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## ----ENEMALTA DPS IPPC APPLICATION - FORM C----

### APPENDIX Q - Decommissioning Plan – Part 1

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**0466 – Enemalta DPS IPPC Application**

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## APPENDICES REFERENCE

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Appendix A	Reference Drawings
Appendix B	Best-Available-Technology Conclusions
Appendix C	Material Safety Data Sheets
Appendix D	Maintenance of Tank Bunds
Appendix E	Enemalta Safety Report
Appendix F	Enemalta Safety Management System
Appendix G	Enemalta Emergency Response Plan
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Appendix M	Enemalta DPS - Noise Monitoring Method Statement
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Appendix P	Technically Competent Person - CV
Appendix Q	Decommissioning Plan
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Appendix S	EMS Documentation & ISO Certification
Appendix T	Environmental Impact Assessment



**RVA GROUP**

Specialist consulting engineering, safety and environmental management  
for decommissioning; decontamination; dismantling; demolition.

# Enemalta Corporation



**Delimara Power Station, Delimara,  
Marsaxlokk**

## **Outline Decommissioning Plan**







## **Executive Summary**

Laboratory analysis of soil samples from Delimara has identified low concentrations of metals in all samples. Low concentrations of polycyclic aromatic hydrocarbons (PAHs), volatile and semi-volatile organic compounds (VOCs and SVOCs), and extractable petroleum hydrocarbons (EPH) were identified in localised areas. All concentrations of contaminants did not exceed Generic Assessment Criteria (GACs) for a commercial/industrial end use.

Elevated concentrations of petroleum hydrocarbons (i.e. above method detection limit of 35mg/kg) were identified in the natural mudstone between depths of 1.8m and 3.0m bgl at BH08, which suggests there may be localised leakage from a sump. The pollution prevention measures may be inadequate in this area. Concentrations of petroleum hydrocarbons were assessed against the relevant Generic Assessment Criteria and were not found to exceed the values.

The likelihood of their being significant contamination of the land was assessed and no present risk was identified.

As a result of the initial findings of the land investigation in relation to contamination, it is recommended that as a minimum an additional soil monitoring investigation is undertaken immediately prior to the IPPC permit surrender. The investigation should be at least equal in detail to the current investigation, but should also take into account any polluting incidents.



**ENEMALTA CORPORATION**  
**DELIMARA POWER STATION, DELIMARA, MARSAXLOKK**

**OUTLINE DECOMMISSIONING PLAN**

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## **Introduction**

From the requirements of the Integrated Pollution Prevention and Control Regulations (LN 234 of 2002), as amended by LN 230 of 2004 and LN 56 of 2008, Delimara Power Station (DPS) operates under an IPPC Environmental Permit (EP), number IP 0002/07/A.

As part of the requirements of this EP there is a need to provide an Outline Decommissioning Plan (ODP) for the site – Condition 2.16.1 of the EP.

RVA has been appointed to produce this ODP on behalf of the Enemalta Corporation (Enemalta), who have in turn appointed ENVIRON to assist in the execution and production of a report associated with the ground conditions at the site.

This ODP covers the following requirements of the EP (note the number of the Conditions mirrors that in the EP):

- 2.16.3            The operator shall submit to the Authority a report by a qualified geologist on the likelihood of their being a significant contamination of the land on the site by any of the pollutants in Schedule 9. Should it result that the land is likely to contain environmentally significant amounts of these pollutants, this report shall contain as a minimum the measured concentrations of the substances specified in Schedule 9:
  - 2.16.3.1        This monitoring programme shall amongst other things include the location of the points for the sampling of land, information on the sampling methods, the handling of the samples, the pretreatment/extraction of the analytes (where applicable) and the methods used in order to analyse the samples.
  - 2.16.3.2        Samples should be analysed to the relevant EN or EN ISO standards or equivalent.
  - 2.16.3.3        Samples shall be managed by a lab accredited (or in the process of accreditation, as confirmed by the National Accreditation Body
- 2.16.5            The operator shall submit to the Authority for review a full Decommissioning Plan. This full Decommissioning Plan shall at least include the following information:





- 2.16.5.1 A detailed monitoring programme which will illustrate how the operator will measure the current levels of various pollutants in the land:
  - 2.16.5.1.1 The list of the pollutants to be monitored for shall be as per Schedule 9.
  - 2.16.5.1.2 The monitoring programme shall amongst other things include the location of the points for the sampling of land, the sampling methods, the handling of the samples, the pretreatment/extraction of the analytes (where applicable) and the methods used in order to analyse the samples.
  - 2.16.5.1.3 Samples should be analysed to the relevant EN or EN ISO standards or equivalent.
  - 2.16.5.1.4 Samples shall be managed by a lab accredited (or in the process of accreditation, as confirmed by the National Accreditation Body (NAB-Malta) or equivalent) to at least EN ISO 17025:2005/Cor 1:2006 and preferably accredited for each and every analysis
- 2.16.5.4 A waste management plan which shall include:
  - 2.16.5.4.1 The identification and characterisation of sources, types and quantities of waste (including equipment, fuels, by-products such as ash, etc.);
  - 2.16.5.4.2 Criteria for segregation of wastes;
  - 2.16.5.4.3 Proposed treatment, conditioning, transport, storage and disposal/recovery methods;
  - 2.16.5.4.4 Potential reuse/recycling of such wastes.
- 2.16.5.5 The identification of potential sources of emissions to the atmosphere, land and water (both seawater and groundwater) pollution which might arise from the decontamination process



and corresponding mitigation measures to minimise the likelihood of such emissions.

Both Enemalta and RVA (including ENVIRON) place EHS excellence as prime business drivers and this philosophy has been taken as the base criteria for the compilation of this document.

### **Terms of reference**

DPS is located to the south of the island of Malta on the edge of Marsaxlokk Bay, on the west side of the Delimara Peninsula. The site is constructed on flat ground that has been formed by cutting the cliff and constructing a platform that protrudes into the bay. This has resulted in the majority of the major plant being built on rock while the support network systems (cooling water intake and network, diesel storage tanks, etc.) are constructed on made land.

The site contains several different power generating plants:

#### **Phase 1**

This was the initial construction phase which was commissioned in 1992 and included two steam units each with a generating capacity of 60MW. Each unit comprise of:

- 260t/hr Waagner-Biro steam raising boiler (110barA at 513degrees Celsius, firing heavy fuel oil [HFO])
- GHEL fully condensing steam turbine (87bar, 510 degrees Celsius)
- 75MW (60MW at 0.8pF) BHEL generator, generating at 11kV, stepped up to 132kV

These steam units utilise the following ancillary equipment and systems:

- Cooling water intake, outlet, and distribution network
- Water treatment plant, including storage
- Heavy Fuel Oil (HFO) storage tanks and distribution network
- Outgoing substation



Also as part of this phase the support structures built included:

- Gatehouse
- Administration building
- Workshop and storage
- Laboratory and fire station
- Quay

#### Phase 2A

This phase was commissioned in 1995 and is an open cycle gas turbine (OCGT). The system comprises of:

- 2x John Brown (JBE) (GE) MS6001B gas turbines
- 2x 47MVA (37.5MW at 0.8pF) Brush generators, generating at 11KV, stepped up to 33Kv.

The OCGT's utilise sections of the Phase 1 ancillary equipment, systems and support buildings, however in addition the following was built to support their operation:

- 4xgas/diesel oil (GDO) storage tanks and distribution network

#### Phase 2B

This phase was commissioned in 1999 and is a combined cycle gas turbine (CCGT). The system comprises of:

- 2x NP (GE) MS6001B gas turbines
- 1x GE fully condensing steam turbine (sliding pressure 17-50barA, 504 degrees Celsius)
- 2x 65t/hr Stork Ketel heat recovery steam raising boilers (50barA at 504 degrees Celsius, unfired)
- 3x 55MVA (44MW at 0.8pF) Brush generators, generating at 13.8kV, stepped up to 132kV



Again this phase utilises the systems and support buildings from the previous phases however the following additional was built to support the site network:

- New site control room
- Additional treated water storage tanks

### Phase 3

This phase is currently under construction and is due to be commissioned in 2012.

The plant will consist of:

- 8x Wartsila 18V46 medium speed diesel engines
- 8x Wartsila AMG generators
- 8x selective catalytic reduction (SCR) units
- 8x exhaust waste heat recovery boilers
- 4x de-sulphurisation units
- 1x fully condensing steam turbine
- 1x 13MW generator

As the previous phases this one will utilise existing site systems and support buildings but in addition this phase includes:

- Fuel treatment facility
- Urea plant
- Flue gas desulphurisation reagent and waste handling plant

### Layout of ODP

The two main sections of this report – Site Condition Report and Waste Management Plan – are two separate stand alone documents.

### Site Condition Report

A Site Condition Report describes and records the condition of the land and groundwater at a site; it enables the operator to demonstrate that they have protected land and groundwater during the lifetime of the site's permitted activities and it is in a satisfactory state when they plan to surrender the permit.

The Site Condition Report provides a point of reference at the start of operations or at the time the permit is issued so that when it time to surrender the permit, it can



decide whether there has been any additional contamination of the site during the operation and ensure that the condition of the land and groundwater are in a “satisfactory state” when they apply to surrender of the permit.

Therefore a Site Condition Report has three stages; an Application Site Condition Report (Application Site Report) - issued to define a point of reference; an Operational Site Condition Report (Site Protection and Monitoring Plan) - which is used during the operational life of the plant; and a Surrender Site Condition Report (Closure Site Report) – which details the work required to surrender the EP.

At DPS the Application Site Condition Report has not been provided/agreed with MEPA. Therefore to produce the report in this ODP (Operational Site Condition Report) ENVIRON had to go back a stage and generate all the information which would normally have been included in the Application Site Condition Report for inclusion here.

For the purpose of this ODP the sections of the Site Condition Report which relate to the EP requirements as detailed in the Introduction are:

- Section 7.0 to 7.10 for Condition 2.16.3
- Section 8.0 for Condition 2.16.5.1
- Section 8.1 for Condition 2.13.5.5

#### Site Waste Management Plan

It is intended that the Waste Management Plan will be maintained and then utilised as the base estimate document for the actual decommissioning and demolition activities – whenever they may be.

For the purposes of this ODP the Waste Management Plan constitutes the deliverable for Condition 2.16.5.4 of the EP.



## **Section 1 – Site Condition Report**

Covering EP Conditions: 2.16.3  
2.16.5.1  
2.16.5.5



## Site Condition Report (SCR)

Delimara Power Station  
Delimara  
Marsaxlokk  
MXK 1320  
Malta

Prepared for:

**Enemalta Corporation,  
Marsa, Malta**

Prepared by:

**ENVIRON  
Manchester, UK**

Date:

**August 2011**

Project or Issue Number:

**UK22-16873**

**ENVIRON**

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Contract/Proposal No: UK22-16873

Issue: FINAL

Author:  
(signature): Kate Whitworth



Project Manager/Director:  
(signature): Jeremy Cork



Date: August 2011

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#### VERSION CONTROL RECORD

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01	Draft to Client for Comment	16/08/2011	JPC	KW
02	Second Draft to Client for Comment	18/08/2011	JPC	KW
03	Final issue to Client	19/08/2011	JPC	KW
04	Final issue following review from Client	30/09/2011	LD	KW



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## 1.0 Introduction

### 1.1 Background to the Site Condition Report

Enemalta Corporation appointed RVA Group to produce the Outline Decommissioning Plan for Delimara Power Station. Part of the Plan requires ground investigations to identify the extent, if any, of ground contamination. RVA Group subsequently sub-contracted the ground investigation (and reporting) sections of the Plan to ENVIRON UK Limited – on approval from Enemalta Corporation.

This document has been prepared by ENVIRON UK Limited (ENVIRON) in support of the requirements for land monitoring data and an Outline Decommissioning Plan under the Integrated Pollution and Prevention Control Regulations (LN 234 of 2002 as amended by LN 230 of 2004 and LN 56 of 2008, enforced by the Environmental Protection Act, 2001 – Integrated Pollution Prevention and Control Regulations, 2002), which transpose the EU IPPC Directive (2008/1/EC) under Maltese law.

This document represents the Site Condition Report (SCR) which forms part of a package to be submitted to the IPPC Committee of the Competent Authority by Enemalta Corporation ('the Operator') to satisfy the requirements of the Improvement Programme of IPPC permit number IP 0002/07/A, specified in Condition 1.5.1. The Programme requires the submission of land monitoring data (as per Condition 2.16.1) of the permit and an Outline Decommissioning Plan (as per condition 2.16) within three and six months respectively of issue of the IPPC permit.

An Environmental Permit (EP) is required where an operator carries out certain prescribed activities, namely installations that undertake Schedule 1 activities, a waste operation or a mobile plant (carrying out either one of the Schedule 1 activities or a waste operation). Enemalta Corporation carry out activities covered in Section 1.1 of the IPPC regulations, comprising:

- **Combustion installations with a rated thermal input exceeding 50 MW**

Where the main activity of the installation is as follows:

- **Generation of electrical energy through the combustion of heavy fuel oil (HFO) and gasoil.**

In the absence of Maltese guidance, ENVIRON has undertake the production of the SCR in accordance with the Environment Agency of England and Wales (EA) Guidance Document H5 Site Condition Reports Guidance and Templates (Version 080328). The EA regulate IPPC permitting in the United Kingdom under EU IPPC Directive (2008/1/EC).

## 2.0 Location of the Installation

<b>Name of Installation</b>	Delimara Power Station
<b>Permit Number</b>	IP 0002/07/A
<b>Date, Reference and Version of SCR</b>	UK22-16873_01 August 2011

Delimara Power Station (DPS) is located on the Delimara Peninsula in Marsaxlokk Bay, on the south east coast of Malta (Figure 1). The site is located at an elevation of between 1.8m and approximately 6.0m metres above local sea level (ALSL). The majority of the installation boundary comprises relatively flat topography ranging from approximately 1.85m to 3.4m ALSL, the exceptions being the bunded storage tanks and adjacent area in the south of site which are located on a manmade platform at approximately 5.6m ALSL and the residual fuel oil (RFO) tanks 1 to 3 located in the east of site which are elevated on the Peninsula at approximately 15m ALSL.

Commissioned in 1992, DPS was excavated into the cliff face to create an even platform on which to situate the facility. The most western portion of the site closest to the coast extends beyond the natural coastline and has been constructed on land reclaimed from the sea. The IPPC permitted boundary includes all the facility.

Immediately off-site to the south (external to the Permit boundary) the land is raised and forms a mound approximately 20m in height, which anecdotally comprises excess waste rock.

The site comprises operational plant in the centre and south of site, and a workshop, administration buildings and a medical centre in the north of site.

Surrounding land uses are detailed in Table 2.0.

<b>Table 2.0: Surrounding Land Uses</b>			
<b>Direction</b>	<b>Description</b>	<b>Company Name</b>	<b>Distance</b>
To the North	Agricultural land and agricultural-type properties	N/A	Immediately north
To the South	Agricultural land and agricultural-type properties	N/A	Immediately south
To the East	Agricultural land	N/A	Adjacent to site
	Residential house	N/A	40 m south east
To the West	Marsaxlokk Bay	N/A	Immediately west.

Plans showing the location of installation and the installation boundary are provided in annex A (Ref. UK2216873\_DPS\_A Figure 1 Site Location and UK2216873\_DPS\_A Figure 2 Installation Boundary).

### 2.1 Site Operations

Permitted activities in accordance with Schedule 1 of the IPPC regulations are listed in Table 2.1 (taken from Table 1.1.1 of the IPPC permit):

**Table 2.1: Site Operations**

Activity / Associated Activity	Description	Limits of activity
Combustion installations with a rated thermal input exceeding 50 MW	Generation of electrical energy through the combustion of heavy fuel oil and gas oil	From receipt of fuel to delivery of utility
Associated activity of fuel handling and storage	Handling and storage of heavy fuel oil and gas oil	From receipt of the fuel to combustion in the combustion plant
Associated activity of utilities	Sea water pre-treatment plant	From intake of sea water to delivery of utility.
Associated activity of storage, treatment and disposal / recycling of waste materials	Handling, storage, treatment and disposal / recovery of wastes from installation	From generation of waste to disposal or recycling on site or off site
Associated activity of maintenance	Maintenance carried out in any workshop in the installation	From maintenance activity to appropriate recovery / disposal of any wastes created.

Delimara Power Station was commissioned in three phases between 1992 and 1999 (Phase 1, 2a and 2b). The existing power station operates at a generation capacity of 304 MW. An extension to the power station is presently undergoing construction to increase the power output into the electrical network by 144 MW. Operational plant at DPS is listed in Table 3.2 (taken from Table B1.3.1: Plant Listing of Delimara Power Station in Part B of the Supporting Document submitted in support of the IPPC permit).

**Table 2.2: Plant of Delimara Power Station**

Phase of Installation	Plant	Details	Fuel	Year Commissioned
Phase 1	Steam unit x 2	Each comprise a boiler, a steam turbine and a 60MW capacity generator.	HFO	1992
Phase 2a	Gas Turbine x 2	Open cycle 37.5 MW gas turbine / generator units.	Gas oil	1994
Phase 2b	Combined cycle gas turbine x 2	Form the combined cycle gas turbine block with associated generators with a total capacity of	Gas oil	1999
	Heat recovery steam generators x 2 and steam		Recover heat from	1999

**Table 2.2: Plant of Delimara Power Station**

Phase of Installation	Plant	Details	Fuel	Year Commissioned
	turbine	110 MW.	the exhaust of the gas turbines to generate power steam to drive the steam turbine.	
Phase 3	<p>Diesel engines x 8, exhaust heat recovery, a steam generator, a steam turbine and necessary ancillary plant.</p> <p>Emission abatement equipment, including a Selective Catalytic Reducer and a Flue Gas Desulphurisation unit will be installed to reduce emissions of nitrogen oxide, sulphur oxides and dust.</p>	Engine and steam turbine plant with a generation capacity of 144MW.	Gas oil or HFO	Anticipated completion date of 2012.

The extension will occur within the present IPPC boundary. The current status of the permit version is not known.

Within the IPPC permitted boundary the site also comprises an administration building, mechanical workshop and medical centre in the north east of site. The operational facilities are concentrated in centre and southern portions of site.

## 2.2 Condition of the Land at Permit Application

### 2.2.1 Geology

According to the soil geology map (Geological Map of the Maltese Islands, Sheet 1 Malta, 1:25,000), the central portion of DPS orientated north to south is directly underlain by solid geology of Middle Globigerina Limestone Member, the thickness of which ranges from 15m to 38m. The description states that the limestone comprises a planktonic foraminifera-rich sequence of massive, white, soft carbonate mudstones locally passing into pale-grey marl mudstones.

The western and central portions of site located closest to the coast line, on which several of the operational plant are situated, is constructed on a man-made platform reclaimed from the sea by cut and fill activities.

The eastern portion of the site is underlain by the natural Delimara Peninsula formed from Upper Globigerina Limestone member comprising a tripartite, fine grained planktonic foraminiferal limestone sequence comprised of a lower cream coloured wakestone, central pale grey marl and an upper pale cream coloured wakestone.

### 2.2.2 Hydrogeology

According to the Malta Resources Authority (2004), the Globigerina Limestone functions as an aquifer where it is highly fractured.

The groundwater body underlying the site is classified as Malta Main Mean Sea Level Groundwater Body, sustained in the Lower Coralline limestone aquifer which is present beneath the Globigerina Limestone. The aquifer is in free contact with sea-water, and is described as 'a lens-shaped body of freshwater floating on more saline water, with a thickness of freshwater below sea level approximately thirty-six times its piezometric height above sea level'. The Malta Main Mean Sea Level Groundwater Body is classed as 'waters used for the abstraction of drinking water'.

Where the land has been reclaimed from the sea in the west of site, the groundwater is likely to exist as a sea-level aquifer.

According to MEPA's report Establishing Drinking Water Protection Areas under the Water Policy Framework Regulations 2004, the site is not located in a Groundwater Protected Zone. Groundwater Protection Zones have a radii of approximately 300m from a potable abstraction point in order to preserve the quality of the drinking water obtained from the Lower Coralline Limestone aquifer.

### 2.2.3 Hydrology

According to MEPA<sup>1</sup>, the nearest water body to Delimara Power Station is Il-Port ta' Marsaxlokk (Marsaxlokk Bay), a coastal water body located immediately off-site to the west.

MEPA have classified the water body as a Category 1 (Water bodies at risk), for which it is already relatively clear that the objectives of the WFD will be failed due to diffuse source pollution and morphological alterations.

According to Form IPPC Part B2, four waste streams are discharged to the sea at Hofra z-Zghira Bay located approximately 300m east across Delimara Peninsula via a tunnel.; cooling water, brine discharged from the seawater evaporator, surface water run-off from buildings and roads and boiler blow down.

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<sup>1</sup> Article 5 Summary Reports for Surface Water, Malta. Water Framework Directive CD 2000/60/EC. Prepared by Maltese Environment and Planning Authority, 2005.

<sup>2</sup> IPPC Permit Part B (Supporting Documents) prepared by Enemalta dated January 2007

According to the Environmental Impact Statement for the proposed Local Generating Capacity at Delimara Power Station (prepared by AIS Environmental Ltd, October 2009 reference ENV/3260/A/08 PA 03152/05) the bay of Hofra z-Zghira may also be affected by thermal effluent discharged from the extension to the power station, once complete.

## **2.2.4 Any additional sensitive issues e.g. Protected Habitats**

All of Malta was designated as a nitrate vulnerable zone under L.N. 233 of 2004.

The land surrounding the installation to the east and south is classified as an Area of Ecological Importance; an area encompassing habitats of conservation value and its associated bufferzone(s). Areas of Ecological Importance (AEIs) are designated to regulate their conservation in accordance with Section 46 of the Development Planning Act 1992. The area has been awarded the status due to the globigerina limestone cliff formations.

Approximately 150m north of the installation boundary is a Special Area of Conservation – International Importance / Bird Sanctuary.

The site of il-Ballut ta' Marsaxlokk located approximately 750m north of DPS is classified as a Special Area of importance. The site comprises a coastal salt marsh located off Xatt is-Sajjieda, limits of Marsaxlokk. The salt marsh at Il-Ballut provides a habitat for a number of rare species.

## **2.3 Pollution History**

There is no known history of pollution at Delimara Power Station.

### **2.3.1 Pollution Incidents at the Site**

There are no known incidents of pollution at the site.

### **2.3.2 Historical Land Uses and Associated Contaminants**

The site history prior to Enemalta occupying the site is unknown.

### **2.3.3 Visual or Olfactory Evidence of Existing Contamination**

A site surveillance visit was undertaken in May 2011. During the visit no visual and/or olfactory evidence of significant existing contamination was identified.

### **2.3.4 Evidence of Damage to Pollution Prevention Measures**

During the site surveillance there was no generic evidence of damage to pollution prevention measures (i.e. bunds, concrete, and interceptors).

### **2.3.5 Baseline Intrusive Data**

Detailed baseline data were not submitted to the Authority in support of the IPPC permit application. The Environmental Impact Statement<sup>3</sup> for the extension to the power station (Phase III) includes the following reports relating to the assessment of ground conditions and contamination:

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<sup>3</sup> for the Proposed Local Generating Capacity at Delimara Power Station, prepared by AIS



1. Sub-Surface Geological Investigation Report prepared by Terracore Geo Services dated November 2008;
2. Report on the Environmental Baseline Survey for Water and Land Contamination prepared by Dr George Peplow on behalf of AIS Environmental dated 27th June 2009.

1. Sub-Surface Geological Investigation Report prepared by Terracore Geo Services dated November 2008

Intrusive investigation was undertaken comprising four (4) boreholes drilled by rotary open hole and closed hole techniques to depths of between 6.0m and 23.0m bgl. The boreholes were located in the footprint of the extension to the power station. A borehole location plan is presented in Figure 4 of Annex A. Approximately 3.0m of continuous rock core was recovered in each borehole. Strata was logged and photographed. Samples of rock core were submitted for geological testing. No laboratory testing for contamination was undertaken.

The strata recorded on geological borehole logs in two (2) of the four (4) boreholes comprised topsoil / fill (described as 'overburden') to depths ranging between 2.5m and 15.0m bgl. Underlying the overburden was natural solid geology Middle Globigerina Limestone comprising grey fine bedded moderately weak marl.

In one (1) location, the overburden was logged as grey waste globigerina and brown soil to a depth of 2.9m bgl overlying Middle Globigerina Limestone. At the remaining location, the solid geology of Middle Globigerina Limestone was found directly underlying the concrete hard standing, to a maximum depth of 6.0m bgl.

All boreholes were terminated in Middle Globigerina Limestone.

2. Report on the Environmental Baseline Survey for Water and Land Contamination prepared by Dr George Peplow on behalf of AIS Environmental dated 27<sup>th</sup> June 2009.

The investigation comprised five (5) exploratory hole locations, of which three were drilled within the IPPC boundary for Delimara Power Station and the remaining two (2) were positioned off-site to the north west on the Delimara Peninsula. One (1) sample was obtained from the upper 3m of strata at each location and tested for a limited suite of metals (Cr, Ni, Pb and Va), polycyclic aromatic hydrocarbons (PAHs); BTEX compounds (benzene, toluene, ethyl benzene and xylene) and inorganic parameters (nitrates, carbonates, sulphates, hydroxides, pH and salinity).

Concentrations of BTEX compounds and PAHs did not exceed laboratory detection limits (0.1 mg/kg and 0.05 mg/kg respectively). Low concentrations of metals were detected in all five soil samples.

The report considers the concentrations to be 'within the levels normally found in environmental soil samples', on Malta.

In addition to the soil samples, the following groundwater, sea water and sediment sampling was undertaken:

- Two (2) groundwater samples were collected; one from a point immediately off-site to the north, and a second off-site to the North West. No details of the methods by which the groundwater samples were collected are provided in the report.
- Four (4) sea water samples were obtained from four locations; immediately inshore to Ras il-Fniek point; at the central part of the il-Hofra z-Zghira Bay; immediately onshore to the entry gate of the power station and immediately inshore to the Kalanka l-Fonda.
- Five (5) sediment samples were obtained from the sea bed near to DPS.

The groundwater, sea water and sediment samples were analysed for the same suite of contaminants as the soil samples (metals, PAHs, BTEX and inorganic compounds). Concentrations of contaminants analysed did not exceed laboratory method detection limits, with the exception of metals, where low concentrations were detected in all five (5) sediment samples.

The report concluded:

- 'No contamination from the measured parameters was observed, and can therefore be considered to comply with local legal notices and EU Directives.'

### 3.0 Conceptual Site Model

The preliminary conceptual site model is a simplified representation of the environmental conditions and potential risks that exist at and in the vicinity of the site. It is based on the presentation and interpretation of information gathered during the environmental review presented in Sections 2.0 to 2.4. This allows for the identification of potential pollutant linkages and, therefore, an interpretation of the potential risk to receptors in relation to site operational activities. The principal sources of contamination, receptors and potential pollutant linkages have been assessed using a qualitative source-pathway-receptor approach in line with current guidance.

Information obtained during the environmental site investigation, described in the following sections of this report, is further used to refine and update the conceptual model. The refined conceptual site model is presented in Section 7.10.

#### 3.1 Environmental Receptor Summary

A summary of environmental receptors is presented in Table 3.1.

Table 3.1: Summary of Receptors	
Receptor	Description
Human health	Site workers Site visitors Construction workers Neighbours
Land	Middle / Upper Globigerina Limestone
Water	Malta Main Mean Sea Level, the Lower Coralline Limestone Aquifer across Malta is a Drinking Water Safeguard Zone. Coastal Water (Marsaxlokk Bay and Il-Hofra z-Zghira. The whole of Malta is a Nitrate Vulnerable Zone.
Nearby industry e.g. Control of Major Accident Hazards (COMAH) sites	DPS is a registered COMAH site as the quantity of gas oil exceeds the threshold for an upper tier site. The site is located in a predominantly agricultural setting with some residential properties
Sensitive land uses	The site does not lie in a habitat protected zone. The surrounding area is classified as an Area of Ecological Importance Approximately 150m north is a Special Area of Conservation – International Importance / Bird Sanctuary. Il-Ballut ta' Marsaxlokk (salt marsh) is located approximately 750m north of DPS and is classified as a Special Area of importance.
Coastal/estuarine areas	Marsaxlokk Bay.

**Table 3.1: Summary of Receptors**

Receptor	Description
Drainage systems/sewers	<p>The site discharges surface water and process water into Il-Hofra z-Zghira. Prior to discharge, water is treated or passes through a separator and/or an oil interceptor, where required.</p> <p>Foul water from personnel toilets discharges into the main municipal sewer.</p>

### 3.2 Potential Sources of Contamination

Potentially polluting materials located within the installation are presented in Table 3.2

**Table 3.2: Potentially Polluting Materials Located Within the Installation**

Process	Activity	Potential Polluting Activity	Potential Polluting Substances
Fuel System Operations	Storage and intermediate transfer via pipelines and pump bays of fuel oil and solid, liquid or sludge waste from fuel oil spillage.	Potential for leaks and spills from primary and secondary containment to occur or have occurred.	Hydrocarbon mixtures may be paraffinic, naphthenic or aromatic, potentially containing sulphur compounds and sulphides, nitrogen compounds, trace metals such as nickel, iron, vanadium, salts such as magnesium chloride or sodium chloride, may contain naphthenic acid.
	Filing of bulk process tanks.	Potential for overflow, blockages causing sumps to backup; and potential for leakage or seepage from any discontinuities to the surrounding soils and/or seawater.	Various chemicals including fuel oil additives (magnesium oxide slurry emulsifier), treatment chemicals, fuel sediments and suspended organic compounds.
	Cleaning operations.		Toxic, oxidising, corrosive, carcinogenic or ozone-depleting substances which may affect the aquatic or non-aquatic environment.
Boiler Water Preparation and Treatment	Discharge of brine and chemical treatment deposits in evaporators	Potential for release of chemicals deposits to occur or have occurred.	Water treatment chemical deposits including Tri Sodium Phosphate and Ammonia Solution.
	Liquid waste generated from make-up water demineralisation	Potential for leakage or seepage from any discontinuities to the surrounding soils and/or seawater.	<p>Chemical Regeneration Effluent – inorganic salts, suspended solids, trace metals and oils.</p> <p>May affect the aquatic or non-aquatic environment.</p>

**Table 3.2: Potentially Polluting Materials Located Within the Installation**

Process	Activity	Potential Polluting Activity	Potential Polluting Substances
Boiler Operation and Cleaning	Dust and gaseous emissions generated from combustion of fuels for boiler /s and gas turbine plant	Potential for release of contaminant emissions and dust to occur or have occurred.	Dust and gaseous emissions generated include particulate matter (fly ash), oxides of sulphur, nitrogen, carbon, organic compounds and traces of oil.
	Fireside boiler/s maintenance and cleaning operations.	Potential for leaks and spills from primary, secondary or intermediate containment, or from pipework to occur or have occurred.	Solid, sludge and liquid wastes generated include bottom ash and boiler slag, unburnt fuel deposits. These potentially have elevated hydrocarbons, treatment chemicals, anti-scaling chemicals, acids and trace metals.
	Waterside boiler/s cleaning and blowdown		
	Fuel oil filtration		
Cooling Systems Operations	Sea water cooling systems.	Potential for leaks or spillage of chemicals.	Liquid waste or contaminants from sea water cooling include treatment chemicals (chlorine dioxide among others).
Plant Maintenance	Changeover of lubricating oils used in stationary and mobile plant	Potential for release of contaminant, from effluent discharge or emissions and dust to occur or have occurred.	Hydrocarbons, other organic compounds (PCBs) generated from renewing oils.
	Changeover of transformer / switchgear oils.		
	General plant maintenance and repair work	Potential for leaks and spills from primary, secondary or intermediate containment, or from pipework to occur or have occurred.	Other wastes generated include metals, plastics and detergents.

**Table 3.2: Potentially Polluting Materials Located Within the Installation**

Process	Activity	Potential Polluting Activity	Potential Polluting Substances
Storm Water Collection	Liquid waste from surface water runoff at oil interceptors	Potential for overflow, blockages causing sumps to backup; and potential for leakage or seepage from any discontinuities to the surrounding soils and/or seawater.	Effluent – oil, oily water containing hydrocarbons, inorganic salts, suspended solids, trace metals.
Administrative Operations	General solid waste generated from administrative work and use of electrical / non-electrical equipment	Potential for leaks and/or leaching from primary and secondary containment to occur or have occurred.	General cleaning chemicals, toner (printer inks), and electrical components.

### 3.3 Initial Conceptual Site Model

The initial conceptual site model is presented in Table 3.3.

The conceptual site model is based on the site remaining in a commercial/industrial use.

**Table 3.3: Initial Source-Pathway-Receptor Risk Assessment**

Pollutant Linkage	Description	Receptor(s)	Discussion	Pathway Status	Risk Ranking
PL1	Dermal Contact & Ingestion	Humans – Site maintenance workers Site visitors	There is potential for site maintenance workers to come into contact with contaminated soils, if present (for example during excavation works). However, the use of appropriate risk assessments and control measures will mitigate the potential risks associated with short term maintenance works.	Active	Low based on mitigation measures
PL2	Inhalation – dust, particulates and asbestos fibres			Active	Low based on mitigation measures
PL3	Inhalation - vapours			Active	Low based on mitigation measures

**Table 3.3: Initial Source-Pathway-Receptor Risk Assessment**

<b>Pollutant Linkage</b>	<b>Description</b>	<b>Receptor(s)</b>	<b>Discussion</b>	<b>Pathway Status</b>	<b>Risk Ranking</b>
PL4	Leaching and migration of contaminants in unsaturated zone to groundwater	Controlled Waters (Malta Mean Groundwater Body, Marsaxlokk Bay and Il-Hofra z-Zghira Bay)	Potential for leaching of contaminants into the groundwater body and surface water. Infiltration is limited in areas covered by hardstanding but not in areas where hardstanding is absent. The geology beneath comprises of limestone which has a low effective porosity, groundwater flow is commonly restricted to fractures and discontinuities.	Active	Moderate
PL5	Migration of contaminated perched water off-site via the surface water drain.	Controlled Waters (Marsaxlokk Bay and Il-Hofra z-Zghira Bay)	Surface water drains are at a shallow depth, and typically are laid directly into the limestone. There is potential for any shallow contaminated to travel along conduits created during the construction of the drains. However, all surface water on-site passes through oil interceptors before discharge to the sea. These are regularly inspected and maintained by site operatives.	Active	low
PL6	Vertical migration of groundwater to groundwater body	Controlled Waters (Malta Mean Groundwater Body)	There is potential for contaminants to migrate vertically. Foundations and footings of buildings, plant and sumps may create a vertical pathway for contaminants. Migration is limited to the horizontal bedding planes. Vertical migration is limited in the limestone to fractures and fissures.	Active	Low
PL7	Migration of land gases into buildings and structures.	Built Environment	There is a small risk from the generation of land gases and volatile gases from hydrocarbons in soil and/or groundwater. However, the majority of the hydrocarbons used on-site are heavy end and less volatile.	Active	Low

## 4.0 Dangerous Substances Associated with Permitted Activities

The permitted operations will encompass the use, storage, treatment and/or disposal of a wide-range of materials. The main material categories are outlined within Table 4.0.

Where a material is specifically listed under Schedule 1 Part 2 (Named Substances) of The Control of Major Accident Hazards Regulations 2003 (COMAH) (Legal Notice (L.N. 37), and amendment (L.N. 6, 2005) this has been indicated within the Table 4.1. The regulations transpose into Maltese law the overarching EU Seveso II Directive enforced by the Council Directive 96/82/EC and extended by the Directive 2003/105/EC.

The gas oil storage capacity at DPS exceeds the threshold level for an upper tier site, thus DPS is classified as a COMAH site.

<b>Material Type</b>	<b>Additional Information</b>	<b>COMAH Listed Substance</b>
Heavy Fuel Oil	With maximum sulphur content of 1% and low ash	No
Gas Oil	With maximum sulphur content of 0.1%	Yes
Fuel oil additives	Magnesium Oxide (MgO) slurry emulsifier	No
Sea water treatment chemicals	Chemical to generate Chlorine Dioxide in situ (Biocaf 1320)	No
Boiler water intake treatment chemical	Tri Sodium Phosphate	No
Evaporators chemical treatments	Anti-scaling chemical, sulfamic acid and corrosion inhibitor	No
Demineralisation plant regeneration chemicals	Sulphuric acid 98% and caustic soda flakes	No
Gas turbine compressor cleaning	Industrial detergent (Zok 27)	No
Acid Spills	Sodium bicarbonate (acid neutraliser	No



## 5.0 Changes to the Activity

There are no known changes to the permitted activity boundary since IPPC permit issue in March 2010.

There are no known changes to the permitted activities since IPPC permit issue in March 2010. The current status of the permit variation for the extension to DPS (Phase III) is unknown.

There are no known 'dangerous substances' not identified in the Application Site Condition Report have been used or produced since IPPC permit issue in March 2010.

## 6.0 Measures Taken to Protect Land

Operational conditions are specified by the IPPC to control the release of substances to the environment. Records are to be maintained and either submitted as part of the Annual Environmental Review or held to be made available for inspection.

Enemalta have prepared a list of the required measures as part of their Environmental Management System (also a requirement of the IPPC Permit) in the form of an Environmental Monitoring Plan (DPS Environmental monitoring plan\_r0\_29-10-10). The Plan is presented in Annex F, with a summary below:

- Complaints concerning effects on the environment
- Plant and equipment and its maintenance
- Non-compliance with the operating procedures
- Waste management practices and control measures
- Waste oil storage including quantities, nature, manner and date of dispatch of the oil.
- Laboratory analyses of emissions to water.
- Laboratory analyses of discharges to water.
- Results of the laboratory analysis of effluent samples arising from process water and non-process water (surface drainage, fuel bunds drainage etc)
- Daily visual examination of the surface water discharge
- Inspection Reports and Certification by Approved Auditors for:
  - Testing of bunds;
  - Pipes, pumps, valves and flanges for fuel delivery from delivery ship to tank farm;
  - Other flanges, valves and over-ground pipes on site; and
  - Oil interceptors including a log of monthly monitoring and interceptor waste removal.

In addition, the IPPC permit specifies the requirements for physical pollution prevention measures including bunds and high level liquid alarms on pump sumps. In the event of accidental contamination of land or observations of surface water indicate contamination has taken place, the permit requires for the operator to notify the Authority immediately and submit and implement a decommissioning plan within one week of the event.

An Annual Environmental Report was submitted to the Authority in 2009/2010. Records were incomplete. It is understood as per Enemalta's response document<sup>4</sup> that improvements are ongoing.

## 7.0 Soil Quality Monitoring

### 7.1 Intrusive Investigation

#### 7.1.1 Objectives

Condition 1.5.1 of the IPPC permit specifically requires for the operator to submit land monitoring data to the Authority within three months of issue of the permit as part of the 'Improvement Programme' (Condition 1.5.1) of the installation. The condition also requires for an Outline Decommissioning Plan to be submitted within six months of the IPPC permit issue.

The objectives of the intrusive investigation are:

- to collect sufficient data on the potentially polluting substances identified in Schedule 9 of the IPPC Permit in order to set Reference Data for the site;
- to collect data to assess the likelihood of their being significant contamination of the land on the site by any of the pollutants specified in Schedule 9 of the permit and thus reduce the uncertainties in the conceptual model presented as Section 4 of this report;

The investigation has been undertaken in accordance with conditions 2.16.3 (covered in Section 7.0-7.10), 2.16.5.1 (covered in Section 8.0), 2.16.5.4 (not covered in this report) and 2.16.5.5 (covered in Section 8.1) of the IPPC permit.

Independent to the soil monitoring investigation for the IPPC permit, MEPA have requested that the mound ('landfill') outside (and to the south) of the IPPC permit is investigated to characterise ground conditions and take samples for analysis of contamination.

### 7.2 Investigation and Sampling Strategy

#### 7.2.1 General

ENVIRON UK Limited undertook and managed an intrusive site investigation on behalf of Enemalta Corporation in order to collect the site reference data. This involved the use of suitable third parties (i.e. drilling contractors etc.). All contractors used are vetted and approved and agree to ENVIRON's site protocols and health and safety (H&S) requirements.

The main site investigation was undertaken between the 2<sup>nd</sup> June to the 28<sup>th</sup> June 2011. All subcontractors were employed under contract and supervision of ENVIRON. All soil sampling was undertaken directly by ENVIRON.

Sample locations were positioned to provide general coverage across the site and to target known current potential sources of contamination. Potential sampling locations were restricted to some degree by the location of current buildings and infrastructure (including foul/surface water drains, cables and cable ducts, and pipelines, as well as access for equipment and plant).

The scope of works comprised the following:

- Service clearance undertaken on 2nd June 2011 by qualified utility surveyors to ensure the drilling locations were clear of services prior to drilling.
- Drilling of twenty (20) boreholes within the IPPC permit boundary to depths of 5m to 10m using solid stem auger rotary drilling techniques to allow the sampling of the soil. The drilling works were undertaken between 4th and 28th June 2011.
- Drilling of three (3) boreholes on an area of 'landfill' outside (and south of) the IPPC permit boundary to prove the base of the 'landfill'. The boreholes were drilled to depths of between 19.0m bgl and 42.0m bgl using solid stem auger to 6.0m bgl, continued to depth using rotary open hole drilling. One (1) metre of rock core sample was taken at one (1) location (LF02) for identification and sampling of the geology. The drilling was undertaken between 9th and 11th June 2011.
- On site screening for hydrocarbon vapours using a portable handheld photo ionization detector (PID) to assist the selection for laboratory analysis by experienced ENVIRON field personnel.
- Analysis of up to thirty two (32) soil samples for a range of determinands specified in Schedule 9 of the IPPC permit, including a suite of metals, total petroleum hydrocarbons (TPH), polycyclic aromatic hydrocarbons (PAHs), volatile and semi-volatile organic compounds, polychlorinated biphenyls (PCBs) and asbestos. The analytical suite is presented in Table 7.7. Analysis of samples in accordance with the relevant British Standards.

## 7.3 Constraints on Investigations

### 7.3.1 Health and Safety

All work was undertaken in accordance with ENVIRON Safe Working Procedure #2, Underground/Overhead Services, which controls risk through a safe system of work by using service location plans for the site, where available, contracted utility surveyors and trained site investigation staff that are competent using cable avoidance tools (CAT & GENNY).

Prior to commencing the intrusive works, each of the boring locations were agreed between ENVIRON and Enemalta. Enemalta undertook an initial utility screening check, and subsequently some of the locations were moved nearby to avoid underground services. As part of ENVIRON's H&S procedures a specialist utility clearance team (an approved ENVIRON contractor) undertook a utility survey of each location. As a final check each location was scanned by ENVIRON personnel using a Cable Avoidance Tool (CAT) immediately prior to the excavation. Due to the presence of underground services in a number of proposed borehole locations, boreholes were relocated to a 'safe' location free of services, ensuring that the borehole location rationale provided in Table 7.5 was still applicable.

### 7.3.2 Drilling Techniques

The justification for the drilling technique selected for the investigation, rotary solid stem auger, is presented in Section 7.4.2. The constraints of using this technique were:

- Arising's returned from the auger were effectively 'disturbed'; caused when the soil removed from the base of the borehole travels up the flights and emerges at the ground surface. As such, the quality of the sample taken is reduced. The disturbance may result in some loss of volatile contaminants. However, for the purposes of the investigation the benefits of the technique were considered to outweigh the detriment of a 'disturbed sample'.
- The use of one set of drilling equipment (primarily rods) at each location provided the potential for cross contamination. As such, a 'wash down' area was established and drilling rods were thoroughly washed with a jet spray after use at each location. Waste water drained into the surface drainage system which was served by an oil / water interceptor. In the eventuality of contamination being identified in boreholes, the equipment would be rinsed with a decontamination solution (Decon 90) prior to jet spraying.
- The auger is unable to penetrate reinforced concrete at depth, which resulted in one boring location being abandoned.

### 7.3.3 Minimisation of Disruption to Site

Borehole locations were positioned to minimize disruption to the site. Areas of soft landscaping or soft rock were selected over areas of concrete or gravel hard standing, where it was possible to do so without compromising the quality of the sampling rationale in Table 7.5. Additionally, locations were positioned to minimize disruption to site traffic.

## 7.4 Soil Investigation and Sampling Techniques and Protocols

### 7.4.1 Concrete Coring

Prior to soil sampling, drilling locations positioned on concrete were 'cored'; the concrete corer unit allowed samples of surface concrete 150mm in diameter and up to 300mm thick to be recovered.

This method also allows the surface to be successfully reinstated on completion of the sampling.

### 7.4.2 Rotary Techniques

#### *Solid Stem Auger*

Solid stem continuous flight auger is a fast method of drilling to the depths required in this investigation. As the auger is rotated and pushed downwards the soil removed from the base of the borehole travels up the flights and emerges at the ground surface. The boreholes drilled using this method are circa 150mm to 200mm in diameter, depending on the size of rods used to drill the hole.

The drilling rig used was a Beretta T44; a tracked drilling rig with reducible tracks enabling it to move over soft ground and width restricted areas with minimal damage.

Solid stem augers have the ability to drill into soft rock, which makes it suitable for this investigation given the geology of Middle Globigerina Limestone. The soil and rock recovered allows for a detailed inspection and logging of the ground conditions encountered and the recovery of disturbed soil samples. As such it is an appropriate and widely used method for investigating shallow soils.

#### *Open Hole & Continuous Rock Coring*

Due to the elevation of locations on the landfill, the boreholes need to be drilled to >15m bgl which is not possible using the solid stem continuous flight augers. The most appropriate technique was to use open hole rotary drilling.

Open hole drilling involves the rotation of a drill-pipe and bit to cut the rock. A water flush is pumped down the drill-pipe to flush out the debris. The technique allows rapid progression through solid rock, however there is no sample recovery. In order to take a sample from the upper strata and from the strata from the lower strata (approximately level with base of underground station), continuous rock coring was undertaken. This involves using rotary flush to penetrate the rock with a hollow tube; the tube is drilled to a known depth then withdrawn. A continuous rock core can then be logged and sampled. This technique is much slower than open hole drilling but allows for detailed logging of the rock and sample collection.

The drilling rig used was a Beretta T44; a tracked drilling rig with reducible tracks enabling it to move over soft ground and width restricted areas with minimal damage.

## 7.5 Sample Locations

Sample locations were positioned to provide general coverage across the site and to target potential sources of contamination. Sampling locations were restricted due to location of current buildings and underground services (including foul/surface water drains, oil/water interceptors, gas, electric and water mains etc.). Sample locations for the site are shown on Figure 4 of Annex A.

Samples are referenced using the following classification system:

Investigation Method + Unique ID
<i>i.e.</i> BH1 (Borehole One) or WS1 (Window Sample One)

Sample locations were approved in principal by MEPA prior to undertaking the investigation. MEPA also confirmed that the sample locations could be relocated on site, to avoid underground services etc., providing the justification in Table 7.1 was applicable.

The sample location rationale for Delimara Power Station is shown in Table 7.1. The proposed sample locations are presented in Figure 3 Annex A and the actual sample locations as drilled are presented in Figure 4 Annex A. The reference to Phase 1, Phase 2A and Phase 2B are the stages of development when the power station was constructed.

**Table 7.1: Delimara Sampling Rationale**

Proposed Location ID	Location ID	Location		Rationale for Sample Location
B	BH01	-	Temporary storage compound	General site coverage (reclaimed land)
C	BH02	Phase 2A	West of Open Cycle Gas Turbines (OCGT)	OCGT and general site coverage (reclaimed land)
R	BH03	Phase 1	South entrance to CCGT	CCGT general site coverage (reclaimed land)
K	BH04	Phase 1	West of pump house	Pump house
J	BH05	Phase 1	Adjacent to pump house, fuel oil interceptor pit and pipelines.	Oil pit and pipelines
L	BH06	Phase 1	Outside bund wall of RFO tanks, at a level approximately 10m lower.	Integrity of RFO bund
A	BH07	-	Entrance of waste storage compound	Waste storage compound and general site coverage (reclaimed land)
N	BH08	Phase 1	Adjacent to Boiler No2	Boiler Power Plant and general site coverage (natural land)
D	SB01	Phase 1	Adjacent to oily water pipe	Drainage system, and down hydraulic gradient of turbine house.
T	SB02	-	Adjacent to extra high voltage building	Extra high voltage building and general site coverage (reclaimed land)
Q	SB03	Phase 2B	Adjacent to fuel tanks	Fuel tanks
M	SB04	Phase 2B	Adjacent to Chimney D5A	Combine Cycle Gas Turbine (CCGT)
S	SB05	-	Adjacent to temporary contractors storage yard for Phase 3 construction	Storage yard and general site coverage (reclaimed land)
I	SB06 /SB06A	Phase 2B	Adjacent to interceptor	Oil interceptor
O	SB07	Phase 2B	Adjacent to Chimney D4B	CCGT

**Table 7.1: Delimara Sampling Rationale**

Proposed Location ID	Location ID	Location		Rationale for Sample Location
E	SB08	Phase 2B	Adjacent to cooling water intake	Cooling water intake
P	SB09	Phase 1	Adjacent to Chimney D1	Main chimney stack, location of temporary drum storage and general site coverage (natural land)
H	SB10	Phase 2A	Bulk diesel tank / pipelines	Integrity of bulk diesel tank bund and pipelines
G	SB11	Phase 2A	Bulk diesel tank	Integrity of bulk diesel tank bund
F	SB12	Phase 2B	Bulk diesel tank	Integrity of bulk diesel tank bund

All borehole locations except SB03 (Q) were positioned within 3m of the proposed location. Due to the presence of a high voltage power cable, SB03 was relocated approximately 5m east. The proposed sample location plan is presented in Figure 3 of Annex A. The actual sample location plan is presented in Figure 4 of Annex A

The three (3) boreholes on the 'raised land' outside of the IPPC permit boundary were positioned to provide a general assessment of the tipped materials.

## 7.6 Sampling Techniques

Soil samples were obtained from the boreholes by ENVIRON personnel at regular intervals. The soil samples were placed in containers appropriate to the type of analysis to be undertaken. The samples were stored in cool boxes and/or a refrigerator to maintain an appropriate temperature prior to being couriered to the local DHL depot and air freighted to an approved laboratory in the UK.

## 7.7 Analytical Strategy

Conditions 2.16.3 and 2.16.5.1.1 of the IPPC permit require monitoring of the substances specified in Schedule 9 of the permit. The analytical strategy was devised in accordance with Schedule 9 and presented in Table 7.2.

**Table 7.2: Analytical Strategy**

Analytical Suite	Determinand			Qty
Metals	Arsenic	Mercury	Vanadium	31
	Cadmium	Nickel	Cobalt	
	Chromium	Tin	Thallium	
	Copper	Antimony	Manganese	
	Lead	Selenium	Zinc	
Inorganic compounds	pH	Sulphate	Sulphide	31
Polycyclic Aromatic Hydrocarbon (PAHs) (US EPA Priority 16)	Naphthalene	Fluoranthene	Benzo(a)pyrene	31
	Acenaphthylene	Pyrene	Indeno(123cd)pyrene	
	Acenaphthene	Benz(a)anthracene	Dibenzo(ah)anthracene	



**Table 7.2: Analytical Strategy**

Analytical Suite	Determinand			Qty
Speciated)	Fluorene	Chrysene	Benzo(ghi)perylene	
	Phenanthrene	Benzo(b)fluoranthene	PAH 16 Total	
	Anthracene	Benzo(k)fluoranthene		
BTEX Compounds (analysed as Volatile Organic Compounds (VOCs))	Benzene	Ethyl Benzene	m/p-xylene	10
	Toluene	o-xylene		
Total Petroleum Hydrocarbons/mineral	EPH >C8-C10	EPH >C20-C30	EPH >C8-C40	31
	EPH >C10-C20	EPH >C30-C40		
Polychlorinated biphenyls (PCBs)	PCB 28	PCB 118	PCB 153	9
	PCB 52	PCB 138	PCB 180	
	PCB 101			
Alkyl benzenes (Volatile organic compounds (VOCs) and tentatively identified VOCs)	Dichlorodifluoromethane	Benzene	1,1,2,2-Tetrachloroethane	10
	Methyl Tertiary Butyl	Trichloroethene	Bromobenzene	
	Chloromethane	1,2-Dichloropropane	1,2,3-Trichloropropane	
	Vinyl Chloride	Dibromomethane	Propylbenzene	
	Bromomethane	Bromodichloromethane	2-Chlorotoluene	
	Chloroethane	cis-1-3-Dichloropropene	1,3,5-Trimethylbenzene	
	Trichlorofluoromethane	Toluene	4-Chlorotoluene	
	Chloroethane	trans-1-3-Dichloropropene	tert-Butylbenzene	
	Trichlorofluoromethane	1,1,2-Trichloroethane	1,2,4-Trimethylbenzene	
	1,1-Dichloroethene	Tetrachloroethene	sec-Butylbenzene	
	Dichloromethane	1,3-Dichloropropane	4-Isopropyltoluene	
	trans-1-2-Dichloroethene	Dibromochloromethane	1,3-Dichlorobenzene	
	1,1-Dichloroethane	1,2-Dibromoethane	1,4-Dichlorobenzene	
	cis-1-2-Dichloroethene	Chlorobenzene	n-Butylbenzene	
	2,2-Dichloropropane	1,1,1,2-Tetrachloroethane	1,2-Dichlorobenzene	
	Bromochloromethane	Ethylbenzene	1,2-Dibromo-3-chloropropane #	

**Table 7.2: Analytical Strategy**

Analytical Suite	Determinand			Qty
	Chloroform	p/m-Xylene	1,2,4-Trichlorobenzene	
	1,1,1-Trichloroethane	o-Xylene	Hexachlorobutadiene	
	1,1-Dichloropropene	Styrene	Naphthalene	
	Carbon tetrachloride	Bromoform	1,2,3-Trichlorobenzene	
	1,2-Dichloroethane	Isopropylbenzene		
Cycloalkanes Semi-volatile Organic Compounds (SVOC) and Tentatively Identified Compounds (SVOC TICs).	2-Chlorophenol	Dimethyl phthalate	Hexachlorocyclopentadiene	10
	2-Methylphenol	1,2-Dichlorobenzene	Hexachloroethane	
	2-Nitrophenol	1,2,4-Trichlorobenzene	Isophorone	
	2,4-Dichlorophenol	1,3-Dichlorobenzene	N-nitrosodi-n-propylamine	
	2,4-Dimethylphenol	1,4-Dichlorobenzene	Nitrobenzene	
	2,4,5-Trichlorophenol	2-Nitroaniline	Benzenesulfonamide, N-ethyl-2-methyl-	
	2,4,6-Trichlorophenol	2,4-Dinitrotoluene	Benzenesulfonamide, N-ethyl-4-methyl-	
	4-Chloro-3-methylphenol	2,6-Dinitrotoluene	Cyclic octaatomic sulfur	
	4-Methylphenol	3-Nitroaniline	Dodecane, 2,6,11-trimethyl-	
	4-Nitrophenol	4-Bromophenylphenylether	Eicosane	
	Pentachlorophenol	4-Chloroaniline	Heneicosane	
	Phenol	4-Chlorophenylphenylether	Heptadecane	
	2-Chloronaphthalene	4-Nitroaniline	Hexadecane	
	2-Methylnaphthalene	Azobenzene	Hexadecane, 2,6,10,14-tetramethyl-	
	Bis(2-ethylhexyl) phthalate	Bis(2-chloroethoxy)methane	Methoxyacetic acid, 4-tetradecyl ester	
	Butylbenzyl phthalate	Bis(2-chloroethyl)ether	Nonadecane	

**Table 7.2: Analytical Strategy**

Analytical Suite	Determinand			Qty
	Di-n-butyl phthalate	Carbazole	Octadecane	
	Di-n-Octyl phthalate	Dibenzofuran	Pentadecane	
	Diethyl phthalate	Hexachlorobenzene	Phenol, 2,4-bis(1,1-dimethylethyl)-	
		Hexachlorobutadiene	9-Octadecenamide, (Z)-	
Asbestos Screen	N/A			10

One sample from the upper 5.0m of strata was taken from each of the three (3) boreholes drilled into the mound outside of the IPPC permit. Each sample was tested for metals, polycyclic aromatic hydrocarbons (PAHs), EPH and inorganics as per the specification in Table 7.2.

### 7.7.1 Justification of Analytical Suites

Where specific compounds were not specified in Schedule 9 of the permit, justification for the testing criteria selected is as follows:

- Cycloalkanes – there is no specification for any individual compounds in this group. ENVIRON recommends that analysis be undertaken for semi-volatile organic compounds (SVOCs) to cover this group of compounds.
- Alkyl-benzenes – whilst the common alkyl benzene are listed (methyl benzene – toluene, ethyl benzene, xylene), there is no specification for which others are required in the analysis. ENVIRON therefore recommend that analysis be undertaken for volatile organic compounds (VOCs) to cover this group of compounds.
- Straight chain alkane C10-C70 – whilst heavy fuel oil used on site can contain hydrocarbons up to C70, analysis is only common for C10 to C40 carbon banding groups, and this would address the key hydrocarbons used on the facility. Analysis has also been requested for ‘mineral oil’ which is essentially duplicating this analysis.

### 7.7.2 Justification of Analytical Field Techniques and Detection Limits

No field testing of samples occurred beyond the screening of soil gas headspace using a Photo-ionisation Detector (PID).

Substances have been analysed in soil phase only.

### 7.7.3 Laboratory Accreditation / Quality Assurance and Quality Control

Conditions 2.16.3.2 and 2.16.3.3 of the IPPC permit require for samples to be analysed to the relevant EN or EN ISO standards or equivalent, and for samples to be tested by a lab accredited by the National Accreditation Body (NAB-Malta or equivalent) or at least EN ISO 17025:2005 / Cor 1:2006.

Analytical testing was contracted to Jones Environmental Laboratory (Jones); an ENVIRON approved ISO 17025 and MCERTS accredited laboratory, working to a recognised international standard and a

Quality Management System (QMS). ISO/IEC 17025 specifies the general requirements for the competence to carry out tests and/or calibrations, including sampling. It covers testing and calibration performed using standard methods, non-standard methods and laboratory-developed methods. MCERTS is the Monitoring Certification Scheme established by the UK Environment Agency to deliver high quality environmental measurements. It provides for product certification of instruments, competency certification of personnel and the accreditation of laboratories based on international standards. MCERTS requires laboratories to first be accredited to the current version of the European and international standard ISO/IEC 17025. MCERTS requires a more stringent level of control for laboratory practices. In the UK the Environment Agency will only accept analytical data from laboratories who are accredited under the MCERTS Chemical Testing of Soil scheme.

ISO/IEC 17025 requires laboratories to validate non-standard methods, laboratory-designed/developed methods, standard methods used outside their intended scope and amplifications and modifications of standard methods, to confirm the methods are fit for the intended use. All but one of the below methods are accredited to ISO/IEC 17025 as a minimum, the SVOC method is included in the laboratories ongoing validation plan, but is based on USEPA 8270.

The analytical testing method, accreditation and limits of detection are presented in Table 7.3.

**Table 7.3 Analytical Methods and Accreditations**

Test Method	Code	SOILS	Sampling Method	ISO 17025	MCERTS	MDL
005 S	EPH	Total EPH (C8-40) by GC-FID (calibrated against diesel and lube oil )	Determination of Extractable Petroleum Hydrocarbons by GC-FID. Following extraction of as-received sample with hexane/acetone. Extraction using end/end, orbital shaker or soxhlet. Calibrated against diesel and lube oil.	Y	Y	30mg/kg
004 S	PAH 16/17	Total PAH 16 by GC-MS	Determination of Polynuclear Aromatic Hydrocarbons by GC-MS. End/end extraction using DCM on as received sample. In house method modified USEPA 8270.	Y	Y	0.02-0.07mg/kg
015 S	VOC	VOC target list (inc BTEX/MTBE) by GC-MS	VOC target list by Headspace GC-MS - modified USEPA 8260	Y	N	2-27/100 ug/kg
016 S	SVOC	SVOC target list including PAHs, phenol and chlorinated phenols by GC-MS	SVOC target list by GC-MS - modified USEPA 8270 on as received sample extracted with DCM or hexane acetone	N	N	10/100 ug/kg
086 S	PCB 7	PCB 7 congeners	7 congeners (101,118,138,153,180,28,52) by GC-ECD - modified USEPA 8250/625	Y	N	5ug/kg (per cong)
030 S	Short CLEA metals	Short CLEA metals (excluding WSB, Cr III, Cr VI): As(0.5), Ba(10), Be(0.5), Cd(0.1), Cr(0.5), Cu(1), Hg(0.1), Ni(0.7), Pb(5), Se(1), V(1), Zn(5)	ICP-OES	Y	Y	Various (mg/kg)
074 S	WSB	Water Soluble Boron	ICP-OES	Y	Y	1mg/kg

## 7.8 Findings of the Ground Investigation

### 7.8.1 General Observations

The majority of the site surface comprises concrete hard standing, of thickness varying from approximately 100mm to 400mm. The concrete was reinforced with metal bars at SB07. In roads the surface generally comprised tarmac, thickness varying between 150mm and 200mm. In peripheral areas and surrounding the tanks in the east of site the surface was found to be 'soft rock' of reworked globigerina limestone.

At SB08 adjacent to the cooling water intake, the presence of a reinforced concrete slab at 2.5m bgl resulted in the borehole being terminated. The 'spare' location that had been cleared for services by ENVIRON's subcontracted utility surveyor was subsequently drilled and a concrete slab was encountered at the same depth. As such a borehole was not progressed adjacent to the cooling water intake.

### 7.8.2 Geology

Made ground was encountered immediately beneath the surface at ten (10) of the twenty (20) locations drilled. Made ground generally comprised gravelly sand / sandy gravel with secondary constituents of clay, ground limestone and silt. The made ground was encountered to a depths of between 0.3m bgl (SB07 and BH07) and 1.25m bgl (SB06a/b).

At the remaining ten (10) locations, the geology beneath the surface comprised reworked mudstone with frequent to occasional gravel of tarmac and concrete at some locations, and frequent to occasional fragments of plaster, metal strips (c. 5cm in length) and plastic. Fibrous plant remains (sea grass) were encountered at BH03, BH04, and BH05 from a minimum depth of 3.75m bgl to a maximum depth of 6.0m bgl (the termination depth). Reworked material was proven to a maximum depth of 8.0m bgl in SB10, SB11 and SB12. Reworked material was encountered in the western and central portions of the site adjacent to the coast line and is likely to represent the man-made platform reclaimed from the sea.

Of the nineteen (19) boreholes successfully progressed to depth, thirteen (13) of these were terminated in reworked natural material between 3.0m bgl and 12.0m bgl.

Natural geology was encountered in five (5) boreholes and comprised green-brown grey mudstone, recovered as clay and gravel. Mudstone was encountered at depths of between 0.5m and 1.2m bgl and proven to a maximum depth of 6.5m bgl in SB04. One (1) borehole (BH06) was progressed to from 6.0m bgl to 12.0m bgl using rotary open hole techniques. The arising's were not returned to the surface, but based on the drilling progress it is likely that the geology was mudstone.

Boreholes in which natural material was encountered (SB03, SB04, SB07, BH06 and BH08) were located in the east of site, adjacent to the cliffs and are likely to represent the natural platform cut into the Delimara Peninsula on which DPS is situated. Made ground was encountered in one borehole in this area (SB09). Given the location of this borehole, it was anticipated that natural material would be identified, however the borehole was terminated at 6.0m bgl in made ground and no natural material

was encountered. Bedrock encountered is consistent with the geological description for the site of Middle Globigerina Limestone.

'Soft rock' comprising mudstone and limestone, was recorded in the three (3) samples drilled into the 'mound' outside of the IPPC permit boundary to depths of between 15.3m to 23m bgl. Small pieces of electrical components, wires, casing was encountered up to 6.0m bgl in LF03. Drilling progress indicated that the rock comprised gravel, cobbles and boulders. At depths of between 15.3m and 23m the rock became generally 'hard' which possibly indicated boulders of limestone, with a smaller proportion of mudstone. In borehole LF02 a core was taken from 25.4m bgl to 26.4 m bgl. The core comprised sub-rounded gravel of cream limestone and grey mudstone. LF02 was continued to 42m bgl; marine deposits comprising fine gravel and shell debris were encountered at 33m bgl, indicating the natural sea bed.

### 7.8.3 Hydrology

Groundwater was encountered in ten (10) of the twenty (20) borehole locations between depths of 1.8m and 3.42m bgl (0.056m and -0.116m ALSL respectively), all of which were located in the man-made platform in the centre and west of site. The strata were found to be 'damp' but not wet in a further five (5) boreholes in the west of site. Groundwater was not encountered in the five (5) of the six (6) boreholes located in the eastern portion of site, where natural mudstone (and made ground in SB09) was encountered. In one of the boreholes (BH08), groundwater was encountered at 2.2m bgl in the natural mudstone. This is not consistent with the hydrology of nearby boreholes, and may indicate a local seepage, for example from the nearby sump.

Groundwater was encountered in one (1) of the three (3) boreholes on the 'landfill' at a depth of 19.7m bgl.

### 7.8.4 Evidence of Contamination

No visual or olfactory evidence of hydrocarbon contamination was identified in the soil during the investigation. Concentrations of volatile organic compounds detected using the photo ionization detector (PID) were very low and did not exceed 10ppm by volume. The maximum concentration was 2.7ppm, identified in SB08 (1.8m to 2.0m). The PID readings do not indicate the presence of volatile hydrocarbon contamination. PID readings are presented on the exploratory borehole logs in Annex B1.

## 7.9 Chemical Analyses

### 7.9.1 Criteria for Assessment

In the absence of current Maltese guidance, the UK risk-based approach to contaminated land has been adopted. In accordance with UK statutory guidance and based on the principles of risk assessment, ENVIRON has derived generic criteria (ENVIRON Generic Assessment Criteria – ENVIRON GAC) for the assessment of soil. The assessment of chemical data from an intrusive investigation is undertaken in a tiered approach, and the first stage is a Generic Quantitative Risk Assessment (GQRA). The ENVIRON GACs are considered to be threshold based screening concentrations, at which a significant risk is not considered to be present to the relevant receptors.

The ENVIRON GACs for soil assessment are based on the generic scenarios outlined in the Contaminated Land Exposure Assessment (CLEA) methodology and guidance documents, and include inhalation, ingestion, dermal contact of soil and dust as pathways for commercial and residential scenarios; as well as ingestion of vegetables for residential with gardens scenario. A commercial / industrial scenario has been selected for comparison as it is most applicable for the continued use of the Delimara Power Station site. These have been calculated by use of two proprietary risk assessment models (CLEA Version 1.06 and the ASTM RBCA4 Tool Kit Version 2.5 for Chemical Releases) which have been amended, where necessary, to reflect the current UK approach to human health risk assessment as set out in the Contaminated Land Report (CLR) 11 and the CLEA guidance documents (incorporating Science Reports SC050021/SR2, SR3 and SR4 published in January 2009). The physiochemical data has been taken from or derived using the methodology detailed in SR7 (November 2008), where feasible. The toxicology data has been taken from the current published EA toxicology documents.

## 7.9.2 Results of Intrusive Investigation

Results of the soil laboratory analyses are summarised in Annex C and the full analytical results are presented in the original laboratory reports in Annex D. The key analytical findings from the investigation within the IPPC permit boundary are summarized as follows:

### Metals:

- Concentrations of arsenic, barium, cadmium, chromium, cobalt, copper, lead, manganese, mercury, nickel, tin, vanadium and zinc exceeded laboratory method detection limits in all of the thirty one (31) samples analysed.
- Concentrations of antimony, beryllium and thallium did not exceed laboratory method detection limits in any of the samples analysed.
- Where concentrations were detected, they were found to be low. The maximum concentration identified was 95 mg/kg of manganese detected in SB05 (2.5 – 3.0m bgl).
- The concentrations of metals in all soil samples did not exceed the respective ENVIRON guideline limits (GAC's) for industrial/commercial land use.

### Inorganics:

- pH ranged from 7.82 in SB01 (2.5 – 3.0) to 11.15 in SB12 (0.8 – 1.0).
- Sulphide ranged from below laboratory method detection limits to a maximum of 1.7 mg/kg in SB03 (0.5 – 1.0)
- Total sulphate ranged from 915 mg/kg in BH07 (0 – 0.5m) to 5213 mg/kg in BH03 (0 – 0.5m).
- Asbestos fibres were not detected in any of the ten (10) samples analysed.

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4 American Society for Testing and Materials Risk Based Corrective Action Model.



### Polycyclic Aromatic Hydrocarbons (PAHs)

- Concentrations of PAHs were detected above method detection limits in four (4) of the thirty one (31) samples analysed. All four samples were taken from the made ground / reworked natural material. In two (2) of the four samples (BH07 0.0 – 0.5m bgl and SB06 0.0 – 0.5m bgl), concentrations of phenanthrene, fluoranthene, pyrene, benz(a)anthracene, chrysene, benzo(b)fluoranthene, benzo(a)pyrene, indeno (1,2,3)pyrene, dibenzo(a,h) anthracene and benzo(g,h,i)perylene exceeded method detection limits. The maximum concentration was 0.11mg/kg of benzo(g,h,i)perylene and indeno(1,2,3-cd)pyrene detected in BH07 (0.0-0.5m bgl).
- In two samples (BH04 3.0 – 3.5m bgl and BH05 0.0 – 0.5m bgl), only chrysene was found to exceed detection limits at a maximum concentration of 0.04mg/kg in BH04 (3.0 – 3.5m bgl).
- In the four samples where individual PAHs were detected above method detection limits, concentrations of total PAHs were detected in two of the samples (BH07 0.0 – 0.5m bgl and SB06 0.0 – 0.5m bgl). The maximum concentration was 0.9mg/kg detected in BH07 (0.0 – 0.5m bgl).
- Concentrations of individual and total PAHs did not exceed ENVIRON's generic assessment criteria.

### Total Petroleum Hydrocarbons (TPHs)

- Thirty one (31) samples were tested for extractable petroleum hydrocarbons (EPH) with aliphatic and aromatic banding. Concentrations of EPH were detected above laboratory method detection limits in eight (8) samples (BH01 0.5m, BH02 0.5m, BH04 0.0 - 0.5m, BH08 1.8 – 2.0m, BH08 2.8 – 3.0m, SB01 0.0 - 0.5m, SB04 0.5 – 1.0m, SB11 0.3 – 0.5m), all except BH08 are located in the man-made platform in the west of site. BH08 is located on the natural Delimara Platform in the east of site. All samples with the exception of the two samples taken from BH08 comprise made ground. The maximum concentration of total EPH detected was 739mg/kg at BH08 1.8m – 2.0m bgl which does not exceed the ENVIRON GAC of 5,000mg/kg for total TPH.
- The samples at depths of 1.8m – 2.0m and 2.8m – 3.0m in BH08 both comprised natural mudstone according to the geological borehole logs. EPH were identified in the bands C10-C20 and C20-C30 in both samples. The maximum concentrations were 408 mg/kg for C10-C20 and 331 mg/kg for C20-C30, both in the sample taken from 1.8m – 2.0m. No ENVIRON GACs are available for the hydrocarbon bands. The total EPH did not exceed the ENVIRON GAC in either sample.
- Of the extractable petroleum hydrocarbon bands detected, concentrations were in the ranges EPH>C20-C30 and EPH>C30-C40 for BH01, BH02, BH04, SB01 and SB11. Petroleum hydrocarbons were detected in the ranges EPH>C10-C20 and EPH C20-C30 for BH08, SB01 and SB04.

- The greatest concentration of EPH banding was 549 mg/kg of EPH>C30-40 detected in SB01.
- No GACs are available for hydrocarbon banding. All concentrations of total EPH did not exceed the ENVIRON's GAC of 5,000 mg/kg.

#### Volatile Organic Compounds

- Concentrations of Volatile Organic Compounds (VOCs) were less than detection limits in seven (7) of the ten (10) samples analysed. In the remaining three samples (SB03 0.5 – 1.0m, SB05 0.5 – 1.0m and SB09 0.3 – 0.5m) only ethylbenzene was found to exceed detection limits, at a maximum concentration of 0.018mg/kg detected in SB03, which does not exceed the ENVIRON GAC.

#### Semi-Volatile Organic Compounds

- Of the ten (10) samples analysed for semi-volatile organic compounds, concentrations were detected above detection limits in three (3) of the samples. In BH08 (1.8 – 2.0m), 2-methylnaphthalene was detected at 0.057mg/kg. In SB04 (0.5 – 1.0m) and SB05 (0.5 – 1.0m) diethyl phthalate was found at 0.092mg/kg and 0.061mg/kg respectively. The concentrations identified did not exceed the ENVIRON GACs.
- Of the ten (10) samples analysed for tentatively identified compounds (TICs), SVOCs were detected in three (3) of the samples. In SB03 (0.5 – 1.0m), two TICs were identified, the maximum concentration was 0.209mg/kg of cyclic octaatomic sulphur. Eleven TICs were detected in SB04 (0.5 – 1.0m), the maximum concentration being N-ethyl-2-methyl-Benzenesulfonamide, detected at a concentration of 0.490mg/kg. Four (4) TICs were identified in SB05 (0.5 – 1.0m), the greatest being (Z)- 9-Octadecenamide at a concentration of 1.308 mg/kg. No ENVIRON GACs are available for TICs.

#### Polychlorinated Biphenyls (PCBs)

- Concentrations of polychlorinated biphenyls (PCBs) were below laboratory detection limits in all nine (9) samples analysed.

#### 'Landfilled mound'

Of the three (3) samples taken from the mound to the south of the permit boundary, the following was identified:

- Low concentrations of metals were identified in all samples. Concentrations did not exceed relevant ENVIRON GACs.
- PAHs were not identified above laboratory method detection limits.
- Low concentrations of EPH in the bands C10-C20, C20-C30 and C30-C40 were identified in one (1) sample taken from LF01 (0.0m – 0.5m). The maximum concentration of banded

hydrocarbons was in the band C20-C30 at 90mg/kg. The concentration of total EPH was 198 mg/kg which is less than the ENVIRON GAC. EPH were not identified above detection limits in the remaining two (2) samples.

- An asbestos screen was undertaken on all samples. Asbestos fibres were not detected.
- pH ranged from 7.87 to 8.69 .
- Total sulphate ranged from 1169 mg/kg in LF02 to 7110 mg/kg in LF03.
- Suphide ranged from less than detection limits to 0.8 mg/kg in LF03.

### 7.9.3 Summary of Results

Low concentrations of metals were identified site wide. Low concentrations of PAHs, VOCs, SVOCs and EPH were identified in localised areas.

EPH were identified above detection limits in two samples of natural material in BH08, located in close proximity to a sump associated with Boiler No2, approximately 2.0 – 2.5m bgl in depth. The borehole logs identify that water was encountered at 2.2m bgl at this location which is not consistent with the geological logs from boreholes located in natural mudstone on the Delimara Peninsula. The presence of water may indicate a local seepage, for example from the nearby sump, which is a potential source of hydrocarbon contamination. The presence of petroleum hydrocarbons suggests that the pollution prevention measures may be inadequate in this area.

### 7.10 Refined Conceptual Site Model

Condition 2.16.3 requires for an assessment of the likelihood of their being significant contamination of the land on the site by the pollutants specified in Schedule 9. Given the findings of the investigation, the initial conceptual model can be refined conceptual model, and it is presented in Table 7.4. The refined conceptual site model is presented in diagrammatic format in Figure 5 Annex A.

**Table 7.4: Refined Source-Pathway-Receptor Risk Assessment**

Pollutant Linkage	Description	Receptor(s)	Discussion	Pathway Status	Risk Ranking
PL1	Dermal Contact & Ingestion	Humans – Site maintenance workers Site visitors	No evidence of contamination was identified in the site investigation. No contamination was identified above ENVIRON Generic Assessment Criteria (GACs).	Inactive	Low
PL2	Inhalation – dust, particulates and asbestos fibres			Inactive	Low
PL3	Inhalation - vapours			Inactive	Low
PL4	Leaching and migration of contaminants in unsaturated zone to groundwater and surface water.	Controlled Waters (Malta Mean Groundwater Body, Marsaxlokk Bay and Il-Hofra z-Zghira Bay)	No evidence of contamination was identified in the site investigation. Petroleum hydrocarbons were identified in the natural mudstone at one location (BH08). No contamination was identified above ENVIRON Generic Assessment Criteria (GACs) and the risk is considered low.	Inactive	Low
PL5	Migration of contaminated perched water off-site via the surface water drain.	Controlled Waters (Marsaxlokk Bay and Il-Hofra z-Zghira)	No evidence of contamination was identified in the site investigation. No contamination was identified above ENVIRON Generic Assessment Criteria (GACs).	Inactive	Low
PL6	Migration of groundwater in Limestone Aquifer	Controlled Waters (Malta Mean Groundwater Body)	No evidence of contamination was identified in the site investigation. No contamination was identified above ENVIRON Generic Assessment Criteria (GACs). Malta Mean Groundwater Body was not encountered during drilling.	Inactive	Low
PL7	Migration of land gases into buildings and structures.	Built Environment	Migration of gases is likely to be limited by clay. Volatile compounds were not detected at concentrations exceeding the ENVIRON GAC therefore the risk is deemed low.	Inactive	Low

## 8.0 Monitoring Programme and Decommissioning

It is a requirement of the IPPC permit that two years prior to the decommissioning of Delimara Power Station that the operator must submit a Site Closure Report as part of the Decommissioning plan, to the Regulator. The report should provide detail of the soil quality to determine whether any contamination has had an impact on the land during the operational stage of the permitted activities.

If contamination is identified as a result of the permitted activities, the land (site) must be returned to an agreed 'satisfactory state' prior to the permit surrendered.

The outputs of the refined conceptual model (refer Section 7.10) do not identify a significant pollution risk from the concentrations of contaminants measured in soil and rock samples during the current land investigation.

As a result of the initial findings of the land investigation in relation to contamination, it is recommended that as a minimum an additional soil monitoring investigation is undertaken immediately prior to the permit surrender. The investigation should be at least equal in detail to the current investigation, but should also take into account any potential polluting incidents, with the scope modified accordingly in order to satisfy Condition 2.16.2 of the IPPC permit. The investigation is used to determine whether soil contamination has taken place during the operation of the permitted activity in the intervening period. Operational conditions specified within the permit are required to control the release of substances to the environment, with records to be maintained. Such records are required to be submitted as part of the Annual Environmental Review, maintained within the EMS and to be made available for inspection, by the Regulator; however they can also be used to determine the scope of the pre surrender investigation.

There is no requirement for an investigation of the hydrogeological conditions at the site; nor is there a requirement for the installation of monitoring wells or for groundwater sampling and analysis. However a detailed monitoring plan would typically consider groundwater monitoring to assess the potential impacts from site activities, especially in areas of raw material, chemical storage and handling. Generally, a 'decontamination plan' would be expected to address the risk of impacts to all potential receptors, i.e., sensitive water bodies. By excluding a groundwater assessment from this initial study, the risk assessment process may result in uncertainty when fully developing the decontamination plans.

Installation of groundwater wells at selected permanent borehole locations at the initial stage, with an appropriate sampling and testing regime allows for a more robust site monitoring programme to be put in place. By assessing on-going impacts to groundwater during the 'lifetime' of the permitted activities allows for more informed decision making with regard to decommissioning planning.

Should significant contamination be identified as a consequence of the operation of the permitted activities, ENVIRON recommend that land is 'decontaminated' so that concentrations of substances specified in Schedule 9 of the IPPC Permit are below those identified within ENVIRON's Generic Assessment Criteria (GACs) for a generic commercial / industrial land use scenario (unless an alternative land use is identified at the time of surrender). These GACs represent those minimal risk levels, below which there is no perceived risk to human health receptors (GACs are presented in Annex E). Concentrations exceeding the GACs may be considered 'acceptable', however use of such

concentrations for risk assessment purposes would require a further detailed assessment and consultation with MEPA.

## 8.1 Decontamination Plans

During the decontamination process there is the potential for 'contaminative emissions' to impact the atmosphere, land and water (groundwater and sea water). In accordance with Condition 2.16.5.5 of the IPPC Permit, the potential sources of emissions and corresponding mitigation measures required to minimize the likelihood of the emissions, during any generic decontamination process, are summarized in Table 8.1.

Table 8.1: Potential Sources of Emissions and Mitigation Measures		
Environmental Media	Potential Sources	Mitigation Measures
Land	Spillage of potentially polluting substances listed in Table 4.0 during removal of soil / rock, storage containers (e.g. tanks and sumps) and equipment.	Preparation of method statements, management plans, health and safety plans prior to undertaking decontamination, including an emergency response plan.
		Loading of vehicles in an organised manner so as to prevent the spread of substances. Sheeting and cleaning vehicles prior to leaving site, if required. All reasonable and applicable measures taken to prevent the escape of material during transportation.
		Storage of liquids and solids of a potentially hazardous nature (e.g. diesel fuel, oils, solvents) in designated areas, for example on surfaced areas, with appropriate containment measures (e.g. bunding) in place during the decontamination process.
		To prevent cross contamination, segregation of substances (including chemicals, contaminated soil/rock, materials, equipment) into hazardous and non-hazardous.
Water	Spillage of potentially polluting substances listed in Table 4.0 and migration or leaching to groundwater and coastal water	Preparation of method statements, management plans, health and safety plans prior to undertaking decontamination, including an emergency response plan.
		Loading of tankers in an organised manner so as to prevent the spread of contaminants. Sheeting and cleaning vehicles if required, prior to leaving site. All reasonable and applicable measures taken to prevent the escape of material during transportation.
		Where drains are not served by an interceptor, suitable 'drain stops' should be employed to intercept direct run-off from any disturbed areas, or to seal off ingress points to

**Table 8.1: Potential Sources of Emissions and Mitigation Measures**

Environmental Media	Potential Sources	Mitigation Measures
		the system, thereby stopping any potential impact to the overall drainage system, and discharge points.
		Storage of liquids and solids of a potentially hazardous nature (e.g. diesel fuel, oils, solvents) in designated areas, for example on surfaced areas, with appropriate containment measures (e.g. bunding) in place during the decontamination process. Use of dedicated spill kits.
		To prevent cross contamination, segregation of substances (including chemicals, contaminated soil/rock, materials, equipment) into hazardous and non-hazardous.
Atmosphere	Dust generated by the movement of soil.	Appropriate Personal Protective Equipment (PPE) (e.g. dust masks).
		Continuous monitoring of the quality of the atmospheric environment, both on site and at the site boundary.
		Provision of appropriate dust suppression infrastructure (i.e. water sprinklers and sprayers)
		Use of covered trucks for the movement of materials.
	Vapours that may be present in chemical storage containers (i.e. tanks, sumps) and released to the atmosphere when disturbed.	Appropriate Personal Protective Equipment (PPE) (e.g. personal vapour alarms).
		Releasing vapours into open air rather than confined spaces. Ensuring vapour release occurs away from personnel and buildings in a controlled manner.
	Noise	Continuous monitoring of noise, where required and identification of dedicated noise control areas, where standards are exceeded. Provision of appropriate PPE.

## 9.0 Reference Data and Remediation

Reference Data for the site has been collected by this report and these are presented in summary in Annex C. The laboratory testing certificates are presented in Annex D.



## 10.0 Statement of Site Condition

ENVIRON undertook a soil monitoring investigation to satisfy Conditions 1.5.1, 2.16.1, 2.16.3, 2.16.5 (Points 1, 4 and 5) of the IPPC permit. The land investigation comprised the advancement of twenty (20) boreholes to depths of 5m to 10m using solid stem auger rotary drilling techniques to allow the sampling of the soil. Soil samples were tested for the range of substances in Schedule 9 of the IPPC permit.

Laboratory analysis identified low concentrations of metals in all samples. Low concentrations of PAHs, VOCs, SVOCs and EPH were identified in localised areas. All concentrations of contaminants did not exceed ENVIRON's Generic Assessment Criteria (GACs) for a commercial / industrial end use.

Elevated concentrations of petroleum hydrocarbons (i.e. above method detection limit of 35mg/kg) were identified in the natural mudstone between depths of 1.8m and 3.0m bgl at BH08, which suggests there may be localised leakage from a sump. The pollution prevention measures may be inadequate in this area. Concentrations of petroleum hydrocarbons were assessed against the relevant ENVIRON Generic Assessment Criteria and were not found to exceed the values.

The likelihood of their being significant contamination of the land was assessed and no present risk was identified.

As a result of the initial findings of the land investigation in relation to contamination, it is recommended that as a minimum an additional soil monitoring investigation is undertaken immediately prior to the permit surrender. The investigation should be at least equal in detail to the current investigation, but should also take into account any potential polluting incidents, with the scope modified accordingly in order to satisfy Condition 2.16.2 of the IPPC permit. The investigation is used to determine whether soil contamination has taken place during the operation of the permitted activity in the intervening period. Operational conditions specified within the permit are required to control the release of substances to the environment, with records to be maintained. Such records are required to be submitted as part of the Annual Environmental Review, maintained within the EMS and to be made available for inspection, by the Regulator; however they can also be used to determine the scope of the pre surrender investigation.

## **Annex A - Figures**

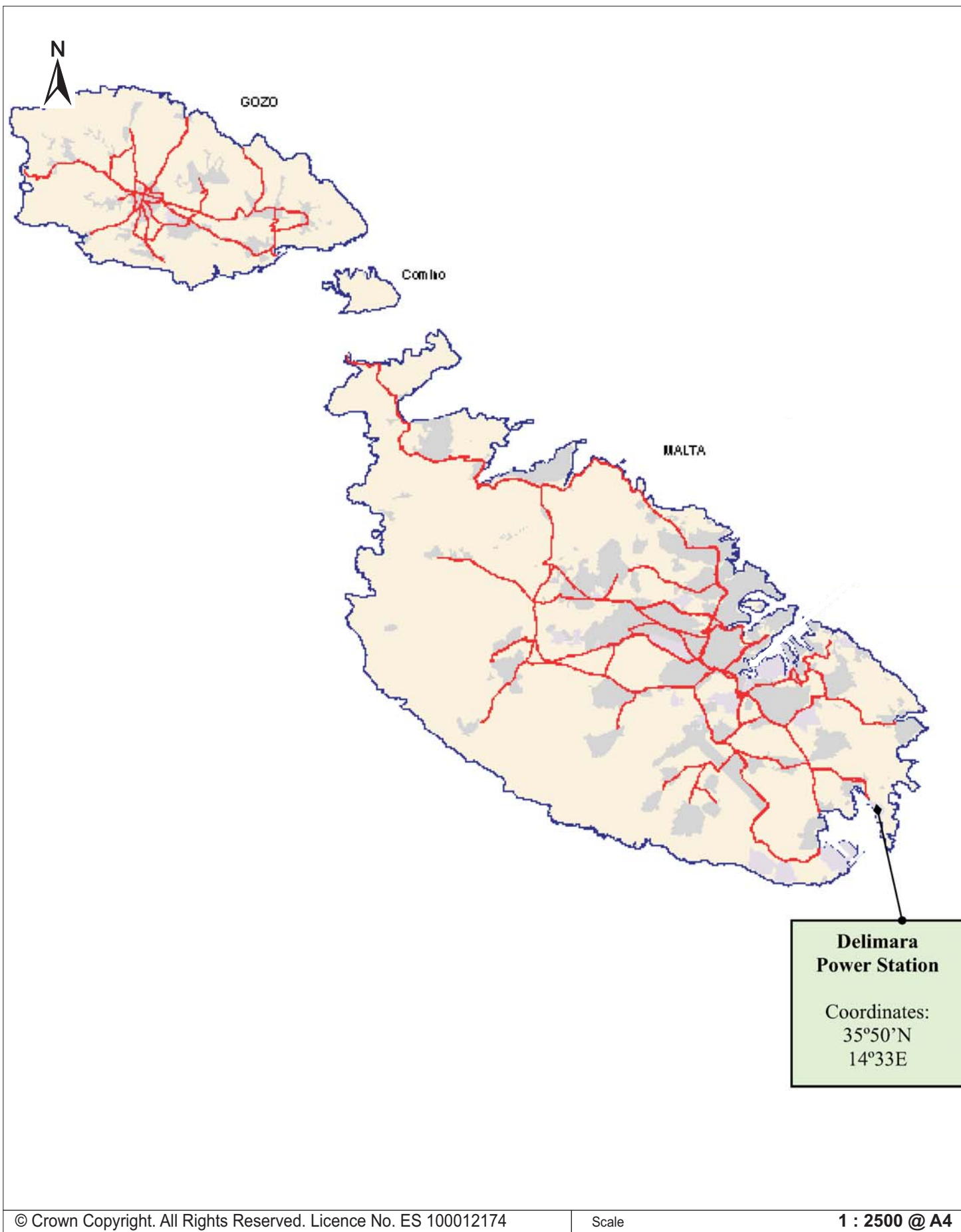
**Figure 1 Site Location**

**Figure 2 Installation Layout and Boundary**

**Figure 3 Proposed Borehole Location Plan**

**Figure 4 Borehole Location Plan as Drilled**

**Figure 5 Conceptual Site Model**



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Scale

1 : 2500 @ A4

Title **Figure 1: Site Location Plan**

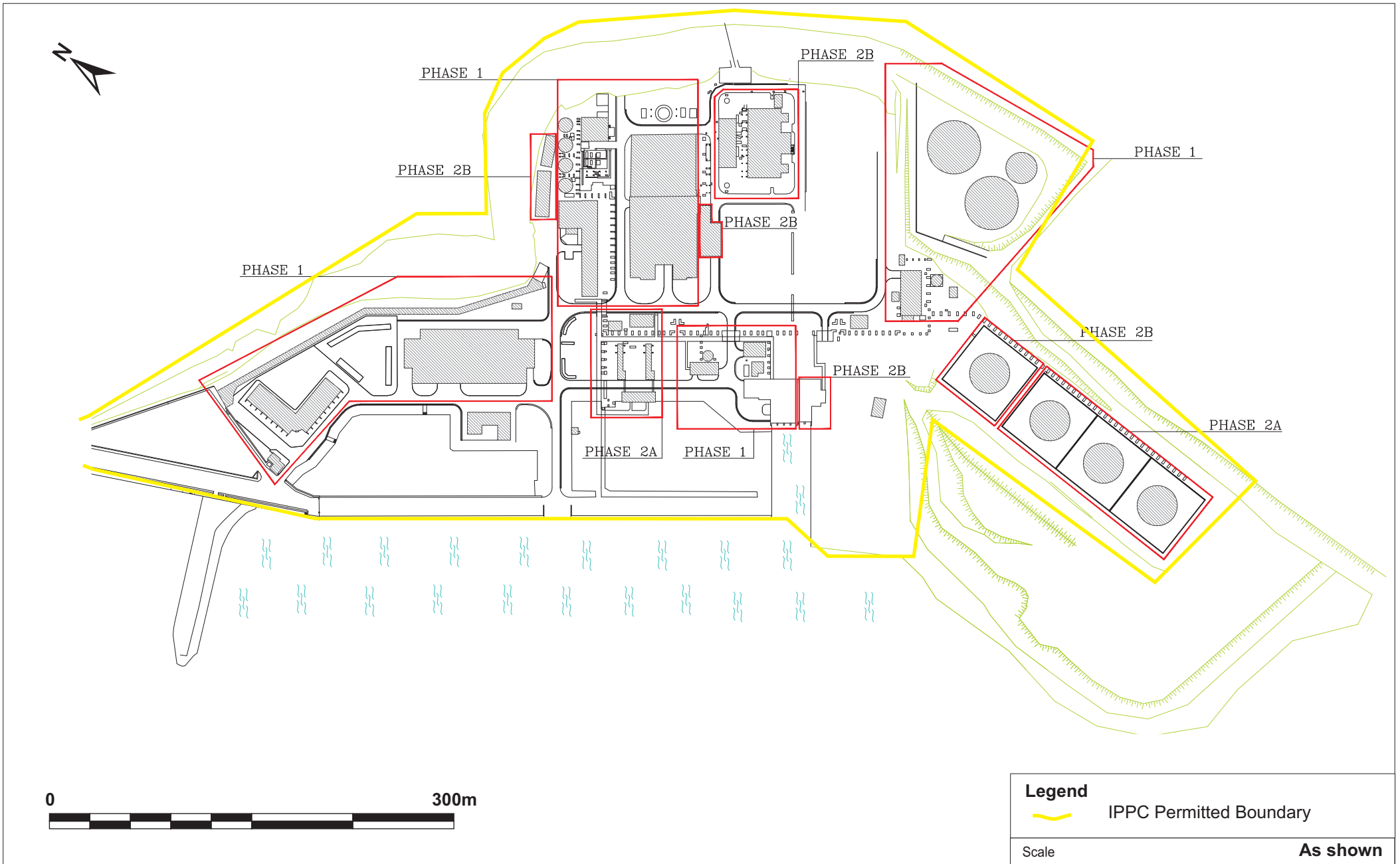
Site **Delimara Power Station  
Enemalta Corporation,  
Delimara,  
Marsaxlokk,  
MXK 1320**

Client **Enemalta Corporation**

Project No. **UK22-16783** Issue **1**

Date **August 2011** Drawn by **CW**

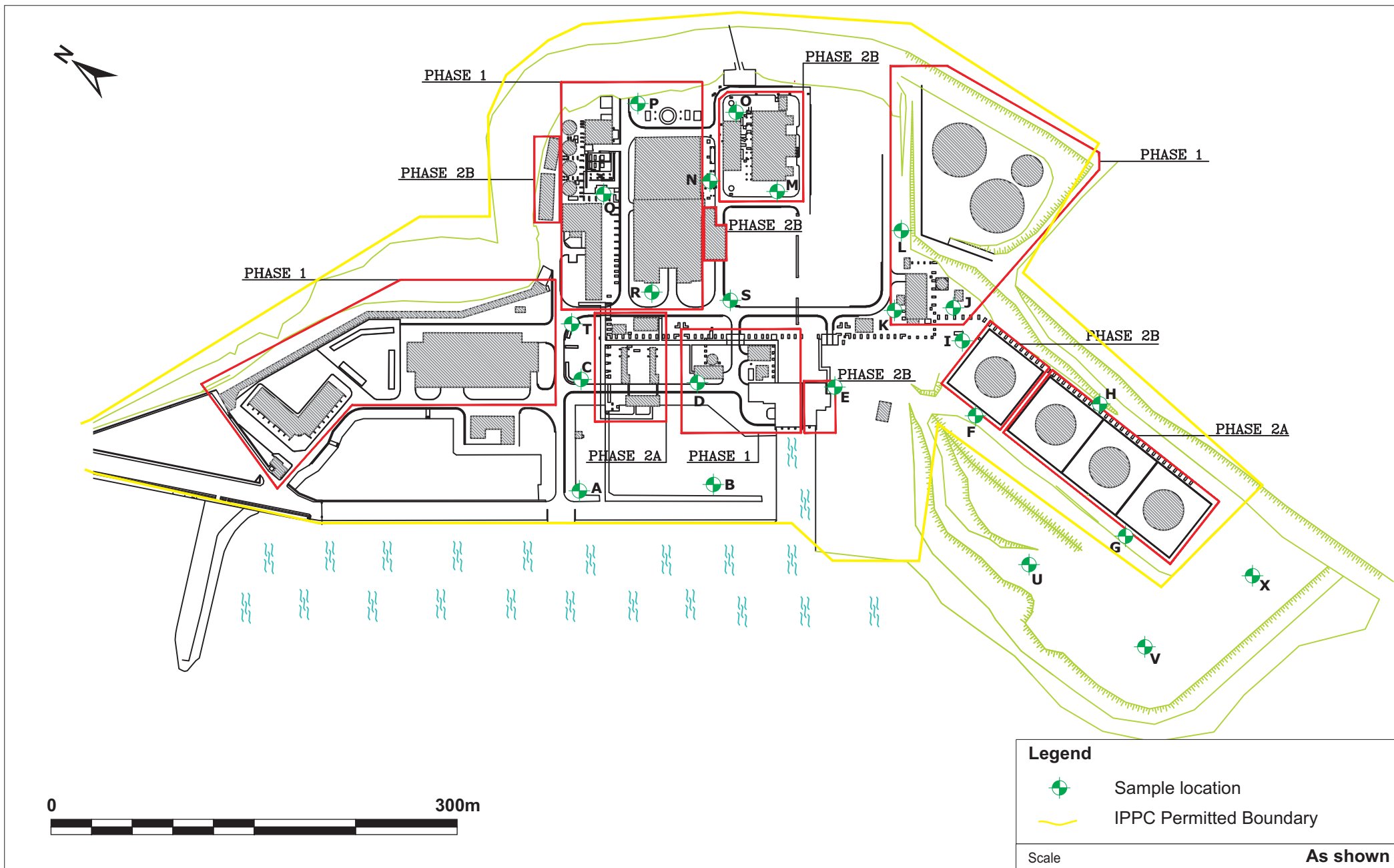
**ENVIRON**



Title	<b>Figure 2: IPPC Installation Boundary</b>
Site	<b>Delimara Power Station</b>

<b>Legend</b>	
	IPPC Permitted Boundary
Scale	<b>As shown</b>

Client	<b>Enemalta Corporation</b>	
Project No.	<b>UK22-16873</b>	Issue <b>1</b>
Date	<b>August 2011</b>	Drawn by <b>MH/DM</b>



ENVIRON

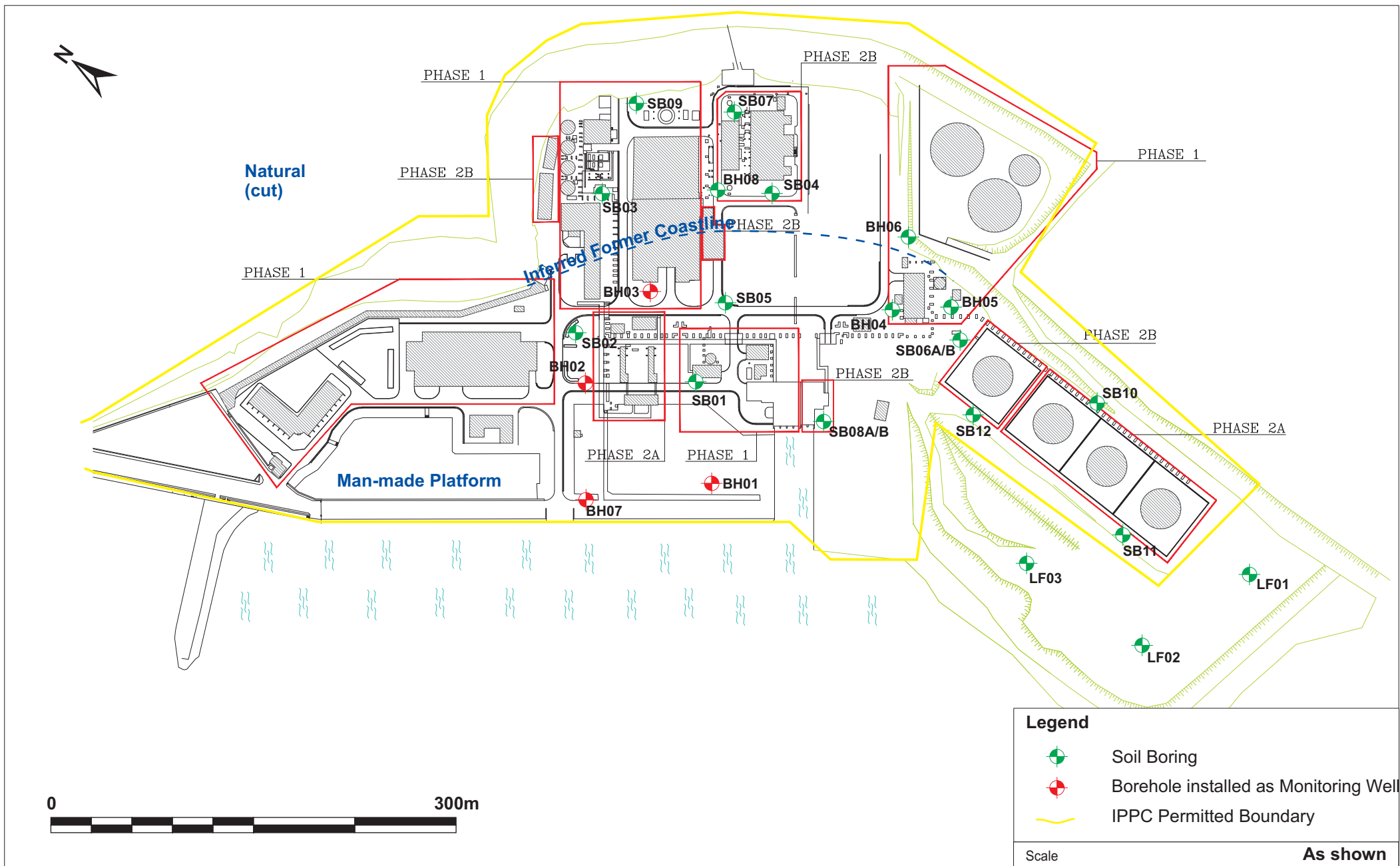
Title **Figure 3: Proposed Sample Location Plan**

Site **Delimara Power Station**

Client **Enemalta Corporation**

Project No. **UK22-16873** Issue **1**

Date **August 2011** Drawn by **MH**



ENVIRON

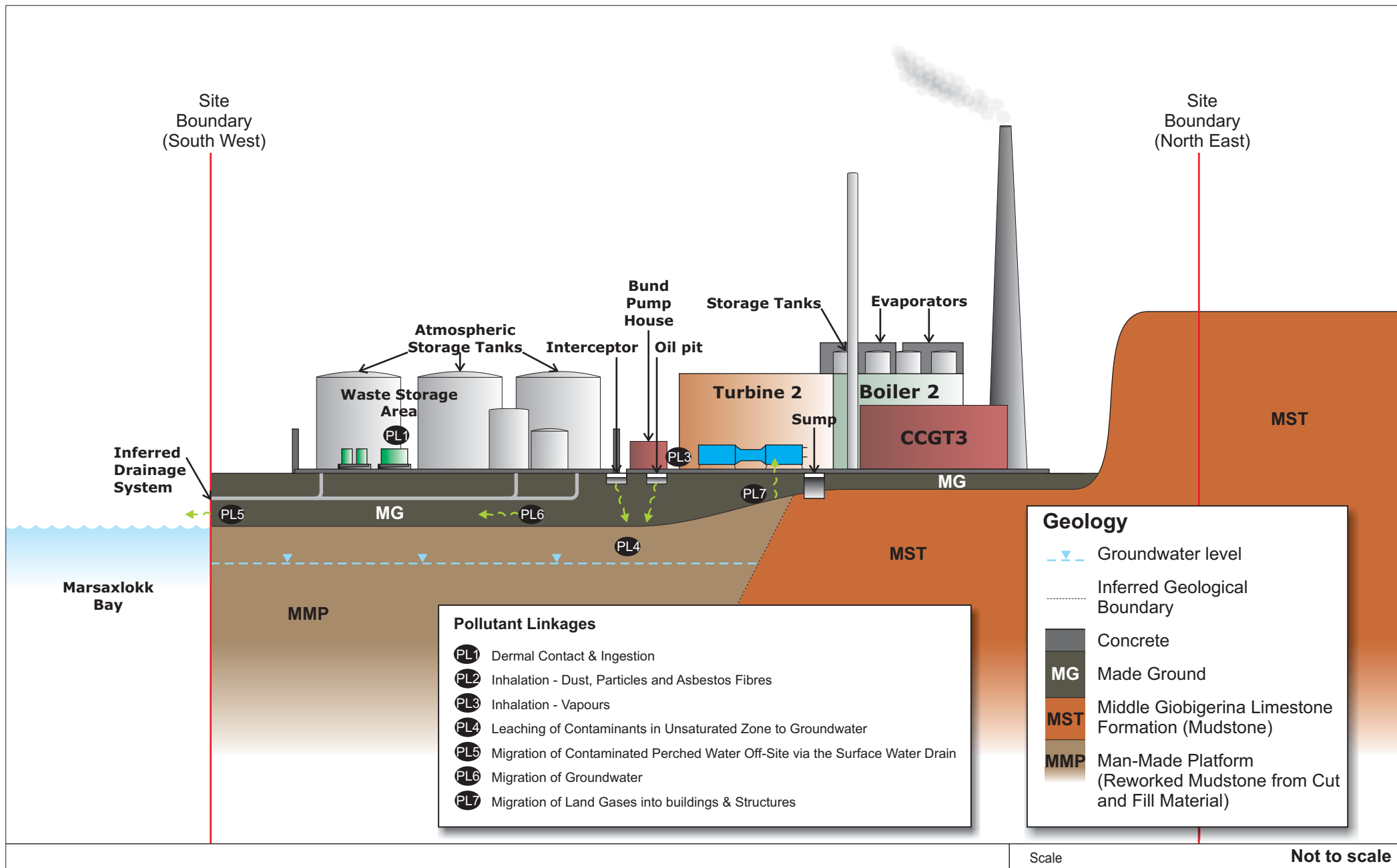
Title **Figure 4: Actual Sample Location Plan**

Site **Delimara Power Station**

Client **Enemalta Corporation**

Project No. **UK22-16873** Issue **1**

Date **August 2011** Drawn by **MH/DM**



## **Annex B – Records of Investigation Findings**

### **B1 Borehole Logs**

### **B2 Photographs**



**Project No:** UK22-16873

**Window Sample:** BH01

**Client:** Enemalta

**Date:** 8th June 2011

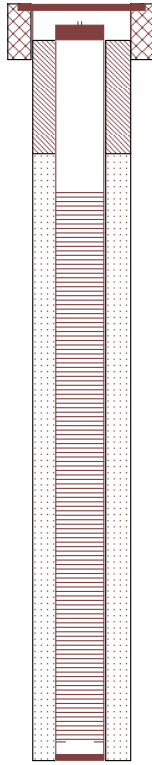
**Location:** Delimara Power Station

**Plant Used:** Beretta T44

**Datum:** 2.11m AOD

**Logged by:** KW

**ENVIRON**

SUBSURFACE PROFILE			SAMPLE			PID Reading ppm 50 150	Well Installation
Depth	Symbol	Description	Elevation	Sample	Lab Analysis		
0.0		Ground Surface	0.00	1			 Dipped water level during drilling
		<b>MADE GROUND</b> Beige slightly silty sandy limestone (recovered as gravel and powder)				2.00	
1.0		<b>MADE GROUND</b> Greyey brown slightly gravelly CLAY (Mudstone). Gravel is fine to medium, angular of mudstone.	-1.00			1.40	
2.0		<b>MADE GROUND</b> Grey greeny brown gravelly slightly silty CLAY (Mudstone).  Strata wet at 3.5m bgl.	-2.00	2		1.30	
3.0						0.90	
4.0						0.60	
5.0		<b>MADE GROUND</b> Greeny grey brown coarse angular gravel of mudstone.	-5.00			2.20	
		5.5 m bgl	-5.50				
6.0							

Remarks:

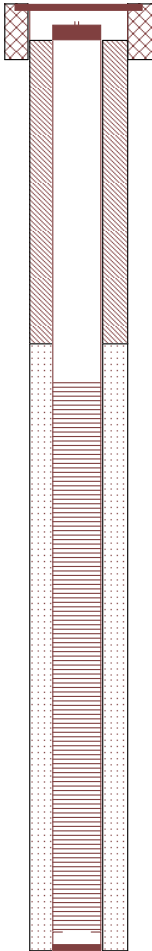
Checked by:

Sheet: 1 of 1

**Datum:** 3.294m ASL

**Logged by:** KW



SUBSURFACE PROFILE			SAMPLE			PID Reading	Well Installation
Depth	Symbol	Description	Elevation	Sample	Lab Analysis		
0.0		Ground Surface	0.00	1			
		<b>MADE GROUND</b> Brown gravelly mudstone (recovered as clay). Gravel is fine to coarse, angular to sub-angular of limestone and mudstone. Rare fibrous plant remains.				0.30	
						0.40	
1.0						0.60	
			-1.75			0.30	
		<b>MADE GROUND</b> Greyey brown slightly gravelly mudstone recovered as clay. Gravel is fine, angular of mudstone.				0.80	
2.0						0.60	
						0.20	
3.0						0.70	
						1.80	
				0.90			
4.0				2			
5.0							
			-5.50				
		5.5 m bgl					
6.0							

Sheet: 1 of 1

**Project No:** UK22-16873

**Window Sample:** BH03

**Client:** Enemalta

**Date:** 13th June 2011

**Location:** Delimara Power Station

**Plant Used:** Beretta T44

**Datum:** 3.21m ASL

**Logged by:** KW

**ENVIRON**

SUBSURFACE PROFILE			SAMPLE			PID Reading 50      ppm      150	Well Installation
Depth	Symbol	Description	Elevation	Sample	Lab Analysis		
0.0		Ground Surface	0.00	1			Borehole backfilled with arisings
		MADE GROUND Concrete	-0.16				
1.0		MADE GROUND Beige becoming greeny brown gravelly clay. Gravel is fine to coarse, angular to sub-rounded of mudstone. Occasional fibrous plant remains.		2		0.00	Dipped water level during drilling
2.0						0.00	
3.0		MADE GROUND Damp beigey brown silty gravelly clay. Gravel is fine to medium, angular to sub-rounded of mudstone.	-2.50			0.20	
4.0						0.50	
5.0		MADE GROUND Beigy brown very silty clay with frequent fibrous plant remains (seagrass). Strong organic odour.	-4.00			0.30	
6.0		5.5 m bgl	-5.50			0.00	

Remarks:

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Sheet: 1 of 1

**Project No:** UK22-16873

**Window Sample:** BH04

**Client:** Enemalta

**Date:** 13th June 2011

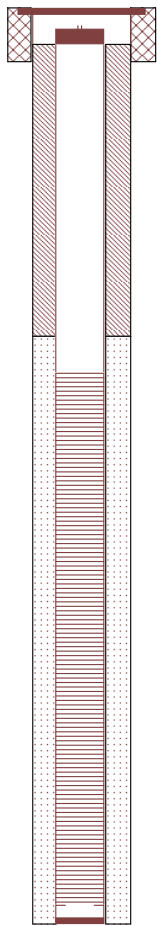
**Location:** Delimara Power Station

**Plant Used:** Beretta T44

**Datum:** 3.32m ASL

**Logged by:** KW

**ENVIRON**

SUBSURFACE PROFILE			SAMPLE			PID Reading ppm 50 150	Well Installation
Depth	Symbol	Description	Elevation	Sample	Lab Analysis		
0.0		Ground Surface	0.00	1			 Dipped water level during drilling
		MADE GROUND Concrete	-0.17				
		MADE GROUND Light brown silty gravelly clay. Gravel s fine to coarse, angular to sub-angular of mudstone and limestone.	-0.50			0.10 0.10	
1.0		MADE GROUND Brown gravelly silty CLAY. Gravel is fine to coarse, angular to sub-angular of mudstone.					
		1.0...clay becoming damp.		2		0.50	
		2.0...concrete slab (0.05m thick).					
2.0		2.5...clay is also cream and silty.				0.50	
						0.10	
3.0						0.10	
			-3.50				
		MADE GROUND Concrete.	-3.65			1.20	
4.0		MADE GROUND Dry brown silty gravelly clay.					
		4.2...becoming damp.					
			-4.75			1.00	
5.0		MADE GROUND Wet greyey brown slightly gravelly silty clay. Frequent fibrous plant remains (seagrass).					
			-6.00			1.10	
6.0		6 m bgl					

Remarks:

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Sheet: 1 of 1

**Project No:** UK22-16873

**Window Sample:** BH05

**Client:** Enemalta

**Date:** 13th June 2011

**Location:** Delimara Power Station

**Plant Used:** Beretta T44

**Datum:** 3.153m ASL

**Logged by:** KW

**ENVIRON**

SUBSURFACE PROFILE			SAMPLE			PID Reading ppm 50 150	Well Installation
Depth	Symbol	Description	Elevation	Sample	Lab Analysis		
0.0		Ground Surface	0.00	1		1.90	Borehole backfilled with arisings
		<b>MADE GROUND</b> Light brown gravelly silty clay and ground limestone. Gravel is fine to coarse, angular to sub-rounded of mudstone and limestone.	-0.30			0.20	
		<b>MADE GROUND</b> Limestone boulder.	-0.50			0.00	
1.0		<b>MADE GROUND</b> Light brown gravelly silty clay and ground limestone. Gravel is fine to coarse, angular to sub-rounded of mudstone and limestone.	-1.00			0.20	
2.0		<b>MADE GROUND</b> Greeny brown gravelly clay (mudstone).  2.0...becoming damp.  3.75...frequent fine organic fibres (likely sea grass).  4.0...clay is saturated.		2		1.60	Dipped water level during drilling
3.0						1.30	
4.0						1.50	
5.0						1.40	
6.0		6 m bgl	-6.00				

Remarks:

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Sheet: 1 of 1

**Project No:** UK22-16873

**Window Sample:** BH06

**Client:** Enemalta

**Date:** 13th to 15th June 2011

**Location:** Delimara Power Station

**Plant Used:** Beretta T44

**Datum:** 3.38m ASL

**Logged by:** KW

**ENVIRON**

SUBSURFACE PROFILE			SAMPLE			PID Reading ppm 50 150	Well Installation
Depth	Symbol	Description	Elevation	Sample	Lab Analysis		
0.0		Ground Surface	0.00	1		0.30	Borehole backfilled with arisings
0.0		<b>MADE GROUND</b> Beige becoming yellowish light brown slightly sandy slightly silty gravelly clay. Gravel is fine to coarse, angular to sub-angular of limestone and mudstone.	-0.70				
1.0		<b>MIDDLE GLOBIGERINA LIMESTONE FORMATION</b> Greenish brownish grey MUDSTONE (recovered as clay and gravel).		2		0.50	
2.0						0.90	
3.0						0.70	
4.0						0.50	
5.0						0.50	
6.0						0.80	
6.0		<b>LIKELY MIDDLE GLOBIGERINA LIMESTONE FORMATION</b> No returns to due rotary open hole drilling with water flush.	-6.00				
7.0							
8.0							
9.0							
10.0			-10.00				
10.0		10 m bgl					

Remarks: No groundwater encountered during drilling

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Sheet: 1 of 1

**Project No:** UK22-16873

**Client:** Enemalta

**Location:** Delimara Power Station

**Datum:**

**Window Sample:** BH06A

**Date:** 9th June 2011

**Plant Used:** Beretta T44

**Logged by:** KW

**ENVIRON**

SUBSURFACE PROFILE			SAMPLE			PID Reading ppm 50 150	Well Installation
Depth	Symbol	Description	Elevation	Sample	Lab Analysis		
0.0		Ground Surface	0.00				Backfilled with arisings
		<b>MADE GROUND</b> Beige becoming brown gravelly sand. Gravel is fine to coarse, angular to sub-rounded of limestone and concrete.				0.40	
						0.10	
1.0						0.30	
		<b>MADE GROUND</b> Greeny grey gravelly clay (possibly reworked mudstone)	-1.25			0.90	
			-1.50			0.50	
		<b>LIKELY MIDDLE GLOBIGERINA LIMESTONE FORMATION</b> Greeny grey MUDSTONE (recovered as clay and gravel).					
2.0							
			-2.75				
		2.75 m bgl					
3.0							

Remarks: Borehole terminated at 2.75m bgl due to limestone obstruction. No groundwater encountered.

Checked by:

Sheet: 1 of 1

**Project No:** UK22-16873

**Client:** Enemalta

**Location:** Delimara Power Station

**Datum:** 3.38m ASL

**Window Sample:** BH06B

**Date:** 9th June 2011

**Plant Used:** Beretta T44

**Logged by:** KW

**ENVIRON**

SUBSURFACE PROFILE			SAMPLE			PID Reading ppm 50 150	Well Installation
Depth	Symbol	Description	Elevation	Sample	Lab Analysis		
0.0		Ground Surface	0.00				Backfilled with arisings  Dipped water level after drilling.
		<b>MADE GROUND</b> Beige becoming brown gravelly sand. Gravel is fine to coarse, angular to sub-rounded of limestone and concrete.				0.40	
						0.10	
1.0			-1.25			0.30	
		<b>MADE GROUND</b> Greeny grey silty gravelly clay (possibly reworked mudstone)	-1.50			0.90	
		<b>LIKELY MIDDLE GLOBIGERINA LIMESTONE FORMATION</b> Greeny grey MUDSTONE (recovered as clay and gravel). 3.5... strata becoming wet				0.50	
2.0							
3.0							
4.0							
5.0							
			-5.50				
		5.5 m bgl					
6.0							

Remarks:

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Sheet: 1 of 1



**Project No:** UK22-16873

**Window Sample:** BH07

**Client:** Enemalta

**Date:** 14th June 2011

**Location:** Delimara Power Station

**Plant Used:** Beretta T44

**Datum:**

**Logged by:** MH

**ENVIRON**

SUBSURFACE PROFILE			SAMPLE			PID Reading ppm 50 150	Well Installation
Depth	Symbol	Description	Elevation	Sample	Lab Analysis		
0.0		Ground Surface	0.00	1		0.50	Borehole backfilled with arisings
		MADE GROUND	-0.15				
		Concrete.	-0.30				
		MADE GROUND		2		0.70	
		Cream and brown sandy gravel of limestone. Occasional concrete cobble.					
1.0		REWORKED MUDSTONE				0.00	
		Soft brown sandy very gravelly CLAY. Gravel is fine to coarse, angular to sub-angular of mudstone, limestone and fragments of tarmac and concrete. Occasional organic material including fibrous plant remains and wood.				0.80	
2.0		Strata becoming damp at 1.5m bgl.	-2.25			0.30	
		REWORKED MUDSTONE				0.60	
		Beige and yellowish brown very gravelly CLAY. Strata wet at 4.5 m bgl.					
3.0						0.90	
4.0							
5.0							
6.0							
		6.5 m bgl	-6.50				

Remarks: Standing groundwater level encountered at 2.27m bgl.

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Sheet: 1 of 1

**Project No:** UK22-16873

**Client:** Enemalta

**Location:** Delimara Power Station

**Datum:** 3.20m ASL

**Window Sample:** BH08

**Date:** 27th June 2011

**Plant Used:** Beretta T44

**Logged by:** MH

**ENVIRON**

SUBSURFACE PROFILE			SAMPLE			PID Reading ppm 50 150	Well Installation
Depth	Symbol	Description	Elevation	Sample	Lab Analysis		
0.0		Ground Surface	0.00	1			Backfilled with arisings
		MADE GROUND	-0.15			0.50	
		Concrete.	-0.30				
		MADE GROUND				0.70	
		Cream and brown sandy gravel of limestone. Occasional concrete cobble.					
1.0		REWORKED MUDSTONE				0.00	
		Soft brown sandy very gravelly CLAY. Gravel is fine to coarse, angular to sub-angular of mudstone, limestone and fragments of tarmac and concrete. Occasional organic material including fibrous plant remains and wood.				0.80	
2.0		Strata becoming damp at 1.5m bgl.	-2.25			0.30	
		REWORKED MUDSTONE		2		0.60	
		Beige and yellowish brown very gravelly CLAY. Strata wet at 4.5 m bgl.					
3.0						0.90	
4.0							
5.0							
6.0							
		6.5 m bgl	-6.50				

Remarks: Groundwater encountered at 2.2m bgl.

Checked by:

Sheet: 1 of 1

**Project No:** UK22-16873

**Window Sample:** SB01

**Client:** Enemalta

**Date:** 8th July 2011

**Location:** Delimara Power Station

**Plant Used:** Beretta T44

**Datum:** 3.14m ASL

**Logged by:** KW

**ENVIRON**

SUBSURFACE PROFILE			SAMPLE			PID Reading ppm 50 150	Well Installation
Depth	Symbol	Description	Elevation	Sample	Lab Analysis		
0.0		Ground Surface	0.00	1			Backfilled with arisings  Dipped water level during drilling
		MADE GROUND Concrete				1.10	
		MADE GROUND Greyey brown black and beige gravel with nodules of clay. Gravel is medium, angular of limestone, tarmac and mudstone.	-0.40			0.90	
			-0.70				
1.0		MADE GROUND Beige medium sub-angular gravel of limestone (Hardcore)	-1.00	2		1.50	
		MADE GROUND Cream limestone (recovered as gravel and powder).				1.50	
2.0		MADE GROUND Greeny grey gravelly CLAY. Gravel is fine, angular of mudstone and occasional limestone. Rare fragments of rubber.	-2.25			1.40	
		MADE GROUND Greeny browny grey gravelly CLAY (recovered as nodules). Gravel is fine to medium, angular of mudstone. Rare fragments of rubber.				2.10	
3.0						1.30	
		Strata becoming wet at 3.75m bgl.				1.80	
		Gravel becoming coarse between 3.75m and 4.0m bgl.				1.10	
4.0							
5.0							
6.0		5.5 m bgl	-5.50				

Remarks:

Checked by:

Sheet: 1 of 1

**Project No:** UK22-16873

**Window Sample:** SB01

**Client:** Enemalta

**Date:** 8th July 2011

**Location:** Delimara Power Station

**Plant Used:** Beretta T44

**Datum:** 3.30m ASL

**Logged by:** KW

**ENVIRON**

SUBSURFACE PROFILE			SAMPLE			PID Reading ppm 50 150	Well Installation
Depth	Symbol	Description	Elevation	Sample	Lab Analysis		
0.0		Ground Surface	0.00	1			Backfilled with arisings  Dipped water level during drilling
		MADE GROUND Concrete				1.10	
		MADE GROUND Greyey brown black and beige gravel with nodules of clay. Gravel is medium, angular of limestone, tarmac and mudstone.	-0.40			0.90	
			-0.70				
1.0		MADE GROUND Beige medium sub-angular gravel of limestone (Hardcore)	-1.00	2		1.50	
		MADE GROUND Cream limestone (recovered as gravel and powder).				1.50	
2.0		MADE GROUND Greeny grey gravelly CLAY. Gravel is fine, angular of mudstone and occasional limestone. Rare fragements of rubber.	-2.25			1.40	
		MADE GROUND Greeny browny grey gravelly CLAY (recovered as nodules). Gravel is fine to medium, angular of mudstone. Rare fragments of rubber.				2.10	
3.0						1.30	
		Strata becoming wet at 3.75m bgl.					
		Gravel becoming coarse between 3.75m and 4.0m bgl.				1.80	
4.0						1.10	
5.0							
6.0		5.5 m bgl	-5.50				

Remarks:

Checked by:

Sheet: 1 of 1

**Project No:** UK22-16873

**Window Sample:** SB03

**Client:** Enemalta

**Date:** 8th July 2011

**Location:** Delimara Power Station

**Plant Used:** Beretta T44

**Datum:** 3.26m ASL

**Logged by:** KW

**ENVIRON**

SUBSURFACE PROFILE			SAMPLE			PID Reading ppm 50 150	Well Installation
Depth	Symbol	Description	Elevation	Sample	Lab Analysis		
0.0		Ground Surface	0.00	1			Backfilled with arisings  Dipped water level during drilling
		MADE GROUND Tarmac	-0.20			0.20	
		MADE GROUND Beigy greyey brown gravelly calcareous clay. Gravel is fine to medium,angular to sub-angular of limestone and mudstone.	-0.40			0.80	
1.0		MADE GROUND Greeny brown clayey gravel of mudstone. Gravel is fine to coarse, sub-angular of mudstone.		2		0.90	
		3.25...becoming damp slightly gravelly clay (recovered as nodules).				0.70	
2.0		3.5...becoming coarse sub-angular gravel of mudstone.				1.10	
		4.25...becoming very clayey gravel of mudstone.				1.40	
3.0						1.60	
4.0						1.90	
5.0						1.70	
		5 m bgl	-5.00				
6.0							

Remarks:

Checked by:

Sheet: 1 of 1

**Project No:** UK22-16873

**Window Sample:** SB04

**Client:** Enemalta

**Date:** 9th June 2011

**Location:** Delimara Power Station

**Plant Used:** Beretta T44

**Datum:** 3.424m ASL

**Logged by:** KW

**ENVIRON**

SUBSURFACE PROFILE			SAMPLE			PID Reading ppm 50 150	Well Installation
Depth	Symbol	Description	Elevation	Sample	Lab Analysis		
0.0		Ground Surface	0.00	1			Backfilled with arisings
		MADE GROUND	-0.15			0.30	
		Concrete					
		MADE GROUND	-0.50			0.70	
		Light greeny grey sandy slightly gravelly CLAY. Gravel is fine to medium, angular of limestone and mudstone.		2		0.40	
1.0		POSSIBLY REWORKED MUDSTONE	-1.00			1.40	
		Light greeny grey sandy slightly gravelly CLAY. Gravel is fine to medium, angular of mudstone				2.50	
		MIDDLE GLOBIGERINA LIMESTONE FORMATION				1.40	
		Greeny grey weathered mudstone (recovered as clay and gravel).				1.40	
2.0						1.00	
3.0						1.80	
4.0						1.00	
5.0							
6.0							
			-6.50				
		6.5 m bgl					
7.0							

Remarks: No groundwater encountered during drilling

Checked by:

Sheet: 1 of 1

**Project No:** UK22-16873

**Client:** Enemalta

**Location:** Delimara Power Station

**Datum:** 3.15m ASL

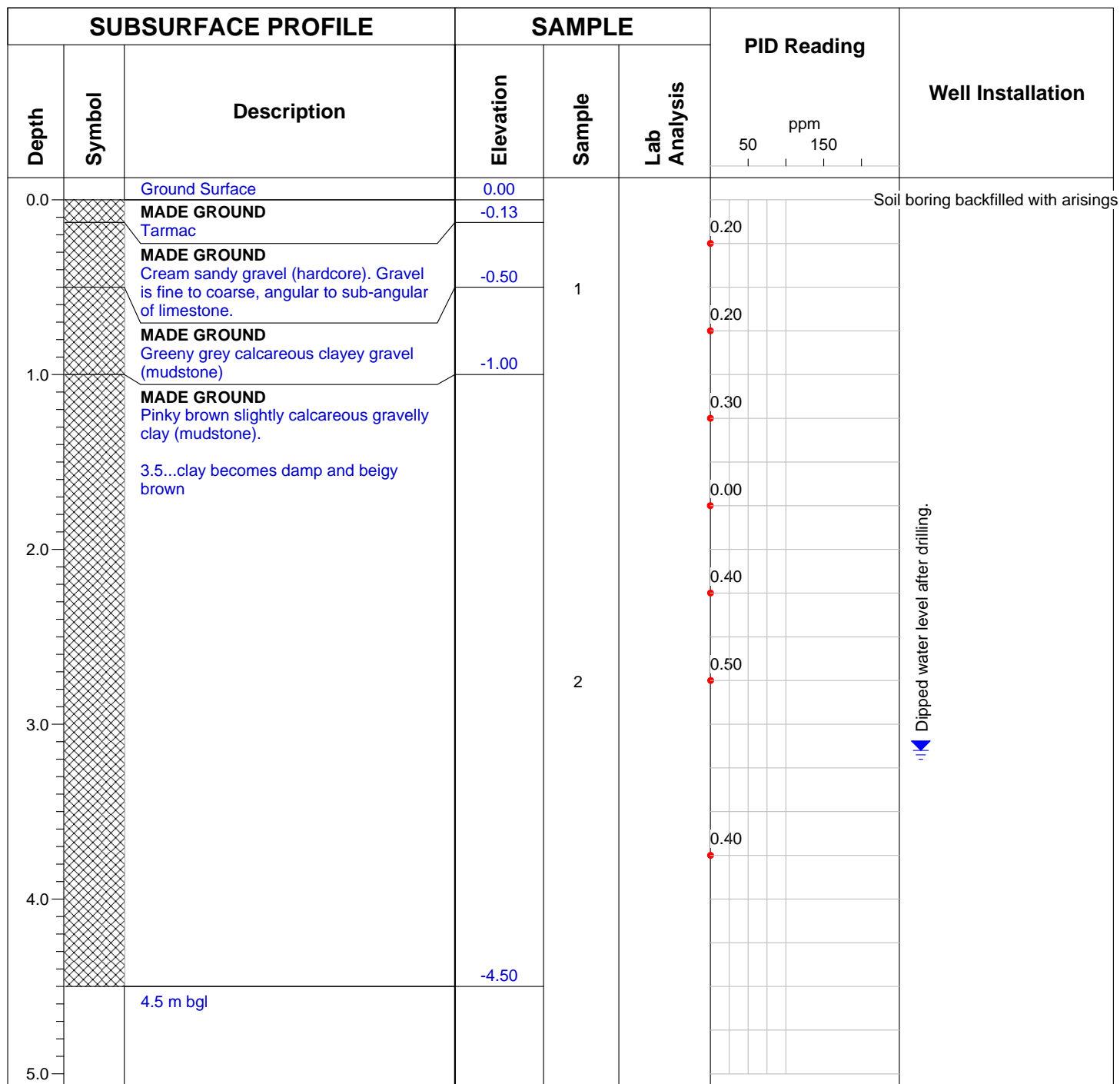
**Window Sample:** SB05

**Date:** 9th June 2011

**Plant Used:** Beretta T44

**Logged by:** KW

**ENVIRON**



Remarks: No groundwater encountered during drilling

Checked by:

Sheet: 1 of 1

**Project No:** UK22-16873

**Window Sample:** SB06A

**Client:** Enemalta

**Date:** 9th June 2011

**Location:** Delimara Power Station

**Plant Used:** Beretta T44

**Datum:**

**Logged by:** KW

**ENVIRON**

SUBSURFACE PROFILE			SAMPLE			PID Reading ppm 50 150	Well Installation
Depth	Symbol	Description	Elevation	Sample	Lab Analysis		
0.0		Ground Surface	0.00				Backfilled with arisings
		<b>MADE GROUND</b> Beige becoming brown calcareous gravelly SAND. Gravel is fine to coarse, angular to sub-rounded of limestone and concrete.				0.40	
						0.10	
1.0						0.30	
		<b>MADE GROUND</b> Greeny grey gravelly clay (likely reworked mudstone).  Becoming slightly damp at 2.5 m bgl.  Limestone obstruction at 2.75m bgl. Borehole abandoned.	-1.25			0.90	
2.0						0.50	
			-2.75				
		2.75 m bgl					
3.0							

Remarks:

Checked by:

Sheet: 1 of 1



**Project No:** UK22-16873

**Window Sample:** SB06B

**Client:** Enemalta

**Date:** 9th June 2011

**Location:** Delimara Power Station

**Plant Used:** Beretta T44

**Datum:**

**Logged by:** KW

**ENVIRON**

SUBSURFACE PROFILE			SAMPLE			PID Reading ppm 50 150	Well Installation
Depth	Symbol	Description	Elevation	Sample	Lab Analysis		
0.0		Ground Surface	0.00	1		0.40	Backfilled with arisings
		<b>MADE GROUND</b> Beige becoming brown calcareous gravelly SAND. Gravel is fine to coarse, angular to sub-rounded of limestone and concrete.					
1.0							
			-1.25				
2.0		<b>MADE GROUND</b> Greeny grey gravelly clay (likely reworked mudstone).  Becoming slightly damp at 2.5 m bgl.  Strata wet at 3.75m bgl.		2		0.60	
3.0							
						0.30	
4.0							
5.0							
			-5.50				
		5.5 m bgl					

Remarks:

Checked by:

Sheet: 1 of 1



**Project No:** UK22-16873

**Window Sample:** SB08A

**Client:** Enemalta

**Date:** 13th June 2011

**Location:** Delimara Power Station

**Plant Used:** Beretta T44

**Datum:** 3.44m ASL

**Logged by:** KW

**ENVIRON**

SUBSURFACE PROFILE			SAMPLE			PID Reading ppm 50 150	Well Installation
Depth	Symbol	Description	Elevation	Sample	Lab Analysis		
0.0		Ground Surface	0.00	1			Borehole backfilled with arisings
		MADE GROUND Cream fine to coarse gravel of limestone	-0.10				
		MADE GROUND Greeny brownish grey gravelly silty clay. Gravel is fine to coarse, angular to sub- rounded of mudstone. Occasional strips of metal (c. 5cm in length) and rare plastic.  1.5...clay becoming damp.				0.90	
						0.10	
1.0						1.10	
2.0				2		0.60	
			-2.50				
		MADE GROUND Reinforced concrete obstruction (thickness not proven). Borehole terminated.  2.5 m bgl					
3.0							

Remarks: Borehole terminated at 2.5m bgl due to reinforced concrete obstruction.

Checked by:

Sheet: 1 of 1

**Project No:** UK22-16873

**Window Sample:** SB08B

**Client:** Enemalta

**Date:** 13th June 2011

**Location:** Delimara Power Station

**Plant Used:** Beretta T44

**Datum:** 3.44m ASL

**Logged by:** KW

**ENVIRON**

SUBSURFACE PROFILE			SAMPLE			PID Reading	Well Installation
Depth	Symbol	Description	Elevation	Sample	Lab Analysis		
0.0		Ground Surface	0.00				Backfilled with arisings
		MADE GROUND	-0.10				
		Cream fine to coarse gravel of limestone					
		MADE GROUND					
		Greeny brown grey gravelly silty clay.					
		Gravel is fine to coarse, angular to sub-					
		rounded of mudstone. Occasional strips					
		of metal (c. 5cm in length) and rare					
		plastic.					
		1.5...clay becoming damp.					
1.0							
2.0							
			-2.50				
		MADE GROUND					
		Reinforced concrete obstruction					
		(thickness not proven). Borehole					
		terminated.					
		2.5 m bgl					
3.0							

Remarks: Borehole terminated at 2.5m bgl due to reinforced concrete obstruction. No groundwater encountered. Checked by:



Photo 1.  
General View of Delimara Power Station  
(Looking North)



Photo 2.  
BH07 – Proposed Location



Photo 3.  
SB04 – Proposed Location



Photo 4.  
SB09 – Proposed Location



Photo 5.  
SB10 - Proposed Location



Photo 6.  
SB12 – Proposed location

**Site:** Delimara Power Station, Malta

**Date:** August 2011

**Client:** Enemalta

**Document Version:** 1



Photo 7.  
Beretta T44 Drilling Rig



Photo 8.  
Beretta T44 Drilling Rig.



Photo 9.  
Arisings from SB02 (0.0 – 5.0m bgl)



Photo 10.  
Arisings from SB04 (0.0m – 2.5m bgl).



Photo 11.  
Arisings from SB04 (0.0m – 6.5m bgl).



Photo 12.  
Arisings from SB05 (0.0m – 4.5m bgl)

**Site:** Delimara Power Station, Malta

**Date:** August 2011

**Client:** Enemalta

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Photo 13.  
Arisings from SB06B (0.0m – 5.5m bgl)



Photo 14.  
SB07 Hand dug service pit to 0.9m bgl



Photo 15.  
Arisings from BH01 (3.0m bgl)



Photo 16  
Arisings from BH01 (5.5m bgl).



Photo 17.  
Arisings from BH02 (0.0m-0.5m bgl)



Photo 18.  
Arisings from LF01 (0.0 – 6.5m bgl)

**Site:** Delimara Power Station, Malta

**Date:** August 2011

**Client:** Enemalta

**Document Version:** 1



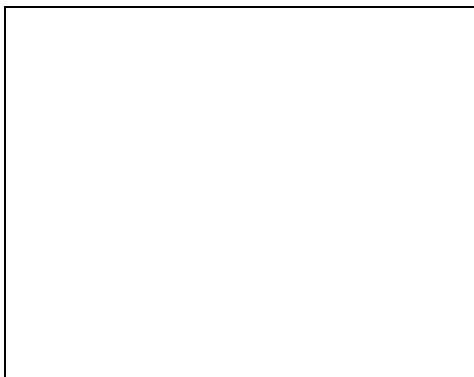
Photo 19.  
Arisings from LF02 (0.0 – 6.0m bgl)



Photo 20.  
Arisings from LF02 (25.4m bgl)



Photo 21.  
Arisings from LF03 (0.0-6.0m bgl)



**Site:** Delimara Power Station, Malta

**Date:** August 2011

**Client:** Enemalta

**Document Version:** 1



## **Annex C – Summary of Analytical Results**

Delimara Power Station Borehole Analytical Results	ENVIRON GAC (Commercial)		SAMPLE ID	DPS-BH01	DPS-BH02	DPS-BH02	DPS-BH03
			DEPTH (m)	0.5	0.5	3.0-3.5	0-0.5
			LOCATION	DPS	DPS	DPS	DPS
			SAMPLE DATE	08/06/2011	08/06/2011	08/06/2011	13/06/2011
Metals		Units	Method				
Antimony	7,550	mg/kg	TM30/PM15	<1	<1	-	<1
Arsenic	635	mg/kg	TM30/PM15	1.4	3	-	2.5
Cadmium	230	mg/kg	TM30/PM15	0.2	0.3	-	0.3
Chromium	35	mg/kg	TM30/PM15	10.5	14.8	-	15.3
Cobalt	NG	mg/kg	TM30/PM15	1.3	2	-	2.1
Copper	71,700	mg/kg	TM30/PM15	10	15	-	12
Lead	750	mg/kg	TM30/PM15	<5	<5	-	9
Manganese	NG	mg/kg	TM30/PM15	42	67	-	60
Mercury	3,640	mg/kg	TM30/PM15	0.4	0.4	-	0.4
Nickel	1,790	mg/kg	TM30/PM15	12.6	15.1	-	15
Selenium	13,000	mg/kg	TM30/PM15	<1	<1	-	<1
Thallium	NG	mg/kg	TM30/PM15	<1	<1	-	<1
Tin	NG	mg/kg	TM30/PM15	<1	<1	-	<1
Vanadium	3,160	mg/kg	TM30/PM15	11	15	-	15
Zinc	665,000	mg/kg	TM30/PM15	31	49	-	52
Inorganics							
Asbestos Screen	N/A	-	Subcontracted	NAD	-	-	NAD
pH	N/A	pH units	TM73/PM11	8.08	8.41	-	8.05
Total Sulphate	N/A	mg/kg	TM50/PM15	2992	3340	-	5213
Fraction of Organic Carbon	N/A	None	TM21/PM24	-	0.01	0.01	-
Sulphide	N/A	mg/kg	Subcontracted	<0.5	<0.5	-	<0.5
PAHs							
Naphthalene	75	mg/kg	TM4/PM8	<0.04	<0.04	-	<0.04
Acenaphthylene	162	mg/kg	TM4/PM8	<0.03	<0.03	-	<0.03
Acenaphthene	56.7	mg/kg	TM4/PM8	<0.05	<0.05	-	<0.05
Fluorene	160	mg/kg	TM4/PM8	<0.04	<0.04	-	<0.04
Phenanthrene	21,900	mg/kg	TM4/PM8	<0.03	<0.03	-	<0.03
Anthracene	522,000	mg/kg	TM4/PM8	<0.04	<0.04	-	<0.04
Fluoranthene	22,600	mg/kg	TM4/PM8	<0.03	<0.03	-	<0.03
Pyrene	54,300	mg/kg	TM4/PM8	<0.03	<0.03	-	<0.03
Benz(a)anthracene	91	mg/kg	TM4/PM8	<0.06	<0.06	-	<0.06
Chrysene	140.0	mg/kg	TM4/PM8	<0.02	<0.02	-	<0.02
Benzo(bk)fluoranthene	102	mg/kg	TM4/PM8	<0.07	<0.07	-	<0.07
Benzo(a)pyrene	14	mg/kg	TM4/PM8	<0.04	<0.04	-	<0.04
Indeno(123cd)pyrene	61.0	mg/kg	TM4/PM8	<0.04	<0.04	-	<0.04
Dibenzo(ah)anthracene	13	mg/kg	TM4/PM8	<0.04	<0.04	-	<0.04
Benzo(ghi)perylene	658	mg/kg	TM4/PM8	<0.04	<0.04	-	<0.04
PAH 16 Total	NG	mg/kg	TM4/PM8	<0.6	<0.6	-	<0.6
Benzo(b)fluoranthene	102	mg/kg	TM4/PM8	<0.05	<0.05	-	<0.05
Benzo(k)fluoranthene	143	mg/kg	TM4/PM8	<0.02	<0.02	-	<0.02
PAH Surrogate % Recovery	N/A	%	TM4/PM8	93	98	-	104
Hydrocarbons							
EPH >C8-C10	N/A	mg/kg	TM5/PM8	<5	<5	-	<5
EPH >C10-C20	N/A	mg/kg	TM5/PM8	<10	<10	-	<10
EPH >C20-C30	N/A	mg/kg	TM5/PM8	36	79	-	<10
EPH >C30-C40	N/A	mg/kg	TM5/PM8	36	226	-	<10
EPH >C8-C40	5,000	mg/kg	TM5/PM8	72	305	-	<35
PCBs							
PCB 28	240.0	ug/kg	TM86/PM8	-	-	-	-
PCB 52	240.0	ug/kg	TM86/PM8	-	-	-	-
PCB 101	240.0	ug/kg	TM86/PM8	-	-	-	-
PCB 118	240.0	ug/kg	TM86/PM8	-	-	-	-
PCB 138	240.0	ug/kg	TM86/PM8	-	-	-	-
PCB 153	240.0	ug/kg	TM86/PM8	-	-	-	-
PCB 180	240.0	ug/kg	TM86/PM8	-	-	-	-
Total 7 PCBs	240	ug/kg	TM86/PM8	-	-	-	-
SVOCs							
2-Chlorophenol	3,590,000	ug/kg	TM16/PM8	-	-	-	-
2-Methylphenol	14,200,000	ug/kg	TM16/PM8	-	-	-	-
2-Nitrophenol	910,597	ug/kg	TM16/PM8	-	-	-	-
2,4-Dichlorophenol	3,530,000	ug/kg	TM16/PM8	-	-	-	-
2,4-Dimethylphenol	1,330,000	ug/kg	TM16/PM8	-	-	-	-
2,4,5-Trichlorophenol	2,300,000	ug/kg	TM16/PM8	-	-	-	-
2,4,6-Trichlorophenol	848,000	ug/kg	TM16/PM8	-	-	-	-

Delimara Power Station Borehole Analytical Results	ENVIRON GAC (Commercial)		SAMPLE ID	DPS-BH03	DPS-BH04	DPS-BH04	DPS-BH05
				DEPTH (m)	0-0.5	3.0-3.5	0-0.5
				LOCATION	DPS	DPS	DPS
				SAMPLE DATE	13/06/2011	13/06/2011	14/06/2011
Metals		Units	Method				
Antimony	7,550	mg/kg	TM30/PM15	<1	<1	<1	<1
Arsenic	635	mg/kg	TM30/PM15	2.5	4.1	2.1	3.3
Cadmium	230	mg/kg	TM30/PM15	0.3	0.6	0.4	0.4
Chromium	35	mg/kg	TM30/PM15	23.8	20.4	23.7	15.9
Cobalt	NG	mg/kg	TM30/PM15	3.5	2.2	2.4	2.8
Copper	71,700	mg/kg	TM30/PM15	16	16	17	15
Lead	750	mg/kg	TM30/PM15	5	11	<5	<5
Manganese	NG	mg/kg	TM30/PM15	87	63	66	72
Mercury	3,640	mg/kg	TM30/PM15	0.4	0.4	0.5	0.4
Nickel	1,790	mg/kg	TM30/PM15	29.2	26.1	25.4	18.7
Selenium	13,000	mg/kg	TM30/PM15	<1	<1	2	<1
Thallium	NG	mg/kg	TM30/PM15	<1	<1	<1	<1
Tin	NG	mg/kg	TM30/PM15	1	2	<1	<1
Vanadium	3,160	mg/kg	TM30/PM15	22	25	19	18
Zinc	665,000	mg/kg	TM30/PM15	59	59	64	48
Inorganics							
Asbestos Screen	N/A	-	Subcontracted	-	-	-	-
pH	N/A	pH units	TM73/PM11	8.51	8.81	7.97	8.26
Total Sulphate	N/A	mg/kg	TM50/PM15	1795	1454	5144	2545
Fraction of Organic Carbon	N/A	None	TM21/PM24	-	-	-	-
Sulphide	N/A	mg/kg	Subcontracted	<0.5	<0.5	<0.5	<0.5
PAHs							
Naphthalene	75	mg/kg	TM4/PM8	<0.04	<0.04	<0.04	<0.04
Acenaphthylene	162	mg/kg	TM4/PM8	<0.03	<0.03	<0.03	<0.03
Acenaphthene	56.7	mg/kg	TM4/PM8	<0.05	<0.05	<0.05	<0.05
Fluorene	160	mg/kg	TM4/PM8	<0.04	<0.04	<0.04	<0.04
Phenanthrene	21,900	mg/kg	TM4/PM8	<0.03	<0.03	<0.03	<0.03
Anthracene	522,000	mg/kg	TM4/PM8	<0.04	<0.04	<0.04	<0.04
Fluoranthene	22,600	mg/kg	TM4/PM8	<0.03	<0.03	<0.03	<0.03
Pyrene	54,300	mg/kg	TM4/PM8	<0.03	<0.03	<0.03	<0.03
Benz(a)anthracene	91	mg/kg	TM4/PM8	<0.06	<0.06	<0.06	<0.06
Chrysene	140.0	mg/kg	TM4/PM8	<0.02	<0.02	0.04	0.02
Benzo(bk)fluoranthene	102	mg/kg	TM4/PM8	<0.07	<0.07	<0.07	<0.07
Benzo(a)pyrene	14	mg/kg	TM4/PM8	<0.04	<0.04	<0.04	<0.04
Indeno(123cd)pyrene	61.0	mg/kg	TM4/PM8	<0.04	<0.04	<0.04	<0.04
Dibenzo(ah)anthracene	13	mg/kg	TM4/PM8	<0.04	<0.04	<0.04	<0.04
Benzo(ghi)perylene	658	mg/kg	TM4/PM8	<0.04	<0.04	<0.04	<0.04
PAH 16 Total	NG	mg/kg	TM4/PM8	<0.6	<0.6	<0.6	<0.6
Benzo(b)fluoranthene	102	mg/kg	TM4/PM8	<0.05	<0.05	<0.05	<0.05
Benzo(k)fluoranthene	143	mg/kg	TM4/PM8	<0.02	<0.02	<0.02	<0.02
PAH Surrogate % Recovery	N/A	%	TM4/PM8	96	96	94	96
Hydrocarbons							
EPH >C8-C10	N/A	mg/kg	TM5/PM8	<5	<5	<5	<5
EPH >C10-C20	N/A	mg/kg	TM5/PM8	<10	<10	<10	<10
EPH >C20-C30	N/A	mg/kg	TM5/PM8	<10	85	<10	<10
EPH >C30-C40	N/A	mg/kg	TM5/PM8	<10	64	<10	<10
EPH >C8-C40	5,000	mg/kg	TM5/PM8	<35	149	<35	<35
PCBs							
PCB 28	240.0	ug/kg	TM86/PM8	-	-	-	-
PCB 52	240.0	ug/kg	TM86/PM8	-	-	-	-
PCB 101	240.0	ug/kg	TM86/PM8	-	-	-	-
PCB 118	240.0	ug/kg	TM86/PM8	-	-	-	-
PCB 138	240.0	ug/kg	TM86/PM8	-	-	-	-
PCB 153	240.0	ug/kg	TM86/PM8	-	-	-	-
PCB 180	240.0	ug/kg	TM86/PM8	-	-	-	-
Total 7 PCBs	240	ug/kg	TM86/PM8	-	-	-	-
SVOCs							
2-Chlorophenol	3,590,000	ug/kg	TM16/PM8	-	-	<10	-
2-Methylphenol	14,200,000	ug/kg	TM16/PM8	-	-	<10	-
2-Nitrophenol	910,597	ug/kg	TM16/PM8	-	-	<10	-
2,4-Dichlorophenol	3,530,000	ug/kg	TM16/PM8	-	-	<10	-
2,4-Dimethylphenol	1,330,000	ug/kg	TM16/PM8	-	-	<10	-
2,4,5-Trichlorophenol	2,300,000	ug/kg	TM16/PM8	-	-	<10	-
2,4,6-Trichlorophenol	848,000	ug/kg	TM16/PM8	-	-	<10	-

Delimara Power Station Borehole Analytical Results	ENVIRON GAC (Commercial)		SAMPLE ID	DPS-BH05	DPS-BH06	DPS-BH06	DPS-BH07
				DEPTH (m)	0-0.5	3.5-4.0	0-0.5
				LOCATION	DPS	DPS	DPS
				SAMPLE DATE	14/06/2011	14/06/2011	14/06/2011
Metals		Units	Method				
Antimony	7,550	mg/kg	TM30/PM15	1	<1	<1	<1
Arsenic	635	mg/kg	TM30/PM15	5.3	3.2	2.2	1
Cadmium	230	mg/kg	TM30/PM15	0.3	0.3	0.4	0.4
Chromium	35	mg/kg	TM30/PM15	20.5	17	21.7	9.3
Cobalt	NG	mg/kg	TM30/PM15	2.8	1.9	2.5	0.6
Copper	71,700	mg/kg	TM30/PM15	17	9	18	5
Lead	750	mg/kg	TM30/PM15	<5	<5	<5	<5
Manganese	NG	mg/kg	TM30/PM15	73	64	69	32
Mercury	3,640	mg/kg	TM30/PM15	0.3	0.4	0.4	0.4
Nickel	1,790	mg/kg	TM30/PM15	22.9	16.1	25.9	4.8
Selenium	13,000	mg/kg	TM30/PM15	1	<1	2	<1
Thallium	NG	mg/kg	TM30/PM15	<1	<1	<1	<1
Tin	NG	mg/kg	TM30/PM15	<1	<1	<1	<1
Vanadium	3,160	mg/kg	TM30/PM15	23	16	20	10
Zinc	665,000	mg/kg	TM30/PM15	55	39	64	13
Inorganics							
Asbestos Screen	N/A	-	Subcontracted	-	-	-	NAD
pH	N/A	pH units	TM73/PM11	8.26	8.39	8.33	8.77
Total Sulphate	N/A	mg/kg	TM50/PM15	1973	1697	1343	915
Fraction of Organic Carbon	N/A	None	TM21/PM24	-	0.003	0.011	-
Sulphide	N/A	mg/kg	Subcontracted	0.8	<0.5	<0.5	<0.5
PAHs							
Naphthalene	75	mg/kg	TM4/PM8	<0.04	<0.04	<0.04	<0.04
Acenaphthylene	162	mg/kg	TM4/PM8	<0.03	<0.03	<0.03	<0.03
Acenaphthene	56.7	mg/kg	TM4/PM8	<0.05	<0.05	<0.05	<0.05
Fluorene	160	mg/kg	TM4/PM8	<0.04	<0.04	<0.04	<0.04
Phenanthrene	21,900	mg/kg	TM4/PM8	<0.03	<0.03	<0.03	0.03
Anthracene	522,000	mg/kg	TM4/PM8	<0.04	<0.04	<0.04	<0.04
Fluoranthene	22,600	mg/kg	TM4/PM8	<0.03	<0.03	<0.03	0.05
Pyrene	54,300	mg/kg	TM4/PM8	<0.03	<0.03	<0.03	0.05
Benz(a)anthracene	91	mg/kg	TM4/PM8	<0.06	<0.06	<0.06	0.09
Chrysene	140.0	mg/kg	TM4/PM8	<0.02	<0.02	<0.02	0.1
Benzo(bk)fluoranthene	102	mg/kg	TM4/PM8	<0.07	<0.07	<0.07	0.18
Benzo(a)pyrene	14	mg/kg	TM4/PM8	<0.04	<0.04	<0.04	0.09
Indeno(123cd)pyrene	61.0	mg/kg	TM4/PM8	<0.04	<0.04	<0.04	0.11
Dibenzo(ah)anthracene	13	mg/kg	TM4/PM8	<0.04	<0.04	<0.04	0.09
Benzo(ghi)perylene	658	mg/kg	TM4/PM8	<0.04	<0.04	<0.04	0.11
PAH 16 Total	NG	mg/kg	TM4/PM8	<0.6	<0.6	<0.6	0.9
Benzo(b)fluoranthene	102	mg/kg	TM4/PM8	<0.05	<0.05	<0.05	0.13
Benzo(k)fluoranthene	143	mg/kg	TM4/PM8	<0.02	<0.02	<0.02	0.05
PAH Surrogate % Recovery	N/A	%	TM4/PM8	96	103	101	100
Hydrocarbons							
EPH >C8-C10	N/A	mg/kg	TM5/PM8	<5	<5	<5	<5
EPH >C10-C20	N/A	mg/kg	TM5/PM8	<10	<10	<10	<10
EPH >C20-C30	N/A	mg/kg	TM5/PM8	<10	<10	<10	<10
EPH >C30-C40	N/A	mg/kg	TM5/PM8	<10	<10	<10	<10
EPH >C8-C40	5,000	mg/kg	TM5/PM8	<35	<35	<35	<35
PCBs							
PCB 28	240.0	ug/kg	TM86/PM8	-	-	-	-
PCB 52	240.0	ug/kg	TM86/PM8	-	-	-	-
PCB 101	240.0	ug/kg	TM86/PM8	-	-	-	-
PCB 118	240.0	ug/kg	TM86/PM8	-	-	-	-
PCB 138	240.0	ug/kg	TM86/PM8	-	-	-	-
PCB 153	240.0	ug/kg	TM86/PM8	-	-	-	-
PCB 180	240.0	ug/kg	TM86/PM8	-	-	-	-
Total 7 PCBs	240	ug/kg	TM86/PM8	-	-	-	-
SVOCs							
2-Chlorophenol	3,590,000	ug/kg	TM16/PM8	<10	-	-	-
2-Methylphenol	14,200,000	ug/kg	TM16/PM8	<10	-	-	-
2-Nitrophenol	910,597	ug/kg	TM16/PM8	<10	-	-	-
2,4-Dichlorophenol	3,530,000	ug/kg	TM16/PM8	<10	-	-	-
2,4-Dimethylphenol	1,330,000	ug/kg	TM16/PM8	<10	-	-	-
2,4,5-Trichlorophenol	2,300,000	ug/kg	TM16/PM8	<10	-	-	-
2,4,6-Trichlorophenol	848,000	ug/kg	TM16/PM8	<10	-	-	-

Delimara Power Station Borehole Analytical Results	ENVIRON GAC (Commercial)		SAMPLE ID	DPS-BH08	BH-08	BH-08
			DEPTH (m)	0-0.5	1.8-2.0	2.8-3.0
			LOCATION	DPS	DPS	DPS
			SAMPLE DATE	14/06/2011	27/06/2011	27/06/2011
Metals		Units	Method			
Antimony	7,550	mg/kg	TM30/PM15	<1	<1	<1
Arsenic	635	mg/kg	TM30/PM15	3.5	4.9	3.5
Cadmium	230	mg/kg	TM30/PM15	0.4	0.4	0.4
Chromium	35	mg/kg	TM30/PM15	18.3	16.6	19.1
Cobalt	NG	mg/kg	TM30/PM15	1.7	1.8	2.6
Copper	71,700	mg/kg	TM30/PM15	10	12	14
Lead	750	mg/kg	TM30/PM15	5	<5	<5
Manganese	NG	mg/kg	TM30/PM15	79	79	72
Mercury	3,640	mg/kg	TM30/PM15	0.3	0.3	0.3
Nickel	1,790	mg/kg	TM30/PM15	20.2	16.9	22
Selenium	13,000	mg/kg	TM30/PM15	<1	<1	<1
Thallium	NG	mg/kg	TM30/PM15	<1	<1	<1
Tin	NG	mg/kg	TM30/PM15	<1	<1	<1
Vanadium	3,160	mg/kg	TM30/PM15	31	16	17
Zinc	665,000	mg/kg	TM30/PM15	54	41	57
Inorganics						
Asbestos Screen	N/A	-	Subcontracted	NAD	-	-
pH	N/A	pH units	TM73/PM11	8.45	8.41	9.04
Total Sulphate	N/A	mg/kg	TM50/PM15	1159	-	-
Fraction of Organic Carbon	N/A	None	TM21/PM24	-	-	-
Sulphide	N/A	mg/kg	Subcontracted	<0.5	0.6	<0.5
PAHs						
Naphthalene	75	mg/kg	TM4/PM8	<0.04	<0.04	<0.04
Acenaphthylene	162	mg/kg	TM4/PM8	<0.03	<0.03	<0.03
Acenaphthene	56.7	mg/kg	TM4/PM8	<0.05	<0.05	<0.05
Fluorene	160	mg/kg	TM4/PM8	<0.04	<0.04	<0.04
Phenanthrene	21,900	mg/kg	TM4/PM8	<0.03	<0.03	<0.03
Anthracene	522,000	mg/kg	TM4/PM8	<0.04	<0.04	<0.04
Fluoranthene	22,600	mg/kg	TM4/PM8	<0.03	<0.03	<0.03
Pyrene	54,300	mg/kg	TM4/PM8	<0.03	<0.03	<0.03
Benz(a)anthracene	91	mg/kg	TM4/PM8	<0.06	<0.06	<0.06
Chrysene	140.0	mg/kg	TM4/PM8	<0.02	<0.02	<0.02
Benzo(bk)fluoranthene	102	mg/kg	TM4/PM8	<0.07	<0.07	<0.07
Benzo(a)pyrene	14	mg/kg	TM4/PM8	<0.04	<0.04	<0.04
Indeno(123cd)pyrene	61.0	mg/kg	TM4/PM8	<0.04	<0.04	<0.04
Dibenzo(ah)anthracene	13	mg/kg	TM4/PM8	<0.04	<0.04	<0.04
Benzo(ghi)perylene	658	mg/kg	TM4/PM8	<0.04	<0.04	<0.04
PAH 16 Total	NG	mg/kg	TM4/PM8	<0.6	<0.6	<0.6
Benzo(b)fluoranthene	102	mg/kg	TM4/PM8	<0.05	<0.05	<0.05
Benzo(k)fluoranthene	143	mg/kg	TM4/PM8	<0.02	<0.02	<0.02
PAH Surrogate % Recovery	N/A	%	TM4/PM8	100	108	119
Hydrocarbons						
EPH >C8-C10	N/A	mg/kg	TM5/PM8	<5	<5	<5
EPH >C10-C20	N/A	mg/kg	TM5/PM8	<10	---	63
EPH >C20-C30	N/A	mg/kg	TM5/PM8	<10	331	41
EPH >C30-C40	N/A	mg/kg	TM5/PM8	<10	<10	<10
EPH >C8-C40	5,000	mg/kg	TM5/PM8	<35	739	104
PCBs						
PCB 28	240.0	ug/kg	TM86/PM8	-	<5	<5
PCB 52	240.0	ug/kg	TM86/PM8	-	<5	<5
PCB 101	240.0	ug/kg	TM86/PM8	-	<5	<5
PCB 118	240.0	ug/kg	TM86/PM8	-	<5	<5
PCB 138	240.0	ug/kg	TM86/PM8	-	<5	<5
PCB 153	240.0	ug/kg	TM86/PM8	-	<5	<5
PCB 180	240.0	ug/kg	TM86/PM8	-	<5	<5
Total 7 PCBs	240	ug/kg	TM86/PM8	-	<35	<35
SVOCs						
2-Chlorophenol	3,590,000	ug/kg	TM16/PM8	-	<10	<10
2-Methylphenol	14,200,000	ug/kg	TM16/PM8	-	<10	<10
2-Nitrophenol	910,597	ug/kg	TM16/PM8	-	<10	<10
2,4-Dichlorophenol	3,530,000	ug/kg	TM16/PM8	-	<10	<10
2,4-Dimethylphenol	1,330,000	ug/kg	TM16/PM8	-	<10	<10
2,4,5-Trichlorophenol	2,300,000	ug/kg	TM16/PM8	-	<10	<10
2,4,6-Trichlorophenol	848,000	ug/kg	TM16/PM8	-	<10	<10

Delimara Power Station Borehole Analytical Results	ENVIRON GAC (Commercial)		SAMPLE ID	DPS-BH01	DPS-BH02	DPS-BH02	DPS-BH03
				DEPTH (m)	0.5	3.0-3.5	0-0.5
				LOCATION	DPS	DPS	DPS
				SAMPLE DATE	08/06/2011	08/06/2011	13/06/2011
Metals		Units	Method				
4-Chloro-3-methylphenol	8,333,156	ug/kg	TM16/PM8	-	-	-	-
4-Methylphenol	25,800,000	ug/kg	TM16/PM8	-	-	-	-
4-Nitrophenol	1,000,000	ug/kg	TM16/PM8	-	-	-	-
Pentachlorophenol	1,230,000	ug/kg	TM16/PM8	-	-	-	-
Phenol	3,200,000	ug/kg	TM16/PM8	-	-	-	-
2-Chloronaphthalene	113,000	ug/kg	TM16/PM8	-	-	-	-
2-Methylnaphthalene	7,148,111	ug/kg	TM16/PM8	-	-	-	-
Bis(2-ethyl-hexyl) phthalate	85,400,000	ug/kg	TM16/PM8	-	-	-	-
Butylbenzyl phthalate	942,000,000	ug/kg	TM16/PM8	-	-	-	-
Di-n-butyl phthalate	12,900	ug/kg	TM16/PM8	-	-	-	-
Di-n-Octyl phthalate	89,100,000	ug/kg	TM16/PM8	-	-	-	-
Diethyl phthalate	109,000	ug/kg	TM16/PM8	-	-	-	-
Dimethyl phthalate	275,000	ug/kg	TM16/PM8	-	-	-	-
1,2-Dichlorobenzene	562,000	ug/kg	TM16/PM8	-	-	-	-
1,2,4-Trichlorobenzene	123,000	ug/kg	TM16/PM8	-	-	-	-
1,3-Dichlorobenzene	177,000	ug/kg	TM16/PM8	-	-	-	-
1,4-Dichlorobenzene	221,000	ug/kg	TM16/PM8	-	-	-	-
2-Nitroaniline	651,305	ug/kg	TM16/PM8	-	-	-	-
2,4-Dinitrotoluene	3,750,000	ug/kg	TM16/PM8	-	-	-	-
2,6-Dinitrotoluene	1,860,000	ug/kg	TM16/PM8	-	-	-	-
3-Nitroaniline	200,000	ug/kg	TM16/PM8	-	-	-	-
4-Bromophenylphenylether	982.8	ug/kg	TM16/PM8	-	-	-	-
4-Chloroaniline	2,300,000	ug/kg	TM16/PM8	-	-	-	-
4-Chlorophenylphenylether	378.3	ug/kg	TM16/PM8	-	-	-	-
4-Nitroaniline	170,000	ug/kg	TM16/PM8	-	-	-	-
Azobenzene	151,511	ug/kg	TM16/PM8	-	-	-	-
Bis(2-chloro-ethoxy)methane	1,301.7	ug/kg	TM16/PM8	-	-	-	-
Bis(2-chloro-ethyl)ether	273.6	ug/kg	TM16/PM8	-	-	-	-
Carbazole	897,000	ug/kg	TM16/PM8	-	-	-	-
Dibenzofuran	6,666,492	ug/kg	TM16/PM8	-	-	-	-
Hexachlorobenzene	199	ug/kg	TM16/PM8	-	-	-	-
Hexachlorobutadiene	17,600	ug/kg	TM16/PM8	-	-	-	-
Hexachlorocyclopentadiene	1,091.3	ug/kg	TM16/PM8	-	-	-	-
Hexachloroethane	8,130	ug/kg	TM16/PM8	-	-	-	-
Isophorone	887,232	ug/kg	TM16/PM8	-	-	-	-
N-nitrosodi-n-propylamine	1,904.9	ug/kg	TM16/PM8	-	-	-	-
Nitrobenzene	131,262	ug/kg	TM16/PM8	-	-	-	-
VOCs							
Dichlorodifluoromethane	1,500,000	ug/kg	TM15/PM10	-	-	-	-
Methyl Tertiary Butyl Ether	-	ug/kg	TM15/PM10	-	-	-	-
Chloromethane	593	ug/kg	TM15/PM10	-	-	-	-
Vinyl Chloride	40.3	ug/kg	TM15/PM10	-	-	-	-
Bromomethane	27,046	ug/kg	TM15/PM10	-	-	-	-
Chloroethane	567,000	ug/kg	TM15/PM10	-	-	-	-
Trichlorofluoromethane	2,200,000	ug/kg	TM15/PM10	-	-	-	-
1,1-Dichloroethene	-	ug/kg	TM15/PM10	-	-	-	-
Dichloromethane	-	ug/kg	TM15/PM10	-	-	-	-
trans-1-2-Dichloroethene	12,300	ug/kg	TM15/PM10	-	-	-	-
1,1-Dichloroethane	148,000	ug/kg	TM15/PM10	-	-	-	-
cis-1-2-Dichloroethene	-	ug/kg	TM15/PM10	-	-	-	-
2,2-Dichloropropane	20,460	ug/kg	TM15/PM10	-	-	-	-
Bromochloromethane	-	ug/kg	TM15/PM10	-	-	-	-
Chloroform	-	ug/kg	TM15/PM10	-	-	-	-
1,1,1-Trichloroethane	391,511	ug/kg	TM15/PM10	-	-	-	-
1,1-Dichloropropene	12,853	ug/kg	TM15/PM10	-	-	-	-
Carbon tetrachloride	1,740	ug/kg	TM15/PM10	-	-	-	-
1,2-Dichloroethane	356	ug/kg	TM15/PM10	-	-	-	-
Benzene	15,826	ug/kg	TM15/PM10	-	-	-	-
Trichloroethene	6,611	ug/kg	TM15/PM10	-	-	-	-
1,2-Dichloropropane	1,720	ug/kg	TM15/PM10	-	-	-	-
Dibromomethane	-	ug/kg	TM15/PM10	-	-	-	-
Bromodichloromethane	1,100	ug/kg	TM15/PM10	-	-	-	-
cis-1-3-Dichloropropene	19,358	ug/kg	TM15/PM10	-	-	-	-
Toluene	835,000	ug/kg	TM15/PM10	-	-	-	-

Delimara Power Station Borehole Analytical Results	ENVIRON GAC (Commercial)		SAMPLE ID	DPS-BH03	DPS-BH04	DPS-BH04	DPS-BH05
				DEPTH (m)	0-0.5	3.0-3.5	0-0.5
				LOCATION	DPS	DPS	DPS
				SAMPLE DATE	13/06/2011	13/06/2011	14/06/2011
Metals		Units	Method				
4-Chloro-3-methylphenol	8,333,156	ug/kg	TM16/PM8	-	-	<10	-
4-Methylphenol	25,800,000	ug/kg	TM16/PM8	-	-	<10	-
4-Nitrophenol	1,000,000	ug/kg	TM16/PM8	-	-	<10	-
Pentachlorophenol	1,230,000	ug/kg	TM16/PM8	-	-	<10	-
Phenol	3,200,000	ug/kg	TM16/PM8	-	-	<10	-
2-Chloronaphthalene	113,000	ug/kg	TM16/PM8	-	-	<10	-
2-Methylnaphthalene	7,148,111	ug/kg	TM16/PM8	-	-	<10	-
Bis(2-ethyl-hexyl) phthalate	85,400,000	ug/kg	TM16/PM8	-	-	<10	-
Butylbenzyl phthalate	942,000,000	ug/kg	TM16/PM8	-	-	<10	-
Di-n-butyl phthalate	12,900	ug/kg	TM16/PM8	-	-	<10	-
Di-n-Octyl phthalate	89,100,000	ug/kg	TM16/PM8	-	-	<10	-
Diethyl phthalate	109,000	ug/kg	TM16/PM8	-	-	<10	-
Dimethyl phthalate	275,000	ug/kg	TM16/PM8	-	-	<10	-
1,2-Dichlorobenzene	562,000	ug/kg	TM16/PM8	-	-	<10	-
1,2,4-Trichlorobenzene	123,000	ug/kg	TM16/PM8	-	-	<10	-
1,3-Dichlorobenzene	177,000	ug/kg	TM16/PM8	-	-	<10	-
1,4-Dichlorobenzene	221,000	ug/kg	TM16/PM8	-	-	<10	-
2-Nitroaniline	651,305	ug/kg	TM16/PM8	-	-	<10	-
2,4-Dinitrotoluene	3,750,000	ug/kg	TM16/PM8	-	-	<10	-
2,6-Dinitrotoluene	1,860,000	ug/kg	TM16/PM8	-	-	<10	-
3-Nitroaniline	200,000	ug/kg	TM16/PM8	-	-	<10	-
4-Bromophenylphenylether	982.8	ug/kg	TM16/PM8	-	-	<10	-
4-Chloroaniline	2,300,000	ug/kg	TM16/PM8	-	-	<10	-
4-Chlorophenylphenylether	378.3	ug/kg	TM16/PM8	-	-	<10	-
4-Nitroaniline	170,000	ug/kg	TM16/PM8	-	-	<10	-
Azobenzene	151,511	ug/kg	TM16/PM8	-	-	<10	-
Bis(2-chloro-ethoxy)methane	1,301.7	ug/kg	TM16/PM8	-	-	<10	-
Bis(2-chloro-ethyl)ether	273.6	ug/kg	TM16/PM8	-	-	<10	-
Carbazole	897,000	ug/kg	TM16/PM8	-	-	<10	-
Dibenzofuran	6,666,492	ug/kg	TM16/PM8	-	-	<10	-
Hexachlorobenzene	199	ug/kg	TM16/PM8	-	-	<10	-
Hexachlorobutadiene	17,600	ug/kg	TM16/PM8	-	-	<10	-
Hexachlorocyclopentadiene	1,091.3	ug/kg	TM16/PM8	-	-	<10	-
Hexachloroethane	8,130	ug/kg	TM16/PM8	-	-	<10	-
Isophorone	887,232	ug/kg	TM16/PM8	-	-	<10	-
N-nitrosodi-n-propylamine	1,904.9	ug/kg	TM16/PM8	-	-	<10	-
Nitrobenzene	131,262	ug/kg	TM16/PM8	-	-	<10	-
VOCs							
Dichlorodifluoromethane	1,500,000	ug/kg	TM15/PM10	-	-	<2	-
Methyl Tertiary Butyl Ether	-	ug/kg	TM15/PM10	-	-	<2	-
Chloromethane	593	ug/kg	TM15/PM10	-	-	<3	-
Vinyl Chloride	40.3	ug/kg	TM15/PM10	-	-	<2	-
Bromomethane	27,046	ug/kg	TM15/PM10	-	-	<1	-
Chloroethane	567,000	ug/kg	TM15/PM10	-	-	<2	-
Trichlorofluoromethane	2,200,000	ug/kg	TM15/PM10	-	-	<2	-
1,1-Dichloroethene	-	ug/kg	TM15/PM10	-	-	<6	-
Dichloromethane	-	ug/kg	TM15/PM10	-	-	<7	-
trans-1-2-Dichloroethene	12,300	ug/kg	TM15/PM10	-	-	<3	-
1,1-Dichloroethane	148,000	ug/kg	TM15/PM10	-	-	<3	-
cis-1-2-Dichloroethene	-	ug/kg	TM15/PM10	-	-	<3	-
2,2-Dichloropropane	20,460	ug/kg	TM15/PM10	-	-	<4	-
Bromochloromethane	-	ug/kg	TM15/PM10	-	-	<3	-
Chloroform	-	ug/kg	TM15/PM10	-	-	<3	-
1,1,1-Trichloroethane	391,511	ug/kg	TM15/PM10	-	-	<3	-
1,1-Dichloropropene	12,853	ug/kg	TM15/PM10	-	-	<3	-
Carbon tetrachloride	1,740	ug/kg	TM15/PM10	-	-	<4	-
1,2-Dichloroethane	356	ug/kg	TM15/PM10	-	-	<4	-
Benzene	15,826	ug/kg	TM15/PM10	-	-	<3	-
Trichloroethene	6,611	ug/kg	TM15/PM10	-	-	<3	-
1,2-Dichloropropane	1,720	ug/kg	TM15/PM10	-	-	<6	-
Dibromomethane	-	ug/kg	TM15/PM10	-	-	<3	-
Bromodichloromethane	1,100	ug/kg	TM15/PM10	-	-	<3	-
cis-1-3-Dichloropropene	19,358	ug/kg	TM15/PM10	-	-	<4	-
Toluene	835,000	ug/kg	TM15/PM10	-	-	<3	-



Delimara Power Station Borehole Analytical Results	ENVIRON GAC (Commercial)		SAMPLE ID	DPS-BH05	DPS-BH06	DPS-BH06	DPS-BH07
				DEPTH (m)	0-0.5	3.5-4.0	0-0.5
				LOCATION	DPS	DPS	DPS
				SAMPLE DATE	14/06/2011	14/06/2011	14/06/2011
Metals		Units	Method				
4-Chloro-3-methylphenol	8,333,156	ug/kg	TM16/PM8	<10	-	-	-
4-Methylphenol	25,800,000	ug/kg	TM16/PM8	<10	-	-	-
4-Nitrophenol	1,000,000	ug/kg	TM16/PM8	<10	-	-	-
Pentachlorophenol	1,230,000	ug/kg	TM16/PM8	<10	-	-	-
Phenol	3,200,000	ug/kg	TM16/PM8	<10	-	-	-
2-Chloronaphthalene	113,000	ug/kg	TM16/PM8	<10	-	-	-
2-Methylnaphthalene	7,148,111	ug/kg	TM16/PM8	<10	-	-	-
Bis(2-ethyl-hexyl) phthalate	85,400,000	ug/kg	TM16/PM8	<10	-	-	-
Butylbenzyl phthalate	942,000,000	ug/kg	TM16/PM8	<10	-	-	-
Di-n-butyl phthalate	12,900	ug/kg	TM16/PM8	<10	-	-	-
Di-n-Octyl phthalate	89,100,000	ug/kg	TM16/PM8	<10	-	-	-
Diethyl phthalate	109,000	ug/kg	TM16/PM8	<10	-	-	-
Dimethyl phthalate	275,000	ug/kg	TM16/PM8	<10	-	-	-
1,2-Dichlorobenzene	562,000	ug/kg	TM16/PM8	<10	-	-	-
1,2,4-Trichlorobenzene	123,000	ug/kg	TM16/PM8	<10	-	-	-
1,3-Dichlorobenzene	177,000	ug/kg	TM16/PM8	<10	-	-	-
1,4-Dichlorobenzene	221,000	ug/kg	TM16/PM8	<10	-	-	-
2-Nitroaniline	651,305	ug/kg	TM16/PM8	<10	-	-	-
2,4-Dinitrotoluene	3,750,000	ug/kg	TM16/PM8	<10	-	-	-
2,6-Dinitrotoluene	1,860,000	ug/kg	TM16/PM8	<10	-	-	-
3-Nitroaniline	200,000	ug/kg	TM16/PM8	<10	-	-	-
4-Bromophenylphenylether	982.8	ug/kg	TM16/PM8	<10	-	-	-
4-Chloroaniline	2,300,000	ug/kg	TM16/PM8	<10	-	-	-
4-Chlorophenylphenylether	378.3	ug/kg	TM16/PM8	<10	-	-	-
4-Nitroaniline	170,000	ug/kg	TM16/PM8	<10	-	-	-
Azobenzene	151,511	ug/kg	TM16/PM8	<10	-	-	-
Bis(2-chloro-ethoxy)methane	1,301.7	ug/kg	TM16/PM8	<10	-	-	-
Bis(2-chloro-ethyl)ether	273.6	ug/kg	TM16/PM8	<10	-	-	-
Carbazole	897,000	ug/kg	TM16/PM8	<10	-	-	-
Dibenzofuran	6,666,492	ug/kg	TM16/PM8	<10	-	-	-
Hexachlorobenzene	199	ug/kg	TM16/PM8	<10	-	-	-
Hexachlorobutadiene	17,600	ug/kg	TM16/PM8	<10	-	-	-
Hexachlorocyclopentadiene	1,091.3	ug/kg	TM16/PM8	<10	-	-	-
Hexachloroethane	8,130	ug/kg	TM16/PM8	<10	-	-	-
Isophorone	887,232	ug/kg	TM16/PM8	<10	-	-	-
N-nitrosodi-n-propylamine	1,904.9	ug/kg	TM16/PM8	<10	-	-	-
Nitrobenzene	131,262	ug/kg	TM16/PM8	<10	-	-	-
VOCs							
Dichlorodifluoromethane	1,500,000	ug/kg	TM15/PM10	<2	-	-	-
Methyl Tertiary Butyl Ether	-	ug/kg	TM15/PM10	<2	-	-	-
Chloromethane	593	ug/kg	TM15/PM10	<3	-	-	-
Vinyl Chloride	40.3	ug/kg	TM15/PM10	<2	-	-	-
Bromomethane	27,046	ug/kg	TM15/PM10	<1	-	-	-
Chloroethane	567,000	ug/kg	TM15/PM10	<2	-	-	-
Trichlorofluoromethane	2,200,000	ug/kg	TM15/PM10	<2	-	-	-
1,1-Dichloroethene	-	ug/kg	TM15/PM10	<6	-	-	-
Dichloromethane	-	ug/kg	TM15/PM10	<7	-	-	-
trans-1-2-Dichloroethene	12,300	ug/kg	TM15/PM10	<3	-	-	-
1,1-Dichloroethane	148,000	ug/kg	TM15/PM10	<3	-	-	-
cis-1-2-Dichloroethene	-	ug/kg	TM15/PM10	<3	-	-	-
2,2-Dichloropropane	20,460	ug/kg	TM15/PM10	<4	-	-	-
Bromochloromethane	-	ug/kg	TM15/PM10	<3	-	-	-
Chloroform	-	ug/kg	TM15/PM10	<3	-	-	-
1,1,1-Trichloroethane	391,511	ug/kg	TM15/PM10	<3	-	-	-
1,1-Dichloropropene	12,853	ug/kg	TM15/PM10	<3	-	-	-
Carbon tetrachloride	1,740	ug/kg	TM15/PM10	<4	-	-	-
1,2-Dichloroethane	356	ug/kg	TM15/PM10	<4	-	-	-
Benzene	15,826	ug/kg	TM15/PM10	<3	-	-	-
Trichloroethene	6,611	ug/kg	TM15/PM10	<3	-	-	-
1,2-Dichloropropane	1,720	ug/kg	TM15/PM10	<6	-	-	-
Dibromomethane	-	ug/kg	TM15/PM10	<3	-	-	-
Bromodichloromethane	1,100	ug/kg	TM15/PM10	<3	-	-	-
cis-1-3-Dichloropropene	19,358	ug/kg	TM15/PM10	<4	-	-	-
Toluene	835,000	ug/kg	TM15/PM10	<3	-	-	-



Delimara Power Station Borehole Analytical Results	ENVIRON GAC (Commercial)		SAMPLE ID	DPS-BH08	BH-08	BH-08
				DEPTH (m)	1.8-2.0	2.8-3.0
				LOCATION	DPS	DPS
				SAMPLE DATE	14/06/2011	27/06/2011
Metals		Units	Method			
4-Chloro-3-methylphenol	8,333,156	ug/kg	TM16/PM8	-	<10	<10
4-Methylphenol	25,800,000	ug/kg	TM16/PM8	-	<10	<10
4-Nitrophenol	1,000,000	ug/kg	TM16/PM8	-	<10	<10
Pentachlorophenol	1,230,000	ug/kg	TM16/PM8	-	<10	<10
Phenol	3,200,000	ug/kg	TM16/PM8	-	<10	<10
2-Chloronaphthalene	113,000	ug/kg	TM16/PM8	-	<10	<10
2-Methylnaphthalene	7,148,111	ug/kg	TM16/PM8	-	57	<10
Bis(2-ethyl-hexyl) phthalate	85,400,000	ug/kg	TM16/PM8	-	<10	<10
Butylbenzyl phthalate	942,000,000	ug/kg	TM16/PM8	-	<10	<10
Di-n-butyl phthalate	12,900	ug/kg	TM16/PM8	-	<10	<10
Di-n-Octyl phthalate	89,100,000	ug/kg	TM16/PM8	-	<10	<10
Diethyl phthalate	109,000	ug/kg	TM16/PM8	-	<10	<10
Dimethyl phthalate	275,000	ug/kg	TM16/PM8	-	<10	<10
1,2-Dichlorobenzene	562,000	ug/kg	TM16/PM8	-	<10	<10
1,2,4-Trichlorobenzene	123,000	ug/kg	TM16/PM8	-	<10	<10
1,3-Dichlorobenzene	177,000	ug/kg	TM16/PM8	-	<10	<10
1,4-Dichlorobenzene	221,000	ug/kg	TM16/PM8	-	<10	<10
2-Nitroaniline	651,305	ug/kg	TM16/PM8	-	<10	<10
2,4-Dinitrotoluene	3,750,000	ug/kg	TM16/PM8	-	<10	<10
2,6-Dinitrotoluene	1,860,000	ug/kg	TM16/PM8	-	<10	<10
3-Nitroaniline	200,000	ug/kg	TM16/PM8	-	<10	<10
4-Bromophenylphenylether	982.8	ug/kg	TM16/PM8	-	<10	<10
4-Chloroaniline	2,300,000	ug/kg	TM16/PM8	-	<10	<10
4-Chlorophenylphenylether	378.3	ug/kg	TM16/PM8	-	<10	<10
4-Nitroaniline	170,000	ug/kg	TM16/PM8	-	<10	<10
Azobenzene	151,511	ug/kg	TM16/PM8	-	<10	<10
Bis(2-chloro-ethoxy)methane	1,301.7	ug/kg	TM16/PM8	-	<10	<10
Bis(2-chloro-ethyl)ether	273.6	ug/kg	TM16/PM8	-	<10	<10
Carbazole	897,000	ug/kg	TM16/PM8	-	<10	<10
Dibenzofuran	6,666,492	ug/kg	TM16/PM8	-	<10	<10
Hexachlorobenzene	199	ug/kg	TM16/PM8	-	<10	<10
Hexachlorobutadiene	17,600	ug/kg	TM16/PM8	-	<10	<10
Hexachlorocyclopentadiene	1,091.3	ug/kg	TM16/PM8	-	<10	<10
Hexachloroethane	8,130	ug/kg	TM16/PM8	-	<10	<10
Isophorone	887,232	ug/kg	TM16/PM8	-	<10	<10
N-nitrosodi-n-propylamine	1,904.9	ug/kg	TM16/PM8	-	<10	<10
Nitrobenzene	131,262	ug/kg	TM16/PM8	-	<10	<10
VOCs						
Dichlorodifluoromethane	1,500,000	ug/kg	TM15/PM10	-	<2	<2
Methyl Tertiary Butyl Ether	-	ug/kg	TM15/PM10	-	<2	<2
Chloromethane	593	ug/kg	TM15/PM10	-	<3	<3
Vinyl Chloride	40.3	ug/kg	TM15/PM10	-	<2	<2
Bromomethane	27,046	ug/kg	TM15/PM10	-	<1	<1
Chloroethane	567,000	ug/kg	TM15/PM10	-	<2	<2
Trichlorofluoromethane	2,200,000	ug/kg	TM15/PM10	-	<2	<2
1,1-Dichloroethene	-	ug/kg	TM15/PM10	-	<6	<6
Dichloromethane	-	ug/kg	TM15/PM10	-	<7	<7
trans-1-2-Dichloroethene	12,300	ug/kg	TM15/PM10	-	<3	<3
1,1-Dichloroethane	148,000	ug/kg	TM15/PM10	-	<3	<3
cis-1-2-Dichloroethene	-	ug/kg	TM15/PM10	-	<3	<3
2,2-Dichloropropane	20,460	ug/kg	TM15/PM10	-	<4	<4
Bromochloromethane	-	ug/kg	TM15/PM10	-	<3	<3
Chloroform	-	ug/kg	TM15/PM10	-	<3	<3
1,1,1-Trichloroethane	391,511	ug/kg	TM15/PM10	-	<3	<3
1,1-Dichloropropene	12,853	ug/kg	TM15/PM10	-	<3	<3
Carbon tetrachloride	1,740	ug/kg	TM15/PM10	-	<4	<4
1,2-Dichloroethane	356	ug/kg	TM15/PM10	-	<4	<4
Benzene	15,826	ug/kg	TM15/PM10	-	<3	<3
Trichloroethene	6,611	ug/kg	TM15/PM10	-	<3	<3
1,2-Dichloropropane	1,720	ug/kg	TM15/PM10	-	<6	<6
Dibromomethane	-	ug/kg	TM15/PM10	-	<3	<3
Bromodichloromethane	1,100	ug/kg	TM15/PM10	-	<3	<3
cis-1-3-Dichloropropene	19,358	ug/kg	TM15/PM10	-	<4	<4
Toluene	835,000	ug/kg	TM15/PM10	-	<3	<3

Delimara Power Station Borehole Analytical Results	ENVIRON GAC (Commercial)		SAMPLE ID	DPS-BH01	DPS-BH02	DPS-BH02	DPS-BH03
			DEPTH (m)	0.5	0.5	3.0-3.5	0-0.5
			LOCATION	DPS	DPS	DPS	DPS
			SAMPLE DATE	08/06/2011	08/06/2011	08/06/2011	13/06/2011
Metals		Units	Method				
trans-1-3-Dichloropropene	12,853	ug/kg	TM15/PM10	-	-	-	-
1,1,2-Trichloroethane	51,100	ug/kg	TM15/PM10	-	-	-	-
Tetrachloroethene	72,200	ug/kg	TM15/PM10	-	-	-	-
1,3-Dichloropropane	12,853	ug/kg	TM15/PM10	-	-	-	-
Dibromochloromethane	-	ug/kg	TM15/PM10	-	-	-	-
1,2-Dibromoethane	-	ug/kg	TM15/PM10	-	-	-	-
Chlorobenzene	32,800	ug/kg	TM15/PM10	-	-	-	-
1,1,1,2-Tetrachloroethane	62,718	ug/kg	TM15/PM10	-	-	-	-
Ethylbenzene	508,000	ug/kg	TM15/PM10	-	-	-	-
p/m-Xylene	564,000	ug/kg	TM15/PM10	-	-	-	-
o-Xylene	467,000	ug/kg	TM15/PM10	-	-	-	-
Styrene	607,000	ug/kg	TM15/PM10	-	-	-	-
Bromoform	417,000	ug/kg	TM15/PM10	-	-	-	-
Isopropylbenzene	753,000	ug/kg	TM15/PM10	-	-	-	-
1,1,2,2-Tetrachloroethane	156,089	ug/kg	TM15/PM10	-	-	-	-
Bromobenzene	-	ug/kg	TM15/PM10	-	-	-	-
1,2,3-Trichloropropane	3143	ug/kg	TM15/PM10	-	-	-	-
Propylbenzene	399000.0	ug/kg	TM15/PM10	-	-	-	-
2-Chlorotoluene	-	ug/kg	TM15/PM10	-	-	-	-
1,3,5-Trimethylbenzene	-	ug/kg	TM15/PM10	-	-	-	-
4-Chlorotoluene	1,418	ug/kg	TM15/PM10	-	-	-	-
tert-Butylbenzene	440,000	ug/kg	TM15/PM10	-	-	-	-
1,2,4-Trimethylbenzene	-	ug/kg	TM15/PM10	-	-	-	-
sec-Butylbenzene	1,300,000	ug/kg	TM15/PM10	-	-	-	-
4-Isopropyltoluene	388,000	ug/kg	TM15/PM10	-	-	-	-
1,3-Dichlorobenzene	17,700	ug/kg	TM15/PM10	-	-	-	-
1,4-Dichlorobenzene	221,000	ug/kg	TM15/PM10	-	-	-	-
n-Butylbenzene	430,000	ug/kg	TM15/PM10	-	-	-	-
1,2-Dichlorobenzene	562,000	ug/kg	TM15/PM10	-	-	-	-
1,2-Dibromo-3-chloropropane	1,037	ug/kg	TM15/PM10	-	-	-	-
1,2,4-Trichlorobenzene	123,000	ug/kg	TM15/PM10	-	-	-	-
Hexachlorobutadiene	17,600	ug/kg	TM15/PM10	-	-	-	-
Naphthalene	75,000	ug/kg	TM15/PM10	-	-	-	-
1,2,3-Trichlorobenzene	56,800	ug/kg	TM15/PM10	-	-	-	-

Delimara Power Station Borehole Analytical Results	ENVIRON GAC (Commercial)		SAMPLE ID	DPS-BH03	DPS-BH04	DPS-BH04	DPS-BH05
			DEPTH (m)	2.5-3.0	0.-0.5	3.0-3.5	0-0.5
			LOCATION	DPS	DPS	DPS	DPS
			SAMPLE DATE	13/06/2011	13/06/2011	13/06/2011	14/06/2011
Metals		Units	Method				
trans-1-3-Dichloropropene	12,853	ug/kg	TM15/PM10	-	-	<3	-
1,1,2-Trichloroethane	51,100	ug/kg	TM15/PM10	-	-	<3	-
Tetrachloroethene	72,200	ug/kg	TM15/PM10	-	-	<3	-
1,3-Dichloropropane	12,853	ug/kg	TM15/PM10	-	-	<3	-
Dibromochloromethane	-	ug/kg	TM15/PM10	-	-	<3	-
1,2-Dibromoethane	-	ug/kg	TM15/PM10	-	-	<3	-
Chlorobenzene	32,800	ug/kg	TM15/PM10	-	-	<3	-
1,1,1,2-Tetrachloroethane	62,718	ug/kg	TM15/PM10	-	-	<3	-
Ethylbenzene	508,000	ug/kg	TM15/PM10	-	-	<3	-
p/m-Xylene	564,000	ug/kg	TM15/PM10	-	-	<6	-
o-Xylene	467,000	ug/kg	TM15/PM10	-	-	<3	-
Styrene	607,000	ug/kg	TM15/PM10	-	-	<3	-
Bromoform	417,000	ug/kg	TM15/PM10	-	-	<3	-
Isopropylbenzene	753,000	ug/kg	TM15/PM10	-	-	<3	-
1,1,2,2-Tetrachloroethane	156,089	ug/kg	TM15/PM10	-	-	<3	-
Bromobenzene	-	ug/kg	TM15/PM10	-	-	<2	-
1,2,3-Trichloropropane	3143	ug/kg	TM15/PM10	-	-	<4	-
Propylbenzene	399000.0	ug/kg	TM15/PM10	-	-	<4	-
2-Chlorotoluene	-	ug/kg	TM15/PM10	-	-	<3	-
1,3,5-Trimethylbenzene	-	ug/kg	TM15/PM10	-	-	<3	-
4-Chlorotoluene	1,418	ug/kg	TM15/PM10	-	-	<3	-
tert-Butylbenzene	440,000	ug/kg	TM15/PM10	-	-	<5	-
1,2,4-Trimethylbenzene	-	ug/kg	TM15/PM10	-	-	<6	-
sec-Butylbenzene	1,300,000	ug/kg	TM15/PM10	-	-	<4	-
4-Isopropyltoluene	388,000	ug/kg	TM15/PM10	-	-	<4	-
1,3-Dichlorobenzene	17,700	ug/kg	TM15/PM10	-	-	<4	-
1,4-Dichlorobenzene	221,000	ug/kg	TM15/PM10	-	-	<4	-
n-Butylbenzene	430,000	ug/kg	TM15/PM10	-	-	<4	-
1,2-Dichlorobenzene	562,000	ug/kg	TM15/PM10	-	-	<4	-
1,2-Dibromo-3-chloropropane	1,037	ug/kg	TM15/PM10	-	-	<4	-
1,2,4-Trichlorobenzene	123,000	ug/kg	TM15/PM10	-	-	<7	-
Hexachlorobutadiene	17,600	ug/kg	TM15/PM10	-	-	<4	-
Naphthalene	75,000	ug/kg	TM15/PM10	-	-	<27	-
1,2,3-Trichlorobenzene	56,800	ug/kg	TM15/PM10	-	-	<7	-

Delimara Power Station Borehole Analytical Results	ENVIRON GAC (Commercial)		SAMPLE ID	DPS-BH05	DPS-BH06	DPS-BH06	DPS-BH07
			DEPTH (m)	3.0-3.5	0-0.5	3.5-4.0	0-0.5
			LOCATION	DPS	DPS	DPS	DPS
			SAMPLE DATE	14/06/2011	14/06/2011	14/06/2011	14/06/2011
Metals		Units	Method				
trans-1-3-Dichloropropene	12,853	ug/kg	TM15/PM10	<3	-	-	-
1,1,2-Trichloroethane	51,100	ug/kg	TM15/PM10	<3	-	-	-
Tetrachloroethene	72,200	ug/kg	TM15/PM10	<3	-	-	-
1,3-Dichloropropane	12,853	ug/kg	TM15/PM10	<3	-	-	-
Dibromochloromethane	-	ug/kg	TM15/PM10	<3	-	-	-
1,2-Dibromoethane	-	ug/kg	TM15/PM10	<3	-	-	-
Chlorobenzene	32,800	ug/kg	TM15/PM10	<3	-	-	-
1,1,1,2-Tetrachloroethane	62,718	ug/kg	TM15/PM10	<3	-	-	-
Ethylbenzene	508,000	ug/kg	TM15/PM10	<3	-	-	-
p/m-Xylene	564,000	ug/kg	TM15/PM10	<6	-	-	-
o-Xylene	467,000	ug/kg	TM15/PM10	<3	-	-	-
Styrene	607,000	ug/kg	TM15/PM10	<3	-	-	-
Bromoform	417,000	ug/kg	TM15/PM10	<3	-	-	-
Isopropylbenzene	753,000	ug/kg	TM15/PM10	<3	-	-	-
1,1,2,2-Tetrachloroethane	156,089	ug/kg	TM15/PM10	<3	-	-	-
Bromobenzene	-	ug/kg	TM15/PM10	<2	-	-	-
1,2,3-Trichloropropane	3143	ug/kg	TM15/PM10	<4	-	-	-
Propylbenzene	399000.0	ug/kg	TM15/PM10	<4	-	-	-
2-Chlorotoluene	-	ug/kg	TM15/PM10	<3	-	-	-
1,3,5-Trimethylbenzene	-	ug/kg	TM15/PM10	<3	-	-	-
4-Chlorotoluene	1,418	ug/kg	TM15/PM10	<3	-	-	-
tert-Butylbenzene	440,000	ug/kg	TM15/PM10	<5	-	-	-
1,2,4-Trimethylbenzene	-	ug/kg	TM15/PM10	<6	-	-	-
sec-Butylbenzene	1,300,000	ug/kg	TM15/PM10	<4	-	-	-
4-Isopropyltoluene	388,000	ug/kg	TM15/PM10	<4	-	-	-
1,3-Dichlorobenzene	17,700	ug/kg	TM15/PM10	<4	-	-	-
1,4-Dichlorobenzene	221,000	ug/kg	TM15/PM10	<4	-	-	-
n-Butylbenzene	430,000	ug/kg	TM15/PM10	<4	-	-	-
1,2-Dichlorobenzene	562,000	ug/kg	TM15/PM10	<4	-	-	-
1,2-Dibromo-3-chloropropane	1,037	ug/kg	TM15/PM10	<4	-	-	-
1,2,4-Trichlorobenzene	123,000	ug/kg	TM15/PM10	<7	-	-	-
Hexachlorobutadiene	17,600	ug/kg	TM15/PM10	<4	-	-	-
Naphthalene	75,000	ug/kg	TM15/PM10	<27	-	-	-
1,2,3-Trichlorobenzene	56,800	ug/kg	TM15/PM10	<7	-	-	-

Delimara Power Station Borehole Analytical Results	ENVIRON GAC (Commercial)		SAMPLE ID	DPS-BH08	BH-08	BH-08
			DEPTH (m)	0-0.5	1.8-2.0	2.8-3.0
			LOCATION	DPS	DPS	DPS
			SAMPLE DATE	14/06/2011	27/06/2011	27/06/2011
Metals		Units	Method			
trans-1-3-Dichloropropene	12,853	ug/kg	TM15/PM10	-	<3	<3
1,1,2-Trichloroethane	51,100	ug/kg	TM15/PM10	-	<3	<3
Tetrachloroethene	72,200	ug/kg	TM15/PM10	-	<3	<3
1,3-Dichloropropane	12,853	ug/kg	TM15/PM10	-	<3	<3
Dibromochloromethane	-	ug/kg	TM15/PM10	-	<3	<3
1,2-Dibromoethane	-	ug/kg	TM15/PM10	-	<3	<3
Chlorobenzene	32,800	ug/kg	TM15/PM10	-	<3	<3
1,1,1,2-Tetrachloroethane	62,718	ug/kg	TM15/PM10	-	<3	<3
Ethylbenzene	508,000	ug/kg	TM15/PM10	-	<3	<3
p/m-Xylene	564,000	ug/kg	TM15/PM10	-	<6+	<6+
o-Xylene	467,000	ug/kg	TM15/PM10	-	<3+	<3+
Styrene	607,000	ug/kg	TM15/PM10	-	<3	<3
Bromoform	417,000	ug/kg	TM15/PM10	-	<3	<3
Isopropylbenzene	753,000	ug/kg	TM15/PM10	-	<3	<3
1,1,2,2-Tetrachloroethane	156,089	ug/kg	TM15/PM10	-	<3	<3
Bromobenzene	-	ug/kg	TM15/PM10	-	<2	<2
1,2,3-Trichloropropane	3143	ug/kg	TM15/PM10	-	<4	<4
Propylbenzene	399000.0	ug/kg	TM15/PM10	-	<4+	<4+
2-Chlorotoluene	-	ug/kg	TM15/PM10	-	<3	<3
1,3,5-Trimethylbenzene	-	ug/kg	TM15/PM10	-	<3	<3
4-Chlorotoluene	1,418	ug/kg	TM15/PM10	-	<3	<3
tert-Butylbenzene	440,000	ug/kg	TM15/PM10	-	<5	<5
1,2,4-Trimethylbenzene	-	ug/kg	TM15/PM10	-	<6	<6
sec-Butylbenzene	1,300,000	ug/kg	TM15/PM10	-	<4	<4
4-Isopropyltoluene	388,000	ug/kg	TM15/PM10	-	<4	<4
1,3-Dichlorobenzene	17,700	ug/kg	TM15/PM10	-	<4	<4
1,4-Dichlorobenzene	221,000	ug/kg	TM15/PM10	-	<4	<4
n-Butylbenzene	430,000	ug/kg	TM15/PM10	-	<4	<4
1,2-Dichlorobenzene	562,000	ug/kg	TM15/PM10	-	<4	<4
1,2-Dibromo-3-chloropropane	1,037	ug/kg	TM15/PM10	-	<4	<4
1,2,4-Trichlorobenzene	123,000	ug/kg	TM15/PM10	-	<7	<7
Hexachlorobutadiene	17,600	ug/kg	TM15/PM10	-	<4	<4
Naphthalene	75,000	ug/kg	TM15/PM10	-	<27	<27
1,2,3-Trichlorobenzene	56,800	ug/kg	TM15/PM10	-	<7	<7

Delimara Power Station Soil Boring Analytical Results	ENVIRON GAC (Commercial)		SAMPLE ID	DPS-SB01	DPS-SB01	DPS-SB02	DPS-SB03
			DEPTH (m)	0-0.5	2.5-3.0	0-0.5	0.5-1.0
			LOCATION	DPS	DPS	DPS	DPS
			SAMPLE DATE	08/06/2011	08/06/2011	08/06/2011	08/06/2011
Metals		Method	Units				
Antimony	7,550	TM30/PM15	mg/kg	<1	<1	<1	<1
Arsenic	635	TM30/PM15	mg/kg	1.2	2.4	2.3	1.9
Cadmium	230	TM30/PM15	mg/kg	0.2	0.4	0.3	0.4
Chromium	35	TM30/PM15	mg/kg	7.8	20	20	19.8
Cobalt	NG	TM30/PM15	mg/kg	0.9	2.6	2.6	2
Copper	71,700	TM30/PM15	mg/kg	12	16	17	18
Lead	750	TM30/PM15	mg/kg	<5	<5	<5	<5
Manganese	NG	TM30/PM15	mg/kg	40	70	71	56
Mercury	3,640	TM30/PM15	mg/kg	0.4	0.3	0.4	0.5
Nickel	1,790	TM30/PM15	mg/kg	6.6	23.2	21.8	24.7
Selenium	13,000	TM30/PM15	mg/kg	<1	1	<1	2
Thallium	NG	TM30/PM15	mg/kg	<1	<1	<1	<1
Tin	NG	TM30/PM15	mg/kg	<1	<1	<1	<1
Vanadium	3,160	TM30/PM15	mg/kg	13	17	18	20
Zinc	665,000	TM30/PM15	mg/kg	17	56	55	53
Inorganics							
Asbestos Screen	N/A	-	Subcontracted	NAD	-	NAD	NAD
pH	N/A	pH units	TM73/PM11	8.35	7.82	8.01	7.97
Total Sulphate	N/A	mg/kg	TM50/PM15	2248	4721	4916	2190
Fraction Organic Carbon	N/A	None	TM21/PM24	-	-	-	0.012
Sulphide	N/A	mg/kg	Subcontracted	<0.5	<0.5	<0.5	1.7
PAHs							
Naphthalene	75	mg/kg	TM4/PM8	<0.40	<0.04	<0.04	<0.04
Acenaphthylene	162	mg/kg	TM4/PM8	<0.30	<0.03	<0.03	<0.03
Acenaphthene	56.7	mg/kg	TM4/PM8	<0.50	<0.05	<0.05	<0.05
Fluorene	160	mg/kg	TM4/PM8	<0.40	<0.04	<0.04	<0.04
Phenanthrene	21,900	mg/kg	TM4/PM8	<0.30	<0.03	<0.03	<0.03
Anthracene	522,000	mg/kg	TM4/PM8	<0.40	<0.04	<0.04	<0.04
Fluoranthene	22,600	mg/kg	TM4/PM8	<0.30	<0.03	<0.03	<0.03
Pyrene	54,300	mg/kg	TM4/PM8	<0.30	<0.03	<0.03	<0.03
Benz(a)anthracene	91	mg/kg	TM4/PM8	<0.60	<0.06	<0.06	<0.06
Chrysene	140.0	mg/kg	TM4/PM8	<0.20	<0.02	<0.02	<0.02
Benzo(bk)fluoranthene	102	mg/kg	TM4/PM8	<0.70	<0.07	<0.07	<0.07
Benzo(a)pyrene	14	mg/kg	TM4/PM8	<0.40	<0.04	<0.04	<0.04
Indeno(123cd)pyrene	61.0	mg/kg	TM4/PM8	<0.40	<0.04	<0.04	<0.04
Dibenzo(ah)anthracene	13	mg/kg	TM4/PM8	<0.40	<0.04	<0.04	<0.04
Benzo(ghi)perylene	658	mg/kg	TM4/PM8	<0.40	<0.04	<0.04	<0.04
PAH 16 Total	NG	mg/kg	TM4/PM8	<6.0	<0.6	<0.6	<0.6
Benzo(b)fluoranthene	102	mg/kg	TM4/PM8	<0.50	<0.05	<0.05	<0.05
Benzo(k)fluoranthene	143	mg/kg	TM4/PM8	<0.20	<0.02	<0.02	<0.02
PAH Surrogate % Recovery	N/A	%	TM4/PM8	101	109	106	100
Hydrocarbons							
EPH >C8-C10	N/A	mg/kg	TM5/PM8	<5	<5	<5	<5
EPH >C10-C20	N/A	mg/kg	TM5/PM8	<10	<10	<10	<10
EPH >C20-C30	N/A	mg/kg	TM5/PM8	88	<10	<10	<10
EPH >C30-C40	N/A	mg/kg	TM5/PM8	549	<10	<10	<10
EPH >C8-C40	5,000	mg/kg	TM5/PM8	637	<35	<35	<35
PCBs							
PCB 28	240.0	ug/kg	TM86/PM8	-	-	-	<5
PCB 52	240.0	ug/kg	TM86/PM8	-	-	-	<5
PCB 101	240.0	ug/kg	TM86/PM8	-	-	-	<5
PCB 118	240.0	ug/kg	TM86/PM8	-	-	-	<5
PCB 138	240.0	ug/kg	TM86/PM8	-	-	-	<5
PCB 153	240.0	ug/kg	TM86/PM8	-	-	-	<5
PCB 180	240.0	ug/kg	TM86/PM8	-	-	-	<5
Total 7 PCBs	240	ug/kg	TM86/PM8	-	-	-	<35
SVOCs							
2-Chlorophenol	3,590,000	ug/kg	TM16/PM8	-	-	-	<10
2-Methylphenol	14,200,000	ug/kg	TM16/PM8	-	-	-	<10
2-Nitrophenol	910,597	ug/kg	TM16/PM8	-	-	-	<10
2,4-Dichlorophenol	3,530,000	ug/kg	TM16/PM8	-	-	-	<10
2,4-Dimethylphenol	1,330,000	ug/kg	TM16/PM8	-	-	-	<10
2,4,5-Trichlorophenol	2,300,000	ug/kg	TM16/PM8	-	-	-	<10
2,4,6-Trichlorophenol	848,000	ug/kg	TM16/PM8	-	-	-	<10
4-Chloro-3-methylphenol	8,333,156	ug/kg	TM16/PM8	-	-	-	<10
4-Methylphenol	25,800,000	ug/kg	TM16/PM8	-	-	-	<10
4-Nitrophenol	1,000,000	ug/kg	TM16/PM8	-	-	-	<10
Pentachlorophenol	1,230,000	ug/kg	TM16/PM8	-	-	-	<10
Phenol	3,200,000	ug/kg	TM16/PM8	-	-	-	<10
2-Chloronaphthalene	113,000	ug/kg	TM16/PM8	-	-	-	<10

Delimara Power Station Soil Boring Analytical Results	ENVIRON GAC (Commercial)		SAMPLE ID	DPS-SB03	DPS-SB04	DPS-SB05	DPS-SB05
			DEPTH (m)	2.0-2.5	0.5-1.0	0.5-1.0	2.5-3.0
			LOCATION	DPS	DPS	DPS	DPS
			SAMPLE DATE	08/06/2011	08/06/2011	08/06/2011	08/06/2011
Metals		Method	Units				
Antimony	7,550	TM30/PM15	mg/kg	<1	<1	<1	<1
Arsenic	635	TM30/PM15	mg/kg	2.4	2	2.4	4
Cadmium	230	TM30/PM15	mg/kg	0.4	0.5	0.3	0.3
Chromium	35	TM30/PM15	mg/kg	22.6	19.2	15.9	17.1
Cobalt	NG	TM30/PM15	mg/kg	2.4	1	2.2	3
Copper	71,700	TM30/PM15	mg/kg	21	8	12	13
Lead	750	TM30/PM15	mg/kg	<5	<5	<5	<5
Manganese	NG	TM30/PM15	mg/kg	62	61	68	95
Mercury	3,640	TM30/PM15	mg/kg	0.3	0.4	0.4	0.4
Nickel	1,790	TM30/PM15	mg/kg	28.4	10.7	18.5	18.5
Selenium	13,000	TM30/PM15	mg/kg	2	<1	<1	<1
Thallium	NG	TM30/PM15	mg/kg	<1	<1	<1	<1
Tin	NG	TM30/PM15	mg/kg	<1	<1	<1	<1
Vanadium	3,160	TM30/PM15	mg/kg	22	11	14	21
Zinc	665,000	TM30/PM15	mg/kg	62	30	41	41
Inorganics							
Asbestos Screen	N/A	-	Subcontracted	-	NAD	NAD	-
pH	N/A	pH units	TM73/PM11	8.22	8.52	8.15	8.28
Total Sulphate	N/A	mg/kg	TM50/PM15	2333	1186	5384	1937
Fraction Organic Carbon	N/A	None	TM21/PM24	0.014	-	-	-
Sulphide	N/A	mg/kg	Subcontracted	1.0	0.6	<0.5	<0.5
PAHs							
Naphthalene	75	mg/kg	TM4/PM8	<0.04	<0.04	<0.04	<0.04
Acenaphthylene	162	mg/kg	TM4/PM8	<0.03	<0.03	<0.03	<0.03
Acenaphthene	56.7	mg/kg	TM4/PM8	<0.05	<0.05	<0.05	<0.05
Fluorene	160	mg/kg	TM4/PM8	<0.04	<0.04	<0.04	<0.04
Phenanthrene	21,900	mg/kg	TM4/PM8	<0.03	<0.03	<0.03	<0.03
Anthracene	522,000	mg/kg	TM4/PM8	<0.04	<0.04	<0.04	<0.04
Fluoranthene	22,600	mg/kg	TM4/PM8	<0.03	<0.03	<0.03	<0.03
Pyrene	54,300	mg/kg	TM4/PM8	<0.03	<0.03	<0.03	<0.03
Benz(a)anthracene	91	mg/kg	TM4/PM8	<0.06	<0.06	<0.06	<0.06
Chrysene	140.0	mg/kg	TM4/PM8	<0.02	<0.02	<0.02	<0.02
Benzo(bk)fluoranthene	102	mg/kg	TM4/PM8	<0.07	<0.07	<0.07	<0.07
Benzo(a)pyrene	14	mg/kg	TM4/PM8	<0.04	<0.04	<0.04	<0.04
Indeno(123cd)pyrene	61.0	mg/kg	TM4/PM8	<0.04	<0.04	<0.04	<0.04
Dibenzo(ah)anthracene	13	mg/kg	TM4/PM8	<0.04	<0.04	<0.04	<0.04
Benzo(ghi)perylene	658	mg/kg	TM4/PM8	<0.04	<0.04	<0.04	<0.04
PAH 16 Total	NG	mg/kg	TM4/PM8	<0.6	<0.6	<0.6	<0.6
Benzo(b)fluoranthene	102	mg/kg	TM4/PM8	<0.05	<0.05	<0.05	<0.05
Benzo(k)fluoranthene	143	mg/kg	TM4/PM8	<0.02	<0.02	<0.02	<0.02
PAH Surrogate % Recovery	N/A	%	TM4/PM8	112	118	124	121
Hydrocarbons							
EPH >C8-C10	N/A	mg/kg	TM5/PM8	<5	<5	<5	<5
EPH >C10-C20	N/A	mg/kg	TM5/PM8	<10	168	<10	<10
EPH >C20-C30	N/A	mg/kg	TM5/PM8	<10	50	<10	<10
EPH >C30-C40	N/A	mg/kg	TM5/PM8	<10	<10	<10	<10
EPH >C8-C40	5,000	mg/kg	TM5/PM8	<35	218	<35	<35
PCBs							
PCB 28	240.0	ug/kg	TM86/PM8	-	<5	<5	-
PCB 52	240.0	ug/kg	TM86/PM8	-	<5	<5	-
PCB 101	240.0	ug/kg	TM86/PM8	-	<5	<5	-
PCB 118	240.0	ug/kg	TM86/PM8	-	<5	<5	-
PCB 138	240.0	ug/kg	TM86/PM8	-	<5	<5	-
PCB 153	240.0	ug/kg	TM86/PM8	-	<5	<5	-
PCB 180	240.0	ug/kg	TM86/PM8	-	<5	<5	-
Total 7 PCBs	240	ug/kg	TM86/PM8	-	<35	<35	-
SVOCs							
2-Chlorophenol	3,590,000	ug/kg	TM16/PM8	-	<10	<10	-
2-Methylphenol	14,200,000	ug/kg	TM16/PM8	-	<10	<10	-
2-Nitrophenol	910,597	ug/kg	TM16/PM8	-	<10	<10	-
2,4-Dichlorophenol	3,530,000	ug/kg	TM16/PM8	-	<10	<10	-
2,4-Dimethylphenol	1,330,000	ug/kg	TM16/PM8	-	<10	<10	-
2,4,5-Trichlorophenol	2,300,000	ug/kg	TM16/PM8	-	<10	<10	-
2,4,6-Trichlorophenol	848,000	ug/kg	TM16/PM8	-	<10	<10	-
4-Chloro-3-methylphenol	8,333,156	ug/kg	TM16/PM8	-	<10	<10	-
4-Methylphenol	25,800,000	ug/kg	TM16/PM8	-	<10	<10	-
4-Nitrophenol	1,000,000	ug/kg	TM16/PM8	-	<10	<10	-
Pentachlorophenol	1,230,000	ug/kg	TM16/PM8	-	<10	<10	-
Phenol	3,200,000	ug/kg	TM16/PM8	-	<10	<10	-
2-Chloronaphthalene	113,000	ug/kg	TM16/PM8	-	<10	<10	-



Delimara Power Station Soil Boring Analytical Results	ENVIRON GAC (Commercial)		SAMPLE ID	DPS-SB06	DPS-SB07	DPS-SB08	SB-09
			DEPTH (m)	0-0.5	0.4	2.0-2.5	0.3-0.5
			LOCATION	DPS	DPS	DPS	DPS
			SAMPLE DATE	08/06/2011	13/06/2011	13/06/2011	27/06/2011
Metals		Method	Units				
Antimony	7,550	TM30/PM15	mg/kg	1	<1	<1	<1
Arsenic	635	TM30/PM15	mg/kg	6.1	2.1	3	2.6
Cadmium	230	TM30/PM15	mg/kg	0.5	0.4	0.4	0.4
Chromium	35	TM30/PM15	mg/kg	17.8	19.1	20.5	19.5
Cobalt	NG	TM30/PM15	mg/kg	3	2.5	2.1	2.6
Copper	71,700	TM30/PM15	mg/kg	17	15	14	15
Lead	750	TM30/PM15	mg/kg	<5	<5	<5	<5
Manganese	NG	TM30/PM15	mg/kg	82	65	77	68
Mercury	3,640	TM30/PM15	mg/kg	0.3	0.4	0.4	0.4
Nickel	1,790	TM30/PM15	mg/kg	24.1	24.4	21.8	34.3
Selenium	13,000	TM30/PM15	mg/kg	2	1	<1	<1
Thallium	NG	TM30/PM15	mg/kg	<1	<1	<1	<1
Tin	NG	TM30/PM15	mg/kg	<1	1	2	<1
Vanadium	3,160	TM30/PM15	mg/kg	19	17	17	53
Zinc	665,000	TM30/PM15	mg/kg	55	53	48	52
Inorganics							
Asbestos Screen	N/A	-	Subcontracted	NAD	-	-	-
pH	N/A	pH units	TM73/PM11	8.03	8.38	8.06	7.96
Total Sulphate	N/A	mg/kg	TM50/PM15	4505	1802	5607	-
Fraction Organic Carbon	N/A	None	TM21/PM24	-	-	-	-
Sulphide	N/A	mg/kg	Subcontracted	<0.5	<0.5	<0.5	<0.5
PAHs							
Naphthalene	75	mg/kg	TM4/PM8	<0.04	<0.04	<0.04	<0.04
Acenaphthylene	162	mg/kg	TM4/PM8	<0.03	<0.03	<0.03	<0.03
Acenaphthene	56.7	mg/kg	TM4/PM8	<0.05	<0.05	<0.05	<0.05
Fluorene	160	mg/kg	TM4/PM8	<0.04	<0.04	<0.04	<0.04
Phenanthrene	21,900	mg/kg	TM4/PM8	0.03	<0.03	<0.03	<0.03
Anthracene	522,000	mg/kg	TM4/PM8	<0.04	<0.04	<0.04	<0.04
Fluoranthene	22,600	mg/kg	TM4/PM8	0.05	<0.03	<0.03	<0.03
Pyrene	54,300	mg/kg	TM4/PM8	0.05	<0.03	<0.03	<0.03
Benz(a)anthracene	91	mg/kg	TM4/PM8	0.07	<0.06	<0.06	<0.06
Chrysene	140.0	mg/kg	TM4/PM8	0.07	<0.02	<0.02	<0.02
Benzo(bk)fluoranthene	102	mg/kg	TM4/PM8	0.17	<0.07	<0.07	<0.07
Benzo(a)pyrene	14	mg/kg	TM4/PM8	0.07	<0.04	<0.04	<0.04
Indeno(123cd)pyrene	61.0	mg/kg	TM4/PM8	0.06	<0.04	<0.04	<0.04
Dibenzo(ah)anthracene	13	mg/kg	TM4/PM8	0.06	<0.04	<0.04	<0.04
Benzo(ghi)perylene	658	mg/kg	TM4/PM8	0.09	<0.04	<0.04	<0.04
PAH 16 Total	NG	mg/kg	TM4/PM8	0.7	<0.6	<0.6	<0.6
Benzo(b)fluoranthene	102	mg/kg	TM4/PM8	0.12	<0.05	<0.05	<0.05
Benzo(k)fluoranthene	143	mg/kg	TM4/PM8	0.05	<0.02	<0.02	<0.02
PAH Surrogate % Recovery	N/A	%	TM4/PM8	117	86	97	103
Hydrocarbons							
EPH >C8-C10	N/A	mg/kg	TM5/PM8	<5	<5	<5	<5
EPH >C10-C20	N/A	mg/kg	TM5/PM8	<10	<10	<10	<10
EPH >C20-C30	N/A	mg/kg	TM5/PM8	<10	<10	<10	<10
EPH >C30-C40	N/A	mg/kg	TM5/PM8	<10	<10	<10	<10
EPH >C8-C40	5,000	mg/kg	TM5/PM8	<35	<35	<35	<35
PCBs							
PCB 28	240.0	ug/kg	TM86/PM8	-	<5	-	-
PCB 52	240.0	ug/kg	TM86/PM8	-	<5	-	-
PCB 101	240.0	ug/kg	TM86/PM8	-	<5	-	-
PCB 118	240.0	ug/kg	TM86/PM8	-	<5	-	-
PCB 138	240.0	ug/kg	TM86/PM8	-	<5	-	-
PCB 153	240.0	ug/kg	TM86/PM8	-	<5	-	-
PCB 180	240.0	ug/kg	TM86/PM8	-	<5	-	-
Total 7 PCBs	240	ug/kg	TM86/PM8	-	<35	-	-
SVOCs							
2-Chlorophenol	3,590,000	ug/kg	TM16/PM8	-	-	-	<10
2-Methylphenol	14,200,000	ug/kg	TM16/PM8	-	-	-	<10
2-Nitrophenol	910,597	ug/kg	TM16/PM8	-	-	-	<10
2,4-Dichlorophenol	3,530,000	ug/kg	TM16/PM8	-	-	-	<10
2,4-Dimethylphenol	1,330,000	ug/kg	TM16/PM8	-	-	-	<10
2,4,5-Trichlorophenol	2,300,000	ug/kg	TM16/PM8	-	-	-	<10
2,4,6-Trichlorophenol	848,000	ug/kg	TM16/PM8	-	-	-	<10
4-Chloro-3-methylphenol	8,333,156	ug/kg	TM16/PM8	-	-	-	<10
4-Methylphenol	25,800,000	ug/kg	TM16/PM8	-	-	-	<10
4-Nitrophenol	1,000,000	ug/kg	TM16/PM8	-	-	-	<10
Pentachlorophenol	1,230,000	ug/kg	TM16/PM8	-	-	-	<10
Phenol	3,200,000	ug/kg	TM16/PM8	-	-	-	<10
2-Chloronaphthalene	113,000	ug/kg	TM16/PM8	-	-	-	<10



Delimara Power Station Soil Boring Analytical Results	ENVIRON GAC (Commercial)		SAMPLE ID	SB-09	SB-10	SB-10-DS	SB-11
			DEPTH (m)	1.3-1.5	2.3-2.5	2.3-2.5	0.3-0.5
			LOCATION	DPS	DPS	DPS	DPS
			SAMPLE DATE	27/06/2011	28/06/2011	28/06/2011	28/06/2011
Metals		Method	Units				
Antimony	7,550	TM30/PM15	mg/kg	<1	<1	<1	<1
Arsenic	635	TM30/PM15	mg/kg	2.3	2.9	2.4	2.4
Cadmium	230	TM30/PM15	mg/kg	0.4	0.4	0.4	0.2
Chromium	35	TM30/PM15	mg/kg	20.7	14.9	13.3	9.8
Cobalt	NG	TM30/PM15	mg/kg	3	2.3	1.8	1.1
Copper	71,700	TM30/PM15	mg/kg	16	12	10	9
Lead	750	TM30/PM15	mg/kg	<5	13	<5	<5
Manganese	NG	TM30/PM15	mg/kg	66	57	50	54
Mercury	3,640	TM30/PM15	mg/kg	0.3	0.4	0.4	0.4
Nickel	1,790	TM30/PM15	mg/kg	23.8	17.1	13.7	10.5
Selenium	13,000	TM30/PM15	mg/kg	<1	<1	<1	<1
Thallium	NG	TM30/PM15	mg/kg	<1	<1	<1	<1
Tin	NG	TM30/PM15	mg/kg	<1	<1	<1	4
Vanadium	3,160	TM30/PM15	mg/kg	17	16	14	8
Zinc	665,000	TM30/PM15	mg/kg	58	43	31	29
Inorganics							
Asbestos Screen	N/A	-	Subcontracted	-	-	-	-
pH	N/A	pH units	TM73/PM11	8.49	8.14	8.15	8.61
Total Sulphate	N/A	mg/kg	TM50/PM15	-	-	-	-
Fraction Organic Carbon	N/A	None	TM21/PM24	-	-	-	-
Sulphide	N/A	mg/kg	Subcontracted	<0.5	<0.5	<0.5	<0.5
PAHs							
Naphthalene	75	mg/kg	TM4/PM8	<0.04	<0.04	<0.04	<0.04
Acenaphthylene	162	mg/kg	TM4/PM8	<0.03	<0.03	<0.03	<0.03
Acenaphthene	56.7	mg/kg	TM4/PM8	<0.05	<0.05	<0.05	<0.05
Fluorene	160	mg/kg	TM4/PM8	<0.04	<0.04	<0.04	<0.04
Phenanthrene	21,900	mg/kg	TM4/PM8	<0.03	<0.03	<0.03	<0.03
Anthracene	522,000	mg/kg	TM4/PM8	<0.04	<0.04	<0.04	<0.04
Fluoranthene	22,600	mg/kg	TM4/PM8	<0.03	<0.03	<0.03	<0.03
Pyrene	54,300	mg/kg	TM4/PM8	<0.03	<0.03	<0.03	<0.03
Benz(a)anthracene	91	mg/kg	TM4/PM8	<0.06	<0.06	<0.06	<0.06
Chrysene	140.0	mg/kg	TM4/PM8	<0.02	<0.02	<0.02	<0.02
Benzo(bk)fluoranthene	102	mg/kg	TM4/PM8	<0.07	<0.07	<0.07	<0.07
Benzo(a)pyrene	14	mg/kg	TM4/PM8	<0.04	<0.04	<0.04	<0.04
Indeno(123cd)pyrene	61.0	mg/kg	TM4/PM8	<0.04	<0.04	<0.04	<0.04
Dibenzo(ah)anthracene	13	mg/kg	TM4/PM8	<0.04	<0.04	<0.04	<0.04
Benzo(ghi)perylene	658	mg/kg	TM4/PM8	<0.04	<0.04	<0.04	<0.04
PAH 16 Total	NG	mg/kg	TM4/PM8	<0.6	<0.6	<0.6	<0.6
Benzo(b)fluoranthene	102	mg/kg	TM4/PM8	<0.05	<0.05	<0.05	<0.05
Benzo(k)fluoranthene	143	mg/kg	TM4/PM8	<0.02	<0.02	<0.02	<0.02
PAH Surrogate % Recovery	N/A	%	TM4/PM8	113	106	102	105
Hydrocarbons							
EPH >C8-C10	N/A	mg/kg	TM5/PM8	<5	<5	<5	<5
EPH >C10-C20	N/A	mg/kg	TM5/PM8	<10	<10	<10	76
EPH >C20-C30	N/A	mg/kg	TM5/PM8	<10	<10	<10	42
EPH >C30-C40	N/A	mg/kg	TM5/PM8	<10	<10	<10	23
EPH >C8-C40	5,000	mg/kg	TM5/PM8	<35	<35	<35	141
PCBs							
PCB 28	240.0	ug/kg	TM86/PM8	<5	<5	-	-
PCB 52	240.0	ug/kg	TM86/PM8	<5	<5	-	-
PCB 101	240.0	ug/kg	TM86/PM8	<5	<5	-	-
PCB 118	240.0	ug/kg	TM86/PM8	<5	<5	-	-
PCB 138	240.0	ug/kg	TM86/PM8	<5	<5	-	-
PCB 153	240.0	ug/kg	TM86/PM8	<5	<5	-	-
PCB 180	240.0	ug/kg	TM86/PM8	<5	<5	-	-
Total 7 PCBs	240	ug/kg	TM86/PM8	<35	<35	-	-
SVOCs							
2-Chlorophenol	3,590,000	ug/kg	TM16/PM8	-	<10	-	-
2-Methylphenol	14,200,000	ug/kg	TM16/PM8	-	<10	-	-
2-Nitrophenol	910,597	ug/kg	TM16/PM8	-	<10	-	-
2,4-Dichlorophenol	3,530,000	ug/kg	TM16/PM8	-	<10	-	-
2,4-Dimethylphenol	1,330,000	ug/kg	TM16/PM8	-	<10	-	-
2,4,5-Trichlorophenol	2,300,000	ug/kg	TM16/PM8	-	<10	-	-
2,4,6-Trichlorophenol	848,000	ug/kg	TM16/PM8	-	<10	-	-
4-Chloro-3-methylphenol	8,333,156	ug/kg	TM16/PM8	-	<10	-	-
4-Methylphenol	25,800,000	ug/kg	TM16/PM8	-	<10	-	-
4-Nitrophenol	1,000,000	ug/kg	TM16/PM8	-	<10	-	-
Pentachlorophenol	1,230,000	ug/kg	TM16/PM8	-	<10	-	-
Phenol	3,200,000	ug/kg	TM16/PM8	-	<10	-	-
2-Chloronaphthalene	113,000	ug/kg	TM16/PM8	-	<10	-	-

Delimara Power Station Soil Boring Analytical Results	ENVIRON GAC (Commercial)		SAMPLE ID	SB-12
			DEPTH (m)	0.8-1.0
			LOCATION	DPS
			SAMPLE DATE	28/06/2011
Metals		Method	Units	
Antimony	7,550	TM30/PM15	mg/kg	<1
Arsenic	635	TM30/PM15	mg/kg	2.8
Cadmium	230	TM30/PM15	mg/kg	0.3
Chromium	35	TM30/PM15	mg/kg	20.6
Cobalt	NG	TM30/PM15	mg/kg	2.8
Copper	71,700	TM30/PM15	mg/kg	14
Lead	750	TM30/PM15	mg/kg	<5
Manganese	NG	TM30/PM15	mg/kg	77
Mercury	3,640	TM30/PM15	mg/kg	0.3
Nickel	1,790	TM30/PM15	mg/kg	22.2
Selenium	13,000	TM30/PM15	mg/kg	4
Thallium	NG	TM30/PM15	mg/kg	<1
Tin	NG	TM30/PM15	mg/kg	<1
Vanadium	3,160	TM30/PM15	mg/kg	17
Zinc	665,000	TM30/PM15	mg/kg	51
Inorganics				
Asbestos Screen	N/A	-	Subcontracted	-
pH	N/A	pH units	TM73/PM11	11.15
Total Sulphate	N/A	mg/kg	TM50/PM15	-
Fraction Organic Carbon	N/A	None	TM21/PM24	-
Sulphide	N/A	mg/kg	Subcontracted	<0.5
PAHs				
Naphthalene	75	mg/kg	TM4/PM8	<0.04
Acenaphthylene	162	mg/kg	TM4/PM8	<0.03
Acenaphthene	56.7	mg/kg	TM4/PM8	<0.05
Fluorene	160	mg/kg	TM4/PM8	<0.04
Phenanthrene	21,900	mg/kg	TM4/PM8	<0.03
Anthracene	522,000	mg/kg	TM4/PM8	<0.04
Fluoranthene	22,600	mg/kg	TM4/PM8	<0.03
Pyrene	54,300	mg/kg	TM4/PM8	<0.03
Benz(a)anthracene	91	mg/kg	TM4/PM8	<0.06
Chrysene	140.0	mg/kg	TM4/PM8	<0.02
Benzo(bk)fluoranthene	102	mg/kg	TM4/PM8	<0.07
Benzo(a)pyrene	14	mg/kg	TM4/PM8	<0.04
Indeno(123cd)pyrene	61.0	mg/kg	TM4/PM8	<0.04
Dibenzo(ah)anthracene	13	mg/kg	TM4/PM8	<0.04
Benzo(ghi)perylene	658	mg/kg	TM4/PM8	<0.04
PAH 16 Total	NG	mg/kg	TM4/PM8	<0.6
Benzo(b)fluoranthene	102	mg/kg	TM4/PM8	<0.05
Benzo(k)fluoranthene	143	mg/kg	TM4/PM8	<0.02
PAH Surrogate % Recovery	N/A	%	TM4/PM8	109
Hydrocarbons				
EPH >C8-C10	N/A	mg/kg	TM5/PM8	<5
EPH >C10-C20	N/A	mg/kg	TM5/PM8	<10
EPH >C20-C30	N/A	mg/kg	TM5/PM8	<10
EPH >C30-C40	N/A	mg/kg	TM5/PM8	<10
EPH >C8-C40	5,000	mg/kg	TM5/PM8	<35
PCBs				
PCB 28	240.0	ug/kg	TM86/PM8	<5
PCB 52	240.0	ug/kg	TM86/PM8	<5
PCB 101	240.0	ug/kg	TM86/PM8	<5
PCB 118	240.0	ug/kg	TM86/PM8	<5
PCB 138	240.0	ug/kg	TM86/PM8	<5
PCB 153	240.0	ug/kg	TM86/PM8	<5
PCB 180	240.0	ug/kg	TM86/PM8	<5
Total 7 PCBs	240	ug/kg	TM86/PM8	<35
SVOCs				
2-Chlorophenol	3,590,000	ug/kg	TM16/PM8	<10
2-Methylphenol	14,200,000	ug/kg	TM16/PM8	<10
2-Nitrophenol	910,597	ug/kg	TM16/PM8	<10
2,4-Dichlorophenol	3,530,000	ug/kg	TM16/PM8	<10
2,4-Dimethylphenol	1,330,000	ug/kg	TM16/PM8	<10
2,4,5-Trichlorophenol	2,300,000	ug/kg	TM16/PM8	<10
2,4,6-Trichlorophenol	848,000	ug/kg	TM16/PM8	<10
4-Chloro-3-methylphenol	8,333,156	ug/kg	TM16/PM8	<10
4-Methylphenol	25,800,000	ug/kg	TM16/PM8	<10
4-Nitrophenol	1,000,000	ug/kg	TM16/PM8	<10
Pentachlorophenol	1,230,000	ug/kg	TM16/PM8	<10
Phenol	3,200,000	ug/kg	TM16/PM8	<10
2-Chloronaphthalene	113,000	ug/kg	TM16/PM8	<10

Delimara Power Station Soil Boring Analytical Results	ENVIRON GAC (Commercial)		SAMPLE ID	DPS-SB01	DPS-SB01	DPS-SB02	DPS-SB03
			DEPTH (m)	0-0.5	2.5-3.0	0-0.5	0.5-1.0
			LOCATION	DPS	DPS	DPS	DPS
			SAMPLE DATE	08/06/2011	08/06/2011	08/06/2011	08/06/2011
Metals		Method	Units				
2-Methylnaphthalene	7,148,111	ug/kg	TM16/PM8	-	-	-	<10
Bis(2-ethylhexyl) phthalate	85,400,000	ug/kg	TM16/PM8	-	-	-	<10
Butylbenzyl phthalate	942,000,000	ug/kg	TM16/PM8	-	-	-	<10
Di-n-butyl phthalate	12,900	ug/kg	TM16/PM8	-	-	-	<10
Di-n-Octyl phthalate	89,100,000	ug/kg	TM16/PM8	-	-	-	<10
Diethyl phthalate	109,000	ug/kg	TM16/PM8	-	-	-	<10
Dimethyl phthalate	275,000	ug/kg	TM16/PM8	-	-	-	<10
1,2-Dichlorobenzene	562,000	ug/kg	TM16/PM8	-	-	-	<10
1,2,4-Trichlorobenzene	123,000	ug/kg	TM16/PM8	-	-	-	<10
1,3-Dichlorobenzene	177,000	ug/kg	TM16/PM8	-	-	-	<10
1,4-Dichlorobenzene	221,000	ug/kg	TM16/PM8	-	-	-	<10
2-Nitroaniline	651,305	ug/kg	TM16/PM8	-	-	-	<10
2,4-Dinitrotoluene	3,750,000	ug/kg	TM16/PM8	-	-	-	<10
2,6-Dinitrotoluene	1,860,000	ug/kg	TM16/PM8	-	-	-	<10
3-Nitroaniline	200,000	ug/kg	TM16/PM8	-	-	-	<10
4-Bromophenylphenylether	982.8	ug/kg	TM16/PM8	-	-	-	<10
4-Chloroaniline	2,300,000	ug/kg	TM16/PM8	-	-	-	<10
4-Chlorophenylphenylether	378.3	ug/kg	TM16/PM8	-	-	-	<10
4-Nitroaniline	170,000	ug/kg	TM16/PM8	-	-	-	<10
Azobenzene	151,511	ug/kg	TM16/PM8	-	-	-	<10
Bis(2-chloroethoxy)methane	1,301.7	ug/kg	TM16/PM8	-	-	-	<10
Bis(2-chloroethyl)ether	273.6	ug/kg	TM16/PM8	-	-	-	<10
Carbazole	897,000	ug/kg	TM16/PM8	-	-	-	<10
Dibenzofuran	6,666,492	ug/kg	TM16/PM8	-	-	-	<10
Hexachlorobenzene	199	ug/kg	TM16/PM8	-	-	-	<10
Hexachlorobutadiene	17,600	ug/kg	TM16/PM8	-	-	-	<10
Hexachlorocyclopentadiene	1,091.3	ug/kg	TM16/PM8	-	-	-	<10
Hexachloroethane	8,130	ug/kg	TM16/PM8	-	-	-	<10
Isophorone	887,232	ug/kg	TM16/PM8	-	-	-	<10
N-nitrosodi-n-propylamine	1,904.9	ug/kg	TM16/PM8	-	-	-	<10
Nitrobenzene	131,262	ug/kg	TM16/PM8	-	-	-	<10
VOCs							
Dichlorodifluoromethane	1,500,000	ug/kg	TM15/PM10	-	-	-	<2
Methyl Tertiary Butyl Ether	-	ug/kg	TM15/PM10	-	-	-	<2
Chloromethane	593	ug/kg	TM15/PM10	-	-	-	<3
Vinyl Chloride	40.3	ug/kg	TM15/PM10	-	-	-	<2
Bromomethane	27,046	ug/kg	TM15/PM10	-	-	-	<1
Chloroethane	567,000	ug/kg	TM15/PM10	-	-	-	<2
Trichlorofluoromethane	2,200,000	ug/kg	TM15/PM10	-	-	-	<2
1,1-Dichloroethene	-	ug/kg	TM15/PM10	-	-	-	<6
Dichloromethane	-	ug/kg	TM15/PM10	-	-	-	<7
trans-1-2-Dichloroethene	12,300	ug/kg	TM15/PM10	-	-	-	<3
1,1-Dichloroethane	148,000	ug/kg	TM15/PM10	-	-	-	<3
cis-1-2-Dichloroethene	-	ug/kg	TM15/PM10	-	-	-	<3
2,2-Dichloropropane	20,460	ug/kg	TM15/PM10	-	-	-	<4
Bromochloromethane	-	ug/kg	TM15/PM10	-	-	-	<3
Chloroform	-	ug/kg	TM15/PM10	-	-	-	<3
1,1,1-Trichloroethane	391,511	ug/kg	TM15/PM10	-	-	-	<3
1,1-Dichloropropene	12,853	ug/kg	TM15/PM10	-	-	-	<3
Carbon tetrachloride	1,740	ug/kg	TM15/PM10	-	-	-	<4
1,2-Dichloroethane	356	ug/kg	TM15/PM10	-	-	-	<4
Benzene	15,826	ug/kg	TM15/PM10	-	-	-	<3
Trichloroethene	6,611	ug/kg	TM15/PM10	-	-	-	<3
1,2-Dichloropropane	1,720	ug/kg	TM15/PM10	-	-	-	<6
Dibromomethane	-	ug/kg	TM15/PM10	-	-	-	<3
Bromodichloromethane	1,100	ug/kg	TM15/PM10	-	-	-	<3
cis-1-3-Dichloropropene	19,358	ug/kg	TM15/PM10	-	-	-	<4
Toluene	835,000	ug/kg	TM15/PM10	-	-	-	<3
trans-1-3-Dichloropropene	12,853	ug/kg	TM15/PM10	-	-	-	<3
1,1,2-Trichloroethane	51,100	ug/kg	TM15/PM10	-	-	-	<3
Tetrachloroethene	72,200	ug/kg	TM15/PM10	-	-	-	<3
1,3-Dichloropropane	12,853	ug/kg	TM15/PM10	-	-	-	<3
Dibromochloromethane	-	ug/kg	TM15/PM10	-	-	-	<3
1,2-Dibromoethane	-	ug/kg	TM15/PM10	-	-	-	<3
Chlorobenzene	32,800	ug/kg	TM15/PM10	-	-	-	<3
1,1,1,2-Tetrachloroethane	62,718	ug/kg	TM15/PM10	-	-	-	<3
Ethylbenzene	508,000	ug/kg	TM15/PM10	-	-	-	18
p/m-Xylene	564,000	ug/kg	TM15/PM10	-	-	-	<6
o-Xylene	467,000	ug/kg	TM15/PM10	-	-	-	<3
Styrene	607,000	ug/kg	TM15/PM10	-	-	-	<3

Delimara Power Station Soil Boring Analytical Results	ENVIRON GAC (Commercial)		SAMPLE ID	DPS-SB03	DPS-SB04	DPS-SB05	DPS-SB05
				DEPTH (m)	0.5-1.0	0.5-1.0	2.5-3.0
				LOCATION	DPS	DPS	DPS
				SAMPLE DATE	08/06/2011	08/06/2011	08/06/2011
Metals		Method	Units				
2-Methylnaphthalene	7,148,111	ug/kg	TM16/PM8	-	<10	<10	-
Bis(2-ethylhexyl) phthalate	85,400,000	ug/kg	TM16/PM8	-	<10	<10	-
Butylbenzyl phthalate	942,000,000	ug/kg	TM16/PM8	-	<10	<10	-
Di-n-butyl phthalate	12,900	ug/kg	TM16/PM8	-	<10	<10	-
Di-n-Octyl phthalate	89,100,000	ug/kg	TM16/PM8	-	<10	<10	-
Diethyl phthalate	109,000	ug/kg	TM16/PM8	-	92	61	-
Dimethyl phthalate	275,000	ug/kg	TM16/PM8	-	<10	<10	-
1,2-Dichlorobenzene	562,000	ug/kg	TM16/PM8	-	<10	<10	-
1,2,4-Trichlorobenzene	123,000	ug/kg	TM16/PM8	-	<10	<10	-
1,3-Dichlorobenzene	177,000	ug/kg	TM16/PM8	-	<10	<10	-
1,4-Dichlorobenzene	221,000	ug/kg	TM16/PM8	-	<10	<10	-
2-Nitroaniline	651,305	ug/kg	TM16/PM8	-	<10	<10	-
2,4-Dinitrotoluene	3,750,000	ug/kg	TM16/PM8	-	<10	<10	-
2,6-Dinitrotoluene	1,860,000	ug/kg	TM16/PM8	-	<10	<10	-
3-Nitroaniline	200,000	ug/kg	TM16/PM8	-	<10	<10	-
4-Bromophenylphenylether	982.8	ug/kg	TM16/PM8	-	<10	<10	-
4-Chloroaniline	2,300,000	ug/kg	TM16/PM8	-	<10	<10	-
4-Chlorophenylphenylether	378.3	ug/kg	TM16/PM8	-	<10	<10	-
4-Nitroaniline	170,000	ug/kg	TM16/PM8	-	<10	<10	-
Azobenzene	151,511	ug/kg	TM16/PM8	-	<10	<10	-
Bis(2-chloroethoxy)methane	1,301.7	ug/kg	TM16/PM8	-	<10	<10	-
Bis(2-chloroethyl)ether	273.6	ug/kg	TM16/PM8	-	<10	<10	-
Carbazole	897,000	ug/kg	TM16/PM8	-	<10	<10	-
Dibenzofuran	6,666,492	ug/kg	TM16/PM8	-	<10	<10	-
Hexachlorobenzene	199	ug/kg	TM16/PM8	-	<10	<10	-
Hexachlorobutadiene	17,600	ug/kg	TM16/PM8	-	<10	<10	-
Hexachlorocyclopentadiene	1,091.3	ug/kg	TM16/PM8	-	<10	<10	-
Hexachloroethane	8,130	ug/kg	TM16/PM8	-	<10	<10	-
Isophorone	887,232	ug/kg	TM16/PM8	-	<10	<10	-
N-nitrosodi-n-propylamine	1,904.9	ug/kg	TM16/PM8	-	<10	<10	-
Nitrobenzene	131,262	ug/kg	TM16/PM8	-	<10	<10	-
VOCs							
Dichlorodifluoromethane	1,500,000	ug/kg	TM15/PM10	-	<2	<2	-
Methyl Tertiary Butyl Ether	-	ug/kg	TM15/PM10	-	<2	<2	-
Chloromethane	593	ug/kg	TM15/PM10	-	<3	<3	-
Vinyl Chloride	40.3	ug/kg	TM15/PM10	-	<2	<2	-
Bromomethane	27,046	ug/kg	TM15/PM10	-	<1	<1	-
Chloroethane	567,000	ug/kg	TM15/PM10	-	<2	<2	-
Trichlorofluoromethane	2,200,000	ug/kg	TM15/PM10	-	<2	<2	-
1,1-Dichloroethene	-	ug/kg	TM15/PM10	-	<6	<6	-
Dichloromethane	-	ug/kg	TM15/PM10	-	<7	<7	-
trans-1-2-Dichloroethene	12,300	ug/kg	TM15/PM10	-	<3	<3	-
1,1-Dichloroethane	148,000	ug/kg	TM15/PM10	-	<3	<3	-
cis-1-2-Dichloroethene	-	ug/kg	TM15/PM10	-	<3	<3	-
2,2-Dichloropropane	20,460	ug/kg	TM15/PM10	-	<4	<4	-
Bromochloromethane	-	ug/kg	TM15/PM10	-	<3	<3	-
Chloroform	-	ug/kg	TM15/PM10	-	<3	<3	-
1,1,1-Trichloroethane	391,511	ug/kg	TM15/PM10	-	<3	<3	-
1,1-Dichloropropene	12,853	ug/kg	TM15/PM10	-	<3	<3	-
Carbon tetrachloride	1,740	ug/kg	TM15/PM10	-	<4	<4	-
1,2-Dichloroethane	356	ug/kg	TM15/PM10	-	<4	<4	-
Benzene	15,826	ug/kg	TM15/PM10	-	<3	<3	-
Trichloroethene	6,611	ug/kg	TM15/PM10	-	<3	<3	-
1,2-Dichloropropane	1,720	ug/kg	TM15/PM10	-	<6	<6	-
Dibromomethane	-	ug/kg	TM15/PM10	-	<3	<3	-
Bromodichloromethane	1,100	ug/kg	TM15/PM10	-	<3	<3	-
cis-1-3-Dichloropropene	19,358	ug/kg	TM15/PM10	-	<4	<4	-
Toluene	835,000	ug/kg	TM15/PM10	-	<3	<3	-
trans-1-3-Dichloropropene	12,853	ug/kg	TM15/PM10	-	<3	<3	-
1,1,2-Trichloroethane	51,100	ug/kg	TM15/PM10	-	<3	<3	-
Tetrachloroethene	72,200	ug/kg	TM15/PM10	-	<3	<3	-
1,3-Dichloropropane	12,853	ug/kg	TM15/PM10	-	<3	<3	-
Dibromochloromethane	-	ug/kg	TM15/PM10	-	<3	<3	-
1,2-Dibromoethane	-	ug/kg	TM15/PM10	-	<3	<3	-
Chlorobenzene	32,800	ug/kg	TM15/PM10	-	<3	<3	-
1,1,1,2-Tetrachloroethane	62,718	ug/kg	TM15/PM10	-	<3	<3	-
Ethylbenzene	508,000	ug/kg	TM15/PM10	-	<3	14	-
p/m-Xylene	564,000	ug/kg	TM15/PM10	-	<6	<6	-
o-Xylene	467,000	ug/kg	TM15/PM10	-	<3	<3	-
Styrene	607,000	ug/kg	TM15/PM10	-	<3	<3	-

Delimara Power Station Soil Boring Analytical Results	ENVIRON GAC (Commercial)		SAMPLE ID	DPS-SB06	DPS-SB07	DPS-SB08	SB-09
			DEPTH (m)	0-0.5	0.4	2.0-2.5	0.3-0.5
			LOCATION	DPS	DPS	DPS	DPS
			SAMPLE DATE	08/06/2011	13/06/2011	13/06/2011	27/06/2011
Metals		Method	Units				
2-Methylnaphthalene	7,148,111	ug/kg	TM16/PM8	-	-	-	<10
Bis(2-ethylhexyl) phthalate	85,400,000	ug/kg	TM16/PM8	-	-	-	<10
Butylbenzyl phthalate	942,000,000	ug/kg	TM16/PM8	-	-	-	<10
Di-n-butyl phthalate	12,900	ug/kg	TM16/PM8	-	-	-	<10
Di-n-Octyl phthalate	89,100,000	ug/kg	TM16/PM8	-	-	-	<10
Diethyl phthalate	109,000	ug/kg	TM16/PM8	-	-	-	<10
Dimethyl phthalate	275,000	ug/kg	TM16/PM8	-	-	-	<10
1,2-Dichlorobenzene	562,000	ug/kg	TM16/PM8	-	-	-	<10
1,2,4-Trichlorobenzene	123,000	ug/kg	TM16/PM8	-	-	-	<10
1,3-Dichlorobenzene	177,000	ug/kg	TM16/PM8	-	-	-	<10
1,4-Dichlorobenzene	221,000	ug/kg	TM16/PM8	-	-	-	<10
2-Nitroaniline	651,305	ug/kg	TM16/PM8	-	-	-	<10
2,4-Dinitrotoluene	3,750,000	ug/kg	TM16/PM8	-	-	-	<10
2,6-Dinitrotoluene	1,860,000	ug/kg	TM16/PM8	-	-	-	<10
3-Nitroaniline	200,000	ug/kg	TM16/PM8	-	-	-	<10
4-Bromophenylphenylether	982.8	ug/kg	TM16/PM8	-	-	-	<10
4-Chloroaniline	2,300,000	ug/kg	TM16/PM8	-	-	-	<10
4-Chlorophenylphenylether	378.3	ug/kg	TM16/PM8	-	-	-	<10
4-Nitroaniline	170,000	ug/kg	TM16/PM8	-	-	-	<10
Azobenzene	151,511	ug/kg	TM16/PM8	-	-	-	<10
Bis(2-chloroethoxy)methane	1,301.7	ug/kg	TM16/PM8	-	-	-	<10
Bis(2-chloroethyl)ether	273.6	ug/kg	TM16/PM8	-	-	-	<10
Carbazole	897,000	ug/kg	TM16/PM8	-	-	-	<10
Dibenzofuran	6,666,492	ug/kg	TM16/PM8	-	-	-	<10
Hexachlorobenzene	199	ug/kg	TM16/PM8	-	-	-	<10
Hexachlorobutadiene	17,600	ug/kg	TM16/PM8	-	-	-	<10
Hexachlorocyclopentadiene	1,091.3	ug/kg	TM16/PM8	-	-	-	<10
Hexachloroethane	8,130	ug/kg	TM16/PM8	-	-	-	<10
Isophorone	887,232	ug/kg	TM16/PM8	-	-	-	<10
N-nitrosodi-n-propylamine	1,904.9	ug/kg	TM16/PM8	-	-	-	<10
Nitrobenzene	131,262	ug/kg	TM16/PM8	-	-	-	<10
VOCs							
Dichlorodifluoromethane	1,500,000	ug/kg	TM15/PM10	-	-	-	<2
Methyl Tertiary Butyl Ether	-	ug/kg	TM15/PM10	-	-	-	<2
Chloromethane	593	ug/kg	TM15/PM10	-	-	-	<3
Vinyl Chloride	40.3	ug/kg	TM15/PM10	-	-	-	<2
Bromomethane	27,046	ug/kg	TM15/PM10	-	-	-	<1
Chloroethane	567,000	ug/kg	TM15/PM10	-	-	-	<2
Trichlorofluoromethane	2,200,000	ug/kg	TM15/PM10	-	-	-	<2
1,1-Dichloroethene	-	ug/kg	TM15/PM10	-	-	-	<6
Dichloromethane	-	ug/kg	TM15/PM10	-	-	-	<7
trans-1-2-Dichloroethene	12,300	ug/kg	TM15/PM10	-	-	-	<3
1,1-Dichloroethane	148,000	ug/kg	TM15/PM10	-	-	-	<3
cis-1-2-Dichloroethene	-	ug/kg	TM15/PM10	-	-	-	<3
2,2-Dichloropropane	20,460	ug/kg	TM15/PM10	-	-	-	<4
Bromochloromethane	-	ug/kg	TM15/PM10	-	-	-	<3
Chloroform	-	ug/kg	TM15/PM10	-	-	-	<3
1,1,1-Trichloroethane	391,511	ug/kg	TM15/PM10	-	-	-	<3
1,1-Dichloropropene	12,853	ug/kg	TM15/PM10	-	-	-	<3
Carbon tetrachloride	1,740	ug/kg	TM15/PM10	-	-	-	<4
1,2-Dichloroethane	356	ug/kg	TM15/PM10	-	-	-	<4
Benzene	15,826	ug/kg	TM15/PM10	-	-	-	<3
Trichloroethene	6,611	ug/kg	TM15/PM10	-	-	-	<3
1,2-Dichloropropane	1,720	ug/kg	TM15/PM10	-	-	-	<6
Dibromomethane	-	ug/kg	TM15/PM10	-	-	-	<3
Bromodichloromethane	1,100	ug/kg	TM15/PM10	-	-	-	<3
cis-1-3-Dichloropropene	19,358	ug/kg	TM15/PM10	-	-	-	<4
Toluene	835,000	ug/kg	TM15/PM10	-	-	-	<3
trans-1-3-Dichloropropene	12,853	ug/kg	TM15/PM10	-	-	-	<3
1,1,2-Trichloroethane	51,100	ug/kg	TM15/PM10	-	-	-	<3
Tetrachloroethene	72,200	ug/kg	TM15/PM10	-	-	-	<3
1,3-Dichloropropane	12,853	ug/kg	TM15/PM10	-	-	-	<3
Dibromochloromethane	-	ug/kg	TM15/PM10	-	-	-	<3
1,2-Dibromoethane	-	ug/kg	TM15/PM10	-	-	-	<3
Chlorobenzene	32,800	ug/kg	TM15/PM10	-	-	-	<3
1,1,1,2-Tetrachloroethane	62,718	ug/kg	TM15/PM10	-	-	-	<3
Ethylbenzene	508,000	ug/kg	TM15/PM10	-	-	-	7
p/m-Xylene	564,000	ug/kg	TM15/PM10	-	-	-	16+
o-Xylene	467,000	ug/kg	TM15/PM10	-	-	-	<3+
Styrene	607,000	ug/kg	TM15/PM10	-	-	-	<3

Delimara Power Station Soil Boring Analytical Results	ENVIRON GAC (Commercial)		SAMPLE ID	SB-09	SB-10	SB-10-DS	SB-11
				DEPTH (m)	2.3-2.5	2.3-2.5	0.3-0.5
				LOCATION	DPS	DPS	DPS
				SAMPLE DATE	27/06/2011	28/06/2011	28/06/2011
Metals		Method	Units				
2-Methylnaphthalene	7,148,111	ug/kg	TM16/PM8	-	<10	-	-
Bis(2-ethylhexyl) phthalate	85,400,000	ug/kg	TM16/PM8	-	<10	-	-
Butylbenzyl phthalate	942,000,000	ug/kg	TM16/PM8	-	<10	-	-
Di-n-butyl phthalate	12,900	ug/kg	TM16/PM8	-	<10	-	-
Di-n-Octyl phthalate	89,100,000	ug/kg	TM16/PM8	-	<10	-	-
Diethyl phthalate	109,000	ug/kg	TM16/PM8	-	<10	-	-
Dimethyl phthalate	275,000	ug/kg	TM16/PM8	-	<10	-	-
1,2-Dichlorobenzene	562,000	ug/kg	TM16/PM8	-	<10	-	-
1,2,4-Trichlorobenzene	123,000	ug/kg	TM16/PM8	-	<10	-	-
1,3-Dichlorobenzene	177,000	ug/kg	TM16/PM8	-	<10	-	-
1,4-Dichlorobenzene	221,000	ug/kg	TM16/PM8	-	<10	-	-
2-Nitroaniline	651,305	ug/kg	TM16/PM8	-	<10	-	-
2,4-Dinitrotoluene	3,750,000	ug/kg	TM16/PM8	-	<10	-	-
2,6-Dinitrotoluene	1,860,000	ug/kg	TM16/PM8	-	<10	-	-
3-Nitroaniline	200,000	ug/kg	TM16/PM8	-	<10	-	-
4-Bromophenylphenylether	982.8	ug/kg	TM16/PM8	-	<10	-	-
4-Chloroaniline	2,300,000	ug/kg	TM16/PM8	-	<10	-	-
4-Chlorophenylphenylether	378.3	ug/kg	TM16/PM8	-	<10	-	-
4-Nitroaniline	170,000	ug/kg	TM16/PM8	-	<10	-	-
Azobenzene	151,511	ug/kg	TM16/PM8	-	<10	-	-
Bis(2-chloroethoxy)methane	1,301.7	ug/kg	TM16/PM8	-	<10	-	-
Bis(2-chloroethyl)ether	273.6	ug/kg	TM16/PM8	-	<10	-	-
Carbazole	897,000	ug/kg	TM16/PM8	-	<10	-	-
Dibenzofuran	6,666,492	ug/kg	TM16/PM8	-	<10	-	-
Hexachlorobenzene	199	ug/kg	TM16/PM8	-	<10	-	-
Hexachlorobutadiene	17,600	ug/kg	TM16/PM8	-	<10	-	-
Hexachlorocyclopentadiene	1,091.3	ug/kg	TM16/PM8	-	<10	-	-
Hexachloroethane	8,130	ug/kg	TM16/PM8	-	<10	-	-
Isophorone	887,232	ug/kg	TM16/PM8	-	<10	-	-
N-nitrosodi-n-propylamine	1,904.9	ug/kg	TM16/PM8	-	<10	-	-
Nitrobenzene	131,262	ug/kg	TM16/PM8	-	<10	-	-
VOCs							
Dichlorodifluoromethane	1,500,000	ug/kg	TM15/PM10	-	<2	-	-
Methyl Tertiary Butyl Ether	-	ug/kg	TM15/PM10	-	<2	-	-
Chloromethane	593	ug/kg	TM15/PM10	-	<3	-	-
Vinyl Chloride	40.3	ug/kg	TM15/PM10	-	<2	-	-
Bromomethane	27,046	ug/kg	TM15/PM10	-	<1	-	-
Chloroethane	567,000	ug/kg	TM15/PM10	-	<2	-	-
Trichlorofluoromethane	2,200,000	ug/kg	TM15/PM10	-	<2	-	-
1,1-Dichloroethene	-	ug/kg	TM15/PM10	-	<6	-	-
Dichloromethane	-	ug/kg	TM15/PM10	-	<7	-	-
trans-1-2-Dichloroethene	12,300	ug/kg	TM15/PM10	-	<3	-	-
1,1-Dichloroethane	148,000	ug/kg	TM15/PM10	-	<3	-	-
cis-1-2-Dichloroethene	-	ug/kg	TM15/PM10	-	<3	-	-
2,2-Dichloropropane	20,460	ug/kg	TM15/PM10	-	<4	-	-
Bromochloromethane	-	ug/kg	TM15/PM10	-	<3	-	-
Chloroform	-	ug/kg	TM15/PM10	-	<3	-	-
1,1,1-Trichloroethane	391,511	ug/kg	TM15/PM10	-	<3	-	-
1,1-Dichloropropene	12,853	ug/kg	TM15/PM10	-	<3	-	-
Carbon tetrachloride	1,740	ug/kg	TM15/PM10	-	<4	-	-
1,2-Dichloroethane	356	ug/kg	TM15/PM10	-	<4	-	-
Benzene	15,826	ug/kg	TM15/PM10	-	<3	-	-
Trichloroethene	6,611	ug/kg	TM15/PM10	-	<3	-	-
1,2-Dichloropropane	1,720	ug/kg	TM15/PM10	-	<6	-	-
Dibromomethane	-	ug/kg	TM15/PM10	-	<3	-	-
Bromodichloromethane	1,100	ug/kg	TM15/PM10	-	<3	-	-
cis-1-3-Dichloropropene	19,358	ug/kg	TM15/PM10	-	<4	-	-
Toluene	835,000	ug/kg	TM15/PM10	-	<3	-	-
trans-1-3-Dichloropropene	12,853	ug/kg	TM15/PM10	-	<3	-	-
1,1,2-Trichloroethane	51,100	ug/kg	TM15/PM10	-	<3	-	-
Tetrachloroethene	72,200	ug/kg	TM15/PM10	-	<3	-	-
1,3-Dichloropropane	12,853	ug/kg	TM15/PM10	-	<3	-	-
Dibromochloromethane	-	ug/kg	TM15/PM10	-	<3	-	-
1,2-Dibromoethane	-	ug/kg	TM15/PM10	-	<3	-	-
Chlorobenzene	32,800	ug/kg	TM15/PM10	-	<3	-	-
1,1,1,2-Tetrachloroethane	62,718	ug/kg	TM15/PM10	-	<3	-	-
Ethylbenzene	508,000	ug/kg	TM15/PM10	-	<3	-	-
p/m-Xylene	564,000	ug/kg	TM15/PM10	-	<6+	-	-
o-Xylene	467,000	ug/kg	TM15/PM10	-	<3+	-	-
Styrene	607,000	ug/kg	TM15/PM10	-	<3	-	-



Delimara Power Station Soil Boring Analytical Results	ENVIRON GAC (Commercial)		SAMPLE ID	SB-12
			DEPTH (m)	0.8-1.0
			LOCATION	DPS
			SAMPLE DATE	28/06/2011
Metals		Method	Units	
2-Methylnaphthalene	7,148,111	ug/kg	TM16/PM8	<10
Bis(2-ethylhexyl) phthalate	85,400,000	ug/kg	TM16/PM8	<10
Butylbenzyl phthalate	942,000,000	ug/kg	TM16/PM8	<10
Di-n-butyl phthalate	12,900	ug/kg	TM16/PM8	<10
Di-n-Octyl phthalate	89,100,000	ug/kg	TM16/PM8	<10
Diethyl phthalate	109,000	ug/kg	TM16/PM8	<10
Dimethyl phthalate	275,000	ug/kg	TM16/PM8	<10
1,2-Dichlorobenzene	562,000	ug/kg	TM16/PM8	<10
1,2,4-Trichlorobenzene	123,000	ug/kg	TM16/PM8	<10
1,3-Dichlorobenzene	177,000	ug/kg	TM16/PM8	<10
1,4-Dichlorobenzene	221,000	ug/kg	TM16/PM8	<10
2-Nitroaniline	651,305	ug/kg	TM16/PM8	<10
2,4-Dinitrotoluene	3,750,000	ug/kg	TM16/PM8	<10
2,6-Dinitrotoluene	1,860,000	ug/kg	TM16/PM8	<10
3-Nitroaniline	200,000	ug/kg	TM16/PM8	<10
4-Bromophenylphenylether	982.8	ug/kg	TM16/PM8	<10
4-Chloroaniline	2,300,000	ug/kg	TM16/PM8	<10
4-Chlorophenylphenylether	378.3	ug/kg	TM16/PM8	<10
4-Nitroaniline	170,000	ug/kg	TM16/PM8	<10
Azobenzene	151,511	ug/kg	TM16/PM8	<10
Bis(2-chloroethoxy)methane	1,301.7	ug/kg	TM16/PM8	<10
Bis(2-chloroethyl)ether	273.6	ug/kg	TM16/PM8	<10
Carbazole	897,000	ug/kg	TM16/PM8	<10
Dibenzofuran	6,666,492	ug/kg	TM16/PM8	<10
Hexachlorobenzene	199	ug/kg	TM16/PM8	<10
Hexachlorobutadiene	17,600	ug/kg	TM16/PM8	<10
Hexachlorocyclopentadiene	1,091.3	ug/kg	TM16/PM8	<10
Hexachloroethane	8,130	ug/kg	TM16/PM8	<10
Isophorone	887,232	ug/kg	TM16/PM8	<10
N-nitrosodi-n-propylamine	1,904.9	ug/kg	TM16/PM8	<10
Nitrobenzene	131,262	ug/kg	TM16/PM8	<10
<b>VOCs</b>				
Dichlorodifluoromethane	1,500,000	ug/kg	TM15/PM10	<2
Methyl Tertiary Butyl Ether	-	ug/kg	TM15/PM10	<2
Chloromethane	593	ug/kg	TM15/PM10	<3
Vinyl Chloride	40.3	ug/kg	TM15/PM10	<2
Bromomethane	27,046	ug/kg	TM15/PM10	<1
Chloroethane	567,000	ug/kg	TM15/PM10	<2
Trichlorofluoromethane	2,200,000	ug/kg	TM15/PM10	<2
1,1-Dichloroethene	-	ug/kg	TM15/PM10	<6
Dichloromethane	-	ug/kg	TM15/PM10	<7
trans-1-2-Dichloroethene	12,300	ug/kg	TM15/PM10	<3
1,1-Dichloroethane	148,000	ug/kg	TM15/PM10	<3
cis-1-2-Dichloroethene	-	ug/kg	TM15/PM10	<3
2,2-Dichloropropane	20,460	ug/kg	TM15/PM10	<4
Bromochloromethane	-	ug/kg	TM15/PM10	<3
Chloroform	-	ug/kg	TM15/PM10	<3
1,1,1-Trichloroethane	391,511	ug/kg	TM15/PM10	<3
1,1-Dichloropropene	12,853	ug/kg	TM15/PM10	<3
Carbon tetrachloride	1,740	ug/kg	TM15/PM10	<4
1,2-Dichloroethane	356	ug/kg	TM15/PM10	<4
Benzene	15,826	ug/kg	TM15/PM10	<3
Trichloroethene	6,611	ug/kg	TM15/PM10	<3
1,2-Dichloropropane	1,720	ug/kg	TM15/PM10	<6
Dibromomethane	-	ug/kg	TM15/PM10	<3
Bromodichloromethane	1,100	ug/kg	TM15/PM10	<3
cis-1-3-Dichloropropene	19,358	ug/kg	TM15/PM10	<4
Toluene	835,000	ug/kg	TM15/PM10	<3
trans-1-3-Dichloropropene	12,853	ug/kg	TM15/PM10	<3
1,1,2-Trichloroethane	51,100	ug/kg	TM15/PM10	<3
Tetrachloroethene	72,200	ug/kg	TM15/PM10	<3
1,3-Dichloropropane	12,853	ug/kg	TM15/PM10	<3
Dibromochloromethane	-	ug/kg	TM15/PM10	<3
1,2-Dibromoethane	-	ug/kg	TM15/PM10	<3
Chlorobenzene	32,800	ug/kg	TM15/PM10	<3
1,1,1,2-Tetrachloroethane	62,718	ug/kg	TM15/PM10	<3
Ethylbenzene	508,000	ug/kg	TM15/PM10	<3
p/m-Xylene	564,000	ug/kg	TM15/PM10	<6+
o-Xylene	467,000	ug/kg	TM15/PM10	<3+
Styrene	607,000	ug/kg	TM15/PM10	<3

Delimara Power Station Soil Boring Analytical Results	ENVIRON GAC (Commercial)		SAMPLE ID	DPS-SB01	DPS-SB01	DPS-SB02	DPS-SB03
			DEPTH (m)	0-0.5	2.5-3.0	0-0.5	0.5-1.0
			LOCATION	DPS	DPS	DPS	DPS
			SAMPLE DATE	08/06/2011	08/06/2011	08/06/2011	08/06/2011
Metals		Method	Units				
Bromoform	417,000	ug/kg	TM15/PM10	-	-	-	<3
Isopropylbenzene	753,000	ug/kg	TM15/PM10	-	-	-	<3
1,1,2,2-Tetrachloroethane	156,089	ug/kg	TM15/PM10	-	-	-	<3
Bromobenzene	-	ug/kg	TM15/PM10	-	-	-	<2
1,2,3-Trichloropropane	3143	ug/kg	TM15/PM10	-	-	-	<4
Propylbenzene	399000.0	ug/kg	TM15/PM10	-	-	-	<4
2-Chlorotoluene	-	ug/kg	TM15/PM10	-	-	-	<3
1,3,5-Trimethylbenzene	-	ug/kg	TM15/PM10	-	-	-	<3
4-Chlorotoluene	1,418	ug/kg	TM15/PM10	-	-	-	<3
tert-Butylbenzene	440,000	ug/kg	TM15/PM10	-	-	-	<5
1,2,4-Trimethylbenzene	-	ug/kg	TM15/PM10	-	-	-	<6
sec-Butylbenzene	1,300,000	ug/kg	TM15/PM10	-	-	-	<4
4-Isopropyltoluene	388,000	ug/kg	TM15/PM10	-	-	-	<4
1,3-Dichlorobenzene	17,700	ug/kg	TM15/PM10	-	-	-	<4
1,4-Dichlorobenzene	221,000	ug/kg	TM15/PM10	-	-	-	<4
n-Butylbenzene	430,000	ug/kg	TM15/PM10	-	-	-	<4
1,2-Dichlorobenzene	562,000	ug/kg	TM15/PM10	-	-	-	<4
1,2-Dibromo-3-chloropropane	1,037	ug/kg	TM15/PM10	-	-	-	<4
1,2,4-Trichlorobenzene	123,000	ug/kg	TM15/PM10	-	-	-	<7
Hexachlorobutadiene	17,600	ug/kg	TM15/PM10	-	-	-	<4
Naphthalene	75,000	ug/kg	TM15/PM10	-	-	-	<27
1,2,3-Trichlorobenzene	56,800	ug/kg	TM15/PM10	-	-	-	<7



Delimara Power Station Soil Boring Analytical Results	ENVIRON GAC (Commercial)		SAMPLE ID	DPS-SB03	DPS-SB04	DPS-SB05	DPS-SB05
			DEPTH (m)	2.0-2.5	0.5-1.0	0.5-1.0	2.5-3.0
			LOCATION	DPS	DPS	DPS	DPS
			SAMPLE DATE	08/06/2011	08/06/2011	08/06/2011	08/06/2011
Metals		Method	Units				
Bromoform	417,000	ug/kg	TM15/PM10	-	<3	<3	-
Isopropylbenzene	753,000	ug/kg	TM15/PM10	-	<3	<3	-
1,1,2,2-Tetrachloroethane	156,089	ug/kg	TM15/PM10	-	<3	<3	-
Bromobenzene	-	ug/kg	TM15/PM10	-	<2	<2	-
1,2,3-Trichloropropane	3143	ug/kg	TM15/PM10	-	<4	<4	-
Propylbenzene	399000.0	ug/kg	TM15/PM10	-	<4	<4	-
2-Chlorotoluene	-	ug/kg	TM15/PM10	-	<3	<3	-
1,3,5-Trimethylbenzene	-	ug/kg	TM15/PM10	-	<3	<3	-
4-Chlorotoluene	1,418	ug/kg	TM15/PM10	-	<3	<3	-
tert-Butylbenzene	440,000	ug/kg	TM15/PM10	-	<5	<5	-
1,2,4-Trimethylbenzene	-	ug/kg	TM15/PM10	-	<6	<6	-
sec-Butylbenzene	1,300,000	ug/kg	TM15/PM10	-	<4	<4	-
4-Isopropyltoluene	388,000	ug/kg	TM15/PM10	-	<4	<4	-
1,3-Dichlorobenzene	17,700	ug/kg	TM15/PM10	-	<4	<4	-
1,4-Dichlorobenzene	221,000	ug/kg	TM15/PM10	-	<4	<4	-
n-Butylbenzene	430,000	ug/kg	TM15/PM10	-	<4	<4	-
1,2-Dichlorobenzene	562,000	ug/kg	TM15/PM10	-	<4	<4	-
1,2-Dibromo-3-chloropropane	1,037	ug/kg	TM15/PM10	-	<4	<4	-
1,2,4-Trichlorobenzene	123,000	ug/kg	TM15/PM10	-	<7	<7	-
Hexachlorobutadiene	17,600	ug/kg	TM15/PM10	-	<4	<4	-
Naphthalene	75,000	ug/kg	TM15/PM10	-	<27	<27	-
1,2,3-Trichlorobenzene	56,800	ug/kg	TM15/PM10	-	<7	<7	-

Delimara Power Station Soil Boring Analytical Results	ENVIRON GAC (Commercial)		SAMPLE ID	DPS-SB06	DPS-SB07	DPS-SB08	SB-09
			DEPTH (m)	0-0.5	0.4	2.0-2.5	0.3-0.5
			LOCATION	DPS	DPS	DPS	DPS
			SAMPLE DATE	08/06/2011	13/06/2011	13/06/2011	27/06/2011
Metals		Method	Units				
Bromoform	417,000	ug/kg	TM15/PM10	-	-	-	<3
Isopropylbenzene	753,000	ug/kg	TM15/PM10	-	-	-	<3
1,1,2,2-Tetrachloroethane	156,089	ug/kg	TM15/PM10	-	-	-	<3
Bromobenzene	-	ug/kg	TM15/PM10	-	-	-	<2
1,2,3-Trichloropropane	3143	ug/kg	TM15/PM10	-	-	-	<4
Propylbenzene	399000.0	ug/kg	TM15/PM10	-	-	-	<4+
2-Chlorotoluene	-	ug/kg	TM15/PM10	-	-	-	<3
1,3,5-Trimethylbenzene	-	ug/kg	TM15/PM10	-	-	-	<3
4-Chlorotoluene	1,418	ug/kg	TM15/PM10	-	-	-	<3
tert-Butylbenzene	440,000	ug/kg	TM15/PM10	-	-	-	<5
1,2,4-Trimethylbenzene	-	ug/kg	TM15/PM10	-	-	-	<6
sec-Butylbenzene	1,300,000	ug/kg	TM15/PM10	-	-	-	<4
4-Isopropyltoluene	388,000	ug/kg	TM15/PM10	-	-	-	<4
1,3-Dichlorobenzene	17,700	ug/kg	TM15/PM10	-	-	-	<4
1,4-Dichlorobenzene	221,000	ug/kg	TM15/PM10	-	-	-	<4
n-Butylbenzene	430,000	ug/kg	TM15/PM10	-	-	-	<4
1,2-Dichlorobenzene	562,000	ug/kg	TM15/PM10	-	-	-	<4
1,2-Dibromo-3-chloropropane	1,037	ug/kg	TM15/PM10	-	-	-	<4
1,2,4-Trichlorobenzene	123,000	ug/kg	TM15/PM10	-	-	-	<7
Hexachlorobutadiene	17,600	ug/kg	TM15/PM10	-	-	-	<4
Naphthalene	75,000	ug/kg	TM15/PM10	-	-	-	<27
1,2,3-Trichlorobenzene	56,800	ug/kg	TM15/PM10	-	-	-	<7

Delimara Power Station Soil Boring Analytical Results	ENVIRON GAC (Commercial)		SAMPLE ID	SB-09	SB-10	SB-10-DS	SB-11
			DEPTH (m)	1.3-1.5	2.3-2.5	2.3-2.5	0.3-0.5
			LOCATION	DPS	DPS	DPS	DPS
			SAMPLE DATE	27/06/2011	28/06/2011	28/06/2011	28/06/2011
Metals		Method	Units				
Bromoform	417,000	ug/kg	TM15/PM10	-	<3	-	-
Isopropylbenzene	753,000	ug/kg	TM15/PM10	-	<3	-	-
1,1,2,2-Tetrachloroethane	156,089	ug/kg	TM15/PM10	-	<3	-	-
Bromobenzene	-	ug/kg	TM15/PM10	-	<2	-	-
1,2,3-Trichloropropane	3143	ug/kg	TM15/PM10	-	<4	-	-
Propylbenzene	399000.0	ug/kg	TM15/PM10	-	<4+	-	-
2-Chlorotoluene	-	ug/kg	TM15/PM10	-	<3	-	-
1,3,5-Trimethylbenzene	-	ug/kg	TM15/PM10	-	<3	-	-
4-Chlorotoluene	1,418	ug/kg	TM15/PM10	-	<3	-	-
tert-Butylbenzene	440,000	ug/kg	TM15/PM10	-	<5	-	-
1,2,4-Trimethylbenzene	-	ug/kg	TM15/PM10	-	<6	-	-
sec-Butylbenzene	1,300,000	ug/kg	TM15/PM10	-	<4	-	-
4-Isopropyltoluene	388,000	ug/kg	TM15/PM10	-	<4	-	-
1,3-Dichlorobenzene	17,700	ug/kg	TM15/PM10	-	<4	-	-
1,4-Dichlorobenzene	221,000	ug/kg	TM15/PM10	-	<4	-	-
n-Butylbenzene	430,000	ug/kg	TM15/PM10	-	<4	-	-
1,2-Dichlorobenzene	562,000	ug/kg	TM15/PM10	-	<4	-	-
1,2-Dibromo-3-chloropropane	1,037	ug/kg	TM15/PM10	-	<4	-	-
1,2,4-Trichlorobenzene	123,000	ug/kg	TM15/PM10	-	<7	-	-
Hexachlorobutadiene	17,600	ug/kg	TM15/PM10	-	<4	-	-
Naphthalene	75,000	ug/kg	TM15/PM10	-	<27	-	-
1,2,3-Trichlorobenzene	56,800	ug/kg	TM15/PM10	-	<7	-	-

Delimara Power Station Soil Boring Analytical Results	ENVIRON GAC (Commercial)		SAMPLE ID	SB-12
			DEPTH (m)	0.8-1.0
			LOCATION	DPS
			SAMPLE DATE	28/06/2011
Metals		Method	Units	
Bromoform	417,000	ug/kg	TM15/PM10	<3
Isopropylbenzene	753,000	ug/kg	TM15/PM10	<3
1,1,2,2-Tetrachloroethane	156,089	ug/kg	TM15/PM10	<3
Bromobenzene	-	ug/kg	TM15/PM10	<2
1,2,3-Trichloropropane	3143	ug/kg	TM15/PM10	<4
Propylbenzene	399000.0	ug/kg	TM15/PM10	<4+
2-Chlorotoluene	-	ug/kg	TM15/PM10	<3
1,3,5-Trimethylbenzene	-	ug/kg	TM15/PM10	<3
4-Chlorotoluene	1,418	ug/kg	TM15/PM10	<3
tert-Butylbenzene	440,000	ug/kg	TM15/PM10	<5
1,2,4-Trimethylbenzene	-	ug/kg	TM15/PM10	<6
sec-Butylbenzene	1,300,000	ug/kg	TM15/PM10	<4
4-Isopropyltoluene	388,000	ug/kg	TM15/PM10	<4
1,3-Dichlorobenzene	17,700	ug/kg	TM15/PM10	<4
1,4-Dichlorobenzene	221,000	ug/kg	TM15/PM10	<4
n-Butylbenzene	430,000	ug/kg	TM15/PM10	<4
1,2-Dichlorobenzene	562,000	ug/kg	TM15/PM10	<4
1,2-Dibromo-3-chloropropane	1,037	ug/kg	TM15/PM10	<4
1,2,4-Trichlorobenzene	123,000	ug/kg	TM15/PM10	<7
Hexachlorobutadiene	17,600	ug/kg	TM15/PM10	<4
Naphthalene	75,000	ug/kg	TM15/PM10	<27
1,2,3-Trichlorobenzene	56,800	ug/kg	TM15/PM10	<7

Delimara Power Station Borehole Analytical Results - Landfill Samples	ENVIRON GAC (Commercial)		SAMPLE ID	DPS-LF01	DPS-LF02	DPS-LF03
			DEPTH (m)	0-0.5	4.5-5.0	0.5-1.0
			LOCATION	DPS	DPS	DPS
			SAMPLE DATE	15/06/2011	15/06/2011	15/06/2011
Metals		Units	Method			
Antimony	7,550	mg/kg	TM30/PM15	<1	<1	<1
Arsenic	635	mg/kg	TM30/PM15	2.9	5.4	2.8
Cadmium	230	mg/kg	TM30/PM15	0.4	0.3	0.3
Chromium	35	mg/kg	TM30/PM15	19.1	16.9	16.4
Cobalt	NG	mg/kg	TM30/PM15	2.2	1.9	2.4
Copper	71,700	mg/kg	TM30/PM15	19	10	14
Lead	750	mg/kg	TM30/PM15	12	6	7
Manganese	NG	mg/kg	TM30/PM15	84	73	66
Mercury	3,640	mg/kg	TM30/PM15	0.3	0.5	0.4
Nickel	1,790	mg/kg	TM30/PM15	51.5	15.7	20.1
Selenium	13,000	mg/kg	TM30/PM15	<1	<1	<1
Thallium	NG	mg/kg	TM30/PM15	<1	<1	<1
Tin	NG	mg/kg	TM30/PM15	<1	<1	<1
Vanadium	3,160	mg/kg	TM30/PM15	166	26	16
Zinc	665,000	mg/kg	TM30/PM15	92	44	49
Inorganics						
Asbestos Screen	N/A	-	Subcontracted	NAD	NAD	NAD
pH	N/A	pH units	TM73/PM11	7.87	8.69	7.99
Total Sulphate	N/A	mg/kg	TM50/PM15	2911	1169	7110
Fraction of Organic Carbon	N/A	None	TM21/PM24	-	-	-
Sulphide	N/A	mg/kg	Subcontracted	<0.5	<0.5	0.8
PAHs						
Naphthalene	75	mg/kg	TM4/PM8	<0.04	<0.04	<0.04
Acenaphthylene	162	mg/kg	TM4/PM8	<0.03	<0.03	<0.03
Acenaphthene	56.7	mg/kg	TM4/PM8	<0.05	<0.05	<0.05
Fluorene	160	mg/kg	TM4/PM8	<0.04	<0.04	<0.04
Phenanthrene	21,900	mg/kg	TM4/PM8	<0.03	<0.03	<0.03
Anthracene	522,000	mg/kg	TM4/PM8	<0.04	<0.04	<0.04
Fluoranthene	22,600	mg/kg	TM4/PM8	<0.03	<0.03	<0.03
Pyrene	54,300	mg/kg	TM4/PM8	<0.03	<0.03	<0.03
Benz(a)anthracene	91	mg/kg	TM4/PM8	<0.06	<0.06	<0.06
Chrysene	140.0	mg/kg	TM4/PM8	<0.02	<0.02	<0.02
Benzo(bk)fluoranthene	102	mg/kg	TM4/PM8	<0.07	<0.07	<0.07
Benzo(a)pyrene	14	mg/kg	TM4/PM8	<0.04	<0.04	<0.04
Indeno(123cd)pyrene	61.0	mg/kg	TM4/PM8	<0.04	<0.04	<0.04
Dibenzo(ah)anthracene	13	mg/kg	TM4/PM8	<0.04	<0.04	<0.04
Benzo(ghi)perylene	658	mg/kg	TM4/PM8	<0.04	<0.04	<0.04
PAH 16 Total	NG	mg/kg	TM4/PM8	<0.6	<0.6	<0.6
Benzo(b)fluoranthene	102	mg/kg	TM4/PM8	<0.05	<0.05	<0.05
Benzo(k)fluoranthene	143	mg/kg	TM4/PM8	<0.02	<0.02	<0.02
PAH Surrogate % Recovery	N/A	%	TM4/PM8	93	87	84
Hydrocarbons						
EPH >C8-C10	N/A	mg/kg	TM5/PM8	<5	<5	<5
EPH >C10-C20	N/A	mg/kg	TM5/PM8	21	<10	<10
EPH >C20-C30	N/A	mg/kg	TM5/PM8	90	<10	<10
EPH >C30-C40	N/A	mg/kg	TM5/PM8	87	<10	<10
EPH >C8-C40	5,000	mg/kg	TM5/PM8	198	<35	<35

## **Annex D – Analytical Certificates**



# Jones Environmental Laboratory

Environ  
Sterling House  
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LS1 5EQ

Unit 3 Deeside Point  
Zone 3  
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No.4225

<b>Attention :</b>	Michael Hazlehurst
<b>Date :</b>	24th June, 2011
<b>Your reference :</b>	UK22-16873
<b>Our reference :</b>	Test Report 11/4615 Batch 3
<b>Location :</b>	DPS
<b>Date samples received :</b>	16th June, 2011
<b>Status :</b>	Final report
<b>Issue :</b>	1

Ten samples were received for analysis on 16th June, 2011, which was completed on 24th June 2011. Please find attached our Test Report which should be read with notes at the end of the report and should include all sections if reproduced. Interpretations and opinions are outside the scope of any accreditation, and all results relate only to samples supplied.

All analysis is carried out on as received samples and reported on a dry weight basis unless stated otherwise. Results are not surrogate corrected.

**J W Farrell- Jones CChem FRSC**  
**Chartered Chemist**

# **Jones Environmental Laboratory**

**Client Name:** Environ

**Report : Solid**

**Reference:** UK22-16873

**Location:** DPS

**Solids:** V=60g VOC jar, J=250g glass jar, T=plastic tub

**Contact:** Michael Hazlehurst

**JE Job No.:** 11/4615

J E Sample No.	72-73	74-75	76-77	78-79	80-81	84-85					Please see attached notes for all abbreviations and acronyms		
Sample ID	DPS-BH05	DPS-BH05	DPS-BH06	DPS-BH06	DPS-BH07	DPS-BH08							
Depth	0-0.5	3.0-3.5	0-0.5	3.5-4.0	0-0.5	0-0.5							
COC No / misc													
Containers	V	V	V	V	V	V							
Sample Date	14/06/2011	14/06/2011	14/06/2011	14/06/2011	14/06/2011	14/06/2011							
Sample Type	Soil	Soil	Soil	Soil	Soil	Soil							
Batch Number	3	3	3	3	3	3							
Date of Receipt	16/06/2011	16/06/2011	16/06/2011	16/06/2011	16/06/2011	16/06/2011					LOD	Units	Method No.
Antimony	<1	1	<1	<1	<1	<1					<1	mg/kg	TM30/PM15
Arsenic #	3.3	5.3	3.2	2.2	1.0	3.5					<0.5	mg/kg	TM30/PM15
Barium #	23	21	12	19	6	14					<1	mg/kg	TM30/PM15
Beryllium	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5					<0.5	mg/kg	TM30/PM15
Cadmium #	0.4	0.3	0.3	0.4	0.4	0.4					<0.1	mg/kg	TM30/PM15
Chromium #	15.9	20.5	17.0	21.7	9.3	18.3					<0.5	mg/kg	TM30/PM15
Cobalt #	2.8	2.8	1.9	2.5	0.6	1.7					<0.5	mg/kg	TM30/PM15
Copper #	15	17	9	18	5	10					<1	mg/kg	TM30/PM15
Lead #	<5	<5	<5	<5	<5	5					<5	mg/kg	TM30/PM15
Manganese #	72	73	64	69	32	79					<1	mg/kg	TM30/PM15
Mercury #	0.4	0.3	0.4	0.4	0.4	0.3					<0.1	mg/kg	TM30/PM15
Nickel #	18.7	22.9	16.1	25.9	4.8	20.2					<0.7	mg/kg	TM30/PM15
Selenium #	<1	1	<1	2	<1	<1					<1	mg/kg	TM30/PM15
Thallium	<1	<1	<1	<1	<1	<1					<1	mg/kg	TM30/PM15
Tin	<1	<1	<1	<1	<1	<1					<1	mg/kg	TM30/PM15
Total Sulphate	2545	1973	1697	1343	915	1159					<50	mg/kg	TM50/PM15
Vanadium	18	23	16	20	10	31					<1	mg/kg	TM30/PM15
Zinc #	48	55	39	64	13	54					<5	mg/kg	TM30/PM15
<b>PAH MS</b>													
Naphthalene #	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04					<0.04	mg/kg	TM4/PM8
Acenaphthylene	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03					<0.03	mg/kg	TM4/PM8
Acenaphthene #	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05					<0.05	mg/kg	TM4/PM8
Fluorene #	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04					<0.04	mg/kg	TM4/PM8
Phenanthrene #	<0.03	<0.03	<0.03	<0.03	0.03	<0.03					<0.03	mg/kg	TM4/PM8
Anthracene #	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04					<0.04	mg/kg	TM4/PM8
Fluoranthene #	<0.03	<0.03	<0.03	<0.03	0.05	<0.03					<0.03	mg/kg	TM4/PM8
Pyrene #	<0.03	<0.03	<0.03	<0.03	0.05	<0.03					<0.03	mg/kg	TM4/PM8
Benz(a)anthracene #	<0.06	<0.06	<0.06	<0.06	0.09	<0.06					<0.06	mg/kg	TM4/PM8
Chrysene #	0.02	<0.02	<0.02	<0.02	0.10	<0.02					<0.02	mg/kg	TM4/PM8
Benzo(bk)fluoranthene #	<0.07	<0.07	<0.07	<0.07	0.18	<0.07					<0.07	mg/kg	TM4/PM8
Benzo(a)pyrene #	<0.04	<0.04	<0.04	<0.04	0.09	<0.04					<0.04	mg/kg	TM4/PM8
Indeno(123cd)pyrene #	<0.04	<0.04	<0.04	<0.04	0.11	<0.04					<0.04	mg/kg	TM4/PM8
Dibenzo(ah)anthracene #	<0.04	<0.04	<0.04	<0.04	0.09	<0.04					<0.04	mg/kg	TM4/PM8
Benzo(ghi)perylene #	<0.04	<0.04	<0.04	<0.04	0.11	<0.04					<0.04	mg/kg	TM4/PM8
PAH 16 Total	<0.6	<0.6	<0.6	<0.6	0.9	<0.6					<0.6	mg/kg	TM4/PM8
Benzo(b)fluoranthene	<0.05	<0.05	<0.05	<0.05	0.13	<0.05					<0.05	mg/kg	TM4/PM8
Benzo(k)fluoranthene	<0.02	<0.02	<0.02	<0.02	0.05	<0.02					<0.02	mg/kg	TM4/PM8
PAH Surrogate % Recovery	96	96	103	101	100	100					<0	%	TM4/PM8
VOC TICs	-	ND	-	-	-	-						None	TM15/PM10
SVOC TICs	-	ND	-	-	-	-							TM10/PM8



**Client Name:** Environ  
**Reference:** UK22-16873  
**Location:** DPS  
**Contact:** Michael Hazlehurst  
**JE Job No.:** 11/4615

**Solids:** V=60g VOC jar, J=250g glass jar, T=plastic tub

Please see attached notes for all abbreviations and acronyms

Client Name: Environ

SVOC Report : Solid

Reference: UK22-16873

Location: DPS

Contact: Michael Hazlehurst

JE Job No.: 11/4615

J E Sample No.	74-75										Please see attached notes for all abbreviations and acronyms		
Sample ID	DPS-BH05												
Depth	3.0-3.5												
COC No / misc													
Containers	V												
Sample Date	14/06/2011												
Sample Type	Soil												
Batch Number	3												
Date of Receipt	16/06/2011										LOD	Units	Method No.
<b>SVOC MS</b>													
Phenols													
2-Chlorophenol	<10										<10	ug/kg	TM16/PM8
2-Methylphenol	<10										<10	ug/kg	TM16/PM8
2-Nitrophenol	<10										<10	ug/kg	TM16/PM8
2,4-Dichlorophenol	<10										<10	ug/kg	TM16/PM8
2,4-Dimethylphenol	<10										<10	ug/kg	TM16/PM8
2,4,5-Trichlorophenol	<10										<10	ug/kg	TM16/PM8
2,4,6-Trichlorophenol	<10										<10	ug/kg	TM16/PM8
4-Chloro-3-methylphenol	<10										<10	ug/kg	TM16/PM8
4-Methylphenol	<10										<10	ug/kg	TM16/PM8
4-Nitrophenol	<10										<10	ug/kg	TM16/PM8
Pentachlorophenol	<10										<10	ug/kg	TM16/PM8
Phenol	<10										<10	ug/kg	TM16/PM8
PAHs													
2-Chloronaphthalene	<10										<10	ug/kg	TM16/PM8
2-Methylnaphthalene	<10										<10	ug/kg	TM16/PM8
Phthalates													
Bis(2-ethylhexyl) phthalate	<10										<10	ug/kg	TM16/PM8
Butylbenzyl phthalate	<10										<10	ug/kg	TM16/PM8
Di-n-butyl phthalate	<10										<10	ug/kg	TM16/PM8
Di-n-Octyl phthalate	<10										<10	ug/kg	TM16/PM8
Diethyl phthalate	<10										<10	ug/kg	TM16/PM8
Dimethyl phthalate	<10										<10	ug/kg	TM16/PM8
Other SVOCs													
1,2-Dichlorobenzene	<10										<10	ug/kg	TM16/PM8
1,2,4-Trichlorobenzene	<10										<10	ug/kg	TM16/PM8
1,3-Dichlorobenzene	<10										<10	ug/kg	TM16/PM8
1,4-Dichlorobenzene	<10										<10	ug/kg	TM16/PM8
2-Nitroaniline	<10										<10	ug/kg	TM16/PM8
2,4-Dinitrotoluene	<10										<10	ug/kg	TM16/PM8
2,6-Dinitrotoluene	<10										<10	ug/kg	TM16/PM8
3-Nitroaniline	<10										<10	ug/kg	TM16/PM8
4-Bromophenylphenylether	<10										<10	ug/kg	TM16/PM8
4-Chloroaniline	<10										<10	ug/kg	TM16/PM8
4-Chlorophenylphenylether	<10										<10	ug/kg	TM16/PM8
4-Nitroaniline	<10										<10	ug/kg	TM16/PM8
Azobenzene	<10										<10	ug/kg	TM16/PM8
Bis(2-chloroethoxy)methane	<10										<10	ug/kg	TM16/PM8
Bis(2-chloroethyl)ether	<10										<10	ug/kg	TM16/PM8
Carbazole	<10										<10	ug/kg	TM16/PM8
Dibenzofuran	<10										<10	ug/kg	TM16/PM8
Hexachlorobenzene	<10										<10	ug/kg	TM16/PM8
Hexachlorobutadiene	<10										<10	ug/kg	TM16/PM8
Hexachlorocyclopentadiene	<10										<10	ug/kg	TM16/PM8
Hexachloroethane	<10										<10	ug/kg	TM16/PM8
Isophorone	<10										<10	ug/kg	TM16/PM8
N-nitrosodi-n-propylamine	<10										<10	ug/kg	TM16/PM8
Nitrobenzene	<10										<10	ug/kg	TM16/PM8

**Client Name:** Environ  
**Reference:** UK22-16873  
**Location:** DPS  
**Contact:** Michael Hazlehurst  
**JE Job No.:** 11/4615

**VOC Report :** Solid

J E Sample No.	74-75										Please see attached notes for all abbreviations and acronyms		
Sample ID	DPS-BH05												
Depth	3.0-3.5												
COC No / misc													
Containers	V												
Sample Date	14/06/2011												
Sample Type	Soil												
Batch Number	3												
Date of Receipt	16/06/2011										LOD	Units	Method No.
VOC MS													
Dichlorodifluoromethane	<2										<2	ug/kg	TM15/PM10
Methyl Tertiary Butyl Ether <sup>#</sup>	<2										<2	ug/kg	TM15/PM10
Chloromethane <sup>#</sup>	<3										<3	ug/kg	TM15/PM10
Vinyl Chloride	<2										<2	ug/kg	TM15/PM10
Bromomethane	<1										<1	ug/kg	TM15/PM10
Chloroethane <sup>#</sup>	<2										<2	ug/kg	TM15/PM10
Trichlorofluoromethane <sup>#</sup>	<2										<2	ug/kg	TM15/PM10
1,1-Dichloroethene <sup>#</sup>	<6										<6	ug/kg	TM15/PM10
Dichloromethane <sup>#</sup>	<7										<7	ug/kg	TM15/PM10
trans-1-2-Dichloroethene <sup>#</sup>	<3										<3	ug/kg	TM15/PM10
1,1-Dichloroethane <sup>#</sup>	<3										<3	ug/kg	TM15/PM10
cis-1-2-Dichloroethene <sup>#</sup>	<3										<3	ug/kg	TM15/PM10
2,2-Dichloropropane	<4										<4	ug/kg	TM15/PM10
Bromochloromethane <sup>#</sup>	<3										<3	ug/kg	TM15/PM10
Chloroform <sup>#</sup>	<3										<3	ug/kg	TM15/PM10
1,1,1-Trichloroethane <sup>#</sup>	<3										<3	ug/kg	TM15/PM10
1,1-Dichloropropene <sup>#</sup>	<3										<3	ug/kg	TM15/PM10
Carbon tetrachloride <sup>#</sup>	<4										<4	ug/kg	TM15/PM10
1,2-Dichloroethane <sup>#</sup>	<4										<4	ug/kg	TM15/PM10
Benzene <sup>#</sup>	<3										<3	ug/kg	TM15/PM10
Trichloroethene <sup>#</sup>	<3										<3	ug/kg	TM15/PM10
1,2-Dichloropropane <sup>#</sup>	<6										<6	ug/kg	TM15/PM10
Dibromomethane <sup>#</sup>	<3										<3	ug/kg	TM15/PM10
Bromodichloromethane <sup>#</sup>	<3										<3	ug/kg	TM15/PM10
cis-1-3-Dichloropropene	<4										<4	ug/kg	TM15/PM10
Toluene <sup>#</sup>	<3										<3	ug/kg	TM15/PM10
trans-1-3-Dichloropropene	<3										<3	ug/kg	TM15/PM10
1,1,2-Trichloroethane <sup>#</sup>	<3										<3	ug/kg	TM15/PM10
Tetrachloroethene <sup>#</sup>	<3										<3	ug/kg	TM15/PM10
1,3-Dichloropropane <sup>#</sup>	<3										<3	ug/kg	TM15/PM10
Dibromochloromethane <sup>#</sup>	<3										<3	ug/kg	TM15/PM10
1,2-Dibromoethane <sup>#</sup>	<3										<3	ug/kg	TM15/PM10
Chlorobenzene <sup>#</sup>	<3										<3	ug/kg	TM15/PM10
1,1,1,2-Tetrachloroethane	<3										<3	ug/kg	TM15/PM10
Ethylbenzene <sup>#</sup>	<3										<3	ug/kg	TM15/PM10
p/m-Xylene <sup>#</sup>	<6										<6	ug/kg	TM15/PM10
o-Xylene <sup>#</sup>	<3										<3	ug/kg	TM15/PM10
Styrene <sup>#</sup>	<3										<3	ug/kg	TM15/PM10
Bromoform <sup>#</sup>	<3										<3	ug/kg	TM15/PM10
Isopropylbenzene <sup>#</sup>	<3										<3	ug/kg	TM15/PM10
1,1,2,2-Tetrachloroethane <sup>#</sup>	<3										<3	ug/kg	TM15/PM10
Bromobenzene	<2										<2	ug/kg	TM15/PM10
1,2,3-Trichloropropane <sup>#</sup>	<4										<4	ug/kg	TM15/PM10
Propylbenzene <sup>#</sup>	<4										<4	ug/kg	TM15/PM10
2-Chlorotoluene	<3										<3	ug/kg	TM15/PM10
1,3,5-Trimethylbenzene <sup>#</sup>	<3										<3	ug/kg	TM15/PM10
4-Chlorotoluene	<3										<3	ug/kg	TM15/PM10
tert-Butylbenzene <sup>#</sup>	<5										<5	ug/kg	TM15/PM10
1,2,4-Trimethylbenzene <sup>#</sup>	<6										<6	ug/kg	TM15/PM10
sec-Butylbenzene <sup>#</sup>	<4										<4	ug/kg	TM15/PM10
4-Isopropyltoluene <sup>#</sup>	<4										<4	ug/kg	TM15/PM10
1,3-Dichlorobenzene <sup>#</sup>	<4										<4	ug/kg	TM15/PM10
1,4-Dichlorobenzene <sup>#</sup>	<4										<4	ug/kg	TM15/PM10
n-Butylbenzene <sup>#</sup>	<4										<4	ug/kg	TM15/PM10
1,2-Dichlorobenzene <sup>#</sup>	<4										<4	ug/kg	TM15/PM10
1,2-Dibromo-3-chloropropane <sup>#</sup>	<4										<4	ug/kg	TM15/PM10
1,2,4-Trichlorobenzene <sup>#</sup>	<7										<7	ug/kg	TM15/PM10
Hexachlorobutadiene	<4										<4	ug/kg	TM15/PM10
Naphthalene	<27										<27	ug/kg	TM15/PM10
1,2,3-Trichlorobenzene <sup>#</sup>	<7										<7	ug/kg	TM15/PM10

## NOTES TO ACCOMPANY ALL SCHEDULES AND REPORTS

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Samples must be received in a condition appropriate to the requested analyses. All samples should be submitted to the laboratory in suitable containers with sufficient ice packs to sustain an appropriate temperature for the requested analysis. If this is not the case you will be informed and any analysis that may be compromised highlighted on your schedule/ report by the use of a symbol.

*The use of any of the following symbols indicates that the sample was deviating and the test result may be unreliable:*

\$	Sample temperature on receipt considered inappropriate for analysis requested.
^	Samples exceeding recommended holding times.
&	Samples received in inappropriate containers (e.g. volatile samples not submitted in VOC jars/vials).
~	No sampling date given, unable to confirm if samples are with acceptable holding times.

### SURROGATES

Surrogate compounds are added during the preparation process to monitor recovery of analytes. However low recovery is often due to peat, clay or other organic rich matrices. For waters this can be due to oxidants, surfactants, organic rich sediments or remediation fluids. Acceptable limits for most organic methods are 70 - 130%. Results are not surrogate corrected.

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Where AQC's fall outside UKAS/MCERTS criteria analysis is repeated if possible.

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## ABBREVIATIONS and ACRONYMS USED

#	UKAS accredited.
M	MCERTS accredited.
NAD	No Asbestos Detected.
ND	None Detected (usually refers to VOC and/SVOC TICs).
SS	Calibrated against a single substance.
*	Analysis subcontracted to a Jones Environmental approved laboratory.
W	Results expressed on as received basis.
+	Accreditation has been removed from this result see 'Note' on previous page.
++	Result outside calibration range, results should be considered as indicative only and are not accredited.
SV	Surrogate recovery outside performance criteria. This may be due to a matrix effect.
DR	Dilution required.

[illegible]



# Jones Environmental Laboratory

Unit 3 Deeside Point  
Zone 3  
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No.4225

<b>Attention :</b>	Michael Hazlehurst
<b>Date :</b>	24th June, 2011
<b>Your reference :</b>	UK22-16873
<b>Our reference :</b>	Test Report 11/4615 Batch 2
<b>Location :</b>	DPS
<b>Date samples received :</b>	15th June, 2011
<b>Status :</b>	Final report
<b>Issue :</b>	1

Fourteen samples were received for analysis on 15th June, 2011, which was completed on 24th June 2011. Please find attached our Test Report which should be read with notes at the end of the report and should include all sections if reproduced. Interpretations and opinions are outside the scope of any accreditation, and all results relate only to samples supplied. All analysis is carried out on as received samples and reported on a dry weight basis unless stated otherwise. Results are not surrogate corrected.

**J W Farrell- Jones CChem FRSC**  
**Chartered Chemist**

# Jones Environmental Laboratory

**Client Name:** Environ

**Report : Solid**

**Reference:** UK22-16873

**Location:** DPS

**Solids:** V=60g VOC jar, J=250g glass jar, T=plastic tub

**Contact:** Michael Hazlehurst

**JE Job No.:** 11/4615

J E Sample No.	40-42	48-49	50-52	55-56	61-62	63-64	65-66	67-69	70-71		Please see attached notes for all abbreviations and acronyms		
Sample ID	DPS-LF01	DPS-LF02	DPS-LF03	DPS-SB07	DPS-SB08	DPS-BH04	DPS-BH04	DPS-BH03	DPS-BH03				
Depth	0-0.5	4.5-5.0	0.5-1.0	0.4	2.0-2.5	0.-0.5	3.0-3.5	0-0.5	2.5-3.0				
COC No / misc													
Containers	V B	V	V B	V	V	V	V	V B	V				
Sample Date	09/06/2011	09/06/2011	10/06/2011	13/06/2011	13/06/2011	13/06/2011	13/06/2011	13/06/2011	13/06/2011				
Sample Type	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil				
Batch Number	2	2	2	2	2	2	2	2	2				
Date of Receipt	15/06/2011	15/06/2011	15/06/2011	15/06/2011	15/06/2011	15/06/2011	15/06/2011	15/06/2011	15/06/2011		LOD	Units	Method No.
Antimony	<1	<1	<1	<1	<1	<1	<1	<1	<1		<1	mg/kg	TM30/PM15
Arsenic #	2.9	5.4	2.8	2.1	3.0	4.1	2.1	2.5	2.5		<0.5	mg/kg	TM30/PM15
Barium #	41	22	21	9	16	14	24	24	22		<1	mg/kg	TM30/PM15
Beryllium	<0.5	<0.5	<0.5	<0.5	<0.5	0.5	0.6	<0.5	0.7		<0.5	mg/kg	TM30/PM15
Cadmium #	0.4	0.3	0.3	0.4	0.4	0.6	0.4	0.3	0.3		<0.1	mg/kg	TM30/PM15
Chromium #	19.1	16.9	16.4	19.1	20.5	20.4	23.7	15.3	23.8		<0.5	mg/kg	TM30/PM15
Cobalt #	2.2	1.9	2.4	2.5	2.1	2.2	2.4	2.1	3.5		<0.5	mg/kg	TM30/PM15
Copper #	19	10	14	15	14	16	17	12	16		<1	mg/kg	TM30/PM15
Lead #	12	6	7	<5	<5	11	<5	9	5		<5	mg/kg	TM30/PM15
Manganese #	84	73	66	65	77	63	66	60	87		<1	mg/kg	TM30/PM15
Mercury #	0.3	0.5	0.4	0.4	0.4	0.4	0.5	0.4	0.4		<0.1	mg/kg	TM30/PM15
Nickel #	51.5	15.7	20.1	24.4	21.8	26.1	25.4	15.0	29.2		<0.7	mg/kg	TM30/PM15
Selenium #	<1	<1	<1	1	<1	<1	2	<1	<1		<1	mg/kg	TM30/PM15
Thallium	<1	<1	<1	<1	<1	<1	<1	<1	<1		<1	mg/kg	TM30/PM15
Tin	<1	<1	<1	1	2	2	<1	<1	1		<1	mg/kg	TM30/PM15
Total Sulphate	2911	1169	7110	1802	5607	1454	5144	5213	1795		<50	mg/kg	TM50/PM15
Vanadium	166	26	16	17	17	25	19	15	22		<1	mg/kg	TM30/PM15
Zinc #	92	44	49	53	48	59	64	52	59		<5	mg/kg	TM30/PM15
<b>PAH MS</b>													
Naphthalene #	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04		<0.04	mg/kg	TM4/PM8
Acenaphthylene	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03		<0.03	mg/kg	TM4/PM8
Acenaphthene #	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05		<0.05	mg/kg	TM4/PM8
Fluorene #	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04		<0.04	mg/kg	TM4/PM8
Phenanthrene #	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03		<0.03	mg/kg	TM4/PM8
Anthracene #	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04		<0.04	mg/kg	TM4/PM8
Fluoranthene #	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03		<0.03	mg/kg	TM4/PM8
Pyrene #	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03		<0.03	mg/kg	TM4/PM8
Benz(a)anthracene #	<0.06	<0.06	<0.06	<0.06	<0.06	<0.06	<0.06	<0.06	<0.06		<0.06	mg/kg	TM4/PM8
Chrysene #	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	0.04	<0.02	<0.02		<0.02	mg/kg	TM4/PM8
Benzo(bk)fluoranthene #	<0.07	<0.07	<0.07	<0.07	<0.07	<0.07	<0.07	<0.07	<0.07		<0.07	mg/kg	TM4/PM8
Benzo(a)pyrene #	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04		<0.04	mg/kg	TM4/PM8
Indeno(123cd)pyrene #	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04		<0.04	mg/kg	TM4/PM8
Dibenzo(ah)anthracene #	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04		<0.04	mg/kg	TM4/PM8
Benzo(ghi)perylene #	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04		<0.04	mg/kg	TM4/PM8
PAH 16 Total	<0.6	<0.6	<0.6	<0.6	<0.6	<0.6	<0.6	<0.6	<0.6		<0.6	mg/kg	TM4/PM8
Benzo(b)fluoranthene	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05		<0.05	mg/kg	TM4/PM8
Benzo(k)fluoranthene	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02		<0.02	mg/kg	TM4/PM8
PAH Surrogate % Recovery	93	87	84	86	97	96	94	104	96		<0	%	TM4/PM8
VOC TICs	-	-	-	-	-	-	ND	-	-			None	TM15/PM10
SVOC TICs	-	-	-	-	-	-	ND	-	-				TM10/PM8



**Client Name:** Environ  
**Reference:** UK22-16873  
**Location:** DPS  
**Contact:** Michael Hazlehurst  
**JE Job No.:** 11/4615

**Solids:** V=60g VOC jar, J=250g glass jar, T=plastic tub

Please see attached notes for all abbreviations and acronyms

Client Name: Environ

SVOC Report : Solid

Reference: UK22-16873

Location: DPS

Contact: Michael Hazlehurst

JE Job No.: 11/4615

J E Sample No.	65-66										Please see attached notes for all abbreviations and acronyms			
Sample ID	DPS-BH04													
Depth	3.0-3.5													
COC No / misc														
Containers	V													
Sample Date	13/06/2011													
Sample Type	Soil													
Batch Number	2													
Date of Receipt	15/06/2011										LOD	Units	Method No.	
SVOC MS														
Phenols														
2-Chlorophenol	<10										<10	ug/kg	TM16/PM8	
2-Methylphenol	<10										<10	ug/kg	TM16/PM8	
2-Nitrophenol	<10										<10	ug/kg	TM16/PM8	
2,4-Dichlorophenol	<10										<10	ug/kg	TM16/PM8	
2,4-Dimethylphenol	<10										<10	ug/kg	TM16/PM8	
2,4,5-Trichlorophenol	<10										<10	ug/kg	TM16/PM8	
2,4,6-Trichlorophenol	<10										<10	ug/kg	TM16/PM8	
4-Chloro-3-methylphenol	<10										<10	ug/kg	TM16/PM8	
4-Methylphenol	<10										<10	ug/kg	TM16/PM8	
4-Nitrophenol	<10										<10	ug/kg	TM16/PM8	
Pentachlorophenol	<10										<10	ug/kg	TM16/PM8	
Phenol	<10										<10	ug/kg	TM16/PM8	
PAHs														
2-Chloronaphthalene	<10										<10	ug/kg	TM16/PM8	
2-Methylnaphthalene	<10										<10	ug/kg	TM16/PM8	
Phthalates														
Bis(2-ethylhexyl) phthalate	<10										<10	ug/kg	TM16/PM8	
Butylbenzyl phthalate	<10										<10	ug/kg	TM16/PM8	
Di-n-butyl phthalate	<10										<10	ug/kg	TM16/PM8	
Di-n-Octyl phthalate	<10										<10	ug/kg	TM16/PM8	
Diethyl phthalate	<10										<10	ug/kg	TM16/PM8	
Dimethyl phthalate	<10										<10	ug/kg	TM16/PM8	
Other SVOCs														
1,2-Dichlorobenzene	<10										<10	ug/kg	TM16/PM8	
1,2,4-Trichlorobenzene	<10										<10	ug/kg	TM16/PM8	
1,3-Dichlorobenzene	<10										<10	ug/kg	TM16/PM8	
1,4-Dichlorobenzene	<10										<10	ug/kg	TM16/PM8	
2-Nitroaniline	<10										<10	ug/kg	TM16/PM8	
2,4-Dinitrotoluene	<10										<10	ug/kg	TM16/PM8	
2,6-Dinitrotoluene	<10										<10	ug/kg	TM16/PM8	
3-Nitroaniline	<10										<10	ug/kg	TM16/PM8	
4-Bromophenylphenylether	<10										<10	ug/kg	TM16/PM8	
4-Chloroaniline	<10										<10	ug/kg	TM16/PM8	
4-Chlorophenylphenylether	<10										<10	ug/kg	TM16/PM8	
4-Nitroaniline	<10										<10	ug/kg	TM16/PM8	
Azobenzene	<10										<10	ug/kg	TM16/PM8	
Bis(2-chloroethoxy)methane	<10										<10	ug/kg	TM16/PM8	
Bis(2-chloroethyl)ether	<10										<10	ug/kg	TM16/PM8	
Carbazole	<10										<10	ug/kg	TM16/PM8	
Dibenzofuran	<10										<10	ug/kg	TM16/PM8	
Hexachlorobenzene	<10										<10	ug/kg	TM16/PM8	
Hexachlorobutadiene	<10										<10	ug/kg	TM16/PM8	
Hexachlorocyclopentadiene	<10										<10	ug/kg	TM16/PM8	
Hexachloroethane	<10										<10	ug/kg	TM16/PM8	
Isophorone	<10										<10	ug/kg	TM16/PM8	
N-nitrosodi-n-propylamine	<10										<10	ug/kg	TM16/PM8	
Nitrobenzene	<10										<10	ug/kg	TM16/PM8	

QF-PM 3.1.4 v9

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*The use of any of the following symbols indicates that the sample was deviating and the test result may be unreliable:*

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Surrogate compounds are added during the preparation process to monitor recovery of analytes. However low recovery is often due to peat, clay or other organic rich matrices. For waters this can be due to oxidants, surfactants, organic rich sediments or remediation fluids. Acceptable limits for most organic methods are 70 - 130%. Results are not surrogate corrected.

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SV	Surrogate recovery outside performance criteria. This may be due to a matrix effect.
DR	Dilution required.

[illegible]



# Jones Environmental Laboratory

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No.4225

<b>Attention :</b>	Michael Hazlehurst
<b>Date :</b>	24th June, 2011
<b>Your reference :</b>	UK22-16873
<b>Our reference :</b>	Test Report 11/4615 Batch 1
<b>Location :</b>	DPS
<b>Date samples received :</b>	13th June, 2011
<b>Status :</b>	Final report
<b>Issue :</b>	1

Sixteen samples were received for analysis on 13th June, 2011, which was completed on 24th June 2011. Please find attached our Test Report which should be read with notes at the end of the report and should include all sections if reproduced. Interpretations and opinions are outside the scope of any accreditation, and all results relate only to samples supplied.

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**J W Farrell- Jones CChem FRSC**  
**Chartered Chemist**

# **Jones Environmental Laboratory**

**Client Name:** Environ

**Report : Solid**

**Reference:** UK22-16873

**Location:** DPS

**Solids:** V=60g VOC jar, J=250g glass jar, T=plastic tub

**Contact:** Michael Hazlehurst

**JE Job No.:** 11/4615

J E Sample No.	1-3	6-7	8-9	10-12	13-14	15-17	20-22	23-24	25-27	30-32	Please see attached notes for all abbreviations and acronyms		
Sample ID	DPS-BH01	DPS-BH02	DPS-BH02	DPS-SB01	DPS-SB01	DPS-SB02	DPS-SB03	DPS-SB03	DPS-SB04	DPS-SB05			
Depth	0.5	0.5	3.0-3.5	0-0.5	2.5-3.0	0-0.5	0.5-1.0	2.0-2.5	0.5-1.0	0.5-1.0			
COC No / misc													
Containers	V B	V	V	V B	V	V B	V B	V	V B	V B			
Sample Date	08/06/2011	08/06/2011	08/06/2011	08/06/2011	08/06/2011	08/06/2011	08/06/2011	08/06/2011	08/06/2011	08/06/2011			
Sample Type	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil			
Batch Number	1	1	1	1	1	1	1	1	1	1			
Date of Receipt	13/06/2011	13/06/2011	13/06/2011	13/06/2011	13/06/2011	13/06/2011	13/06/2011	13/06/2011	13/06/2011	13/06/2011	LOD	Units	Method No.
Antimony	<1	<1	-	<1	<1	<1	<1	<1	<1	<1	<1	mg/kg	TM30/PM15
Arsenic #	1.4	3.0	-	1.2	2.4	2.3	1.9	2.4	2.0	2.4	<0.5	mg/kg	TM30/PM15
Barium #	18	24	-	14	15	35	24	22	9	14	<1	mg/kg	TM30/PM15
Beryllium	<0.5	<0.5	-	<0.5	<0.5	<0.5	<0.5	0.5	<0.5	<0.5	<0.5	mg/kg	TM30/PM15
Cadmium #	0.2	0.3	-	0.2	0.4	0.3	0.4	0.4	0.5	0.3	<0.1	mg/kg	TM30/PM15
Chromium #	10.5	14.8	-	7.8	20.0	20.0	19.8	22.6	19.2	15.9	<0.5	mg/kg	TM30/PM15
Cobalt #	1.3	2.0	-	0.9	2.6	2.6	2.0	2.4	1.0	2.2	<0.5	mg/kg	TM30/PM15
Copper #	10	15	-	12	16	17	18	21	8	12	<1	mg/kg	TM30/PM15
Lead #	<5	<5	-	<5	<5	<5	<5	<5	<5	<5	<5	mg/kg	TM30/PM15
Manganese #	42	67	-	40	70	71	56	62	61	68	<1	mg/kg	TM30/PM15
Mercury #	0.4	0.4	-	0.4	0.3	0.4	0.5	0.3	0.4	0.4	<0.1	mg/kg	TM30/PM15
Nickel #	12.6	15.1	-	6.6	23.2	21.8	24.7	28.4	10.7	18.5	<0.7	mg/kg	TM30/PM15
Selenium #	<1	<1	-	<1	1	<1	2	2	<1	<1	<1	mg/kg	TM30/PM15
Thallium	<1	<1	-	<1	<1	<1	<1	<1	<1	<1	<1	mg/kg	TM30/PM15
Tin	<1	<1	-	<1	<1	<1	<1	<1	<1	<1	<1	mg/kg	TM30/PM15
Total Sulphate	2992	3340	-	2248	4721	4916	2190	2333	1186	5384	<50	mg/kg	TM50/PM15
Vanadium	11	15	-	13	17	18	20	22	11	14	<1	mg/kg	TM30/PM15
Zinc #	31	49	-	17	56	55	53	62	30	41	<5	mg/kg	TM30/PM15
<b>PAH MS</b>													
Naphthalene #	<0.04	<0.04	-	<0.40	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	mg/kg	TM4/PM8
Acenaphthylene	<0.03	<0.03	-	<0.30	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	mg/kg	TM4/PM8
Acenaphthene #	<0.05	<0.05	-	<0.50	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	mg/kg	TM4/PM8
Fluorene #	<0.04	<0.04	-	<0.40	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	mg/kg	TM4/PM8
Phenanthrene #	<0.03	<0.03	-	<0.30	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	mg/kg	TM4/PM8
Anthracene #	<0.04	<0.04	-	<0.40	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	mg/kg	TM4/PM8
Fluoranthene #	<0.03	<0.03	-	<0.30	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	mg/kg	TM4/PM8
Pyrene #	<0.03	<0.03	-	<0.30	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	mg/kg	TM4/PM8
Benz(a)anthracene #	<0.06	<0.06	-	<0.60	<0.06	<0.06	<0.06	<0.06	<0.06	<0.06	<0.06	mg/kg	TM4/PM8
Chrysene #	<0.02	<0.02	-	<0.20	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	mg/kg	TM4/PM8
Benzo(bk)fluoranthene #	<0.07	<0.07	-	<0.70	<0.07	<0.07	<0.07	<0.07	<0.07	<0.07	<0.07	mg/kg	TM4/PM8
Benzo(a)pyrene #	<0.04	<0.04	-	<0.40	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	mg/kg	TM4/PM8
Indeno(123cd)pyrene #	<0.04	<0.04	-	<0.40	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	mg/kg	TM4/PM8
Dibenzo(ah)anthracene #	<0.04	<0.04	-	<0.40	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	mg/kg	TM4/PM8
Benzo(ghi)perylene #	<0.04	<0.04	-	<0.40	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	mg/kg	TM4/PM8
PAH 16 Total	<0.6	<0.6	-	<6.0	<0.6	<0.6	<0.6	<0.6	<0.6	<0.6	<0.6	mg/kg	TM4/PM8
Benzo(b)fluoranthene	<0.05	<0.05	-	<0.50	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	mg/kg	TM4/PM8
Benzo(k)fluoranthene	<0.02	<0.02	-	<0.20	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	mg/kg	TM4/PM8
PAH Surrogate % Recovery	93	98	-	101	109	106	100	112	118	124	<0	%	TM4/PM8
VOC TICs	-	-	-	-	-	-	ND	-	ND	ND		None	TM15/PM10
SVOC TICs	-	-	-	-	-	-	See Attached	-	See Attached	See Attached			TM10/PM8



**Client Name:** Environ  
**Reference:** UK22-16873  
**Location:** DPS  
**Contact:** Michael Hazlehurst  
**JE Job No.:** 11/4615

**Solids:** V=60g VOC jar, J=250g glass jar, T=plastic tub

Please see attached notes for all abbreviations and acronyms

# **Jones Environmental Laboratory**

**Client Name:** Environ  
**Reference:** UK22-16873  
**Location:** DPS  
**Contact:** Michael Hazlehurst  
**JE Job No.:** 11/4615

**Report : Solid**

**Solids:** V=60g VOC jar, J=250g glass jar, T=plastic tub

J E Sample No.	33-34	35-37									Please see attached notes for all abbreviations and acronyms		
Sample ID	DPS-SB05	DPS-SB06											
Depth	2.5-3.0	0-0.5											
COC No / misc													
Containers	V	V B											
Sample Date	08/06/2011	08/06/2011											
Sample Type	Soil	Soil											
Batch Number	1	1											
Date of Receipt	13/06/2011	13/06/2011									LOD	Units	Method No.
Antimony	<1	1									<1	mg/kg	TM30/PM15
Arsenic #	4.0	6.1									<0.5	mg/kg	TM30/PM15
Barium #	30	14									<1	mg/kg	TM30/PM15
Beryllium	0.5	<0.5									<0.5	mg/kg	TM30/PM15
Cadmium #	0.3	0.5									<0.1	mg/kg	TM30/PM15
Chromium #	17.1	17.8									<0.5	mg/kg	TM30/PM15
Cobalt #	3.0	3.0									<0.5	mg/kg	TM30/PM15
Copper #	13	17									<1	mg/kg	TM30/PM15
Lead #	<5	<5									<5	mg/kg	TM30/PM15
Manganese #	95	82									<1	mg/kg	TM30/PM15
Mercury #	0.4	0.3									<0.1	mg/kg	TM30/PM15
Nickel #	18.5	24.1									<0.7	mg/kg	TM30/PM15
Selenium #	<1	2									<1	mg/kg	TM30/PM15
Thallium	<1	<1									<1	mg/kg	TM30/PM15
Tin	<1	<1									<1	mg/kg	TM30/PM15
Total Sulphate	1937	4505									<50	mg/kg	TM50/PM15
Vanadium	21	19									<1	mg/kg	TM30/PM15
Zinc #	41	55									<5	mg/kg	TM30/PM15
<b>PAH MS</b>													
Naphthalene #	<0.04	<0.04									<0.04	mg/kg	TM4/PM8
Acenaphthylene	<0.03	<0.03									<0.03	mg/kg	TM4/PM8
Acenaphthene #	<0.05	<0.05									<0.05	mg/kg	TM4/PM8
Fluorene #	<0.04	<0.04									<0.04	mg/kg	TM4/PM8
Phenanthrene #	<0.03	0.03									<0.03	mg/kg	TM4/PM8
Anthracene #	<0.04	<0.04									<0.04	mg/kg	TM4/PM8
Fluoranthene #	<0.03	0.05									<0.03	mg/kg	TM4/PM8
Pyrene #	<0.03	0.05									<0.03	mg/kg	TM4/PM8
Benz(a)anthracene #	<0.06	0.07									<0.06	mg/kg	TM4/PM8
Chrysene #	<0.02	0.07									<0.02	mg/kg	TM4/PM8
Benzo(bk)fluoranthene #	<0.07	0.17									<0.07	mg/kg	TM4/PM8
Benzo(a)pyrene #	<0.04	0.07									<0.04	mg/kg	TM4/PM8
Indeno(123cd)pyrene #	<0.04	0.06									<0.04	mg/kg	TM4/PM8
Dibenzo(ah)anthracene #	<0.04	0.06									<0.04	mg/kg	TM4/PM8
Benzo(ghi)perylene #	<0.04	0.09									<0.04	mg/kg	TM4/PM8
PAH 16 Total	<0.6	0.7									<0.6	mg/kg	TM4/PM8
Benzo(b)fluoranthene	<0.05	0.12									<0.05	mg/kg	TM4/PM8
Benzo(k)fluoranthene	<0.02	0.05									<0.02	mg/kg	TM4/PM8
PAH Surrogate % Recovery	121	117									<0	%	TM4/PM8
VOC TICs	-	-										None	TM15/PM10
SVOC TICs	-	-											TM10/PM8

**Client Name:** Environ  
**Reference:** UK22-16873  
**Location:** DPS  
**Contact:** Michael Hazlehurst  
**JE Job No.:** 11/4615

**Report : Solid**

**Solids:** V=60g VOC jar, J=250g glass jar, T=plastic tub

J E Sample No.	33-34	35-37									Please see attached notes for all abbreviations and acronyms		
Sample ID	DPS-SB05	DPS-SB06									LOD	Units	Method No.
Depth	2.5-3.0	0-0.5											
COC No / misc													
Containers	V	V B											
Sample Date	08/06/2011	08/06/2011											
Sample Type	Soil	Soil											
Batch Number	1	1											
Date of Receipt	13/06/2011	13/06/2011											
EPH >C8-C10 #	<5	<5									<5	mg/kg	TM5/PM8
EPH >C10-C20 #	<10	<10									<10	mg/kg	TM5/PM8
EPH >C20-C30 #	<10	<10									<10	mg/kg	TM5/PM8
EPH >C30-C40 #	<10	<10									<10	mg/kg	TM5/PM8
EPH >C8-C40 #	<35	<35									<35	mg/kg	TM5/PM8
Fraction Organic Carbon	-	-									<0.001		TM21/PM24
PCB 28 #	-	-									<5	ug/kg	TM86/PM8
PCB 52 #	-	-									<5	ug/kg	TM86/PM8
PCB 101 #	-	-									<5	ug/kg	TM86/PM8
PCB 118 #	-	-									<5	ug/kg	TM86/PM8
PCB 138 #	-	-									<5	ug/kg	TM86/PM8
PCB 153 #	-	-									<5	ug/kg	TM86/PM8
PCB 180 #	-	-									<5	ug/kg	TM86/PM8
Total 7 PCBs #	-	-									<35	ug/kg	TM86/PM8
Asbestos Screen*	-	NAD											Subcontracted
pH #	8.28	8.03									<0.01	pH units	TM73/PM11
Sulphide*	<0.5	<0.5									<0.5	mg/kg	Subcontracted

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# Jones Environmental Laboratory

**Client Name:** Environ  
**Reference:** UK22-16873  
**Location:** DPS  
**Contact:** Michael Hazlehurst  
**JE Job No.:** 11/4615

**VOC Report :** Solid

J E Sample No.	20-22	25-27	30-32								Please see attached notes for all abbreviations and acronyms		
Sample ID	DPS-SB03	DPS-SB04	DPS-SB05										
Depth	0.5-1.0	0.5-1.0	0.5-1.0										
COC No / misc													
Containers	V B	V B	V B										
Sample Date	08/06/2011	08/06/2011	08/06/2011										
Sample Type	Soil	Soil	Soil										
Batch Number	1	1	1										
Date of Receipt	13/06/2011	13/06/2011	13/06/2011								LOD	Units	Method No.
<b>VOC MS</b>													
Dichlorodifluoromethane	<2	<2	<2								<2	ug/kg	TM15/PM10
Methyl Tertiary Butyl Ether <sup>#</sup>	<2	<2	<2								<2	ug/kg	TM15/PM10
Chloromethane <sup>#</sup>	<3	<3	<3								<3	ug/kg	TM15/PM10
Vinyl Chloride	<2	<2	<2								<2	ug/kg	TM15/PM10
Bromomethane	<1	<1	<1								<1	ug/kg	TM15/PM10
Chloroethane <sup>#</sup>	<2	<2	<2								<2	ug/kg	TM15/PM10
Trichlorofluoromethane <sup>#</sup>	<2	<2	<2								<2	ug/kg	TM15/PM10
1,1-Dichloroethene <sup>#</sup>	<6	<6	<6								<6	ug/kg	TM15/PM10
Dichloromethane <sup>#</sup>	<7	<7	<7								<7	ug/kg	TM15/PM10
trans-1-2-Dichloroethene <sup>#</sup>	<3	<3	<3								<3	ug/kg	TM15/PM10
1,1-Dichloroethane <sup>#</sup>	<3	<3	<3								<3	ug/kg	TM15/PM10
cis-1-2-Dichloroethene <sup>#</sup>	<3	<3	<3								<3	ug/kg	TM15/PM10
2,2-Dichloropropane	<4	<4	<4								<4	ug/kg	TM15/PM10
Bromochloromethane <sup>#</sup>	<3	<3	<3								<3	ug/kg	TM15/PM10
Chloroform <sup>#</sup>	<3	<3	<3								<3	ug/kg	TM15/PM10
1,1,1-Trichloroethane <sup>#</sup>	<3	<3	<3								<3	ug/kg	TM15/PM10
1,1-Dichloropropene <sup>#</sup>	<3	<3	<3								<3	ug/kg	TM15/PM10
Carbon tetrachloride <sup>#</sup>	<4	<4	<4								<4	ug/kg	TM15/PM10
1,2-Dichloroethane <sup>#</sup>	<4	<4	<4								<4	ug/kg	TM15/PM10
Benzene <sup>#</sup>	<3	<3	<3								<3	ug/kg	TM15/PM10
Trichloroethene <sup>#</sup>	<3	<3	<3								<3	ug/kg	TM15/PM10
1,2-Dichloropropane <sup>#</sup>	<6	<6	<6								<6	ug/kg	TM15/PM10
Dibromomethane <sup>#</sup>	<3	<3	<3								<3	ug/kg	TM15/PM10
Bromodichloromethane <sup>#</sup>	<3	<3	<3								<3	ug/kg	TM15/PM10
cis-1-3-Dichloropropene	<4	<4	<4								<4	ug/kg	TM15/PM10
Toluene <sup>#</sup>	<3	<3	<3								<3	ug/kg	TM15/PM10
trans-1-3-Dichloropropene <sup>#</sup>	<3	<3	<3								<3	ug/kg	TM15/PM10
1,1,2-Trichloroethane <sup>#</sup>	<3	<3	<3								<3	ug/kg	TM15/PM10
Tetrachloroethene <sup>#</sup>	<3	<3	<3								<3	ug/kg	TM15/PM10
1,3-Dichloropropane <sup>#</sup>	<3	<3	<3								<3	ug/kg	TM15/PM10
Dibromochloromethane <sup>#</sup>	<3	<3	<3								<3	ug/kg	TM15/PM10
1,2-Dibromoethane <sup>#</sup>	<3	<3	<3								<3	ug/kg	TM15/PM10
Chlorobenzene <sup>#</sup>	<3	<3	<3								<3	ug/kg	TM15/PM10
1,1,1,2-Tetrachloroethane	<3	<3	<3								<3	ug/kg	TM15/PM10
Ethylbenzene <sup>#</sup>	18	<3	14								<3	ug/kg	TM15/PM10
p/m-Xylene <sup>#</sup>	<6	<6	<6								<6	ug/kg	TM15/PM10
o-Xylene <sup>#</sup>	<3	<3	<3								<3	ug/kg	TM15/PM10
Styrene <sup>#</sup>	<3	<3	<3								<3	ug/kg	TM15/PM10
Bromoform <sup>#</sup>	<3	<3	<3								<3	ug/kg	TM15/PM10
Isopropylbenzene <sup>#</sup>	<3	<3	<3								<3	ug/kg	TM15/PM10
1,1,2,2-Tetrachloroethane <sup>#</sup>	<3	<3	<3								<3	ug/kg	TM15/PM10
Bromobenzene	<2	<2	<2								<2	ug/kg	TM15/PM10
1,2,3-Trichloropropane <sup>#</sup>	<4	<4	<4								<4	ug/kg	TM15/PM10
Propylbenzene <sup>#</sup>	<4	<4	<4								<4	ug/kg	TM15/PM10
2-Chlorotoluene	<3	<3	<3								<3	ug/kg	TM15/PM10
1,3,5-Trimethylbenzene <sup>#</sup>	<3	<3	<3								<3	ug/kg	TM15/PM10
4-Chlorotoluene	<3	<3	<3								<3	ug/kg	TM15/PM10
tert-Butylbenzene <sup>#</sup>	<5	<5	<5								<5	ug/kg	TM15/PM10
1,2,4-Trimethylbenzene <sup>#</sup>	<6	<6	<6								<6	ug/kg	TM15/PM10
sec-Butylbenzene <sup>#</sup>	<4	<4	<4								<4	ug/kg	TM15/PM10
4-Isopropyltoluene <sup>#</sup>	<4	<4	<4								<4	ug/kg	TM15/PM10
1,3-Dichlorobenzene <sup>#</sup>	<4	<4	<4								<4	ug/kg	TM15/PM10
1,4-Dichlorobenzene <sup>#</sup>	<4	<4	<4								<4	ug/kg	TM15/PM10
n-Butylbenzene <sup>#</sup>	<4	<4	<4								<4	ug/kg	TM15/PM10
1,2-Dichlorobenzene <sup>#</sup>	<4	<4	<4								<4	ug/kg	TM15/PM10
1,2-Dibromo-3-chloropropane <sup>#</sup>	<4	<4	<4								<4	ug/kg	TM15/PM10
1,2,4-Trichlorobenzene <sup>#</sup>	<7	<7	<7								<7	ug/kg	TM15/PM10
Hexachlorobutadiene	<4	<4	<4								<4	ug/kg	TM15/PM10
Naphthalene	<27	<27	<27								<27	ug/kg	TM15/PM10
1,2,3-Trichlorobenzene <sup>#</sup>	<7	<7	<7								<7	ug/kg	TM15/PM10

***Jones Environmental Laboratory***

### SVOCs - Tentatively Identified Compounds (TICs)

<b>Job number:</b>	11/4615
<b>Sample number:</b>	22
<b>Sample identity:</b>	DPS-SB03
<b>Sample depth:</b>	0.5-1.0
<b>Sample Type:</b>	Soil
<b>Units:</b>	ug/kg

Method TM16/PM8

**note: Only samples with TICs (if requested) are reported. If TICs were requested but no compounds found they are not reported.**

Tentative Compound Identification (>80% match)	Retention Time (minutes)	Concentration
Benzenesulfonamide, N-ethyl-2-methyl-	9.57	138
Cyclic octaatomic sulfur	11.16	209

**SVOCs - Tentatively Identified Compounds (TICs)**

**Job number:** 11/4615  
**Sample number:** 27  
**Sample identity:** DPS-SB04  
**Sample depth:** 0.5-1.0  
**Sample Type:** Soil  
**Units:** ug/kg

**Method** TM16/PM8

**note:** Only samples with TICs (if requested) are reported. If TICs were requested but no compounds found they are not reported.

Tentative Compound Identification (>80% match)	Retention Time (minutes)	Concentration
Dodecane, 2,6,11-trimethyl-	8.83	200
Pentadecane	9.05	198
Benzenesulfonamide, N-ethyl-2-methyl-	9.56	490
Hexadecane	9.63	284
Methoxyacetic acid, 4-tetradecyl ester	9.91	325
Heptadecane	10.16	305
Octadecane	10.63	241
Hexadecane, 2,6,10,14-tetramethyl-	10.69	538
Nonadecane	11.06	408
Eicosane	11.46	202
Heneicosane	11.84	152

***Jones Environmental Laboratory***

### SVOCs - Tentatively Identified Compounds (TICs)

<b>Job number:</b>	11/4615
<b>Sample number:</b>	32
<b>Sample identity:</b>	DPS-SB05
<b>Sample depth:</b>	0.5-1.0
<b>Sample Type:</b>	Soil
<b>Units:</b>	ug/kg

**Method**      **TM16/PM8**

**note: Only samples with TICs (if requested) are reported. If TICs were requested but no compounds found they are not reported.**

Tentative Compound Identification (>80% match)	Retention Time (minutes)	Concentration
Phenol, 2,4-bis(1,1-dimethylethyl)-	9.01	142
Benzenesulfonamide, N-ethyl-2-methyl-	9.56	615
Benzenesulfonamide, N-ethyl-4-methyl-	9.88	295
9-Octadecenamide, (Z)-	13.86	1308



## NOTES TO ACCOMPANY ALL SCHEDULES AND REPORTS

### SOILS

Please note we are only MCERTS accredited for sand, loam and clay and any other matrix is outside our scope of accreditation.

Where an MCERTS report has been requested, you will be notified within 48 hours of any samples that have been identified as being outside our MCERTS scope. As validation has been performed on clay, sand and loam, only samples that are predominantly these matrices, or combinations of them will be within our MCERTS scope. If samples are not one of a combination of the above matrices they will not be marked as MCERTS accredited.

It is assumed that you have taken representative samples on site and require analysis on a representative subsample. Stones will generally be included unless we are requested to remove them.

All samples will be discarded one month after the date of reporting, unless we are instructed to the contrary. If we are instructed to keep samples, a storage charge of £1 (1.5 Euros) per sample per month will be applied until we are asked to dispose of them.

If you have not already done so, please send us a purchase order if this is required by your company.

Where appropriate please make sure that our detection limits are suitable for your needs, if they are not, please notify us immediately.

All analysis is reported on a dry weight basis unless stated otherwise. Results are not surrogate corrected. Samples are dried at 35°C unless otherwise stated. Moisture content for CEN Leachate tests are dried at 105°C

Asbestos screens where requested will be undertaken by a UKAS accredited laboratory.

### WATERS

Please note we are not a Drinking Water Inspectorate (DWI) Approved Laboratory. It is important that detection limits are carefully considered when requesting water analysis.

UKAS accreditation applies to surface water and groundwater and one other matrix which is analysis specific, any other liquids are outside our scope of accreditation

As surface waters require different sample preparation to groundwaters the laboratory must be informed of the water type when submitting samples. All samples are treated as groundwaters and analysis performed on settled samples unless we are instructed otherwise.

### DEVIATING SAMPLES

Samples must be received in a condition appropriate to the requested analyses. All samples should be submitted to the laboratory in suitable containers with sufficient ice packs to sustain an appropriate temperature for the requested analysis. If this is not the case you will be informed and any analysis that may be compromised highlighted on your schedule/ report by the use of a symbol.

*The use of any of the following symbols indicates that the sample was deviating and the test result may be unreliable:*

\$	Sample temperature on receipt considered inappropriate for analysis requested.
^	Samples exceeding recommended holding times.
&	Samples received in inappropriate containers (e.g. volatile samples not submitted in VOC jars/vials).
~	No sampling date given, unable to confirm if samples are with acceptable holding times.

### SURROGATES

Surrogate compounds are added during the preparation process to monitor recovery of analytes. However low recovery is often due to peat, clay or other organic rich matrices. For waters this can be due to oxidants, surfactants, organic rich sediments or remediation fluids. Acceptable limits for most organic methods are 70 - 130%. Results are not surrogate corrected.

### AQCs

Where AQC's fall outside UKAS/MCERTS criteria analysis is repeated if possible.

### NOTE

Data is only accredited when all the requirements of our Quality System have been met. In certain circumstances where the requirements have not been met, the laboratory may issue the data in its final report if it believes that the validity of the data has not been compromised but will remove the accreditation. Please do not hesitate to contact the laboratory if further details are required of the circumstances which have led to the removal of accreditation.

## ABBREVIATIONS and ACRONYMS USED

#	UKAS accredited.
M	MCERTS accredited.
NAD	No Asbestos Detected.
ND	None Detected (usually refers to VOC and/SVOC TICs).
SS	Calibrated against a single substance.
*	Analysis subcontracted to a Jones Environmental approved laboratory.
W	Results expressed on as received basis.
+	Accreditation has been removed from this result see 'Note' on previous page.
++	Result outside calibration range, results should be considered as indicative only and are not accredited.
SV	Surrogate recovery outside performance criteria. This may be due to a matrix effect.
DR	Dilution required.

[illegible]



# Jones Environmental Laboratory

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Zone 3  
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No.4225

<b>Attention :</b>	Michael Hazlehurst
<b>Date :</b>	8th July, 2011
<b>Your reference :</b>	UK22-16873
<b>Our reference :</b>	Test Report 11/5009 Batch 1
<b>Location :</b>	DPS
<b>Date samples received :</b>	1st July, 2011
<b>Status :</b>	Final report
<b>Issue :</b>	1

Eleven samples were received for analysis on 1st July, 2011, which was completed on 8th July 2011. Please find attached our Test Report which should be read with notes at the end of the report and should include all sections if reproduced. Interpretations and opinions are outside the scope of any accreditation, and all results relate only to samples supplied.

All analysis is carried out on as received samples and reported on a dry weight basis unless stated otherwise. Results are not surrogate corrected.

**J W Farrell- Jones CChem FRSC**  
**Chartered Chemist**

# **Jones Environmental Laboratory**

**Client Name:** Environ

**Report : Solid**

**Reference:** UK22-16873

**Location:** DPS

**Solids:** V=60g VOC jar, J=250g glass jar, T=plastic tub

**Contact:** Michael Hazlehurst

**JE Job No.:** 11/5009

J E Sample No.	1-2	3-4	5-7	8-9	13-14	15-16	17-18	21-22			Please see attached notes for all abbreviations and acronyms		
Sample ID	BH-08	BH-08	SB-09	SB-09	SB-10	SB-10-DS	SB-11	SB-12					
Depth	1.8-2.0	2.8-3.0	0.3-0.5	1.3-1.5	2.3-2.5	2.3-2.5	0.3-0.5	0.8-1.0					
COC No / misc													
Containers	V	V	VB	V	V	V	V	V					
Sample Date	27/06/2011	27/06/2011	27/06/2011	27/06/2011	28/06/2011	28/06/2011	28/06/2011	28/06/2011					
Sample Type	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil					
Batch Number	1	1	1	1	1	1	1	1					
Date of Receipt	01/07/2011	01/07/2011	01/07/2011	01/07/2011	01/07/2011	01/07/2011	01/07/2011	01/07/2011			LOD	Units	Method No.
Antimony	<1	<1	<1	<1	<1	<1	<1	<1			<1	mg/kg	TM30/PM15
Arsenic <sup>#</sup>	4.9	3.5	2.6	2.3	2.9	2.4	2.4	2.8			<0.5	mg/kg	TM30/PM15
Cadmium <sup>#</sup>	0.4	0.4	0.4	0.4	0.4	0.4	0.2	0.3			<0.1	mg/kg	TM30/PM15
Chromium <sup>#</sup>	16.6	19.1	19.5	20.7	14.9	13.3	9.8	20.6			<0.5	mg/kg	TM30/PM15
Cobalt <sup>#</sup>	1.8	2.6	2.6	3.0	2.3	1.8	1.1	2.8			<0.5	mg/kg	TM30/PM15
Copper <sup>#</sup>	12	14	15	16	12	10	9	14			<1	mg/kg	TM30/PM15
Lead <sup>#</sup>	<5	<5	<5	<5	13	<5	<5	<5			<5	mg/kg	TM30/PM15
Manganese <sup>#</sup>	79	72	68	66	57	50	54	77			<1	mg/kg	TM30/PM15
Mercury <sup>#</sup>	0.3	0.3	0.4	0.3	0.4	0.4	0.4	0.3			<0.1	mg/kg	TM30/PM15
Nickel <sup>#</sup>	16.9	22.0	34.3	23.8	17.1	13.7	10.5	22.2			<0.7	mg/kg	TM30/PM15
Selenium <sup>#</sup>	<1	<1	<1	<1	<1	<1	<1	4			<1	mg/kg	TM30/PM15
Thallium	<1	<1	<1	<1	<1	<1	<1	<1			<1	mg/kg	TM30/PM15
Tin	<1	<1	<1	<1	<1	<1	4	<1			<1	mg/kg	TM30/PM15
Vanadium	16	17	53	17	16	14	8	17			<1	mg/kg	TM30/PM15
Zinc <sup>#</sup>	41	57	52	58	43	31	29	51			<5	mg/kg	TM30/PM15
<b>PAH MS</b>													
Naphthalene <sup>#</sup>	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04			<0.04	mg/kg	TM4/PM8
Acenaphthylene	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03			<0.03	mg/kg	TM4/PM8
Acenaphthene <sup>#</sup>	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05			<0.05	mg/kg	TM4/PM8
Fluorene <sup>#</sup>	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04			<0.04	mg/kg	TM4/PM8
Phenanthrene <sup>#</sup>	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03			<0.03	mg/kg	TM4/PM8
Anthracene <sup>#</sup>	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04			<0.04	mg/kg	TM4/PM8
Fluoranthene <sup>#</sup>	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03			<0.03	mg/kg	TM4/PM8
Pyrene <sup>#</sup>	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03			<0.03	mg/kg	TM4/PM8
Benz(a)anthracene <sup>#</sup>	<0.06	<0.06	<0.06	<0.06	<0.06	<0.06	<0.06	<0.06			<0.06	mg/kg	TM4/PM8
Chrysene <sup>#</sup>	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02			<0.02	mg/kg	TM4/PM8
Benzo(b)fluoranthene <sup>#</sup>	<0.07	<0.07	<0.07	<0.07	<0.07	<0.07	<0.07	<0.07			<0.07	mg/kg	TM4/PM8
Benzo(a)pyrene <sup>#</sup>	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04			<0.04	mg/kg	TM4/PM8
Indeno(123cd)pyrene <sup>#</sup>	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04			<0.04	mg/kg	TM4/PM8
Dibenzo(ah)anthracene <sup>#</sup>	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04			<0.04	mg/kg	TM4/PM8
Benzo(ghi)perylene <sup>#</sup>	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04			<0.04	mg/kg	TM4/PM8
PAH 16 Total	<0.6	<0.6	<0.6	<0.6	<0.6	<0.6	<0.6	<0.6			<0.6	mg/kg	TM4/PM8
Benzo(b)fluoranthene	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05			<0.05	mg/kg	TM4/PM8
Benzo(k)fluoranthene	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02			<0.02	mg/kg	TM4/PM8
PAH Surrogate % Recovery	108	119	103	113	106	102	105	109			<0	%	TM4/PM8
EPH >C8-C10 <sup>#</sup>	<5	<5	<5	<5	<5	<5	<5	<5			<5	mg/kg	TM5/PM8
EPH >C10-C20 <sup>#</sup>	408	63	<10	<10	<10	<10	76	<10			<10	mg/kg	TM5/PM8
EPH >C20-C30 <sup>#</sup>	331	41	<10	<10	<10	<10	42	<10			<10	mg/kg	TM5/PM8
EPH >C30-C40 <sup>#</sup>	<10	<10	<10	<10	<10	<10	23	<10			<10	mg/kg	TM5/PM8
EPH >C8-C40 <sup>#</sup>	739	104	<35	<35	<35	<35	141	<35			<35	mg/kg	TM5/PM8
Sulphate as SO4 (2:1 Ext) <sup>#</sup>	0.2052	0.1462	1.8795	0.1728	0.6094	0.8984	0.2526	1.5808			<0.0015	g/l	TM38/PM20

**Client Name:** Environ  
**Reference:** UK22-16873  
**Location:** DPS  
**Contact:** Michael Hazlehurst  
**JE Job No.:** 11/5009

**Solids:** V=60g VOC jar, J=250g glass jar, T=plastic tub

Please see attached notes for all abbreviations and acronyms

Client Name: Environ

SVOC Report : Solid

Reference: UK22-16873

Location: DPS

Contact: Michael Hazlehurst

JE Job No.: 11/5009

J E Sample No.	1-2	3-4	8-9	13-14	21-22						Please see attached notes for all abbreviations and acronyms		
Sample ID	BH-08	BH-08	SB-09	SB-10	SB-12								
Depth	1.8-2.0	2.8-3.0	1.3-1.5	2.3-2.5	0.8-1.0								
COC No / misc													
Containers	V	V	V	V	V								
Sample Date	27/06/2011	27/06/2011	27/06/2011	28/06/2011	28/06/2011								
Sample Type	Soil	Soil	Soil	Soil	Soil								
Batch Number	1	1	1	1	1								
Date of Receipt	01/07/2011	01/07/2011	01/07/2011	01/07/2011	01/07/2011						LOD	Units	Method No.
<b>SVOC MS</b>													
Phenols													
2-Chlorophenol	<10	<10	<10	<10	<10						<10	ug/kg	TM16/PM8
2-Methylphenol	<10	<10	<10	<10	<10						<10	ug/kg	TM16/PM8
2-Nitrophenol	<10	<10	<10	<10	<10						<10	ug/kg	TM16/PM8
2,4-Dichlorophenol	<10	<10	<10	<10	<10						<10	ug/kg	TM16/PM8
2,4-Dimethylphenol	<10	<10	<10	<10	<10						<10	ug/kg	TM16/PM8
2,4,5-Trichlorophenol	<10	<10	<10	<10	<10						<10	ug/kg	TM16/PM8
2,4,6-Trichlorophenol	<10	<10	<10	<10	<10						<10	ug/kg	TM16/PM8
4-Chloro-3-methylphenol	<10	<10	<10	<10	<10						<10	ug/kg	TM16/PM8
4-Methylphenol	<10	<10	<10	<10	<10						<10	ug/kg	TM16/PM8
4-Nitrophenol	<10	<10	<10	<10	<10						<10	ug/kg	TM16/PM8
Pentachlorophenol	<10	<10	<10	<10	<10						<10	ug/kg	TM16/PM8
Phenol	<10	<10	<10	<10	<10						<10	ug/kg	TM16/PM8
PAHs													
2-Chloronaphthalene	<10	<10	<10	<10	<10						<10	ug/kg	TM16/PM8
2-Methylnaphthalene	57	<10	<10	<10	<10						<10	ug/kg	TM16/PM8
Phthalates													
Bis(2-ethylhexyl) phthalate	<10	<10	<10	<10	<10						<10	ug/kg	TM16/PM8
Butylbenzyl phthalate	<10	<10	<10	<10	<10						<10	ug/kg	TM16/PM8
Di-n-butyl phthalate	<10	<10	<10	<10	<10						<10	ug/kg	TM16/PM8
Di-n-Octyl phthalate	<10	<10	<10	<10	<10						<10	ug/kg	TM16/PM8
Diethyl phthalate	<10	<10	<10	<10	<10						<10	ug/kg	TM16/PM8
Dimethyl phthalate	<10	<10	<10	<10	<10						<10	ug/kg	TM16/PM8
Other SVOCs													
1,2-Dichlorobenzene	<10	<10	<10	<10	<10						<10	ug/kg	TM16/PM8
1,2,4-Trichlorobenzene	<10	<10	<10	<10	<10						<10	ug/kg	TM16/PM8
1,3-Dichlorobenzene	<10	<10	<10	<10	<10						<10	ug/kg	TM16/PM8
1,4-Dichlorobenzene	<10	<10	<10	<10	<10						<10	ug/kg	TM16/PM8
2-Nitroaniline	<10	<10	<10	<10	<10						<10	ug/kg	TM16/PM8
2,4-Dinitrotoluene	<10	<10	<10	<10	<10						<10	ug/kg	TM16/PM8
2,6-Dinitrotoluene	<10	<10	<10	<10	<10						<10	ug/kg	TM16/PM8
3-Nitroaniline	<10	<10	<10	<10	<10						<10	ug/kg	TM16/PM8
4-Bromophenylphenylether	<10	<10	<10	<10	<10						<10	ug/kg	TM16/PM8
4-Chloroaniline	<10	<10	<10	<10	<10						<10	ug/kg	TM16/PM8
4-Chlorophenylphenylether	<10	<10	<10	<10	<10						<10	ug/kg	TM16/PM8
4-Nitroaniline	<10	<10	<10	<10	<10						<10	ug/kg	TM16/PM8
Azobenzene	<10	<10	<10	<10	<10						<10	ug/kg	TM16/PM8
Bis(2-chloroethoxy)methane	<10	<10	<10	<10	<10						<10	ug/kg	TM16/PM8
Bis(2-chloroethyl)ether	<10	<10	<10	<10	<10						<10	ug/kg	TM16/PM8
Carbazole	<10	<10	<10	<10	<10						<10	ug/kg	TM16/PM8
Dibenzofuran	<10	<10	<10	<10	<10						<10	ug/kg	TM16/PM8
Hexachlorobenzene	<10	<10	<10	<10	<10						<10	ug/kg	TM16/PM8
Hexachlorobutadiene	<10	<10	<10	<10	<10						<10	ug/kg	TM16/PM8
Hexachlorocyclopentadiene	<10	<10	<10	<10	<10						<10	ug/kg	TM16/PM8
Hexachloroethane	<10	<10	<10	<10	<10						<10	ug/kg	TM16/PM8
Isophorone	<10	<10	<10	<10	<10						<10	ug/kg	TM16/PM8
N-nitrosodi-n-propylamine	<10	<10	<10	<10	<10						<10	ug/kg	TM16/PM8
Nitrobenzene	<10	<10	<10	<10	<10						<10	ug/kg	TM16/PM8

# **Jones Environmental Laboratory**

**Client Name:** Environ  
**Reference:** UK22-16873  
**Location:** DPS  
**Contact:** Michael Hazlehurst  
**JE Job No.:** 11/5009

**VOC Report :** Solid

J E Sample No.	1-2	3-4	8-9	13-14	21-22						Please see attached notes for all abbreviations and acronyms		
Sample ID	BH-08	BH-08	SB-09	SB-10	SB-12								
Depth	1.8-2.0	2.8-3.0	1.3-1.5	2.3-2.5	0.8-1.0								
COC No / misc													
Containers	V	V	V	V	V								
Sample Date	27/06/2011	27/06/2011	27/06/2011	28/06/2011	28/06/2011								
Sample Type	Soil	Soil	Soil	Soil	Soil								
Batch Number	1	1	1	1	1								
Date of Receipt	01/07/2011	01/07/2011	01/07/2011	01/07/2011	01/07/2011						LOD	Units	Method No.
<b>VOC MS</b>													
Dichlorodifluoromethane	<2	<2	<2	<2	<2						<2	ug/kg	TM15/PM10
Methyl Tertiary Butyl Ether <sup>#</sup>	<2	<2	<2	<2	<2						<2	ug/kg	TM15/PM10
Chloromethane <sup>#</sup>	<3	<3	<3	<3	<3						<3	ug/kg	TM15/PM10
Vinyl Chloride	<2	<2	<2	<2	<2						<2	ug/kg	TM15/PM10
Bromomethane	<1	<1	<1	<1	<1						<1	ug/kg	TM15/PM10
Chloroethane <sup>#</sup>	<2	<2	<2	<2	<2						<2	ug/kg	TM15/PM10
Trichlorofluoromethane <sup>#</sup>	<2	<2	<2	<2	<2						<2	ug/kg	TM15/PM10
1,1-Dichloroethene <sup>#</sup>	<6	<6	<6	<6	<6						<6	ug/kg	TM15/PM10
Dichloromethane <sup>#</sup>	<7	<7	<7	<7	<7						<7	ug/kg	TM15/PM10
trans-1-2-Dichloroethene <sup>#</sup>	<3	<3	<3	<3	<3						<3	ug/kg	TM15/PM10
1,1-Dichloroethane <sup>#</sup>	<3	<3	<3	<3	<3						<3	ug/kg	TM15/PM10
cis-1-2-Dichloroethene <sup>#</sup>	<3	<3	<3	<3	<3						<3	ug/kg	TM15/PM10
2,2-Dichloropropane	<4	<4	<4	<4	<4						<4	ug/kg	TM15/PM10
Bromochloromethane <sup>#</sup>	<3	<3	<3	<3	<3						<3	ug/kg	TM15/PM10
Chloroform <sup>#</sup>	<3	<3	<3	<3	<3						<3	ug/kg	TM15/PM10
1,1,1-Trichloroethane <sup>#</sup>	<3	<3	<3	<3	<3						<3	ug/kg	TM15/PM10
1,1-Dichloropropene <sup>#</sup>	<3	<3	<3	<3	<3						<3	ug/kg	TM15/PM10
Carbon tetrachloride <sup>#</sup>	<4	<4	<4	<4	<4						<4	ug/kg	TM15/PM10
1,2-Dichloroethane <sup>#</sup>	<4	<4	<4	<4	<4						<4	ug/kg	TM15/PM10
Benzene <sup>#</sup>	<3	<3	<3	<3	<3						<3	ug/kg	TM15/PM10
Trichloroethene <sup>#</sup>	<3	<3	<3	<3	<3						<3	ug/kg	TM15/PM10
1,2-Dichloropropane <sup>#</sup>	<6	<6	<6	<6	<6						<6	ug/kg	TM15/PM10
Dibromomethane <sup>#</sup>	<3	<3	<3	<3	<3						<3	ug/kg	TM15/PM10
Bromodichloromethane <sup>#</sup>	<3	<3	<3	<3	<3						<3	ug/kg	TM15/PM10
cis-1-3-Dichloropropene	<4	<4	<4	<4	<4						<4	ug/kg	TM15/PM10
Toluene <sup>#</sup>	<3	<3	<3	<3	<3						<3	ug/kg	TM15/PM10
trans-1-3-Dichloropropene	<3	<3	<3	<3	<3						<3	ug/kg	TM15/PM10
1,1,2-Trichloroethane <sup>#</sup>	<3	<3	<3	<3	<3						<3	ug/kg	TM15/PM10
Tetrachloroethene <sup>#</sup>	<3	<3	<3	<3	<3						<3	ug/kg	TM15/PM10
1,3-Dichloropropane <sup>#</sup>	<3	<3	<3	<3	<3						<3	ug/kg	TM15/PM10
Dibromochloromethane <sup>#</sup>	<3	<3	<3	<3	<3						<3	ug/kg	TM15/PM10
1,2-Dibromoethane <sup>#</sup>	<3	<3	<3	<3	<3						<3	ug/kg	TM15/PM10
Chlorobenzene <sup>#</sup>	<3	<3	<3	<3	<3						<3	ug/kg	TM15/PM10
1,1,1,2-Tetrachloroethane	<3	<3	<3	<3	<3						<3	ug/kg	TM15/PM10
Ethylbenzene <sup>#</sup>	<3	<3	7	<3	<3						<3	ug/kg	TM15/PM10
p/m-Xylene <sup>#</sup>	<6 <sup>+</sup>	<6 <sup>+</sup>	16 <sup>+</sup>	<6 <sup>+</sup>	<6 <sup>+</sup>						<6	ug/kg	TM15/PM10
o-Xylene <sup>#</sup>	<3 <sup>+</sup>	<3 <sup>+</sup>	<3 <sup>+</sup>	<3 <sup>+</sup>	<3 <sup>+</sup>						<3	ug/kg	TM15/PM10
Styrene <sup>#</sup>	<3	<3	<3	<3	<3						<3	ug/kg	TM15/PM10
Bromoform <sup>#</sup>	<3	<3	<3	<3	<3						<3	ug/kg	TM15/PM10
Isopropylbenzene <sup>#</sup>	<3	<3	<3	<3	<3						<3	ug/kg	TM15/PM10
1,1,2,2-Tetrachloroethane <sup>#</sup>	<3	<3	<3	<3	<3						<3	ug/kg	TM15/PM10
Bromobenzene	<2	<2	<2	<2	<2						<2	ug/kg	TM15/PM10
1,2,3-Trichloropropane <sup>#</sup>	<4	<4	<4	<4	<4						<4	ug/kg	TM15/PM10
Propylbenzene <sup>#</sup>	<4 <sup>+</sup>	<4 <sup>+</sup>	<4 <sup>+</sup>	<4 <sup>+</sup>	<4 <sup>+</sup>						<4	ug/kg	TM15/PM10
2-Chlorotoluene	<3	<3	<3	<3	<3						<3	ug/kg	TM15/PM10
1,3,5-Trimethylbenzene <sup>#</sup>	<3	<3	<3	<3	<3						<3	ug/kg	TM15/PM10
4-Chlorotoluene	<3	<3	<3	<3	<3						<3	ug/kg	TM15/PM10
tert-Butylbenzene <sup>#</sup>	<5	<5	<5	<5	<5						<5	ug/kg	TM15/PM10
1,2,4-Trimethylbenzene <sup>#</sup>	<6	<6	<6	<6	<6						<6	ug/kg	TM15/PM10
sec-Butylbenzene <sup>#</sup>	<4	<4	<4	<4	<4						<4	ug/kg	TM15/PM10
4-Isopropyltoluene <sup>#</sup>	<4	<4	<4	<4	<4						<4	ug/kg	TM15/PM10
1,3-Dichlorobenzene <sup>#</sup>	<4	<4	<4	<4	<4						<4	ug/kg	TM15/PM10
1,4-Dichlorobenzene <sup>#</sup>	<4	<4	<4	<4	<4						<4	ug/kg	TM15/PM10
n-Butylbenzene <sup>#</sup>	<4	<4	<4	<4	<4						<4	ug/kg	TM15/PM10
1,2-Dichlorobenzene <sup>#</sup>	<4	<4	<4	<4	<4						<4	ug/kg	TM15/PM10
1,2-Dibromo-3-chloropropane <sup>#</sup>	<4	<4	<4	<4	<4						<4	ug/kg	TM15/PM10
1,2,4-Trichlorobenzene <sup>#</sup>	<7	<7	<7	<7	<7						<7	ug/kg	TM15/PM10
Hexachlorobutadiene	<4	<4	<4	<4	<4						<4	ug/kg	TM15/PM10
Naphthalene	<27	<27	<27	<27	<27						<27	ug/kg	TM15/PM10
1,2,3-Trichlorobenzene <sup>#</sup>	<7	<7	<7	<7	<7						<7	ug/kg	TM15/PM10



## NOTES TO ACCOMPANY ALL SCHEDULES AND REPORTS

### SOILS

Please note we are only MCERTS accredited for sand, loam and clay and any other matrix is outside our scope of accreditation.

Where an MCERTS report has been requested, you will be notified within 48 hours of any samples that have been identified as being outside our MCERTS scope. As validation has been performed on clay, sand and loam, only samples that are predominantly these matrices, or combinations of them will be within our MCERTS scope. If samples are not one of a combination of the above matrices they will not be marked as MCERTS accredited.

It is assumed that you have taken representative samples on site and require analysis on a representative subsample. Stones will generally be included unless we are requested to remove them.

All samples will be discarded one month after the date of reporting, unless we are instructed to the contrary. If we are instructed to keep samples, a storage charge of £1 (1.5 Euros) per sample per month will be applied until we are asked to dispose of them.

If you have not already done so, please send us a purchase order if this is required by your company.

Where appropriate please make sure that our detection limits are suitable for your needs, if they are not, please notify us immediately.

All analysis is reported on a dry weight basis unless stated otherwise. Results are not surrogate corrected. Samples are dried at 35°C unless otherwise stated. Moisture content for CEN Leachate tests are dried at 105°C

Asbestos screens where requested will be undertaken by a UKAS accredited laboratory.

### WATERS

Please note we are not a Drinking Water Inspectorate (DWI) Approved Laboratory. It is important that detection limits are carefully considered when requesting water analysis.

UKAS accreditation applies to surface water and groundwater and one other matrix which is analysis specific, any other liquids are outside our scope of accreditation

As surface waters require different sample preparation to groundwaters the laboratory must be informed of the water type when submitting samples. All samples are treated as groundwaters and analysis performed on settled samples unless we are instructed otherwise.

### DEVIATING SAMPLES

Samples must be received in a condition appropriate to the requested analyses. All samples should be submitted to the laboratory in suitable containers with sufficient ice packs to sustain an appropriate temperature for the requested analysis. If this is not the case you will be informed and any analysis that may be compromised highlighted on your schedule/ report by the use of a symbol.

*The use of any of the following symbols indicates that the sample was deviating and the test result may be unreliable:*

\$	Sample temperature on receipt considered inappropriate for analysis requested.
^	Samples exceeding recommended holding times.
&	Samples received in inappropriate containers (e.g. volatile samples not submitted in VOC jars/vials).
~	No sampling date given, unable to confirm if samples are with acceptable holding times.

### SURROGATES

Surrogate compounds are added during the preparation process to monitor recovery of analytes. However low recovery is often due to peat, clay or other organic rich matrices. For waters this can be due to oxidants, surfactants, organic rich sediments or remediation fluids. Acceptable limits for most organic methods are 70 - 130%. Results are not surrogate corrected.

### AQCs

Where AQC's fall outside UKAS/MCERTS criteria analysis is repeated if possible.

### NOTE

Data is only accredited when all the requirements of our Quality System have been met. In certain circumstances where the requirements have not been met, the laboratory may issue the data in its final report if it believes that the validity of the data has not been compromised but will remove the accreditation. Please do not hesitate to contact the laboratory if further details are required of the circumstances which have led to the removal of accreditation.

## ABBREVIATIONS and ACRONYMS USED

#	UKAS accredited.
M	MCERTS accredited.
NAD	No Asbestos Detected.
ND	None Detected (usually refers to VOC and/SVOC TICs).
SS	Calibrated against a single substance.
*	Analysis subcontracted to a Jones Environmental approved laboratory.
W	Results expressed on as received basis.
+	Accreditation has been removed from this result see 'Note' on previous page.
++	Result outside calibration range, results should be considered as indicative only and are not accredited.
SV	Surrogate recovery outside performance criteria. This may be due to a matrix effect.
DR	Dilution required.

[illegible]

## **Annex E – ENVIRON Generic Assessment Criteria**

ANALYTE	ENVIRON GAC (Commercial)	UNIT
<b>Metals</b>		
Antimony	7,550	mg/kg
Arsenic	635	mg/kg
Barium	22,100	mg/kg
Beryllium	417	mg/kg
Cadmium	230	mg/kg
Chromium	35	mg/kg
Cobalt	NC	mg/kg
Copper	71,700	mg/kg
Lead	750	mg/kg
Manganese	NC	mg/kg
Mercury	4.3	mg/kg
Nickel	1,790	mg/kg
Selenium	13,000	mg/kg
Thallium	NC	mg/kg
Tin	NC	mg/kg
Total Sulphate	N/A	mg/kg
Vanadium	3,160	mg/kg
Zinc	665,000	mg/kg

ANALYTE	ENVIRON GAC (Commercial)	UNIT
<b>PAHs</b>		
Naphthalene	75	mg/kg
Acenaphthylene	162	mg/kg
Acenaphthene	56.7	mg/kg
Fluorene	160	mg/kg
Phenanthrene	21,900	mg/kg
Anthracene	522,000	mg/kg
Fluoranthene	22,600	mg/kg
Pyrene	54,300	mg/kg
Benz(a)anthracene	91	mg/kg
Chrysene	140.0	mg/kg
Benzo(bk)fluoranthene	102	mg/kg
Benzo(a)pyrene	14	mg/kg
Indeno(123cd)pyrene	61.0	mg/kg
Dibenzo(ah)anthracene	13	mg/kg
Benzo(ghi)perylene	658	mg/kg
PAH 16 Total	NC	mg/kg
Benzo(b)fluoranthene	102	mg/kg

ANALYTE	ENVIRON GAC (Commercial)	UNIT
Benzo(k)fluoranthene	143	mg/kg
PAH Surrogate % Recovery	NC	%

ANALYTE	ENVIRON GAC (Commercial)	UNIT
<b>Hydrocarbons</b>		
EPH >C8-C10	NC	mg/kg
EPH >C10-C20	NC	mg/kg
EPH >C20-C30	NC	mg/kg
EPH >C30-C40	NC	mg/kg
EPH >C8-C40	5,000	mg/kg

ANALYTE	ENVIRON GAC (Commercial)	UNIT
<b>PCBs</b>		
PCB 28	NC	mg/kg
PCB 52	NC	mg/kg
PCB 101	NC	mg/kg

ANALYTE	ENVIRON GAC (Commercial)	UNIT
PCB 118	NC	mg/kg
PCB 138	NC	mg/kg
PCB 153	NC	mg/kg
PCB 180	NC	mg/kg
Total 7 PCBs	0.24	mg/kg

ANALYTE	ENVIRON GAC (Commercial)	UNIT
<b>Others</b>		
Asbestos Screen	NC	
pH	NC	pH units
Sulphide	NC	mg/kg
Sulphate as SO4 (2:1 Ext)	NC	g/l

ANALYTE	ENVIRON GAC (Commercial)	UNIT
<b>SVOCs</b>		
2-Chlorophenol	3,590	mg/kg
2-Methylphenol	14,200	mg/kg
2-Nitrophenol	910	mg/kg
2,4-Dichlorophenol	3,530	mg/kg
2,4-Dimethylphenol	1,330	mg/kg
2,4,5-Trichlorophenol	2,300	mg/kg
2,4,6-Trichlorophenol	848	mg/kg
4-Chloro-3-methylphenol	8,333	mg/kg
4-Methylphenol	25,800	mg/kg
4-Nitrophenol	1,000	mg/kg
Pentachlorophenol	1,230	mg/kg
Phenol	3,200	mg/kg
2-Chloronaphthalene	113	mg/kg
2-Methylnaphthalene	7,148	mg/kg
Bis(2-ethyl-hexyl) phthalate	85,400	mg/kg
Butylbenzyl phthalate	942,000	mg/kg
Di-n-butyl phthalate	12.9	mg/kg

ANALYTE	ENVIRON GAC (Commercial)	UNIT
Di-n-Octyl phthalate	89,100	mg/kg
Diethyl phthalate	109	mg/kg
Dimethyl phthalate	275	mg/kg
1,2-Dichlorobenzene	562	mg/kg
1,2,4-Trichlorobenzene	123	mg/kg
1,3-Dichlorobenzene	177	mg/kg
1,4-Dichlorobenzene	221	mg/kg
2-Nitroaniline	651	mg/kg
2,4-Dinitrotoluene	3,750	mg/kg
2,6-Dinitrotoluene	1,860	mg/kg
3-Nitroaniline	200	mg/kg
4-Bromophenylphenylether	0.9	mg/kg
4-Chloroaniline	2,300	mg/kg
4-Chlorophenylphenylether	0.3	mg/kg
4-Nitroaniline	170	mg/kg
Azobenzene	151	mg/kg

ANALYTE	ENVIRON GAC (Commercial)	UNIT
<b>SVOCs (continued)</b>		
Bis(2-chloro-ethoxy)methane	1.3	mg/kg
Bis(2-chloro-ethyl)ether	0.2	mg/kg
Carbazole	897	mg/kg
Dibenzofuran	6,666	mg/kg
Hexachlorobenzene	0.1	mg/kg
Hexachlorobutadiene	17.6	mg/kg
Hexachlorocyclopentadiene	1	mg/kg
Hexachloroethane	8.1	mg/kg
Isophorone	887	mg/kg
N-nitrosodi-n-propylamine	1.9	mg/kg
Nitrobenzene	131	mg/kg

ANALYTE	ENVIRON GAC (Commercial)	UNIT
<b>VOCs</b>		

ANALYTE	ENVIRON GAC (Commercial)	UNIT
1,1,1,2-Tetrachloroethane	62.7	mg/kg
1,1,1-Trichloroethane	391	mg/kg
1,1,2,2-Tetrachloroethane	156	mg/kg
1,1,2-Trichloroethane	51.1	mg/kg
1,1-Dichloroethane	148	mg/kg
1,1-Dichloroethene	NC	mg/kg
1,1-Dichloropropene	12.8	mg/kg
1,2,3-Trichlorobenzene	56.8	mg/kg
1,2,3-Trichloropropane	3.14	mg/kg
1,2,4-Trichlorobenzene	123	mg/kg
1,2,4-Trimethylbenzene	NC	mg/kg
1,2-Dibromo-3-chloropropane	1.03	mg/kg
1,2-Dibromoethane	NC	mg/kg
1,2-Dichlorobenzene	562	mg/kg



ANALYTE	ENVIRON GAC (Commercial)	UNIT
1,2-Dichloroethane	0.35	mg/kg
1,2-Dichloropropane	1.72	mg/kg
<b>VOCs (continued)</b>		
1,3,5-Trimethylbenzene	1.28	mg/kg
1,3-Dichlorobenzene	17.7	mg/kg
1,3-Dichloropropane	12.8	mg/kg
1,4-Dichlorobenzene	221	mg/kg
2,2-Dichloropropane	20.4	mg/kg
2-Chlorotoluene	NC	mg/kg
4-Chlorotoluene	1.41	mg/kg
4-Isopropyltoluene	388	mg/kg
Benzene	15.8	mg/kg
Bromobenzene	NC	mg/kg
Bromochloromethane	1.10	mg/kg
Bromodichloromethane	1.10	mg/kg
Bromoform	417	mg/kg
Bromomethane	27.0	mg/kg
Carbon tetrachloride	1.74	mg/kg

ANALYTE	ENVIRON GAC (Commercial)	UNIT
Chlorobenzene	32.8	mg/kg
Chloroethane	567	mg/kg
Chloroform	57.3	mg/kg
Chloromethane	0.5	mg/kg
cis-1-2-Dichloroethene	7.74	mg/kg
cis-1-3-Dichloropropene	19.3	mg/kg
Dibromochloromethane	264	mg/kg
Dibromomethane	NC	mg/kg
Dichlorodifluoromethane	1,500	mg/kg
Dichloromethane	NC	mg/kg
Ethylbenzene	508	mg/kg
Hexachlorobutadiene	17.6	mg/kg
Isopropylbenzene	753	mg/kg
Methyl Tertiary Butyl Ether	NC	mg/kg
Naphthalene	75.0	mg/kg
n-Butylbenzene	430	mg/kg

ANALYTE	ENVIRON GAC (Commercial)	UNIT
o-Xylene	467	mg/kg
p/m-Xylene	564	mg/kg
<b>VOCs (continued)</b>		
Propylbenzene	399	mg/kg
sec-Butylbenzene	1,300	mg/kg
Styrene	607	mg/kg
tert-Butylbenzene	440	mg/kg
Tetrachloroethene	72.2	mg/kg
Toluene	835	mg/kg
trans-1-2- Dichloroethene	12.3	mg/kg
trans-1-3- Dichloropropene	12.8	mg/kg
Trichloroethene	6.61	mg/kg
Trichlorofluorometha ne	2,200	mg/kg
Vinyl Chloride	0.04	mg/kg

## **Annex F: MPS Environmental Monitoring Procedures (Prepared by Enemalta)**

F1 Environmental Monitoring

F2 Environmental Aspects Register – Direct

F3 Environmental Aspects Register - Indirect

## DPS Environmental monitoring plan\_r0\_29-10-10

Environmental aspect	Type of monitoring/ surveillance	Frequency	Data source	Responsible for the implementation	Responsible for the evaluation of Check	Recording form	Notes
Oil rags, wastes contaminated with oils	Visual inspection	once a week	Waste management checklist	Enemalta employee (Users)	Waste site coordinator	Checklist	Ensuring that contaminated waste is disposed in the appropriate containers at collection point
Oil rags, wastes contaminated with oils	Visual inspection	once a week	Waste management checklist	Cleaner	Waste site coordinator	Checklist	Contaminated waste in designed areas are collected by cleaners and disposed in the appropriate collecting facility
Oil rags, wastes contaminated with oils	Visual inspection	Variable	MEPA Waste Consignment Permit application & Waste Consignment Note	Waste carrier (contractor)	Waste site coordinator	MEPA Waste Consignment Permit application & Waste Consignment Note	Obligated to have approval from MEPA for disposal as per IPPC permit obligation 2.8.2.15 -- Collecting of contaminated waste from facility
Empty chemical cans (lubricant aerosol cans, 1000L chemical cans waste, 40Gallon chemical can waste etc)	Visual inspection	once a week	Waste management checklist	Enemalta employee (Users)	Waste site coordinator	Checklist	Obligated to have approval from MEPA for disposal as per IPPC permit obligation 2.8.2.15 -- Ensuring that empty cans are disposed in the appropriate facility
Waste from sea water filtration	Visual inspection	Daily	Waste management checklist	Maintenance personnel	Waste site coordinator	Checklist	Obligated to have approval from MEPA for disposal as per IPPC permit obligation 2.8.2.15 -- Waste from sea water filtration is emptied in an appropriate skip
Office Waste	Visual inspection	Weekly	Waste management checklist	Day duty administration cleaners	Waste site coordinator	Checklist	Office waste is being disposed of appropriately
General waste-Hazardous and Non-Hazardous	Visual inspection	Weekly	Waste management checklist	Waste site coordinator	Waste site coordinator	Checklist	No storage of waste is permitted for a period exceeding 12 months. Certificates kept on record and made available for inspection for a period of at least 5 years from date of their issue -- Segregation and storage in designated areas protected, as may be appropriate, against spillage, leachate run-off and accidental damage, where applicable, as per IPPC permit obligations 2.8.2.2/3/7/8/9/10/11/26
General waste - Non- hazardous	Contractor waste transfer note	Quarterly	Enemalta Waste Register	Waste site coordinator	Regulatory office staff	Register	Quarterly reporting according to IPPC template S3.1 - Transfer of waste-reporting
General waste - Non- hazardous	Contractor waste transfer note	Annually	Enemalta Waste Register	Waste site coordinator	Regulatory office staff	Register	Annual reporting according to IPPC template S2.1 -- Transfer of waste-reporting
General waste - Hazardous	MEPA Waste Consignment Permit application & Waste Consignment Note	Quarterly	Enemalta Waste Register	Waste site coordinator	Regulatory office staff	Register	Quarterly reporting according to IPPC template S3.1 - Transfer of waste-reporting
General waste - Hazardous	MEPA Waste Consignment Permit application & Waste Consignment Note	Annually	Enemalta Waste Register	Waste site coordinator	Regulatory office staff	Register	Annual reporting according to IPPC template S2.1 -- Transfer of waste-reporting
Bunds of hazardous waste areas	Visual inspection	Monthly	Bund checklist	Waste site coordinator	Regulatory office staff	Checklist	Bund containment condition/s
Waste Oils	Visual inspection	Monthly	Waste management checklist	Waste site coordinator	Regulatory office staff	Checklist	Obligated to have approval from MEPA for disposal as per IPPC permit obligation 2.8.2.11/15 -- Segregation, storage & containment
Waste batteries	Visual inspection	Monthly	Waste management checklist	Waste site coordinator	Regulatory office staff	Checklist	Obligated to have approval from MEPA for disposal as per IPPC permit obligation 2.8.2.15 -- Segregation and storage in designated areas protected, as may be appropriate, against spillage, leachate run-off and accidental damage.
Waste packaging materials	Visual inspection	Monthly	Waste management checklist	Waste site coordinator	Regulatory office staff	Checklist	Segregation & storage as per IPPC permit obligation 2.8.2.7.
Waste electrical & electronic equipment	Visual inspection	Monthly	Waste management checklist	Waste site coordinator	Regulatory office staff	Checklist	Obligated to have approval from MEPA for disposal as per IPPC permit obligation 2.8.2.15 -- Segregation, storage & containment
Scrap decommissioned equipment, if any	Visual inspection	yearly	Waste management checklist	Waste site coordinator	Waste site coordinator	Checklist	Obligated to have approval from MEPA for disposal as per IPPC obligation 2.8.2.27

Approved

DPS Station Manger

## DPS Environmental monitoring plan\_r0\_29-10-10

Environmental aspect	Type of monitoring/ surveillance	Frequency	Data source	Responsible for the implementation	Responsible for the evaluation of Check	Recording form	Notes
Fuel Spills response preparedness	material stocktake	every fortnight	actual material check	operations engineer	Assistant Manager	SOP-28 Annex 4 Checklist	Check of spill response equipment.
Spills due to transfer of fuels (ship to tank farm)	pipeline hydraulic testing	Every year	Pressure gauge reading and third party visual inspection	Maintenance Engineer ( third party auditor)	Station Manager	Third party inspection report & certification	Pipeline testing (IPPC obligation 2.5.5.5)
Spills due to transfer of fuels (ship to tank farm)	Continuous supervision during discharge as per Work instructions for fuel unloading.	every bunker	continuous pipeline inspection	Fuel pump-house operator/ petroleum officer	Operations engineer	incident report (in case of leak)	Work instructions WI-02 and WI-03 and IPPC permit clause 2.5.5.4
Spills due to transfer of fuels, oils, etc, except uncontaminated water (site above-ground pipelines)	visual inspection of pipelines, valves, pumps, glands, etc; for presence of leaks	weekly	pipeline visual inspection	Operations Engineer	Assistant Manager	SOP-28 Fuel lines management and inspections. Template 28.1-pipeline inspection form per site.	As per IPPC permit obligation 2.5.5.10
Spills due to transfer of fuels, oils, etc, except uncontaminated water (site above-ground pipelines)	Third party inspection and certification for leak proof	Every 3 years	visual inspection by accredited third party	third party accredited auditor	Station Manager	Inspection report & certification	see IPPC permit obligation 2.5.5.11 & as amended in MEPA correspondence dated 28th August 2009 -- checks for leakages from pipes, pumps, valves & flanges
Water discharge from fuel steam heating, tank de-watering and bunds draining.(interceptors check - daily)	frequent periodic visual inspection of interceptor for surface oil films	Per shift and according to operations	visual checks of interceptors' surfaces	Fuel Pumphouse operator	operations Engineer	SOP-DPS-10 Template 10.2 (per shift interceptor inspection form)	Work instructions for Tanks' DE-watering and Bunds draining operations WI-04 and WI-05
Water discharge from fuel steam heating, tank de-watering and bunds draining.(interceptors check -monthly)	Visual inspection of interceptor	Monthly	visual check for correct operation of interceptor and their structural integrity.	Operations engineer	Assistant Manager	SOP-DPS 10 Template 10.1 (monthly interceptor inspection form)	interceptors' inspection (IPPC clause 2.5.5.14)
Water discharge from steam fuel heating, tank de-watering and bunds draining. ( three year inspections)	Cleaning and Third party inspection for interceptor efficiency of operation	Every 3 years	Inspection report & certification as per IPPC template S2.11 obligations	Maintenance engineer (Third party civil Engineer)	Station Manager	Inspection report & certification as per IPPC template S2.11 obligations	see IPPC section 2.5.5 & as amended in MEPA correspondence dated 28th August 2009 -- inspection of interceptors (IPPC clause 2.5.5.15)
Fuel Oil tanks' bunds water retention (weekly bunds inspection)	Visual inspection of fuel tanks' bunds	weekly	visual inspection of bund walls, sumps, drain, perforations etc,	operations engineer	Assistant Manager	SOP-DPS-17. Template 17.1 HFO and D.O. bund wall inspection	As per IPPC permit obligation 2.5.5.2/3 & as amended in MEPA correspondence.
Fuel Oil tanks' bunds water retention (third party certification of bunds)	Certification of bund walls by third parties (warranted civil engineer)	Annually	visual inspection by accredited third party	Maintenance Engineer (Third party civil Engineer)	Station Manager	Report and certification	as per MEPA revised template Annex I, Updated S2.11 -- bund wall visual inspection (as per MEPA IPPC letter 14th November 2009)
Surface water discharge	Visual inspection of station oily water interceptor	Daily	Visual check for surface oil films	Cooling Water Pumphouse operator	Operations engineer	SOP-DPS 10 Template 10.1 (monthly interceptor inspection form)	interceptors' inspection (IPPC clause 2.5.5.14)
Discharge from boiler wash down pit	pH neutralisation	event driven	pH readings and quantity records	Plant maintenance officer/ chemist	Maintenance engineer	SOP-DPS-24 Template 24.1 Discharge of treated waste water from Boiler wash down neutralising pit	
Discharge of regeneration water to sea - demi plant neutralizing pit	online pH monitor which is calibrated monthly	monthly calibration	pH meter calibration on standard solutions	Chemist	Assistant Manager	calibration report	Laboratory personnel to perform analysis on pH of pit
Dispersion of regeneration effluent to ground_ from demi plant neutralizing pit walls	visual inspection of pit walls	every 2 years	Certification Report	Maintenance Engineer	Assistant Manager	Report	Maintenance to ascertain no cracks present in walls
Sea water outlet discharge - Presence of CLO <sub>2</sub>	sampling of water discharge from condenser inlets and at PHE during dosing.	twice weekly	CLO <sub>2</sub> standard tests	Chemist	Assistant Manager	Report	To check where this report is being stored -- Laboratory personnel perform analysis on sea water outlet
Sea water discharge from outlets	On site temperature and pH analysis	Quarterly	pH meter and thermometer readings	Chemist	Station Manager/ RAO	Report and certification	as per IPPC obligations 2.5.3.6 & ELVs in Schedule 6
Sea water discharge from outlets	Tests for: BOD <sub>5</sub> , COD, Total Nitrogen, Total Phosphorus, AOX, ClO <sub>2</sub> , Arsenic, Cadmium, Chromium, Copper, Lead, Mercury, Nickel, Tin, Vanadium, Zinc, PCBs, Petroleum Hydrocarbons, Tributyl tin compounds, total suspended solids.	Quarterly	Report of third party laboratory accredited to ISO 17025: 2005	Chemist	Station Manager/ RAO	Report and certification as per IPPC permit template S2.7& S3.3 obligations	as per IPPC obligations 2.5.3.6/7/8 & ELVs in Schedule 6

Approved

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DPS Station Manager

## DPS Environmental monitoring plan\_r0\_29-10-10

<i>Environmental aspect</i>	<i>Type of monitoring/ surveillance</i>	<i>Frequency</i>	<i>Data source</i>	<i>Responsible for the implementation</i>	<i>Responsible for the evaluation of Check</i>	<i>Recording form</i>	<i>Notes</i>
Electricity consumption in used in station units	Manual Reading of electricity meters	Monthly	Electricity Meters	Operations Engineers	Station Manager	System Generation Figures	
Electricity consumption of administration block	Manual Reading of electricity meters	Monthly	Electricity Meters	Operations Engineers	Station Manager	System Generation Figures	
Total Annual Energy Consumption (from electricity & other sources)	Manual Reading of electricity meters	Annual	Electricity Meters	Operations Engineers	Station Manager	Annual Environmental Report, as per template in IPPC permit Schedule 2.3.1, Annual Summary	

Approved

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DPS Station Manager

## DPS Environmental monitoring plan\_r0\_29-10-10

<i>Environmental aspect</i>	<i>Type of monitoring/ surveillance</i>	<i>Frequency</i>	<i>Data source</i>	<i>Responsible for the implementation</i>	<i>Responsible for the evaluation of Check</i>	<i>Recording form</i>	<i>Notes</i>
Fuel Analysis for HFO	Chemical/physical analysis of the most important parameters, especially % Sulphur not exceeding 0.7%	Each consignment	Fuel Quality Certificate	Fuel Procurement Committee	Station Manager	Fuel Quality Certificate in compliance with IPPC permit Table 2.2.1.1	see IPPC permit obligations from 2.2.1.8 to 2.2.1.13
Fuel Analysis for Diesels	Chemical/physical analysis of the most important parameters, especially % Sulphur not exceeding 0.1%	Each consignment	Fuel Quality Certificate	Fuel Procurement Committee	Station Manager	Fuel Quality Certificate in compliance with IPPC permit obligation 2.2.1.9	
Fuel Consumption for HFO	Mass of fuel consumed	monthly	tank soundings	operations engineer	Station Manager	monthly report	Mass of fuel consumed per plant required for IPPC annual consumptions are detailed in Schedule 2.
Fuel Consumption for Diesel	Mass of fuel consumed	monthly	tank soundings	operations engineer	Station Manager	monthly report	Mass of fuel consumed per plant required for IPPC annual consumptions are detailed in Schedule 2.
Interruption of supply of low-sulphur HFO	Check about reporting of occurrence to MEPA	Monthly	Log book	Station Manager	Station Manager	Log book	Required by MEPA as per obligation 2.2.12

Approved

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DPS Station Manager

## DPS Environmental monitoring plan\_r0\_29-10-10

<i>Environmental aspect</i>	<i>Type of monitoring/ surveillance</i>	<i>Frequency</i>	<i>Data source</i>	<i>Responsible for the implementation</i>	<i>Responsible for the evaluation of Check</i>	<i>Recording form</i>	<i>Notes</i>
Procurement of chemicals	REACH & CLP compliance	Prior every purchase order	SDS & Enemalta's <i>Procurement of Chemicals: General requirements</i> document	Officer making the order	Immediate superior to officer for endorsement & check for endorsement by Procurement officer	Enemalta purchase order forms	
Procurement of chemicals	Health & Safety Risks checks	Prior every purchase order	SDS & Enemalta's <i>Procurement of Chemicals: General requirements</i> document	Officer making the order	Immediate superior to officer for endorsement & check for endorsement by Procurement officer	Enemalta purchase order forms	
Storage of chemicals	Visual inspection of segregation of chemicals & chemical storage bunds/ pits/ trays	Annually	SDS documents	Officer responsible for storage of chemicals	Immediate superior to officer responsible for storage of chemicals	Dangerous Chemical Control & Monitoring Form	As per IPPC obligation 2.8.2.25 & SOP DPS 23: Chemical Procurement, Storage & Handling
Consumption of dangerous chemicals	Quantity checks	Annually	Stores invoices	Station Manager	Chemist	Report	
Consumption of dangerous chemicals	Quality Checks	Annually	MSDS	Station Manager	Chemist	Report	

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DPS Station Manager



## DPS Environmental monitoring plan\_r0\_29-10-10

<i>Environmental aspect</i>	<i>Type of monitoring/ surveillance</i>	<i>Frequency</i>	<i>Data source</i>	<i>Responsible for the implementation</i>	<i>Responsible for the evaluation of Check</i>	<i>Recording form</i>	<i>Notes</i>
SF6 leakage	Inspection of Switch gear for identification of leaks	Daily	Pressure gauge monitoring	CCR generation officer	Operations engineer	SOP-DPS-16 Template 16.1 for 33KV swgr and Template 16.2 for 132KV swgr	
SF6 leakage	pressure alarms verification controls	When practicable and circumstances permit	alarm checks	Maintenance Engineer	Assistant Manager Maintenance	SOP-DPS-11 Template 11.2- SF6 Pressure alarm verification control sheet.	
SF6 leakage	SF6 loss control	according to reporting from daily checks and alarm signaling	pressure gauges readings and cylinder weighing by electronic balance	Maintenance Engineer	Assistant Manager Maintenance	SOP-DPS-11 Template 11.1- Identification of SF6 loss.	

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DPS Station Manager

## DPS Environmental monitoring plan\_r0\_29-10-10

<i>Environmental aspect</i>	<i>Type of monitoring/ surveillance</i>	<i>Frequency</i>	<i>Data source</i>	<i>Responsible for the implementation</i>	<i>Responsible for the evaluation of Check</i>	<i>Recording form</i>	<i>Notes</i>
Electro magnetic pollution from switchgears and transformers	E.M Level reading from appropriate instrument	Annually	Report from maintenance engineer	Maintenance Engineer	Assistant Manager Maintenance	Report and certification	Measurements are checked against "action" & "exposure" limit values as stipulated by EU Regulation

Approved

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DPS Station Manager

## DPS Environmental monitoring plan\_r0\_29-10-10

<i>Environmental aspect</i>	<i>Type of monitoring/ surveillance</i>	<i>Frequency</i>	<i>Data source</i>	<i>Responsible for the implementation</i>	<i>Responsible for the evaluation of Check</i>	<i>Recording form</i>	<i>Notes</i>
Ozone depleting gases from air-conditioning units	Inspection of gas pressure to determine leaks	Annually (when exceeding 3 Kg of refrigerant)	pressure gauges and gas cylinder weighing	Maintenance Engineer	Assistant Manager	SOP-DPS 31 Template31.1 - Air conditioning logsheet and Template 31.2 Monitoring of GHG leakages in AC units.	A logbook is required by law (LN 145 of 2007, reg. 5 & 7) for the checks to be carried out

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DPS Station Manager

## DPS Environmental monitoring plan\_r0\_29-10-10

<i>Environmental aspect</i>	<i>Type of monitoring/ surveillance</i>	<i>Frequency</i>	<i>Data source</i>	<i>Responsible for the implementation</i>	<i>Responsible for the evaluation of Check</i>	<i>Recording form</i>	<i>Notes</i>
Noise & Vibration	Noise analysis - peak points at specific locations	Annual	Report from third party surveyor	Regulatory Office	Manager Generation	Report from third party surveyor	As per IPPC obligation in section 2.11 & Schedule 2, S2.8

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DPS Station Manager

## DPS Environmental monitoring plan\_r0\_29-10-10

<i>Environmental aspect</i>	<i>Type of monitoring/ surveillance</i>	<i>Frequency</i>	<i>Data source</i>	<i>Responsible for the implementation</i>	<i>Responsible for the evaluation of Check</i>	<i>Recording form</i>	<i>Notes</i>
Extinguisher Control	Visual and weighing	6 monthly	Gauge and scale	Shift Leader Fire section	Head Health & Safety	Label and Fire section checklist for each site	
Fire Alarms panel	Visual	daily	Panel Display	Operations Engineers	Station Manager	Log sheets	
Fire Alarms	Functional test	Annual	Panel, Detector tester	Shift Leader Fire section	Head Health & Safety	Checklist for each site	
Fire Deluge	Functional	Monthly	Testing	Operations Engineers	Station Manager	Checklist for each site	
Fire Deluge	Functional	Annual	Testing	Shift Leader Fire section	Head Health & Safety	Checklist for each site	
Hydrants & equipment	Functional	6 monthly	Testing	Shift Leader Fire section	Head Health & Safety	Checklist for each site	
Foam	Functional	Annual	Testing	Shift Leader Fire section	Head Health & Safety	Checklist for each site	
CO2 fixed systems	Functional	Annual	Testing	Shift Leader Fire section	Head Health & Safety	Checklist for each site	
CO2 fixed systems	Visual	daily	Visual	Operations Engineers	Station Manager	Log sheets	
Breathing Apparatus	Functional	Weekly	Testing	Operations Engineers	Station Manager	Log book for each set	

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DPS Station Manager

## DPS Environmental monitoring plan\_r0\_29-10-10

<i>Environmental aspect</i>	<i>Type of monitoring/ surveillance</i>	<i>Frequency</i>	<i>Data source</i>	<i>Responsible for the implementation</i>	<i>Responsible for the evaluation of Check</i>	<i>Recording form</i>	<i>Notes</i>
CO2 Production	CO2 Production calculation	monthly	system database	regulatory affairs office	Station manager	System Generation Figures report	calculations based on fuel consumption data
CO2 Production	third part body verification	yearly	Verified Enemalta annual report	regulatory affairs office (third party body)	Station manager	Verified Enemalta report & third party body report	Reporting as per legal obligations & guidelines (referred to also in IPPC Permit, section 6): Directive 2003/87/EC of 13th October 2003 establishing a scheme for greenhouse gas emission allowance trading within the Community and amending Council Directive 96/61/EC, its transposition in Maltese law LN140 of 2005 , and whenever applicable, uses guidelines for the monitoring and reporting of greenhouse gas emissions established in Commission Decision 2007/589/EC of 18 July 2007.

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DPS Station Manager

## DPS Environmental monitoring plan\_r0\_29-10-10

<i>Environmental aspect</i>	<i>Type of monitoring/ surveillance</i>	<i>Frequency</i>	<i>Data source</i>	<i>Responsible for the implementation</i>	<i>Responsible for the evaluation of Check</i>	<i>Recording form</i>	<i>Notes</i>
Town water consumption in station for daily needs (excluding plant)	Manual Reading of water services meters	Yearly	Water Services Meters	Maintenance Engineer	Station Manager	Annual Environmental Report	As required by IPPC permit (S2.3.1 - Annual Summary)

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DPS Station Manager

## DPS Environmental monitoring plan\_r0\_29-10-10

<i>Environmental aspect</i>	<i>Type of monitoring/ surveillance</i>	<i>Frequency</i>	<i>Data source</i>	<i>Responsible for the implementation</i>	<i>Responsible for the evaluation of Check</i>	<i>Recording form</i>	<i>Notes</i>
Oil spills from transformers	Visual inspection of transformer bound area	Daily	Report in case of leak	Generation Officer	operations engineers	Fault list (in case of leak)	As per IPPC obligation 2.10
Oil spills from transformers	Transformer Bund and Reservoir inspection, maintenance and cleaning SOP18-Template 18.1	Annually	Maintenance engineer report	Station Manager	Maintenance Engineer	SOP18-Template 18.1- transformer bund wall and reservoir certification form	As per IPPC obligation 2.10
Chemical spills from chemical handling and dosing	visual inspections at point-of-use sites	weekly	inspections check lists	Station Manager	operations engineers	SOP23-Chemicals procurement, storage and handling Templates 23.1 > 23.6 (point of use site inspection forms)	As per IPPC obligation 2.10
fuel spills	visual inspection of pipelines, valves, pumps, glands, etc; for presence of leaks	weekly	pipeline visual inspection	Operations Engineer	Assistant Manager	SOP-28 Fuel lines management and inspections. Template 28.1- pipeline inspection form per site.	As per IPPC permit obligation 2.5.5.10
fuel spills	Third party inspection and certification for leak proof	Every 3 years	visual inspection by accredited third party	third party accredited auditor	Station Manager	Inspection report & certification	see IPPC permit obligation 2.5.5.11 & as amended in MEPA correspondence dated 28th August 2009 -- checks for leakages from pipes, pumps, valves & flanges
Fuel Spill	Visual inspection of fuel tanks, pipelines and storage areas	Daily	Report in case of leak	Maintenance Engineer	Station Manager	Fault list (in case of leak)	Emergency plan

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DPS Station Manager



## DPS Environmental monitoring plan\_r0\_29-10-10

Environmental aspect	Type of monitoring/surveillance	Frequency	Data source	Responsible for the implementation	Responsible for the evaluation of Check	Recording form	Notes
Air Emissions From Stacks	Analysis of SO <sub>2</sub> ; NO <sub>x</sub> ; CO; Particulates - concentrations	Continuous - hourly & monthly statistical analysis values	Air Emissions Monitoring Equipment	Manager Generation - Maintenance Section	Regulatory Office	Report generated by Monitoring equipment, in line with IPPC Schedule 3	Results are presented as per IPPC permit template forms in Schedule 3, section S3.2
Air Emissions From Stacks	Analysis of SO <sub>2</sub> ; NO <sub>x</sub> ; Particulates - loads	annually	Air Emissions Monitoring Equipment	Manager Generation - Maintenance Section	Regulatory Office	annual report, IPPC Schedule 2	Results are presented as per IPPC permit template forms in Schedule 2, section S2.4.1
Air Emissions From Stacks	Calculation of Loads of Ni & V	annually	Fuel quality certificates	Manager Generation	Regulatory Office	annual report, IPPC Schedule 2	Results are presented as per IPPC permit template form, Schedule 2, section S2.4.3.2
Air Emissions From Stacks	Measurement of Heavy Metals emissions	6 monthly	Spot sampling & testing by a third party analysts	Manager Generation	Regulatory Office	Report generated by third party analysts	Results are presented as per IPPC permit template forms, Schedule 2, section S2.4.1.4
Air Emissions From Stacks	Measurement of Dioxins & Furans (PCDDs & PCDFs)	1 off after 6 months from IPPC permit issue	Spot sampling & testing by a third party analysts	Manager Generation	Regulatory Office	Report generated by third party analysts	Results are presented as per IPPC permit template forms, Schedule 2, section S2.4.1.3
Air Emissions From Stacks	Measurement of PAHs	annually	Spot sampling & testing by a third party analysts	Manager Generation	Regulatory Office	Report generated by third party analysts	Results are presented as per IPPC permit template forms, Schedule 2, section S2.4.1.5
Air Emissions From Stacks	Annual Surveillance Tests (AST)	annually	third party Annual Surveillance Tests (AST) reports	Manager Generation	Maintenance Engineer	third party Annual Surveillance Tests (AST) reports	IPPC obligation 2.2.11
Air dispersion around installation	Measurement of Wind air speed & direction continuous logging	continuous monitoring	weather station	Manager Generation - Maintenance Section	Regulatory Office	report generated by measuring equipment	Results are presented as per IPPC permit template form, Schedule 2, section S2.6
Emissions from vehicle fleet	Overall fuel consumption	monthly	fuel issue chits	Operations Manager (transport)	Regulatory Office	fuel consumption log	

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## DPS Environmental monitoring plan\_r0\_29-10-10

<b>Environmental aspect</b>	<b>Type of monitoring/ surveillance</b>	<b>Frequency</b>	<b>Data source</b>	<b>Responsible for the implementation</b>	<b>Responsible for the evaluation of Check</b>	<b>Recording form</b>	<b>Notes</b>
Environmental Improvement Program	Checking the status of actions of the environmental improvement program	As per improvement programme monitoring requirements	Improvement program status Report	Environmental coordinator	Station Manager	Improvement program status Report	

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DPS Station Manager

## DPS Environmental monitoring plan\_r0\_29-10-10

<i>Environmental aspect</i>	<i>Type of monitoring/ surveillance</i>	<i>Frequency</i>	<i>Data source</i>	<i>Responsible for the implementation</i>	<i>Responsible for the evaluation of Check</i>	<i>Recording form</i>	<i>Notes</i>
Material/ equipment supplies	visual checks against contract obligations	every consignment	contract document	Stores Manager	Station Manager	goods consignment/ delivery form	
Engineering services	engineering contract obligations	every service	engineering warrant/s & contract document	Assistant Manager (Maintenance or Operations)	Station Manager	service delivery notice	
Laboratory services	testing standards & accreditation	every service	contract document	Assistant Manager (Maintenance or Operations)	Station Manager	service delivery notice	
Waste disposal / recovery	waste carrier permit	every collection	waste consignment permit/ prenotification forms	Waste site coordinator	Waste site coordinator	waste register	
Waste disposal / recovery	waste management facility permit (consignee permit)	every collection	waste consignment permit/ prenotification forms	Waste site coordinator	Waste site coordinator	waste register	

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DPS Station Manager

Environmental aspects	Environmental impacts	Activities, process	Data and information; evaluation criteria	N/A/E	Notes, comments, useful information	Improvement opportunities	Evaluation criteria										Expected EMS reactions			
							Legal requirements	Interested parties concern	Relevance and vulnerability	Improvements opportunities	Availability of data	TOTAL	S/NS	accidents (frequency x severity)	TOTAL	S/NS	Procedures	Training	Monitoring	Improvements
Fuel Consumption	Resource Depletion & Air pollution	Burning of fuel to produce electrical energy. Calculation of fuel used and plant thermal efficiency	Competent Person: Station Manager 1. Legal requirement: None 2. Concern: 3rd party concern, government, MEPA 3. Relevance and vulnerability : Emissions and generation of CO2 depend on the amount of fuel burnt 4. Possibility of improvement: Yes 5. Availability of data: Plant Generation report	N	<a href="#">Refer to Annual Trends Environmental Report : \\\nedomain\enedata\SectionData\EMSR\reports\Annual Trends Environmental Report</a>	Installation of new plant at Delimara which is more efficient and hence gives the same output for a reduced fuel consumption Installation of Interconnector Cable to Sicily	1	3	4	3	1	12	S						Fuel consumption is measured and recorded. Generation report shows the fuel consumed per boiler. Efficiencies of boiler and turbine are continuously measured to keep each boiler and/or turbine operating with the highest efficiency possible	Purchasing of fuel which has a weighted average sulphur content of 0.7; Closing down of Marsa Power Station; Transfer of load to Delimara Power Station; Installation of Interconnector cable to Sicily; Installation of new diesel plant at Delimara
Electric Energy Consumption	Global warming & Air Emissions	Electricity consumption used in plant (Units used in plant) to drive pumps, machinery, lightning in plant	Competent Person: Station Manager 1. Legal requirement: None 2. Concern: 3rd party concern MEPA, NGOs 3. Relevance and vulnerability: Energy needed to drive the plant machinery is quite substantial 4 Possibility of improvement: No 5. Availability of data: Units used in plant records and generation report	N	<a href="#">Refer to Annual Trends Environmental Report : \\\nedomain\enedata\SectionData\EMSR\reports\Annual Trends Environmental Report</a>		1	3	3	3	1	11	S						Units used in plant in Kwh are measured daily and recorded	Installation of energy saving motors ; Solar water heaters for workshops; Possibility of lowering temperature of fuel tanks; Replacement of Neon tubes typeT8 with typeT5
		Electricity consumption used in administration building and offices	Competent Person: Station Manager 1. Legal requirement: None 2. Concern: Enemalta itself is concerned with respect to energy units consumed in administration building and offices 3. Relevance and vulnerability: Consumption is reasonable 4 Possibility of improvement: No 5. Availability of data: Electricity meter readings	N	<a href="#">Refer to Annual Trends Environmental Report : \\\nedomain\enedata\SectionData\EMSR\reports\Annual Trends Environmental Report</a>	Energy audits will be carried out if energy consumption readings are high to identify those areas with high consumption. Energy saving equipment will be installed especially for areas with high consumption.	1	1	3	3	1	9	S						Electricity meter reading is recorded every month and the monthly electricity consumption is calculated.	Fixing of Solar film to window panes Installation of PIR in washrooms
Water Consumption	Resource Depletion	Domestic use in administration buildings and offices and workshops	Competent Person: Station Manager 1. Legal requirement: None 2. Concern: Enemalta itself is concerned with respect to water consumption in administration building and offices 3. Relevance and vulnerability: Consumption is reasonable 4. Possibility of improvement: Yes 5. Availability of data: Water meter readings	N		Installation of Water saving equipment is being considered if results show that these are feasible.	1	1	3	3	1	9	S						Water meter reading is recorded every month and the monthly consumption is being plotted and the trend for water consumption is being analysed	Use of water containers in water cisterns to reduce water volume ; Low flow shower heads to be used in showers
Consumption of dangerous chemicals	Chemical consumption	Chemicals used for general maintenance	Competent Persons: Maintenance Engineers (Mechanical) 1. Legal requirement: None 2. Concern: Economical concern as regards to expenditure for chemicals 3. Relevance and vulnerability: Releases to the environment is proportional to consumption 4. Possibility of improvement: Reduce consumption or use alternatives less dangerous chemicals 5. Availability of data : issues of chemicals from a specified category over a defined period of time from SAP	N			1	1	2	2	1	7	NS							
		Chemical dosing for plant operations - treatment for boiler water pH and antifouling	Normal Conditions Competent Person: Operations Engineers 1. Legal requirement: None 2. Concern: Economical concern as regards to expenditure for chemicals 3. Relevance and vulnerability: Releases to the environment are proportional to consumption 4. Possibility of improvement: Reduce consumption or use alternatives less dangerous chemicals 5. Availability of data: Yes - issues of chemicals from a specified category over a defined period of time can be extracted from SAP Emergency Conditions Frequency of occurrence Remote probably never Severity Moderate impact	N/E	If losses occur in tubes, more chemicals need to be dosed into the boiler (Emergency)		1	1	2	2	1	7	NS	1x3	3	NS	Trisodium phosphate is mixed with Sodium hydroxide to obtain the required pH level for boiler water. This produces magnetite which prevents boiler corrosion. The pH level of this solution is monitored. Boiler blowdown valves are opened during startup and cranked during operation.		Quantity of chemicals (kgs or ltrs) issued from stores on a 3 monthly period	
		Chemical dosing for plant operations - turbine antifouling	Competent Person: Operations Engineers 1. Legal requirement: None 2. Concern: Economical concern as regards to expenditure for chemicals 3. Relevance and vulnerability: Releases to the environment is proportional to consumption 4. Possibility of improvement: Reduce consumption or use alternatives less dangerous chemicals 5. Availability of data: Yes issues of chemicals from a specified category over a defined period of time can be issued from SAP	N			1	1	2	2	1	7	NS						Quantity of chemicals (kgs or ltrs) issued from stores on a 3 monthly period	
		Chemical process- SOx and NOx abatement (for new diesel plant)	Competent Person: Operations Engineers 1. Legal requirement: None 2. Concern: Economical concern as regards to expenditure for chemicals 3. Relevance and vulnerability: Releases to the environment is proportional to consumption 4. Possibility of improvement: Reduce consumption or use alternatives less dangerous chemicals 5. Availability of data: issues of chemicals from a specified category over a defined period of time from SAP	N			2	1	3	1	2	9	S				Once the installation will start to operate in 2012 a procedure will be put in place for the control of the abatement process		Quantity of chemicals issued	
Atmospheric Emissions	Air pollution	Stack Emissions (Particulates, SOx, NOx)	Normal Conditions Competent Person: Operations Engineer & Maintenance Engineer (Electrical) 1. Legal requirements: IPPC, NEC 2. Concern: MEPA authority-3rd party concern 3. Relevance and vulnerability: Extremely vulnerable may create significant environmental impacts 4. Possibility of improvements: Yes 5. Availability of Data: CEMS reports Emergency Conditions Frequency of occurrence: Once in a lifetime of the plant Severity: Significant environmental damage	N/E	<a href="#">Refer to Annual Trends Environmental Report : \\\nedomain\enedata\SectionData\EMSR\reports\Annual Trends Environmental Report</a>		3	3	4	3	1	14	S	2x4	8	S	Quality of fuel is monitored through suppliers' fuel quality certificates. These results are then verified by a 3rd party. Air to fuel ratio is continually monitored by boiler operator.		Continuous Emission Monitoring system continuously monitors the levels of Particulates and CO, O2, NOx & SOx concentrations (mg/Nmc) in the flue gas at the stack. Records keeping and reporting to MEPA as per IPPC permit Automatic calibration of CEMS	Use of low Sulphur fuel; Installation of low NOx tips on burners; Installation of Interconnector cable; Installation of new diesel plant at Delimara
		Emissions from welding and machinery (exhaust fumes, and particulates)	Competent Person: maintenance 1. Legal requirement: IPPC 2. Concern: No concern 3. Relevance and Vulnerability: Minor 4. Possibility of improvement: None 5. Availability of information: Qualitative information	N			2	1	1	1	2	7	NS							
Green house gas emissions	Global warming	Fuel combustion - CO2 emissions	Competent Person: Operations Engineer & Boiler Operator 1. Legal requirement: IPPC, NAP 2. Concern: 3rd party concern, neighbours, authority, politicians, media 3. Relevance and vulnerability: Great resource consumption 4. Possibility of improvement: Yes Gradual shutdown of Marsa, Interconnector cable, new Delimara Extension 5. Availability of data: GHG Emissions Annual Verified Report	N			2	3	4	4	1	14	S				Procedure for monitoring and reporting GHG emissions as per GHG permits. O2 and CO in flue gas are continuously measured by the Continuous Emission Monitoring System (CEMS) Verification by 3rd party of CO2 emission data		Monitoring of CO2 gas generation through presence of O2 in flue gas. High level of CO2 (given by low O2 levels ) implies incomplete combustion, low outlet gas temperature, low final steam temp and black smoke. Fuel to air mix is controlled either automatically via plics or manually through FD damper control by the boiler operator. Reporting to MRA and to MEPA as per IPPC permit	Gradual closing down of Marsa Power station; Installation of Interconnector cable; New extension at Delimara; Installation of a data acquisition system for the CEMS analyser and installation of second hard disk as a backup for data storage

		Operation and maintenance of High voltage switchgear – SF6 leakages or explosion of switchgear	Competent Person: Operations and Maintenance Engineers (Mechanical) Normal Conditions Legal requirement: IPPC, LN 93/2010 2. Concern: Authorities MRA & MEPA 3. Relevance and vulnerability: Highly vulnerable 4. Possibility of improvement: Training program for employees working on SF6 switchgear and handling SF6 gas Availability of data: Annual SF6 gas consumption report Emergency Conditions Frequency of Occurrence: Extremely unlikely may happen once in a lifetime of the switchgear Severity: may cause significant environmental damage	N/E	<a href="#">Refer to Annual Trends Environmental Report</a> ; <a href="#">Venedomain/enedata/SectionData/EMSReports/Annual Trends Environmental Report</a>		2	3	4	2	1	12	S	2x4	8	S	Procedure SOP DPS 11 Maintenance of Equipment Containing SF6 and Management of leak control; Procedure SOP DPS 16 Operations SF6 management and leaks control		Daily monitoring of SF6 gauges; Reporting annual consumption of SF6 gas to MRA and to MEPA as per IPPC permit.	
Loss of Ozone Depleting Substances	Ozone layer depletion	Maintenance of airconditioning units	Competent Person: Manager Estate Management & Station Manager Emergency Conditions Frequency of Occurrence: Extremely unlikely may happen once in a lifetime of the airconditioning unit Severity: may cause significant environmental damage	E											2x4	8	S	Procedure SOP DPS 31 Maintenance of airconditioning units for DPS		Gradual replacement of R22 airconditioners over a peiod of 4 years; 4 year plan to replace Chiller in administration block using R22 gas with a number of split units
Electromagnetic Frequency radiation	EM waves pollution	Electric energy distribution (transformation)	Competent Person: Maintenance Engineers (Electrical) 1. Legal requirement: No local legislation concerning EMF radiation however reference is made to EU Directive 2004/40 and recommendation 1999/512/EC of 12 JULY 1999 2. Concern: Employee concern 3. Relevance and vulnerability: Minimum pollution 4. Possibility of improvement: No 5. Availability of data: Yes report issued giving measurements taken at various locations across the plant	N	Electromagnetic radiation readings were taken at strategic points in the plant such as near transformers, control room, underground cables, etc: A report ref EMF/DPS/2010 dated 28th November 2010 was issued. The EMFreadings obtained and the conclusions show that the EMF levels were very low and hence there was no concern. This exercise will be repeated for the new Delimara Extension. This exercise will be scheduled every 5 years to confirm that the EMF levels have remained stable.		2	2	1	1	1	7	NS							
Noise & Vibrations	Sound pollution	Plant and machinery	Competent Person: Station Manager & Head of H&S Section 1. Legal requirement: IPPC 2. Concern: MEPA - authority- neighbour concern - local councils 3. Relevance and vulnerability: Minimum pollution no sensitive areas close to power station 4. Possibility of improvement: No 5. Availability of data: Yes Consultant's report	N			2	3	1	1	1	8	S						Annual Noise measurement and assessment carried out by 3rd party according to BS4142:1997; Spot checks are carried out by H&S personnel from time-to-time to confirm that the noise level is below the stipulated H&S limits; Emergency generators/alarms/sirens/release valves are not tested between 19.00 and 07.00 Mon-Fri and not on any Public Holiday; Level of noise emitted from the installation at all operational times does not exceed the background noise level by 5dB, excluding during the use of emergency sirens, alarms and during start-up Noise survey carried out by 3rd party annually	
Water discharge	Seawater pollution	Evaporator discharge and turbine cooling	Competent Person: Evaporator operator 1. Legal requirements: IPPC 2. Concern: MEPA - authority- Environmental groups 3. Relevance and vulnerability: Minor pollution 4. Possibility of improvement: 5. Availability of data: Sea water discharge Analytical reports and temperature recordings	N	The evaporator discharge includes: 1. A cooling flow (at about 25deg C above the seawater temperature. 2. A concentrated brine blow-down resulting from the evaporator process 3. Residues of antiscaling g and anti-foaming chemicals in the evaporator.		2	3	1	1	1	8	S						pH readings of outlet will be monitored and recorded; Sea water samples are taken from outflow where we are discharging to the sea on a quarterly basis and tested by a third party laboratory; Reporting to MEPA as per IPPC permit	
		Demineralising plant's neutralising pit discharge	Competent Person: Demineralisation Plant Operator 1. Legal requirement: IPPC 2. Concern: MEPA - authority- Local Councils -Environmental groups 3. Relevance and vulnerability: Highly vulnerable 4. Possibility of improvement: no 5. Availability of data: pH and temperature readings	A	Filters used in the demineralisation process are regularly regenerated with sulphuric acid (4%) and caustic soda (4%). The effluents resulting from this process are directed to a neutralising pit. The neutralized effluent is discharged to the outflow to the sea. Discharges resulting from annual acid cleaning of the evaporator heat exchanger tubes to remove calcium carbonate is also transferred to the D/M neutralizing pit.		3	3	3	3	2	14	S						Regular verification of pH readings registered by the automatic pH measurement equipment; Testing of samples taken from outflow on a 3 monthly basis and reporting to MEPA as per IPPC permit	
		Boiler washing pit/ Boiler washing tanks	Competent Person: Maintenance Engineer (Mechanical) 1. Legal requirements: IPPC 2. Concern: MEPA - authority - Local Councils - Environmental groups 3. Relevance and vulnerability: Highly vulnerable 4. Possibility of improvement: Low-margin improvement 5. Availability of data: Sea water discharge Analytical reports and temperature recordings	A	Boiler washing effluent is contained and neutralised with caustic soda. The pH of the resulting effluent is tested at various intervals. When the pH is confirmed to be neutral the effluent is discharged to the sea.		2	3	3	2	1	11	S				Procedure SOP DPS 24 Discharge of Treated Waste Water from Boiler Wash Down Neutralising pit		Monitoring of pH of effluent before discharging	
		Boiler blowdown/boiler drainage (boiler is emptied when plant is shutdown for maintenance 1-3 times a year)	Competent Person: Maintenance Engineer (Mechanical) 1. Legal requirements: IPPC 2. Concern: MEPA - authority - Local Councils - Environmental groups 3. Relevance and vulnerability: Highly vulnerable 4. Possibility of improvement: Low-margin improvement 5. Availability of data: Sea water discharge Analytical reports and temperature recordings	A	Boiler water is dosed with a mixture of Trisodium phosphate and Sodium Hydroxide in order to obtain the necessary pH level to help in the formation of magnetite to avoid boiler corrosion. Boiler valves are open during startups and cranked during operation.		2	1	1	1	2	7	NS							
		Drainage of bunds for HFO and Diesel Tank Areas	Competent Person: Maintenance Engineer (Mechanical) 1. Legal requirements: IPPC 2. Concern: MEPA - authority - Local Councils - Environmental groups 3. Relevance and vulnerability: Highly vulnerable 4. Possibility of improvement: Low-margin improvement 5. Availability of data: Sea water discharge Analytical reports and temperature recordings	A	Drain valves are normally kept closed. They are opened only to drain water after heavy rainfalls which are not so frequent in Malta. The resulting water will flow through an interceptor where any traces of oil are separated from the water and left in the interceptor before the water can flow out to the sea.		2	3	3	2	2	12	S				SOP DPS 17 Tank Area Bund Wall Inspection; SOP DPS 9 Interceptor cleaning; SOP DPS 10 Interceptor inspection SOP DPS 30 Interceptor Maintenance		Interceptor inspection per shift; 3rd party annual inspection of tank bund walls	
		Overflow of interceptors to the sea	Competent Person: Operations Engineer Frequency of occurrence: Unlikely but may happen once in a lifetime Severity: causes severe environmental damage	E										2x4	8	S	Emergency plan for oil spills SOP DPS 10 Interceptor Inspection		Interceptor inspection checklist per shift	

		Storm water runoff from contaminated areas	Competent Person: boiler operator/ waste site coordinator 1. Legal requirement: IPPC 2. Concern: 3rd party concern, MEPA - authority, local councils, NGOs 3. Relevance and vulnerability: Small pollution 4. Possibility of improvement: No 5. Availability of data: Yes checklists	A			2	3	2	2	1	10	S			SOP DPS 28 Fuel Transfer lines Management and Inspections SOP DPS 29 Waste Management SOP DPS 23 Chemical procurement, handling and storage		Weekly fuel lines and valves inspection checklist			
		Storm water runoff from uncontaminated areas	Competent Person: - 1. Legal requirement: IPPC 2. Concern: No concern 3. Relevance and vulnerability: Not Vulnerable 4. Possibility of improvement: No 5. Availability of data: Yes	A			2	1	1	1	1	6	NS								
		Discharge to sewer	Competent Person: Civil engineer 1. Legal requirement: IPPC 2. Concern: WSC 3rd party 3. Relevance and vulnerability: No concern 4. Possibility of improvement: No 5. Availability of data: Yes	N	Permit is issued from Water Services Corporation for the use of the main sewage system as per IPPC permit		2	1	1	1	1	6	NS								
Chemical spills	land/soil/water/sea pollution	Chemical spills during boiler/turbine dosing by operations	Emergency Conditions Frequency of occurrence: may happen more than once in a lifetime but many times less than once a year Severity: toxicity of chemicals involved is of medium severity and can cause damage to the environment and persons	E										2x3	6	S	SOP DPS 23 Chemical Procurement, storage and handling	Training in Chemical handling	Weekly monitoring checklist of chemical areas		
		Chemical spills during turbine cooling dosing	Emergency Conditions Frequency of occurrence: Extremely unlikely Severity: Moderate	E	Antifouling for turbine cooling water is done by means of Chlorine dioxide. This is generated in situ and quickly decomposes with time. However ClO2 is generated in situ under water by mixing sulphuric acid and biocaf. Both chemicals need to have adequate storage areas which are banded.	The resulting ClO2 in the outlet is analysed daily to calculate the dosing ratio of the constituent chemicals sulphuric acid and biocaf.											SOP DPS 23 Chemical Procurement, Storage and Handling	Training in Chemical handling	Weekly monitoring checklist of chemical areas	An alternative method which is more environmental friendly may be used	
		Incorrect handling of chemicals during operations and general maintenance	Emergency Conditions frequency of occurrence: can happen once a year severity: moderate, can effect flora, fauna and humans	E											2x3	6	S	SOP DPS 23 Chemical Procurement; Storage and handling	Training in chemical handling		
Oil spills	land/soil/water/sea pollution	Transfer of fuels from tanker to tank farm	Competent Person: Tank Area Operator Frequency of Occurrence: May happen once in a lifetime of installation Severity: Significant environmental damage	E	Pressure tests are carried out periodically on fuel unloading line.									2x4	8	S	SOP DPS 28 Fuel Transfer Lines Management and Inspections; Emergency plan for oil spills	Training in Emergency response		Installation of isolation couplers on lines for diesel oil	
		HFO or diesel oil storage (Tank farms)	Competent Person: Tank Area Operator Frequency of Occurrence: May happen once in a lifetime of installation Severity: May cause significant environmental damage	E											2x4	8	S	Emergency plan fo oil spills	Training in Emergency response		Installation of level gauges on fuel tanks. An alarm is sent in real time if the level of fuel exceeds the high level setting of the gauge
		Oil leakages from damaged or broken pipework and valves	Emergency condition: Frequency of occurrence: once in a lifetime of installation Severity: Significant damage which can cause serious environmental damage	E	Daily visual inspection of pipework Detailed weekly visual check Annual hydrostatic test										2x4	8	S	SOP DPS 28 Fuel Transfer Lines Management and Inspections Emergency plan for oil spills	Training in Emergency response Emergency drills		Construction of a new oil interceptor will increase the capacity of interceptor volume
		Oil pumping from tank to combustion	Competent Person: Tank Area and Boiler Operators Frequency of occurrence: Unlikely could occur once in a lifetime of installation Severity: Significant damage which can cause serious environmental damage	E	Daily visual inspection of pipework Detailed weekly visual check Annual hydrostatic test Detection of leaks the system is isolated										2x4	8	S	SOP DPS 28 Fuel Transfer Lines Management and Inspections Emergency plan for oil spills	Training in Emergency response Emergency drills	Checklist to be filled in by the operator during the visual inspection	

		Oil leakage from transformer	Competent Person: Control Room Operators Frequency of occurrence: once in a lifetime of installation Severity: Significant damage which can cause serious environmental damage	E	Transformer are surrounded by bunds which are designed to contain the volume of oil in the transformer in case of a major leak. Transformer bunds are visually inspected for cracks and damages Conservator level is checked 3 times a day											2x4	8	S	SOP DPS 18 Transformer Bund and Reservoir Inspection, Maintenance and Cleaning	Training in Emergency response	Transformer bund wall inspection logbook; Certification form to be filled in by the engineer for every inspection and intervention	
		Incorrect handling of oils and lubricants during operations and general maintenance	Emergency Condition: Frequency of occurrence: may happen more than once but not so frequently Severity: Limited damage to flora, fauna or humans	E												2x3	6	S	Emergency plan for oil spills	Emergency response team training		
Waste Management	Land/ soil/ water/sea pollution	HFO and diesel storage - Sludge resulting from cleaning of fuel tanks	Competent Person: All employees 1. Legal requirement: IPPC 2. Concern: 3rd Party - MEPA authority, local councils, NGOs 3. Relevance and vulnerability: Highly vulnerable 4. Possibility of improvement: Low-margin improvement 5. Availability of data: waste register, consignment permits, consignment notes	N	<a href="#">Refer to Annual Trends Environmental Report - Venedomainedata/SectionData/EMSReports/Annual Trends Environmental Report</a>	2	3	4	2	1	12	S							SOP DPS 29 Waste Management Procedure	EMS Awareness and Waste Management	Daily Waste monitoring	
		Oil pumping from tank to combustion - storage and disposal of oily rags and oil contaminated waste	Competent Person: All employees 1. Legal requirement: IPPC 2. Concern: 3rd Party - MEPA authority, local councils, NGOs 3. Relevance and vulnerability: Highly vulnerable 4. Possibility of improvement: Low-margin improvement 5. Availability of data: waste register, consignment permits, consignment notes	N		2	3	3	2	1	11	S							SOP DPS 29 Waste Management Procedure	EMS Awareness and Waste Management	Daily Waste monitoring	
		General mechanical maintenance - Storage and disposal of industrial waste- oils, metal, contaminated gloves, oily rags, aerosol cans etc,	Competent Person: All employees 1. Legal requirement: IPPC 2. Concern: 3rd Party - MEPA authority, local councils, NGOs 3. Relevance and vulnerability: Highly vulnerable 4. Possibility of improvement: Low-margin improvement 5. Availability of data: waste register, consignment permits, consignment notes	N		2	3	3	2	1	11	S							SOP DPS 29 Waste Management Procedure SOP DPS 23 Chemical Procurement, storage and Handling procedure	EMS Awareness Waste Management, Chemical Handling	Daily Waste monitoring	
		Sea water filtration storage and disposal of waste collected from seawater screens	Competent Person: All employees 1. Legal requirement: IPPC 2. Concern: 3rd Party - MEPA authority, local councils, NGOs 3. Relevance and vulnerability: Highly vulnerable 4. Possibility of improvement: Low-margin improvement 5. Availability of data: waste register, consignment permits, consignment notes	N		2	3	2	2	1	10	S							SOP DPS 29 Waste Management Procedure	EMS Awareness and Waste Management	Daily Waste monitoring	
		Storage and disposal of Waste of particulates from flue gases	Competent Person: Operations Engineer/Maintenance 1. Legal requirement: IPPC 2. Concern: 3rd Party - MEPA authority, Local Council 3. Relevance and vulnerability: Extremely vulnerable 4. Possibility of improvement: Low-margin improvement 5. Availability of data: waste register	N		2	3	4	1	1	11	S							Waste Management procedure to include in waste classification this waste stream	Training of personnel in the operation of abatement system and the waste disposal operation	When new diesel plant is put in operation in 2012 monitoring of the abatement system will be in place	
		Storage and disposal of Waste from SOx abatement	Competent Person: Operations Engineer/Maintenance Engineer 1. Legal requirement: IPPC 2. Concern: 3rd Party - MEPA authority 3. Relevance and vulnerability: Highly vulnerable 4. Possibility of improvement: Low-margin improvement 5. Availability of data: waste register	N		2	3	4	1	1	11	S							Waste Management procedure to include in waste classification this waste stream	Training of personnel in the operation of abatement system and the waste disposal operation	When new diesel plant is put in operation in 2012 monitoring of the abatement system will be in place	
		Storage and disposal of waste from DeNOx system	Competent Person: Operations Engineer/Maintenance Engineer 1. Legal requirement: IPPC 2. Concern: 3rd Party - MEPA authority 3. Relevance and vulnerability: Highly vulnerable 4. Possibility of improvement: Low-margin improvement 5. Availability of data: waste register	N		2	3	4	1	1	11	S							Waste Management procedure to include in waste classification this waste stream	Training of personnel in the operation of abatement system and the waste disposal operation	When new diesel plant is put in operation in 2012 monitoring of the abatement system will be in place	
	Use of landfill	Office waste	Competent Person: All employees 1. Legal requirement: IPPC 2. Concern: 3rd Party - MEPA authority, local councils, NGOs 3. Relevance and vulnerability: Highly vulnerable 4. Possibility of improvement: Low-margin improvement 5. Availability of data: waste register, consignment permits, consignment notes	N		2	3	1	2	1	9	S							SOP DPS 29 Waste Management Procedure	EMS Awareness and Waste Management	Daily Waste monitoring	
Impact on landscape	Visual impact	Plant and auxiliary buildings	Competent Person: Station Manager 1. Legal requirement: None 2. Concern: No 3. Relevance and vulnerability :Built on a natural area 4. Possibility of improvement: No 5.Availability of information: Environmental impact assessment for new Delimara plant	N		1	3	1	1	1	7	NS										
Fire risk	Land/sea/air/water pollution	Plant and ancillaries	Competent Person: Head of Fire Section Frequency of occurrence: Extremely unlikely once i n a lifetime of the installation Severity: Serious possible risk of death; event falls under Major Accident according to COMAH	E	Emergency plans Emergency drills Scheduled inspection and maintenance program for fire fighting equipment fire deluge, fire extinguishers											2x5	10	S	Emergency plans Emergency drills plan	Emergency Response Training for ERT personnel Annual Emergency drill plan	Annual checks of fire extinguishers and fire deluge systems Annual checks of fire alarms	Implementation of actions or recommendations (where applicable) from COMAH inspection reports Purchasing of more equipment for ERT
Major Accident	Land/sea/air/water pollution	Fuel Storage	Competent Person: Station Manager Frequency of Occurrence: Extremely unlikely once in a lifetime of the installation Severity: Serious possible risk of death; falls under Major Accident according to COMAH	E	Emergency Response report COMAH inspections COMAH inspection report	Safety Report produced by Enemalta to show compliance with COMAH. The competent authority conducts regular inspections on site, and may request additional improvements or remedial action										2x5	10	S	Emergency plans Emergency drills plan		Carrying out of emergency drills,Analysis of and reporting of emergency situations and scheduled emergency drills	Implementation of actions or recommendations (where applicable) from COMAH inspection reports Purchasing of more equipment for ERT



[illegible]





## **Section 2 – Waste Management Plan**

Covering EP Conditions: 2.16.5.4



**RVA GROUP**

Specialist consulting engineering, safety and environmental management  
for decommissioning; decontamination; dismantling; demolition.

# Enemalta Corporation



## Delimara Power Station, Delimara, Marsaxlokk Waste Management Plan



## DOCUMENT ISSUE/AMENDMENT CERTIFICATE

Date	Author	Checker	Revision	Amendment
22/08/2011	M Taylor	I Wharton	000	Draft

**ENEMALTA CORPORATION**  
**DELIMARA POWER STATION, DELIMARA, MARSAXLOKK**

**WASTE MANAGEMENT PLAN**

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<b>Client:</b>	Enemalta Corporation
<b>Person Drafting this SWMP:</b>	Mark Taylor
<b>Site Location:</b>	Delimara Power Station, Delimara, Marsaxlokk, Malta
<b>Description of Proposed Works:</b>	Waste Estimates for Demolition, Dismantling, Clearance of Process Plant structures, Buildings, Equipment, and Foundation Removal at Delimara Power Station to Support the Station Outline Decommissioning Plan
<b>Estimated Cost of Project:</b>	N/A for this version

### **Introduction**

This Site Waste Management Plan (SWMP) applies to all demolition activities for the Delimara Power Station (DPS) and includes, the currently under construction, Phase 3 plant.

DPS is situated in the south easterly part of the island and was first commissioned in 1992, and consists of the following units:

	Units	Commissioned
Phase 1	2 x 60MW Conventional Steam Boiler/Turbine units	1992
Phase 2a	2 x 37MW Open Cycle Gas Turbines	1994
Phase 2b	1 x 110MW Combined-Cycle Plant. 2 x 37MW Gas Turbines, 2 x Heat Recovery Steam Generators, 1 x 36MW Steam Turbine	1999
Phase 3 (under construction)	8 x Diesel Engines, 1 x 13MW Steam Turbine unit	Due 2012

The final total generation capacity of this station will stand at 448MW on completion of Phase 3.

Phase 1 consists of 2 steam units each consisting of a boiler, a steam turbine and a generator with a capacity of 60 MW. The fuel is heavy fuel oil (HFO). The plant runs at base load.

Phase 2a consists of 2 open cycle gas turbine / generator units each rated at 37.5 MW. The fuel is gas oil and the plant is used for peak loads. This plant may also be used for synchronous compensation.

Phase 2b consists of a combined cycle gas turbine block consisting of 2 gas turbines, 2 heat recovery steam generators and a steam turbine and associated generators with a total capacity of 110 MW. The fuel is gas oil and the plant is used for mid-range loads.

Phase 3 consist of 8 Wartsila 18V46 medium speed diesel engines capable of burning HFO and gas oil, and a 13MW steam turbine which is operated by steam generated by boilers which recover heat from the exhaust of the diesel engines. The power plant incorporates 8 Selective Catalytic Reduction units (SCR), and 4 de-sulphurisation units.

### **Terms of Reference**

The SWMP assumes that all decommissioning and decontamination work has been completed and that all chemicals and process material has been removed under the existing site operating and maintenance procedures.

On the section of the site that has been constructed on the made land to the west, foundation removal quantities include for the ground slabs and shallow foundations (up to 1m deep). This SWMP assumes that the quay structure remains.

Where foundations have been constructed onto the natural rock strata (to the east of the site) then the foundation removal quantities only include for the ground slabs and the top 0.5m of the foundations. This is standard industry practice unless there is a defined future use of the site that requires the full removal of the foundations. Any remaining buried structures will need to be documented and recorded.

### **Waste and the Waste Hierarchy**

Waste is defined in Article 1 (1) (a) of the Waste Framework Directive (2008/98/EC) and means.... "any substance or object ....which the holder discards or intends or is required to discard". All waste that falls within the scope of this definition will be recorded in the Site Waste Management Plan.

Waste is widely defined and includes excess unwanted materials, effluents, unwanted surplus substances arising from the application of any process and any substance or article which is broken, worn out, contaminated or otherwise damaged.

Waste becomes controlled by legislation when it is discarded by the holder. Materials sold for re-use or re-cycling are still classified as waste and subject to all the statutory controls, including Duty of Care.

The European Commission Decision 2000/532/EC1 established a list of wastes. The list of waste has been used to determine what wastes are considered as hazardous waste. A substance or object has only been considered as waste if it conformed to the definition in regulation 4 of the Waste Regulations 2011 (L.N.184 of 2011).

All waste on DPS will be dealt with in accordance with the waste Duty of Care which is a legal requirement under regulation 12 of Waste Regulations 2011 (L.N.184 of 2011) and states that materials will be handled efficiently to minimise wastage and that all waste arising from the site will be managed appropriately.

The Waste Hierarchy has been applied when formulating this Site Waste Management Plan:

- Prevention
- Reuse
- Recycle
- Recovery
- Disposal

Where practical waste has been selected for reuse and recycling. Only when all other routes had been exhausted has waste been designated for landfill.

### **Waste Types**

The waste types that have been identified and documented in Table 1 for the Delimara Power Station are those which are expected to be produced during the demolition of the site. Table 2 further breaks these figures down into geographical areas (see Appendix A). This is to give greater knowledge and understanding of the site and to also allow for better detailed planning depending on demolition scheduling. Each identified waste has a European Waste Catalogue Code (EWC).

### **Waste Segregation**

The waste streams will be segregated along the lines of the waste item and not the code as some items share the same code but require different treatment/conditioning/disposal options. All waste will be segregated at the workface or in a processing area and will then be stockpiled. Types of stockpiling can range

from clearly labelled containers (bins, skips, buildings), to open fenced areas. The majority of any processing done on site will be solely to enable segregation and to aid transportation. The only exception to this will be materials to be re-cycled for use on site (see below). Therefore any treatment, conditioning, or recovery will be performed off-site either on Malta or abroad (see Table 1).

### **Processing, Transportation, and Disposal (Recovery)**

The concrete/brickwork will be re-cycled on site by utilising a mobile crushing machine to process it to an engineering grade fill, a typical example is crushed and sieved material of maximum size 75mm. This fill will be utilised to fill voids and hollows on the site.

All waste disposed off on Malta will be transported and disposed of by appropriate licensed entities as described in the Waste Regulations 2011 (L.N.184 of 2011). All waste to be shipped off the island will also follow the requirements of the regulations but will either be shipped from existing ports or for bulk material directly from the Delimara quay.

### **Definitions**

“Waste Holder” means “the producer of the waste or the natural or legal person who is in possession of it”. It rests, in the first place, with the producer or holder of a substance or object to decide whether it is being discarded and is waste.

“Carrier” means the person who collects and carries out the transport.

“Consignment note” means a note that is to accompany the consignment of hazardous or non-hazardous waste.

“Disposal” means any operation which is not recovery even where the operation has as a secondary consequence the reclamation of substances or energy.

“Non Hazardous Waste” means all waste that does not display one or more of the hazardous properties listed in Schedule 3 of the Waste Regulations 2011 (L.N.184 of 2011). Examples can include paper, plastic, wood, domestic waste, metal and glass.

“Hazardous Waste” means waste which displays one or more of the hazardous properties listed in Schedule 3 of the Waste Regulations 2011 (L.N.184 of 2011).

“Inert” means material of an insoluble mineral nature i.e. glass, concrete, brick, stone, tiles, ceramics, glass fibre material, some soils.



“Recovery” means any operation the principal result of which is waste serving a useful purpose by replacing other materials which would otherwise have been used to fulfil a particular function, or waste being prepared to fulfil that function, in the plant or in the wider economy.

“Recycling” means any recovery operation by which waste materials are reprocessed into products, materials or substances whether for the original or other purposes. It includes the reprocessing of organic material but does not include energy recovery and the reprocessing into materials that are to be used as fuels or for backfilling operations.

“Re-use” means any operation by which products or components that are not waste are used again for the same purpose for which they were conceived.

“Treatment” means recovery or disposal operations, including preparation prior to recovery or disposal.

“Waste Producer” means anyone whose activities produce waste (original waste producer) or anyone who carries out pre-processing, mixing or other operations resulting in a change in the nature or composition of this waste.



## DPS Waste Totals

TABLE 1														
Type of material	Materials						Schedule 2 Coding	Reuse, Re-manufacturing, Recycling and Energy Recovery					Disposal/Carrier	
	EWC Code	Estimates		Inert	Hazardous	Non-Hazardous		On-site Reuse and Recycling		Off-site Reuse, Recycling or Recovery			Specify the type of landfill and disposal company	
		m <sup>3</sup>	Tonnes					Specify the process	Quantity	Specify the process	Quantity	Location	Specify the waste license carrier.	
Soft Strip														
Glass	17 02 02	19		Y		Y	R5			Re-cycle	19	Abroad		
Plasterboard	17 08 02	58				Y	D1 R5			Re-cycle	58	Abroad	Otherwise Landfill Malta (e.g. Ghallis)	
Suspended Ceilings (alumin. tiles,etc.) & Floor Tiles	17 09 04	58				Y	D1 R5			Re-cycle	58	Abroad	Otherwise Landfill Malta (e.g. Ghallis)	
Timber (incl. furniture)	17 02 01	403				Y	R3			Re-cycle	453	Abroad		
Paper and Cardboard	20 01 01	0				Y	R3			Re-cycle	0	Abroad		



TABLE 1													
Type of material	Materials						Schedule 2 Coding	Reuse, Re-manufacturing, Recycling and Energy Recovery					Disposal/Carrier
	EWC Code	Estimates		Inert	Hazardous	Non-Hazardous		On-site Reuse and Recycling		Off-site Reuse, Recycling or Recovery			Specify the type of landfill and disposal company
		m <sup>3</sup>	Tonnes					Specify the process	Quantity	Specify the process	Quantity	Location	Specify the waste license carrier.
Lights	20 01 21*	28			Y		R3 R4			Re-cycle	38	Abroad	
Waste Electrical & Electronic Equipment	16 02 14	23				Y	R4			Recovery	23	Abroad	
<b>Demolition Waste</b>													
Cable	17 04 11		166			Y	R4			Recovery	166	Abroad	
Cable – Oil Filled	17 04 10*		40		Y		R4 R9			Recovery & Re-cycle	40	Abroad	
Transformer Oils	13 03 10*		373		Y		R9			Re-use	373	Abroad	
Waste Oils	13 02 08* 13 07 01*		546		Y		R9			Re-cycle & Re-use	546	Abroad	



TABLE 1													
Type of material	Materials						Schedule 2 Coding	Reuse, Re-manufacturing, Recycling and Energy Recovery					Disposal/Carrier
	EWC Code	Estimates		Inert	Hazardous	Non-Hazardous		On-site Reuse and Recycling		Off-site Reuse, Recycling or Recovery			Specify the type of landfill and disposal company
		m <sup>3</sup>	Tonnes					Specify the process	Quantity	Specify the process	Quantity	Location	Specify the waste license carrier.
Batteries	16 06 01*	2055 No.			Y		R4 R6			Re-cycle	2055 No.	Abroad	
Insulation/Mineral wool	17 06 04	5614				Y	R5 D1			Re-cycle	5614	Abroad	Otherwise Landfill Malta (e.g. Ghallis)
Ceramic Fibres	17 06 03*		0.8		Y		D1						Landfill Malta (e.g. Ghallis)
Refractory	16 11 06	30				Y	R5			Re-cycle	30	Abroad	
Ash and Coal Dust (Waste Hydrocarbon Solids)	10 01 04*	0			Y		D9						Abroad
Urea	16 10 02	0				Y	R3			Re-use	0	Abroad	
Plastics	17 02 03	20				Y	R5			Re-cycle	20	Abroad	



TABLE 1													
Type of material	Materials						Schedule 2 Coding	Reuse, Re-manufacturing, Recycling and Energy Recovery					Disposal/Carrier
	EWC Code	Estimates		Inert	Hazardous	Non-Hazardous		On-site Reuse and Recycling		Off-site Reuse, Recycling or Recovery			Specify the type of landfill and disposal company
		m <sup>3</sup>	Tonnes					Specify the process	Quantity	Specify the process	Quantity	Location	Specify the waste license carrier.
Fibreglass	10 11 03	0		Y		Y	D1						Landfill Malta (e.g. Ghallis)
Metal Cladding	17 04 05		280			Y	R4			Recovery	280	Abroad	
Foam insulation (CFC, HCFC, Propane)	17 06 03*	561			Y		D9						Abroad
Sand/Bitumen	17 03 01*	100			Y		D1						Landfill Malta (e.g. Ghallis)
Stone	17 01 02	800		Y		Y	R5			Recovery	800	Malta	
Concrete/Brick work	17 01 07	11102		Y		Y	R5	Re-cycle (graded crush)	11102				



TABLE 1													
Type of material	Materials						Schedule 2 Coding	Reuse, Re-manufacturing, Recycling and Energy Recovery					Disposal/Carrier
	EWC Code	Estimates		Inert	Hazardous	Non-Hazardous		On-site Reuse and Recycling		Off-site Reuse, Recycling or Recovery			Specify the type of landfill and disposal company
		m <sup>3</sup>	Tonnes					Specify the process	Quantity	Specify the process	Quantity	Location	Specify the waste license carrier.
<b>Scrap Metal</b>													
Carbon Steel	17 04 05		18523			Y	R4			Recovery	18523	Abroad	
Stainless Steel	17 04 05		27			Y	R4			Recovery	27	Abroad	
Copper	17 04 01		385			Y	R4			Recovery	385	Abroad	
Admiralty Brass	17 04 01		92			Y	R4			Recovery	92	Abroad	
Muntz Metal (Cu/Zn - 60/40)	17 04 01		40			Y	R4			Recovery	40	Abroad	
Aluminium	17 04 02		22			Y	R4			Recovery	22	Abroad	
Titanium	17 04 07		20			Y	R4			Recovery	20	Abroad	
High Nickel Alloys	17 04 07		0.4			Y	R4			Recovery	0.4	Abroad	



TABLE 1													
Type of material	Materials						Schedule 2 Coding	Reuse, Re-manufacturing, Recycling and Energy Recovery					Disposal/Carrier
	EWC Code	Estimates		Inert	Hazardous	Non-Hazardous		On-site Reuse and Recycling		Off-site Reuse, Recycling or Recovery			Specify the type of landfill and disposal company
		m <sup>3</sup>	Tonnes					Specify the process	Quantity	Specify the process	Quantity	Location	Specify the waste license carrier.
Foundations													
Concrete	17 01 01	17505		Y		Y	R5	Re-cycle (graded crush)	17505				
Steel	17 04 05		201			Y	R4			Recovery	201	Abroad	
Tarmac	17 03 01*	2652			Y		R3			Re-cycle	2652	Abroad	



## DPS Area Totals

TABLE 2					
Type of material	Materials				
	Estimates		Inert	Hazardous	Non-Hazardous
	m <sup>3</sup>	Tonnes			
<b>AREA 1</b>					
<b><i>Soft Strip</i></b>					
Glass	8		Y		Y
Plasterboard	25				Y
Suspended Ceilings & Floor Tiles	16				Y
Timber (incl furniture)	50				Y
Lights	6			Y	
Waste Electrical & Electronic Equipment	10				Y
<b><i>Demolition Waste</i></b>					
Cable		4			Y
Transformer Oils		0.2		Y	
Waste Oils		0.1		Y	
Insulation/Mineral wool	5				Y
Plastics	5				Y
Cladding		40			Y
Foam insulation (CFC, HCFC, propane)	120			Y	
Stone	540		Y		Y
Concrete/Brickwork/Porcelain	2240		Y		Y
<b><i>Scrap Metal</i></b>					
Carbon Steel		115			Y
<b><i>Foundations</i></b>					
Concrete	2552		Y		Y




**TABLE 2**

Type of material	Materials				
	Estimates		Inert	Hazardous	Non-Hazardous
	m <sup>3</sup>	Tonnes			
Steel		40			Y
Tarmac	600			Y	
<b>AREA 2</b>					
<b><i>Soft Strip</i></b>					
Glass	4		Y		Y
Plasterboard	18				Y
Suspended Ceilings & Floor Tiles	32				Y
Timber (incl furniture)	80				Y
Lights	3			Y	
Waste Electrical & Electronic Equipment	2				Y
<b><i>Demolition Waste</i></b>					
Cable		35			Y
Cable Oil Filled		40		Y	
Transformer Oils		67		Y	
Waste Oils		0.25		Y	
Batteries	226 No.			Y	
Insulation/Mineral wool	44				Y
Plastics	2				Y
Cladding		36			Y
Foam insulation (CFC, HCFC, propane)	106			Y	
Stone	130		Y		Y
Concrete/Brickwork/Porcelain	730		Y		Y
<b><i>Scrap Metal</i></b>					


**TABLE 2**

Type of material	Materials				
	Estimates		Inert	Hazardous	Non-Hazardous
	m <sup>3</sup>	Tonnes			
Carbon Steel		1800			Y
Stainless Steel		10			Y
Copper		54			Y
<b>Foundations</b>					
Concrete	1100		Y		Y
Steel		18			Y
Tarmac	140			Y	
<b>AREA 3</b>					
<b>Soft Strip</b>					
Glass	4		Y		Y
Plasterboard	8				Y
Suspended Ceilings & Floor Tiles	6				Y
Timber (incl furniture)	80				Y
Lights	15			Y	
Waste Electrical & Electronic Equipment	8				Y
<b>Demolition Waste</b>					
Cable		60			Y
Transformer Oils		98		Y	
Waste Oils		23		Y	
Batteries	528 No.			Y	
Insulation/Mineral wool	1800				Y
Refractory	20				Y
Plastics	5				Y


**TABLE 2**

Type of material	Materials				
	Estimates		Inert	Hazardous	Non-Hazardous
	m <sup>3</sup>	Tonnes			
Cladding		70			Y
Foam insulation (CFC, HCFC, propane)	220			Y	
Stone	100		Y		Y
Concrete/Brickwork/Porcelain	3232		Y		Y
<b>Scrap Metal</b>					
Carbon Steel		4900			Y
Copper		110			Y
Admiralty. Brass		92			Y
Aluminum		7			Y
<b>Foundations</b>					
Concrete	5000		Y		Y
Steel		30			Y
Tarmac	550			Y	
<b>AREA 4</b>					
<b>Soft Strip</b>					
Glass	1		Y		Y
Plasterboard	2				Y
Suspended Ceilings & Floor Tiles	1				Y
Timber (incl furniture)	25				Y
Lights	2			Y	
Waste Electrical & Electronic Equipment	1				Y
<b>Demolition Waste</b>					
Cable		20			Y


**TABLE 2**

Type of material	Materials				
	Estimates		Inert	Hazardous	Non-Hazardous
	m <sup>3</sup>	Tonnes			
Transformer Oils		59		Y	
Waste Oils		36		Y	
Batteries	472 No.			Y	
Insulation/Mineral wool	350				Y
Ceramic Fibres		0.4		Y	
Refractory	10				Y
Plastics	4				Y
Cladding		17			Y
Foam insulation (CFC, HCFC, propane)	115			Y	
Concrete/Brickwork/Porcelain	300		Y		Y
<b>Scrap Metal</b>					
Carbon Steel		1992			Y
Stainless Steel		15			Y
Copper		50			Y
Muntz metal (Cu/Zn – 60/40)		40			Y
Aluminum		3			Y
High Nickel Alloys		0.2			Y
<b>Foundations</b>					
Concrete	1053		Y		Y
Steel		10			Y
Tarmac	500			Y	
<b>AREA 5</b>					
<b>Soft Strip</b>					


**TABLE 2**

Type of material	Materials				
	Estimates		Inert	Hazardous	Non-Hazardous
	m <sup>3</sup>	Tonnes			
Glass	1		Y		Y
Plasterboard	2				Y
Suspended Ceilings & Floor Tiles	1				Y
Timber (incl furniture)	50				Y
Lights	4			Y	
Waste Electrical & Electronic Equipment	1				Y
<b>Demolition Waste</b>					
Cable		40			Y
Transformer Oils		114		Y	
Waste Oils		60		Y	
Batteries	356 No.			Y	
Insulation/Mineral wool	3250				Y
Plastics	2				Y
Cladding		120			Y
Concrete/Brickwork/Porcelain	1300		Y		Y
<b>Scrap Metal</b>					
Carbon Steel		6500			Y
Copper		123			Y
Titanium		20			Y
Aluminum		10			Y
<b>Foundations</b>					
Concrete	3230		Y		Y
Steel		50			Y


**TABLE 2**

Type of material	Materials				
	Estimates		Inert	Hazardous	Non-Hazardous
	m <sup>3</sup>	Tonnes			
Tarmac	272			Y	
<b>AREA 6</b>					
<b><i>Soft Strip</i></b>					
Glass	0.5		Y		Y
Plasterboard	2				Y
Suspended Ceilings & Floor Tiles	1				Y
Timber (incl furniture)	10				Y
Lights	0.5			Y	
Waste Electrical & Electronic Equipment	0.5				Y
<b><i>Demolition Waste</i></b>					
Cable		4			Y
Transformer Oils		33		Y	
Waste Oils		17		Y	
Batteries	149 No.			Y	
Insulation/Mineral wool	15				Y
Ceramic Fibres		0.4		Y	
Concrete/Brickwork/Porcelain	100		Y		Y
<b><i>Scrap Metal</i></b>					
Carbon Steel		530			Y
Copper		39			Y
High Nickel Alloys		0.2			Y
<b><i>Foundations</i></b>					
Concrete	470		Y		Y


**TABLE 2**

Type of material	Materials				
	Estimates		Inert	Hazardous	Non-Hazardous
	m <sup>3</sup>	Tonnes			
Steel		7			Y
Tarmac	190			Y	
<b>AREA 7</b>					
<b><i>Soft Strip</i></b>					
Plasterboard	1				Y
Suspended Ceilings & Floor Tiles	1				Y
Timber (incl furniture)	5				Y
Lights	0.5			Y	
<b><i>Demolition Waste</i></b>					
Cable		1			Y
Transformer Oils		0.1		Y	
Waste Oils		0.5		Y	
Batteries	54 No.			Y	
Cladding		7			Y
Stone	30		Y		Y
Concrete/Brickwork/Porcelain	100		Y		Y
<b><i>Scrap Metal</i></b>					
Carbon Steel		216			Y
Copper		4			Y
<b><i>Foundations</i></b>					
Concrete	600		Y		Y
Steel		8			Y
Tarmac	220			Y	



TABLE 2					
Type of material	Materials				
	Estimates		Inert	Hazardous	Non-Hazardous
	m <sup>3</sup>	Tonnes			
<b>AREA 8</b>					
<b><i>Soft Strip</i></b>					
Timber (incl furniture)	10				Y
Lights	0.5			Y	
Waste Electrical & Electronic Equipment	1				Y
<b><i>Demolition Waste</i></b>					
Cable		1			Y
Transformer Oils		0.1		Y	
Waste Oils		8		Y	
Insulation/Mineral wool	150				Y
Plastics	2				Y
Concrete/Brickwork/Porcelain	500		Y		Y
<b><i>Scrap Metal</i></b>					
Carbon Steel		250			Y
Stainless Steel		2			Y
Copper		4			Y
Aluminium		2			Y
<b><i>Foundations</i></b>					
Concrete	400		Y		Y
Steel		5			Y
Tarmac	180			Y	
<b>AREA 9</b>					
<b><i>Demolition Waste</i></b>					




**TABLE 2**

Type of material	Materials				
	Estimates		Inert	Hazardous	Non-Hazardous
	m <sup>3</sup>	Tonnes			
Cable		0.5			Y
Waste Oils		400		Y	
Sand/bitumen	100			Y	
Concrete/Brickwork/Porcelain	200		Y		Y
<b>Scrap Metal</b>					
Carbon Steel		1000			Y
<b>Foundations</b>					
Concrete	200		Y		Y
Steel		3			Y
Tarmac	0			Y	
<b>AREA 10</b>					
<b>Demolition Waste</b>					
Cable		0.5			Y
Transformer Oils		1.4		Y	
Waste Oils		1		Y	
Batteries	270 No.			Y	
Concrete/Brickwork/Porcelain	1600		Y		Y
<b>Scrap Metal</b>					
Carbon Steel		1220			Y
Copper		1			Y
<b>Foundations</b>					
Concrete	2900		Y		Y
Steel		30			Y



## APPENDIX A – DPS Area Plan

