GROUND INVESTIGATION REPORT

PEMBROKE DOCK MARINE DEVELOPMENT

On Behalf of Milford Haven Port Authority

Date: January 2019

Our Ref: JER1262

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Executive Summary

RPS Consulting Services Limited was commissioned by Milford Haven Port Authority to undertake a supplementary intrusive ground investigation and associated reporting and assessments to support an Outline Planning Application for the redevelopment of part of Pembroke Dockyard. The planning application is to be supported by an Environmental Impact Assessment (EIA). As part of the EIA scoping process the scope of supplementary ground investigation works and assessment have been agreed with the Local Authority and Natural Resources Wales.

The proposed redevelopment comprises the creation of transport corridors, open-air lay down areas, increased dockside space and a range of commercial buildings. To allow the proposed development, the current graving dock and Timber Pond will require infilling. The area between the two slipways will require removal to create one larger slipway.

The objectives of this report are to; determine the ground conditions at the Application Site, determine the groundwater regime at the Application Site, determine the likely extent and severity of ground, groundwater and gas contamination at the Application Site, present risk assessments in relation to human health, controlled waters and ground gas and to present a preliminary review of significant ground related stability issues associated with natural voids and cavities. These objectives are to be achieved using the data from this phase of supplementary intrusive ground investigation and the available data from historical phases of intrusive ground investigation, where appropriate.

Details of the site setting, location, and environmental setting and summaries of the available previous reports are given.

The supplementary intrusive ground investigation, as agreed with the local authority and NRW, comprised drilling of 3 no. rotary boreholes and 10 no. windowless sampler boreholes, sediment sampling from onsite water body (Timber Pond), chemical laboratory analysis of soil and groundwater samples, and ground gas and groundwater monitoring over 2 no. rounds.

The ground conditions encountered comprised Made Ground overlying weathered Pembroke Limestone Group and Pembroke Limestone Group. These conditions broadly corresponded with those ground conditions encountered in previous investigations.

Assessments regarding human health, controlled waters and ground gas have been undertaken. The human health risk assessment found exceedances of the assessment criteria of asbestos, lead and polycyclic aromatic hydrocarbons (PAHs). All of the identified exceedances were associated with the Made Ground soils between ground level and 3.0 m bgl. No exceedances against the human health assessment criteria have been noted for Natural Ground samples or sediment samples. The human health risk assessment concluded that the risk to human health from the identified contamination will be largely mitigated through the proposed development works, with hardstanding being constructed over the

majority of the Application Site. A cover system would be required in the proposed soft landscaped areas, or source removal to remove contaminated Made Ground materials.

The ground gas risk assessment concluded that, whilst a CS1 classification has been derived based on the recent monitoring that, consideration should be given to the existing gas monitoring data which derived a classification of CS2 (due to recorded CO_2 of 7.0%). Therefore, a classification of CS2 is recommended at this stage, with further monitoring to confirm this position. It is considered that protection against VOCs, CO and H_2S may be required. This could be delivered by a gas membrane resistant to VOCs and protective of CO and H_2S. The Application Site lies within a higher probability radon area and as such protection from radon gases may be required.

The controlled water risk assessment concluded that, based on the results of the monitoring and the current refined CSM, the risks to controlled waters are currently considered to be low for identified receptors (groundwater of the Pembroke Limestone Group and surface waters of the Milford Haven).

The review of naturally occurring voids identified potential evidence of potential solution features at the Application Site. The potential presence of solution features should be considered within the design of the proposed structures at the Application Site.

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1.1 Introduction

1.1.1 RPS Consulting Services Limited ('RPS') was commissioned by Milford Haven Port Authority (MHPA) ('the Client') to undertake a supplementary intrusive ground investigation and associated reporting and assessments to support an Outline Planning Application for the redevelopment of part of Pembroke Docks. The planning application is to be supported by an Environmental Impact Assessment (EIA) and as part of this process the scope of supplementary ground investigation work and assessment have been agreed with the Local Authority and Natural Resources Wales (NRW). The assessment will consider the available information relating to the previous ground investigation undertaken at the site.

1.2 Proposed Development

1.2.1 The proposed redevelopment comprises the creation of transport corridors, open-air lay down areas, increased dockside space and a range of commercial buildings. To facilitate the proposed development, the current graving dock (located in the northeast of the site) and the Timber Pond (located in the southwest of the site) will require infilling. The area between the two existing slipways (Slipway 1 and Slipway 2 in the northwest of the site) will require removal to create one larger slipway.

1.2.2 *Drawing JPW1115-04* sets out the draft masterplan for the site together with the Application Boundary. The term '*Application Site'* is used from this point onward to define the area outlined in red on this drawing.

1.3 Objectives

1.3.1 The objectives of this report are to:

- Determine the ground conditions at the Application Site.
- Determine the groundwater regime at the Application Site.
- Determine the likely extent and severity of ground, groundwater and gas contamination at the Application Site.
- Present risk assessments in relation to human health, controlled waters and ground gas.
- Present a preliminary review of significant ground related stability issues associated with voids and cavities.

1.3.2 These objectives are to be achieved using the data from this phase of supplementary intrusive ground investigation and the available data from historical phases of intrusive ground investigation.

1.4 Previous Reports

1.4.1 A number of reports have been made available to RPS in relation to the Application Site. These have been reviewed and are summarised with the following RPS documents:

- Chapter 13 Ground Conditions, Environmental Impact Assessment Scoping Report, Pembroke Dock Marine, ref: 180403 R JPW1115 DW EIA SO, dated 1st May 2018.
- Desk-Top Study and Preliminary Risk Assessment, Pembroke Dock Marine Development, on behalf of MHPA, ref: JER1262, dated June 2018 (RPS, 2018b).

1.4.2 The reports considered within the above documents and in the remainder of this assessment are:

- Port of Pembroke – Culvert Traverse Survey Letter report, by Sewer Services Ltd on behalf of W S Atkins, ref: 417-3/WFR/vjf, dated 24th May 1999.
- Land Quality Assessment Phase 1: Desk Study, HM Mooring Depot Pembroke Dock, by Enviros Consulting Ltd on behalf of Defence Estates, ref: 12553, dated October 2006.
- Land Quality Assessment Phase Two: Intrusive Investigation, HM Mooring Depot Pembroke Dock, by Enviros Consulting Ltd on behalf of Defence Estates, ref: 12553, dated April 2007.
- Ex-RMAS Site, 2020 Condition Survey Report, by Atkins on behalf of Milford Haven Port Authority, ref: 5056549-2/DG01-3, dated December 2008.
- Gate 4 Pickling Pond Culvert System, Preliminary Inspection Report, by Atkins on behalf of Port of Milford Haven, ref: 5116155-008/DG01_Inspection Report, dated 21st June 2013 (this includes and updates a report from 20th September 2010).
- Site within Gate 1 Pembroke Dock Pembrokeshire, Preliminary Risk Assessment, ground conditions and contaminated land, by RSK Environment Ltd on behalf of Port of Milford Haven Limited, ref: 312994-R1(00), Status: Final, dated March 2015.
- Phase I Ground Investigation Interpretative Report, Pembroke Dock Port, by Quantum Geotechnical on behalf of Milford Haven Port Authority, ref: G624/IR, dated April 2015.
- Pembroke Dock Geotechnical Desk Study, by Royal Haskoning DHV on behalf of Milford Haven Port Authority, ref: PB4337R002, rev. 01/Final, dated 13th November 2015.
- UXO Desk Study & Risk Assessment, Pembroke Dockyard by Zetica Ltd on behalf of Royal Haskoning DHV, ref: P5692-15-R1 rev B, dated 7th December 2015.
- Milford & Pembroke Docks, Ground Investigation Factual Report, by Quantum Geotechnical Ltd on behalf of Milford Haven Port Authority, ref: G778/FR, rev 1, dated June 2016.
- Pembroke Dock Redevelopments, Ground Investigation Report, by Royal Haskoning DHV on behalf of Milford Haven Port Authority, ref: PB4337R007D01, rev. 01/Draft, dated 3rd August 2016.

1.4.3 It should be noted that the provided copies of the above reports are in various stages of completeness. The RPS Desk-Top Study and Preliminary Risk Assessment (RPS, 2018b) details their completeness.

1.5 Limitations of this Report

1.5.1 This assessment is limited to the information available at the time of production including a review of the available ground investigation reports listed above. Whilst RPS believes these reports to be reliable RPS will not be liable for errors or inaccuracies within the reports. Whilst the report does consider the presence of voids or cavities that could impact on the development to the extent required by the planning regime, the report should not be considered a geotechnical appraisal.

2 Site Setting

2.1 Site Location

2.1.1 The Application Site is located in the town of Pembroke Dock in Pembrokeshire, South West Wales, approximately 4 km northwest of Pembroke on the northern banks of the River Cleddau. The Application Site is located at the approximate grid reference SM 96006 03670, and the approximate postcode is SA72 6TD.

2.1.2 The Application Site is accessed from Meyrick Owen Way. Pembroke Dock railway station is located approximately 0.65 km to the east of the Application Site.

2.1.3 The Application Site is approximately 10.7 hectares in size and is roughly L-shaped.

2.1.4 The current site layout is shown on *Drawing JER1262-DTS-001.*

2.2 Site Description

2.2.1 The Application Site is bound to the north by the Milford Haven Waterway, to the south by a residential area, to the east by the Pembroke Dock facility and to the west by a sewage works. The Milford Haven Waterway is located beyond the sewage works to the west.

2.2.2 The Application Site is currently used for a variety of commercial/light industrial land uses including marine engineering. Within the boundary of the dockyard there are two areas that are not under the control of the Client; the ferry terminal and an area in use as a garage and scrap yard.

2.2.3 Further details on land use and site history are given in the desk-top study (RPS, 2018b). *Drawing JER1262-DTS-001* presents a summary of key activities and installations observed during site reconnaissance.

2.3 Environmental Setting

2.3.1 The desk-top study (RPS, 2018b) presents detailed environmental settings of the Application Site. Key details are summarised below:

- The published geology comprises Tidal Flat Deposits, overlying the Pembroke Limestone Group in the South of the Application Site and the Black Rock Subgroup and Gully Oolite Formation in the north of the Application Site.
- The Tidal Flat Deposits are classified as a Secondary (undifferentiated) Aquifer.
- The Pembroke Limestone Group is classified as a Principal Aquifer.
- The Application Site includes a surface water body (Timber Pond).

- The Milford Haven Waterway and Estuary (Site of Special Scientific Interest (SSSI) and Special Area of Conservation (SAC)) is present immediately to the north and a short distance to the west of the Application Site.
- The Application Site lies within a higher probability radon area.

2.4 Summary of Key Previous Reports

2.4.1 A number of investigations and assessments / reports have been undertaken in relation to the Application Site in recent years. Those which included an intrusive ground investigation element and / or risk assessment elements are summarised in the sections below.

2.4.2 More detailed reviews of all of the reports made available to RPS (including comments on geotechnical aspects) are included in the desk-top study report (RPS, 2018b).

2.4.3 The exploratory hole locations from the various phases of intrusive investigation are shown on *Drawing JER1262-DTS-002*.

Land Quality Assessment Phase 1, Enviros Consulting Ltd, October 2006

2.4.4 This report comprises a desk-based assessment of the environmental condition of the western third of the current Application Site. The report included a walkover survey and summaries of previous desk-based studies and intrusive investigations.

2.4.5 The potential sources of contamination identified were former standby generators (hydrocarbon fuels), former metal foundry, coal yard and paint shop (lead, arsenic, Poly Aromatic Hydrocarbons (PAHs), phenols, copper and zinc), former oakum store (tar, creosote, asphalt), former lube oil store (hydrocarbon fuels and phenols), former transformers (oil, PCBs), former rifle range (lead, gunpowder residues), former locomotive shed (hydrocarbons, PAHs, metals), former railway lines (PAHs, Polycyclic Bisphenols (PCBs), metals, asbestos), current Petrol Oil and Lubrication (POL) Point (petroleum, oil, lubricants) and emergency generator (hydrocarbon fuels and phenols), current and historical use for maintenance works (metals, solvents, hydrocarbons) and sediments from Mast Pond (also called Timber Pond) (lead, arsenic, mercury and chromium).

2.4.6 The report states that intrusive investigations, sampling, analysis of soil and groundwater samples and risk assessment was undertaken. Lead and hydrocarbons are stated to have been recorded in Made Ground above the assessment criteria of the time. Hydrocarbon and phenols are stated to have been identified in soil and shallow groundwater in the vicinity of former standby generator house fuel tanks. Tributyl tin was encountered in sediment samples from the ends of slipways. The two samples of sediment from the Timber Pond were found to contain elevated concentrations of metals (type and concentration not given).

2.4.7 The report concluded that it was unlikely that there would be any significant environmental constraints to redevelopment for continued commercial/industrial use, provided the identified

risks were appropriately managed and mitigated. Where hardstanding was proposed to be removed, limited remedial works were recommended.

Land Quality Assessment Phase Two, Enviros Consulting Ltd, April 2007

2.4.8 This report relates to the western third of the current Application Site. This report details the following intrusive works which were undertaken in November 2006:

- 18 no. shallow rotary boreholes for soil sampling, max depth 3.0 m bgl (WS201-WS218).
- 4 no. deeper boreholes for groundwater monitoring wells (BH201-BH204).
- 6 no. rounds of gas and groundwater monitoring.

2.4.9 The report includes a plan of exploratory hole locations, a conceptual site model, exploratory hole logs with co-ordinates and elevations (plus borehole logs for Gibb 2001 and Enviros 2004), results of the gas and groundwater monitoring rounds, laboratory data for gas samples.

2.4.10 This report stated that the investigation found seven locations where soil contamination was encountered, with regard to heavy metals and PAH above the assessment criteria of the time (Soil Guideline Values). Further assessment of the sediment sample data taken previously from the Timber Pond was undertaken and exceedances of the commercial assessment criteria for lead were noted. Six groundwater samples were taken and combined with previous groundwater data. Assessment found exceedances for heavy metals, other inorganics, Total Petroleum Hydrocarbons (TPH) and PAH.

2.4.11 Groundwater monitoring indicated "*the groundwater was either absent or in small quantities within the Made Ground*". Monitoring of deeper boreholes found a fluctuating trend, possibly in response to "*rainfall events or tidal influences*". No record of rainfall events or tide heights is given however.

2.4.12 As per the previous report, this report concluded that it was unlikely that there would be any significant environmental constraints to redevelopment for continued commercial/industrial use, provided the identified risks were appropriately managed and mitigated. Where hardstanding was proposed to be removed, limited remedial works were recommended.

Geotechnical Desk Study, Royal Haskoning DHV, November 2015

2.4.13 This report covers three sub-sites known as Gate 1, Gate 4 and Millforge. Gate 1 is located on the eastern boundary of the overall Pembroke Docks complex and is at distance from the current Application Site. Gate 4 is located in the north east of the current Application Site and the Milforge is located in the south east of the current Application Site.

2.4.14 The Gate 1 sub-site is described as comprising "a large concrete hardstanding pad approximately 100 m by 70 m. Currently unused (at the time of Royal Haskonings' site reconnaissance visit), the site lies in the southeast corner of the Pembroke Dock and is surrounded by roadways and commercial/industrial land use". The Gate 4 sub-site is described as comprising "an area of quayside including a dry dock and slipways, with a

commercial/industrial building immediately to the south". The Millforge sub-site described as comprising "an area of semi-derelict land with a large warehouse/garage and rough scrub and some mature trees.

2.4.15 The report considers that potential sources of contamination are present and the following potential contaminants of concern are identified; hydrocarbons, PAHs, heavy metals, sulphates, creosote, ammonia, asbestos, solvents, PCBs and organo-tin compounds. The report separates the potential sources into the three areas considered however they have been combined for ease of reference in this report. Risks from ground gas and ordnance are also considered possible.

2.4.16 Potential receptors considered included human health (construction/maintenance workers, future site users and adjacent site users), controlled waters, water supply pipes, and buildings and infrastructure. Potential pathways considered include direct contact, inhalation, explosive risk, infiltration/leaching/migration and chemical attack.

2.4.17 The reported risks posed to the various receptors are given below (combined for the three sub-sites for ease of reference):

- Human health - Low to Moderate.
- Buildings & infrastructure – Low to Moderate.
- Controlled waters – Low to Moderate.

2.4.18 In addition to geotechnical recommendations, geo-environmental recommendations were made. These comprised; an intrusive ground investigation to collect soil samples for analysis and assessment for risk to human health and from aggressive ground conditions (risks to concrete etc.), installation and subsequent monitoring of ground gas wells for risk to human health and buildings, installation of groundwater monitoring wells and subsequent collection of groundwater samples and assessment of risks to controlled waters, and waste assessment for materials tipped at Milforge. A later Royal Haskoning report (Pembroke Dock Redevelopments, Ground Investigation Report, by Royal Haskoning DHV on behalf of Milford Haven Port Authority, ref: PB4337R007D01, rev. 01/Draft, dated 3rd August 2016) makes reference to a waste assessment report (not seen by RPS) which classified the soils in the Milforge site as hazardous (reasons unknown).

Ground Investigation Factual Report, Quantum Geotechnical, June 2016

2.4.19 This report from Quantum comprises a factual report only and relates to fieldwork undertaken between 29th January and 18th March 2016. The areas investigated were Gate 1, Gate 4 and Milforge. Additional areas were investigated at another dock as part of this report (Milford Haven) however this area is not part of the Application Site considered in this report.

2.4.20 The fieldwork (at Pembroke dock only) comprised the following:

- 11 no. boreholes (BH701 to 706, BH801-802, BH901-903) by dynamic and rotary methods, to between 10 and 16.5 m bgl.

- 20. No TPs (TP701-706, TP901-913) to between 1.3 and 4.8 m bgl.
- 19. No HPs (HP901-919) from spoil heaps at Milforge sub-site.
- 5 no. gas/groundwater monitoring installations plus 2 no. rounds of monitoring.
- Chemical analysis suite including asbestos (soils only), ammoniacal nitrogen, phenol, cyanide, heavy metals, TPH, PAH, and VOC.
- Geotechnical testing on selected soil samples.

2.4.21 The report includes exploratory hole logs with co-ordinates and elevations, geophysical survey report, results of the gas and groundwater monitoring rounds, laboratory data (geotechnical and geo-environmental). The report was factual and did not assess the data.

2.4.22 Groundwater monitoring included borehole 5-BH901 (installed with a response zone in the weathered Pembroke Limestone Group) which was found to adequately recharge on one monitoring round, and then have insufficient recharge on a subsequent visit. Recharge within boreholes 5-BH802 (Made Ground & weathered Pembroke Limestone Group) and 5-BH902 (Pembroke Limestone Group) was not commented on.

Ground Investigation Report, Royal Haskoning DHV, August 2016

2.4.23 This report considers four discrete sub-sites; Gate 1, Gate 4, Silo Site and Milforge. The Silo Site is within the larger Gate 1 area.

2.4.24 The stated purpose of the report was to summarise the findings of a ground investigation, to establish a ground model, to propose geotechnical design parameters for preliminary design and assess the geo-environmental risks posed by potential contamination at each of the redevelopment sub-sites. The report and associated assessments are based on ground investigation data from two reports:

- Pembroke Dock Port – Phase 1 Ground Investigation – Interpretative Report (Quantum, 2015 Report No. G624/IR).
- Ground Investigation Factual Report for Milford Haven and Pembroke Dock (Quantum, 2016 – Report No. G778/FR).

2.4.25 We have not been provided with a copy of the former report. The latter report is summarised in the previous section.

2.4.26 Geological cross-sections, utilising data from some of the previous reports, are presented.

2.4.27 Observations of potential contamination included presence of demolition material, a hydrocarbon odour noted in soils and a solvent odour noted in soils (all at the Milforge sub-site). No free phase hydrocarbons were recorded.

2.4.28 The geo-environmental risk assessment utilises chemical data from the two reports (Quantum, 2015 & Quantum, 2016). The data is summarised in a table in their Appendix B. Commercial land use Generic Assessment Criteria (GACs) and C4SLs plus CLEA-model derived criteria were used to make the assessment.

2.4.29 The geo-environmental risk assessment identified exceedances against the criteria for beryllium (1 no. sample from trial pit TP704 at 2.1 m bgl), PAH) / Semi Volatile Organic Compounds (SVOC) (1 no. sample from trial pit TP902 at 3.0 m bgl), plus positive detects for a number of contaminants including PCBs. PCBs were detected above the laboratory limit of detection (LOD) in samples from borehole BH801, borehole BH802 (marginal) and from trial pit TP902 (marginal). Further assessment with respect to PCBs was recommended.

2.4.30 Asbestos was recorded in 16 out of 73 samples analysed. This was detected as loose fibres, insulation lagging and woven product (rope). Quantification testing found asbestos in all samples to be below the LOD.

2.4.31 A controlled waters assessment was undertaken which used leachability data (from 2016 Quantum investigation) and Environmental Quality Standards (EQS). This controlled waters assessment did not include the Gate 4 area as it was considered to be in connection with the estuary water. In other areas, the underlying Principal Aquifer was considered to be the main receptor (drinking water standards and freshwater standards were used).

2.4.32 Exceedances of the controlled waters assessment criteria were recorded for lead (in a sample from a trial pit in the Gate 1 sub-site, and in 2 no. samples from boreholes in the Milforge sub-site), copper (in all 5 no. borehole samples form the Milforge sub-site). The controlled waters assessment concluded that the contamination at the sub-sites was unlikely to cause an unacceptable risk.

2.4.33 A gas risk assessment was undertaken, based on monitoring from 2 no. boreholes at Gate 1 sub-site, 1 no. borehole at Gate 4 sub-site and 2 no. boreholes at Milforge sub-site. Two monitoring rounds were undertaken. The maximum recorded results were; maximum methane (CH_4) 0.1%, maximum carbon dioxide (CO_2) 7.0%, maximum carbon monoxide (CO) 13 parts per million (ppm), maximum hydrogen sulphide (H_2S) 0 ppm and a maximum flow of 0.4 litres per hour (l/hr). The worst case assessment found the sites included the assessment conform to Characteristic Situation CS2 (due to elevated concentrations of CO_2). Royal Haskoning recommend further gas monitoring in their report. In addition to the above gas risk, protection measures for radon gas are also likely to be required.

2.5 Summary of Desk-Top Study

2.5.1 RPS carried out a Desk-Top Study (RPS, 2018b). A summary of the key findings and conclusions of this report are presented below. The conclusions were as follows:

2.5.2 “Potential contamination sources at the Application Site have been identified including current on-site uses of fuel oil storage, use as a scrap yard, presence of electrical sub-stations and spoil heaps (potential hydrocarbons, PCBs and asbestos contamination), historical use including localised tanks, railway lines, electrical sub-stations, car dealers/breakers, manufacturing/engineering (potential hydrocarbons, solvents, PCBs, heavy metals, ground gas/vapours and asbestos contamination), historical off-site gas works and Depot feature to the

south (potential ground gas/vapours to migrate to Application Site), chemical contamination of shallow/perched groundwater and current off-site sewage works (potential cyanide, hydrocarbons, solvents, PCBs, heavy metals, gases and vapours). A loss of fuel in the Milford Haven Estuary (Sea Empress in 1996) may also be a source of hydrocarbons in coastal sediments.

2.5.3 A preliminary risk assessment based on a proposed future commercial use of the Application Site has been carried out. It is considered that the maximum risk is low to medium, for risks to human health from chemical contamination of soils/groundwater and ground gas. It is considered that the maximum risk is low to medium, for risks to buildings and structures from aggressive ground conditions and potential explosion/fire risk from ground gas. It is considered that the maximum risk is low to medium, for risks to controlled waters. The risk from UXO is considered to be low in the areas of proposed development (the Application Site).

2.5.4 Current data is not available for all parts of the Application Site which are proposed to be developed. Whilst some of the available data is relatively old (2006) it is considered that it is likely to have characterised the historical contamination sources and contaminating activities at the Application Site. It is therefore recommended that further targeted intrusive investigation is undertaken in the specific areas of the Assessment not previously characterised and that the existing data is reassessed against current standards to confirm the need for mitigation with respects to contamination at the Application Site. Such investigation would also allow the geotechnical risks associated the potential presence of Running sands and solution features in the limestone bedrock to be refined for the areas investigated".

3 Ground Investigation Methodology

3.1 Introduction

3.1.1 A supplementary intrusive geo-environmental ground investigation was undertaken by RPS in November 2018 to achieve the objectives set out in *Section 1.3*.

3.1.2 The ground investigation was set in the context of relevant UK guidance and legislation relating to the pollution of land and controlled waters including:

- The Model Procedures for the Management of Land Contamination, Contaminated Land Report (CLR) 11 (DEFRA & EA, 2004).
- British Standards BS5930 (BSI, 2015) and BS10175 (BSI, 2011).

3.1.3 The specific scope of ground investigation, including investigation locations and densities was defined through a scoping exercise, as set out in Scoping Report (RPS, 2018a). Through the EIA scoping process the scope of the intrusive ground investigation was agreed with the local authority and NRW.

3.1.4 The Scoping Report (RPS, 2018a) identified gaps in the available data and proposed a targeted supplementary intrusive ground investigation. The scoping report stated that the intrusive ground investigation works should:

> "comprise a series of boreholes to address the identified data gaps, plus sediment sampling from the Timber Pond. The proposed boreholes shall be advanced using a combination of windowless sampling techniques (for shallow boreholes) and rotary technique (for deeper boreholes). Where boreholes will advance to depths where a pathway to the Principal Aquifer may be created, clean drilling techniques shall be used. The sediment sampling shall be undertaken from the side of the pond using a weighted bucket to collect sediment from the pond bottom".

3.1.5 The scope of investigation has been designed to target the areas where previous investigation data is not available, revisit key areas where ongoing potentially contaminating activities are occurring and provide further confidence regarding the groundwater regime beneath the site and its contamination status. As such the scope of works comprises:

- *Advancement of shallow and deep boreholes on the boundaries of the site to allow groundwater sampling from the limestone aquifer and any overlying perched water.*
- *Advancement of shallow boreholes in the central parts of the southern area of the site and the eastern parts of the northern area of the site, where historical ground investigation data is unavailable.*
- *Targeted investigation in the western part of the site to target the following ongoing potentially contaminating activities:*
  - 2 no. electricity substations.

- 1 no. refuelling point.
- 1 no scrap yard.

3.2 Summary of Works Undertaken in November 2018

3.2.1 The intrusive ground investigation undertaken by RPS comprised the following:

- Concrete coring at all hardstanding locations.
- Drilling of 1 no. rotary borehole to 15 meters below ground level (m bgl).
- Drilling of 2 no. rotary boreholes to 6 m bgl.
- Drilling of 10 no. windowless sampler boreholes to depths of up to 5 m bgl.
- Sediment sampling from Timber Pond.
- Analysis of soil samples for chemical laboratory analysis for a suite of analysis to include heavy metals, organotin, TPH, PAHs, VOCs, Semi Volatile Organic Compounds (SVOCs), phenols, PCBs and asbestos.
- In-situ vapour testing of soil samples using a Photoionisation Detector (PID).
- Installation of 50 mm gas and groundwater monitoring standpipes within 6 no. borehole locations.
- Gas (2 no. rounds) and groundwater (1 no. rounds) monitoring upon completion of the ground investigation.
- Analysis of groundwater samples for a suite of analysis to include metals, TPH, PAHs, organotin VOCs, SVOCs, PCBs and pH.

3.3 Rotary Drilling

3.3.1 Three of the boreholes were advanced using rotary techniques using a Beretta T44 rotary rig. All 3 no. rotary boreholes were installed with monitoring pipework. The borehole depths, installation details and geology adjacent to the slotted borehole sections are summarised within Table 1.

Table 1. Rotary Borehole Response Zones

Borehole	Depth of slotted section, m bgl	Targeted strata at slotted section
6-BH01	5.0 to 6.0	Pembroke Limestone Group
6-BH02	1.0 to 15.0	Weathered bedrock (gravelly clay)
6-BH03	4.0 to 6.0	Pembroke Limestone Group

3.3.2 The associated borehole logs are presented within *Appendix 1*.

3.4 Windowless Sampler Drilling

3.4.1 Ten boreholes were advanced to depth of between 0.6 m and 4.8 m bgl using a windowless sampler rig. Three out of the 10 windowless sampler boreholes were installed with monitoring

wells. Details of the installed wells, including the depth range of the slotted sections and the adjacent geology are presented within Table 2.

Table 2. Windowless Sampler Borehole Response Zones

Borehole	Depth of slotted section, m bgl	Targeted strata at slotted section
6-BH04	1.0 to 1.7	Made Ground
6-BH10	0.3 to 0.8	Made Ground
6-BH11	0.3 to 1.0	Made Ground

3.4.2 Boreholes which were not installed with monitoring wells were backfilled with bentonite pellets and capped with a flush steel cover where the surrounding ground is concrete or tarmac, to provide strength to the reinstatement and surrounding hardstanding.

3.4.3 The borehole logs are presented within *Appendix 1*.

3.5 Logging

3.5.1 An experienced consultant from RPS was in attendance throughout the works to log the ground conditions.

3.6 Screening of VOCs

3.6.1 A calibrated Photo-ionisation Detector (PID) (MiniRae 2,000 model) was used during excavations to determine the concentration of Volatile Organic Compounds (VOCs) within the arisings encountered. To ensure that even very low concentrations of VOCs were detected, a headspace methodology was used for VOC screening. PID monitoring was undertaken on targeted samples, with further monitoring where visual and / or olfactory evidence of contamination was identified.

3.7 Ground Gas Monitoring

3.7.1 Ground gas monitoring was carried out on 2 no. occasions (14th to 15th of November and the 30th of November) with monitoring being undertaken form the monitoring wells detailed within Table 1 and Table 2 and the serviceable historical boreholes within the Application Site.

3.7.2 In advance of measuring ground gas concentrations and flow rates, a PID was used to determine concentrations of VOCs being released from the monitoring wells. Following the measurement of VOCs, a gas box was used to determine peak and stabilised flow rates and concentrations of oxygen (O_2), carbon dioxide (CO_2) and methane (CH_4) within each monitoring well. Differential pressures, carbon monoxide (CO) and hydrogen sulphide (H_2S) were also recorded together with atmospheric pressures. These works were completed prior to the groundwater sampling described in the following section.

3.8 Groundwater Level Monitoring and Sampling

3.8.1 Groundwater monitoring was undertaken between the 14th and the 30th of November 2018. Groundwater sampling was undertaken on 14th-15th November 2018. The depth of the water table was determined within each monitoring well using a dip meter to identify the level of the water table and the base of the monitoring well. Where monitoring wells recovered sufficiently, three well volumes of water were removed from each well prior to sampling. Where recharge was limited, samples were taken of the available water without the purging of three well volumes. Water was recovered using disposable bailers on a dedicated line to prevent cross contamination between monitoring wells.

3.8.2 Samples were placed into laboratory supplied containers which were then placed into cool boxes and kept at a nominal temperature of +4°C ± 2°C by the use of ice packs. The samples were then dispatched for analysis to a UKAS accredited laboratory, together with appropriate chain of custody documentation.

3.8.3 Locations where groundwater samples were collected from are shown on *Drawing JER1262-SR-003.*

3.9 Soil Sampling

3.9.1 Representative soil samples were collected at each exploratory location during the intrusive works. Any soils exhibiting visual or olfactory evidence of contamination were targeted for sampling to allow subsequent laboratory analysis.

3.9.2 Samples were placed into laboratory supplied containers which were then packed into cool boxes and kept at a nominal temperature of +4°C ± 2°C by the use of ice packs. The samples were then dispatched for analysis to a United Kingdom Accreditation Service (UKAS) accredited laboratory.

3.10 Sediment Sampling

3.10.1 The handling and storage of sediment samples was as set out within *Section 3.9*.

3.10.2 2 no. sediment samples were collected from the base of the Timber Pond, by way of a weighted bucket from the side of the pond. Sample ‘Sediment 1’ was taken from the south side of the pond and sample ‘Sediment 2’ was taken from the north side of the pond.

3.10.3 Sediment samples were collected by the Marine Team at RPS, from the graving dock and nearby proposed dredging areas. The results and interpretation will be reported by the Marine Team separately. However, we have included the data in this assessment.

4 Ground Conditions

4.1 Introduction

4.1.1 The ground conditions encountered during the RPS supplementary intrusive ground investigation are set out within this section. Section 4.7 considers the ground conditions identified during the previous phases of ground investigation and identifies where the previously identified conditions differ from those identified during this supplementary ground investigation .

4.2 Geology

General

4.2.1 The supplementary intrusive ground investigation works undertaken at the Application Site identified the following sequence of deposits (stated in depth order from shallowest to deepest):

- Made Ground,
- Weathered bedrock, and
- Pembroke Limestone Group.

4.2.2 A description of each deposit is presented in the following sections. Detailed borehole logs are presented within *Appendix 1*.

Made Ground

4.2.3 Made Ground was encountered at the surface at all boreholes locations (13 no. locations). A formal hardstanding was present at 5 no. locations, comprising either concrete (6-BH06, 6-BH08, 6-BH09 and 6-BH13) or tarmacadam (6-BH07), underlain by a limestone or sandstone gravel (considered to represent a sub-base/capping layer). The remaining locations did not benefit from a formal handstand, being either surfaced with gravel or with no surface ‘treatment'.

4.2.4 The non-hardstanding Made Ground was variable and typically comprised soft dark blackish or greyish brown gravelly clay, or gravelly clayey silty sand. Occasionally it comprised a light orangish brown clayey gravel. The gravel is typically comprised of flint, sandstone, mudstone, brick, slag, concrete, coal, and/or limestone.

4.2.5 An organic-rich clay layer was present within one borehole (6-BH05), possibly representing a buried topsoil layer.

4.2.6 The hardstanding at the Application Site ranges in thickness from 0.05 m to 0.3 m. The non-hardstanding Made Ground materials ranged in thickness from 0.2 m to 5.0 m, and the total Made Ground thickness ranges from 0.2 m to 5.0 m. In some locations the base of the Made Ground was not reached and therefore the total thickness of Made Ground may be greater than encountered.

4.2.7 The full thickness of Made Ground was not proven in every borehole, either due to obstructions or the target depth having been met.

Weathered bedrock

4.2.8 Weathered bedrock was encountered in the majority of boreholes where the base of the Made Ground was reached. The exception to this was borehole 6-BH01, where the Made Ground was found to directly overlie the limestone bedrock.

4.2.9 The weathered bedrock was variably cohesive with a granular component, and granular with a cohesive component.

4.2.10 Where the base of the weathered bedrock was reached in borehole 6-BH03, the thickness of this stratum was found to be a depth of 3.6 m. However, in borehole 6-BH02 (which extended to 15.0 m bgl), the base of the weathered bedrock was found to be 10.4 m. A previous borehole in this area also found weathered bedrock to a similar depth. This possibly represents a scour feature within the limestone.

4.2.11 The base of the weathered bedrock was not reached in 4 no. of the boreholes where it was found (boreholes 6-BH04, 6-BH07, 6-BH08 and 6-BH09), due either to refusal of the drilling rig or reaching the target depth.

Pembroke Limestone Group

4.2.12 The Pembroke Limestone Group was encountered in three boreholes; 6-BH01, 6-BH02 and 6-BH03. The Pembroke Limestone Group was recovered as angular limestone gravels respectively from 5.0 m to 10.4 m (possible scour feature) in borehole 6-BH02.

4.2.13 Occasional white mineralized veins were encountered in the Pembroke Limestone Group in borehole 6-BH01.

Summary of Strata

4.2.14 A summary og the ground conditions beneth the Application Site are presented within Table 3.

Table 3. Summary of typical Ground Conditions – from RPS 2018

Stratum	Description	Thickness, m	Depth to top, m bgl	Depth to base, m bgl
Made Ground	Variably soft dark blackish or greyish brown gravelly clay or gravelly clayey silty sand. Sometimes a light orangish brown clayey gravel. Gravel is of flint, sandstone, mudstone, brick, slag, concrete, coal, and/or limestone. Organic-rich clay layer present within one borehole (6-BH05 only), possibly representing a buried topsoil layer. Hardstanding layer of concrete or tarmac present in boreholes 6-BH06, 6-BH07, 6-BH08, 6-BH09 and 6-BH13.	0.2 to 5.0	0.0	0.2 to 5.0

Stratum	Description	Thickness, m	Depth to top, m bgl	Depth to base, m bgl
Weathered bedrock	Firm to very stiff dark reddish brown or light yellowish brown gravelly clay or sandy clayey gravel. Gravel is mudstone and/or limestone or sandstone. (6-BH02, 6-BH03, 6-BH04, 6-BH07, 6-BH08 and 6-BH09 only)	3.6 to >14.8	0.4 to 1.7	>15.0
Pembroke Limestone Group	Light whitish grey or brownish yellow limestone. Recovered as angular gravels of limestone. Occasional white mineralised veins. (6-BH01 and 6-BH03 only)	>2.0	4.0 to 5.0	>6.0

4.3 Obstructions and Voids

4.3.1 A void was encountered in the first attempt at a hand dug starter pit at borehole 6-BH04, from around 0.3 m to 1.0 m bgl. The location was relocated to a more suitable position before commencing drilling. The type of void is unknown and no services were thought to be present in this area.

4.3.2 The following boreholes terminated on obstructions within the Made Ground: 6-BH04 (at 3.8 m in weathered bedrock), 6-BH05 (at 3.6 m in Made Ground), 6-BH06 (at 3.0 m in Made Ground), 6-BH07 (at 4.8 m in weathered bedrock), 6-BH08 (at 2.95 m in weathered bedrock), 6-BH09 (at 2.8 m in weathered bedrock), 6-BH10 (at 0.8 m in Made Ground), 6-BH11 (at 1.0 m in Made Ground) and 6-BH12 (at 0.6 m in Made Ground). Borehole 6-BH13 was terminated due to water ingress into the hand dug pit (at 0.6 m in Made Ground).

4.4 Visual and Olfactory Evidence of Contamination

4.4.1 Visual evidence of potential Asbestos Containing Materials (ACMs) was encountered at the ground surface at borehole 6-BH05. The suspected ACM was in the form of fragments of cement-bound asbestos sheeting.

4.4.2 Monitoring for VOCs using a PID typically did not identify VOCs above the instrument LoD (0.1 ppm). The Readings above zero were found in the following locations:

- 6-BH04: 47.2 ppm at 0.5 m bgl within Made Ground.
- 6-BH06: 60.9 ppm at 2.5 m bgl within Made Ground.
- 6-BH07: 60.8 ppm at 1.5 m bgl within weathered bedrock.
- 6-BH08: 23.3 ppm at 2.7 m bgl within weathered bedrock.
- 6-BH09: 28.2 ppm at 2.5 m bgl within weathered bedrock.
- 6-BH10: 0.3 ppm at 0.6 m bgl within weathered bedrock.

4.5 Groundwater

Intrusive Investigations

4.5.1 Groundwater strikes were noted during the drilling (although the addition of water to aid the drilling process is likely to have hindered observation of these). The identified water strikes are summarised within Table 4 with full details being provided upon the borehole logs within *Appendix 1*.

Table 4 Water Strikes

Borehole	Depth of groundwater strike, m bgl	Monitoring well installed at this depth?	Stratum
6-BH03	4.0	Yes	Base of weathered bedrock, top of Pembroke Limestone Group
6-BH07	3.0	No	Weathered bedrock
6-BH11	0.3	Yes	Made Ground
6-BH13	0.5	No	Made Ground

Groundwater Monitoring

4.5.2 A summary of the groundwater levels identified during the two monitoring rounds is presented within Table 5. Groundwater levels were monitored in the monitoring wells installed as part of the supplementary investigation and selected historical monitoring wells. The locations of the monitoring wells are detailed upon *Drawing JER1262-SR-001*. The full monitoring results are presented within *Appendix 2*.

Table 5. Summary of Groundwater Monitoring Results

Borehole	Round 1 Groundwater depth, m bgl	Round 2 Groundwater depth, m bgl	Response zone (m bgl)	Geology Adjacent to Slotted Section	Sampled
6-BH01	4.61	4.03	5.00 to 6.05	Pembroke Limestone Group	Yes
6-BH02	6.77	-	1.00 to 9.50	Weathered bedrock	Yes
6-BH03	5.03	4.40	4.00 to 6.00	Pembroke Limestone Group	Yes
6-BH04	1.83	Dry	1.00 to 1.84	Made Ground	No, Insufficient volume
6-BH10	Dry	Dry	0.00 to 0.68	Made Ground	No, Dry
6-BH11	Dry	Dry	0.00 to 0.82	Made Ground	No, Dry
4-BH201	5.16	5.05	1.00 to 10.08	Weathered bedrock & Pembroke Limestone Group	Yes
4-BH202	3.30	3.65	1.00 to 10.09	Weathered bedrock & Pembroke Limestone Group	Yes
4-BH203	3.50	-	1.00 to 8.99	Pembroke Limestone Group	Yes
4-WS205	Dry	-	1.00 to 3.12	Weathered bedrock	No, Dry
4-WS206	Dry	Dry	1.00 to 3.06	Weathered bedrock	No, Dry
4-WS208	1.15	-	1.00 to 2.74	Made Ground	Yes

Borehole	Round 1 Groundwater depth, m bgl	Round 2 Groundwater depth, m bgl	Response zone (m bgl)	Geology Adjacent to Slotted Section	Sampled
4-WS209	2.37	-	0.50 to 2.56	Made Ground	No, Insufficient volume
4-WS211	Dry	Dry	0.60 to 0.82	Made Ground	No, Dry
4-WS212	2.86	2.80	1.00 to 3.0	Made Ground	No, Insufficient volume
3-W1	6.06	6.50	3.00 to 10.83	Made Ground & Pembroke Limestone Group	Yes

4.5.3 The tidal conditions during the monitoring rounds is summarised in Table 6. In the absence of records for Pembroke Dock, the height and time of the tide is taken from Neyland situated on the north bank of the Milford Haven, opposite the Application Site.

Table 6. Summary of tidal conditions during monitoring

Location	Time of monitoring	Height of tide, m AOD	Rising or Falling?
Round 1 – Part 1 – 14th November 2018			
4-WS206	10:40	5.66	Falling
4-BH201	10:50	5.71	Falling
4-WS205	11:00	5.56	Falling
6-BH03	11:15	5.43	Falling
6-BH10	11:40	5.26	Falling
6-BH01	11:57	5.07	Falling
6-BH11	12:50	4.36	Falling
6-BH02	13:08	4.11	Falling
4-BH203	14:10	3.37	Falling
4-WS212	14:57	2.79	Falling
4-WS211	15:10	2.66	Falling
4-WS209	15:29	2.56	Falling
4-WS208	15:47	2.5	Falling
Round 1 – Part 2 – 15th November 2018			
3-W1	08:18	4.48	Rising
4-BH202	08:56	4.86	Rising
6-BH04	11:31	5.35	Falling
Round 2 – 30th November 2018			
6-BH11	11:20	6.01	Rising
6-BH01	11:35	6.03	Rising
6-BH10	11:50	6.03	Falling
3-W1	12:00	6.01	Falling
4-WS206	12:15	5.93	Falling
6-BH03	12:30	5.81	Falling
4-BH202	14:00	4.94	Falling
4-BH203	14:30	4.35	Falling
4-WS212	14:57	4.04	Falling
6-BH02	15:00	4.04	Falling
6-BH04	15:25	3.72	Falling

Table 7. High and low tide times during monitoring periods

	High Tide	Low Tide
14th November 2018	5.72 m at 09:44	2.48 m at 16:14
15th November 2018	5.41 m at 10:56	2.73 m at 04:29
30th November 2018	6.03 m at 11:44	2.04 m at 18:17

4.6 Ground Gas

4.6.1 A summary of the stabilised gas concentrations and stabilised flow rates identified during the two monitoring rounds is presented within Table 8 below. Gas concentrations and flow rates were monitored in the monitoring wells installed as part of the supplementary investigation and selected historical monitoring wells. The locations of the monitoring wells are detailed upon *Drawing JER1262-SR-001*. The full monitoring results are presented within Appendix 2.

4.6.2 Due to extreme weather including high winds, the flow rate was affected during the monitoring rounds leading to fluctuating readings between10 and 30 l/hour. These results have been discounted from the data set.

Table 8. Gas Monitoring Data Summary

Location [Stratum]	Max stabilised Flow (litres per hour)	Maximum stabilised CH_4 concentration (%v/v)	Maximum stabilised CO_2 concentration (%v/v)	Minimum stabilised O_2 concentration (%v/v)	VOCs max [stabilised] (ppm)	Max stabilised CO (ppm)	Maximum stabilised H_2S (ppm)
6-BH01 [PLG]	-	0	0	20.6	3.8	13.3	0
6-BH02 [WB]	0	0	0.3	16.8	3.8	0	0
6-BH03 [PLG]	0	0	2.0	19	3.0	6	5
6-BH04 [MG]	0	0	1.7	17.2	2.9	0	0
6-BH10 [MG]	-	0	0	20.4	3.3	0	0
6-BH11 [MG]	-	0	0	20.1	0	3.9	0
4-BH201 [WB&PLG]	-	0	0	20.3	0	0	0
4-BH202 [WB&PLG]	0	0	0	17	2.9	0	0
4-BH203 [PLG]	-1	0	1.5	17.0	3.2	3.7	0
4-WS205 [WB]	0	0	2.0	18.5	0	0	0
4-WS206 [WB]	0	0	1.1	18.9	3.5	0	0
4-WS208 [MG]	-0.2	0	0	20.7	0	3.8	0
4-WS209 [MG]	0	0	0	20.3	0	2.0	0
4-WS211 [MG]	0	0	1.0	16.6	0.1	0	0
4-WS212 [MG]	-	0	0	20.4	3.5	3.5	0
3-W1 [MG&PLG]	0	0	0	17	3.2	3.4	0

Notes: MG = Made Ground, WB = Weathered bedrock, PLG = Pembroke Limestone Group, - = Severe winds preventing flow readings.

4.7 Consistency with Previous Ground Investigations

Geology

4.7.1 The ground conditions from previous investigations are broadly comparable to those identified during this current supplementary ground investigation. The possible exception relates to the presence of Head deposits, as suggested by Enviros within their 2007 report and by Royal Haskoning in their 2016 report. This is likely to be an interpretative difference in opinion, in that those materials designated as Head deposits by Enviros and Royal Haskoning have been interpreted as weathered bedrock of the Pembroke Limestone Group during this current supplementary investigation.

Groundwater

4.7.2 Groundwater levels and recharge rates observed during the previous intrusive investigations (Enviros, 2007 and Quantum, 2016 – see Section 2.4) are variable and in the absence of detailed date and time of the groundwater level observations, a direct comparison with those observed during the supplementary investigation is difficult.

4.7.3 The monitoring of groundwater within the five wells installed by Royal Haskoning identified inconsistent groundwater level conditions, although generally at depth or dry. The RPS and Enviros groundwater monitoring has identified shallower and more persistent groundwater levels.

Gas

4.7.4 The monitoring from previous investigations recorded concentrations of CO and CH_4 of similar magnitude to those identified during the supplementary ground investigation. Measured concentrations of CO_2, VOCs and flow rates were typically higher during the previous ground investigations. The maximum CO_2 recorded was 7.0%, the maximum VOC was 323 ppm (the next highest was 42.3 ppm) and the maximum flow rate was 30 l/hr. H2S, where measured, was recorded as zero. It should be noted that much of this data is from 2006 / 2007 and therefore may not be representative of the current gas regime.

5 Results of Laboratory Analysis

5.1 Introduction

5.1.1 This section summarises the available dataset for the Application Site. The dataset collated originates from:

- RPS 2018 supplementary ground investigation,
- Land Quality Assessment Phase Two: Intrusive Investigation, HM Mooring Depot Pembroke Dock, by Enviros Consulting Ltd on behalf of Defence Estates, ref: 12553, dated April 2007 (samples collected in 2006), and
- Milford & Pembroke Docks, Ground Investigation Factual Report, by Quantum Geotechnical Ltd on behalf of Milford Haven Port Authority, ref: G778/FR, rev 1, dated June 2016.

5.1.2 The Royal Haskoning report, summarising the Quantum 2016 data (plus Quantum 2015 data from a different part of the site), did not add any new data. A summary of the Royal Haskoning findings is given in Section 2.4. This dataset has not been used due to the absence of the source dataset.

5.1.3 The results have been presented for each geological unit separately, and the sediment samples. Only those contaminants identified above the laboratory LoD are presented.

5.1.4 The results of the soil and groundwater laboratory analysis from the RPS supplementary ground investigation and historical data are presented respectively within *Appendix 3* and *Appendix 4*.

5.2 Results of Soil Analysis

Made Ground

5.2.1 The combined sample data for Made Ground, from the Enviros, Quantum and this RPS investigation is summarised in the Table 9.

Table 9. Summary of Made Ground soil sample data – 2006, 2016 & 2018

Determinand	Units	Number of tests	Maximum	Minimum
Lead	mg/kg	26	13,730	48
Mercury (MS)	mg/kg	26	5.4	0.878
Nickel (MS)	mg/kg	26	59.7	2.5
Arsenic (MS)	mg/kg	26	58.5	5
Cadmium (MS)	mg/kg	26	3.2	0.2
Chromium (MS)	mg/kg	71	190	0.9
Copper (MS)	mg/kg	26	500.1	15
Vanadium (MS)	mg/kg	26	41.8	3
Zinc (MS)	mg/kg	26	1,642	50.9

Determinand	Units	Number of tests	Maximum	Minimum
Selenium (MS)	mg/kg	26	3	0.6
Trivalent Chromium	mg/kg	45	190	3.9
Boron	mg/kg	7	4.7	0.74
Beryllium	mg/kg	7	0.6489	0.299
Toluene	µg/kg	53	9.74	9.74
Benzene	µg/kg	53	4.87	2.28
m and p-Xylene	µg/kg	53	8.53	4.56
o-Xylene	µg/kg	60	24	24
Anthracene	mg/kg	61	25	0.1
Pyrene	mg/kg	61	97	0.2
Benzo(g,h,i)perylene	mg/kg	61	34	0.18
Indeno(1,2,3-cd)pyrene	mg/kg	61	34	0.165
Benzo(b)fluoranthene	mg/kg	61	120	0.087
Fluoranthene	mg/kg	61	140	0.27
Benzo(k)fluoranthene	mg/kg	61	49	0.176
Acenaphthylene	mg/kg	61	3.27	0.024
Chrysene	mg/kg	61	93	0.013
Benzo(a)pyrene	mg/kg	61	69	0.225
Dibenzo(a,h)anthracene	mg/kg	61	13	0.085
Benzo(a)anthracene	mg/kg	61	92	0.02
Acenaphthene	mg/kg	61	7.3	0.055
Phenanthrene	mg/kg	61	91	0.142
Fluorene	mg/kg	61	10	0.1
Naphthalene	mg/kg	61	4.6	0.08
Aromatic >C10 - C12	mg/kg	60	6.6	0.304
Aromatic >C12 - C16	mg/kg	60	63	0.25
Aromatic >C16 - C21	mg/kg	60	1,000	4.709
Aromatic >C21 - C35	mg/kg	60	2,800	12
Aliphatics >C08 - C10	mg/kg	60	10.862	10.862
Aliphatics >C10 - C12	mg/kg	60	13.85	0.202
Aliphatics >C12 - C16	mg/kg	60	166.41	1.537
Aliphatics >C16 - C21	mg/kg	60	336.905	0.593
Aliphatics >C21 - C35	mg/kg	60	1200	11.22
PCB118	mg/kg	44	0.022	0.004
PCB Total of 12 WHO	mg/kg	39	0.022	0.022
Phenol	mg/kg	52	0.6	0.6
1,4-Dichlorobenzene	µg/kg	53	1.2	1.2
1,2-Dichlorobenzene	µg/kg	53	1.2	1.2
Carbon Tetrachloride	µg/kg	53	4.56	4.56
1,1,1-Trichloroethane	µg/kg	53	24.4	24.4
Trichloroethene	µg/kg	53	3.42	2.2
1,3,5-Trimethylbenzene	µg/kg	8	15.2	1.3

Natural Ground

5.2.2 The combined sample data for Natural Ground, from the Enviros, Quantum and this RPS investigation is summarised in Table 10.

Table 10. Summary of Natural Ground soil sample data – 2006, 2016 & 2018

Determinand	Units	Number of tests	Maximum	Minimum
Lead	mg/kg	4	1,520	51
Nickel (MS)	mg/kg	4	35	14.9
Arsenic (MS)	mg/kg	4	21.8	13.7
Cadmium (MS)	mg/kg	4	1.69	0.42
Chromium (MS)	mg/kg	16	36	13
Copper (MS)	mg/kg	4	46.3	14
Vanadium (MS)	mg/kg	4	37.8	21
Zinc (MS)	mg/kg	4	332.3	62.4
Selenium (MS)	mg/kg	4	0.6	0.6
Trivalent Chromium	mg/kg	12	36	13
Boron.	mg/kg	3	1.2	0.5
Beryllium	mg/kg	3	1.3	0.352
Anthracene	mg/kg	16	0.29	0.13
Pyrene	mg/kg	16	1.94	0.14
Benzo(g,h,i)perylene	mg/kg	16	0.61	0.49
Indeno(1,2,3-cd)pyrene	mg/kg	16	0.79	0.44
Benzo(b)fluoranthene	mg/kg	16	1.99	0.19
Fluoranthene	mg/kg	16	2.29	0.21
Benzo(k)fluoranthene	mg/kg	16	0.81	0.7
Acenaphthylene	mg/kg	16	0.25	0.21
Chrysene	mg/kg	16	1.6	0.21
Benzo(a)pyrene	mg/kg	16	1.47	0.12
Dibenzo(a,h)anthracene	mg/kg	16	0.23	0.23
Benzo(a)anthracene	mg/kg	16	1.9	0.19
Phenanthrene	mg/kg	16	1	0.18
Fluorene	mg/kg	16	0.09	0.09
Aromatic >C12 - C16	mg/kg	16	9.37	8.63
Aromatic >C16 - C21	mg/kg	16	34	7.82
Aromatic >C21 - C35	mg/kg	16	138	20
Aliphatics >C16 - C21	mg/kg	16	14.8	14.8
Aliphatics >C21 - C35	mg/kg	16	466	18

Sediment Samples

5.2.3 The sample data for sediments sampled from the Timber Pond as part of this RPS investigation is summarised in the *Table 11*.

Table 11. Summary of Timber Pond sediment sample data 2018

Determinand	Units	Number of analysis	Maximum	Minimum
Boron (H20 Soluble)	mg/kg	2	23.6	19
Arsenic (MS)	mg/kg	2	95.9	33.4
Cadmium (MS)	mg/kg	2	1.1	0.68
Chromium (MS)	mg/kg	2	81	45.5
Copper (MS)	mg/kg	2	206.4	178.1
Lead (MS)	mg/kg	2	645.3	624.1
Mercury (MS)	mg/kg	2	38.63	11.48
Nickel (MS)	mg/kg	2	34.1	30.2
Vanadium (MS)	mg/kg	2	56.1	48.7
Zinc (MS)	mg/kg	2	706.6	561.7
Barium	mg/kg	2	304	269
Beryllium	mg/kg	2	1.13	0.779
Dibutyl Tin	µg/kg	2	13.7	13.7
Monobutyl Tin	µg/kg	2	69.8	69.8
Triphenyl Tin	µg/kg	2	11.67	11.67
Acenaphthene	mg/kg	2	1.04	1.04
Anthracene	mg/kg	2	0.65	0.43
Benzo(a)anthracene	mg/kg	2	5.67	2.07
Benzo(a)pyrene	mg/kg	2	7.36	2.82
Benzo(b)fluoranthene	mg/kg	2	9.55	3.67
Benzo(ghi)perylene	mg/kg	2	4.16	1.48
Benzo(k)fluoranthene	mg/kg	2	3.29	1.25
Chrysene	mg/kg	2	6.38	1.67
Dibenzo(ah)anthracene	mg/kg	2	1.21	0.43
Fluoranthene	mg/kg	2	11.69	3.41
Fluorene	mg/kg	2	0.7	0.7
Indeno(123-cd)pyrene	mg/kg	2	5.37	1.87
Naphthalene	mg/kg	2	0.34	0.34
Phenanthrene	mg/kg	2	6.01	1.41
Pyrene	mg/kg	2	9.55	3.9
TPH Ali Band >C16-C21	mg/kg	2	47.5	47.5
TPH Ali Band >C21-C35	mg/kg	2	280.1	42.6
TPH Ali Band >C8-C40	mg/kg	2	346	346
TPH Aro Band >C16-C21	mg/kg	2	49.5	30.9
TPH Aro Band >C21-C35	mg/kg	2	309.2	177.5
TPH Aro Band >C8-C40	mg/kg	2	370	220.5

5.2.4 The sample data for sediments samples recovered from the graving dock is summarised in Table 12 below.

Table 12. Summary of Graving Dock sediment sample data –2018

Determinand	Units	Number of analysis	Maximum	Minimum
Arsenic	mg/kg	2	14.4	13.0
Cadmium	mg/kg	2	0.15	0.13
Chromium	mg/kg	2	47.8	40.4
Copper	mg/kg	2	26.5	23.6
Lead	mg/kg	2	46.2	41.8
Mercury	mg/kg	2	0.14	0.13
Nickel	mg/kg	2	30.6	29.6
Zinc	mg/kg	2	146	142
Dibutyltin	µg/kg	2	<10.61	<10.40
Tributyltin	µg/kg	2	9.96	8.95
Total hydrocarbon content	mg/kg	2	12.1	4.97
Acenaphthene	µg/kg	2	8.07	<1.7
Anthracene	µg/kg	2	13.0	3.93
Benzo(a)anthracene	µg/kg	2	32.8	11.1
Benzo(a)pyrene	µg/kg	2	32.9	11.9
Benzo(ghi)perylene	µg/kg	2	30.4	9.48
Benzo(k)fluoranthene	µg/kg	2	20.3	7.34
Chrysene	µg/kg	2	36.6	11.7
Dibenzo(ah)anthracene	µg/kg	2	12.5	<1.6
Fluoranthene	µg/kg	2	70.6	25.1
Fluorene	µg/kg	2	20.1	<1.7
Indeno(123-cd)pyrene	µg/kg	2	27.6	9.04
Naphthalene	µg/kg	2	49.3	8.21
Phenanthrene	µg/kg	2	64.6	16.7
Pyrene	µg/kg	2	55.2	19.9
Benzo(b+j)fluoranthene	µg/kg	2	63.0	18.2
Perylene	µg/kg	2	13.6	4.65
PCB congener 18	µg/kg	2	1.830	<0.208
PCB congener 138	µg/kg	2	3.200	2.950
PCB congener 149	µg/kg	2	1.510	0.811
PCB congener 153	µg/kg	2	2.780	2.660
PCB congener 180	µg/kg	2	1.560	<0.200
PCB congener 183	µg/kg	2	0.530	<0.200

5.3 Results of Groundwater Analysis

5.3.1 The combined sample data for groundwater samples, from the Enviros, Quantum and this RPS investigation is summarised in the Table 13. The data is split into which strata the response zone of the borehole was installed.

5.3.2 Data is available in relation to 16 groundwater samples, one sample was taken from Made Ground, two samples from Weathered Pembroke Limestone Group, and six samples from the Pembroke Limestone Group. Other samples, seven, were abstracted from boreholes crossing multiple stratum.

Table 13. Summary of groundwater data– 2006, 2016 & 2018

Determinand	Units	Made Ground	Weathered bedrock	Pembroke Limestone Group	Two or more strata
Arsenic as (Dissolved)	mg/l	0.022	<LoD	0.003	0.00111 – 0.008
Cadmium as Cd (Dissolved)	mg/l	<LoD	0.0001	<LoD	<LoD
Chromium as Cr (Dissolved)	mg/l	<LoD	<LoD	0.002 – 0.005	0.0006 – 0.004
Copper as Cu (Dissolved)	mg/l	<LoD	<LoD	0.001 – 0.003	0.0006
Lead as Pb (Dissolved)	mg/l	0.002	<LoD	0.014	<LoD
Nickel as Ni (Dissolved)	mg/l	<LoD	0.001	0.005	0.0015
Selenium as Se (Dissolved)	mg/l	<LoD	0.002	0.001 – 0.003	0.001 – 0.270
Zinc as Zn (Dissolved)	mg/l	0.005	<LoD	0.016	0.0005 – 0.02
Boron as B (Dissolved)	mg/l	-	-	0.076 – 0.180	0.05 – 3.5
Anthracene	µg/l	<LoD	<LoD	0.037	<LoD
Benzo(g,h,i)perylene	µg/l	<LoD	<LoD	0.018 – 0.030	<LoD
Indeno(1,2,3-cd)pyrene	µg/l	<LoD	<LoD	0.019	<LoD
Acenaphthene	µg/l	<LoD	<LoD	0.041	<LoD
Naphthalene	µg/l	<LoD	<LoD	0.038	<LoD
Chloride as Cl	mg/l	36	33	27 – 257	35 – 19,000
Ammonia (Free) as N	mg/l	0.01	<LoD	<LoD	<LoD
Ammoniacal Nitrogen as N	mg/l	0.6	<LoD	0.01 – 0.02	0.01 – 0.05
1,2,3-Trichlorobenzene	µg/l	2.0	<LoD	<LoD	<LoD
pH units	pH Units	7.8	7.1	7.5 – 8.26	7.5 – 8.17
Tributyl Tin	µg/l	-	<LoD to 0.0003	<LoD	<LoD

5.4 Consistency with Previous Laboratory Results

Soils Analysis

5.4.1 The laboratory results from previous investigations comprise a much larger dataset (80 no. samples) than that of the current RPS supplementary ground investigation (16 no. samples). The reason for this was the RPS investigation is supplementary and filled in gaps in the testing.

The spatial locations of samples were targeted to gaps in the data, compared to previous investigations. Therefore, it is unsurprising that the greatest range in concentrations in found in the previous dataset.

5.4.2 The maximum concentrations of certain parameters are an order of magnitude higher in the dataset from previous investigations typically, compared to the current RPS supplementary investigation (lead, chromium, zinc, selenium, PAHs and PCBs). Notwithstanding this, there are some parameters for which the maximum concentration (where the difference is an order of magnitude or higher) is found in the current RPS supplementary investigation dataset (toluene, benzene, xylene, 1,4-dichlorobenzene, 1,2-dichlorobenzene, carbon tetrachloride, 1,1,1-trichloroethane, trichloroethene and 1,3,5-trimethylbenzene).

5.4.3 The maximum concentrations (where the difference is an order of magnitude or higher) for shorter chain Total Petroleum Hydrocarbons (TPH) are generally higher in the current dataset, and longer chain TPHs are generally higher in the previous investigation dataset.

5.4.4 It is considered that this variation can be attributed to the variation found in Made Ground soils, and due to the larger dataset of previous investigations.

Groundwater Analysis

5.4.5 The previous dataset of groundwater data comprised 8 no. samples (4 no. from 2007 and 4 no. from 2016), while the dataset from the current RPS supplementary investigation in 2018 comprised 8 no. samples. The following parameters were found to be an order of magnitude higher in the current dataset, compared to the previous dataset; arsenic, cadmium, copper, lead and ammoniacal nitrogen. The following parameters were found to be an order of magnitude higher in the previous dataset, compared to the current dataset; selenium, boron, chloride, tributyl tin, anthracene, benzo(g,h,i)perylene, indeno(1,2,3-cd)pyrene, acenaphthene and naphthalene.

5.4.6 Some boreholes were sampled and analysed in both the previous and current dataset (boreholes 3-W1, 4-BH201, 4-BH202 and 4-BH203).

5.4.7 When the 2007 and 2018 datasets for borehole 3-W1 are compared, boron is found to be an order of magnitude higher in the current dataset, while 2 no. PAHs are found to be an order of magnitude higher in the previous dataset (benzo(g,h,i)perylene and indeno(1,2,3-cd)pyrene). According to the borehole log, borehole 3-W1 is installed with the response zone across the Made Ground and Pembroke Limestone Group.

5.4.8 When the 2007 and 2018 datasets for borehole 4-BH201 are compared, selenium is found to be an order of magnitude higher in the current dataset, while chromium and zinc are found to be an order of magnitude higher in the previous dataset. According to the borehole log, borehole 4-BH201 is installed with the response zone across the weathered bedrock and Pembroke Limestone Group.

5.4.9 When the 2007 and 2018 datasets for borehole 4-BH202 are compared, selenium is found to be an order of magnitude higher in the previous dataset. According to the borehole log, borehole 4-BH202 is installed with the response zone across the weathered bedrock and Pembroke Limestone Group.

5.4.10 When the 2007 and 2018 datasets for borehole 4-BH203 are compared, selenium is found to be an order of magnitude higher in the current dataset, while 4 no. PAHs are found to be an order of magnitude higher in the previous dataset (anthracene, benzo(g,h,i)perylene, acenaphthene and naphthalene). According to the borehole log, borehole 4-BH203 is installed with the response zone in the Pembroke Limestone Group.

6 Refined Conceptual Site Model

6.1 General

6.1.1 Information from the previous sections has been used to form the Refined Conceptual Site Model (CSM) and Preliminary Risk Assessment (PRA) below. This is based on the Conceptual Site Model set out in the Desk-Top Study (RPS, 2018b). It should be noted that whilst the updated CSM and PRA considers all of the relevant chemical data, the appraisal of gas risk is based on the data generated through the supplementary ground investigation only. This is considered appropriate as the supplementary ground investigation provides a reasonable coverage of the Application Site and ground conditions (including historical ground investigation locations, as well as those advanced during the supplementary ground investigation). It is considered that the data should supersede the historical data given its site coverage and recent nature.

6.1.2 In line with CLR-11 guidance (EA, 2004), a CSM and PRA have been developed to qualitatively assess potential contaminant sources, receptors and potential pollutant linkages identified at the Application Site. The risk level relevant to each linkage is stated in the context of potential risk to future site users based on the proposed continued commercial use, as well as controlled water receptors.

6.2 Conceptual Site Model

6.2.1 A number of potential contamination sources are present in the areas of proposed development. The sources of contamination were found to be relevant to selected receptors and associated with potential pathways and linkages resulting in the need to undertake a preliminary risk assessment fulfilling development objectives of the Application Site.

6.2.2 The general ground conditions at the Application Site comprise Made Ground over weathered bedrock over the Pembroke Limestone Group. Over the various phases of ground investigation, the Pembroke Limestone Group has been identified as a limestone and mudstone deposit. The limestone was found slightly weathered to strong fresh and fractured rock. The mudstone was typically found highly to moderately weathered thinly to medium bedded.

6.2.3 The orientation of geological units is likely to be controlled by the East – West anticline / syncline regional structure and dipping of Pembroke Limestone Group to the North. The control of these large geological structures is likely to affect the orientation of the fractures within the strata.

6.2.4 Made Ground was found to occasionally contain groundwater, which is perched and discontinuous in nature. The underlying weathered bedrock and Pembroke Limestone Group demonstrate more consistent groundwater levels, affected by the tide and therefore likely to be in hydraulic continuity with the Milford Haven.

6.2.5 The Application Site general topography indicates elevations from east to west range from 11.75 meters Above Ordnance Datum (mAOD) to 6.5 mAOD near the Timber Pond and flat toward the north.

6.3 Preliminary Risk Assessment

Potential Contamination Sources

6.3.1 The following potential contamination sources at the Application Site have been identified:

- Chemical contamination associated with the current on-site uses including storage of fuel oil, scrap yard, presence of electrical sub-stations Made Ground and spoil heaps (potential hydrocarbons, PCBs and asbestos contamination);
- Chemical contamination associated with the historical use of the Application Site (including military usage), including localised tanks, railway lines, electrical sub-stations, car dealers/breakers, manufacturing/engineering (potential hydrocarbons, solvents, PCBs, heavy metals, ground gas/vapours and asbestos contamination);
- Chemical contamination associated with historical off-site gas works and Depot feature to the south (potential ground gas/vapours to migrate to Application Site);
- Chemical contamination of shallow/perched groundwater (potential cyanide, hydrocarbons, solvents, PCBs, heavy metals and vapours); and
- Fuel contamination associated with the Sea Empress oil spill, in 1996, which occurred in the Milford Haven Estuary adjacent to the Application Site. The interview with site staff indicated that during repairs to Slipway 1, evidence of oil contamination was observed below the slipway slabs.

6.3.2 The risk assessment is based on a proposed future commercial use of the Application Site. Table 14 presents Sources, Pathways and Receptors used in this context. Should a different land use be proposed, this CSM and PRA should be reassessed.

Table 14. Summary of Pollutant (Source-Pathway-Receptor) Linkages

Source	Pathway	Receptor	Risk	Notes
Chemical contamination associated with the current site uses, including storage of fuel oil, scrap yard and presence of electrical sub-stations (potential hydrocarbons and PCBs)	Ingestion and dermal contact of soil; Inhalation of dust/asbestos fibres	Future Site Users	Low	Current onsite activities are well managed (no staining around tanks, tanks are of modern construction and double-skinned) with the possible exception of the scrap yard/garage where oil sheens were observed on bare ground outside. The potential for contamination pathways to future users will be limited as, post development, the site will be principally laid to hardstanding. The multiple phases of ground investigation have identified low to moderate concentrations of contaminants.
	Inhalation of ground vapours		Low	Current onsite activities are well managed (no staining around tanks, tanks are of modern construction and double-skinned) with the possible exception of the scrap yard/garage where oil sheens were observed on bare ground outside. Whilst activities have the potential to have generated volatile contamination at the Application Site, PID screening has identified limited volatile vapours. The multiple phases of ground investigation have identified low concentrations of volatile contaminants. The proposed development is considered low sensitivity with respects to volatile vapours, the proposed buildings being large with high ventilation.
	Inhalation of ground gas and risk of explosion	Future Site Users and Buildings	Low	The Made Ground and Limestone geology beneath the Application Site have the potential to generate ground gas. The monitoring works to date have identified low to moderate concentrations of ground gases and flow rates. The proposed development is considered low sensitivity with respect to ground gas, the proposed buildings being large with high ventilation.

Source	Pathway	Receptor	Risk	Notes
	Leaching; Migration of contaminated groundwater	Deep groundwater	Low	Current onsite activities are broadly well managed (no staining around tanks, tanks are of modern construction and double-skinned) with the possible exception of the scrap yard/garage where oil sheens were observed on bare ground outside. Leaching of contaminants will be restricted through the development, with the placement of hardstanding restricting infiltration. The weathered bedrock deposits are likely to be of relatively low permeability restricting vertical migration of contaminants. The Limestone aquifer beneath the Application Site is classified as a Principal aquifer, but due to its costal nature is unlikely to represent a potable abstraction source. The multiple phases of ground investigation have identified low to moderate concentrations of contaminants.
	Leaching; Migration of contaminated deep groundwater and subsequent horizontal migration into adjoining Surface Water (Pembroke Estuary)	Pembroke Estuary	Low	Current onsite activities are broadly well managed (no staining around tanks, tanks are of modern construction and double-skinned) with the possible exception of the scrap yard/garage where oil sheens were observed on bare ground outside. Leaching of contaminants will be restricted through the development, with the placement of hardstanding restricting infiltration. The weathered bedrock deposits are likely to be of relatively low permeability restricting vertical migration of contaminants. Whilst the limestone is likely to allow horizontal migration of contaminants, significant dilution is likely to occur within the unit and within the estuary. The multiple phases of ground investigation have identified low to moderate concentrations of contaminants.

Source	Pathway	Receptor	Risk	Notes
	Leaching; Migration of contaminated shallow perched water and subsequent horizontal migration into adjoining Surface Water (Pembroke Estuary)	Pembroke Estuary	Low	Current onsite activities are broadly well managed (no staining around tanks, tanks are of modern construction and double-skinned) with the possible exception of the scrap yard/garage where oil sheens were observed on bare ground outside. Leaching of contaminants will be restricted through the development, with the placement of hardstanding restricting infiltration. Whilst the Made Ground contains granular horizons, the monitoring data suggests an absence of a consistent perched water table. Significant dilution is likely to occur within the unit and within the estuary. The multiple phases of ground investigation have identified low to moderate concentrations of contaminants.
Chemical contamination associated with the historical use of the Application Site, including localised tanks, railway lines, electrical sub-stations, car dealers/breakers, manufacturing/engineering (potential hydrocarbons, solvents, PCBs, heavy metals, ground gas/vapours and asbestos contamination)	Ingestion and dermal contact of soil; Inhalation of dust/asbestos fibres	Future Site Users; Construction workers	Low	The potential for contamination pathways to be present to future users is limited due to the minimal soft standing present. The multiple phases of ground investigations have identified low to moderate concentrations of contaminants.
	Inhalation of ground vapours		Low	Volatile contamination may have arisen as a result of the historical site activities. PID screening has identified limited volatile vapours. The multiple phases of ground investigation have identified low concentrations of volatile contaminants. The proposed development is considered low sensitivity with respects to volatile vapours, the proposed buildings being large with high ventilation.
	Inhalation of ground gas and risk of explosion	Future Site Users and Buildings	Low	The Made Ground and Limestone geology beneath the Application Site have the potential to generate ground gas. The monitoring works to date have identified low to moderate concentrations of ground gases and flow rates. The proposed development is considered low sensitivity with respect to ground gas, the proposed buildings being large with high ventilation.

Source	Pathway	Receptor	Risk	Notes
	Leaching; Migration of contaminated groundwater	Deep groundwater	Low	Leaching of contaminants will be restricted through the development, with the placement of hardstanding restricting infiltration. The weathered bedrock deposits are of relatively low permeability restricting vertical migration of contaminants. The Limestone aquifer beneath the Application Site is classified as a Principal aquifer, but due to its costal nature is unlikely to represent a potable abstraction source. The multiple phases of ground investigation have identified low to moderate concentrations of contaminants.
	Leaching; Migration of contaminated deep groundwater and subsequent horizontal migration into adjoining Surface Water (Pembroke Estuary)	Pembroke Estuary	Low	Leaching of contaminants will be restricted through the development, with the placement of hardstanding restricting infiltration. The weathered bedrock deposits are likely to be of relatively low permeability restricting vertical migration of contaminants. Whilst the limestone is likely to allow horizontal migration of contaminants, significant dilution is likely to occur within the unit and within the estuary. The multiple phases of ground investigation have identified low to moderate concentrations of contaminants.
	Leaching; Migration of contaminated shallow perched water and subsequent horizontal migration into adjoining Surface Water (Pembroke Estuary)	Pembroke Estuary	Low	Leaching of contaminants will be restricted through the development, with the placement of hardstanding restricting infiltration. Whilst the Made Ground contains granular horizons, the monitoring data suggests an absence of a consistent perched water table. Significant dilution is likely to occur within the unit and within the estuary. The multiple phases of ground investigation have identified low to moderate concentrations of contaminants.
Volatile and ground gas contamination associated with historical off-site gas works and sewage works, and Depot feature to the south	Lateral migration of vapours and ground gas onto the Application Site and subsequent inhalation	Future Site Users and buildings	Low	Volatile contamination may have arisen as a result of the historical site activities offsite. Gas monitoring has identified low concentrations of volatiles and gas within monitoring wells. The proposed development is considered low sensitivity with respects to volatile vapours, the proposed buildings being large with high ventilation.

7 Human Health Risk Assessment

7.1 Introduction

7.1.1 A human health risk assessment has been undertaken to determine the level of risk to human health from the presence of chemical contamination within soils at the Site. This section provides a summary of the levels of chemical contaminants encountered and determines whether the identified contamination is likely to present a potential unacceptable / intolerable long term risk to human health.

7.2 Risk Assessment Methodology

7.2.1 The assessment of risks posed to human health by the presence of soil contaminants is based upon the guidelines outlined in CLR11 (EA, 2004), which provides a framework for risk assessment and follows the tiered process, with each subsequent tier involving a higher degree of input into the assessment. This approach is outlined below.

Tier 1 – Qualitative Risk Assessment

7.2.2 This stage qualitatively identifies each of the Source-Pathway-Receptor components that are present on the Site, which forms the basis of the UK risk assessment approach. The Tier 1 assessment is presented within Section 6 of this report .

Tier 2 – Generic Quantitative Risk Assessment (GQRA)

7.2.3 Two Science Reports (EA, 2009a & EA, 2009b) together with the CLEA exposure model have been used to form the basis of the Tier 2 assessment.

7.2.4 It is recognised that Category 4 Screening Levels (C4SLs) (DEFRA, 2014), for a limited number of contaminants have been developed by CL:AIRE in an attempt to align with the updated Part IIA guidance, by defining a level of contamination that would not be considered as contaminated land under Part IIA of the Environmental Protection Act. However, there is currently a debate within the UK contaminated land industry about the applicability of the C4SLs in determining remedial requirements under the planning regime, therefore C4SLs have not been applied within this risk assessment and instead Suitable 4 Use Levels (S4ULs) have been adopted, with the exception of lead, where no S4UL is available. No S4UL for PCB is available so the withdrawn EA SGV has been used.

7.2.5 The Tier 2 risk assessment aims to identify contaminants of concern and their spatial distribution, and requires benchmarks against which to compare the concentrations of soil contaminants. This requires the comparison of contaminant concentrations with S4ULs that have been derived by Land Quality Management Ltd (LQM) (LQM, 2015) using the Contaminated Land Exposure Assessment (CLEA) framework. Contaminant concentrations below the respective S4UL criteria represent a tolerable or minimal risk level to human health as

described in the SR2 Report. Where contaminant concentrations are above S4UL criteria, further risk assessment and possibly remediation may be required.

7.2.6 Where S4ULs have been derived by LQM, these have been used for comparison with Site ground investigation data. For those contaminants where no S4ULs have been derived, Application Site data is compared against Generic Assessment Criteria (GAC) published by CL:AIRE (CL:AIRE, 2009).

7.2.7 The Tier 2 risk assessment presented within this section is based upon the generic 'Commercial' land-use scenario under the CLEA methodology using S4UL/C4SL /GACs on those contaminants for which laboratory analysis is available.

Tier 3 – Detailed Quantitative Risk Assessment (DQRA)

7.2.8 Where a S4UL / C4SL / GAC is exceeded, a detailed human health risk assessment may be required to further quantify the potential risk posed and determine whether there is a requirement for remediation. The Tier 3 assessment considers the toxicological characteristics, migration mechanisms and exposure pathways to derive Site Specific Assessment Criteria (SSAC) using the CLEA computer model. A literature search is undertaken to obtain the most recent relevant toxicological information, and this is input into the model. Exceedance of the SSAC may suggest that remediation is required to mitigate risks posed to human health.

7.2.9 A Tier 3 assessment is outside the scope of this report and has not been undertaken.

7.3 Tier 2 – Generic Quantitative Risk Assessment

7.3.1 This section provides a comparison of the available soil analysis data (as summarised within Appendix 4 of this report), against appropriate screening criteria for a commercial end use. The assessment was undertaken to identify any potentially unacceptable risks to human health on the basis of the proposed redevelopment of the Application Site for a continued commercial purpose.

7.3.2 For inorganic contaminants principally comprising metals, the laboratory analysis results have initially been compared against the appropriate screening criteria to determine if the maximum concentration exceeds the screening criteria. Where the maximum concentrations do not exceed the screening criteria, it is considered that concentrations of these contaminants lie at levels of tolerable risk to human health and no further consideration is warranted. Where individual exceedances of particular contaminants are identified, further consideration to those particular contaminants is given by the calculation of the statistical 95% Upper Confidence Limit (UCL) of the true mean concentration and completion of an outlier assessment, in line with UK best practice. The statistical analysis is undertaken to determine whether the UCL exceeds the selected screening criteria and if the identified maximum concentration exceedance is part of the same statistical dataset i.e. the same contamination source, or whether it represents a statistical outliers and is indicative of a separate or discrete contamination source.

7.3.3 For all TPH, PCB, PAH, VOC and SVOC contaminants, the results of the laboratory analysis have been compared directly against the appropriate screening criteria, as the most likely source of this contamination is considered to be from point sources e.g. spillages from storage tanks, pipelines. Therefore the statistical assessment of data is not considered valid and this approach is considered to be in line with UK best practice.

Assessment

7.3.4 The below assessment has been split into Made Ground and Natural Ground.

Table 15. Summary of Made Ground soil sample data and comparison to assessment criteria – 2006, 2016 & 2018

Determinand	Units	Number of tests	Max	Min	S4UL	Exceedances?
Asbestos	N/A	59	18 no. Detected	41 no. Not Detected	N/A	N/A
Lead (MS)	mg/kg	26	13,730	48	2,300*	4
Mercury (MS)	mg/kg	26	5.4	0.878	58	0
Nickel (MS)	mg/kg	26	59.7	2.5	980	0
Arsenic (MS)	mg/kg	26	58.5	5	640	0
Cadmium (MS)	mg/kg	26	3.2	0.2	190	0
Chromium (MS)	mg/kg	71	190	0.9	8,600	0
Copper (MS)	mg/kg	26	500.1	15	68,000	0
Vanadium (MS)	mg/kg	26	41.8	3	9,000	0
Zinc (MS)	mg/kg	26	1,642	50.9	730,000	0
Selenium (MS)	mg/kg	26	3	0.6	12,000	0
Trivalent Chromium	mg/kg	45	190	3.9	8,600	0
Boron	mg/kg	7	4.7	0.74	240,000	0
Beryllium	mg/kg	7	0.6489	0.299	12	0
Anthracene	mg/kg	61	25	0.1	520,000	0
Pyrene	mg/kg	61	97	0.2	54,000	0
Benzo(g,h,i)perylene	mg/kg	61	34	0.18	3,900	0
Indeno(1,2,3-cd)pyrene	mg/kg	61	34	0.165	500	0
Benzo(b)fluoranthene	mg/kg	61	120	0.087	44	2
Fluoranthene	mg/kg	61	140	0.27	23,000	0
Benzo(k)fluoranthene	mg/kg	61	49	0.176	1,200	0
Acenaphthylene	mg/kg	61	3.27	0.024	83,000	0
Chrysene	mg/kg	61	93	0.013	350	0
Benzo(a)pyrene	mg/kg	61	69	0.225	35	1

Determinand	Units	Number of tests	Max	Min	S4UL	Exceedances?
Dibenzo(a,h)anthracene	mg/kg	61	13	0.085	3.5	2
Benzo(a)anthracene	mg/kg	61	92	0.02	170	0
Acenaphthene	mg/kg	61	7.3	0.055	84,000	0
Phenanthrene	mg/kg	61	91	0.22	22,000	0
Fluorene	mg/kg	61	10	0.1	63,000	0
Naphthalene	mg/kg	61	4.6	0.08	190	0
Aromatic >C10 - C12	mg/kg	60	6.6	0.304	16,000	0
Aromatic >C12 - C16	mg/kg	60	63	0.25	36,000	0
Aromatic >C16 - C21	mg/kg	60	1,000	4.709	28,000	0
Aromatic >C21 - C35	mg/kg	60	2,800	12	28,000	0
Aliphatics >C08 - C10	mg/kg	60	10.862	10.862	2,000	0
Aliphatics >C10 - C12	mg/kg	60	13.85	0.202	9,700	0
Aliphatics >C12 - C16	mg/kg	60	166.41	1.537	59,000	0
Aliphatics >C16 - C21	mg/kg	60	336.905	0.593	1,600,000	0
Aliphatics >C21 - C35	mg/kg	60	1,200	11.22	1,600,000	0
PCB Total of 12 WHO	mg/kg	39	0.022	0.022	0.24**	0
Phenol	mg/kg	52	0.6	0.6	440	0
Toluene	µg/kg	53	9.74	9.74	56,000,000	0
Benzene	µg/kg	53	4.87	2.28	27,000	0
m and p-Xylene	µg/kg	53	8.53	4.56	5,900,000	0
O-Xylene	µg/kg	60	24	24	6,600,000	0
1,4-Dichlorobenzene	µg/kg	53	1.2	1.2	4,400,000	0
1,2-Dichlorobenzene	µg/kg	53	1.2	1.2	2,000,000	0
Carbon Tetrachloride	µg/kg	53	4.56	4.56	2,900	0
1,1,1-Trichloroethane	µg/kg	53	24.4	24.4	660,000	0
Trichloroethene	µg/kg	53	3.42	2.2	1,200	0
1,3,5-Trimethylbenzene	µg/kg	8	15.2	1.3	23,000	0

Note: * C4SL assessment criteria used as no S4UL available for lead.

** Withdrawn EA Soil Guideline Value (SGV) used as no S4UL available for PCBs.

7.3.5 Exceedances of the assessment criteria of asbestos, lead, Benzo(b)fluoranthene, Benzo(a)pyrene and Dibenzo(a,h)anthracene have been noted. All the identified exceedances have been from Made Ground soils between ground level and 3.0 m bgl.

Asbestos

- 5-HP901 at 0.0 m bgl from Made Ground (Chrysotile, <0.001%)
- 5-HP902 at 0.0 m bgl from Made Ground (Crocidolite, <0.001%)
- 5-HP905 at 0.0 m bgl from Made Ground (Chrysotile, <0.001%)
- 5-HP908 at 0.0 m bgl from Made Ground (Chrysotile, <0.001%)v
- 5-HP909 at 0.0 m bgl from Made Ground (Chrysotile, <0.001%)
- 5-HP916 at 0.0 m bgl from Made Ground (Chrysotile, <0.001%)
- 5-TP902 at 3.0 m bgl from Made Ground (Chrysotile)
- 5-TP903 at 0.5 m bgl from Made Ground (Chrysotile)
- 5-TP903 at 3.0 m bgl from Made Ground (Chrysotile)
- 5-TP906 at 0.15 m bgl from Made Ground (Chrysotile)
- 5-BH801 at 0.8-1.5 m bgl from Made Ground (Chrysotile & Amosite)
- 5-BH802 at 0.8-1.5 m bgl from Made Ground (Amosite)
- 5-BH902 at 0.5-1.0 m bgl from Made Ground (Chrysotile)
- 6-BH03 at 0.3 m bgl from Made Ground (Chrysotile)
- 6-BH04 at 1.0-1.2 m bgl from Made Ground (Chrysotile & Amosite)
- 6-BH06 at 0.6 m bgl from Made Ground (Chrysotile)
- 6-BH11 at 0.8 m bgl from Made Ground (Chrysotile & Crocidolite)
- 6-BH13 at 0.5 m bgl from Made Ground (Chrysotile)

Lead (4 no.)

- 4-WS203 at 0.2 m bgl from Made Ground (2,875 mg/kg)
- 4-WS211 at 0.4-0.5 m bgl from Made Ground (2,303 mg/kg)
- 4-WS212 at 0.4-0.6 m bgl from Made Ground (13,730 mg/kg)
- 4-WS212 at 1.0-1.2 m bgl from Made Ground (5,296 mg/kg)

Benzo(b)fluoranthene (2 no.)

- 5-TP902 at 3.0 m bgl from Made Ground (120 mg/kg)
- 6-BH09 at 0.5 m bgl from Made Ground (47.8 mg/kg)

Benzo(a)pyrene (1 no.)

- 5-TP902 at 3.0 m bgl, from Made Ground (69 mg/kg)

Dibenzo(a,h)anthracene (2 no.)

- 5-TP902 at 3.0 m bgl, from Made Ground (13 mg/kg)
- 6-BH09 at 0.5 m bgl, from Made Ground (7.85 mg/kg)

7.3.6 A statistical assessment of the concentrations of lead has been undertaken to determine the presence of statistical outliers and the 95th percentile for the general population (excluding the statistical outliers). The statistical analysis is presented within Table 16.

- 4-WS202 @ 0.1 m bgl (1818 mg/kg)
- 4-WS203 @ 0.2 m bgl (2,875 mg/kg)
- 4-WS204 @ 0.8 m bgl (1,871 mg/kg)
- 4-WS211 @ 0.4-0.7 m bgl (2,303 mg/kg)
- 4-WS212 @ 0.4 – 0.6 m bgl (13,730 mg/kg)
- 4-WS212 @ 1 – 1.2 m bgl (5,296 mg/kg)

Table 16. Statistical analysis of identified contaminants and comparison to assessment criteria

Determinand	Units	Number of tests	Max	Min	95th %*	S4UL	Does 95th % exceed S4UL?	Outliers
Lead	mg/kg	26	13,730	48	475.22	2,300	Yes	▪ 4-WS202 @ 0.1 m bgl (1818 mg/kg) ▪ 4-WS203 @ 0.2 m bgl (2,875 mg/kg) ▪ 4-WS204 @ 0.8 m bgl (1,871 mg/kg) ▪ 4-WS211 @ 0.4-0.7 m bgl (2,303 mg/kg) ▪ 4-WS212 @ 0.4 – 0.6 m bgl (13,730 mg/kg) ▪ 4-WS212 @ 1 – 1.2 m bgl (5,296 mg/kg)

* Excludes outliers

7.3.7 *Drawing JER1262-SR-005* shows the locations of the above exceedances on a site plan.

7.3.8 The locations of the above boreholes, trial pits and hand dug pits are not clustered in one area but are found across the Application Site. The presence of asbestos has been recorded in the Milforge Site in the south, and also within boreholes BH801 and BH802 on the northern end of the graving dock sides. The exceedances of lead were recorded in the north of the Application Site (boreholes 4-WS211 and 4-WS212) and in the southwest (borehole 4-WS203). The

exceedances of PAHs were recorded in the Milforge Site (trial pit 5-TP902) and in the central part of the site (borehole 6-BH09).

Table 17. Summary of Natural Ground soil sample data and comparison to assessment criteria – 2006, 2016 & 2018

Determinand	Units	Number of tests	Max	Min	S4UL	Exceedances?
Lead	mg/kg	7	1,520	50.1	2,300*	0
Nickel (MS)	mg/kg	7	35	3.2	980	0
Arsenic (MS)	mg/kg	7	21.8	3.1	640	0
Cadmium (MS)	mg/kg	7	1.69	0.4	190	0
Chromium (MS)	mg/kg	19	36	3.5	8,600	0
Copper (MS)	mg/kg	7	46.3	10.2	68,000	0
Vanadium (MS)	mg/kg	7	37.8	5.8	9,000	0
Zinc (MS)	mg/kg	7	332.3	52	730,000	0
Selenium (MS)	mg/kg	7	0.6	0.6	12,000	0
Trivalent Chromium	mg/kg	12	36	13	8,600	0
Boron.	mg/kg	4	1.2	0.5	240,000	0
Beryllium	mg/kg	4	1.3	0.352	12	0
Anthracene	mg/kg	18	0.51	0.13	520,000	0
Pyrene	mg/kg	18	1.94	0.14	54,000	0
Benzo(g,h,i)perylene	mg/kg	18	0.61	0.49	3,900	0
Indeno(1,2,3-cd)pyrene	mg/kg	18	0.79	0.44	500	0
Benzo(b)fluoranthene	mg/kg	18	1.99	0.19	44	0
Fluoranthene	mg/kg	18	2.538	0.21	23,000	0
Benzo(k)fluoranthene	mg/kg	18	1.245	0.7	1,200	0
Acenaphthylene	mg/kg	18	0.25	0.164	83,000	0
Chrysene	mg/kg	18	2.295	0.21	350	0
Benzo(a)pyrene	mg/kg	18	1.47	0.12	35	0
Dibenzo(a,h)anthracene	mg/kg	18	0.532	0.23	3.5	0
Benzo(a)anthracene	mg/kg	18	2.06	0.19	170	0
Acenaphthene	mg/kg	18	0.016	0.016	84,000	0
Phenanthrene	mg/kg	18	1.0	0.18	22,000	0
Fluorene	mg/kg	18	0.09	0.069	63,000	0
Naphthalene	mg/kg	18	0.051	0.051	190	0
Aromatic >C12 - C16	mg/kg	18	9.37	0.728	36,000	0
Aromatic >C16 - C21	mg/kg	18	34	6.388	28,000	0
Aromatic >C21 - C35	mg/kg	18	138	10.9	28,000	0
Aliphatics >C12 - C16	mg/kg	18	4.94	0.925	59,000	0
Aliphatics >C16 - C21	mg/kg	18	36	14.726	1,600,000	0
Aliphatics >C21 - C35	mg/kg	18	523.666	18	1,600,000	0

Note: * C4SL assessment criteria used as no S4UL available for lead.

Table 18. Summary of sediment sample data and comparison to assessment criteria – 2018

Determinand	Units	Number of tests	Max	Min	S4UL	Exceedances?
Boron (H20 Soluble)	mg/kg	2	23.6	19	240,000	0
Arsenic (MS)	mg/kg	4	95.9	13.0	640	0
Cadmium (MS)	mg/kg	4	1.1	0.13	190	0
Chromium (MS)	mg/kg	4	81	40.4	8,600	0
Copper (MS)	mg/kg	4	206.4	23.6	68,000	0
Lead (MS)	mg/kg	4	645.3	41.8	2,300*	0
Mercury (MS)	mg/kg	4	38.63	0.13	58	0
Nickel (MS)	mg/kg	4	34.1	29.6	980	0
Vanadium (MS)	mg/kg	2	56.1	48.7	9,000	0
Zinc (MS)	mg/kg	4	706.6	142	730,000	0
Barium	mg/kg	2	304	269	-	-
Beryllium	mg/kg	2	1.13	0.779	12	0
Dibutyl Tin	µg/kg	4	13.7	<10.4	130,000**	0
Monobutyl Tin	µg/kg	2	69.8	69.8	130,000**	0
Triphenyl Tin	µg/kg	2	11.67	11.67	130,000**	0
Tributyl Tin	µg/kg	4	9.96	8.95	130,000**	0
Acenaphthene	mg/kg	4	1.04	<0.0017	84,000	0
Anthracene	mg/kg	4	0.65	0.00393	520,000	0
Benzo(a)anthracene	mg/kg	4	5.67	0.0111	170	0
Benzo(a)pyrene	mg/kg	4	7.36	0.0119	35	0
Benzo(b)fluoranthene	mg/kg	2	9.55	3.67	44	0
Benzo(b+j)fluoranthene	mg/kg	2	0.063	0.0182	44	0
Benzo(ghi)perylene	mg/kg	4	4.16	0.00948	3,900	0
Benzo(k)fluoranthene	mg/kg	4	3.29	0.00734	1,200	0
Chrysene	mg/kg	4	6.38	0.0117	350	0
Dibenzo(ah)anthracene	mg/kg	4	1.21	<0.0016	3.5	0
Fluoranthene	mg/kg	4	11.69	0.0251	23,000	0
Fluorene	mg/kg	4	0.70	<0.0017	63,000	0
Indeno(123-cd)pyrene	mg/kg	4	5.37	0.00904	500	0
Naphthalene	mg/kg	4	0.34	0.00821	190	0
Phenanthrene	mg/kg	4	6.01	0.0167	22,000	0
Pyrene	mg/kg	4	9.55	0.0199	54,000	0
Perylene	mg/kg	2	0.0136	0.00465	-	-
TPH Ali Band >C16-C21	mg/kg	2	47.5	47.5	1,600,000	0
TPH Ali Band >C21-C35	mg/kg	2	280.1	42.6	1,600,000	0
TPH Ali Band >C8-C40	mg/kg	2	346	346	-	-
TPH Aro Band >C16-C21	mg/kg	2	49.5	30.9	28,000	0
TPH Aro Band >C21-C35	mg/kg	2	309.2	177.5	28,000	0
TPH Aro Band >C8-C40	mg/kg	2	370	220.5	-	-

Determinand	Units	Number of tests	Max	Min	S4UL	Exceedances?
Total hydrocarbon content	mg/kg	2	12.1	4.97	-	-
PCB congener 18	µg/kg	2	1.83	<0.208	240***	0
PCB congener 138	µg/kg	2	3.2	2.95	240***	0
PCB congener 149	µg/kg	2	1.51	0.811	240***	0
PCB congener 153	µg/kg	2	2.78	2.66	240***	0
PCB congener 180	µg/kg	2	1.56	<0.200	240***	0
PCB congener 183	µg/kg	2	0.53	<0.200	240***	0

Note: * C4SL assessment criteria used as no S4UL available for lead.

** Generic Assessment Criteria (GAC) derived by CL:AIRE, for tributyl tin oxide as no S4UL for tin.

*** Withdrawn EA Soil Guideline Value (SGV) used as no S4UL available for PCBs.

7.3.9 No exceedances against the human health assessment criteria have been noted for Natural Ground samples or sediment samples.

7.4 Human Health Risk Assessment Conclusion and Recommendations

7.4.1 Asbestos fibres, and suspected asbestos-containing materials, have been identified at the Application Site in Made Ground soils. Concentrations of lead and certain PAHs in Made Ground soils have been identified above the relevant human health assessment criteria.

7.4.2 Remedial measures in the form of capping is recommended, to break the physical pathway from soils to site users. Across much of the site, hardstanding is proposed and this will provide a capping layer. Where soft landscaping is proposed, clean cover soils of 600 mm (plus a geotextile or no-dig break layer below) are recommended. Alternatively, Made Ground soils could be removed offsite.

8 Controlled Waters Risk Assessment

8.1 Introduction

8.1.1 Following completion of the RPS desk-top study (RPS, 2018b), the supplementary intrusive ground investigation and associated environmental monitoring programme, a Conceptual Site Model (CSM), including potentially active pollutant (Source-Pathway-Receptor) linkages has been developed.

8.1.2 The 2018 groundwater sampling dataset is deemed to be representative of the groundwater conditions pertaining at the site, and the previously collected dataset has not be used in the risk assessment.

8.1.3 An evaluation of the water quality dataset gathered for the Application Site, from the supplementary investigation, has been undertaken. The baseline water quality comprises firstly, definition by a statistical description of the quantitative water quality dataset that shall include, as a minimum:

- Number of analyses;
- Number of analyses that exceed the laboratory Limit of Detection (LOD) (also expressed as a percentage of analyses);
- Concentration range;
- Arithmetic mean concentration and standard deviation (SD) (where dataset allows);
- Monitoring location with maximum concentration, and
- Time series trends (where dataset allows).

8.1.4 Any hazardous substances or non-hazardous pollutants (as defined by Joint Agencies Groundwater Directive Advisory Group (JAGDAG) for the purposes of the groundwater directive 2006/118/EC) present in groundwater at concentrations above the laboratory LOD shall be identified. Finally, a Generic Quantified Risk Assessment (GQRA) shall be undertaken to determine the likely significance of contamination identified in the controlled water body defined for the Application Site and / or the potential risk to other controlled water receptors.

8.1.5 A GQRA involves screening the observed water quality dataset against appropriate water quality Assessment Criteria (AC). The selection of AC for the screening assessment shall depend on the CSM developed for the Application Site and in particular the nature and sensitivity of controlled water receptors for which active pollutant (Source-Pathway-Receptor) linkages are considered likely to exist. The following water quality AC have been used herein:

- Environmental Quality Standards (EQSs) for surface waters (i.e. for specific pollutants, priority substances and other pollutant) as defined in The Water Framework Directive (Standards and Classification) Directions (England and Wales) 2015 (http://www.legislation.gov.uk/uksi/2015/1623/resources); and
- Drinking Water Standards (DWSs) as defined in The Water Supply (Water Quality) Regulations 2016 (SI 2016 No. 614) and The Private Water Supplies (England) Regulations 2016 (SI 2016 No 618) (http://www.legislation.gov.uk/wsi/2016).

8.1.6 Only statutory water quality limits identified above have been used in this assessment. Although not used in this assessment other AC are potentially available, most notably:

- Water Framework Directive criteria used for the classification of status of surface water bodies; and
- Non-statutory World Health Organization Guidelines for Drinking-water Quality, 4th Edition (WHO, 2011).

8.2 Results of the Preliminary Risk Assessment

8.2.1 The Preliminary Risk Assessment presented in Section 6 identified the following active source – pathway – receptor linkages on site that could pose a risk to controlled waters (risk identified as low to medium):

- Source: Chemical contamination associated with the current and historical site uses, including storage of fuel oil, scrap yard and presence of electrical sub-stations (potential hydrocarbons and PCBs).
- Pathway: Leaching from contaminated soil and migration of contaminated groundwater within Made Ground, weathered Pembroke Limestone Group or Pembroke Limestone Group and subsequent horizontal migration into adjoining Surface Water (Pembroke Estuary).
- Receptors: Deep groundwater (Pembroke Limestone Group) and Pembroke Estuary (Milford Haven surface water).

8.3 Controlled Water Risk Assessment

8.3.1 For those determinants analysed above laboratory LOD, Table 19 provides summary statistics, location of maximum detected and a comparison with AC. Due to the proximity of the sea, and evidence of the tidal influence on groundwater level and water salinity, the relevance of the freshwater EQS is limited.

8.3.2 Metals have been analysed as dissolved and can be compared directly with water assessment criteria. The comparison table indicates, in bold, exceedances with EQS saltwater or DWS, or if the detection limit is equal or above the assessment criteria.

8.3.3 Detection limits equal to the maximum concentration of the parameter have been found for free ammonia (0.01mg/l) and cadmium (0.0001mg/l). Both parameters are below the EQS for saltwater. Due to the proximity of the site to the Milford Haven and evidence of tidal influence over the Application Site, chloride has been screened out of the assessment, providing only local evidence of the relationship between groundwater and the estuary.

8.3.4 Exceedances of chromium, lead, zinc and trichlorobenzene were found at discrete locations (6-BH01 (lead and zinc), 4-WS208 (lead and trichlorobenzene), 4-BH203 (chromium), 4-BH202 (chromium) and 3-W1 (chromium)). Many parameters across the Application Site were below LOD confirming the relatively good groundwater quality beneath the Application Site.

Table 19. Comparison of groundwater monitoring data with Assessment Criteria

Parameter	Units	No of detects	No of tests	Detection limit	Max	Min	Mean	Standard Deviation	Location of max	EQS (saltwater)	DWS
Ammonia (Free) as N calc	mg/l	1	8	0.01	0.01	0.01	N/A	N/A	4-WS208	0.021	0.5
Arsenic as As	mg/l	3	8	0.001	0.022	0.002	0.009	0.011	4-WS208	0.025	0.01
Cadmium as Cd	mg/l	1	8	0.0001	0.0001	0.0001	N/A	N/A	6-BH02	0.0002	0.005
Chromium as Cr	mg/l	3	8	0.001	0.004	0.002	0.003	0.001	3-W1	**0.0006**	0.05
Copper as Cu	mg/l	2	8	0.001	0.003	0.001	0.002	N/A	6-BH01	0.00376	2
Lead as Pb	mg/l	2	8	0.001	0.014	0.002	0.008	N/A	6-BH01	**0.0013**	**0.01**
Nickel as Ni	mg/l	2	8	0.001	0.005	0.001	0.003	N/A	6-BH01	0.0086	0.02
Selenium as Se	mg/l	6	8	0.001	0.002	0.001	0.002	0.001	4-BH202	n/a	0.01
Vanadium as V	mg/l	1	4	0.001	0.001	0.001	N/A	N/A	4-BH202	n/a	n/a
Zinc as Zn	mg/l	2	8	0.002	0.016	0.005	0.011	N/A	6-BH01	**0.0068**	n/a
Barium as Ba	mg/l	3	4	0.01	0.04	0.01	0.023	0.015	6-BH03	n/a	n/a
Boron as B	mg/l	4	4	0.02	0.18	0.05	0.123	0.056	6-BH03	7	1
Total Sulphur as SO4	mg/l	8	8	0.03	59	10	31.75	15.88	6-BH03	n/a	250
Ammoniacal Nitrogen as N	mg/l	5	8	0.04	0.6	0.01	0.138	0.259	4-WS208	n/a	0.5
Chloride as Cl w	mg/l	8	8	1	257	27	71.75	77.30	6-BH03	n/a	**250**
TPH Ali Band >C8-C40	mg/l	8	8	0.013	0.384	0.074	0.132	0.104	6-BH02	n/a	n/a
TPH Aro Band >C8-C40	mg/l	8	8	0.011	0.134	0.014	0.037	0.040	6-BH02	n/a	n/a
1,1,1-Trichloroethane	µg/l	1	8	1	3	3	N/A	N/A	4-BH201	n/a	n/a
1,2,3-Trichlorobenzene	µg/l	1	8	1	2	2	N/A	N/A	4-WS208	**0.4**	n/a

8.3.5 The EQS standard for chromium relates to chromium VI and based on the site use, it is more likely that the chromium found is Chromium III. For comparison, the long term EQS standard for chromium III in fresh water is currently standing at 4.7 µg/l and is not exceeded at any location.

8.3.6 The lead and zinc AC are exceeded at borehole 6-BH01. Lead concentrations also exceed DWS although the application of this assessment criteria at this location for the Pembroke Limestone Group should be balanced with historical very high chloride concentration in the vicinity (19,000 mg/l at 5-BH802).

8.3.7 Low concentrations of Total Petroleum Hydrocarbon (TPH) were found in most monitoring locations, with concentrations ranging from below LOD to 0.384 mg/l for aliphatic compounds, and from below LOD to 0.134 mg/l for aromatic compounds.

8.3.8 *Drawing JER1262-SR-006* shows the spatial distribution of the observed contaminants and monitored parameters.

8.4 Controlled Water Risk Assessment Conclusion

8.4.1 Some uncertainties, related to the significance of the tidal influence, and of the fracturation of the weathered bedrock and Pembroke Limestone Group, on the movement of observed concentrations of contaminants remains. The emergence of groundwater within the weathered bedrock and Pembroke Limestone Group into the Milford Haven is unknown but evidence that mixing is occurring within the Pembroke Dockyard is likely to reduce concentration of contaminants in the Milford Haven.

8.4.2 Based on the results of the monitoring and the current refined CSM, the risks to controlled waters are currently considered to be low for identified receptors (groundwater of the Pembroke Limestone Group and surface waters of the Milford Haven).

9 Ground Gas Risk Assessment

9.1 Introduction

9.1.1 CIRIA Report C665 'Assessing Risk Posed by Hazardous Ground Gases to Buildings' and BS 8485:2007 'Code of practice for the characterization and remediation from ground gas in affected developments' represent the current best practice guidance in relation to ground gas assessment. They propose a holistic approach to gas risk assessment, which takes account of the following factors:

- Nature of source and migration pathway;
- Borehole flow rate and surface emission rate;
- Frequency and distribution of elevated gas concentrations;
- Nature of proposed development; and
- Confidence and reliability of results.

9.1.2 These factors are described in the remainder of this risk assessment. As previously stated, this assessment considers the data from the most recent two monitoring rounds undertaken as part of this supplementary investigation only. Whilst this data is considered to be more representative of the current gas regime at the Application Site, the conclusions of the assessment are considered in the context of the previous data and the uncertainty this may generate.

9.2 Current Gas Regime

9.2.1 The key findings from the ground gas monitoring are as follows:

- Maximum CO_2: 2.0 % (borehole 4-WS205 on Round 1 and 6-BH03 on Round 2),
- Maximum CH_4: 0.0 %,
- Maximum H_2S: 5.0 ppm (borehole 6-BH03 on Round 2),
- Maximum CO: 13.3 ppm (borehole 6-BH01 on Round 1),
- Maximum VOC: 3.8 ppm (borehole 6-BH01 and 6-BH02 on Round 2),
- Minimum oxygen: 16.6 % (borehole 4-WS211 on Round 1), and
- Flows were recorded between -1 l/hr (borehole 4-BH203 on Round 1) and zero.

9.2.2 For the purpose of gas risk assessment, negative flows are often used. The following flows (other than zero) have been recorded over the 2 no. monitoring rounds: -0.2 l/hr (borehole 4-WS208 on Round 1) and -1 l/hr (borehole 4-BH203 on Round 1). All other recorded flows have been zero i.e. no positive flows have been recorded.

9.3 Identified Gas Sources and Migration Pathways

9.3.1 The general ground conditions comprise Made Ground with variable granular and cohesive components overlying superficial deposits of weathered bedrock (comprised of variable gravelly clay and clayey gravel) and Pembroke Limestone Group (limestone).

9.3.2 Organic matter is a potential source of ground gas however little organic matter was encountered during this investigation. A possible buried layer of topsoil or other organic-rich soil layer was encountered within borehole 6-BH05 at 3.2 m bgl, the base of which was not reached. A gas monitoring well was not installed within this unit. Additional areas of organic-rich soils may be present on-site in areas not investigated. Previous investigations encountered organic-rich soils/organic inclusions at boreholes:

- 2-BH08 – Alluvium below Made Ground to the base, 5.2 m to 6.0 m bgl (close to 6-BH05),
- 4-WS203 – Fragments of wood in Made Ground from 0.12 m to 1.0 m bgl,
- 4-WS208 – Fragments of wood in Made Ground from 0.26 m to 1.8 m bgl,
- 4-WS211 – Fragments of wood in Made Ground from 0.4 m to 0.7 m bgl,
- 5-BH801 – Fragments of wood in Made Ground from ground level to 1.5 m bgl,
- 5-BH901 – Fragments of wood in Made Ground from ground level to 0.6 m bgl,
- 5-BH903 – Fragments of wood in Made Ground from ground level to 1.6 m bgl and strong organic odours in Made Ground from 6.0 m to 7.5 m bgl,
- 5-TP903 – Fragments of wood and frequent rootlets in Made Ground from ground level to 2.4 m bgl and slight organic odour in buried topsoil (Made Ground) from 2.4 m to 2.7 m bgl, and
- 5-TP911 – Fragments of wood in Made Ground from ground level to 0.85 m bgl.

9.3.3 Limestone is a natural rock composed of calcium carbonate. When heated this breaks down to give off carbon dioxide (CO_2). The most recent monitoring has only identified low concentrations of CO_2.

9.3.4 Low concentrations of VOCs (up to 3.8 ppm) were measured during the monitoring however PID tests on soil samples carried out during the investigation found results of up to 60.9 ppm (as set out in Section 4.6) in Made Ground and weathered bedrock. Hydrocarbon odours were also noted in Made Ground soils during previous investigations at locations across the site (also set out in Section 9.3.2 above).

9.3.5 Both the Made Ground and superficial weathered bedrock were noted to be comprised of both granular and cohesive materials. These granular horizons will provide a potential pathway for ground gases. Additionally the Made Ground and weathered bedrock can comprise a source of ground gases (where organic material/hydrocarbon contamination is present).

9.3.6 Carbon monoxide (CO) was measured in eight out of the sixteen monitored boreholes, with the highest concentrations noted being recorded within 6-BH01 (13.3 ppm). In many of the boreholes, CO was found to be present in Round 1 and absent in Round 2. The instances of

CO are likely to be associated with the presence of organic material at varying depths throughout the Made Ground, which contributes to the production of ground gas.

9.3.7 Hydrogen sulphide (H_2S) was encountered on one occasion during the monitoring (at borehole 6-BH03 during Round 2). This borehole is installed into the Pembroke Limestone Group and H_2S was not recorded during Round 1. This result is possibly due to equipment malfunction however further monitoring should be carried out before discounting this result.

Previous gas monitoring data and assessment

9.3.8 Previous investigations for which gas monitoring data is available are:

- Land Quality Assessment Phase Two: Intrusive Investigation, HM Mooring Depot Pembroke Dock, by Enviros Consulting Ltd on behalf of Defence Estates, ref: 12553, dated April 2007, and
- Milford & Pembroke Docks, Ground Investigation Factual Report, by Quantum Geotechnical Ltd on behalf of Milford Haven Port Authority, ref: G778/FR, rev 1, dated June 2016.

9.3.9 The monitoring from previous investigations recorded concentrations of CO and CH_4 of similar magnitude. Measured concentrations of CO_2, VOCs and flow rates were higher however. The maximum CO_2 recorded was 7.0%, the maximum VOC was 323 ppm (the next highest was 42.3 ppm) and the maximum flow rate was 30 l/hr. H_2S, where measured, was recorded as zero. It should be noted that much of this data is from 2006/07.

9.3.10 The maximum CO_2 recorded (7%) was from within a borehole installed in the Pembroke Limestone Group (and partly in weathered Pembroke Limestone Group). The elevated CO_2 is potentially natural-occurring from the bedrock.

9.3.11 As mentioned above, elevated VOCs have been recorded previously (323 ppm at 4-BH203, 42.3 ppm at 4-WS202 and 27.9 ppm at 4-WS205). Boreholes 4-BH203 and 4-WS205 were monitored again in 2018. The VOC concentration was recorded to be 3.2 ppm and 0 ppm respectively, significantly lower than 2007.

9.3.12 High flow rates were recorded in 2007 by Enviros, up to 30 l/hr in borehole 4-BH202. It is not noted with the Enviros report whether these are peak or stable flow rates. The Enviros report refers to the high flows possibly being caused by changes in groundwater level, due to tide changes. This would indicate that the flows recorded may not be representative of long term stabilised conditions. Where the flow rate has been re-monitored in 2018 by RPS (borehole 4-BH202), the stable flow rate was recorded to be zero i.e. significantly lower than 2007.

9.3.13 Previous assessment (by Royal Haskoning in 2016, using data from Quantum 2016 investigation) had concluded that the site could be characterised as Characteristic Situation 2, based on the available data.

9.4 Defensibility of Gas Data

9.4.1 CIRIA C665 recommends that six monitoring rounds are undertaken over a minimum three month period at sites where the gas generation potential is 'moderate' and the sensitivity of the development is low (i.e. commercial/industrial).

9.4.2 The current programme of two rounds and should be considered preliminary.

9.4.3 CIRIA guidance C665 recommends that "monitoring should, as far as practical, be undertaken during times of falling atmospheric pressure and various weather/site-specific conditions to ensure data is acquired during 'worst-case' conditions". As the table below indicates, monitoring was unable to be scheduled during times of falling pressure.

Table 20. Summary of atmospheric pressures during monitoring

Monitoring round	Measured atmospheric pressure (mB)	Comment on atmospheric pressure system during monitoring
14th & 15th November 2018	1015 - 1016	High, steady
30th November 2018	1004 - 1007	High, rising

9.5 Gas Risk Assessment

9.5.1 The classification of a site's gas regime is governed by the concentration of the ground gas, and the flow rate. This is reflected by the Gas Screening Value (GSV), which is calculated as the concentration gas (expressed as a volumetric fraction) multiplied by the borehole flow rate, as per CIRIA C665 and BS 8485:2016.

9.5.2 In summary, the gas monitoring rounds undertaken to date have identified the maximum flow rates and maximum (stabilised) concentrations identified. The table below provides a summary of the assigned Characteristic Situation classifications for each borehole, based upon the data derived from the ground gas monitoring programme.

Table 21. Modified Gas Monitoring Data Summary

Location	Max [stabilised] Flow (litres per hour)	Maximum CH_4 concentration (%v/v)	Maximum stabilised CO_2 concentration (%v/v)	Maximum Gas Screening Value	Characterisation
6-BH01	0	0	0	0.0001	CS1
6-BH02	0	0	0.3	0.0003	CS1
6-BH03	0	0	2.0	0.002	CS1
6-BH04	0	0	1.7	0.0017	CS1
6-BH10	0	0	0	0.0001	CS1
6-BH11	0	0	0	0.0001	CS1
4-BH201	0	0	0	0.0001	CS1
4-BH202	0	0	0	0.0001	CS1
4-BH203	-1	0	1.5	0.015	CS1
4-WS205	0	0	2.0	0.002	CS1
4-WS206	0	0	1.1	0.0011	CS1
4-WS208	-0.2	0	0	0.0002	CS1
4-WS209	0	0	0	0.0001	CS1
4-WS211	0	0	1.0	0.001	CS1
4-WS212	0	0	0	0.0001	CS1
3-W1	0	0	0	0.0001	CS1

Note: Where flows were recorded as zero, a flow rate of 0.1 l/hr has been used

9.5.3 As per BS 8485:2016, stabilised flow and maximum (peak) gas concentrations have been used to derive the GSV.

9.5.4 This GSV can be compared against one of two classification schemes, dictated by the type of development and the specific design proposals for the property floor. For commercial development the most appropriate is the Characteristic Situation system, as set out in BS:8485:2016.

9.5.5 A Characteristic Situation of CS1 (low risk) has been determined, based on the GSV ranges set out in BS:8485, CIRIA C665 and The Ground Gas Handbook (Wilson et al 2005). This characterisation has been applied to the whole Application Site, as the site conditions do not lend it towards zoning into distinct areas.

9.5.6 Sites with a Characteristic Situation of CS1 typically do not require gas protection measures. However, whilst a CS1 classification has been derived, the recorded concentrations of VOCs, carbon monoxide and hydrogen sulphide should be considered as posing a ground gas risk to

the end use of the Application Site. The maximum peak VOC concentrations exceed the long term workplace exposure limit of 1 ppm for benzene, which has tentatively been used as screening criteria for the assessment of VOCs. On this basis it is considered that a vapour resistant membrane may be required within proposed structures where further assessment cannot dismiss the risk.

9.5.7 The Application Site lies within a higher probability radon area and as such protection from radon gases may be required.

9.6 Gas Risk Assessment Conclusion

9.6.1 It is considered that further ground gas monitoring, including CO, VOC and H_2S, should be carried out to meet the requirements of monitoring frequencies set out in CIRIA C665 i.e. six monitoring rounds over a minimum three month period.

9.6.2 While a CS1 classification has been derived, consideration should be given to the existing gas monitoring data which derived a classification of CS2 (due to recorded CO_2 of 7.0%). Therefore, a classification of CS2 is recommended at this stage, with further monitoring to confirm if the this can be reduced to CS1. This should allow monitoring during periods of low and falling pressure.

9.6.3 It is considered that protection against VOCs, CO and H_2S may be required. This could be delivered by a gas membrane resistant to VOCs and protective of CO and H_2S.

9.6.4 Consideration should be given to the possibly of creating a pathway for naturally-occurring CO_2 to migrate from the limestone bedrock in to buildings via foundation piles when selecting foundation types. A Foundation Works Risk Assessment should be undertaken to determine if this pathway may exist and identify appropriate mitigation. .

9.6.5 The Application Site lies within a higher probability radon area and as such protection from radon gases may be required.

10 Ground Stability

10.1 Introduction

10.1.1 A brief comment on the potential for natural voids and cavities that could lead to significant acute ground stability issues, is provided below. The data reviewed in support of the previous desk study (RPS, 2018b) has characterised the risk from the potential for shrink-swell clay, landslides, collapsible rocks as very low hazard, the risk from potential for dissolution as low hazard, and the risk from potential for compressible ground and running sand as moderate hazard. These issues are not consideration to require further consideration in relation to planning. Consideration has not been given to the effects of ground compression, shrink-swell, running sands or landslides.

Potential solution features

10.1.2 Sites underlain by limestone can be prone to the presence of natural solution features formed by dissolution of the soluble limestone. These features can be present in a stable or potentially unstable condition and metastable cavity forms may be disturbed and triggered to cause ground subsidence. Trigger mechanisms may include loading, leaking drains, or water supply pipes.

10.1.3 While the desk-top study (RPS, 2018b) did not detail any features within 1 km, the ground conditions found by RPS and others indicate the possibility for a solution feature to be present in the southeast of the Application Site (boreholes 5-BH901 and 6-BH02). These boreholes both encountered weathered bedrock from near surface to beyond 10.0 m bgl.

10.1.4 For comparison, the weathered bedrock (where the base has been reached) elsewhere on site have been found to terminate between 2.5 m and 9.8 m bgl.

10.1.5 The design of structures at the Application Site should take account of the potential presence of solution features.

11 Conclusions and Recommendations

11.1.1 RPS Consulting Services Limited was commissioned by Milford Haven Port Authority to undertake a supplementary intrusive ground investigation and associated reporting and assessments to support an Outline Planning Application for the redevelopment of part of Pembroke Dockyard.

11.1.2 The objectives of this report are to; determine the ground conditions at the Application Site, determine the groundwater regime at the Application Site, determine the likely extent and severity of ground, groundwater and gas contamination at the Application Site, present risk assessments in relation to human health, controlled waters and ground gas and to present a preliminary review of significant ground related stability issues associated with natural voids and cavities. These objectives are to be achieved using the data from this phase of supplementary intrusive ground investigation and the available data from historical phases of intrusive ground investigation, where appropriate.

11.1.3 The supplementary intrusive ground investigation, as agreed with the local authority and NRW, comprised drilling of 3 no. rotary boreholes and 10 no. windowless sampler boreholes, sediment sampling from onsite water body (Timber Pond), chemical laboratory analysis of soil and groundwater samples, and ground gas and groundwater monitoring over 2 no. rounds.

11.1.4 The ground conditions encountered comprised Made Ground overlying weathered Pembroke Limestone Group and Pembroke Limestone Group. These conditions broadly corresponded with those ground conditions encountered in previous investigations.

11.1.5 Assessments regarding human health, controlled waters and ground gas have been undertaken. The human health risk assessment found exceedances of the assessment criteria of asbestos, lead and polycyclic aromatic hydrocarbons (PAHs). All of the identified exceedances were associated with the Made Ground soils between ground level and 3.0 m bgl. No exceedances against the human health assessment criteria have been noted for Natural Ground samples or sediment samples. The human health risk assessment concluded that the risk to human health from the identified contamination will be largely mitigated through the proposed development works, with hardstanding being constructed over the majority of the Application Site. A cover system would be required in the proposed soft landscaped areas, or source removal to remove contaminated Made Ground materials.

11.1.6 The ground gas risk assessment concluded that, whilst a CS1 classification has been derived based on the recent monitoring that, consideration should be given to the existing gas monitoring data which derived a classification of CS2 (due to recorded CO_2 of 7.0%). Therefore, a classification of CS2 is recommended at this stage, with further monitoring to confirm this position. It is considered that protection against VOCs, CO and H_2S may be required. This could be delivered by a gas membrane resistant to VOCs and protective of CO and H_2S. The

Application Site lies within a higher probability radon area and as such protection from radon gases may be required.

11.1.7 The controlled water risk assessment concluded that, based on the results of the monitoring and the current refined CSM, the risks to controlled waters are currently considered to be low for identified receptors (groundwater of the Pembroke Limestone Group and surface waters of the Milford Haven).

11.1.8 The review of naturally occurring voids identified potential evidence of potential solution features at the Application Site. The potential presence of solution features should be considered within the design of the proposed structures at the Application Site.

References

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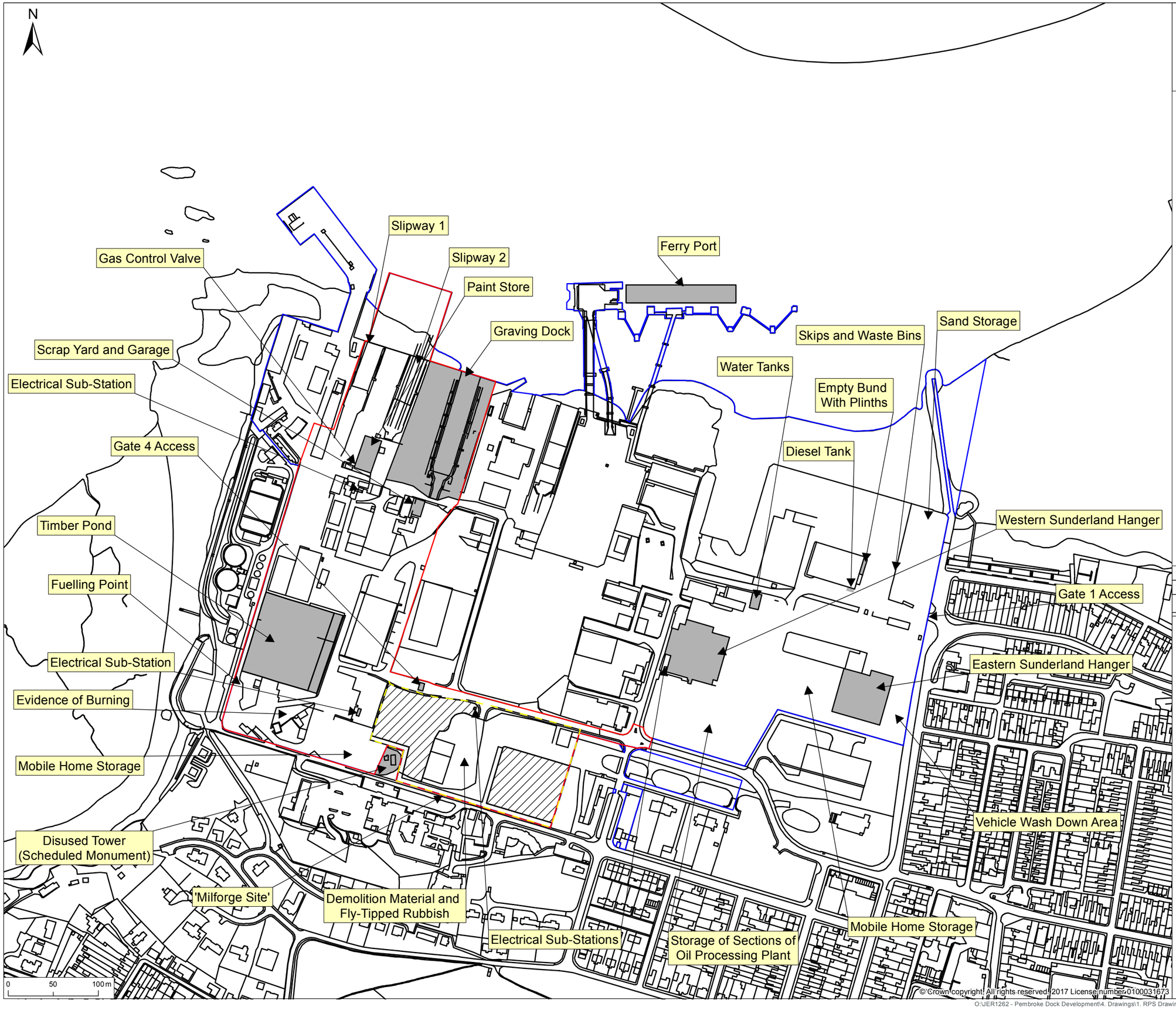
Drawings



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Legend

- Milford Haven Port Authority Other Land Ownership
- Application Site Boundary
- Overgrown with Vegetation

Note: Observations from site reconnaissance visit by RPS in January 2018.

Rev	Description	Date	Initial	Checked

RPS

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Client: MILFORD HAVEN PORT AUTHORITY

Project: PEMBROKE DOCK MARINE DEVELOPEMENT

Title: SITE RECONNAISSANCE PLAN

Status	Drawn By	PM/Checked By
PRELIMINARY	AM	AT

Job Ref	Scale @ A3	Date Created
JER1262	1:4,000	FEB 18

Drawing Number: **JER1262-DTS-001**

Rev: -

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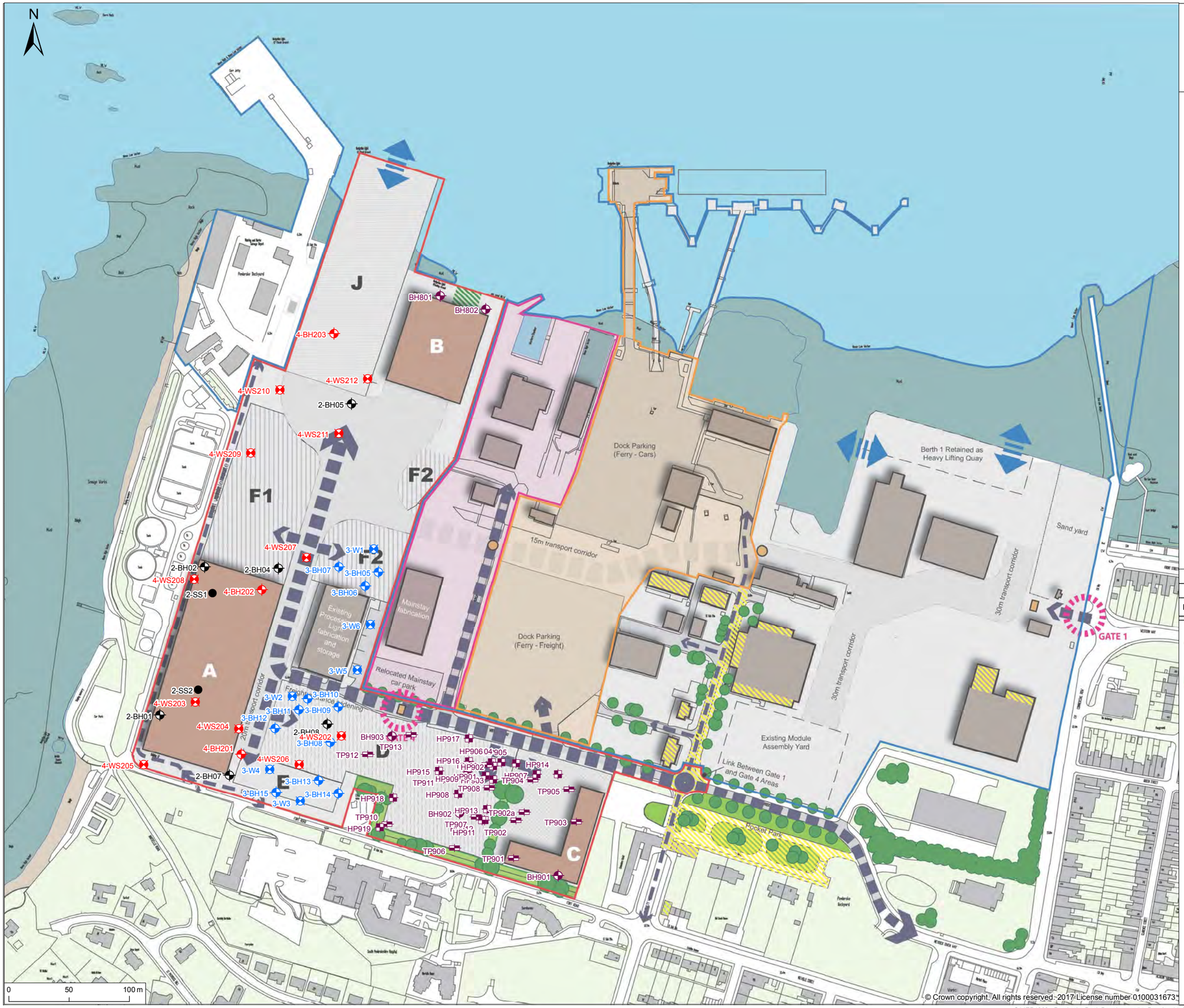

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Legend

Site Boundary

Previous Investigation Locations

P2 Series - GIBB Environmental 2001

- Sediment Sample
- Borehole

P3 Series - Enviros 2004

- Borehole
- Window Sample

P4 Series - Enviros 2006

- Borehole
- Window Sample

Quantum 2016

- BH
- HP
- TP

Rev	Description	Date	Initial	Checked

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Project	PEMBROKE DOCK MARINE DEVELOPEMENT
Title	HISTORIC INVESTIGATION LOCATIONS

Status	Drawn By	PM/Checked By
PRELIMINARY	AM	AT
Job Ref	**Scale @ A3**	**Date Created**
JER1262	1:3,000	MAR 18

Drawing Number: **JER1262-DTS-002** Rev: **-**

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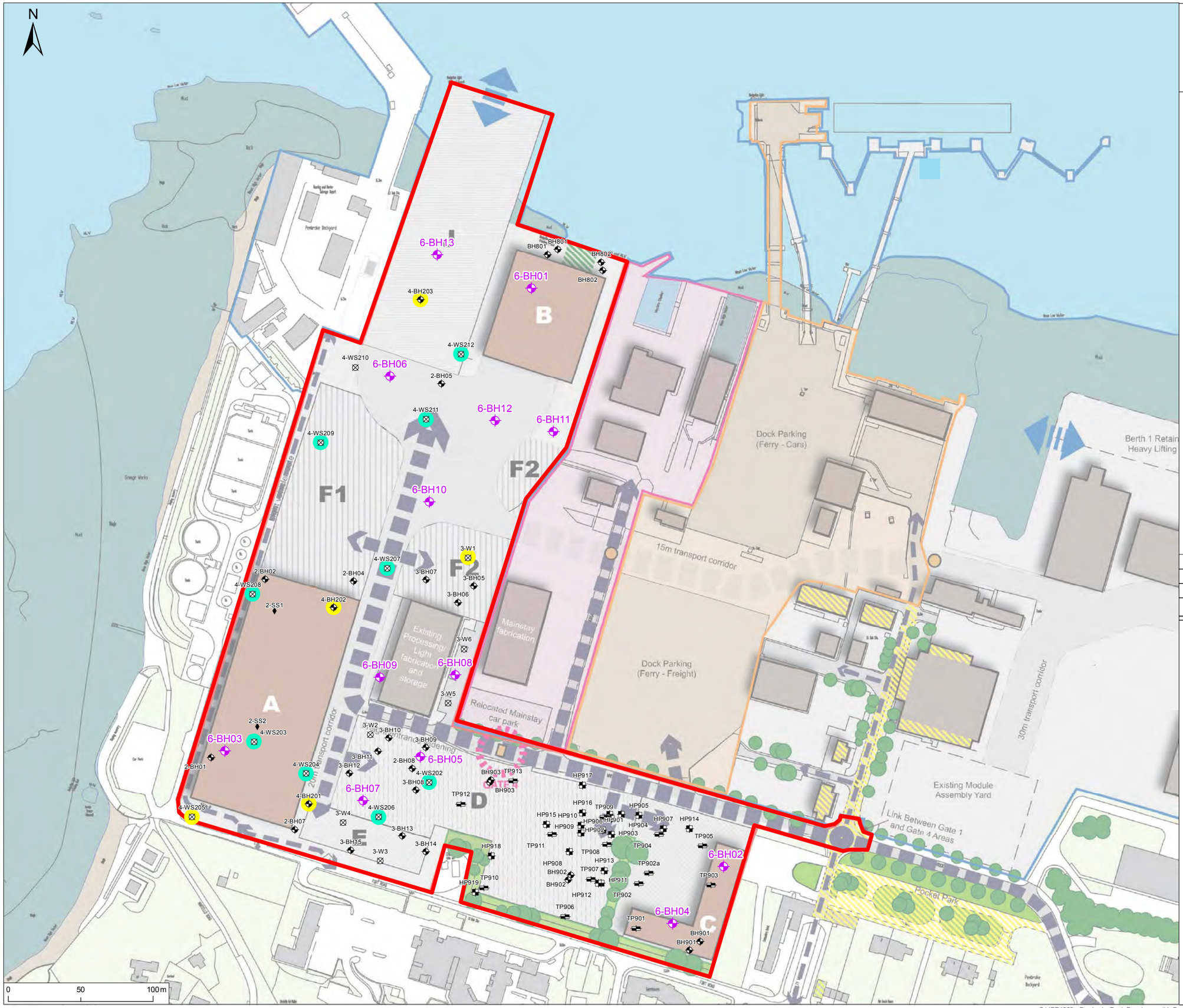

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Legend

- Site Boundary

Historic Investigation Locations

- Borehole
- Window Sample Borehole
- Trial Pit
- Hand Dug Pit
- Sediment Sample
- Monitoring Well Installation
- Sampling from Historic Borehole

RPS Investigation Locations (November 2018)

- Borehole

Rev	Description	Date	Initial	Checked
C	Surveyed as-built locations	NOV 18	RJ	AT
B	Minor edits	OCT 18	RJ	AT
A	Revised positions	JUN 18	RJ	PT

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Client: MILFORD HAVEN PORT AUTHORITY

Project: PEMBROKE DOCK MARINE DEVELOPEMENT

Title: INVESTIGATION LOCATIONS & PROPOSED DEVELOPMENT

Status	Drawn By	PM/Checked By
PRELIMINARY	RJ	AT

Job Ref	Scale @ A3	Date Created
JER1262	1:2,500	MAY 18

Drawing Number: **JER1262-SR-001**

Rev: **C**

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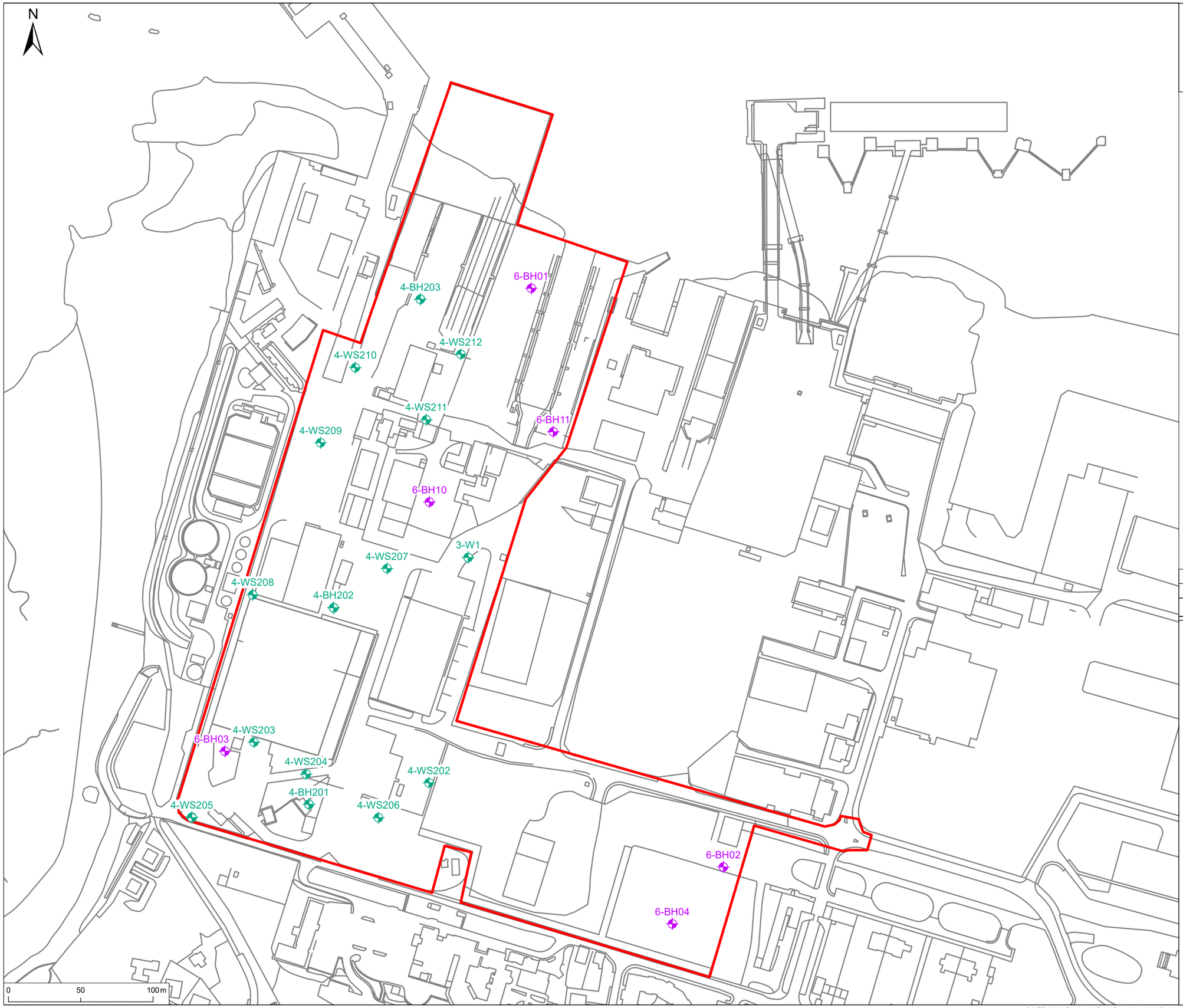

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Legend

- Site Assessment
- RPS Borehole (November 2018)
- Historic Borehole

Rev	Description	Date	Initial	Checked
A	Added additional historic boreholes	DEC 18	RW	BB

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Client: MILFORD HAVEN PORT AUTHORITY

Project: PEMBROKE DOCK MARINE DEVELOPEMENT

Title: MONITORING WELL INSTALLATIONS

Status	Drawn By	PM/Checked By
PRELIMINARY	RJ	BB

Job Ref	Scale @ A3	Date Created
JER1262	1:2,500	NOV 18

Drawing Number: **JER1262-SR-003**

Rev: **A**

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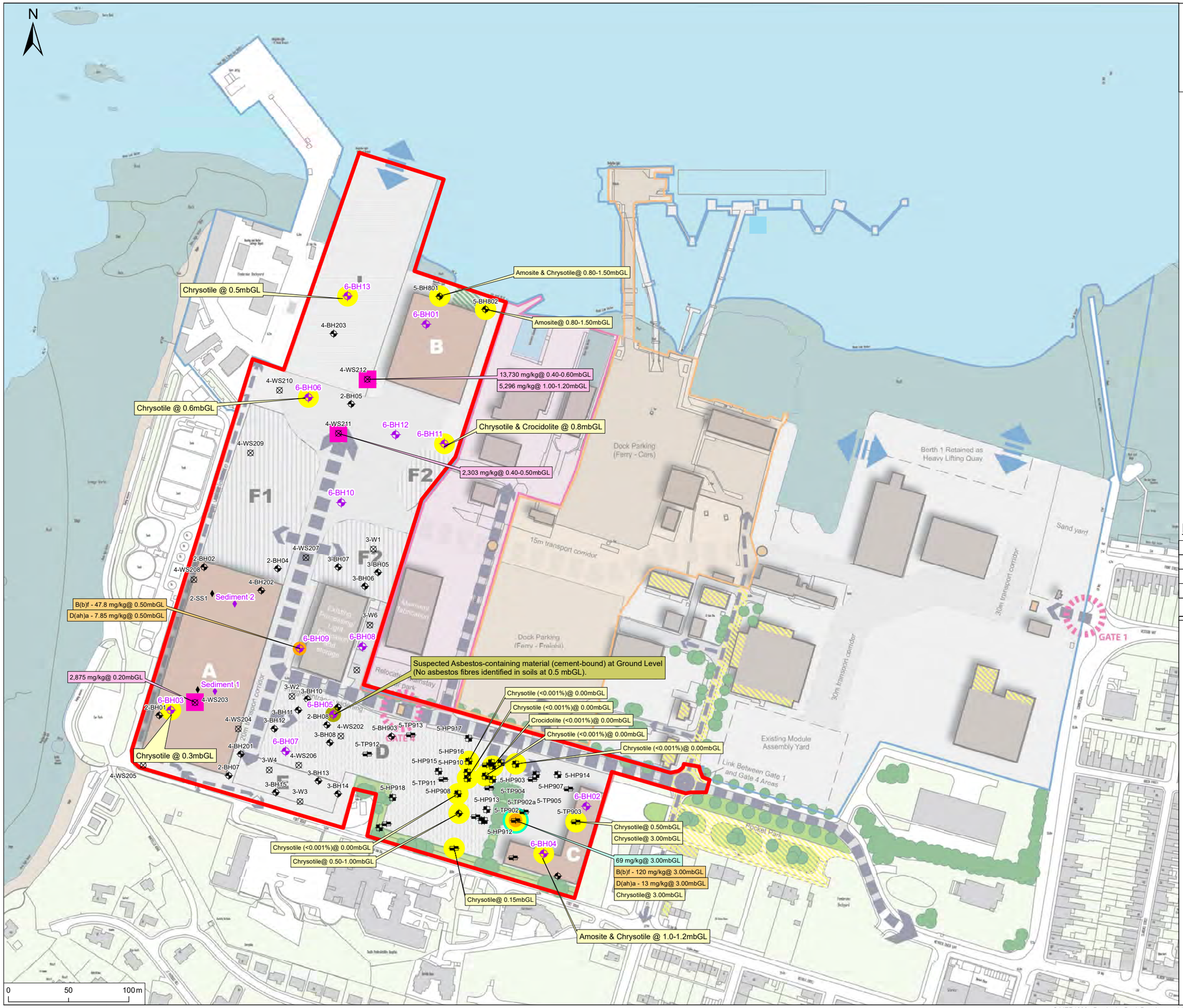

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Legend

- Site Boundary

Historic Investigation Locations

- Borehole
- Window Sample Borehole
- Trial Pit
- Hand Dug Pit
- Sediment Sample

RPS Investigation Locations (November 2018)

- Borehole
- Sediment Sample

Soil Threshold Exceedances

- Asbestos Identified
- Suspected Asbestos
- Benzo(a)pyrene (S4UL: 35 mg/kg)
- Benzo(b)fluoranthene (S4UL: 44 mg/kg) & Dibenzo(a,h)anthracene (S4UL: 3.5 mg/kg)
- Lead (C4SL: 2,300 mg/kg)

Note: All Exceedances are in MADE GROUND

Rev	Description	Date	Initial	Checked
A	Added Nov 18 Asbestos samples	JAN 19	RW	AT

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Client	MILFORD HAVEN PORT AUTHORITY
Project	PEMBROKE DOCK MARINE DEVELOPEMENT
Title	SOIL THRESHOLD EXCEEDANCES

Status	Drawn By	PM/Checked By
PRELIMINARY	RJ	AT

Job Ref	Scale @ A3	Date Created
JER1262	1:3,000	DEC 18

Drawing Number: **JER1262-SR-005** Rev: **A**

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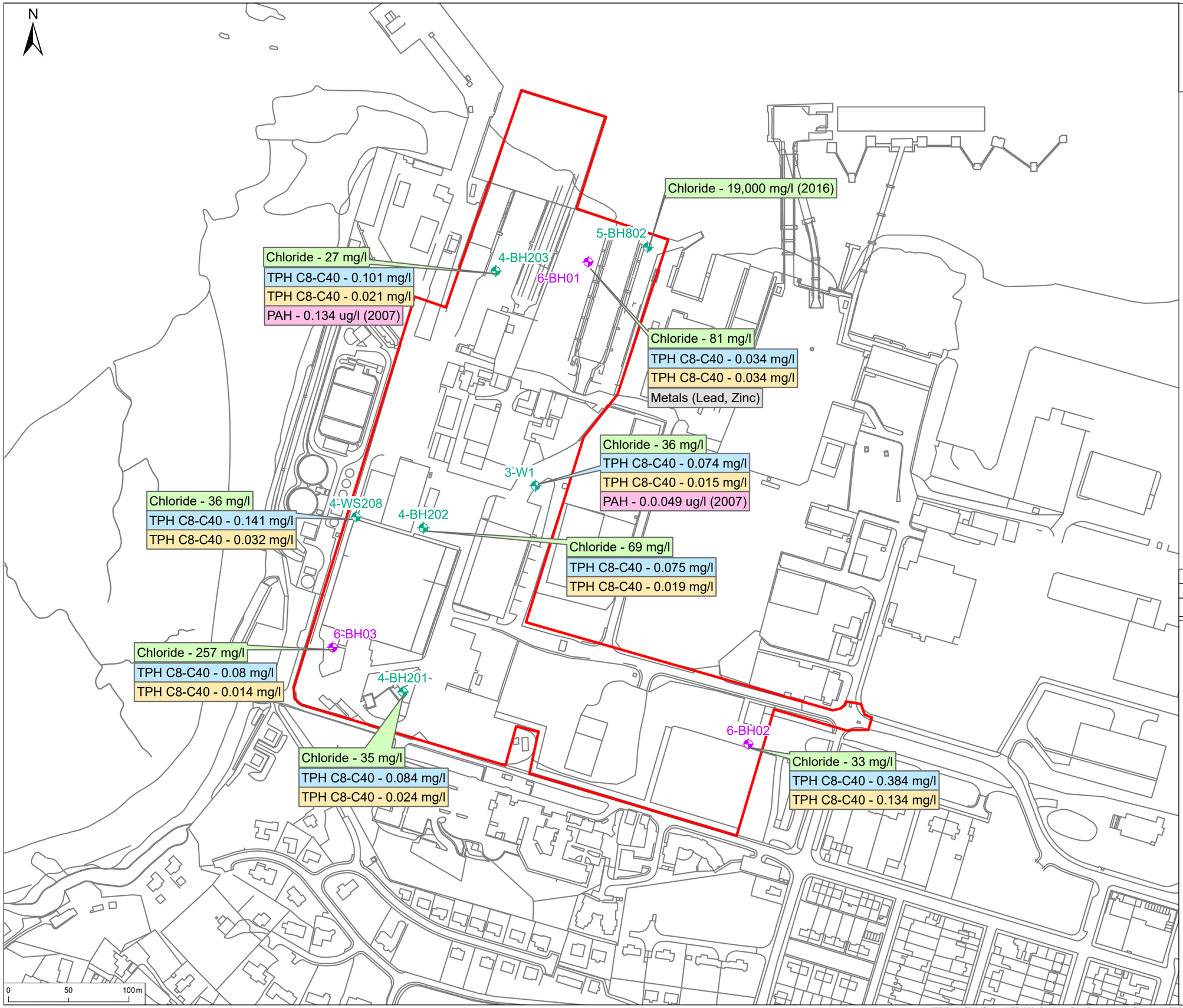

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Legend

- Site Assessment
- RPS Borehole (November 2018)
- Historic Borehole

Determinands in Groundwater

- Chloride as Cl
- TPH Aliphatic
- TPH Aromatic
- PAH
- Metals (Lead, Zinc)

All measurements made in 2018 unless otherwise stated

*Chloride concentrations naturally elevated due to proximity to sea

Rev	Description	Date	Initial	Checked

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Client	MILFORD HAVEN PORT AUTHORITY
Project	PEMBROKE DOCK MARINE DEVELOPEMENT
Title	SELECTED DETERMINANDS IN GROUNDWATER

Status	Drawn By	PM/Checked By
PRELIMINARY	RW	BB

Job Ref	Scale @ A3	Date Created
JER1262	1:3,000	JAN 19

Drawing Number: **JER1262-SR-006**

Rev: -

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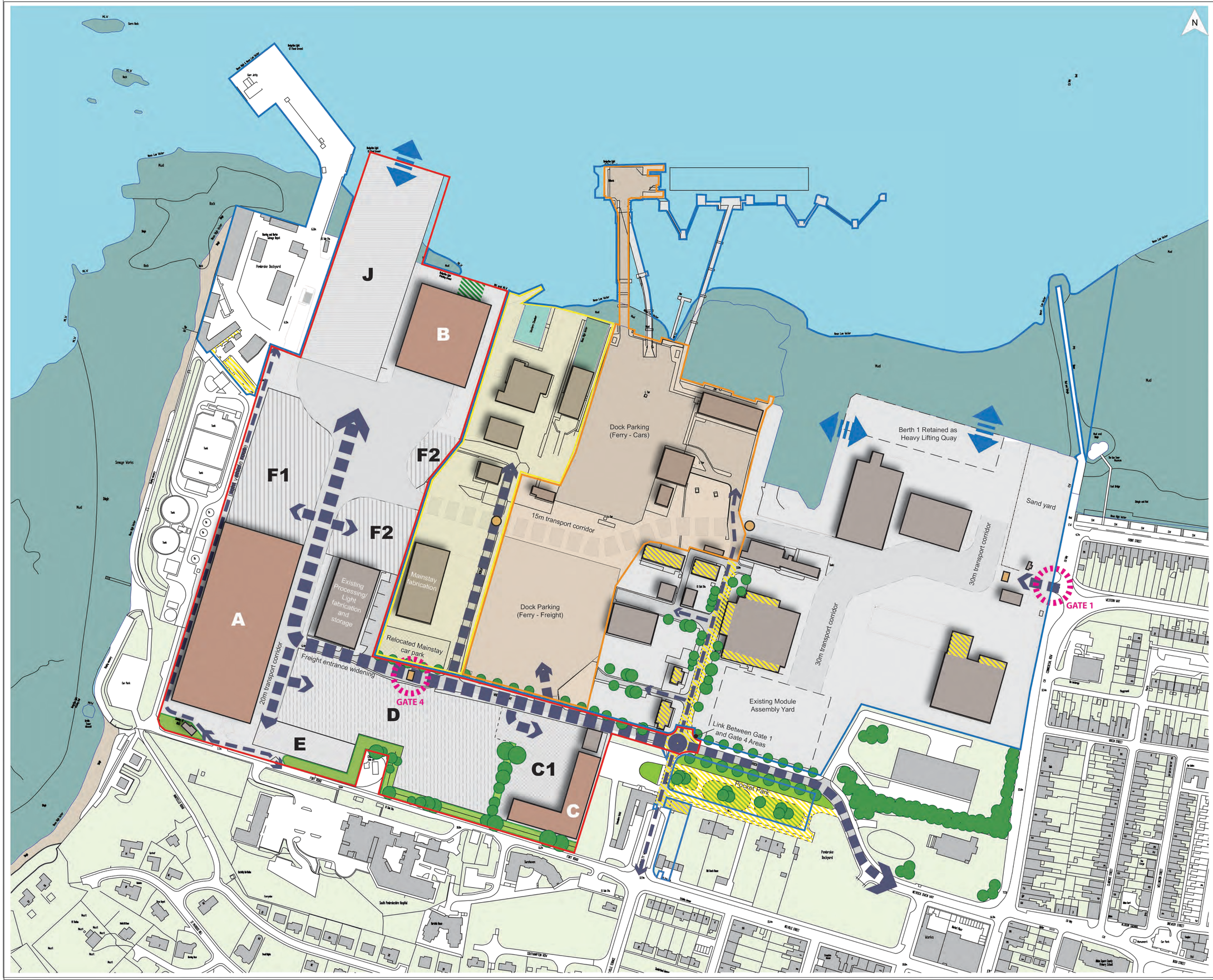

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- Application boundary 10.70 ha (26.44 acres)
- Land Leased to Mainstay
- Ferry Terminal Area
- Proposed buildings
- Existing buildings to be retained
- Proposed transport corridor
- Ship Access
- Mean Low Water
- Mud/Mean High Water
- Proposed Multi-use laydown/ assembly yard Areas
- Security gate/ check point
- Temporarily Manned Security Point
- Key movement routes
- Landscaping
- 6m ecology corridor (including 1m maintenance footpath)
- Key Access Points
- Proposed Revetment
- Heritage Mitigation areas and enhancement (subject to seperate LBC applications)

Proposed High Quality Fabrication Facility
A – Fabrication building for sub-assemblies and marine engineering related activities (11,900sqm) – (170m X 70m and 40m to ridge)
F1 – External/open multi-use laydown and final assembly area (8,058sqm)
F2 – Existing external processing/open multi-use laydown and assembly area (4,836sqm)

Proposed High Bay Ship Repair and Fabrication Facility
B – High bay ship repair and fabrication building (4,900sqm) – (75m X 65m and 40m to ridge)

Proposed Slipway and Transition Area
J – Slipway and large open transition area (13,051sqm) – required to transfer completed components to the slipway and to allow large vessels to be moved to/from the high bay ship repair and fabrication building (Building B)

Proposed Light Assembly and Maintenance Facility
C - Light assembly and maintenance building (2,500sqm) – (129m X 20m and 10m to ridge)
C1 - Light assembly and maintenance external storage and parking area (5,000sqm)

Proposed Batching Plant
D – Open batching plant and storage area (15,584sqm)

Proposed Employee Car Park
E – Employee car park

The building sizes are indicative parameters only and will be adjusted to suit exact requirements.
The transport corridors will allow smaller completed modules or vessels to be transported to/from the existing heavy lift quay or partially completed sub-assemblies to be transported to/from the existing module assembly yard.
The light vehicle route is to allow access from Fort Road to the area occupied by Switzer.

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Client	Milford Haven Port Authority
Project	Pembroke Dock Marine
Title	Draft Proposed Masterplan

Status	Drawn By	PM/Checked by
Draft	AW/PO	DW
Job Ref	**Scale @ A1**	**Date Created**
JPW1115	1:1500	April 2018
Drawing Number		**Rev**
JPW1115-04		H

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Appendices

Appendix 1

Borehole Logs

RPS	Contract Name: Pembroke Dock Marine Development		Client: Milford Haven Port Authority	Borehole ID: 6-BH01
	Contract Number: JER1262	Start Date: 07/11/2018	End Date: 08/11/2018	Checked By: GR	Status: FINAL	Sheet 1 of 1
Rotary Open Hole Drilling Log	Easting: 195822.7	Northing: 203955.7	Ground Level: 6.12mOD	Plant Used: Beretta T44	Logged By: AT	Scale: 1:50
Weather: Wet, windy		Termination: Target depth reached.				

Samples & Core Recovery					Strata Details				Groundwater	
Depths	Type/ Ref	Duration (mm:ss)	Flush Return	Testing	Level (mAOD)	Depth (m) (Thickness)	Legend	Strata Description	Water Strike	Backfill/ Installation
	D1 ES					(1.50)		Vegetated surface over soft dark brownish black gravelly CLAY. Gravel is angular to rounded fine to coarse of flint, sandstone, brick and slag. MADE GROUND		
					4.62	1.50		Light orangish brown clayey subangular to subrounded fine to coarse mudstone and limestone GRAVEL. POSSIBLE MADE GROUND		
	D2 ES					(3.50)				
					1.12	5.00		Light grey LIMESTONE. Recovered as angular fine to coarse gravel. Occasional white mineralized veins. PEMBROKE LIMESTONE GROUP		
	D3 ES				0.12	6.00		End of Borehole at 6.00m		

1 2 3 4 5 6 7 8 9 10

Start & End of Shift Observations

Date	Time	Depth (m)	Casing (m)	Water (m)
07-11-2018	15:00	0.00		
08-11-2018	12:30	6.00		

Installation

Ref	Top (m)	Base (m)	Type	Dia (mm)
1	0.00	5.00	PLAIN	50
1	5.00	6.00	SLOTTED	50

Flush Information

Top (m)	Base (m)	Flush Type	Return	Flush Colour

Borehole Diameter

Depth (m)	Dia (mm)

Casing Diameter

Depth (m)	Dia (mm)

Remarks:

1. Area cleared by utilities survey team with hand excavated service pit to 1.20mbgl. 2. Rotary open hole drilling from 1.20m to 6.00mbgl. 3. Installed with a flush steel cover at ground level.

Water Strikes

Strike (m)	Casing (m)	Sealed (m)	Time (mins)	Rose to (m)	Remarks

RPS	Contract Name: Pembroke Dock Marine Development		Client: Milford Haven Port Authority	Borehole ID: 6-BH02
	Contract Number: JER1262	Start Date: 06/11/2018	End Date: 06/11/2018	Checked By: GR	Status: FINAL	Sheet 1 of 2
Rotary Open Hole Drilling Log	Easting: 195955.5	Northing: 203555.8	Ground Level: 9.81mOD	Plant Used: Beretta T44	Logged By: AT	Scale: 1:50
Weather: Wet, windy	Termination: Target depth reached.					

Samples & Core Recovery					Strata Details				Groundwater	
Depths	Type/ Ref	Duration (mm:ss)	Flush Return	Testing	Level (mAOD)	Depth (m) (Thickness)	Legend	Strata Description	Water Strike	Backfill/ Installation
					9.61	0.20		Gravel surface. MADE GROUND Firm dark reddish brown gravelly CLAY. Gravel is subangular to subrounded fine to coarse of mudstone and limestone. POSSIBLE MADE GROUND/WEATHERED PEMBROKE LIMESTONE GROUP		
						(10.20)				

1 2 3 4 5 6 7 8 9 10

Start & End of Shift Observations

Date	Time	Depth (m)	Casing (m)	Water (m)
06-11-2018	08:00	0.00		
07-11-2018	15:00	15.00		

Installation

Ref	Top (m)	Base (m)	Type	Dia (mm)
1	0.00	1.00	PLAIN	50
1	1.00	15.00	SLOTTED	50

Flush Information

Top (m)	Base (m)	Flush Type	Return	Flush Colour

Borehole Diameter

Depth (m)	Dia (mm)

Casing Diameter

Depth (m)	Dia (mm)

Remarks:

1. Area cleared by utilities survey team with hand excavated service pit to 1.20mbgl. 2. Rotary open hole drilling from 1.20m to 15.00mbgl. 3. Installed with a flush steel cover at ground level.

Water Strikes

Strike (m)	Casing (m)	Sealed (m)	Time (mins)	Rose to (m)	Remarks

RPS	Contract Name: Pembroke Dock Marine Development		Client: Milford Haven Port Authority	Borehole ID: 6-BH02
	Contract Number: JER1262	Start Date: 06/11/2018	End Date: 06/11/2018	Checked By: GR	Status: FINAL	Sheet 2 of 2
Rotary Open Hole Drilling Log	Easting: 195955.5	Northing: 203555.8	Ground Level: 9.81mOD	Plant Used: Beretta T44	Logged By: AT	Scale: 1:50
Weather: Wet, windy		Termination: Target depth reached.				

Samples & Core Recovery					Strata Details				Groundwater	
Depths	Type/ Ref	Duration (mm:ss)	Flush Return	Testing	Level (mAOD)	Depth (m) (Thickness)	Legend	Strata Description	Water Strike	Backfill/ Installation
	D1 ES				-0.59	10.40		Limestone (Drillers Description) PEMBROKE LIMESTONE GROUP		
						(4.60)				
					-5.19	15.00		End of Borehole at 15.00m		

11 12 13 14 15 16 17 18 19 20

Start & End of Shift Observations				
Date	Time	Depth (m)	Casing (m)	Water (m)

Installation				
Ref	Top (m)	Base (m)	Type	Dia (mm)
1	0.00	1.00	PLAIN	50
1	1.00	15.00	SLOTTED	50

Remarks:

1. Area cleared by utilities survey team with hand excavated service pit to 1.20mbgl. 2. Rotary open hole drilling from 1.20m to 15.00mbgl. 3. Installed with a flush steel cover at ground level.

Water Strikes					
Strike (m)	Casing (m)	Sealed (m)	Time (mins)	Rose to (m)	Remarks

Flush Information					Borehole Diameter		Casing Diameter	
Top (m)	Base (m)	Flush Type	Return	Flush Colour	Depth (m)	Dia (mm)	Depth (m)	Dia (mm)

RPS	Contract Name: Pembroke Dock Marine Development		Client: Milford Haven Port Authority		Borehole ID: 6-BH03
	Contract Number: JER1262	Start Date: 08/11/2018	End Date: 09/11/2018	Checked By: GR	Status: FINAL
					Sheet 1 of 1
Rotary Open Hole Drilling Log	Easting: 195610.9	Northing: 203635.7	Ground Level: 6.25mOD	Plant Used: Beretta T44	Logged By: AT
					Scale: 1:50
Weather: Wet, windy		Termination: Target depth reached.			

Samples & Core Recovery					Strata Details				Groundwater	
Depths	Type/ Ref	Duration (mm:ss)	Flush Return	Testing	Level (mAOD)	Depth (m) (Thickness)	Legend	Strata Description	Water Strike	Backfill/ Installation
	D1 ES				5.85	(0.40) 0.40		Vegetated surface over dark greyish brown slightly gravelly SILT. Gravel is subangular to subrounded fine to coarse of brick mudstone and sandstone. Frequent rootlets to 0.20 m bgl. MADE GROUND		
	D2 ES					(1.60)		Dark reddish brown slightly gravelly slightly sandy silty CLAY. Gravel is subangular to subrounded fine to medium of mudstone. POSSIBLE MADE GROUND		
	D3 ES				4.25	2.00		Light yellowish brown slightly gravelly CLAY. Gravel is subangular to subrounded fine to coarse of limestone. WEATHERED PEMBROKE LIMESTONE GROUP		
					2.25	(2.00) 4.00		Light brownish yellow LIMESTONE. Recovered as angular fine to coarse gravel. PEMBROKE LIMESTONE GROUP		
	D4 ES				0.25	(2.00) 6.00		End of Borehole at 6.00m		

1 2 3 4 5 6 7 8 9 10

Start & End of Shift Observations				
Date	Time	Depth (m)	Casing (m)	Water (m)
09-11-2018	08:00	0.00		
09-11-2018	17:00	6.00		

Flush Information				
Top (m)	Base (m)	Flush Type	Return	Flush Colour

Installation				
Ref	Top (m)	Base (m)	Type	Dia (mm)
1	0.00	4.00	PLAIN	50
1	4.00	6.00	SLOTTED	50

Borehole Diameter	
Depth (m)	Dia (mm)

Casing Diameter	
Depth (m)	Dia (mm)

Remarks:

1. Area cleared by utilities survey team with hand excavated service pit to 1.20mbgl. 2. Rotary open hole drilling from 1.20m to 6.00mbgl. 3. Installed with a flush steel cover at ground level

Water Strikes

Strike (m)	Casing (m)	Sealed (m)	Time (mins)	Rose to (m)	Remarks
4.00			0		

RPS	Contract Name: Pembroke Dock Marine Development		Client: Milford Haven Port Authority		Borehole ID: 6-BH04
	Contract Number: JER1262	Start Date: 07/11/2018	End Date: 07/11/2018	Checked By: GR	Status: FINAL
					Sheet 1 of 1
Windowless Borehole Log	Easting: 195920.2	Northing: 203516.5	Ground Level: 9.63mOD	Plant Used: Dando Terrier	Logged By: GJ
					Scale: 1:50
Weather: Wet.		Termination: Sampler refusal on suspected boulder.			

Samples & In Situ Testing				Strata Details				Groundwater	
Depths	Type/ Ref	SPT	Testing	Level (mAOD)	Depth (m) (Thickness)	Legend	Strata Description	Water Strike	Backfill/ Installation
0.50	D1						Vegetated surface over probably medium dense brown clayey sandy angular to subangular fine to coarse GRAVEL of mudstone with occasional brick and concrete. Rare inclusions of masonry. MADE GROUND		
0.50	ES		PID 0.50m, 47.2ppm		(1.70)				
1.00 - 1.20	D2								
1.00 - 1.20	ES		PID 1.00m, 0.0ppm						
				7.93	1.70		Firm to stiff light reddish brown slightly gravelly sandy CLAY. Gravel is subangular to subrounded fine to coarse predominantly fine sandstone and mudstone.		
2.00 - 2.20	D3								
2.00 - 2.20	ES		PID 2.00m, 0.0ppm		(1.10)		POSSIBLE MADE GROUND/WEATHERED PEMBROKE LIMESTONE GROUP		
							2.5 - 2.6m. Gravelly clay.		
							2.6m. Yellow sandstone cobble.		
				6.83	2.80		Stiff to very stiff brown slightly gravelly CLAY. Gravel is subangular to subrounded fine to coarse, predominantly fine to medium sandstone and mudstone.		
3.20 - 3.40	D								
3.20 - 3.40	ES		PID 3.20m, 0.0ppm		(1.00)		POSSIBLE MADE GROUND/WEATHERED PEMBROKE LIMESTONE GROUP		
							3.7 - 3.8m. Black decomposed organic matter.		
				5.83	3.80		End of Borehole at 3.80m		

1 2 3 4 5 6 7 8 9 10

Start & End of Shift Observations				
Date	Time	Depth (m)	Casing (m)	Water (m)

Installation				
Ref	Top (m)	Base (m)	Type	Diameter (mm)
1	0.00	1.00	PLAIN	50
1	1.00	1.70	SLOTTED	50

Remarks:

1. Area cleared by utilities survey team with hand excavated service pit to 1.20mbgl. 2. Dynamic sampling from 1.20mbgl to 3.80mbgl. 3. Installed with a flush steel cover at ground level.

Windowless Sample Run Details				
Test Number	Diameter (mm)	Depth Top (m)	Depth Base (m)	Recovery (%)
1	107	1.20	1.80	100
2	87	1.80	2.80	50
3	77	2.80	3.80	100

Casing	
Depth (m)	Diameter (mm)

Water Strikes					
Strike (m)	Casing (m)	Sealed (m)	Time (mins)	Rose to (m)	Remarks

RPS	Contract Name: Pembroke Dock Marine Development		Client: Milford Haven Port Authority			Borehole ID: 6-BH05
	Contract Number: JER1262	Start Date: 07/11/2018	End Date: 07/11/2018	Checked By: GR	Status: FINAL	Sheet 1 of 1
Windowless Borehole Log	Easting: 195745.8	Northing: 203632.0	Ground Level: 8.23mOD	Plant Used: Dando Terrier.	Logged By: GJ	Scale: 1:50
Weather: Wet.	Termination: Sampler refusal on suspected cobble/boulder.		SPT Hammer: N/R, Energy Ratio: N/R			

Samples & In Situ Testing				Strata Details				Groundwater	
Depths	Type/ Ref	SPT	Testing	Level (mAOD)	Depth (m) (Thickness)	Legend	Strata Description	Water Strike	Backfill/ Installation
0.50 0.50	D1 ES		PID 0.50m, 0.0ppm		(1.30)		Probably loose black and brown slightly gravelly silty SAND. Gravel is predominantly angular fine to medium sandstone and angular burnt coal with a low concrete cobble content. Occasional suspected cement-bound asbestos fragments. MADE GROUND		
1.40 1.40	D2 ES		PID 1.40m, 0.0ppm	6.93	1.30		Probably dense grey sandy angular fine to coarse GRAVEL of brick, concrete and sandstone with a medium brick and concrete cobble content. MADE GROUND		
2.50 2.50	D3 ES		PID 2.50m, 0.0ppm		(1.60)				
				5.33	2.90				
					(0.30)		Firm brown very gravelly CLAY. Gravel is angular to subrounded fine to coarse mudstone. MADE GROUND		
				5.03	3.20				
					(0.40)		Firm black to dark brown organic CLAY with rare nail inclusion. Possible buried reworked topsoil layer. MADE GROUND		
3.50 3.50	D ES		PID 3.50m, 0.0ppm	4.63	3.60		End of Borehole at 3.60m		

Start & End of Shift Observations				
Date	Time	Depth (m)	Casing (m)	Water (m)

Installation					
Ref	Top (m)	Base (m)	Type	Diameter (mm)	

Remarks:

1. Area cleared by utilities survey team with hand excavated service pit to 1.20m. 2. Dynamic sampling from 1.20m to 3.60mbgl. 3. Borehole backfilled on completion.

Windowless Sample Run Details				
Test Number	Diameter (mm)	Depth Top (m)	Depth Base (m)	Recovery (%)
1	104	1.20	2.00	90
2	87	2.00	3.00	60
3	87	3.00	3.60	90

Casing	
Depth (m)	Diameter (mm)

Water Strikes					
Strike (m)	Casing (m)	Sealed (m)	Time (mins)	Rose to (m)	Remarks

RPS	Contract Name: Pembroke Dock Marine Development		Client: Milford Haven Port Authority		Borehole ID: 6-BH06
	Contract Number: JER1262	Start Date: 08/11/2018	End Date: 08/11/2018	Checked By: GR	Status: FINAL
					Sheet 1 of 1
Windowless Borehole Log	Easting: 195725.0	Northing: 203895.0	Ground Level: 6.72mOD	Plant Used: Dando Terrier	Logged By: GJ
					Scale: 1:50
Weather: Wet.		Termination: Sampler refusal on suspected cobble.			

Samples & In Situ Testing				Strata Details				Groundwater	
Depths	Type/ Ref	SPT	Testing	Level (mAOD)	Depth (m) (Thickness)	Legend	Strata Description	Water Strike	Backfill/ Installation
					(0.30)		Strong grey CONCRETE of 50 - 60 % aggregate of subangular limestone in a coarse matrix.		
				6.42	0.30		CONCRETE		
				6.22	0.50		Probably medium dense brown slightly sandy angular fine to coarse limestone GRAVEL. MADE GROUND		
0.60	D1								
0.60	ES		PID 0.60m, 0.3ppm						
1.00 - 2.00	D2						Probably medium dense greyish brown slightly clayey slightly sandy angular fine to coarse sandstone GRAVEL with a medium sandstone cobble content. MADE GROUND		
1.00 - 2.00	ES						*1.2 - 3.0m. Limited recovery.*		
			PID 1.50m, 16.4ppm		(2.50)				
2.00 - 3.00	D								
2.00 - 3.00	ES								
			PID 2.50m, 60.9ppm						
				3.72	3.00		End of Borehole at 3.00m		

Start & End of Shift Observations				
Date	Time	Depth (m)	Casing (m)	Water (m)

Installation					
Ref	Top (m)	Base (m)	Type	Diameter (mm)	

Remarks:

1. Area cleared by utilities survey team with hand excavated service pit to 1.20mbgl. 2. Hardstanding removed by 230mm coring rig and reinstated with concrete and flush steel cover. 3. Dynamic sampling from 1.20 to 3.00mbgl. 4. Borehole backfilled on completion.

Windowless Sample Run Details

Test Number	Diameter (mm)	Depth Top (m)	Depth Base (m)	Recovery (%)
1	107	1.20	2.00	40
2	87	2.00	3.00	40

Casing

Depth (m)	Diameter (mm)

Water Strikes

Strike (m)	Casing (m)	Sealed (m)	Time (mins)	Rose to (m)	Remarks

RPS	Contract Name: Pembroke Dock Marine Development		Client: Milford Haven Port Authority	Borehole ID: 6-BH07
	Contract Number: JER1262	Start Date: 07/11/2018	End Date: 07/11/2018	Checked By: GR	Status: FINAL	Sheet 1 of 1
Windowless Borehole Log	Easting: 195706.2	Northing: 203601.4	Ground Level: 7.35mOD	Plant Used: Dando Terrier.	Logged By: GJ	Scale: 1:50
Weather: Wet.		Termination: Sampler refusal on suspected cobble.				

Samples & In Situ Testing				Strata Details				Groundwater	
Depths	Type/ Ref	SPT	Testing	Level (mAOD)	Depth (m) (Thickness)	Legend	Strata Description	Water Strike	Backfill/ Installation
				7.30	0.05		Black MACADAM of subangular to angular medium to coarse limestone with 5 % voids. ASPHALT		
0.50	D1			7.15	0.20		Probably medium dense grey slightly sandy angular fine to coarse limestone GRAVEL. MADE GROUND		
0.50	ES		PID 0.50m, 0.0ppm		(1.00)				
				6.15	1.20		Probably medium dense brown slightly clayey slightly sandy angular fine to coarse GRAVEL of sandstone and mudstone with occasional brick fragments. MADE GROUND		
1.50	D2						Firm reddish brown slightly gravelly CLAY. Gravel is subangular to subrounded fine to medium mudstone.		
1.50	ES		PID 1.50m, 60.8ppm		(1.00)		POSSIBLE MADE GROUND/WEATHERED PEMBROKE LIMESTONE GROUP		
				5.15	2.20		*1.5m. Weak grey limestone cobble with bivalve fossil.* *1.9m. Weak grey sandstone cobble.*		
2.50	D3						Soft to firm light brown slightly gravelly sandy CLAY. Gravel is subangular to subrounded, predominantly subrounded fine to coarse sandstone and mudstone.		
2.50	ES		PID 2.50m, 0.5ppm				POSSIBLE MADE GROUND/ WEATHERED PEMBROKE LIMESTONE GROUP		
							3.0 - 4.0m. Soft and wet.		
3.50	D4				(2.60)				
3.50	ES		PID 3.50m, 0.7ppm						
4.50	D5								
4.50	ES		PID 4.50m, 19.7ppm				*4.7 - 4.8m. Sandstone cobble.*		
				2.55	4.80		End of Borehole at 4.80m		

Start & End of Shift Observations				
Date	Time	Depth (m)	Casing (m)	Water (m)

Installation				
Ref	Top (m)	Base (m)	Type	Diameter (mm)

Remarks:

1. Area cleared by utilities survey team with hand excavated service pit to 1.20mbgl. 2. Dynamic sampling from 1.20m to 4.80m.bgl 3. Borehole backfilled on completion.

Windowless Sample Run Details				
Test Number	Diameter (mm)	Depth Top (m)	Depth Base (m)	Recovery (%)
1	107	1.20	2.00	100
2	87	2.00	3.00	80
3	87	3.00	4.00	70
4	77	4.00	4.80	100

Casing	
Depth (m)	Diameter (mm)

Water Strikes					
Strike (m)	Casing (m)	Sealed (m)	Time (mins)	Rose to (m)	Remarks
3.00			0		3.0 - 4.0m. Wet arisings.

RPS	Contract Name: Pembroke Dock Marine Development		Client: Milford Haven Port Authority		Borehole ID: 6-BH08
	Contract Number: JER1262	Start Date: 07/11/2018	End Date: 08/11/2018	Checked By: GR	Status: FINAL
					Sheet 1 of 1
Windowless Borehole Log	Easting: 195770.0	Northing: 203688.4	Ground Level: 9.15mOD	Plant Used: Dando Terrier.	Logged By: GJ
					Scale: 1:50

Weather: Wet.

Termination: Sampler refusal on suspected limestone cobble.

Samples & In Situ Testing				Strata Details				Groundwater	
Depths	Type/ Ref	SPT	Testing	Level (mAOD)	Depth (m) (Thickness)	Legend	Strata Description	Water Strike	Backfill/ Installation
				8.95	0.20		Strong grey CONCRETE of 50 - 60 % aggregate of subangular limestone in a coarse matrix. CONCRETE		
				8.65	(0.30)				
0.60	D1				0.50		Probably medium dense brown slightly sandy angular fine to coarse limestone GRAVEL. MADE GROUND		
0.60	ES		PID 0.60m, 0.0ppm						
1.00	D2						Firm light brown very gravelly CLAY. Gravel is subangular to subrounded fine to coarse of limestone. POSSIBLE MADE GROUND/WEATHERED PEMBROKE LIMESTONE GROUP		
1.00	ES		PID 1.00m, 4.6ppm						
1.50	D3						*1.5 - 1.7m. Very gravelly.*		
1.50	ES		PID 1.50m, 0.0ppm		(2.45)				
							2.0 - 2.8m. Limited recovery.		
2.70	D4						*2.8m. Grey limestone cobble.*		
2.70	ES		PID 2.70m, 23.3ppm	6.20	2.95		End of Borehole at 2.95m		

Start & End of Shift Observations				
Date	Time	Depth (m)	Casing (m)	Water (m)

Installation				
Ref	Top (m)	Base (m)	Type	Diameter (mm)

Remarks:

1. Area cleared by utilities survey team with hand excavated service pit to 1.20mbgl. 2. Hardstanding removed by 230mm coring rig and reinstated with concrete and flush steel cover. 3. Dynamic sampling from 1.20m to 2.95mbgl. 4. Borehole backfilled on completion.

Windowless Sample Run Details				
Test Number	Diameter (mm)	Depth Top (m)	Depth Base (m)	Recovery (%)
1	104	1.20	2.00	80
2	87	2.00	2.95	50

Casing	
Depth (m)	Diameter (mm)

Water Strikes					
Strike (m)	Casing (m)	Sealed (m)	Time (mins)	Rose to (m)	Remarks

RPS	Contract Name: Pembroke Dock Marine Development		Client: Milford Haven Port Authority		Borehole ID: 6-BH09
	Contract Number: JER1262	Start Date: 07/11/2018	End Date: 07/11/2018	Checked By: GR	Status: FINAL
					Sheet 1 of 1
Windowless Borehole Log	Easting: 195717.9	Northing: 203686.7	Ground Level: 6.43mOD	Plant Used: Dando Terrier.	Logged By: GJ
					Scale: 1:50
Weather: Wet.		Termination: Sampler refusal on suspected cobble.			

Samples & In Situ Testing				Strata Details				Groundwater	
Depths	Type/ Ref	SPT	Testing	Level (mAOD)	Depth (m) (Thickness)	Legend	Strata Description	Water Strike	Backfill/ Installation
				6.23	0.20		Strong grey CONCRETE of 50 - 60 % aggregate of subangular limestone in a coarse matrix. CONCRETE		
0.50	D1				(0.50)		Probably medium dense blackish grey sandy angular fine to coarse GRAVEL of sandstone with occasional brick and concrete fragments. MADE GROUND		
0.50	ES			5.73	0.70				
0.80	D2		PID 0.50m, 0.0ppm		(0.30)				
0.80	ES			5.43	1.00		Brown and light brown slightly sandy clayey angular fine to coarse GRAVEL of sandstone and mudstone with occasional concrete fragments. MADE GROUND		
			PID 0.80m, 0.1ppm						
1.50	D3						Brown and light brown slightly sandy clayey angular fine to coarse sandstone and mudstone GRAVEL. POSSIBLE MADE GROUND/ WEATHERED PEMBROKE LIMESTONE GROUP		
1.50	ES						*1.5m. Sandstone cobble.*		
			PID 1.50m, 1.5ppm		(1.80)				
2.50	D4								
2.50	ES								
			PID 2.50m, 28.2ppm	3.63	2.80		End of Borehole at 2.80m		

Start & End of Shift Observations				
Date	Time	Depth (m)	Casing (m)	Water (m)

Installation				
Ref	Top (m)	Base (m)	Type	Diameter (mm)

Remarks:

1. Area cleared by utilities survey team with hand excavated service pit to 1.20mbgl. 2. Hardstanding removed by 230mm coring rig and reinstated with concrete and flush steel cover. 3. Dynamic sampling from 1.20m to 2.80mbgl. 4. Borehole backfilled on completion.

Windowless Sample Run Details				
Test Number	Diameter (mm)	Depth Top (m)	Depth Base (m)	Recovery (%)
1	104	1.20	2.00	100
2	87	2.00	2.80	87

Casing	
Depth (m)	Diameter (mm)

Water Strikes					
Strike (m)	Casing (m)	Sealed (m)	Time (mins)	Rose to (m)	Remarks

RPS	Contract Name: Pembroke Dock Marine Development		Client: Milford Haven Port Authority	Borehole ID: 6-BH10
	Contract Number: JER1262	Start Date: 08/11/2018	End Date: 08/11/2018	Checked By: GR	Status: FINAL	Sheet 1 of 1
Windowless Borehole Log	Easting: 195752.3	Northing: 203807.9	Ground Level: 6.96mOD	Plant Used: Dando Terrier.	Logged By: GJ	Scale: 1:50
Weather: Wet.	Termination: Sampler refusal on obstruction in Made Ground.					

Samples & In Situ Testing				Strata Details				Groundwater	
Depths	Type/ Ref	SPT	Testing	Level (mAOD)	Depth (m) (Thickness)	Legend	Strata Description	Water Strike	Backfill/ Installation
0.60 0.60	D1 ES		PID 0.60m, 0.3ppm	6.16	(0.80) 0.80		Gravel surface over; probably medium dense greyish brown slightly clayey sandy angular fine to coarse GRAVEL of limestone with rare brick inclusions. MADE GROUND End of Borehole at 0.80m		

1 2 3 4 5 6 7 8 9 10

Start & End of Shift Observations				
Date	Time	Depth (m)	Casing (m)	Water (m)

Installation				
Ref	Top (m)	Base (m)	Type	Diameter (mm)
1	0.00	0.30	PLAIN	50
1	0.30	0.80	SLOTTED	50

Remarks:

1. Area cleared by utilities survey team 2. Dynamic sampling to 0.80mbgl. 3. Obstruction resulting in sampler refusal at 0.80mbgl. One additional pit undertaken immediately adjacent resulted in a sampler refusal at 0.75m.bgl 4. Installed with a flush steel cover at ground level. 5. Borehole backfilled on completion.

Windowless Sample Run Details				
Test Number	Diameter (mm)	Depth Top (m)	Depth Base (m)	Recovery (%)

Casing	
Depth (m)	Diameter (mm)

Water Strikes					
Strike (m)	Casing (m)	Sealed (m)	Time (mins)	Rose to (m)	Remarks

RPS	Contract Name: Pembroke Dock Marine Development		Client: Milford Haven Port Authority	Borehole ID: 6-BH11
	Contract Number: JER1262	Start Date: 08/11/2018	End Date: 08/11/2018	Checked By: GR	Status: FINAL	Sheet 1 of 1
Windowless Borehole Log	Easting: 195837.9	Northing: 203856.5	Ground Level: 7.31mOD	Plant Used: Dando Terrier.	Logged By: GJ	Scale: 1:50
Weather: Wet.	Termination: Sampler refusal on obstruction in Made Ground.					

Samples & In Situ Testing				Strata Details				Groundwater	
Depths	Type/ Ref	SPT	Testing	Level (mAOD)	Depth (m) (Thickness)	Legend	Strata Description	Water Strike	Backfill/ Installation
0.80 0.80	D1 ES		PID 0.50m, 0.1ppm	6.31	(1.00) 1.00		Grass surface over dark grey to brown sandy angular to subangular fine to coarse GRAVEL of sandstone and mudstone with occasional metal fragments. MADE GROUND End of Borehole at 1.00m		

1 2 3 4 5 6 7 8 9 10

Start & End of Shift Observations				
Date	Time	Depth (m)	Casing (m)	Water (m)

Installation				
Ref	Top (m)	Base (m)	Type	Diameter (mm)
1	0.00	0.30	PLAIN	50
1	0.30	1.00	SLOTTED	50

Remarks:

1. Area cleared by utilities survey team 2. Dynamic sampling to 1.00mbgl. 3. Obstruction resulting in sampler refusal at 1.00m.bgl Two additional pits undertaken in adjacent area resulted in refusals at similar depth. 4. Installed with a flush steel cover at ground level. 5. Borehole backfilled on completion.

Windowless Sample Run Details				
Test Number	Diameter (mm)	Depth Top (m)	Depth Base (m)	Recovery (%)

Casing	
Depth (m)	Diameter (mm)

Water Strikes

Strike (m)	Casing (m)	Sealed (m)	Time (mins)	Rose to (m)	Remarks
0.30			0		Water ingress from gravel. Likely perched water.

RPS	Contract Name: Pembroke Dock Marine Development		Client: Milford Haven Port Authority	Borehole ID: 6-BH12
	Contract Number: JER1262	Start Date: 08/11/2018	End Date: 08/11/2018	Checked By: GR	Status: FINAL	Sheet 1 of 1
Windowless Borehole Log	Easting: 195797.5	Northing: 203864.1	Ground Level: 7.04mOD	Plant Used: Dando Terrier.	Logged By: GJ	Scale: 1:50
Weather: Wet.	Termination: Sampler refusal on obstruction in Made Ground.					

Samples & In Situ Testing				Strata Details				Groundwater	
Depths	Type/ Ref	SPT	Testing	Level (mAOD)	Depth (m) (Thickness)	Legend	Strata Description	Water Strike	Backfill/ Installation
0.50 0.50	D1 ES		PID 0.50m, 0.0ppm	6.44	(0.60) 0.60		Vegetation surface over black and brown slightly sandy gravelly CLAY. Gravel is subangular to subrounded fine to coarse sandstone, mudstone and brick with occasional wood fragments. MADE GROUND End of Borehole at 0.60m		

1 2 3 4 5 6 7 8 9 10

Start & End of Shift Observations				
Date	Time	Depth (m)	Casing (m)	Water (m)

Installation				
Ref	Top (m)	Base (m)	Type	Diameter (mm)

Remarks:

1. Area cleared by utilities survey team 2. Dynamic sampling to 0.60mbgl. 3. Obstruction resulting in sampler refusal at 0.60mbgl. Two additional pits undertaken in adjacent area resulted in refusals at 0.60mbgl. 4. Borehole backfilled on completion.

Windowless Sample Run Details				
Test Number	Diameter (mm)	Depth Top (m)	Depth Base (m)	Recovery (%)

Casing	
Depth (m)	Diameter (mm)

Water Strikes					
Strike (m)	Casing (m)	Sealed (m)	Time (mins)	Rose to (m)	Remarks

RPS	Contract Name: Pembroke Dock Marine Development		Client: Milford Haven Port Authority	Borehole ID: 6-BH13
	Contract Number: JER1262	Start Date: 08/11/2018	End Date: 08/11/2018	Checked By: GR	Status: FINAL	Sheet 1 of 1
Windowless Borehole Log	Easting: 195757.6	Northing: 203978.9	Ground Level: 6.14mOD	Plant Used: None.	Logged By: GJ	Scale: 1:50
Weather: Wet.		Termination: Water in service pit.				

Samples & In Situ Testing				Strata Details				Groundwater	
Depths	Type/ Ref	SPT	Testing	Level (mAOD)	Depth (m) (Thickness)	Legend	Strata Description	Water Strike	Backfill/ Installation
0.50 0.50	D1 ES		PID 0.50m, 0.0ppm	5.89 5.54	0.25 (0.35) 0.60		Strong grey CONCRETE of 50 - 60 % aggregate of subangular limestone in a coarse matrix. CONCRETE Probably medium dense grey brown slightly sandy angular fine to coarse GRAVEL of sandstone, limestone and brick. MADE GROUND End of Borehole at 0.60m		

Start & End of Shift Observations				
Date	Time	Depth (m)	Casing (m)	Water (m)

Installation				
Ref	Top (m)	Base (m)	Type	Diameter (mm)

Remarks:

1. Area cleared by utilities survey team with significant water ingress into hand excavated service pit from 0.50mbgl. 2. Hardstanding removed by 230mm coring rig and reinstated with concrete and flush steel cover.

Windowless Sample Run Details				
Test Number	Diameter (mm)	Depth Top (m)	Depth Base (m)	Recovery (%)

Casing	
Depth (m)	Diameter (mm)

Water Strikes

Strike (m)	Casing (m)	Sealed (m)	Time (mins)	Rose to (m)	Remarks
0.50			0		Perched water in Made Ground.

Appendix 2

Gas & Groundwater Field Data

Gas Monitoring Record

Project Number:	JER1262
Project Name:	Pembroke Dock Marine Development
Date:	14/11/2018
Logger	AT

Weather:	Dry, fine

*mbgl - Meters below Ground Level

			Initial	10 secs	20 secs	30 secs	40 secs	50 secs	60 secs	70 secs	80 secs	90 secs	100 secs	110 secs	120 secs	130 secs	140 secs	150 secs	180 secs	300 secs	Groundwater Level (mbgl*)	Borehole Base (mbgl*)	Comments
Borehole ID	4-BH201																							
Peak Flow Rate (l/hr)	-	**CH4 (%)**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**											
Stable Flow Rate (l/hr)	-	**CO2 (%)**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**											
Atmospheric Pressure (mbar)	1016	**H2S (ppm)**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**								5.16	10.08	Water was dark orange brown and heavily sedimented. Gas flow rates did not stabilise, due to high winds during monitoring.
Borehole Pressure (Pa)	-	**O2 (%)**	**20.3**	**20.4**	**20.6**	**20.8**	**20.8**	**20.8**	**20.8**	**20.9**	**20.9**	**20.9**	**20.9**										
Time	-	**LEL (%)**	0	0	0	0	0	0	0	0	0	0	0										
Peak VOC	0	**CO (ppm)**	0	0	0	0	0	0	0	0	0	0	0										

			Initial	10 secs	20 secs	30 secs	40 secs	50 secs	60 secs	70 secs	80 secs	90 secs	100 secs	110 secs	120 secs	130 secs	140 secs	150 secs	180 secs	300 secs	Groundwater Level (mbgl*)	Borehole Base (mbgl*)	Comments
Borehole ID	4-WS206																							
Peak Flow Rate (l/hr)	1.4	**CH4 (%)**	0	0	0	0	0	0	0	0	0	0	0	0	0									
Stable Flow Rate (l/hr)	0	**CO2 (%)**	0	0.5	0.9	1	1	1	1	1	1	1.1	1.1	1.1	1.1									
Atmospheric Pressure (mbar)	1016	**H2S (ppm)**	0	0	0	0	0	0	0	0	0	0	0	0	0						DRY	3.06	-	
Borehole Pressure (Pa)	-2	**O2 (%)**	20.4	20	19.9	19.4	19.4	19.2	19.1	19	19	19	18.9	18.9	18.9									
Time	-	**LEL (%)**	0	0	0	0	0	0	0	0	0	0	0	0	0									
Peak VOC	0.2	**CO (ppm)**	0	0	0	0	0	0	0	0	0	0	0	0	0									

			Initial	10 secs	20 secs	30 secs	40 secs	50 secs	60 secs	70 secs	80 secs	90 secs	100 secs	110 secs	120 secs	130 secs	140 secs	150 secs	180 secs	300 secs	Groundwater Level (mbgl*)	Borehole Base (mbgl*)	Comments
Borehole ID	4-WS205																							
Peak Flow Rate (l/hr)	1.2	**CH4 (%)**	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0							
Stable Flow Rate (l/hr)	0	**CO2 (%)**	0	1	1.5	1.7	1.7	1.8	1.9	1.9	1.9	2	2	2	2	2	2							
Atmospheric Pressure (mbar)	1016	**H2S (ppm)**	0	0	0	0															DRY	3.12	-	
Borehole Pressure (Pa)	0	**O2 (%)**	20.1	19.8	18.9	19	19	18.9	18.8	18.7	18.7	18.6	18.6	18.5	18.5	18.5	18.5							
Time	11:00	**LEL (%)**	0	0	0	0																		
Peak VOC	0	**CO (ppm)**	0	0	0	0																		

			Initial	10 secs	20 secs	30 secs	40 secs	50 secs	60 secs	70 secs	80 secs	90 secs	100 secs	110 secs	120 secs	130 secs	140 secs	150 secs	180 secs	300 secs	Groundwater Level (mbgl*)	Borehole Base (mbgl*)	Comments
Borehole ID	6-BH03																							
Peak Flow Rate (l/hr)	-0.8	**CH4 (%)**	0	0	0	0	0	0	0	0	0	0	0	0	0									
Stable Flow Rate (l/hr)	0	**CO2 (%)**	0	0	0	0	0	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1									
Atmospheric Pressure (mbar)	1016	**H2S (ppm)**	0	0	0																5.03	6.15	Water was dark orange brown and heavily sedimented.	
Borehole Pressure (Pa)	-4	**O2 (%)**	20.1	20.1	20.1	20	19.9	19.6	19.4	19.3	19.2	19.1	19	19	19									
Time		**LEL (%)**	0	0	0																			
Peak VOC	0.1	**CO (ppm)**	0	0	0																			

Gas Monitoring Record

Project Number:	JER1262
Project Name:	Pembroke Dock Marine Development
Date:	14/11/2018
Logger	AT

Weather:	Dry, fine

*mbgl - Meters below Ground Level

			Initial	10 secs	20 secs	30 secs	40 secs	50 secs	60 secs	70 secs	80 secs	90 secs	100 secs	110 secs	120 secs	130 secs	140 secs	150 secs	180 secs	300 secs	Groundwater Level (mbgl*)	Borehole Base (mbgl*)	Comments
Borehole ID	4-WS208																							
Peak Flow Rate (l/hr)	-1.4	**CH4 (%)**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**			
Stable Flow Rate (l/hr)	-0.2	**CO2 (%)**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**			
Atmospheric Pressure (mbar)	1015	**H2S (ppm)**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	1.15	2.74	Slight hydrocarbon sheen and organic odour. Water was dark grey brown and heavily sedimented.
Borehole Pressure (Pa)	-2	**O2 (%)**	**21**	**21.1**	**20.9**	**20.7**	**20.7**	**20.7**	**20.7**	**20.8**	**20.8**	**20.8**	**20.8**	**20.9**	**20.9**	**20.9**	**20.9**	**20.9**	**20.9**	**20.9**			
Time	15:47	**LEL (%)**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**			
Peak VOC	0	**CO (ppm)**	**0**	**0**	**0**	**0**	**1.2**	**1.8**	**2.3**	**2.6**	**3**	**3.1**	**3.4**	**3.7**	**3.8**	**3.7**	**3.5**	**2.5**	**0**	**0**			

			Initial	10 secs	20 secs	30 secs	40 secs	50 secs	60 secs	70 secs	80 secs	90 secs	100 secs	110 secs	120 secs	130 secs	140 secs	150 secs	180 secs	300 secs	Groundwater Level (mbgl*)	Borehole Base (mbgl*)	Comments
Borehole ID	4-WS209																							
Peak Flow Rate (l/hr)	-1.1	**CH4 (%)**	0	0	0	0	0	0	0	0	0	0	0	0	0									
Stable Flow Rate (l/hr)	0	**CO2 (%)**	0	0	0	0	0	0	0	0	0	0	0	0	0									
Atmospheric Pressure (mbar)	1016	**H2S (ppm)**	0	0	0	0	0	0	0	0	0	0	0	0	0						2.37	2.56	Not enough volume so no sample taken.	
Borehole Pressure (Pa)	-2	**O2 (%)**	20.3	20.9	20.9	20.9	20.9	20.9	20.9	20.9	20.9	20.9	20.9	20.9	20.9									
Time	15:29	**LEL (%)**	0	0	0	0	0	0	0	0	0	0	0	0	0									
Peak VOC	0	**CO (ppm)**	0	0	0	0	0	0	2	0	0	0	0	0	0									

			Initial	10 secs	20 secs	30 secs	40 secs	50 secs	60 secs	70 secs	80 secs	90 secs	100 secs	110 secs	120 secs	130 secs	140 secs	150 secs	180 secs	300 secs	Groundwater Level (mbgl*)	Borehole Base (mbgl*)	Comments
Borehole ID	4-WS211																							
Peak Flow Rate (l/hr)	1	**CH4 (%)**	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			
Stable Flow Rate (l/hr)	0	**CO2 (%)**	0	0.6	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	1	1	1	0.9	0.9	0.9			
Atmospheric Pressure (mbar)	1015	**H2S (ppm)**	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	DRY	0.82	-	
Borehole Pressure (Pa)	-2	**O2 (%)**	21	20.3	18.5	17.8	17.4	17.2	17	16.9	16.8	16.8	16.7	16.7	16.7	16.7	16.7	16.6	16.6	16.6			
Time	15:10	**LEL (%)**	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			
Peak VOC	0.1	**CO (ppm)**	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			

			Initial	10 secs	20 secs	30 secs	40 secs	50 secs	60 secs	70 secs	80 secs	90 secs	100 secs	110 secs	120 secs	130 secs	140 secs	150 secs	180 secs	300 secs	Groundwater Level (mbgl*)	Borehole Base (mbgl*)	Comments
Borehole ID	4-WS212																							
Peak Flow Rate (l/hr)	-	**CH4 (%)**	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			
Stable Flow Rate (l/hr)	-	**CO2 (%)**	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			
Atmospheric Pressure (mbar)	1016	**H2S (ppm)**	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2.86	3	Not enough volume so no sample taken. Gas flow rates did not stabilise, due to high winds during monitoring.	
Borehole Pressure (Pa)	-2	**O2 (%)**	20.5	21	21	21	20.9	21	20.9	20.9	20.9	20.9	20.9	20.9	20.8	20.9	20.9	20.9	20.9	20.8				
Time	14:57	**LEL (%)**	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0				
Peak VOC	0	**CO (ppm)**	0	0	0	0	0	0	0	0	0	1.3	1.6	2.2	2.7	2.8	3	3.4	3.5	0				

Gas Monitoring Record

Project Number:	JER1262
Project Name:	Pembroke Dock Marine Development
Date:	14/11/2018
Logger	AT

Weather:	Dry, fine

*mbgl - Meters below Ground Level

			Initial	10 secs	20 secs	30 secs	40 secs	50 secs	60 secs	70 secs	80 secs	90 secs	100 secs	110 secs	120 secs	130 secs	140 secs	150 secs	180 secs	300 secs	Groundwater Level (mbgl*)	Borehole Base (mbgl*)	Comments
Borehole ID	4-BH203																							
Peak Flow Rate (l/hr)	-2.1	**CH4 (%)**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**			
Stable Flow Rate (l/hr)	-1	**CO2 (%)**	**0**	**0.4**	**0.8**	**0.9**	**1.1**	**1.3**	**1.4**	**1.4**	**1.4**	**1.5**	**1.5**	**1.5**	**1.5**	**1.5**	**1.5**	**1.5**	**1.5**	**1.5**			
Atmospheric Pressure (mbar)	1016	**H2S (ppm)**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	3.5	8.99	Water was dark orange brown and heavily sedimented.
Borehole Pressure (Pa)	-3	**O2 (%)**	**20.6**	**20.9**	**20.2**	**19.6**	**19.1**	**18.6**	**18.4**	**18.1**	**18**	**17.8**	**17.7**	**17.6**	**17.5**	**17.5**	**17.5**	**17.5**	**17.4**	**17.2**			
Time	14:10	**LEL (%)**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**			
Peak VOC	0	**CO (ppm)**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1.1**	**2**	**2.2**	**2.6**	**2.9**	**3.7**	**1.4**			

			Initial	10 secs	20 secs	30 secs	40 secs	50 secs	60 secs	70 secs	80 secs	90 secs	100 secs	110 secs	120 secs	130 secs	140 secs	150 secs	180 secs	300 secs	Groundwater Level (mbgl*)	Borehole Base (mbgl*)	Comments
Borehole ID	6-BH10																							
Peak Flow Rate (l/hr)	-	**CH4 (%)**	0	0	0	0	0	0	0	0														
Stable Flow Rate (l/hr)	-	**CO2 (%)**	0	0	0	0	0	0	0	0														
Atmospheric Pressure (mbar)	1016	**H2S (ppm)**	0	0	0	0	0	0	0	0											DRY	0.68	Gas flow rates did not stabilise, due to high winds during monitoring.	
Borehole Pressure (Pa)	-	**O2 (%)**	20.5	20.7	21	20.9	21	21	21	21														
Time	11:40	**LEL (%)**	0	0	0	0	0	0	0	0														
Peak VOC	0	**CO (ppm)**	0	0	0	0	0	0	0	0														

			Initial	10 secs	20 secs	30 secs	40 secs	50 secs	60 secs	70 secs	80 secs	90 secs	100 secs	110 secs	120 secs	130 secs	140 secs	150 secs	180 secs	300 secs	Groundwater Level (mbgl*)	Borehole Base (mbgl*)	Comments
Borehole ID	6-BH01																							
Peak Flow Rate (l/hr)	-	**CH4 (%)**	0	0	0	0	0	0	0	0	0	0	0	0	0									
Stable Flow Rate (l/hr)	-	**CO2 (%)**	0	0	0	0	0	0	0	0	0	0	0	0	0									
Atmospheric Pressure (mbar)	1016	**H2S (ppm)**	0	0	0	0	0	0	0	0	0	0	0	0	0						4.61	5.78	Water was dark orange brown and heavily sedimented. Gas flow rates did not stabilise, due to high winds during monitoring.	
Borehole Pressure (Pa)	-	**O2 (%)**	20.6	20.6	20.6	20.6	20.6	20.7	20.8	20.8	20.8	20.9	20.9	20.9	20.9									
Time	11:57	**LEL (%)**	0	0	0	0	0	0	0	0	0	0	0	0	0									
Peak VOC	0	**CO (ppm)**	0	9.5	13.3	13.3	10	8.1	5.5	3.8	1.9	0	0	0	0									

			Initial	10 secs	20 secs	30 secs	40 secs	50 secs	60 secs	70 secs	80 secs	90 secs	100 secs	110 secs	120 secs	130 secs	140 secs	150 secs	180 secs	300 secs	Groundwater Level (mbgl*)	Borehole Base (mbgl*)	Comments
Borehole ID	6-BH11																							
Peak Flow Rate (l/hr)	-	**CH4 (%)**	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0				
Stable Flow Rate (l/hr)	-	**CO2 (%)**	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0				
Atmospheric Pressure (mbar)	1016	**H2S (ppm)**	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	DRY	0.82	Gas flow rates did not stabilise, due to high winds during monitoring.	
Borehole Pressure (Pa)	-	**O2 (%)**	20.9	21.2	21.2	21.1	21.1	21.1	21.1	21.1	21.1	21.1	21.1	21.1	21.1	21.1	21.1	21.1	21.1	21.1				
Time	12:50	**LEL (%)**	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0				
Peak VOC	0	**CO (ppm)**	0	0	0	1	1.4	1.6	1.8	2.1	2.5	3.1	3.3	3.8	3.7	3.6	3.9	2.2	0	0				

Gas Monitoring Record

Project Number:	JER1262
Project Name:	Pembroke Dock Marine Development
Date:	15/11/2018
Logger	AT

Weather:	Dry, fine

*mbgl - Meters below Ground Level

			Initial	10 secs	20 secs	30 secs	40 secs	50 secs	60 secs	70 secs	80 secs	90 secs	100 secs	110 secs	120 secs	130 secs	140 secs	150 secs	180 secs	300 secs	Groundwater Level (mbgl*)	Borehole Base (mbgl*)	Comments
Borehole ID	3-W1																						
Peak Flow Rate (l/hr)	0.1	**CH4 (%)**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**										
Stable Flow Rate (l/hr)	0	**CO2 (%)**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**										
Atmospheric Pressure (mbar)	1016	**H2S (ppm)**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**								6.06	10.83	Water was dark grey brown and heavily sedimented.
Borehole Pressure (Pa)	-2	**O2 (%)**	**17**	**17**	**17**	**17**	**17**	**17**	**17**	**17**	**17**	**17**	**17**										
Time	08:18	**LEL (%)**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**										
Peak VOC	0	**CO (ppm)**	**0**	**0**	**3.4**	**3.3**	**2.7**	**2**	**1**	**0**	**0**	**0**	**0**										

			Initial	10 secs	20 secs	30 secs	40 secs	50 secs	60 secs	70 secs	80 secs	90 secs	100 secs	110 secs	120 secs	130 secs	140 secs	150 secs	180 secs	300 secs	Groundwater Level (mbgl*)	Borehole Base (mbgl*)	Comments
Borehole ID	4-BH202																						
Peak Flow Rate (l/hr)	0	**CH4 (%)**	0	0	0	0	0	0	0	0													
Stable Flow Rate (l/hr)	0	**CO2 (%)**	0	0	0	0	0	0	0	0													
Atmospheric Pressure (mbar)	1016	**H2S (ppm)**	0	0	0	0	0	0	0	0											3.3	10.09	Water was dark orange brown and heavily sedimented.
Borehole Pressure (Pa)	-2	**O2 (%)**	17	17	17	17	17	17	17	17													
Time	08:56	**LEL (%)**	0	0	0	0	0	0	0	0													
Peak VOC	0	**CO (ppm)**	0	0	0	0	0	0	0	0													

			Initial	10 secs	20 secs	30 secs	40 secs	50 secs	60 secs	70 secs	80 secs	90 secs	100 secs	110 secs	120 secs	130 secs	140 secs	150 secs	180 secs	300 secs	Groundwater Level (mbgl*)	Borehole Base (mbgl*)	Comments
Borehole ID	6-BH04																						
Peak Flow Rate (l/hr)	1.4	**CH4 (%)**	0	0	0	0	0	0	0	0	0	0	0										
Stable Flow Rate (l/hr)	0	**CO2 (%)**	0	0	0	0	0	0	0	0	0	0	0										
Atmospheric Pressure (mbar)	1016	**H2S (ppm)**	0	0	0	0	0	0	0	0	0	0	0								1.83	1.84	Not enough volume so no sample taken.
Borehole Pressure (Pa)	-2	**O2 (%)**	17.3	17.3	17.3	17.2	17.2	17.2	17.2	17.2	17.2	17.2	17.2										
Time	11:31	**LEL (%)**	0	0	0	0	0	0	0	0	0	0	0										
Peak VOC	0	**CO (ppm)**	0	0	0	0	0	0	0	0	0	0	0										

			Initial	10 secs	20 secs	30 secs	40 secs	50 secs	60 secs	70 secs	80 secs	90 secs	100 secs	110 secs	120 secs	130 secs	140 secs	150 secs	180 secs	300 secs	Groundwater Level (mbgl*)	Borehole Base (mbgl*)	Comments
Borehole ID	6-BH02																						
Peak Flow Rate (l/hr)	1.7	**CH4 (%)**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**												
Stable Flow Rate (l/hr)	0	**CO2 (%)**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**												
Atmospheric Pressure (mbar)	1016	**H2S (ppm)**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**										6.77	9.5	Water was dark orange brown and heavily sedimented.
Borehole Pressure (Pa)	-2	**O2 (%)**	**20.7**	**21.1**	**20.9**	**20.7**	**20.9**	**20.8**	**20.8**	**20.8**	**20.8**												
Time	13:08	**LEL (%)**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**												
Peak VOC	0	**CO (ppm)**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**												

Gas Monitoring Record

Project Number:	JER1262
Project Name:	Pembroke Dock Marine Development
Date:	30/11/2018
Logger	GJ

Weather:	Overcast, windy with showers.

*mbgl - Meters below Ground Level

			Initial	10 secs	20 secs	30 secs	40 secs	50 secs	60 secs	70 secs	80 secs	90 secs	100 secs	110 secs	120 secs	130 secs	140 secs	150 secs	180 secs	300 secs	Groundwater Level (mbgl*)	Borehole Base (mbgl*)	Comments
Borehole ID	4-BH201																				5.05	10.1	Gas tap has rusted shut. Unable to sample gas concentrations.
Peak Flow Rate (l/hr)		**CH4 (%)**																					
Stable Flow Rate (l/hr)		**CO2 (%)**																					
Atmospheric Pressure (mbar)		**H2S (ppm)**	**See Comments.**																				
Borehole Pressure (Pa)		**O2 (%)**																					
Time		**LEL (%)**																					
Peak VOC		**CO (ppm)**																					

			Initial	10 secs	20 secs	30 secs	40 secs	50 secs	60 secs	70 secs	80 secs	90 secs	100 secs	110 secs	120 secs	130 secs	140 secs	150 secs	180 secs	300 secs	Groundwater Level (mbgl*)	Borehole Base (mbgl*)	Comments
Borehole ID	4-WS206																				DRY	3.05	-
Peak Flow Rate (l/hr)	0	**CH4 (%)**	0	0	0	0	0	0	0	0	0	0											
Stable Flow Rate (l/hr)	0	**CO2 (%)**	0	0	0	0	0	0	0	0	0	0											
Atmospheric Pressure (mbar)	1004	**H2S (ppm)**	0	0	0	0	0	0	0	0	0	0											
Borehole Pressure (Pa)	0	**O2 (%)**	20.3	20.8	20.7	20.7	20.7	20.6	20.6	20.6	20.6	20.6											
Time	-	**LEL (%)**	0	0	0	0	0	0	0	0	0	0											
Peak VOC	3.5	**CO (ppm)**	0	0	0	0	0	0	0	0	0	0											

			Initial	10 secs	20 secs	30 secs	40 secs	50 secs	60 secs	70 secs	80 secs	90 secs	100 secs	110 secs	120 secs	130 secs	140 secs	150 secs	180 secs	300 secs	Groundwater Level (mbgl*)	Borehole Base (mbgl*)	Comments
Borehole ID	4-WS205																						
Peak Flow Rate (l/hr)		**CH4 (%)**																					
Stable Flow Rate (l/hr)		**CO2 (%)**																					
Atmospheric Pressure (mbar)		**H2S (ppm)**	**See Comments.**																				Area not accessible
Borehole Pressure (Pa)		**O2 (%)**																					
Time		**LEL (%)**																					
Peak VOC		**CO (ppm)**																					

			Initial	10 secs	20 secs	30 secs	40 secs	50 secs	60 secs	70 secs	80 secs	90 secs	100 secs	110 secs	120 secs	130 secs	140 secs	150 secs	180 secs	300 secs	Groundwater Level (mbgl*)	Borehole Base (mbgl*)	Comments
Borehole ID	6-BH03																				4.4	6.1	-
Peak Flow Rate (l/hr)	0	**CH4 (%)**	0	0	0	0	0	0	0														
Stable Flow Rate (l/hr)	0	**CO2 (%)**	2	0.6	0.4	0.4	0.5	0.5	0.5														
Atmospheric Pressure (mbar)	1004	**H2S (ppm)**	0	4	5	1	0	0	0														
Borehole Pressure (Pa)	0	**O2 (%)**	20.1	20.2	20.1	20.1	20.1	20.1	20.1														
Time	12:30	**LEL (%)**	0	0	0	0	0	0	0														
Peak VOC	3	**CO (ppm)**	0	5	6	0	0	0	0														

Gas Monitoring Record

Project Number:	JER1262
Project Name:	Pembroke Dock Marine Development
Date:	30/11/2018
Logger	GJ

Weather:	Overcast, windy with showers.

*mbgl - Meters below Ground Level

			Initial	10 secs	20 secs	30 secs	40 secs	50 secs	60 secs	70 secs	80 secs	90 secs	100 secs	110 secs	120 secs	130 secs	140 secs	150 secs	180 secs	300 secs	Groundwater Level (mbgl*)	Borehole Base (mbgl*)	Comments
Borehole ID	4-WS208																						
Peak Flow Rate (l/hr)		**CH4 (%)**																					
Stable Flow Rate (l/hr)		**CO2 (%)**																					
Atmospheric Pressure (mbar)		**H2S (ppm)**	**See Comments**																				Area not accessible
Borehole Pressure (Pa)		**O2 (%)**																					
Time		**LEL (%)**																					
Peak VOC		**CO (ppm)**																					

			Initial	10 secs	20 secs	30 secs	40 secs	50 secs	60 secs	70 secs	80 secs	90 secs	100 secs	110 secs	120 secs	130 secs	140 secs	150 secs	180 secs	300 secs	Groundwater Level (mbgl*)	Borehole Base (mbgl*)	Comments
Borehole ID	4-WS209																						
Peak Flow Rate (l/hr)		**CH4 (%)**																					
Stable Flow Rate (l/hr)		**CO2 (%)**																					
Atmospheric Pressure (mbar)		**H2S (ppm)**																					Area not accessible
Borehole Pressure (Pa)		**O2 (%)**																					
Time		**LEL (%)**																					
Peak VOC		**CO (ppm)**																					

			Initial	10 secs	20 secs	30 secs	40 secs	50 secs	60 secs	70 secs	80 secs	90 secs	100 secs	110 secs	120 secs	130 secs	140 secs	150 secs	180 secs	300 secs	Groundwater Level (mbgl*)	Borehole Base (mbgl*)	Comments
Borehole ID	4-WS211																						
Peak Flow Rate (l/hr)		**CH4 (%)**																					
Stable Flow Rate (l/hr)		**CO2 (%)**																					
Atmospheric Pressure (mbar)		**H2S (ppm)**	**See Comments**																		DRY	0.82	Area not accessible
Borehole Pressure (Pa)		**O2 (%)**																					
Time		**LEL (%)**																					
Peak VOC		**CO (ppm)**																					

			Initial	10 secs	20 secs	30 secs	40 secs	50 secs	60 secs	70 secs	80 secs	90 secs	100 secs	110 secs	120 secs	130 secs	140 secs	150 secs	180 secs	300 secs	Groundwater Level (mbgl*)	Borehole Base (mbgl*)	Comments
Borehole ID	4-WS212																						
Peak Flow Rate (l/hr)	-	**CH4 (%)**	0	0	0	0	0	0	0														
Stable Flow Rate (l/hr)	-	**CO2 (%)**	0	0	0	0	0	0	0														
Atmospheric Pressure (mbar)	1004	**H2S (ppm)**	0	0	0	0	0	0	0												2.8	3	Gas flow rates did not stabilise, due to high winds during monitoring.
Borehole Pressure (Pa)	-2	**O2 (%)**	20.5	20.5	20.5	20.5	20.5	20.5	20.4														
Time	14:57	**LEL (%)**	0	0	0	0	0	0	0														
Peak VOC	3.5	**CO (ppm)**	0	0	0	0	0	0	0														

Gas Monitoring Record

Project Number:	JER1262
Project Name:	Pembroke Dock Marine Development
Date:	30/11/2018
Logger	GJ

Weather:	Overcast, windy with showers.

*mbgl - Meters below Ground Level

			Initial	10 secs	20 secs	30 secs	40 secs	50 secs	60 secs	70 secs	80 secs	90 secs	100 secs	110 secs	120 secs	130 secs	140 secs	150 secs	180 secs	300 secs	Groundwater Level (mbgl*)	Borehole Base (mbgl*)	Comments
Borehole ID	4-BH203																						
Peak Flow Rate (l/hr)	0	**CH4 (%)**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**								
Stable Flow Rate (l/hr)	0	**CO2 (%)**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**								
Atmospheric Pressure (mbar)	1004	**H2S (ppm)**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**						3.5	4.1	-
Borehole Pressure (Pa)		**O2 (%)**	**20.8**	**20.1**	**17**	**17.3**	**17.2**	**17.1**	**17.1**	**17**	**17**	**17**	**17**	**17**	**17**								
Time	14:30	**LEL (%)**	**0**	**1**	**1.1**	**1.1**	**1.1**	**1.1**	**1.1**	**1.2**	**1.2**	**1.2**	**1.2**	**1.2**	**1.2**								
Peak VOC	3.2	**CO (ppm)**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**								

			Initial	10 secs	20 secs	30 secs	40 secs	50 secs	60 secs	70 secs	80 secs	90 secs	100 secs	110 secs	120 secs	130 secs	140 secs	150 secs	180 secs	300 secs	Groundwater Level (mbgl*)	Borehole Base (mbgl*)	Comments
Borehole ID	6-BH10																						
Peak Flow Rate (l/hr)	-	**CH4 (%)**	0	0	0	0	0	0	0	0	0	0											
Stable Flow Rate (l/hr)	-	**CO2 (%)**	0	0	0	0	0	0	0	0	0	0											
Atmospheric Pressure (mbar)	1005	**H2S (ppm)**	0	0	0	0	0	0	0	0	0	0									DRY	0.68	Gas flow rates did not stabilise, due to high winds during monitoring.
Borehole Pressure (Pa)	-	**O2 (%)**	20.5	20.8	20.6	20.5	20.5	20.4	20.4	20.4	20.4	20.4											
Time	11:50	**LEL (%)**	0	0	0	0	0	0	0	0	0	0											
Peak VOC	3.3	**CO (ppm)**	0	0	0	0	0	0	0	0	0	0											

			Initial	10 secs	20 secs	30 secs	40 secs	50 secs	60 secs	70 secs	80 secs	90 secs	100 secs	110 secs	120 secs	130 secs	140 secs	150 secs	180 secs	300 secs	Groundwater Level (mbgl*)	Borehole Base (mbgl*)	Comments
Borehole ID	6-BH01																						
Peak Flow Rate (l/hr)	-	**CH4 (%)**	0	0	0	0	0	0	0	0	0	0											
Stable Flow Rate (l/hr)	-	**CO2 (%)**	0	0	0	0	0	0	0	0	0	0											
Atmospheric Pressure (mbar)	1005	**H2S (ppm)**	0	0	0	0	0	0	0	0	0	0									4.03	6.05	Gas flow rates did not stabilise, due to high winds during monitoring.
Borehole Pressure (Pa)	-	**O2 (%)**	20.6	20.6	20.6	20.6	20.6	20.6	20.6	20.6	20.6	20.6											
Time	11:35	**LEL (%)**	0	0	0	0	0	0	0	0	0	0											
Peak VOC	3.8	**CO (ppm)**	0	0	0	0	0	0	0	0	0	0											

			Initial	10 secs	20 secs	30 secs	40 secs	50 secs	60 secs	70 secs	80 secs	90 secs	100 secs	110 secs	120 secs	130 secs	140 secs	150 secs	180 secs	300 secs	Groundwater Level (mbgl*)	Borehole Base (mbgl*)	Comments
Borehole ID	6-BH11																						
Peak Flow Rate (l/hr)	-	**CH4 (%)**	0	0	0	0	0	0	0	0	0	0											
Stable Flow Rate (l/hr)	-	**CO2 (%)**	0	0	0	0	0	0	0	0	0	0											
Atmospheric Pressure (mbar)	1007	**H2S (ppm)**	0	0	0	0	0	0	0	0	0	0									DRY	0.82	Gas flow rates did not stabilise, due to high winds during monitoring.
Borehole Pressure (Pa)	-	**O2 (%)**	20.5	20.3	20.1	20.3	20.5	20.4	20.3	20.2	20.2	20.2											
Time	11:20	**LEL (%)**	0	0	0	0	0	0	0	0	0	0											
Peak VOC	0	**CO (ppm)**	0	0	0	0	0	0	0	0	0	0											

Gas Monitoring Record

Project Number:	JER1262
Project Name:	Pembroke Dock Marine Development
Date:	30/11/2018
Logger	GJ

Weather:	Overcast, windy with showers.

*mbgl - Meters below Ground Level

			Initial	10 secs	20 secs	30 secs	40 secs	50 secs	60 secs	70 secs	80 secs	90 secs	100 secs	110 secs	120 secs	130 secs	140 secs	150 secs	180 secs	300 secs	Groundwater Level (mbgl*)	Borehole Base (mbgl*)	Comments
Borehole ID	3-WS1																						
Peak Flow Rate (l/hr)	0	**CH4 (%)**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**											
Stable Flow Rate (l/hr)	0	**CO2 (%)**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**											
Atmospheric Pressure (mbar)	1004	**H2S (ppm)**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**									6.5	10.67	-
Borehole Pressure (Pa)	0	**O2 (%)**	**20.3**	**20.5**	**20.7**	**20.7**	**20.7**	**20.6**	**20.6**	**20.6**	**20.6**	**20.6**											
Time	11:50	**LEL (%)**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**											
Peak VOC	3.2	**CO (ppm)**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**											

			Initial	10 secs	20 secs	30 secs	40 secs	50 secs	60 secs	70 secs	80 secs	90 secs	100 secs	110 secs	120 secs	130 secs	140 secs	150 secs	180 secs	300 secs	Groundwater Level (mbgl*)	Borehole Base (mbgl*)	Comments
Borehole ID	4-BH202																						
Peak Flow Rate (l/hr)	0	**CH4 (%)**	0	0	0	0	0	0	0	0	0	0											
Stable Flow Rate (l/hr)	0	**CO2 (%)**	0	0	0	0	0	0	0	0	0	0											
Atmospheric Pressure (mbar)	1004	**H2S (ppm)**	0	0	0	0	0	0	0	0	0	0									3.65	9.6	-
Borehole Pressure (Pa)	0	**O2 (%)**	20.7	20.8	20.6	20.5	20.5	20.5	20.5	20.5	20.5	20.5											
Time	14:00	**LEL (%)**	0	0	0	0	0	0	0	0	0	0											
Peak VOC	2.9	**CO (ppm)**	0	0	0	0	0	0	0	0	0	0											

			Initial	10 secs	20 secs	30 secs	40 secs	50 secs	60 secs	70 secs	80 secs	90 secs	100 secs	110 secs	120 secs	130 secs	140 secs	150 secs	180 secs	300 secs	Groundwater Level (mbgl*)	Borehole Base (mbgl*)	Comments
Borehole ID	6-BH04																						
Peak Flow Rate (l/hr)	0	**CH4 (%)**	0	0	0	0	0	0	0	0	0	0											
Stable Flow Rate (l/hr)	0	**CO2 (%)**	0	0.3	1.1	1.4	1.6	1.7	1.7	1.7	1.7	1.7											
Atmospheric Pressure (mbar)	1004	**H2S (ppm)**	0	0	0	0	0	0	0	0	0	0									Dry	1.72	-
Borehole Pressure (Pa)	0	**O2 (%)**	20	19.7	19.6	19.5	19.4	19.2	19.2	19.2	19.2	19.2											
Time	15:25	**LEL (%)**	0	0	0	0	0	0	0	0	0	0											
Peak VOC	2.9	**CO (ppm)**	0	0	0	0	0	0	0	0	0	0											

			Initial	10 secs	20 secs	30 secs	40 secs	50 secs	60 secs	70 secs	80 secs	90 secs	100 secs	110 secs	120 secs	130 secs	140 secs	150 secs	180 secs	300 secs	Groundwater Level (mbgl*)	Borehole Base (mbgl*)	Comments
Borehole ID	6-BH02																						
Peak Flow Rate (l/hr)	0	**CH4 (%)**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**											
Stable Flow Rate (l/hr)	0	**CO2 (%)**	**0**	**0.3**	**0.3**	**0.3**	**0.3**	**0.3**	**0.3**	**0.3**	**0.3**	**0.3**											
Atmospheric Pressure (mbar)	1004	**H2S (ppm)**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**											-
Borehole Pressure (Pa)	0	**O2 (%)**	**20.5**	**18.3**	**17.5**	**17.1**	**16.9**	**16.9**	**16.8**	**16.8**	**16.8**	**16.8**											
Time	15:00	**LEL (%)**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**											
Peak VOC	3.8	**CO (ppm)**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**											

Appendix 3

Laboratory Data from Current Investigation

2 Shaftesbury Industrial Centre, Icknield Way, Letchworth Garden City, Hertfordshire, SG6 1HE
T +44 (0)1462 480 400, **F** +44 (0)1462 480 403, **E** rpsmh@rpsgroup.com, **W** rpsgroup.com

Certificate of Analysis

Report No.: 18-74169-1

Issue No.: 1
Date of Issue 29/08/2018

Customer Details:	RPS Energy - Chepstow Marine, Riverside Court, Beaufort Park, Chepstow, Monmouthshire. NP16 5UH
Customer Contact:	Kevin Linanne
Customer Order No.:	REQUEST
Customer Reference:	EOR0718
Quotation Reference:	180517/13
Description:	6 sediment samples
Date Received:	17/07/2018
Date Started:	24/07/2018
Date Completed:	29/08/2018
Test Methods:	Details available on request (refer to SOP code against relevant result/s)
Notes:	None

Approved By: **Matthew Hickson, Laboratory Manager**

This certificate is issued in accordance with the accreditation requirements of the United Kingdom Accreditation Service.
This certificate shall not be reproduced except in full without the prior written approval of the laboratory.
Observations and interpretations are outside of the scope of UKAS accreditation.
Results reported herein relate only to the items supplied to the laboratory for testing.
Results on an Interim Report are not dry-weight corrected.

UKAS TESTING
1663

2 Shaftesbury Industrial Centre, Icknield Way, Letchworth Garden City, Hertfordshire, SG6 1HE
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Results Summary - Dry Weights, Moisture, Total Organic Carbon, TPH, Organotins & Density

Report No.: **18-74169**
Customer Reference: EOR0718
Customer Order No: REQUEST

						Customer Sample No	**Certified Reference Material**		**AQC spike**			**Sample 1**	**Sample 2**	**Sample 3**	**Sample 4**
						Customer Sample ID						Grab Sample	Grab Sample	Grab Sample	Grab Sample
						RPS Sample No						371513	371514	371515	371516
						Sample Type	**SEDIMENT**		**SEDIMENT**			**SEDIMENT**	**SEDIMENT**	**SEDIMENT**	**SEDIMENT**
						Sample Location									
						Sample Depth (m)									
						Sampling Date	**CRM BCR-646 CRM NIST 1944**		**Spike on clean sediment**			13/07/2018	13/07/2018	13/07/2018	13/07/2018
						Sampling Time									
Determinand	**CAS No**	**Codes**	**SOP**	**Units**	**RL**	**Assigned Value**	**Measured Value**	**Recovery %**	**Assigned Value**	**Measured Value**	**Recovery %**				
dry solids (at 105°C)		N	397	%		n/a	n/a	n/a	n/a	n/a	n/a	67.3	47.8	47.1	48.1
total organic carbon		UO	404	%	0.3	4.4	4.86	110.5%	1.5	1.2	80.2%	2.1	1.8	2.1	2.2
total hydrocarbon content by fluorescence		N	In house	mg/kg	n/a	n/a	n/a	n/a	1	1	100.0%	34.4	42.3	12.1	4.97
dibutyltin (DBT)	1002-53-5	UO	395	ug/kg DW	5	770	513.9	66.7%	40	34.0	85.1%	249	< 10.45	< 10.61	< 10.40
tributyltin (TBT)	56573-85-4	UO	395	ug/kg DW	2	480	394.5	82.2%	40	38.1	95.3%	2560	13.0	8.95	9.96

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Results Summary - Dry Weights, Moisture, Total Organic Carbon, TPH, Organotins & Density

Report No.: **18-74169**
Customer Reference: EOR0718
Customer Order No: REQUEST

Customer Sample No	**Sample 5**	**Core 4**
Customer Sample ID	Grab Sample	1.5m deep
RPS Sample No	371517	371518
Sample Type	**SEDIMENT**	**SEDIMENT**
Sample Location		
Sample Depth (m)		
Sampling Date	13/07/2018	13/07/2018
Sampling Time		

Determinand	CAS No	Codes	SOP	Units	RL		
dry solids (at 105°C)		N	397	%		49.1	50.0
total organic carbon		UO	404	%	0.3		2.5
total hydrocarbon content by fluorescence		N	In house	mg/kg	n/a		
dibutyltin (DBT)	1002-53-5	UO	395	ug/kg DW	5	< 10.18	< 5.00
tributyltin (TBT)	56573-85-4	UO	395	ug/kg DW	2	9.53	13.2

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Results Summary - Metals

Report No.: **18-74169**
Customer Reference: EOR0718
Customer Order No: REQUEST

						Customer Sample No	**Standard Reference Material**		**Sample 1**	**Sample 2**	**Sample 3**	**Sample 4**	**Sample 5**	**Core 4**
						Customer Sample ID			Grab Sample	Grab Sample	Grab Sample	Grab Sample	Grab Sample	1.5m deep
						RPS Sample No			371513	371514	371515	371516	371517	371518
						Sample Type	**SEDIMENT**		**SEDIMENT**	**SEDIMENT**	**SEDIMENT**	**SEDIMENT**	**SEDIMENT**	**SEDIMENT**
						Sample Location								
						Sample Depth (m)								
						Sampling Date			13/07/2018	13/07/2018	13/07/2018	13/07/2018	13/07/2018	13/07/2018
						Sampling Time								
Determinand	**CAS No**	**Codes**	**SOP**	**Units**	**RL**	**Assigned Value**	**Measured Value**	**Recovery %**						
arsenic (50% nitric digest)	7440-38-2	USI	M-132	mg/kg DW	0.5	5.58	5.7	102.2%	24.1	12.2	13.0	14.4	13.1	17.6
cadmium (50% nitric digest)	7440-43-9	USI	M-132	mg/kg DW	0.04	3.69	3.83	103.8%	0.40	0.15	0.13	0.15	0.16	0.21
chromium (50% nitric digest)	7440-47-3	USI	M-132	mg/kg DW	0.5	101	108	106.9%	51.1	42.4	40.4	47.8	35.4	44.1
copper (50% nitric digest)	7440-50-8	USI	M-132	mg/kg DW	0.5	72.9	72.9	100.0%	227	34.5	23.6	26.5	25.2	28.5
lead (50% nitric digest)	7439-92-1	USI	M-132	mg/kg DW	0.5	131	143	109.2%	233	50.0	41.8	46.2	45.7	60.6
mercury (50% nitric digest)	7439-97-6	USI	M-132	mg/kg DW	0.01	0.33	0.36	108.1%	0.42	0.31	0.13	0.14	0.17	0.20
nickel (50% nitric digest)	7440-02-0	USI	M-132	mg/kg DW	0.5	33	325.1	985.2%	33.6	26.6	29.6	30.6	27.4	29.6
zinc (50% nitric digest)	7440-66-6	USI	M-132	mg/kg DW	2	1072	1116	104.1%	1170	143	142	146	138	152

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Results Summary - Polycyclic Aromatic Hydrocarbons

Report No.: **18-74169**
Customer Reference: EOR0718
Customer Order No: REQUEST

					Customer Sample No	**Certified Reference Material**			**AQC spike**			**Sample 1**	**Sample 2**	**Sample 3**
					Customer Sample ID							Grab Sample	Grab Sample	Grab Sample
					RPS Sample No							371513	371514	371515
					Sample Type	**SEDIMENT**			**SEDIMENT**			**SEDIMENT**	**SEDIMENT**	**SEDIMENT**
					Sample Location									
					Sample Depth (m)									
					Sampling Date	**QPH080MS**			**Spike on clean sediment**			13/07/2018	13/07/2018	13/07/2018
					Sampling Time									
Determinand	**CAS No**	**Codes**	**SOP**	**Units**	**RL**	**Assigned Value**	**Measured Value**	**Recovery %**	**Assigned Value**	**Measured Value**	**Recovery %**			
naphthalene	91-20-3	N	396	ug/kg DW	3	n/a	n/a	n/a	50	48.48	97.0%	4.97	53.1	8.21
acenaphthylene	208-96-8	N	396	ug/kg DW	2	5.95	5.23	87.9%	50	42.02	84.0%	<2.0	4.54	<2.0
acenaphthene	83-32-9	N	396	ug/kg DW	1.7	13.4	10.77	80.4%	50	47.05	94.1%	15.1	11.5	<1.7
fluorene	86-73-7	N	396	ug/kg DW	1.7	22.3	20.77	93.1%	50	48.98	98.0%	11.2	24.9	<1.7
phenanthrene	85-01-8	N	396	ug/kg DW	4	132	189.81	143.8%	50	52.12	104.2%	28.4	79.4	16.7
anthracene	120-12-7	N	396	ug/kg DW	2.5	29.7	26.7	89.9%	50	35.39	70.8%	9.74	15.1	3.93
fluoranthene	206-44-0	N	396	ug/kg DW	2.5	151	158.35	104.9%	50	52.96	105.9%	58.7	83.2	25.1
pyrene	129-00-0	N	396	ug/kg DW	2.8	128	137.83	107.7%	50	49.53	99.1%	47.9	70.2	19.9
benzo(a)anthracene	56-55-3	N	396	ug/kg DW	1.6	81.8	74.72	91.3%	50	45.43	90.9%	26.4	35.9	11.1
chrysene	218-01-9	N	396	ug/kg DW	1.7	74.1	79.13	106.8%	50	49.95	99.9%	23.7	40.8	11.7
benzo(b+j)fluoranthene	205-99-2	N	396	ug/kg DW	1.6	125	151.77	121.4%	50	48.63	97.3%	34.7	71.9	18.2
benzo(k)fluoranthene	207-08-9	N	396	ug/kg DW	2	51.7	45.85	88.7%	50	47.54	95.1%	13.5	22.0	7.34
benzo(a)pyrene	50-32-8	N	396	ug/kg DW	0.9	83.3	62.1	74.5%	50	33.34	66.7%	26.4	36.2	11.9
indeno(1,2,3-c,d)pyrene	193-39-5	N	396	ug/kg DW	2.2	95.1	74.04	77.9%	50	44.86	89.7%	14.8	29.5	9.04
dibenzo(a,h)anthracene	53-70-3	N	396	ug/kg DW	1.6	n/a	n/a	n/a	50	42.34	84.7%	6.42	11.7	<1.6
benzo(g,h,i)perylene	191-24-2	N	396	ug/kg DW	1.4	98.8	107.22	108.5%	50	45.83	91.7%	15.9	33.2	9.48
Perylene	198-55-0	N	396	ug/kg DW	0.1	21.1	17.06	80.9%	n/a	n/a	n/a	7.62	14.2	4.65
C1 128		N	396	ug/kg DW	0.1	n/a	n/a	n/a	50	49.76	99.5%	91.7	20.9	132
C2 128		N	396	ug/kg DW	0.1	n/a	n/a	n/a	50	47.71	95.4%	116	26.6	147
C3 128		N	396	ug/kg DW	0.1	n/a	n/a	n/a	50	47.69	95.4%	83.8	24.6	110
C1 178		N	396	ug/kg DW	0.1	n/a	n/a	n/a	50	50.24	100.5%	112	26.6	100

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Results Summary - Polycyclic Aromatic Hydrocarbons

Report No.: **18-74169**
Customer Reference: EOR0718
Customer Order No: REQUEST

Customer Sample No	**Sample 4**
Customer Sample ID	Grab Sample
RPS Sample No	371516
Sample Type	**SEDIMENT**
Sample Location	
Sample Depth (m)	
Sampling Date	13/07/2018
Sampling Time	

Determinand	CAS No	Codes	SOP	Units	RL	
naphthalene	91-20-3	N	396	ug/kg DW	3	49.3
acenaphthylene	208-96-8	N	396	ug/kg DW	2	<2.0
acenaphthene	83-32-9	N	396	ug/kg DW	1.7	8.07
fluorene	86-73-7	N	396	ug/kg DW	1.7	20.1
phenanthrene	85-01-8	N	396	ug/kg DW	4	64.6
anthracene	120-12-7	N	396	ug/kg DW	2.5	13.0
fluoranthene	206-44-0	N	396	ug/kg DW	2.5	70.6
pyrene	129-00-0	N	396	ug/kg DW	2.8	55.2
benzo(a)anthracene	56-55-3	N	396	ug/kg DW	1.6	32.8
chrysene	218-01-9	N	396	ug/kg DW	1.7	36.6
benzo(b+j)fluoranthene	205-99-2	N	396	ug/kg DW	1.6	63.0
benzo(k)fluoranthene	207-08-9	N	396	ug/kg DW	2	20.3
benzo(a)pyrene	50-32-8	N	396	ug/kg DW	0.9	32.9
indeno(1,2,3-c,d)pyrene	193-39-5	N	396	ug/kg DW	2.2	27.6
dibenzo(a,h)anthracene	53-70-3	N	396	ug/kg DW	1.6	12.5
benzo(g,h,i)perylene	191-24-2	N	396	ug/kg DW	1.4	30.4
Perylene	198-55-0	N	396	ug/kg DW	0.1	13.6
C1 128		N	396	ug/kg DW	0.1	114
C2 128		N	396	ug/kg DW	0.1	128
C3 128		N	396	ug/kg DW	0.1	93.8
C1 178		N	396	ug/kg DW	0.1	90.9

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Results Summary - Organochlorine Pesticides & Polychlorinated Biphenyls

Report No.: **18-74169**
Customer Reference: EOR0718
Customer Order No: REQUEST

					Customer Sample No	**Certified Reference Material**			**AQC spike**			**Sample 1**	**Sample 2**	**Sample 3**
					Customer Sample ID							Grab Sample	Grab Sample	Grab Sample
					RPS Sample No							371513	371514	371515
					Sample Type	**SEDIMENT**			**SEDIMENT**			**SEDIMENT**	**SEDIMENT**	**SEDIMENT**
					Sample Location									
					Sample Depth (m)									
					Sampling Date	**CRM BCR-536**			**Spike on clean sediment**			13/07/2018	13/07/2018	13/07/2018
					Sampling Time									
Determinand	**CAS No**	**Codes**	**SOP**	**Units**	**RL**	**Assigned Value**	**Measured Value**	**Recovery %**	**Assigned Value**	**Measured Value**	**Recovery %**			
aldrin	309-00-2	N	396	ug/kg DW	1	n/a	n/a	n/a	n/a	n/a	n/a			
alpha-hexachlorocyclohexane (alpha-HCH)	319-84-6	N	396	ug/kg DW	1	n/a	n/a	n/a	50	56.86	113.7%	<1.00	<1.00	<1.00
beta-hexachlorocyclohexane (beta-HCH, beta-BHC)	319-85-7	N	396	ug/kg DW	1	n/a	n/a	n/a	50	53.27	106.5%	<1.00	<1.00	<1.00
delta-hexachlorocyclohexane (delta-HCH)	319-86-8	N	396	ug/kg DW	1	n/a	n/a	n/a	50	59.03	118.1%	<1.00	<1.00	<1.00
gamma-hexachlorocyclohexane (lindane)	58-89-9	N	396	ug/kg DW	1	n/a	n/a	n/a	50	58.1	116.2%	<1.00	<1.00	<1.00
hexachlorobenzene (HCB)	118-74-1	N	396	ug/kg DW	1	n/a	n/a	n/a	50	55.87	111.7%	<1.00	<1.00	<1.00
dieldrin	60-57-1	N	396	ug/kg DW	1	n/a	n/a	n/a	50	51.33	102.7%	<1.00	<1.00	<1.00
p,p'-DDD	3424-82-6	N	396	ug/kg DW	1	n/a	n/a	n/a	50	50.71	101.4%	<1.00	<1.00	<1.00
p,p'-DDT	72-54-8	N	396	ug/kg DW	1	n/a	n/a	n/a	50	51.15	102.3%	<1.00	<1.00	<1.00
p,p'-DDE	50-29-3	N	396	ug/kg DW	1	n/a	n/a	n/a	50	50.79	101.6%	<1.00	<1.00	<1.00

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Results Summary - Organochlorine Pesticides & Polychlorinated Biphenyls

Report No.: **18-74169**
Customer Reference: EOR0718
Customer Order No: REQUEST

						Customer Sample No	**Certified Reference Material**		**AQC spike**			**Sample 1**	**Sample 2**	**Sample 3**
						Customer Sample ID						Grab Sample	Grab Sample	Grab Sample
						RPS Sample No						371513	371514	371515
						Sample Type	**SEDIMENT**		**SEDIMENT**			**SEDIMENT**	**SEDIMENT**	**SEDIMENT**
						Sample Location								
						Sample Depth (m)								
						Sampling Date	**CRM BCR-536**		**Spike on clean sediment**			13/07/2018	13/07/2018	13/07/2018
						Sampling Time								
Determinand	**CAS No**	**Codes**	**SOP**	**Units**	**RL**	**Assigned Value**	**Measured Value**	**Recovery %**	**Assigned Value**	**Measured Value**	**Recovery %**			
PCB congener 18	37680-65-2	N	403	ug/kg DW	0.1	n/a	n/a	n/a	25	23.79	95.2%	0.238	1.55	1.83
PCB congener 28	7012-37-5	N	403	ug/kg DW	0.1	44	51.04	116.0%	25	25.99	104.0%	< 0.1	< 0.1	< 0.1
PCB congener 31	16606-02-3	N	403	ug/kg DW	0.1	n/a	n/a	n/a	18.75	20.46	109.1%	< 0.1	< 0.1	< 0.1
PCB congener 44	41464-39-5	N	403	ug/kg DW	0.2	n/a	n/a	n/a	25	23.36	93.4%	< 0.2	< 0.2	< 0.2
PCB congener 47	2437-79-8	N	403	ug/kg DW	0.1	n/a	n/a	n/a	25	21.89	87.6%	< 0.1	< 0.1	< 0.1
PCB congener 49	41464-40-8	N	403	ug/kg DW	0.2	n/a	n/a	n/a	25	22.26	89.0%	< 0.2	< 0.2	< 0.2
PCB congener 52	35693-99-3	N	403	ug/kg DW	0.2	38	40.56	106.7%	25	24.55	98.2%	2.06	< 0.2	< 0.2
PCB congener 66	32598-10-0	N	403	ug/kg DW	0.1	n/a	n/a	n/a	25	23.49	94.0%	0.549	< 0.1	< 0.1
PCB congener 101	37680-73-2	N	403	ug/kg DW	0.2	44	49.23	111.9%	25	23.97	95.9%	< 0.2	< 0.2	< 0.2
PCB congener 105	32598-14-4	N	403	ug/kg DW	0.1	3.5	3.04	86.9%	6.25	5.9	94.4%	< 0.1	< 0.1	< 0.1
PCB congener 110	38380-03-9	N	403	ug/kg DW	0.1	n/a	n/a	n/a	25	23.89	95.6%	< 0.1	< 0.1	< 0.1
PCB congener 118	31508-00-6	N	403	ug/kg DW	0.2	27.5	32.86	119.5%	25	23.5	94.0%	< 0.2	< 0.2	< 0.2
PCB congener 128	38380-07-3	N	403	ug/kg DW	0.1	5.4	6.07	112.4%	25	26.24	105.0%	0.995	0.753	< 0.1
PCB congener 138	35065-28-2	N	403	ug/kg DW	0.2	44.2	47.85	108.3%	25	26.41	105.6%	5.12	3.72	3.20
PCB congener 141	52712-04-6	N	403	ug/kg DW	0.2	n/a	n/a	n/a	25	25.39	101.6%	0.579	0.460	< 0.2
PCB congener 149	38380-04-0	N	403	ug/kg DW	0.2	49	39.37	80.3%	25	23.7	94.8%	1.81	1.44	1.51
PCB congener 151	52663-63-5	N	403	ug/kg DW	0.1	n/a	n/a	n/a	25	23.75	95.0%	0.386	0.355	< 0.1
PCB congener 153	35065-27-1	N	403	ug/kg DW	0.2	50	50.64	101.3%	25	25.87	103.5%	3.47	2.99	2.78
PCB congener 156	38380-08-4	N	403	ug/kg DW	0.2	3	3.38	112.7%	25	25.76	103.0%	< 0.2	< 0.2	< 0.2
PCB congener 158	74472-42-7	N	403	ug/kg DW	0.1	n/a	n/a	n/a	6.25	6.5	104.0%	0.505	< 0.1	< 0.1
PCB congener 170	35065-30-6	N	403	ug/kg DW	0.1	13.4	9.05	67.5%	25	26.31	105.2%	< 0.1	0.732	< 0.1
PCB congener 180	35065-29-3	N	403	ug/kg DW	0.2	22.4	26.25	117.2%	25	26.89	107.6%	1.90	< 0.2	< 0.2
PCB congener 183	52663-69-1	N	403	ug/kg DW	0.2	n/a	n/a	n/a	25	25.45	101.8%	0.297	0.564	0.530
PCB congener 187	52663-68-0	N	403	ug/kg DW	0.2	n/a	n/a	n/a	25	25.21	100.8%	< 0.2	< 0.2	< 0.2
PCB congener 194	35694-08-7	N	403	ug/kg DW	0.1	n/a	n/a	n/a	25	26.98	107.9%	< 0.1	< 0.1	< 0.1

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Results Summary - Organochlorine Pesticides & Polychlorinated Biphenyls

Report No.: **18-74169**
Customer Reference: EOR0718
Customer Order No: REQUEST

Customer Sample No	**Sample 4**
Customer Sample ID	Grab Sample
RPS Sample No	371516
Sample Type	**SEDIMENT**
Sample Location	
Sample Depth (m)	
Sampling Date	13/07/2018
Sampling Time	

Determinand	CAS No	Codes	SOP	Units	RL	
aldrin	309-00-2	N	396	ug/kg DW	1	
alpha-hexachlorocyclohexane (alpha-HCH)	319-84-6	N	396	ug/kg DW	1	<1.00
beta-hexachlorocyclohexane (beta-HCH, beta-BHC)	319-85-7	N	396	ug/kg DW	1	<1.00
delta-hexachlorocyclohexane (delta-HCH)	319-86-8	N	396	ug/kg DW	1	<1.00
gamma-hexachlorocyclohexane (lindane)	58-89-9	N	396	ug/kg DW	1	<1.00
hexachlorobenzene (HCB)	118-74-1	N	396	ug/kg DW	1	<1.00
dieldrin	60-57-1	N	396	ug/kg DW	1	<1.00
p,p'-DDD	3424-82-6	N	396	ug/kg DW	1	<1.00
p,p'-DDT	72-54-8	N	396	ug/kg DW	1	<1.00
p,p'-DDE	50-29-3	N	396	ug/kg DW	1	<1.00

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Results Summary - Organochlorine Pesticides & Polychlorinated Biphenyls

Report No.: **18-74169**
Customer Reference: EOR0718
Customer Order No: REQUEST

Customer Sample No	**Sample 4**
Customer Sample ID	Grab Sample
RPS Sample No	371516
Sample Type	**SEDIMENT**
Sample Location	
Sample Depth (m)	
Sampling Date	13/07/2018
Sampling Time	

Determinand	CAS No	Codes	SOP	Units	RL	
PCB congener 18	37680-65-2	N	403	ug/kg DW	0.1	< 0.208
PCB congener 28	7012-37-5	N	403	ug/kg DW	0.1	< 0.1
PCB congener 31	16606-02-3	N	403	ug/kg DW	0.1	< 0.1
PCB congener 44	41464-39-5	N	403	ug/kg DW	0.2	< 0.2
PCB congener 47	2437-79-8	N	403	ug/kg DW	0.1	< 0.1
PCB congener 49	41464-40-8	N	403	ug/kg DW	0.2	< 0.2
PCB congener 52	35693-99-3	N	403	ug/kg DW	0.2	< 0.2
PCB congener 66	32598-10-0	N	403	ug/kg DW	0.1	< 0.1
PCB congener 101	37680-73-2	N	403	ug/kg DW	0.2	< 0.2
PCB congener 105	32598-14-4	N	403	ug/kg DW	0.1	< 0.1
PCB congener 110	38380-03-9	N	403	ug/kg DW	0.1	< 0.1
PCB congener 118	31508-00-6	N	403	ug/kg DW	0.2	< 0.2
PCB congener 128	38380-07-3	N	403	ug/kg DW	0.1	< 0.1
PCB congener 138	35065-28-2	N	403	ug/kg DW	0.2	2.95
PCB congener 141	52712-04-6	N	403	ug/kg DW	0.2	< 0.2
PCB congener 149	38380-04-0	N	403	ug/kg DW	0.2	0.811
PCB congener 151	52663-63-5	N	403	ug/kg DW	0.1	< 0.1
PCB congener 153	35065-27-1	N	403	ug/kg DW	0.2	2.66
PCB congener 156	38380-08-4	N	403	ug/kg DW	0.2	< 0.2
PCB congener 158	74472-42-7	N	403	ug/kg DW	0.1	< 0.1
PCB congener 170	35065-30-6	N	403	ug/kg DW	0.1	< 0.1
PCB congener 180	35065-29-3	N	403	ug/kg DW	0.2	1.56
PCB congener 183	52663-69-1	N	403	ug/kg DW	0.2	< 0.2
PCB congener 187	52663-68-0	N	403	ug/kg DW	0.2	< 0.2
PCB congener 194	35694-08-7	N	403	ug/kg DW	0.1	< 0.1

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Results Summary
PSA Results

Report No.: **18-74169**
Customer Reference: EOR0718
Customer Order No: REQUEST

				Customer Sample No	**Sample 1**	**Sample 2**	**Sample 3**	**Sample 4**	**Sample 5**	**Core 4**
				Customer Sample ID	Grab Sample	Grab Sample	Grab Sample	Grab Sample	Grab Sample	1.5m deep
				RPS Sample No	371513	371514	371515	371516	371517	371518
				Sample Type	**SEDIMENT**	**SEDIMENT**	**SEDIMENT**	**SEDIMENT**	**SEDIMENT**	**SEDIMENT**
				Sample Location						
				Sample Depth (m)						
				Sampling Date	13/07/2018	13/07/2018	13/07/2018	13/07/2018	13/07/2018	13/07/2018
				Sampling Time						
Determinand	**CAS No**	**Codes**	**SOP**	**Units**						
sample type		S	In-house		Polymodal, Very Poorly Sorted	Trimodal, Very Poorly Sorted	Trimodal, Very Poorly Sorted	Trimodal, Poorly Sorted	Bimodal, Poorly Sorted	Trimodal, Very Poorly Sorted
textural group (GRADISTAT)		S	In-house		Muddy Sand	Sandy Mud	Mud	Mud	Mud	Sandy Mud
sediment name		S	In-house		Very Coarse Silty Very Coarse Sand	Very Fine Sandy Medium Silt	Medium Silt	Medium Silt	Medium Silt	Very Fine Sandy Medium Silt
arithmetic mean (method of moments)		S	In-house	um	575	30.0	26.0	29.0	20.2	33.1
arithmetic sorting (method of moments)		S	In-house	um	567	42.9	42.6	45.8	28.5	62.4
arithmetic skewness (method of moments)		S	In-house	um	0.828	2.60	3.21	3.10	2.68	3.68
arithmetic kurtosis (method of moments)		S	In-house	um	2.42	10.5	14.6	13.6	10.4	18.4
geometic mean (method of moments)		S	In-house	um	194	12.5	10.3	12.0	9.1	11.6
geometic sorting (method of moments)		S	In-house	um	7.76	4.20	4.13	4.09	3.85	4.31
geometic skewness (method of moments)		S	In-house	um	-1.10	-0.431	-0.243	-0.384	-0.427	-0.091
geometic kurtosis (method of moments)		S	In-house	um	3.40	3.35	3.30	3.64	3.48	3.40
logarithmic mean (method of moments)		S	In-house	phi	2.37	6.31	6.59	6.37	6.76	6.42
logarithmic sorting (method of moments)		S	In-house	phi	2.96	2.07	2.04	2.03	1.94	2.11
logarithmic skewness (method of moments)		S	In-house	phi	1.10	0.446	0.254	0.403	0.446	0.103
logarithmic kurtosis (method of moments)		S	In-house	phi	3.40	3.35	3.30	3.65	3.49	3.41
mean (Folk and Ward method - um)		S	In-house	um	200	13.0	10.6	12.3	9.7	11.4
sorting (Folk and Ward method - um)		S	In-house	um	7.62	4.12	4.08	3.98	3.88	4.11
skewness (Folk and Ward method - um)		S	In-house	um	-0.489	-0.029	0.014	0.000	-0.021	0.037
kurtosis (Folk and Ward method - um)		S	In-house	um	0.902	1.10	1.16	1.18	1.19	1.19
mean (Folk and Ward method - phi)		S	In-house	phi	2.33	6.26	6.57	6.34	6.69	6.45
sorting (Folk and Ward method - phi)		S	In-house	phi	2.93	2.04	2.03	1.99	1.96	2.04

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Results Summary
PSA Results

Report No.: **18-74169**
Customer Reference: EOR0718
Customer Order No: REQUEST

				Customer Sample No	**Sample 1**	**Sample 2**	**Sample 3**	**Sample 4**	**Sample 5**	**Core 4**
				Customer Sample ID	Grab Sample	Grab Sample	Grab Sample	Grab Sample	Grab Sample	1.5m deep
				RPS Sample No	371513	371514	371515	371516	371517	371518
				Sample Type	**SEDIMENT**	**SEDIMENT**	**SEDIMENT**	**SEDIMENT**	**SEDIMENT**	**SEDIMENT**
				Sample Location						
				Sample Depth (m)						
				Sampling Date	13/07/2018	13/07/2018	13/07/2018	13/07/2018	13/07/2018	13/07/2018
				Sampling Time						
Determinand	**CAS No**	**Codes**	**SOP**	**Units**						
skewness (Folk and Ward method - phi)		S	In-house	phi	0.489	0.029	-0.014	-0.000	0.021	-0.037
kurtosis (Folk and Ward method - phi)		S	In-house	phi	0.902	1.10	1.16	1.18	1.19	1.19
mean description (Folk and Ward method)		S	In-house		Fine Sand	Medium Silt	Medium Silt	Medium Silt	Medium Silt	Medium Silt
sorting description (Folk and Ward method)		S	In-house		Very Poorly Sorted	Very Poorly Sorted	Very Poorly Sorted	Poorly Sorted	Poorly Sorted	Very Poorly Sorted
skewness description (Folk and Ward method)		S	In-house		Very Fine Skewed	Symmetrical	Symmetrical	Symmetrical	Symmetrical	Symmetrical
kurtosis description (Folk and Ward method)		S	In-house		Mesokurtic	Mesokurtic	Leptokurtic	Leptokurtic	Leptokurtic	Leptokurtic
MODE 1 - um		S	In-house	um	1700	9.4	9.4	9.4	9.4	9.4
MODE 2 - um		S	In-house	um	427	37.7	26.7	37.7	107	107
MODE 3 - um		S	In-house	um	53.4	107	107	151		302
MODE 1 - phi		S	In-house	phi	-0.743	6.75	6.75	6.75	6.75	6.75
MODE 2 - phi		S	In-house	phi	1.25	4.75	5.25	4.75	3.25	3.25
MODE 3 - phi		S	In-house	phi	4.25	3.25	3.25	2.75		1.75
D10 - um		S	In-house	um	7.2	2.2	1.8	2.3	1.7	2.1
D50 - um		S	In-house	um	389	12.8	10.2	12.1	9.5	11.0
D90 - um		S	In-house	um	1510	89.6	57.9	60.6	43.6	95.7
(D90/D10) - um		S	In-house	um	209	41.5	31.7	26.3	25.4	45.7
(D90 - D10) - um		S	In-house	um	1500	87.4	56.1	58.3	41.9	93.6
(D75/D25) - um		S	In-house	um	16.9	6.37	5.92	5.68	5.33	5.81
(D75 - D25) - um		S	In-house	um	877	28.9	22.2	25.1	18.5	23.5
D10 - phi		S	In-house	phi	-0.596	3.48	4.11	4.04	4.52	3.39
D50 - phi		S	In-house	phi	1.36	6.29	6.62	6.37	6.71	6.50
D90 - phi		S	In-house	phi	7.11	8.86	9.10	8.76	9.19	8.90
(D90/D10) - phi		S	In-house	phi	-11.9	2.54	2.21	2.17	2.03	2.63
(D90 - D10) - phi		S	In-house	phi	7.71	5.38	4.99	4.72	4.67	5.52

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Results Summary
PSA Results

Report No.: **18-74169**
Customer Reference: EOR0718
Customer Order No: REQUEST

	Customer Sample No	Sample 1	Sample 2	Sample 3	Sample 4	Sample 5	Core 4
	Customer Sample ID	Grab Sample	Grab Sample	Grab Sample	Grab Sample	Grab Sample	1.5m deep
	RPS Sample No	371513	371514	371515	371516	371517	371518
	Sample Type	**SEDIMENT**	**SEDIMENT**	**SEDIMENT**	**SEDIMENT**	**SEDIMENT**	**SEDIMENT**
	Sample Location						
	Sample Depth (m)						
	Sampling Date	13/07/2018	13/07/2018	13/07/2018	13/07/2018	13/07/2018	13/07/2018
	Sampling Time						
Determinand	**CAS No**	**Codes**	**SOP**	**Units**			
(D75/D25) - phi		S	In-house	phi	41.3	1.55	1.49	1.50	1.44	1.49
(D75 - D25) - phi		S	In-house	phi	4.08	2.67	2.57	2.51	2.42	2.54
% gravel		S	In-house	%	0.00	0.00	0.00	0.00	0.00	0.00
% sand		S	In-house	%	74.0	11.8	9.11	9.47	7.49	11.8
% mud		S	In-house	%	26.0	88.2	90.9	90.5	92.5	88.2
% very coarse gravel (>32<64mm or <-5>-6phi)		S	In-house	%	0.00	0.00	0.00	0.00	0.00	0.00
% coarse gravel (>16<32mm or <-4>-5phi)		S	In-house	%	0.00	0.00	0.00	0.00	0.00	0.00
% medium gravel (>8<16mm or <-3>-4phi)		S	In-house	%	0.00	0.00	0.00	0.00	0.00	0.00
% fine gravel (>4<8mm or <-2>-3phi)		S	In-house	%	0.00	0.00	0.00	0.00	0.00	0.00
% very fine gravel (>2<4mm or <-1>-2phi)		S	In-house	%	0.00	0.00	0.00	0.00	0.00	0.00
% very coarse sand (>1<2mm or <0>-1phi)		S	In-house	%	23.0	0.00	0.00	0.00	0.00	0.00
% coarse sand (>0.5<1mm or <1>0phi)		S	In-house	%	19.4	0.00	0.00	0.00	0.00	0.00
% medium sand (>0.25<0.5mm or <2>1phi)		S	In-house	%	18.8	0.15	0.33	0.52	0.00	2.44
% fine sand (>0.125<0.25mm or <3>2phi)		S	In-house	%	8.61	5.01	4.17	5.50	1.36	4.37
% very fine sand (>0.0625<0.125mm or <4>3phi)		S	In-house	%	4.18	6.62	4.61	3.45	6.13	4.98
% very coarse silt (>0.03125<0.0625mm or <5>4phi		S	In-house	%	5.57	15.8	12.1	14.9	10.1	11.0
% coarse silt (>0.015625<0.03125mm or <6>5phi)		S	In-house	%	4.72	16.8	16.3	17.8	16.4	16.7
% medium silt (>0.007813<0.015625mm or <7>6phi)		S	In-house	%	5.14	20.5	20.9	21.8	22.8	21.9
% fine silt (>0.003906<0.007813mm or <8>7phi)		S	In-house	%	5.01	17.4	20.3	18.7	20.6	19.3
% very fine silt (>0.001953<0.003906mm or <9>8phi		S	In-house	%	2.65	8.81	10.7	8.98	11.5	10.1
% clay (<0.001953mm or >9phi)		S	In-house	%	2.94	9.01	10.5	8.41	11.1	9.22

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Results Summary
PSA Size Class & Statistics

Report No.: **18-74169**
Customer Reference: EOR0718
Customer Order No: REQUEST

			Customer Sample No	**Sample 1**	**Sample 2**	**Sample 3**	**Sample 4**	**Sample 5**	**Core 4**
			Customer Sample ID	Grab Sample	Grab Sample	Grab Sample	Grab Sample	Grab Sample	1.5m deep
			RPS Sample No	371513	371514	371515	371516	371517	371518
			Sample Type	**SEDIMENT**	**SEDIMENT**	**SEDIMENT**	**SEDIMENT**	**SEDIMENT**	**SEDIMENT**
			Sample Location						
			Sample Depth (m)						
			Sampling Date	13/07/2018	13/07/2018	13/07/2018	13/07/2018	13/07/2018	13/07/2018
			Sampling Time						
Sediment	**mm**	**phi ϕ**	**Units**						
Very coarse gravel	>32<64	<-5>-6	%	0.00	0.00	0.00	0.00	0.00	0.00
Coarse gravel	>16<32	<-4>-5	%	0.00	0.00	0.00	0.00	0.00	0.00
Medium gravel	>8<16	<-3>-4	%	0.00	0.00	0.00	0.00	0.00	0.00
Fine gravel	>4<8	<-2>-3	%	0.00	0.00	0.00	0.00	0.00	0.00
Very fine gravel	>2<4	<-1>-2	%	0.00	0.00	0.00	0.00	0.00	0.00
Very coarse sand	>1<2	<0>-1	%	23.00	0.00	0.00	0.00	0.00	0.00
Coarse sand	>0.5<1	<1>0	%	19.40	0.00	0.00	0.00	0.00	0.00
Medium sand	>0.25<0.5	<2>1	%	18.80	0.15	0.33	0.52	0.00	2.44
Fine sand	>0.125<0.25	<3>2	%	8.61	5.01	4.17	5.50	1.36	4.37
Very fine sand	>0.0625<0.125	<4>3	%	4.18	6.62	4.61	3.45	6.13	4.98
Very coarse silt	>0.03125<0.0625	<5>4	%	5.57	15.80	12.10	14.90	10.10	11.00
Coarse silt	>0.015625<0.03125	<6>5	%	4.72	16.80	16.30	17.80	16.40	16.70
Medium silt	>0.007813<0.015625	<7>6	%	5.14	20.50	20.90	21.80	22.80	21.90
Fine silt	>0.003906<0.007813	<8>7	%	5.01	17.40	20.30	18.70	20.60	19.30
Very fine silt	>0.001953<0.003906	<9>8	%	2.65	8.81	10.70	8.98	11.50	10.10
Clay	<0.001953	>9	%	2.94	9.01	10.50	8.41	11.10	9.22
Statistics*	Mean (phi)			2.33	6.26	6.57	6.34	6.69	6.45
	Sorting			2.93	2.04	2.03	1.99	1.96	2.04
	Skewness			0.489	0.029	-0.014	-0.000	0.021	-0.037
	Kurtosis			0.902	1.10	1.16	1.18	1.19	1.19
	% Silt/Clay		%	26.03	88.32	90.80	90.59	92.50	88.22
	Textural Group**			Muddy Sand	Sandy Mud	Mud	Mud	Mud	Sandy Mud

* Folk & Ward

** GRADISTAT classification system (Blott, S. J. & Pye, K., 2001)

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Results Summary
PSA Wentworth Scale

Report No.: **18-74169**
Customer Reference: EOR0718
Customer Order No: REQUEST

Customer Sample No		**Sample 1**	**Sample 2**	**Sample 3**	**Sample 4**	**Sample 5**	**Core 4**
Customer Sample ID		Grab Sample	Grab Sample	Grab Sample	Grab Sample	Grab Sample	1.5m deep
RPS Sample No		371513	371514	371515	371516	371517	371518
Sample Type		**SEDIMENT**	**SEDIMENT**	**SEDIMENT**	**SEDIMENT**	**SEDIMENT**	**SEDIMENT**
Sample Location							
Sample Depth (m)							
Sampling Date		13/07/2018	13/07/2018	13/07/2018	13/07/2018	13/07/2018	13/07/2018
Sampling Time							
Parameter	**Units**						
Pebble	%	0.00	0.00	0.00	0.00	0.00	0.00
Granule	%	0.00	0.00	0.00	0.00	0.00	0.00
Very coarse sand	%	23.00	0.00	0.00	0.00	0.00	0.00
Coarse sand	%	19.40	0.00	0.00	0.00	0.00	0.00
Medium sand	%	18.80	0.15	0.33	0.52	0.00	2.44
Fine sand	%	8.61	5.01	4.17	5.50	1.36	4.37
Very fine sand	%	4.18	6.62	4.61	3.45	6.13	4.98
Silt Clay	%	26.03	88.32	90.80	90.59	92.50	88.22
Total	%	100.0	100.1	99.9	100.1	100.0	100.0

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Report No.: 18-74169-1
Customer Reference: EOR0718
Customer Order No: REQUEST

Comments

RPS Sample Number	Customer Number	Sample Comments
371513	Sample 1	Visual Inspection: Colour - Brown Texture - Grain odour - Sulphur Biota - None Anthropogenic Inputs - None
371514	Sample 2	Visual Inspection: Colour - Brown Texture - Clay Odour - Seaside Biota - None Anthropogenic Inputs - None
371515	Sample 3	Visual Inspection: Colour - Brown Texture -Clay Odour - Seaside Biota - None Anthropogenic Inputs - None
371516	Sample 4	Visual Inspection: Colour - Black Texture -Clay Odour - Seaside Biota - None Anthropogenic Inputs - None
371517	Sample 5	Visual Inspection: Colour - Black Texture -Clay Odour - Seaside Biota - None Anthropogenic Inputs - None
371518	Core 4	Visual Inspection: Colour - Black Texture - Clay Odour - Seaside Biota - None Anthropogenic Inputs - None

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Deviating Samples

Report No.: 18-74169-1

Customer Reference: EOR0718

Customer Order No: REQUEST

Our policy on Deviating Samples and reference list of Holding Times applied can be supplied on request. These have been implemented in accordance with UKAS Policy on Deviating Samples (TPS63).
RPS is not responsible for the integrity of samples as received, unless RPS personnel performed the sampling, and it is possible that samples submitted may be declared to be deviating.
Where applicable the analysis method remains UKAS accredited, however results reported for a deviating sample may be invalid. The reason for a sample being declared to be deviating is indicated below.
Where no sampling date was supplied, samples have been declared to be deviating. However, if a date of sampling can be supplied, the results may be reissued with the deviating sample status removed.
Where the sample container used was unsuitable, the appropriate Holding Time was exceeded, or the sample is flagged as deviating for some other reason, re-sampling/re-submisson may be required.

RPS No.	Customer No.	Customer ID	Date Sampled	Containers Received	Deviating Sample	Reason for Sample Deviation
371513	Sample 1		13/07/2018	Metal & plastic containers	**Yes**	Temperature of samples exceeded in transit/storage
371514	Sample 2		13/07/2018	Metal & plastic containers	**Yes**	Temperature of samples exceeded in transit/storage
371515	Sample 3		13/07/2018	Metal & plastic containers	**Yes**	Temperature of samples exceeded in transit/storage
371516	Sample 4		13/07/2018	Metal & plastic containers	**Yes**	Temperature of samples exceeded in transit/storage
371517	Sample 5		13/07/2018	Metal & plastic containers	**Yes**	Temperature of samples exceeded in transit/storage
371518	Core 4		13/07/2018	Metal & plastic containers	**Yes**	Temperature of samples exceeded in transit/storage

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Report Information

Key to Report Codes

U	UKAS Accredited
F	UKAS Flexible Scope
M	MCERTS Accredited
N	Not Accredited
O	Marine Management Organisation (MMO) Validated
S	Subcontracted to approved laboratory
US	Subcontracted to approved laboratory UKAS Accredited for the test
MS	Subcontracted to approved laboratory MCERTS/UKAS Accredited for the test
SI	Subcontracted to internal RPS Group Laboratory
USI	Subcontracted to internal RPS Group Laboratory UKAS Accredited for the test
MSI	Subcontracted to internal RPS Group Laboratory MCERTS/UKAS Accredited for the test
I/S (in results)	Insufficient Sample
U/S (in results)	Unsuitable Sample
S/C (in results)	See Comments
ND (in results)	Not Detected
DW (in units)	Results are expressed on a dry weight basis

Sample Retention and Disposal

Samples will generally* be retained for the following times prior to disposal:

Perishables, e.g. foodstuffs	1 month (if frozen) from the issue date of this report
Waters	2 weeks from the issue date of this report
Other Liquids	1 months from the issue date of this report
Solids (including Soils)	1 months from the issue date of this report

*Sample retention may be subject to agreement with the customer for particular projects

Analytical Methods

PAH's and PCB's	GCMS analysis following extraction of the wet sediment with DCM:acetone by ASE 350 extraction. Extract cleaned-up with silica and activated copper.
Metals	ICP-MS analysis following microwave assisted digestion in hydrofluoric acid of the dried (<30°C) and ground sediment.
TOC	Combustion and infrared analysis following carbonate removal with hydrochloric acid.
PSA	Wet and dry sieving followed by laser diffraction analysis.
Density	Determination of density from the dry sediment by gravimetric analysis of a known volume of sediment.
Dry solids at 105°C	A portion of the wet sediment is dried at 105°C to constant weight.
TBT and DBT	GCMS analysis following the extraction of the wet sediment and subsequent derivatisation.
Please note:	All testing carried out using the <2mm fraction

Laboratories

RPS Letchworth	UKAS Accreditation Laboratory No. 1663
RPS Manchester (Metals only)	UKAS Accreditation Laboratory No. 0605
Ocean Ecology PSA only	NMBAQC

RPS Letchworth and Manchester Laboratories participate in the QUASIMEME Proficiency Testing Scheme

Our Ref: EFS/192631M (Ver. 2)
Your Ref: JER1262

December 12, 2018

Environmental Chemistry
SOCOTEC UK Limited
Bretby Business Park
Ashby Road
Burton-on-Trent
Staffordshire
DE15 0YZ

Telephone: 01283 554400
Facsimile: 01283 554422

Alice Thomas
RPS
260 Park Avenue
Aztec West
Almondsbury
Bristol
BS32 4SY

For the attention of Alice Thomas

Dear Alice Thomas

Sample Analysis - Pembroke Dock

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 27/12/18 when they will be discarded. Please call 01283 554400 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 SOCOTEC UK Limited (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 SOCOTEC UK Limited

[redacted]

L Moore
Project Co-ordinator
01283 554400

TEST REPORT

1252

Report No. EFS/192631M (Ver. 2)

RPS
RPS
260 Park Avenue
Aztec West
Almondsbury
Bristol
BS32 4SY

Site: Pembroke Dock

The 11 samples described in this report were registered for analysis by SOCOTEC UK Limited on 15-Nov-2018. This report supersedes any versions previously issued by the laboratory.
The analysis was completed by: 12-Dec-2018

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 SOCOTEC UK Limited.

The following tables are contained in this report:

On behalf of
SOCOTEC UK Lim[redacted]
Becky Batham Operations Manager
Energy & Waste Services

Date of Issue: 12-Dec-2018

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)
SOCOTEC UK Limited accepts no responsibility for any sampling not carried out by our personnel.

Units :			µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
Method Codes :			BTEXHSA	BTEXHSA	BTEXHSA	BTEXHSA	BTEXHSA	BTEXHSA	GROHSA	GROHSA	GROHSA	GROHSA	GROHSA	GROHSA	GROHSA	GROHSA	GROHSA	ICPBOR
Method Reporting Limits :			10	10	20	10	10	30	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.5
Accreditation Code:			UM	UM	UM	UM	UM	UM	UM	UM	UM	UM	UM	UM	UM	UM	UM	UM
LAB ID Number CL/	**Client Sample Description**	**Sample Date**	**Benzene**	**Ethyl Benzene**	**m/p Xylenes**	**o Xylene**	**Toluene**	**Xylenes**	**GRO**	**GRO (>C5 - C6)**	**GRO (>C7 - C8)**	**GRO (>C8 - C10)**	**GRO (C5-C6 Aliphatic)**	**GRO (C6-C7 Aliphatic)**	**GRO (C6-C7)**	**GRO (C7-C8 Aliphatic)**	**GRO (C8-C10 Aliphatic)**	**Boron (H20 Soluble)**
1932770	BH02 11.00	06-Nov-18	<12.3	<12.3	<24.5	<12.3	<12.3	<36.8	<0.245	<0.245	<0.245	<0.245	<0.245	<0.245	<0.245	<0.245	<0.245	1.1
1932771	BH01 0.30	07-Nov-18																
1932772	BH05 0.50	07-Nov-18	<12.7	<12.7	<25.4	<12.7	<12.7	<38.1	<0.254	<0.254	<0.254	<0.254	<0.254	<0.254	<0.254	<0.254	<0.254	
1932773	BH05 1.40 (NVM)	07-Nov-18																
1932774	BH05 3.50	07-Nov-18	<13.4	<13.4	<26.9	<13.4	<13.4	<40.3	<0.269	<0.269	<0.269	<0.269	<0.269	<0.269	<0.269	<0.269	<0.269	4.7
1932775	BH07 0.50 (NVM)	07-Nov-18	<10.8‡	<10.8‡	<21.5‡	<10.8‡	<10.8‡	<32.3‡	<0.215‡	<0.215‡	<0.215‡	<0.215‡	<0.215‡	<0.215‡	<0.215‡	<0.215‡	<0.215‡	
1932776	BH07 1.50	07-Nov-18	<11.8	<11.8	<23.6	<11.8	<11.8	<35.3	<0.236	<0.236	<0.236	<0.236	<0.236	<0.236	<0.236	<0.236	<0.236	
1932777	BH09 0.50 (NVM)	07-Nov-18	<10.7‡	<10.7‡	<21.3‡	<10.7‡	<10.7‡	<32.0‡	<0.213‡	<0.213‡	<0.213‡	<0.213‡	<0.213‡	<0.213‡	<0.213‡	<0.213‡	<0.213‡	0.8‡
1932778	BH09 2.50	07-Nov-18	<12.9	<12.9	<25.7	<12.9	<12.9	<38.6	<0.257	<0.257	<0.257	<0.257	<0.257	<0.257	<0.257	<0.257	<0.257	1.2
1932779	BH12 0.50	08-Nov-18	<11.6	<11.6	<23.2	<11.6	<11.6	<34.8	<0.232	<0.232	<0.232	<0.232	<0.232	<0.232	<0.232	<0.232	<0.232	0.8
1935138	BH09 0.80																	

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Client Name RPS

Contact Alice Thomas

Pembroke Dock

Sample Analysis

Date Printed	**12-Dec-2018**
Report Number	**EFS/192631M**
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	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	ug Sn/kg	ug Sn/kg	ug Sn/kg	ug Sn/kg
Method Codes :			ICPMSS	ICPMSS	ICPMSS	ICPMSS	ICPMSS	ICPMSS	ICPMSS	ICPMSS	ICPMSS	ICPMSS	ICPSOIL	ICPSOIL	OGSN	OGSN	OGSN	OGSN
Method Reporting Limits :			0.3	0.2	1.2	1.6	0.7	0.5	2	0.5	0.6	16	0.5	0.1	1	1	1	1
Accreditation Code:			UM	UM	UM	UM	UM	UM	UM	UM	N	UM	UM	UM	N	N	N	N
LAB ID Number CL/	**Client Sample Description**	**Sample Date**	**Arsenic (MS)**	**Cadmium (MS)**	**Chromium (MS)**	**Copper (MS)**	**Lead (MS)**	**Mercury (MS)**	**Nickel (MS)**	**Selenium (MS)**	**Vanadium (MS)**	**Zinc (MS)**	**Barium.**	**Beryllium.**	**Dibutyl Tin**	**Monobutyl Tin**	**Tetrabutyl Tin**	**Tributyl Tin as Sn**
1932770	BH02 11.00	06-Nov-18	13.7	0.42	21.8	29.4	51.5	<0.50	28.0	<0.5	25.1	83.3	178	0.780	<1	<12	<1	<1
1932771	BH01 0.30	07-Nov-18																
1932772	BH05 0.50	07-Nov-18																
1932773	BH05 1.40 (NVM)	07-Nov-18																
1932774	BH05 3.50	07-Nov-18	11.1	0.38	16.2	62.6	398.7	<0.56	21.2	0.6	18.9	58.2	50.9	0.505				
1932775	BH07 0.50 (NVM)	07-Nov-18																
1932776	BH07 1.50	07-Nov-18																
1932777	BH09 0.50 (NVM)	07-Nov-18	8.0‡	0.35‡	10.5‡	63.0‡	194‡	<0.48‡	15.8‡	<0.5‡	10.9	207.0‡	44.7‡	0.299‡				
1932778	BH09 2.50	07-Nov-18	21.8	0.58	32.0	24.6	59.1	<0.53	35	0.6	33.8	113	71.7	1.30				
1932779	BH12 0.50	08-Nov-18	27.4	1.10	18.7	500.1	940.3	1.84	38.0	<0.5	16	883.1	205	0.623				
1935138	BH09 0.80																	

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Pembroke Dock

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Units :			ug Sn/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 :			OGSN	PAHMSUS	PAHMSUS	PAHMSUS	PAHMSUS	PAHMSUS	PAHMSUS	PAHMSUS	PAHMSUS	PAHMSUS	PAHMSUS	PAHMSUS	PAHMSUS	PAHMSUS	PAHMSUS	PAHMSUS
Method Reporting Limits :			1	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08
Accreditation Code:			N	UM	U	U	UM	UM	UM	UM	UM	UM	UM	UM	UM	UM	UM	UM
LAB ID Number CL/	**Client Sample Description**	**Sample Date**	**Triphenyl Tin**	**Acenaphthene**	**Acenaphthylene**	**Anthracene**	**Benzo(a)anthracene**	**Benzo(a)pyrene**	**Benzo(b)fluoranthene**	**Benzo(ghi)perylene**	**Benzo(k)fluoranthene**	**Chrysene**	**Dibenzo(ah)anthracene**	**Fluoranthene**	**Fluorene**	**Indeno(123-cd)pyrene**	**Naphthalene**	**Phenanthrene**
1932770	BH02 11.00	06-Nov-18	<1	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
1932771	BH01 0.30	07-Nov-18																
1932772	BH05 0.50	07-Nov-18		0.30	0.48	1.44	9.26	7.60	9.39	2.83	3.61	7.94	1.40	11.91	0.42	3.98	0.20	4.26
1932773	BH05 1.40 (NVM)	07-Nov-18																
1932774	BH05 3.50	07-Nov-18		<0.11	0.15	0.17	1.30	1.47	1.80	0.52	0.70	1.28	0.24	1.67	<0.11	0.77	<0.11	0.67
1932775	BH07 0.50 (NVM)	07-Nov-18		<0.09‡	<0.09	0.11	0.40‡	0.41‡	0.53‡	0.18‡	0.20‡	0.43‡	<0.09‡	0.64‡	<0.09‡	0.26‡	<0.09‡	0.42‡
1932776	BH07 1.50	07-Nov-18		<0.09	<0.09	<0.09	<0.09	<0.09	<0.09	<0.09	<0.09	<0.09	<0.09	<0.09	<0.09	<0.09	<0.09	<0.09
1932777	BH09 0.50 (NVM)	07-Nov-18		0.44‡	3.27	8.88	48.8‡	29.1‡	47.8‡	11.7‡	15.8‡	61.5‡	7.85‡	61.4‡	1.29‡	18.8‡	0.12‡	10.25‡
1932778	BH09 2.50	07-Nov-18		<0.10	<0.10	<0.10	0.19	0.12	0.19	<0.10	<0.10	0.21	<0.10	0.21	<0.10	<0.10	<0.10	<0.10
1932779	BH12 0.50	08-Nov-18		0.09	0.48	0.70	2.04	3.31	4.41	1.80	1.40	2.32	0.56	3.14	0.10	2.39	0.30	1.03
1935138	BH09 0.80																	

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		Units :	mg/kg	mg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	mg/kg		mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
		Method Codes :	PAHMSUS	PAHMSUS	PCBECD	PCBECD	PCBECD	PCBECD	PCBECD	PCBECD	PCBECD	SFAPI	Sub020	SVOCSW	SVOCSW	SVOCSW	SVOCSW	SVOCSW
		Method Reporting Limits :	0.08	1.28	5	5	5	5	5	5	5	0.5		0.1	0.1	0.1	0.1	0.1
		Accreditation Code:	UM	U	UM	UM	UM	UM	UM	UM	UM	U	U	N	U	U	U	U
LAB ID Number CL/	**Client Sample Description**	**Sample Date**	**Pyrene**	**Total PAH (Sum of USEPA 16)**	**PCB 101**	**PCB 118**	**PCB 138**	**PCB 153**	**PCB 180**	**PCB 28**	**PCB 52**	**Phenol Index.(AR)**	**^Asbestos ID (Stage 1)**	**1,2,4-Trichlorobenzene**	**1,2-Dichlorobenzene**	**1,3-Dichlorobenzene**	**1,4-Dichlorobenzene**	**1-Methylnaphthalene**
1932770	BH02 11.00	06-Nov-18	<0.10	<1.57	<6.13	<6.13	<6.13	<6.13	<6.13	<6.13	<6.13							
1932771	BH01 0.30	07-Nov-18											NADIS					
1932772	BH05 0.50	07-Nov-18	9.31	74.3	<6.35	<6.35	<6.35	<6.35	<6.35	<6.35	<6.35	<0.6	NADIS	<0.127	<0.127	<0.127	<0.127	0.174
1932773	BH05 1.40 (NVM)	07-Nov-18											NADIS					
1932774	BH05 3.50	07-Nov-18	1.37	<12.43	<6.72	<6.72	<6.72	<6.72	<6.72	<6.72	<6.72	<0.7		<0.134	<0.134	<0.134	<0.134	<0.134
1932775	BH07 0.50 (NVM)	07-Nov-18	0.51‡	<4.53	<5.38‡	<5.38‡	<5.38‡	<5.38‡	<5.38‡	<5.38‡	<5.38‡		NADIS	<0.108	<0.108	<0.108	<0.108	<0.108
1932776	BH07 1.50	07-Nov-18	<0.09	<1.51	<5.89	<5.89	<5.89	<5.89	<5.89	<5.89	<5.89			<0.118	<0.118	<0.118	<0.118	<0.118
1932777	BH09 0.50 (NVM)	07-Nov-18	46.4‡	374									NADIS					
1932778	BH09 2.50	07-Nov-18	0.14	<2.07														
1932779	BH12 0.50	08-Nov-18	3.48	27.5								<0.6	NADIS	<0.116	<0.116	<0.116	<0.116	0.215
1935138	BH09 0.80												NADIS					

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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 :			SVOCSW	SVOCSW	SVOCSW	SVOCSW	SVOCSW	SVOCSW	SVOCSW	SVOCSW	SVOCSW	SVOCSW	SVOCSW	SVOCSW	SVOCSW	SVOCSW	SVOCSW	SVOCSW
Method Reporting Limits :			0.1	0.1	0.1	0.1	0.5	0.2	0.5	0.1	0.1	0.1	0.1	0.5	0.1	0.1	14.5	0.2
Accreditation Code:			U	U	U	U	N	U	U	U	U	U	U	N	U	U	N	N
LAB ID Number CL/	**Client Sample Description**	**Sample Date**	**2,4,5-Trichlorophenol**	**2,4,6-Trichlorophenol**	**2,4-Dichlorophenol**	**2,4-Dimethylphenol**	**2,4-Dinitrophenol**	**2,4-Dinitrotoluene**	**2,6-Dinitrotoluene**	**2-Chloronaphthalene**	**2-Chlorophenol**	**2-Methylnaphthalene**	**2-Methylphenol**	**2-Nitroaniline**	**2-Nitrophenol**	**3- & 4-Methylphenol**	**3-Nitroaniline**	**4,6-Dinitro-2-methylphenol**
1932770	BH02 11.00	06-Nov-18																
1932771	BH01 0.30	07-Nov-18																
1932772	BH05 0.50	07-Nov-18	<0.127	<0.127	<0.127	<0.127	<0.635	<0.254	<0.635	<0.127	<0.127	0.341	<0.127	<0.635	<0.127	<0.127	<18.4	<0.254
1932773	BH05 1.40 (NVM)	07-Nov-18																
1932774	BH05 3.50	07-Nov-18	<0.134	<0.134	<0.134	<0.134	<0.672	<0.269	<0.672	<0.134	<0.134	<0.134	<0.134	<0.672	<0.134	<0.134	<19.5	<0.269
1932775	BH07 0.50 (NVM)	07-Nov-18	<0.108	<0.108	<0.108	<0.108	<0.538	<0.215	<0.538	<0.108	<0.108	<0.108	<0.108	<0.538	<0.108	<0.108	<15.6	<0.215
1932776	BH07 1.50	07-Nov-18	<0.118	<0.118	<0.118	<0.118	<0.589	<0.236	<0.589	<0.118	<0.118	<0.118	<0.118	<0.589	<0.118	<0.118	<17.1	<0.236
1932777	BH09 0.50 (NVM)	07-Nov-18																
1932778	BH09 2.50	07-Nov-18																
1932779	BH12 0.50	08-Nov-18	<0.116	<0.116	<0.116	<0.116	<0.580	<0.232	<0.580	<0.116	<0.116	0.439	<0.116	<0.580	<0.116	<0.116	<16.8	<0.232
1935138	BH09 0.80																	

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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	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 :	SVOCSW	SVOCSW	SVOCSW	SVOCSW	SVOCSW	SVOCSW	SVOCSW	SVOCSW	SVOCSW	SVOCSW	SVOCSW	SVOCSW	SVOCSW	SVOCSW	SVOCSW	SVOCSW
		Method Reporting Limits :	0.1	0.1	0.5	0.5	0.1	0.6	0.5	0.1	0.1	0.1	0.2	0.2	0.2	0.5	0.2	0.5
		Accreditation Code:	U	U	N	U	U	N	N	U	U	U	U	U	U	U	U	N
LAB ID Number CL/	**Client Sample Description**	**Sample Date**	**4-Bromophenyl-phenylether**	**4-Chloro-3-methylphenol**	**4-Chloroaniline**	**4-Chlorophenol**	**4-Chlorophenyl-phenylether**	**4-Nitroaniline**	**4-Nitrophenol**	**Acenaphthene**	**Acenaphthylene**	**Anthracene**	**Benzo(a)anthracene**	**Benzo(a)pyrene**	**Benzo(b)fluoranthene**	**Benzo(ghi)perylene**	**Benzo(k)fluoranthene**	**Benzoic Acid**
1932770	BH02 11.00	06-Nov-18																
1932771	BH01 0.30	07-Nov-18																
1932772	BH05 0.50	07-Nov-18	<0.127	<0.127	<0.635	<0.635	<0.127	<0.762	<0.635	0.398	0.433	1.77	8.06	7.14	11.36	3.04	3.42	<0.635
1932773	BH05 1.40 (NVM)	07-Nov-18																
1932774	BH05 3.50	07-Nov-18	<0.134	<0.134	<0.672	<0.672	<0.134	<0.806	<0.672	<0.134	<0.134	0.165	1.183	1.136	1.69	<0.672	0.683	<0.672
1932775	BH07 0.50 (NVM)	07-Nov-18	<0.108	<0.108	<0.538	<0.538	<0.108	<0.646	<0.538	<0.108	<0.108	<0.108	<0.215	<0.215	0.322	<0.538	<0.215	<0.538
1932776	BH07 1.50	07-Nov-18	<0.118	<0.118	<0.589	<0.589	<0.118	<0.707	<0.589	<0.118	<0.118	<0.118	<0.236	<0.236	<0.236	<0.589	<0.236	<0.589
1932777	BH09 0.50 (NVM)	07-Nov-18																
1932778	BH09 2.50	07-Nov-18																
1932779	BH12 0.50	08-Nov-18	<0.116	<0.116	<0.580	<0.580	<0.116	<0.696	<0.580	0.179	0.297	0.727	2.67	3.28	5.89	2.02	1.68	<0.580
1935138	BH09 0.80																	

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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	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 :	SVOCSW	SVOCSW	SVOCSW	SVOCSW	SVOCSW	SVOCSW	SVOCSW	SVOCSW	SVOCSW	SVOCSW	SVOCSW	SVOCSW	SVOCSW	SVOCSW	SVOCSW	SVOCSW	SVOCSW
		Method Reporting Limits :	0.5	0.1	0.1	0.1	0.5	0.2	0.2	0.1	0.3	0.5	0.1	0.1	0.1	0.1	0.2	0.1	
		Accreditation Code:	U	U	U	U	U	U	U	U	N	U	U	U	U	U	U	U	
LAB ID Number CL/	**Client Sample Description**	**Sample Date**	**Benzyl alcohol**	**Biphenyl**	**bis(2-Chloroethoxy)methane**	**bis(2-Chloroethyl)ether**	**bis(2-Chloroisopropyl)ether**	**bis(2-Ethylhexyl)phthalate**	**Butylbenzylphthalate**	**Chrysene**	**Coronene**	**Dibenzo(ah)anthracene**	**Dibenzofuran**	**Diethylphthalate**	**Dimethylphthalate**	**Di-n-butylphthalate**	**Di-n-octylphthalate**	**Diphenyl Ether**	
1932770	BH02 11.00	06-Nov-18																	
1932771	BH01 0.30	07-Nov-18																	
1932772	BH05 0.50	07-Nov-18	<0.635	0.128	<0.127	<0.127*	<0.635	<0.254	<0.254	7.27	0.587	1.257	0.404	<0.127	<0.127	<0.127	<0.254	<0.127	
1932773	BH05 1.40 (NVM)	07-Nov-18																	
1932774	BH05 3.50	07-Nov-18	<0.672	<0.134	<0.134	<0.134*	<0.672	<0.269	<0.269	1.140	<0.403	<0.672	<0.134	<0.134	<0.134	<0.134	<0.269	<0.134	
1932775	BH07 0.50 (NVM)	07-Nov-18	<0.538	<0.108	<0.108	<0.108*	<0.538	<0.215	<0.215	0.236	<0.323	<0.538	<0.108	<0.108	<0.108	<0.108	<0.215	<0.108	
1932776	BH07 1.50	07-Nov-18	<0.589	<0.118	<0.118	<0.118*	<0.589	<0.236	<0.236	<0.118	<0.353	<0.589	<0.118	<0.118	<0.118	<0.118	<0.236	<0.118	
1932777	BH09 0.50 (NVM)	07-Nov-18																	
1932778	BH09 2.50	07-Nov-18																	
1932779	BH12 0.50	08-Nov-18	<0.580	0.159	<0.116	<0.116*	<0.580	<0.232	<0.232	3.13	0.471	0.661	<0.116	<0.116	<0.116	<0.116	<0.232	<0.116	
1935138	BH09 0.80																		

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Client Name RPS

Contact Alice Thomas

Pembroke Dock

Sample Analysis

Date Printed	**12-Dec-2018**
Report Number	**EFS/192631M**
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	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 :			SVOCSW	SVOCSW	SVOCSW	SVOCSW	SVOCSW	SVOCSW	SVOCSW	SVOCSW	SVOCSW	SVOCSW	SVOCSW	SVOCSW	SVOCSW	SVOCSW	SVOCSW	SVOCSW	SVOCSW
Method Reporting Limits :			0.2	0.2	0.1	0.1	0.1	0.1	0.5	0.1	0.1	0.5	0.9	0.1	0.5	0.1	0.1	0.2	
Accreditation Code:			U	U	U	N	N	U	U	N	U	U	N	N	N	U	U	U	
LAB ID Number CL/	**Client Sample Description**	**Sample Date**	**Fluoranthene**	**Fluorene**	**Hexachlorobenzene**	**Hexachlorobutadiene**	**Hexachlorocyclopentadiene**	**Hexachloroethane**	**Indeno(123-cd)pyrene**	**Isophorone**	**Naphthalene**	**Nitrobenzene**	**N-Nitroso-di-n-propylamine**	**N-Nitrosodiphenylamine**	**Pentachlorophenol**	**Phenanthrene**	**Phenol**	**Pyrene**	
1932770	BH02 11.00	06-Nov-18																	
1932771	BH01 0.30	07-Nov-18																	
1932772	BH05 0.50	07-Nov-18	11.74	0.814	<0.127	<0.127	<0.127	<0.127	4.28	<0.127	0.410	<0.635	<1.144	<0.127	<0.635	5.16	<0.127*	9.42	
1932773	BH05 1.40 (NVM)	07-Nov-18																	
1932774	BH05 3.50	07-Nov-18	1.67	<0.269	<0.134	<0.134	<0.134	<0.134	<0.672	<0.134	<0.134	<0.672	<1.210	<0.134	<0.672	0.526	<0.134*	1.40	
1932775	BH07 0.50 (NVM)	07-Nov-18	0.324	<0.215	<0.108	<0.108	<0.108	<0.108	<0.538	<0.108	<0.108	<0.538	<0.969	<0.108	<0.538	0.142	<0.108*	0.265	
1932776	BH07 1.50	07-Nov-18	<0.236	<0.236	<0.118	<0.118	<0.118	<0.118	<0.589	<0.118	<0.118	<0.589	<1.060	<0.118	<0.589	<0.118	<0.118*	<0.236	
1932777	BH09 0.50 (NVM)	07-Nov-18																	
1932778	BH09 2.50	07-Nov-18																	
1932779	BH12 0.50	08-Nov-18	4.05	<0.232	<0.116	<0.116	<0.116	<0.116	2.71	<0.116	0.625	<0.580	<1.044	<0.116	<0.580	1.71	<0.116*	4.20	
1935138	BH09 0.80																		

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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	µg/kg	µg/kg	µg/kg
Method Codes :			TMSS	TPHUSSI	TPHUSSI	TPHUSSI	TPHUSSI	TPHUSSI	TPHUSSI	TPHUSSI	TPHUSSI	TPHUSSI	TPHUSSI	TPHUSSI	TPHUSSI	VOCHSAS	VOCHSAS	VOCHSAS
Method Reporting Limits :			0.1	4	4	4	8.75	4	20	4	4	4	8.75	4	20	1	1	1
Accreditation Code:			U	U	U	U	U	U	U	U	U	U	U	U	U	UM	UM	N
LAB ID Number CL/	**Client Sample Description**	**Sample Date**	**Tot.Moisture @ 105C**	**TPH Ali Band >C10-C12**	**TPH Ali Band >C12-C16**	**TPH Ali Band >C16-C21**	**TPH Ali Band >C21-C35**	**TPH Ali Band >C8-C10**	**TPH Ali Band >C8-C40**	**TPH Aro Band >C10-C12**	**TPH Aro Band >C12-C16**	**TPH Aro Band >C16-C21**	**TPH Aro Band >C21-C35**	**TPH Aro Band >C8-C10**	**TPH Aro Band >C8-C40**	**1,1,1,2-Tetrachloroethane**	**1,1,1-Trichloroethane**	**1,1,2,2-Tetrachloroethane**
1932770	BH02 11.00	06-Nov-18	18.4	<5.15	<5.15	14.8*	466	<5.15	509	<4.90	8.63	11.30*	138	<4.90	169			
1932771	BH01 0.30	07-Nov-18	15.1															
1932772	BH05 0.50	07-Nov-18	21.3	<5.29	<5.29	<5.29*	26.9	<5.29	41.0	<5.08	11.22	31.6*	128	<5.08	191	<1.3	<1.3	<1.3
1932773	BH05 1.40 (NVM)	07-Nov-18	14.3															
1932774	BH05 3.50	07-Nov-18	25.6	<5.65	<5.65	<5.65*	<12.37	<5.65	<28.2	<5.38	9.40	14.0*	39.7	<5.38	69.4	<1.3	<1.3	<1.3
1932775	BH07 0.50 (NVM)	07-Nov-18	7.1	<4.48	<4.48	<4.48*	16.3	<4.48	25.0	<4.31	10.54	8.11*	22.0	<4.31	46.1	<1.1‡	<1.1‡	<1.1
1932776	BH07 1.50	07-Nov-18	15.1	<4.90	<4.90	<4.90*	<10.73	<4.90	<24.5	<4.71	9.22	7.82*	23.8	<4.71	55.5	<1.2	<1.2	<1.2
1932777	BH09 0.50 (NVM)	07-Nov-18	6.3	<4.40	<4.40	10.14*	40.3	<4.40	56.9	<4.27	13.1	81.2*	557	<4.27	671			
1932778	BH09 2.50	07-Nov-18	22.3	<5.35	<5.35	<5.35*	<11.72	<5.35	<26.8	<5.15	9.37	8.47*	21.5	<5.15	44.7			
1932779	BH12 0.50	08-Nov-18	13.8	<4.83	<4.83	10.88*	82.3	<4.83	99.9	<4.64	9.47	15.9*	83.5	<4.64	124	<1.2	24.4	<1.2
1935138	BH09 0.80																	

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Contact	Alice Thomas

Pembroke Dock

Sample Analysis

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Report Number	**EFS/192631M**
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Results corrected to dry weight at 105°C where appropriate, in accordance with the MCERTS standard.

		Units :	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg
		Method Codes :	VOCHSAS	VOCHSAS	VOCHSAS	VOCHSAS	VOCHSAS	VOCHSAS	VOCHSAS	VOCHSAS	VOCHSAS	VOCHSAS	VOCHSAS	VOCHSAS	VOCHSAS	VOCHSAS	VOCHSAS	VOCHSAS
		Method Reporting Limits :	1	1	1	1	3	1	3	1	1	1	1	1	1	1	1	1
		Accreditation Code:	UM	UM	U	UM	UM	UM	N	UM	N	UM	UM	UM	UM	UM	UM	UM
LAB ID Number CL/	Client Sample Description	Sample Date	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
1932770	BH02 11.00	06-Nov-18																
1932771	BH01 0.30	07-Nov-18																
1932772	BH05 0.50	07-Nov-18	<1.3	<1.3	<1.3	<1.3	<3.8	<1.3	<3.8	71.2	<1.3	<1.3	<1.3	<1.3	<1.3	15.2	<1.3	<1.3
1932773	BH05 1.40 (NVM)	07-Nov-18																
1932774	BH05 3.50	07-Nov-18	<1.3	<1.3	<1.3	<1.3	<4.0	<1.3	<4.0	5.4	<1.3	<1.3	<1.3	<1.3	<1.3	1.3	<1.3	<1.3
1932775	BH07 0.50 (NVM)	07-Nov-18	<1.1‡	<1.1‡	<1.1	<1.1‡	<3.2‡	<1.1‡	<3.2	<1.1‡	<1.1	<1.1‡	<1.1‡	<1.1‡	<1.1‡	<1.1‡	<1.1‡	<1.1‡
1932776	BH07 1.50	07-Nov-18	<1.2	<1.2	<1.2	<1.2	<3.5	<1.2	<3.5	<1.2	<1.2	<1.2	<1.2	<1.2	<1.2	<1.2	<1.2	<1.2
1932777	BH09 0.50 (NVM)	07-Nov-18																
1932778	BH09 2.50	07-Nov-18																
1932779	BH12 0.50	08-Nov-18	<1.2	<1.2	<1.2	<1.2	<3.5	<1.2	<3.5	<1.2	<1.2	<1.2	<1.2	<1.2	<1.2	<1.2	<1.2	<1.2
1935138	BH09 0.80																	

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			Units :	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg
			Method Codes :	VOCHSAS	VOCHSAS	VOCHSAS	VOCHSAS	VOCHSAS	VOCHSAS	VOCHSAS	VOCHSAS	VOCHSAS	VOCHSAS	VOCHSAS	VOCHSAS	VOCHSAS	VOCHSAS	VOCHSAS	VOCHSAS
			Method Reporting Limits :	1	1	1	1	1	1	1	1	1	1	1	1	2	1	3	5
			Accreditation Code:	UM	UM	UM	UM	UM	UM	UM	UM	UM	UM	UM	UM	UM	UM	U	UM
LAB ID Number CL/	Client Sample Description	Sample Date		1,4-Dichlorobenzene	2,2-Dichloropropane	2-Chlorotoluene	4-Chlorotoluene	Benzene	Bromobenzene	Bromochloromethane	Bromodichloromethane	Bromoform	Bromomethane	Carbon Tetrachloride	Chlorobenzene	Chloroethane	Chloroform	Chloromethane	cis 1,2-Dichloroethene
1932770	BH02 11.00	06-Nov-18																	
1932771	BH01 0.30	07-Nov-18																	
1932772	BH05 0.50	07-Nov-18		<1.3	<1.3	<1.3	<1.3	2.5	<1.3	<1.3	<1.3	<1.3	<1.3	<1.3	<1.3	<2.5	<1.3	<3.8	<6.4
1932773	BH05 1.40 (NVM)	07-Nov-18																	
1932774	BH05 3.50	07-Nov-18		<1.3	<1.3	<1.3	<1.3	<1.3	<1.3	<1.3	<1.3	<1.3	<1.3	<1.3	<1.3	<2.7	<1.3	<4.0	<6.7
1932775	BH07 0.50 (NVM)	07-Nov-18		<1.1‡	<1.1‡	<1.1‡	<1.1‡	<1.1‡	<1.1‡	<1.1‡	<1.1‡	2.2‡	<1.1‡	<1.1‡	<1.1‡	<2.2‡	<1.1‡	<3.2	<5.4‡
1932776	BH07 1.50	07-Nov-18		<1.2	<1.2	<1.2	<1.2	<1.2	<1.2	<1.2	<1.2	<1.2	<1.2	<1.2	<1.2	<2.4	<1.2	<3.5	<5.9
1932777	BH09 0.50 (NVM)	07-Nov-18																	
1932778	BH09 2.50	07-Nov-18																	
1932779	BH12 0.50	08-Nov-18		<1.2	<1.2	<1.2	<1.2	<1.2	<1.2	<1.2	<1.2	<1.2	<1.2	<1.2	<1.2	<2.3	<1.2	<3.5	<5.8
1935138	BH09 0.80																		

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		Units :	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg
		Method Codes :	VOCHSAS	VOCHSAS	VOCHSAS	VOCHSAS	VOCHSAS	VOCHSAS	VOCHSAS	VOCHSAS	VOCHSAS	VOCHSAS	VOCHSAS	VOCHSAS	VOCHSAS	VOCHSAS	VOCHSAS	VOCHSAS	VOCHSAS
		Method Reporting Limits :	1	1	1	1	1	2	1	4	1	5	1	2	1	1	1	1	1
		Accreditation Code:	UM	UM	UM	N	UM	N	UM	UM	UM	UM	U	UM	UM	UM	UM	UM	UM
LAB ID Number CL/	**Client Sample Description**	**Sample Date**	**cis 1,3-Dichloropropene**	**Dibromochloromethane**	**Dibromomethane**	**Dichlorodifluoromethane**	**Ethylbenzene**	**Hexachlorobutadiene**	**iso-Propylbenzene**	**m and p-Xylene**	**MTBE**	**Naphthalene**	**n-Butylbenzene**	**o-Xylene**	**p-Isopropyltoluene**	**Propylbenzene**	**sec-Butylbenzene**	**Styrene**
1932770	BH02 11.00	**06-Nov-18**																
1932771	BH01 0.30	**07-Nov-18**																
1932772	BH05 0.50	**07-Nov-18**	1.3	<1.3	<1.3	<1.3	<2.5	<2.5	<1.3	<5.1	<1.3	<6.4	2.5	<2.5	<1.3	2.5	1.3	1.3
1932773	BH05 1.40 (NVM)	**07-Nov-18**																
1932774	BH05 3.50	**07-Nov-18**	1.3	<1.3	<1.3	<1.3	<2.7	<2.7	<1.3	<5.4	<1.3	<6.7	<1.3	<2.7	<1.3	<1.3	<1.3	<1.3
1932775	BH07 0.50 (NVM)	**07-Nov-18**	2.2‡	<1.1‡	<1.1‡	<1.1	<2.2‡	<2.2	<1.1‡	<4.3‡	<1.1‡	<5.4‡	<1.1	<2.2‡	<1.1‡	<1.1‡	<1.1‡	<1.1‡
1932776	BH07 1.50	**07-Nov-18**	1.2	<1.2	<1.2	<1.2	<2.4	<2.4	<1.2	<4.7	<1.2	<5.9	<1.2	<2.4	<1.2	<1.2	<1.2	<1.2
1932777	BH09 0.50 (NVM)	**07-Nov-18**																
1932778	BH09 2.50	**07-Nov-18**																
1932779	BH12 0.50	**08-Nov-18**	2.3	<1.2	<1.2	<1.2	<2.3	<2.3	<1.2	<4.6	<1.2	<5.8	<1.2	<2.3	<1.2	<1.2	<1.2	<1.2
1935138	BH09 0.80																	

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Units :			µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg								
Method Codes :			VOCHSAS	VOCHSAS	VOCHSAS	VOCHSAS	VOCHSAS	VOCHSAS	VOCHSAS	VOCHSAS								
Method Reporting Limits :			1	3	5	1	1	1	1	1								
Accreditation Code:			UM	UM	UM	UM	UM	UM	UM	UM								
LAB ID Number CL/	**Client Sample Description**	**Sample Date**	**tert-Butylbenzene**	**Tetrachloroethene**	**Toluene**	**trans 1,2-Dichloroethene**	**trans 1,3-Dichloropropene**	**Trichloroethene**	**Trichlorofluoromethane**	**Vinyl Chloride**								
1932770	BH02 11.00	06-Nov-18																
1932771	BH01 0.30	07-Nov-18																
1932772	BH05 0.50	07-Nov-18	7.6	<3.8	<6.4	<1.3	<1.3	<1.3	2.5	<1.3								
1932773	BH05 1.40 (NVM)	07-Nov-18																
1932774	BH05 3.50	07-Nov-18	<1.3	<4.0	<6.7	<1.3	<1.3	<1.3	<1.3	<1.3								
1932775	BH07 0.50 (NVM)	07-Nov-18	<1.1‡	<3.2‡	<5.4‡	<1.1‡	<1.1‡	2.2‡	<1.1‡	<1.1‡								
1932776	BH07 1.50	07-Nov-18	<1.2	<3.5	<5.9	<1.2	<1.2	<1.2	<1.2	<1.2								
1932777	BH09 0.50 (NVM)	07-Nov-18																
1932778	BH09 2.50	07-Nov-18																
1932779	BH12 0.50	08-Nov-18	<1.2	<3.5	<5.8	<1.2	<1.2	<1.2	<1.2	<1.2								
1935138	BH09 0.80																	

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IOM

WORKING FOR A HEALTHIER FUTURE

CERTIFICATE OF ANALYSIS

ANALYSIS REQUESTED BY: SOCOTEC UK Ltd
Environmental Chemistry
PO Box 100
Burton upon Trent
Staffordshire
DE15 0XD

CONTRACT NO: S02224-3a

DATE OF ISSUE: 26.11.18

DATE SAMPLES RECEIVED: 14.11.18

DATE SAMPLES ANALYSED: 21.11.18

SAMPLE DESCRIPTION: Six soil/loose aggregate samples.

ANALYSIS REQUESTED: Qualitative analysis of samples for determination of presence/type of asbestos.

METHODS:

Our method involves initial examination of the 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 any of the soil samples 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

IOM CONSULTING LIMITED, registered in Scotland No. SC205670

UKAS TESTING
0374

CONTRACT NO: S02224-3a
DATE OF ISSUE: 26.11.18

RESULTS: (cont.)

Table 1: Qualitative Results

SOCOTEC Job I.D: S192631

IOM sample number	Client sample number	ACM type detected	PLM result
S62212	S1932771 BH01 0.30	-	No Asbestos Detected
S62213	S1932772 BH05 0.50	-	No Asbestos Detected
S62214	S1932773 BH05 1.40	-	No Asbestos Detected
S62216	S1932775 BH07 0.50	-	No Asbestos Detected
S62217	S1932777 BH09 0.50	-	No Asbestos Detected
S62219	S1932779 BH12 0.50	-	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 outwith the scope of our UKAS accreditation.

AUTHORISED BY: [redacted]
.....
D Third
Scientific Technician

CERTIFICATE OF ANALYSIS

ANALYSIS REQUESTED BY: SOCOTEC UK Ltd
Environmental Chemistry
PO Box 100
Burton upon Trent
Staffordshire
DE15 0XD

CONTRACT NO: S02648-1

DATE OF ISSUE: 11.12.18

DATE SAMPLE RECEIVED: 04.12.18

DATE SAMPLE ANALYSED: 11.12.18

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 the sample followed by detailed analysis of a representative sub-sample. The sub-sample is 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 result 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
IOM CONSULTING LIMITED, registered in Scotland No. SC205670

CONTRACT NO: S02648-1
DATE OF ISSUE: 11.12.18

RESULTS: (cont.)

Table 1: Qualitative Results

SOCOTEC Job I.D: S192631

IOM sample number	Client sample number	ACM type detected	PLM result
S62701	S1935138 BH09 0.80	-	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 outwith the scope of our UKAS accreditation.

AUTHORISED BY: .....
D Third
Scientific Technician

Analytical and Deviating Sample Overview

Customer RPS
Site Pembroke Dock
Report No S192631M

Consignment No S80358
Date Logged 15-Nov-2018
In-House Report Due 05-Dec-2018

Please note the results for any subcontracted analysis (identified with a '^') is likely to take up to an additional five working days.

ID Number	Description	MethodID	CustServ	GROHSA	ICPBOR	ICPMSS									ICPSOIL		MCertS	OGSN					PAHMSUS	PCBECD	SFAPI	Sub020
		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.	MCertS Analysis	Dibutyl Tin	Monobutyl Tin	Tetrabutyl Tin	Tributyl Tin as Sn	Triphenyl Tin	PAH (16) by GCMS	PCB-7 Congeners Analysis	Phenol Index.(AR)	^Asbestos ID (Stage 1)
				✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓		✓	✓	✓	✓						✓	✓	✓	✓
CL/1932770	BH02 11.00	06/11/18																									
CL/1932771	BH01 0.30	07/11/18																									
CL/1932772	BH05 0.50	07/11/18																									
CL/1932773	BH05 1.40	07/11/18																									
CL/1932774	BH05 3.50	07/11/18																									
CL/1932775	BH07 0.50	07/11/18																									
CL/1932776	BH07 1.50	07/11/18																									
CL/1932777	BH09 0.50	07/11/18																									
CL/1932778	BH09 2.50	07/11/18																									
CL/1932779	BH12 0.50	08/11/18																									
CL/1935138	BH09 0.80	D	D															D									D

Note: We will endeavour to prioritise samples to complete analysis within holding time; however any delay could result in samples becoming deviant whilst being processed in the laboratory.

If sampling dates are missing or matrices unclassified then results will not be ISO 17025 accredited. Please contact us as soon as possible to provide missing information in order to reinstate accreditation.

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 RPS
Site Pembroke Dock
Report No S192631M

Consignment No S80358
Date Logged 15-Nov-2018
In-House Report Due 05-Dec-2018

Please note the results for any subcontracted analysis (identified with a '^') is likely to take up to an additional five working days.

ID Number	Description	MethodID	SVOCSW	TMSS	TPHUSSI													VOCHSAS
		Sampled	SVOC (AR)	Tot.Moisture @ 105C	TPH Ali Band >C10-C12	TPH Ali Band >C12-C16	TPH Ali Band >C16-C21	TPH Ali Band >C21-C35	TPH Ali Band >C8-C10	TPH Ali Band >C8-C40	TPH Aro Band >C10-C12	TPH Aro Band >C12-C16	TPH Aro Band >C16-C21	TPH Aro Band >C21-C35	TPH Aro Band >C8-C10	TPH Aro Band >C8-C40	TPH by GCFID (AR/Si)	VOC HSA-GCMS
			✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
CL/1932770	BH02 11.00	06/11/18		E														
CL/1932771	BH01 0.30	07/11/18		E														
CL/1932772	BH05 0.50	07/11/18		E														
CL/1932773	BH05 1.40	07/11/18		E														
CL/1932774	BH05 3.50	07/11/18		E														
CL/1932775	BH07 0.50	07/11/18		E														
CL/1932776	BH07 1.50	07/11/18		E														
CL/1932777	BH09 0.50	07/11/18		E														
CL/1932778	BH09 2.50	07/11/18		E														
CL/1932779	BH12 0.50	08/11/18		E														
CL/1935138	BH09 0.80	D																

Note: We will endeavour to prioritise samples to complete analysis within holding time; however any delay could result in samples becoming deviant whilst being processed in the laboratory.

If sampling dates are missing or matrices unclassified then results will not be ISO 17025 accredited. Please contact us as soon as possible to provide missing information in order to reinstate accreditation.

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/192631

Additional Report Notes

Method Code	Sample ID	The following information should be taken into consideration when using the data contained within this report
SVOCSW	CL1932772, CL1932774 - CL1932776, CL1932779	The Primary process control data associated with this Test has not wholly met the requirements of the Laboratory Quality Management System QMS with one or more target analytes falling outside acceptable limits. However the remaining data gives the Laboratory confidence that the test has performed satisfactorily and that the validity of the data may not have been significantly affected. However in line with our QMS policy we have removed accreditation, where applicable, from the affected analytes (phenol, bis(2-chloroethyl)ether) . These circumstances should be taken into consideration when utilising the data.
TPHUSSI	CL1932770 CL1932772 CL1932774 TO CL1932779	The Secondary process control data associated with this Test has not wholly met the requirements of the Laboratory Quality Management System QMS with one or more target analytes falling outside acceptable limits. However the remaining data gives the Laboratory confidence that the test has performed satisfactorily (including the Primary Process Control) and that the validity of the data may not have been significantly affected. However in line with our QMS policy we have removed accreditation , where applicable, from the affected analytes (c16-c21 aliphatics and c16-c21 aromatics) . These circumstances should be taken into consideration when utilising the data.

Method Descriptions

Matrix	MethodID	Analysis Basis	Method Description
Soil	BTEXHSA	As Received	Determination of Benzene, Toluene, Ethyl benzene and Xylenes (BTEX) 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 Marine Sediments and Soil samples by aqua regia digestion followed by ICPMS detection
Soil	ICPSOIL	Oven Dried @ < 35°C	Determination of Metals in soil samples by aqua regia digestion followed by ICPOES detection
Soil	OGSN	As Received	Determination of Organo-tin compounds using sonic extraction in methanol , derivatiseation with Sodium Tetraethylborate and GCMS quantitation (SIM mode).
Soil	PAHMSUS	As Received	Determination of Polycyclic Aromatic Hydrocarbons (PAH) by hexane/acetone extraction followed by GCMS detection
Soil	PCBECD	As Received	Determination of Polychlorinated Biphenyl (PCB) congeners/aroclors by hexane/acetone extraction followed by GCECD detection
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	SVOCSW	As Received	Determination of Semi-Volatile Organic Compounds 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

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 : RPS

Site : Pembroke Dock

Report Number : S19_2631

Note: major constituent in upper case

Lab ID Number	Client ID	Description
CL/1932770	BH02 11.00	Brown Clay SILT
CL/1932771	BH01 0.30	Brown Stone SILT
CL/1932772	BH05 0.50	Brown Stone SILT
CL/1932773	BH05 1.40 (NVM)	Brown MADE GROUND
CL/1932774	BH05 3.50	Brown Stone SILT
CL/1932775	BH07 0.50 (NVM)	Brown Stone GRAVEL Silt
CL/1932776	BH07 1.50	Brown Clay SILT Stone
CL/1932777	BH09 0.50 (NVM)	Brown Silt STONE
CL/1932778	BH09 2.50	Brown Clay SILT Gravel
CL/1932779	BH12 0.50	Brown Stone SILT
CL/1935138	BH09 0.80	Stone CLAY

Our Ref: EFS/192726M (Ver. 1)
Your Ref: JER1262

November 28, 2018

Environmental Chemistry
SOCOTEC UK Limited
Bretby Business Park
Ashby Road
Burton-on-Trent
Staffordshire
DE15 0YZ

Telephone: 01283 554400
Facsimile: 01283 554422

Alice Thomas
RPS
260 Park Avenue
Aztec West
Almondsbury
Bristol
BS32 4SY

For the attention of Alice Thomas

Dear Alice Thomas

Sample Analysis - Pembroke Dock

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 28/12/18 when they will be discarded. Please call 01283 554400 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 SOCOTEC UK Limited (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

[redacted]

Project Co-ordinator
01283 554400

TEST REPORT

1252

Report No. EFS/192726M (Ver. 1)

RPS
RPS
260 Park Avenue
Aztec West
Almondsbury
Bristol
BS32 4SY

Site: Pembroke Dock

The 8 samples described in this report were registered for analysis by SOCOTEC UK Limited on 16-Nov-2018. This report supersedes any versions previously issued by the laboratory.
The analysis was completed by: 28-Nov-2018

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 SOCOTEC UK Limited.

The following tables are contained in this report:

On behalf of
SOCOTEC UK Lim[redacted]
Becky Batham Operations Manager
Energy & Waste Services

Date of Issue: 28-Nov-2018

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)
SOCOTEC UK Limited accepts no responsibility for any sampling not carried out by our personnel.

Units :			µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
Method Codes :			BTEXHSA	BTEXHSA	BTEXHSA	BTEXHSA	BTEXHSA	BTEXHSA	GROHSA	GROHSA	GROHSA	GROHSA	GROHSA	GROHSA	GROHSA	GROHSA	GROHSA	ICPBOR
Method Reporting Limits :			10	10	20	10	10	30	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.5
Accreditation Code:			UM	UM	UM	UM	UM	UM	UM	UM	UM	UM	UM	UM	UM	UM	UM	UM
LAB ID Number CL/	**Client Sample Description**	**Sample Date**	**Benzene**	**Ethyl Benzene**	**m/p Xylenes**	**o Xylene**	**Toluene**	**Xylenes**	**GRO**	**GRO (>C5 - C6)**	**GRO (>C7 - C8)**	**GRO (>C8 - C10)**	**GRO (C5-C6 Aliphatic)**	**GRO (C6-C7 Aliphatic)**	**GRO (C6-C7)**	**GRO (C7-C8 Aliphatic)**	**GRO (C8-C10 Aliphatic)**	**Boron (H20 Soluble)**
1933220	BH04 0.50	07-Nov-18																
1933221	BH04 1.00-1.20	07-Nov-18																
1933222	BH01 4.50	08-Nov-18																
1933223	BH03 0.30	08-Nov-18	<11.9	<11.9	<23.9	<11.9	<11.9	<35.8	<0.239	<0.239	<0.239	<0.239	<0.239	<0.239	<0.239	<0.239	<0.239	
1933224	BH03 1.00	08-Nov-18	<11.5	<11.5	<23.1	<11.5	<11.5	<34.6	<0.231	<0.231	<0.231	<0.231	<0.231	<0.231	<0.231	<0.231	<0.231	0.5
1933225	SED 1	08-Nov-18	<28.1	<28.1	<56.2	<28.1	<28.1	<84.3	<0.562	<0.562	<0.562	<0.562	<0.562	<0.562	<0.562	<0.562	<0.562	19.0
1933226	SED 2	08-Nov-18	<32.8	<32.8	<65.6	<32.8	<32.8	<98.4	<0.656	<0.656	<0.656	<0.656	<0.656	<0.656	<0.656	<0.656	<0.656	23.6
1933227	BH03 6.00	09-Nov-18	<10.5	<10.5	<21.1	<10.5	<10.5	<31.6	<0.211	<0.211	<0.211	<0.211	<0.211	<0.211	<0.211	<0.211	<0.211	<0.5

SOCOTEC

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Fax +44 (0) 1283 554422

Client Name RPS

Contact Alice Thomas

Pembroke Dock

Sample Analysis

Date Printed	**28-Nov-2018**
Report Number	**EFS/192726M**
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	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	ug Sn/kg	ug Sn/kg	ug Sn/kg	ug Sn/kg
Method Codes :			ICPMSS	ICPMSS	ICPMSS	ICPMSS	ICPMSS	ICPMSS	ICPMSS	ICPMSS	ICPMSS	ICPMSS	ICPSOIL	ICPSOIL	OGSN	OGSN	OGSN	OGSN
Method Reporting Limits :			0.3	0.2	1.2	1.6	0.7	0.5	2	0.5	0.6	16	0.5	0.1	1	1	1	1
Accreditation Code:			UM	UM	UM	UM	UM	UM	UM	UM	N	UM	UM	UM	N	N	N	N
LAB ID Number CL/	**Client Sample Description**	**Sample Date**	**Arsenic (MS)**	**Cadmium (MS)**	**Chromium (MS)**	**Copper (MS)**	**Lead (MS)**	**Mercury (MS)**	**Nickel (MS)**	**Selenium (MS)**	**Vanadium (MS)**	**Zinc (MS)**	**Barium.**	**Beryllium.**	**Dibutyl Tin**	**Monobutyl Tin**	**Tetrabutyl Tin**	**Tributyl Tin as Sn**
1933220	BH04 0.50	07-Nov-18																
1933221	BH04 1.00-1.20	07-Nov-18																
1933222	BH01 4.50	08-Nov-18																
1933223	BH03 0.30	08-Nov-18																
1933224	BH03 1.00	08-Nov-18	15.8	1.69	16.8	46.3	1520	<0.5	14.9	<0.5	21	332.3	42.2	0.352				
1933225	SED 1	08-Nov-18	33.4	0.68	81	178.1	645.3	11.48	30.2	<0.6	48.7	561.7	304	0.779	<3	<28	<3	<3
1933226	SED 2	08-Nov-18	95.9	1.10	45.5	206.4	624.1	38.63	34.1	<0.8	56.1	706.6	269	1.13	13.70	69.8	<3	<3
1933227	BH03 6.00	09-Nov-18	3.1	<0.20	3.5	10.2	50.1	<0.50	3.2	<0.5	5.8	52	6.35	<0.1				

SOCOTEC

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Fax +44 (0) 1283 554422

Client Name RPS

Contact Alice Thomas

Pembroke Dock

Sample Analysis

Date Printed	**28-Nov-2018**
Report Number	**EFS/192726M**
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 :	ug Sn/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 :	OGSN	PAHMSUS	PAHMSUS	PAHMSUS	PAHMSUS	PAHMSUS	PAHMSUS	PAHMSUS	PAHMSUS	PAHMSUS	PAHMSUS	PAHMSUS	PAHMSUS	PAHMSUS	PAHMSUS	PAHMSUS
			Method Reporting Limits :	1	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08
			Accreditation Code:	N	UM	U	U	UM	UM	UM	UM	UM	UM	UM	UM	UM	UM	UM	UM
LAB ID Number CL/	Client Sample Description	Sample Date	Triphenyl Tin	Acenaphthene	Acenaphthylene	Anthracene	Benzo(a)anthracene	Benzo(a)pyrene	Benzo(b)fluoranthene	Benzo(ghi)perylene	Benzo(k)fluoranthene	Chrysene	Dibenzo(ah)anthracene	Fluoranthene	Fluorene	Indeno(123-cd)pyrene	Naphthalene	Phenanthrene	
1933220	BH04 0.50	07-Nov-18																	
1933221	BH04 1.00-1.20	07-Nov-18																	
1933222	BH01 4.50	08-Nov-18																	
1933223	BH03 0.30	08-Nov-18		<0.10	0.24	0.36	1.85	1.71	2.25	0.75	0.81	1.94	0.30	3.12	0.12	0.99	<0.10	1.48	
1933224	BH03 1.00	08-Nov-18		<0.09	0.21	0.29	1.49	1.47	1.99	0.61	0.70	1.55	0.23	2.29	0.09	0.79	<0.09	1.00	
1933225	SED 1	08-Nov-18	<3	1.04	<0.22	0.65	5.67	7.36	9.55	4.16	3.29	6.38	1.21	11.69	0.70	5.37	0.34	6.01	
1933226	SED 2	08-Nov-18	11.67	<0.26	<0.26	0.43	2.07	2.82	3.67	1.48	1.25	1.67	0.43	3.41	<0.26	1.87	<0.26	1.41	
1933227	BH03 6.00	09-Nov-18		<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	

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Sample Analysis

Date Printed	**28-Nov-2018**
Report Number	**EFS/192726M**
Table Number	**1**

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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
Method Codes :			PAHMSUS	PAHMSUS	SFAPI	Sub002	SVOCSW	SVOCSW	SVOCSW	SVOCSW	SVOCSW	SVOCSW	SVOCSW	SVOCSW	SVOCSW	SVOCSW	SVOCSW	SVOCSW
Method Reporting Limits :			0.08	1.28	0.5		0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.5	0.2	0.5
Accreditation Code:			UM	U	U	U	N	U	U	U	U	U	U	U	U	N	U	U
LAB ID Number CL/	**Client Sample Description**	**Sample Date**	**Pyrene**	**Total PAH (Sum of USEPA 16)**	**Phenol Index.(AR)**	**^Asbestos Screen & ID (Stage 1)**	**1,2,4-Trichlorobenzene**	**1,2-Dichlorobenzene**	**1,3-Dichlorobenzene**	**1,4-Dichlorobenzene**	**1-Methylnaphthalene**	**2,4,5-Trichlorophenol**	**2,4,6-Trichlorophenol**	**2,4-Dichlorophenol**	**2,4-Dimethylphenol**	**2,4-Dinitrophenol**	**2,4-Dinitrotoluene**	**2,6-Dinitrotoluene**
1933220	BH04 0.50	07-Nov-18				NAIIS												
1933221	BH04 1.00-1.20	07-Nov-18				AM, CH												
1933222	BH01 4.50	08-Nov-18				NAIIS												
1933223	BH03 0.30	08-Nov-18	2.41	<18.5	<0.6	CH	<0.119	<0.119	<0.119	<0.119	<0.119	<0.119	<0.119	<0.119	<0.119	<0.597	<0.239	<0.597
1933224	BH03 1.00	08-Nov-18	1.94	<14.9	<0.6		<0.115	<0.115	<0.115	<0.115	<0.115	<0.115	<0.115	<0.115	<0.115	<0.577	<0.231	<0.577
1933225	SED 1	08-Nov-18	9.55	<73.3														
1933226	SED 2	08-Nov-18	3.90	<25.51														
1933227	BH03 6.00	09-Nov-18	<0.08	<1.35	<0.5		<0.105	<0.105	<0.105	<0.105	<0.105	<0.105	<0.105	<0.105	<0.105	<0.527	<0.211	<0.527

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		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	mg/kg
		Method Codes :	SVOCSW	SVOCSW	SVOCSW	SVOCSW	SVOCSW	SVOCSW	SVOCSW	SVOCSW	SVOCSW	SVOCSW	SVOCSW	SVOCSW	SVOCSW	SVOCSW	SVOCSW	SVOCSW	SVOCSW
		Method Reporting Limits :	0.1	0.1	0.1	0.1	0.5	0.1	0.1	14.5	0.2	0.1	0.1	0.5	0.5	0.1	0.6	0.5	
		Accreditation Code:	U	U	U	U	N	U	U	N	N	U	U	N	U	U	N	N	
LAB ID Number CL/	**Client Sample Description**	**Sample Date**	**2-Chloronaphthalene**	**2-Chlorophenol**	**2-Methylnaphthalene**	**2-Methylphenol**	**2-Nitroaniline**	**2-Nitrophenol**	**3- & 4-Methylphenol**	**3-Nitroaniline**	**4,6-Dinitro-2-methylphenol**	**4-Bromophenyl-phenylether**	**4-Chloro-3-methylphenol**	**4-Chloroaniline**	**4-Chlorophenol**	**4-Chlorophenyl-phenylether**	**4-Nitroaniline**	**4-Nitrophenol**	
1933220	BH04 0.50	07-Nov-18																	
1933221	BH04 1.00-1.20	07-Nov-18																	
1933222	BH01 4.50	08-Nov-18																	
1933223	BH03 0.30	08-Nov-18	<0.119	<0.119	<0.119	<0.119	<0.597	<0.119	<0.119	<17.3	<0.239	<0.119	<0.119	<0.597	<0.597	<0.119	<0.717	<0.597	
1933224	BH03 1.00	08-Nov-18	<0.115	<0.115	<0.115	<0.115	<0.577	<0.115	<0.115	<16.7	<0.231	<0.115	<0.115	<0.577	<0.577	<0.115	<0.693	<0.577	
1933225	SED 1	08-Nov-18																	
1933226	SED 2	08-Nov-18																	
1933227	BH03 6.00	09-Nov-18	<0.105	<0.105	<0.105	<0.105	<0.527	<0.105	<0.105	<15.3	<0.211	<0.105	<0.105	<0.527	<0.527	<0.105	<0.632	<0.527	

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Table Number	**1**

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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	mg/kg
Method Codes :			SVOCSW	SVOCSW	SVOCSW	SVOCSW	SVOCSW	SVOCSW	SVOCSW	SVOCSW	SVOCSW	SVOCSW	SVOCSW	SVOCSW	SVOCSW	SVOCSW	SVOCSW	SVOCSW	SVOCSW
Method Reporting Limits :			0.1	0.1	0.1	0.2	0.2	0.2	0.5	0.2	0.5	0.5	0.1	0.1	0.1	0.5	0.2	0.2	
Accreditation Code:			U	U	U	U	U	U	U	U	N	U	U	U	U	U	U	U	
LAB ID Number CL/	**Client Sample Description**	**Sample Date**	**Acenaphthene**	**Acenaphthylene**	**Anthracene**	**Benzo(a)anthracene**	**Benzo(a)pyrene**	**Benzo(b)fluoranthene**	**Benzo(ghi)perylene**	**Benzo(k)fluoranthene**	**Benzoic Acid**	**Benzyl alcohol**	**Biphenyl**	**bis(2-Chloroethoxy)methane**	**bis(2-Chloroethyl)ether**	**bis(2-Chloroisopropyl)ether**	**bis(2-Ethylhexyl)phthalate**	**Butylbenzylphthalate**	
1933220	BH04 0.50	07-Nov-18																	
1933221	BH04 1.00-1.20	07-Nov-18																	
1933222	BH01 4.50	08-Nov-18																	
1933223	BH03 0.30	08-Nov-18	<0.119	<0.119*	<0.119	0.554	0.476	0.834	<0.597	0.321	<0.597	<0.597	<0.119	<0.119	<0.119*	<0.597	<0.239*	<0.239*	
1933224	BH03 1.00	08-Nov-18	<0.115	0.152	0.279	1.015	0.906	1.44	<0.577	0.465	<0.577	<0.577	<0.115	<0.115	<0.115	<0.577	<0.231	<0.231	
1933225	SED 1	08-Nov-18																	
1933226	SED 2	08-Nov-18																	
1933227	BH03 6.00	09-Nov-18	<0.105	<0.105	<0.105	<0.211	<0.211	<0.211	<0.527	<0.211	<0.527	<0.527	<0.105	<0.105	<0.105	<0.527	<0.211	<0.211	

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		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	mg/kg
		Method Codes :	SVOCSW	SVOCSW	SVOCSW	SVOCSW	SVOCSW	SVOCSW	SVOCSW	SVOCSW	SVOCSW	SVOCSW	SVOCSW	SVOCSW	SVOCSW	SVOCSW	SVOCSW	SVOCSW	SVOCSW
		Method Reporting Limits :	0.1	0.3	0.5	0.1	0.1	0.1	0.1	0.2	0.1	0.2	0.2	0.1	0.1	0.1	0.1	0.1	0.5
		Accreditation Code:	U	N	U	U	U	U	U	U	U	U	U	U	N	N	U	U	U
LAB ID Number CL/	**Client Sample Description**	**Sample Date**	**Chrysene**	**Coronene**	**Dibenzo(ah)anthracene**	**Dibenzofuran**	**Diethylphthalate**	**Dimethylphthalate**	**Di-n-butylphthalate**	**Di-n-octylphthalate**	**Diphenyl Ether**	**Fluoranthene**	**Fluorene**	**Hexachlorobenzene**	**Hexachlorobutadiene**	**Hexachlorocyclopentadiene**	**Hexachloroethane**	**Indeno(123-cd)pyrene**
1933220	BH04 0.50	**07-Nov-18**																	
1933221	BH04 1.00-1.20	**07-Nov-18**																	
1933222	BH01 4.50	**08-Nov-18**																	
1933223	BH03 0.30	**08-Nov-18**	0.646	<0.358	<0.597	<0.119	<0.119	<0.119	<0.119	<0.239*	<0.119	1.42	<0.239	<0.119	<0.119	<0.119	<0.119	<0.597
1933224	BH03 1.00	**08-Nov-18**	1.100	<0.346	<0.577	<0.115	<0.115	<0.115	<0.115	<0.231	<0.115	1.76	<0.231	<0.115	<0.115	<0.115	<0.115	0.580
1933225	SED 1	**08-Nov-18**																	
1933226	SED 2	**08-Nov-18**																	
1933227	BH03 6.00	**09-Nov-18**	<0.105	<0.316	<0.527	<0.105	<0.105	<0.105	<0.105	<0.211	<0.105	<0.211	<0.211	<0.105	<0.105	<0.105	<0.105	<0.527

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Pembroke Dock

Sample Analysis

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		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
		Method Codes :	SVOCSW	SVOCSW	SVOCSW	SVOCSW	SVOCSW	SVOCSW	SVOCSW	SVOCSW	SVOCSW	TMSS	TPHUSSI	TPHUSSI	TPHUSSI	TPHUSSI	TPHUSSI	TPHUSSI
		Method Reporting Limits :	0.1	0.1	0.5	0.9	0.1	0.5	0.1	0.1	0.2	0.1	4	4	4	8.75	4	20
		Accreditation Code:	N	U	U	N	N	N	U	U	U	U	U	U	U	U	U	U
LAB ID Number CL/	Client Sample Description	Sample Date	Isophorone	Naphthalene	Nitrobenzene	N-Nitroso-di-n-propylamine	N-Nitrosodiphenylamine	Pentachlorophenol	Phenanthrene	Phenol	Pyrene	Tot.Moisture @ 105C	TPH Ali Band >C10-C12	TPH Ali Band >C12-C16	TPH Ali Band >C16-C21	TPH Ali Band >C21-C35	TPH Ali Band >C8-C10	TPH Ali Band >C8-C40
1933220	BH04 0.50	07-Nov-18																
1933221	BH04 1.00-1.20	07-Nov-18																
1933222	BH01 4.50	08-Nov-18																
1933223	BH03 0.30	08-Nov-18	<0.119	<0.119	<0.597	<1.075	<0.119	<0.597	0.501	<0.119	1.096	16.3	<4.92	<4.92	<4.92	11.22	<4.92	<24.6
1933224	BH03 1.00	08-Nov-18	<0.115	<0.115	<0.577	<1.039	<0.115	<0.577	1.005	<0.115	1.48	13.4	<4.76	<4.76	<4.76	<10.42	<4.76	<23.8
1933225	SED 1	08-Nov-18										64.4	<11.35	<11.35	47.5	280.1	<11.35	346
1933226	SED 2	08-Nov-18										69.5	<13.25	<13.25	<13.25	42.6	<13.25	<66.2
1933227	BH03 6.00	09-Nov-18	<0.105	<0.105	<0.527	<0.948	<0.105	<0.527	<0.105	<0.105	<0.211	5.1	<4.26	4.94	36.0	193	<4.26	246

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		Units :	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg
		Method Codes :	TPHUSSI	TPHUSSI	TPHUSSI	TPHUSSI	TPHUSSI	TPHUSSI	VOCHSAS	VOCHSAS	VOCHSAS	VOCHSAS	VOCHSAS	VOCHSAS	VOCHSAS	VOCHSAS	VOCHSAS	VOCHSAS
		Method Reporting Limits :	4	4	4	8.75	4	20	1	1	1	1	1	1	1	3	1	3
		Accreditation Code:	U	U	U	U	U	U	UM	UM	N	UM	UM	U	UM	UM	UM	N
LAB ID Number CL/	Client Sample Description	Sample Date	TPH Aro Band >C10-C12	TPH Aro Band >C12-C16	TPH Aro Band >C16-C21	TPH Aro Band >C21-C35	TPH Aro Band >C8-C10	TPH Aro Band >C8-C40	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
1933220	BH04 0.50	07-Nov-18																
1933221	BH04 1.00-1.20	07-Nov-18																
1933222	BH01 4.50	08-Nov-18																
1933223	BH03 0.30	08-Nov-18	<4.78	<4.78	9.09*	28.3	<4.78	41.5	<1.2	<1.2	<1.2	<1.2	<1.2	<1.2	<1.2	<3.6	<1.2	<3.6
1933224	BH03 1.00	08-Nov-18	<4.62	<4.62	9.18*	28.1	<4.62	42.6	<1.2	<1.2	<1.2	<1.2	<1.2	<1.2	<1.2	<3.5	<1.2	<3.5
1933225	SED 1	08-Nov-18	<11.24	<11.24	30.9*	177.5	<11.24	220.5										
1933226	SED 2	08-Nov-18	<13.11	<13.11	49.5*	309.2	<13.11	370										
1933227	BH03 6.00	09-Nov-18	<4.21	<4.21	<4.21*	10.9	<4.21	<21.1	<1.1	<1.1	<1.1	<1.1	<1.1	<1.1	<1.1	<3.2	<1.1	<3.2

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Units :			µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg
Method Codes :			VOCHSAS	VOCHSAS	VOCHSAS	VOCHSAS	VOCHSAS	VOCHSAS	VOCHSAS	VOCHSAS	VOCHSAS	VOCHSAS	VOCHSAS	VOCHSAS	VOCHSAS	VOCHSAS	VOCHSAS	VOCHSAS
Method Reporting Limits :			1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Accreditation Code:			UM	N	UM	UM	UM	UM	UM	UM	UM	UM	UM	UM	UM	UM	UM	UM
LAB ID Number CL/	**Client Sample Description**	**Sample Date**	**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**
1933220	BH04 0.50	07-Nov-18																
1933221	BH04 1.00-1.20	07-Nov-18																
1933222	BH01 4.50	08-Nov-18																
1933223	BH03 0.30	08-Nov-18	<1.2	1.2	<1.2	1.2	<1.2	<1.2	<1.2	<1.2	<1.2	1.2	<1.2	<1.2	<1.2	<1.2	<1.2	<1.2
1933224	BH03 1.00	08-Nov-18	<1.2	<1.2	<1.2	<1.2	<1.2	<1.2	<1.2	<1.2	<1.2	<1.2	<1.2	<1.2	<1.2	<1.2	<1.2	<1.2
1933225	SED 1	08-Nov-18																
1933226	SED 2	08-Nov-18																
1933227	BH03 6.00	09-Nov-18	<1.1	<1.1	<1.1	<1.1	<1.1	<1.1	<1.1	<1.1	<1.1	<1.1	<1.1	<1.1	<1.1	<1.1	<1.1	<1.1

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Units :			µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg
Method Codes :			VOCHSAS	VOCHSAS	VOCHSAS	VOCHSAS	VOCHSAS	VOCHSAS	VOCHSAS	VOCHSAS	VOCHSAS	VOCHSAS	VOCHSAS	VOCHSAS	VOCHSAS	VOCHSAS	VOCHSAS	VOCHSAS
Method Reporting Limits :			1	1	1	1	1	2	1	3	5	1	1	1	1	2	2	1
Accreditation Code:			UM	UM	UM	UM	UM	UM	UM	U	UM	UM	UM	UM	N	UM	N	UM
LAB ID Number CL/	**Client Sample Description**	**Sample Date**	**Bromodichloromethane**	**Bromoform**	**Bromomethane**	**Carbon Tetrachloride**	**Chlorobenzene**	**Chloroethane**	**Chloroform**	**Chloromethane**	**cis 1,2-Dichloroethene**	**cis 1,3-Dichloropropene**	**Dibromochloromethane**	**Dibromomethane**	**Dichlorodifluoromethane**	**Ethylbenzene**	**Hexachlorobutadiene**	**iso-Propylbenzene**
1933220	BH04 0.50	07-Nov-18																
1933221	BH04 1.00-1.20	07-Nov-18																
1933222	BH01 4.50	08-Nov-18																
1933223	BH03 0.30	08-Nov-18	<1.2	<1.2	<1.2	<1.2	<1.2	<2.4	<1.2	<3.6	<6.0	<1.2	<1.2	<1.2	<1.2	<2.4*	<2.4	<1.2
1933224	BH03 1.00	08-Nov-18	<1.2	<1.2	<1.2	<1.2	<1.2	<2.3	<1.2	<3.5	<5.8	<1.2	<1.2	<1.2	<1.2	<2.3	<2.3	<1.2
1933225	SED 1	08-Nov-18																
1933226	SED 2	08-Nov-18																
1933227	BH03 6.00	09-Nov-18	<1.1	<1.1	<1.1	<1.1	<1.1	<2.1	<1.1	<3.2	<5.3	<1.1	<1.1	<1.1	<1.1	<2.1	<2.1	<1.1

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Client Name	**RPS**
Contact	Alice Thomas

Pembroke Dock

Sample Analysis

Date Printed	**28-Nov-2018**
Report Number	**EFS/192726M**
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 :			µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg
Method Codes :			VOCHSAS	VOCHSAS	VOCHSAS	VOCHSAS	VOCHSAS	VOCHSAS	VOCHSAS	VOCHSAS	VOCHSAS	VOCHSAS	VOCHSAS	VOCHSAS	VOCHSAS	VOCHSAS	VOCHSAS	VOCHSAS
Method Reporting Limits :			4	1	5	1	2	1	1	1	1	1	3	5	1	1	1	1
Accreditation Code:			UM	UM	UM	U	UM	UM	UM	UM	UM	UM	UM	UM	UM	UM	UM	UM
LAB ID Number CL/	**Client Sample Description**	**Sample Date**	**m and p-Xylene**	**MTBE**	**Naphthalene**	**n-Butylbenzene**	**o-Xylene**	**p-Isopropyltoluene**	**Propylbenzene**	**sec-Butylbenzene**	**Styrene**	**tert-Butylbenzene**	**Tetrachloroethene**	**Toluene**	**trans 1,2-Dichloroethene**	**trans 1,3-Dichloropropene**	**Trichloroethene**	**Trichlorofluoromethane**
1933220	BH04 0.50	07-Nov-18																
1933221	BH04 1.00-1.20	07-Nov-18																
1933222	BH01 4.50	08-Nov-18																
1933223	BH03 0.30	08-Nov-18	<4.8	<1.2	<6.0	<1.2	<2.4	<1.2	<1.2	<1.2	<1.2	<1.2	<3.6	<6.0	<1.2	<1.2	<1.2	<1.2
1933224	BH03 1.00	08-Nov-18	<4.6	<1.2	<5.8	<1.2	<2.3	<1.2	<1.2	<1.2	<1.2	<1.2	<3.5	<5.8	<1.2	<1.2	<1.2	<1.2
1933225	SED 1	08-Nov-18																
1933226	SED 2	08-Nov-18																
1933227	BH03 6.00	09-Nov-18	<4.2	<1.1	<5.3	<1.1	<2.1	<1.1	<1.1	<1.1	<1.1	<1.1	<3.2	<5.3	<1.1	<1.1	<1.1	<1.1

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Client Name RPS

Contact Alice Thomas

Pembroke Dock

Sample Analysis

Date Printed	**28-Nov-2018**
Report Number	**EFS/192726M**
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 :	µg/kg															
		Method Codes :	VOCHSAS															
		Method Reporting Limits :	1															
		Accreditation Code:	UM															
LAB ID Number CL/	**Client Sample Description**	**Sample Date**	**Vinyl Chloride**															
1933220	BH04 0.50	**07-Nov-18**																
1933221	BH04 1.00-1.20	**07-Nov-18**																
1933222	BH01 4.50	**08-Nov-18**																
1933223	BH03 0.30	**08-Nov-18**	<1.2															
1933224	BH03 1.00	**08-Nov-18**	<1.2															
1933225	SED 1	**08-Nov-18**																
1933226	SED 2	**08-Nov-18**																
1933227	BH03 6.00	**09-Nov-18**	<1.1															

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Client Name	**RPS**
Contact	Alice Thomas

Pembroke Dock

Sample Analysis

Date Printed	**28-Nov-2018**
Report Number	**EFS/192726M**
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Where individual 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

SOCOTEC Asbestos Limited Certificate of Analysis for Asbestos in Soils, Sediments and Aggregates

UKAS TESTING 1089

Detection limit of Method SCI-ASB-020 is 0.001%

Sampling has been carried out by a third party

SOCOTEC

Client:	SOCOTEC Environmental Chemistry	**Page 1 of 1**	
Address:	Etwall House, Bretby Business Park, Ashby Road, Burton upon Trent	**Report No:**	**ANO-0503-19831**
For the attention of:	RPS	**Report Date:**	**23/11/2018**
Site Address:	Pembroke Dock	**Project Number:**	**S192726**

Sample Number	Sample Date	Sample Location & Matrix	Test Date	Total Sample Dry Weight (g)	Weight of <10mm Fraction (g)	Asbestos(g) in >10mm	Asbestos(g) in < 10mm	% Asbestos by weight of Total Dried Sample	Moisture Content	Asbestos Fibre Types Identified
CL/1933220	07/11/18	BH04 0.50 Soils	23/11/2018	1136.8	607.5			Identification		NAIIS
CL/1933221	07/11/18	BH04 1.00-1.20 Soils	22/11/2018	1145.8	405.2			Identification		Amosite & Chrysotile(Free Fibres)
CL/1933222	08/11/18	BH01 4.50 Soils	22/11/2018	652.3	448.3			Identification		NAIIS
CL/1933223	08/11/18	BH03 0.30 Soils	23/11/2018	605.6	374.0			Identification		Chrysotile(Free Fibres)

Keys

NAACR = Not Analysed at Clients Request

NAIIS = No Asbestos Identified in Sample (Identification Only)

*** visible to naked eye**

NADIS = No Asbestos Detected in Sample (ID & Quant Only)

Name:	Tom Pratt	Authorised Signatory:
Position:	Lab Coordinator	

The sample analysis for the above results was carried out using the procedures detailed in SOCOTEC Asbestos Limited in house method (SCI-ASB-020) based on EA document Quantification of asbestos in soil and associated materials - Draft 2017. Fibre identification was carried out using SOCOTEC 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 the < 10mm fraction for asbestos content only includes ACMs and fibres and does not discriminate non-asbestos fibres. All fibres are assumed, unless specified, to be amphiboles. All tests were carried out at a SOCOTEC Asbestos Ltd laboratory, UKAS Testing Number 1089. Recommended sample weight is 1kg-2kg, samples less than 1kg are classified as deviating samples.

Where individual results are flagged see report notes for status.

Sample Analysis

SOCOTEC UK Ltd Environmental Chemistry
Analytical and Deviating Sample Overview

S192726M

Customer RPS
Site Pembroke Dock
Report No S192726M

Consignment No S80358
Date Logged 16-Nov-2018
In-House Report Due 23-Nov-2018

Please note the results for any subcontracted analysis (identified with a '^') is likely to take up to an additional five working days.

ID Number	Description	MethodID	CustServ	GROHSA	ICPBOR	ICPMSS										ICPSOIL		MCertS	OGSN						PAHMSUS	SFAPI	Sub002	SVOCSW
		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.	MCertS Analysis	Dibutyl Tin	Monobutyl Tin	Tetrabutyl Tin	Tributyl Tin as Sn	Triphenyl Tin	PAH (16) by GCMS	Phenol Index.(AR)	^Asbestos Screen & ID (Stage 1)	SVOC (AR)
				✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓		✓	✓	✓	✓						✓	✓	✓	✓
CL/1933220	BH04 0.50	07/11/18																									
CL/1933221	BH04 1.00-1.20	07/11/18																									
CL/1933222	BH01 4.50	08/11/18																									
CL/1933223	BH03 0.30	08/11/18																									
CL/1933224	BH03 1.00	08/11/18																									
CL/1933225	SED 1	08/11/18																									
CL/1933226	SED 2	08/11/18																									
CL/1933227	BH03 6.00	09/11/18																									

Note: We will endeavour to prioritise samples to complete analysis within holding time; however any delay could result in samples becoming deviant whilst being processed in the laboratory.

If sampling dates are missing or matrices unclassified then results will not be ISO 17025 accredited. Please contact us as soon as possible to provide missing information in order to reinstate accreditation.

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.

Sample Analysis

SOCOTEC UK Ltd Environmental Chemistry
Analytical and Deviating Sample Overview

S192726M

Customer RPS
Site Pembroke Dock
Report No S192726M

Consignment No S80358
Date Logged 16-Nov-2018
In-House Report Due 23-Nov-2018

Please note the results for any subcontracted analysis (identified with a '^') is likely to take up to an additional five working days.

ID Number	Description	MethodID	TMSS	TPHUSSI													VOCHSAS
		Sampled	Tot.Moisture @ 105C	TPH Ali Band >C10-C12	TPH Ali Band >C12-C16	TPH Ali Band >C16-C21	TPH Ali Band >C21-C35	TPH Ali Band >C8-C10	TPH Ali Band >C8-C40	TPH Aro Band >C10-C12	TPH Aro Band >C12-C16	TPH Aro Band >C16-C21	TPH Aro Band >C21-C35	TPH Aro Band >C8-C10	TPH Aro Band >C8-C40	TPH by GCFID (AR/Si)	VOC HSA-GCMS
			✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
CL/1933220	BH04 0.50	07/11/18															
CL/1933221	BH04 1.00-1.20	07/11/18															
CL/1933222	BH01 4.50	08/11/18															
CL/1933223	BH03 0.30	08/11/18															
CL/1933224	BH03 1.00	08/11/18															
CL/1933225	SED 1	08/11/18															
CL/1933226	SED 2	08/11/18															
CL/1933227	BH03 6.00	09/11/18															

Note: We will endeavour to prioritise samples to complete analysis within holding time; however any delay could result in samples becoming deviant whilst being processed in the laboratory.

If sampling dates are missing or matrices unclassified then results will not be ISO 17025 accredited. Please contact us as soon as possible to provide missing information in order to reinstate accreditation.

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/192726

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/1933223	The Secondary process control data associated with this Test has not wholly met the requirements of the Laboratory Quality Management System QMS with one or more target analytes falling outside acceptable limits. However the remaining data gives the Laboratory confidence that the test has performed satisfactorily (including the Primary Process Control) and that the validity of the data may not have been significantly affected. However in line with our QMS policy we have removed accreditation , where applicable, from the affected analytes (Ethylbenzene) . These circumstances should be taken into consideration when utilising the data.
TPHUSSI	CL1933223 TO CL1933227	The Secondary process control data associated with this Test has not wholly met the requirements of the Laboratory Quality Management System QMS with one or more target analytes falling outside acceptable limits. However the remaining data gives the Laboratory confidence that the test has performed satisfactorily (including the Primary Process Control) and that the validity of the data may not have been significantly affected. However in line with our QMS policy we have removed accreditation , where applicable, from the affected analytes (C16-C21) on the aromatic fraction. These circumstances should be taken into consideration when utilising the data.
SVOCSW	CL1933223	The Primary process control data associated with this Test has not wholly met the requirements of the Laboratory Quality Management System QMS with one or more target analytes falling outside acceptable limits. However the remaining data gives the Laboratory confidence that the test has performed satisfactorily and that the validity of the data may not have been significantly affected. However in line with our QMS policy we have removed accreditation, where applicable, from the affected analytes (Di-n-octylphthalate) . These circumstances should be taken into consideration when utilising the data.
SVOCSW	CL1933223	The Secondary process control data associated with this Test has not wholly met the requirements of the Laboratory Quality Management System QMS with one or more target analytes falling outside acceptable limits. However the remaining data gives the Laboratory confidence that the test has performed satisfactorily (including the Primary Process Control) and that the validity of the data may not have been significantly affected. However in line with our QMS policy we have removed accreditation, where applicable, from the affected analytes (bis(2-Chloroethyl)ether, Acenaphthylene, Butylbenzylphthalate, bis(2-Ethylhexyl)phthalate) . These circumstances should be taken into consideration when utilising the data.

Method Descriptions

Matrix	MethodID	Analysis Basis	Method Description
Soil	BTEXHSA	As Received	Determination of Benzene, Toluene, Ethyl benzene and Xylenes (BTEX) 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 Marine Sediments and Soil samples by aqua regia digestion followed by ICPMS detection
Soil	ICPSOIL	Oven Dried @ < 35°C	Determination of Metals in soil samples by aqua regia digestion followed by ICPOES detection
Soil	OGSN	As Received	Determination of Organo-tin compounds using sonic extraction in methanol , derivatiseation with Sodium Tetraethylborate and GCMS quantitation (SIM mode).
Soil	PAHMSUS	As Received	Determination of Polycyclic Aromatic Hydrocarbons (PAH) by hexane/acetone extraction followed by GCMS detection
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	SVOCSW	As Received	Determination of Semi-Volatile Organic Compounds 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 : RPS

Site : Pembroke Dock

Report Number : S19_2726

Note: major constituent in upper case

Lab ID Number	Client ID	Description
CL/1933220	BH04 0.50	Brown Stone SILT
CL/1933221	BH04 1.00-1.20	Brown Stone SILT
CL/1933222	BH01 4.50	Brown Stone SILT
CL/1933223	BH03 0.30	Brown Stone SILT
CL/1933224	BH03 1.00	Brown Stone SILT
CL/1933225	SED 1	Brown SILT
CL/1933226	SED 2	Brown SILT
CL/1933227	BH03 6.00	Brown Gravel SILT

Our Ref: EFS/192856M (Ver. 1)
Your Ref: JER1262

December 6, 2018

Environmental Chemistry
SOCOTEC UK Limited
Bretby Business Park
Ashby Road
Burton-on-Trent
Staffordshire
DE15 0YZ

Telephone: 01283 554400
Facsimile: 01283 554422

Alice Thomas
RPS
260 Park Avenue
Aztec West
Almondsbury
Bristol
BS32 4SY

For the attention of Alice Thomas

Dear Alice Thomas

Sample Analysis - Pembroke Dock

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 02/01/19 when they will be discarded. Please call 01283 554400 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 SOCOTEC UK Limited (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

[redacted]

Project Co-ordinator
01283 554400

TEST REPORT

1252

Report No. EFS/192856M (Ver. 1)

RPS
RPS
260 Park Avenue
Aztec West
Almondsbury
Bristol
BS32 4SY

Site: Pembroke Dock

The 5 samples described in this report were registered for analysis by SOCOTEC UK Limited on 21-Nov-2018. This report supersedes any versions previously issued by the laboratory.
The analysis was completed by: 06-Dec-2018

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 SOCOTEC UK Limited.

The following tables are contained in this report:

On behalf of
SOCOTEC UK
Becky Batham Operations Manager
Energy & Waste Services

Date of Issue: 06-Dec-2018

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)
SOCOTEC UK Limited accepts no responsibility for any sampling not carried out by our personnel.

Units :			µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
Method Codes :			BTEXHSA	BTEXHSA	BTEXHSA	BTEXHSA	BTEXHSA	BTEXHSA	GROHSA	GROHSA	GROHSA	GROHSA	GROHSA	GROHSA	GROHSA	GROHSA	GROHSA	ICPBOR
Method Reporting Limits :			10	10	20	10	10	30	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.5
Accreditation Code:			UM	UM	UM	UM	UM	UM	UM	UM	UM	UM	UM	UM	UM	UM	UM	UM
LAB ID Number CL/	**Client Sample Description**	**Sample Date**	**Benzene**	**Ethyl Benzene**	**m/p Xylenes**	**o Xylene**	**Toluene**	**Xylenes**	**GRO**	**GRO (>C5 - C6)**	**GRO (>C7 - C8)**	**GRO (>C8 - C10)**	**GRO (C5-C6 Aliphatic)**	**GRO (C6-C7 Aliphatic)**	**GRO (C6-C7)**	**GRO (C7-C8 Aliphatic)**	**GRO (C8-C10 Aliphatic)**	**Boron (H20 Soluble)**
1933665	BH06 0.60 (NVM)	08-Nov-18	<10.98§	<10.98§	<21.95§	<10.98§	<10.98§	<32.93§	<0.2195§	<0.2195§	<0.2195§	<0.2195§	<0.2195§	<0.2195§	<0.2195§	<0.2195§	<0.2195§	
1933666	BH06 2.00-3.00 (NVM)	08-Nov-18	<10.91§	<10.91§	<21.81§	24§	<10.91§	45§	0.7568§	<0.2181§	<0.2181§	0.7339§	<0.2181§	<0.2181§	<0.2181§	<0.2181§	0.6881§	<0.48§
1933667	BH10 0.60 (NVM)	08-Nov-18	<12.18§	<12.18§	<24.36§	<12.18§	<12.18§	<36.54§	<0.2436§	<0.2436§	<0.2436§	<0.2436§	<0.2436§	<0.2436§	<0.2436§	<0.2436§	<0.2436§	0.74§
1933668	BH11 0.80 (NVM)	08-Nov-18	<11.39§	<11.39§	<22.78§	<11.39§	<11.39§	<34.17§	<0.2278§	<0.2278§	<0.2278§	<0.2278§	<0.2278§	<0.2278§	<0.2278§	<0.2278§	<0.2278§	0.91§
1933669	BH13 0.50 (NVM)	08-Nov-18	<11.74§	<11.74§	<23.47§	<11.74§	<11.74§	<35.21§	<0.2347§	<0.2347§	<0.2347§	<0.2347§	<0.2347§	<0.2347§	<0.2347§	<0.2347§	<0.2347§	1.24§

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Client Name	**RPS**
Contact	Alice Thomas

Pembroke Dock

Sample Analysis

Date Printed	**06-Dec-2018**
Report Number	**EFS/192856M**
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	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 :			ICPMSS	ICPMSS	ICPMSS	ICPMSS	ICPMSS	ICPMSS	ICPMSS	ICPMSS	ICPMSS	ICPMSS	ICPSOIL	ICPSOIL	PAHMSUS	PAHMSUS	PAHMSUS	PAHMSUS
Method Reporting Limits :			0.3	0.2	1.2	1.6	0.7	0.5	2	0.5	0.6	16	0.5	0.1	0.08	0.08	0.08	0.08
Accreditation Code:			UM	UM	UM	UM	UM	UM	UM	UM	N	UM	UM	UM	UM	U	U	UM
LAB ID Number CL/	**Client Sample Description**	**Sample Date**	**Arsenic (MS)**	**Cadmium (MS)**	**Chromium (MS)**	**Copper (MS)**	**Lead (MS)**	**Mercury (MS)**	**Nickel (MS)**	**Selenium (MS)**	**Vanadium (MS)**	**Zinc (MS)**	**Barium.**	**Beryllium.**	**Acenaphthene**	**Acenaphthylene**	**Anthracene**	**Benzo(a)anthracene**
1933665	BH06 0.60 (NVM)	08-Nov-18													<0.088§	<0.088§	0.132§	0.384§
1933666	BH06 2.00-3.00 (NVM)	08-Nov-18	7.47§	0.504§	13§	20.46§	82.73§	<0.485§	12.80§	0.68§	5.1	76.42§	23.47§	0.3181§	<0.087§	<0.087§	<0.087§	<0.087§
1933667	BH10 0.60 (NVM)	08-Nov-18	9.25§	0.694§	12.94§	50.59§	316.03§	<0.53§	15.04§	<0.53§	12.1	590.42§	191§	0.3060§	0.560§	<0.097§	1.608§	4.068§
1933668	BH11 0.80 (NVM)	08-Nov-18	58.50§	0.71§	30.37§	292.18§	593§	1.991§	49.97§	<0.51§	18.5	590.35§	207§	0.6489§	<0.091§	0.125§	0.308§	1.230§
1933669	BH13 0.50 (NVM)	08-Nov-18	13§	0.702§	21§	111.73§	779.14§	0.878§	24.89§	<0.52§	27.3	355.75§	171§	0.5566§	<0.094§	<0.094§	0.141§	0.939§

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Pembroke Dock

Sample Analysis

Date Printed	**06-Dec-2018**
Report Number	**EFS/192856M**
Table Number	**1**

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			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	µg/kg	µg/kg	µg/kg
			Method Codes :	PAHMSUS	PAHMSUS	PAHMSUS	PAHMSUS	PAHMSUS	PAHMSUS	PAHMSUS	PAHMSUS	PAHMSUS	PAHMSUS	PAHMSUS	PAHMSUS	PAHMSUS	PCBECD	PCBECD	PCBECD
			Method Reporting Limits :	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	1.28	5	5	5
			Accreditation Code:	UM	UM	UM	UM	UM	UM	UM	UM	UM	UM	UM	UM	U	UM	UM	UM
LAB ID Number CL/	Client Sample Description	Sample Date		Benzo(a)pyrene	Benzo(b)fluoranthene	Benzo(ghi)perylene	Benzo(k)fluoranthene	Chrysene	Dibenzo(ah)anthracene	Fluoranthene	Fluorene	Indeno(123-cd)pyrene	Naphthalene	Phenanthrene	Pyrene	Total PAH (Sum of USEPA 16)	PCB 101	PCB 118	PCB 138
1933665	BH06 0.60 (NVM)	08-Nov-18		0.351§	0.505§	0.263§	0.176§	0.417§	0.088§	0.626§	<0.088§	0.285§	0.099§	0.483§	0.527§	<4.588§	<5.488§	<5.488§	<5.488§
1933666	BH06 2.00-3.00 (NVM)	08-Nov-18		<0.087§	0.087§	<0.087§	<0.087§	<0.087§	<0.087§	<0.087§	<0.087§	<0.087§	<0.087§	<0.087§	<0.087§	<1.396§	<5.453§	<5.453§	<5.453§
1933667	BH10 0.60 (NVM)	08-Nov-18		3.496§	4.275§	1.912§	1.681§	4.019§	0.597§	8.417§	0.597§	2.132§	0.134§	7.430§	6.857§	<47.87§			
1933668	BH11 0.80 (NVM)	08-Nov-18		1.367§	1.970§	1.116§	0.695§	1.424§	0.353§	1.560§	<0.091§	1.219§	<0.091§	0.535§	1.503§	<13.67§			
1933669	BH13 0.50 (NVM)	08-Nov-18		0.716§	1.021§	0.423§	0.364§	0.880§	0.188§	0.986§	<0.094§	0.481§	<0.094§	0.376§	0.786§	<7.676§			

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Units :			µg/kg	µg/kg	µg/kg	µg/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 :			PCBECD	PCBECD	PCBECD	PCBECD	SFAPI	Sub020	SVOCSW	SVOCSW	SVOCSW	SVOCSW	SVOCSW	SVOCSW	SVOCSW	SVOCSW	SVOCSW	SVOCSW	SVOCSW
Method Reporting Limits :			5	5	5	5	0.5		0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.5
Accreditation Code:			UM	UM	UM	UM	U	U	N	U	U	U	U	U	U	U	U	U	N
LAB ID Number CL/	**Client Sample Description**	**Sample Date**	**PCB 153**	**PCB 180**	**PCB 28**	**PCB 52**	**Phenol Index.(AR)**	**^Asbestos ID (Stage 1)**	**1,2,4-Trichlorobenzene**	**1,2-Dichlorobenzene**	**1,3-Dichlorobenzene**	**1,4-Dichlorobenzene**	**1-Methylnaphthalene**	**2,4,5-Trichlorophenol**	**2,4,6-Trichlorophenol**	**2,4-Dichlorophenol**	**2,4-Dimethylphenol**	**2,4-Dinitrophenol**	
1933665	BH06 0.60 (NVM)	08-Nov-18	<5.488§	<5.488§	<5.488§	<5.488§	<0.55§	CH											
1933666	BH06 2.00-3.00 (NVM)	08-Nov-18	<5.453§	<5.453§	<5.453§	<5.453§	<0.55§												
1933667	BH10 0.60 (NVM)	08-Nov-18					<0.61§	NADIS	<0.122	<0.1218§	<0.1218§	<0.1218§	<0.1218§	<0.1218§	<0.1218§	<0.1218§	<0.1218§	<0.1218§	<0.609
1933668	BH11 0.80 (NVM)	08-Nov-18					<0.57§	CH CR	<0.114	<0.1139§	<0.1139§	<0.1139§	<0.1139§	<0.1139§	<0.1139§	<0.1139§	<0.1139§	<0.1139§	<0.569
1933669	BH13 0.50 (NVM)	08-Nov-18					<0.59§	CH	<0.117	<0.1174§	<0.1174§	<0.1174§	<0.1174§	<0.1174§	<0.1174§	<0.1174§	<0.1174§	<0.1174§	<0.587

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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 :			SVOCSW	SVOCSW	SVOCSW	SVOCSW	SVOCSW	SVOCSW	SVOCSW	SVOCSW	SVOCSW	SVOCSW	SVOCSW	SVOCSW	SVOCSW	SVOCSW	SVOCSW	SVOCSW
Method Reporting Limits :			0.2	0.5	0.1	0.1	0.1	0.1	0.5	0.1	0.1	14.5	0.2	0.1	0.1	0.5	0.5	0.1
Accreditation Code:			U	U	U	U	U	U	N	U	U	N	N	U	U	N	U	U
LAB ID Number CL/	**Client Sample Description**	**Sample Date**	**2,4-Dinitrotoluene**	**2,6-Dinitrotoluene**	**2-Chloronaphthalene**	**2-Chlorophenol**	**2-Methylnaphthalene**	**2-Methylphenol**	**2-Nitroaniline**	**2-Nitrophenol**	**3- & 4-Methylphenol**	**3-Nitroaniline**	**4,6-Dinitro-2-methylphenol**	**4-Bromophenyl-phenylether**	**4-Chloro-3-methylphenol**	**4-Chloroaniline**	**4-Chlorophenol**	**4-Chlorophenyl-phenylether**
1933665	BH06 0.60 (NVM)	08-Nov-18																
1933666	BH06 2.00-3.00 (NVM)	08-Nov-18																
1933667	BH10 0.60 (NVM)	08-Nov-18	<0.2436§	<0.6090§	<0.1218§	<0.1218§	0.1632§	<0.1218§	<0.609	<0.1218§	<0.1218§	<17.7	<0.244	<0.1218§	<0.1218§	<0.609	<0.6090§	<0.1218§
1933668	BH11 0.80 (NVM)	08-Nov-18	<0.2278§	<0.5695§	<0.1139§	<0.1139§	<0.1139§	<0.1139§	<0.569	<0.1139§	<0.1139§	<16.5	<0.228	<0.1139§	<0.1139§	<0.569	<0.5695§	<0.1139§
1933669	BH13 0.50 (NVM)	08-Nov-18	<0.2347§	<0.5869§	<0.1174§	<0.1174§	<0.1174§	<0.1174§	<0.587	<0.1174§	<0.1174§	<17.0	<0.235	<0.1174§	<0.1174§	<0.587	<0.5869§	<0.1174§

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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	mg/kg
Method Codes :			SVOCSW	SVOCSW	SVOCSW	SVOCSW	SVOCSW	SVOCSW	SVOCSW	SVOCSW	SVOCSW	SVOCSW	SVOCSW	SVOCSW	SVOCSW	SVOCSW	SVOCSW	SVOCSW	SVOCSW
Method Reporting Limits :			0.6	0.5	0.1	0.1	0.1	0.2	0.2	0.2	0.5	0.2	0.5	0.5	0.1	0.1	0.1	0.5	
Accreditation Code:			N	N	U	U	U	U	U	U	U	U	N	U	U	U	U	U	
LAB ID Number CL/	**Client Sample Description**	**Sample Date**	**4-Nitroaniline**	**4-Nitrophenol**	**Acenaphthene**	**Acenaphthylene**	**Anthracene**	**Benzo(a)anthracene**	**Benzo(a)pyrene**	**Benzo(b)fluoranthene**	**Benzo(ghi)perylene**	**Benzo(k)fluoranthene**	**Benzoic Acid**	**Benzyl alcohol**	**Biphenyl**	**bis(2-Chloroethoxy)methane**	**bis(2-Chloroethyl)ether**	**bis(2-Chloroisopropyl)ether**	
1933665	BH06 0.60 (NVM)	08-Nov-18																	
1933666	BH06 2.00-3.00 (NVM)	08-Nov-18																	
1933667	BH10 0.60 (NVM)	08-Nov-18	<0.731	<0.609	0.3630§	<0.1218*§	1.279§	4.348§	3.678§	5.530§	1.328§	2.046§	<0.609	<0.6090§	<0.1218§	<0.1218§	<0.1218*§	<0.6090§	
1933668	BH11 0.80 (NVM)	08-Nov-18	<0.683	<0.569	<0.1139§	<0.1139*§	0.1629§	0.6651§	0.6515§	1.1253§	<0.5695§	0.3964§	<0.569	<0.5695§	<0.1139§	<0.1139§	<0.1139*§	<0.5695§	
1933669	BH13 0.50 (NVM)	08-Nov-18	<0.704	<0.587	<0.1174§	<0.1174*§	0.1643§	0.8110§	0.5469§	0.9143§	<0.5869§	0.3415§	<0.587	<0.5869§	<0.1174§	<0.1174§	<0.1174*§	<0.5869§	

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		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 :	SVOCSW	SVOCSW	SVOCSW	SVOCSW	SVOCSW	SVOCSW	SVOCSW	SVOCSW	SVOCSW	SVOCSW	SVOCSW	SVOCSW	SVOCSW	SVOCSW	SVOCSW	SVOCSW
		Method Reporting Limits :	0.2	0.2	0.1	0.3	0.5	0.1	0.1	0.1	0.1	0.2	0.1	0.2	0.2	0.1	0.1	0.1
		Accreditation Code:	U	U	U	N	U	U	U	U	U	U	U	U	U	U	N	N
LAB ID Number CL/	**Client Sample Description**	**Sample Date**	**bis(2-Ethylhexyl)phthalate**	**Butylbenzylphthalate**	**Chrysene**	**Coronene**	**Dibenzo(ah)anthracene**	**Dibenzofuran**	**Diethylphthalate**	**Dimethylphthalate**	**Di-n-butylphthalate**	**Di-n-octylphthalate**	**Diphenyl Ether**	**Fluoranthene**	**Fluorene**	**Hexachlorobenzene**	**Hexachlorobutadiene**	**Hexachlorocyclopentadiene**
1933665	BH06 0.60 (NVM)	**08-Nov-18**																
1933666	BH06 2.00-3.00 (NVM)	**08-Nov-18**																
1933667	BH10 0.60 (NVM)	**08-Nov-18**	<0.2436*§	<0.2436*§	4.251§	<0.365	<0.6090§	0.3094§	<0.1218§	<0.1218§	<0.1218§	<0.2436*§	<0.1218§	9.878§	0.3861§	<0.1218§	<0.122	<0.122
1933668	BH11 0.80 (NVM)	**08-Nov-18**	<0.2278*§	<0.2278*§	0.7517§	<0.342	<0.5695§	<0.1139§	<0.1139§	<0.1139§	<0.1139§	<0.2278*§	<0.1139§	1.162§	<0.2278§	<0.1139§	<0.114	<0.114
1933669	BH13 0.50 (NVM)	**08-Nov-18**	<0.2347*§	<0.2347*§	0.7535§	<0.352	<0.5869§	<0.1174§	<0.1174§	<0.1174§	<0.1174§	<0.2347*§	<0.1174§	1.0047§	<0.2347§	<0.1174§	<0.117	<0.117

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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
Method Codes :			SVOCSW	SVOCSW	SVOCSW	SVOCSW	SVOCSW	SVOCSW	SVOCSW	SVOCSW	SVOCSW	SVOCSW	SVOCSW	TMSS	TPHUSSI	TPHUSSI	TPHUSSI	TPHUSSI
Method Reporting Limits :			0.1	0.5	0.1	0.1	0.5	0.9	0.1	0.5	0.1	0.1	0.2	0.1	4	4	4	8.75
Accreditation Code:			U	U	N	U	U	N	N	N	U	U	U	U	U	U	U	U
LAB ID Number CL/	**Client Sample Description**	**Sample Date**	**Hexachloroethane**	**Indeno(123-cd)pyrene**	**Isophorone**	**Naphthalene**	**Nitrobenzene**	**N-Nitroso-di-n-propylamine**	**N-Nitrosodiphenylamine**	**Pentachlorophenol**	**Phenanthrene**	**Phenol**	**Pyrene**	**Tot.Moisture @ 105C**	**TPH Ali Band >C10-C12**	**TPH Ali Band >C12-C16**	**TPH Ali Band >C16-C21**	**TPH Ali Band >C21-C35**
1933665	BH06 0.60 (NVM)	08-Nov-18												8.9 §	<4.479§	<4.479§	9.879§	72.45§
1933666	BH06 2.00-3.00 (NVM)	08-Nov-18												8.3 §	13.85§	<4.406§	<4.406§	46.02§
1933667	BH10 0.60 (NVM)	08-Nov-18	<0.1218§	1.596§	<0.122	0.1389§	<0.6090§	<1.096	<0.122	<0.609	5.250§	<0.1218§	8.404§	17.9 §	<5.018§	<5.018§	<5.018§	33.86§
1933668	BH11 0.80 (NVM)	08-Nov-18	<0.1139§	<0.5695§	<0.114	<0.1139§	<0.5695§	<1.025	<0.114	<0.569	0.3576§	<0.1139§	1.0843§	12.2 §	<4.738§	<4.738§	22.32§	95.90§
1933669	BH13 0.50 (NVM)	08-Nov-18	<0.1174§	<0.5869§	<0.117	<0.1174§	<0.5869§	<1.056	<0.117	<0.587	0.4014§	<0.1174§	0.7406§	14.8 §	<4.789§	<4.789§	<4.789§	22.77§

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Method Codes :			TPHUSSI	TPHUSSI	TPHUSSI	TPHUSSI	TPHUSSI	TPHUSSI	TPHUSSI	TPHUSSI	VOCHSAS	VOCHSAS	VOCHSAS	VOCHSAS	VOCHSAS	VOCHSAS	VOCHSAS	VOCHSAS
Method Reporting Limits :			4	20	4	4	4	8.75	4	20	1	1	1	1	1	1	1	3
Accreditation Code:			U	U	U	U	U	U	U	U	UM	UM	N	UM	UM	U	UM	UM
LAB ID Number CL/	**Client Sample Description**	**Sample Date**	**TPH Ali Band >C8-C10**	**TPH Ali Band >C8-C40**	**TPH Aro Band >C10-C12**	**TPH Aro Band >C12-C16**	**TPH Aro Band >C16-C21**	**TPH Aro Band >C21-C35**	**TPH Aro Band >C8-C10**	**TPH Aro Band >C8-C40**	**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**
1933665	BH06 0.60 (NVM)	08-Nov-18	<4.479§	87.38§	<4.391§	<4.391§	4.709§	36.66§	<4.391§	46.10§								
1933666	BH06 2.00-3.00 (NVM)	08-Nov-18	10.862§	76.01§	<4.362§	<4.362§	<4.362§	13.20§	<4.362§	<21.81§								
1933667	BH10 0.60 (NVM)	08-Nov-18	<5.018§	40.93§	<4.872§	<4.872§	35.20§	119.98§	<4.872§	163§	<1.22§	<1.22§	<1.2	<1.22§	<1.22§	<1.22§	<1.22§	<3.65§
1933668	BH11 0.80 (NVM)	08-Nov-18	<4.738§	128§	<4.556§	<4.556§	13.67§	87.47§	<4.556§	109.00§	<1.14§	<1.14§	<1.1	<1.14§	<1.14§	<1.14§	<1.14§	<3.42§
1933669	BH13 0.50 (NVM)	08-Nov-18	<4.789§	29.58§	<4.695§	<4.695§	6.315§	40.26§	<4.695§	54.34§	<1.17§	<1.17§	<1.2	<1.17§	<1.17§	<1.17§	<1.17§	<3.52§

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Units :			µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg
Method Codes :			VOCHSAS	VOCHSAS	VOCHSAS	VOCHSAS	VOCHSAS	VOCHSAS	VOCHSAS	VOCHSAS	VOCHSAS	VOCHSAS	VOCHSAS	VOCHSAS	VOCHSAS	VOCHSAS	VOCHSAS	VOCHSAS	VOCHSAS
Method Reporting Limits :			1	3	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Accreditation Code:			UM	N	UM	N	UM	UM	UM	UM	UM	UM	UM	UM	UM	UM	UM	UM	UM
LAB ID Number CL/	**Client Sample Description**	**Sample Date**	**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**
1933665	BH06 0.60 (NVM)	08-Nov-18																	
1933666	BH06 2.00-3.00 (NVM)	08-Nov-18																	
1933667	BH10 0.60 (NVM)	08-Nov-18	<1.22§	<3.7	3.65§	<1.2	<1.22§	<1.22§	<1.22§	<1.22§	2.44§	<1.22§	<1.22§	<1.22§	<1.22§	<1.22§	<1.22§	<1.22§	4.87§
1933668	BH11 0.80 (NVM)	08-Nov-18	<1.14§	<3.4	<1.14§	<1.1	<1.14§	<1.14§	<1.14§	<1.14§	<1.14§	<1.14§	<1.14§	<1.14§	<1.14§	<1.14§	<1.14§	<1.14§	2.28§
1933669	BH13 0.50 (NVM)	08-Nov-18	<1.17§	<3.5	<1.17§	<1.2	<1.17§	<1.17§	<1.17§	<1.17§	<1.17§	<1.17§	<1.17§	<1.17§	<1.17§	<1.17§	<1.17§	<1.17§	<1.17§

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Client Name	**RPS**
Contact	Alice Thomas

Pembroke Dock

Sample Analysis

Date Printed	**06-Dec-2018**
Report Number	**EFS/192856M**
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 :	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg
			Method Codes :	VOCHSAS	VOCHSAS	VOCHSAS	VOCHSAS	VOCHSAS	VOCHSAS	VOCHSAS	VOCHSAS	VOCHSAS	VOCHSAS	VOCHSAS	VOCHSAS	VOCHSAS	VOCHSAS	VOCHSAS	VOCHSAS
			Method Reporting Limits :	1	1	1	1	1	1	1	2	1	3	5	1	1	1	1	2
			Accreditation Code:	UM	UM	UM	UM	UM	UM	UM	UM	UM	U	UM	UM	UM	UM	N	UM
LAB ID Number CL/	Client Sample Description	Sample Date		Bromobenzene	Bromochloromethane	Bromodichloromethane	Bromoform	Bromomethane	Carbon Tetrachloride	Chlorobenzene	Chloroethane	Chloroform	Chloromethane	cis 1,2-Dichloroethene	cis 1,3-Dichloropropene	Dibromochloromethane	Dibromomethane	Dichlorodifluoromethane	Ethylbenzene
1933665	BH06 0.60 (NVM)	08-Nov-18																	
1933666	BH06 2.00-3.00 (NVM)	08-Nov-18																	
1933667	BH10 0.60 (NVM)	08-Nov-18		<1.22§	<1.22§	<1.22§	<1.22§	<1.22§	<1.22§	<1.22§	<2.44§	<1.22§	<3.65§	<6.09§	1.22§	<1.22§	<1.22§	<1.2	<2.44§
1933668	BH11 0.80 (NVM)	08-Nov-18		<1.14§	<1.14§	<1.14§	<1.14§	<1.14§	4.56§	<1.14§	<2.28§	<1.14§	<3.42§	<5.69§	<1.14§	<1.14§	<1.14§	<1.1	<2.28§
1933669	BH13 0.50 (NVM)	08-Nov-18		<1.17§	<1.17§	<1.17§	<1.17§	<1.17§	<1.17§	<1.17§	<2.35§	<1.17§	<3.52§	<5.87§	1.17§	<1.17§	<1.17§	<1.2	<2.35§

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Client Name	**RPS**
Contact	Alice Thomas

Pembroke Dock

Sample Analysis

Date Printed	**06-Dec-2018**
Report Number	**EFS/192856M**
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 :			µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg
Method Codes :			VOCHSAS	VOCHSAS	VOCHSAS	VOCHSAS	VOCHSAS	VOCHSAS	VOCHSAS	VOCHSAS	VOCHSAS	VOCHSAS	VOCHSAS	VOCHSAS	VOCHSAS	VOCHSAS	VOCHSAS	VOCHSAS	VOCHSAS
Method Reporting Limits :			2	1	4	1	5	1	2	1	1	1	1	1	3	5	1	1	
Accreditation Code:			N	UM	UM	UM	UM	U	UM	UM	UM	UM	UM	UM	UM	UM	UM	UM	
LAB ID Number CL/	**Client Sample Description**	**Sample Date**	**Hexachlorobutadiene**	**iso-Propylbenzene**	**m and p-Xylene**	**MTBE**	**Naphthalene**	**n-Butylbenzene**	**o-Xylene**	**p-Isopropyltoluene**	**Propylbenzene**	**sec-Butylbenzene**	**Styrene**	**tert-Butylbenzene**	**Tetrachloroethene**	**Toluene**	**trans 1,2-Dichloroethene**	**trans 1,3-Dichloropropene**	
1933665	BH06 0.60 (NVM)	08-Nov-18																	
1933666	BH06 2.00-3.00 (NVM)	08-Nov-18																	
1933667	BH10 0.60 (NVM)	08-Nov-18	<2.4	<1.22§	8.53§	<1.22§	<6.09§	<1.22§	<2.44§	<1.22§	<1.22§	<1.22§	<1.22§	<1.22§	<3.65*§	9.74§	<1.22§	<1.22§	
1933668	BH11 0.80 (NVM)	08-Nov-18	<2.3	<1.14§	4.56§	<1.14§	<5.69§	<1.14§	<2.28§	<1.14§	<1.14§	<1.14§	<1.14§	<1.14§	<3.42*§	<5.69§	<1.14§	<1.14§	
1933669	BH13 0.50 (NVM)	08-Nov-18	<2.3	<1.17§	<4.69§	<1.17§	<5.87§	<1.17§	<2.35§	<1.17§	<1.17§	<1.17§	<1.17§	<1.17§	<3.52*§	<5.87§	<1.17§	<1.17§	

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Client Name RPS

Contact Alice Thomas

Pembroke Dock

Sample Analysis

Date Printed	**06-Dec-2018**
Report Number	**EFS/192856M**
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 :	µg/kg	µg/kg	µg/kg														
		Method Codes :	VOCHSAS	VOCHSAS	VOCHSAS														
		Method Reporting Limits :	1	1	1														
		Accreditation Code:	UM	UM	UM														
LAB ID Number CL/	**Client Sample Description**	**Sample Date**	**Trichloroethene**	**Trichlorofluoromethane**	**Vinyl Chloride**														
1933665	BH06 0.60 (NVM)	**08-Nov-18**																	
1933666	BH06 2.00-3.00 (NVM)	**08-Nov-18**																	
1933667	BH10 0.60 (NVM)	**08-Nov-18**	<1.22§	<1.22§	<1.22§														
1933668	BH11 0.80 (NVM)	**08-Nov-18**	3.42§	<1.14§	<1.14§														
1933669	BH13 0.50 (NVM)	**08-Nov-18**	<1.17§	<1.17§	<1.17§														

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Client Name	**RPS**
Contact	Alice Thomas

Pembroke Dock

Sample Analysis

Date Printed	**06-Dec-2018**
Report Number	**EFS/192856M**
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.

CERTIFICATE OF ANALYSIS

ANALYSIS REQUESTED BY: SOCOTEC UK Ltd
Environmental Chemistry
PO Box 100
Burton upon Trent
Staffordshire
DE15 0XD

CONTRACT NO: S02438-2

DATE OF ISSUE: 03.12.18

DATE SAMPLES RECEIVED: 23.11.18

DATE SAMPLES ANALYSED: 30.11.18

SAMPLE DESCRIPTION: Four soil/loose aggregate samples.

ANALYSIS REQUESTED: Qualitative analysis of samples for determination of presence/type of asbestos.

METHODS:

Our method involves initial examination of the 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

Asbestos was detected in three of the soil samples 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

CONTRACT NO: S02438-2
DATE OF ISSUE: 03.12.18

RESULTS: (cont.)

Table 1: Qualitative Results

SOCOTEC Job I.D: S192856

IOM sample number	Client sample number	ACM type detected	PLM result
S62427	S1933665 BH06 0.60	Loose Insulation[2]	Chrysotile
S62428	S1933667 BH10 0.60	-	No Asbestos Detected
S62429	S1933668 BH11 0.80	Loose Insulation[2]	Chrysotile & Crocidolite
S62430	S1933669 BH13 0.50	Loose Insulation[1&2]	Chrysotile

Our detection limit for this method is 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.

AUTHORISED BY: [redacted]

D Third
Scientific Technician

Analytical and Deviating Sample Overview

Customer RPS
Site Pembroke Dock
Report No S192856M

Consignment No S80432
Date Logged 21-Nov-2018
In-House Report Due 26-Nov-2018

Please note the results for any subcontracted analysis (identified with a '^') is likely to take up to an additional five working days.

ID Number	Description	MethodID	CustServ	GROHSA	ICPBOR	ICPMSS									ICPSOIL		MCertS	PAHMSUS	PCBECD	SFAPI	Sub020	SVOCSW	TMSS	TPHUSSI		
		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.	MCertS Analysis	PAH (16) by GCMS	PCB-7 Congeners Analysis	Phenol Index.(AR)	^Asbestos ID (Stage 1)	SVOC (AR)	Tot.Moisture @ 105C	TPH Ali Band >C10-C12	TPH Ali Band >C12-C16	TPH Ali Band >C16-C21
				✓	✓	✓	✓	✓	✓	✓	✓	✓	✓		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
CL/1933665	BH06 0.60	08/11/18		E																E						
CL/1933666	BH06 2.00-3.00	08/11/18		E																E						
CL/1933667	BH10 0.60	08/11/18		E																E		E				
CL/1933668	BH11 0.80	08/11/18		E																E		E				
CL/1933669	BH13 0.50	08/11/18		E																E		E				

Note: We will endeavour to prioritise samples to complete analysis within holding time; however any delay could result in samples becoming deviant whilst being processed in the laboratory.

If sampling dates are missing or matrices unclassified then results will not be ISO 17025 accredited. Please contact us as soon as possible to provide missing information in order to reinstate accreditation.

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 RPS
Site Pembroke Dock
Report No S192856M

Consignment No S80432
Date Logged 21-Nov-2018
In-House Report Due 26-Nov-2018

Please note the results for any subcontracted analysis (identified with a '^') is likely to take up to an additional five working days.

ID Number	Description	MethodID	TPHUSSI										VOCHSAS
		Sampled	TPH Ali Band >C21-C35	TPH Ali Band >C8-C10	TPH Ali Band >C8-C40	TPH Aro Band >C10-C12	TPH Aro Band >C12-C16	TPH Aro Band >C16-C21	TPH Aro Band >C21-C35	TPH Aro Band >C8-C10	TPH Aro Band >C8-C40	TPH by GCFID (AR/Si)	VOC HSA-GCMS
			✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
CL/1933665	BH06 0.60	08/11/18											
CL/1933666	BH06 2.00-3.00	08/11/18											
CL/1933667	BH10 0.60	08/11/18											E
CL/1933668	BH11 0.80	08/11/18											E
CL/1933669	BH13 0.50	08/11/18											E

Note: We will endeavour to prioritise samples to complete analysis within holding time; however any delay could result in samples becoming deviant whilst being processed in the laboratory.

If sampling dates are missing or matrices unclassified then results will not be ISO 17025 accredited. Please contact us as soon as possible to provide missing information in order to reinstate accreditation.

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/192856

Additional Report Notes

Method Code	Sample ID	The following information should be taken into consideration when using the data contained within this report
SVOCSW	CL1933667 TO CL1933669	The Primary process control data associated with this Test has not wholly met the requirements of the Laboratory Quality Management System QMS with one or more target analytes falling outside acceptable limits. However the remaining data gives the Laboratory confidence that the test has performed satisfactorily and that the validity of the data may not have been significantly affected. However in line with our QMS policy we have removed accreditation, where applicable, from the affected analytes (Di-n-octylphthalate) . These circumstances should be taken into consideration when utilising the data.
SVOCSW	CL1933667 TO CL1933669	The Secondary process control data associated with this Test has not wholly met the requirements of the Laboratory Quality Management System QMS with one or more target analytes falling outside acceptable limits. However the remaining data gives the Laboratory confidence that the test has performed satisfactorily (including the Primary Process Control) and that the validity of the data may not have been significantly affected. However in line with our QMS policy we have removed accreditation, where applicable, from the affected analytes (bis(2-Chloroethyl)ether, Acenaphthylene, Butylbenzylphthalate, bis(2-Ethylhexyl)phthalate) . These circumstances should be taken into consideration when utilising the data.
VOCHSAS	CL1933667 TO CL1933669	The Primary process control data associated with this Test has not wholly met the requirements of the Laboratory Quality Management System QMS with one or more target analytes falling outside acceptable limits. However the remaining data gives the Laboratory confidence that the test has performed satisfactorily and that the validity of the data may not have been significantly affected. However in line with our QMS policy we have removed accreditation, where applicable, from the affected analytes (Tetrachloroethene) . These circumstances should be taken into consideration when utilising the data.
VOCHSAS	CL1933667 CL1933668	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 unless otherwise stated. These circumstances should be taken into consideration when utilising the data.
VOCHSAS	CL1933669	Due to matrix interference, the Surrogate (Dibromofluoromethane) recovery for this Test is below the required QMS specification. This has been confirmed by testing the pH of the sample which was above pH7.0. Surrogate is known to degrade in alkaline samples. All other Laboratory Process Controls meet the requirements of the QMS unless otherwise stated. These circumstances should be taken into consideration when utilising the data

Method Descriptions

Matrix	MethodID	Analysis Basis	Method Description
Soil	BTEXHSA	As Received	Determination of Benzene, Toluene, Ethyl benzene and Xylenes (BTEX) 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 Marine Sediments and Soil samples by aqua regia digestion followed by ICPMS detection
Soil	ICPSOIL	Oven Dried @ < 35°C	Determination of Metals in soil samples by aqua regia digestion followed by ICPOES detection
Soil	PAHMSUS	As Received	Determination of Polycyclic Aromatic Hydrocarbons (PAH) by hexane/acetone extraction followed by GCMS detection
Soil	PCBECD	As Received	Determination of Polychlorinated Biphenyl (PCB) congeners/aroclors by hexane/acetone extraction followed by GCECD detection
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	SVOCSW	As Received	Determination of Semi-Volatile Organic Compounds 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

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 : RPS

Site : Pembroke Dock

Report Number : S19_2856

Note: major constituent in upper case

Lab ID Number	Client ID	Description
CL/1933665	BH06 0.60 (NVM)	Stone GRAVEL Silt
CL/1933666	BH06 2.00-3.00 (NVM)	Gravel STONE Silt
CL/1933667	BH10 0.60 (NVM)	Brown Gravel STONE Silt
CL/1933668	BH11 0.80 (NVM)	Brown Gravel STONE Silt
CL/1933669	BH13 0.50 (NVM)	Gravel STONE Silt

Our Ref: EXR/273752 (Ver. 2)
Your Ref: JER1262

December 17, 2018

Environmental Chemistry
SOCOTEC UK Limited
Bretby Business Park
Ashby Road
Burton-on-Trent
Staffordshire
DE15 0YZ

Telephone: 01283 554400
Facsimile: 01283 554422

Alice Thomas
RPS
260 Park Avenue
Aztec West
Almondsbury
Bristol
BS32 4SY

For the attention of Alice Thomas

Dear Alice Thomas

Sample Analysis - Pembroke Dock

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 SOCOTEC UK Limited (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

[redacted]

Project Co-ordinator
01283 554400

TEST REPORT

Interim Report
Report No. EXR/273752 (Ver. 2)

RPS
RPS
260 Park Avenue
Aztec West
Almondsbury
Bristol
BS32 4SY

Site: Pembroke Dock

The 4 samples described in this report were registered for analysis by SOCOTEC UK Limited on 19-Nov-2018. This report supersedes any versions previously issued by the laboratory.

The analysis was completed by: 17-Dec-2018

The following tables are contained in this report:

On behalf of
SOCOTEC UK
Becky Batham Operations Manager
Energy & Waste Services

Date of Issue: 17-Dec-2018

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. SOCOTEC UK Limited accepts no responsibility for any sampling not carried out by our personnel.

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	mg/l
Method Codes :			FNH3CALC	GROHSA	GROHSA	GROHSA	GROHSA	GROHSA	GROHSA	GROHSA	GROHSA	GROHSA	ICPMSW	ICPMSW	ICPMSW	ICPMSW	ICPMSW	ICPMSW
Method Reporting Limits :			0.01	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.001	0.0001	0.001	0.001	0.001	0.0001
LAB ID Number EX/	**Client Sample Description**	**Sample Date**	**Ammonia (Free) as N calc a**	**GRO >C5->C6**	**GRO >C5->C6 Aliphatic**	**GRO >C6->C7**	**GRO >C6->C7 Aliphatic**	**GRO >C7->C8**	**GRO >C7->C8 Aliphatic**	**GRO >C8->C10**	**GRO >C8->C10 Aliphatic**	**GRO-HSA o**	**Arsenic as As (Dissolved)**	**Cadmium as Cd (Dissolved)**	**Chromium as Cr (Dissolved)**	**Copper as Cu (Dissolved)**	**Lead as Pb (Dissolved)**	**Mercury as Hg (Dissolved)**
1932969	6-BH03	**15-Nov-18 10:17**	<0.01	< 0.100	< 0.100	< 0.100	<0.1	< 0.100	<0.1	< 0.100	<0.1	< 0.100	<0.001	<0.0001	<0.001	0.001	<0.001	<0.0001
1932970	4-BH201	**15-Nov-18 09:41**	<0.01	< 0.100	< 0.100	< 0.100	<0.1	< 0.100	<0.1	< 0.100	<0.1	< 0.100	<0.001	<0.0001	<0.001	<0.001	<0.001	<0.0001
1932971	4-BH202	**15-Nov-18 08:56**	<0.01	< 0.100	< 0.100	< 0.100	<0.1	< 0.100	<0.1	< 0.100	<0.1	< 0.100	0.002	<0.0001	0.003	<0.001	<0.001	<0.0001
1932972	3-W1	**15-Nov-18 08:18**	<0.01	< 0.100	< 0.100	< 0.100	<0.1	< 0.100	<0.1	< 0.100	<0.1	< 0.100	<0.001	<0.0001	0.004	<0.001	<0.001	<0.0001

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Sample Analysis

Interim Report

Date Printed	**17-Dec-2018**
Report Number	**EXR/273752**
Table Number	**1**

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Units :			mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	ng/l	ng/l	ng/l	µg/l	µg/l	µg/l
Method Codes :			ICPMSW	ICPMSW	ICPMSW	ICPMSW	ICPWATVAR	ICPWATVAR	ICPWATVAR	ICPWATVAR	KONENS	KONENS	OGSN	OGSN	OGSN	PAHMSW	PAHMSW	PAHMSW
Method Reporting Limits :			0.001	0.001	0.001	0.002	0.01	0.01	0.01	3	0.01	1	20	20	50	0.01	0.01	0.01
LAB ID Number EX/	**Client Sample Description**	**Sample Date**	**Nickel as Ni (Dissolved)**	**Selenium as Se (Dissolved)**	**Vanadium as V (Dissolved)**	**Zinc as Zn (Dissolved)**	**Barium as Ba (Dissolved) a**	**Beryllium as Be (Dissolved) a**	**Boron as B (Dissolved) a**	**Total Sulphur as SO4 (Dissolved) a**	**Ammoniacal Nitrogen as N**	**Chloride as Cl w**	**Dibutyl Tin as Sn**	**Tributyl Tin as Sn**	**Triphenyl Tin as Sn**	**Acenaphthene**	**Acenaphthylene**	**Anthracene**
1932969	6-BH03	**15-Nov-18 10:17**	<0.001	0.001	<0.001	<0.002	0.04	<0.01	0.18	59	0.02	257	<20	<20	<50	< 0.01	< 0.01	< 0.01
1932970	4-BH201	**15-Nov-18 09:41**	<0.001	0.001	<0.001	<0.002	0.01	<0.01	0.05	21	0.05	35	<20	<20	<50	< 0.01	< 0.01	< 0.01
1932971	4-BH202	**15-Nov-18 08:56**	<0.001	0.002	0.001	<0.002	<0.01	<0.01	0.15	31	0.01	69	<20	<20	<50	< 0.01	< 0.01	< 0.01
1932972	3-W1	**15-Nov-18 08:18**	<0.001	0.002	<0.001	<0.002	0.02	<0.01	0.11	37	<0.01	36	<20	<20	<50	< 0.01	< 0.01	< 0.01

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Units :			µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l
Method Codes :			PAHMSW	PAHMSW	PAHMSW	PAHMSW	PAHMSW	PAHMSW	PAHMSW	PAHMSW	PAHMSW	PAHMSW	PAHMSW	PAHMSW	PAHMSW	PAHMSW	PCBCONEC	PCBCONEC
Method Reporting Limits :			0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.16	0.01	0.01
LAB ID Number EX/	**Client Sample Description**	**Sample Date**	**Benzo(a)anthracene**	**Benzo(b)fluoranthene**	**Benzo(ghi)perylene**	**Benzo(k)fluoranthene**	**Benzo-a-Pyrene**	**Chrysene**	**Dibenzo(a,h)anthracene**	**Fluoranthene**	**Fluorene**	**Indeno(1,2,3-cd)pyrene**	**Naphthalene**	**Phenanthrene**	**Pyrene**	**Total PAH (Sum of USEPA 16)**	**PCB101**	**PCB118**
1932969	6-BH03	**15-Nov-18 10:17**	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.16	< 0.01	< 0.01
1932970	4-BH201	**15-Nov-18 09:41**	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.16	< 0.01	< 0.01
1932971	4-BH202	**15-Nov-18 08:56**	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.16	< 0.01	< 0.01
1932972	3-W1	**15-Nov-18 08:18**	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.16	< 0.01	< 0.01

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Units :			µg/l	µg/l	µg/l	µg/l	µg/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 :			PCBCONEC	PCBCONEC	PCBCONEC	PCBCONEC	PCBCONEC	SFAPI	SFAPI	SVOCSW	SVOCSW	SVOCSW	SVOCSW	SVOCSW	SVOCSW	SVOCSW	SVOCSW	SVOCSW	SVOCSW
Method Reporting Limits :			0.01	0.01	0.01	0.01	0.01	0.02	0.02	0.005	0.005	0.005	0.005	0.002	0.02	0.02	0.02	0.02	
LAB ID Number EX/	**Client Sample Description**	**Sample Date**	**PCB138**	**PCB153**	**PCB180**	**PCB28**	**PCB52**	**Cyanide (Free) as CN**	**Cyanide (Total) as CN**	**1,2,4-Trichlorobenzene**	**1,2-Dichlorobenzene**	**1,3-Dichlorobenzene**	**1,4-Dichlorobenzene**	**1-Methylnaphthalene**	**2,4,5-Trichlorophenol**	**2,4,6 - Trichlorophenol**	**2,4-Dichlorophenol**	**2,4-Dimethylphenol**	
1932969	6-BH03	**15-Nov-18 10:17**	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	<0.02	<0.02	< 0.040	< 0.040	< 0.040	< 0.040	< 0.016	< 0.160	< 0.160	< 0.160	< 0.160	
1932970	4-BH201	**15-Nov-18 09:41**	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	<0.02	<0.02	< 0.040	< 0.040	< 0.040	< 0.040	< 0.016	< 0.160	< 0.160	< 0.160	< 0.160	
1932971	4-BH202	**15-Nov-18 08:56**	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	<0.02	<0.02	< 0.040	< 0.040	< 0.040	< 0.040	< 0.016	< 0.160	< 0.160	< 0.160	< 0.160	
1932972	3-W1	**15-Nov-18 08:18**	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	<0.02	<0.02	< 0.040	< 0.040	< 0.040	< 0.040	< 0.016	< 0.160	< 0.160	< 0.160	< 0.160	

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Interim Report

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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	mg/l
Method Codes :			SVOCSW	SVOCSW	SVOCSW	SVOCSW	SVOCSW	SVOCSW	SVOCSW	SVOCSW	SVOCSW	SVOCSW	SVOCSW	SVOCSW	SVOCSW	SVOCSW	SVOCSW	SVOCSW
Method Reporting Limits :			0.01	0.005	0.005	0.002	0.02	0.002	0.005	0.005	0.02	0.02	0.005	0.05	0.005	0.005	0.005	0.02
LAB ID Number EX/	**Client Sample Description**	**Sample Date**	**2,4-Dinitrophenol**	**2,4-Dinitrotoluene**	**2,6 Dinitrotoluene**	**2-Chloronaphthalene**	**2-Chlorophenol**	**2-Methylnaphthalene**	**2-Methylphenol**	**2-Nitroaniline**	**2-Nitrophenol**	**3+4-Methylphenol**	**3-Nitroaniline**	**4,6-Dinitro-2-methylphenol**	**4-Bromophenyl-phenylether**	**4-Chloro-3-methylphenol**	**4-Chloroaniline**	**4-Chlorophenol**
1932969	6-BH03	**15-Nov-18 10:17**	< 0.080	< 0.040	< 0.040	< 0.016	< 0.160	< 0.016	< 0.040	< 0.040	< 0.160	< 0.160	< 0.040	< 0.400	< 0.040	< 0.040	< 0.040	< 0.160
1932970	4-BH201	**15-Nov-18 09:41**	< 0.080	< 0.040	< 0.040	< 0.016	< 0.160	< 0.016	< 0.040	< 0.040	< 0.160	< 0.160	< 0.040	< 0.400	< 0.040	< 0.040	< 0.040	< 0.160
1932971	4-BH202	**15-Nov-18 08:56**	< 0.080	< 0.040	< 0.040	< 0.016	< 0.160	< 0.016	< 0.040	< 0.040	< 0.160	< 0.160	< 0.040	< 0.400	< 0.040	< 0.040	< 0.040	< 0.160
1932972	3-W1	**15-Nov-18 08:18**	< 0.080	< 0.040	< 0.040	< 0.016	< 0.160	< 0.016	< 0.040	< 0.040	< 0.160	< 0.160	< 0.040	< 0.400	< 0.040	< 0.040	< 0.040	< 0.160

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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	mg/l	mg/l
Method Codes :			SVOCSW	SVOCSW	SVOCSW	SVOCSW	SVOCSW	SVOCSW	SVOCSW	SVOCSW	SVOCSW	SVOCSW	SVOCSW	SVOCSW	SVOCSW	SVOCSW	SVOCSW	SVOCSW	SVOCSW
Method Reporting Limits :			0.005	0.005	0.05	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.1	0.005	0.002	0.005	0.005	
LAB ID Number EX/	**Client Sample Description**	**Sample Date**	**4-Chlorophenyl-phenylether**	**4-Nitroaniline**	**4-Nitrophenol**	**Acenaphthene**	**Acenaphthylene**	**Anthracene**	**Benzo[a]anthracene**	**Benzo[a]pyrene**	**Benzo[b]fluoranthene**	**Benzo[g,h,i]perylene**	**Benzo[k]fluoranthene**	**Benzoic Acid**	**Benzyl alcohol**	**Biphenyl**	**bis(2-Chloroethoxy)methane**	**bis(2-Chloroethyl)ether**	
1932969	6-BH03	**15-Nov-18 10:17**	< 0.040	< 0.040	< 0.400	< 0.016	< 0.016	< 0.016	< 0.016	< 0.016	< 0.016	< 0.016	< 0.016	< 0.800	< 0.040	< 0.016	< 0.040	< 0.040	
1932970	4-BH201	**15-Nov-18 09:41**	< 0.040	< 0.040	< 0.400	< 0.016	< 0.016	< 0.016	< 0.016	< 0.016	< 0.016	< 0.016	< 0.016	< 0.800	< 0.040	< 0.016	< 0.040	< 0.040	
1932971	4-BH202	**15-Nov-18 08:56**	< 0.040	< 0.040	< 0.400	< 0.016	< 0.016	< 0.016	< 0.016	< 0.016	< 0.016	< 0.016	< 0.016	< 0.800	< 0.040	< 0.016	< 0.040	< 0.040	
1932972	3-W1	**15-Nov-18 08:18**	< 0.040	< 0.040	< 0.400	< 0.016	< 0.016	< 0.016	< 0.016	< 0.016	< 0.016	< 0.016	< 0.016	< 0.800	< 0.040	< 0.016	< 0.040	< 0.040	

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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	mg/l
Method Codes :			SVOCSW	SVOCSW	SVOCSW	SVOCSW	SVOCSW	SVOCSW	SVOCSW	SVOCSW	SVOCSW	SVOCSW	SVOCSW	SVOCSW	SVOCSW	SVOCSW	SVOCSW	SVOCSW
Method Reporting Limits :			0.005	0.005	0.005	0.002	0.05	0.002	0.005	0.005	0.005	0.005	0.002	0.002	0.002	0.002	0.005	0.005
LAB ID Number EX/	**Client Sample Description**	**Sample Date**	**bis(2-Chloroisopropyl)ether**	**bis(2-Ethylhexyl)phthalate**	**Butylbenzylphthalate**	**Chrysene**	**Coronene**	**Dibenzo[a,h]anthracene**	**Dibenzofuran**	**Diethylphthalate**	**Dimethylphthalate**	**Di-n-butylphthalate**	**Di-n-octylphthalate**	**Diphenyl Ether**	**Fluoranthene**	**Fluorene**	**Hexachlorobenzene**	**Hexachlorobutadiene**
1932969	6-BH03	**15-Nov-18 10:17**	< 0.040	< 0.040	< 0.040	< 0.016	< 0.400	< 0.016	< 0.040	< 0.040	< 0.040	< 0.040	< 0.016	< 0.016	< 0.016	< 0.016	< 0.040	< 0.040
1932970	4-BH201	**15-Nov-18 09:41**	< 0.040	< 0.040	< 0.040	< 0.016	< 0.400	< 0.016	< 0.040	< 0.040	< 0.040	< 0.040	< 0.016	< 0.016	< 0.016	< 0.016	< 0.040	< 0.040
1932971	4-BH202	**15-Nov-18 08:56**	< 0.040	< 0.040	< 0.040	< 0.016	< 0.400	< 0.016	< 0.040	< 0.040	< 0.040	< 0.040	< 0.016	< 0.016	< 0.016	< 0.016	< 0.040	< 0.040
1932972	3-W1	**15-Nov-18 08:18**	< 0.040	< 0.040	< 0.040	< 0.016	< 0.400	< 0.016	< 0.040	< 0.040	< 0.040	< 0.040	< 0.016	< 0.016	< 0.016	< 0.016	< 0.040	< 0.040

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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	mg/l
Method Codes :			SVOCSW	SVOCSW	SVOCSW	SVOCSW	SVOCSW	SVOCSW	SVOCSW	SVOCSW	SVOCSW	SVOCSW	SVOCSW	SVOCSW	TPHFID-Si	TPHFID-Si	TPHFID-Si	TPHFID-Si
Method Reporting Limits :			0.005	0.005	0.002	0.005	0.002	0.005	0.005	0.005	0.05	0.002	0.02	0.002	0.01	0.01	0.01	0.01
LAB ID Number EX/	**Client Sample Description**	**Sample Date**	**Hexachlorocyclopentadiene**	**Hexachloroethane**	**Indeno[1,2,3-cd]pyrene**	**Isophorone**	**Naphthalene**	**Nitrobenzene**	**N-Nitroso-di-n-propylamine**	**n-Nitrosodiphenylamine**	**Pentachlorophenol**	**Phenanthrene**	**Phenol**	**Pyrene**	**TPH Ali Band >C10-C12**	**TPH Ali Band >C12-C16**	**TPH Ali Band >C16-C21**	**TPH Ali Band >C21-C35**
1932969	6-BH03	**15-Nov-18 10:17**	< 0.040	< 0.040	< 0.016	< 0.040	< 0.016	< 0.040	< 0.040	< 0.040	< 0.400	< 0.016	< 0.160	< 0.016	< 0.010	< 0.010	< 0.010	0.057
1932970	4-BH201	**15-Nov-18 09:41**	< 0.040	< 0.040	< 0.016	< 0.040	< 0.016	< 0.040	< 0.040	< 0.040	< 0.400	< 0.016	< 0.160	< 0.016	< 0.010	< 0.010	< 0.010	0.063
1932971	4-BH202	**15-Nov-18 08:56**	< 0.040	< 0.040	< 0.016	< 0.040	< 0.016	< 0.040	< 0.040	< 0.040	< 0.400	< 0.016	< 0.160	< 0.016	< 0.010	< 0.010	< 0.010	0.057
1932972	3-W1	**15-Nov-18 08:18**	< 0.040	< 0.040	< 0.016	< 0.040	< 0.016	< 0.040	< 0.040	< 0.040	< 0.400	< 0.016	< 0.160	< 0.016	< 0.010	< 0.010	< 0.010	0.053

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Units :			mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	µg/l	ug/l	µg/l	µg/l	ug/l	µg/l	µg/l	ug/l
Method Codes :			TPHFID-Si	TPHFID-Si	TPHFID-Si	TPHFID-Si	TPHFID-Si	TPHFID-Si	TPHFID-Si	TPHFID-Si	VOCHSAW	VOCHSAW	VOCHSAW	VOCHSAW	VOCHSAW	VOCHSAW	VOCHSAW	VOCHSAW
Method Reporting Limits :			0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	1	1	1	1	1	1	1	1
LAB ID Number EX/	**Client Sample Description**	**Sample Date**	**TPH Ali Band >C8-C10**	**TPH Ali Band >C8-C40**	**TPH Aro Band >C10-C12**	**TPH Aro Band >C12-C16**	**TPH Aro Band >C16-C21**	**TPH Aro Band >C21-C35**	**TPH Aro Band >C8-C10**	**TPH Aro Band >C8-C40**	**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**
1932969	6-BH03	**15-Nov-18 10:17**	< 0.010	0.080	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	0.014	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1932970	4-BH201	**15-Nov-18 09:41**	< 0.010	0.084	< 0.010	< 0.010	< 0.010	0.018	< 0.010	0.024	< 1.0	3.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1932971	4-BH202	**15-Nov-18 08:56**	< 0.010	0.075	< 0.010	< 0.010	< 0.010	0.013	< 0.010	0.019	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0*	< 1.0	< 1.0
1932972	3-W1	**15-Nov-18 08:18**	< 0.010	0.074	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	0.015	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0*	< 1.0	< 1.0

SOCOTEC

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Client Name RPS

Contact Alice Thomas

Pembroke Dock

Sample Analysis

Interim Report

Date Printed	**17-Dec-2018**
Report Number	**EXR/273752**
Table Number	**1**

Units :			µg/l	ug/l	ug/l	µg/l	µg/l	ug/l	ug/l	µg/l	ug/l	ug/l	µg/l	ug/l	ug/l	ug/l	µg/l	µg/l	µg/l
Method Codes :			VOCHSAW	VOCHSAW	VOCHSAW	VOCHSAW	VOCHSAW	VOCHSAW	VOCHSAW	VOCHSAW	VOCHSAW	VOCHSAW	VOCHSAW	VOCHSAW	VOCHSAW	VOCHSAW	VOCHSAW	VOCHSAW	VOCHSAW
Method Reporting Limits :			1	5	1	5	1	5	1	1	1	1	1	1	1	1	1	1	1
LAB ID Number EX/	**Client Sample Description**	**Sample Date**	**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- Chlorotoluene**	**2,2-Dichloropropane**	**4-Chlorotoluene**	**Benzene**
1932969	6-BH03	**15-Nov-18 10:17**	< 1.0	< 5.0	< 1.0	< 5.0	< 1.0	< 5.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1932970	4-BH201	**15-Nov-18 09:41**	< 1.0	< 5.0	< 1.0	< 5.0	< 1.0	< 5.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1932971	4-BH202	**15-Nov-18 08:56**	< 1.0	< 5.0	< 1.0	< 5.0	< 1.0	< 5.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1932972	3-W1	**15-Nov-18 08:18**	< 1.0	< 5.0	< 1.0	< 5.0	< 1.0	< 5.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0

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Sample Analysis

Interim Report

Date Printed	**17-Dec-2018**
Report Number	**EXR/273752**
Table Number	**1**

			Units :	µg/l	µg/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	µg/l	ug/l	ug/l	µg/l	ug/l	µg/l
			Method Codes :	VOCHSAW	VOCHSAW	VOCHSAW	VOCHSAW	VOCHSAW	VOCHSAW	VOCHSAW	VOCHSAW	VOCHSAW	VOCHSAW	VOCHSAW	VOCHSAW	VOCHSAW	VOCHSAW	VOCHSAW	VOCHSAW
			Method Reporting Limits :	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
LAB ID Number EX/	Client Sample Description	Sample Date		Bromobenzene	Bromochloromethane	Bromodichloromethane	Bromoform	Bromomethane	Carbon Tetrachloride	Chlorobenzene	Chloroethane	Chloroform	Chloromethane	cis 1,3-Dichloropropene	Cis-1,2-dichloroethene	Dibromochloromethane	Dibromomethane	Dichlorodifluoromethane	Ethylbenzene
1932969	6-BH03	15-Nov-18 10:17		< 1.0	< 1.0*	< 1.0	< 1.0	< 1.0	< 1.0*	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1932970	4-BH201	15-Nov-18 09:41		< 1.0	< 1.0*	< 1.0	< 1.0	< 1.0	< 1.0*	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1932971	4-BH202	15-Nov-18 08:56		< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0*	< 1.0	< 1.0*	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1932972	3-W1	15-Nov-18 08:18		< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0*	< 1.0	< 1.0*	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0

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Sample Analysis

Interim Report

Date Printed	**17-Dec-2018**
Report Number	**EXR/273752**
Table Number	**1**

			Units :	ug/l	ug/l	µg/l	ug/l	µg/l	µg/l	ug/l	µg/l	µg/l	µg/l	ug/l	µg/l	µg/l	ug/l	µg/l	ug/l
			Method Codes :	VOCHSAW	VOCHSAW	VOCHSAW	VOCHSAW	VOCHSAW	VOCHSAW	VOCHSAW	VOCHSAW	VOCHSAW	VOCHSAW	VOCHSAW	VOCHSAW	VOCHSAW	VOCHSAW	VOCHSAW	VOCHSAW
			Method Reporting Limits :	5	1	1	5	1	1	1	1	1	1	1	1	1	1	1	1
LAB ID Number EX/	Client Sample Description	Sample Date	Hexachlorobutadiene	Isopropylbenzene	m and p-Xylene	Naphthalene	n-Butylbenzene	o-Xylene	p-Isopropyltoluene	Propylbenzene	sec-Butylbenzene	Styrene	tert-Butylbenzene	Tetrachloroethene	Toluene	Trans 1,2 Dichloroethene	trans 1,3-Dichloropropene	Trichloroethene	
1932969	6-BH03	15-Nov-18 10:17	< 5.0	< 1.0	< 1.0	< 5.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	
1932970	4-BH201	15-Nov-18 09:41	< 5.0	< 1.0	< 1.0	< 5.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	
1932971	4-BH202	15-Nov-18 08:56	< 5.0	< 1.0	< 1.0	< 5.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	
1932972	3-W1	15-Nov-18 08:18	< 5.0	< 1.0	< 1.0	< 5.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	

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Pembroke Dock

Sample Analysis

Interim Report

Date Printed	**17-Dec-2018**
Report Number	**EXR/273752**
Table Number	**1**

		Units :	µg/l	µg/l	µg/l	pH units													
		Method Codes :	VOCHSAW	VOCHSAW	VOCHSAW	WSLM3													
		Method Reporting Limits :	1	1	2														
LAB ID Number EX/	**Client Sample Description**	**Sample Date**	**Trichlorofluoromethane**	**Vinyl Chloride**	**Xylenes**	**pH units w**													
1932969	6-BH03	**15-Nov-18 10:17**	< 1.0	< 1.0*	<2	7.5													
1932970	4-BH201	**15-Nov-18 09:41**	< 1.0	< 1.0*	<2	7.5													
1932971	4-BH202	**15-Nov-18 08:56**	< 1.0*	< 1.0*	<3	7.7													
1932972	3-W1	**15-Nov-18 08:18**	< 1.0*	< 1.0*	<3	7.7													

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Pembroke Dock

Sample Analysis

Interim Report

Date Printed	**17-Dec-2018**
Report Number	**EXR/273752**
Table Number	**1**

Analytical and Deviating Sample Overview

Customer RPS
Site Pembroke Dock
Report No W273752

Consignment No W146491
Date Logged 19-Nov-2018
In-House Report Due 23-Nov-2018

Please note the results for any subcontracted analysis (identified with a '^') is likely to take up to an additional five working days.

ID Number	Description	Matrix Type	Sampled	MethodID	CUSTSERV	FNH3CALC	GROHSA	ICPMSW										ICPWATVAR				KONENS
					Report A	Ammonia (Free) as N calc	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	Barium as Ba (Dissolved) VAR	Boron as B (Dissolved) VAR	Beryllium as Be (Dissolved) VAR	Chloride as Cl (Kone)
								✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓		✓
EX/1932969	6-BH03	Unclassified	15/11/18																			
EX/1932970	4-BH201	Unclassified	15/11/18																			
EX/1932971	4-BH202	Unclassified	15/11/18																			
EX/1932972	3-W1	Unclassified	15/11/18																			

Note: We will endeavour to prioritise samples to complete analysis within holding time; however any delay could result in samples becoming deviant whilst being processed in the laboratory.

If sampling dates are missing or matrices unclassified then results will not be ISO 17025 accredited. Please contact us as soon as possible to provide missing information in order to reinstate accreditation.

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 RPS
Site Pembroke Dock
Report No W273752

Consignment No W146491
Date Logged 19-Nov-2018
In-House Report Due 23-Nov-2018

Please note the results for any subcontracted analysis (identified with a '^') is likely to take up to an additional five working days.

ID Number	Description	Matrix Type	Sampled	Ammoniacal Nitrogen (Kone)	Dibutyl Tin	Tributyl Tin	Triphenyl Tin	PAH GC-MS (16)	PCB - 7 Congeners	Cyanide (Free) as CN SFA	Cyanide (Total) as CN SFA	SVOC	TPH by GC(Si)	BTEX Analysis HSA GC-MS	Benzene (µg/l)	Toluene (µg/l)	Ethyl Benzene (µg/l)	Xylenes (µg/l)	m/p Xylenes (µg/l)	o Xylene (µg/l)	VOC HSA-GCMS
MethodID				KONENS	OGSN			PAHMSW	PCBCONEC	SFAPI		SVOCSW	TPHFID-SI	VOCHSAW							
				✓				✓		✓	✓		✓	✓	✓	✓	✓	✓	✓	✓	✓
EX/1932969	6-BH03	Unclassified	15/11/18																		
EX/1932970	4-BH201	Unclassified	15/11/18																		
EX/1932971	4-BH202	Unclassified	15/11/18																		
EX/1932972	3-W1	Unclassified	15/11/18																		

Note: We will endeavour to prioritise samples to complete analysis within holding time; however any delay could result in samples becoming deviant whilst being processed in the laboratory.

If sampling dates are missing or matrices unclassified then results will not be ISO 17025 accredited. Please contact us as soon as possible to provide missing information in order to reinstate accreditation.

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 RPS
Site Pembroke Dock
Report No W273752

Consignment No W146491
Date Logged 19-Nov-2018
In-House Report Due 23-Nov-2018

Please note the results for any subcontracted analysis (identified with a '^') is likely to take up to an additional five working days.

ID Number	Description	Matrix Type	Sampled	WSLM3 Temperature C°	WSLM3 pH units
		MethodID			
					✓
EX/1932969	6-BH03	Unclassified	15/11/18		
EX/1932970	4-BH201	Unclassified	15/11/18		
EX/1932971	4-BH202	Unclassified	15/11/18		
EX/1932972	3-W1	Unclassified	15/11/18		

Note: We will endeavour to prioritise samples to complete analysis within holding time; however any delay could result in samples becoming deviant whilst being processed in the laboratory.

If sampling dates are missing or matrices unclassified then results will not be ISO 17025 accredited. Please contact us as soon as possible to provide missing information in order to reinstate accreditation.

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.

Additional Report Notes

Method Code	Sample ID	The following information should be taken into consideration when using the data contained within this report
VOCHSAW	EX1932971 EX1932972	The Primary process control data associated with this Test has not wholly met the requirements of the Laboratory Quality Management System QMS with one or more target analytes falling outside acceptable limits. However the remaining data gives the Laboratory confidence that the test has performed satisfactorily and that the validity of the data may not have been significantly affected. However in line with our QMS policy we have removed accreditation, where applicable, from the affected analytes (Chloromethane, Vinyl Chloride, Chloroethane, Trichlorofluoromethane, 1,1-Dichloroethene, MTBE) . These circumstances should be taken into consideration when utilising the data.
SVOCSW	EX1932969 TO EX1932972	Due to a limited amount of sample, a lower volume was used to complete the analysis. This resulted in a raised detection limit for these samples.
VOCHSAW	EX1932969 EX1932970	The Primary process control data associated with this Test has not wholly met the requirements of the Laboratory Quality Management System QMS with one or more target analytes falling outside acceptable limits. However the remaining data gives the Laboratory confidence that the test has performed satisfactorily and that the validity of the data may not have been significantly affected. However in line with our QMS policy we have removed accreditation, where applicable, from the affected analytes (Bromochloromethane, Carbon Tetrachloride) . These circumstances should be taken into consideration when utilising the data.
VOCHSAW	EX1932969 EX1932970	The Secondary process control data associated with this Test has not wholly met the requirements of the Laboratory Quality Management System QMS with one or more target analytes falling outside acceptable limits. However the remaining data gives the Laboratory confidence that the test has performed satisfactorily (including the Primary Process Control) and that the validity of the data may not have been significantly affected. However in line with our QMS policy we have removed accreditation , where applicable, from the affected analytes (Vinyl Chloride) . These circumstances should be taken into consideration when utilising the data.

Method Descriptions

Matrix	MethodID	Analysis Basis	Method Description
Water	FNH3CALC	As Received	Calculation of Free Ammonia from Ammonium
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	KONENS	As Received	Direct analysis using discrete colorimetric analysis
Water	OGSN	As Received	Hexane extraction, sodium tetraethylborate derivitisation and GC-MS quantitation
Water	PAHMSW	As Received	Determination of PolyAromatic Hydrocarbons in water by pentane extraction GCMS quantitation
Water	PCBCONEC	As Received	Determination of Polychlorinated Biphenyl (PCB) congeners by pentane extraction followed by GCECD detection
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	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 : RPS
Site : Pembroke Dock
Report Number : W27_3752

Lab ID Number	Client ID	Description
EX/1932969	6-BH03	Unclassified
EX/1932970	4-BH201	Unclassified
EX/1932971	4-BH202	Unclassified
EX/1932972	3-W1	Unclassified

Our Ref: EXR/274271 (Ver. 2)
Your Ref: JER1262

December 17, 2018

Environmental Chemistry
SOCOTEC UK Limited
Bretby Business Park
Ashby Road
Burton-on-Trent
Staffordshire
DE15 0YZ

Telephone: 01283 554400
Facsimile: 01283 554422

Alice Thomas
RPS
260 Park Avenue
Aztec West
Almondsbury
Bristol
BS32 4SY

For the attention of Alice Thomas

Dear Alice Thomas

Sample Analysis - Pembroke Dock

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 SOCOTEC UK Limited (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

[redacted]

L Moore
Project Co-ordinator
01283 554400

TEST REPORT

Interim Report
Report No. EXR/274271 (Ver. 2)

RPS
RPS
260 Park Avenue
Aztec West
Almondsbury
Bristol
BS32 4SY

Site: Pembroke Dock

The 4 samples described in this report were registered for analysis by SOCOTEC UK Limited on 27-Nov-2018. This report supersedes any versions previously issued by the laboratory.
The analysis was completed by: 17-Dec-2018

The following tables are contained in this report:

On behalf of
SOCOTEC UK
Becky Batham Operations Manager
Energy & Waste Services

Date of Issue: 17-Dec-2018

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.
SOCOTEC UK Limited accepts no responsibility for any sampling not carried out by our personnel.

Units :			µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l
Method Codes :			BTEXHSA	BTEXHSA	BTEXHSA	BTEXHSA	BTEXHSA	BTEXHSA	FNH3CALC	GROHSA	GROHSA	GROHSA	GROHSA	GROHSA	GROHSA	GROHSA	GROHSA	GROHSA
Method Reporting Limits :			5	5	10	5	5	15	0.01	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
LAB ID Number EX/	**Client Sample Description**	**Sample Date**	**Benzene**	**Ethyl Benzene**	**m/p Xylenes**	**o Xylene**	**Toluene**	**Xylenes**	**Ammonia (Free) as N calc a**	**GRO >C5->C6**	**GRO >C5->C6 Aliphatic**	**GRO >C6->C7**	**GRO >C6->C7 Aliphatic**	**GRO >C7->C8**	**GRO >C7->C8 Aliphatic**	**GRO >C8->C10**	**GRO >C8->C10 Aliphatic**	**GRO-HSA o**
1935216	4-BH203	**14-Nov-18 14:10**	< 5.0	< 5.0	< 10.0	< 5.0	< 5.0	< 15.0	<0.01	< 0.100	< 0.100	< 0.100	< 0.100	< 0.100	< 0.100	< 0.100	< 0.100	< 0.100
1935217	4-WS208	**14-Nov-18 15:47**	< 5.0	< 5.0	< 10.0	< 5.0	< 5.0	< 15.0	0.01	< 0.100	< 0.100	< 0.100	< 0.100	< 0.100	< 0.100	< 0.100	< 0.100	< 0.100
1935218	6-BH01	**14-Nov-18 11:57**	< 5.0	< 5.0	< 10.0	< 5.0	< 5.0	< 15.0	<0.01	< 0.100	< 0.100	< 0.100	< 0.100	< 0.100	< 0.100	< 0.100	< 0.100	< 0.100
1935219	6-BH02	**14-Nov-18 13:08**	< 5.0	< 5.0	< 10.0	< 5.0	< 5.0	< 15.0	<0.01	< 0.100	< 0.100	< 0.100	< 0.100	< 0.100	< 0.100	< 0.100	< 0.100	< 0.100

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Sample Analysis

Interim Report

Date Printed	**17-Dec-2018**
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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	ng/l	ng/l	ng/l	µg/l
Method Codes :			ICPMSW	ICPMSW	ICPMSW	ICPMSW	ICPMSW	ICPMSW	ICPMSW	ICPMSW	ICPMSW	ICPWATVAR	KONENS	KONENS	OGSN	OGSN	OGSN	PAHMSW
Method Reporting Limits :			0.001	0.0001	0.001	0.001	0.001	0.0001	0.001	0.001	0.002	3	0.01	1	20	20	50	0.01
LAB ID Number EX/	**Client Sample Description**	**Sample Date**	**Arsenic as As (Dissolved)**	**Cadmium as Cd (Dissolved)**	**Chromium as Cr (Dissolved)**	**Copper as Cu (Dissolved)**	**Lead as Pb (Dissolved)**	**Mercury as Hg (Dissolved)**	**Nickel as Ni (Dissolved)**	**Selenium as Se (Dissolved)**	**Zinc as Zn (Dissolved)**	**Total Sulphur as SO4 (Dissolved) a**	**Ammoniacal Nitrogen as N**	**Chloride as Cl w**	**Dibutyl Tin as Sn**	**Tributyl Tin as Sn**	**Triphenyl Tin as Sn**	**Acenaphthene**
1935216	4-BH203	14-Nov-18 14:10	<0.001	<0.0001	0.002	<0.001	<0.001	<0.0001	<0.001	0.001	<0.002	10	<0.01	27	<20	<20	<50	< 0.01
1935217	4-WS208	14-Nov-18 15:47	0.022	<0.0001	<0.001	<0.001	0.002	<0.0001	<0.001	<0.001	0.005	16	0.6	36	I.S	I.S	I.S	< 0.10
1935218	6-BH01	14-Nov-18 11:57	0.003	<0.0001	<0.001	0.003	0.014	<0.0001	0.005	<0.001	0.016	38	0.01	81	<40	<40	<100	< 0.04
1935219	6-BH02	14-Nov-18 13:08	<0.001	0.0001	<0.001	<0.001	<0.001	<0.0001	0.001	0.002	<0.002	42	<0.01	33	<20	<20	<50	< 0.04

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Method Codes :			PAHMSW	PAHMSW	PAHMSW	PAHMSW	PAHMSW	PAHMSW	PAHMSW	PAHMSW	PAHMSW	PAHMSW	PAHMSW	PAHMSW	PAHMSW	PAHMSW	PAHMSW	PAHMSW
Method Reporting Limits :			0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.16
LAB ID Number EX/	**Client Sample Description**	**Sample Date**	**Acenaphthylene**	**Anthracene**	**Benzo(a)anthracene**	**Benzo(b)fluoranthene**	**Benzo(ghi)perylene**	**Benzo(k)fluoranthene**	**Benzo-a-Pyrene**	**Chrysene**	**Dibenzo(a,h)anthracene**	**Fluoranthene**	**Fluorene**	**Indeno(1,2,3-cd)pyrene**	**Naphthalene**	**Phenanthrene**	**Pyrene**	**Total PAH (Sum of USEPA 16)**
1935216	4-BH203	**14-Nov-18 14:10**	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.16
1935217	4-WS208	**14-Nov-18 15:47**	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 1.6
1935218	6-BH01	**14-Nov-18 11:57**	< 0.04	< 0.04	< 0.04	< 0.04	< 0.04	< 0.04	< 0.04	< 0.04	< 0.04	< 0.04	< 0.04	< 0.04	< 0.04	< 0.04	< 0.04	< 0.64
1935219	6-BH02	**14-Nov-18 13:08**	< 0.04	< 0.04	< 0.04	< 0.04	< 0.04	< 0.04	< 0.04	< 0.04	< 0.04	< 0.04	< 0.04	< 0.04	< 0.04	< 0.04	< 0.04	< 0.64

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Units :			µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l
Method Codes :			PCBCONEC	PCBCONEC	PCBCONEC	PCBCONEC	PCBCONEC	PCBCONEC	PCBCONEC	SFAPI	SFAPI	SVOCSW	SVOCSW	SVOCSW	SVOCSW	SVOCSW	SVOCSW	SVOCSW
Method Reporting Limits :			0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.02	0.02	0.005	0.005	0.005	0.005	0.002	0.02	0.02
LAB ID Number EX/	**Client Sample Description**	**Sample Date**	**PCB101**	**PCB118**	**PCB138**	**PCB153**	**PCB180**	**PCB28**	**PCB52**	**Cyanide (Free) as CN**	**Cyanide (Total) as CN**	**1,2,4-Trichlorobenzene**	**1,2-Dichlorobenzene**	**1,3-Dichlorobenzene**	**1,4-Dichlorobenzene**	**1-Methylnaphthalene**	**2,4,5-Trichlorophenol**	**2,4,6 - Trichlorophenol**
1935216	4-BH203	**14-Nov-18 14:10**	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	<0.02	<0.02	< 0.050	< 0.050	< 0.050	< 0.050	< 0.020	< 0.200	< 0.200
1935217	4-WS208	**14-Nov-18 15:47**								<0.02	<0.02	< 0.007	< 0.007	< 0.007	< 0.007	< 0.003	< 0.028	< 0.028
1935218	6-BH01	**14-Nov-18 11:57**	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	<0.02	<0.02	< 0.050	< 0.050	< 0.050	< 0.050	< 0.020	< 0.200	< 0.200
1935219	6-BH02	**14-Nov-18 13:08**	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	<0.02	<0.02	< 0.005	< 0.005	< 0.005	< 0.005	< 0.002	< 0.020	< 0.020

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Method Codes :			SVOCSW	SVOCSW	SVOCSW	SVOCSW	SVOCSW	SVOCSW	SVOCSW	SVOCSW	SVOCSW	SVOCSW	SVOCSW	SVOCSW	SVOCSW	SVOCSW	SVOCSW
Method Reporting Limits :			0.02	0.02	0.01	0.005	0.005	0.002	0.02	0.002	0.005	0.005	0.02	0.02	0.005	0.05	0.005	0.005
LAB ID Number EX/	**Client Sample Description**	**Sample Date**	**2,4-Dichlorophenol**	**2,4-Dimethylphenol**	**2,4-Dinitrophenol**	**2,4-Dinitrotoluene**	**2,6 Dinitrotoluene**	**2-Chloronaphthalene**	**2-Chlorophenol**	**2-Methylnaphthalene**	**2-Methylphenol**	**2-Nitroaniline**	**2-Nitrophenol**	**3+4-Methylphenol**	**3-Nitroaniline**	**4,6-Dinitro-2-methylphenol**	**4-Bromophenyl-phenylether**	**4-Chloro-3-methylphenol**
1935216	4-BH203	**14-Nov-18 14:10**	< 0.200	< 0.200	< 0.100	< 0.050	< 0.050	< 0.020	< 0.200	< 0.020	< 0.050	< 0.050	< 0.200	< 0.200	< 0.050	< 0.500	< 0.050	< 0.050
1935217	4-WS208	**14-Nov-18 15:47**	< 0.028	< 0.028	< 0.014	< 0.007	< 0.007	< 0.003	< 0.028	< 0.003	< 0.007	< 0.007	< 0.028	< 0.028	< 0.007	< 0.070	< 0.007	< 0.007
1935218	6-BH01	**14-Nov-18 11:57**	< 0.200	< 0.200	< 0.100	< 0.050	< 0.050	< 0.020	< 0.200	< 0.020	< 0.050	< 0.050	< 0.200	< 0.200	< 0.050	< 0.500	< 0.050	< 0.050
1935219	6-BH02	**14-Nov-18 13:08**	< 0.020	< 0.020	< 0.010	< 0.005	< 0.005	< 0.002	< 0.020	< 0.002	< 0.005	< 0.005	< 0.020	< 0.020	< 0.005	< 0.050	< 0.005	< 0.005

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Method Codes :			SVOCSW	SVOCSW	SVOCSW	SVOCSW	SVOCSW	SVOCSW	SVOCSW	SVOCSW	SVOCSW	SVOCSW	SVOCSW	SVOCSW	SVOCSW	SVOCSW	SVOCSW	SVOCSW
Method Reporting Limits :			0.005	0.02	0.005	0.005	0.05	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.1	0.005	0.002
LAB ID Number EX/	**Client Sample Description**	**Sample Date**	**4-Chloroaniline**	**4-Chlorophenol**	**4-Chlorophenyl-phenylether**	**4-Nitroaniline**	**4-Nitrophenol**	**Acenaphthene**	**Acenaphthylene**	**Anthracene**	**Benzo[a]anthracene**	**Benzo[a]pyrene**	**Benzo[b]fluoranthene**	**Benzo[g,h,i]perylene**	**Benzo[k]fluoranthene**	**Benzoic Acid**	**Benzyl alcohol**	**Biphenyl**
1935216	4-BH203	**14-Nov-18 14:10**	< 0.050	< 0.200	< 0.050	< 0.050	< 0.500	< 0.020	< 0.020	< 0.020	< 0.020	< 0.020	< 0.020	< 0.020	< 0.020	< 1.000	< 0.050	< 0.020
1935217	4-WS208	**14-Nov-18 15:47**	< 0.007	< 0.028	< 0.007	< 0.007	< 0.070	< 0.003	< 0.003	< 0.003	< 0.003	< 0.003	< 0.003	< 0.003	< 0.003	< 0.140	< 0.007	< 0.003
1935218	6-BH01	**14-Nov-18 11:57**	< 0.050	< 0.200	< 0.050	< 0.050	< 0.500	< 0.020	< 0.020	< 0.020	< 0.020	< 0.020	< 0.020	< 0.020	< 0.020	< 1.000	< 0.050	< 0.020
1935219	6-BH02	**14-Nov-18 13:08**	< 0.005	< 0.020	< 0.005	< 0.005	< 0.050	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.100	< 0.005	< 0.002

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Method Codes :			SVOCSW	SVOCSW	SVOCSW	SVOCSW	SVOCSW	SVOCSW	SVOCSW	SVOCSW	SVOCSW	SVOCSW	SVOCSW	SVOCSW	SVOCSW	SVOCSW	SVOCSW	SVOCSW
Method Reporting Limits :			0.005	0.005	0.005	0.005	0.005	0.002	0.05	0.002	0.005	0.005	0.005	0.005	0.002	0.002	0.002	0.002
LAB ID Number EX/	**Client Sample Description**	**Sample Date**	**bis(2-Chloroethoxy)methane**	**bis(2-Chloroethyl)ether**	**bis(2-Chloroisopropyl)ether**	**bis(2-Ethylhexyl)phthalate**	**Butylbenzylphthalate**	**Chrysene**	**Coronene**	**Dibenzo[a,h]anthracene**	**Dibenzofuran**	**Diethylphthalate**	**Dimethylphthalate**	**Di-n-butylphthalate**	**Di-n-octylphthalate**	**Diphenyl Ether**	**Fluoranthene**	**Fluorene**
1935216	4-BH203	14-Nov-18 14:10	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.020	< 0.500	< 0.020	< 0.050	< 0.050	< 0.050	< 0.050	< 0.020	< 0.020	< 0.020	< 0.020
1935217	4-WS208	14-Nov-18 15:47	< 0.007	< 0.007	< 0.007	< 0.007	< 0.007	< 0.003	< 0.070	< 0.003	< 0.007	< 0.007	< 0.007	< 0.007	< 0.003	< 0.003	< 0.003	< 0.003
1935218	6-BH01	14-Nov-18 11:57	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.020	< 0.500	< 0.020	< 0.050	< 0.050	< 0.050	< 0.050	< 0.020	< 0.020	< 0.020	< 0.020
1935219	6-BH02	14-Nov-18 13:08	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.002	< 0.050	< 0.002	< 0.005	< 0.005	< 0.005	< 0.005	< 0.002	< 0.002	< 0.002	< 0.002

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Method Codes :			SVOCSW	SVOCSW	SVOCSW	SVOCSW	SVOCSW	SVOCSW	SVOCSW	SVOCSW	SVOCSW	SVOCSW	SVOCSW	SVOCSW	SVOCSW	SVOCSW	TPHFID-Si	TPHFID-Si
Method Reporting Limits :			0.005	0.005	0.005	0.005	0.002	0.005	0.002	0.005	0.005	0.005	0.05	0.002	0.02	0.002	0.01	0.01
LAB ID Number EX/	**Client Sample Description**	**Sample Date**	**Hexachlorobenzene**	**Hexachlorobutadiene**	**Hexachlorocyclopentadiene**	**Hexachloroethane**	**Indeno[1,2,3-cd]pyrene**	**Isophorone**	**Naphthalene**	**Nitrobenzene**	**N-Nitroso-di-n-propylamine**	**n-Nitrosodiphenylamine**	**Pentachlorophenol**	**Phenanthrene**	**Phenol**	**Pyrene**	**TPH Ali Band >C10-C12**	**TPH Ali Band >C12-C16**
1935216	4-BH203	**14-Nov-18 14:10**	< 0.050	< 0.050	< 0.050	< 0.050	< 0.020	< 0.050	< 0.020	< 0.050	< 0.050	< 0.050	< 0.500	< 0.020	< 0.200	< 0.020	< 0.010	< 0.010
1935217	4-WS208	**14-Nov-18 15:47**	< 0.007	< 0.007	< 0.007	< 0.007	< 0.003	< 0.007	< 0.003	< 0.007	< 0.007	< 0.007	< 0.070	< 0.003	< 0.028	< 0.003	< 0.010	< 0.010
1935218	6-BH01	**14-Nov-18 11:57**	< 0.050	< 0.050	< 0.050	< 0.050	< 0.020	< 0.050	< 0.020	< 0.050	< 0.050	< 0.050	< 0.500	< 0.020	< 0.200	< 0.020	< 0.010	< 0.010
1935219	6-BH02	**14-Nov-18 13:08**	< 0.005	< 0.005	< 0.005	< 0.005	< 0.002	< 0.005	< 0.002	< 0.005	< 0.005	< 0.005	< 0.050	< 0.002	< 0.020	< 0.002	< 0.010	< 0.010

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Method Codes :			TPHFID-Si	TPHFID-Si	TPHFID-Si	TPHFID-Si	TPHFID-Si	TPHFID-Si	TPHFID-Si	TPHFID-Si	TPHFID-Si	TPHFID-Si	VOCHSAW	VOCHSAW	VOCHSAW	VOCHSAW	VOCHSAW	VOCHSAW
Method Reporting Limits :			0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	1	1	1	1	1	1
LAB ID Number EX/	**Client Sample Description**	**Sample Date**	**TPH Ali Band >C16-C21**	**TPH Ali Band >C21-C35**	**TPH Ali Band >C8-C10**	**TPH Ali Band >C8-C40**	**TPH Aro Band >C10-C12**	**TPH Aro Band >C12-C16**	**TPH Aro Band >C16-C21**	**TPH Aro Band >C21-C35**	**TPH Aro Band >C8-C10**	**TPH Aro Band >C8-C40**	**1,1,1,2-Tetrachloroethane**	**1,1,1-Trichloroethane**	**1,1,2,2-Tetrachloroethane**	**1,1,2-Trichloroethane**	**1,1-Dichloroethane**	**1,1-Dichloroethene**
1935216	4-BH203	**14-Nov-18 14:10**	< 0.010	0.073	< 0.010	0.101	< 0.010	< 0.010	< 0.010	0.011	< 0.010	0.021	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0*
1935217	4-WS208	**14-Nov-18 15:47**	0.018	0.097	< 0.010	0.141	< 0.010	< 0.010	< 0.010	0.020	< 0.010	0.032	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0*
1935218	6-BH01	**14-Nov-18 11:57**	0.011	0.084	< 0.010	0.120	< 0.010	< 0.010	< 0.010	0.018	< 0.010	0.034	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0*
1935219	6-BH02	**14-Nov-18 13:08**	0.012	0.331	< 0.010	0.384	< 0.010	< 0.010	< 0.010	0.119	< 0.010	0.134	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0*

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Table Number	**1**

Units :			µg/l	ug/l	µg/l	ug/l	ug/l	µg/l	µg/l	ug/l	ug/l	µg/l	ug/l	ug/l	µg/l	ug/l	ug/l	µg/l
Method Codes :			VOCHSAW	VOCHSAW	VOCHSAW	VOCHSAW	VOCHSAW	VOCHSAW	VOCHSAW	VOCHSAW	VOCHSAW	VOCHSAW	VOCHSAW	VOCHSAW	VOCHSAW	VOCHSAW	VOCHSAW	VOCHSAW
Method Reporting Limits :			1	1	1	5	1	5	1	5	1	1	1	1	1	1	1	1
LAB ID Number EX/	**Client Sample Description**	**Sample Date**	**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- Chlorotoluene**	**2,2-Dichloropropane**
1935216	4-BH203	**14-Nov-18 14:10**	< 1.0	< 1.0	< 1.0	< 5.0	< 1.0	< 5.0	< 1.0	< 5.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1935217	4-WS208	**14-Nov-18 15:47**	< 1.0	2.0	< 1.0	< 5.0	< 1.0	< 5.0	< 1.0	< 5.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1935218	6-BH01	**14-Nov-18 11:57**	< 1.0	< 1.0	< 1.0	< 5.0	< 1.0	< 5.0	< 1.0	< 5.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1935219	6-BH02	**14-Nov-18 13:08**	< 1.0	< 1.0	< 1.0	< 5.0	< 1.0	< 5.0	< 1.0	< 5.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0

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Client Name RPS

Contact Alice Thomas

Pembroke Dock

Sample Analysis

Interim Report

Date Printed	**17-Dec-2018**
Report Number	**EXR/274271**
Table Number	**1**

Units :			µg/l	µg/l	µg/l	µg/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	µg/l	ug/l	ug/l	µg/l
Method Codes :			VOCHSAW	VOCHSAW	VOCHSAW	VOCHSAW	VOCHSAW	VOCHSAW	VOCHSAW	VOCHSAW	VOCHSAW	VOCHSAW	VOCHSAW	VOCHSAW	VOCHSAW	VOCHSAW	VOCHSAW	VOCHSAW
Method Reporting Limits :			1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
LAB ID Number EX/	**Client Sample Description**	**Sample Date**	**4-Chlorotoluene**	**Benzene**	**Bromobenzene**	**Bromochloromethane**	**Bromodichloromethane**	**Bromoform**	**Bromomethane**	**Carbon Tetrachloride**	**Chlorobenzene**	**Chloroethane**	**Chloroform**	**Chloromethane**	**cis 1,3-Dichloropropene**	**Cis-1,2-dichloroethene**	**Dibromochloromethane**	**Dibromomethane**
1935216	4-BH203	14-Nov-18 14:10	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0*	< 1.0	< 1.0	< 1.0*	< 1.0	< 1.0*	< 1.0	< 1.0	< 1.0	< 1.0
1935217	4-WS208	14-Nov-18 15:47	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0*	< 1.0	< 1.0	< 1.0*	< 1.0	< 1.0*	< 1.0	< 1.0	< 1.0	< 1.0
1935218	6-BH01	14-Nov-18 11:57	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0*	< 1.0	< 1.0	< 1.0*	< 1.0	< 1.0*	< 1.0	< 1.0	< 1.0	< 1.0
1935219	6-BH02	14-Nov-18 13:08	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0*	< 1.0	< 1.0	< 1.0*	< 1.0	< 1.0*	< 1.0	< 1.0	< 1.0	< 1.0

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Date Printed	**17-Dec-2018**
Report Number	**EXR/274271**
Table Number	**1**

Units :			ug/l	µg/l	ug/l	ug/l	µg/l	ug/l	µg/l	µg/l	ug/l	µg/l	µg/l	ug/l	µg/l	ug/l	µg/l	ug/l
Method Codes :			VOCHSAW	VOCHSAW	VOCHSAW	VOCHSAW	VOCHSAW	VOCHSAW	VOCHSAW	VOCHSAW	VOCHSAW	VOCHSAW	VOCHSAW	VOCHSAW	VOCHSAW	VOCHSAW	VOCHSAW	VOCHSAW
Method Reporting Limits :			1	1	5	1	1	5	1	1	1	1	1	1	1	1	1	1
LAB ID Number EX/	**Client Sample Description**	**Sample Date**	**Dichlorodifluoromethane**	**Ethylbenzene**	**Hexachlorobutadiene**	**Isopropylbenzene**	**m and p-Xylene**	**Naphthalene**	**n-Butylbenzene**	**o-Xylene**	**p-Isopropyltoluene**	**Propylbenzene**	**sec-Butylbenzene**	**Styrene**	**tert-Butylbenzene**	**Tetrachloroethene**	**Toluene**	**Trans 1,2 Dichloroethene**
1935216	4-BH203	**14-Nov-18 14:10**	< 1.0*	< 1.0	< 5.0	< 1.0	< 1.0	< 5.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1935217	4-WS208	**14-Nov-18 15:47**	< 1.0*	< 1.0	< 5.0	< 1.0	< 1.0	< 5.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1935218	6-BH01	**14-Nov-18 11:57**	< 1.0*	< 1.0	< 5.0	< 1.0	< 1.0	< 5.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1935219	6-BH02	**14-Nov-18 13:08**	< 1.0*	< 1.0	< 5.0	< 1.0	< 1.0	< 5.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0

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Pembroke Dock

Sample Analysis

Interim Report

Date Printed	**17-Dec-2018**
Report Number	**EXR/274271**
Table Number	**1**

Units :			µg/l	ug/l	µg/l	µg/l	pH units											
Method Codes :			VOCHSAW	VOCHSAW	VOCHSAW	VOCHSAW	WSLM3											
Method Reporting Limits :			1	1	1	1												
LAB ID Number EX/	**Client Sample Description**	**Sample Date**	**trans 1,3-Dichloropropene**	**Trichloroethene**	**Trichlorofluoromethane**	**Vinyl Chloride**	**pH units w**											
1935216	4-BH203	**14-Nov-18 14:10**	< 1.0	< 1.0	< 1.0*	< 1.0*	7.5											
1935217	4-WS208	**14-Nov-18 15:47**	< 1.0	< 1.0	< 1.0*	< 1.0*	7.8											
1935218	6-BH01	**14-Nov-18 11:57**	< 1.0	< 1.0	< 1.0*	< 1.0*	7.6											
1935219	6-BH02	**14-Nov-18 13:08**	< 1.0	< 1.0	< 1.0*	< 1.0*	7.1											

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Contact	Alice Thomas

Pembroke Dock

Sample Analysis

Interim Report

Date Printed	**17-Dec-2018**
Report Number	**EXR/274271**
Table Number	**1**

Analytical and Deviating Sample Overview

Customer RPS
Site Pembroke Dock
Report No W274271

Consignment No W146473
Date Logged 27-Nov-2018
In-House Report Due 03-Dec-2018

Please note the results for any subcontracted analysis (identified with a '^') is likely to take up to an additional five working days.

ID Number	Description	Matrix Type	Sampled	MethodID	CUSTSERV	FNH3CALC	GROHSA	ICPMSW									IGPWATVAR	KONENS		OGSN		
					Report A	Ammonia (Free) as N calc	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)	Total Sulphur as SO4 (Diss) VAR	Chloride as Cl (Kone)	Ammoniacal Nitrogen (Kone)	Dibutyl Tin	Tributyl Tin	Triphenyl Tin
								✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓			
EX/1935216	4-BH203	Unclassified	14/11/18				E											E	E			
EX/1935217	4-WS208	Unclassified	14/11/18				E											E	E			
EX/1935218	6-BH01	Unclassified	14/11/18				E											E	E			
EX/1935219	6-BH02	Unclassified	14/11/18				E											E	E			

Note: We will endeavour to prioritise samples to complete analysis within holding time; however any delay could result in samples becoming deviant whilst being processed in the laboratory.

If sampling dates are missing or matrices unclassified then results will not be ISO 17025 accredited. Please contact us as soon as possible to provide missing information in order to reinstate accreditation.

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 RPS
Site Pembroke Dock
Report No W274271

Consignment No W146473
Date Logged 27-Nov-2018
In-House Report Due 03-Dec-2018

Please note the results for any subcontracted analysis (identified with a '^') is likely to take up to an additional five working days.

ID Number	Description	Matrix Type	Sampled	MethodID	PAHMSW	PCBCONEC	SFAPI		SVOCSW	TPHFID-Si	VOCHSAW	WSLM3	
					PAH GC-MS (16)	PCB - 7 Congeners	Cyanide (Free) as CN SFA	Cyanide (Total) as CN SFA	SVOC	TPH by GC(Si)	VOC HSA-GCMS	Temperature C°	pH units
					✓		✓	✓		✓	✓		✓
EX/1935216	4-BH203	Unclassified	14/11/18		E		E	E		E	E	E	E
EX/1935217	4-WS208	Unclassified	14/11/18		E		E	E		E	E	E	E
EX/1935218	6-BH01	Unclassified	14/11/18		E		E	E		E	E	E	E
EX/1935219	6-BH02	Unclassified	14/11/18		E		E	E		E	E	E	E

Note: We will endeavour to prioritise samples to complete analysis within holding time; however any delay could result in samples becoming deviant whilst being processed in the laboratory.

If sampling dates are missing or matrices unclassified then results will not be ISO 17025 accredited. Please contact us as soon as possible to provide missing information in order to reinstate accreditation.

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.

Additional Report Notes

Method Code	Sample ID	The following information should be taken into consideration when using the data contained within this report
SVOCSW	EX1935216 EX1935218	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.
SVOCSW	EX1935217	Due to a limited amount of sample, a lower volume was used to complete the analysis. This resulted in a raised detection limit for these samples.
PAHMSW	EX1935217 EX1935218	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.
VOCHSAW	EX/1935216 TO EX/1935219	The Primary process control data associated with this Test has not wholly met the requirements of the Laboratory Quality Management System QMS with one or more target analytes falling outside acceptable limits. However the remaining data gives the Laboratory confidence that the test has performed satisfactorily and that the validity of the data may not have been significantly affected. However in line with our QMS policy we have removed accreditation, where applicable, from the affected analytes (Dichlorodifluoromethane, Chloromethane, Vinyl Chloride, Bromomethane, Chloroethane, Trichlorofluoromethane,1,1-Dichloroethene) . These circumstances should be taken into consideration when utilising the data.
VOCHSAW	EX/1935217 EX/1935218	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 unless otherwise stated. These circumstances should be taken into consideration when utilising the data.
OGSN	EX1935218	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	BTEXHSA	As Received	Benzene, Toluene, Ethylbenzene, & Xylenes by headspace extraction GCFID quantitation
Water	FNH3CALC	As Received	Calculation of Free Ammonia from Ammonium
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	KONENS	As Received	Direct analysis using discrete colorimetric analysis
Water	OGSN	As Received	Hexane extraction, sodium tetraethylborate derivitisation and GC-MS quantitation
Water	PAHMSW	As Received	Determination of PolyAromatic Hydrocarbons in water by pentane extraction GCMS quantitation
Water	PCBCONEC	As Received	Determination of Polychlorinated Biphenyl (PCB) congeners by pentane extraction followed by GCECD detection
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	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 : RPS
Site : Pembroke Dock
Report Number : W27_4271

Lab ID Number	Client ID	Description
EX/1935216	4-BH203	Unclassified
EX/1935217	4-WS208	Unclassified
EX/1935218	6-BH01	Unclassified
EX/1935219	6-BH02	Unclassified

Appendix 4

Summary Table of Historic Data

SCREENING CRITERIA									
Commercial (S4UL)		0	2300	58	980	640	190	8600	68000
Commercial (C4SL)		0	2300			640	220		
SUMMARY									
No. Tested		6	33	33	33	33	33	90	33
No. Detected		0	33	6	33	32	30	90	33
Maximum Value		N/A	13730	5.4	59.7	58.5	3.2	190	500.1
Minimum Detected Value		N/A	48	0.878	2.5	3.1	0.2	0.9	10.2
No. of S4UL Exceedances		0	4	0	0	0	0	0	0
No. of C4SL Exceedances		0	4	0	0	0	0	0	0
DATA									
Unit		N/A	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
SAMPLE ID	**Strata**	**Asbestos Quantification**	**Lead**	**Mercury (MS)**	**Nickel (MS)**	**Arsenic (MS)**	**Cadmium (MS)**	**Chromium (MS)**	**Copper (MS)**
4-BH202/ES/0.9	MG		688	<LoD	12.4	9	0.5	9.6	37
4-BH203/ES/0.9-1.1	MG		51	<LoD	2.5	5	0.2	4.8	30
4-WS202/ES/0.1	MG		1818	<LoD	23.3	14	1.1	12.1	113
4-WS203/ES/0.2	MG		2875	3.6	27.6	37	1.6	19	206
4-WS203/ES/1.2	MG		423	<LoD	29.9	11	<LoD	29.4	27
4-WS204/ES/0.8	MG		1871	5.4	17.8	30	1.8	35.4	141
4-WS204/ES/1	MG		289	<LoD	27.4	5	0.3	26.5	38
4-WS205/ES/0.2	MG		563	<LoD	25	6	0.4	20.6	91
4-WS206/ES/0.2	MG		491	<LoD	16.7	13	0.5	13.4	77
4-WS206/ES/1	MG		48	<LoD	41.2	8	0.6	31.2	35
4-WS207/ES/1	MG		156	<LoD	27.2	16	0.5	18.1	84
4-WS207/ES/2.4-2.8	MG		93	<LoD	23.7	17	0.7	17.7	32
4-WS208/ES/1.5-1.8	MG		241	<LoD	19	9	0.2	16.6	47

4-WS209/ES/1	MG		371	2.3	14.4	23	0.5	12.1	70
4-WS209/ES/3	MG		64	<LoD	59.7	38	1.1	34.7	15
4-WS210/ES/0.4-0.5	MG		664	<LoD	21	22	0.5	19	73
4-WS211/ES/0.4-0.7	MG		2303	<LoD	36.7	27	0.2	13.2	256
4-WS212/ES/0.4-0.6	MG		13730	<LoD	33.8	27	3.2	17.8	70
4-WS212/ES/1-1.2	MG		5296	<LoD	17.3	16	0.7	9.3	50
5-BH801/ES4/0.8-1.5	MG							45	
5-BH802/ES4/0.8-1.5	MG							13	
5-BH802/ES12/3-3.5	MG							18	
5-BH901/ES9/2-2.25	MG							25	
5-BH901/ES22/4.5-5	MG							3.9	
5-BH902/ES4/0.5-1	MG							23	
5-BH903/ES4/0.7-1.2	MG							21	
5-BH903/ES17/5	MG							13	
5-HP901/ES1/0	MG	<LoD						24	
5-HP902/ES1/0	MG	<LoD						17	
5-HP903/ES1/0	MG							11	
5-HP904/ES1/0	MG							8	
5-HP905/ES1/0	MG	<LoD						39	
5-HP906/ES1/0	MG							14	
5-HP907/ES1/0	MG							18	
5-HP908/ES1/0	MG	<LoD						13	
5-HP909/ES1/0	MG	<LoD						45	
5-HP910/ES1/0	MG							25	
5-HP912/ES1/0	MG							60	
5-HP914/ES1/0	MG							100	
5-HP916/ES1/0	MG	<LoD						29	
5-HP917/ES1/0.5	MG							11	
5-HP918/ES1/0.5	MG							23	
5-HP919/ES1/0.5	MG							42	
5-TP901/ES5/1.6	MG							32	
5-TP902/ES5/1.1	MG							40	
5-TP902/ES12/3	MG							27	

5-TP902A/ES3/3.5	MG							26	
5-TP903/ES4/0.5	MG							29	
5-TP903/ES11/3	MG							19	
5-TP904/ES1/0.35	MG							32	
5-TP904/ES4/0.5	MG							19	
5-TP905/ES5/0.55	MG							9.2	
5-TP906/ES2/0.15	MG							33	
5-TP907/ES1/0.1	MG							79	
5-TP908/ES11/0.8	MG							34	
5-TP908/ES8/0.8	MG							11	
5-TP909/ES3/0.4	MG							21	
5-TP910/ES1/0.5	MG							41	
5-TP911/ES1/0.5	MG							190	
5-TP911/ES7/1.9	MG							7.7	
5-TP911/ES10/2.4	MG							0.9	
5-TP912/ES5/0.8	MG							9.8	
5-TP913/ES5/0.7	MG							12	
5-TP913/ES10/1.5	MG							24	
6-BH03/ES/0.3	MG								
6-BH05/ES/0.5	MG								
6-BH05/ES/3.5	MG		398.7	<LoD	21.2	11.1	0.38	16.2	62.6
6-BH06/ES/0.6	MG								
6-BH06/ES/2-3	MG		82.73	<LoD	12.8	7.47	0.504	13	20.46
6-BH07/ES/0.5	MG								
6-BH09/ES/0.5	MG		194	<LoD	15.8	8	0.35	10.5	63
6-BH10/ES/0.6	MG		316.03	<LoD	15.04	9.25	0.694	12.94	50.59
6-BH11/ES/0.8	MG		593	1.991	49.97	58.5	0.71	30.37	292.18
6-BH12/ES/0.5	MG		940.3	1.84	38	27.4	1.1	18.7	500.1
6-BH13/ES/0.5	MG		779.14	0.878	24.89	13	0.702	21	111.73
4-BH201/ES/0.7	Head		202	<LoD	24.7	5	0.4	19.4	45
4-BH201/ES/3.5	Head		87	<LoD	17.8	8	0.5	11.8	33
4-WS205/ES/0.6	Head		51	<LoD	23.7	<LoD	<LoD	29	14
5-BH801/ES17/4-5	Head							14	

5-BH902/ES14/3.5-3.7	Head							21	
5-TP901/ES14/4.5	Head							25	
5-TP902A/ES6/4	Head							35	
5-TP904/ES7/1	Head							34	
5-TP904/ES10/2	Head							31	
5-TP904/ES1/2	Head								
5-TP904/ES6/4	Head							32	
5-TP905/ES10/2	Head							28	
5-TP907/ES13/3	Head							35	
5-TP909/ES14/4	Head							36	
5-TP910/ES4/1.5	Head							13	
5-TP912/ES14/3.4	Head							26	
6-BH02/ES/11	Head		51.5	<LoD	28	13.7	0.42	21.8	29.4
6-BH03/ES/1	Head		1520	<LoD	14.9	15.8	1.69	16.8	46.3
6-BH07/ES/1.5	Head								
6-BH09/ES/2.5	Head		59.1	<LoD	35	21.8	0.58	32	24.6
6-BH03/ES/6	PLG		50.1	<LoD	3.2	3.1	<LoD	3.5	10.2

9000	730000	12000	8600	33	240000	12	5700000	56000000	27000	6600000	5900000	3200	2000
				33					90000				

33	33	33	57	57	11	11	78	78	78	78	78	16	16
33	33	4	56	0	9	10	0	0	0	1	0	0	1
41.8	1642	3	190	N/A	4.7	1.3	N/A	N/A	N/A	24	N/A	N/A	0.6881
3	50.9	0.6	3.9	N/A	0.5	0.299	N/A	N/A	N/A	24	N/A	N/A	0.6881
0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0

mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	mg/kg	mg/kg
Vanadium (MS)	**Zinc (MS)**	**Selenium (MS)**	**Trivalent Chromium**	**Chromium - Hexavalent**	**Boron.**	**Beryllium**	**Ethyl Benzene**	**Toluene**	**Benzene**	**O-Xylene**	**m and p-Xylene**	**GRO C5-C6 Alpihatic**	**GRO C8-C10 Alpihatic**
20.8	99.2	<LoD											
3	50.9	<LoD											
20.3	481.6	<LoD											
24	868	<LoD											
38.6	126	<LoD											
41.8	561.8	3											
33.5	156.7	<LoD											
31.2	379	<LoD											
15.9	265.1	<LoD											
34	95.3	<LoD					<LoD	<LoD	<LoD	<LoD	<LoD		
14.4	103.4	<LoD											
13	131.9	<LoD											
21.3	109.8	<LoD					<LoD	<LoD	<LoD	<LoD	<LoD		

13.2	577.5	<LoD					<LoD	<LoD	<LoD	<LoD	<LoD		
31.5	193.6	<LoD					<LoD	<LoD	<LoD	<LoD	<LoD		
17.2	413.8	<LoD											
14.8	599.7	<LoD											
23.1	1642	<LoD											
23.9	969.9	<LoD											
			45	<LoD			<LoD	<LoD	<LoD	<LoD	<LoD		
			13	<LoD			<LoD	<LoD	<LoD	<LoD	<LoD		
			18	<LoD			<LoD	<LoD	<LoD	<LoD	<LoD		
			25	<LoD			<LoD	<LoD	<LoD	<LoD	<LoD		
			3.9	<LoD			<LoD	<LoD	<LoD	<LoD	<LoD		
			23	<LoD			<LoD	<LoD	<LoD	<LoD	<LoD		
			21	<LoD			<LoD	<LoD	<LoD	<LoD	<LoD		
			13	<LoD			<LoD	<LoD	<LoD	<LoD	<LoD		
			24	<LoD			<LoD	<LoD	<LoD	<LoD	<LoD		
			17	<LoD			<LoD	<LoD	<LoD	<LoD	<LoD		
			11	<LoD			<LoD	<LoD	<LoD	<LoD	<LoD		
			8	<LoD			<LoD	<LoD	<LoD	<LoD	<LoD		
			39	<LoD			<LoD	<LoD	<LoD	<LoD	<LoD		
			14	<LoD			<LoD	<LoD	<LoD	<LoD	<LoD		
			18	<LoD			<LoD	<LoD	<LoD	<LoD	<LoD		
			13	<LoD			<LoD	<LoD	<LoD	<LoD	<LoD		
			45	<LoD			<LoD	<LoD	<LoD	<LoD	<LoD		
			25	<LoD			<LoD	<LoD	<LoD	<LoD	<LoD		
			60	<LoD			<LoD	<LoD	<LoD	<LoD	<LoD		
			100	<LoD			<LoD	<LoD	<LoD	<LoD	<LoD		
			29	<LoD			<LoD	<LoD	<LoD	<LoD	<LoD		
			11	<LoD			<LoD	<LoD	<LoD	<LoD	<LoD		
			23	<LoD			<LoD	<LoD	<LoD	<LoD	<LoD		
			42	<LoD			<LoD	<LoD	<LoD	<LoD	<LoD		
			31	<LoD			<LoD	<LoD	<LoD	<LoD	<LoD		
			40	<LoD			<LoD	<LoD	<LoD	<LoD	<LoD		
			27	<LoD			<LoD	<LoD	<LoD	<LoD	<LoD		

			26	<LoD			<LoD	<LoD	<LoD	<LoD	<LoD		
			29	<LoD			<LoD	<LoD	<LoD	<LoD	<LoD		
			19	<LoD			<LoD	<LoD	<LoD	<LoD	<LoD		
			19	<LoD			<LoD	<LoD	<LoD	<LoD	<LoD		
			19	<LoD			<LoD	<LoD	<LoD	<LoD	<LoD		
			9.2	<LoD			<LoD	<LoD	<LoD	<LoD	<LoD		
			33	<LoD			<LoD	<LoD	<LoD	<LoD	<LoD		
			79	<LoD			<LoD	<LoD	<LoD	<LoD	<LoD		
			34	<LoD			<LoD	<LoD	<LoD	<LoD	<LoD		
			11	<LoD			<LoD	<LoD	<LoD	<LoD	<LoD		
			21	<LoD			<LoD	<LoD	<LoD	<LoD	<LoD		
			41	<LoD			<LoD	<LoD	<LoD	<LoD	<LoD		
			190	<LoD			<LoD	<LoD	<LoD	<LoD	<LoD		
			7.7	<LoD			<LoD	<LoD	<LoD	<LoD	<LoD		
			<LoD	<LoD			<LoD	<LoD	<LoD	<LoD	<LoD		
			9.9	<LoD			<LoD	<LoD	<LoD	<LoD	<LoD		
			11	<LoD			<LoD	<LoD	<LoD	<LoD	<LoD		
			24	<LoD			<LoD	<LoD	<LoD	<LoD	<LoD		
							<LoD	<LoD	<LoD	<LoD	<LoD	<LoD	<LoD
							<LoD	<LoD	<LoD	<LoD	<LoD	<LoD	<LoD
18.9	58.2	0.6			4.7	0.505	<LoD	<LoD	<LoD	<LoD	<LoD	<LoD	<LoD
							<LoD	<LoD	<LoD	<LoD	<LoD	<LoD	<LoD
5.1	76.42	0.68			<LoD	0.3181	<LoD	<LoD	<LoD	24	<LoD	<LoD	0.6881
							<LoD	<LoD	<LoD	<LoD	<LoD	<LoD	<LoD
10.9	207	<LoD			0.8	0.299	<LoD	<LoD	<LoD	<LoD	<LoD	<LoD	<LoD
12.1	590.42	<LoD			0.74	0.306	<LoD	<LoD	<LoD	<LoD	<LoD	<LoD	<LoD
18.5	590.35	<LoD			0.91	0.6489	<LoD	<LoD	<LoD	<LoD	<LoD	<LoD	<LoD
16	883.1	<LoD			0.8	0.623	<LoD	<LoD	<LoD	<LoD	<LoD	<LoD	<LoD
27.3	355.75	<LoD			1.24	0.5566	<LoD	<LoD	<LoD	<LoD	<LoD	<LoD	<LoD
25	136.3	<LoD					<LoD	<LoD	<LoD	<LoD	<LoD		
18	119.8	<LoD											
37.8	62.4	<LoD											
			14	<LoD			<LoD	<LoD	<LoD	<LoD	<LoD		

			21	<LoD			<LoD	<LoD	<LoD	<LoD	<LoD		
			25	<LoD			<LoD	<LoD	<LoD	<LoD	<LoD		
			35	<LoD			<LoD	<LoD	<LoD	<LoD	<LoD		
			34	<LoD			<LoD	<LoD	<LoD	<LoD	<LoD		
			31	<LoD			<LoD	<LoD	<LoD	<LoD	<LoD		
			32	<LoD			<LoD	<LoD	<LoD	<LoD	<LoD		
			28	<LoD			<LoD	<LoD	<LoD	<LoD	<LoD		
			35	<LoD			<LoD	<LoD	<LoD	<LoD	<LoD		
			36	<LoD			<LoD	<LoD	<LoD	<LoD	<LoD		
			13	<LoD			<LoD	<LoD	<LoD	<LoD	<LoD		
			26	<LoD			<LoD	<LoD	<LoD	<LoD	<LoD		
25.1	83.3	<LoD			1.1	0.78	<LoD	<LoD	<LoD	<LoD	<LoD	<LoD	<LoD
21	332.3	<LoD			0.5	0.352	<LoD	<LoD	<LoD	<LoD	<LoD	<LoD	<LoD
							<LoD	<LoD	<LoD	<LoD	<LoD	<LoD	<LoD
33.8	113	0.6			1.2	1.3	<LoD	<LoD	<LoD	<LoD	<LoD	<LoD	<LoD
5.8	52	<LoD			<LoD	<LoD	<LoD	<LoD	<LoD	<LoD	<LoD	<LoD	<LoD

3200	7800		7800		2000	520000	54000	3900	500	44	23000	1200	83000

16	16	16	16	16	16	79	79	79	79	79	79	79	79
0	0	0	0	0	1	46	53	47	47	51	53	49	25
N/A	N/A	N/A	N/A	N/A	0.7339	25	97	34	34	120	140	49	3.27
N/A	N/A	N/A	N/A	N/A	0.7339	0.1	0.14	0.18	0.165	0.087	0.21	0.176	0.024
0	0	0	0	0	0	0	0	0	0	2	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0

mg/kg	mg/kg	0	mg/kg	0	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
GRO C5-C6	**GRO C6-C7**	**GRO C6-C7 Alpihatic**	**GRO C7-C8**	**GRO C7-C8 Alpihatic**	**GRO C8-C10**	**Anthracene**	**Pyrene**	**Benzo(g,h,i)perylene**	**Indeno(1,2,3-cd)pyrene**	**Benzo(b)fluoranthene**	**Fluoranthene**	**Benzo(k)fluoranthene**	**Acenaphthylene**
						0.822	6.066	2.437	2.424	7.466	7.919	3.354	0.307
						3.184	13.772	0.272	0.165	0.755	23.264	0.372	0.024

						0.989	3.982	1.562	1.17	1.877	5.021	1.035	0.07
						<LoD	<LoD	<LoD	<LoD	<LoD	<LoD	<LoD	<LoD
						0.401	1.887	0.587	0.514	1.745	2.426	0.909	0.097
						0.33	2.7	2.4	1.8	4.5	3.3	1.8	0.1
						0.15	2.2	0.45	0.32	1.5	2.2	0.97	<LoD
						<LoD	<LoD	<LoD	<LoD	<LoD	<LoD	<LoD	<LoD
						<LoD	<LoD	<LoD	<LoD	<LoD	<LoD	<LoD	<LoD
						<LoD	<LoD	<LoD	<LoD	<LoD	<LoD	<LoD	<LoD
						4.6	13	3.5	3.3	7.2	19	5.8	0.18
						2.1	11	3.4	2.9	7.7	14	4.6	0.61
						<LoD	<LoD	<LoD	<LoD	<LoD	<LoD	<LoD	<LoD
						<LoD	0.78	0.45	0.29	0.71	1	0.41	<LoD
						0.32	1.9	0.56	0.63	2.1	2.4	0.84	0.21
						<LoD	<LoD	<LoD	<LoD	<LoD	<LoD	<LoD	<LoD
						<LoD	<LoD	<LoD	<LoD	<LoD	<LoD	<LoD	<LoD
						0.21	1.5	0.42	0.43	1.2	1.9	0.74	0.12
						0.68	3.9	1.4	1.5	4.2	4.8	2.2	0.5
						0.56	2.8	0.93	0.85	2.7	3.9	1.4	0.35
						0.2	1.7	0.77	0.69	1.8	2.1	0.81	<LoD
						0.37	2	0.82	0.78	1.7	2.5	0.94	<LoD
						<LoD	0.53	<LoD	<LoD	0.37	0.63	0.29	<LoD
						0.54	7.2	1.9	1.7	4.8	8.3	1.8	<LoD
						0.14	1.8	0.83	0.68	1.6	2.2	0.63	<LoD
						0.29	1.9	0.6	0.62	1.3	2	0.8	<LoD
						0.62	4	1.5	1.5	3.1	4.8	2.8	0.22
						0.12	0.98	0.37	0.33	0.85	1.1	0.48	<LoD
						25	93	14	12	34	130	29	<LoD
						<LoD	<LoD	<LoD	<LoD	<LoD	<LoD	<LoD	<LoD
						0.15	1.3	1	1	1.4	1.8	0.85	<LoD
						16	97	34	34	120	140	49	2.1

						0.1	0.49	0.27	0.24	0.48	0.69	0.41	<LoD
						0.33	2.5	1.1	1.1	2	3.4	1.7	<LoD
						<LoD	0.45	<LoD	<LoD	0.39	0.59	0.35	<LoD
						<LoD	<LoD	<LoD	<LoD	<LoD	<LoD	<LoD	<LoD
						<LoD	0.2	<LoD	<LoD	<LoD	0.27	<LoD	<LoD
						0.46	2.8	1.4	1.3	2.8	3.7	1.9	0.24
						0.13	1	0.53	0.43	0.8	1.3	0.78	<LoD
						0.17	1.1	0.56	0.51	1.1	1.3	0.98	<LoD
						<LoD	<LoD	<LoD	<LoD	<LoD	<LoD	<LoD	<LoD
						0.19	0.79	0.41	0.35	0.51	1	0.65	<LoD
						0.49	3.3	1.6	1.5	2.8	4.3	1.9	<LoD
						<LoD	<LoD	<LoD	<LoD	<LoD	<LoD	<LoD	<LoD
						0.19	1.6	0.62	0.58	1.2	1.9	0.87	0.12
						<LoD	<LoD	<LoD	<LoD	<LoD	<LoD	<LoD	<LoD
						<LoD	<LoD	<LoD	<LoD	<LoD	<LoD	<LoD	<LoD
						0.17	1.3	0.45	0.38	0.98	1.8	0.53	<LoD
						0.62	2.3	0.64	0.59	2	3.3	0.99	0.18
						0.17	1	0.28	0.25	0.84	1.4	0.44	<LoD
<LoD	<LoD	<LoD	<LoD	<LoD	<LoD	0.36	2.41	0.75	0.99	2.25	3.12	0.81	0.24
<LoD	<LoD	<LoD	<LoD	<LoD	<LoD	1.44	9.31	2.83	3.98	9.39	11.91	3.61	0.48
<LoD	<LoD	<LoD	<LoD	<LoD	<LoD	0.17	1.37	0.52	0.77	1.8	1.67	0.7	0.15
<LoD	<LoD	<LoD	<LoD	<LoD	<LoD	0.132	0.527	0.263	0.285	0.505	0.626	0.176	<LoD
<LoD	<LoD	<LoD	<LoD	<LoD	0.7339	<LoD	<LoD	<LoD	<LoD	0.087	<LoD	<LoD	<LoD
<LoD	<LoD	<LoD	<LoD	<LoD	<LoD	0.11	0.51	0.18	0.26	0.53	0.64	0.2	<LoD
<LoD	<LoD	<LoD	<LoD	<LoD	<LoD	8.88	46.4	11.7	18.8	47.8	61.4	15.8	3.27
<LoD	<LoD	<LoD	<LoD	<LoD	<LoD	1.608	6.857	1.912	2.132	4.275	8.417	1.681	<LoD
<LoD	<LoD	<LoD	<LoD	<LoD	<LoD	0.308	1.503	1.116	1.219	1.97	1.56	0.695	0.125
<LoD	<LoD	<LoD	<LoD	<LoD	<LoD	0.7	3.48	1.8	2.39	4.41	3.14	1.4	0.48
<LoD	<LoD	<LoD	<LoD	<LoD	<LoD	0.141	0.786	0.423	0.481	1.021	0.986	0.364	<LoD
						0.51	1.759	0.545	0.638	1.893	2.538	1.245	0.164
						<LoD	<LoD	<LoD	<LoD	<LoD	<LoD	<LoD	<LoD

						<LoD	0.35	<LoD	<LoD	<LoD	0.42	<LoD	<LoD
						<LoD	<LoD	<LoD	<LoD	<LoD	<LoD	<LoD	<LoD
						<LoD	<LoD	<LoD	<LoD	<LoD	<LoD	<LoD	<LoD
						<LoD	<LoD	<LoD	<LoD	<LoD	<LoD	<LoD	<LoD
						<LoD	0.2	<LoD	<LoD	<LoD	0.34	<LoD	<LoD
						<LoD	<LoD	<LoD	<LoD	<LoD	<LoD	<LoD	<LoD
						<LoD	<LoD	<LoD	<LoD	<LoD	<LoD	<LoD	<LoD
						<LoD	<LoD	<LoD	<LoD	<LoD	<LoD	<LoD	<LoD
						<LoD	<LoD	<LoD	<LoD	<LoD	<LoD	<LoD	<LoD
						0.13	1.7	0.49	0.44	1.8	1.7	0.81	0.25
						<LoD	<LoD	<LoD	<LoD	<LoD	<LoD	<LoD	<LoD
<LoD	<LoD	<LoD	<LoD	<LoD	<LoD	<LoD	<LoD	<LoD	<LoD	<LoD	<LoD	<LoD	<LoD
<LoD	<LoD	<LoD	<LoD	<LoD	<LoD	0.29	1.94	0.61	0.79	1.99	2.29	0.7	0.21
<LoD	<LoD	<LoD	<LoD	<LoD	<LoD	<LoD	<LoD	<LoD	<LoD	<LoD	<LoD	<LoD	<LoD
<LoD	<LoD	<LoD	<LoD	<LoD	<LoD	<LoD	0.14	<LoD	<LoD	0.19	0.21	<LoD	<LoD
<LoD	<LoD	<LoD	<LoD	<LoD	<LoD	<LoD	<LoD	<LoD	<LoD	<LoD	<LoD	<LoD	<LoD

350	35	3.5	170	84000	22000	63000	190	26000	26000000	56000	3500	16000	36000
	36												

79	79	79	79	79	79	79	79	57	5	62	78	78	78
53	50	28	53	22	52	24	32	0	0	0	0	4	24
93	69	13	92	7.3	91	10	4.6	N/A	N/A	N/A	N/A	6.6	63
0.013	0.12	0.085	0.02	0.016	0.18	0.069	0.051	N/A	N/A	N/A	N/A	0.304	0.25
0	1	2	0	0	0	0	0	0	0	0	0	0	0
0	1	0	0	0	0	0	0	0	0	0	0	0	0

mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	ug/kg	mg/kg	mg/kg	mg/kg	mg/kg
Chrysene	**Benzo(a)pyrene**	**Dibenzo(a,h)anthracene**	**Benzo(a)anthracene**	**Acenaphthene**	**Phenanthrene**	**Fluorene**	**Naphthalene**	**Aromatics >C5-7**	**Aromatics >C6-7**	**Aromatics >C7-8**	**Aromatic >C08 - C10**	**Aromatic >C10 - C12**	**Aromatic >C12 - C16**
4.332	3.387	0.839	3.7	0.105	3.486	0.175	0.341						
6.394	0.225	0.085	2.24	0.055	19.708	0.194	3.446						
									<LoD	<LoD	<LoD	<LoD	<LoD
									<LoD	<LoD	<LoD	0.304	0.257

2.504	2.18	0.548	2.281	0.273	3.817	0.291	0.653		<LoD	<LoD	<LoD	<LoD	0.25
0.013	<LoD	<LoD	0.02	<LoD	<LoD	<LoD	<LoD		<LoD	<LoD	<LoD	<LoD	<LoD
1.702	0.971	0.323	1.063	0.157	1.64	0.133	0.409						
2.8	3	0.52	2.8	0.18	1.8	0.16	0.39	<LoD		<LoD	<LoD	<LoD	4.6
1.7	0.98	<LoD	1.6	0.11	0.7	0.11	0.09	<LoD		<LoD	<LoD	<LoD	<LoD
<LoD	<LoD	<LoD	<LoD	<LoD	<LoD	<LoD	<LoD	<LoD		<LoD	<LoD	<LoD	<LoD
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<LoD	<LoD	<LoD	<LoD	<LoD	<LoD	<LoD	<LoD	<LoD		<LoD	<LoD	<LoD	<LoD
12	6.5	<LoD	12	0.84	16	1.9	4.6	<LoD		<LoD	<LoD	5.9	5.9
7.1	6.7	0.59	9.5	0.85	8.1	1.4	0.47	<LoD		<LoD	<LoD	<LoD	6.1
<LoD	<LoD	<LoD	<LoD	<LoD	<LoD	<LoD	<LoD	<LoD		<LoD	<LoD	<LoD	<LoD
0.65	0.58	<LoD	0.49	0.21	0.51	<LoD	<LoD	<LoD		<LoD	<LoD	<LoD	<LoD
1.6	1.3	<LoD	1.6	<LoD	1	0.2	0.14	<LoD		<LoD	<LoD	<LoD	2.5
<LoD	<LoD	<LoD	<LoD	<LoD	<LoD	<LoD	<LoD	<LoD		<LoD	<LoD	<LoD	4
<LoD	<LoD	<LoD	<LoD	<LoD	<LoD	<LoD	<LoD	<LoD		<LoD	<LoD	<LoD	<LoD
1.2	1	<LoD	1.1	0.12	0.85	0.16	<LoD	<LoD		<LoD	<LoD	<LoD	<LoD
3.1	3.3	0.37	4.4	<LoD	1.1	<LoD	0.2	<LoD		<LoD	<LoD	<LoD	<LoD
2.5	2	0.23	2.9	<LoD	1	<LoD	0.08	<LoD		<LoD	<LoD	<LoD	<LoD
1.3	1.3	<LoD	1.4	0.13	1	<LoD	0.09	<LoD		<LoD	<LoD	<LoD	<LoD
1.5	1.4	<LoD	1.5	0.29	1.3	0.2	<LoD	<LoD		<LoD	<LoD	<LoD	2
0.33	0.27	<LoD	0.37	<LoD	0.26	<LoD	<LoD	<LoD		<LoD	<LoD	<LoD	2.5
3.4	3.3	0.32	3.5	0.73	5.7	0.5	0.36	<LoD		<LoD	<LoD	<LoD	4.8
1.2	1.1	<LoD	1.1	<LoD	1.4	<LoD	<LoD	<LoD		<LoD	<LoD	<LoD	<LoD
0.99	1.1	<LoD	1.2	<LoD	0.69	<LoD	<LoD	<LoD		<LoD	<LoD	<LoD	<LoD
2.9	3	0.39	3.2	0.18	1.9	0.2	0.21	<LoD		<LoD	<LoD	<LoD	2.5
0.63	0.52	<LoD	0.71	<LoD	0.51	<LoD	<LoD	<LoD		<LoD	<LoD	<LoD	<LoD
46	30	3.4	59	7.3	91	10	0.46	<LoD		<LoD	<LoD	1.8	44
<LoD	<LoD	<LoD	<LoD	<LoD	<LoD	<LoD	<LoD	<LoD		<LoD	<LoD	<LoD	<LoD
1.5	0.44	0.23	1.2	<LoD	0.72	<LoD	<LoD	<LoD		<LoD	<LoD	<LoD	<LoD
93	69	13	92	2.1	59	4.5	0.32	<LoD		<LoD	<LoD	6.6	63

0.59	0.41	<LoD	0.46	<LoD	0.4	<LoD	0.1	<LoD		<LoD	<LoD	<LoD	<LoD
2.2	1.8	0.26	1.8	<LoD	2.7	<LoD	0.22	<LoD		<LoD	<LoD	<LoD	<LoD
0.43	0.33	<LoD	0.36	<LoD	0.34	<LoD	0.11	<LoD		<LoD	<LoD	<LoD	<LoD
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0.2	<LoD	<LoD	0.14	<LoD	0.22	<LoD	0.31	<LoD		<LoD	<LoD	<LoD	<LoD
2.7	2.6	0.35	2.7	<LoD	1.7	<LoD	0.18	<LoD		<LoD	<LoD	<LoD	<LoD
0.93	0.66	<LoD	0.91	<LoD	0.69	<LoD	<LoD	<LoD		<LoD	<LoD	<LoD	<LoD
1.2	1.1	<LoD	1.1	<LoD	0.67	<LoD	0.14	<LoD		<LoD	<LoD	<LoD	<LoD
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0.74	0.62	<LoD	0.74	<LoD	0.44	<LoD	0.15	<LoD		<LoD	<LoD	<LoD	<LoD
2.5	2.2	0.3	2.5	0.24	1.9	0.24	0.17	<LoD		<LoD	<LoD	<LoD	<LoD
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1.2	1.1	<LoD	1	<LoD	0.73	<LoD	0.14	<LoD		<LoD	<LoD	<LoD	3.5
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1	0.74	<LoD	1	<LoD	1	<LoD	<LoD	<LoD		<LoD	<LoD	<LoD	<LoD
1.9	1.5	0.2	2.2	<LoD	2	0.27	0.17	<LoD		<LoD	<LoD	<LoD	3
0.87	0.6	<LoD	0.9	<LoD	1.3	<LoD	<LoD	<LoD		<LoD	<LoD	<LoD	<LoD
1.94	1.71	0.3	1.85	<LoD	1.48	0.12	<LoD				<LoD	<LoD	<LoD
7.94	7.6	1.4	9.26	0.3	4.26	0.42	0.2				<LoD	<LoD	11.22
1.28	1.47	0.24	1.3	<LoD	0.67	<LoD	<LoD				<LoD	<LoD	9.4
0.417	0.351	0.088	0.384	<LoD	0.483	<LoD	0.099				<LoD	<LoD	<LoD
<LoD	<LoD	<LoD	<LoD	<LoD	<LoD	<LoD	<LoD				<LoD	<LoD	<LoD
0.43	0.41	<LoD	0.4	<LoD	0.42	<LoD	<LoD				<LoD	<LoD	10.54
61.5	29.1	7.85	48.8	0.44	10.25	1.29	0.12				<LoD	<LoD	13.1
4.019	3.496	0.597	4.068	0.56	7.43	0.597	0.134				<LoD	<LoD	<LoD
1.424	1.367	0.353	1.23	<LoD	0.535	<LoD	<LoD				<LoD	<LoD	<LoD
2.32	3.31	0.56	2.04	0.09	1.03	0.1	0.3				<LoD	<LoD	9.47
0.88	0.716	0.188	0.939	<LoD	0.376	<LoD	<LoD				<LoD	<LoD	<LoD
2.295	1.452	0.532	2.06	0.016	0.526	0.069	0.051		<LoD	<LoD	<LoD	<LoD	0.728
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1.6	1.2	<LoD	1.9	<LoD	0.33	<LoD	<LoD	<LoD		<LoD	<LoD	<LoD	<LoD
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<LoD	<LoD	<LoD	<LoD	<LoD	<LoD	<LoD	<LoD				<LoD	<LoD	8.63
1.55	1.47	0.23	1.49	<LoD	1	0.09	<LoD				<LoD	<LoD	<LoD
<LoD	<LoD	<LoD	<LoD	<LoD	<LoD	<LoD	<LoD				<LoD	<LoD	9.22
0.21	0.12	<LoD	0.19	<LoD	<LoD	<LoD	<LoD				<LoD	<LoD	9.37
<LoD	<LoD	<LoD	<LoD	<LoD	<LoD	<LoD	<LoD				<LoD	<LoD	<LoD

28000	28000	3200	7800	2000	9700	59000	1600000	1600000	0.24	0.24	0.24	0.24	0.24
78	78	62	62	78	78	78	78	78	58	51	51	51	51
39	55	0	0	1	3	11	20	38	3	0	0	0	0
1000	2800	N/A	N/A	10.862	13.85	166.41	336.905	1200	0.022	N/A	N/A	N/A	N/A
4.709	10.9	N/A	N/A	10.862	0.202	0.925	0.593	11.22	0.004	N/A	N/A	N/A	N/A
0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0
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
Aromatic >C16 - C21	**Aromatic >C21 - C35**	**Aliphatics >C5-6**	**Aliphatics >C6-8**	**Aliphatics >C08 - C10**	**Aliphatics >C10 - C12**	**Aliphatics >C12 - C16**	**Aliphatics >C16 - C21**	**Aliphatics >C21 - C35**	**PCB118**	**PCB 77**	**PCB 105**	**PCB 169**	**PCB156**
<LoD	<LoD	<LoD	<LoD	<LoD	<LoD	1.537	0.593	<LoD					
7.903	131.126	<LoD	<LoD	<LoD	0.202	166.41	336.905	821.92					

8.946	41.741	<LoD	<LoD	<LoD	<LoD	2.639	10.65	40.493					
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21	160	<LoD	<LoD	<LoD	<LoD	4.7	32	190	0.022	<LoD	<LoD	<LoD	<LoD
<LoD	12	<LoD	<LoD	<LoD	<LoD	<LoD	<LoD	47	0.006	<LoD	<LoD	<LoD	<LoD
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<LoD	79	<LoD	<LoD	<LoD	<LoD	<LoD	9.4	190					
53	100	<LoD	<LoD	<LoD	<LoD	<LoD	<LoD	17	<LoD	<LoD	<LoD	<LoD	<LoD
56	170	<LoD	<LoD	<LoD	<LoD	<LoD	<LoD	47					
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33	170	<LoD	<LoD	<LoD	<LoD	6.3	70	440	<LoD	<LoD	<LoD	<LoD	<LoD
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28	160	<LoD	<LoD	<LoD	<LoD	<LoD	<LoD	45	<LoD	<LoD	<LoD	<LoD	<LoD
20	83	<LoD	<LoD	<LoD	<LoD	<LoD	<LoD	<LoD	<LoD	<LoD	<LoD	<LoD	<LoD
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22	430	<LoD	<LoD	<LoD	<LoD	26	98	300	<LoD	<LoD	<LoD	<LoD	<LoD
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92	860	<LoD	<LoD	<LoD	<LoD	<LoD	34	350	<LoD	<LoD	<LoD	<LoD	<LoD
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13	52	<LoD	<LoD	<LoD	<LoD	2.1	8.9	23	<LoD	<LoD	<LoD	<LoD	<LoD
24	56	<LoD	<LoD	<LoD	<LoD	<LoD	<LoD	<LoD	<LoD	<LoD	<LoD	<LoD	<LoD
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620	880	<LoD	<LoD	<LoD	<LoD	<LoD	<LoD	30	<LoD	<LoD	<LoD	<LoD	<LoD
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10	17	<LoD	<LoD	<LoD	<LoD	<LoD	<LoD	38	<LoD	<LoD	<LoD	<LoD	<LoD
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56	580	<LoD	<LoD	<LoD	<LoD	6.3	68	1200	<LoD	<LoD	<LoD	<LoD	<LoD
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34	93	<LoD	<LoD	<LoD	<LoD	<LoD	<LoD	<LoD	<LoD	<LoD	<LoD	<LoD	<LoD
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9.09	28.3			<LoD	<LoD	<LoD	<LoD	11.22					
31.6	128			<LoD	<LoD	<LoD	<LoD	26.9	<LoD				
14	39.7			<LoD	<LoD	<LoD	<LoD	<LoD	<LoD				
4.709	36.66			<LoD	<LoD	<LoD	9.879	72.45	<LoD				
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8.11	22			<LoD	<LoD	<LoD	<LoD	16.3	<LoD				
81.2	557			<LoD	<LoD	<LoD	10.14	40.3					
35.2	119.98			<LoD	<LoD	<LoD	<LoD	33.86					
13.67	87.47			<LoD	<LoD	<LoD	22.32	95.9					
15.9	83.5			<LoD	<LoD	<LoD	10.88	82.3					
6.315	40.26			<LoD	<LoD	<LoD	<LoD	22.77					
6.388	102.216	<LoD	<LoD	<LoD	<LoD	0.925	14.726	523.666					
20	100	<LoD	<LoD	<LoD	<LoD	<LoD	<LoD	100	<LoD	<LoD	<LoD	<LoD	<LoD

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11.3	138			<LoD	<LoD	<LoD	14.8	466	<LoD				
9.18	28.1			<LoD	<LoD	<LoD	<LoD	<LoD					
7.82	23.8			<LoD	<LoD	<LoD	<LoD	<LoD	<LoD				
8.47	21.5			<LoD	<LoD	<LoD	<LoD	<LoD					
<LoD	10.9			<LoD	<LoD	4.94	36	193					

0.24	0.24	0.24	0.24	0.24	0.24	0.24	0.24	240	240	240	240	240	240

51	51	51	51	51	51	51	51	7	7	7	7	7	7
0	0	0	0	0	0	0	1	0	0	0	0	0	0
N/A	N/A	N/A	N/A	N/A	N/A	N/A	0.022	N/A	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A	0.022	N/A	N/A	N/A	N/A	N/A	N/A
0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0

mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg
PCB 189	**PCB 167**	**PCB 126**	**PCB 123**	**PCB 157**	**PCB 81**	**PCB 114**	**PCB Total of 12 WHO**	**PCB153**	**PCB138**	**PCB180**	**PCB52**	**PCB101**	**PCB28**

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520000	54000	3900	500	44	23000	1200	83000	350	35	3.5	170	84000	22000
									36				

67	67	67	67	67	67	67	67	67	67	67	67	67	67
37	45	34	35	42	45	41	16	44	41	15	43	16	45
25	97	34	34	120	140	49	2.1	93	69	13	92	7.3	91
0.1	0.2	0.27	0.24	0.322	0.27	0.29	0.1	0.2	0.27	0.2	0.14	0.11	0.142
0	0	0	0	1	0	0	0	0	1	1	0	0	0
0	0	0	0	0	0	0	0	0	1	0	0	0	0

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
Anthracene	**Pyrene**	**Benzo(g,h,i)perylene**	**Indeno(1,2,3-cd)pyrene**	**Benzo(b)fluoranthene**	**Fluoranthene**	**Benzo(k)fluoranthene**	**Acenaphthylene**	**Chrysene**	**Benzo(a)pyrene**	**Dibenzo(a,h)anthracene**	**Benzo(a)anthracene**	**Acenaphthene**	**Phenanthrene**

0.33	2.7	2.4	1.8	4.5	3.3	1.8	0.1	2.8	3	0.52	2.8	0.18	1.8
0.15	2.2	0.45	0.32	1.5	2.2	0.97	<LoD	1.7	0.98	<LoD	1.6	0.11	0.7
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4.6	13	3.5	3.3	7.2	19	5.8	0.18	12	6.5	<LoD	12	0.84	16
2.1	11	3.4	2.9	7.7	14	4.6	0.61	7.1	6.7	0.59	9.5	0.85	8.1
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<LoD	0.78	0.45	0.29	0.71	1	0.41	<LoD	0.65	0.58	<LoD	0.49	0.21	0.51
0.32	1.9	0.56	0.63	2.1	2.4	0.84	0.21	1.6	1.3	<LoD	1.6	<LoD	1
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0.21	1.5	0.42	0.43	1.2	1.9	0.74	0.12	1.2	1	<LoD	1.1	0.12	0.85
0.68	3.9	1.4	1.5	4.2	4.8	2.2	0.5	3.1	3.3	0.37	4.4	<LoD	1.1
0.56	2.8	0.93	0.85	2.7	3.9	1.4	0.35	2.5	2	0.23	2.9	<LoD	1
0.2	1.7	0.77	0.69	1.8	2.1	0.81	<LoD	1.3	1.3	<LoD	1.4	0.13	1
0.37	2	0.82	0.78	1.7	2.5	0.94	<LoD	1.5	1.4	<LoD	1.5	0.29	1.3
<LoD	0.53	<LoD	<LoD	0.37	0.63	0.29	<LoD	0.33	0.27	<LoD	0.37	<LoD	0.26
0.54	7.2	1.9	1.7	4.8	8.3	1.8	<LoD	3.4	3.3	0.32	3.5	0.73	5.7
0.14	1.8	0.83	0.68	1.6	2.2	0.63	<LoD	1.2	1.1	<LoD	1.1	<LoD	1.4
0.29	1.9	0.6	0.62	1.3	2	0.8	<LoD	0.99	1.1	<LoD	1.2	<LoD	0.69
0.62	4	1.5	1.5	3.1	4.8	2.8	0.22	2.9	3	0.39	3.2	0.18	1.9
0.12	0.98	0.37	0.33	0.85	1.1	0.48	<LoD	0.63	0.52	<LoD	0.71	<LoD	0.51
25	93	14	12	34	130	29	<LoD	46	30	3.4	59	7.3	91
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0.15	1.3	1	1	1.4	1.8	0.85	<LoD	1.5	0.44	0.23	1.2	<LoD	0.72
16	97	34	34	120	140	49	2.1	93	69	13	92	2.1	59

0.1	0.49	0.27	0.24	0.48	0.69	0.41	<LoD	0.59	0.41	<LoD	0.46	<LoD	0.4
0.33	2.5	1.1	1.1	2	3.4	1.7	<LoD	2.2	1.8	0.26	1.8	<LoD	2.7
<LoD	0.45	<LoD	<LoD	0.39	0.59	0.35	<LoD	0.43	0.33	<LoD	0.36	<LoD	0.34
<LoD	0.2	<LoD	<LoD	<LoD	0.27	<LoD	<LoD	0.2	<LoD	<LoD	0.14	<LoD	0.22
0.46	2.8	1.4	1.3	2.8	3.7	1.9	0.24	2.7	2.6	0.35	2.7	<LoD	1.7
0.13	1	0.53	0.43	0.8	1.3	0.78	<LoD	0.93	0.66	<LoD	0.91	<LoD	0.69
0.17	1.1	0.56	0.51	1.1	1.3	0.98	<LoD	1.2	1.1	<LoD	1.1	<LoD	0.67
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0.19	0.79	0.41	0.35	0.51	1	0.65	<LoD	0.74	0.62	<LoD	0.74	<LoD	0.44
0.49	3.3	1.6	1.5	2.8	4.3	1.9	<LoD	2.5	2.2	0.3	2.5	0.24	1.9
<LoD	<LoD	<LoD	<LoD	<LoD	<LoD	<LoD	<LoD	<LoD	<LoD	<LoD	<LoD	<LoD	<LoD
0.19	1.6	0.62	0.58	1.2	1.9	0.87	0.12	1.2	1.1	<LoD	1	<LoD	0.73
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0.18	1.3	0.45	0.38	0.99	1.8	0.54	<LoD	1	0.74	<LoD	1	<LoD	1
0.62	2.3	0.64	0.59	2	3.3	0.99	0.18	1.9	1.5	0.2	2.2	<LoD	2
0.17	1	0.28	0.25	0.84	1.4	0.44	<LoD	0.87	0.6	<LoD	0.9	<LoD	1.3
<LoD	1.096	<LoD	<LoD	0.834	1.42	0.321	<LoD	0.646	0.476	<LoD	0.554	<LoD	0.501
1.77	9.42	3.04	4.28	11.36	11.74	3.42	0.433	7.27	7.14	1.257	8.06	0.398	5.16
0.165	1.4	<LoD	<LoD	1.69	1.67	0.683	<LoD	1.14	1.136	<LoD	1.183	<LoD	0.526
<LoD	0.265	<LoD	<LoD	0.322	0.324	<LoD	<LoD	0.236	<LoD	<LoD	<LoD	<LoD	0.142
1.279	8.404	1.328	1.596	5.53	9.878	2.046	<LoD	4.251	3.678	<LoD	4.348	0.363	5.25
0.1629	1.0843	<LoD	<LoD	1.1253	1.162	0.3964	<LoD	0.7517	0.6515	<LoD	0.6651	<LoD	0.3576
0.727	4.2	2.02	2.71	5.89	4.05	1.68	0.297	3.13	3.28	0.661	2.67	0.179	1.71
0.1643	0.7406	<LoD	<LoD	0.9143	1.0047	0.3415	<LoD	0.7535	0.5469	<LoD	0.811	<LoD	0.4014
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0.13	1.7	0.49	0.44	1.8	1.7	0.81	0.25	1.6	1.2	<LoD	1.9	<LoD	0.33
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0.279	1.48	<LoD	0.58	1.44	1.76	0.465	0.152	1.1	0.906	<LoD	1.015	<LoD	1.005
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63000	190	4400	440	110	220	3500	30	31	3500	2000	3500	3500	3500

67	67	67	67	56	67	67	67	67	67	67	67	67	11
15	25	0	1	0	0	0	0	0	0	0	0	0	0
10	4.6	N/A	0.6	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
0.11	0.08	N/A	0.6	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0

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
Fluorene	**Naphthalene**	**1,4-Dichlorobenzene**	**Phenol**	**Hexachlorobenzene**	**1,2,4-Trichlorobenzene**	**2,4-Dichlorophenol**	**1,3-Dichlorobenzene**	**Hexachlorobutadiene**	**2,4,6-Trichlorophenol**	**1,2-Dichlorobenzene**	**2-Chlorophenol**	**2,4,5-Trichlorophenol**	**4-Chlorophenol**

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0	0	1	3	0	2	0	1	0	0	0	1	0	0
N/A	N/A	9.74	4.87	N/A	8.53	N/A	1.2	N/A	N/A	N/A	1.2	N/A	N/A
N/A	N/A	9.74	2.28	N/A	4.56	N/A	1.2	N/A	N/A	N/A	1.2	N/A	N/A
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0	0	0	0	0	0	0	0	0	0	0	0	0	0

mg/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg
Pentachlorophenol	**Ethyl Benzene**	**Toluene**	**Benzene**	**O-Xylene**	**m and p-Xylene**	**Naphthalene**	**1,4-Dichlorobenzene**	**1,2,4-Trichlorobenzene**	**1,3-Dichlorobenzene**	**Hexachlorobutadiene**	**1,2-Dichlorobenzene**	**1,2-Dichloroethane**	**Chlorobenzene**

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19000	2900	110000	99000	660000	59	670	1200	102000	23000

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N/A	4.56	N/A	N/A	24.4	N/A	N/A	3.42	N/A	15.2
N/A	4.56	N/A	N/A	24.4	N/A	N/A	2.2	N/A	1.3
0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0

ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg
Tetrachloroethene	**Carbon Tetrachloride**	**1,1,1,2-Tetrachloroethar**	**Chloroform**	**1,1,1-Trichloroethane**	**Vinyl Chloride**	**1,1-Dichloroethane**	**Trichloroethene**	**1,2,3-Trichlorobenzene**	**1,3,5-Trimethylbenzene**

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SCREENING CRITERIA									
Commercial (S4UL)		0	2300	58	980	640	190	8600	68000
Commercial (C4SL)		0	2300			640	220		
SUMMARY									
No. Tested		6	22	22	22	22	22	79	22
No. Detected		0	22	3	22	21	20	79	22
Maximum Value		N/A	13730	5.4	59.7	38	3.2	190	256
Minimum Detected Value		N/A	48	2.3	2.5	5	0.2	0.9	14
No. of S4UL Exceedances		0	4	0	0	0	0	0	0
No. of C4SL Exceedances		0	4	0	0	0	0	0	0
DATA									
Unit		N/A	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
SAMPLE ID	**Strata**	**Asbestos Quantification**	**Lead**	**Mercury (MS)**	**Nickel (MS)**	**Arsenic (MS)**	**Cadmium (MS)**	**Chromium (MS)**	**Copper (MS)**
4-BH202/ES/0.9	MG		688	<LoD	12.4	9	0.5	9.6	37
4-BH203/ES/0.9-1.1	MG		51	<LoD	2.5	5	0.2	4.8	30
4-WS202/ES/0.1	MG		1818	<LoD	23.3	14	1.1	12.1	113
4-WS203/ES/0.2	MG		2875	3.6	27.6	37	1.6	19	206
4-WS203/ES/1.2	MG		423	<LoD	29.9	11	<LoD	29.4	27
4-WS204/ES/0.8	MG		1871	5.4	17.8	30	1.8	35.4	141
4-WS204/ES/1	MG		289	<LoD	27.4	5	0.3	26.5	38
4-WS205/ES/0.2	MG		563	<LoD	25	6	0.4	20.6	91
4-WS206/ES/0.2	MG		491	<LoD	16.7	13	0.5	13.4	77
4-WS206/ES/1	MG		48	<LoD	41.2	8	0.6	31.2	35
4-WS207/ES/1	MG		156	<LoD	27.2	16	0.5	18.1	84
4-WS207/ES/2.4-2.8	MG		93	<LoD	23.7	17	0.7	17.7	32
4-WS208/ES/1.5-1.8	MG		241	<LoD	19	9	0.2	16.6	47

4-WS209/ES/1	MG		371	2.3	14.4	23	0.5	12.1	70
4-WS209/ES/3	MG		64	<LoD	59.7	38	1.1	34.7	15
4-WS210/ES/0.4-0.5	MG		664	<LoD	21	22	0.5	19	73
4-WS211/ES/0.4-0.7	MG		2303	<LoD	36.7	27	0.2	13.2	256
4-WS212/ES/0.4-0.6	MG		13730	<LoD	33.8	27	3.2	17.8	70
4-WS212/ES/1-1.2	MG		5296	<LoD	17.3	16	0.7	9.3	50
5-BH801/ES4/0.8-1.5	MG							45	
5-BH802/ES4/0.8-1.5	MG							13	
5-BH802/ES12/3-3.5	MG							18	
5-BH901/ES9/2-2.25	MG							25	
5-BH901/ES22/4.5-5	MG							3.9	
5-BH902/ES4/0.5-1	MG							23	
5-BH903/ES4/0.7-1.2	MG							21	
5-BH903/ES17/5	MG							13	
5-HP901/ES1/0	MG	<LoD						24	
5-HP902/ES1/0	MG	<LoD						17	
5-HP903/ES1/0	MG							11	
5-HP904/ES1/0	MG							8	
5-HP905/ES1/0	MG	<LoD						39	
5-HP906/ES1/0	MG							14	
5-HP907/ES1/0	MG							18	
5-HP908/ES1/0	MG	<LoD						13	
5-HP909/ES1/0	MG	<LoD						45	
5-HP910/ES1/0	MG							25	
5-HP912/ES1/0	MG							60	
5-HP914/ES1/0	MG							100	
5-HP916/ES1/0	MG	<LoD						29	
5-HP917/ES1/0.5	MG							11	
5-HP918/ES1/0.5	MG							23	
5-HP919/ES1/0.5	MG							42	
5-TP901/ES5/1.6	MG							32	
5-TP902/ES5/1.1	MG							40	
5-TP902/ES12/3	MG							27	

5-TP902A/ES3/3.5	MG							26	
5-TP903/ES4/0.5	MG							29	
5-TP903/ES11/3	MG							19	
5-TP904/ES1/0.35	MG							32	
5-TP904/ES4/0.5	MG							19	
5-TP905/ES5/0.55	MG							9.2	
5-TP906/ES2/0.15	MG							33	
5-TP907/ES1/0.1	MG							79	
5-TP908/ES11/0.8	MG							34	
5-TP908/ES8/0.8	MG							11	
5-TP909/ES3/0.4	MG							21	
5-TP910/ES1/0.5	MG							41	
5-TP911/ES1/0.5	MG							190	
5-TP911/ES7/1.9	MG							7.7	
5-TP911/ES10/2.4	MG							0.9	
5-TP912/ES5/0.8	MG							9.8	
5-TP913/ES5/0.7	MG							12	
5-TP913/ES10/1.5	MG							24	
4-BH201/ES/0.7	Head		202	<LoD	24.7	5	0.4	19.4	45
4-BH201/ES/3.5	Head		87	<LoD	17.8	8	0.5	11.8	33
4-WS205/ES/0.6	Head		51	<LoD	23.7	<LoD	<LoD	29	14
5-BH801/ES17/4-5	Head							14	
5-BH902/ES14/3.5-3.7	Head							21	
5-TP901/ES14/4.5	Head							25	
5-TP902A/ES6/4	Head							35	
5-TP904/ES7/1	Head							34	
5-TP904/ES10/2	Head							31	
5-TP904/ES1/2	Head								
5-TP904/ES6/4	Head							32	
5-TP905/ES10/2	Head							28	
5-TP907/ES13/3	Head							35	
5-TP909/ES14/4	Head							36	
5-TP910/ES4/1.5	Head							13	

5-TP912/ES14/3.4	Head							26	

9000	730000	12000	8600	33	240000	12	5700000	56000000	27000	6600000	5900000	3200	2000
				33					90000				

22	22	22	57	57	0	0	62	62	62	62	62	0	0
22	22	1	56	0	0	0	0	0	0	0	0	0	0
41.8	1642	3	190	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
3	50.9	3	3.9	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0

mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	mg/kg	mg/kg
Vanadium (MS)	**Zinc (MS)**	**Selenium (MS)**	**Trivalent Chromium**	**Chromium - Hexavalent**	**Boron.**	**Beryllium**	**Ethyl Benzene**	**Toluene**	**Benzene**	**O-Xylene**	**m and p-Xylene**	**GRO C5-C6 Alpihatic**	**GRO C8-C10 Alpihatic**
20.8	99.2	<LoD											
3	50.9	<LoD											
20.3	481.6	<LoD											
24	868	<LoD											
38.6	126	<LoD											
41.8	561.8	3											
33.5	156.7	<LoD											
31.2	379	<LoD											
15.9	265.1	<LoD											
34	95.3	<LoD					<LoD	<LoD	<LoD	<LoD	<LoD		
14.4	103.4	<LoD											
13	131.9	<LoD											
21.3	109.8	<LoD					<LoD	<LoD	<LoD	<LoD	<LoD		

13.2	577.5	<LoD					<LoD	<LoD	<LoD	<LoD	<LoD		
31.5	193.6	<LoD					<LoD	<LoD	<LoD	<LoD	<LoD		
17.2	413.8	<LoD											
14.8	599.7	<LoD											
23.1	1642	<LoD											
23.9	969.9	<LoD											
			45	<LoD			<LoD	<LoD	<LoD	<LoD	<LoD		
			13	<LoD			<LoD	<LoD	<LoD	<LoD	<LoD		
			18	<LoD			<LoD	<LoD	<LoD	<LoD	<LoD		
			25	<LoD			<LoD	<LoD	<LoD	<LoD	<LoD		
			3.9	<LoD			<LoD	<LoD	<LoD	<LoD	<LoD		
			23	<LoD			<LoD	<LoD	<LoD	<LoD	<LoD		
			21	<LoD			<LoD	<LoD	<LoD	<LoD	<LoD		
			13	<LoD			<LoD	<LoD	<LoD	<LoD	<LoD		
			24	<LoD			<LoD	<LoD	<LoD	<LoD	<LoD		
			17	<LoD			<LoD	<LoD	<LoD	<LoD	<LoD		
			11	<LoD			<LoD	<LoD	<LoD	<LoD	<LoD		
			8	<LoD			<LoD	<LoD	<LoD	<LoD	<LoD		
			39	<LoD			<LoD	<LoD	<LoD	<LoD	<LoD		
			14	<LoD			<LoD	<LoD	<LoD	<LoD	<LoD		
			18	<LoD			<LoD	<LoD	<LoD	<LoD	<LoD		
			13	<LoD			<LoD	<LoD	<LoD	<LoD	<LoD		
			45	<LoD			<LoD	<LoD	<LoD	<LoD	<LoD		
			25	<LoD			<LoD	<LoD	<LoD	<LoD	<LoD		
			60	<LoD			<LoD	<LoD	<LoD	<LoD	<LoD		
			100	<LoD			<LoD	<LoD	<LoD	<LoD	<LoD		
			29	<LoD			<LoD	<LoD	<LoD	<LoD	<LoD		
			11	<LoD			<LoD	<LoD	<LoD	<LoD	<LoD		
			23	<LoD			<LoD	<LoD	<LoD	<LoD	<LoD		
			42	<LoD			<LoD	<LoD	<LoD	<LoD	<LoD		
			31	<LoD			<LoD	<LoD	<LoD	<LoD	<LoD		
			40	<LoD			<LoD	<LoD	<LoD	<LoD	<LoD		
			27	<LoD			<LoD	<LoD	<LoD	<LoD	<LoD		

			26	<LoD			<LoD	<LoD	<LoD	<LoD	<LoD		
			29	<LoD			<LoD	<LoD	<LoD	<LoD	<LoD		
			19	<LoD			<LoD	<LoD	<LoD	<LoD	<LoD		
			19	<LoD			<LoD	<LoD	<LoD	<LoD	<LoD		
			19	<LoD			<LoD	<LoD	<LoD	<LoD	<LoD		
			9.2	<LoD			<LoD	<LoD	<LoD	<LoD	<LoD		
			33	<LoD			<LoD	<LoD	<LoD	<LoD	<LoD		
			79	<LoD			<LoD	<LoD	<LoD	<LoD	<LoD		
			34	<LoD			<LoD	<LoD	<LoD	<LoD	<LoD		
			11	<LoD			<LoD	<LoD	<LoD	<LoD	<LoD		
			21	<LoD			<LoD	<LoD	<LoD	<LoD	<LoD		
			41	<LoD			<LoD	<LoD	<LoD	<LoD	<LoD		
			190	<LoD			<LoD	<LoD	<LoD	<LoD	<LoD		
			7.7	<LoD			<LoD	<LoD	<LoD	<LoD	<LoD		
			<LoD	<LoD			<LoD	<LoD	<LoD	<LoD	<LoD		
			9.9	<LoD			<LoD	<LoD	<LoD	<LoD	<LoD		
			11	<LoD			<LoD	<LoD	<LoD	<LoD	<LoD		
			24	<LoD			<LoD	<LoD	<LoD	<LoD	<LoD		
25	136.3	<LoD					<LoD	<LoD	<LoD	<LoD	<LoD		
18	119.8	<LoD											
37.8	62.4	<LoD											
			14	<LoD			<LoD	<LoD	<LoD	<LoD	<LoD		
			21	<LoD			<LoD	<LoD	<LoD	<LoD	<LoD		
			25	<LoD			<LoD	<LoD	<LoD	<LoD	<LoD		
			35	<LoD			<LoD	<LoD	<LoD	<LoD	<LoD		
			34	<LoD			<LoD	<LoD	<LoD	<LoD	<LoD		
			31	<LoD			<LoD	<LoD	<LoD	<LoD	<LoD		
			32	<LoD			<LoD	<LoD	<LoD	<LoD	<LoD		
			28	<LoD			<LoD	<LoD	<LoD	<LoD	<LoD		
			35	<LoD			<LoD	<LoD	<LoD	<LoD	<LoD		
			36	<LoD			<LoD	<LoD	<LoD	<LoD	<LoD		
			13	<LoD			<LoD	<LoD	<LoD	<LoD	<LoD		

			26	<LoD			<LoD	<LoD	<LoD	<LoD	<LoD		

3200	7800		7800		2000	520000	54000	3900	500	44	23000	1200	83000

0	0	0	0	0	0	63	63	63	63	63	63	63	63
0	0	0	0	0	0	35	41	36	36	38	41	38	18
N/A	N/A	N/A	N/A	N/A	N/A	25	97	34	34	120	140	49	2.1
N/A	N/A	N/A	N/A	N/A	N/A	0.1	0.2	0.27	0.165	0.37	0.27	0.29	0.024
0	0	0	0	0	0	0	0	0	0	1	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0

mg/kg	mg/kg	0	mg/kg	0	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
GRO C5-C6	**GRO C6-C7**	**GRO C6-C7 Alpihatic**	**GRO C7-C8**	**GRO C7-C8 Alpihatic**	**GRO C8-C10**	**Anthracene**	**Pyrene**	**Benzo(g,h,i)perylene**	**Indeno(1,2,3-cd)pyrene**	**Benzo(b)fluoranthene**	**Fluoranthene**	**Benzo(k)fluoranthene**	**Acenaphthylene**
						0.822	6.066	2.437	2.424	7.466	7.919	3.354	0.307
						3.184	13.772	0.272	0.165	0.755	23.264	0.372	0.024

						0.989	3.982	1.562	1.17	1.877	5.021	1.035	0.07
						<LoD	<LoD	<LoD	<LoD	<LoD	<LoD	<LoD	<LoD
						0.401	1.887	0.587	0.514	1.745	2.426	0.909	0.097
						0.33	2.7	2.4	1.8	4.5	3.3	1.8	0.1
						0.15	2.2	0.45	0.32	1.5	2.2	0.97	<LoD
						<LoD	<LoD	<LoD	<LoD	<LoD	<LoD	<LoD	<LoD
						<LoD	<LoD	<LoD	<LoD	<LoD	<LoD	<LoD	<LoD
						<LoD	<LoD	<LoD	<LoD	<LoD	<LoD	<LoD	<LoD
						4.6	13	3.5	3.3	7.2	19	5.8	0.18
						2.1	11	3.4	2.9	7.7	14	4.6	0.61
						<LoD	<LoD	<LoD	<LoD	<LoD	<LoD	<LoD	<LoD
						<LoD	0.78	0.45	0.29	0.71	1	0.41	<LoD
						0.32	1.9	0.56	0.63	2.1	2.4	0.84	0.21
						<LoD	<LoD	<LoD	<LoD	<LoD	<LoD	<LoD	<LoD
						<LoD	<LoD	<LoD	<LoD	<LoD	<LoD	<LoD	<LoD
						0.21	1.5	0.42	0.43	1.2	1.9	0.74	0.12
						0.68	3.9	1.4	1.5	4.2	4.8	2.2	0.5
						0.56	2.8	0.93	0.85	2.7	3.9	1.4	0.35
						0.2	1.7	0.77	0.69	1.8	2.1	0.81	<LoD
						0.37	2	0.82	0.78	1.7	2.5	0.94	<LoD
						<LoD	0.53	<LoD	<LoD	0.37	0.63	0.29	<LoD
						0.54	7.2	1.9	1.7	4.8	8.3	1.8	<LoD
						0.14	1.8	0.83	0.68	1.6	2.2	0.63	<LoD
						0.29	1.9	0.6	0.62	1.3	2	0.8	<LoD
						0.62	4	1.5	1.5	3.1	4.8	2.8	0.22
						0.12	0.98	0.37	0.33	0.85	1.1	0.48	<LoD
						25	93	14	12	34	130	29	<LoD
						<LoD	<LoD	<LoD	<LoD	<LoD	<LoD	<LoD	<LoD
						0.15	1.3	1	1	1.4	1.8	0.85	<LoD
						16	97	34	34	120	140	49	2.1

						0.1	0.49	0.27	0.24	0.48	0.69	0.41	<LoD
						0.33	2.5	1.1	1.1	2	3.4	1.7	<LoD
						<LoD	0.45	<LoD	<LoD	0.39	0.59	0.35	<LoD
						<LoD	<LoD	<LoD	<LoD	<LoD	<LoD	<LoD	<LoD
						<LoD	0.2	<LoD	<LoD	<LoD	0.27	<LoD	<LoD
						0.46	2.8	1.4	1.3	2.8	3.7	1.9	0.24
						0.13	1	0.53	0.43	0.8	1.3	0.78	<LoD
						0.17	1.1	0.56	0.51	1.1	1.3	0.98	<LoD
						<LoD	<LoD	<LoD	<LoD	<LoD	<LoD	<LoD	<LoD
						0.19	0.79	0.41	0.35	0.51	1	0.65	<LoD
						0.49	3.3	1.6	1.5	2.8	4.3	1.9	<LoD
						<LoD	<LoD	<LoD	<LoD	<LoD	<LoD	<LoD	<LoD
						0.19	1.6	0.62	0.58	1.2	1.9	0.87	0.12
						<LoD	<LoD	<LoD	<LoD	<LoD	<LoD	<LoD	<LoD
						<LoD	<LoD	<LoD	<LoD	<LoD	<LoD	<LoD	<LoD
						0.17	1.3	0.45	0.38	0.98	1.8	0.53	<LoD
						0.62	2.3	0.64	0.59	2	3.3	0.99	0.18
						0.17	1	0.28	0.25	0.84	1.4	0.44	<LoD
						0.51	1.759	0.545	0.638	1.893	2.538	1.245	0.164
						<LoD	<LoD	<LoD	<LoD	<LoD	<LoD	<LoD	<LoD
						<LoD	0.35	<LoD	<LoD	<LoD	0.42	<LoD	<LoD
						<LoD	<LoD	<LoD	<LoD	<LoD	<LoD	<LoD	<LoD
						<LoD	<LoD	<LoD	<LoD	<LoD	<LoD	<LoD	<LoD
						<LoD	<LoD	<LoD	<LoD	<LoD	<LoD	<LoD	<LoD
						<LoD	0.2	<LoD	<LoD	<LoD	0.34	<LoD	<LoD
						<LoD	<LoD	<LoD	<LoD	<LoD	<LoD	<LoD	<LoD
						<LoD	<LoD	<LoD	<LoD	<LoD	<LoD	<LoD	<LoD
						<LoD	<LoD	<LoD	<LoD	<LoD	<LoD	<LoD	<LoD
						<LoD	<LoD	<LoD	<LoD	<LoD	<LoD	<LoD	<LoD
						0.13	1.7	0.49	0.44	1.8	1.7	0.81	0.25

						<LoD	<LoD	<LoD	<LoD	<LoD	<LoD	<LoD	<LoD

350	35	3.5	170	84000	22000	63000	190	26000	26000000	56000	3500	16000	36000
	36												

63	63	63	63	63	63	63	63	57	5	62	62	62	62
41	38	18	41	18	41	18	27	0	0	0	0	4	16
93	69	13	92	7.3	91	10	4.6	N/A	N/A	N/A	N/A	6.6	63
0.013	0.225	0.085	0.02	0.016	0.18	0.069	0.051	N/A	N/A	N/A	N/A	0.304	0.25
0	1	1	0	0	0	0	0	0	0	0	0	0	0
0	1	0	0	0	0	0	0	0	0	0	0	0	0

mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	ug/kg	mg/kg	mg/kg	mg/kg	mg/kg
Chrysene	**Benzo(a)pyrene**	**Dibenzo(a,h)anthracene**	**Benzo(a)anthracene**	**Acenaphthene**	**Phenanthrene**	**Fluorene**	**Naphthalene**	**Aromatics >C5-7**	**Aromatics >C6-7**	**Aromatics >C7-8**	**Aromatic >C08 - C10**	**Aromatic >C10 - C12**	**Aromatic >C12 - C16**
4.332	3.387	0.839	3.7	0.105	3.486	0.175	0.341						
6.394	0.225	0.085	2.24	0.055	19.708	0.194	3.446						
									<LoD	<LoD	<LoD	<LoD	<LoD
									<LoD	<LoD	<LoD	0.304	0.257

2.504	2.18	0.548	2.281	0.273	3.817	0.291	0.653		<LoD	<LoD	<LoD	<LoD	0.25
0.013	<LoD	<LoD	0.02	<LoD	<LoD	<LoD	<LoD		<LoD	<LoD	<LoD	<LoD	<LoD
1.702	0.971	0.323	1.063	0.157	1.64	0.133	0.409						
2.8	3	0.52	2.8	0.18	1.8	0.16	0.39	<LoD		<LoD	<LoD	<LoD	4.6
1.7	0.98	<LoD	1.6	0.11	0.7	0.11	0.09	<LoD		<LoD	<LoD	<LoD	<LoD
<LoD	<LoD	<LoD	<LoD	<LoD	<LoD	<LoD	<LoD	<LoD		<LoD	<LoD	<LoD	<LoD
<LoD	<LoD	<LoD	<LoD	<LoD	<LoD	<LoD	<LoD	<LoD		<LoD	<LoD	<LoD	<LoD
<LoD	<LoD	<LoD	<LoD	<LoD	<LoD	<LoD	<LoD	<LoD		<LoD	<LoD	<LoD	<LoD
12	6.5	<LoD	12	0.84	16	1.9	4.6	<LoD		<LoD	<LoD	5.9	5.9
7.1	6.7	0.59	9.5	0.85	8.1	1.4	0.47	<LoD		<LoD	<LoD	<LoD	6.1
<LoD	<LoD	<LoD	<LoD	<LoD	<LoD	<LoD	<LoD	<LoD		<LoD	<LoD	<LoD	<LoD
0.65	0.58	<LoD	0.49	0.21	0.51	<LoD	<LoD	<LoD		<LoD	<LoD	<LoD	<LoD
1.6	1.3	<LoD	1.6	<LoD	1	0.2	0.14	<LoD		<LoD	<LoD	<LoD	2.5
<LoD	<LoD	<LoD	<LoD	<LoD	<LoD	<LoD	<LoD	<LoD		<LoD	<LoD	<LoD	4
<LoD	<LoD	<LoD	<LoD	<LoD	<LoD	<LoD	<LoD	<LoD		<LoD	<LoD	<LoD	<LoD
1.2	1	<LoD	1.1	0.12	0.85	0.16	<LoD	<LoD		<LoD	<LoD	<LoD	<LoD
3.1	3.3	0.37	4.4	<LoD	1.1	<LoD	0.2	<LoD		<LoD	<LoD	<LoD	<LoD
2.5	2	0.23	2.9	<LoD	1	<LoD	0.08	<LoD		<LoD	<LoD	<LoD	<LoD
1.3	1.3	<LoD	1.4	0.13	1	<LoD	0.09	<LoD		<LoD	<LoD	<LoD	<LoD
1.5	1.4	<LoD	1.5	0.29	1.3	0.2	<LoD	<LoD		<LoD	<LoD	<LoD	2
0.33	0.27	<LoD	0.37	<LoD	0.26	<LoD	<LoD	<LoD		<LoD	<LoD	<LoD	2.5
3.4	3.3	0.32	3.5	0.73	5.7	0.5	0.36	<LoD		<LoD	<LoD	<LoD	4.8
1.2	1.1	<LoD	1.1	<LoD	1.4	<LoD	<LoD	<LoD		<LoD	<LoD	<LoD	<LoD
0.99	1.1	<LoD	1.2	<LoD	0.69	<LoD	<LoD	<LoD		<LoD	<LoD	<LoD	<LoD
2.9	3	0.39	3.2	0.18	1.9	0.2	0.21	<LoD		<LoD	<LoD	<LoD	2.5
0.63	0.52	<LoD	0.71	<LoD	0.51	<LoD	<LoD	<LoD		<LoD	<LoD	<LoD	<LoD
46	30	3.4	59	7.3	91	10	0.46	<LoD		<LoD	<LoD	1.8	44
<LoD	<LoD	<LoD	<LoD	<LoD	<LoD	<LoD	<LoD	<LoD		<LoD	<LoD	<LoD	<LoD
1.5	0.44	0.23	1.2	<LoD	0.72	<LoD	<LoD	<LoD		<LoD	<LoD	<LoD	<LoD
93	69	13	92	2.1	59	4.5	0.32	<LoD		<LoD	<LoD	6.6	63

0.59	0.41	<LoD	0.46	<LoD	0.4	<LoD	0.1	<LoD		<LoD	<LoD	<LoD	<LoD
2.2	1.8	0.26	1.8	<LoD	2.7	<LoD	0.22	<LoD		<LoD	<LoD	<LoD	<LoD
0.43	0.33	<LoD	0.36	<LoD	0.34	<LoD	0.11	<LoD		<LoD	<LoD	<LoD	<LoD
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0.2	<LoD	<LoD	0.14	<LoD	0.22	<LoD	0.31	<LoD		<LoD	<LoD	<LoD	<LoD
2.7	2.6	0.35	2.7	<LoD	1.7	<LoD	0.18	<LoD		<LoD	<LoD	<LoD	<LoD
0.93	0.66	<LoD	0.91	<LoD	0.69	<LoD	<LoD	<LoD		<LoD	<LoD	<LoD	<LoD
1.2	1.1	<LoD	1.1	<LoD	0.67	<LoD	0.14	<LoD		<LoD	<LoD	<LoD	<LoD
<LoD	<LoD	<LoD	<LoD	<LoD	<LoD	<LoD	<LoD	<LoD		<LoD	<LoD	<LoD	<LoD
0.74	0.62	<LoD	0.74	<LoD	0.44	<LoD	0.15	<LoD		<LoD	<LoD	<LoD	<LoD
2.5	2.2	0.3	2.5	0.24	1.9	0.24	0.17	<LoD		<LoD	<LoD	<LoD	<LoD
<LoD	<LoD	<LoD	<LoD	<LoD	<LoD	<LoD	<LoD	<LoD		<LoD	<LoD	<LoD	<LoD
1.2	1.1	<LoD	1	<LoD	0.73	<LoD	0.14	<LoD		<LoD	<LoD	<LoD	3.5
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<LoD	<LoD	<LoD	<LoD	<LoD	<LoD	<LoD	<LoD	<LoD		<LoD	<LoD	<LoD	<LoD
1	0.74	<LoD	1	<LoD	1	<LoD	<LoD	<LoD		<LoD	<LoD	<LoD	<LoD
1.9	1.5	0.2	2.2	<LoD	2	0.27	0.17	<LoD		<LoD	<LoD	<LoD	3
0.87	0.6	<LoD	0.9	<LoD	1.3	<LoD	<LoD	<LoD		<LoD	<LoD	<LoD	<LoD
2.295	1.452	0.532	2.06	0.016	0.526	0.069	0.051		<LoD	<LoD	<LoD	<LoD	0.728
<LoD	<LoD	<LoD	<LoD	<LoD	<LoD	<LoD	<LoD	<LoD		<LoD	<LoD	<LoD	<LoD
0.22	<LoD	<LoD	0.31	<LoD	0.18	<LoD	<LoD	<LoD		<LoD	<LoD	<LoD	<LoD
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1.6	1.2	<LoD	1.9	<LoD	0.33	<LoD	<LoD	<LoD		<LoD	<LoD	<LoD	<LoD

<LoD	<LoD	<LoD	<LoD	<LoD	<LoD	<LoD	<LoD	<LoD		<LoD	<LoD	<LoD	<LoD

28000	28000	3200	7800	2000	9700	59000	1600000	1600000	0.24	0.24	0.24	0.24	0.24

62	62	62	62	62	62	62	62	62	51	51	51	51	51
25	39	0	0	0	2	10	14	26	3	0	0	0	0
1000	2800	N/A	N/A	N/A	8.1	166.41	336.905	1200	0.022	N/A	N/A	N/A	N/A
6.388	12	N/A	N/A	N/A	0.202	0.925	0.593	17	0.004	N/A	N/A	N/A	N/A
0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0

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
Aromatic >C16 - C21	**Aromatic >C21 - C35**	**Aliphatics >C5-6**	**Aliphatics >C6-8**	**Aliphatics >C08 - C10**	**Aliphatics >C10 - C12**	**Aliphatics >C12 - C16**	**Aliphatics >C16 - C21**	**Aliphatics >C21 - C35**	**PCB118**	**PCB 77**	**PCB 105**	**PCB 169**	**PCB156**
<LoD	<LoD	<LoD	<LoD	<LoD	<LoD	1.537	0.593	<LoD					
7.903	131.126	<LoD	<LoD	<LoD	0.202	166.41	336.905	821.92					

8.946	41.741	<LoD	<LoD	<LoD	<LoD	2.639	10.65	40.493					
<LoD	<LoD	<LoD	<LoD	<LoD	<LoD	<LoD	<LoD	<LoD					
21	160	<LoD	<LoD	<LoD	<LoD	4.7	32	190	0.022	<LoD	<LoD	<LoD	<LoD
<LoD	12	<LoD	<LoD	<LoD	<LoD	<LoD	<LoD	47	0.006	<LoD	<LoD	<LoD	<LoD
<LoD	39	<LoD	<LoD	<LoD	<LoD	<LoD	<LoD	22	<LoD	<LoD	<LoD	<LoD	<LoD
<LoD	<LoD	<LoD	<LoD	<LoD	<LoD	<LoD	<LoD	<LoD					
<LoD	79	<LoD	<LoD	<LoD	<LoD	<LoD	9.4	190					
53	100	<LoD	<LoD	<LoD	<LoD	<LoD	<LoD	17	<LoD	<LoD	<LoD	<LoD	<LoD
56	170	<LoD	<LoD	<LoD	<LoD	<LoD	<LoD	47					
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99	150	<LoD	<LoD	<LoD	<LoD	<LoD	<LoD	<LoD	<LoD	<LoD	<LoD	<LoD	<LoD
33	170	<LoD	<LoD	<LoD	<LoD	6.3	70	440	<LoD	<LoD	<LoD	<LoD	<LoD
<LoD	120	<LoD	<LoD	<LoD	<LoD	<LoD	27	260	<LoD	<LoD	<LoD	<LoD	<LoD
<LoD	140	<LoD	<LoD	<LoD	<LoD	<LoD	<LoD	71	<LoD	<LoD	<LoD	<LoD	<LoD
28	160	<LoD	<LoD	<LoD	<LoD	<LoD	<LoD	45	<LoD	<LoD	<LoD	<LoD	<LoD
20	83	<LoD	<LoD	<LoD	<LoD	<LoD	<LoD	<LoD	<LoD	<LoD	<LoD	<LoD	<LoD
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22	430	<LoD	<LoD	<LoD	<LoD	26	98	300	<LoD	<LoD	<LoD	<LoD	<LoD
<LoD	25	<LoD	<LoD	<LoD	<LoD	<LoD	<LoD	<LoD	<LoD	<LoD	<LoD	<LoD	<LoD
92	860	<LoD	<LoD	<LoD	<LoD	<LoD	34	350	<LoD	<LoD	<LoD	<LoD	<LoD
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13	52	<LoD	<LoD	<LoD	<LoD	2.1	8.9	23	<LoD	<LoD	<LoD	<LoD	<LoD
24	56	<LoD	<LoD	<LoD	<LoD	<LoD	<LoD	<LoD	<LoD	<LoD	<LoD	<LoD	<LoD
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620	880	<LoD	<LoD	<LoD	<LoD	<LoD	<LoD	30	<LoD	<LoD	<LoD	<LoD	<LoD
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1000	2800	<LoD	<LoD	<LoD	8.1	30	74	280	<LoD	<LoD	<LoD	<LoD	<LoD

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16	49	<LoD	<LoD	<LoD	<LoD	<LoD	12	60	<LoD	<LoD	<LoD	<LoD	<LoD
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17	38	<LoD	<LoD	<LoD	<LoD	<LoD	<LoD	<LoD	<LoD	<LoD	<LoD	<LoD	<LoD
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10	17	<LoD	<LoD	<LoD	<LoD	<LoD	<LoD	38	<LoD	<LoD	<LoD	<LoD	<LoD
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12	17	<LoD	<LoD	<LoD	<LoD	<LoD	<LoD	<LoD	<LoD	<LoD	<LoD	<LoD	<LoD
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56	580	<LoD	<LoD	<LoD	<LoD	6.3	68	1200	<LoD	<LoD	<LoD	<LoD	<LoD
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<LoD	28	<LoD	<LoD	<LoD	<LoD	<LoD	<LoD	<LoD	<LoD	<LoD	<LoD	<LoD	<LoD
34	93	<LoD	<LoD	<LoD	<LoD	<LoD	<LoD	<LoD	<LoD	<LoD	<LoD	<LoD	<LoD
21	22	<LoD	<LoD	<LoD	<LoD	<LoD	<LoD	<LoD	<LoD	<LoD	<LoD	<LoD	<LoD
6.388	102.216	<LoD	<LoD	<LoD	<LoD	0.925	14.726	523.666					
20	100	<LoD	<LoD	<LoD	<LoD	<LoD	<LoD	100	<LoD	<LoD	<LoD	<LoD	<LoD
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0.24	0.24	0.24	0.24	0.24	0.24	0.24	0.24	240	240	240	240	240	240
51	51	51	51	51	51	51	51	0	0	0	0	0	0
0	0	0	0	0	0	0	1	0	0	0	0	0	0
N/A	N/A	N/A	N/A	N/A	N/A	N/A	0.022	N/A	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A	0.022	N/A	N/A	N/A	N/A	N/A	N/A
0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0
mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg
PCB 189	**PCB 167**	**PCB 126**	**PCB 123**	**PCB 157**	**PCB 81**	**PCB 114**	**PCB Total of 12 WHO**	**PCB153**	**PCB138**	**PCB180**	**PCB52**	**PCB101**	**PCB28**

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520000	54000	3900	500	44	23000	1200	83000	350	35	3.5	170	84000	22000
									36				

56	56	56	56	56	56	56	56	56	56	56	56	56	56
30	36	31	31	33	36	33	13	35	33	13	35	13	36
25	97	34	34	120	140	49	2.1	93	69	13	92	7.3	91
0.1	0.2	0.27	0.24	0.37	0.27	0.29	0.1	0.2	0.27	0.2	0.14	0.11	0.18
0	0	0	0	1	0	0	0	0	1	1	0	0	0
0	0	0	0	0	0	0	0	0	1	0	0	0	0

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
Anthracene	**Pyrene**	**Benzo(g,h,i)perylene**	**Indeno(1,2,3-cd)pyrene**	**Benzo(b)fluoranthene**	**Fluoranthene**	**Benzo(k)fluoranthene**	**Acenaphthylene**	**Chrysene**	**Benzo(a)pyrene**	**Dibenzo(a,h)anthracene**	**Benzo(a)anthracene**	**Acenaphthene**	**Phenanthrene**

0.33	2.7	2.4	1.8	4.5	3.3	1.8	0.1	2.8	3	0.52	2.8	0.18	1.8
0.15	2.2	0.45	0.32	1.5	2.2	0.97	<LoD	1.7	0.98	<LoD	1.6	0.11	0.7
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4.6	13	3.5	3.3	7.2	19	5.8	0.18	12	6.5	<LoD	12	0.84	16
2.1	11	3.4	2.9	7.7	14	4.6	0.61	7.1	6.7	0.59	9.5	0.85	8.1
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<LoD	0.78	0.45	0.29	0.71	1	0.41	<LoD	0.65	0.58	<LoD	0.49	0.21	0.51
0.32	1.9	0.56	0.63	2.1	2.4	0.84	0.21	1.6	1.3	<LoD	1.6	<LoD	1
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0.21	1.5	0.42	0.43	1.2	1.9	0.74	0.12	1.2	1	<LoD	1.1	0.12	0.85
0.68	3.9	1.4	1.5	4.2	4.8	2.2	0.5	3.1	3.3	0.37	4.4	<LoD	1.1
0.56	2.8	0.93	0.85	2.7	3.9	1.4	0.35	2.5	2	0.23	2.9	<LoD	1
0.2	1.7	0.77	0.69	1.8	2.1	0.81	<LoD	1.3	1.3	<LoD	1.4	0.13	1
0.37	2	0.82	0.78	1.7	2.5	0.94	<LoD	1.5	1.4	<LoD	1.5	0.29	1.3
<LoD	0.53	<LoD	<LoD	0.37	0.63	0.29	<LoD	0.33	0.27	<LoD	0.37	<LoD	0.26
0.54	7.2	1.9	1.7	4.8	8.3	1.8	<LoD	3.4	3.3	0.32	3.5	0.73	5.7
0.14	1.8	0.83	0.68	1.6	2.2	0.63	<LoD	1.2	1.1	<LoD	1.1	<LoD	1.4
0.29	1.9	0.6	0.62	1.3	2	0.8	<LoD	0.99	1.1	<LoD	1.2	<LoD	0.69
0.62	4	1.5	1.5	3.1	4.8	2.8	0.22	2.9	3	0.39	3.2	0.18	1.9
0.12	0.98	0.37	0.33	0.85	1.1	0.48	<LoD	0.63	0.52	<LoD	0.71	<LoD	0.51
25	93	14	12	34	130	29	<LoD	46	30	3.4	59	7.3	91
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0.15	1.3	1	1	1.4	1.8	0.85	<LoD	1.5	0.44	0.23	1.2	<LoD	0.72
16	97	34	34	120	140	49	2.1	93	69	13	92	2.1	59

0.1	0.49	0.27	0.24	0.48	0.69	0.41	<LoD	0.59	0.41	<LoD	0.46	<LoD	0.4
0.33	2.5	1.1	1.1	2	3.4	1.7	<LoD	2.2	1.8	0.26	1.8	<LoD	2.7
<LoD	0.45	<LoD	<LoD	0.39	0.59	0.35	<LoD	0.43	0.33	<LoD	0.36	<LoD	0.34
<LoD	0.2	<LoD	<LoD	<LoD	0.27	<LoD	<LoD	0.2	<LoD	<LoD	0.14	<LoD	0.22
0.46	2.8	1.4	1.3	2.8	3.7	1.9	0.24	2.7	2.6	0.35	2.7	<LoD	1.7
0.13	1	0.53	0.43	0.8	1.3	0.78	<LoD	0.93	0.66	<LoD	0.91	<LoD	0.69
0.17	1.1	0.56	0.51	1.1	1.3	0.98	<LoD	1.2	1.1	<LoD	1.1	<LoD	0.67
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0.19	0.79	0.41	0.35	0.51	1	0.65	<LoD	0.74	0.62	<LoD	0.74	<LoD	0.44
0.49	3.3	1.6	1.5	2.8	4.3	1.9	<LoD	2.5	2.2	0.3	2.5	0.24	1.9
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0.19	1.6	0.62	0.58	1.2	1.9	0.87	0.12	1.2	1.1	<LoD	1	<LoD	0.73
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0.18	1.3	0.45	0.38	0.99	1.8	0.54	<LoD	1	0.74	<LoD	1	<LoD	1
0.62	2.3	0.64	0.59	2	3.3	0.99	0.18	1.9	1.5	0.2	2.2	<LoD	2
0.17	1	0.28	0.25	0.84	1.4	0.44	<LoD	0.87	0.6	<LoD	0.9	<LoD	1.3
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0.13	1.7	0.49	0.44	1.8	1.7	0.81	0.25	1.6	1.2	<LoD	1.9	<LoD	0.33

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13	22	0	1	0	0	0	0	0	0	0	0	0	0
10	4.6	N/A	0.6	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
0.11	0.08	N/A	0.6	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0

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
Fluorene	**Naphthalene**	**1,4-Dichlorobenzene**	**Phenol**	**Hexachlorobenzene**	**1,2,4-Trichlorobenzene**	**2,4-Dichlorophenol**	**1,3-Dichlorobenzene**	**Hexachlorobutadiene**	**2,4,6-Trichlorophenol**	**1,2-Dichlorobenzene**	**2-Chlorophenol**	**2,4,5-Trichlorophenol**	**4-Chlorophenol**

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N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
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mg/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg
Pentachlorophenol	**Ethyl Benzene**	**Toluene**	**Benzene**	**O-Xylene**	**m and p-Xylene**	**Naphthalene**	**1,4-Dichlorobenzene**	**1,2,4-Trichlorobenzene**	**1,3-Dichlorobenzene**	**Hexachlorobutadiene**	**1,2-Dichlorobenzene**	**1,2-Dichloroethane**	**Chlorobenzene**

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N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
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0	0	0	0	0	0	0	0	0	0

ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg
Tetrachloroethene	**Carbon Tetrachloride**	**1,1,1,2-Tetrachloroethar**	**Chloroform**	**1,1,1-Trichloroethane**	**Vinyl Chloride**	**1,1-Dichloroethane**	**Trichloroethene**	**1,2,3-Trichlorobenzene**	**1,3,5-Trimethylbenzene**

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SCREENING CRITERIA		*Denotes screening value when converted*							
Hazardous Substance		Y	Y	Y	N	Y	N	N	N
UK DWS		1	N/A	N/A	0.5cv	0.01	0.005	0.05	50
EQS (Freshwater)		10	74	N/A	0.0006	0.05	0.00008	0.0034	4.7
EQS (Saltwater EC)		8	74	N/A	0.021	0.025	0.0002	0.0006	N/A
SUMMARY									
No. Tested		8	8	8	8	13	13	13	1
No. Detected		0	0	0	1	5	1	8	0
Maximum Value		N/A	N/A	N/A	0.01	0.022	0.0001	0.005	N/A
Minimum Detected Value		N/A	N/A	N/A	0.01	0.00111	0.0001	0.0006	N/A
Hazardous Substance ID'd		N	N	N	N	Y	N	N	N
No. of UK DWS Exceedances		0	0	0	0	1	0	0	0
No. of EQS-F Exceedances		0	0	0	1	0	1	4	0
No. of EQS-EC Exceedances		0	0	0	0	0	0	7	0
DATA									
Unit		ug/l	ug/l	ug/l	mg/l	mg/l	mg/l	mg/l	ug/l
SAMPLE ID	**Strata**	**Benzene**	**Toluene**	**Ethyl Benzene**	**Ammonia (Free) as N**	**Arsenic as As (Dissolved)**	**Cadmium as Cd (Dissolved)**	**Chromium as Cr (Dissolved)**	**Trivalent Chromium**
3-W1/EW/11-01-07	PLG					<LoD	<LoD	0.005	
4-BH201/EW/11-01-07	HEAD & PLG					<LoD	<LoD	0.004	
4-BH202/EW/11-01-07	HEAD & PLG					0.008	<LoD	0.003	
4-BH203/EW/10-01-07	PLG					<LoD	<LoD	0.004	
5-BH802/EW/06-04-16	MG & HEAD	<LoD	<LoD	<LoD					
5-BH901/EW/06-04-16	HEAD	<LoD	<LoD	<LoD					
5-BH902/EW/06-04-16	HEAD & PLG	<LoD	<LoD	<LoD					

5-BH802/EW/26-05-16	MG & HEAD	<LoD	<LoD	<LoD		0.00111	<LoD	0.0006	<LoD
3-W1/EW/15-11-18	PLG				<LoD	<LoD	<LoD	0.004	
4-BH201/EW/15-11-18	HEAD & PLG				<LoD	<LoD	<LoD	<LoD	
4-BH202/EW/15-11-18	HEAD & PLG				<LoD	0.002	<LoD	0.003	
4-BH203/EW/14-11-18	PLG	<LoD	<LoD	<LoD	<LoD	<LoD	<LoD	0.002	
4-WS208/EW/14-11-18	MG	<LoD	<LoD	<LoD	0.01	0.022	<LoD	<LoD	
6-BH01/EW/14-11-18	PLG	<LoD	<LoD	<LoD	<LoD	0.003	<LoD	<LoD	
6-BH02/EW/14-11-18	HEAD	<LoD	<LoD	<LoD	<LoD	<LoD	0.0001	<LoD	
6-BH03/EW/15-11-18	PLG				<LoD	<LoD	<LoD	<LoD	

							Denotes screening value of combined determinands - check sum values						
Y	N	Y	Y	N	N	N	N	N	N	N	N	Y	Y
50	2	0.01	0.001	0.02	0.01	N/A	1	250	0.5cv	N/A	N/A	N/A	0.1c
3.4	0.001	0.0012	0.00007	0.004	N/A	0.0109	2	250	N/A	0.0002	0.02	0.1	N/A
0.6	0.001	0.0013	0.00007	0.0086	N/A	0.0068	7	N/A	N/A	0.0002	0.008	0.1	N/A

1	13	13	13	13	13	13	9	9	9	13	9	13	13
0	3	2	0	3	9	4	9	9	5	1	0	1	2
N/A	0.003	0.014	N/A	0.005	0.27	0.02	3.5	19000	0.6	0.0003	N/A	0.037	0.03
N/A	0.0006	0.002	N/A	0.001	0.001	0.0005	0.05	27	0.01	0.0003	N/A	0.037	0.018
N	N	Y	N	N	N	N	N	N	N	N	N	Y	Y
0	0	1	0	0	2	0	1	2	0	0	0	0	0
0	1	2	0	1	0	2	1	2	0	1	0	0	0
0	1	2	0	0	0	2	0	0	0	1	0	0	0

ug/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	ug/l	ug/l	ug/l	ug/l
Chromium - Hexavalent	**Copper as Cu (Dissolved)**	**Lead as Pb (Dissolved)**	**Mercury as Hg (Dissolved)**	**Nickel as Ni (Dissolved)**	**Selenium as Se (Dissolved)**	**Zinc as Zn (Dissolved)**	**Boron as B (Dissolved)**	**Chloride as Cl**	**Ammoniacal Nitrogen as N**	**Tributyl Tin**	**Triphenyl Tin**	**Anthracene**	**Benzo(g,h,i)perylene**
	<LoD	<LoD	<LoD	<LoD	0.003	<LoD	0.076					<LoD	0.03
	<LoD	<LoD	<LoD	<LoD	<LoD	0.02	0.097			<LoD	<LoD	<LoD	<LoD
	<LoD	<LoD	<LoD	<LoD	0.014	<LoD	0.96			<LoD	<LoD	<LoD	<LoD
	<LoD	<LoD	<LoD	<LoD	<LoD	<LoD	0.081					0.037	0.018
										<LoD			
										0.0003			
										<LoD			

<LoD	0.0006	<LoD	<LoD	0.0015	0.27	0.0005	3.5	19000	<LoD	<LoD		<LoD	<LoD
	<LoD	<LoD	<LoD	<LoD	0.002	<LoD	0.11	36	<LoD	<LoD	<LoD	<LoD	<LoD
	<LoD	<LoD	<LoD	<LoD	0.001	<LoD	0.05	35	0.05	<LoD	<LoD	<LoD	<LoD
	<LoD	<LoD	<LoD	<LoD	0.002	<LoD	0.15	69	0.01	<LoD	<LoD	<LoD	<LoD
	<LoD	<LoD	<LoD	<LoD	0.001	<LoD		27	<LoD	<LoD	<LoD	<LoD	<LoD
	<LoD	0.002	<LoD	<LoD	<LoD	0.005		36	0.6			<LoD	<LoD
	0.003	0.014	<LoD	0.005	<LoD	0.016		81	0.01	<LoD	<LoD	<LoD	<LoD
	<LoD	<LoD	<LoD	0.001	0.002	<LoD		33	<LoD	<LoD	<LoD	<LoD	<LoD
	0.001	<LoD	<LoD	<LoD	0.001	<LoD	0.18	257	0.02	<LoD	<LoD	<LoD	<LoD

Y	Y	Y	Y	Y	Y	N	N	Y	Y	Y	Y	N	N
0.1c	0.1c	N/A	0.1c	0.01	N/A	N/A	0.05	N/A	N/A	N/A	N/A	N/A	N/A
N/A	N/A	0.063	N/A	0.00017	N/A	2	0.001	0.00014	N/A	N/A	N/A	0.0077	0.02
N/A	N/A	N/A	N/A	0.00017	N/A	2	0.001	0.000014	N/A	N/A	N/A	0.0077	0.02

13	13	13	13	13	13	13	13	8	12	8	12	12	8
1	0	0	0	0	1	1	0	0	0	0	0	0	0
0.019	N/A	N/A	N/A	N/A	0.041	0.038	N/A	N/A	N/A	N/A	N/A	N/A	N/A
0.019	N/A	N/A	N/A	N/A	0.041	0.038	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Y	N	N	N	N	Y	N	N	N	N	N	N	N	N
0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0

ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l
Indeno(1,2,3-cd)pyrene	**Benzo(b)fluoranthene**	**Fluoranthene**	**Benzo(k)fluoranthene**	**Benzo(a)pyrene**	**Acenaphthene**	**Naphthalene**	**Cyanide**	**Diphenyl ether**	**4-Chloroaniline**	**4-Chlorophenol**	**1,4-Dichlorobenzene**	**Phenol**	**Di-n-octylphthalate**
0.019	<LoD	<LoD	<LoD	<LoD	<LoD	<LoD	<LoD						
<LoD	<LoD	<LoD	<LoD	<LoD	<LoD	<LoD	<LoD						
<LoD	<LoD	<LoD	<LoD	<LoD	<LoD	<LoD	<LoD						
<LoD	<LoD	<LoD	<LoD	<LoD	0.041	0.038	<LoD						
									<LoD		<LoD	<LoD	
									<LoD		<LoD	<LoD	
									<LoD		<LoD	<LoD	

<LoD	<LoD	<LoD	<LoD	<LoD	<LoD	<LoD	<LoD		<LoD		<LoD	<LoD	
<LoD	<LoD	<LoD	<LoD	<LoD	<LoD	<LoD	<LoD	<LoD	<LoD	<LoD	<LoD	<LoD	<LoD
<LoD	<LoD	<LoD	<LoD	<LoD	<LoD	<LoD	<LoD	<LoD	<LoD	<LoD	<LoD	<LoD	<LoD
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<LoD	<LoD	<LoD	<LoD	<LoD	<LoD	<LoD	<LoD	<LoD	<LoD	<LoD	<LoD	<LoD	<LoD
<LoD	<LoD	<LoD	<LoD	<LoD	<LoD	<LoD	<LoD	<LoD	<LoD	<LoD	<LoD	<LoD	<LoD
<LoD	<LoD	<LoD	<LoD	<LoD	<LoD	<LoD	<LoD	<LoD	<LoD	<LoD	<LoD	<LoD	<LoD
<LoD	<LoD	<LoD	<LoD	<LoD	<LoD	<LoD	<LoD	<LoD	<LoD	<LoD	<LoD	<LoD	<LoD
<LoD	<LoD	<LoD	<LoD	<LoD	<LoD	<LoD	<LoD	<LoD	<LoD	<LoD	<LoD	<LoD	<LoD

Y	N	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	N
N/A	N/A	N/A	0.0001c	0.0001c	0.0001c	N/A	0.0001c	0.00001	N/A	N/A	N/A	N/A	N/A
0.0001	0.0004c	0.0042	N/A	N/A	N/A	0.000063	N/A	1.7E-07	N/A	N/A	N/A	N/A	0.008
0.0001	N/A	0.00042	N/A	N/A	N/A	N/A	N/A	1.7E-07	N/A	N/A	N/A	N/A	0.008

12	12	12	12	12	12	12	12	12	12	12	12	12	12
0	0	0	0	0	0	0	0	0	0	0	0	0	0
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
N	N	N	N	N	N	N	N	N	N	N	N	N	N
0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0

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
Anthracene	**1,2,4-Trichlorobenzene**	**2,4-Dichlorophenol**	**Benzo(g,h,i)perylene**	**Indeno(1,2,3-cd)pyrene**	**Benzo(b)fluoranthene**	**Fluoranthene**	**Benzo(k)fluoranthene**	**Benzo(a)pyrene**	**1,3-Dichlorobenzene**	**4-Chloro-3-methylphenol**	**Hexachloroethane**	**Acenaphthene**	**Di-n-butylphthalate**
<LoD	<LoD	<LoD	<LoD	<LoD	<LoD	<LoD	<LoD	<LoD	<LoD	<LoD	<LoD	<LoD	<LoD
<LoD	<LoD	<LoD	<LoD	<LoD	<LoD	<LoD	<LoD	<LoD	<LoD	<LoD	<LoD	<LoD	<LoD
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<LoD	<LoD	<LoD	<LoD	<LoD	<LoD	<LoD	<LoD	<LoD	<LoD	<LoD	<LoD	<LoD	<LoD
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<LoD	<LoD	<LoD	<LoD	<LoD	<LoD	<LoD	<LoD	<LoD	<LoD	<LoD	<LoD	<LoD	<LoD

N	Y	Y	N	Y	Y	Y	Y	N	Y	Y	N	Y	Y
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
0.0075	0.0004	0.0006	0.002	N/A	N/A	0.05	N/A	0.4c	N/A	0.6	2	N/A	N/A
0.00075	0.0004	0.0006	0.002	N/A	N/A	0.05	N/A	N/A	N/A	0.6	2	N/A	N/A

12	8	12	12	12	12	4	14	14	14	14	10	14	14
0	0	0	0	0	0	0	0	0	0	0	0	0	0
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
N	N	N	N	N	N	N	N	N	N	N	N	N	N
0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0

mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l
Butylbenzylphthalate	**Pentachlorophenol**	**Hexachlorobutadiene**	**Naphthalene**	**1,2-Dichlorobenzene**	**2-Chlorophenol**	**Hexachlorobenzene**	**1,4-Dichlorobenzene**	**1,2,4-Trichlorobenzene**	**1,3-Dichlorobenzene**	**Hexachlorobutadiene**	**Naphthalene**	**1,2-Dichlorobenzene**	**2- Chlorotoluene**
							<LoD	<LoD	<LoD	<LoD	<LoD	<LoD	<LoD
							<LoD	<LoD	<LoD	<LoD	<LoD	<LoD	<LoD
<LoD		<LoD	<LoD	<LoD	<LoD	<LoD	<LoD	<LoD	<LoD	<LoD		<LoD	<LoD
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N	Y	N	Y	N	N	N	N	Y	Y	Y	N	Y	N
N/A	N/A	10c	N/A	N/A	0.5	N/A	N/A	1	N/A	N/A	10c	N/A	3
0.4c	N/A	10c	140	N/A	N/A	N/A	N/A	10	N/A	12	10c	N/A	10
N/A	N/A	10c	N/A	100c	N/A	100c	100c	8	N/A	12	10c	N/A	10

14	14	14	14	10	14	12	14	14	14	14	14	14	14
1	0	0	0	0	0	0	0	0	0	0	0	0	0
2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
N	N	N	N	N	N	N	N	N	N	N	N	N	N
0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0

ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l
1,2,3-Trichlorobenzene	**1,2-Dichloropropane**	**Trichloroethene**	**1,1,2,2-Tetrachloroethane**	**Bromochloromethane**	**Vinyl Chloride**	**Bromoform**	**Bromodichloromethane**	**Benzene**	**Chloroform**	**Carbon Tetrachloride**	**Tetrachloroethene**	**1,2-Dibromoethane**	**1,2-Dichloroethane**
<LoD	<LoD	<LoD	<LoD	<LoD	<LoD		<LoD	<LoD	<LoD	<LoD	<LoD	<LoD	<LoD
<LoD	<LoD	<LoD	<LoD	<LoD	<LoD		<LoD	<LoD	<LoD	<LoD	<LoD	<LoD	<LoD
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2	<LoD	<LoD	<LoD	<LoD	<LoD	<LoD	<LoD	<LoD	<LoD	<LoD	<LoD	<LoD	<LoD
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<LoD	<LoD	<LoD	<LoD	<LoD	<LoD	<LoD	<LoD	<LoD	<LoD	<LoD	<LoD	<LoD	<LoD

Y	Y	Y	Y	N	N
N/A	N/A	N/A	N/A	N/A	N/A
74	N/A	N/A	N/A	20	6-9
74	N/A	N/A	N/A	20	6-8.5

14	14	14	14	2	13
0	0	0	0	0	13
N/A	N/A	N/A	N/A	N/A	8.26
N/A	N/A	N/A	N/A	N/A	7.1
N	N	N	N	N	N
0	0	0	0	0	0
0	0	0	0	0	0
0	0	0	0	0	0

ug/l	ug/l	ug/l	ug/l	ug/l	pH Units
Toluene	**4-Chlorotoluene**	**Ethyl Benzene**	**Styrene**	**Dichloromethane**	**pH units**
					8.24
<LoD	<LoD	<LoD	<LoD	<LoD	8.17
<LoD	<LoD	<LoD	<LoD	<LoD	8.17
					8.26
<LoD	<LoD	<LoD	<LoD		
<LoD	<LoD	<LoD	<LoD		
<LoD	<LoD	<LoD	<LoD		

<LoD	<LoD	<LoD	<LoD		7.9
<LoD	<LoD	<LoD	<LoD		7.7
<LoD	<LoD	<LoD	<LoD		7.5
<LoD	<LoD	<LoD	<LoD		7.7
<LoD	<LoD	<LoD	<LoD		7.5
<LoD	<LoD	<LoD	<LoD		7.8
<LoD	<LoD	<LoD	<LoD		7.6
<LoD	<LoD	<LoD	<LoD		7.1
<LoD	<LoD	<LoD	<LoD		7.5

SCREENING CRITERIA		*Denotes screening value when converted*							
Hazardous Substance		Y	Y	Y	N	Y	N	N	N
UK DWS		1	N/A	N/A	0.5cv	0.01	0.005	0.05	50
EQS (Freshwater)		10	74	N/A	0.0006	0.05	0.00008	0.0034	4.7
EQS (Saltwater EC)		8	74	N/A	0.021	0.025	0.0002	0.0006	N/A
SUMMARY									
No. Tested		6	6	6	5	10	10	10	1
No. Detected		0	0	0	1	4	0	8	0
Maximum Value		N/A	N/A	N/A	0.01	0.022	N/A	0.005	N/A
Minimum Detected Value		N/A	N/A	N/A	0.01	0.00111	N/A	0.0006	N/A
Hazardous Substance ID'd		N	N	N	N	Y	N	N	N
No. of UK DWS Exceedances		0	0	0	0	1	0	0	0
No. of EQS-F Exceedances		0	0	0	1	0	0	4	0
No. of EQS-EC Exceedances		0	0	0	0	0	0	7	0
DATA									
Unit		ug/l	ug/l	ug/l	mg/l	mg/l	mg/l	mg/l	ug/l
SAMPLE ID	**Strata**	**Benzene**	**Toluene**	**Ethyl Benzene**	**Ammonia (Free) as N**	**Arsenic as As (Dissolved)**	**Cadmium as Cd (Dissolved)**	**Chromium as Cr (Dissolved)**	**Trivalent Chromium**
3-W1/EW/11-01-07	PLG					<LoD	<LoD	0.005	
4-BH201/EW/11-01-07	HEAD & PLG					<LoD	<LoD	0.004	
4-BH202/EW/11-01-07	HEAD & PLG					0.008	<LoD	0.003	
4-BH203/EW/10-01-07	PLG					<LoD	<LoD	0.004	
5-BH802/EW/06-04-16	MG & HEAD	<LoD	<LoD	<LoD					
5-BH901/EW/06-04-16	HEAD	<LoD	<LoD	<LoD					
5-BH902/EW/06-04-16	HEAD & PLG	<LoD	<LoD	<LoD					

5-BH802/EW/26-05-16	MG & HEAD	<LoD	<LoD	<LoD		0.00111	<LoD	0.0006	<LoD
3-W1/EW/15-11-18	PLG				<LoD	<LoD	<LoD	0.004	
4-BH201/EW/15-11-18	HEAD & PLG				<LoD	<LoD	<LoD	<LoD	
4-BH202/EW/15-11-18	HEAD & PLG				<LoD	0.002	<LoD	0.003	
4-BH203/EW/14-11-18	PLG	<LoD	<LoD	<LoD	<LoD	<LoD	<LoD	0.002	
4-WS208/EW/14-11-18	MG	<LoD	<LoD	<LoD	0.01	0.022	<LoD	<LoD	

							Denotes screening value of combined determinands - check sum values						
Y	N	Y	Y	N	N	N	N	N	N	N	N	Y	Y
50	2	0.01	0.001	0.02	0.01	N/A	1	250	0.5cv	N/A	N/A	N/A	0.1c
3.4	0.001	0.0012	0.00007	0.004	N/A	0.0109	2	250	N/A	0.0002	0.02	0.1	N/A
0.6	0.001	0.0013	0.00007	0.0086	N/A	0.0068	7	N/A	N/A	0.0002	0.008	0.1	N/A

1	10	10	10	10	10	10	8	6	6	10	6	10	10
0	1	1	0	1	7	3	8	6	3	1	0	1	2
N/A	0.0006	0.002	N/A	0.0015	0.27	0.02	3.5	19000	0.6	0.0003	N/A	0.037	0.03
N/A	0.0006	0.002	N/A	0.0015	0.001	0.0005	0.05	27	0.01	0.0003	N/A	0.037	0.018
N	N	Y	N	N	N	N	N	N	N	N	N	Y	Y
0	0	0	0	0	2	0	1	1	0	0	0	0	0
0	0	1	0	0	0	1	1	1	0	1	0	0	0
0	0	1	0	0	0	1	0	0	0	1	0	0	0

ug/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	ug/l	ug/l	ug/l	ug/l
Chromium - Hexavalent	**Copper as Cu (Dissolved)**	**Lead as Pb (Dissolved)**	**Mercury as Hg (Dissolved)**	**Nickel as Ni (Dissolved)**	**Selenium as Se (Dissolved)**	**Zinc as Zn (Dissolved)**	**Boron as B (Dissolved)**	**Chloride as Cl**	**Ammoniacal Nitrogen as N**	**Tributyl Tin**	**Triphenyl Tin**	**Anthracene**	**Benzo(g,h,i)perylene**
	<LoD	<LoD	<LoD	<LoD	0.003	<LoD	0.076					<LoD	0.03
	<LoD	<LoD	<LoD	<LoD	<LoD	0.02	0.097			<LoD	<LoD	<LoD	<LoD
	<LoD	<LoD	<LoD	<LoD	0.014	<LoD	0.96			<LoD	<LoD	<LoD	<LoD
	<LoD	<LoD	<LoD	<LoD	<LoD	<LoD	0.081					0.037	0.018
										<LoD			
										0.0003			
										<LoD			

<LoD	0.0006	<LoD	<LoD	0.0015	0.27	0.0005	3.5	19000	<LoD	<LoD		<LoD	<LoD
	<LoD	<LoD	<LoD	<LoD	0.002	<LoD	0.11	36	<LoD	<LoD	<LoD	<LoD	<LoD
	<LoD	<LoD	<LoD	<LoD	0.001	<LoD	0.05	35	0.05	<LoD	<LoD	<LoD	<LoD
	<LoD	<LoD	<LoD	<LoD	0.002	<LoD	0.15	69	0.01	<LoD	<LoD	<LoD	<LoD
	<LoD	<LoD	<LoD	<LoD	0.001	<LoD		27	<LoD	<LoD	<LoD	<LoD	<LoD
	<LoD	0.002	<LoD	<LoD	<LoD	0.005		36	0.6			<LoD	<LoD

Y	Y	Y	Y	Y	Y	N	N	Y	Y	Y	Y	N	N
0.1c	0.1c	N/A	0.1c	0.01	N/A	N/A	0.05	N/A	N/A	N/A	N/A	N/A	N/A
N/A	N/A	0.063	N/A	0.00017	N/A	2	0.001	0.00014	N/A	N/A	N/A	0.0077	0.02
N/A	N/A	N/A	N/A	0.00017	N/A	2	0.001	0.000014	N/A	N/A	N/A	0.0077	0.02

10	10	10	10	10	10	10	10	5	9	5	9	9	5
1	0	0	0	0	1	1	0	0	0	0	0	0	0
0.019	N/A	N/A	N/A	N/A	0.041	0.038	N/A	N/A	N/A	N/A	N/A	N/A	N/A
0.019	N/A	N/A	N/A	N/A	0.041	0.038	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Y	N	N	N	N	Y	N	N	N	N	N	N	N	N
0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0

ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l
Indeno(1,2,3-cd)pyrene	**Benzo(b)fluoranthene**	**Fluoranthene**	**Benzo(k)fluoranthene**	**Benzo(a)pyrene**	**Acenaphthene**	**Naphthalene**	**Cyanide**	**Diphenyl ether**	**4-Chloroaniline**	**4-Chlorophenol**	**1,4-Dichlorobenzene**	**Phenol**	**Di-n-octylphthalate**
0.019	<LoD	<LoD	<LoD	<LoD	<LoD	<LoD	<LoD						
<LoD	<LoD	<LoD	<LoD	<LoD	<LoD	<LoD	<LoD						
<LoD	<LoD	<LoD	<LoD	<LoD	<LoD	<LoD	<LoD						
<LoD	<LoD	<LoD	<LoD	<LoD	0.041	0.038	<LoD						
									<LoD		<LoD	<LoD	
									<LoD		<LoD	<LoD	
									<LoD		<LoD	<LoD	

<LoD	<LoD	<LoD	<LoD	<LoD	<LoD	<LoD	<LoD		<LoD		<LoD	<LoD	
<LoD	<LoD	<LoD	<LoD	<LoD	<LoD	<LoD	<LoD	<LoD	<LoD	<LoD	<LoD	<LoD	<LoD
<LoD	<LoD	<LoD	<LoD	<LoD	<LoD	<LoD	<LoD	<LoD	<LoD	<LoD	<LoD	<LoD	<LoD
<LoD	<LoD	<LoD	<LoD	<LoD	<LoD	<LoD	<LoD	<LoD	<LoD	<LoD	<LoD	<LoD	<LoD
<LoD	<LoD	<LoD	<LoD	<LoD	<LoD	<LoD	<LoD	<LoD	<LoD	<LoD	<LoD	<LoD	<LoD
<LoD	<LoD	<LoD	<LoD	<LoD	<LoD	<LoD	<LoD	<LoD	<LoD	<LoD	<LoD	<LoD	<LoD

Y	N	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	N
N/A	N/A	N/A	0.0001c	0.0001c	0.0001c	N/A	0.0001c	0.00001	N/A	N/A	N/A	N/A	N/A
0.0001	0.0004c	0.0042	N/A	N/A	N/A	0.000063	N/A	1.7E-07	N/A	N/A	N/A	N/A	0.008
0.0001	N/A	0.00042	N/A	N/A	N/A	N/A	N/A	1.7E-07	N/A	N/A	N/A	N/A	0.008

9	9	9	9	9	9	9	9	9	9	9	9	9	9
0	0	0	0	0	0	0	0	0	0	0	0	0	0
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
N	N	N	N	N	N	N	N	N	N	N	N	N	N
0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0

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
Anthracene	**1,2,4-Trichlorobenzene**	**2,4-Dichlorophenol**	**Benzo(g,h,i)perylene**	**Indeno(1,2,3-cd)pyrene**	**Benzo(b)fluoranthene**	**Fluoranthene**	**Benzo(k)fluoranthene**	**Benzo(a)pyrene**	**1,3-Dichlorobenzene**	**4-Chloro-3-methylphenol**	**Hexachloroethane**	**Acenaphthene**	**Di-n-butylphthalate**
<LoD	<LoD	<LoD	<LoD	<LoD	<LoD	<LoD	<LoD	<LoD	<LoD	<LoD	<LoD	<LoD	<LoD
<LoD	<LoD	<LoD	<LoD	<LoD	<LoD	<LoD	<LoD	<LoD	<LoD	<LoD	<LoD	<LoD	<LoD
<LoD	<LoD	<LoD	<LoD	<LoD	<LoD	<LoD	<LoD	<LoD	<LoD	<LoD	<LoD	<LoD	<LoD

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<LoD	<LoD	<LoD	<LoD	<LoD	<LoD	<LoD	<LoD	<LoD	<LoD	<LoD	<LoD	<LoD	<LoD
<LoD	<LoD	<LoD	<LoD	<LoD	<LoD	<LoD	<LoD	<LoD	<LoD	<LoD	<LoD	<LoD	<LoD
<LoD	<LoD	<LoD	<LoD	<LoD	<LoD	<LoD	<LoD	<LoD	<LoD	<LoD	<LoD	<LoD	<LoD

N	Y	Y	N	Y	Y	Y	Y	N	Y	Y	N	Y	Y
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
0.0075	0.0004	0.0006	0.002	N/A	N/A	0.05	N/A	0.4c	N/A	0.6	2	N/A	N/A
0.00075	0.0004	0.0006	0.002	N/A	N/A	0.05	N/A	N/A	N/A	0.6	2	N/A	N/A

9	5	9	9	9	9	4	11	11	11	11	7	11	11
0	0	0	0	0	0	0	0	0	0	0	0	0	0
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
N	N	N	N	N	N	N	N	N	N	N	N	N	N
0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0

mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l
Butylbenzylphthalate	**Pentachlorophenol**	**Hexachlorobutadiene**	**Naphthalene**	**1,2-Dichlorobenzene**	**2-Chlorophenol**	**Hexachlorobenzene**	**1,4-Dichlorobenzene**	**1,2,4-Trichlorobenzene**	**1,3-Dichlorobenzene**	**Hexachlorobutadiene**	**Naphthalene**	**1,2-Dichlorobenzene**	**2- Chlorotoluene**
							<LoD	<LoD	<LoD	<LoD	<LoD	<LoD	<LoD
							<LoD	<LoD	<LoD	<LoD	<LoD	<LoD	<LoD
<LoD		<LoD	<LoD	<LoD	<LoD	<LoD	<LoD	<LoD	<LoD	<LoD		<LoD	<LoD
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<LoD		<LoD	<LoD	<LoD	<LoD	<LoD	<LoD	<LoD	<LoD	<LoD		<LoD	<LoD
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<LoD	<LoD	<LoD	<LoD	<LoD	<LoD		<LoD	<LoD	<LoD	<LoD	<LoD	<LoD	<LoD
<LoD	<LoD	<LoD	<LoD	<LoD	<LoD		<LoD	<LoD	<LoD	<LoD	<LoD	<LoD	<LoD

N	Y	N	Y	N	N	N	N	Y	Y	Y	N	Y	N
N/A	N/A	10c	N/A	N/A	0.5	N/A	N/A	1	N/A	N/A	10c	N/A	3
0.4c	N/A	10c	140	N/A	N/A	N/A	N/A	10	N/A	12	10c	N/A	10
N/A	N/A	10c	N/A	100c	N/A	100c	100c	8	N/A	12	10c	N/A	10

11	11	11	11	7	11	9	11	11	11	11	11	11	11
1	0	0	0	0	0	0	0	0	0	0	0	0	0
2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
N	N	N	N	N	N	N	N	N	N	N	N	N	N
0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0

ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l
1,2,3-Trichlorobenzene	**1,2-Dichloropropane**	**Trichloroethene**	**1,1,2,2-Tetrachloroethane**	**Bromochloromethane**	**Vinyl Chloride**	**Bromoform**	**Bromodichloromethane**	**Benzene**	**Chloroform**	**Carbon Tetrachloride**	**Tetrachloroethene**	**1,2-Dibromoethane**	**1,2-Dichloroethane**
<LoD	<LoD	<LoD	<LoD	<LoD	<LoD		<LoD	<LoD	<LoD	<LoD	<LoD	<LoD	<LoD
<LoD	<LoD	<LoD	<LoD	<LoD	<LoD		<LoD	<LoD	<LoD	<LoD	<LoD	<LoD	<LoD
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<LoD	<LoD	<LoD	<LoD		<LoD	<LoD	<LoD	<LoD	<LoD	<LoD	<LoD	<LoD	<LoD
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<LoD	<LoD	<LoD	<LoD	<LoD	<LoD	<LoD	<LoD	<LoD	<LoD	<LoD	<LoD	<LoD	<LoD
2	<LoD	<LoD	<LoD	<LoD	<LoD	<LoD	<LoD	<LoD	<LoD	<LoD	<LoD	<LoD	<LoD

Y	Y	Y	Y	N	N
N/A	N/A	N/A	N/A	N/A	N/A
74	N/A	N/A	N/A	20	6-9
74	N/A	N/A	N/A	20	6-8.5

11	11	11	11	2	10
0	0	0	0	0	10
N/A	N/A	N/A	N/A	N/A	8.26
N/A	N/A	N/A	N/A	N/A	7.5
N	N	N	N	N	N
0	0	0	0	0	0
0	0	0	0	0	0
0	0	0	0	0	0

ug/l	ug/l	ug/l	ug/l	ug/l	pH Units
Toluene	**4-Chlorotoluene**	**Ethyl Benzene**	**Styrene**	**Dichloromethane**	**pH units**
					8.24
<LoD	<LoD	<LoD	<LoD	<LoD	8.17
<LoD	<LoD	<LoD	<LoD	<LoD	8.17
					8.26
<LoD	<LoD	<LoD	<LoD		
<LoD	<LoD	<LoD	<LoD		
<LoD	<LoD	<LoD	<LoD		

<LoD	<LoD	<LoD	<LoD		7.9
<LoD	<LoD	<LoD	<LoD		7.7
<LoD	<LoD	<LoD	<LoD		7.5
<LoD	<LoD	<LoD	<LoD		7.7
<LoD	<LoD	<LoD	<LoD		7.5
<LoD	<LoD	<LoD	<LoD		7.8