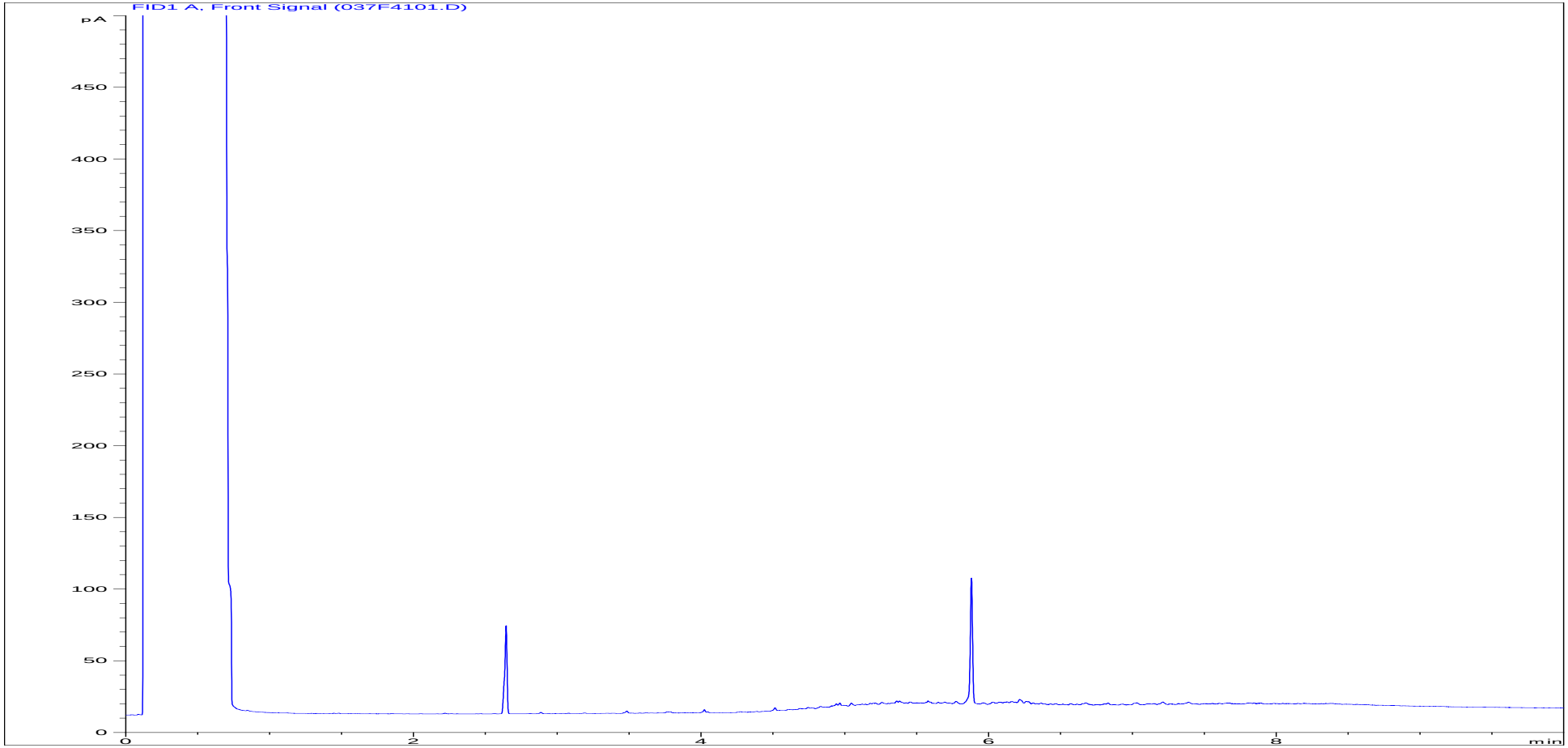
Petroleum Hydrocarbons (C8 to C40) by GC/FID Aromatics Fraction.



Sample ID:	EX1695436ARO	**Job Number:**	W22_0377
Multiplier:	0.015	**Client:**	Ramboll Environ
Dilution:	1	**Site:**	Zeon Chemicals ESA
Acquisition Method:	TPH_RUNF.M	**Client Sample Ref:**	WS30
Acquisition Date/Time:	28-May-16, 03:18:10		
Datafile:	D:\TES\DATA\Y2016\052616TPH_GC17\052716 2016-05-27 15-32-41\086B4001.D		

Where individual results are flagged see report notes for status.

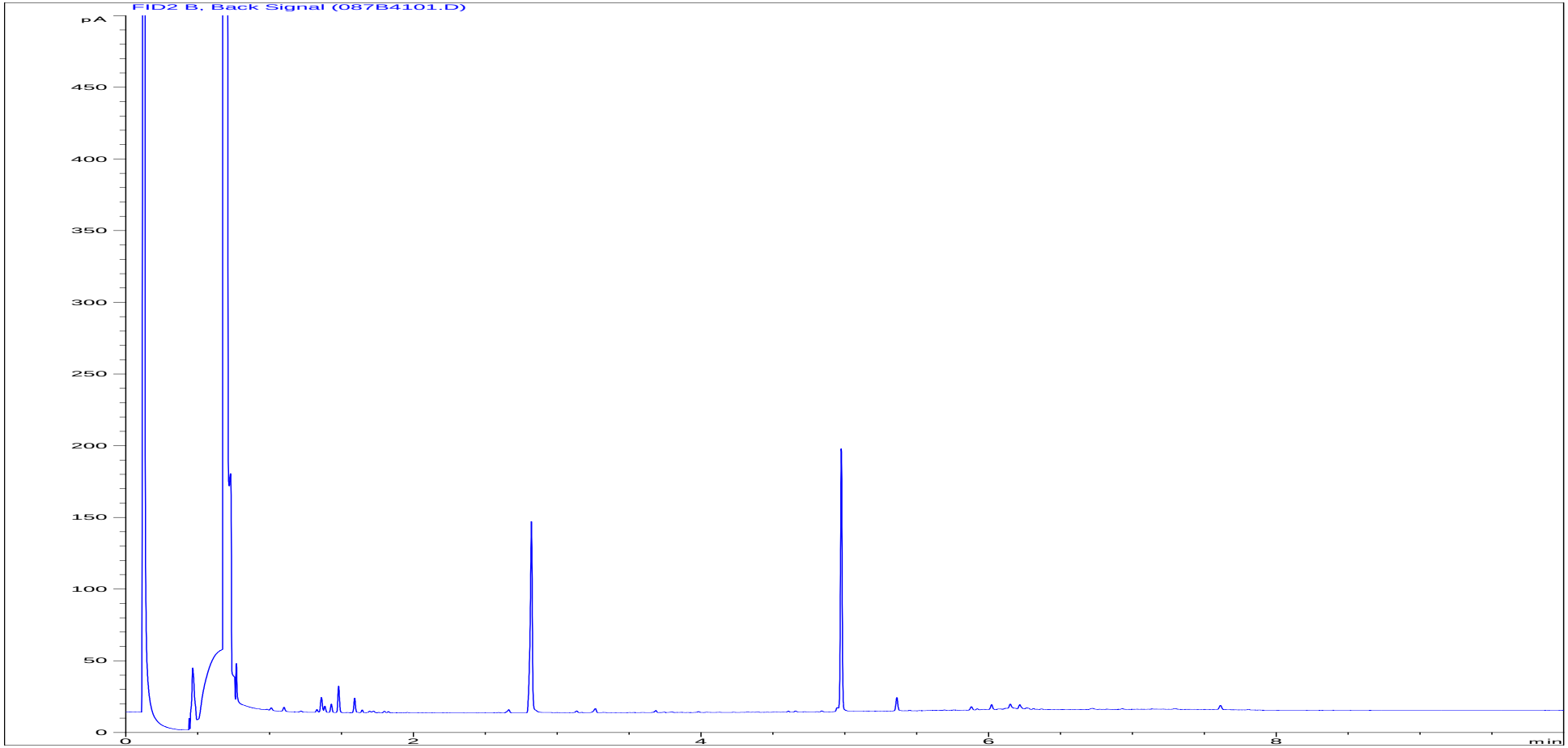
Petroleum Hydrocarbons (C8 to C40) by GC/FID Aliphatics Fraction.



Sample ID:	EX1695437ALI	**Job Number:**	W22_0377
Multiplier:	0.0475	**Client:**	Ramboll Environ
Dilution:	1	**Site:**	Zeon Chemicals ESA
Acquisition Method:	TPH_RUNF.M	**Client Sample Ref:**	WS28
Acquisition Date/Time:	28-May-16, 03:35:29		
Datafile:	D:\TES\DATA\Y2016\052616TPH_GC17\052716 2016-05-27 15-32-41\037F4101.D		

Where individual results are flagged see report notes for status.

Petroleum Hydrocarbons (C8 to C40) by GC/FID Aromatics Fraction.



Sample ID:	EX1695437ARO	**Job Number:**	W22_0377
Multiplier:	0.0365	**Client:**	Ramboll Environ
Dilution:	1	**Site:**	Zeon Chemicals ESA
Acquisition Method:	TPH_RUNF.M	**Client Sample Ref:**	WS28
Acquisition Date/Time:	28-May-16, 03:35:29		
Datafile:	D:\TES\DATA\Y2016\052616TPH_GC17\052716 2016-05-27 15-32-41\087B4101.D		

Where individual results are flagged see report notes for status.

Volatile Organic Compounds by HSA-GCMS

UKAS accredited?: Yes

Customer and Site Details:	Ramboll Environ: Zeon Chemicals ESA	**Directory/Quant file:**	2016\052616\ Initial Calibration	**Matrix:**	Water
Sample Details:	WS30	**Date Booked in:**	21-May-16	**Method:**	Headspace
LIMS ID Number:	EX1695436	**Date Analysed:**	27-May-16	**Multiplier:**	1
Job Number:	W22_0377	**Operator:**	PR	**Position:**	12

Target Compounds	CAS #	R.T. (min.)	Concentration µg/l	% Fit
Dichlorodifluoromethane	75-71-8 *	-	< 1	-
Chloromethane	74-87-3	-	< 1	-
Vinyl Chloride	75-01-4	-	< 1	-
Bromomethane	74-83-9 *	-	< 5	-
Chloroethane	75-00-3	-	< 5	-
Trichlorofluoromethane	75-69-4	-	< 1	-
1,1-Dichloroethene	75-35-4	-	< 1	-
trans 1,2-Dichloroethene	156-60-5	-	< 1	-
1,1-Dichloroethane	75-34-3	-	< 1	-
2,2-Dichloropropane	594-20-7 *	-	< 1	-
cis 1,2-Dichloroethene	156-59-2	-	< 1	-
Bromochloromethane	74-97-5	-	< 1	-
Chloroform	67-66-3	-	< 1	-
1,1,1-Trichloroethane	71-55-6	-	< 1	-
Carbon Tetrachloride	56-23-5	-	< 1	-
1,1-Dichloropropene	563-58-6 *	-	< 1	-
Benzene	71-43-2	-	< 1	-
1,2-Dichloroethane	107-06-2	-	< 1	-
Trichloroethene	79-01-6	-	< 5	-
1,2-Dichloropropane	78-87-5	-	< 1	-
Dibromomethane	74-95-3	-	< 1	-
Bromodichloromethane	75-27-4	-	< 1	-
cis 1,3-Dichloropropene	10061-01-5 *	-	< 1	-
Toluene	108-88-3	4.61	1	92
trans 1,3-Dichloropropene	10061-02-6 *	-	< 1	-
1,1,2-Trichloroethane	79-00-5	-	< 1	-
Tetrachloroethene	127-18-4	-	< 5	-
1,3-Dichloropropane	142-28-9	-	< 1	-
Dibromochloromethane	124-48-1	-	< 1	-
1,2-Dibromoethane	106-93-4	-	< 1	-
Chlorobenzene	108-90-7	-	< 1	-
Ethylbenzene	100-41-4	-	< 1	-
1,1,1,2-Tetrachloroethane	630-20-6 *	-	< 1	-
m and p-Xylene	108-38-3/106-42-3	-	< 1	-
o-Xylene	95-47-6	-	< 1	-

Target Compounds	CAS #	R.T. (min.)	Concentration µg/l	% Fit
Styrene	100-42-5	-	< 1	-
Bromoform	75-25-2	-	< 1	-
iso-Propylbenzene	98-82-8	-	< 1	-
1,1,2,2-Tetrachloroethane	79-34-5 *	-	< 1	-
Propylbenzene	103-65-1	-	< 1	-
Bromobenzene	108-86-1	-	< 1	-
1,2,3-Trichloropropane	96-18-4	-	< 1	-
2-Chlorotoluene	95-49-8	-	< 1	-
1,3,5-Trimethylbenzene	108-67-8 *	-	< 1	-
4-Chlorotoluene	106-43-4	-	< 1	-
tert-Butylbenzene	98-06-6 *	-	< 1	-
1,2,4-Trimethylbenzene	95-63-6	-	< 1	-
sec-Butylbenzene	135-98-8	-	< 1	-
p-Isopropyltoluene	99-87-6	-	< 1	-
1,3-Dichlorobenzene	541-73-1	-	< 1	-
1,4-Dichlorobenzene	106-46-7	-	< 1	-
n-Butylbenzene	104-51-8	-	< 1	-
1,2-Dichlorobenzene	95-50-1	-	< 5	-
1,2-Dibromo-3-chloropropane	96-12-8 *	-	< 5	-
1,2,4-Trichlorobenzene	120-82-1	-	< 5	-
Hexachlorobutadiene	87-68-3	-	< 5	-
Naphthalene	91-20-3	-	< 5	-
1,2,3-Trichlorobenzene	87-61-6	-	< 5	-

Compounds marked * are not UKAS accredited
"M" denotes that % fit has been manually interpreted

Internal standards	R.T.	Area %	Surrogates	% Rec
Pentafluorobenzene	3.62	96	Dibromofluoromethane	119
1,4-Difluorobenzene	3.97	103	Toluene-d8	100
Chlorobenzene-d5	5.12	102	Bromofluorobenzene	91
1,4-Dichlorobenzene-d4	5.92	87		

Where individual results are flagged see report notes for status.

Volatile Organic Compounds by HSA-GCMS

UKAS accredited?: No

Customer and Site Details:	Ramboll Environ: Zeon Chemicals ESA	**Directory/Quant file:**	2016\052616\ Initial Calibration	**Matrix:**	Water
Sample Details:	WS28	**Date Booked in:**	21-May-16	**Method:**	Headspace
LIMS ID Number:	EX1695437	**Date Analysed:**	27-May-16	**Multiplier:**	1
Job Number:	W22_0377	**Operator:**	PR	**Position:**	13

Target Compounds	CAS #	R.T. (min.)	Concentration µg/l	% Fit
Dichlorodifluoromethane	75-71-8 *	-	< 1	-
Chloromethane	74-87-3	-	< 1	-
Vinyl Chloride	75-01-4	-	< 1	-
Bromomethane	74-83-9 *	-	< 5	-
Chloroethane	75-00-3	-	< 5	-
Trichlorofluoromethane	75-69-4	-	< 1	-
1,1-Dichloroethene	75-35-4	-	< 1	-
trans 1,2-Dichloroethene	156-60-5	-	< 1	-
1,1-Dichloroethane	75-34-3	-	< 1	-
2,2-Dichloropropane	594-20-7 *	-	< 1	-
cis 1,2-Dichloroethene	156-59-2	-	< 1	-
Bromochloromethane	74-97-5	-	< 1	-
Chloroform	67-66-3	-	< 1	-
1,1,1-Trichloroethane	71-55-6	-	< 1	-
Carbon Tetrachloride	56-23-5	-	< 1	-
1,1-Dichloropropene	563-58-6 *	-	< 1	-
Benzene	71-43-2	-	< 1	-
1,2-Dichloroethane	107-06-2	-	< 1	-
Trichloroethene	79-01-6	-	< 5	-
1,2-Dichloropropane	78-87-5	-	< 1	-
Dibromomethane	74-95-3	-	< 1	-
Bromodichloromethane	75-27-4	-	< 1	-
cis 1,3-Dichloropropene	10061-01-5 *	-	< 1	-
Toluene	108-88-3	-	< 1	-
trans 1,3-Dichloropropene	10061-02-6 *	-	< 1	-
1,1,2-Trichloroethane	79-00-5	-	< 1	-
Tetrachloroethene	127-18-4	-	< 5	-
1,3-Dichloropropane	142-28-9	-	< 1	-
Dibromochloromethane	124-48-1	-	< 1	-
1,2-Dibromoethane	106-93-4	-	< 1	-
Chlorobenzene	108-90-7	-	< 1	-
Ethylbenzene	100-41-4	-	< 1	-
1,1,1,2-Tetrachloroethane	630-20-6 *	-	< 1	-
m and p-Xylene	108-38-3/106-42-3	-	< 1	-
o-Xylene	95-47-6	-	< 1	-

Target Compounds	CAS #	R.T. (min.)	Concentration µg/l	% Fit
Styrene	100-42-5	-	< 1	-
Bromoform	75-25-2	-	< 1	-
iso-Propylbenzene	98-82-8	-	< 1	-
1,1,2,2-Tetrachloroethane	79-34-5 *	-	< 1	-
Propylbenzene	103-65-1	-	< 1	-
Bromobenzene	108-86-1	-	< 1	-
1,2,3-Trichloropropane	96-18-4	-	< 1	-
2-Chlorotoluene	95-49-8	-	< 1	-
1,3,5-Trimethylbenzene	108-67-8 *	-	< 1	-
4-Chlorotoluene	106-43-4	-	< 1	-
tert-Butylbenzene	98-06-6 *	-	< 1	-
1,2,4-Trimethylbenzene	95-63-6	5.79	5	97
sec-Butylbenzene	135-98-8	-	< 1	-
p-Isopropyltoluene	99-87-6	-	< 1	-
1,3-Dichlorobenzene	541-73-1	-	< 1	-
1,4-Dichlorobenzene	106-46-7	-	< 1	-
n-Butylbenzene	104-51-8	-	< 1	-
1,2-Dichlorobenzene	95-50-1	-	< 5	-
1,2-Dibromo-3-chloropropane	96-12-8 *	-	< 5	-
1,2,4-Trichlorobenzene	120-82-1	-	< 5	-
Hexachlorobutadiene	87-68-3	-	< 5	-
Naphthalene	91-20-3	-	< 5	-
1,2,3-Trichlorobenzene	87-61-6	-	< 5	-

Compounds marked * are not UKAS accredited
"M" denotes that % fit has been manually interpreted

Internal standards	R.T.	Area %	Surrogates	% Rec
Pentafluorobenzene	3.62	110	Dibromofluoromethane	1
1,4-Difluorobenzene	3.97	116	Toluene-d8	99
Chlorobenzene-d5	5.12	114	Bromofluorobenzene	95
1,4-Dichlorobenzene-d4	5.92	101		

Where individual results are flagged see report notes for status.

TICs by HSA-GCMS

UKAS accredited?: No

Customer and Site Details:	Ramboll Environ: Zeon Chemicals ESA		**Date Booked in:**	21-May-16
Sample Details:	WS30		**Date Analysed:**	27-May-16
LIMS ID Number:	EX1695436		**Matrix:**	Water
Job Number:	W22_0377		**Ext Method:**	Headspace
Directory/Quant file:	2016\052616\	Initial Calibration	**Dilution:**	1
Operator:	PR		**Position:**	12

Tentatively Identified Compounds	CAS No	R.T. (min.)	Concentration µg/l	% Fit
None Detected			<5	

The compounds listed above have been tentatively identified by a computer based library search.
Compounds identified in the sample are not reported if they also occur in the method blank.
The % fit is an indication of the reliability of the compound assignment.
Due to the similarity between mass spectra of some isomeric compounds, assignments may not be correct.
Other compounds may also be present but identification was not possible.
Concentrations are semi-quantitative, assume a response factor of 1 and use the nearest internal standard.
Compounds marked * are not UKAS accredited
"M" denotes that % fit has been manually interpreted

Where individual results are flagged see report notes for status.

TICs by HSA-GCMS

UKAS accredited?: No

Customer and Site Details:	Ramboll Environ: Zeon Chemicals ESA		**Date Booked in:**	21-May-16
Sample Details:	WS28		**Date Analysed:**	27-May-16
LIMS ID Number:	EX1695437		**Matrix:**	Water
Job Number:	W22_0377		**Ext Method:**	Headspace
Directory/Quant file:	2016\052616\	Initial Calibration	**Dilution:**	1
Operator:	PR		**Position:**	13

Tentatively Identified Compounds	CAS No	R.T. (min.)	Concentration µg/l	% Fit
Hexane	000110-54-3	2.80	8	72
Unidentified Peak		6.69	8	

The compounds listed above have been tentatively identified by a computer based library search.
Compounds identified in the sample are not reported if they also occur in the method blank.
The % fit is an indication of the reliability of the compound assignment.
Due to the similarity between mass spectra of some isomeric compounds, assignments may not be correct.
Other compounds may also be present but identification was not possible.
Concentrations are semi-quantitative, assume a response factor of 1 and use the nearest internal standard.
Compounds marked * are not UKAS accredited
"M" denotes that % fit has been manually interpreted

Where individual results are flagged see report notes for status.

Sample Analysis

ESG Environmental Chemistry
Analytical and Deviating Sample Overview

W220377

Customer Ramboll Environ
Site Zeon Chemicals ESA
Report No W220377

Consignment No W104339
Date Logged 21-May-2016

Report Due 31-May-2016

ID Number	Description	Matrix Type	Sampled	MethodID	Calc_HD	CUSTSERV	GROHSA	ICPMSW										ICPWATVAR				
					Total Hardness as CaCO3 (CALC)	Report A	GRO-HSA GCFID (AA)	Nickel as Ni MS (Dissolved)	Chromium as Cr MS (Dissolved)	Cadmium as Cd MS (Dissolved)	Copper as Cu MS (Dissolved)	Lead as Pb MS (Dissolved)	Zinc as Zn MS (Dissolved)	Arsenic as As MS (Dissolved)	Mercury as Hg MS (Dissolved)	Selenium as Se MS (Dissolved)	Vanadium as V MS (Dissolved)	Total Sulphur as SO4 (Diss) VAR	Calcium as Ca (Dissolved) VAR	Magnesium as Mg (Dissolved) VAR	Boron as B (Dissolved) VAR	Beryllium as Be (Dissolved) VAR
					✓			✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	
EX/1695436	WS30	Groundwater	20/05/16																			
EX/1695437	WS28	Groundwater	20/05/16																			

Note: For analysis where the scheduled turnaround is greater than the holding time we will do our utmost to prioritise these samples. However, it is possible that samples could become deviant whilst being processed in the laboratory.

In this instance please contact the laboratory immediately should you wish to discuss how you would like us to proceed. If you do not respond within 24 hours, we will proceed as originally requested.

Deviating Sample Key	
A	The sample was received in an inappropriate container for this analysis
B	The sample was received without the correct preservation for this analysis
C	Headspace present in the sample container
D	The sampling date was not supplied so holding time may be compromised - applicable to all analysis
E	Sample processing did not commence within the appropriate holding time
F	Sample processing did not commence within the appropriate handling time

Requested Analysis Key	
	Analysis Required
	Analysis dependant upon trigger result - **Note: due date may be affected if triggered**
	No analysis scheduled
^	Analysis Subcontracted - **Note: due date may vary**

The integrity of data for samples/analysis that have been categorised as Deviating may be compromised. Data may not be representative of the sample at the time of sampling.
Where individual results are flagged see report notes for status.

Sample Analysis

ESG Environmental Chemistry
Analytical and Deviating Sample Overview

W220377

Customer Ramboll Environ
Site Zeon Chemicals ESA
Report No W220377

Consignment No W104339
Date Logged 21-May-2016

Report Due 31-May-2016

ID Number	Description	Matrix Type	Sampled	MethodID	PAHMSW	PHENPLCVL	SFAPI	SVOCSW	TPHFID-SI	VOCHSAW	WSLM12	WSLM17	WSLM3
					PAH GC-MS (16)	Phenols by HPLC (Low Level)	Cyanide (Total) as CN SFA	SVOC + TICS	TPH by GC(Si)	VOC + TICS HSA-GCMS	Total Alkalinity as CaCO3	Total Acidity as CaCO3	pH units
					✓		✓		✓	✓	✓	✓	✓
EX/1695436	WS30	Groundwater	20/05/16										
EX/1695437	WS28	Groundwater	20/05/16										

Note: For analysis where the scheduled turnaround is greater than the holding time we will do our utmost to prioritise these samples. However, it is possible that samples could become deviant whilst being processed in the laboratory.

In this instance please contact the laboratory immediately should you wish to discuss how you would like us to proceed. If you do not respond within 24 hours, we will proceed as originally requested.

Deviating Sample Key	
A	The sample was received in an inappropriate container for this analysis
B	The sample was received without the correct preservation for this analysis
C	Headspace present in the sample container
D	The sampling date was not supplied so holding time may be compromised - applicable to all analysis
E	Sample processing did not commence within the appropriate holding time
F	Sample processing did not commence within the appropriate handling time

Requested Analysis Key	
	Analysis Required
	Analysis dependant upon trigger result - **Note: due date may be affected if triggered**
	No analysis scheduled
^	Analysis Subcontracted - **Note: due date may vary**

The integrity of data for samples/analysis that have been categorised as Deviating may be compromised. Data may not be representative of the sample at the time of sampling.
Where individual results are flagged see report notes for status.

Report Number : W/EXR/220377

Additional Report Notes

Method Code	Sample ID	The following information should be taken into consideration when using the data contained within this report
PHEHPLCVL	EX1695436	The matrix of this sample has been found to interfere with the result for this test. The sample has therefore been diluted to improve the signal to noise ratio but in doing so, the detection limit for this test has been elevated.

Method Descriptions

Matrix	MethodID	Analysis Basis	Method Description
Water	Calc_HD	As Received	Calculation based on Dissolved metals analysis by ICPOES
Water	GROHSA	As Received	Determination of Total Gasoline Range Organics Hydrocarbons (GRO) by Headspace FID
Water	ICPMSW	As Received	Direct quantitative determination of Metals in water samples using ICPMS
Water	ICPWATVAR	As Received	Direct determination of Metals and Sulphate in water samples using ICPOES
Water	PAHMSW	As Received	Determination of PolyAromatic Hydrocarbons in water by pentane extraction GCMS quantitation
Water	PHEHPLCVL	As Received	Determination of Phenols by HPLC
Water	SFAPI	As Received	Segmented flow analysis with colorimetric detection
Water	SVOCSW	As Received	Determination of Semi Volatile Organic Compounds (SVOC) by DCM extraction followed by GCMS detection
Water	TPHFID-Si	As Received	Determination of speciated pentane extractable hydrocarbons in water by GCFID
Water	VOCHSAW	As Received	Determination of Volatile Organics Compounds by Headspace GCMS
Water	WSLM12	As Received	Titration with Sulphuric Acid to required pH
Water	WSLM17	As Received	Titration with Sodium Hydroxide to required pH
Water	WSLM3	As Received	Determination of the pH of water samples by pH probe

Report Notes

Generic Notes

Soil/Solid Analysis

Unless stated otherwise,
- Results expressed as mg/kg have been calculated on the basis indicated in the Method Description table.
  All results on MCERTS reports are reported on a 105ºC dry weight basis with the exception of pH and conductivity.
- Sulphate analysis not conducted in accordance with BS1377
- Water Soluble Sulphate is on a 2:1 water:soil extract

Waters Analysis

Unless stated otherwise results are expressed as mg/l
Nil: Where "Nil" has been entered against Total Alkalinity or Total Acidity this indicates that a measurement was not required due to the inherent pH of the sample.

Oil analysis specific

Unless stated otherwise,
- Results are expressed as mg/kg
- SG is expressed as g/cm^3@ 15^{o}C

Gas (Tedlar bag) Analysis

Unless stated otherwise, results are expressed as ug/l

Asbestos Analysis

CH Denotes Chrysotile **TR** Denotes Tremolite
CR Denotes Crocidolite **AC** Denotes Actinolite
AM Denotes Amosite **AN** Denotes Anthophylite
NAIIS No Asbestos Identified in Sample
NADIS No Asbestos Detected In Sample

Symbol Reference

^ Sub-contracted analysis.
$$ Unable to analyse due to the nature of the sample
¶ Samples submitted for this analyte were not preserved on site in accordance with laboratory protocols. This may have resulted in deterioration of the sample(s) during transit to the laboratory. Consequently the reported data may not represent the concentration of the target analyte present in the sample at the time of sampling
¥ Results for guidance only due to possible interference
& Blank corrected result
I.S Insufficient sample to complete requested analysis
I.S(g) Insufficient sample to re-analyse, results for guidance only
Intf Unable to analyse due to interferences
N.D Not determined **N.Det** Not detected
N.F No Flow
NS Information Not Supplied
Req Analysis requested, see attached sheets for results
Þ Raised detection limit due to nature of the sample
***** All accreditation has been removed by the laboratory for this result
‡ MCERTS accreditation has been removed for this result
§ accreditation has been removed for this result as it is a non-accredited matrix

Note: The Laboratory may only claim that data is accredited when all of the requirements of our Quality System have been met. Where these requirements have not been met the laboratory may elect to include the data in its final report and remove the accreditation from individual data items if it believes that the validity of the data has not been affected. If further details are required of the circumstances which have led to the removal of accreditation then please do not hesitate to contact the laboratory.

Sample Descriptions

Client : Ramboll Environ
Site : Zeon Chemicals ESA
Report Number : W22_0377

Lab ID Number	Client ID	Description
EX/1695436	WS30	Groundwater
EX/1695437	WS28	Groundwater

APPENDIX 5
STATEMENT OF REFERENCE DATA

Table 1 Total Petroleum Hydrocarbon Concentrations in Soil

Matrix	SOIL
Chem_Class	TPH

		Analyte																	
Sample_ID	Depth	>C10 TO C12 ALIPHATICS	>C10 TO C12 AROMATICS	>C12 TO C16 ALIPHATICS	>C12 TO C16 AROMATICS	>C16 TO C21 AROMATICS	>C16 TO C35 ALIPHATICS	>C21 TO C35 AROMATICS	>C35 TO C44 ALIPHATICS	>C35 TO C44 AROMATICS	>C5 TO C6 ALIPHATICS	>C5 TO C7 AROMATICS	>C6 TO C8 ALIPHATICS	>C7 TO C8 AROMATICS	>C8 TO C10 ALIPHATICS	>C8 TO C10 AROMATICS	EPH TOTAL (>C5-C44)	TOTAL ALIPHATICS (>C5-C44)	TOTAL AROMATICS (>C5-C44)
ZC1	0.3	6.3	7.2	11	13	35	110	110	14	28	2.1	0.12	18	45	2.1	14	410	160	250
ZC214	0.9	*ND*	*ND*	22	12	30	110	63	9.5	20	*ND*	0.054	0.3	0.28	0.2	0.16	270	140	120
	1.8	50	4.6	120	27	36	150	12	*ND*	*ND*	0.13	*ND*	0.28	*ND*	1.1	*ND*	400	320	81
	3.6	210	8	470	80	130	570	51	*ND*	*ND*	0.19	*ND*	0.36	*ND*	2	*ND*	1500	1300	270

ND = Non-detect, below the limit of detection
NA = Not Anaylsed
Concentrations in mg/kg

Table 2 Volatile Organic Compound Concentrations in Soil

Matrix	SOIL
Chem_Class	VOC

		Analyte																																																											
Sample_ID	Depth	1,1,1,2-TETRACHLOROETHANE	1,1,1-TRICHLOROETHANE	1,1,2,2-TETRACHLOROETHANE	1,1,2-TRICHLOROETHANE	1,1-DICHLOROETHANE	1,1-DICHLOROETHENE	1,1-DICHLOROPROPENE	1,2,3-TRICHLOROBENZENE	1,2,3-TRICHLOROPROPANE	1,2,4-TRICHLOROBENZENE	1,2,4-TRIMETHYLBENZENE	1,2-DIBROMO-3-CHLOROPROPANE	1,2-DIBROMOETHANE	1,2-DICHLOROBENZENE	1,2-DICHLOROETHANE	1,2-DICHLOROPROPANE	1,3,5-TRIMETHYLBENZENE	1,3-DICHLOROBENZENE	1,3-DICHLOROPROPANE	1,4-DICHLOROBENZENE	2,2-DICHLOROPROPANE	2-CHLOROTOLUENE	4-CHLOROTOLUENE	BENZENE	BROMOBENZENE	BROMOCHLOROMETHANE	BROMODICHLOROMETHANE	BROMOFORM	BROMOMETHANE	CARBON TETRACHLORIDE	CHLOROBENZENE	CHLOROETHANE	CHLOROFORM	CHLOROMETHANE	CISND,2-DICHLOROETHENE	CISND,3-DICHLOROPROPENE	DIBROMOCHLOROMETHANE	DIBROMOMETHANE	DICHLORODIFLUOROMETHANE	DICHLOROMETHANE	ETHYLBENZENE	HEXACHLOROBUTADIENE	ISOPROPYLBENZENE	M,P-XYLENE	NAPHTHALENE	N-BUTYLBENZENE	N-PROPYLBENZENE	O-XYLENE	P-ISOPROPYLTOLUENE	SEC-BUTYLBENZENE	STYRENE	TERT-BUTYLBENZENE	TETRACHLOROETHENE	TOLUENE	TRANSND,2-DICHLOROETHENE	TRANSND,3-DICHLOROPROPENE	TRICHLOROETHENE	TRICHLOROFLUOROMETHANE	VINYL CHLORIDE	VOC	VOC WITH TICS
ZC1	0.3	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
ZC212	0.2	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
ZC214	0.9	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
	1.8	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
	3.6	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND

ND = Non-detect, below the limit of detection
NA = Not Anaylsed
Concentrations in mg/kg

Table 3 Metal Concentrations in Soil

Matrix	SOIL
Chem_Class	METALTOT

		Analyte									
Sample_ID	Depth	ARSENIC AS AS, DRY WEIGHT	BARIUM AS BA, DRY WT	CADMIUM AS CD, DRY WEIGHT	CHROMIUM AS CR, DRY WEIGHT	COPPER AS CU, DRY WEIGHT	IRON AS FE, DRY WEIGHT	LEAD AS PB, DRY WEIGHT	MERCURY AS HG, DRY WEIGHT	SELENIUM AS SE, DRY WEIGHT	ZINC AS ZN, DRY WEIGHT
ZC1	0.3	4.9	240	0.67	57	39	6700	54	0.35	*ND*	240
ZC210	0.5	8.2	160	*ND*	20	32	15000	40	0.28	0.37	67
	1	9.3	45	*ND*	31	17	32000	30	*ND*	*ND*	92
	1.4	18	48	*ND*	32	45	28000	60	*ND*	*ND*	97
ZC211	0.3	4.1	24	*ND*	12	8	4900	*ND*	*ND*	*ND*	18
	0.8	6.1	36	*ND*	21	11	7000	14	*ND*	*ND*	31
ZC212	0.2	8.9	91	*ND*	19	23	15000	25	0.5	*ND*	79
ZC213	0.3	8.7	240	0.62	37	110	20000	93	1.9	*ND*	190
	1.8	9.2	64	*ND*	69	35	23000	47	0.3	*ND*	100
	2.6	4.1	19	*ND*	15	11	10000	*ND*	*ND*	*ND*	49
ZC214	0.9	21	460	0.63	72	140	29000	62	0.33	*ND*	150
	1.8	13	110	0.53	35	30	33000	64	*ND*	*ND*	130
	3.6	7.9	37	*ND*	30	18	25000	25	*ND*	*ND*	84

ND = Non-detect, below the limit of detection
NA = Not Anaylsed
Concentrations in mg/kg

Table 4 Pesticide and Polychlorinated Biphenyl Concentrations in Soil

Matrix	SOIL
Chem_Class	PEST/PCB

		Analyte
Sample_ID	Depth	FORMALDEHYDE
ZC212	0.2	*ND*

ND = Non-detect, below the limit of detection
NA = Not Anaylsed
Concentrations in mg/kg

Table 5 Non-classified Analyte Concentrations in Soil

Matrix	SOIL
Chem_Class	MISC

		Analyte					
Sample_ID	Depth	% Stones BG 2.6/3.0	Acrylonitrile	CATECHOL	MOISTURE CONTENT AT 30 C	PH	TOC BY IGNITION IN OXYGEN
ZC1	0.3	*NA*	*NA*	*NA*	*NA*	9.2	*NA*
ZC210	0.5	36	*ND*	*ND*	9	9.2	10
	1	24	*ND*	*ND*	4.5	8.6	0.92
	1.4	11	*ND*	*ND*	8.2	8.6	*NA*
ZC211	0.3	15	*ND*	*NA*	8.6	9.3	7.2
	0.8	12	*ND*	*NA*	21	10.6	*NA*
ZC212	0.2	25	*ND*	*ND*	11	8.6	*NA*
ZC213	0.3	7.6	*ND*	*NA*	8	8.7	*NA*
	1.2	0	*NA*	*NA*	15	*NA*	14
	1.8	9.1	*ND*	*NA*	26	7.9	*NA*
	2.6	13	*ND*	*NA*	8.2	8.6	*NA*
ZC214	0.9	22	*NA*	*NA*	17	8.3	*NA*
	1.8	18	*NA*	*NA*	8.3	7.9	*NA*
	3.6	8.8	*NA*	*NA*	14	8.1	*NA*

ND = Non-detect, below the limit of detection
NA = Not Anaylsed
Concentrations in mg/kg

Table 6 Particle Size Distribution in Soil

Location	Depth (m)	Description	Classification	% of each
ZC210	0.5	Grey silty sandy GRAVEL	Clay	3
			Silt	13
			Sand	19
			Gravel	65
			Cobbles	0
			Boulders	0
ZC210	1	Brown slightly sandy SILT	Clay	34
			Silt	63
			Sand	3
			Gravel	0
			Cobbles	0
			Boulders	0
ZC211	0.3	Brown silty sandy GRAVEL	Clay	4
			Silt	16
			Sand	23
			Gravel	57
			Cobbles	0
			Boulders	0
ZC213	1.2	Dark brown very gravelly very sandy SILT	Clay	10
			Silt	35
			Sand	30
			Gravel	25
			Cobbles	0
			Boulders	0

Table 7 Total Petroleum Hydrocarbon Concentrations in Water

Matrix	WATER
Chem_Class	TPH

		Analyte					
Sample_ID	Depth	TPH >C10-C16	TPH >C16-C24	TPH >C24-C40	TPH >C6-C40	TPH >C6-C8	TPH >C8-C10
ZC214	W	969	878	122	1980	*ND*	13

ND = Non-detect, below the limit of detection
NA = Not Anaylsed
Concentrations in µg/l

Table 8 Volatile Organic Compound Concentrations in Water

Matrix	WATER
Chem_Class	VOC

Analyte

Sample_ID	Depth	1,1,1,2-TETRACHLOROETHANE	1,1,1-TRICHLOROETHANE	1,1,2,2-TETRACHLOROETHANE	1,1,2-TRICHLOROETHANE	1,1-DICHLOROETHANE	1,1-DICHLOROETHENE	1,1-DICHLOROPROPENE	1,2,3-TRICHLOROBENZENE	1,2,3-TRICHLOROPROPANE	1,2,4-TRICHLOROBENZENE	1,2,4-TRIMETHYLBENZENE	1,2-DIBROMO-3-CHLOROPROPANE	1,2-DIBROMOETHANE	1,2-DICHLOROBENZENE	1,2-DICHLOROETHANE	1,2-DICHLOROPROPANE	1,3,5-TRIMETHYLBENZENE	1,3-DICHLOROBENZENE	1,3-DICHLOROPROPANE	1,4-DICHLOROBENZENE
ZC201	W	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
ZC212	W	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
ZC214	W	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND

Sample_ID	Depth	2,2-DICHLOROPROPANE	2-CHLOROTOLUENE	4-CHLOROTOLUENE	BENZENE	BROMOBENZENE	BROMOCHLOROMETHANE	BROMODICHLOROMETHANE	BROMOFORM	BROMOMETHANE	CARBON TETRACHLORIDE	CHLOROBENZENE	CHLOROETHANE	CHLOROFORM	CHLOROMETHANE	CISND,2-DICHLOROETHENE	CISND,3-DICHLOROPROPENE	DIBROMOCHLOROMETHANE	DIBROMOMETHANE	DICHLOROMETHANE	HEXACHLOROBUTADIENE
ZC201	W	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
ZC212	W	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
ZC214	W	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND

Sample_ID	Depth	ISOPROPYLBENZENE	M,P-XYLENE	NAPHTHALENE	N-BUTYLBENZENE	N-PROPYLBENZENE	O-XYLENE	P-ISOPROPYLTOLUENE	SEC-BUTYLBENZENE	STYRENE	TERT-BUTYLBENZENE	TETRACHLOROETHENE	TOLUENE	TRANSND,2-DICHLOROETHENE	TRANSND,3-DICHLOROPROPENE	TRICHLOROETHENE	TRICHLOROFLUOROMETHANE	VINYL CHLORIDE	VOC WITH TICS	ETHYL BENZENE	MTBE
ZC201	W	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
ZC212	W	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
ZC214	W	1	ND	ND	ND	ND	ND	ND	2	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND

ND = Non-detect, below the limit of detection
NA = Not Anaylsed
Concentrations in µg/l

Table 9 Semi-volatile Organic Compounds in Water

Matrix	WATER
Chem_Class	SVOC

		Analyte																			
Sample_ID	Depth	1,2,4-TRICHLOROBENZENE	HEXACHLOROBUTADIENE	NAPHTHALENE	1,2 DICHLOROBENZENE	1,3 DICHLOROBENZENE	1,4 DICHLOROBENZENE	2,4,5-TRICHLOROPHENOL	2,4,6-TRICHLOROPHENOL	2,4-DICHLOROPHENOL	2,4-DIMETHYLPHENOL	2,4-DINITROTOLUENE	2,6-DINITROTOLUENE	2-CHLORONAPHTHALENE	2-CHLOROPHENOL	2-METHYLNAPHTHALENE	2-METHYLPHENOL	2-NITROPHENOL	4-BROMOPHENYL PHENYL ETHER	4-CHLORO-3-METHYLPHENOL	4-CHLOROPHENYL PHENYL ETHER
ZC205	W	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND

Sample_ID	Depth	4-METHYLPHENOL	4-NITROPHENOL	ACENAPHTHENE	ACENAPHTHYLENE	ANTHRACENE	BENZO(A)ANTHRACENE	BENZO(A)PYRENE	BENZO(B)FLUORANTHENE	BENZO(G,H,I)PERYLENE	BENZO(K)FLUORANTHENE	BIS(2-CHLOROETHOXY)METHANE	BIS(2-CHLOROETHYL)ETHER	BIS(2-CHLOROISOPROPYL)ETHER	BIS(2-ETHYLHEXYL)PHTHALATE	BUTYLBENZYLPHTHALATE	CHRYSENE	DI-N-BUTYLPHTHALATE	DI-N-OCTYLPHTHALATE	DIBENZ(A,H)ANTHRACENE	DIBENZOFURAN	DIETHYLPHTHALATE
ZC205	W	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND

Sample_ID	Depth	DIMETHYLPHTHALATE	FLUORANTHENE	FLUORENE	HEXACHLOROBENZENE	HEXACHLOROETHANE	INDENO(1,2,3-CD)PYRENE	ISOPHORONE	N-NITROSO-DI-N-PROPYLAMINE	N-NITROSODIPHENYLAMINE	NITROBENZENE	PENTACHLOROPHENOL	PHENANTHRENE	PHENOL	PYRENE	SVOC WITH TICS
ZC205	W	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND

ND = Non-detect, below the limit of detection
NA = Not Anaylsed
Concentrations in µg/l

Table 10 Metal Concentrations in Water

Matrix	WATER
Chem_Class	METALTOT

		Analyte													
Sample_ID	Depth	Arsenic (T) ICPMS	BARIUM	CADMIUM	CALCIUM TOTAL AS CA	CHROMIUM	COPPER	IRON , TOTAL AS FE	LEAD	MAGNESIUM AS MG	MERCURY	POTASSIUM TOTAL AS K	SELENIUM	SODIUM, TOTAL AS NA	ZINC
ZC201	W	16	52	*ND*	38000	*ND*	*ND*	410	*ND*	4400	*ND*	1700	4	162000	11
ZC203	W	12	110	*ND*	16000	*ND*	*ND*	140	*ND*	16000	*ND*	9700	5	1060000	7
ZC204	W	11	23	*ND*	50000	*ND*	*ND*	950	*ND*	11000	*ND*	3000	3	103000	5
ZC205	W	15	43	*ND*	67000	*ND*	*ND*	1910	*ND*	6900	*ND*	4400	1	22000	19
ZC206	W	19	88	*ND*	157000	*ND*	*ND*	2130	*ND*	21000	*ND*	10000	3	177000	17
ZC207	W	62	140	*ND*	78000	*ND*	*ND*	10010	*ND*	26000	*ND*	8200	2	72000	8
ZC208	W	10	240	*ND*	47000	*ND*	*ND*	850	*ND*	31000	*ND*	9000	2	78000	16
ZC210	W	4	52	*ND*	39000	*ND*	*ND*	60	*ND*	4800	*ND*	2900	1	13000	13
ZC211	W	21	75	0.6	71000	*ND*	*ND*	6490	7	6400	*ND*	12000	*ND*	41000	18
ZC212	W	7	210	*ND*	96000	*ND*	11	330	*ND*	17000	*ND*	6100	12	51000	11
ZC213	W	10	42	0.7	154000	*ND*	*ND*	2240	8	30000	*ND*	7300	2	131000	22
ZC214	W	21	120	0.6	126000	*ND*	8	6540	6	16000	*ND*	7500	7	46000	19

ND = Non-detect, below the limit of detection
NA = Not Anaylsed
Concentrations in µg/l

Table 11 Pesticide and Polychlorinated Biphenyl Concentrations in Water

Matrix	WATER
Chem_Class	PEST/PCB

		Analyte
Sample_ID	Depth	FORMALDEHYDE
ZC201	W	400
ZC212	W	3710

ND = Non-detect, below the limit of detection
NA = Not Anaylsed
Concentrations in µg/l

Table 12 Non-classified Analyte Concentrations in Water

Matrix	WATER
Chem_Class	MISC

		Analyte													
Sample_ID	Depth	Acrylonitrile	CATECHOL	PH	ALKALINITY AS CAC03	BOD + ATU (5 day)	CARBONATE ALKALINITY	CHLORIDE AS CL	COD (TOTAL)	NITRATE AS N	Nonyl phenol	Octyl phenol	SULPHATE AS SO4	Detergents, anionic as NaLS	Methanol
ZC201	W	NA	NA	8.2	286000	56000	ND	129000	469000	ND	NA	NA	15000	NA	NA
ZC203	W	NA	NA	9.4	562000	10000	198000	1340000	115000	ND	NA	NA	ND	2000	ND
ZC204	W	ND	ND	8.2	322000	2000	ND	79000	31000	ND	NA	NA	ND	NA	NA
ZC205	W	NA	NA	7.9	163000	3000	ND	40000	40000	1300	1	ND	20000	NA	NA
ZC206	W	ND	NA	7.6	301000	42000	ND	289000	371000	900	NA	NA	26000	NA	NA
ZC207	W	ND	ND	7.5	352000	9000	ND	96000	43000	900	NA	NA	ND	NA	NA
ZC208	W	ND	ND	7.8	302000	3000	ND	103000	41000	600	NA	NA	ND	NA	NA
ZC210	W	ND	ND	8.3	498000	ND	ND	28000	36000	1000	NA	NA	6000	NA	NA
ZC211	W	ND	NA	7.6	282000	58000	ND	17000	254000	ND	NA	NA	5000	NA	NA
ZC212	W	ND	ND	7.5	391000	2000	ND	52000	140000	700	NA	NA	64000	NA	NA
ZC213	W	ND	NA	7.6	287000	2000	ND	299000	71000	400	NA	NA	82000	NA	NA
ZC214	W	NA	NA	7.2	392000	4000	ND	29000	94000	ND	NA	NA	14000	NA	NA

ND = Non-detect, below the limit of detection
NA = Not Anaylsed
Concentrations in µg/l

CLR 7 MADE GROUND SOIL STATISTICS

		Location	ZC1	ZC210	ZC211	ZC212	ZC213	ZC214
		Material	made	made	made	made	made	made
		Depth	0.3	0.5	0.3	0.2	0.3	0.9
Analyte	MDL	HALF MDL						
PH	NA	NA	9.2	9.2	9.3	8.6	8.7	8.3
TOTAL_ARSENIC	1	0.5	4.9	8.2	4.1	8.9	8.7	21
TOTAL_BARIUM	6.39	3.195	240	160	24	91	240	460
TOTAL_CADMIUM	0.5	0.25	0.67	ND	ND	ND	0.62	0.63
TOTAL_CHROMIUM	3	1.5	57	20	12	19	37	72
TOTAL_COPPER	3.546	1.773	39	32	8	23	110	140
TOTAL_LEAD	5.349	2.6745	54	40	ND	25	93	62
TOTAL_MERCURY	0.218	0.109	0.35	0.28	ND	0.5	1.9	0.33
TOTAL_SELENIUM	0.3	0.15	ND	0.37	ND	ND	ND	ND
TOTAL_ZINC	9.2	4.6	240	67	18	79	190	150

AvgND
8.88
9.30
202.50
0.64
36.17
58.67
54.80
0.67
0.37
124.00

		Location	ZC1	ZC210	ZC211	ZC212	ZC213	ZC214
		Material	made	made	made	made	made	made
		Depth	0.3	0.5	0.3	0.2	0.3	0.9
Analyte	MDL	HALF MDL						
PH	NA	NA	9.2	9.2	9.3	8.6	8.7	8.3
TOTAL_ARSENIC	1	0.5	4.9	8.2	4.1	8.9	8.7	21
TOTAL_BARIUM	6.39	3.195	240	160	24	91	240	460
TOTAL_CADMIUM	0.5	0.25	0.67	0.25	0.25	0.25	0.62	0.63
TOTAL_CHROMIUM	3	1.5	57	20	12	19	37	72
TOTAL_COPPER	3.546	1.773	39	32	8	23	110	140
TOTAL_LEAD	5.349	2.6745	54	40	2.6745	25	93	62
TOTAL_MERCURY	0.218	0.109	0.35	0.28	0.109	0.5	1.9	0.33
TOTAL_SELENIUM	0.3	0.15	0.15	0.37	0.15	0.15	0.15	0.15
TOTAL_ZINC	9.2	4.6	240	67	18	79	190	150

N	Min	Max	Average	Stdev	Analyte
6	8.300	9.300	8.883	0.407	PH
6	4.100	21.000	9.300	6.083	TOTAL_ARSENIC
6	24.000	460.000	202.500	151.802	TOTAL_BARIUM
6	0.250	0.670	0.445	0.214	TOTAL_CADMIUM
6	12.000	72.000	36.167	23.912	TOTAL_CHROMIUM
6	8.000	140.000	58.667	53.268	TOTAL_COPPER
6	2.675	93.000	46.112	31.251	TOTAL_LEAD
6	0.109	1.900	0.578	0.660	TOTAL_MERCURY
6	0.150	0.370	0.187	0.090	TOTAL_SELENIUM
6	18.000	240.000	124.000	83.664	TOTAL_ZINC

log		Location	ZC1	ZC210	ZC211	ZC212	ZC213	ZC214
		Material	made	made	made	made	made	made
		Depth	0.3	0.5	0.3	0.2	0.3	0.9
Analyte	MDL	HALF MDL						
PH	NA	NA	0.9638	0.9638	0.9685	0.9345	0.9395	0.9191
TOTAL_ARSENIC	1	0.5	0.6902	0.9138	0.6128	0.9494	0.9395	1.3222
TOTAL_BARIUM	6.39	3.195	2.3802	2.2041	1.3802	1.959	2.3802	2.6628
TOTAL_CADMIUM	0.5	0.25	-0.174	-0.602	-0.602	-0.602	-0.208	-0.201
TOTAL_CHROMIUM	3	1.5	1.7559	1.301	1.0792	1.2788	1.5682	1.8573
TOTAL_COPPER	3.546	1.773	1.5911	1.5051	0.9031	1.3617	2.0414	2.1461
TOTAL_LEAD	5.349	2.6745	1.7324	1.6021	0.4272	1.3979	1.9685	1.7924
TOTAL_MERCURY	0.218	0.109	-0.456	-0.553	-0.963	-0.301	0.2788	-0.481
TOTAL_SELENIUM	0.3	0.15	-0.824	-0.432	-0.824	-0.824	-0.824	-0.824
TOTAL_ZINC	9.2	4.6	2.3802	1.8261	1.2553	1.8976	2.2788	2.1761

N	Min	Max	Average	Stdev	T Crit 5%	T Crit 10%	Exceeds	T
6	0.919	0.968	0.948	0.020	1.82	1.73	n	1.0124
6	0.613	1.322	0.905	0.249	1.82	1.73	n	1.6801
6	1.380	2.663	2.161	0.447	1.82	1.73	n	1.1217
6	-0.602	-0.174	-0.398	0.224	1.82	1.73	n	1.0017
6	1.079	1.857	1.473	0.303	1.82	1.73	n	1.2669
6	0.903	2.146	1.591	0.457	1.82	1.73	n	1.2138
6	0.427	1.968	1.487	0.553	1.82	1.73	n	0.871
6	-0.963	0.279	-0.413	0.405	1.82	1.73	n	1.7078
6	-0.824	-0.432	-0.759	0.160	1.82	1.73	y	2.0412
6	1.255	2.380	1.969	0.411	1.82	1.73	n	1.0015

CLR 7 ALLUVIAL SOIL
STATISTICS

		Location	ZC210	ZC210	ZC211	ZC213	ZC213	ZC214	ZC214
		Material	alluvial	alluvial	alluvial	alluvial	alluvial	alluvial	alluvial
		Depth	1	1.4	0.8	1.8	2.6	1.8	3.6
Analyte	MDL	HALF MDL							
PH	NA	NA	8.6	8.6	10.6	7.9	8.6	7.9	8.1
TOTAL_ARSENIC	1	0.5	9.3	18	6.1	9.2	4.1	13	7.9
TOTAL_BARIUM	6.39	3.195	45	48	36	64	19	110	37
TOTAL_CADMIUM	0.5	0.25	ND	ND	ND	ND	ND	0.53	ND
TOTAL_CHROMIUM	3	1.5	31	32	21	69	15	35	30
TOTAL_COPPER	3.546	1.773	17	45	11	35	11	30	18
TOTAL_LEAD	5.349	2.6745	30	60	14	47	ND	64	25
TOTAL_MERCURY	0.218	0.109	ND	ND	ND	0.3	ND	ND	ND
TOTAL_ZINC	9.2	4.6	92	97	31	100	49	130	84

AvgND
8.88
9.3
202.5
0.64
36.17
58.67
54.8
0.67
124

		Location	ZC210	ZC210	ZC211	ZC213	ZC213	ZC214	ZC214
		Material	alluvial	alluvial	alluvial	alluvial	alluvial	alluvial	alluvial
		Depth	1	1.4	0.8	1.8	2.6	1.8	3.6
Analyte	MDL	HALF MDL							
PH	NA	NA	8.6	8.6	10.6	7.9	8.6	7.9	8.1
TOTAL_ARSENIC	1	0.5	9.3	18	6.1	9.2	4.1	13	7.9
TOTAL_BARIUM	6.39	3.195	45	48	36	64	19	110	37
TOTAL_CADMIUM	0.5	0.25	0.25	0.25	0.25	0.25	0.25	0.53	0.25
TOTAL_CHROMIUM	3	1.5	31	32	21	69	15	35	30
TOTAL_COPPER	3.546	1.773	17	45	11	35	11	30	18
TOTAL_LEAD	5.349	2.6745	30	60	14	47	2.6745	64	25
TOTAL_MERCURY	0.218	0.109	0.109	0.109	0.109	0.3	0.109	0.109	0.109
TOTAL_ZINC	9.2	4.6	92	97	31	100	49	130	84

N	Min	Max	Avg	StDev	US 95	Analyte
7	7.900	10.600	8.614	0.934	9.300	PH
7	4.100	18.000	9.657	4.614	13.046	TOTAL_ARSENIC
7	19.000	110.000	51.286	29.267	72.779	TOTAL_BARIUM
7	0.250	0.530	0.290	0.106	0.368	TOTAL_CADMIUM
7	15.000	69.000	33.286	17.231	45.940	TOTAL_CHROMIUM
7	11.000	45.000	23.857	13.044	33.436	TOTAL_COPPER
7	2.675	64.000	34.668	23.167	51.681	TOTAL_LEAD
7	0.109	0.300	0.136	0.072	0.189	TOTAL_MERCURY
7	31.000	130.000	83.286	33.255	107.708	TOTAL_ZINC

log		Location	A1	A1	B1	B1	B2	C2	C3
		Material	alluvial	alluvial	alluvial	alluvial	alluvial	alluvial	alluvial
		Depth	4.4	8.4	2.2	8.5	4.8	3.8	6.9
Analyte	MDL	HALF MDL							
PH	NA	NA	0.934498	0.934498	1.025306	0.897627	0.934498	0.897627	0.908485
TOTAL_ARSENIC	1	0.5	0.968483	1.255273	0.78533	0.963788	0.612784	1.113943	0.897627
TOTAL_BARIUM	6.39	3.195	1.653213	1.681241	1.556303	1.80618	1.278754	2.041393	1.568202
TOTAL_CADMIUM	0.5	0.25	-0.60206	-0.60206	-0.60206	-0.60206	-0.60206	-0.27572	-0.60206
TOTAL_CHROMIUM	3	1.5	1.491362	1.50515	1.322219	1.838849	1.176091	1.544068	1.477121
TOTAL_COPPER	3.546	1.773	1.230449	1.653213	1.041393	1.544068	1.041393	1.477121	1.255273
TOTAL_LEAD	5.349	2.6745	1.477121	1.778151	1.146128	1.672098	0.427243	1.80618	1.39794
TOTAL_MERCURY	0.218	0.109	-0.96257	-0.96257	-0.96257	-0.52288	-0.96257	-0.96257	-0.96257
TOTAL_ZINC	9.2	4.6	1.963788	1.986772	1.491362	2	1.690196	2.113943	1.924279

N	Min	Max	Avg	StDev	log US 95	T crit 5%	T crit 10%	Exceeds	T
7	0.898	1.025	0.933	0.044	0.966	1.94	1.83	y	2.09157762
7	0.613	1.255	0.942	0.210	1.096	1.94	1.83	n	1.491901671
7	1.279	2.041	1.655	0.235	1.828	1.94	1.83	n	1.643225988
7	-0.602	-0.276	-0.555	0.123	-0.465	1.94	1.83	y	2.267786838
7	1.176	1.839	1.479	0.204	1.629	1.94	1.83	n	1.758433096
7	1.041	1.653	1.320	0.243	1.499	1.94	1.83	n	1.371312582
7	0.427	1.806	1.386	0.483	1.741	1.94	1.83	n	0.869821933
7	-0.963	-0.523	-0.900	0.166	-0.778	1.94	1.83	y	2.267786838
7	1.491	2.114	1.881	0.215	2.039	1.94	1.83	n	1.082779946

unlogged lead US95 55.05779874

Analyte	MDL	0.5*MDL	ZC201 WATER Bedrock	ZC203 WATER Bedrock	ZC204 WATER Bedrock	ZC205 WATER Bedrock	ZC206 WATER Bedrock	ZC207 WATER Bedrock	ZC208 WATER Bedrock	ZC210 WATER Bedrock	ZC211 WATER Bedrock	ZC212 WATER Bedrock	ZC213 WATER Bedrock	ZC214 WATER Bedrock	Avg ND
ALKALINITY AS CAC03	2288	1144	286000	562000	322000	163000	301000	352000	302000	498000	282000	391000	287000	392000	344833.333
Arsenic (T) ICPMS	0.2	0.1	16	12	11	15	19	62	10	4	21	7	10	21	17.333
BARIUM	4	2	52	110	23	43	88	140	240	52	75	210	42	120	99.583
BOD + ATU (5 day)	880	440	56000	10000	2000	3000	42000	9000	3000	ND	58000	2000	2000	4000	13000
CADMIUM	0.4	0.2	ND	ND	ND	ND	ND	ND	ND	ND	0.6	ND	0.7	0.6	0.63
CALCIUM TOTAL AS CA	43	21.5	38000	16000	50000	67000	157000	78000	47000	39000	71000	96000	154000	126000	78250
CARBONATE ALKALINITY	2288	1144	ND	198000	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	198000
CHLORIDE AS CL	1300	650	129000	1340000	79000	40000	289000	96000	103000	28000	17000	52000	299000	29000	208416.667
COD (TOTAL)	11000	5500	469000	115000	31000	40000	371000	43000	41000	36000	254000	140000	71000	94000	142083.333
COPPER	3	1.5	ND	ND	ND	ND	ND	ND	ND	ND	ND	11	ND	8	9.5
IRON , TOTAL AS FE	50	25	410	140	950	1910	2130	10010	850	60	6490	330	2240	6540	2671.667
LEAD	4	2	ND	ND	ND	ND	ND	ND	ND	ND	7	ND	8	6	7
MAGNESIUM AS MG	10	5	4400	16000	11000	6900	21000	26000	31000	4800	6400	17000	30000	16000	15875
NITRATE AS N	260	130	ND	ND	ND	1300	900	900	600	1000	ND	700	400	130	720
PH	NA	NA	8.2	9.4	8.2	7.9	7.6	7.5	7.8	8.3	7.6	7.5	7.6	7.2	7.9
POTASSIUM TOTAL AS K	10	5	1700	9700	3000	4400	10000	8200	9000	2900	12000	6100	7300	7500	6816.667
SELENIUM	0.7	0.35	4	5	3	1	3	2	2	1	ND	12	2	7	4.33
SODIUM, TOTAL AS NA	150	75	162000	1060000	103000	22000	177000	72000	78000	13000	41000	51000	131000	46000	163000
SULPHATE AS SO4	5000	2500	15000	ND	ND	20000	26000	ND	ND	6000	5000	64000	82000	14000	34200
ZINC	1	0.5	11	7	5	19	17	8	16	13	18	11	22	19	13.833

Analyte	MDL	0.5*MDL	ZC201 WATER Bedrock	ZC203 WATER Bedrock	ZC204 WATER Bedrock	ZC205 WATER Bedrock	ZC206 WATER Bedrock	ZC207 WATER Bedrock	ZC208 WATER Bedrock	ZC210 WATER Bedrock	ZC211 WATER Bedrock	ZC212 WATER Bedrock	ZC213 WATER Bedrock	ZC214 WATER Bedrock	N	Min	Max	Average	Sdev	Analyte
ALKALINITY AS CAC03	2288	1144	286000	562000	322000	163000	301000	352000	302000	498000	282000	391000	287000	392000	12	163000.000	562000.000	344833.333	105797.262	ALKALINITY AS CAC03
Arsenic (T) ICPMS	0.2	0.1	16	12	11	15	19	62	10	4	21	7	10	21	12	4.000	62.000	17.333	15.053	Arsenic (T) ICPMS
BARIUM	4	2	52	110	23	43	88	140	240	52	75	210	42	120	12	23.000	240.000	99.583	68.568	BARIUM
BOD + ATU (5 day)	880	440	56000	10000	2000	3000	42000	9000	3000	440	58000	2000	2000	4000	12	440.000	58000.000	15953.333	22232.424	BOD + ATU (5 day)
CADMIUM	0.4	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.6	0.2	0.7	0.6	12	0.200	0.700	0.308	0.198	CADMIUM
CALCIUM TOTAL AS CA	43	21.5	38000	16000	50000	67000	157000	78000	47000	39000	71000	96000	154000	126000	12	16000.000	157000.000	78250.000	46244.656	CALCIUM TOTAL AS CA
CARBONATE ALKALINITY	2288	1144	1144	198000	1144	1144	1144	1144	1144	1144	1144	1144	1144	1144	12	1144.000	198000.000	17548.667	56827.432	CARBONATE ALKALINITY
CHLORIDE AS CL	1300	650	129000	1340000	79000	40000	289000	96000	103000	28000	17000	52000	299000	29000	12	17000.000	1340000.000	208416.667	368806.049	CHLORIDE AS CL
COD (TOTAL)	11000	5500	469000	115000	31000	40000	371000	43000	41000	36000	254000	140000	71000	94000	12	31000.000	469000.000	142083.333	145837.680	COD (TOTAL)
COPPER	3	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	11	1.5	8	12	1.500	11.000	2.833	3.179	COPPER
IRON , TOTAL AS FE	50	25	410	140	950	1910	2130	10010	850	60	6490	330	2240	6540	12	60.000	10010.000	2671.667	3227.242	IRON , TOTAL AS FE
LEAD	4	2	2	2	2	2	2	2	2	2	7	2	8	6	12	2.000	8.000	3.250	2.301	LEAD
MAGNESIUM AS MG	10	5	4400	16000	11000	6900	21000	26000	31000	4800	6400	17000	30000	16000	12	4400.000	31000.000	15875.000	9566.906	MAGNESIUM AS MG
NITRATE AS N	260	130	130	130	130	1300	900	900	600	1000	130	700	400	130	12	130.000	1300.000	537.500	419.700	NITRATE AS N
PH	NA	NA	8.2	9.4	8.2	7.9	7.6	7.5	7.8	8.3	7.6	7.5	7.6	7.2	12	7.200	9.400	7.900	0.578	PH
POTASSIUM TOTAL AS K	10	5	1700	9700	3000	4400	10000	8200	9000	2900	12000	6100	7300	7500	12	1700.000	12000.000	6816.667	3235.270	POTASSIUM TOTAL AS K
SELENIUM	0.7	0.35	4	5	3	1	3	2	2	1	0.35	12	2	7	12	0.350	12.000	3.529	3.257	SELENIUM
SODIUM, TOTAL AS NA	150	75	162000	1060000	103000	22000	177000	72000	78000	13000	41000	51000	131000	46000	12	13000.000	1060000.000	163000.000	287375.902	SODIUM, TOTAL AS NA
SULPHATE AS SO4	5000	2500	15000	2500	2500	20000	26000	2500	2500	6000	5000	64000	82000	14000	12	2500.000	82000.000	20166.667	26151.076	SULPHATE AS SO4
ZINC	1	0.5	11	7	5	19	17	8	16	13	18	11	22	19	12	5.000	22.000	13.833	5.458	ZINC

log

Analyte	MDL	0.5*MDL	ZC201	ZC203	ZC204	ZC205	ZC206	ZC207	ZC208	ZC210	ZC211	ZC212	ZC213	ZC214	N	Min	Max	Average	Sdev	T Max Value	T crit 5%	T crit 10%	Exceeds
ALKALINITY AS CAC03	2288	1144	5.456366033	5.749736316	5.507855872	5.212187604	5.478566496	5.546542663	5.480006943	5.697229343	5.450249108	5.592176757	5.457881897	5.593286067	12	5.212	5.750	5.519	0.137	1.688	2.29	2.13	n
Arsenic (T) ICPMS	0.2	0.1	1.204119983	1.079181246	1.041392685	1.176091259	1.278753601	1.792391689	1	0.602059991	1.322219295	0.84509804	1	1.322219295	12	0.602	1.792	1.139	0.293	2.230	2.29	2.13	n
BARIUM	4	2	1.716003344	2.041392685	1.361727836	1.633468456	1.944482672	2.146128036	2.380211242	1.716003344	1.875061263	2.322219295	1.62324929	2.079181246	12	1.362	2.380	1.903	0.306	1.559	2.29	2.13	n
BOD + ATU (5 day)	880	440	4.748188027	4	3.301029996	3.477121255	4.62324929	3.954242509	3.477121255	2.643452676	4.763427994	3.301029996	3.301029996	3.602059991	12	2.643	4.763	3.766	0.667	1.496	2.29	2.13	n
CADMIUM	0.4	0.2	-0.698970004	-0.698970004	-0.698970004	-0.698970004	-0.698970004	-0.698970004	-0.698970004	-0.698970004	-0.22184875	-0.698970004	-0.15490196	-0.22184875	12	-0.699	-0.155	-0.574	0.226	1.851	2.29	2.13	n
CALCIUM TOTAL AS CA	43	21.5	4.579783597	4.204119983	4.698970004	4.826074803	5.195899652	4.892094603	4.672097858	4.591064607	4.851258349	4.982271233	5.187520721	5.100370545	12	4.204	5.196	4.815	0.288	1.322	2.29	2.13	n
CARBONATE ALKALINITY	2288	1144	3.058426024	5.29666519	3.058426024	3.058426024	3.058426024	3.058426024	3.058426024	3.058426024	3.058426024	3.058426024	3.058426024	3.058426024	12	3.058	5.297	3.245	0.646	3.175	2.29	2.13	y
CHLORIDE AS CL	1300	650	5.11058971	6.127104798	4.897627091	4.602059991	5.460897843	4.982271233	5.012837225	4.447158031	4.230448921	4.716003344	5.475671188	4.462397998	12	4.230	6.127	4.960	0.534	2.184	2.29	2.13	n
COD (TOTAL)	11000	5500	5.671172843	5.06069784	4.491361694	4.602059991	5.56937391	4.633468456	4.612783857	4.556302501	5.404833717	5.146128036	4.851258349	4.973127854	12	4.491	5.671	4.964	0.412	1.714	2.29	2.13	n
COPPER	3	1.5	0.176091259	0.176091259	0.176091259	0.176091259	0.176091259	0.176091259	0.176091259	0.176091259	0.176091259	1.041392685	0.176091259	0.903089987	12	0.176	1.041	0.309	0.311	2.353	2.29	2.13	y
IRON , TOTAL AS FE	50	25	2.612783857	2.146128036	2.977723605	3.281033367	3.328379603	4.000434077	2.929418926	1.77815125	3.812244697	2.51851394	3.350248018	3.815577748	12	1.778	4.000	3.046	0.689	1.386	2.29	2.13	n
LEAD	4	2	0.301029996	0.301029996	0.301029996	0.301029996	0.301029996	0.301029996	0.301029996	0.301029996	0.84509804	0.301029996	0.903089987	0.77815125	12	0.301	0.903	0.436	0.246	1.896	2.29	2.13	n
MAGNESIUM AS MG	10	5	3.643452676	4.204119983	4.041392685	3.838849091	4.322219295	4.414973348	4.491361694	3.681241237	3.806179974	4.230448921	4.477121255	4.204119983	12	3.643	4.491	4.113	0.305	1.241	2.29	2.13	n
NITRATE AS N	260	130	2.113943352	2.113943352	2.113943352	3.113943352	2.954242509	2.954242509	2.77815125	3	2.113943352	2.84509804	2.602059991	2.113943352	12	2.114	3.114	2.568	0.420	1.301	2.29	2.13	n
PH	NA	NA	0.913813852	0.973127854	0.913813852	0.897627091	0.880813592	0.875061263	0.892094603	0.919078092	0.880813592	0.875061263	0.880813592	0.857332496	12	0.857	0.973	0.897	0.030	2.513	2.29	2.13	y
POTASSIUM TOTAL AS K	10	5	3.230448921	3.986771734	3.477121255	3.643452676	4	3.913813852	3.954242509	3.462397998	4.079181246	3.785329835	3.86332286	3.875061263	12	3.230	4.079	3.773	0.262	1.168	2.29	2.13	n
SELENIUM	0.7	0.35	0.602059991	0.698970004	0.477121255	0	0.477121255	0.301029996	0.301029996	0	-0.455931956	1.079181246	0.301029996	0.84509804	12	-0.456	1.079	0.386	0.414	1.677	2.29	2.13	n
SODIUM, TOTAL AS NA	150	75	5.209515015	6.025305865	5.012837225	4.342422681	5.247973266	4.857332496	4.892094603	4.113943352	4.612783857	4.707570176	5.117271296	4.662757832	12	4.114	6.025	4.900	0.491	2.293	2.29	2.13	y
SULPHATE AS SO4	5000	2500	4.176091259	3.397940009	3.397940009	4.301029996	4.414973348	3.397940009	3.397940009	3.77815125	3.698970004	4.806179974	4.913813852	4.146128036	12	3.398	4.914	3.986	0.555	1.673	2.29	2.13	n
ZINC	1	0.5	1.041392685	0.84509804	0.698970004	1.278753601	1.230448921	0.903089987	1.204119983	1.113943352	1.255272505	1.041392685	1.342422681	1.278753601	12	0.699	1.342	1.103	0.201	1.190	2.29	2.13	n

APPENDIX 9
RAMBOLL ENVIRON SOIL AND GROUNDWATER SAMPLING PROTOCOLS

2. PROCEDURE 2 – SAMPLING PROTOCOL

2.1 Introduction

Before going to site, the sampling strategy and rationale should be discussed in detail with the Project Manager/Project Director. Specific instructions will vary depending on the site; however, a few general principles will apply in all circumstances. Before going to site, the following questions should be answered:

- Has a preliminary Conceptual Site Model (CSM) been developed and have potential pollutant linkages been identified?
- Can the site be zoned to target specific pollutant linkages, as well as providing general site coverage? Can a sufficient number of sampling locations be assigned to these zones to allow meaningful assessment? What type of sampling regime needs to be used to achieve the objectives of the investigation i.e. random, targeted, statistically based?
- What is the purpose of the investigation, e.g. establishing baseline conditions, investigating pollutant linkages, validation? What is the scope of work described in the proposal?
- Have the contaminants of concern been identified and what other parameters should be recorded?
- What phase are the contaminants likely to be in, e.g. free phase, dissolved phase, solid phase, adsorbed on to soil particles, gaseous/vapour phase?
- Where are the contaminants likely to be found (depth, location)?
- What field techniques should be used to recover samples?
- What frequency of sampling/testing should be carried out?
- How much sample should be collected and what laboratory techniques should be used to analyse the samples?
- What quality control sampling needs to be included e.g. trip blanks, repeats, spikes?

Guidance on developing CSMs and selecting laboratory techniques are provided elsewhere, and detailed procedures on field techniques are provided later in this manual. The remainder of this procedure will focus on sample collection, handling and storage.

2.2 Sample Identification

All samples should have a unique ID. The specific approach to identifying samples will be at the discretion of the Project Manager; however, the following elements should be included:

The name and address of the laboratory and any specific laboratory reference (usually pre-printed on the labels);

- Sample type (e.g. soil, water).
- Site name/location.
- Contract number.
- Name of the company (and ideally name/initials of the person) taking the sample.
- Date/time of sampling.
- Sample location reference.
- Sampling depth.

The sample ID should be recorded in the following places:

- on the sample container;

- on the exploratory logs;
- on the Chain of Custody (COC); and
- in the field notebook.

A sample may comprise several types of sample containers (e.g. tub, vial, jar) and the same information should be recorded on each. The type of containers used will depend on the analysis required. This should be clarified with the laboratory prior to the work commencing.

Sample containers should be labelled using a pen or non-solvent based waterproof marker. It is imperative that samples are labelled clearly to allow safe handling/transport, e.g. if the presence of asbestos is suspected the sample should be double-bagged and clearly labelled “Potential ACMs” (this information should also be recorded on the COC). If potentially hazardous substances e.g. particularly volatile, potentially explosive, may be present and pose a hazard to laboratory staff, this should be recorded on the sample containers.

Labelling must also comply with legislative requirements, including the Classification, Packaging and Labelling of Dangerous Substances Regulations 1986 (as amended). Please note that potentially radioactive samples or sample containing pathogens should not be handled without specific prior agreement by the HS Team and Project Director, and should not be sent to a standard laboratory.

Samples should be stored whilst on site in a cool box, ideally maintained at 4oC. This temperature must be maintained during sample transit, which should be taken into account when planning the site investigation.

2.3 Soil Samples

The following is a guide to the minimum number of soil samples that should be recovered from each sampling location. Use a stainless steel trowel to take the required samples and clean it between each sample, or use clean gloves which you change between each sample (see Procedure 3):

- Within 1m (and ideally within 0.5m) of the surface.
- A representative sample of each stratum encountered (NOT at the interface between strata). If any stratum encountered is greater than 1m thick, samples should be collected at regular 1 m intervals within that stratum.
- Any depth where visual/olfactory evidence of contamination is encountered.

Soil samples should be screened using a PID, in accordance with Procedure 11, unless otherwise agreed in the project scope of work.

If samples are being submitted for VOC analysis, this sample should be taken immediately (following a quick note of the relationship between the lithologies present). More detailed logging of the core can then be carried out before collection of the rest of the sample.

Sample duplicates should be recovered from natural strata and in locations where there have been minimal observations of contamination. The purpose of a sample duplicate is to test sample reproducibility; therefore the substrate chosen should be as homogeneous as possible.

2.4 Water Samples

Refer to Procedure 13.

13. PROCEDURE 13 – GROUNDWATER MONITORING

13.1 Introduction

This procedure provides basic guidance that should be adhered to when monitoring groundwater and taking samples. There are a number of considerations when monitoring a well which are often defined by site conditions e.g. seasonal or tidal fluctuations, interactions between groundwater bodies and perched groundwater, contaminant type, project objectives and budget. Procedure 11 should be referred to prior to installing the well.

13.2 Staff Responsibility

All site personnel who are undertaking groundwater monitoring should follow this procedure. The Project Manager should ensure all personnel are proficient in groundwater sampling and are familiar with these procedures.

13.3 Site Equipment

You will need:

- Groundwater monitoring log sheets (see Annex F).
- Well construction details.
- Borehole keys.
- Site / monitoring well location plan.
- Dip meter.
- Interface probe (if required).
- Pump (if required).
- Bailers, Waterra or low-flow sampling equipment, as appropriate.
- Decontamination equipment.
- Sampling equipment (Bottles, Fixing Agents (if necessary) labels, chain of custody forms, icepacks).
- QA/QC blanks.

13.4 Well Development

Each monitoring well should be developed following installation and prior to sampling. Development should not be undertaken within 12 hours of the well being installed, to allow time for the well grouting to cure (this may not be possible for all projects - check with Project Manager), and not sooner than three days prior to sampling.

Well development is NOT purging (see Procedure 11).

Well development is the process whereby drilling fluid or added water (if used) and fine particles from the well and surrounding formation are removed, and the process 'stabilises' the filter (sand or gravel) pack and surrounding formation so that sand/silt-free water can be obtained over the lifetime of the well.

Over-pumping is a common way to develop a well during routine investigations (note: other techniques are necessary for wells designated as abstraction wells). Over-pumping involves pumping the well at a rate above the range of normal in-service pumping rates until relatively sediment-free water is obtained. Over-pumping should be undertaken for a minimum of one hour. This may not be possible on most sites due to project constraints; however; this demonstrates the need to consider which monitoring wells should be developed.

Development can also be achieved by pumping out groundwater from the well until parameters such as temperature and conductivity have stabilised by undertaking on-site field testing methods. An instrument capable of taking field measurements of parameters such as temperature, conductivity, salinity, pH, dissolved oxygen and oxidation-reduction potential (ORP) should be taken out on every site investigation. Ramboll Environ has a number of such instruments, manufactured by Waterra, YSI or Hanna Instruments. Regardless of the method of development employed, it is good practice to record this field information. A water quality meter should be used on all Ramboll Environ investigations.

Shallow wells (<10m) can normally be developed using a suction-lift/submersible pump, which should be placed near the bottom of the well and periodically moved to agitate the water and enhance the removal of fine particles from the sand pack. Do not place the pump resting on the bottom of the well as often silts in the well block the pump.

Development (and purging) of wells will generate waste groundwater that will require disposal. The disposal route for waste groundwater should be judged on a site-by-site basis (see Waste Procedures): discuss this with the Project Manager/Project Director before mobilising to site.

13.5 Gas/Vapour Monitoring

Prior to removing the well seal (bung or screw cap), Ramboll Environ personnel should monitor the presence of volatile organic compounds or ground within the well airspace, following Procedure 14.

13.6 Well Purging

Ideally, groundwater samples should not be collected from new wells until at least three days after well development. However, due to project constraints, this may not be possible (check with the Project Manager). Monitoring wells should always be purged prior to sampling on each and every occasion. Purging involves the removal of 'stagnant' water that has been in contact with atmospheric gases and the well casing and screen materials. This contact can affect the water chemistry; oxygen can diffuse into the water and dissolved gases can volatilise or oxidise. Organics may be sorbed by the well casing and trace elements may be leached from the well casing. Purging will ensure a representative sample is obtained from the aquifer.

13.6.1 Purging Procedure

1. Using a dip meter, measure the depth to water (DW) and total well depth (WT). Measure the internal well diameter (d). All measurements should be recorded in centimetres.
2. Calculate the well volume (V)[10]. Round the answer up to the nearest litre.
3. Remove 3 x well volume using either dedicated bailer or submersible pump positioned at the TOP of the water column (see Note 1).
   - **NOTE 1:** If the water level is above the screened area and the pump intake is within the screened area, it is possible for a section of stagnant water to remain within the well. It is good practice, in such cases, to commence pumping at the top of the water table and slowly lower the pump during the purging process until the pump is within the screened section, when purging will be complete.
4. If the well purges dry, the water should be allowed to recover to 90% of the pre-purge water level (or for two hours, whichever occurs first) prior to sampling.

[10] 8 V = (WT – Dw) * (nd2/4). The answer will be in cubic centimetres. 1 cm3 = 1 ml

5. In the case of sampling from domestic, industrial or public supply wells where a pump is permanently fixed within the well, the well should be pumped long enough to flush any pipework. If well construction details are available, the well should be purged of three well volumes. If this information is not available, the well should be pumped for approx. 15 minutes prior to sampling or until pH, temperature and specific conductivity stabilise. Care should be taken to adjust the pumping rate if necessary to avoid pumping the well dry (see Note 2).
   - **NOTE 2:** Pumping a well dry would lead to aeration of the well, resulting in volatile loss or change in the chemical characteristics of the aquifer nearest to the well. This will prevent a representative sample being collected.
6. Purge water should be monitored using a water quality meter. Once the measurements stabilise, purging can be considered complete.

13.7 Sample Collection

Groundwater samples should be collected immediately on completion of purging, unless significant drawdown has occurred in which case the well should be allowed to recover.

There are a range of different techniques and equipment for sampling groundwater. In most cases samples can be collected using a dedicated bailer, which can be either Teflon or polyethylene. In some cases samples may be collected via the submersible pump, but tubing MUST be dedicated to each well. These procedures should not be applied to the collection of samples for volatiles.

Passive sampling equipment such as Waterra's Hydrasleeve sampler is very effective at collecting samples at discrete intervals. The sampler has a one-way valve that remains closed whilst falling through the water column and only opens to fill the bag when tugged upwards. The valve shuts once the bag is full, allowing a water sample to be collected from a specific depth in a borehole without mixing. Further details can be obtained from Waterra's website (see Annex C).

If analysing for VOCs it is therefore preferable to use bailers or a low flow sampling system, where narrower tubing and smaller valves restrict flow rates to nearer 1.5 litres per minute.

13.7.1 Sampling Procedure

The following procedure should be followed during sample collection (following purging):

1. Carefully lower the bailer into the well using nylon cord. The cord should be knotted or marked in metre lengths and the bailer should be lowered to the mid-point of the screened well section. The depth at which the sample is recovered should be recorded in your notebook and subsequent samples from the same well should be taken from the same depth. Care should be taken to minimise agitation and exposure to the atmosphere.
2. From the first bailer, fill a 60ml water vial (with Teflon lid) for volatile analysis.
3. Sample other determinands thereafter. In all cases, water sample containers should be overfilled before putting on lids in order to minimise the amount of air trapped in the bottle.
4. If LNAPL (e.g. fuel hydrocarbons) is being sampled, the bailer should only be lowered so that the top of the bailer is at the top of the product level. In this case, the first bailer full of water/product is withdrawn and sampled for product ID.
5. If DNAPL (e.g. chlorinated solvent) is being sampled, a 'grab sampler' should be used and placed at the base of the well (See Notes 3, 4 and 5 below).

6. Record date and time of sample collection, the collection method, parameters to be analysed, the number and type of sample containers and any other information that may be relevant to interpretation (see Procedure 10).
   - **NOTE 3:** Do not submit the groundwater sample for analysis for dissolved hydrocarbons/solvents if free product has been identified. Representative samples cannot be obtained if NAPL is present. If it is known that NAPL is present in a well, these wells should be sampled after sampling has been completed on all other wells on the site. This will further reduce the potential for cross-contamination. It should be assumed that groundwater below the product will be at concentrations equal to solubility limits.
   - **NOTE 4:** In some cases dissolved hydrocarbons/solvent concentrations will be required to determine the depth or thickness of the plume. These should only be monitored via specifically designed multilevel wells or samplers.
   - **NOTE 5:** Development and sampling of wells can also be carried out using an inertial pump system, such as that provided by Waterra. The maximum rate of flow on Waterra's standard system of tubing and foot valves is 6-8 litres per minute. This flow rate causes a level of turbidity in the water column that allows volatilisation of VOCs, thereby producing artificially low concentrations in the samples recovered for VOC analysis. If using an inertial pump system to develop a well, it is also possible to add a surge block, which sits directly above the foot valve. Surge blocks can be used in 50mm diameter boreholes. The mechanical surging action introduced by the surge block allows high volumes of water containing sand and fine silt to be pumped out without clogging up the tubing; therefore, they are especially useful in unconsolidated strata.

APPENDIX 10

LABORATORY QA/QC PROCEDURES/ PROFICIECY SCHEMES & LABORATORY ACCREDITATION DATA

ESG
Environmental Scientifics Group
Environmental Chemistry

QA/QC procedures and Proficiency Schemes

All methods within the laboratory are firstly validated to the ISO17025 and MCERTS standards. Using duplicate analyses over 11 consecutive days, the precision and bias of each method is determined for a variety of different sample matrices. Laboratory policy at Scientifics is to validate 4 key soil sample matrices (including Made Ground) unlike the majority of UK laboratories who only validate against three soil matrices.

Laboratory calibration standards are prepared to order by the specialist QC department using traceable materials (ISO17025, Guide 34) with full traceability auditable documentation.

Internal Quality Control
The laboratory's confidence in the data that it provides is supported by the preparation and analysis of a range of analytical quality control (AQC) samples within each batch of unknown samples. These AQC samples can be assigned to two fundamental groups, these being the Primary Process and the secondary Instrumental AQC.

Prior to use, all Instrumentation and ancillary equipment undergoes a series of system suitability checks. These demonstrate that the instrumentation is fit for purpose and all checks are documented in our Quality Management System.

Primary Process Control QC samples are introduced at the beginning of the preparation stages of each method and as such demonstrate control over the whole method. Examples in routine use within the laboratory are;

- Certified Reference Materials (CRM)
- Secondary reference materials (RM) produced in house
- Replicate testing
- Matrix spikes
- Method Blank samples
- Addition of surrogates

Secondary Process Control Instrument QC samples are introduced after the sample preparation/extraction stage before analysis is carried out. As such, they demonstrate that methods are in control for the analytical stages of the process only. Examples in routine use within the laboratory are:

- Instrumental AQC
- Continuing calibration checks (CCC)
- Instrument Blank samples
- Addition of Internal standards

QC samples are analysed at a rate of at least one in every batch of twenty unknown samples.

All QC data is automatically plotted on Shewhart charts to ensure that all processes are under statistical process control at all times. Our AQC system updates over 1500 charts on a batch by batch basis. Transgressions from statistical process control are automatically highlighted and are investigated using our Non Conforming work procedures.

Once the associated Quality control samples have passed interrogation, data is allowed to be reported to LIMS. On a job by job basis, this data undergoes a series of further sense checks firstly by the Laboratory Manager and finally by the reporting Account Manager.

External Quality Control

The laboratory participates in interlaboratory proficiency testing schemes including;

- Contest
- Aquacheck
- Quasimeme
- NGPH
- RTC

Data from the laboratory's participation in these schemes is reviewed and performance/trends are investigated by the laboratory's Non Conformance investigation procedures. These investigations include root cause analysis, the effect on reported data, the implementation of corrective and preventative actions and their effectiveness.

APPENDIX 11
INVENTORY OF HAZARDOUS WASTE REMOVAL

Inventory of Hazardous Waste Removal

Material	Code	weight (kg)	
Cured/part cured latex, filter cake	07 01 11*	4180	
Cured/part cured latex, filter cake	07 01 11*	4080	
Calamity Tank Sludge	07 02 11*	10620	
Calamity Tank Sludge	07 02 11*	10620	
Calamity Tank Sludge	07 02 11*	7960	
U167 Floor Misc waste debris/rubber/soil	07 02 11*	4760	
U167 Floor Misc waste debris/rubber/soil	07 02 11*	4200	
U167 Floor Misc waste debris/rubber/soil	07 02 11*	2820	
U167 Floor Misc waste debris/rubber/soil	07 02 11*	6660	
U167 Floor Misc waste debris/rubber/soil	07 02 11*	5020	
Rubber/Debris waste	07 02 11*	5680	
As Dangerous goods list	As DGL*	12094	
As Dangerous goods list	As DGL*	8500	
As Dangerous goods list	As DGL*	13647	
As Dangerous goods list	As DGL*	11000	
As Dangerous goods list	As DGL*	15987	
As Dangerous goods list	As DGL*	4660	
As Dangerous goods list	As DGL*	13707	
As Dangerous goods list	As DGL*	12960	
As Dangerous goods list	As DGL*	6306	
Ammonia	150504	4202	
Acrylonitrile	16 07 08*	22060	
	16 07 08*	16000	

Material	Code	weight (kg)	
Methanol	16 05 08*	21140	
Methanol waste	16 05 08*	23480	
Soil c/w asbestos fibres	17 06 05*	800	
Contaminated soil	17 05 03*	200	
Total Hazardous Waste		**253343**	