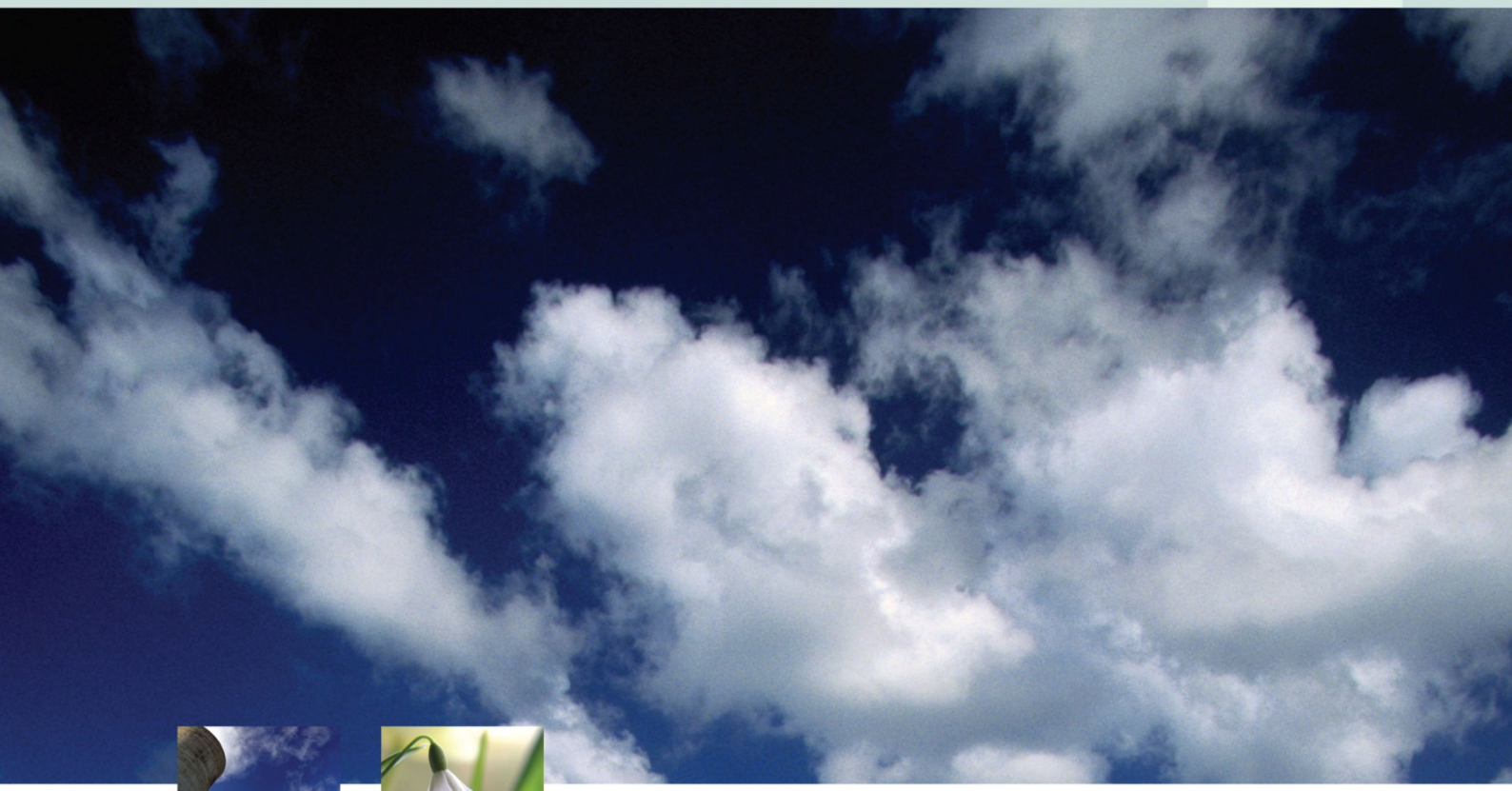

EPR Waste Operation Permit Application

SITE CONDITION REPORT

Mekatek Ltd

Maerdy Industrial Estate

Date:
September 2017

Project Issue Number:
SOL1707MK01

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VERSION CONTROL RECORD			
Contract/Proposal Number:		SOL1707MK01	
Authors Name:		Emily Hingston	
Signature:			
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1	First Submission to Natural Resources Wales	September 2017	SP

Contents

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INTRODUCTION

This Application Site Report has been prepared by Sol Environment Ltd on the behalf of Mekatek Ltd in support of a Bespoke Waste Operation Permit Application under The Environmental Permitting (England and Wales) Regulations 2016 for the proposed operation of a waste recovery and recycling facility at Maerdy Industrial Estate, Rhymney.

This document represents the Application Site Condition Report (ASCR) submitted as part of the Application package to Natural Resources Wales (NRW) (Sol Environment Ref. SOL1707MK01) and has relied on information supplied by the site and various third party information sources (See Section 2).

The Mekatek site ('the Site') is located on land at Unit C, Maerdy Industrial Estate, Rhymney, NP22 5PY.

The waste recovery and recycling facility will be permitted by the Natural Resources Wales as a Waste Operation and will be operated in accordance with the EPR Regulations 2016.

This document has been prepared in accordance with the NRW/EA's Guidance Document H5 Site Condition Reports Guidance and Templates (Version 2.0, dated 04/08/08). This report provides baseline information in relation to the site.

1. Site Details

Name of the Applicant:	Mekatek Ltd
Activity Address:	Unit C, Maerdy Industrial Estate, Rhymney, NP22 5PY
National Grid Reference:	OS X (Eastings) 311588 OS Y (Northings) 206808

Document References:	EP Application Site Condition Report, Mekatek Ltd Sol document reference and date: SOL1707MK01
Annexes:	Annex A: Figures Annex B: Phase I and II Geoenvironmental Investigation Annex C: Site Photographs Annex D: Conceptual Model

2. Condition of Land at Permit Issue

2.1 Environmental Setting

2.1.1 Site Location

The location of the subject Site is shown on Figure A1, Annex A, centered at approximate National Grid Reference OS X (Eastings) 311601; OS Y (Northings) 206726. The proposed site layout is shown in Figure A2.

The site is located at Maerdy Industrial Estate, Rhymney, NP22 5PY.

The application site is located within the south of the Maerdy Industrial Estate with industrial and commercial units to the north and west and residential dwellings of the town of Rhymney to the south and east. The site is roughly rectangular in shape and extends in area to 3ha. The site is bounded to the west by the Valley Railway Line.

The site comprises a steel frame building with tarmac, concrete and graveled external areas. A vegetated railway siding is present to the east of the building and an old railway track and disused land in the west. The northern half of the main building is owned by Williams Medical Supplies.

The nearest residential development is located on Forge Crescent to the east and at a distance of 50m. The River Rhymey is culverted beneath the west of the site flowing north – south.

Table 2.1 below provides information regarding the surrounding site.

Table 2.1 Site Setting

Direction	Description
North	Immediate Vicinity: Williams Medical Supplies Within 500m: Maerdy Industrial Estate industrial units, River Rhymney Beyond 500m: Residential Area of Rhymney, School
North East	Immediate Vicinity: B4257 Within 500m: Residential Dwellings, School Beyond 500m: Agricultural land and rough terrain
East	Immediate Vicinity: Small industrial / commercial units Within 500m: B4257, Residential Dwellings, allotments, B4256 Beyond 500m: Agricultural land and rough terrain
South East	Immediate Vicinity: Houses on Wellington Way Within 500m: B4257, residential dwellings, stream with waterfall Beyond 500m: Copse, rough terrain, Tredegar & Rhymney Golf Club

South	Immediate Vicinity: Industrial units, Bungalows Within 500m: River Rhymney, B4257, Railway Line & Station, Residential Housing Beyond 500m: Residential Housing, A469, Disused Tip
South West	Immediate Vicinity: Railway, A469 Within 500m: Residential dwellings, football ground Beyond 500m: Rough terrain, Village of Pontlottyn & Fochriw
West	Immediate Vicinity: Railway Within 500m: Capital Valley Industrial Park units, A469, Rough terrain, small lake Beyond 500m: Gelligaer Common, dismantled railway, disused quarries and tips
North West	Immediate Vicinity: Railway Within 500m: Industrial Units of Maerdy Industrial Estate Beyond 500m: A469, Rough terrain, disused quarries and tips

2.1.2 Geology, Hydrogeology and Surface Waters

Desk-based research of the local geology, hydrogeology and surface waters has been carried out in order to establish the potential for migration of contamination onto or away from the Site, and to assess the surface water and groundwater sensitivity of the Site area. Information was obtained from a number of sources, namely:

- Natural Resources Wales Flood Risk Map;
- Information provided by an previous Phase I Desk Study of the site (Integral Geotechnique (Wales) Limited).
- Geological maps produced by the British Geological Survey (BGS) and the BGS Geology of Britain Viewer (http://maps.bgs.ac.uk/geologyviewer).
- MAGIC http://magic.defra.gov.uk)
- BGS Borehole Record Viewer (http://www.bgs.ac.uk/data/boreholescans/home.html)

Geology

According to the BGS Geology of Britain Viewer, the site is directly underlain by superficial deposits of Glacial Till deposits made up of variable geology including clays, sand and gravel. The superficial deposits are further underlain by the Bedrock Geology of the South Wales Middle Coal Measures Formation, which are described by the BGS lexicon as; 'grey, productive coal-bearing mudstones/siltstones, with seatearths and minor sandstones'.

It is also likely that the site is underlain by significant thicknesses of colliery spoil materials and slag, which was proven during the 2003 ground investigation (discussed in Section 2.3.1 of this report) at depths of 3.5 – 15 mbgl.

The site is located in an area which is affected by coal mining activity.

Hydrogeology

The 1:100,000 scale Environment Agency Groundwater Vulnerability Map (Sheet No.36) classifies the site as lying on a minor aquifer with variable permeability. These are important for local supplies and for supplying base flow to rivers.

The soils at the site are classified as having low leaching potential, in which pollutants are unlikely to penetrate the soil layer.

The site is considered to be situated in an area of moderate sensitivity with respect to groundwater resources.

Surface Water

The River Rhymney is culverted beneath the west of the site, with it entering the culvert approximately 200m north of the site and exiting approximately 100m south. In addition, a number of issues, sinks and drains including a small lake are located approximately 300m upslope to the west, and a network of springs and issues on the other side of the valley approximately 500m to the east.

The River Rhymney has historically been of poor quality due to the mining heritage of the area and is still undergoing improvement programmes with its current quality rating Grade B.

The Natural Resources Wales flood risk map indicates that the site lies within an area where there is a medium risk of flooding from rivers and the sea. This is land assessed as having a chance of flooding between 1 in 100 (1%) and 1 in 30 (3.3%) each year.

The site is considered to be in area of moderate sensitivity in regard to surface water due to the proximity of the River Rhymney.

2.1.3 Designated Sites

Natural Resources Wales H1 and H5 guidance states that the potential impacts of the site should be assessed for the following habitat sites within 10km of the Installation:

- Special Areas of Conservations (SACs) and candidate SACs (cSACs) designated under the EC Habitats Directive;
- Special Protection Areas (SPAs) and potential SPAs designated under the EC Birds Directive; and
- Ramsar Sites designated under the Convention of Wetlands of International Importance.

It is also stated that within 2km of the Source:

- Sites of Special Scientific Interest (SSSI) established by the 1981 Wildlife and Countryside Act;
- National Nature Reserves (NNR);
- Local Nature Reserves (LNR);
- Local Wildlife Sites (LWS), County Wildlife Sites (CWS) and potential wildlife sites (PWS);
- Sites of Importance for Nature Conservation (SINC); and
- Ancient Woodland.

Information from the Multi Agency Geographic Information for the Countryside (MAGIC) website (http://magic.defra.gov.uk/) has been used to obtain the above information.

The designated sites relevant to this study are presented in Table 2.2 below:

Table 2.2: Location of Sensitive Habitat Receptors		
Distance & Direction	Receptor	Status
8.9 km North East	Usk Bat Sites	SAC

The site is not located within an Air Quality Management Area.

The proposed operation has no environmental emissions to land, controlled waters or atmosphere and therefore it is the conclusion of this assessment that there will be no direct or indirect effects on any of the statutory sites described above.

2.2 Pollution History

2.2.2 Historical Land Uses

Available online historic maps for the site have been reviewed to determine if there is the potential for contamination to be present on Site associated with the Sites historical uses.

A summary of the historical development of the Site and surroundings is included below:

- 1878: The site is crisscrossed by railway way lines and sidings. Maerdy Pit (coal) and associated infrastructure and a limekiln is located adjacent to the west, with spoil heaps beyond. The Rhymney River is culverted to the north and reappears within Maerdy Pit. Wellington Street and its residential dwellings (later the A469) is already present to the east. A police station and industrial unit is located to the north. A quarry is located approximately 200m to the east.

- 1884 – 1886: No change to the site. Rhymney Iron works is located to the northwest.

- 1901 – 1902: No change to the site. The colliery is still shown though the quarry to the east is now marked as 'Old Quarry'. A gas works is marked on the south on the outskirts of Pontlottyn village. The limekiln is no longer marked.

- 1919 : The site is no longer crossed by numerous tracks, only one runs across site. The main railway line is adjacent to the west. Housing to the east has expanded. Maerdy Colliery has expanded into the south of the site with a shaft and reservoir marked. The Iron works to the north is marked as dismantled. The industrial unit / police station to the north is no longer present and coke ovens are marked.

- 1922 - 1951: No change onsite. An electric power station is marked below the coke ovens to the north and a school is marked to the east.

- 1959 - 1961: The Colliery works are marked as 'Disused Mine'. Railway sidings are still present in the west and north of the site with disused mine buildings in the south. The Main colliery pit to the west and its railway is still present. The town of Rhymney to the east is expanding with allotment gardens present.

- 1964 – 1965: No change. The gas works in Pontlottyn is no longer marked. Industrial units to the north are marked as 'Works'.

- 1971 – 1977: The colliery pit has been infilled and an industrial unit marked 'Factory' is now located centrally onsite, with the same footprint as present day. The River has been culverted and reappears further to the south. Railway sidings are present running to the east of the building and disused railway tracks to the west. Further development of industrial buildings are present to the west of the main railway line with 'tanks' and 'engineering works' marked. Units to the north are marked 'plastics factory' and 'clothing factory'. A 'garage' is marked to the southeast on the access road into the site.

- 1981 – 1984: Tanks are located to the southwest of the building onsite by the old railway tracks. Residential dwellings have been built to the south along the access road into site and are labelled 'St Clares'. Residential dwellings adjacent to the east have been demolished and replaced by small industrial units, one of which is labelled 'telephone exchange' and another 'substation'. On the 1984 map a weighbridge is marked on the entrance to site.

- 1986 – 1992: No change.

- 2017: A depot is now marked next to the St Clares residential dwellings to the south. Instead of 'works' industrial units to the north and east are known as 'Capital Valley Industrial Park'.

A number of potentially contaminative land uses have been identified both on and around the site. These specifically include the below:

Table 2.3: Potentially Contaminative Land Uses

Activity	Contaminants
Onsite	
Colliery	Hydrocarbons, PAHs, Heavy metals, fill materials, asbestos, ash, coal, sulphates, PCBs
Railway	Hydrocarbons (diesels, lubricating oils, paraffin), PAHs, PCBs, solvents, ethylene glycol, creosote, ferrous residues, metals, asbestos, ash and fill, sulphates

Factory including tanks	Various contaminants including lubricants, ash, organic and inorganic contaminants
Offsite	
Iron Works	Various contaminants including heavy metals, organic and inorganics
Garage	Hydrocarbons (diesel, petrol, fuel oils), PAHs
Tips	Spoil from mining & quarrying works in the area
Gas Works	Various contaminants including heavy metals, organic and inorganics

Online searches indicate there are no registered landfill sites within 500m of the site.

2.2.3 Site Reconnaissance

Visual/Olfactory Evidence of Existing Contamination

All areas of the site have been subject to a visual inspection at the time of this application by Sol Environment Ltd. This was undertaken on the 1st August 2017 with the site running at small volumes under variously held exemptions.

All aspects of the installation boundary have been inspected.

The inspection was carried out in conjunction with the management of Mekatek Ltd for the purposes of inspecting and assessing the following:

- Physical condition of hard standing;
- Condition and adequacy of containment bunds (if present);
- Condition and adequacy of underground drainage and containment systems (where applicable).

The entire site was covered in good to adequate condition hard standing. All operational areas were internal with good quality concrete impermeable surface. No asbestos containing substances were noted and discussion with site operatives revealed that an asbestos survey undertaken by Mekatek Ltd upon acquisition had identified no asbestos within the building.

Small volumes of maintenance chemicals and lubricant oils were kept onsite. At the time of the walkover this was on mobile bunding internally, although this is expected to be contained within a caged bunded area by the time of permit acquisition. A small bunded diesel tank was also present in the area, however this will shortly be replaced by a self-bunded 500 l diesel tank which will be located externally to the building.

Disused railway sidings and tracks were overgrown and present to the west of the building.

Photographs are provided in Annex C.

Apart from the above, at the time of the site walkover, there was no sign of any potentially contaminative uses.

2.3 Evidence of Historic Contamination

2.3.1 Previous Site Investigation – Application Site

A Phase I – II Geoenvironmental Investigation was carried out in October 2003 by Intégral Géotechnique (Wales) Limited which is provided within Annex B of this document.

The report was undertaken in order to provide a baseline contamination survey of the site as Williams Medical Supplies (site owners) wished to lease part of their site. The specific objectives of the appraisal were to investigate the degree, nature and extent of contamination and its implications for site ownership, reclamation and development.

A targeted ground investigation was undertaken in October 2003. The combined programme of works comprised:

- The sinking of 13 boreholes by dynamic probing and window sampling methods;
- The subsampling of borehole recovery for soil contamination and soil classification testing;
- The sampling of the River Rhymney both upstream and downstream of the site for contamination testing.

The majority of the boreholes are located north of the site in the area owned by Williams Medical Supplies with only two located on the site targeting the historical tanks and railway sidings area. However, due to proximity and land use it is considered that the ground conditions adjacent to the north are representative of the site and can be used for baseline conditions.

The suite of chemical analysis was based upon the potential contaminants of concern (CoCs) and soil samples were tested for metals, TPH, PAHs, cyanide, sulphide, sulphur, phenol, slate and pH. In addition, water samples were analysed for the same compounds.

Please refer to the report provided in Annex B of this report for detailed results of the fieldwork investigation. A brief summary of the baseline conditions at the site is provided below.

Ground Conditions

Made Ground comprising colliery spoil and slag was identified across site within all boreholes. Spoil materials ranged in composition from silt grade washings to more granular sands and gravels with mudstone clasts. Ash materials and coal fragments were present throughout with occasional cobbles or boulders. Depth was only proven in one borehole at 3.5mbgl.

Within this singular borehole (WS7) natural soil comprising soft grey brown silty gravelly clay was identified, likely representing till deposits.

Groundwater

Groundwater was not identified within any of the boreholes during the ground investigation. IT is likely that groundwater is present at greater depths in lien with the River.

Soil Chemical Analysis Results

Elevated levels of some inorganic substances (copper, sulphates and sulphides) were identified across the site with some localized areas of elevated concentrations of PAH compounds, including in the southeast of the site.

Baseline levels for the principal contaminants of concern based on future site use (namely metals, PAH and TPH) are summarised within the table below. For further data please refer to the full ground investigation report provided in Annex B.

Table 2.4 Soil Analysis Results Summary

Contaminant	Unit	Mean Concentration	Maximum Concentration	Location of Maximum
Inorganics				
Arsenic	mg/kg	11	34.1	WS009
Boron (water soluble)	mg/kg	1	2.8	WS001
Cadmium	mg/kg	0	0.61	WS009
Chromium	mg/kg	15	120	WS007
Copper	mg/kg	38	154.1	WS007
Lead	mg/kg	40	124.4	WS009
Mercury	mg/kg	0	0.4	WS009
Selenium	mg/kg	2	5.09	WS001
Nickel	mg/kg	17	43.5	WS001
Zinc	mg/kg	54	134.5	WS011
Organics				
Total PAH	mg/kg	58	257	WS004
Phenols	mg/kg	1	0.7	WS005

Cyanide	mg/kg	2	8	WS011
Sulphur	mg/kg	186	1050	WS004
Sulphate	mg/kg	3691	18200	WS005
Sulphide	mg/kg	327	3922	WS002
pH	mg/kg	9	12.2	WS012

Surface Water Chemical Analysis Results

Surface water analysis on samples taken from both upstream and downstream of the site identified river quality to be typical of areas with past mining activity with elevated concentrations of lead, cadmium and zinc. However, no difference was identified between the up and downstream samples. This indicates that site activities at the time of assessment (including surface water run-off) were not impacting of the quality of the river.

Baseline levels for the principal contaminants of concern based on future site use (namely metals, PAH and TPH) are summarised within the table below. For further data please refer to the full ground investigation report provided in Annex B.

Table 2.5 Groundwater Analysis Results Summary

Contaminant	Unit	Upstream Concentration	Downstream Concentration
Inorganics			
Arsenic	mg/l	<0.03	<0.03
Boron	mg/l	0.14	0.14
Cadmium	mg/l	0.01	0.01
Chromium	mg/l	<0.02	<0.02
Copper	mg/l	<0.01	<0.01
Lead	mg/l	0.19	0.19
Mercury	mg/l	<0.0001	<0.0001
Selenium	mg/l	<0.001	<0.001
Nickel	mg/l	<0.02	<0.02
Zinc	mg/l	0.29	0.29
Organics			

Phenols	mg/l	<0.05	<0.05
Cyanide	mg/l	<0.1	<0.1
Sulphide	mg/l	<0.2	<0.2
Total TPH	mg/l	<0.1	<0.1

Please refer to Annex B for more information.

2.4 Supporting Information

- Figures detailing the location, boundary and layouts of the Installation are shown in Annex A.
- A Phase I and II Geoenvironmental Report carried out by Intégral Géotechnique (Wales) Limited is provided within Annex B
- Photographs of the site from the site reconnaissance are provided in Annex C.
- A Conceptual Model of the site is shown in Annex D.

3. Permitted Activities

3.1 Proposed Activities Undertaken at the Installation

3.1.1 Description of the New Process

Mekatek Ltd is making this application to carry out a Bespoke Waste Operation under The Environmental Permitting (England and Wales) Regulations 2016 for the proposed operation of a waste recovery and recycling facility at their site at Maerdy Industrial Estate, Rhymney.

The waste recovery and recycling facility has been designed to predominantly process non-hazardous waste electrical and electronic equipment (WEEE), selected source segregated packaging materials, plastics and metals. The site will accept 30,999 tonnes per annum and include the receipt, storage, segregation and mechanical processing into various grades of granular metals and plastics for sale as recovered product.

All recovered / processed materials are then stored within dedicated storage bays ready for offsite transfer and sale. Any waste materials that are not able to be recycled on site are stored pending off site transfer to other licensed waste management facilities for further processing or disposal.

All physical and mechanical processing takes place within the main processing building. The sole external activity is the storage of wooden pallets which are stored before being collected and transferred off site. All storage is in accordance with the Fire Prevention Plan guidance.

In addition, there is also a rarely used external site storage area to the east of the site used to store surplus waste skips. Skips would only normally be stored in this area when they cannot otherwise be stored within the Processing Building next to the required work station. Sol understand through discussions with Mekatek that the storage area is infrequently used.

The process will be permitted by the Natural Resources Wales as a Waste Operation Activity and will be operated in accordance with the Environmental Permitting Regulations 2016.

3.1.2 Substances Used at the Installation

Table 3.1: Chemical and Hazardous Materials Summary

Material	Nature of storage	Location	Fate
Mixed Electronic Recyclables & Plastics	Waste received for recovery and recycling Approx. 30,999 tonnes per annum	Stored and processed internally within building	Components are separated, processed and sold
Diesel Oil	500 L tank Double skinned steel or polyurethane tanks designed to conform to EA Pollution Prevention Guideline 2 (PPG2) above ground oil tanks.	External within secure compound	Used in processing equipment
Oils, Grease, Lubricants	Small quantities (<10 m^3 per annum) stored within internal bunded caged area	Internal	Consumed within plant All waste oils disposed off site to appropriately qualified contractor.

Waste

The recovery and recycling process will not inherently produce significant quantities of waste. Domestic waste from the site offices and canteen will be disposed of internally within the company. Domestic sewerage from site welfare will discharge to foul sewer.

3.1.3 Drainage Systems

There are no process effluents produced from the sites activities. There is no drainage system within the building. Should any water (surface moisture, small puddles of liquids on top of IBC etc) be present on incoming wastes, this generally evaporates or where possible is collected and disposed of via IBC.

Any spillages, leaks or incidents arising within the building will be effectively contained and captured in accordance with the sites spill response procedure, utilising spill kits which will be strategically located around the site. Any spillages / leaks etc. would be of small volume and be non-hazardous in their nature.

Internal bunds associated with the plant maintenance oil storage area are checked daily and in the unlikely event of spillages, these would be pumped out and disposed of offsite via IBC.

Uncontaminated surface water run-off from external hard standing and roof top areas discharges via surface water drain and is ultimately discharged to the River Rhymney (W1 and W2).

Foul drainage from the offices / canteen area will be discharged to sewer (S1).

The following has been designed in the event of a fire:

- The WEEE Reception bay would be utilised as a holding bund for firewater;
- All fire water will enter the bay which would be isolated from the surface water drainage system;
- Company tankers would be mobilised from nearby sites (1-hour mobilisation time) to remove any collected firewater held in the bay to a suitable treatment facility;
- The bay is calculated to have a storage capacity of 245 m^3 if empty and 150 m^3 if at full utilisation as a reception bay.

Hard standing

The site is constructed on impermeable concrete hard standing which was identified to be in good condition at the site walkover in August 2017.

Tanks and Bunds

There will be a small number of new process tanks incorporated on the site for the storage of vehicle fuels, maintenance oils, and fire protection foams.

All tanks will be installed with secondary containment and be designed to comply with the Environment Protection Pollution Prevention Guideline *Above Ground Oil Storage Tanks: PPG 2*.

All storage tanks associated with the process are detailed within Table 3.1 above.

3.1.4 Potential for Fugitive Releases to Soil, Groundwater and Surface Water

The materials and substances used in the new activity are not considered to have significant potential to cause ground or groundwater contamination under general storage or operating procedures.

The following measures have been incorporated into the design of the new activity to protect groundwater and soil from installation substances;

- There are no internal surface water drains located within the building interiors. Any spillages of liquids will be retained within the building and treated accordingly. In the event of a spillage, no materials will be able to escape the building;
- Emergency Spill kits (some oil specific) will be provided throughout the site and strategically placed in locations;
- All fixed storage and mobile [small volume] tanks / drums will be located away from vehicle manoeuvring areas and placed within secondary containment bunds;
- All storage tanks will be equipped with secondary containment bunds that have been designed to comply with Pollution Prevention Guideline Above Ground Oil Storage Tanks PPG 2;
- All aspects of the operational facility will be located on impermeable concrete slabs;
- There will be no subsurface infrastructure used for the storage or transfer of hazardous waste; and
- There will only be external storage of wooden pallets in the designated storage area and infrequent storage of surplus skips in the eastern storage area. This is located hardstanding.

When constructed and operated in the manner described above the proposed operations will not introduce any sub surface or potentially polluting activities to the site.

Due to the protection measures mentioned above, the risk to soil and groundwater from the development is considered to be LOW as summarised in the Conceptual Site Model below. In the unlikely event that any of the above measures fail, due to all activities being carried out internally and on impermeable hard standing, there would be no impact to soil, groundwater and surface water.

Table 3.2 Conceptual Site Model

Contaminant Source	Contaminants of Concern	Receptor	Exposure Pathway Present?	Likelihood of Risk
Historical soil contamination within Made Ground generally associated with colliery and railway	Elevated levels of inorganic contaminants (Cu, Sulphates, Sulphides) and localised organics (in particular PAHs))	Construction Workers	Yes – Use of control measures during construction work including appropriate PPE will minimise potential exposure to contaminants	Low - no construction work is planned
		Future Site Users	Yes – Although hard standing covers the majority of the site, a small area in the south east comprises disused vegetated land and railway tracks which may include Made Ground materials being present at the surface.	Low – area is generally unused and as vegetated is likely that potential contaminants have previously leached from surface
		Groundwater	Yes – However, leaching of contaminants within soils by infiltrating rainfall will be minimal due to presence of hardstanding, buildings and the	Low

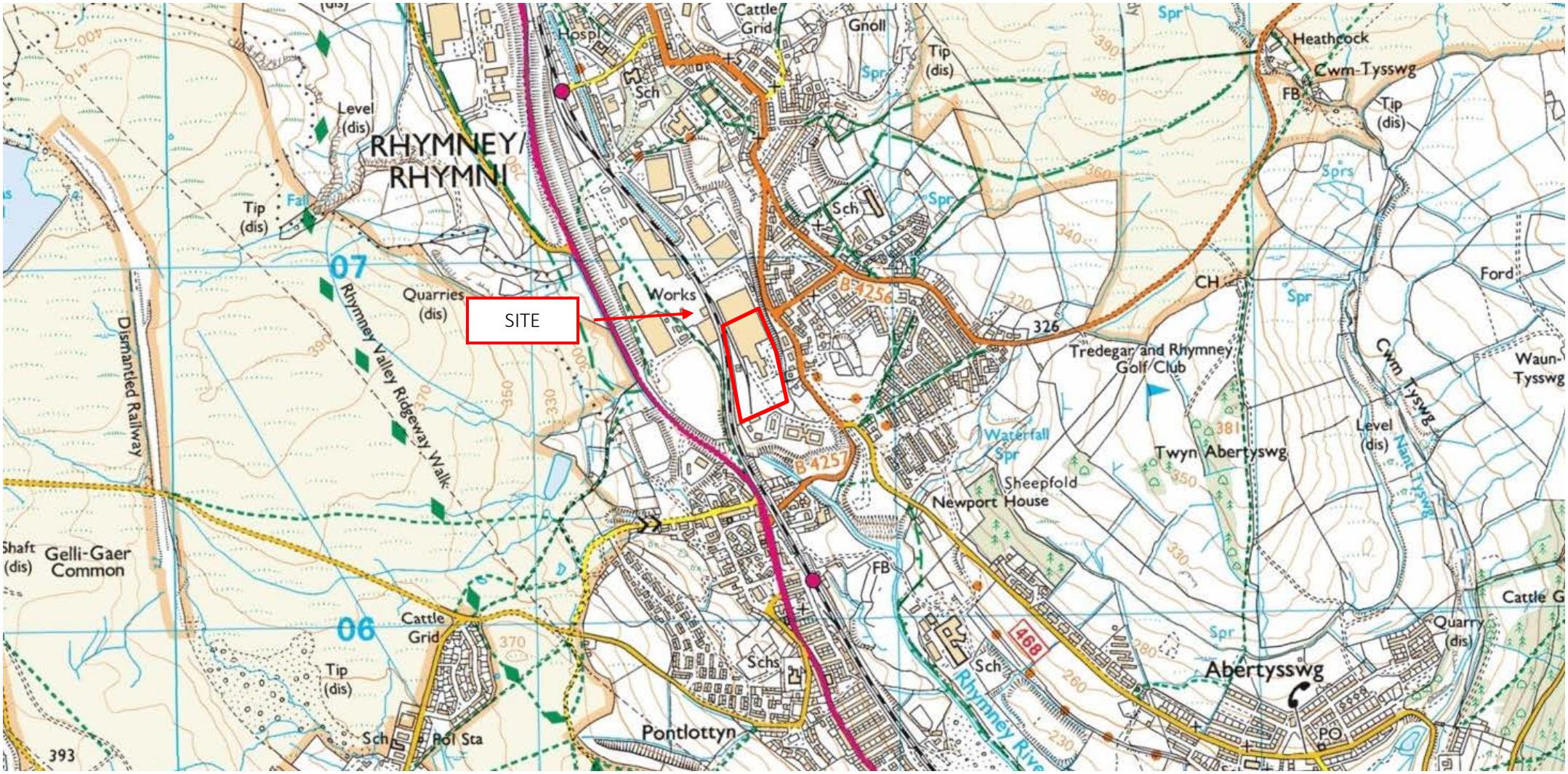
			thickness of the Made Ground. In addition, the superficial deposits should minimise contaminant migration to the deep groundwater.	
		Surface Water	Yes - Made Ground materials are present at the surface in the south east. However, dissolution of contaminants into surface water run-off is less likely than rainwater soak away to ground and vertical migration of contaminants.	Low
Future substances stored, used and generated onsite from use as a waste recovery and recycling facility	Metals, TPH, PAH	Future Site Users	Yes – Workers at the plant may come into contact with potentially hazardous materials, however internal management systems will be place to mitigate any risks	Low
		Soil & Groundwater and Surface Water	No – All materials onsite shall be stored and processed internally. Tanks are bunded and fitted with secondary containment. Site drainage has the ability to be isolated in the event of any spillages / need to fire water containment. In addition, all operational areas of the site will be on concrete hardstanding.	Low
Ground Gas (associated with Made Ground)	CO2, CH4, H2S	Future Site Users	Yes – The site has been constructed above an old colliery and nearby pits and quarries have been infilled. However, the site has been constructed with no issues since the 1970's and is a large spacious warehouse style building. In addition, the site will be covered by hardstanding in operational areas.	Low

In addition, the site will operate a comprehensive maintenance and management system which is described in Section 2 of the main application document. The environmental management system will be designed to meet the requirements of the Environmental Permitting Regulations and associated pollution prevention guidance.

The management system includes visual inspections of:

• All storage areas, hard standing and storage vessels will be physically inspected to detect any signs of deterioration, leaks or spillage. Any corrective action required is reported to and implemented by the Site Manager; and • Equipment in all process areas as part of the company's planned/predictive maintenance programme. Based on this assessment, the potential for the new activity to impact on soil and groundwater underlying the installation is considered to be low.	
Non-permitted activities undertaken at the Installation	Not applicable
Plan showing activity layout	Refer to Figure A2, Annex A
Environmental Risk Assessment	See attached Main Application Document SOL1707MK01.

Annex A – Figures



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				Drawing Title:	SITE LOCATION	**Drawn By:**	EMILY HINGSTON	**Scale:**	NTS

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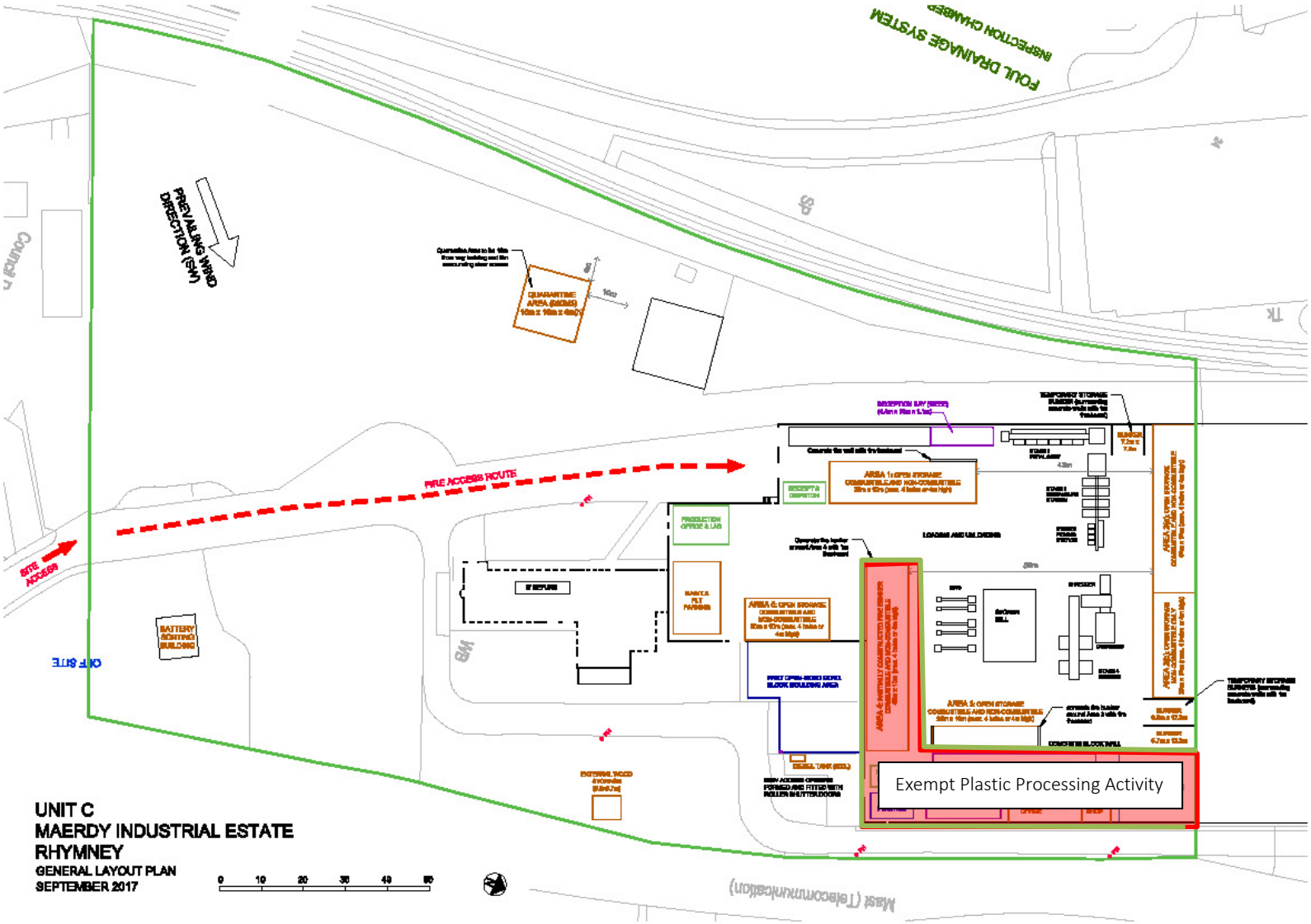

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0	SEPT 17	Original

Client:	MEKATEK LTD	**Job No:**	SOL1707MK01	**Drawing No:**	MK02
Project:	RHYMNEY	**Date:**	SEPT 17	**Revision:**	1
Drawing Title:	INSTALLATION BOUNDARY	**Drawn By:**	SOPHIE PERRIN	**Scale:**	NTS

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FOUL DRAINAGE SYSTEM
INSPECTION CHAMBER

PREVAILING WIND DIRECTION (SW)

Quarantine Area to be 10m from any building and 6m surrounding clear access

QUARANTINE AREA (900M3) 15m x 15m x 4m(h)

6m

10m

RECEPTION BAY (WEEE) (4.4m x 15m x 1.1m)

TEMPORARY STORAGE BUNKER (surrounding concrete walls with 1m freeboard)

Concrete fire wall with 1m freeboard

BUNKER 7.2m x 7.8m

STAGE 1 INITIAL SORT

42m

AREA 1: OPEN STORAGE COMBUSTIBLE AND NON-COMBUSTIBLE 35m x 10m (max. 4 bales or 4m high)

RECEIPT & DISPATCH

STAGE 2 DISMANTLING STATION

STAGE 3 PICKING STATION

AREA 2(a): OPEN STORAGE COMBUSTIBLE AND NON-COMBUSTIBLE 40m x 10m (max. 4 bales or 4m high)

FIRE ACCESS ROUTE

SITE ACCESS

PRODUCTION OFFICE & LAB

LOADING AND UNLOADING

Concrete fire bunker around Area 4 with 1m freeboard

58m

KWS

STOKER MILL

SHREDDER

OVERSIZED

STAGE 4 SORTING

IT REFURB

MAINT.& FLT PARKING

AREA 5: OPEN STORAGE COMBUSTIBLE AND NON-COMBUSTIBLE 20m x 10m (max. 4 bales or 4m high)

AREA 4: PARTIALLY CONSTRUCTED FIRE BUNKER COMBUSTIBLE AND NON-COMBUSTIBLE 45m x 10m (max. 4 bales or 4m high)

AREA 2(b): OPEN STORAGE NON-COMBUSTIBLE ONLY 25m x 10m (max. 4 bales or 4m high)

TEMPORARY STORAGE BUNKERS (surrounding concrete walls with 1m freeboard)

BATTERY SORTING BUILDING

OFF SITE

PART OPEN-SIDED CONC. BLOCK MOULDING AREA

AREA 3: OPEN STORAGE COMBUSTIBLE AND NON-COMBUSTIBLE 25m x 10m (max. 4 bales or 4m high)

concrete fire bunker around Area 3 with 1m freeboard

BUNKER 6.5m x 12.2m

BUNKER 5.7m x 12.2m

CONCRETE BLOCK WALL

DIESEL TANK (500L)

SHREDDER & GRANUALTOR

EXTERNAL WOOD STORAGE (6.8x5.7m)

NEW ACCESS OPENING FORMED AND FITTED WITH ROLLER SHUTTER DOORS

RECEIPT & DISPATCH

LOADING PLASTICS

FLOAT SINK

MAINTENANCE & OFFICE

WORK SHOP

MAINTENANCE

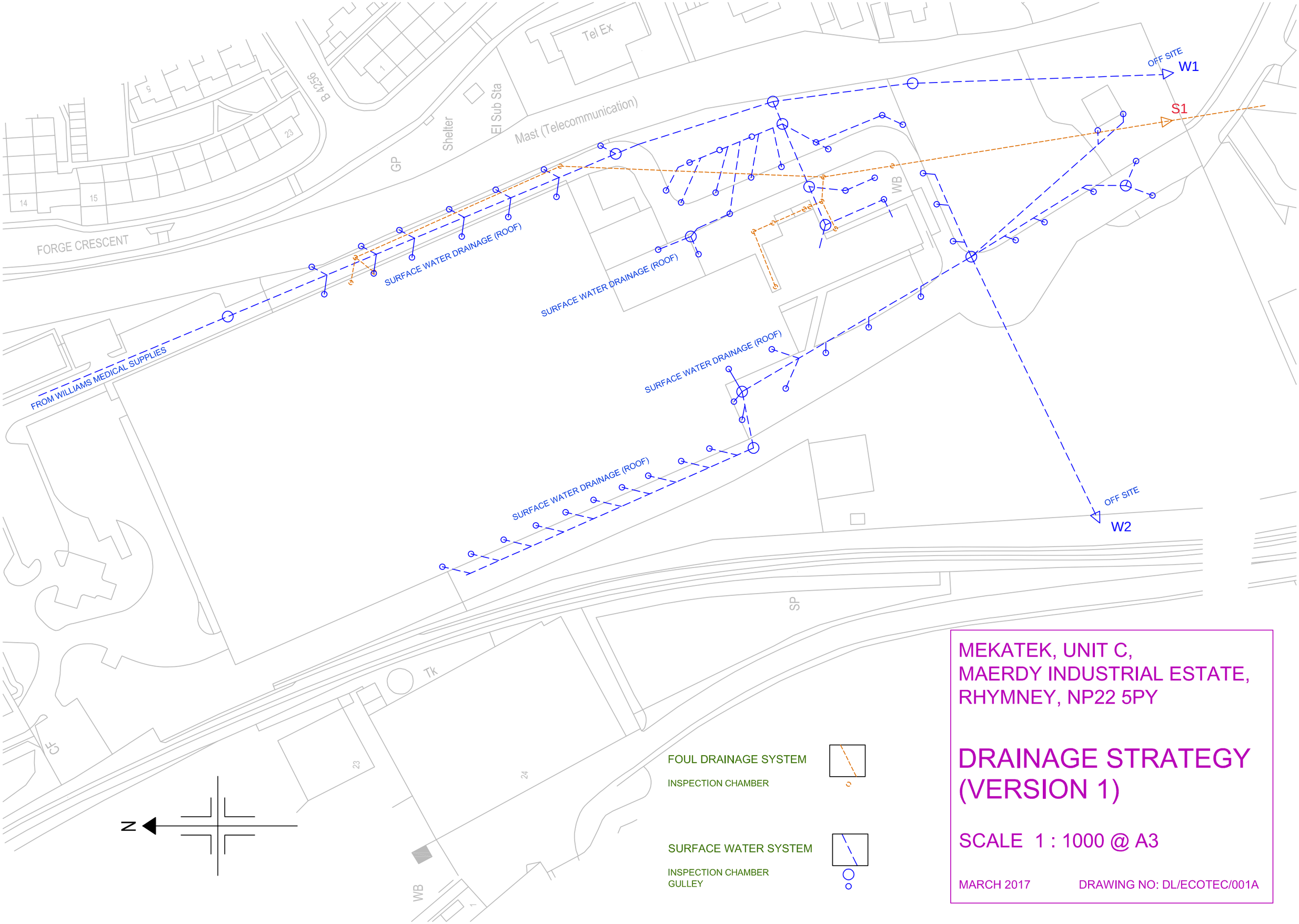
FH

Mast (Telecommunication)

UNIT C
MAERDY INDUSTRIAL ESTATE
RHYMNEY

GENERAL LAYOUT PLAN
SEPTEMBER 2017

0 10 20 30 40 50



MEKATEK, UNIT C,
MAERDY INDUSTRIAL ESTATE,
RHYMNEY, NP22 5PY

DRAINAGE STRATEGY (VERSION 1)

SCALE 1 : 1000 @ A3

MARCH 2017 DRAWING NO: DL/ECOTEC/001A

Annex B – Phase I & Phase II Geoenvironmental Investigation

Williams Medical Supplies Limited

SITE AT MAERDY INDUSTRIAL ESTATE, RHYMNEY

GEO-ENVIRONMENTAL REPORT

November 2003

Intégral
Géotechnique

CLIENT:	**Williams Medical Supplies Limited**
PROJECT:	**Site at Maerdy Industrial Estate, Rhymney**
TITLE:	**Geo-environmental Report**
JOB NO:	**8674**
DOCUMENT REF:	**8674/MJE/03**

Revision	Purpose Description	Originated	Reviewed	Authorised	Date
0	Issue	MJE	MR	MJE	Nov 03

Geotechnical Engineers:

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CONTENTS

CONTENTS (CONTINUED)

1.0 INTRODUCTION

1.1 GENERAL

Williams Medical Supplies are proposing to lease part of their site at Maerdy Industrial Estate at Rhymney and it was requested that an assessment of the contamination on the site be prepared to form a baseline ground contamination survey.

Intégral Géotechnique (Wales) Limited have been appointed as the Geotechnical Engineers to undertake a site investigation to enable the appraisal of the site and provide a basis for assessment.

This report presents the findings of the site investigation and gives an assessment of the contamination results and a risk assessment for comparison against normal industry standards.

1.2 OBJECTIVES

The objectives of the environmental and geotechnical appraisal of the site are to:

- Investigate the degree, nature and extent of contamination and its implications for site ownership, reclamation and redevelopment.

1.3 PROPOSED DEVELOPMENT

The development comprises a large warehouse operation for the manufacture, supply and distribution of medical supplies.

1.4 SCOPE OF WORK

The work instructed included a desk study of available information and site reconnaissance. Intrusive investigation comprising dynamic probing and window sampling with representative sampling was undertaken at the northern section of the site and within the northern end of the building. Two probes were undertaken in the south-eastern section of the site.

Water sampling of the adjacent river was also undertaken. This was followed by chemical testing and reporting.

2.0 THE SITE

2.1 SITE LOCATION AND DESCRIPTION

The site is located at Maerdy Industrial estate at Rhymney, a National Grid Reference of SO 1163 0672, see Figure 1.

The site is approximately rectangular in shape and occupies an area of three hectares. The boundaries of the site are defined by the Valley railway line to the west beyond which is the Capital Valley Industrial Park, residential development upslope on the eastern boundary, other commercial premises to the north and south, see Figure 2.

2.2 SITE OPERATIONS

There are currently no site operations as the site is being refurbished.

The site is generally level with the ground rising beyond the eastern boundary. The ground is generally level westwards with the River Rhymney culverted under the site. The river is approximately 8 to 15m below the site level.

A large steel frame building covers the central part of the site, with external areas generally set to tarmac or concrete or gravel. A railway siding passes to the east of the main building.

2.3 SURROUNDING LAND USE

The adjacent areas upslope of the site are predominately residential. To the north and south of the site there are further industrial and commercial premises.

2.4 AVAILABLE SITE INVESTIGATION DATA

There are no previous investigation data available.

3.0 SITE HISTORY

The site and the surrounding areas have been used for a range of different uses. In particular the Maerdy Colliery was located immediately to the north of the site where the two shafts are capped off.

The site lies within the railway sidings and infrastructure of the colliery.

Various engineering factories have also been present on and adjacent the site.

The premises themselves were formally the Impress Works developed during the 1960s or 1970's.

4.0 SITE ENVIRONMENTAL SETTING

4.1 PHYSICAL SETTING

The site is located within the valley of the River Rhymney. The valley has been significantly altered over the last 100 years or so with the channel being progressively infilled as part of the colliery operations, so the river now runs in a deep channel with relatively steep side slopes.

Ground slopes rise at moderate angles away eastwards and westwards beyond other industrial development.

4.2 GEOLOGY

The geological map shows the site to be underlain the following general succession.

Recent	Colliery spoil materials and slag
Pleistocene	Clays and gravels
Carboniferous	Lower Coal Measures – Mudstones and siltstones with coal seams

In the southern part of the site the made ground materials may be underlain by alluvial soils of the valley floor.

Within the Coal Measures sequence three number of coal seams including the Garw, Old Coal, and Black Vein. Ironstone veins may also be present.

4.3 HYDROGEOLOGY

The 1:100,000 scale Environment Agency Groundwater Vulnerability map (Sheet No. 36), classifies the site as a minor aquifer with variable permeability. Although these aquifers will seldom produce large quantities of water for abstraction purposes, they can be important both for local supplies and in supplying base flow to rivers.

The Groundwater Vulnerability Map classifies the soils into two different types. The soils along the northern parts of the site are classified as being of high leaching potential. These soils have little ability to attenuate diffuse source pollutants and non-adsorbed diffuse source pollutants and liquid discharges have the potential to move rapidly to underlying strata or to shallow groundwater.

The soils across the rest of the site are classified as having a low leaching potential. These are soils in which pollutants are unlikely to penetrate the soil layer because either water movement is largely horizontal, or they have the ability to attenuate diffuse pollutants.

4.4 LANDFILL SITES

The available data indicates that there are no registered landfill operations within 500m of the site.

4.5 POTENTIAL CONTAMINATION

Previous Uses

The various activities in the vicinity of the site which are thought likely to have resulted in ground or water resource contamination on this site are listed below in Table 1. The potential contaminants from each activity are described along with the hazards they pose.

Table 1 : Potential Contaminants

Activity	Material/Process	Contamination/Hazard	Evidence
Colliery	Mining Ash	Combustible materials Minewaters Ore residues and dust	Shown on historical plans. No direct evidence.
Railway land	Maintenance Spillages	Combustible materials Organic deposits	Shown on historical plans. No direct evidence
Engineering works	Various processes eg Galvanising/ cleaning	Lubricants Organic deposits Ash	Shown on historical plans. No direct evidence
Foundries	Smelting/refining/metal preparation and finishing	Dust/Ash Organic deposits Solvents Sludges	Shown on historical plans. No direct evidence
Garages	Maintenance/cleaning/waste disposal	Organic deposits Solvents/paints Batteries etc	Shown on historical plans. No direct evidence

Existing Uses

None at present. Sub stations and tanks are potential sources of contamination.

5.0 THE SITE INVESTIGATION

5.1 FIELDWORKS

A site investigation comprising thirteen dynamic probe and window sample probes was carried out on 22nd and 23rd October 2003.

The probes were excavated by using a dynamic probe rig to a maximum depth of 4.0m. During the window sampling, representative samples were taken for laboratory chemical testing.

Following completion of the probing, the holes were backfilled with arisings. Holes through concrete slabs in the factory were initially cored to minimise disturbance. These were reinstated with concrete on completion.

In parallel with the site works outlined above samples, of river water were taken at the upstream end of the culvert and immediately downstream of the culvert.

The fieldworks were supervised by a qualified Geotechnical Engineer from Intégral Géotechnique (Wales) Limited who also logged the probes and prepared their detailed engineering logs in accordance with the requirements of BS5930 : 1999.

The window sampling logs are presented in Appendix A and their approximate locations are shown on Figure 2.

5.2 LABORATORY CHEMICAL TESTING

Representative samples were taken from the window sample holes across the site and were dispatched to the laboratories of TES Bretby for laboratory chemical testing.

The testing schedule was prepared to provide a general screen for commonly occurring contaminants and to assess the potential contamination caused by historical uses.

The concentrations of the following chemical elements/compounds were determined in the laboratories:

Arsenic	Cadmium
Total Chromium	Lead
Mercury	Selenium
Boron	Copper
Nickel	TPH (GCFID)

5.2 LABORATORY CHEMICAL TESTING (CONTINUED)

PAH (Priority 16 by GC)
Total Cyanide
Sulphide
Elemental Sulphur
Water Soluble Sulphate
Phenol Index
Total Sulphate
pH
Zinc

Following soil testing, selected samples were also tested for their leachability characteristics.

Also the water samples from the river were also dispatched to the laboratories of TES Bretby and tested for the same elements/compounds as the soils.

The results of all the soils and water testing are presented in Appendices B and C respectively.

6.0 GROUND CONDITIONS

All the probes encountered made ground deposits primarily comprising colliery spoils. Some slag materials were also encountered.

The spoil ranged from silt grade colliery washings to more granular sands and gravels with mudstone clasts. Ash materials were present throughout as was coal fragments. Occasional coarse cobbles or boulders are also present.

Only WS7 in the north eastern corner of the site encountered what appeared to be natural soils at a depth of 3.5m. As outlined in the geological and historical assessment, tipping and culverting has resulted in a substantial depth of made ground materials, perhaps as much as 15m in places.

All the holes were dry reflecting the likelihood of water levels being controlled and influenced by the lower river levels.

7.0 CONTAMINATION

7.1 SOIL CONTAMINATION

At present in the UK, the concentration levels of a number of chemical elements/ compounds are generally being compared to the guidelines given in the DEFRA Soil Guideline Values and a number of other guidelines. As the site is to be used and further developed for commercial/industrial use, the results of the tests carried out on the samples have been compared to the trigger concentration levels given in the Guidance Notes for the residential commercial/industrial end-usage categories.

The contamination assessment has been carried out to identify contaminants of concern. This has allowed the potential risks by any contaminants present to be assessed in relation to potential receptors.

Statistical analysis of the soil test results has been carried out in line with DEFRA and Environment Agency recommendations. The analysis used gives a contaminant concentration of the 95th percentile (US_{95}), which can be compared with the guideline concentrations. This allows the general site wide contamination to be assessed. Statistical analysis has also been carried out to assess whether individual results can be regarded as statistically significant or not.

The soil test results have been summarised and are shown in Table 2:

TABLE 2 : SUMMARY OF LABORATORY CHEMICAL TEST RESULTS - SOILS

Analysed Element/Compound	Minimum Measured Value (mg/kg)	Maximum Measured Value (mg/kg)	Mean (mg/kg/)	US_{95} (mg/kg)	Guideline Concentration (mg/kg)
Arsenic	0.5	34.1	11	13	500(~)
Cadmium	<0.1	0.61	0	0	1400(~)
Chromium (total)	2.4	120	15	22	5000(~)
Lead	2	124.4	31	40	750(~)
Mercury	<0.1	0.4	0	0	480(~)
Selenium	0.62	5.09	2	2	8000(~)
Boron (water soluble)	<0.5	2.8	1	1	3(+)
Copper	<0.5	154.1	38	51	130(+)

7.1 SOIL CONTAMINATION (CONTINUED)

TABLE 2 : SUMMARY OF LABORATORY CHEMICAL TEST RESULTS -SOILS

Analysed Element/Compound	Minimum Measured Value (mg/kg)	Maximum Measured Value (mg/kg)	Mean (mg/kg/)	US_{95} (mg/kg)	Guideline Concentration (mg/kg)
Nickel	<1	43.5	17	20	5000(~)
Zinc	4.2	134.5	54	66	300(+)
PAH	10	257	58	78	1000($)
Phenols	<0.5	0.7	1	1	5(+)
Cyanide (total)	<1	8	2	3	250(+)
Sulphur	20	1050	186	275	5000(+)
Sulphate (total)	477	18200	3691	5380	2000(+)
Sulphide	<5	3922	327	601	250(+)
pH (#)	6.5	12.2	9	9	5(+)
TPH					50(#)

(*) pH Dependant

(~) DEFRA and EA Guideline Values

(+) ICRCL – Guidance Note 59/83, Guidance on the assessment and redevelopment of contaminated land

(#) Dutch Ministry of the Environment Guidelines

($) Subject to specific assessment of various PAH compounds

Some samples were selected for the determination of the concentrations of the 16 Priority PAH compounds. Generally the results indicate low levels of concentrations for these substances.

Selected samples, taken at random, showed minor concentrations of semi-volatile organic compounds commensurate with the type and range of past practices undertaken at the site.

A few loss on ignition tests were also carried out. These demonstrate that locally some materials are high in coal content.

7.2 SURFACE WATER QUALITY

The samples of river water collected upstream and downstream of the culvert were collected to provide a background assessment of the water quality in this Grade B listed river.

The results are presented in the Appendix C.

TABLE 3 : SUMMARY OF LABORATORY CHEMICAL TEST RESULTS - WATERS

Analysed Element/ Compound	Range of Measured Values (mg/l)		EQS / Dutch Guidelines Threshold (mg/l)
	Upstream	Downstream	Threshold
Arsenic	<0.03	<0.03	0.05
Cadmium	0.01	0.01	0.005
Chromium (dissolved)	<0.02	<0.02	0.02
Lead	0.19	0.19	0.01
Mercury	<0.0001	<0.0001	0.001
Selenium	<0.001	<0.001	0.01
Boron (water soluble)	0.14	0.14	2000
Copper	<0.01	<0.01	0.01
Nickel	<0.02	<0.02	0.15
Zinc	0.29	0.29	0.01
Phenols	<0.05	<0.05	0.03
Cyanide (total)	<0.1	<0.1	0.07

Analysed Element/ Compound	Range of Measured Values (mg/l)		Number of Measured Values Above Threshold
	Upstream	Downstream	Threshold
Sulphide	<0.2	<0.2	0.0025
pH (#)	8.5	7.8	6 – 9
TPH	<0.1	<0.1	0.01

No volatile or semi-volatile organic compounds were identified.

The waters were typical of areas of past mining activity where iron precipitates occur. The pH was neutral to slightly alkaline.

The results suggest slightly elevated concentrations of lead, cadmium, and zinc. However, there appears to be no discernible difference in water quality between upstream and downstream except in the pH which becomes more neutral.

8.0 RISK ASSESSMENT

8.1 METHODOLOGY

The risk of pollution, health effects or environmental harm occurring as a result of ground contamination is dependent upon three principal factors:

- The scale of the contamination sources;
- The presence of sensitive "receptors", eg Humans: health of the general public, site occupiers, redevelopment workers. Environment: flora, fauna, etc;
- The existence of migration pathways by which contaminants can reach the sensitive receptors.

This section assesses each of these factors in order to evaluate the overall level of risk and potential harm to receptors. The receptor may be human, a water resource, an eco-system or construction materials. Pathways connecting a perceived hazard to a receptor are referred to as exposure pathways.

The sources of contamination, the links connecting the hazards to the sensitive receptors, together with represent the basis for the risk assessment.

8.2 SOURCE-PATHWAY-RECEPTOR MODEL

The following contaminant sources, pathways and receptors have been identified, which are relevant to the site and its surroundings:

Sources

Made Ground materials from past mining and extractive industries

Residual deposits associated with past activities

Receptors

End-users of the development

Maintenance workers

Surface water and groundwater

Building materials

Pathways

Dust generation

Ingestion/dermal contact

Soil leaching and migration to controlled waters

8.3 SITE OWNERSHIP

In the context of the current site uses and form, the potential contamination issues described earlier are not considered a significant physical and economic constraint to either continued use or redevelopment for further industrial use.

The implications of contamination on site redevelopment will depend on

- the nature, degree and extent of actual contamination; and
- the sensitivity of the proposed redevelopment (residential being more sensitive and potentially requiring a greater degree of remedial action to make the site fit for purpose than a commercial or industrial re-use).

There a number of factors that would affect both land value and redevelopment costs. These would include the cost of remediation including waste removal, in particular special waste materials, and the increased health and safety requirements for the protection of workers during redevelopment works, especially works in the ground.

Redevelopment for the purposes of a changed site use, especially more sensitive receptor groups such as residential owners, would require a greater scale of investigation, assessment and hence remediation works.

It is anticipated that a prudent developer would undertake appropriate further investigations to define the actual contamination status of the site and help define any remedial measures needed to facilitate specific safe redevelopment of the site and manage environmental liabilities.

The site, particularly in the regional context in which it lies, is unlikely to represent a significant environmental risk for the site owner and any such risks are most likely to relate to local aspects of the made ground materials and the contamination contained therein.

8.4 HUMAN HEALTH RISK ASSESSMENT

The contamination test results and investigation observations show elevated concentration levels across the site of some inorganic substances (copper, sulphates and sulphides), and also some localized 'hot spots/areas' of other organic contaminants in particular polyaromatic hydrocarbons.

The scale and significance of these contamination 'hot spots' cannot be confirmed at this stage. A further phase of detailed investigatory works will be required in order to determine the amounts of materials affected, the appropriate remediation technique to be used and the degree to which remediation would be needed. This would involve a greater number of boreholes, a series of deeper probes, additional more extensive laboratory testing and longer term monitoring to enable quantitative risk assessments to be carried out.

Based on this contamination investigation designed to scope the broad nature of the site and it's contamination potential, it is considered necessary to ensure that end-users are protected from the contaminative nature of the made ground. For the development in it's current form, this will involve maintaining a hard cover system of tarmac or concrete hardstandings which, when combined with the effective cover of the building and a formal drainage system, will ensure that there is no effective linkage between end-users and the ground.

If redevelopment was being considered then a formal assessment of human health risks to determine site specific target levels may be necessary in order to agree a remediation strategy with the landowner and the Environmental Health Department.

With future site maintenance or future development works involving the excavation and removal of the made ground, there would be a risk to workers from contaminants in the soils and also the groundwater if it is encountered. Appropriate measures are recommended for works involving the made ground materials, which are known to be present beneath the site. All excavations should be regularly checked for safe atmospheres since the presence of colliery spoil materials will probably mean potentially elevated carbon dioxide and possibly methane in confined space conditions.

Normal good hygiene practices should be adequate to protect the health and safety of redevelopment workers, which should include:

- Minimum handling of materials;
- Washing of hands prior to all meal breaks, which should be taken in a designated clean area;
- The use of standard protective clothing such as boots and overalls and gloves, where considered relevant.

8.4 HUMAN HEALTH RISK ASSESSMENT (CONTINUED)

In dry weather, inhalation of dust and gases should be avoided preferably by the use of dust suppression techniques to minimize fugitive emissions and minimization of exposed materials at any particular time. Additionally, a system should be established by which any 'unusual' materials that may be encountered are reported rapidly to the site management, so that the appropriate action may be taken, following specialist advice if necessary. An unusual material may be identified on site by colour, odour or physical nature.

Reference should be made to the Health And Safety Executive document "Protection of Workers and the General Public During the Development of Contaminated Land" for detailed guidance on these matters.

8.5 RISKS TO VEGETATION

The phytotoxic metals present indicate the potential for adverse effects to vegetation. It is unlikely that any landscaping is required, to ensure no upward migration of contaminants into the overlying soils, the areas will require capping with a minimum of 600mm of clean, inert subsoil and topsoil materials to ensure viable landscape areas.

8.6 GROUNDWATER RISK ASSESSMENT

No sampling of groundwater was undertaken during this investigation as none was encountered. The surface water sampling indicates generally satisfactory conditions. However, the potential leachability of contaminants would need to be assessed to determine whether there are any risks to controlled waters given the apparent continuity of the made ground materials to the river.

Since there are potential viable pathways there could be a risk of contaminants migrating off-site. However, particularly in the regional context in which it lies and the similarity with all the other land uses in close proximity to the site, is unlikely to represent a significant environmental risk for the site owner and any such risks are most likely to relate to local aspects of the made ground materials and the contamination contained therein.

8.7 RISKS TO BUILDINGS AND MATERIALS DURABILITY

Evidence to date does not indicate any specifically aggressive conditions but it would be reasonable to expect a degree of sulphate and acidic aggressiveness from the made ground.

In accordance with BRE Digest SD1:2001 and adopting the assessment procedure specified therein for brownfield sites, the laboratory chemical test results indicate a characteristic value (taking the mean of the two highest results) for water soluble sulphate of 0.7g/l. However, total sulphate concentrations were up to 5.3g/l and this would suggest that should conditions change then further release of aggressive sulphates may arise.

Using Table 2 of BRE Digest SD1:2001, this characteristic value corresponds to Design Sulphate Class DS-2.

The groundwater regime of the site has been assessed as 'mobile' and a characteristic pH value of 6.5 has been determined (adopting the mean of the lowest 20% of test results). The Design Sulphate Class has been modified to give a site ACEC class of AC-2.

APPENDIX A

DYNAMIC PROBE/WINDOW SAMPLING LOGS

RECORD OF WINDOW SAMPLE HOLE 1

Client: Williams Medical Supplies

Site Name: Maerdy Industrial Estate, Rhymney

Ground Level (mOD):

Co-ordinates:

Project Engineer: MJE

Project Number: 8674

Intégral Géotechnique
50 Cathedral Road
Cardiff CF11 9LL
Tel: 029 2022 0462
Fax: 029 2034 0789
e mail: mail@integralgeotec.com

Depth	Legend	Description	Samples/Tests			Comments
			Depth (m)	Type	SPT 'N'	
		Ground Surface				
0.20		Reinforced CONCRETE				
0.30		CONCRETE	0.40 m	D		
0.60		MADE GROUND: Grey sand to coarse gravel sized fragments of slag				
		MADE GROUND: Black SILT with occasional fine to medium gravel and brick (colliery washing)	1.00 m	D		
1.20		MADE GROUND: Grey and black silty SAND, coarse ground sized fragments of coal and mudstone				
			2.00 m	D		
			3.00 m	D		
4.00		End of Window Sample at 4.00m				

REMARKS
1. Core through floor slab
2. Terminated at 4.00m
3. Reinstated with concrete

Samples/Tests

SPT= standard penetration test
C = SPT using solid cone
S = SPT using split spoon
D = small disturbed sample
B = bulk disturbed sample
W = water sample

Equipment: Dynamic Probing Rig

Date drilled: 22.10.03

Hole diameter: 60mm

Groundwater: Dry

RECORD OF WINDOW SAMPLE HOLE 2

Client: Williams Medical Supplies

Site Name: Maerdy Industrial Estate, Rhymney

Ground Level (mOD):

Co-ordinates:

Project Engineer: MJE

Project Number: 8674

Intégral Géotechnique
50 Cathedral Road
Cardiff CF11 9LL
Tel: 029 2022 0462
Fax: 029 2034 0789
e mail: mail@integralgeotec.com

Depth	Legend	Description	Samples/Tests			Comments
			Depth (m)	Type	SPT 'N'	
		Ground Surface				
		Reinforced CONCRETE				
0.25						
0.45		CONCRETE	0.50	D		
0.60		MADE GROUND: Grey fine to coarse gravel and CLAY				
		MADE GROUND: Grey and black very silty fine to coarse MUDSTONE gravel with some coal	1.00	D		
1.40		MADE GROUND: Black very silty fine to coarse gravel, ash, slag and coal				
			2.00	D		
2.90		End of Window Sample at 2.90m				

REMARKS

1. Core through floor slab
2. Refusal at 2.90m
3. Reinstated with concrete

Samples/Tests

SPT= standard penetration test
C = SPT using solid cone
S = SPT using split spoon
D = small disturbed sample
B = bulk disturbed sample
W = water sample

Equipment: Dynamic Probing Rig

Date drilled: 22.10.03

Hole diameter: 60mm

Groundwater: Dry

RECORD OF WINDOW SAMPLE HOLE 3

Client: Williams Medical Supplies

Site Name: Maerdy Industrial Estate, Rhymney

Ground Level (mOD):

Co-ordinates:

Project Engineer: MJE

Project Number: 8674

Intégral Géotechnique
50 Cathedral Road
Cardiff CF11 9LL
Tel: 029 2022 0462
Fax: 029 2034 0789
e mail: mail@integralgeotec.com

Depth	Legend	Description	Samples/Tests			Comments
			Depth (m)	Type	SPT 'N'	
		Ground Surface				
0.25		Reinforced CONCRETE				
0.40		CONCRETE				
0.50		MADE GROUND: Grey fine to coarse gravel and slag				
		End of Window Sample at 0.50m				

REMARKS

1. Core through floor slab
2. Refusal at 0.50m
3. Reinstated with concrete

Samples/Tests

SPT= standard penetration test
C = SPT using solid cone
S = SPT using split spoon
D = small disturbed sample
B = bulk disturbed sample
W = water sample

Equipment: Dynamic Probing Rig

Date drilled: 22.10.03

Hole diameter: 60mm

Groundwater: Dry

RECORD OF WINDOW SAMPLE HOLE 4

Client: Williams Medical Supplies

Site Name: Maerdy Industrial Estate, Rhymney

Ground Level (mOD):

Co-ordinates:

Project Engineer: MJE

Project Number: 8674

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Depth	Legend	Description	Samples/Tests			Comments
			Depth (m)	Type	SPT 'N'	
		Ground Surface				
0.20		Reinforced CONCRETE				
0.40		CONCRETE				
0.60		MADE GROUND: Green CLAY fine to coarse slag and gravel (strong smell of sulphur)	0.50	D		
1.10		MADE GROUND: Black very silty fine to coarse gravel with occasional coal and slag	0.90	D		
		End of Window Sample at 1.10m				

REMARKS

1. Core through floor slab
2. Refusal at 1.10m
3. Reinstated with concrete

Samples/Tests

SPT= standard penetration test
C = SPT using solid cone
S = SPT using split spoon
D = small disturbed sample
B = bulk disturbed sample
W = water sample

Equipment: Dynamic Probing Rig

Date drilled: 22.10.03

Hole diameter: 60mm

Groundwater: Dry

RECORD OF WINDOW SAMPLE HOLE 5

Client: Williams Medical Supplies

Site Name: Maerdy Industrial Estate, Rhymney

Ground Level (mOD):

Co-ordinates:

Project Engineer: MJE

Project Number: 8674

Intégral Géotechnique
50 Cathedral Road
Cardiff CF11 9LL
Tel: 029 2022 0462
Fax: 029 2034 0789
e mail: mail@integralgeotec.com

Depth	Legend	Description	Samples/Tests			Comments
			Depth (m)	Type	SPT 'N'	
		Ground Surface				
0.20		Reinforced CONCRETE				
0.40		CONCRETE	0.50	D		
0.70		MADE GROUND: Brown clayey silty fine to coarse gravel and slag				
		MADE GROUND: Black slightly clayey SILT with much fine to coarse gravel and occasional slag and coal (colliery washing)	1.50	D		
2.20		MADE GROUND: Orange brown silty SAND to coarse gravel sized fragments of slag	3.00	D		
3.45		End of Window Sample at 3.45m				

REMARKS

1. Core through floor slab
2. Refusal at 3.45m
3. Reinstated with concrete

Samples/Tests

SPT= standard penetration test
C = SPT using solid cone
S = SPT using split spoon
D = small disturbed sample
B = bulk disturbed sample
W = water sample

Equipment: Dynamic Probing Rig

Date drilled: 22.10.03

Hole diameter: 60mm

Groundwater: Dry

RECORD OF WINDOW SAMPLE HOLE 6

Client: Williams Medical Supplies

Site Name: Maerdy Industrial Estate, Rhymney

Ground Level (mOD):

Co-ordinates:

Project Engineer: MJE

Project Number: 8674

Intégral Géotechnique
50 Cathedral Road
Cardiff CF11 9LL
Tel: 029 2022 0462
Fax: 029 2034 0789
e mail: mail@integralgeotec.com

Depth	Legend	Description	Samples/Tests			Comments
			Depth (m)	Type	SPT 'N'	
		Ground Surface				
0.20		Reinforced CONCRETE				
0.30		CONCRETE	0.40	D		
0.50		MADE GROUND: Grey sandy fine to coarse gravel and slag				
		End of Window Sample at 0.50m				

REMARKS

1. Core through floor slab
2. Refusal at 0.50m
3. Reinstated with concrete

Samples/Tests

SPT= standard penetration test
C = SPT using solid cone
S = SPT using split spoon
D = small disturbed sample
B = bulk disturbed sample
W = water sample

Equipment: Dynamic Probing Rig

Date drilled: 22.10.03

Hole diameter: 60mm

Groundwater: Dry

RECORD OF WINDOW SAMPLE HOLE 7

Client: Williams Medical Supplies

Site Name: Maerdy Industrial Estate, Rhymney

Ground Level (mOD):

Co-ordinates:

Project Engineer: MJE

Project Number: 8674

Intégral Géotechnique
50 Cathedral Road
Cardiff CF11 9LL
Tel: 029 2022 0462
Fax: 029 2034 0789
e mail: mail@integralgeotec.com

Depth	Legend	Description	Samples/Tests			Comments
			Depth (m)	Type	SPT 'N'	
		Ground Surface				
		TOPSOIL				
0.20						
0.40		BRICK				
		MADE GROUND: Black silty fine to coarse, slag and coal (colliery spoil)	1.00	D		
1.80		MADE GROUND: Orange brown sand to coarse gravel sized fragment of ash and slag	2.50	D		
3.50		Soft to firm grey brown silty CLAY with some fine to coarse gravels	3.80	D		
4.00		End of Window Sample at 4.00m				

REMARKS
Terminated at 4.00m

Samples/Tests

SPT= standard penetration test
C = SPT using solid cone
S = SPT using split spoon
D = small disturbed sample
B = bulk disturbed sample
W = water sample

Equipment: Dynamic Probing Rig

Date drilled: 23.10.03

Hole diameter: 60mm

Groundwater: Dry

RECORD OF WINDOW SAMPLE HOLE 8

Client: Williams Medical Supplies

Site Name: Maerdy Industrial Estate, Rhymney

Ground Level (mOD):

Co-ordinates:

Project Engineer: MJE

Project Number: 8674

Intégral Géotechnique
50 Cathedral Road
Cardiff CF11 9LL
Tel: 029 2022 0462
Fax: 029 2034 0789
e mail: mail@integralgeotec.com

Depth	Legend	Description	Samples/Tests			Comments
			Depth (m)	Type	SPT 'N'	
		Ground Surface				
		TOPSOIL				
0.30		MADE GROUND: White silty fine to coarse GRAVEL	0.50	D		
0.80		MADE GROUND: Brown slightly clayey fine to coarse GRAVEL	1.00	D		
1.20		End of Window sample at 1.20m				

REMARKS
Refusal at 1.20m

Samples/Tests

SPT= standard penetration test
C = SPT using solid cone
S = SPT using split spoon
D = small disturbed sample
B = bulk disturbed sample
W = water sample

Equipment: Dynamic Probing Rig

Date drilled: 23.10.03

Hole diameter: 60mm

Groundwater: Dry

RECORD OF WINDOW SAMPLE HOLE 9

Client: Williams Medical Supplies

Site Name: Maerdy Industrial Estate, Rhymney

Ground Level (mOD):

Co-ordinates:

Project Engineer: MJE

Project Number: 8674

Intégral Géotechnique
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Cardiff CF11 9LL
Tel: 029 2022 0462
Fax: 029 2034 0789
e mail: mail@integralgeotec.com

Depth	Legend	Description	Samples/Tests			Comments
			Depth (m)	Type	SPT 'N'	
		Ground Surface				
		MADE GROUND: Grey black silty fine to coarse gravel with occasional coal	0.50	D		
1.10		MADE GROUND: Black silty CLAY some fine to medium gravel and occasional coal	1.30	D		
1.60		MADE GROUND: Grey and black silty fine to coarse ash and slag with occasional gravel	3.00	D		
4.00		End of Window sample at 4.00m				

REMARKS
Terminated at 4.00m

Samples/Tests

SPT= standard penetration test
C = SPT using solid cone
S = SPT using split spoon
D = small disturbed sample
B = bulk disturbed sample
W = water sample

Equipment: Dynamic Probing Rig

Date drilled: 23.10.03

Hole diameter: 60mm

Groundwater: Dry

RECORD OF WINDOW SAMPLE HOLE 10

Client: Williams Medical Supplies

Site Name: Maerdy Industrial Estate, Rhymney

Ground Level (mOD):

Co-ordinates:

Project Engineer: MJE

Project Number: 8674

Intégral Géotechnique
50 Cathedral Road
Cardiff CF11 9LL
Tel: 029 2022 0462
Fax: 029 2034 0789
e mail: mail@integralgeotec.com

Depth	Legend	Description	Samples/Tests			Comments
			Depth (m)	Type	SPT 'N'	
		Ground Surface				
		TOPSOIL				
0.15		MADE GROUND: Grey black very silty fine to coarse GRAVEL with occasional coal	1.00	D		
1.20		MADE GROUD: black silty SAND to coarse gravel sized fragments of ash and slag wth occasional coal	2.00	D		
2.20		End of window sample at 2.20m				

REMARKS
1. 3 N° attempts
2. Refusal at 2.20m

Samples/Tests

SPT= standard penetration test
C = SPT using solid cone
S = SPT using split spoon
D = small disturbed sample
B = bulk disturbed sample
W = water sample

Equipment: Dynamic Probing Rig

Date drilled: 23.10.03

Hole diameter: 60mm

Groundwater: Dry

RECORD OF WINDOW SAMPLE HOLE 11

Client: Williams Medical Supplies

Site Name: Maerdy Industrial Estate, Rhymney

Ground Level (mOD):

Co-ordinates:

Project Engineer: MJE

Project Number: 8674

Intégral Géotechnique
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Tel: 029 2022 0462
Fax: 029 2034 0789
e mail: mail@integralgeotec.com

Depth	Legend	Description	Samples/Tests			Comments
			Depth (m)	Type	SPT 'N'	
		Ground Surface				
0.10		TOPSOIL				
		MADE GROUND: Black silty with much SAND to coarse gravel sized fragments of gravel ash and slag	0.50	D		
1.10		MADE GROUND: Black silty SAND to coarse gravel sized fragments of ash and slag	1.50	D		
4.00		End of Window sample at 4.00m				

REMARKS

Samples/Tests

SPT= standard penetration test
C = SPT using solid cone
S = SPT using split spoon
D = small disturbed sample
B = bulk disturbed sample
W = water sample

Equipment: Dynamic Probing Rig

Date drilled: 24.10.03

Hole diameter: 60mm

Groundwater: Dry

RECORD OF WINDOW SAMPLE HOLE 12

Client: Williams Medical Supplies

Site Name: Maerdy Industrial Estate, Rhymney

Ground Level (mOD):

Co-ordinates:

Project Engineer: MJE

Project Number: 8674

Intégral Géotechnique
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Fax: 029 2034 0789
e mail: mail@integralgeotec.com

Depth	Legend	Description	Samples/Tests			Comments
			Depth (m)	Type	SPT 'N'	
		Ground Surface				
0.20		TOPSOIL				
		MADE GROUND: Black very silty slightly clayey fine to coarse GRAVEL and concrete with occasional coal	0.50	D		
1.10		MADE GROUND: Soft to firm grey brown slightly silty CLAY with some fine to coarse gravel and occasional brick and coal	2.00	D		
			3.00	D		
3.60		End of Window sample at 3.60m				

REMARKS
Refusal at 3.60m

Samples/Tests

SPT= standard penetration test
C = SPT using solid cone
S = SPT using split spoon
D = small disturbed sample
B = bulk disturbed sample
W = water sample

Equipment: Dynamic Probing Rig

Date drilled: 24.10.03

Hole diameter: 60mm

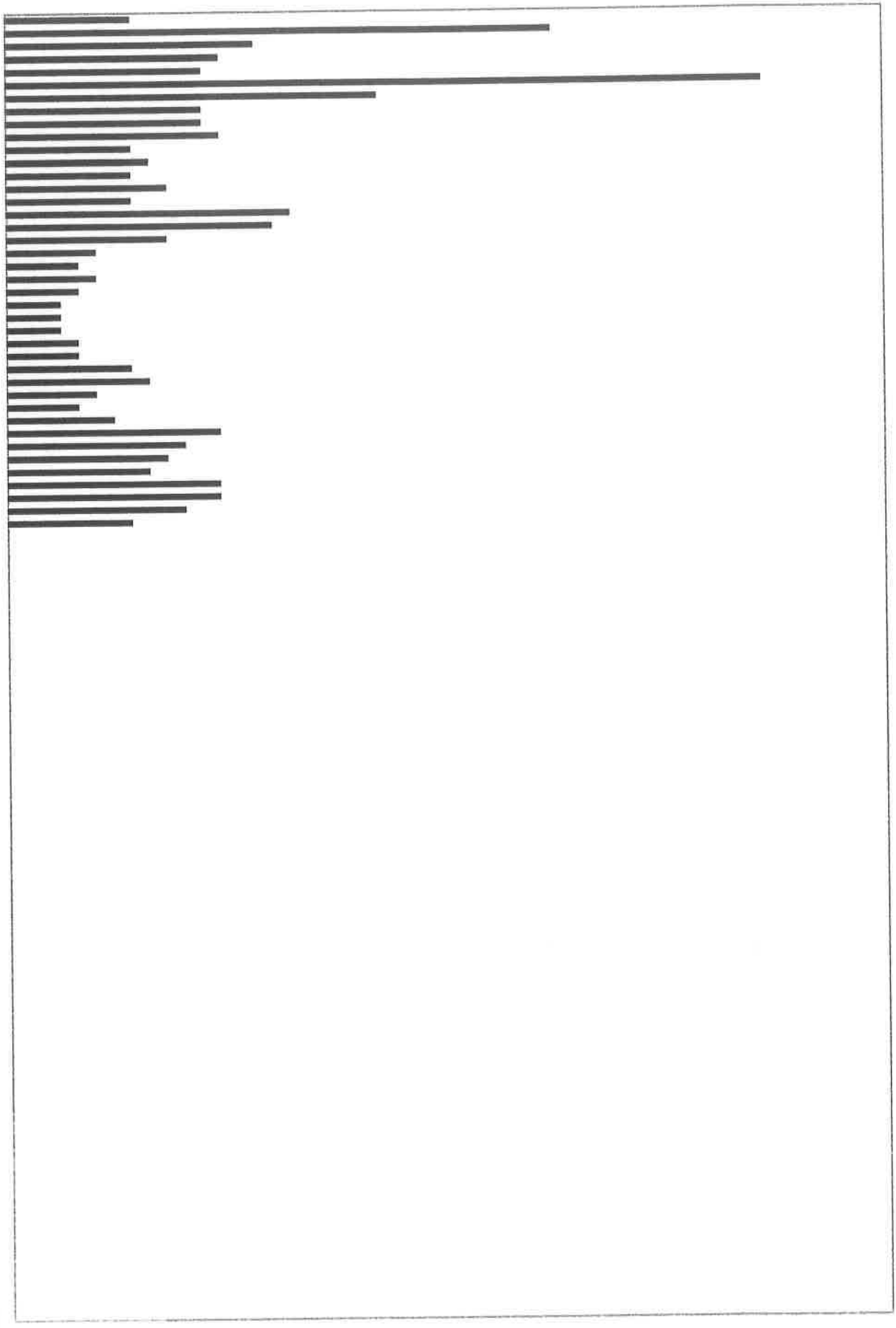
Groundwater: Dry

SOUTHERN GROUND TESTING

DYNAMIC PROBE RECORD

Depth(m)	BLOWS (100mm)
	7
	31
	14
	12
	11
	43
	21
	11
	11
1.00	12
	7
	8
	7
	9
	7
	16
	15
	9
	5
2.00	4
	5
	4
	3
	3
	3
	4
	4
	7
	8
3.00	5
	4
	6
	12
	10
	9
	8
	12
	12
	10
4.00	7
5.00	
6.00	
7.00	
8.00	
9.00	
10.00	

DIAGRAM DPH N100 VALUES



REMARKS: 1.Terminate at 4.00m.

CONTRACT: Williams Medical Supplies, Rhymney.

PROBE NUMBER: 12
DATE: 24.10.03
PAGE 1of 1

RECORD OF WINDOW SAMPLE HOLE 13

Client: Williams Medical Supplies

Site Name: Maerdy Industrial Estate, Rhymney

Ground Level (mOD):

Co-ordinates:

Project Engineer: MJE

Project Number: 8674

Intégral Géotechnique
50 Cathedral Road
Cardiff CF11 9LL
Tel: 029 2022 0462
Fax: 029 2034 0789
e mail: mail@integralgeotec.com

Depth	Legend	Description	Samples/Tests			Comments
			Depth (m)	Type	SPT 'N'	
		Ground Surface				
		MADE GROUND: Black very silty slightly clayey fine to coarse GRAVEL with some coal and brick	1.00	D		
1.40		MADE GROUND: Brown and grey soft to firm very silty CLAY with some fine to coarse gravel, coal and brick	2.00	D		
			3.00	D		
3.20		End of window sample at 3.20m				

REMARKS
Refusal at 3.20m

Samples/Tests

SPT= standard penetration test
C = SPT using solid cone
S = SPT using split spoon
D = small disturbed sample
B = bulk disturbed sample
W = water sample

Equipment: Dynamic Probing Rig

Date drilled: 24.10.03

Hole diameter: 60mm

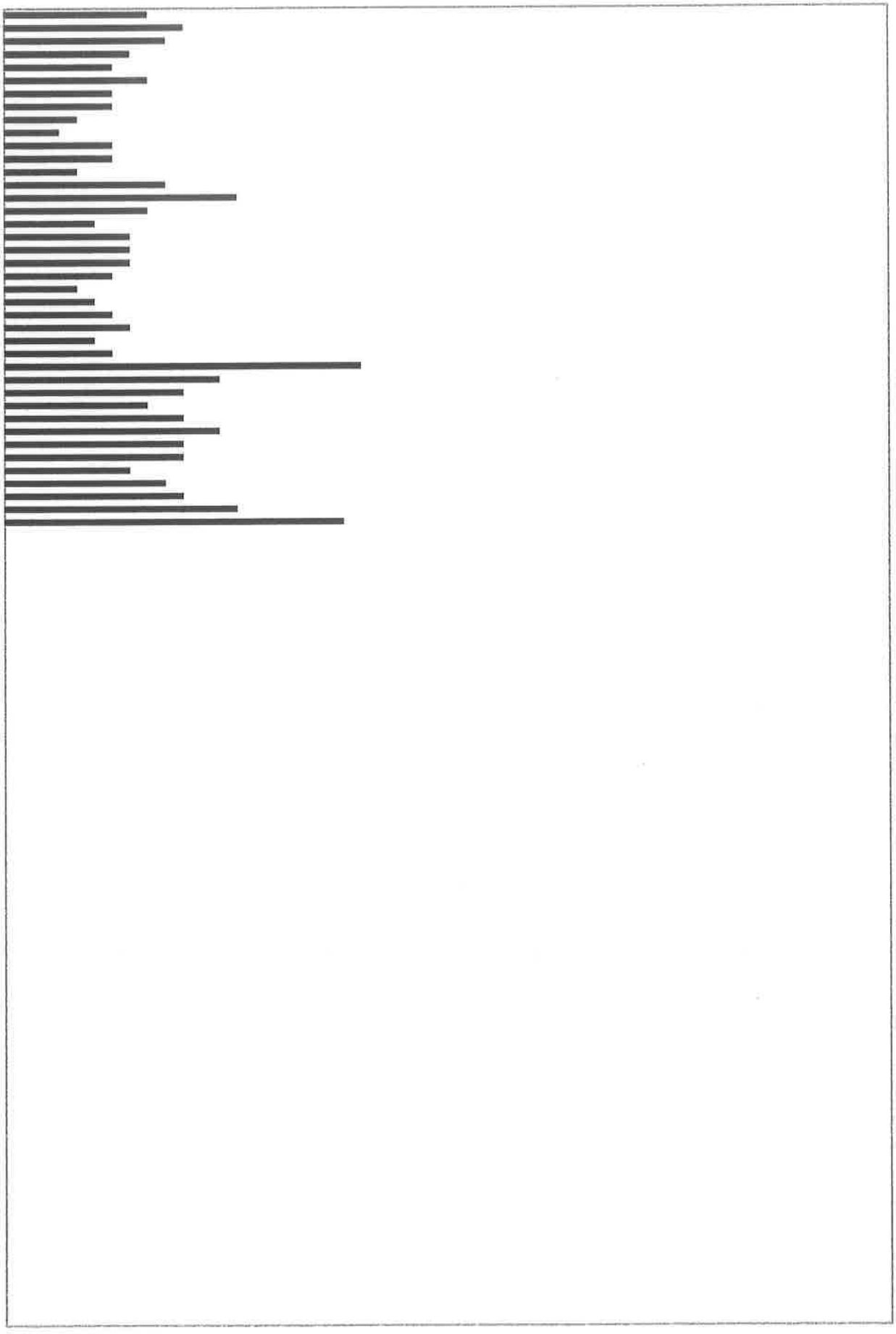
Groundwater: Dry

SOUTHERN GROUND TESTING

DYNAMIC PROBE RECORD

Depth(m)	BLOWS (100mm)
	8
	10
	9
	7
	6
	8
	6
	6
	4
1.00	3
	6
	6
	4
	9
	13
	8
	5
	7
	7
2.00	7
	6
	4
	5
	6
	7
	5
	6
	20
	12
3.00	10
	8
	10
	12
	10
	10
	7
	9
	10
	13
4.00	19
5.00	
6.00	
7.00	
8.00	
9.00	
10.00	

DIAGRAM DPH N100 VALUES



REMARKS: 1.Terminate at 4.00m.

CONTRACT: Williams Medical Supplies, Rhymney.

PROBE NUMBER: 13
DATE: 24.10.03
PAGE 1of 1

APPENDIX B

LABORATORY CHEMICAL TEST RESULTS (SOILS)

TES Bretby

TEST REPORT
SOIL SAMPLE ANALYSIS

UKAS TESTING
1252

TES Report No. EFS/034777

Site: Rhymney

Integral Geotechnique
50 Cathedral Rd
Cardiff
CF11 9LL

The 18 samples described in this report were scheduled for analysis by TES Bretby on Wednesday, 12 November 2003. The analysis was completed by Tuesday, 25 November 2003.

Tests marked as 'not UKAS accredited' and any opinions or interpretations expressed herein are outside the scope of any UKAS accreditation held by TES Bretby laboratories.

The following tables are contained in this report:

Table 1 Main Analysis Results
Tables of PAH by MS Results (2 Pages)
Tables of SVOC Results (3 Pages)
Table of Report Notes (1 Page)

On behalf of
TES Bretby : J Hannah
J Hannah Project Co-ordinator

Date of Issue: 25/11/03

Tests marked 'not UKAS accredited' in this report are not included in the UKAS Accreditation Schedule for our laboratory.

TES Bretby accepts no responsibility for the sampling related to the above results

	Units :	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/l	mg/kg	mg/kg	mg/kg	mg/kg
	Method Codes :	ELESULP	ICPACIDS	ICPMSS	ICPMSS	ICPMSS	ICPMSS	ICPMSS	ICPMSS	ICPMSS	ICPMSS	ICPMSS	ICPWSS	ICTSCN28	ICTSCN28	PAHSCUV	SVOCSW
	Detection Limits :	20	10	0.5	0.1	0.5	0.5	0.5	0.10	0.5	0.5	3.0	0.1	1	5	10	0.2-10.0
	UKAS Accredited :	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes
TES ID Number CL/	Client Sample Description	Elemental Sulphur	SO4-- (acid sol)	Arsenic (MS)	Cadmium (MS)	Chromium (MS)	Copper (MS)	Lead (MS)	Mercury (MS)	Nickel (MS)	Selenium (MS)	Zinc (MS)	SO4-- (H2O sol) mg/l	CN- (total)	Sulphide	PAH (screening)	PAH by MS
0332994	WS001 0.4	812	13400	0.60	0.11	5.80	1.30	3.20	<0.10	1.00	5.09	6.00	1990	4	163	180	
0332995	WS001 1.0	104	5230	11.20	<0.10	6.70	33.8	24.8	0.13	12.40	2.05	37.1	1260	<1	15	105	
0332996	WS001 2.0	<20	864	8.00	0.17	9.20	31	19	0.11	43.5	0.62	58.3	231	<1	<5	17	
0332997	WS002 0.5	782	11000	<0.50	<0.10	10.80	<0.50	2.00	<0.10	1.00	4.32	4.70	1200	6	3922	156	
0332998	WS002 1.0	22	852	24.4	0.18	6.40	31.6	30.2	0.36	30.1	1.15	107.3	206	<1	<5	23	
0332999	WS004 0.5	1050	17200	1.00	<0.10	4.90	0.50	2.00	<0.10	1.20	4.68	4.20	1670	4	1376	257	
0333000	WS004 0.9	286	4260	8.30	0.16	11.70	20.8	20.2	0.13	18.4	1.78	47.8	1280	<1	144	84	
0333001	WS005 0.5	200	18200	1.40	<0.10	10.60	2.40	5.40	<0.10	2.20	4.10	15.5	1710	2	1773	50	
0333002	WS005 1.5	39	1420	8.20	0.12	14.60	30.4	20	0.23	20	1.82	53.5	351	<1	82	28	Req
0333003	WS005 3.0	153	3920	9.00	0.11	35.6	17.4	41.4	<0.10	17.5	1.53	30.9	861	2	90	33	
0333004	WS007 1.0	135	1190	19.2	0.13	120.0	152.1	86.2	0.10	17.6	0.71	32.4	163	<1	<5	108	
0333005	WS007 2.5	143	867	3.60	<0.10	5.40	13.20	9.40	<0.10	19.4	0.72	5.40	74.8	<1	37	33	Req
0333006	WS008 0.5	<20	883	10.60	0.18	12.10	13.00	13.40	0.11	23.7	0.65	54.1	21.1	<1	<5	<10	
0333007	WS008 1.0	<20	1100	13.00	0.24	14.00	24.3	20.6	<0.10	30.1	1.00	62.2	32.8	<1	18	<10	
0333008	WS009 0.5	62	914	11.20	<0.10	4.30	54.2	24.9	0.40	31.2	1.59	40.9	93.3	<1	<5	18	
0333009	WS009 1.2	106	2530	34.1	0.61	8.40	115.1	124.4	0.31	21.4	2.22	123.3	116	1	<5	63	
0333010	WS009 3.0	224	1500	4.30	<0.10	25.7	11.40	5.70	<0.10	7.80	1.22	16	207	2	297	36	
0333011	WS010 1.0	<20	851	4.00	<0.10	2.40	25.8	14.90	0.14	13.70	0.77	32.5	35.7	<1	<5	<10	

TES Bretby

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Client Name	Integral Geotechnique Ltd
Contact	Mr M Earl

Rhymney

Soils Sample Analysis

Date Printed	25 November 2003
Report Number	EFS/034777
Table Number	1
Page Number	1 of 2

UKAS TESTING
1252

Units :		mg/kg	pH Units	mg/kg	MJ/kg	mg/kg	%											
Method Codes :		SVOCSW	WSLM3	WSLM4	CL12	ICPBOR	LOI450											
Detection Limits :				0.5	0.1	0.5	0.2											
UKAS Accredited :		yes	yes	yes	no	no	no											
TES ID Number CL/	Client Sample Description	SVOC Scan	pH units	Phenol Index	Gross CV MJ/kg	Boron,	LOI % @ 450øC											
0332994	WS001 0.4		10.2	<0.5		2.8												
0332995	WS001 1.0	Req	9.3	<0.5		1.6												
0332996	WS001 2.0		8.0	<0.5		0.7												
0332997	WS002 0.5		10.7	<0.5		1.2												
0332998	WS002 1.0	Req	8.8	<0.5		0.7												
0332999	WS004 0.5		11.9	<0.5		1.4												
0333000	WS004 0.9		10.2	<0.5		1.4												
0333001	WS005 0.5		10.1	<0.5		2.1												
0333002	WS005 1.5	Req	8.7	0.7		1.2												
0333003	WS005 3.0		7.4	<0.5		1.1												
0333004	WS007 1.0		8.0	<0.5		1.0												
0333005	WS007 2.5		10.7	<0.5		0.7												
0333006	WS008 0.5		9.1	<0.5		<0.5												
0333007	WS008 1.0		8.8	<0.5		0.9												
0333008	WS009 0.5		7.3	<0.5	16.13	1.0	43.0											
0333009	WS009 1.2		6.5	<0.5	3.74	<0.5	16.4											
0333010	WS009 3.0		8.2	<0.5		0.6												
0333011	WS010 1.0		7.7	<0.5		0.9												

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Client Name Integral Geotechnique Ltd

Contact Mr M Earl

Rhymney

Soils Sample Analysis

Date Printed	25 November 2003
Report Number	EFS/034777
Table Number	1
Page Number	2 of 2

UKAS TESTING 1252

TES Bretby

Polycyclic Aromatic Hydrocarbons
GC/MS

UKAS TESTING 1252

Customer and Site Details:	Integral Geotechnique Ltd: Rhymney		
Sample Details:	WS005 1.5	**Job Number:**	S03_4777
LIMS ID Number:	CL0333002	**Date Booked in:**	12-Nov-03
QC Batch Number:	2163	**Date Extracted:**	17-Nov-03
Quantitation File:	1119CCC1.D	**Date Analysed:**	19-Nov-03
Directory:	1119ABN.MS5\	**Matrix:**	Soil
Dilution:	1.0	**Ext Method:**	Soxhlet

UKAS accredited?: Yes

Target Compounds	CAS #	R.T. (min)	Concentration mg/kg	% Fit
Naphthalene	91-20-3	8.85	0.5	99
Acenaphthylene	208-96-8	-	< 0.2	-
Acenaphthene	83-32-9	-	< 0.2	-
Fluorene	86-73-7	13.57	0.2	83
Phenanthrene	85-01-8	15.56	1.1	98
Anthracene	120-12-7	-	< 0.2	-
Fluoranthene	206-44-0	18.07	0.3	99
Pyrene	129-00-0	18.51	0.2	94
Benzo[a]anthracene	56-55-3	-	< 0.2	-
Chrysene	218-01-9	21.15	0.5	98
Benzo[b]fluoranthene	205-99-2	23.34	0.3	94
Benzo[k]fluoranthene	207-08-9	-	< 0.2	-
Benzo[a]pyrene	50-32-8	-	< 0.2	-
Indeno[1,2,3-cd]pyrene	193-39-5	-	< 0.2	-
Dibenzo[a,h]anthracene	53-70-3	-	< 0.2	-
Benzo[g,h,i]perylene	191-24-2	-	< 0.2	-
Total (USEPA16) PAHs	-	-	< 4.9	-

Internal Standards	% Area
1,4-Dichlorobenzene-d4	87
Naphthalene-d8	87
Acenaphthene-d10	90
Phenanthrene-d10	91
Chrysene-d12	90
Perylene-d12	95

Surrogates	% Rec
Nitrobenzene-d5	72
2-Fluorobiphenyl	81
Terphenyl-d14	93

Concentrations are reported on a wet weight basis.

The Total PAH result is the sum of non-rounded individual PAH results and therefore may differ to the sum of the rounded individual PAH results printed above. By convention, where any one or more result is a "less than", the total is expressed as a "less than" and includes the "less than" concentration within the total.

TES Bretby

Polycyclic Aromatic Hydrocarbons GC/MS

UKAS TESTING 1252

Customer and Site Details:	Integral Geotechnique Ltd: Rhymney		
Sample Details:	WS007 2.5	**Job Number:**	S03_4777
LIMS ID Number:	CL0333005	**Date Booked in:**	12-Nov-03
QC Batch Number:	2163	**Date Extracted:**	17-Nov-03
Quantitation File:	1119CCC1.D	**Date Analysed:**	19-Nov-03
Directory:	1119ABN.MS6\	**Matrix:**	Soil
Dilution:	1.0	**Ext Method:**	Soxhlet

UKAS accredited?: Yes

Target Compounds	CAS #	R.T. (min)	Concentration mg/kg	% Fit
Naphthalene	91-20-3	-	< 0.2	-
Acenaphthylene	208-96-8	-	< 0.2	-
Acenaphthene	83-32-9	-	< 0.2	-
Fluorene	86-73-7	-	< 0.2	-
Phenanthrene	85-01-8	-	< 0.2	-
Anthracene	120-12-7	-	< 0.2	-
Fluoranthene	206-44-0	-	< 0.2	-
Pyrene	129-00-0	-	< 0.2	-
Benzo[a]anthracene	56-55-3	-	< 0.2	-
Chrysene	218-01-9	-	< 0.2	-
Benzo[b]fluoranthene	205-99-2	-	< 0.2	-
Benzo[k]fluoranthene	207-08-9	-	< 0.2	-
Benzo[a]pyrene	50-32-8	-	< 0.2	-
Indeno[1,2,3-cd]pyrene	193-39-5	-	< 0.2	-
Dibenzo[a,h]anthracene	53-70-3	-	< 0.2	-
Benzo[g,h,i]perylene	191-24-2	-	< 0.2	-
Total (USEPA16) PAHs	-	-	< 3.2	-

Internal Standards	% Area
1,4-Dichlorobenzene-d4	77
Naphthalene-d8	74
Acenaphthene-d10	80
Phenanthrene-d10	78
Chrysene-d12	82
Perylene-d12	85

Surrogates	% Rec
Nitrobenzene-d5	73
2-Fluorobiphenyl	79
Terphenyl-d14	89

Concentrations are reported on a wet weight basis.

The Total PAH result is the sum of non-rounded individual PAH results and therefore may differ to the sum of the rounded individual PAH results printed above. By convention, where any one or more result is a "less than", the total is expressed as a "less than" and includes the "less than" concentration within the total.

TES Bretby

SVOC (TICs)

UKAS TESTING 1252

UKAS accredited?:Yes

Customer and Site Details:	Integral Geotechnique Ltd: Rhymney		
Sample Details:	WS005 1.5	**Job Number:**	S03_4777
LIMS ID Number:	CL0333002		
		Multiplier:	0.06667
Date Booked in:	12-Nov-03	**Dilution Factor:**	1
Date Extracted:	17-Nov-03	**GPC (Y/N):**	N
Date Analysed:	19-Nov-03	**Matrix:**	Soil
QC Batch Number:	2163	**Method:**	Soxhlet
Directory/Quant File:	1119ABN.MS5\ 1119CCC1.D	**Operator:**	SO

Tentatively Identified Compounds	CAS #	R.T.	mg/kg	% Fit
Naphthalene	91-20-3	8.85	0.500	99
2-Methylnaphthalene	91-57-6	10.27	0.800	99
1-Methylnaphthalene	90-12-0	10.48	0.300	98
Biphenyl	92-52-4	11.28	0.500	99
Fluorene	86-73-7	13.57	0.200	83
Phenanthrene	85-01-8	15.56	1.100	98
Fluoranthene	206-44-0	18.07	0.300	99
Pyrene	129-00-0	18.51	0.200	94
Chrysene	218-01-9	21.15	0.500	98
bis(2-Ethylhexyl)phthalate	117-81-7	21.56	0.800	98
Benzo[b]fluoranthene	205-99-2	23.34	0.300	94
2,7-DIMETHYLNAPHTHALENE	000000-00-0	11.59	0.514	97
1,1'-Biphenyl, 4,4'-dichloro-	002050-68-2	14.74	0.328	92
9H-Fluoren-9-one	000486-25-9	15.14	0.383	93
1,1'-Biphenyl, 2',3,4-trichloro-	038444-86-9	16.40	0.526	95
METHYL-PHENANTHRENE OR METHYL-ANTHRACENE	000610-48-0	16.61	0.438	91
Anthracene, 9-methyl-	000779-02-2	16.67	0.639	96
2-Phenylnaphthalene	035465-71-5	17.27	0.320	95
Sulfur, mol. (S8)	010544-50-0	17.92	1.437	91

The compounds listed above have been tentatively identified by a computer based library search.
Compounds identified in the sample are not reported if they also occur in the method blank.
The % fit is an indication of the reliability of the compound assignment.
Due to the similarity between mass spectra of some isomeric compounds assignments may not be correct.
Other compounds may also be present but identification was not possible.
Concentrations are semi-quantitative, assume a response factor of 1 and use the nearest internal standard.
Concentrations are reported on a wet weight basis.

TES Bretby

SVOC (TICs)

UKAS TESTING 1252

UKAS accredited?:Yes

Customer and Site Details:	Integral Geotechnique Ltd: Rhymney		
Sample Details:	WS001 1.0	**Job Number:**	S03_4777
LIMS ID Number:	CL0332995		
		Multiplier:	0.066667
Date Booked in:	12-Nov-03	**Dilution Factor:**	1
Date Extracted:	17-Nov-03	**GPC (Y/N):**	N
Date Analysed:	19-Nov-03	**Matrix:**	Soil
QC Batch Number:	2163	**Method:**	Soxhlet
Directory/Quant File:	1118ABN.MS6\ 1118CCC3.D	**Operator:**	SO

Tentatively Identified Compounds	CAS #	R.T.	mg/kg	% Fit
Naphthalene	91-20-3	8.76	0.900	99
2-Methylnaphthalene	91-57-6	10.18	2.200	99
1-Methylnaphthalene	90-12-0	10.40	0.900	98
Biphenyl	92-52-4	11.19	0.800	98
Fluorene	86-73-7	13.48	0.400	82
Phenanthrene	85-01-8	15.47	2.500	99
Fluoranthene	206-44-0	17.98	0.500	95
Pyrene	129-00-0	18.42	0.400	87
Benzo[a]anthracene	56-55-3	20.98	0.400	97
Chrysene	218-01-9	21.06	1.000	99
Benzo[b]fluoranthene	205-99-2	23.23	0.600	98
Benzo[a]pyrene	50-32-8	23.99	0.300	98
Indeno[1,2,3-cd]pyrene	193-39-5	27.31	0.200	92
Benzo[g,h,i]perylene	191-24-2	27.92	0.300	97
Naphthalene, 2,7-dimethyl-	000582-16-1	11.51	1.810	98
Naphthalene, 2,3-dimethyl-	000581-40-8	11.68	1.039	98
1,1'-Biphenyl, 4-methyl-	000644-08-6	12.50	0.867	95
Heptadecane	000629-78-7	14.54	0.658	95
9H-Fluorene, 9-methyl-	002523-37-7	14.66	0.593	96
9H-Fluorene, 2-methyl-	001430-97-3	14.73	0.651	97
9H-Fluoren-9-one	000486-25-9	15.05	1.060	96
Phenanthrene, 4-methyl-	000832-64-4	16.52	1.291	93
Anthracene, 2-methyl-	000613-12-7	16.58	1.665	96

Compounds identified in the sample are not reported if they also occur in the method blank.
The % fit is an indication of the reliability of the compound assignment.
Due to the similarity between mass spectra of some isomeric compounds assignments may not be correct.
Other compounds may also be present but identification was not possible.
Concentrations are semi-quantitative, assume a response factor of 1 and use the nearest internal standard.
Concentrations are reported on a wet weight basis.

SVOC (TICs)

UKAS accredited?:Yes

1252

Customer and Site Details:	Integral Geotechnique Ltd: Rhymney		
Sample Details:	WS002 1.0	**Job Number:**	S03_4777
LIMS ID Number:	CL0332998		
		Multiplier:	0.06667
Date Booked in:	12-Nov-03	**Dilution Factor:**	1
Date Extracted:	17-Nov-03	**GPC (Y/N):**	N
Date Analysed:	19-Nov-03	**Matrix:**	Soil
QC Batch Number:	2163	**Method:**	Soxhlet
Directory/Quant File:	1119ABN.MS5\ 1119CCC1.D	**Operator:**	SO

Tentatively Identified Compounds	CAS #	R.T.	mg/kg	% Fit
Naphthalene	91-20-3	8.85	0.600	99
2-Methylnaphthalene	91-57-6	10.27	0.900	100
1-Methylnaphthalene	90-12-0	10.49	0.200	96
Biphenyl	92-52-4	11.28	0.500	99
Fluorene	86-73-7	13.57	0.200	92
Phenanthrene	85-01-8	15.56	0.900	99
Fluoranthene	206-44-0	18.07	0.200	100
Chrysene	218-01-9	21.16	0.300	99
Naphthalene, 1,7-dimethyl-	000575-37-1	11.59	0.455	98
Anthracene, 2-methyl-	000613-12-7	16.61	0.389	93
Phenanthrene, 4-methyl-	000832-64-4	16.67	0.517	95
Sulfur, mol. (S8)	010544-50-0	17.92	1.385	91

The compounds listed above have been tentatively identified by a computer based library search.
Compounds identified in the sample are not reported if they also occur in the method blank.
The % fit is an indication of the reliability of the compound assignment.
Due to the similarity between mass spectra of some isomeric compounds assignments may not be correct.
Other compounds may also be present but identification was not possible.
Concentrations are semi-quantitative, assume a response factor of 1 and use the nearest internal standard.
Concentrations are reported on a wet weight basis.

Report Notes

Soil/Solid analysis specific:
Results expressed as mg/kg unless stated otherwise
S04 analysis not conducted in accordance with BS1377
Water Soluble Sulphate on 2:1 water:soil extract
AR denotes analysis conducted on the As Received sample
co-eluted with benzo(b)fluoranthene
co-eluted with Indeno(123-cd)pyrene
BTEX analysis expressed as ug/kg As Received
Phenol HPLC results expressed as mg/kg As Received

Water analysis specific:
Results expressed as mg/l unless stated otherwise

Oil analysis specific:
Results expressed as mg/kg unless stated otherwise
S.G. expressed as g/cm^3@ 15°C

Filter analysis specific:
Results expressed as mg on filter unless stated otherwise

VOC analysis specific:
Explanatory notes for data flagging
U = undetected above reporting limit
J = concentration at instrument was below lowest calibration standard
E = concentration at instrument was above top calibration standard
B = compound was detected in method blank

Gas (Tedlar bag) analysis specific:
Results expressed as ug/l unless stated otherwise

Air (Carbon tube) analysis specific:
Results expressed as ug on tube unless stated otherwise

Asbestos analysis specific:
CH denotes Chrysotile
CR denotes Crocidolite
AM denotes Amosite
NADIS denotes No Asbestos Detected in Sample
NBFO denotes No Bulk fibres Observed
T Trace
L Low (2-15%)
M Medium (15-50%)
H High (>50%)

General notes:
^ this analysis was subcontracted to another laboratory
$ Within laboratory tolerances
$$ unable to analyse due to nature of sample
¥ Results for guidance only, possible interference
& Blank corrected
I.S insufficient sample for analysis
Intf Unable to analyse due to interferences
N.D Not determined
N.R Not recorded
N.Det Not detected
Req Analysis Requested, see attached sheets for results
***** denotes this result not UKAS accredited on this sample
Þ Raised detection limit due to nature of sample

TES Bretby

TEST REPORT
SOIL SAMPLE ANALYSIS

UKAS TESTING
1252

TES Report No. EFS/034778

Site: Rhymney

Integral Geotechnique
50 Cathedral Rd
Cardiff
CF11 9LL

The 9 samples described in this report were scheduled for analysis by TES Bretby on Wednesday, 12 November 2003. The analysis was completed by Tuesday, 25 November 2003.

Tests marked as 'not UKAS accredited' and any opinions or interpretations expressed herein are outside the scope of any UKAS accreditation held by TES Bretby laboratories.

The following tables are contained in this report:

Table 1 Main Analysis Results
Tables of PAH by MS Results (3 Pages)
Tables of SVOC Results (3 Pages)
Table of Report Notes (1 Page)

On behalf of
TES Bretby : J Hannah
J Hannah Project Co-ordinator

Date of Issue: 25/11/03

Tests marked 'not UKAS accredited' in this report are not included in the UKAS Accreditation Schedule for our laboratory.

TES Bretby accepts no responsibility for the sampling related to the above results

TES Bretby, P.O. Box 100, Burton-on-trent, DE15 0XD Tel: 01283 554400 Fax: 01283 554422
TES Bretby is a division of Mowlem Environmental Sciences Group Registered in England Number 77628

	Units :	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/l	mg/kg	mg/kg	mg/kg	mg/kg
	Method Codes :	ELESULP	ICPACIDS	ICPMSS	ICPMSS	ICPMSS	ICPMSS	ICPMSS	ICPMSS	ICPMSS	ICPMSS	ICPMSS	ICPWSS	ICTSCN28	ICTSCN28	PAHSCUV	SVOCSW
	Detection Limits :	20	10	0.5	0.1	0.5	0.5	0.5	0.10	0.5	0.5	3.0	0.1	1	5	10	
	UKAS Accredited :	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes
TES ID Number CL/	Client Sample Description	Elemental Sulphur	SO4-- (acid sol)	Arsenic (MS)	Cadmium (MS)	Chromium (MS)	Copper (MS)	Lead (MS)	Mercury (MS)	Nickel (MS)	Selenium (MS)	Zinc (MS)	SO4-- (H2O sol) mg/l	CN- (total)	Sulphide	PAH (screening)	SVOC Scan
0333012	WS010 2.0	72	1540	11.50	0.26	14.50	46.5	36.4	<0.10	14.10	1.17	66.7	98.2	<1	77	35	
0333013	WS011 0.5	195	1800	18.1	0.40	9.00	154.1	62.9	0.14	9.70	2.22	134.5	93.6	6	173	60	
0333014	WS011 1.5	374	2850	19.4	0.21	12.70	62.3	47.3	0.11	8.90	2.54	99.2	517	8	574	109	Req
0333015	WS012 0.5	21	4110	9.30	0.16	10.20	31.5	14.40	<0.10	11.20	0.98	46.9	20.6	<1	15	23	
0333016	WS012 2.0	26	698	18.3	0.24	10.80	36.1	67.7	0.24	17.3	0.92	94.9	120	<1	<5	22	Req
0333017	WS012 3.0	<20	512	15.7	<0.10	11.20	30.7	53.3	0.30	15.1	0.89	77.6	85.6	<1	<5	22	
0333018	WS013 1.0	68	947	6.50	0.16	5.30	18.8	23.9	0.10	14.20	0.96	45.4	156	1	29	47	Req
0333019	WS013 2.0	39	552	9.20	0.15	7.60	31	35	0.14	24	0.85	83.9	142	<1	<5	22	
0333020	WS013 3.0	<20	477	11.10	0.20	10.50	28.8	33.5	0.13	28.4	0.91	76.2	94.1	<1	<5	<10	

TES Bretby

TES Bretby
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Client Name	Integral Geotechnique Ltd
Contact	Mr M Earl

Rhymney

Soils Sample Analysis

Date Printed	25 November 2003
Report Number	EFS/034778
Table Number	1
Page Number	1 of 2

UKAS TESTING
1252

Units :		pH Units	mg/kg	mg/kg														
Method Codes :		WSLM3	WSLM4	ICPBOR														
Detection Limits :			0.5	0.5														
UKAS Accredited :		yes	yes	no														
TES ID Number CL/	Client Sample Description	pH units	Phenol Index	Boron.														
0333012	WS010 2.0	7.5	<0.5	0.6														
0333013	WS011 0.5	9.0	<0.5	<0.5														
0333014	WS011 1.5	10.0	<0.5	<0.5														
0333015	WS012 0.5	12.2	<0.5	<0.5														
0333016	WS012 2.0	8.2	<0.5	0.9														
0333017	WS012 3.0	8.1	<0.5	0.7														
0333018	WS013 1.0	9.5	<0.5	0.6														
0333019	WS013 2.0	8.0	<0.5	0.7														
0333020	WS013 3.0	8.2	<0.5	0.5														

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Client Name: Integral Geotechnique Ltd

Contact: Mr M Earl

Rhymney

Soils Sample Analysis

Date Printed	25 November 2003
Report Number	EFS/034778
Table Number	1
Page Number	2 of 2

UKAS TESTING 1252

TES Bretby

Polycyclic Aromatic Hydrocarbons
GC/MS

UKAS TESTING 1252

Customer and Site Details:	Integral Geotechnique Ltd: Rhymney		
Sample Details:	WS013 1.0	**Job Number:**	S03_4778
LIMS ID Number:	CL0333018	**Date Booked in:**	12-Nov-03
QC Batch Number:	2163	**Date Extracted:**	17-Nov-03
Quantitation File:	1118CCC3.D	**Date Analysed:**	19-Nov-03
Directory:	1118ABN.MS6\	**Matrix:**	Soil
Dilution:	1.0	**Ext Method:**	Soxhlet

UKAS accredited?: Yes

Target Compounds	CAS #	R.T. (min)	Concentration mg/kg	% Fit
Naphthalene	91-20-3	8.76	0.4	99
Acenaphthylene	208-96-8	-	< 0.2	-
Acenaphthene	83-32-9	-	< 0.2	-
Fluorene	86-73-7	13.48	0.2	93
Phenanthrene	85-01-8	15.47	1.0	99
Anthracene	120-12-7	-	< 0.2	-
Fluoranthene	206-44-0	17.97	0.6	94
Pyrene	129-00-0	18.42	0.4	90
Benzo[a]anthracene	56-55-3	20.98	0.3	99
Chrysene	218-01-9	21.06	0.5	98
Benzo[b]fluoranthene	205-99-2	23.22	0.3	96
Benzo[k]fluoranthene	207-08-9	23.26	0.2	97
Benzo[a]pyrene	50-32-8	23.98	0.2	98
Indeno[1,2,3-cd]pyrene	193-39-5	-	< 0.2	-
Dibenzo[a,h]anthracene	53-70-3	-	< 0.2	-
Benzo[g,h,i]perylene	191-24-2	-	< 0.2	-
Total (USEPA16) PAHs	-	-	< 5.3	-

Internal Standards	% Area
1,4-Dichlorobenzene-d4	82
Naphthalene-d8	78
Acenaphthene-d10	85
Phenanthrene-d10	79
Chrysene-d12	69
Perylene-d12	82

Surrogates	% Rec
Nitrobenzene-d5	82
2-Fluorobiphenyl	83
Terphenyl-d14	99

Concentrations are reported on a wet weight basis.

The Total PAH result is the sum of non-rounded individual PAH results and therefore may differ to the sum of the rounded individual PAH results printed above. By convention, where any one or more result is a "less than", the total is expressed as a "less than" and includes the "less than" concentration within the total.

TES Bretby

Polycyclic Aromatic Hydrocarbons
GC/MS

UKAS TESTING 1252

Customer and Site Details:	Integral Geotechnique Ltd: Rhymney		
Sample Details:	WS012 2.0	**Job Number:**	S03_4778
LIMS ID Number:	CL0333016	**Date Booked in:**	12-Nov-03
QC Batch Number:	2163	**Date Extracted:**	17-Nov-03
Quantitation File:	1119CCC1.D	**Date Analysed:**	19-Nov-03
Directory:	1119ABN.MS5\	**Matrix:**	Soil
Dilution:	1.0	**Ext Method:**	Soxhlet

UKAS accredited?: Yes

Target Compounds	CAS #	R.T. (min)	Concentration mg/kg	% Fit
Naphthalene	91-20-3	8.85	0.3	99
Acenaphthylene	208-96-8	-	< 0.2	-
Acenaphthene	83-32-9	-	< 0.2	-
Fluorene	86-73-7	-	< 0.2	-
Phenanthrene	85-01-8	15.56	1.1	98
Anthracene	120-12-7	-	< 0.2	-
Fluoranthene	206-44-0	18.07	0.8	99
Pyrene	129-00-0	18.52	0.6	96
Benzo[a]anthracene	56-55-3	21.08	0.4	93
Chrysene	218-01-9	21.16	0.7	96
Benzo[b]fluoranthene	205-99-2	23.34	0.5	95
Benzo[k]fluoranthene	207-08-9	23.39	0.3	96
Benzo[a]pyrene	50-32-8	24.12	0.4	95
Indeno[1,2,3-cd]pyrene	193-39-5	27.43	0.2	79
Dibenzo[a,h]anthracene	53-70-3	-	< 0.2	-
Benzo[g,h,i]perylene	191-24-2	28.07	0.2	95
Total (USEPA16) PAHs	-	-	< 6.5	-

Internal Standards	% Area
1,4-Dichlorobenzene-d4	87
Naphthalene-d8	87
Acenaphthene-d10	90
Phenanthrene-d10	91
Chrysene-d12	88
Perylene-d12	90

Surrogates	% Rec
Nitrobenzene-d5	82
2-Fluorobiphenyl	87
Terphenyl-d14	95

Concentrations are reported on a wet weight basis.

The Total PAH result is the sum of non-rounded individual PAH results and therefore may differ to the sum of the rounded individual PAH results printed above. By convention, where any one or more result is a "less than", the total is expressed as a "less than" and includes the "less than" concentration within the total.

TES Bretby

Polycyclic Aromatic Hydrocarbons
GC/MS

UKAS TESTING 1252

Customer and Site Details:	Integral Geotechnique Ltd: Rhymney		
Sample Details:	WS011 1.5	**Job Number:**	S03_4778
LIMS ID Number:	CL0333014	**Date Booked in:**	12-Nov-03
QC Batch Number:	2163	**Date Extracted:**	17-Nov-03
Quantitation File:	1119CCC1.D	**Date Analysed:**	19-Nov-03
Directory:	1119ABN.MS2\	**Matrix:**	Soil
Dilution:	1.0	**Ext Method:**	Soxhlet

UKAS accredited?: Yes

Target Compounds	CAS #	R.T. (min)	Concentration mg/kg	% Fit
Naphthalene	91-20-3	12.73	0.4	99
Acenaphthylene	208-96-8	-	< 0.2	-
Acenaphthene	83-32-9	-	< 0.2	-
Fluorene	86-73-7	19.42	0.2	76
Phenanthrene	85-01-8	22.23	1.5	99
Anthracene	120-12-7	-	< 0.2	-
Fluoranthene	206-44-0	25.78	0.7	91
Pyrene	129-00-0	26.41	0.5	84
Benzo[a]anthracene	56-55-3	30.02	0.4	76
Chrysene	218-01-9	30.14	0.7	99
Benzo[b]fluoranthene	205-99-2	33.29	0.5	97
Benzo[k]fluoranthene	207-08-9	33.36	0.3	M
Benzo[a]pyrene	50-32-8	34.43	0.3	92
Indeno[1,2,3-cd]pyrene	193-39-5	39.14	0.2	92
Dibenzo[a,h]anthracene	53-70-3	-	< 0.2	-
Benzo[g,h,i]perylene	191-24-2	40.06	0.2	95
Total (USEPA16) PAHs	-	-	< 6.7	-

Internal Standards	% Area
1,4-Dichlorobenzene-d4	91
Naphthalene-d8	88
Acenaphthene-d10	90
Phenanthrene-d10	89
Chrysene-d12	88
Perylene-d12	98

Surrogates	% Rec
Nitrobenzene-d5	86
2-Fluorobiphenyl	89
Terphenyl-d14	90

Concentrations are reported on a wet weight basis.

The Total PAH result is the sum of non-rounded individual PAH results and therefore may differ to the sum of the rounded individual PAH results printed above. By convention, where any one or more result is a "less than", the total is expressed as a "less than" and includes the "less than" concentration within the total.

TES Bretby

SVOC (TICs)

UKAS TESTING 1252

UKAS accredited?:Yes

Customer and Site Details:	Integral Geotechnique Ltd: Rhymney		
Sample Details:	WS013 1.0	**Job Number:**	S03_4778
LIMS ID Number:	CL0333018		
		Multiplier:	0.066667
Date Booked in:	12-Nov-03	**Dilution Factor:**	1
Date Extracted:	17-Nov-03	**GPC (Y/N):**	N
Date Analysed:	19-Nov-03	**Matrix:**	Soil
QC Batch Number:	2163	**Method:**	Soxhlet
Directory/Quant File:	1118ABN.MS6\ 1118CCC3.D	**Operator:**	SO

Tentatively Identified Compounds	CAS #	R.T.	mg/kg	% Fit
Naphthalene	91-20-3	8.76	0.400	99
2-Methylnaphthalene	91-57-6	10.18	0.600	97
Biphenyl	92-52-4	11.19	0.300	97
Fluorene	86-73-7	13.48	0.200	93
Phenanthrene	85-01-8	15.47	1.000	99
Fluoranthene	206-44-0	17.97	0.600	94
Pyrene	129-00-0	18.42	0.400	90
Benzo[a]anthracene	56-55-3	20.98	0.300	99
Chrysene	218-01-9	21.06	0.500	98
Benzo[b]fluoranthene	205-99-2	23.22	0.300	96
Benzo[k]fluoranthene	207-08-9	23.26	0.200	97
Benzo[a]pyrene	50-32-8	23.98	0.200	98
Naphthalene, 1,7-dimethyl-	000575-37-1	11.50	0.367	98
Anthracene, 1-methyl-	000610-48-0	16.57	0.367	96
Cyclic octaatomic sulfur	010544-50-0	17.83	1.895	91

The compounds listed above have been tentatively identified by a computer based library search.
Compounds identified in the sample are not reported if they also occur in the method blank.
The % fit is an indication of the reliability of the compound assignment.
Due to the similarity between mass spectra of some isomeric compounds assignments may not be correct.
Other compounds may also be present but identification was not possible.
Concentrations are semi-quantitative, assume a response factor of 1 and use the nearest internal standard.
Concentrations are reported on a wet weight basis.

TES Bretby

SVOC (TICs)

UKAS TESTING 1252

UKAS accredited?:Yes

Customer and Site Details:	Integral Geotechnique Ltd: Rhymney		
Sample Details:	WS012 2.0	**Job Number:**	S03_4778
LIMS ID Number:	CL0333016		
		Multiplier:	0,06667
Date Booked in:	12-Nov-03	**Dilution Factor:**	1
Date Extracted:	17-Nov-03	**GPC (Y/N):**	N
Date Analysed:	19-Nov-03	**Matrix:**	Soil
QC Batch Number:	2163	**Method:**	Soxhlet
Directory/Quant File:	1119ABN.MS5\ 1119CCC1.D	**Operator:**	SO

Tentatively Identified Compounds	CAS #	R.T.	mg/kg	% Fit
Naphthalene	91-20-3	8.85	0.300	99
2-Methylnaphthalene	91-57-6	10.27	0.500	99
1-Methylnaphthalene	90-12-0	10.48	0.300	99
Biphenyl	92-52-4	11.28	0.200	98
Phenanthrene	85-01-8	15.56	1.100	98
Fluoranthene	206-44-0	18.07	0.800	99
Pyrene	129-00-0	18.52	0.600	96
Benzo[a]anthracene	56-55-3	21.08	0.400	93
Chrysene	218-01-9	21.16	0.700	96
Benzo[b]fluoranthene	205-99-2	23.34	0.500	95
Benzo[k]fluoranthene	207-08-9	23.39	0.300	96
Benzo[a]pyrene	50-32-8	24.12	0.400	95
Indeno[1,2,3-cd]pyrene	193-39-5	27.43	0.200	79
Benzo[g,h,i]perylene	191-24-2	28.07	0.200	95
Naphthalene, 2,6-dimethyl-	000581-42-0	11.59	0.391	98
9H-Fluoren-9-one	000486-25-9	15.14	0.312	95
Anthracene, 9-methyl-	000779-02-2	16.61	0.401	94
Anthracene, 1-methyl-	000779-02-2	16.67	0.518	94
2-Phenylnaphthalene	035465-71-5	17.27	0.388	97
SULFUR	007704-34-9	17.92	1.009	95
Benz[a]anthracene, 12-methyl-	002422-79-9	21.96	0.443	98
Perylene	000198-55-0	24.00	0.440	93

The compounds listed above have been tentatively identified by a computer based library search.
Compounds identified in the sample are not reported if they also occur in the method blank.
The % fit is an indication of the reliability of the compound assignment.
Due to the similarity between mass spectra of some isomeric compounds assignments may not be correct.
Other compounds may also be present but identification was not possible.
Concentrations are semi-quantitative, assume a response factor of 1 and use the nearest internal standard.
Concentrations are reported on a wet weight basis.

TES Bretby

SVOC (TICs)

UKAS TESTING 1252

UKAS accredited?:Yes

Customer and Site Details:	Integral Geotechnique Ltd: Rhymney		
Sample Details:	WS011 1.5	**Job Number:**	S03_4778
LIMS ID Number:	CL0333014		
		Multiplier:	0.06667
Date Booked in:	12-Nov-03	**Dilution Factor:**	1
Date Extracted:	17-Nov-03	**GPC (Y/N):**	N
Date Analysed:	19-Nov-03	**Matrix:**	Soil
QC Batch Number:	2163	**Method:**	Soxhlet
Directory/Quant File:	1119ABN.MS2\ 1119CCC1.D	**Operator:**	SO

Tentatively Identified Compounds	CAS #	R.T.	mg/kg	% Fit
Naphthalene	91-20-3	12.73	0.400	99
2-Methylnaphthalene	91-57-6	14.74	0.800	98
1-Methylnaphthalene	90-12-0	15.04	0.400	97
Biphenyl	92-52-4	16.17	0.300	93
Fluorene	86-73-7	19.42	0.200	76
Phenanthrene	85-01-8	22.23	1.500	99
Fluoranthene	206-44-0	25.78	0.700	91
Pyrene	129-00-0	26.41	0.500	84
Benzo[a]anthracene	56-55-3	30.02	0.400	76
Chrysene	218-01-9	30.14	0.700	99
Benzo[b]fluoranthene	205-99-2	33.29	0.500	97
Benzo[k]fluoranthene	207-08-9	33.36	0.300	M
Benzo[a]pyrene	50-32-8	34.43	0.300	92
Indeno[1,2,3-cd]pyrene	193-39-5	39.14	0.200	92
Benzo[g,h,i]perylene	191-24-2	40.06	0.200	95
Naphthalene, 1,5-dimethyl-	000571-61-9	16.61	0.578	98
Naphthalene, 2,3-dimethyl-	000581-40-8	16.85	0.331	97
9H-Fluoren-9-one	000486-25-9	21.64	0.382	93
Anthracene, 1-methyl-	000610-48-0	23.71	0.425	96
Anthracene, 9-methyl-	000779-02-2	23.79	0.602	96
Naphthalene, 2-phenyl-	000612-94-2	24.64	0.513	97
Fluoranthene, 2-methyl-	033543-31-6	27.50	0.330	50
Benzo[e]pyrene	000192-97-2	34.25	0.365	93

The compounds listed above have been tentatively identified by a computer based library search.
Compounds identified in the sample are not reported if they also occur in the method blank.
The % fit is an indication of the reliability of the compound assignment.
Due to the similarity between mass spectra of some isomeric compounds assignments may not be correct.
Other compounds may also be present but identification was not possible.
Concentrations are semi-quantitative, assume a response factor of 1 and use the nearest internal standard.
Concentrations are reported on a wet weight basis.

Report Notes

Soil/Solid analysis specific:
Results expressed as mg/kg unless stated otherwise
S04 analysis not conducted in accordance with BS1377
Water Soluble Sulphate on 2:1 water:soil extract
AR denotes analysis conducted on the As Received sample
co-eluted with benzo(b)fluoranthene
co-eluted with Indeno(123-cd)pyrene
BTEX analysis expressed as ug/kg As Received
Phenol HPLC results expressed as mg/kg As Received

Water analysis specific:
Results expressed as mg/l unless stated otherwise

Oil analysis specific:
Results expressed as mg/kg unless stated otherwise
S.G. expressed as g/cm^3@ 15°C

Filter analysis specific:
Results expressed as mg on filter unless stated otherwise

VOC analysis specific:
Explanatory notes for data flagging
U = undetected above reporting limit
J = concentration at instrument was below lowest calibration standard
E = concentration at instrument was above top calibration standard
B = compound was detected in method blank

Gas (Tedlar bag) analysis specific:
Results expressed as ug/l unless stated otherwise

Air (Carbon tube) analysis specific:
Results expressed as ug on tube unless stated otherwise

Asbestos analysis specific:
CH denotes Chrysotile
CR denotes Crocidolite
AM denotes Amosite
NADIS denotes No Asbestos Detected in Sample
NBFO denotes No Bulk fibres Observed
T Trace
L Low (2-15%)
M Medium (15-50%)
H High (>50%)

General notes:
^ this analysis was subcontracted to another laboratory
$ Within laboratory tolerances
$$ unable to analyse due to nature of sample
¥ Results for guidance only, possible interference
& Blank corrected
I.S insufficient sample for analysis
Intf Unable to analyse due to interferences
N.D Not determined
N.R Not recorded
N.Det Not detected
Req Analysis Requested, see attached sheets for results
* denotes this result not UKAS accredited on this sample
Þ Raised detection limit due to nature of sample

APPENDIX C

LABORATORY CHEMICAL TEST RESULTS (WATER)

TES Bretby

TEST REPORT
WATER SAMPLE ANALYSIS

UKAS TESTING
1252

TES Report No. EXR/035539

Site: Rhymney

Integral Geotechnique Ltd
(Wales) Limited
50 Cathedral Road
Cardiff
CF11 9LL

The 2 Samples described in this report were scheduled for analysis by TES Bretby on Tuesday, 28 October 2003. The analysis was completed by Friday, 14 November 2003.

Tests marked as 'not UKAS accredited' and any opinions or interpretations expressed herein are outside the scope of any UKAS accreditation held by TES Bretby laboratories.

The following tables are contained in this report:

Table 1 Main Analysis Results
Tables of VOC Results (2 Pages)
Tables of TPH Chromatograms (2 Pages)
Table of Report Notes (1 Page)

On behalf of
TES Bretby :
J Elstub

Date of Issue: 14/11/03

Tests marked 'not UKAS accredited' in this report are not included in the UKAS Accreditation Schedule for our laboratory.
TES Bretby accepts no responsibility for the sampling related to the above results.

TES Bretby
Report Number
EXR/035539
Control Page
Sheet 1/ 1

Units :		mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l
Method Codes :	WSLM3	Calc	ICPWATER	ICPWATER	ICPWATER	ICPWATER	ICPWATER	ICPWATER	ICPWATER	ICPWATER	ICPWATER	ICPWATER	ICPWATER	ICPWATER	ICPWATER	ICPWATER
Detection Limits :			0.06	0.01	0.03	0.01	0.01	0.02	0.02	0.01	0.01	0.03	0.01	0.01	0.03	0.05
UKAS Accredited :	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes

TES ID Number EX/	Client Sample Description	pH units	Total Hardness as CaCO3	Total Sulphur as SO4 (Dissolved)	Calcium as Ca (Dissolved)	Magnesium as Mg (Dissolved)	Sodium as Na (Dissolved)	Potassium as K (Dissolved)	Nickel as Ni (Dissolved)	Chromium as Cr (Dissolved)	Cadmium as Cd (Dissolved)	Copper as Cu (Dissolved)	Lead as Pb (Dissolved)	Zinc as Zn (Dissolved)	Iron as Fe (Dissolved)	Arsenic as As (Dissolved)	Boron as B (Dissolved)
0324402	US001	8.5	149	122	43.3	9.81	32.2	4.81	<0.02	<0.02	0.01	<0.01	0.19	0.29	0.05	<0.03	0.14
0324403	DS002	7.8	571	122	104	75.5	61.2	36.4	<0.02	<0.02	0.01	<0.01	0.19	0.29	0.37	<0.03	0.14

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Client Name	Integral Geotechnique Ltd
Contact	Mr M Earl

Rhymney

Water Sample Analysis

Date Printed	14 November 2003
Report Number	EXR/035539
Table Number	1
Page Number	1 of 3

UKAS TESTING
1252

Units :		mg/l	mg/l	mg/l	mg/l	mg/l	ug/l	mg/l										
Method Codes :		ICPMSW	ICPMSW	ICTSCN28	ISESW24	TPHFID	VOCSW	SFAPI										
Detection Limits :		0.0001	0.001	0.1	0.2	0.1	1	0.05										
UKAS Accredited :		yes	yes	yes	yes	yes	yes	no										
TES ID Number EX/	Client Sample Description	Mercury as Hg (Dissolved)	Selenium as Se (Dissolved)	Cyanide (Total) as CN	Sulphide (Free) as S	TPH GC	Volatile Organic Compounds	Phenol Index as C6H5OH										
0324402	US001	<0.0001	<0.001	<0.1	<0.2	<0.1	Req	<0.05										
0324403	DS002	<0.0001	<0.001	<0.1	<0.2	<0.1	Req	<0.05										

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Client Name	Integral Geotechnique Ltd
Contact	Mr M Earl

Rhymney

Water Sample Analysis

Date Printed	14 November 2003
Report Number	EXR/035539
Table Number	1
Page Number	2 of 3

UKAS TESTING
1252

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 :		PAHFID	PAHFID	PAHFID	PAHFID	PAHFID	PAHFID	PAHFID	PAHFID	PAHFID	PAHFID	PAHFID	PAHFID	PAHFID	PAHFID	PAHFID	PAHFID
Detection 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	0.01
UKAS Accredited :		yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes
TES ID Number EX/	Client Sample Description	Naphthalene	Acenaphthylene	Acenaphthene	Fluorene	Phenanthrene	Anthracene	Fluoranthene	Pyrene	Benzo(a)anthracene	Chrysene	Benzo(b)fluoranthene	Benzo(k)fluoranthene	Benzo(a)pyrene	Indeno(123-cd)pyrene	Dibenzo(ah)anthracene	Benzo(ghi)perylene
0324402	US001	<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	<0.01
0324403	DS002	<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	<0.01

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Contact: Mr M Earl

Rhymney

Water Sample Analysis

Date Printed	14 November 2003
Report Number	EXR/035539
Table Number	1
Page Number	3 of 3

UKAS TESTING 1252

TES Bretby

Volatile Organic Compounds by PTGCMS

UKAS accredited?: Yes

UKAS TESTING 1252

Customer and Site Details:	Integral Geotechnique Ltd: Rhymney	**Directory/Quant file:**	1109VOC.MS7\ 1109CCC5.D	**Matrix:**	Water
Sample Details:	US001	**Date Booked in:**	28-Oct-03	**Method:**	Purge and Trap
LIMS ID Number:	EX0324402	**Date Analysed:**	09-Nov-03	**Dilution:**	1
Job Number:	W03_5539	**Operator:**	TJ	**Position:**	15

Target Compounds	CAS #	R.T. (min.)	Concentration µg/l	% Fit
Dichlorodifluoromethane	75-71-8	-	< 1	-
Chloromethane	74-87-3	-	< 1	-
Vinyl Chloride	75-01-4	-	< 1	-
Bromomethane	74-83-9 *	-	< 1	-
Chloroethane	75-00-3 *	-	< 1	-
Trichlorofluoromethane	75-69-4	-	< 1	-
1,1-Dichloroethene	75-35-4	-	< 1	-
trans 1,2-Dichloroethene	156-60-5	-	< 1	-
1,1-Dichloroethane	75-34-3	-	< 1	-
2,2-Dichloropropane	594-20-7	-	< 1	-
cis 1,2-Dichloroethene	156-59-2	-	< 1	-
Bromochloromethane	74-97-5	-	< 1	-
Chloroform	67-66-3	-	< 1	-
1,1,1-Trichloroethane	71-55-6	-	< 1	-
Carbon Tetrachloride	56-23-5	-	< 1	-
1,1-Dichloropropene	563-58-6	-	< 1	-
Benzene	71-43-2	-	< 1	-
1,2-Dichloroethane	107-06-2	-	< 1	-
Trichloroethene	79-01-6	-	< 1	-
1,2-Dichloropropane	78-87-5	-	< 1	-
Dibromomethane	74-95-3	-	< 1	-
Bromodichloromethane	75-27-4	-	< 1	-
cis 1,3-Dichloropropene	10061-01-5	-	< 1	-
Toluene	108-88-3	-	< 1	-
trans 1,3-Dichloropropene	10061-02-6	-	< 1	-
1,1,2-Trichloroethane	79-00-5	-	< 1	-
Tetrachloroethene	127-18-4	-	< 1	-
1,3-Dichloropropane	142-28-9	-	< 1	-
Dibromochloromethane	124-48-1	-	< 1	-
1,2-Dibromoethane	106-93-4	-	< 1	-
Chlorobenzene	108-90-7	-	< 1	-
Ethylbenzene	100-41-4	-	< 1	-
1,1,1,2-Tetrachloroethane	630-20-6	-	< 1	-
m and p-Xylene	108-38-3/106-42-3	-	< 1	-
o-Xylene	95-47-6	-	< 1	-

Target Compounds	CAS #	R.T. (min.)	Concentration µg/l	% Fit
Styrene	100-42-5	-	< 1	-
Bromoform	75-25-2	-	< 1	-
iso-Propylbenzene	98-82-8	-	< 1	-
1,1,2,2-Tetrachloroethane	79-34-5	-	< 1	-
Propylbenzene	103-65-1	-	< 1	-
Bromobenzene	108-86-1	-	< 1	-
1,2,3-Trichloropropane	96-18-4	-	< 1	-
2-Chlorotoluene	95-49-8	-	< 1	-
1,3,5-Trimethylbenzene	108-67-8	-	< 1	-
4-Chlorotoluene	106-43-4	-	< 1	-
tert-Butylbenzene	98-06-6	-	< 1	-
1,2,4-Trimethylbenzene	95-63-6	-	< 1	-
sec-Butylbenzene	135-98-8	-	< 1	-
p-Isopropyltoluene	99-87-6	-	< 1	-
1,3-Dichlorobenzene	541-73-1	-	< 1	-
1,4-Dichlorobenzene	106-46-7	-	< 1	-
n-Butylbenzene	104-51-8	-	< 1	-
1,2-Dichlorobenzene	95-50-1	-	< 1	-
1,2-Dibromo-3-chloropropane	96-12-8	-	< 5	-
1,2,4-Trichlorobenzene	120-82-1	-	< 5	-
Hexachlorobutadiene	87-68-3	-	< 5	-
Naphthalene	91-20-3	-	< 5	-
1,2,3-Trichlorobenzene	87-61-6	-	< 5	-

* Due to the effect of water on the trap these compounds are not UKAS accredited.

Internal standards	R.T.	Area %	Surrogates	% Rec
Pentafluorobenzene	6.68	87	Dibromofluoromethane	100
1,4-Difluorobenzene	7.66	88	Toluene-d8	100
Chlorobenzene-d5	12.05	89	Bromofluorobenzene	88
1,4-Dichlorobenzene-d4	16.15	78		

TES Bretby

Volatile Organic Compounds by PTGCMS

UKAS accredited?: Yes

UKAS TESTING 1252

Customer and Site Details:	Integral Geotechnique Ltd: Rhymney	**Directory/Quant file:**	1109VOC.MS7\ 1109CCC5.D	**Matrix:**	Water
Sample Details:	DS002	**Date Booked in:**	28-Oct-03	**Method:**	Purge and Trap
LIMS ID Number:	EX0324403	**Date Analysed:**	10-Nov-03	**Dilution:**	1
Job Number:	W03_5539	**Operator:**	TJ	**Position:**	16

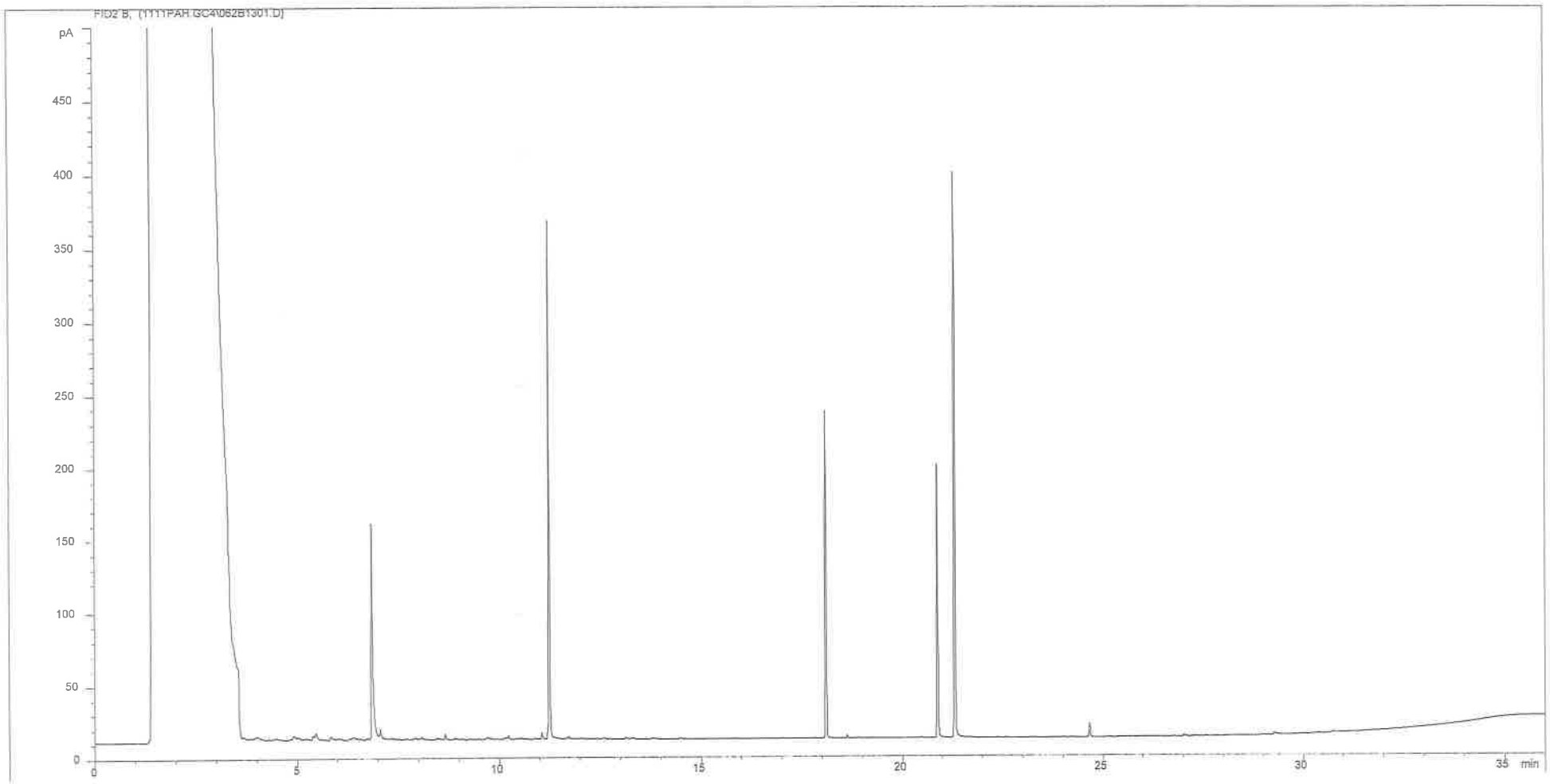
Target Compounds	CAS #	R.T. (min.)	Concentration µg/l	% Fit
Dichlorodifluoromethane	75-71-8	-	< 1	-
Chloromethane	74-87-3	-	< 1	-
Vinyl Chloride	75-01-4	-	< 1	-
Bromomethane	74-83-9 *	-	< 1	-
Chloroethane	75-00-3 *	-	< 1	-
Trichlorofluoromethane	75-69-4	-	< 1	-
1,1-Dichloroethene	75-35-4	-	< 1	-
trans 1,2-Dichloroethene	156-60-5	-	< 1	-
1,1-Dichloroethane	75-34-3	-	< 1	-
2,2-Dichloropropane	594-20-7	-	< 1	-
cis 1,2-Dichloroethene	156-59-2	-	< 1	-
Bromochloromethane	74-97-5	-	< 1	-
Chloroform	67-66-3	-	< 1	-
1,1,1-Trichloroethane	71-55-6	-	< 1	-
Carbon Tetrachloride	56-23-5	-	< 1	-
1,1-Dichloropropene	563-58-6	-	< 1	-
Benzene	71-43-2	-	< 1	-
1,2-Dichloroethane	107-06-2	-	< 1	-
Trichloroethene	79-01-6	-	< 1	-
1,2-Dichloropropane	78-87-5	-	< 1	-
Dibromomethane	74-95-3	-	< 1	-
Bromodichloromethane	75-27-4	-	< 1	-
cis 1,3-Dichloropropene	10061-01-5	-	< 1	-
Toluene	108-88-3	-	< 1	-
trans 1,3-Dichloropropene	10061-02-6	-	< 1	-
1,1,2-Trichloroethane	79-00-5	-	< 1	-
Tetrachloroethene	127-18-4	-	< 1	-
1,3-Dichloropropane	142-28-9	-	< 1	-
Dibromochloromethane	124-48-1	-	< 1	-
1,2-Dibromoethane	106-93-4	-	< 1	-
Chlorobenzene	108-90-7	-	< 1	-
Ethylbenzene	100-41-4	-	< 1	-
1,1,1,2-Tetrachloroethane	630-20-6	-	< 1	-
m and p-Xylene	108-38-3/106-42-3	-	< 1	-
o-Xylene	95-47-6	-	< 1	-

Target Compounds	CAS #	R.T. (min.)	Concentration µg/l	% Fit
Styrene	100-42-5	-	< 1	-
Bromoform	75-25-2	-	< 1	-
iso-Propylbenzene	98-82-8	-	< 1	-
1,1,2,2-Tetrachloroethane	79-34-5	-	< 1	-
Propylbenzene	103-65-1	-	< 1	-
Bromobenzene	108-86-1	-	< 1	-
1,2,3-Trichloropropane	96-18-4	-	< 1	-
2-Chlorotoluene	95-49-8	-	< 1	-
1,3,5-Trimethylbenzene	108-67-8	-	< 1	-
4-Chlorotoluene	106-43-4	-	< 1	-
tert-Butylbenzene	98-06-6	-	< 1	-
1,2,4-Trimethylbenzene	95-63-6	-	< 1	-
sec-Butylbenzene	135-98-8	-	< 1	-
p-Isopropyltoluene	99-87-6	-	< 1	-
1,3-Dichlorobenzene	541-73-1	-	< 1	-
1,4-Dichlorobenzene	106-46-7	-	< 1	-
n-Butylbenzene	104-51-8	-	< 1	-
1,2-Dichlorobenzene	95-50-1	-	< 1	-
1,2-Dibromo-3-chloropropane	96-12-8	-	< 5	-
1,2,4-Trichlorobenzene	120-82-1	-	< 5	-
Hexachlorobutadiene	87-68-3	-	< 5	-
Naphthalene	91-20-3	-	< 5	-
1,2,3-Trichlorobenzene	87-61-6	-	< 5	-

* Due to the effect of water on the trap these compounds are not UKAS accredited.

Internal standards	R.T.	Area %	Surrogates	% Rec
Pentafluorobenzene	6.69	87	Dibromofluoromethane	98
1,4-Difluorobenzene	7.66	87	Toluene-d8	103
Chlorobenzene-d5	12.05	92	Bromofluorobenzene	95
1,4-Dichlorobenzene-d4	16.14	91		

Petroleum Hydrocarbons (C8 to C37) by GC/FID



Sample ID:	EX0324402	**Job Number:**	W03_5539
Multiplier:	0.001	**Client:**	Integral Geotechnique Ltd
Dilution:	1	**Site:**	Rhymney
Acquisition Method:	WMF_RUNF.M	**Client Sample Ref:**	US001
Acquisition Date/Time:	11/11/2003 22:32		
Datafile:	L:\DATA\1111PAH.GC4\062B1301.D		

Report Notes

Soil/Solid analysis specific:
Results expressed as mg/kg unless stated otherwise
S04 analysis not conducted in accordance with BS1377
Water Soluble Sulphate on 2:1 water:soil extract
AR denotes analysis conducted on the As Received sample
co-eluted with benzo(b)fluoranthene
co-eluted with Indeno(123-cd)pyrene
BTEX analysis expressed as ug/kg As Received
Phenol HPLC results expressed as mg/kg As Received

Water analysis specific:
Results expressed as mg/l unless stated otherwise

Oil analysis specific:
Results expressed as mg/kg unless stated otherwise
S.G. expressed as g/cm^3@ 15°C

Filter analysis specific:
Results expressed as mg on filter unless stated otherwise

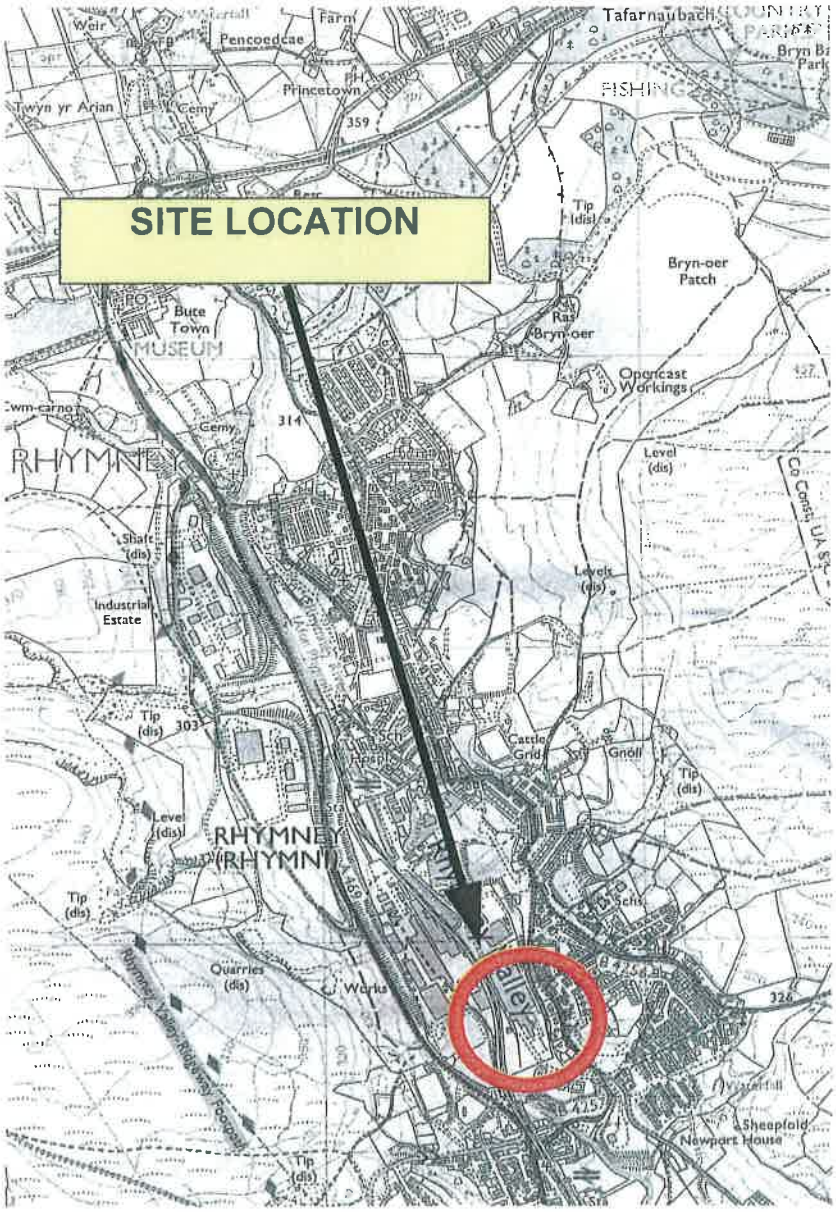
VOC analysis specific:
Explanatory notes for data flagging
U = undetected above reporting limit
J = concentration at instrument was below lowest calibration standard
E = concentration at instrument was above top calibration standard
B = compound was detected in method blank

Gas (Tedlar bag) analysis specific:
Results expressed as ug/l unless stated otherwise

Air (Carbon tube) analysis specific:
Results expressed as ug on tube unless stated otherwise

Asbestos analysis specific:
CH denotes Chrysotile
CR denotes Crocidolite
AM denotes Amosite
NADIS denotes No Asbestos Detected in Sample
NBFO denotes No Bulk fibres Observed
T Trace
L Low (2-15%)
M Medium (15-50%)
H High (>50%)

General notes:
^ this analysis was subcontracted to another laboratory
$ Within laboratory tolerances
$$ unable to analyse due to nature of sample
¥ Results for guidance only, possible interference
& Blank corrected
I.S insufficient sample for analysis
Intf Unable to analyse due to interferences
N.D Not determined
N.R Not recorded
N.Det Not detected
Req Analysis Requested, see attached sheets for results
***** denotes this result not UKAS accredited on this sample
Þ Raised detection limit due to nature of sample



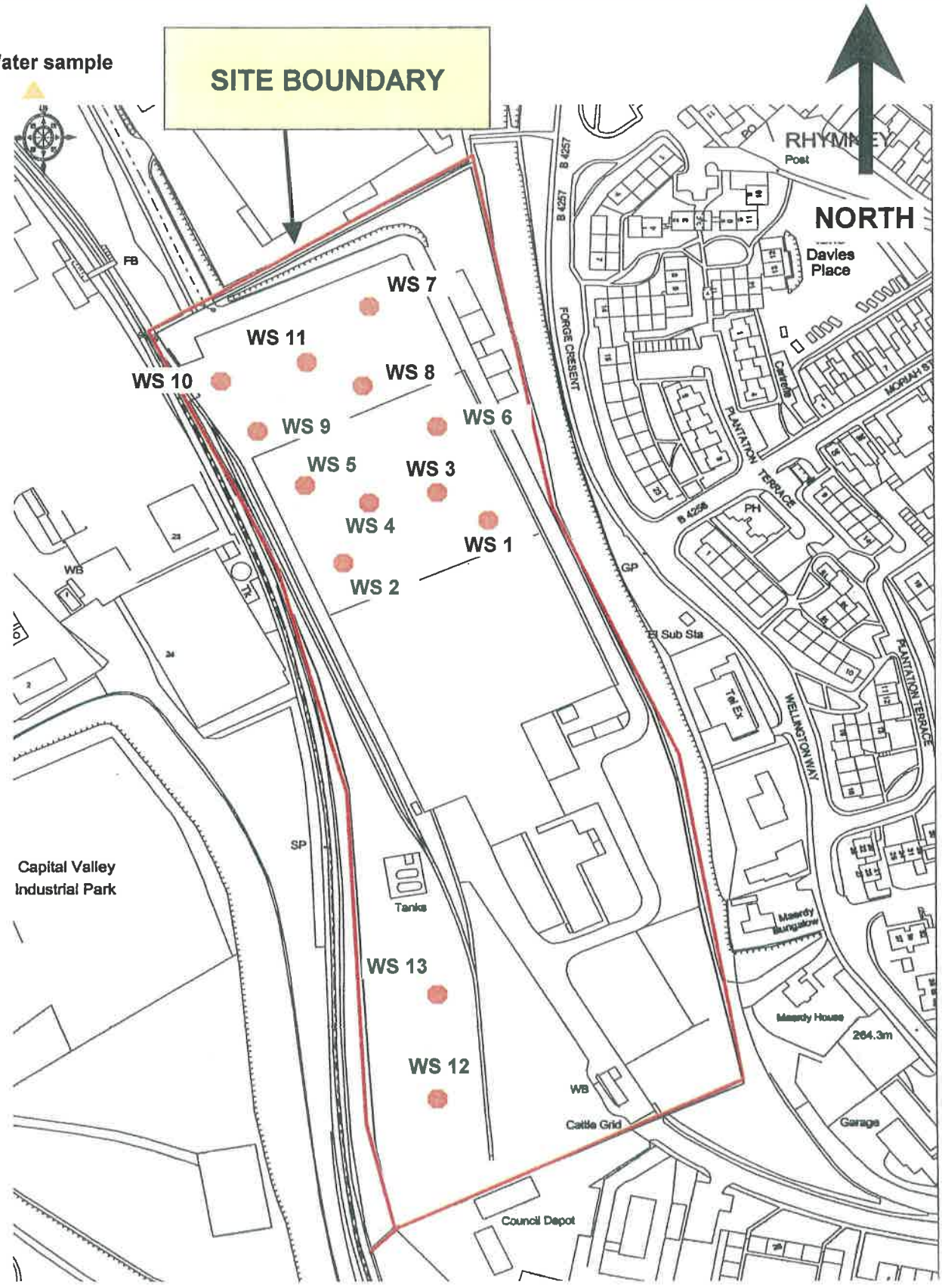
NORTH

Scale = 1:25,000

FIGURE 1 - SITE LOCATION

Maerdy Industrial Estate, Rhymney

Intégral Géotechnique
50 Cathedral Road
Cardiff
CF11 9LL
Tel: 029 2022 0462
Fax: 029 2034 0789



Dynamic Probing / Window Sampling location

Water sampling point

DS Water sample

Scale = 1:2,500

FIGURE 2 - SITE LAYOUT

Maerdy Industrial Estate, Rhymney

Intégral Géotechnique
50 Cathedral Road
Cardiff
CF11 9LL
Tel: 029 2022 0462
Fax: 029 2034 0789

Annex C – Site Photographs

Plate 1: Internal Building

Plate 2: Site entrance and car park area

Rev:	Date:	Desc:
0	JULY 17	Original

Client:	MEKATEK LTD	**Job No:**	SOL1707MK01
Project:	RHYMNEY	**Date:**	**JULY** 17
Annex Title:	SITE PHOTOGRAPHS		

Sol Environment Ltd
2nd Floor,
10 The Lees, Malvern,
Worcestershire WR14 3HT
t: +44(0)1684 572727
e: enquiries@sol-environment.co.uk
www.sol-environment.co.uk

Plate 3: Internal Storage

Plate 4: External designated wood storage area

Rev:	Date:	Desc:
0	JULY 17	Original

Client:	MEKATEK LTD	**Job No:**	SOL1707MK01
Project:	RHYMNEY	**Date:**	**JULY** 17
Annex Title:	SITE PHOTOGRAPHS		

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Plate 5: External hardstanding and car park

Plate 5: Temporary storage on mobile bunds of chemicals / maintenance oils, lubricants etc.

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Plate 6: Temporary diesel tank. To be replaced.

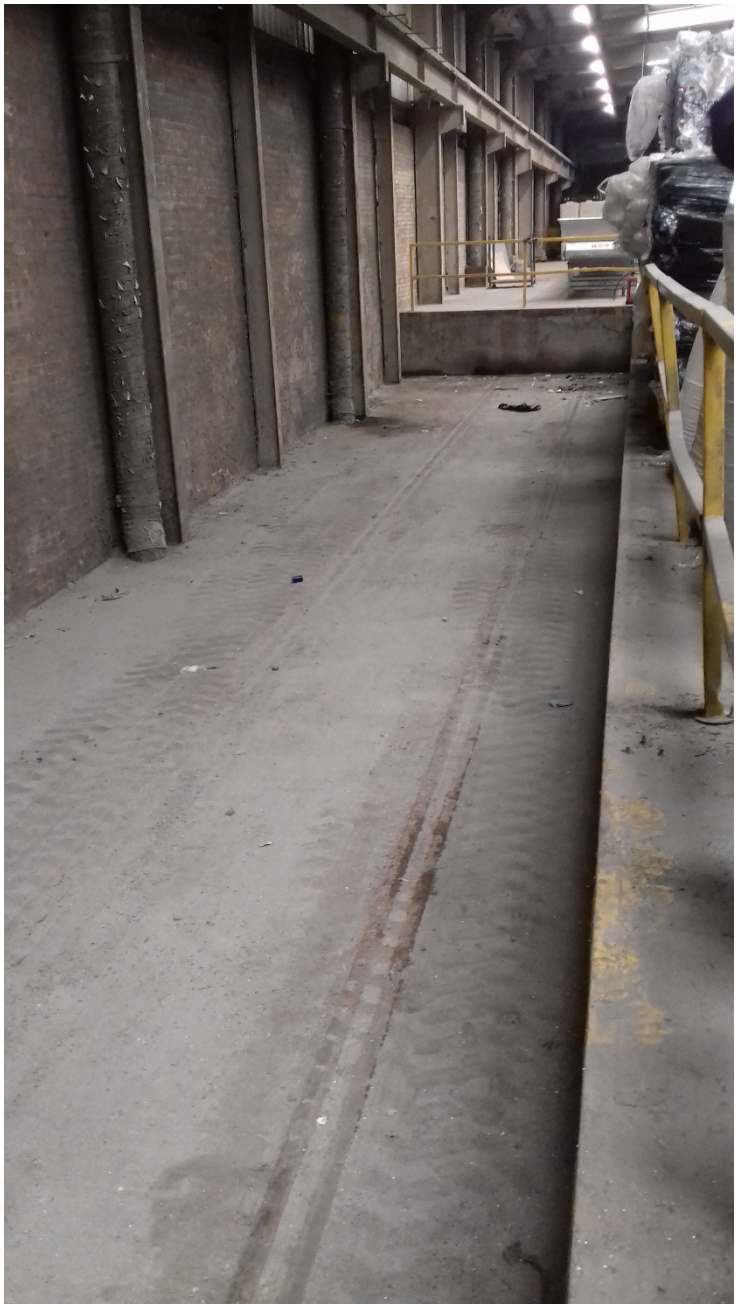

Plate 7: WEE Reception Bay.

Rev:	Date:	Desc:
0	JULY 17	Original

Client:	MEKATEK LTD	**Job No:**	SOL1707MK01
Project:	RHYMNEY	**Date:**	**JULY** 17
Annex Title:	SITE PHOTOGRAPHS		

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Plate 8: Processing Equipment.

Plate 9: Pallet storage

Rev:	Date:	Desc:
0	JULY 17	Original

Client:	MEKATEK LTD	**Job No:**	SOL1707MK01
Project:	RHYMNEY	**Date:**	**JULY** 17
Annex Title:	SITE PHOTOGRAPHS		

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www.sol-environment.co.uk

Plate 10: Processing Equipment

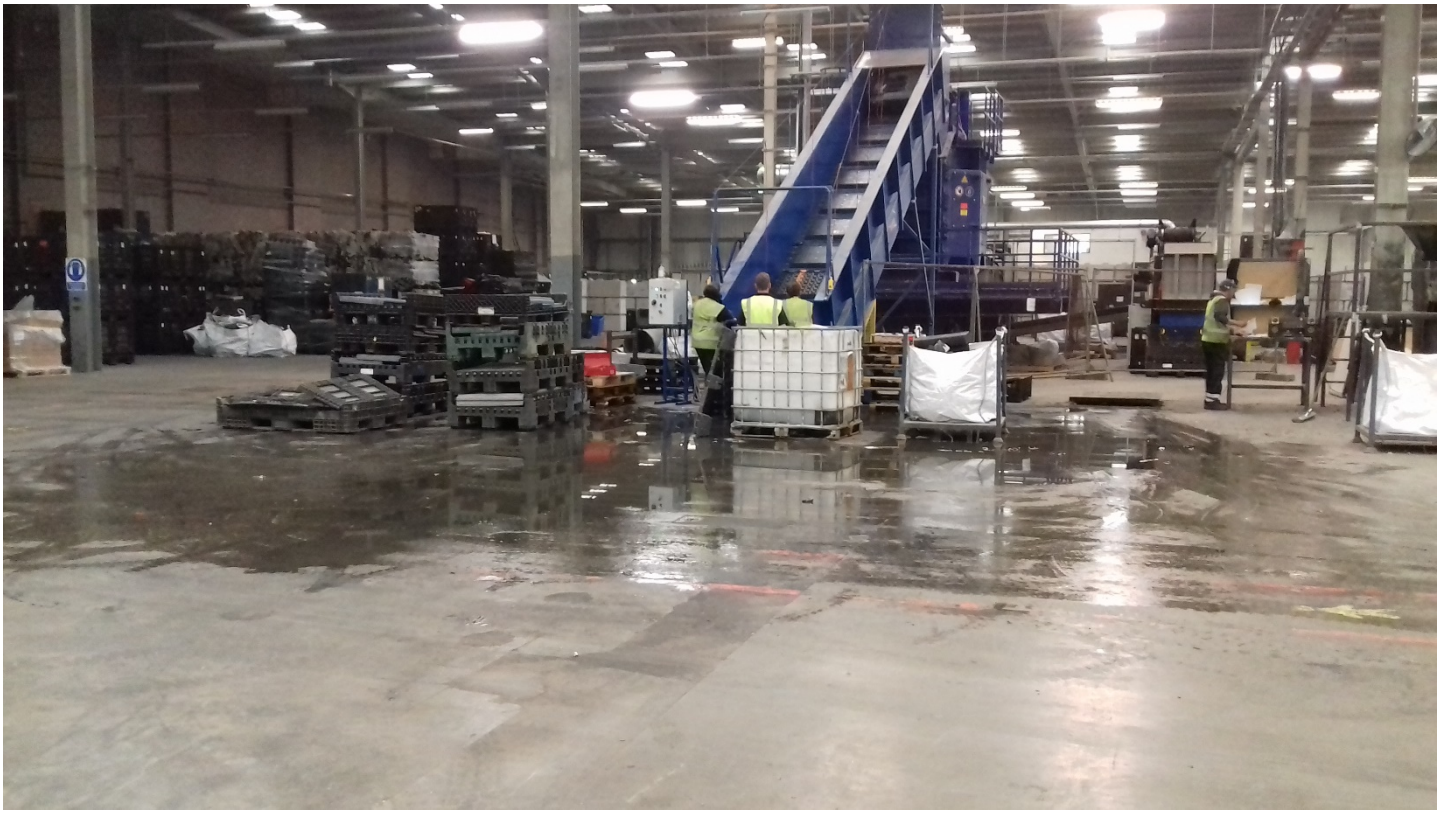

Plate 11: Shredder

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10 The Lees, Malvern,
Worcestershire WR14 3HT
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Plate 12: Stillage Storage

Plate 13: Bale Storage

Rev:	Date:	Desc:
0	JULY 17	Original

Client:	MEKATEK LTD	**Job No:**	SOL1707MK01
Project:	RHYMNEY	**Date:**	**JULY** 17
Annex Title:	SITE PHOTOGRAPHS		

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www.sol-environment.co.uk

Plate 14: Stillage Storage

Plate 15: Processing

Rev:	Date:	Desc:
0	JULY 17	Original

Client:	MEKATEK LTD	**Job No:**	SOL1707MK01
Project:	RHYMNEY	**Date:**	**JULY** 17
Annex Title:	SITE PHOTOGRAPHS		

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Plate 16: Disused railway west of the building

Plate 17: Loading bay with view of the offices and site entrance

Rev:	Date:	Desc:
0	JULY 17	Original

Client:	MEKATEK LTD	**Job No:**	SOL1707MK01
Project:	RHYMNEY	**Date:**	**JULY** 17
Annex Title:	SITE PHOTOGRAPHS		

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Annex D – Conceptual Model

Key:

- Site Infrastructure
- Potential Receptor
- Geology

Impermeable Concrete Hardstanding:

Therefore no risk to soil and groundwater from the development.