



## DECOMMISSIONING OF MARSA POWER STATION

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### HAZMAT REPORT



**Version 2: June 2017**



**Report Reference:**

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## Quality Assurance

### Decommissioning of Marsa Power Station HAZMAT Report June 2017

Report for: **Salv. Bezzina & Sons Ltd**

### Revision Schedule

Rev	Date	Details	Written by:	Checked by:	Approved by:
00	June 2017	Submission to client	<b>Krista Farrugia</b> Senior Environmental Consultant	<b>Rachel Xuereb</b> Director	<b>Adrian Mallia</b> Managing Director

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## I. INTRODUCTION

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- I.1. Adi Associates Environmental Consultants Ltd (“Adi Associates”) has been commissioned by Salv Bezzina & Sons Ltd (“the contractor”) to prepare a HAZMAT Report in connection with the decommissioning of the Marsa Power Station, following the award of a tender by Enemalta to Salv Bezzina & Sons Ltd. **Figure 1.1** illustrates a block plan of the Marsa Power Station. **Figure 1.2** illustrates those parts of the Marsa Power Station that are subject of this HAZMAT Report.
- I.2. The scope of this HAZMAT report is to identify all hazardous materials that need to be removed as part of the decommissioning and dismantling contract. It builds on the Waste Management Plan<sup>1</sup> as prepared by Adi Associates. This report refers to hazardous materials as identified in national waste management legislation. It does not address health and safety requirements for the handling of such materials, as these are the responsibility of the contractor appointed to remove the hazardous materials.
- I.3. In order to inform and build the HAZMAT Report a hazardous materials survey was undertaken; hazardous materials to be tested for further characterisation were identified in the survey. The Plan identifies tests to be carried out where (i) there is a doubt with respect to the type of hazardous material present, or (ii) whether there is a doubt that equipment or other objects are contaminated with hazardous material. Materials that were known to be hazardous were not tested. The outcome of the sampling and testing undertaken are described in subsequent sections of this report. The laboratory analysis of the material tested is found in **Appendix I: Hazardous Materials Test Results**.
- I.4. Asbestos testing and surveying was carried by Dr George Peplow as the Principal Surveyor. The objectives of the survey were to establish the location of any asbestos containing material (ACM) during the demolition of the power station. A Type Three Survey<sup>2</sup> was carried out to assess, identify and evaluate the presence of ACM. The survey was conducted by means of visual inspection and subsequent sampling of suspect bulk materials. Where the surveyor suspected a material to contain asbestos, a sample was taken for analysis. Refer to **Appendix 2: Asbestos Containing Materials Test Results** for results.
- I.5. It is noted that this HAZMAT report is based on a more extensive report that described the hazardous materials present throughout the Power Station, and not just the parts of the Power Station that are subject of this HAZMAT Report.

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<sup>1</sup> Adi Associates Environmental Consultants Ltd, 2017. Decommissioning of Marsa Power Station. Waste Management Plan. San Gwann, April 2017; v + 13pp + I Appendix.

<sup>2</sup> Type Three Surveys involve Full Access Sampling & Identification Surveys.



Figure I.1: Marsa Power Station existing layout

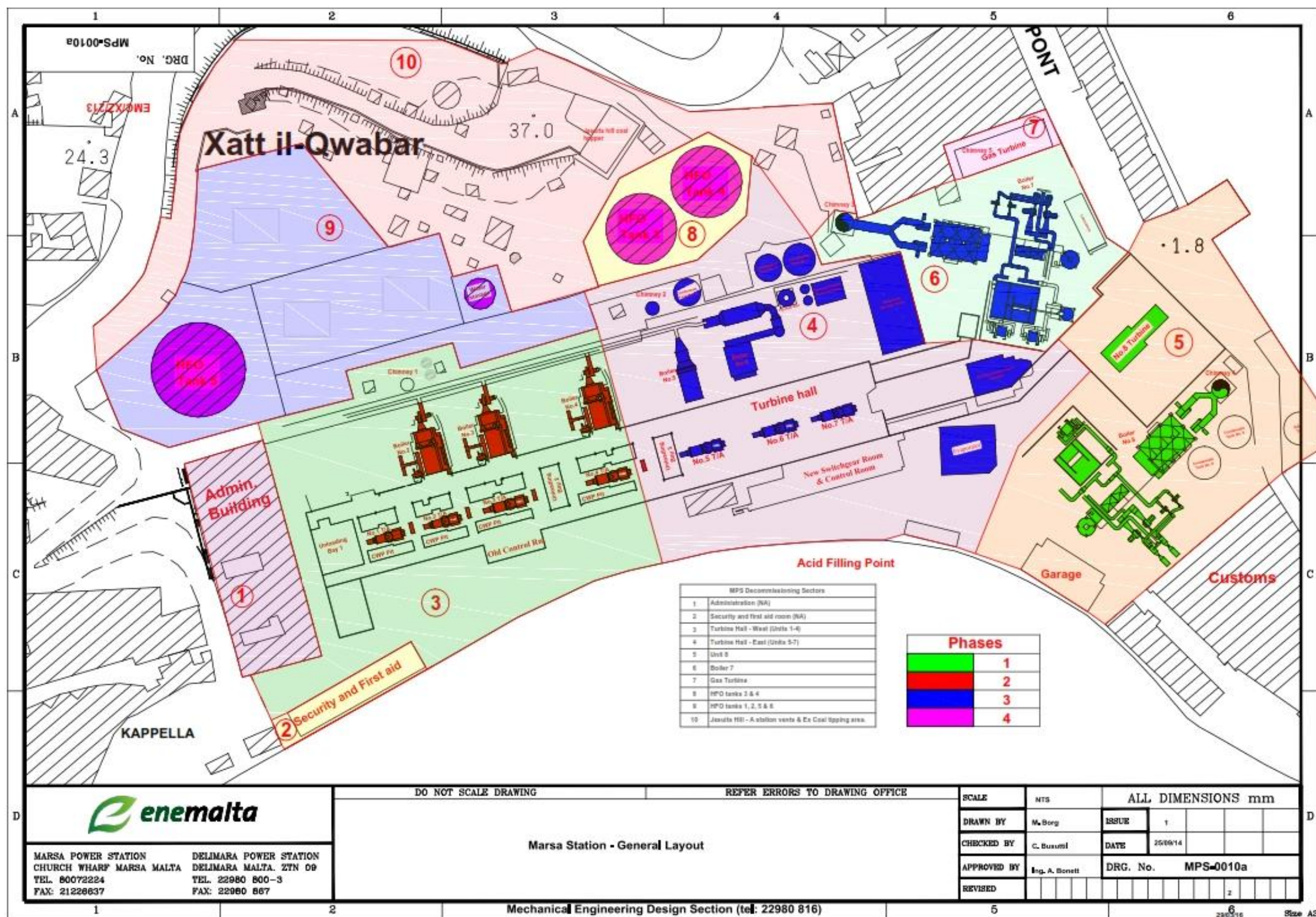
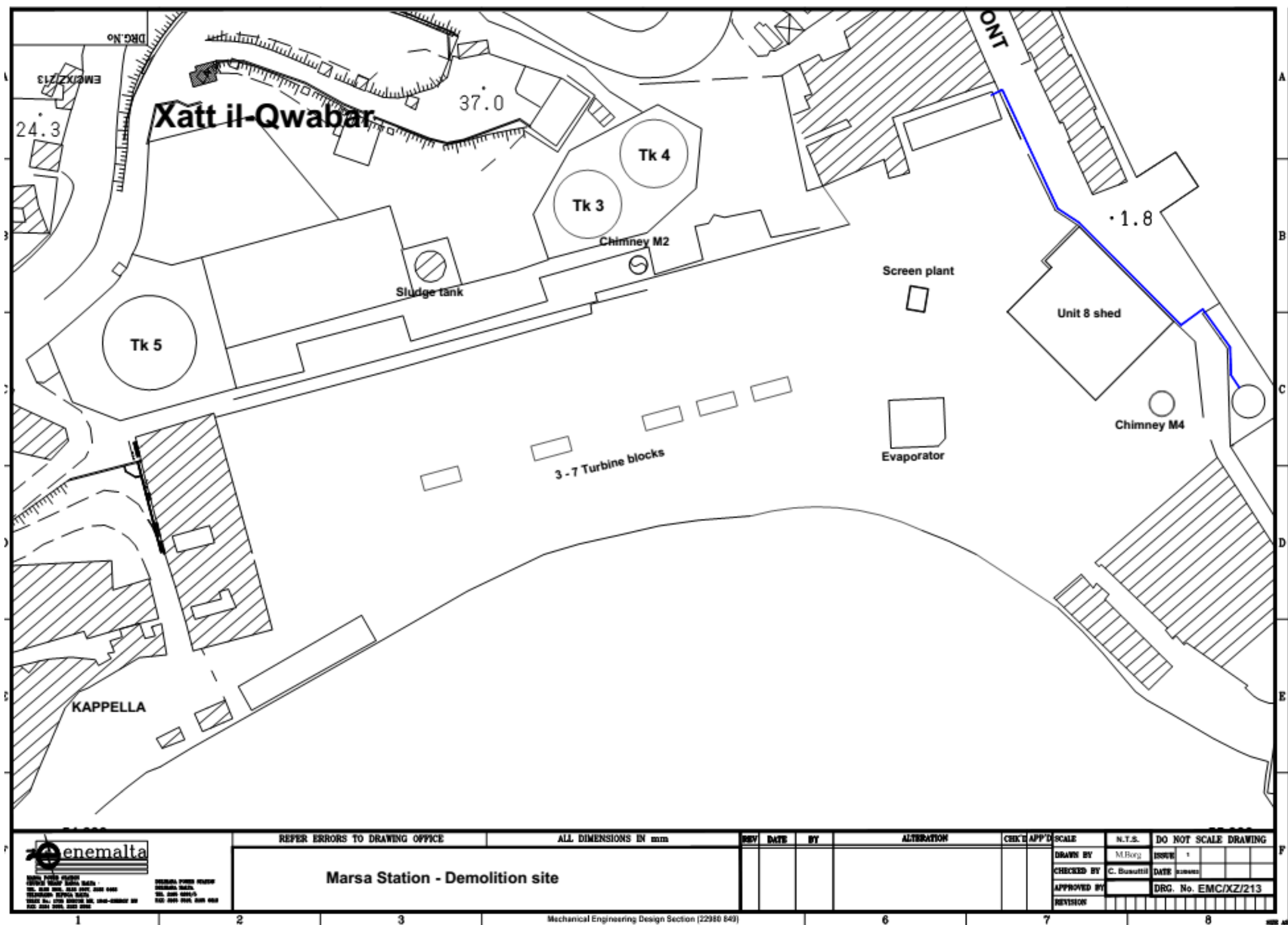




Figure I.2: Layout of Power Station to be demolished



## 2. MARSA POWER STATION

### BACKGROUND

- 2.1. The Marsa Power 'B' Station was first commissioned in 1966<sup>3</sup> with the commissioning of the first two units. This station was further expanded over time to meet the electrical load and currently comprises the units listed in **Table 2.1**. The total generation capacity is 267 MW. Prior to decommissioning, the steam units burned 0.7% sulphur heavy fuel oil and the gas turbine burned distillate fuel oil (diesel). In summary, the plant consists of steam plants, comprising six heavy fuel oil fired boilers (Boilers 3 – 8), eight conventional steam turbines (Turbines 1-8) and one open cycle diesel fired gas turbine.
- 2.2. Operational plant is situated in the centre of the site; a workshop, administration buildings and a medical clinic are located in the west of the site. Bulk storage tanks are located on a higher level on top of Jesuits Hill on the northern part of the site.

**Table 2.1: Plant at Marsa Power Station**

Units	Year Commissioned
2 x 90 ton/h steam raising boilers <sup>4</sup>	1966
2 x 10 MW steam turbines and generators	1966
2 x 120 ton/h steam raising boilers	1970
2 x 30 MW steam turbines and generators	1970
1 x 130 ton/h steam raising boiler	1982
1 x 30 MW steam turbine and generator <sup>5</sup>	1982
1 x 130 ton/h steam raising boiler	1984
1 x 30 MW steam turbines and generator <sup>6</sup>	1984
1 x 300 ton/h steam raising boiler	1985
1 x 30 MW steam turbine and generator <sup>7</sup>	1985
1 x 60 MW steam turbine and generator <sup>8</sup>	1987
1 x 300 ton/h steam raising boiler	1987
1 x 37 MW open cycle gas turbine and generator	1990

### DISMANTLING AND DECOMMISSIONING

- 2.3. Decommissioning of the Marsa Power Station will be carried out in phases. Structures that will not be demolished include the underground 'A' station, the

<sup>3</sup> An underground station, located beneath Jesuits Hill was commissioned in 1953 and was eventually increased to a final total capacity of 30 MW. This station, known as the 'A' station, was decommissioned in 1993.

<sup>4</sup> The steam generators were decommissioned in 1994 and 1999, respectively.

<sup>5</sup> The steam turbine is refurbished plant, first commissioned in 1952 in Palermo, Sicily.

<sup>6</sup> The steam turbine is refurbished plant, first commissioned in 1952 in Palermo, Sicily. This unit was run on coal between its commissioning date and 1995 when coal firing was discontinued.

<sup>7</sup> The steam turbine is refurbished plant, first commissioned in 1952 in Palermo, Sicily. This unit was run on coal between its commissioning date and 1995 when coal firing was discontinued.

<sup>8</sup> The steam turbine is a refurbished plant, which was first commissioned in 1954 at Little Barford in the UK. In 1996, this unit was refurbished again to extend its lifetime for a further 15 years. This unit was run on coal between its commissioning date and 1995 when coal firing was discontinued.



administration building and main gate security rooms, the inlet jetty and gas turbine 9 (including associated fuel tank, pipework and control equipment).

2.4. The scope of the HAZMAT Report covers the following areas:

- HFO Tanks 3, 4 and 5;
- Unit 8 shed including transformers and switchgear;
- Chimneys M2 and M4;
- Sludge Tank;
- Screen Plant and Evaporator No. 1; and
- Turbine 3 to 7 block.

2.5. Unit Shed 8 comprises demolition of the concrete turbine block and infilling of pits with inert material, demolition of the roof, concrete and masonry structures and the shed steel structure as well as the decommissioning of transformers, cables, switchgear, batteries, and a gantry crane.

2.6. Chimney 02 is approximately 60 m high. Chimney 02 is similar to Chimney 01 which was recently demolished, however insulation may be present in Chimney 02. Enemalta staff<sup>9</sup> has confirmed that the chimney is made up of brickwork sandwiched between an external concrete skin and an internal iron plate.

2.7. Chimney 4 is located in the area of Boiler 8 and is mainly composed of inner bricks surrounded by a concrete structure. Samples have been taken of the bricks at the base of the chimney and bricks from the uppermost of the chimney. The bricks are non-hazardous however, further testing is envisaged once the demolition commences.

2.8. Heavy Fuel Oil tanks 3, 4, and 5 together with the sludge tank and settling tanks will be dismantled and it will be carted away together with associated pipework. Oils removed from the tanks include heavy fuel oil (HFO) and lubricating oils. HFO is highly viscous and requires heating in order to increase its fluidity to a point where the oil can be pumped out. The HFO is stored in appropriate 1,000 L intermediate bulk containers (IBCs) which are stored on site in a bunded area until the necessary approvals are obtained from the Competent Authority to allow for transport to an appropriate treatment site. Lubricating oil is present in various units most notably in the oil system which furnishes oil to the turbines. Lubricating oil will be drained by gravity from existing outlets.

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<sup>9</sup> Ing. Albert Bonett and Ing. Spiru Grima during site visit dated 6<sup>th</sup> April 2016.

- 2.9. Prior to any works, disconnection of all pipes and / or wires will be carried out as required. Units will also be cleaned. Where necessary, hot cutting of equipment will be carried out and the various pieces removed by overhead gantry crane as appropriate. Where insulation is present on specific units, this will be cut away from the main body and removed separately.
- 2.10. The rest of the equipment has already been dismantled and decommissioned and has been included in a separate Waste Management Plan and HAZMAT Report.

### **3. WASTE LEGISLATION**

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- 3.1. The legislation and policy documents relevant to this HAZMAT report are outlined below.

#### **NATIONAL LEGISLATION**

- 3.2. The key Regulations in force under the Environment Protection Act 2016 include the following Legal Notices that are relevant to the Scheme:

- Legal Notice 184 of 2011 (as amended), the Waste Regulations (S.L. 549.63) and Legal Notice 106 of 2007, the Waste Management (Activity Registration) Regulations (S.L. 549.45). These Regulations regulate the management of hazardous and non-hazardous wastes. The Regulations aim to control all operations relating to the production and management of waste and promote sound waste management practices so as to safeguard human health and the environment.

The regulations define hazardous waste as any waste that displays one or more properties described in Schedule 3 of Legal notice 184 of 2011. Commission Decision 2014/955/EU (amending Decision 2000/532/EC) on the list of waste, establishes the classification system for wastes, including a distinction between hazardous and non-hazardous wastes. It is closely linked to the list of the main characteristics which render waste hazardous contained in Annex III to the Waste Framework Directive (Directive 2008/98/EC) as also transposed into national legislation, described above. This legislation was used to categorize waste streams. Only hazardous waste streams are addressed in this report.

#### **Waste Management Plan for the Maltese Islands, 2014 - 2020**

- 3.3. The latest Waste Management Plan for the Maltese Islands discusses legislation relevant to waste management in the Maltese Islands, presents a detailed picture of the waste arisings, and includes a strategy in relation to all waste streams, with the objective of moving waste management in Malta up the waste hierarchy through increased prevention of waste generation, re-use, recycling and recovery.
- 3.4. The Waste Management Plan for the Maltese Islands identifies that Malta has limited facilities for the disposal of hazardous waste and the latter is mainly exported through the appropriate legislative requirements. Waste oils, batteries, asbestos and waste electrical and electronic equipment (WEEE) are specifically mentioned. The plan has specific measures to address the collection and disposal of these different waste streams.

## 4. HAZARDOUS MATERIALS

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- 4.1. As mentioned, as part of the process of the compilation of this HAZMAT report, Adi Associates in the presence of Enemalta personnel, carried out a survey to visually identify hazardous material present on site, including identification, classification, quantification (as far as possible) and identification of waste management required. This HAZMAT reports identifies all hazardous materials to be removed and discarded from the site to ensure that they are disposed of in accordance with whether they are hazardous or non-hazardous. This HAZMAT Report presents the findings of the Hazardous Materials Survey for the decommissioning of the Marsa Power Station and supports the Waste Management Plan. The Asbestos Reports prepared by Dr George Peplow are presented in **Appendix 2** to this HAZMAT Report.

### HAZARDOUS WASTE MATERIAL SAMPLING

- 4.2. Samples were taken from various locations with the Site and tested in order to identify the presence of hazardous materials and allow for appropriate waste characterisation, as described below. The preparation of the survey was consistent with the requirements of EN 14899:2005.

#### Chemical analysis

- 4.3. Chemical analysis was carried out at UK-based Scientific Analysis Laboratories (SAL). SAL has UKAS accreditation to the ISO/IEC 17025 standard.
- 4.4. Samples were tested as indicated in **Tables 4.1** and **4.2**. The full suite of tests is as follows:
- Metals: As, Cd, Cr, Cu, Pb, Hg, Ni, Sn, Sb, Se, V, Co, Th, Mn, Zn;
  - PAH (US EPA 16)<sup>10</sup>;
  - PCBs;
  - Asbestos screen;
  - Cyanide;
  - BTEX;
  - C5-C12;
  - C12-C35;

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<sup>10</sup> 16 US EPA PAHs, as follows: acenaphthene, acenaphthylene, anthracene, benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, benzo(ghi)perylene, benzo(k)fluoranthene, chrysene, dibenzo(ah)anthracene, fluoranthene, fluorene, indeno(123-cd)pyrene, naphthalene, phenanthrene, pyrene.

- Hazardous property assessment HPI-HPI4;
- Acid neutralisation capacity;
- LOI; and
- Leachate preparation and testing for Sb, As, Ba, Cd, Cl, Cr, Co, DOC, conductivity, fluoride, lead, mercury, Mo, Ni, Se, Sulphate, TDS and Zn. Leachate preparation was carried out in accordance with standard BS EN 12457-2.

4.5. Where necessary, samples were ground up by the laboratory to prepare for testing. The method used for digestion of waste was consistent with EN 13656:2002.

**Table 4.1: Laboratory analysis of bulk product**

Analyte	Analytical methodology	Limit of detection	Test-specific accreditation
Asbestos Bulk ID	Polarised light microscopy (PLM)	Presence / absence	UKAS
Cyanide (total)	Colorimetry	1 mg/kg	None
Acid Neutralising Capacity (pH 4)	Titration	2 Mol/kg	None
Acid Neutralising Capacity (pH 7)	Titration (pH 7)	2 Mol/kg	None
Benzene	Headspace Gas Chromatography / Mass Spectrometry (GC/MS)	1 µg/kg	None
Ethylbenzene	GC/MS (Headspace)	1 µg/kg	None
Meta/Para-Xylene	GC/MS (Headspace)	1 µg/kg	None
Ortho-Xylene	GC/MS (Headspace)	1 µg/kg	None
Toluene	GC/MS (Headspace)	1 µg/kg	None
BTEX (Sum)	Calc	4 µg/kg	None
Coronene	GC/MS	0.1 mg/kg	None
Loss on Ignition	Grav	0.1%	None
Moisture	Grav	0.1%	None
PAH (Sum)	1.6 mg/kg	Calc	None
Polychlorinated biphenyl BZ#101	GC/MS (Selected Ion Recording, SIR)	0.5 µg/kg	None
Polychlorinated biphenyl BZ#118	GC/MS (SIR)	0.5 µg/kg	None
Polychlorinated biphenyl BZ#138	GC/MS (SIR)	0.5 µg/kg	None
Polychlorinated biphenyl BZ#153	GC/MS (SIR)	0.5 µg/kg	None
Polychlorinated biphenyl BZ#180	GC/MS (SIR)	0.5 µg/kg	None
Polychlorinated biphenyl BZ#28	GC/MS (SIR)	0.5 µg/kg	None
Polychlorinated biphenyl BZ#52	GC/MS (SIR)	0.5 µg/kg	None
PCB EC7 (Sum)	Calc	3.5 µg/kg	None
pH	Probe		None
Acenaphthene	GC/MS	0.1 mg/kg	None

Analyte	Analytical methodology	Limit of detection	Test-specific accreditation
Acenaphthylene	GC/MS	0.1 mg/kg	None
Anthracene	GC/MS	0.1 mg/kg	None
Benzo(a)Anthracene	GC/MS	0.1 mg/kg	None
Benzo(a)Pyrene	GC/MS	0.1 mg/kg	None
Benzo(b/k)Fluoranthene	GC/MS	0.1 mg/kg	None
Benzo(ghi)Perylene	GC/MS	0.1 mg/kg	None
Chrysene	GC/MS	0.1 mg/kg	None
Dibenzo(ah)Anthracene	GC/MS	0.1 mg/kg	None
Fluoranthene	GC/MS	0.1 mg/kg	None
Fluorene	GC/MS	0.1 mg/kg	None
Indeno(123-cd)Pyrene	GC/MS	0.1 mg/kg	None
Naphthalene	GC/MS	0.1 mg/kg	None
Phenanthrene	GC/MS	0.1 mg/kg	None
Polyaromatic Hydrocarbons (Total)	GC/MS	0.1 mg/kg	None
Pyrene	GC/MS	0.1 mg/kg	None
Total Organic Carbon	OX/IR	0.1%	None
Total Petroleum Hydrocarbons <sup>11</sup>	Gas Chromatography / Flame Ion Detector (GC/FID)	1 mg/kg	None
Total Petroleum Hydrocarbons (C35-C40)	GC/FID	1 mg/kg	None
Total Petroleum Hydrocarbons C10-C40 (Sum)	Calc	1 mg/kg	None
Arsenic	Inductively coupled plasma optical emission spectrometry (ICP/OES)	1 mg/kg	None
Cadmium	ICP/OES	1 mg/kg	None
Chromium	ICP/OES	1 mg/kg	None
Copper	ICP/OES	1 mg/kg	None
Lead	ICP/OES	1 mg/kg	None
Mercury	ICP/OES	1 mg/kg	None
Nickel	ICP/OES	1 mg/kg	None
Selenium	ICP/OES	10 mg/kg	None
Zinc	ICP/OES	1 mg/kg	None
Antimony	ICP/OES	10 mg/kg	None
Cobalt	ICP/OES	10 mg/kg	None
Manganese	ICP/OES	1 mg/kg	None
Thallium	ICP/OES	10 mg/kg	None
Tin	ICP/OES	2 mg/kg	None
Vanadium	ICP/OES	10 mg/kg	None

<sup>11</sup> The method for determination of C10-C40 hydrocarbons is consistent with EN 13370:2005.

**Table 4.2: Laboratory analysis of water (leachate)**

Analyte	Analytical methodology	Limit of detection	Test-specific accreditation
Sb (dissolved)	Inductively coupled plasma mass spectrometry (ICP/MS) (Filtered)	1 µg/L	UKAS
As (dissolved)	ICP/MS (Filtered)	0.2 µg/L	UKAS
Ba (dissolved)	ICP/MS (Filtered)	1 µg/L	UKAS
Cd (dissolved)	ICP/MS (Filtered)	0.02 µg/L	UKAS
Chloride	Discrete Analyser	1 mg/L	UKAS
Cu	ICP/MS (Filtered)	0.5 µg/L	UKAS
Dissolved Organic Carbon	OX/IR	1 mg/L	None
Electrical conductivity	Probe	10 µS/cm	None
Fluoride	Discrete Analyser	0.05 mg/L	UKAS
Pb (dissolved)	ICP/MS (Filtered)	0.3 µg/L	UKAS
Hg (dissolved)	ICP/MS (Filtered)	0.05 µg/L	UKAS
Mo (dissolved)	ICP/MS (Filtered)	1 µg/L	None
Ni (dissolved)	ICP/MS (Filtered)	1 µg/L	None
Phenols (total mono)	Colorimetry	0.1 mg/L	UKAS
Se (dissolved)	ICP/MS (Filtered)	0.5 µg/L	UKAS
Sulphate	Discrete analyser	0.5 mg/L	UKAS
Total Dissolved Solids	Grav	100 mg/L	none
Zn (dissolved)	ICP/MS (Filtered)	2 µg/L	UKAS

- 4.6. Waste oil (dielectric fluid) from transformers was tested for PCB and PCT levels and the flash point of the fluid, refer to **Table 4.3**.

**Table 4.3: Laboratory analysis of transformer oil**

Analyte	Analytical methodology	Limit of detection	Test-specific accreditation
Flash Point	FPE (Ignition)	55 °C	None
Poly-Chlorinated Biphenyls (Total Tri-Hepta)	GC/MS (SIR)	50 µg/kg	None
Polychlorinated terphenyls	GC/MS	0.1 mg/kg	None

### Radiochemical testing

- 4.7. In addition to the above, it was recognised during the hazardous materials survey that coal that may remain in the mills in Area 6 should be screened for radioactive nuclides. The screening was carried out through the use of a hand-held Geiger-Müller counter to detect ionising radiation such as alpha particles, beta particles and gamma rays by the Occupational Health and Safety Authority registered expert, Mr Aldo Busuttil. **Appendix 3: Results of coal testing for radioactivity** presents the results. No radioactivity was detected.



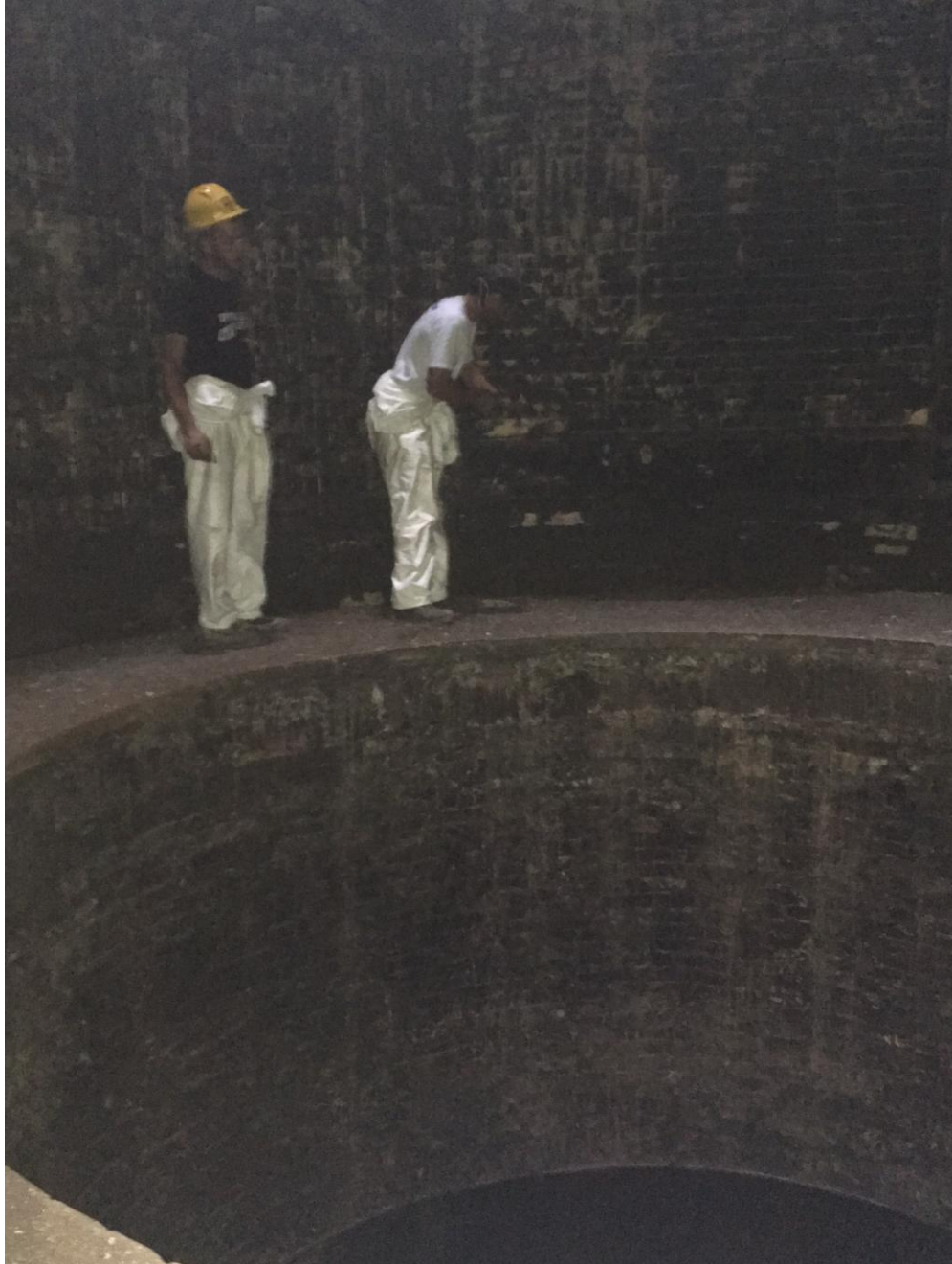
## Sampling

- 4.8. Sampling was undertaken by the Contractor's staff as supervised by Adi Associates and in the presence of Enemalta personnel (see **Figure 4.1**).
- 4.9. Of relevance to this HAZMAT Report, the following materials were sampled and tested:
- Chimneys: core samples from 5 locations within Chimney 3 and another 5 locations within chimney 4 were taken to determine the hazardous nature of the chimneys<sup>12</sup>. The samples consisted of 500 g of crushed brick each; the samples were collected in glass jars (see **Figure 4.2**).
  - A further 2 samples from chimney 4 (outer part of bricks from upper part of chimney) were taken during commencement of demolition of this chimney, however works were not continued. The bricks were tested. Transformers from each area were tested: Transformer No. 8 Generator Transformer (Manufacturer – Pauwels Trafo, serial number, 85.4.4836), Transformer Station Tx1 (Manufacturer – Brush, serial number, 64588), Station Aux. Tx 5 generation auxiliary transformer (Manufacturer – s.e.a. S.p.a, serial number 23829), and Boiler Aux Tx. 7A generation auxiliary transformer (Manufacturer – Elettromeccanica Verbano S.p.a.). All were tested for polychlorinated biphenyls (PCB)-containing dielectric fluid (waste oil) and polychlorinated terphenyls (PCTs). 50 mL of the oil was collected in small glass vials.
  - Concrete structure in the turbine hall of boiler 8 – 1 sample of lightly stained concrete + another 3 samples of heavily stained concrete from the surface and from 3 cm. Additionally 4 core samples were taken from turbine hall 8 (2 samples) and turbines 4 and 5.
  - Sample of concrete taken after scraping heavily stained concrete in turbine hall 8.
  - Transformer oil (Interbus Transformer 2) zone 3 (tested for PCBs and PCTs).
  - 3 samples of switchgear oil from zone 3 (tested for PCBs and PCTs).
- 4.10. Additional samples will be tested as works commence and areas are made accessible and where there is uncertainty on the nature of the material.

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<sup>12</sup> It is noted that only bricks were tested in Chimneys 3 and 4 as the rest of the materials will be tested prior to dismantling, when there will be better accessibility.

**Figure 4.1: Collection of samples from inside one of the chimneys**



**Figure 4.2: Samples collected**





**Figure 4.3: Sample of concrete from turbine hall 8 (Sample MPS9)**



**Figure 4.4: Location of heavily stained samples from turbine hall 8**



**Sample MPS11**

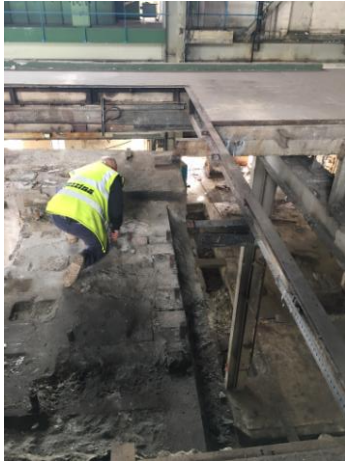


**Sample MPS12**



**Sample MPS13**

**Figure 4.5: Photographs of various samples**



**MPS 22: Concrete from Turbine hall 8  
after scarping off stained material**



**MPS 20: Sample of bricks collected from  
Chimney 4 at the start of demolition of  
the upper part of the chimney**

**Table 4.4: Hazardous Materials Survey**

Component to be tested	Sampling	Tests
<b>Area 5</b>		
Transformer No. 8 Generator Transformer (Manufacturer – Pauwels Trafo, serial number, 85.4.4836)	50 mL of dielectric fluid in a small glass vial	PCB and PCT testing
Boiler No. 8 quarl	Removal of quarl, storage in a glass jar	Full suite <sup>13</sup>
Chimney 4	Sample of inner-most bricks in the flue. Bricks cored from 5 separate places in the chimney	Full suite
Chimney 4	Sample of inner-most bricks in the flue – uppermost part prior to demolition (samples MPS20 and MPS21)	Full suite
Concrete in turbine hall 8	1 lightly stained sample from 3 places and mixed. 3 samples from heavily stained areas (see <b>Figure 4.4</b> ) at surface (Samples MPS11A, MPS12A, and MPS13A, and 3 cm below surface (samples MPS11B, 12B, and 13B). 1 sample following removal of stained concrete (MPS22)	Full suite
Concrete plinth just outside turbine hall 8	1 heavily stained sample (Sample MPS14)	Full suite
Mud outside evaporator just outside turbine hall 8	1 sample of muddy ground (sample MPS15)	Full suite
Green liquid at the base of chimney 4	1 sample of liquid (sample MPS19)	Parameters listed in Legal Notice 139 of 2002
<b>Area 3</b>		
Transformer Station Tx1 (Manufacturer – Brush, serial number, 64588)	50 mL of dielectric fluid in a small glass vial	PCB and PCT testing
Mud on the ground between areas 3 and 4	Sample of mud from ground (MPS 18)	Full suite
Interbus Transformer 2	50 mL of dielectric fluid in a small glass vial	PCB and PCT testing
Switchgear oil 11KV Brush S/G,	50 mL of dielectric fluid in a small glass vial	PCB and PCT testing

<sup>13</sup> As described Tables 4.1 and 4.2.

Component to be tested	Sampling	Tests
Switchgear oil 33KV Gwarator No 3, Switchgear oil 3 KV Brush S/G respectively		
<b>Areas 4 &amp; 6</b>		
Station Aux. Tx 5 generation auxiliary transformer (Manufacturer – s.e.a. S.p.a, serial number 23829)	50 mL of dielectric fluid in a small glass vial	PCB and PCT testing
Boiler bottom deposits / ash from boiler 5 and boiler 6.	500 g of crushed bottom ash deposits were collected in a glass jar	Full suite
Chimney 3	Sample of inner-most bricks in the flue. Bricks cored from within the chimney. Sample of metal sheet lining <sup>14</sup> .	Full suite
Chimney 2	Sample of metal sheet lining (to be taken during dismantling works)	Full suite
Radioactivity screening of coal	Use of Geiger-Müller counter to detect	Screen for ionising radiation such as alpha particles, beta particles and gamma rays
Boiler Aux Tx. 7A generation auxiliary transformer (Manufacturer – Elettromeccanica Verbano S.p.a.)	50 mL of dielectric fluid in a small glass vial	PCB and PCT testing
Boiler Aux Tx. 7A generation auxiliary transformer (Manufacturer – Elettromeccanica Verbano S.p.a.)	50 mL of dielectric fluid in a small glass vial	PCB and PCT testing

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<sup>14</sup> This will only be taken once the chimney is ready to be dismantled to avoid damaging the integrity of the structure.



## **HAZARDOUS WASTE FOUND IN THE DIFFERENT EQUIPMENT**

### **HFO Tanks 3, 4 and 5**

- 4.11. HFO tank 5 and associated settling and sludge tanks will be cleaned from any remaining HFO and sludge. Hazardous material from the tanks is HFO.

### **Unit 8 shed including transformers and switchgear**

- 4.12. The following hazardous materials are likely to be found in unit shed 8:
- Asbestos: this was found in the electrical switchgear located on the north and east walls on the third floor level of the Turbine Hall. No inspections on items that were either sealed or still electrically live were undertaken including in sealed turbine windings, gaskets sealed in the various pipe flanges and certain live electrical switchgear (see **Appendix 2**).
  - Transformer oils: these oils were tested for PCBs and PCTs (see **Appendix 1**). Although the oils were found to contain PCB, the PCB concentration is less than 50 mg/kg, which means that the oil is classified under EWC 13 01 13\*; the transformer oil is still considered hazardous.
  - Approximately 18 mercury switches are found within area 5, in the precipitator transformers. **Appendix 4** contains a list of the mercury switches present throughout the Marsa Power Station.
  - Absorbents, filter materials, wiping cloths, protective clothing contaminated by dangerous substances will be generated by the contractor during the dismantling process. They are being treated as hazardous waste.
  - Various Waste Electric & Electronic Equipment (WEEE) found in this area including from transformers, generators and the gantry crane.
  - 110 V and 240 V batteries; see **Appendix 5** for a list of batteries present throughout the power station.
  - Heavily stained concrete in the turbine hall. This is still being tested to ascertain the nature of the material.
- 4.13. The concrete structure found in Turbine Hall 8 was tested in three different locations at two depths – at surface and approximately 3 cm below the surface. The results presented in Appendix 1 (samples MPS11A, MPS11B, MPS12A, MPS12B, MPS13A, and MPS13B) show that the surface concrete is hazardous. The results for the sub-surface concrete are inconclusive because it is likely that some of the samples were contaminated with surface concrete. In April 2017, core samples were taken and sent for testing to establish the nature of the material extracted from the core.

### **Chimney M2**

- 4.14. Chimney 02 is approximately 40 m high. Chimney 02 is identical to Chimney 01 which was recently demolished. Enemalta staff<sup>15</sup> has confirmed that the chimney is made up of brickwork sandwiched between an external concrete skin and an internal iron plate. As stated in the survey, the metal sheet will be tested prior to demolition, so as not to affect the integrity of the structure. As requested by the Environment & Resources Authority (ERA), if the metal sheet is found to be hazardous then testing of other parts of the structure will be carried out.
- 4.15. Chimney M4, which is located in the area of turbine hall 8 has already been subject to testing of the inner bricks of the chimney both at the base of the chimney and from bricks located at the top of the chimney. The analysis presented in Appendix I (samples MPS2, MPS20, and MPS 21) shows that the bricks are non hazardous.

### **Sludge Tank**

- 4.16. The removal of the sludge tank is likely to generate heavy fuel oil.

### **Screen Plant and Evaporator No. 1**

- 4.17. In addition to steel and other metals, the demolition of the screen plant and evaporator is likely to generate WEEE and lub oil.

### **Turbine 1 to 7 block**

- 4.18. It is anticipated that this demolition will comprise mild steel, copper and bronze from cables and concrete. The nature of the concrete will be determined through analysis of core samples.

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<sup>15</sup> Ing. Albert Bonett and Ing. Spiru Grima during site visit dated 6<sup>th</sup> April 2016.

**Table 4.5: Preliminary Hazardous Waste log**

No	Type of Waste	EWC code	Quantity projected (estimated)	Quantity generated (to be compiled during actual works)	Classification	Waste Carrier reg No / Waste Broker reg No	Permitted disposal facility	Method of storage and containment for wastes to be retained on site
W1	Lights	20 01 21*	Small amounts		Hazardous		WasteServ Malta Ltd	Stored safely on site in a bunded area until disposal by a licensed contractor to a licensed facility or exported
W2	Waste Electric & Electronic Equipment	16 02 13*	few tonnes		Hazardous		WasteServ Malta Ltd	
W3	Transformer oils	13 01 13* <sup>16</sup>	Small quantities		Hazardous	PTMatic	Exported	Stored safely on site in a bunded area until disposal by a licensed contractor to a licensed facility or exported
W4	Mercury switches from transformers	16 02 13*	18 <sup>17</sup>		Hazardous	PTMatic	Exported	
W5	Lubricating Oil	13 02 05*	Few litres drained from the different equipment such as gantry cranes		Hazardous waste	PTMatic	Exported	
W6	Heavy Fuel Oil	13 07 01*	Amount uncertain – from Tank 5		Hazardous waste	PTMatic	Exported	



<sup>16</sup> Transformer oils were sampled and tested. Results show that although PCBs are present, their concentration is less than 50 mg/kg, so although the oil is hazardous the relevant EWC code is 13 01 13\* (refer to **Appendix 1: Laboratory Results**).

<sup>17</sup> Number may increase where sealed relays are not accessible.

No	Type of Waste	EWCode	Quantity projected (estimated)	Quantity generated (to be compiled during actual works)	Classification	Waste Carrier reg No / Waste Broker reg No	Permitted disposal facility	Method of storage and containment for wastes to be retained on site
W7	Absorbents, filter materials, wiping cloths, protective clothing contaminated by dangerous substances	15 02 02*	Small quantities		Hazardous waste	PTMatic	Greenskips Ltd	
W8	Batteries	16 06 01* 16 06 02*	175 (number)		Hazardous	PTMatic	Exported	Stored safely on-site by contractor responsible for disposal of hazardous waste until ready for disposal.
W9	Heavily stained concrete in turbine all 8 <sup>18</sup>	17 09 03*	<1 tonne		Hazardous	PT Matic	Not available yet	Stored safely on site in a bunded area until disposal by a licensed contractor to a licensed facility or exported
W10	Asbestos	17 06 05*	Small quantities		Hazardous	PT Matic	Exported.	Stored safely until ready for export.

<sup>18</sup> The hazardous nature or otherwise of this material will be confirmed once the analysis results of concrete cores sent for testing in April 2017 will be available.

**Figure 4.6: Waste streams**

	
Mercury switches	Transformer

**Appendix I:**  
**Hazardous Materials Test Results**

# Scientific Analysis Laboratories Ltd

## Certificate of Analysis

**Report Number:** 584632-2

**Date of Report:** 08-Aug-2016

**Customer:** ADI Associates Ltd  
Kappara Business Centre  
113 Triq Birkirkara  
San Gwann SGN4197  
Malta  
VAT Number: MT18486514

**Customer Contact:** M/S Krista Farrugia

**Customer Job Reference:** SBS002

**Customer Site Reference:** MPS Decommissioning

**Date Job Received at SAL:** 13-Jul-2016

**Date Analysis Started:** 14-Jul-2016

**Date Analysis Completed:** 04-Aug-2016

The results reported relate to samples received in the laboratory and may not be representative of a whole batch.

Opinions and interpretations expressed herein are outside the scope of UKAS accreditation

This report should not be reproduced except in full without the written approval of the laboratory

Tests covered by this certificate were conducted in accordance with SAL SOPs

All results have been reviewed in accordance with Section 25 of the SAL Quality Manual



Report checked  
and authorised by :  
Emma Spear  
Project Manager

Issued by :  
Emma Spear  
Project Manager





# Waste Acceptance Criteria

Customer Sample Reference : MPS2

SAL Sample Reference : 584632 002

Project Site : MPS Decommissioning

Customer Reference : SBS002

Date Sampled : 21-JUL-2016

Bulk Product					Result	Inert Waste Landfill	Stable non reactive	Hazardous Waste Landfill
Determinand	Technique	LOD	Units	Symbol				
Acid Neutralising Capacity (pH 4)	Titration	2	Mol/kg	N	<2			
Acid Neutralising Capacity (pH 7)	Titration (pH 7)	2	Mol/kg	N	<2			
BTEX (Sum)	Calc	0.0040	mg/kg	N	<0.0040	6.0		
Loss on Ignition	Grav	0.1	%	N	5.8			10.0
Moisture	Grav	0.1	%	N	1.9			
PAH (Sum)	Calc	1.6	mg/kg	N	<1.6	100.0		
PCB EC7 (Sum)	Calc	0.0035	mg/kg	N	<0.0035	1.0		
pH	Probe			N	2.7		> 6.0	
Total Organic Carbon	OX/IR	0.1	%	N	1.9	3.0	5.0	6.0
Total Petroleum Hydrocarbons C10-C40 (Sum)	Calc	1	mg/kg	N	(13) <1	500.0		

Data for BS EN 12457-2 (10:1)					Result	Inert Waste Landfill	Stable non reactive	Hazardous Waste Landfill
Determinand	Technique	LOD	Units	Symbol				
Antimony	Calc WAC ICP/MS	0.010	mg/kg	N	0.033	0.06	0.7	5.0
Arsenic	Calc WAC ICP/MS	0.0020	mg/kg	N	0.025	0.5	2.0	25.0
Barium	Calc WAC ICP/MS	0.010	mg/kg	N	0.56	20.0	100.0	300.0
Cadmium	Calc WAC ICP/MS	0.00020	mg/kg	N	0.016	0.04	1.0	5.0
Chloride	Calc (W)	10	mg/kg	N	<10	800.0	15000.0	25000.0
Chromium	Calc WAC ICP/MS	0.010	mg/kg	N	3.9	0.5	10.0	70.0
Copper	Calc WAC ICP/MS	0.0050	mg/kg	N	2.2	2.0	50.0	100.0
Dissolved Organic Carbon	Calc	10	mg/kg	N	62	500.0	800.0	1000.0
Fluoride	Calc (W)	0.50	mg/kg	N	<0.50	10.0	150.0	500.0
Lead	Calc WAC ICP/MS	0.0030	mg/kg	N	0.37	0.5	10.0	50.0
Mercury	Calc WAC ICP/MS	0.00050	mg/kg	N	<0.00050	0.01	0.2	2.0
Molybdenum	Calc WAC ICP/MS	0.010	mg/kg	N	0.15	0.5	10.0	30.0
Nickel	Calc WAC ICP/MS	0.010	mg/kg	N	160	0.4	10.0	40.0
Phenols (Total-Mono)	Calc	1.0	mg/kg	N	<1.0	1.0		
Selenium	Calc WAC ICP/MS	0.0050	mg/kg	N	0.086	0.1	0.5	7.0
Sulphate	Calc (W)	5	mg/kg	N	13000	1000.0	20000.0	50000.0
Total Dissolved Solids	Calc WAC ICP/MS	1000	mg/kg	N	15000	4000.0	60000.0	100000.0
Zinc	Calc WAC ICP/MS	0.020	mg/kg	N	9.6	4.0	50.0	200.0

Following the recommendation from the Environment Agency (England and Wales)\*, the leachate preparation in this report has been carried out to BS EN 12457-2 : One Stage batch test at a liquid to solid ratio of 10 l/kg. This is also compliant with Schedule 10 of the Environmental Permitting Regulations 2010.

Note : This is the minimum amount of testing which is required.

Further testing may be required if :

- evidence of immediately leachable parameters becomes available.
- evidence to indicate that the sample could be classified as hazardous under H1-H14 of the Waste(England and Wales) Regulations 2011(as amended) becomes available.

Acceptance of waste at landfill is always at the discretion of the Landfill Operator.

\* Waste Sampling and Testing for Disposal at Landfill, EBPR1 11507B, Environment Agency (England and Wales) March 2013

# Waste Acceptance Criteria

Customer Sample Reference : MPS4

SAL Sample Reference : 584632 004

Project Site : MPS Decommissioning

Customer Reference : SBS002

Date Sampled : 21-JUL-2016

Bulk Product					Result	Inert Waste Landfill	Stable non reactive	Hazardous Waste Landfill
Determinand	Technique	LOD	Units	Symbol				
Acid Neutralising Capacity (pH 4)	Titration	2	Mol/kg	N	<2			
Acid Neutralising Capacity (pH 7)	Titration (pH 7)	2	Mol/kg	N	<2			
BTEX (Sum)	Calc	0.0040	mg/kg	N	<0.0040	6.0		
Loss on Ignition	Grav	0.1	%	N	<b>0.5</b>			10.0
Moisture	Grav	0.1	%	N	<0.1			
PAH (Sum)	Calc	1.6	mg/kg	N	<1.6	100.0		
PCB EC7 (Sum)	Calc	0.0035	mg/kg	N	<0.0035	1.0		
pH	Probe			N	<b>4.4</b>		<b>&gt; 6.0</b>	
Total Organic Carbon	OX/IR	0.1	%	N	<0.1	3.0	5.0	6.0
Total Petroleum Hydrocarbons C10-C40 (Sum)	Calc	1	mg/kg	N	<sup>(13)</sup> <1	500.0		

Data for BS EN 12457-2 (10:1)					Result	Inert Waste Landfill	Stable non reactive	Hazardous Waste Landfill
Determinand	Technique	LOD	Units	Symbol				
Antimony	Calc WAC ICP/MS	0.010	mg/kg	N	<0.010	0.06	0.7	5.0
Arsenic	Calc WAC ICP/MS	0.0020	mg/kg	N	<b>0.015</b>	0.5	2.0	25.0
Barium	Calc WAC ICP/MS	0.010	mg/kg	N	<b>0.65</b>	20.0	100.0	300.0
Cadmium	Calc WAC ICP/MS	0.00020	mg/kg	N	<b>0.011</b>	0.04	1.0	5.0
Chloride	Calc (W)	10	mg/kg	N	<10	800.0	15000.0	25000.0
Chromium	Calc WAC ICP/MS	0.010	mg/kg	N	<b>0.030</b>	0.5	10.0	70.0
Copper	Calc WAC ICP/MS	0.0050	mg/kg	N	<b>0.16</b>	2.0	50.0	100.0
Dissolved Organic Carbon	Calc	10	mg/kg	N	<b>61</b>	500.0	800.0	1000.0
Fluoride	Calc (W)	0.50	mg/kg	N	<0.50	10.0	150.0	500.0
Lead	Calc WAC ICP/MS	0.0030	mg/kg	N	<b>0.0036</b>	0.5	10.0	50.0
Mercury	Calc WAC ICP/MS	0.00050	mg/kg	N	<b>0.00052</b>	0.01	0.2	2.0
Molybdenum	Calc WAC ICP/MS	0.010	mg/kg	N	<b>0.23</b>	0.5	10.0	30.0
Nickel	Calc WAC ICP/MS	0.010	mg/kg	N	<b>3.0</b>	<b>0.4</b>	10.0	40.0
Phenols (Total-Mono)	Calc	1.0	mg/kg	N	<1.0	1.0		
Selenium	Calc WAC ICP/MS	0.0050	mg/kg	N	<b>0.076</b>	0.1	0.5	7.0
Sulphate	Calc (W)	5	mg/kg	N	<b>8800</b>	<b>1000.0</b>	20000.0	50000.0
Total Dissolved Solids	Calc WAC ICP/MS	1000	mg/kg	N	<b>9400</b>	<b>4000.0</b>	60000.0	100000.0
Zinc	Calc WAC ICP/MS	0.020	mg/kg	N	<b>0.31</b>	4.0	50.0	200.0

Following the recommendation from the Environment Agency (England and Wales)\*, the leachate preparation in this report has been carried out to BS EN 12457-2 : One Stage batch test at a liquid to solid ratio of 10 l/kg. This is also compliant with Schedule 10 of the Environmental Permitting Regulations 2010.

Note : This is the minimum amount of testing which is required.

Further testing may be required if :

- evidence of immediately leachable parameters becomes available.
- evidence to indicate that the sample could be classified as hazardous under H1-H14 of the Waste(England and Wales) Regulations 2011(as amended) becomes available.

Acceptance of waste at landfill is always at the discretion of the Landfill Operator.

\* Waste Sampling and Testing for Disposal at Landfill, EBPR1 11507B, Environment Agency (England and Wales) March 2013

# Waste Acceptance Criteria

Customer Sample Reference : MPS6

SAL Sample Reference : 584632 006

Project Site : MPS Decommissioning

Customer Reference : SBS002

Date Sampled : 12-JUL-2016

Bulk Product					Result	Inert Waste Landfill	Stable non reactive	Hazardous Waste Landfill
Determinand	Technique	LOD	Units	Symbol				
Acid Neutralising Capacity (pH 4)	Titration	2	Mol/kg	N	<2			
Acid Neutralising Capacity (pH 7)	Titration (pH 7)	2	Mol/kg	N	<2			
BTEX (Sum)	Calc	0.0040	mg/kg	N	<0.0040	6.0		
Loss on Ignition	Grav	0.1	%	N	<b>6.8</b>			10.0
Moisture	Grav	0.1	%	N	<b>7.5</b>			
PAH (Sum)	Calc	1.6	mg/kg	N	<1.6	100.0		
PCB EC7 (Sum)	Calc	0.0035	mg/kg	N	<0.0035	1.0		
pH	Probe			N	<b>5.6</b>		<b>&gt; 6.0</b>	
Total Organic Carbon	OX/IR	0.1	%	N	<b>0.1</b>	3.0	5.0	6.0
Total Petroleum Hydrocarbons C10-C40 (Sum)	Calc	1	mg/kg	N	<sup>(13)</sup> <b>18</b>	500.0		

Data for BS EN 12457-2 (10:1)					Result	Inert Waste Landfill	Stable non reactive	Hazardous Waste Landfill
Determinand	Technique	LOD	Units	Symbol				
Antimony	Calc WAC ICP/MS	0.010	mg/kg	N	<b>0.040</b>	0.06	0.7	5.0
Arsenic	Calc WAC ICP/MS	0.0020	mg/kg	N	<b>0.67</b>	<b>0.5</b>	2.0	25.0
Barium	Calc WAC ICP/MS	0.010	mg/kg	N	<b>0.47</b>	20.0	100.0	300.0
Cadmium	Calc WAC ICP/MS	0.00020	mg/kg	N	<b>0.27</b>	<b>0.04</b>	1.0	5.0
Chloride	Calc (W)	10	mg/kg	N	<10	800.0	15000.0	25000.0
Chromium	Calc WAC ICP/MS	0.010	mg/kg	N	<b>0.027</b>	0.5	10.0	70.0
Copper	Calc WAC ICP/MS	0.0050	mg/kg	N	<b>3.0</b>	<b>2.0</b>	50.0	100.0
Dissolved Organic Carbon	Calc	10	mg/kg	N	<b>26</b>	500.0	800.0	1000.0
Fluoride	Calc (W)	0.50	mg/kg	N	<b>560</b>	<b>10.0</b>	<b>150.0</b>	<b>500.0</b>
Lead	Calc WAC ICP/MS	0.0030	mg/kg	N	<b>0.027</b>	0.5	10.0	50.0
Mercury	Calc WAC ICP/MS	0.00050	mg/kg	N	<b>0.0058</b>	0.01	0.2	2.0
Molybdenum	Calc WAC ICP/MS	0.010	mg/kg	N	<b>0.75</b>	<b>0.5</b>	10.0	30.0
Nickel	Calc WAC ICP/MS	0.010	mg/kg	N	<b>1200</b>	<b>0.4</b>	<b>10.0</b>	<b>40.0</b>
Phenols (Total-Mono)	Calc	1.0	mg/kg	N	<1.0	1.0		
Selenium	Calc WAC ICP/MS	0.0050	mg/kg	N	<b>2.1</b>	<b>0.1</b>	<b>0.5</b>	7.0
Sulphate	Calc (W)	5	mg/kg	N	<b>250000</b>	<b>1000.0</b>	<b>20000.0</b>	<b>50000.0</b>
Total Dissolved Solids	Calc WAC ICP/MS	1000	mg/kg	N	<b>190000</b>	<b>4000.0</b>	<b>60000.0</b>	<b>100000.0</b>
Zinc	Calc WAC ICP/MS	0.020	mg/kg	N	<b>77</b>	<b>4.0</b>	<b>50.0</b>	200.0

Following the recommendation from the Environment Agency (England and Wales)\*, the leachate preparation in this report has been carried out to BS EN 12457-2 : One Stage batch test at a liquid to solid ratio of 10 l/kg. This is also compliant with Schedule 10 of the Environmental Permitting Regulations 2010.

Note : This is the minimum amount of testing which is required.

Further testing may be required if :

- evidence of immediately leachable parameters becomes available.
- evidence to indicate that the sample could be classified as hazardous under H1-H14 of the Waste(England and Wales) Regulations 2011(as amended) becomes available.

Acceptance of waste at landfill is always at the discretion of the Landfill Operator.

\* Waste Sampling and Testing for Disposal at Landfill, EBPR1 11507B, Environment Agency (England and Wales) March 2013

# Waste Acceptance Criteria

Customer Sample Reference : MPS7

SAL Sample Reference : 584632 007

Project Site : MPS Decommissioning

Customer Reference : SBS002

Date Sampled : 21-JUL-2016

Bulk Product					Result	Inert Waste Landfill	Stable non reactive	Hazardous Waste Landfill
Determinand	Technique	LOD	Units	Symbol				
Acid Neutralising Capacity (pH 4)	Titration	2	Mol/kg	N	<2			
Acid Neutralising Capacity (pH 7)	Titration (pH 7)	2	Mol/kg	N	<2			
BTEX (Sum)	Calc	0.0040	mg/kg	N	<0.0040	6.0		
Loss on Ignition	Grav	0.1	%	N	<b>0.9</b>			10.0
Moisture	Grav	0.1	%	N	<b>0.5</b>			
PAH (Sum)	Calc	1.6	mg/kg	N	<1.6	100.0		
PCB EC7 (Sum)	Calc	0.0035	mg/kg	N	<0.0035	1.0		
pH	Probe			N	<b>2.5</b>		<b>&gt; 6.0</b>	
Total Organic Carbon	OX/IR	0.1	%	N	<b>0.1</b>	3.0	5.0	6.0
Total Petroleum Hydrocarbons C10-C40 (Sum)	Calc	1	mg/kg	N	<sup>(13)</sup> <1	500.0		

Data for BS EN 12457-2 (10:1)					Result	Inert Waste Landfill	Stable non reactive	Hazardous Waste Landfill
Determinand	Technique	LOD	Units	Symbol				
Antimony	Calc WAC ICP/MS	0.010	mg/kg	N	<b>0.031</b>	0.06	0.7	5.0
Arsenic	Calc WAC ICP/MS	0.0020	mg/kg	N	<b>0.022</b>	0.5	2.0	25.0
Barium	Calc WAC ICP/MS	0.010	mg/kg	N	<b>0.58</b>	20.0	100.0	300.0
Cadmium	Calc WAC ICP/MS	0.00020	mg/kg	N	<b>0.013</b>	0.04	1.0	5.0
Chloride	Calc (W)	10	mg/kg	N	<b>14</b>	800.0	15000.0	25000.0
Chromium	Calc WAC ICP/MS	0.010	mg/kg	N	<b>2.5</b>	<b>0.5</b>	10.0	70.0
Copper	Calc WAC ICP/MS	0.0050	mg/kg	N	<b>2.2</b>	<b>2.0</b>	50.0	100.0
Dissolved Organic Carbon	Calc	10	mg/kg	N	<b>63</b>	500.0	800.0	1000.0
Fluoride	Calc (W)	0.50	mg/kg	N	<b>4.2</b>	10.0	150.0	500.0
Lead	Calc WAC ICP/MS	0.0030	mg/kg	N	<b>0.011</b>	0.5	10.0	50.0
Mercury	Calc WAC ICP/MS	0.00050	mg/kg	N	<b>0.00064</b>	0.01	0.2	2.0
Molybdenum	Calc WAC ICP/MS	0.010	mg/kg	N	<b>0.036</b>	0.5	10.0	30.0
Nickel	Calc WAC ICP/MS	0.010	mg/kg	N	<b>140</b>	<b>0.4</b>	<b>10.0</b>	<b>40.0</b>
Phenols (Total-Mono)	Calc	1.0	mg/kg	N	<1.0	1.0		
Selenium	Calc WAC ICP/MS	0.0050	mg/kg	N	<b>0.15</b>	<b>0.1</b>	0.5	7.0
Sulphate	Calc (W)	5	mg/kg	N	<b>6100</b>	<b>1000.0</b>	20000.0	50000.0
Total Dissolved Solids	Calc WAC ICP/MS	1000	mg/kg	N	<b>8000</b>	<b>4000.0</b>	60000.0	100000.0
Zinc	Calc WAC ICP/MS	0.020	mg/kg	N	<b>3.6</b>	4.0	50.0	200.0

Following the recommendation from the Environment Agency (England and Wales)\*, the leachate preparation in this report has been carried out to BS EN 12457-2 : One Stage batch test at a liquid to solid ratio of 10 l/kg. This is also compliant with Schedule 10 of the Environmental Permitting Regulations 2010.

Note : This is the minimum amount of testing which is required.

Further testing may be required if :

- evidence of immediately leachable parameters becomes available.
- evidence to indicate that the sample could be classified as hazardous under H1-H14 of the Waste(England and Wales) Regulations 2011(as amended) becomes available.

Acceptance of waste at landfill is always at the discretion of the Landfill Operator.

\* Waste Sampling and Testing for Disposal at Landfill, EBPR1 11507B, Environment Agency (England and Wales) March 2013

SAL Reference: 584632								
Project Site: MPS Decommissioning								
Customer Reference: SBS002								
Bulk Product		Analysed as Bulk Product						
Metals								
SAL Reference					584632 002	584632 004	584632 006	584632 007
Customer Sample Reference					MPS2	MPS4	MPS6	MPS7
Test Sample					AR	AR	AR	AR
Date Sampled					21-JUL-2016	21-JUL-2016	12-JUL-2016	21-JUL-2016
Determinand	Method	LOD	Units	Symbol				
Antimony	ICP/OES	10	mg/kg	N	<10	<10	<10	<10
Arsenic	ICP/OES	1	mg/kg	N	7	4	56	1
Cadmium	ICP/OES	1	mg/kg	N	<1	<1	16	<1
Cobalt	ICP/OES	10	mg/kg	N	17	<10	63	<10
Chromium	ICP/OES	1	mg/kg	N	58	8	140	35
Copper	ICP/OES	1	mg/kg	N	16	10	310	4
Manganese	ICP/OES	1	mg/kg	N	98	35	380	29
Lead	ICP/OES	1	mg/kg	N	20	39	310	5
Thallium	ICP/OES	10	mg/kg	N	<10	<10	260	<10
Mercury	ICP/OES	1	mg/kg	N	<1	<1	<1	<1
Tin	ICP/OES	2	mg/kg	N	<2	<2	4	<2
Nickel	ICP/OES	1	mg/kg	N	430	130	2700	52
Vanadium	ICP/OES	10	mg/kg	N	700	330	<10	77
Selenium	ICP/OES	10	mg/kg	N	<10	<10	<10	<10
Zinc	ICP/OES	1	mg/kg	N	79	7	290	4

<b>SAL Reference:</b> 584632								
<b>Project Site:</b> MPS Decommissioning								
<b>Customer Reference:</b> SBS002								
<b>Bulk Product</b>		Analysed as Bulk Product						
<b>Miscellaneous</b>								
<b>SAL Reference</b>					<b>584632 002</b>	<b>584632 004</b>	<b>584632 006</b>	<b>584632 007</b>
<b>Customer Sample Reference</b>					<b>MPS2</b>	<b>MPS4</b>	<b>MPS6</b>	<b>MPS7</b>
<b>Test Sample</b>					<b>AR</b>	<b>AR</b>	<b>AR</b>	<b>AR</b>
<b>Date Sampled</b>					<b>21-JUL-2016</b>	<b>21-JUL-2016</b>	<b>12-JUL-2016</b>	<b>21-JUL-2016</b>
<b>Determinand</b>	<b>Method</b>	<b>LOD</b>	<b>Units</b>	<b>Symbol</b>				
Asbestos Bulk ID	PLM			SU	N.D.	N.D.	N.D.	N.D.
Cyanide (Total)	Colorimetry	1	mg/kg	N	<1	<1	<1	<1

SAL Reference: 584632								
Project Site: MPS Decommissioning								
Customer Reference: SBS002								
Bulk Product		Analysed as Bulk Product						
BTEX								
SAL Reference				584632 002	584632 004	584632 006	584632 007	
Customer Sample Reference				MPS2	MPS4	MPS6	MPS7	
Test Sample				AR	AR	AR	AR	
Date Sampled				21-JUL-2016	21-JUL-2016	12-JUL-2016	21-JUL-2016	
Determinand	Method	LOD	Units	Symbol				
Toluene	GC/MS (Headspace)	1	µg/kg	N	<1	<1	<1	<1
EthylBenzene	GC/MS (Headspace)	1	µg/kg	N	<1	<1	<1	<1
Meta/Para-Xylene	GC/MS (Headspace)	1	µg/kg	N	<1	<1	<1	<1
Ortho-Xylene	GC/MS (Headspace)	1	µg/kg	N	<1	<1	<1	<1
Benzene	GC/MS (Headspace)	1	ua/kg	N	(13) <1	(13) <1	(13) <1	(13) <1

SAL Reference: 584632								
Project Site: MPS Decommissioning								
Customer Reference: SBS002								
Bulk Product		Analysed as Bulk Product						
PCB EC7								
SAL Reference				584632 002	584632 004	584632 006	584632 007	
Customer Sample Reference				MPS2	MPS4	MPS6	MPS7	
Test Sample				AR	AR	AR	AR	
Date Sampled				21-JUL-2016	21-JUL-2016	12-JUL-2016	21-JUL-2016	
Determinand	Method	LOD	Units	Symbol				
Polychlorinated biphenyl BZ#28	GC/MS (HR)	0.5	µg/kg	N	<0.5	<0.5	<0.5	<0.5
Polychlorinated biphenyl BZ#52	GC/MS (HR)	0.5	µg/kg	N	<0.5	<0.5	<0.5	<0.5
Polychlorinated biphenyl BZ#101	GC/MS (SIR)	0.5	µg/kg	N	<0.5	<0.5	<0.5	<0.5
Polychlorinated biphenyl BZ#118	GC/MS (SIR)	0.5	µg/kg	N	<0.5	<0.5	<0.5	<0.5
Polychlorinated biphenyl BZ#138	GC/MS (SIR)	0.5	µg/kg	N	<0.5	<0.5	<0.5	<0.5
Polychlorinated biphenyl BZ#153	GC/MS (SIR)	0.5	µg/kg	N	<0.5	<0.5	<0.5	<0.5
Polychlorinated biphenyl BZ#180	GC/MS (HR)	0.5	µg/kg	N	<0.5	<0.5	<0.5	<0.5

SAL Reference: 584632								
Project Site: MPS Decommissioning								
Customer Reference: SBS002								
Bulk Product		Analysed as Bulk Product						
PAH's								
SAL Reference					584632 002	584632 004	584632 006	584632 007
Customer Sample Reference					MPS2	MPS4	MPS6	MPS7
Test Sample					AR	AR	AR	AR
Date Sampled					21-JUL-2016	21-JUL-2016	12-JUL-2016	21-JUL-2016
Determinand	Method	LOD	Units	Symbol				
Naphthalene	GC/MS	0.1	mg/kg	N	<0.1	<0.1	<0.1	<0.1
Acenaphthylene	GC/MS	0.1	mg/kg	N	<0.1	<0.1	<0.1	<0.1
Acenaphthene	GC/MS	0.1	mg/kg	N	<0.1	<0.1	<0.1	<0.1
Fluorene	GC/MS	0.1	mg/kg	N	<0.1	<0.1	<0.1	<0.1
Phenanthrene	GC/MS	0.1	mg/kg	N	0.1	<0.1	<0.1	<0.1
Anthracene	GC/MS	0.1	mg/kg	N	<0.1	<0.1	<0.1	<0.1
Fluoranthene	GC/MS	0.1	mg/kg	N	<0.1	<0.1	<0.1	<0.1
Pyrene	GC/MS	0.1	mg/kg	N	<0.1	<0.1	<0.1	<0.1
Benzo(a)Anthracene	GC/MS	0.1	mg/kg	N	0.1	0.1	<0.1	<0.1
Chrysene	GC/MS	0.1	mg/kg	N	<0.1	<0.1	<0.1	<0.1
Benzo(b/k)Fluoranthene	GC/MS	0.1	mg/kg	N	0.1	<0.1	<0.1	<0.1
Benzo(a)Pyrene	GC/MS	0.1	mg/kg	N	<0.1	<0.1	<0.1	<0.1
Indeno(123-cd)Pyrene	GC/MS	0.1	mg/kg	N	<0.1	<0.1	<0.1	<0.1
Dibenzo(ah)Anthracene	GC/MS	0.1	mg/kg	N	<0.1	<0.1	<0.1	<0.1
Benzo(ghi)Perylene	GC/MS	0.1	mg/kg	N	<0.1	<0.1	<0.1	<0.1
Polyaromatic Hydrocarbons (Total)	GC/MS	0.1	mg/kg	N	0.3	0.1	<0.1	<0.1
Coronene	GC/MS	0.1	mg/kg	N	<0.1	<0.1	<0.1	<0.1

SAL Reference: 584632								
Project Site: MPS Decommissioning								
Customer Reference: SBS002								
Bulk Product                      Analysed as Bulk Product								
Total Petroleum Hydrocarbons								
SAL Reference					584632 002	584632 004	584632 006	584632 007
Customer Sample Reference					MPS2	MPS4	MPS6	MPS7
Test Sample					AR	AR	AR	AR
Date Sampled					21-JUL-2016	21-JUL-2016	12-JUL-2016	21-JUL-2016
Determinand	Method	LOD	Units	Symbol				
Total Petroleum Hydrocarbons	GC/FID	1	mg/kg	N	(13) <1	(13) <1	(13) 16	(13) <1
Total Petroleum Hydrocarbons (C35-C40)	GC/FID	1	mg/kg	N	(13) <1	(13) <1	(13) 2	(13) <1

<b>SAL Reference:</b> 584632								
<b>Project Site:</b> MPS Decommissioning								
<b>Customer Reference:</b> SBS002								
<b>Oil</b> Analysed as Oil								
<b>Miscellaneous</b>								
<b>SAL Reference</b>					<b>584632 001</b>	<b>584632 003</b>	<b>584632 005</b>	<b>584632 008</b>
<b>Customer Sample Reference</b>					<b>MPS1</b>	<b>MPS3</b>	<b>MPS5</b>	<b>MPS8</b>
<b>Test Sample</b>					<b>AR</b>	<b>AR</b>	<b>AR</b>	<b>AR</b>
<b>Date Sampled</b>					<b>12-JUL-2016</b>	<b>12-JUL-2016</b>	<b>12-JUL-2016</b>	<b>12-JUL-2016</b>
<b>Determinand</b>		<b>Method</b>	<b>LOD</b>	<b>Units</b>	<b>Symbol</b>			
Flash Point (Minimum Value)		FPE (Ignition)	55	C	N	<b>&gt;55</b>	<b>&gt;55</b>	<b>&gt;55</b>
Poly-Chlorinated Biphenyls (Total Tri-Hepta)		GC/MS (SIR)	50	µg/kg	N	<b>2500</b>	<b>600</b>	<b>1400</b>
Polychlorinated Terphenyls		GC/MS	0.1	mg/kg	N	(100) <5.0	(100) <5.0	(100) <5.0

SAL Reference: 584632								
Project Site: MPS Decommissioning								
Customer Reference: SBS002								
Leachate to BS EN 12457-2 (10:1)		Analysed as Water						
Waste Acceptance Criteria								
SAL Reference				584632 002	584632 004	584632 006	584632 007	
Customer Sample Reference				MPS2	MPS4	MPS6	MPS7	
Test Sample				10:1	10:1	10:1	10:1	
Date Sampled				21-JUL-2016	21-JUL-2016	12-JUL-2016	21-JUL-2016	
Determinand	Method	LOD	Units	Symbol				
Antimony (Dissolved)	ICP/MS (Filtered)	1	µg/l	U	3	<1	4	3
Arsenic (Dissolved)	ICP/MS (Filtered)	0.2	µg/l	U	2.5	1.5	67	2.2
Barium (Dissolved)	ICP/MS (Filtered)	1	µg/l	U	56	65	47	58
Cadmium (Dissolved)	ICP/MS (Filtered)	0.02	µg/l	U	1.6	1.1	27	1.3
Chloride	Discrete Analyser	1	mg/l	U	<1	<1	<1	1
Chromium (Dissolved)	ICP/MS (Filtered)	1	µg/l	U	390	3	3	250
Copper (Dissolved)	ICP/MS (Filtered)	0.5	µg/l	U	220	16	300	220
Dissolved Organic Carbon	OX/IR	1	mg/l	N	6	6	3	6
Electrical Conductivity	Probe	10	µS/cm	N	2500	1600	32000	1300
Fluoride	Discrete Analyser	0.05	mg/l	U	<0.05	<0.05	56	0.42
Lead (Dissolved)	ICP/MS (Filtered)	0.3	µg/l	U	37	0.4	2.7	1.1
Mercury (Dissolved)	ICP/MS (Filtered)	0.05	µg/l	U	<0.05	0.05	0.58	0.06
Molybdenum (Dissolved)	ICP/MS (Filtered)	1	µg/l	N	15	23	75	4
Nickel (Dissolved)	ICP/MS (Filtered)	1	µg/l	U	16000	300	(64) 120000	14000
Phenols (Total-Mono)	Colorimetry	0.1	mg/l	U	<0.1	<0.1	<0.1	<0.1
Selenium (Dissolved)	ICP/MS (Filtered)	0.5	µg/l	U	8.6	7.6	210	15
Sulphate	Discrete Analyser	0.5	mg/l	U	1300	880	25000	610
Total Dissolved Solids	Grav	100	mg/l	N	1500	940	19000	800
Zinc (Dissolved)	ICP/MS (Filtered)	2	µg/l	U	960	31	7700	360

## Index to symbols used in 584632-2

Value	Description
10:1	Leachate to BS EN 12457-2 (10:1)
AR	As Received
10:1 S	Data for BS EN 12457-2 (10:1)
N.D.	Not Detected
64	Analysis was performed by an alternative technique
13	Results have been blank corrected.
100	LOD determined by sample aliquot used for analysis
S	Analysis was subcontracted
U	Analysis is UKAS accredited
N	Analysis is not UKAS accredited

## Notes

Asbestos was sub-contracted to REC Asbestos.

SAL Ref: 584632 002,4,6,7

**HAZARDOUS PROPERTY ASSESSMENT**  
Waste (England and Wales) Regulations 2011

Date of Assessment 11th August 2016

Client Reference: MPS Decommissioning-demolition material

Hazardous Property/Determinand	Test/Assessment Method	Result %	Worst Case Compound	% Worst Case Compound	Hazard Statement	Hazardous Property	Threshold %	Conclusion
Arsenic	ICP OES	<0.001%						Trace only :eliminated
Antimony	ICP OES	<0.001%						Trace only :eliminated
Cadmium	ICP/OES	<0.001						Trace only :eliminated
Chromium (highest result)	ICP/OES	0.014	chromates	0.0441	H350 H317 H416	HP11	0.1	Not Hazardous
Mercury	ICP/OES	<0.0001						not detected -eliminated
Selenium	ICP/OES	<0.001						Trace only :eliminated
Copper (highest result)	ICP/OES	0.031	copper oxide		H302 H400 H410	HP6 HP14 HP14	0.1 0.1	Not Hazardous Not Hazardous



SAL Ref: 584632 002,4,6,7

**HAZARDOUS PROPERTY ASSESSMENT**  
**Waste (England and Wales) Regulations 2011**

Date of Assessment 11th August 2016

Client Reference: MPS Decommissioning-demolition material

Hazardous Property/Determinand	Test/Assessment Method	Result %	Worst Case Compound	% Worst Case Compound	Hazard Statement	Hazardous Property	Threshold %	Conclusion
Nickel (average of 4 results)	ICP/OES	0.0828	nickel carbonate	0.1656	H350	HP7	0.1	Not Hazardous
					H341	HP11	1	Not Hazardous
					H360	HP10	0.3	Not Hazardous
					H372	HP5	0.1	Not Hazardous
					H332	HP6	1	Not Hazardous
					H302	HP6	1	Not Hazardous
					H315	HP4	20	Not Hazardous
					H334	HP13	1	Not Hazardous
					H317	HP13	1	Not Hazardous
					H400	HP14	0.1	Not Hazardous
Nickel highest result MPS6 SAL 584632	ICP/OES	0.27	nickel carbonate	0.54	H350	HP7	0.1	Hazardous
					H341	HP11	1	Not Hazardous
					H360	HP10	0.3	Hazardous
					H372	HP5	0.1	Hazardous
					H332	HP6	1	Not Hazardous
					H302	HP6	1	Not Hazardous
					H315	HP4	20	Not Hazardous
					H334	HP13	1	Not Hazardous
					H317	HP13	1	Not Hazardous
					H400	HP14	0.1	Hazardous
Lead	ICP/OES	0.03	(highest)		H410	HP14	0.1	Hazardous
								Trace only :eliminated
Zinc	ICP/ODES	0.029	zinc oxide	0.03596	H400	HP14	0.1	Not Hazardous
Tin					H410	HP14	0.1	Not Hazardous
Vanadium		0.07						Trace only :eliminated
Manganese								Trace only :eliminated
Cobalt							2	Trace only :eliminated

**SCIENTIFIC ANALYSIS LABORATORIES LTD**  
**HADFIELD HOUSE**  
**HADFIELD STREET**  
**MANCHESTER M16 9FE**

SAL Ref: 584632 002,4,6,7

**HAZARDOUS PROPERTY ASSESSMENT**  
Waste (England and Wales) Regulations 2011

Date of Assessment 11th August 2016

Client Reference: MPS Decommissioning-demolition material

Hazardous Property/Determinand	Test/Assessment Method	Result %	Worst Case Compound	% Worst Case Compound	Hazard Statement	Hazardous Property	Threshold %	Conclusion
pH	Probe							
	002	2.7				HP4/HP8	2<pH<11.5	Not Hazardous
	004	4.4				HP4/HP8	2<pH<11.5	Not Hazardous
	006	5.6				HP4/HP8	2<pH<11.5	Not Hazardous
	007	2.5				HP4/HP8	2<pH<11.5	Not Hazardous

SAL Ref: 584632 002,4,6,7

**HAZARDOUS PROPERTY ASSESSMENT**  
Waste (England and Wales) Regulations 2011

Date of Assessment 11th August 2016

Client Reference: MPS Decommissioning-demolition material

Hazardous Property/Determinand	Test/Assessment Method	Result %	Worst Case Compound	% Worst Case Compound	Hazard Statement	Hazardous Property	Threshold %	Conclusion
<b>Organic Compounds</b>								
Semi Volatiles PAHs and TPHs	GC MS	<0.1%			H341 H331 H311 H301 H373 H314	HP6 HP6 HP6	0.1 0.1 0.1	Not Hazardous
<b>Overall Conclusion</b> EWC Code	Average of all 4 samples							<b>Not Hazardous</b>
	MPS6							<b>Hazardous</b>

SAL Ref: 584632 002,4,6,7

**HAZARDOUS PROPERTY ASSESSMENT**  
**Waste (England and Wales) Regulations 2011**

Date of Assessment 11th August 2016

Client Reference: MPS Decommissioning-demolition material

Hazardous Property/Determinand	Test/Assessment Method	Result %	Worst Case Compound	% Worst Case Compound	Hazard Statement	Hazardous Property	Threshold %	Conclusion
<b>OIL Samples</b>								
PCBs	highest	0.00025		All oils are to be classified as hazardous				<b>EW Code 13 01 13* AH</b>  <b>Note: as PCB concentration is less than 50mg/kg, 13 01 01* does not apply</b>

Assessment is based on SAL Report # 584632 which is included .

Risk Phrases used in this assessment are based on EU 1277 2008

The conclusions in this assessment are based on guidance taken from WM3 1st Edition 2015.

The terms "Hazardous" and "Not Hazardous" are used in the context of these Regulations. Further testing may be required if classification under the Waste Acceptance Criteria (Landfill Regulations 2000/EU Directive 99/3/EC as amended) is intended.

The term "Not Hazardous" does not imply that the product could present a significant possibility of significant harm to human health or the environment.

Assessment Prepared by W A Cohen  
[bcohen@salltd.co.uk](mailto:bcohen@salltd.co.uk)

# Scientific Analysis Laboratories Ltd

## Certificate of Analysis

**Report Number:** 597500-1

**Date of Report:** 22-Sep-2016

**Customer:** ADI Associates Ltd  
Kappara Business Centre  
113 Triq Birkirkara  
San Gwann SGN4197  
Malta  
VAT Number: MT18486514

**Customer Contact:** M/S Krista Farrugia

**Customer Job Reference:** SBS002

**Customer Site Reference:** MPS Decommissioning

**Date Job Received at SAL:** 26-Aug-2016

**Date Analysis Started:** 05-Sep-2016

**Date Analysis Completed:** 22-Sep-2016

The results reported relate to samples received in the laboratory and may not be representative of a whole batch.

Opinions and interpretations expressed herein are outside the scope of UKAS accreditation

This report should not be reproduced except in full without the written approval of the laboratory

Tests covered by this certificate were conducted in accordance with SAL SOPs

All results have been reviewed in accordance with Section 25 of the SAL Quality Manual



Report checked  
and authorised by :  
Mr Richard Wong  
Project Manager

Issued by :  
Mr Richard Wong  
Project Manager



# Waste Acceptance Criteria

Customer Sample Reference : MPS09

SAL Sample Reference : 597500 001

Project Site : MPS Decommissioning

Customer Reference : SBS002

Date Sampled : 25-AUG-2016

Bulk Product					Result	Inert Waste Landfill	Stable non reactive	Hazardous Waste Landfill
Determinand	Technique	LOD	Units	Symbol				
Acid Neutralising Capacity (pH 4)	Titration	2	Mol/kg	N	<2			
Acid Neutralising Capacity (pH 7)	Titration (pH 7)	2	Mol/kg	N	<2			
BTEX (Sum)	Calc	0.0040	mg/kg	N	<0.0040	6.0		
Loss on Ignition	Grav	0.1	%	N	<b>4.7</b>			10.0
Moisture	Grav	0.1	%	N	<b>0.9</b>			
Total Organic Carbon	OX/IR	0.1	%	N	<b>0.5</b>	3.0	5.0	6.0
Total Petroleum Hydrocarbons C10-C40 (Sum)	Calc	1	mg/kg	N	<sup>(13)</sup> <b>35</b>	500.0		
PAH (Sum)	Calc	1.6	mg/kg	N	<1.6	100.0		
PCB EC7 (Sum)	Calc	0.0035	mg/kg	N	<0.0035	1.0		
pH	Probe			N	<b>11.6</b>		> 6.0	

Data for BS EN 12457-2 (10:1)					Result	Inert Waste Landfill	Stable non reactive	Hazardous Waste Landfill
Determinand	Technique	LOD	Units	Symbol				
Antimony	Calc WAC ICP/MS	0.010	mg/kg	N	<0.010	0.06	0.7	5.0
Arsenic	Calc WAC ICP/MS	0.0020	mg/kg	N	<b>0.0042</b>	0.5	2.0	25.0
Barium	Calc WAC ICP/MS	0.010	mg/kg	N	<b>0.084</b>	20.0	100.0	300.0
Cadmium	Calc WAC ICP/MS	0.00020	mg/kg	N	<0.00020	0.04	1.0	5.0
Chromium	Calc WAC ICP/MS	0.010	mg/kg	N	<b>0.10</b>	0.5	10.0	70.0
Copper	Calc WAC ICP/MS	0.0050	mg/kg	N	<b>0.023</b>	2.0	50.0	100.0
Lead	Calc WAC ICP/MS	0.0030	mg/kg	N	<0.0030	0.5	10.0	50.0
Mercury	Calc WAC ICP/MS	0.00050	mg/kg	N	<b>0.00068</b>	0.01	0.2	2.0
Molybdenum	Calc WAC ICP/MS	0.010	mg/kg	N	<b>0.027</b>	0.5	10.0	30.0
Nickel	Calc WAC ICP/MS	0.010	mg/kg	N	<0.010	0.4	10.0	40.0
Selenium	Calc WAC ICP/MS	0.0050	mg/kg	N	<0.0050	0.1	0.5	7.0
Zinc	Calc WAC ICP/MS	0.020	mg/kg	N	<0.020	4.0	50.0	200.0
Chloride	Calc (W)	10	mg/kg	N	<b>140</b>	800.0	15000.0	25000.0
Fluoride	Calc (W)	0.50	mg/kg	N	<0.50	10.0	150.0	500.0
Sulphate	Calc (W)	5	mg/kg	N	<b>450</b>	1000.0	20000.0	50000.0
Phenols (Total-Mono)	Calc	1.0	mg/kg	N	<1.0	1.0		
Dissolved Organic Carbon	Calc	10	mg/kg	N	<b>160</b>	500.0	800.0	1000.0
Total Dissolved Solids	Calc WAC ICP/MS	1000	mg/kg	N	<b>4700</b>	<b>4000.0</b>	60000.0	100000.0

Following the recommendation from the Environment Agency (England and Wales)\*, the leachate preparation in this report has been carried out to BS EN 12457-2 : One Stage batch test at a liquid to solid ratio of 10 l/kg. This is also compliant with Schedule 10 of the Environmental Permitting Regulations 2010.

Note : This is the minimum amount of testing which is required.

Further testing may be required if :

- evidence of immediately leachable parameters becomes available.
- evidence to indicate that the sample could be classified as hazardous under H1-H14 of the Waste(England and Wales) Regulations 2011(as amended) becomes available.

Acceptance of waste at landfill is always at the discretion of the Landfill Operator.

\* Waste Sampling and Testing for Disposal at Landfill, EBPRI 11507B, Environment Agency (England and Wales) March 2013

<b>SAL Reference:</b> 597500 <b>Project Site:</b> MPS Decommissioning <b>Customer Reference:</b> SBS002  <b>Leachate to BS EN 12457-2 (10:1)</b> Analysed as Water <b>Waste Acceptance Criteria</b>					
<b>SAL Reference</b>					<b>597500 001</b>
<b>Customer Sample Reference</b>					<b>MPS09</b>
<b>Test Sample</b>					<b>10:1</b>
<b>Date Sampled</b>					<b>25-AUG-2016</b>
<b>Determinand</b>	<b>Method</b>	<b>LOD</b>	<b>Units</b>	<b>Symbol</b>	
Antimony (Dissolved)	ICP/MS (Filtered)	1	µg/l	U	<1
Arsenic (Dissolved)	ICP/MS (Filtered)	0.2	µg/l	U	<b>0.4</b>
Barium (Dissolved)	ICP/MS (Filtered)	1	µg/l	U	<b>8</b>
Cadmium (Dissolved)	ICP/MS (Filtered)	0.02	µg/l	U	<0.02
Chromium (Dissolved)	ICP/MS (Filtered)	1	µg/l	U	<b>10</b>
Copper (Dissolved)	ICP/MS (Filtered)	0.5	µg/l	U	<b>2.3</b>
Lead (Dissolved)	ICP/MS (Filtered)	0.3	µg/l	U	<0.3
Mercury (Dissolved)	ICP/MS (Filtered)	0.05	µg/l	U	<b>0.07</b>
Nickel (Dissolved)	ICP/MS (Filtered)	1	µg/l	U	<1
Selenium (Dissolved)	ICP/MS (Filtered)	0.5	µg/l	U	<0.5
Zinc (Dissolved)	ICP/MS (Filtered)	2	µg/l	U	<2
Chloride	Discrete Analyser	1	mg/l	U	<b>14</b>
Fluoride	Discrete Analyser	0.05	mg/l	U	<0.05
Sulphate	Discrete Analyser	0.5	mg/l	U	<b>45</b>
Phenols (Total-Mono)	Colorimetry	0.1	mg/l	U	<0.1
Molybdenum (Dissolved)	ICP/MS (Filtered)	1	µg/l	N	<b>3</b>
Total Dissolved Solids	Grav	100	mg/l	N	<b>470</b>
Dissolved Organic Carbon	OX/IR	1	mg/l	N	<b>16</b>
Electrical Conductivity	Probe	10	µS/cm	N	<b>780</b>
Volume	Vol	1	ml	U	-

<b>SAL Reference:</b> 597500 <b>Project Site:</b> MPS Decommissioning <b>Customer Reference:</b> SBS002  <b>Bulk Product</b> Analysed as Bulk Product <b>BTEX</b>					
<b>SAL Reference</b>					<b>597500 001</b>
<b>Customer Sample Reference</b>					<b>MPS09</b>
<b>Test Sample</b>					<b>AR</b>
<b>Date Sampled</b>					<b>25-AUG-2016</b>
<b>Determinand</b>	<b>Method</b>	<b>LOD</b>	<b>Units</b>	<b>Symbol</b>	
Benzene	GC/MS (Headspace)	1	µg/kg	N	<sup>(13)</sup> <1
Toluene	GC/MS (Headspace)	1	µg/kg	N	<sup>(13)</sup> <1
EthylBenzene	GC/MS (Headspace)	1	µg/kg	N	<1
Meta/Para-Xylene	GC/MS (Headspace)	1	µg/kg	N	<1
Ortho-Xylene	GC/MS (Headspace)	1	µg/kg	N	<1

<b>SAL Reference:</b> 597500 <b>Project Site:</b> MPS Decommissioning <b>Customer Reference:</b> SBS002  <b>Bulk Product</b> Analysed as Bulk Product <b>TPH</b>					
<b>SAL Reference</b>					<b>597500 001</b>
<b>Customer Sample Reference</b>					<b>MPS09</b>
<b>Test Sample</b>					<b>AR</b>
<b>Date Sampled</b>					<b>25-AUG-2016</b>
<b>Determinand</b>	<b>Method</b>	<b>LOD</b>	<b>Units</b>	<b>Symbol</b>	
Total Petroleum Hydrocarbons	GC/FID	1	mg/kg	N	<sup>(13)</sup> 33
Total Petroleum Hydrocarbons (C35-C40)	GC/FID	1	mg/kg	N	<sup>(13)</sup> 2



<b>SAL Reference:</b> 597500 <b>Project Site:</b> MPS Decommissioning <b>Customer Reference:</b> SBS002  <b>Bulk Product</b> Analysed as Bulk Product <b>Polyaromatic Hydrocarbons (US EPA16) with Coronene</b>					
<b>SAL Reference</b>					<b>597500 001</b>
<b>Customer Sample Reference</b>					<b>MPS09</b>
<b>Test Sample</b>					<b>AR</b>
<b>Date Sampled</b>					<b>25-AUG-2016</b>
<b>Determinand</b>	<b>Method</b>	<b>LOD</b>	<b>Units</b>	<b>Symbol</b>	
Naphthalene	GC/MS	0.1	mg/kg	N	<0.1
Acenaphthylene	GC/MS	0.1	mg/kg	N	<0.1
Acenaphthene	GC/MS	0.1	mg/kg	N	<0.1
Fluorene	GC/MS	0.1	mg/kg	N	<0.1
Phenanthrene	GC/MS	0.1	mg/kg	N	<0.1
Anthracene	GC/MS	0.1	mg/kg	N	<0.1
Fluoranthene	GC/MS	0.1	mg/kg	N	<0.1
Pyrene	GC/MS	0.1	mg/kg	N	<0.1
Benzo(a)Anthracene	GC/MS	0.1	mg/kg	N	<0.1
Chrysene	GC/MS	0.1	mg/kg	N	<0.1
Benzo(b/k)Fluoranthene	GC/MS	0.1	mg/kg	N	<0.1
Benzo(a)Pyrene	GC/MS	0.1	mg/kg	N	<0.1
Indeno(123-cd)Pyrene	GC/MS	0.1	mg/kg	N	<0.1
Dibenzo(ah)Anthracene	GC/MS	0.1	mg/kg	N	<0.1
Benzo(ghi)Perylene	GC/MS	0.1	mg/kg	N	<0.1
Coronene	GC/MS	0.1	mg/kg	N	<0.1
Polyaromatic Hydrocarbons (Total)	GC/MS	0.1	mg/kg	N	<0.1

<b>SAL Reference:</b> 597500 <b>Project Site:</b> MPS Decommissioning <b>Customer Reference:</b> SBS002  <b>Bulk Product</b> Analysed as Bulk Product <b>PCB EC7</b>					
<b>SAL Reference</b>					<b>597500 001</b>
<b>Customer Sample Reference</b>					<b>MPS09</b>
<b>Test Sample</b>					<b>AR</b>
<b>Date Sampled</b>					<b>25-AUG-2016</b>
<b>Determinand</b>	<b>Method</b>	<b>LOD</b>	<b>Units</b>	<b>Symbol</b>	
Polychlorinated biphenyl BZ#28	GC/MS (HR)	0.5	µg/kg	N	<0.5
Polychlorinated biphenyl BZ#52	GC/MS (HR)	0.5	µg/kg	N	<0.5
Polychlorinated biphenyl BZ#101	GC/MS (SIR)	0.5	µg/kg	N	<0.5
Polychlorinated biphenyl BZ#118	GC/MS (SIR)	0.5	µg/kg	N	<0.5
Polychlorinated biphenyl BZ#138	GC/MS (SIR)	0.5	µg/kg	N	<0.5
Polychlorinated biphenyl BZ#153	GC/MS (SIR)	0.5	µg/kg	N	<0.5
Polychlorinated biphenyl BZ#180	GC/MS (HR)	0.5	µg/kg	N	<0.5

<b>SAL Reference:</b> 597500 <b>Project Site:</b> MPS Decommissioning <b>Customer Reference:</b> SBS002  <b>Bulk Product</b> Analysed as Bulk Product <b>Suite A</b>					
<b>SAL Reference</b>				<b>597500 001</b>	
<b>Customer Sample Reference</b>				<b>MPS09</b>	
<b>Test Sample</b>				<b>A40</b>	
<b>Date Sampled</b>				<b>25-AUG-2016</b>	
<b>Determinand</b>	<b>Method</b>	<b>LOD</b>	<b>Units</b>	<b>Symbol</b>	
Antimony	ICP/OES	10	mg/kg	N	<10
Arsenic	ICP/OES	1	mg/kg	N	<b>7</b>
Cadmium	ICP/OES	1	mg/kg	N	<b>1</b>
Chromium	ICP/OES	1	mg/kg	N	<b>15</b>
Cobalt	ICP/OES	10	mg/kg	N	<10
Copper	ICP/OES	1	mg/kg	N	<b>42</b>
Lead	ICP/OES	1	mg/kg	N	<b>30</b>
Manganese	ICP/OES	1	mg/kg	N	<b>120</b>
Mercury	ICP/OES	1	mg/kg	N	<1
Nickel	ICP/OES	1	mg/kg	N	<b>8</b>
Selenium	ICP/OES	10	mg/kg	N	<10
Thallium	ICP/OES	10	mg/kg	N	<10
Tin	ICP/OES	2	mg/kg	N	<b>3</b>
Vanadium	ICP/OES	10	mg/kg	N	<b>15</b>
Zinc	ICP/OES	1	mg/kg	N	<b>69</b>

<b>SAL Reference:</b> 597500 <b>Project Site:</b> MPS Decommissioning <b>Customer Reference:</b> SBS002  <b>Bulk Product</b> Analysed as Bulk Product <b>Miscellaneous</b>					
<b>SAL Reference</b>				<b>597500 001</b>	
<b>Customer Sample Reference</b>				<b>MPS09</b>	
<b>Test Sample</b>				<b>AR</b>	
<b>Date Sampled</b>				<b>25-AUG-2016</b>	
<b>Determinand</b>	<b>Method</b>	<b>LOD</b>	<b>Units</b>	<b>Symbol</b>	
Cyanide (Total)	Colorimetry	1	mg/kg	N	<1
Asbestos Bulk ID	PLM			SU	N.D.

## Index to symbols used in 597500-1

Value	Description
A40	Assisted dried < 40C
AR	As Received
10:1 S	Data for BS EN 12457-2 (10:1)
10:1	Leachate to BS EN 12457-2 (10:1)
N.D.	Not Detected
13	Results have been blank corrected.
S	Analysis was subcontracted
U	Analysis is UKAS accredited
N	Analysis is not UKAS accredited

## Notes

Samples submitted for GC/MS (Headspace) analysis were submitted in inappropriate containers. It is possible therefore that the results provided may be compromised.
Asbestos ID performed at REC Asbestos

# Scientific Analysis Laboratories Ltd

## Certificate of Analysis

**Report Number:** 597500-1

**Date of Report:** 22-Sep-2016

**Customer:** ADI Associates Ltd  
Kappara Business Centre  
113 Triq Birkirkara  
San Gwann SGN4197  
Malta  
VAT Number: MT18486514

**Customer Contact:** M/S Krista Farrugia

**Customer Job Reference:** SBS002

**Customer Site Reference:** MPS Decommissioning

**Date Job Received at SAL:** 26-Aug-2016

**Date Analysis Started:** 05-Sep-2016

**Date Analysis Completed:** 22-Sep-2016

The results reported relate to samples received in the laboratory and may not be representative of a whole batch.

Opinions and interpretations expressed herein are outside the scope of UKAS accreditation

This report should not be reproduced except in full without the written approval of the laboratory

Tests covered by this certificate were conducted in accordance with SAL SOPs

All results have been reviewed in accordance with Section 25 of the SAL Quality Manual



Report checked  
and authorised by :  
Mr Richard Wong  
Project Manager

Issued by :  
Mr Richard Wong  
Project Manager



SAL Ref: 597500

Client Reference: Demolition Material MPS decommissioning

# HAZARDOUS PROPERTY ASSESSMENT Waste (England and Wales) Regulations 2011

Date of Assessment 30th September 2016

Hazardous Property/Determinand	Test/Assessment Method	Result %	Worst Case Compound	% Worst Case Compound	Hazard Statement	Hazardous Property	Threshold %	Conclusion
Arsenic	ICP/OES	0.0007	diasenic trioxide	0.000924	H350	HP7	0.1	Not Hazardous
					H300	HP6	0.25	Not Hazardous
					H314	HP8	1	Not Hazardous
					H400	HP14	0,1	Not Hazardous
					H410	HP12		Not Hazardous
Cadmium	ICP/OES	0.0001	cadmium carbonate	<0.001				
Chromium	ICP/OES	0.0015	chromates	0.004725	H350	HP11	0.1	Not Hazardous
					H317			
					H416			
Mercury	ICP/OES	<0.0001		<0.0001				not detected -excluded
Lead	ICP/OES	0.003	lead sulphate	0.012	H360	HP10		Not Hazardous
					H332	HP6		Not Hazardous
					H302	HP6		Not Hazardous
					H373	HP5		Not Hazardous
					H400	HP14	0.10%	Not Hazardous
					H410	HP14		Not Hazardous
					H350	HP7		Not Hazardous
Selenium	ICP/OES	<0.001		<0.001				not detected -excluded
Copper	ICP/OES	0.0042	copper oxide	0.00525	H302	HP6		
					H400	HP14	0.1	Not Hazardous

SAL Ref: 597500

Client Reference: Demolition Material MPS decommissioning

**HAZARDOUS PROPERTY ASSESSMENT**  
Waste (England and Wales) Regulations 2011

Date of Assessment 30th September 2016

Hazardous Property/Determinand	Test/Assessment Method	Result %	Worst Case Compound	% Worst Case Compound	Hazard Statement	Hazardous Property	Threshold %	Conclusion
Nickel	ICP/OES	0.0008	nickel carbonate	0.0016	H410	HP14	0.1	Not Hazardous
					H350	HP7	0.1	Not Hazardous
					H341	HP11		Not Hazardous
					H360	HP10	0.3	Not Hazardous
					H372	HP5	1	Not Hazardous
					H332	HP6		Not Hazardous
					H302	HP6		Not Hazardous
					H315	HP4	20	Not Hazardous
					H334	HP13		Not Hazardous
					H317	HP13		Not Hazardous
					H319	HP4	20	Not Hazardous
					H400	HP14	0.1	Not Hazardous
					H410	HP14	0.1	Not Hazardous
Zinc	ICP/OES	0.0069	zinc oxide	0.008556	H400	HP14	0.1	Not Hazardous
					H410	HP14	0.1	Not Hazardous
pH		11.6		<11.5		HP4/HP8		Not Hazardous

SAL Ref: 597500

Client Reference: Demolition Material MPS decommissioning

**HAZARDOUS PROPERTY ASSESSMENT**  
**Waste (England and Wales) Regulations 2011**

Date of Assessment 30th September 2016

Hazardous Property/Determinand Organic Compounds	Test/Assessment Method	Result %	Worst Case Compound	% Worst Case Compound	Hazard Statement	Hazardous Property	Threshold %	Conclusion
		no significant compounds detected						
								below lowest threshold
Overall Conclusion EWC Code								<b>NOT HAZARDOUS</b> <b>17-09-04 MN</b>

SAL Ref: 597500

Client Reference: Demolition Material MPS decommissioning

**HAZARDOUS PROPERTY ASSESSMENT**  
**Waste (England and Wales) Regulations 2011**

Date of Assessment 30th September 2016

Hazardous Property/Determinand	Test/Assessment Method	Result %	Worst Case Compound	% Worst Case Compound	Hazard Statement	Hazardous Property	Threshold %	Conclusion
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Assessment is based on SAL Report # 597500 which is included .

Risk Phrases used in this assessment are based on EU 1277 2008

The conclusions in this assessment are based on guidance taken from WM3 1st Edition 2015.

The terms “Hazardous” and “Not Hazardous” are used in the context of these Regulations. Further testing may be required if classification under the Waste Acceptance Criteria (Landfill Regulations 2000/EU Directive 99/3/EC as amended) is intended.

The term “Not Hazardous” does not imply that significant possibility of significant harm to human health or the environment is not present.

Assessment Prepared by W A Cohen  
[bcohen@salltd.co.uk](mailto:bcohen@salltd.co.uk)



# Scientific Analysis Laboratories Ltd

## Certificate of Analysis

**Report Number:** 597225-1

**Date of Report:** 17-Sep-2016

**Customer:** ADI Associates Ltd  
Kappara Business Centre  
113 Triq Birkirkara  
San Gwann SGN4197  
Malta  
VAT Number: MT18486514

**Customer Contact:** M/S Krista Farrugia

**Customer Job Reference:** SBS002

**Customer Site Reference:** MPS Decommissioning

**Date Job Received at SAL:** 02-Sep-2016

**Date Analysis Started:** 02-Sep-2016

**Date Analysis Completed:** 17-Sep-2016

The results reported relate to samples received in the laboratory and may not be representative of a whole batch.

Opinions and interpretations expressed herein are outside the scope of UKAS accreditation

This report should not be reproduced except in full without the written approval of the laboratory

Tests covered by this certificate were conducted in accordance with SAL SOPs

All results have been reviewed in accordance with Section 25 of the SAL Quality Manual



Report checked  
and authorised by :  
Aleksandra Pacula  
Project Manager

Issued by :  
Aleksandra Pacula  
Project Manager



# Waste Acceptance Criteria

Customer Sample Reference : MPS10

SAL Sample Reference : 597225 001

Project Site : MPS Decommissioning

Customer Reference : SBS002

Date Sampled : 01-SEP-2016

Bulk Product					Result	Inert Waste Landfill	Stable non reactive	Hazardous Waste Landfill
Determinand	Technique	LOD	Units	Symbol				
Acid Neutralising Capacity (pH 4)	Titration	2	Mol/kg	N	<2			
Acid Neutralising Capacity (pH 7)	Titration (pH 7)	2	Mol/kg	N	<2			
BTEX (Sum)	Calc	0.0040	mg/kg	N	<b>0.0060</b>	6.0		
Loss on Ignition	Grav	0.1	%	N	<b>1.2</b>			10.0
Moisture	Grav	0.1	%	N	<b>0.3</b>			
PAH (Sum)	Calc	1.6	mg/kg	N	<1.6	100.0		
PCB EC7 (Sum)	Calc	0.0035	mg/kg	N	<0.0035	1.0		
pH	Probe			N	<b>7.1</b>		> 6.0	
Total Organic Carbon	OX/IR	0.1	%	N	<0.1	3.0	5.0	6.0
Total Petroleum Hydrocarbons C10-C40 (Sum)	Calc	1	mg/kg	N	<sup>(13)</sup> <b>6</b>	500.0		

Data for BS EN 12457-2 (10:1)					Result	Inert Waste Landfill	Stable non reactive	Hazardous Waste Landfill
Determinand	Technique	LOD	Units	Symbol				
Antimony	Calc WAC ICP/MS	0.010	mg/kg	N	<b>0.085</b>	<b>0.06</b>	0.7	5.0
Arsenic	Calc WAC ICP/MS	0.0020	mg/kg	N	<b>1.0</b>	<b>0.5</b>	2.0	25.0
Barium	Calc WAC ICP/MS	0.010	mg/kg	N	<b>1.6</b>	20.0	100.0	300.0
Cadmium	Calc WAC ICP/MS	0.00020	mg/kg	N	<b>0.021</b>	0.04	1.0	5.0
Chloride	Calc (W)	10	mg/kg	N	<10	800.0	15000.0	25000.0
Chromium	Calc WAC ICP/MS	0.010	mg/kg	N	<b>0.90</b>	<b>0.5</b>	10.0	70.0
Copper	Calc WAC ICP/MS	0.0050	mg/kg	N	<b>0.079</b>	2.0	50.0	100.0
Dissolved Organic Carbon	Calc	10	mg/kg	N	<b>4900</b>	<b>500.0</b>	<b>800.0</b>	<b>1000.0</b>
Fluoride	Calc (W)	0.50	mg/kg	N	<0.50	10.0	150.0	500.0
Lead	Calc WAC ICP/MS	0.0030	mg/kg	N	<b>0.012</b>	0.5	10.0	50.0
Mercury	Calc WAC ICP/MS	0.00050	mg/kg	N	<b>0.012</b>	<b>0.01</b>	0.2	2.0
Molybdenum	Calc WAC ICP/MS	0.010	mg/kg	N	<b>15</b>	<b>0.5</b>	<b>10.0</b>	30.0
Nickel	Calc WAC ICP/MS	0.010	mg/kg	N	<b>3.7</b>	<b>0.4</b>	10.0	40.0
Phenols (Total-Mono)	Calc	1.0	mg/kg	N	<1.0	1.0		
Selenium	Calc WAC ICP/MS	0.0050	mg/kg	N	<b>0.012</b>	0.1	0.5	7.0
Sulphate	Calc (W)	5	mg/kg	N	<b>34000</b>	<b>1000.0</b>	<b>20000.0</b>	50000.0
Total Dissolved Solids	Calc WAC ICP/MS	1000	mg/kg	N	<b>45000</b>	<b>4000.0</b>	60000.0	100000.0
Zinc	Calc WAC ICP/MS	0.020	mg/kg	N	<b>0.78</b>	4.0	50.0	200.0

Following the recommendation from the Environment Agency (England and Wales)\*, the leachate preparation in this report has been carried out to BS EN 12457-2 : One Stage batch test at a liquid to solid ratio of 10 l/kg. This is also compliant with Schedule 10 of the Environmental Permitting Regulations 2010.

Note : This is the minimum amount of testing which is required.

Further testing may be required if :

- evidence of immediately leachable parameters becomes available.
- evidence to indicate that the sample could be classified as hazardous under H1-H14 of the Waste(England and Wales) Regulations 2011(as amended) becomes available.

Acceptance of waste at landfill is always at the discretion of the Landfill Operator.

\* Waste Sampling and Testing for Disposal at Landfill, EBPR1 11507B, Environment Agency (England and Wales) March 2013

<b>SAL Reference:</b> 597225 <b>Project Site:</b> MPS Decommissioning <b>Customer Reference:</b> SBS002  <b>Bulk Product</b> Analysed as Bulk Product <b>BTEX</b>					
<b>SAL Reference</b>					<b>597225 001</b>
<b>Customer Sample Reference</b>					<b>MPS10</b>
<b>Test Sample</b>					<b>AR</b>
<b>Date Sampled</b>					<b>01-SEP-2016</b>
<b>Determinand</b>	<b>Method</b>	<b>LOD</b>	<b>Units</b>	<b>Symbol</b>	
Meta/Para-Xylene	GC/MS (Headspace)	1	µg/kg	N	<2
EthylBenzene	GC/MS (Headspace)	1	µg/kg	N	<2
Toluene	GC/MS (Headspace)	1	µg/kg	N	<sup>(13)</sup> 6
Benzene	GC/MS (Headspace)	1	µg/kg	N	<sup>(13)</sup> <2
Ortho-Xylene	GC/MS (Headspace)	1	µg/kg	N	<2

<b>SAL Reference:</b> 597225 <b>Project Site:</b> MPS Decommissioning <b>Customer Reference:</b> SBS002  <b>Bulk Product</b> Analysed as Bulk Product <b>PCB EC7</b>					
<b>SAL Reference</b>					<b>597225 001</b>
<b>Customer Sample Reference</b>					<b>MPS10</b>
<b>Test Sample</b>					<b>AR</b>
<b>Date Sampled</b>					<b>01-SEP-2016</b>
<b>Determinand</b>	<b>Method</b>	<b>LOD</b>	<b>Units</b>	<b>Symbol</b>	
Polychlorinated biphenyl BZ#28	GC/MS (HR)	0.5	µg/kg	N	<0.5
Polychlorinated biphenyl BZ#52	GC/MS (HR)	0.5	µg/kg	N	<0.5
Polychlorinated biphenyl BZ#101	GC/MS (SIR)	0.5	µg/kg	N	<0.5
Polychlorinated biphenyl BZ#118	GC/MS (SIR)	0.5	µg/kg	N	<0.5
Polychlorinated biphenyl BZ#138	GC/MS (SIR)	0.5	µg/kg	N	<0.5
Polychlorinated biphenyl BZ#153	GC/MS (SIR)	0.5	µg/kg	N	<0.5
Polychlorinated biphenyl BZ#180	GC/MS (HR)	0.5	µg/kg	N	<0.5

<b>SAL Reference:</b> 597225 <b>Project Site:</b> MPS Decommissioning <b>Customer Reference:</b> SBS002  <b>Bulk Product</b> Analysed as Bulk Product <b>Polyaromatic Hydrocarbons (US EPA16)</b>					
<b>SAL Reference</b>					<b>597225 001</b>
<b>Customer Sample Reference</b>					<b>MPS10</b>
<b>Test Sample</b>					<b>AR</b>
<b>Date Sampled</b>					<b>01-SEP-2016</b>
<b>Determinand</b>	<b>Method</b>	<b>LOD</b>	<b>Units</b>	<b>Symbol</b>	
Naphthalene	GC/MS	0.1	mg/kg	N	<0.1
Acenaphthylene	GC/MS	0.1	mg/kg	N	<0.1
Acenaphthene	GC/MS	0.1	mg/kg	N	<0.1
Fluorene	GC/MS	0.1	mg/kg	N	<0.1
Phenanthrene	GC/MS	0.1	mg/kg	N	<0.1
Anthracene	GC/MS	0.1	mg/kg	N	<0.1
Fluoranthene	GC/MS	0.1	mg/kg	N	<0.1
Pyrene	GC/MS	0.1	mg/kg	N	<0.1
Benzo(a)Anthracene	GC/MS	0.1	mg/kg	N	<0.1
Chrysene	GC/MS	0.1	mg/kg	N	<0.1
Benzo(b/k)Fluoranthene	GC/MS	0.1	mg/kg	N	<0.1
Benzo(a)Pyrene	GC/MS	0.1	mg/kg	N	<0.1
Indeno(123-cd)Pyrene	GC/MS	0.1	mg/kg	N	<0.1
Dibenzo(ah)Anthracene	GC/MS	0.1	mg/kg	N	<0.1
Benzo(ghi)Perylene	GC/MS	0.1	mg/kg	N	<0.1
Polyaromatic Hydrocarbons (Total)	GC/MS	0.1	mg/kg	N	<0.1
Coronene	GC/MS	0.1	mg/kg	N	<0.1

<b>SAL Reference:</b> 597225 <b>Project Site:</b> MPS Decommissioning <b>Customer Reference:</b> SBS002  <b>Bulk Product</b> Analysed as Bulk Product <b>Total Petroleum Hydrocarbons</b>					
<b>SAL Reference</b>					<b>597225 001</b>
<b>Customer Sample Reference</b>					<b>MPS10</b>
<b>Test Sample</b>					<b>AR</b>
<b>Date Sampled</b>					<b>01-SEP-2016</b>
<b>Determinand</b>	<b>Method</b>	<b>LOD</b>	<b>Units</b>	<b>Symbol</b>	
Total Petroleum Hydrocarbons	GC/FID	1	mg/kg	N	(13) 4
Total Petroleum Hydrocarbons (C35-C40)	GC/FID	1	mg/kg	N	(13) 2

<b>SAL Reference:</b> 597225 <b>Project Site:</b> MPS Decommissioning <b>Customer Reference:</b> SBS002  <b>Bulk Product</b> Analysed as Bulk Product <b>Suite A</b>					
<b>SAL Reference</b>					<b>597225 001</b>
<b>Customer Sample Reference</b>					<b>MPS10</b>
<b>Test Sample</b>					<b>A40</b>
<b>Date Sampled</b>					<b>01-SEP-2016</b>
<b>Determinand</b>	<b>Method</b>	<b>LOD</b>	<b>Units</b>	<b>Symbol</b>	
Antimony	ICP/OES	10	mg/kg	N	55
Cobalt	ICP/OES	10	mg/kg	N	610
Manganese	ICP/OES	1	mg/kg	N	310
Thallium	ICP/OES	10	mg/kg	N	<10
Tin	ICP/OES	2	mg/kg	N	5
Vanadium	ICP/OES	10	mg/kg	N	27000

<b>SAL Reference:</b> 597225 <b>Project Site:</b> MPS Decommissioning <b>Customer Reference:</b> SBS002  <b>Bulk Product</b> Analysed as Bulk Product <b>Heavy Metals(9)</b>					
<b>SAL Reference</b>					<b>597225 001</b>
<b>Customer Sample Reference</b>					<b>MPS10</b>
<b>Test Sample</b>					<b>A40</b>
<b>Date Sampled</b>					<b>01-SEP-2016</b>
<b>Determinand</b>	<b>Method</b>	<b>LOD</b>	<b>Units</b>	<b>Symbol</b>	
Arsenic	ICP/OES	1	mg/kg	N	200
Cadmium	ICP/OES	1	mg/kg	N	3
Chromium	ICP/OES	1	mg/kg	N	120
Copper	ICP/OES	1	mg/kg	N	200
Lead	ICP/OES	1	mg/kg	N	120
Mercury	ICP/OES	1	mg/kg	N	<1
Nickel	ICP/OES	1	mg/kg	N	17000
Selenium	ICP/OES	10	mg/kg	N	<10
Zinc	ICP/OES	1	mg/kg	N	580

<b>SAL Reference:</b> 597225 <b>Project Site:</b> MPS Decommissioning <b>Customer Reference:</b> SBS002  <b>Bulk Product</b> Analysed as Bulk Product <b>Miscellaneous</b>					
<b>SAL Reference</b>					<b>597225 001</b>
<b>Customer Sample Reference</b>					<b>MPS10</b>
<b>Test Sample</b>					<b>AR</b>
<b>Date Sampled</b>					<b>01-SEP-2016</b>
<b>Determinand</b>	<b>Method</b>	<b>LOD</b>	<b>Units</b>	<b>Symbol</b>	
Asbestos Bulk ID	PLM			SU	N.D.
Cyanide (Total)	Colorimetry	1	mg/kg	N	<1

<b>SAL Reference:</b> 597225 <b>Project Site:</b> MPS Decommissioning <b>Customer Reference:</b> SBS002  <b>Leachate to BS EN 12457-2 (10:1)</b> Analysed as Water <b>Waste Acceptance Criteria</b>					
<b>SAL Reference</b>					<b>597225 001</b>
<b>Customer Sample Reference</b>					<b>MPS10</b>
<b>Test Sample</b>					<b>10:1</b>
<b>Date Sampled</b>					<b>01-SEP-2016</b>
<b>Determinand</b>	<b>Method</b>	<b>LOD</b>	<b>Units</b>	<b>Symbol</b>	
Antimony (Dissolved)	ICP/MS (Filtered)	1	µg/l	U	<b>8</b>
Arsenic (Dissolved)	ICP/MS (Filtered)	0.2	µg/l	U	<b>100</b>
Barium (Dissolved)	ICP/MS (Filtered)	1	µg/l	U	<b>160</b>
Cadmium (Dissolved)	ICP/MS (Filtered)	0.02	µg/l	U	<b>2.1</b>
Chloride	Discrete Analyser	1000	µg/l	U	<1000
Chromium (Dissolved)	ICP/MS (Filtered)	1	µg/l	U	<b>90</b>
Copper (Dissolved)	ICP/MS (Filtered)	0.5	µg/l	U	<b>7.9</b>
Dissolved Organic Carbon	OX/IR	1000	µg/l	N	<b>490000</b>
Electrical Conductivity	Probe	10	µS/cm	N	<b>7600</b>
Fluoride	Discrete Analyser	50	µg/l	U	<50
Lead (Dissolved)	ICP/MS (Filtered)	0.3	µg/l	U	<b>1.2</b>
Mercury (Dissolved)	ICP/MS (Filtered)	0.05	µg/l	U	<b>1.2</b>
Molybdenum (Dissolved)	ICP/MS (Filtered)	1	µg/l	N	<b>1500</b>
Nickel (Dissolved)	ICP/MS (Filtered)	1	µg/l	U	<b>370</b>
Phenols (Total-Mono)	Colorimetry	100	µg/l	U	<100
Selenium (Dissolved)	ICP/MS (Filtered)	0.5	µg/l	U	<b>1.2</b>
Sulphate	Discrete Analyser	500	µg/l	U	<b>3400000</b>
Total Dissolved Solids	Grav	100000	µg/l	N	<b>4500000</b>
Zinc (Dissolved)	ICP/MS (Filtered)	2	µg/l	U	<b>78</b>

## Index to symbols used in 597225-1

Value	Description
A40	Assisted dried < 40C
10:1 S	Data for BS EN 12457-2 (10:1)
10:1	Leachate to BS EN 12457-2 (10:1)
AR	As Received
N.D.	Not Detected
13	Results have been blank corrected.
S	Analysis was subcontracted
U	Analysis is UKAS accredited
N	Analysis is not UKAS accredited

## Notes

Asbestos was subcontracted to REC Asbestos.

SAL Ref: 597225

Client Reference: Demolition Material MPS decommissioning

# HAZARDOUS PROPERTY ASSESSMENT Waste (England and Wales) Regulations 2011

Date of Assessment 29th September 2016

Hazardous Property/Determinand	Test/Assessment Method	Result %	Worst Case Compound	% Worst Case Compound	Hazard Statement	Hazardous Property	Threshold %	Conclusion
Arsenic	ICP/OES	0.02	diasenic trioxide	0.0264	H350	HP7	0.1	Not Hazardous
					H300	HP6	0.25	Not Hazardous
					H314	HP8	1	Not Hazardous
					H400	HP14	0,1	Not Hazardous
					H410	HP12		Not Hazardous
Cadmium	ICP/OES	0.0003	cadmium carbonate	<0.001				
Chromium	ICP/OES	0.012	chromates	0.0378	H332	HP6	22.5	Not Hazardous
					H312	HP6	0.25	
					H302	HP6	0.25	
					H400	HP14	0.1	Not Hazardous
					H410	HP14	0.1	Not Hazardous
Mercury	ICP/OES	0.012	lead sulphate	<0.0001	H350	HP11	0.1	Not Hazardous
					H317			
					H416			
Lead	ICP/OES	<0.0001	lead sulphate	0.012				not detected -excluded
					H360	HP10		Not Hazardous
					H332	HP6		Not Hazardous
					H302	HP6		Not Hazardous
					H373	HP5		Not Hazardous
Selenium	ICP/OES	<0.001	copper oxide	<0.001	H400	HP14	0.10%	Not Hazardous
					H410	HP14		Not Hazardous
					H350	HP7		Not Hazardous
								not detected -excluded
Copper	ICP/OES	0.02	copper oxide	0.025	H302	HP6		
					H400	HP14	0.1	Not Hazardous



SAL Ref: 597225

Client Reference: Demolition Material MPS decommissioning

**HAZARDOUS PROPERTY ASSESSMENT**  
Waste (England and Wales) Regulations 2011

Date of Assessment 29th September 2016

Hazardous Property/Determinand	Test/Assessment Method	Result %	Worst Case Compound	% Worst Case Compound	Hazard Statement	Hazardous Property	Threshold %	Conclusion
Nickel	ICP/OES	1.7	nickel carbonate	3.4	H410	HP14	0.1	Not Hazardous
					H350	HP7	0.1	<b>Hazardous</b>
					H341	HP11		Not Hazardous
					H360	HP10	0.3	<b>Hazardous</b>
					H372	HP5	1	<b>Hazardous</b>
					H332	HP6		Not Hazardous
					H302	HP6		Not Hazardous
					H315	HP4	20	Not Hazardous
					H334	HP13		Not Hazardous
					H317	HP13		Not Hazardous
					H319	HP4	20	Not Hazardous
					H400	HP14	0.1	<b>Hazardous</b>
					H410	HP14	0.1	<b>Hazardous</b>
Zinc	ICP/OES	0.058	zinc oxide	0.07192	H400	HP14	0.1	Not Hazardous
					H410	HP14	0.1	Not Hazardous
pH		11.3		<11.5		HP4/HP8		Not Hazardous

SAL Ref: 597225

Client Reference: Demolition Material MPS decommissioning

**HAZARDOUS PROPERTY ASSESSMENT**  
**Waste (England and Wales) Regulations 2011**

Date of Assessment 29th September 2016

Hazardous Property/Determinand Organic Compounds	Test/Assessment Method	Result %	Worst Case Compound	% Worst Case Compound	Hazard Statement	Hazardous Property	Threshold %	Conclusion
		no significant compounds detected						
								below lowest threshold
Overall Conclusion EWC Code								<b>HAZARDOUS</b> <b>17-09-03* MH</b>

SAL Ref: 597225

Client Reference: Demolition Material MPS decommissioning

**HAZARDOUS PROPERTY ASSESSMENT**  
**Waste (England and Wales) Regulations 2011**

Date of Assessment 29th September 2016

Hazardous Property/Determinand	Test/Assessment Method	Result %	Worst Case Compound	% Worst Case Compound	Hazard Statement	Hazardous Property	Threshold %	Conclusion
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Assessment is based on SAL Report # 597225 which is included .

Risk Phrases used in this assessment are based on EU 1277 2008

The conclusions in this assessment are based on guidance taken from WM3 1st Edition 2015.

The terms “Hazardous” and “Not Hazardous” are used in the context of these Regulations. Further testing may be required if classification under the Waste Acceptance Criteria (Landfill Regulations 2000/EU Directive 99/3/EC as amended) is intended.

The term “Not Hazardous” does not imply that significant possibility of significant harm to human health or the environment is not present.

Assessment Prepared by W A Cohen  
[bcohen@salltd.co.uk](mailto:bcohen@salltd.co.uk)

# Scientific Analysis Laboratories Ltd

## Certificate of Analysis

**Report Number:** 605011-1

**Date of Report:** 12-Oct-2016

**Customer:** ADI Associates Ltd  
Kappara Business Centre  
113 Triq Birkirkara  
San Gwann SGN4197  
Malta  
VAT Number: MT18486514

**Customer Contact:** M/S Krista Farrugia

**Customer Job Reference:** SBS002

**Customer Site Reference:** MPS Decmmissioning

**Date Job Received at SAL:** 19-Sep-2016

**Date Analysis Started:** 05-Oct-2016

**Date Analysis Completed:** 12-Oct-2016

The results reported relate to samples received in the laboratory and may not be representative of a whole batch.

Opinions and interpretations expressed herein are outside the scope of UKAS accreditation

This report should not be reproduced except in full without the written approval of the laboratory

Tests covered by this certificate were conducted in accordance with SAL SOPs

All results have been reviewed in accordance with Section 25 of the SAL Quality Manual



Report checked  
and authorised by :  
Mr Richard Wong  
Project Manager

Issued by :  
Mr Richard Wong  
Project Manager



# Waste Acceptance Criteria

Customer Sample Reference : MPS11B (601175/002)

SAL Sample Reference : 605011 001

Project Site : MPS Decommissioning

Customer Reference : SBS002

Date Sampled : 15-SEP-2016

Bulk Product					Result	Inert Waste Landfill	Stable non reactive	Hazardous Waste Landfill
Determinand	Technique	LOD	Units	Symbol				
Acid Neutralising Capacity (pH 4)	Titration	2	Mol/kg	N	<2			
Acid Neutralising Capacity (pH 7)	Titration (pH 7)	2	Mol/kg	N	<2			
BTEX (Sum)	Calc	0.040	mg/kg	N	(110, 100) <0.040	6.0		
Loss on Ignition	Grav	0.1	%	N	15			10.0
Moisture	Grav	0.1	%	N	0.4			
Total Organic Carbon	OX/IR	0.1	%	N	5.4	3.0	5.0	6.0
Total Petroleum Hydrocarbons C10-C40 (Sum)	Calc	1	mg/kg	N	(13) 51000	500.0		
PAH (Sum)	Calc	1.6	mg/kg	N	<1.6	100.0		
PCB EC7 (Sum)	Calc	0.0035	mg/kg	N	<0.0035	1.0		
pH	Probe			N	12.2		> 6.0	

Data for BS EN 12457-2 (10:1)					Result	Inert Waste Landfill	Stable non reactive	Hazardous Waste Landfill
Determinand	Technique	LOD	Units	Symbol				
Antimony	Calc WAC ICP/MS	0.010	mg/kg	N	<0.010	0.06	0.7	5.0
Arsenic	Calc WAC ICP/MS	0.0020	mg/kg	N	<0.0020	0.5	2.0	25.0
Barium	Calc WAC ICP/MS	0.010	mg/kg	N	1.9	20.0	100.0	300.0
Cadmium	Calc WAC ICP/MS	0.00020	mg/kg	N	<0.00020	0.04	1.0	5.0
Chromium	Calc WAC ICP/MS	0.010	mg/kg	N	0.032	0.5	10.0	70.0
Copper	Calc WAC ICP/MS	0.0050	mg/kg	N	0.0067	2.0	50.0	100.0
Lead	Calc WAC ICP/MS	0.0030	mg/kg	N	0.0058	0.5	10.0	50.0
Mercury	Calc WAC ICP/MS	0.00050	mg/kg	N	<0.00050	0.01	0.2	2.0
Molybdenum	Calc WAC ICP/MS	0.010	mg/kg	N	0.025	0.5	10.0	30.0
Nickel	Calc WAC ICP/MS	0.010	mg/kg	N	0.028	0.4	10.0	40.0
Selenium	Calc WAC ICP/MS	0.0050	mg/kg	N	<0.0050	0.1	0.5	7.0
Zinc	Calc WAC ICP/MS	0.020	mg/kg	N	0.058	4.0	50.0	200.0
Chloride	Calc (W)	10	mg/kg	N	20	800.0	15000.0	25000.0
Fluoride	Calc (W)	0.50	mg/kg	N	5.1	10.0	150.0	500.0
Sulphate	Calc (W)	5	mg/kg	N	100	1000.0	20000.0	50000.0
Phenols (Total-Mono)	Calc	1.0	mg/kg	N	<1.0	1.0		
Dissolved Organic Carbon	Calc	10	mg/kg	N	88	500.0	800.0	1000.0
Total Dissolved Solids	Calc WAC ICP/MS	1000	mg/kg	N	32000	4000.0	60000.0	100000.0

Following the recommendation from the Environment Agency (England and Wales)\*, the leachate preparation in this report has been carried out to BS EN 12457-2 : One Stage batch test at a liquid to solid ratio of 10 l/kg. This is also compliant with Schedule 10 of the Environmental Permitting Regulations 2010.

Note : This is the minimum amount of testing which is required.

Further testing may be required if :

- evidence of immediately leachable parameters becomes available.
- evidence to indicate that the sample could be classified as hazardous under H1-H14 of the Waste(England and Wales) Regulations 2011(as amended) becomes available.

Acceptance of waste at landfill is always at the discretion of the Landfill Operator.

\* Waste Sampling and Testing for Disposal at Landfill, EBPR1 11507B, Environment Agency (England and Wales) March 2013

# Waste Acceptance Criteria

Customer Sample Reference : MPS12A (601175/003)

SAL Sample Reference : 605011 002

Project Site : MPS Decommissioning

Customer Reference : SBS002

Date Sampled : 15-SEP-2016

Bulk Product					Result	Inert Waste Landfill	Stable non reactive	Hazardous Waste Landfill
Determinand	Technique	LOD	Units	Symbol				
Acid Neutralising Capacity (pH 4)	Titration	2	Mol/kg	N	<2			
Acid Neutralising Capacity (pH 7)	Titration (pH 7)	2	Mol/kg	N	<2			
BTEX (Sum)	Calc	0.040	mg/kg	N	(110, 100) <0.040	6.0		
Loss on Ignition	Grav	0.1	%	N	13			10.0
Moisture	Grav	0.1	%	N	0.4			
Total Organic Carbon	OX/IR	0.1	%	N	6.1	3.0	5.0	6.0
Total Petroleum Hydrocarbons C10-C40 (Sum)	Calc	1	mg/kg	N	(13) 37000	500.0		
PAH (Sum)	Calc	1.6	mg/kg	N	<1.6	100.0		
PCB EC7 (Sum)	Calc	0.0035	mg/kg	N	<0.0035	1.0		
pH	Probe			N	11.9		> 6.0	

Data for BS EN 12457-2 (10:1)					Result	Inert Waste Landfill	Stable non reactive	Hazardous Waste Landfill
Determinand	Technique	LOD	Units	Symbol				
Antimony	Calc WAC ICP/MS	0.010	mg/kg	N	<0.010	0.06	0.7	5.0
Arsenic	Calc WAC ICP/MS	0.0020	mg/kg	N	0.0044	0.5	2.0	25.0
Barium	Calc WAC ICP/MS	0.010	mg/kg	N	0.78	20.0	100.0	300.0
Cadmium	Calc WAC ICP/MS	0.00020	mg/kg	N	0.00021	0.04	1.0	5.0
Chromium	Calc WAC ICP/MS	0.010	mg/kg	N	0.034	0.5	10.0	70.0
Copper	Calc WAC ICP/MS	0.0050	mg/kg	N	0.22	2.0	50.0	100.0
Lead	Calc WAC ICP/MS	0.0030	mg/kg	N	0.085	0.5	10.0	50.0
Mercury	Calc WAC ICP/MS	0.00050	mg/kg	N	<0.00050	0.01	0.2	2.0
Molybdenum	Calc WAC ICP/MS	0.010	mg/kg	N	0.21	0.5	10.0	30.0
Nickel	Calc WAC ICP/MS	0.010	mg/kg	N	0.030	0.4	10.0	40.0
Selenium	Calc WAC ICP/MS	0.0050	mg/kg	N	<0.0050	0.1	0.5	7.0
Zinc	Calc WAC ICP/MS	0.020	mg/kg	N	0.10	4.0	50.0	200.0
Chloride	Calc (W)	10	mg/kg	N	120	800.0	15000.0	25000.0
Fluoride	Calc (W)	0.50	mg/kg	N	2.8	10.0	150.0	500.0
Sulphate	Calc (W)	5	mg/kg	N	220	1000.0	20000.0	50000.0
Phenols (Total-Mono)	Calc	1.0	mg/kg	N	<1.0	1.0		
Dissolved Organic Carbon	Calc	10	mg/kg	N	150	500.0	800.0	1000.0
Total Dissolved Solids	Calc WAC ICP/MS	1000	mg/kg	N	18000	4000.0	60000.0	100000.0

Following the recommendation from the Environment Agency (England and Wales)\*, the leachate preparation in this report has been carried out to BS EN 12457-2 : One Stage batch test at a liquid to solid ratio of 10 l/kg. This is also compliant with Schedule 10 of the Environmental Permitting Regulations 2010.

Note : This is the minimum amount of testing which is required.

Further testing may be required if :

- evidence of immediately leachable parameters becomes available.
- evidence to indicate that the sample could be classified as hazardous under H1-H14 of the Waste(England and Wales) Regulations 2011(as amended) becomes available.

Acceptance of waste at landfill is always at the discretion of the Landfill Operator.

\* Waste Sampling and Testing for Disposal at Landfill, EBPRI 11507B, Environment Agency (England and Wales) March 2013

# Waste Acceptance Criteria

Customer Sample Reference : MPS12B (601175/004)

SAL Sample Reference : 605011 003

Project Site : MPS Decommissioning

Customer Reference : SBS002

Date Sampled : 15-SEP-2016

Bulk Product					Result	Inert Waste Landfill	Stable non reactive	Hazardous Waste Landfill
Determinand	Technique	LOD	Units	Symbol				
Acid Neutralising Capacity (pH 4)	Titration	2	Mol/kg	N	<2			
Acid Neutralising Capacity (pH 7)	Titration (pH 7)	2	Mol/kg	N	<2			
BTEX (Sum)	Calc	0.040	mg/kg	N	(110, 100) <0.040	6.0		
Loss on Ignition	Grav	0.1	%	N	14			10.0
Moisture	Grav	0.1	%	N	2.1			
Total Organic Carbon	OX/IR	0.1	%	N	7.9	3.0	5.0	6.0
Total Petroleum Hydrocarbons C10-C40 (Sum)	Calc	1	mg/kg	N	(13) 57000	500.0		
PAH (Sum)	Calc	1.6	mg/kg	N	<1.6	100.0		
PCB EC7 (Sum)	Calc	0.0035	mg/kg	N	<0.0035	1.0		
pH	Probe			N	12.2		> 6.0	

Data for BS EN 12457-2 (10:1)					Result	Inert Waste Landfill	Stable non reactive	Hazardous Waste Landfill
Determinand	Technique	LOD	Units	Symbol				
Antimony	Calc WAC ICP/MS	0.010	mg/kg	N	<0.010	0.06	0.7	5.0
Arsenic	Calc WAC ICP/MS	0.0020	mg/kg	N	<0.0020	0.5	2.0	25.0
Barium	Calc WAC ICP/MS	0.010	mg/kg	N	2.8	20.0	100.0	300.0
Cadmium	Calc WAC ICP/MS	0.00020	mg/kg	N	<0.00020	0.04	1.0	5.0
Chromium	Calc WAC ICP/MS	0.010	mg/kg	N	0.011	0.5	10.0	70.0
Copper	Calc WAC ICP/MS	0.0050	mg/kg	N	0.0085	2.0	50.0	100.0
Lead	Calc WAC ICP/MS	0.0030	mg/kg	N	0.012	0.5	10.0	50.0
Mercury	Calc WAC ICP/MS	0.00050	mg/kg	N	<0.00050	0.01	0.2	2.0
Molybdenum	Calc WAC ICP/MS	0.010	mg/kg	N	<0.010	0.5	10.0	30.0
Nickel	Calc WAC ICP/MS	0.010	mg/kg	N	0.041	0.4	10.0	40.0
Selenium	Calc WAC ICP/MS	0.0050	mg/kg	N	<0.0050	0.1	0.5	7.0
Zinc	Calc WAC ICP/MS	0.020	mg/kg	N	0.074	4.0	50.0	200.0
Chloride	Calc (W)	10	mg/kg	N	30	800.0	15000.0	25000.0
Fluoride	Calc (W)	0.50	mg/kg	N	6.0	10.0	150.0	500.0
Sulphate	Calc (W)	5	mg/kg	N	80	1000.0	20000.0	50000.0
Phenols (Total-Mono)	Calc	1.0	mg/kg	N	<1.0	1.0		
Dissolved Organic Carbon	Calc	10	mg/kg	N	130	500.0	800.0	1000.0
Total Dissolved Solids	Calc WAC ICP/MS	1000	mg/kg	N	45000	4000.0	60000.0	100000.0

Following the recommendation from the Environment Agency (England and Wales)\*, the leachate preparation in this report has been carried out to BS EN 12457-2 : One Stage batch test at a liquid to solid ratio of 10 l/kg. This is also compliant with Schedule 10 of the Environmental Permitting Regulations 2010.

Note : This is the minimum amount of testing which is required.

Further testing may be required if :

- evidence of immediately leachable parameters becomes available.
- evidence to indicate that the sample could be classified as hazardous under H1-H14 of the Waste(England and Wales) Regulations 2011(as amended) becomes available.

Acceptance of waste at landfill is always at the discretion of the Landfill Operator.

\* Waste Sampling and Testing for Disposal at Landfill, EBPR1 11507B, Environment Agency (England and Wales) March 2013

# Waste Acceptance Criteria

Customer Sample Reference : MPS13A (601175/005)

SAL Sample Reference : 605011 004

Project Site : MPS Decommissioning

Customer Reference : SBS002

Date Sampled : 15-SEP-2016

Bulk Product					Result	Inert Waste Landfill	Stable non reactive	Hazardous Waste Landfill
Determinand	Technique	LOD	Units	Symbol				
Acid Neutralising Capacity (pH 4)	Titration	2	Mol/kg	N	<2			
Acid Neutralising Capacity (pH 7)	Titration (pH 7)	2	Mol/kg	N	<2			
BTEX (Sum)	Calc	0.040	mg/kg	N	(100, 110) <0.040	6.0		
Loss on Ignition	Grav	0.1	%	N	11			10.0
Moisture	Grav	0.1	%	N	0.7			
Total Organic Carbon	OX/IR	0.1	%	N	5.4	3.0	5.0	6.0
Total Petroleum Hydrocarbons C10-C40 (Sum)	Calc	1	mg/kg	N	(13) 20000	500.0		
PAH (Sum)	Calc	1.6	mg/kg	N	<1.6	100.0		
PCB EC7 (Sum)	Calc	0.0035	mg/kg	N	<0.0035	1.0		
pH	Probe			N	11.7		> 6.0	

Data for BS EN 12457-2 (10:1)					Result	Inert Waste Landfill	Stable non reactive	Hazardous Waste Landfill
Determinand	Technique	LOD	Units	Symbol				
Antimony	Calc WAC ICP/MS	0.010	mg/kg	N	<0.010	0.06	0.7	5.0
Arsenic	Calc WAC ICP/MS	0.0020	mg/kg	N	0.020	0.5	2.0	25.0
Barium	Calc WAC ICP/MS	0.010	mg/kg	N	0.15	20.0	100.0	300.0
Cadmium	Calc WAC ICP/MS	0.00020	mg/kg	N	<0.00020	0.04	1.0	5.0
Chromium	Calc WAC ICP/MS	0.010	mg/kg	N	0.026	0.5	10.0	70.0
Copper	Calc WAC ICP/MS	0.0050	mg/kg	N	0.094	2.0	50.0	100.0
Lead	Calc WAC ICP/MS	0.0030	mg/kg	N	0.0030	0.5	10.0	50.0
Mercury	Calc WAC ICP/MS	0.00050	mg/kg	N	<0.00050	0.01	0.2	2.0
Molybdenum	Calc WAC ICP/MS	0.010	mg/kg	N	0.038	0.5	10.0	30.0
Nickel	Calc WAC ICP/MS	0.010	mg/kg	N	0.011	0.4	10.0	40.0
Selenium	Calc WAC ICP/MS	0.0050	mg/kg	N	<0.0050	0.1	0.5	7.0
Zinc	Calc WAC ICP/MS	0.020	mg/kg	N	0.080	4.0	50.0	200.0
Chloride	Calc (W)	10	mg/kg	N	42	800.0	15000.0	25000.0
Fluoride	Calc (W)	0.50	mg/kg	N	<0.50	10.0	150.0	500.0
Sulphate	Calc (W)	5	mg/kg	N	190	1000.0	20000.0	50000.0
Phenols (Total-Mono)	Calc	1.0	mg/kg	N	<1.0	1.0		
Dissolved Organic Carbon	Calc	10	mg/kg	N	170	500.0	800.0	1000.0
Total Dissolved Solids	Calc WAC ICP/MS	1000	mg/kg	N	4700	4000.0	60000.0	100000.0

Following the recommendation from the Environment Agency (England and Wales)\*, the leachate preparation in this report has been carried out to BS EN 12457-2 : One Stage batch test at a liquid to solid ratio of 10 l/kg. This is also compliant with Schedule 10 of the Environmental Permitting Regulations 2010.

Note : This is the minimum amount of testing which is required.

Further testing may be required if :

- evidence of immediately leachable parameters becomes available.
- evidence to indicate that the sample could be classified as hazardous under H1-H14 of the Waste(England and Wales) Regulations 2011(as amended) becomes available.

Acceptance of waste at landfill is always at the discretion of the Landfill Operator.

\* Waste Sampling and Testing for Disposal at Landfill, EBPR1 11507B, Environment Agency (England and Wales) March 2013



# Waste Acceptance Criteria

Customer Sample Reference : MPS13B (601175/006)

SAL Sample Reference : 605011 005

Project Site : MPS Decommissioning

Customer Reference : SBS002

Date Sampled : 15-SEP-2016

Bulk Product					Result	Inert Waste Landfill	Stable non reactive	Hazardous Waste Landfill
Determinand	Technique	LOD	Units	Symbol				
Acid Neutralising Capacity (pH 4)	Titration	2	Mol/kg	N	<2			
Acid Neutralising Capacity (pH 7)	Titration (pH 7)	2	Mol/kg	N	<2			
BTEX (Sum)	Calc	0.020	mg/kg	N	<sup>(100)</sup> <0.020	6.0		
Loss on Ignition	Grav	0.1	%	N	11			10.0
Moisture	Grav	0.1	%	N	1.0			
Total Organic Carbon	OX/IR	0.1	%	N	3.8	3.0	5.0	6.0
Total Petroleum Hydrocarbons C10-C40 (Sum)	Calc	1	mg/kg	N	<sup>(13)</sup> 14000	500.0		
PAH (Sum)	Calc	1.6	mg/kg	N	<1.6	100.0		
PCB EC7 (Sum)	Calc	0.0035	mg/kg	N	<0.0035	1.0		
pH	Probe			N	12.2		> 6.0	

Data for BS EN 12457-2 (10:1)					Result	Inert Waste Landfill	Stable non reactive	Hazardous Waste Landfill
Determinand	Technique	LOD	Units	Symbol				
Antimony	Calc WAC ICP/MS	0.010	mg/kg	N	<0.010	0.06	0.7	5.0
Arsenic	Calc WAC ICP/MS	0.0020	mg/kg	N	0.011	0.5	2.0	25.0
Barium	Calc WAC ICP/MS	0.010	mg/kg	N	0.68	20.0	100.0	300.0
Cadmium	Calc WAC ICP/MS	0.00020	mg/kg	N	0.00026	0.04	1.0	5.0
Chromium	Calc WAC ICP/MS	0.010	mg/kg	N	0.054	0.5	10.0	70.0
Copper	Calc WAC ICP/MS	0.0050	mg/kg	N	0.060	2.0	50.0	100.0
Lead	Calc WAC ICP/MS	0.0030	mg/kg	N	0.010	0.5	10.0	50.0
Mercury	Calc WAC ICP/MS	0.00050	mg/kg	N	<0.00050	0.01	0.2	2.0
Molybdenum	Calc WAC ICP/MS	0.010	mg/kg	N	0.22	0.5	10.0	30.0
Nickel	Calc WAC ICP/MS	0.010	mg/kg	N	0.026	0.4	10.0	40.0
Selenium	Calc WAC ICP/MS	0.0050	mg/kg	N	<0.0050	0.1	0.5	7.0
Zinc	Calc WAC ICP/MS	0.020	mg/kg	N	0.13	4.0	50.0	200.0
Chloride	Calc (W)	10	mg/kg	N	36	800.0	15000.0	25000.0
Fluoride	Calc (W)	0.50	mg/kg	N	3.1	10.0	150.0	500.0
Sulphate	Calc (W)	5	mg/kg	N	100	1000.0	20000.0	50000.0
Phenols (Total-Mono)	Calc	1.0	mg/kg	N	<1.0	1.0		
Dissolved Organic Carbon	Calc	10	mg/kg	N	240	500.0	800.0	1000.0
Total Dissolved Solids	Calc WAC ICP/MS	1000	mg/kg	N	17000	4000.0	60000.0	100000.0

Following the recommendation from the Environment Agency (England and Wales)\*, the leachate preparation in this report has been carried out to BS EN 12457-2 : One Stage batch test at a liquid to solid ratio of 10 l/kg. This is also compliant with Schedule 10 of the Environmental Permitting Regulations 2010.

Note : This is the minimum amount of testing which is required.

Further testing may be required if :

- evidence of immediately leachable parameters becomes available.
- evidence to indicate that the sample could be classified as hazardous under H1-H14 of the Waste(England and Wales) Regulations 2011(as amended) becomes available.

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\* Waste Sampling and Testing for Disposal at Landfill, EBPR1 11507B, Environment Agency (England and Wales) March 2013

# Waste Acceptance Criteria

Customer Sample Reference : MPS14A (601175/007)

SAL Sample Reference : 605011 006

Project Site : MPS Decommissioning

Customer Reference : SBS002

Date Sampled : 15-SEP-2016

Bulk Product					Result	Inert Waste Landfill	Stable non reactive	Hazardous Waste Landfill
Determinand	Technique	LOD	Units	Symbol				
Acid Neutralising Capacity (pH 4)	Titration	2	Mol/kg	N	<2			
Acid Neutralising Capacity (pH 7)	Titration (pH 7)	2	Mol/kg	N	<2			
BTEX (Sum)	Calc	0.020	mg/kg	N	<sup>(100)</sup> <0.020	6.0		
Loss on Ignition	Grav	0.1	%	N	<b>5.1</b>			10.0
Moisture	Grav	0.1	%	N	<b>0.6</b>			
Total Organic Carbon	OX/IR	0.1	%	N	<b>1.2</b>	3.0	5.0	6.0
Total Petroleum Hydrocarbons C10-C40 (Sum)	Calc	1	mg/kg	N	<sup>(13)</sup> <b>340</b>	500.0		
PAH (Sum)	Calc	1.6	mg/kg	N	<1.6	100.0		
PCB EC7 (Sum)	Calc	0.0035	mg/kg	N	<0.0035	1.0		
pH	Probe			N	<b>9.9</b>		> 6.0	

Data for BS EN 12457-2 (10:1)					Result	Inert Waste Landfill	Stable non reactive	Hazardous Waste Landfill
Determinand	Technique	LOD	Units	Symbol				
Antimony	Calc WAC ICP/MS	0.010	mg/kg	N	<0.010	0.06	0.7	5.0
Arsenic	Calc WAC ICP/MS	0.0020	mg/kg	N	<b>0.0096</b>	0.5	2.0	25.0
Barium	Calc WAC ICP/MS	0.010	mg/kg	N	<b>0.068</b>	20.0	100.0	300.0
Cadmium	Calc WAC ICP/MS	0.00020	mg/kg	N	<0.00020	0.04	1.0	5.0
Chromium	Calc WAC ICP/MS	0.010	mg/kg	N	<b>0.048</b>	0.5	10.0	70.0
Copper	Calc WAC ICP/MS	0.0050	mg/kg	N	<b>0.0094</b>	2.0	50.0	100.0
Lead	Calc WAC ICP/MS	0.0030	mg/kg	N	<0.0030	0.5	10.0	50.0
Mercury	Calc WAC ICP/MS	0.00050	mg/kg	N	<0.00050	0.01	0.2	2.0
Molybdenum	Calc WAC ICP/MS	0.010	mg/kg	N	<0.010	0.5	10.0	30.0
Nickel	Calc WAC ICP/MS	0.010	mg/kg	N	<0.010	0.4	10.0	40.0
Selenium	Calc WAC ICP/MS	0.0050	mg/kg	N	<0.0050	0.1	0.5	7.0
Zinc	Calc WAC ICP/MS	0.020	mg/kg	N	<b>0.058</b>	4.0	50.0	200.0
Chloride	Calc (W)	10	mg/kg	N	<b>470</b>	800.0	15000.0	25000.0
Fluoride	Calc (W)	0.50	mg/kg	N	<0.50	10.0	150.0	500.0
Sulphate	Calc (W)	5	mg/kg	N	<b>810</b>	1000.0	20000.0	50000.0
Phenols (Total-Mono)	Calc	1.0	mg/kg	N	<1.0	1.0		
Dissolved Organic Carbon	Calc	10	mg/kg	N	<b>150</b>	500.0	800.0	1000.0
Total Dissolved Solids	Calc WAC ICP/MS	1000	mg/kg	N	<b>3300</b>	4000.0	60000.0	100000.0

Following the recommendation from the Environment Agency (England and Wales)\*, the leachate preparation in this report has been carried out to BS EN 12457-2 : One Stage batch test at a liquid to solid ratio of 10 l/kg. This is also compliant with Schedule 10 of the Environmental Permitting Regulations 2010.

Note : This is the minimum amount of testing which is required.

Further testing may be required if :

- evidence of immediately leachable parameters becomes available.
- evidence to indicate that the sample could be classified as hazardous under H1-H14 of the Waste(England and Wales) Regulations 2011(as amended) becomes available.

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\* Waste Sampling and Testing for Disposal at Landfill, EBPR1 11507B, Environment Agency (England and Wales) March 2013

# Waste Acceptance Criteria

Customer Sample Reference : MPS14B (601175/008)

SAL Sample Reference : 605011 007

Project Site : MPS Decommissioning

Customer Reference : SBS002

Date Sampled : 15-SEP-2016

Bulk Product					Result	Inert Waste Landfill	Stable non reactive	Hazardous Waste Landfill
Determinand	Technique	LOD	Units	Symbol				
Acid Neutralising Capacity (pH 4)	Titration	2	Mol/kg	N	<2			
Acid Neutralising Capacity (pH 7)	Titration (pH 7)	2	Mol/kg	N	<2			
BTEX (Sum)	Calc	0.020	mg/kg	N	<sup>(100)</sup> <0.020	6.0		
Loss on Ignition	Grav	0.1	%	N	<b>5.6</b>			10.0
Moisture	Grav	0.1	%	N	<b>1.3</b>			
Total Organic Carbon	OX/IR	0.1	%	N	<b>0.3</b>	3.0	5.0	6.0
Total Petroleum Hydrocarbons C10-C40 (Sum)	Calc	1	mg/kg	N	<sup>(13)</sup> <b>7</b>	500.0		
PAH (Sum)	Calc	1.6	mg/kg	N	<1.6	100.0		
PCB EC7 (Sum)	Calc	0.0035	mg/kg	N	<0.0035	1.0		
pH	Probe			N	<b>12.2</b>		> 6.0	

Data for BS EN 12457-2 (10:1)					Result	Inert Waste Landfill	Stable non reactive	Hazardous Waste Landfill
Determinand	Technique	LOD	Units	Symbol				
Antimony	Calc WAC ICP/MS	0.010	mg/kg	N	<0.010	0.06	0.7	5.0
Arsenic	Calc WAC ICP/MS	0.0020	mg/kg	N	<0.0020	0.5	2.0	25.0
Barium	Calc WAC ICP/MS	0.010	mg/kg	N	<b>1.8</b>	20.0	100.0	300.0
Cadmium	Calc WAC ICP/MS	0.00020	mg/kg	N	<0.00020	0.04	1.0	5.0
Chromium	Calc WAC ICP/MS	0.010	mg/kg	N	<b>0.13</b>	0.5	10.0	70.0
Copper	Calc WAC ICP/MS	0.0050	mg/kg	N	<0.0050	2.0	50.0	100.0
Lead	Calc WAC ICP/MS	0.0030	mg/kg	N	<0.0030	0.5	10.0	50.0
Mercury	Calc WAC ICP/MS	0.00050	mg/kg	N	<0.00050	0.01	0.2	2.0
Molybdenum	Calc WAC ICP/MS	0.010	mg/kg	N	<b>0.049</b>	0.5	10.0	30.0
Nickel	Calc WAC ICP/MS	0.010	mg/kg	N	<b>0.018</b>	0.4	10.0	40.0
Selenium	Calc WAC ICP/MS	0.0050	mg/kg	N	<0.0050	0.1	0.5	7.0
Zinc	Calc WAC ICP/MS	0.020	mg/kg	N	<b>0.092</b>	4.0	50.0	200.0
Chloride	Calc (W)	10	mg/kg	N	<b>160</b>	800.0	15000.0	25000.0
Fluoride	Calc (W)	0.50	mg/kg	N	<b>3.1</b>	10.0	150.0	500.0
Sulphate	Calc (W)	5	mg/kg	N	<b>110</b>	1000.0	20000.0	50000.0
Phenols (Total-Mono)	Calc	1.0	mg/kg	N	<1.0	1.0		
Dissolved Organic Carbon	Calc	10	mg/kg	N	<b>37</b>	500.0	800.0	1000.0
Total Dissolved Solids	Calc WAC ICP/MS	1000	mg/kg	N	<b>20000</b>	<b>4000.0</b>	60000.0	100000.0

Following the recommendation from the Environment Agency (England and Wales)\*, the leachate preparation in this report has been carried out to BS EN 12457-2 : One Stage batch test at a liquid to solid ratio of 10 l/kg. This is also compliant with Schedule 10 of the Environmental Permitting Regulations 2010.

Note : This is the minimum amount of testing which is required.

Further testing may be required if :

- evidence of immediately leachable parameters becomes available.
- evidence to indicate that the sample could be classified as hazardous under H1-H14 of the Waste(England and Wales) Regulations 2011(as amended) becomes available.

Acceptance of waste at landfill is always at the discretion of the Landfill Operator.

\* Waste Sampling and Testing for Disposal at Landfill, EBPR1 11507B, Environment Agency (England and Wales) March 2013

<b>SAL Reference:</b> 605011 <b>Project Site:</b> MPS Decommissioning <b>Customer Reference:</b> SBS002  <b>Leachate to BS EN 12457-2 (10:1)</b> Analysed as Water <b>Waste Acceptance Criteria</b>											
<b>SAL Reference</b>				605011 001	605011 002	605011 003	605011 004	605011 005	605011 006	605011 007	
<b>Customer Sample Reference</b>				MPS11B (601175/002)	MPS12A (601175/003)	MPS12B (601175/004)	MPS13A (601175/005)	MPS13B (601175/006)	MPS14A (601175/007)	MPS14B (601175/008)	
<b>Test Sample</b>				10:1	10:1	10:1	10:1	10:1	10:1	10:1	
<b>Date Sampled</b>				15-SEP-2016	15-SEP-2016	15-SEP-2016	15-SEP-2016	15-SEP-2016	15-SEP-2016	15-SEP-2016	
<b>Determinand</b>	<b>Method</b>	<b>LOD</b>	<b>Units</b>	<b>Symbol</b>							
Antimony (Dissolved)	ICP/MS (Filtered)	1	µg/l	U	<1	<1	<1	<1	<1	<1	<1
Arsenic (Dissolved)	ICP/MS (Filtered)	0.2	µg/l	U	<0.2	0.4	<0.2	2.0	1.1	1.0	<0.2
Barium (Dissolved)	ICP/MS (Filtered)	1	µg/l	U	190	78	280	15	68	7	180
Cadmium (Dissolved)	ICP/MS (Filtered)	0.02	µg/l	U	<0.02	0.02	<0.02	<0.02	0.03	<0.02	<0.02
Chromium (Dissolved)	ICP/MS (Filtered)	1	µg/l	U	3	3	1	3	5	5	13
Copper (Dissolved)	ICP/MS (Filtered)	0.5	µg/l	U	0.7	22	0.8	9.4	6.0	0.9	<0.5
Lead (Dissolved)	ICP/MS (Filtered)	0.3	µg/l	U	0.6	8.5	1.2	0.3	1.0	<0.3	<0.3
Mercury (Dissolved)	ICP/MS (Filtered)	0.05	µg/l	U	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Molybdenum (Dissolved)	ICP/MS (Filtered)	1	µg/l	N	2	21	<1	4	22	<1	5
Nickel (Dissolved)	ICP/MS (Filtered)	1	µg/l	U	3	3	4	1	3	<1	2
Selenium (Dissolved)	ICP/MS (Filtered)	0.5	µg/l	U	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Zinc (Dissolved)	ICP/MS (Filtered)	2	µg/l	U	6	10	7	8	13	6	9
Chloride	Discrete Analyser	1	mg/l	U	2	12	3	4	4	47	16
Fluoride	Discrete Analyser	0.05	mg/l	U	0.51	0.28	0.60	<0.05	0.31	<0.05	0.31
Sulphate	Discrete Analyser	0.5	mg/l	U	10	22	8.0	19	10	81	11
Phenols (Total-Mono)	Colorimetry	0.1	mg/l	U	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Dissolved Organic Carbon	OX/IR	1	mg/l	N	9	15	13	17	24	15	4
Total Dissolved Solids	Grav	100	mg/l	N	3200	1800	4500	470	1700	330	2000
Electrical Conductivity	Probe	10	µS/cm	N	5300	2900	7500	780	2800	540	3300
Volume	Vol	1	ml	U	-	-	-	-	-	-	-

<b>SAL Reference:</b> 605011 <b>Project Site:</b> MPS Decommissioning <b>Customer Reference:</b> SBS002  <b>Bulk Product</b> Analysed as Bulk Product <b>BTEX</b>											
<b>SAL Reference</b>				605011 001	605011 002	605011 003	605011 004	605011 005	605011 006	605011 007	
<b>Customer Sample Reference</b>				MPS11B (601175/002)	MPS12A (601175/003)	MPS12B (601175/004)	MPS13A (601175/005)	MPS13B (601175/006)	MPS14A (601175/007)	MPS14B (601175/008)	
<b>Test Sample</b>				AR	AR	AR	AR	AR	AR	AR	
<b>Date Sampled</b>				15-SEP-2016	15-SEP-2016	15-SEP-2016	15-SEP-2016	15-SEP-2016	15-SEP-2016	15-SEP-2016	
<b>Determinand</b>	<b>Method</b>	<b>LOD</b>	<b>Units</b>	<b>Symbol</b>							
Benzene	GC/MS (Headspace)	1	µg/kg	N	(100,110,13) <10	(100,110,13) <10	(110,13,100) <10	(110,13,100) <10	(13,100) <5	(100,13) <5	(100,13) <5
Toluene	GC/MS (Headspace)	1	µg/kg	N	(110,100,13) <10	(13,100,110) <10	(13) 11	(100,13,110) <10	(13,100) <5	(100,13) <5	(100,13) <5
EthylBenzene	GC/MS (Headspace)	1	µg/kg	N	(110,100) <10	(100,110) <10	(100,110) <10	(100,110) <10	(100) <5	(100) <5	(100) <5
Meta/Para-Xylene	GC/MS (Headspace)	1	µg/kg	N	(100,110) <10	(100,110) <10	(110,100) <10	(100,110) <10	(100) <5	(100) <5	(100) <5
Ortho-Xylene	GC/MS (Headspace)	1	µg/kg	N	(110,100) <10	(100,110) <10	(100,110) <10	(110,100) <10	(100) <5	(100) <5	(100) <5

<b>SAL Reference:</b> 605011 <b>Project Site:</b> MPS Decommissioning <b>Customer Reference:</b> SBS002  <b>Bulk Product</b> Analysed as Bulk Product <b>TPH</b>											
<b>SAL Reference</b>				605011 001	605011 002	605011 003	605011 004	605011 005	605011 006	605011 007	
<b>Customer Sample Reference</b>				MPS11B (601175/002)	MPS12A (601175/003)	MPS12B (601175/004)	MPS13A (601175/005)	MPS13B (601175/006)	MPS14A (601175/007)	MPS14B (601175/008)	
<b>Test Sample</b>				AR	AR	AR	AR	AR	AR	AR	
<b>Date Sampled</b>				15-SEP-2016	15-SEP-2016	15-SEP-2016	15-SEP-2016	15-SEP-2016	15-SEP-2016	15-SEP-2016	
<b>Determinand</b>	<b>Method</b>	<b>LOD</b>	<b>Units</b>	<b>Symbol</b>							
Total Petroleum Hydrocarbons	GC/FID	1	mg/kg	N	(13) 45000	(13) 32000	(13) 50000	(13) 18000	(13) 13000	(13) 260	(13) 7
Total Petroleum Hydrocarbons (C35-C40)	GC/FID	1	mg/kg	N	(13) 6200	(13) 4900	(13) 6400	(13) 2500	(13) 1800	(13) 81	(13) <1

<b>SAL Reference:</b> 605011 <b>Project Site:</b> MPS Decommissioning <b>Customer Reference:</b> SBS002  <b>Bulk Product</b> Analysed as Bulk Product <b>Polyaromatic Hydrocarbons (US EPA16) with Coronene</b>											
<b>SAL Reference</b>				<b>605011 001</b>	<b>605011 002</b>	<b>605011 003</b>	<b>605011 004</b>	<b>605011 005</b>	<b>605011 006</b>	<b>605011 007</b>	
<b>Customer Sample Reference</b>				<b>MPS11B (601175/002)</b>	<b>MPS12A (601175/003)</b>	<b>MPS12B (601175/004)</b>	<b>MPS13A (601175/005)</b>	<b>MPS13B (601175/006)</b>	<b>MPS14A (601175/007)</b>	<b>MPS14B (601175/008)</b>	
<b>Test Sample</b>				<b>AR</b>	<b>AR</b>	<b>AR</b>	<b>AR</b>	<b>AR</b>	<b>AR</b>	<b>AR</b>	
<b>Date Sampled</b>				<b>15-SEP-2016</b>	<b>15-SEP-2016</b>	<b>15-SEP-2016</b>	<b>15-SEP-2016</b>	<b>15-SEP-2016</b>	<b>15-SEP-2016</b>	<b>15-SEP-2016</b>	
<b>Determinand</b>	<b>Method</b>	<b>LOD</b>	<b>Units</b>	<b>Symbol</b>							
Naphthalene	GC/MS	0.1	mg/kg	N	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Acenaphthylene	GC/MS	0.1	mg/kg	N	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Acenaphthene	GC/MS	0.1	mg/kg	N	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Fluorene	GC/MS	0.1	mg/kg	N	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Phenanthrene	GC/MS	0.1	mg/kg	N	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Anthracene	GC/MS	0.1	mg/kg	N	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Fluoranthene	GC/MS	0.1	mg/kg	N	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Pyrene	GC/MS	0.1	mg/kg	N	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Benzo(a)Anthracene	GC/MS	0.1	mg/kg	N	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Chrysene	GC/MS	0.1	mg/kg	N	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Benzo(b/k)Fluoranthene	GC/MS	0.1	mg/kg	N	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Benzo(a)Pyrene	GC/MS	0.1	mg/kg	N	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Indeno(123-cd)Pyrene	GC/MS	0.1	mg/kg	N	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Dibenzo(ah)Anthracene	GC/MS	0.1	mg/kg	N	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Benzo(ghi)Perylene	GC/MS	0.1	mg/kg	N	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Coronene	GC/MS	0.1	mg/kg	N	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Polyaromatic Hydrocarbons (Total)	GC/MS	0.1	mg/kg	N	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1

<b>SAL Reference:</b> 605011 <b>Project Site:</b> MPS Decommissioning <b>Customer Reference:</b> SBS002  <b>Bulk Product</b> Analysed as Bulk Product <b>PCB EC7</b>											
<b>SAL Reference</b>				<b>605011 001</b>	<b>605011 002</b>	<b>605011 003</b>	<b>605011 004</b>	<b>605011 005</b>	<b>605011 006</b>	<b>605011 007</b>	
<b>Customer Sample Reference</b>				<b>MPS11B (601175/002)</b>	<b>MPS12A (601175/003)</b>	<b>MPS12B (601175/004)</b>	<b>MPS13A (601175/005)</b>	<b>MPS13B (601175/006)</b>	<b>MPS14A (601175/007)</b>	<b>MPS14B (601175/008)</b>	
<b>Test Sample</b>				<b>AR</b>	<b>AR</b>	<b>AR</b>	<b>AR</b>	<b>AR</b>	<b>AR</b>	<b>AR</b>	
<b>Date Sampled</b>				<b>15-SEP-2016</b>	<b>15-SEP-2016</b>	<b>15-SEP-2016</b>	<b>15-SEP-2016</b>	<b>15-SEP-2016</b>	<b>15-SEP-2016</b>	<b>15-SEP-2016</b>	
<b>Determinand</b>	<b>Method</b>	<b>LOD</b>	<b>Units</b>	<b>Symbol</b>							
Polychlorinated biphenyl BZ#28	GC/MS (HR)	0.5	µg/kg	N	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Polychlorinated biphenyl BZ#52	GC/MS (HR)	0.5	µg/kg	N	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Polychlorinated biphenyl BZ#101	GC/MS (SIR)	0.5	µg/kg	N	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Polychlorinated biphenyl BZ#118	GC/MS (SIR)	0.5	µg/kg	N	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Polychlorinated biphenyl BZ#138	GC/MS (SIR)	0.5	µg/kg	N	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Polychlorinated biphenyl BZ#153	GC/MS (SIR)	0.5	µg/kg	N	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Polychlorinated biphenyl BZ#180	GC/MS (HR)	0.5	µg/kg	N	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5

SAL Reference: 605011																	
Project Site: MPS Decommissioning																	
Customer Reference: SBS002																	
Bulk Product		Analysed as Bulk Product															
Metals																	
SAL Reference				605011 001		605011 002		605011 003		605011 004		605011 005		605011 006		605011 007	
Customer Sample Reference				MPS11B (601175/002)		MPS12A (601175/003)		MPS12B (601175/004)		MPS13A (601175/005)		MPS13B (601175/006)		MPS14A (601175/007)		MPS14B (601175/008)	
Test Sample				A40		A40		A40		A40		A40		A40		A40	
Date Sampled				15-SEP-2016		15-SEP-2016		15-SEP-2016		15-SEP-2016		15-SEP-2016		15-SEP-2016		15-SEP-2016	
Determinand		Method	LOD	Units	Symbol												
Aluminium		ICP/OES	1	mg/kg	N	4600	5300	5800	3100	5600	6800	5700					
Antimony		ICP/OES	10	mg/kg	N	<10	<10	<10	<10	<10	<10	<10					
Barium		ICP/OES	1	mg/kg	N	40	43	45	180	78	60	45					
Arsenic		ICP/OES	1	mg/kg	N	9	15	17	13	19	27	23					
Cadmium		ICP/OES	1	mg/kg	N	<1	<1	<1	<1	<1	<1	<1					
Calcium		ICP/OES	1	mg/kg	N	290000	340000	330000	220000	330000	380000	290000					
Chromium		ICP/OES	1	mg/kg	N	17	19	19	31	24	25	20					
Cobalt		ICP/OES	10	mg/kg	N	<10	<10	<10	<10	<10	<10	<10					
Copper		ICP/OES	1	mg/kg	N	12	40	25	92	42	14	8					
Lead		ICP/OES	1	mg/kg	N	4	12	6	25	41	12	6					
Manganese		ICP/OES	1	mg/kg	N	97	82	74	150	160	110	78					
Mercury		ICP/OES	1	mg/kg	N	1	2	1	<1	1	<1	2					
Nickel		ICP/OES	1	mg/kg	N	9	10	8	28	11	12	7					
Selenium		ICP/OES	10	mg/kg	N	<10	<10	<10	<10	<10	<10	<10					
Silver		ICP/OES	1	mg/kg	N	2	2	2	1	<1	<1	<1					
Thallium		ICP/OES	10	mg/kg	N	<10	<10	<10	<10	<10	<10	<10					
Tin		ICP/OES	2	mg/kg	N	<2	2	<2	5	6	<2	<2					
Vanadium		ICP/OES	10	mg/kg	N	12	16	15	22	21	32	20					
Zinc		ICP/OES	1	mg/kg	N	15	76	33	220	77	60	16					

<div><div>SAL Reference: 605011</div><div>Project Site: MPS Decommissioning</div><div>Customer Reference: SBS002</div></div> <div><div>Bulk Product</div><div>Analysed as Bulk Product</div></div> <div>Metals</div>															
SAL Reference		605011 001		605011 002		605011 003		605011 004		605011 005		605011 006		605011 007	
Customer Sample Reference		MPS11B (601175/002)		MPS12A (601175/003)		MPS12B (601175/004)		MPS13A (601175/005)		MPS13B (601175/006)		MPS14A (601175/007)		MPS14B (601175/008)	
Test Sample		AR		AR		AR		AR		AR		AR		AR	
Date Sampled		15-SEP-2016		15-SEP-2016		15-SEP-2016		15-SEP-2016		15-SEP-2016		15-SEP-2016		15-SEP-2016	
Determinand		Method	LOD	Units	Symbol										
Yttrium		ICP/OES	5	mg/kg	N	<5	<5	<5	<5	<5	<5	<5	<5	<5	

<div>SAL Reference: 605011 Project Site: MPS Decommissioning Customer Reference: SBS002</div> <div>Bulk Product Miscellaneous</div> <div>Analysed as Bulk Product</div>												
SAL Reference				605011 001	605011 002	605011 003	605011 004	605011 005	605011 006	605011 007		
Customer Sample Reference				MPS11B (601175/002)	MPS12A (601175/003)	MPS12B (601175/004)	MPS13A (601175/005)	MPS13B (601175/006)	MPS14A (601175/007)	MPS14B (601175/008)		
Test Sample				AR	AR	AR	AR	AR	AR	AR		
Date Sampled				15-SEP-2016	15-SEP-2016	15-SEP-2016	15-SEP-2016	15-SEP-2016	15-SEP-2016	15-SEP-2016		
Determinand	Method	LOD	Units	Symbol								
Cyanide (Total)	Colorimetry	1	mg/kg	N	<1	<1	<1	<1	<1	<1	<1	
Asbestos Bulk ID	PLM		SU	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	

## Index to symbols used in 605011-1

Value	Description
AR	As Received
10:1	Leachate to BS EN 12457-2 (10:1)
10:1 S	Data for BS EN 12457-2 (10:1)

A40	Assisted dried < 40C
N.D.	Not Detected
110	LOD raised due to low internal standard recovery.
100	LOD determined by sample aliquot used for analysis
13	Results have been blank corrected.
S	Analysis was subcontracted
U	Analysis is UKAS accredited
N	Analysis is not UKAS accredited

## Notes

Asbestos ID performed at REC Asbestos
Samples submitted for GC/MS (Headspace) analysis were submitted in inappropriate containers. It is possible therefore that the results provided may be compromised.



Hazardous Property/Determinand	Test/Assessment Method	Result %	Worst Case Compound	% Worst Case Compound	Hazard Statement	Hazardous Property	Threshold %	Conclusion
Arsenic	ICP/OES	0.0009	diasenic trioxide		H350	HP7	0.1	Not Hazardous
					H300	HP6	0.25	Not Hazardous
					H314	HP8	1	Not Hazardous
					H400	HP14	0,1	Not Hazardous
	contact with acid	no gas evolved			H410	HP12		Not Hazardous
Cadmium	ICP/OES	<0.001	cadmium carbonate	<0.001	H332	HP6	22.5	Not Hazardous
					H312	HP6	0.25	
					H302	HP6	0.25	
					H400	HP14	0.1	Not Hazardous
					H410	HP14	0.1	Not Hazardous
Chromium	ICP/OES	0.0017	chromates	0.005355	H350	HP11	0.1	Not Hazardous
					H317			
					H416			
Mercury	ICP/OES	<0.0001		<0.0001				not detected -excluded
Lead	ICP/OES	0.0004	lead sulphate	0.0004	H360	HP10	0.10%	Not Hazardous
					H332	HP6		Not Hazardous
					H302	HP6		Not Hazardous
					H373	HP5		Not Hazardous
					H400	HP14		Not Hazardous
					H410	HP14		Not Hazardous
					H350	HP7		Not Hazardous
								not detected -excluded
Selenium	ICP/OES	<0.001		<0.001				
Copper	ICP/OES	0.02	copper oxide	0.025	H302	HP6	0.1	Not Hazardous
					H400	HP14		



SAL Ref: 605011 001

Client Reference: Demolition Material MPS decommissioning

**HAZARDOUS PROPERTY ASSESSMENT**  
Waste (England and Wales) Regulations 2011

Date of Assessment 14th October 2016

Hazardous Property/Determinand	Test/Assessment Method	Result %	Worst Case Compound	% Worst Case Compound	Hazard Statement	Hazardous Property	Threshold %	Conclusion
Nickel	ICP/OES	0.0009	nickel carbonate	0.0018	H410	HP14	0.1	Not Hazardous
					H350	HP7	0.1	Not Hazardous
					H341	HP11		Not Hazardous
					H360	HP10	0.3	Not Hazardous
					H372	HP5	1	Not Hazardous
					H332	HP6		Not Hazardous
					H302	HP6		Not Hazardous
					H315	HP4	20	Not Hazardous
					H334	HP13		Not Hazardous
					H317	HP13		Not Hazardous
					H319	HP4	20	Not Hazardous
					H400	HP14	0.1	Not Hazardous
					H410	HP14	0.1	Not Hazardous
Zinc	ICP/OES	0.0015	zinc oxide	0.00186	H400	HP14	0.1	Not Hazardous
					H410	HP14	0.1	Not Hazardous
pH		12.2		<11.5		HP4/HP8		Not Hazardous

SAL Ref: 605011 001

Client Reference: Demolition Material MPS decommissioning

**HAZARDOUS PROPERTY ASSESSMENT**  
**Waste (England and Wales) Regulations 2011**

Date of Assessment 14th October 2016

Hazardous Property/Determinand	Test/Assessment Method	Result %	Worst Case Compound	% Worst Case Compound	Hazard Statement	Hazardous Property	Threshold %	Conclusion
Organic Compounds								
Total Petroleum Hydrocarbons		5.10%				HP5	10	Not Hazardous
						HP7	0.1	Hazardous
						HP11	0.1	Hazardous
						HP10	3	Hazardous
						HP14	2.5	Hazardous
Overall Conclusion								<b>HAZARDOUS</b>
EWC Code								<b>17-09-03* MH</b>

SAL Ref: 605011 001

Client Reference: Demolition Material MPS decommissioning

**HAZARDOUS PROPERTY ASSESSMENT**  
**Waste (England and Wales) Regulations 2011**

Date of Assessment 14th October 2016

Hazardous Property/Determinand	Test/Assessment Method	Result %	Worst Case Compound	% Worst Case Compound	Hazard Statement	Hazardous Property	Threshold %	Conclusion
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Assessment is based on SAL Report # 605011 which is included .

Risk Phrases used in this assessment are based on EU 1277 2008

The conclusions in this assessment are based on guidance taken from WM3 1st Edition 2015.

The terms “Hazardous” and “Not Hazardous” are used in the context of these Regulations. Further testing may be required if classification under the Waste Acceptance Criteria (Landfill Regulations 2000/EU Directive 99/3/EC as amended) is intended.

The term “Not Hazardous” does not imply that significant possibility of significant harm to human health or the environment is not present.

Assessment Prepared by W A Cohen  
[bcohen@salltd.co.uk](mailto:bcohen@salltd.co.uk)

Hazardous Property/Determinand	Test/Assessment Method	Result %	Worst Case Compound	% Worst Case Compound	Hazard Statement	Hazardous Property	Threshold %	Conclusion
Arsenic	ICP/OES	0.0015	diasenic trioxide		H350	HP7	0.1	Not Hazardous
					H300	HP6	0.25	Not Hazardous
					H314	HP8	1	Not Hazardous
					H400	HP14	0,1	Not Hazardous
	contact with acid	no gas evolved			H410	HP12		Not Hazardous
Cadmium	ICP/OES	<0.001	cadmium carbonate	<0.001	H332	HP6	22.5	Not Hazardous
					H312	HP6	0.25	
					H302	HP6	0.25	
					H400	HP14	0.1	Not Hazardous
					H410	HP14	0.1	Not Hazardous
Chromium	ICP/OES	0.0019	chromates	0.005985	H350	HP11	0.1	Not Hazardous
					H317			
					H416			
Mercury	ICP/OES	<0.0001		<0.0001				not detected -excluded
Lead	ICP/OES	0.0012	lead sulphate	0.0012	H360	HP10		Not Hazardous
					H332	HP6		Not Hazardous
					H302	HP6		Not Hazardous
					H373	HP5		Not Hazardous
					H400	HP14	0.10%	Not Hazardous
					H410	HP14		Not Hazardous
					H350	HP7		Not Hazardous
Selenium	ICP/OES	<0.001		<0.001				not detected -excluded
Copper	ICP/OES	0.004	copper oxide	0.005	H302	HP6		
					H400	HP14	0.1	Not Hazardous

Hazardous Property/Determinand	Test/Assessment Method	Result %	Worst Case Compound	% Worst Case Compound	Hazard Statement	Hazardous Property	Threshold %	Conclusion
Nickel	ICP/OES	0.001	nickel carbonate	0.002	H410	HP14	0.1	Not Hazardous
					H350	HP7	0.1	Not Hazardous
					H341	HP11		Not Hazardous
					H360	HP10	0.3	Not Hazardous
					H372	HP5	1	Not Hazardous
					H332	HP6		Not Hazardous
					H302	HP6		Not Hazardous
					H315	HP4	20	Not Hazardous
					H334	HP13		Not Hazardous
					H317	HP13		Not Hazardous
					H319	HP4	20	Not Hazardous
					H400	HP14	0.1	Not Hazardous
					H410	HP14	0.1	Not Hazardous
Zinc	ICP/OES	0.0076	zinc oxide	0.009424	H400	HP14	0.1	Not Hazardous
					H410	HP14	0.1	Not Hazardous
pH		11.9		<11.5		HP4/HP8		Not Hazardous

SAL Ref: 605011 002

Client Reference: Demolition Material MPS decommissioning

**HAZARDOUS PROPERTY ASSESSMENT**  
**Waste (England and Wales) Regulations 2011**

Date of Assessment 14th October 2016

Hazardous Property/Determinand Organic Compounds	Test/Assessment Method	Result %	Worst Case Compound	% Worst Case Compound	Hazard Statement	Hazardous Property	Threshold %	Conclusion
Total Petroleum Hydrocarbons		3.7				HP5	10	Not Hazardous
						HP7	0.1	Hazardous
						HP11	0.1	Hazardous
						HP10	3	Hazardous
						HP14	2.5	Hazardous
Overall Conclusion EWC Code								<b>HAZARDOUS</b> <b>17-09-03* MH</b>

SAL Ref: 605011 002

Client Reference: Demolition Material MPS decommissioning

**HAZARDOUS PROPERTY ASSESSMENT**  
**Waste (England and Wales) Regulations 2011**

Date of Assessment 14th October 2016

Hazardous Property/Determinand	Test/Assessment Method	Result %	Worst Case Compound	% Worst Case Compound	Hazard Statement	Hazardous Property	Threshold %	Conclusion
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Assessment is based on SAL Report # 605011 which is included .

Risk Phrases used in this assessment are based on EU 1277 2008

The conclusions in this assessment are based on guidance taken from WM3 1st Edition 2015.

The terms “Hazardous” and “Not Hazardous” are used in the context of these Regulations. Further testing may be required if classification under the Waste Acceptance Criteria (Landfill Regulations 2000/EU Directive 99/3/EC as amended) is intended.

The term “Not Hazardous” does not imply that significant possibility of significant harm to human health or the environment is not present.

Assessment Prepared by W A Cohen

Hazardous Property/Determinand	Test/Assessment Method	Result %	Worst Case Compound	% Worst Case Compound	Hazard Statement	Hazardous Property	Threshold %	Conclusion
Arsenic	ICP/OES	0.0017	diasenic trioxide		H350	HP7	0.1	Not Hazardous
					H300	HP6	0.25	Not Hazardous
					H314	HP8	1	Not Hazardous
					H400	HP14	0,1	Not Hazardous
	contact with acid	no gas evolved			H410	HP12		Not Hazardous
Cadmium	ICP/OES	<0.001	cadmium carbonate	<0.001	H332	HP6	22.5	Not Hazardous
					H312	HP6	0.25	
					H302	HP6	0.25	
					H400	HP14	0.1	Not Hazardous
					H410	HP14	0.1	Not Hazardous
Chromium	ICP/OES	0.0019	chromates	0.005985	H350	HP11	0.1	Not Hazardous
					H317			
					H416			
Mercury	ICP/OES	<0.0001		<0.0001				not detected -excluded
Lead	ICP/OES	0.0006	lead sulphate	0.0004	H360	HP10		Not Hazardous
					H332	HP6		Not Hazardous
					H302	HP6		Not Hazardous
					H373	HP5		Not Hazardous
					H400	HP14	0.10%	Not Hazardous
					H410	HP14		Not Hazardous
					H350	HP7		Not Hazardous
Selenium	ICP/OES	<0.001		<0.001				not detected -excluded
Copper	ICP/OES	0.0025	copper oxide	0.003125	H302	HP6		
					H400	HP14	0.1	Not Hazardous



SAL Ref: 605011 003

Client Reference: Demolition Material MPS decommissioning

**HAZARDOUS PROPERTY ASSESSMENT**  
Waste (England and Wales) Regulations 2011

Date of Assessment 14th October 2016

Hazardous Property/Determinand	Test/Assessment Method	Result %	Worst Case Compound	% Worst Case Compound	Hazard Statement	Hazardous Property	Threshold %	Conclusion
Nickel	ICP/OES	0.0008	nickel carbonate	0.0016	H410	HP14	0.1	Not Hazardous
					H350	HP7	0.1	Not Hazardous
					H341	HP11		Not Hazardous
					H360	HP10	0.3	Not Hazardous
					H372	HP5	1	Not Hazardous
					H332	HP6		Not Hazardous
					H302	HP6		Not Hazardous
					H315	HP4	20	Not Hazardous
					H334	HP13		Not Hazardous
					H317	HP13		Not Hazardous
					H319	HP4	20	Not Hazardous
					H400	HP14	0.1	Not Hazardous
					H410	HP14	0.1	Not Hazardous
Zinc	ICP/OES	0.0033	zinc oxide	0.004092	H400	HP14	0.1	Not Hazardous
					H410	HP14	0.1	Not Hazardous
pH		12.2		<11.5		HP4/HP8		Not Hazardous

SAL Ref: 605011 003

Client Reference: Demolition Material MPS decommissioning

**HAZARDOUS PROPERTY ASSESSMENT**  
**Waste (England and Wales) Regulations 2011**

Date of Assessment 14th October 2016

Hazardous Property/Determinand	Test/Assessment Method	Result %	Worst Case Compound	% Worst Case Compound	Hazard Statement	Hazardous Property	Threshold %	Conclusion
Organic Compounds								
Total Petroleum Hydrocarbons		5.70%				HP5	10	Not Hazardous
						HP7	0.1	Hazardous
						HP11	0.1	Hazardous
						HP10	3	Hazardous
						HP14	2.5	Hazardous
Overall Conclusion								<b>HAZARDOUS</b>
EWC Code								<b>17-09-03* MH</b>

SAL Ref: 605011 003

Client Reference: Demolition Material MPS decommissioning

**HAZARDOUS PROPERTY ASSESSMENT**  
**Waste (England and Wales) Regulations 2011**

Date of Assessment 14th October 2016

Hazardous Property/Determinand	Test/Assessment Method	Result %	Worst Case Compound	% Worst Case Compound	Hazard Statement	Hazardous Property	Threshold %	Conclusion
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Assessment is based on SAL Report # 605011 which is included .

Risk Phrases used in this assessment are based on EU 1277 2008

The conclusions in this assessment are based on guidance taken from WM3 1st edition 2015.

The terms “Hazardous” and “Not Hazardous” are used in the context of these Regulations. Further testing may be required if classification under the Waste Acceptance Criteria (Landfill Regulations 2000/EU Directive 99/3/EC as amended) is intended.

The term “Not Hazardous” does not imply that significant possibility of significant harm to human health or the environment is not present.

Assessment Prepared by W A Cohen

SAL Ref: 605011 004

Client Reference: Demolition Material MPS decommissioning

**HAZARDOUS PROPERTY ASSESSMENT**  
Waste (England and Wales) Regulations 2011

Date of Assessment 14th October 2016

Hazardous Property/Determinand	Test/Assessment Method	Result %	Worst Case Compound	% Worst Case Compound	Hazard Statement	Hazardous Property	Threshold %	Conclusion
Arsenic	ICP/OES	0.0017	diasenic trioxide		H350	HP7	0.1	Not Hazardous
					H300	HP6	0.25	Not Hazardous
					H314	HP8	1	Not Hazardous
					H400	HP14	0,1	Not Hazardous
	contact with acid	no gas evolved			H410	HP12		Not Hazardous
Cadmium	ICP/OES	<0.001	cadmium carbonate	<0.001	H332	HP6	22.5	Not Hazardous
					H312	HP6	0.25	
					H302	HP6	0.25	
					H400	HP14	0.1	Not Hazardous
					H410	HP14	0.1	Not Hazardous
Chromium	ICP/OES	0.0019	chromates	0.005985	H350	HP11	0.1	Not Hazardous
					H317			
					H416			
Mercury	ICP/OES	<0.0001		<0.0001				not detected -excluded
Lead	ICP/OES	0.0006	lead sulphate	0.0004	H360	HP10	0.10%	Not Hazardous
					H332	HP6		Not Hazardous
					H302	HP6		Not Hazardous
					H373	HP5		Not Hazardous
					H400	HP14		Not Hazardous
					H410	HP14		Not Hazardous
					H350	HP7		Not Hazardous
Selenium	ICP/OES	<0.001		<0.001				not detected -excluded
Copper	ICP/OES	0.0025	copper oxide	0.003125	H302	HP6	0.1	Not Hazardous
					H400	HP14		

SAL Ref: 605011 004

Client Reference: Demolition Material MPS decommissioning

**HAZARDOUS PROPERTY ASSESSMENT**  
Waste (England and Wales) Regulations 2011

Date of Assessment 14th October 2016

Hazardous Property/Determinand	Test/Assessment Method	Result %	Worst Case Compound	% Worst Case Compound	Hazard Statement	Hazardous Property	Threshold %	Conclusion
Nickel	ICP/OES	0.0008	nickel carbonate	0.0016	H410	HP14	0.1	Not Hazardous
					H350	HP7	0.1	Not Hazardous
					H341	HP11		Not Hazardous
					H360	HP10	0.3	Not Hazardous
					H372	HP5	1	Not Hazardous
					H332	HP6		Not Hazardous
					H302	HP6		Not Hazardous
					H315	HP4	20	Not Hazardous
					H334	HP13		Not Hazardous
					H317	HP13		Not Hazardous
					H319	HP4	20	Not Hazardous
					H400	HP14	0.1	Not Hazardous
					H410	HP14	0.1	Not Hazardous
Zinc	ICP/OES	0.0033	zinc oxide	0.004092	H400	HP14	0.1	Not Hazardous
					H410	HP14	0.1	Not Hazrdous
pH		11.7		<11.5		HP4/HP8		Not Hazardous

SAL Ref: 605011 004

Client Reference: Demolition Material MPS decommissioning

**HAZARDOUS PROPERTY ASSESSMENT**  
**Waste (England and Wales) Regulations 2011**

Date of Assessment 14th October 2016

Hazardous Property/Determinand	Test/Assessment Method	Result %	Worst Case Compound	% Worst Case Compound	Hazard Statement	Hazardous Property	Threshold %	Conclusion
Organic Compounds								
Total Petroleum								
Hydrocarbons		2.00%				HP5	10	Not Hazardous
						HP7	0.1	Hazardous
						HP11	0.1	Hazardous
						HP10	3	Not Hazardous
						HP14	2.5	Not Hazardous
Overall Conclusion								<b>HAZARDOUS</b>
EWC Code								<b>17-09-03* MH</b>

SAL Ref: 605011 004

Client Reference: Demolition Material MPS decommissioning

**HAZARDOUS PROPERTY ASSESSMENT**  
**Waste (England and Wales) Regulations 2011**

Date of Assessment 14th October 2016

Hazardous Property/Determinand	Test/Assessment Method	Result %	Worst Case Compound	% Worst Case Compound	Hazard Statement	Hazardous Property	Threshold %	Conclusion
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Assessment is based on SAL Report # 605011 which is included .

Risk Phrases used in this assessment are based on EU 1277 2008

The conclusions in this assessment are based on guidance taken from WM3 1st Edition 2015.

The terms “Hazardous” and “Not Hazardous” are used in the context of these Regulations. Further testing may be required if classification under the Waste Acceptance Criteria (Landfill Regulations 2000/EU Directive 99/3/EC as amended) is intended.

The term “Not Hazardous” does not imply that significant possibility of significant harm to human health or the environment is not present.

Assessment Prepared by W A Cohen

Hazardous Property/Determinand	Test/Assessment Method	Result %	Worst Case Compound	% Worst Case Compound	Hazard Statement	Hazardous Property	Threshold %	Conclusion
Arsenic	ICP/OES	0.0017	diasenic trioxide		H350	HP7	0.1	Not Hazardous
					H300	HP6	0.25	Not Hazardous
					H314	HP8	1	Not Hazardous
					H400	HP14	0,1	Not Hazardous
	contact with acid	no gas evolved			H410	HP12		Not Hazardous
Cadmium	ICP/OES	<0.001	cadmium carbonate	<0.001	H332	HP6	22.5	Not Hazardous
					H312	HP6	0.25	
					H302	HP6	0.25	
					H400	HP14	0.1	Not Hazardous
					H410	HP14	0.1	Not Hazardous
Chromium	ICP/OES	0.0019	chromates	0.005985	H350 H317 H416	HP11	0.1	Not Hazardous
Mercury	ICP/OES	<0.0001		<0.0001				not detected -excluded
Lead	ICP/OES	0.0006	lead sulphate	0.0004	H360	HP10		Not Hazardous
					H332	HP6		Not Hazardous
					H302	HP6		Not Hazardous
					H373	HP5		Not Hazardous
					H400	HP14	0.10%	Not Hazardous
					H410	HP14		Not Hazardous
					H350	HP7		Not Hazardous
Selenium	ICP/OES	<0.001		<0.001				not detected -excluded
Copper	ICP/OES	0.0025	copper oxide	0.003125	H302	HP6		
					H400	HP14	0.1	Not Hazardous



Hazardous Property/Determinand	Test/Assessment Method	Result %	Worst Case Compound	% Worst Case Compound	Hazard Statement	Hazardous Property	Threshold %	Conclusion
Nickel	ICP/OES	0.0008	nickel carbonate	0.0016	H410	HP14	0.1	Not Hazardous
					H350	HP7	0.1	Not Hazardous
					H341	HP11		Not Hazardous
					H360	HP10	0.3	Not Hazardous
					H372	HP5	1	Not Hazardous
					H332	HP6		Not Hazardous
					H302	HP6		Not Hazardous
					H315	HP4	20	Not Hazardous
					H334	HP13		Not Hazardous
					H317	HP13		Not Hazardous
					H319	HP4	20	Not Hazardous
					H400	HP14	0.1	Not Hazardous
					H410	HP14	0.1	Not Hazardous
Zinc	ICP/OES	0.0033	zinc oxide	0.004092	H400	HP14	0.1	Not Hazardous
					H410	HP14	0.1	Not Hazardous
pH		11.7		<11.5		HP4/HP8		Not Hazardous

SAL Ref: 605011 005

Client Reference: Demolition Material MPS decommissioning

**HAZARDOUS PROPERTY ASSESSMENT**  
**Waste (England and Wales) Regulations 2011**

Date of Assessment 14th October 2016

Hazardous Property/Determinand	Test/Assessment Method	Result %	Worst Case Compound	% Worst Case Compound	Hazard Statement	Hazardous Property	Threshold %	Conclusion
Organic Compounds								
Total Petroleum Hydrocarbons		1.40%				HP5	10	Not Hazardous
			Benzo a Pyrene	<0.1		HP7	0.1	Not Hazardous
			which is less than 0.01%			HP11	0.1	Not Hazardous
			of the TPH			HP10	3	Not Hazardous
			waste is not hazardous by HP7/11			HP14	2.5	Not Hazardous
Overall Conclusion								Not Hazardous
EWC Code								17-09-04 MN

SAL Ref: 605011 005

Client Reference: Demolition Material MPS decommissioning

**HAZARDOUS PROPERTY ASSESSMENT**  
**Waste (England and Wales) Regulations 2011**

Date of Assessment 14th October 2016

Hazardous Property/Determinand	Test/Assessment Method	Result %	Worst Case Compound	% Worst Case Compound	Hazard Statement	Hazardous Property	Threshold %	Conclusion
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Assessment is based on SAL Report # 605011 which is included .

Risk Phrases used in this assessment are based on EU 1277 2008

The conclusions in this assessment are based on guidance taken from WM3 1st Edition 2015.

The terms “Hazardous” and “Not Hazardous” are used in the context of these Regulations. Further testing may be required if classification under the Waste Acceptance Criteria (Landfill Regulations 2000/EU Directive 99/3/EC as amended) is intended.

The term “Not Hazardous” does not imply that significant possibility of significant harm to human health or the environment is not present.

Assessment Prepared by W A Cohen  
[bcohen@salltd.co.uk](mailto:bcohen@salltd.co.uk)

Hazardous Property/Determinand	Test/Assessment Method	Result %	Worst Case Compound	% Worst Case Compound	Hazard Statement	Hazardous Property	Threshold %	Conclusion
Arsenic	ICP/OES	0.0027	diasenic trioxide		H350	HP7	0.1	Not Hazardous
					H300	HP6	0.25	Not Hazardous
					H314	HP8	1	Not Hazardous
					H400	HP14	0,1	Not Hazardous
	contact with acid	no gas evolved			H410	HP12		Not Hazardous
Cadmium	ICP/OES	<0.001	cadmium carbonate	<0.001	H332	HP6	22.5	Not Hazardous
					H312	HP6	0.25	
					H302	HP6	0.25	
					H400	HP14	0.1	Not Hazardous
					H410	HP14	0.1	Not Hazardous
Chromium	ICP/OES	0.0025	chromates	0.007875	H350 H317 H416	HP11	0.1	Not Hazardous
Mercury	ICP/OES	<0.0001		<0.0001				not detected -excluded
Lead	ICP/OES	0.0012	lead sulphate	0.0004	H360	HP10		Not Hazardous
					H332	HP6		Not Hazardous
					H302	HP6		Not Hazardous
					H373	HP5		Not Hazardous
					H400	HP14	0.10%	Not Hazardous
					H410	HP14		Not Hazardous
					H350	HP7		Not Hazardous
Selenium	ICP/OES	<0.001		<0.001				not detected -excluded
Copper	ICP/OES	0.0012	copper oxide	0.0015	H302	HP6		
					H400	HP14	0.1	Not Hazardous

Hazardous Property/Determinand	Test/Assessment Method	Result %	Worst Case Compound	% Worst Case Compound	Hazard Statement	Hazardous Property	Threshold %	Conclusion
Nickel	ICP/OES	0.0012	nickel carbonate	0.0024	H410	HP14	0.1	Not Hazardous
					H350	HP7	0.1	Not Hazardous
					H341	HP11		Not Hazardous
					H360	HP10	0.3	Not Hazardous
					H372	HP5	1	Not Hazardous
					H332	HP6		Not Hazardous
					H302	HP6		Not Hazardous
					H315	HP4	20	Not Hazardous
					H334	HP13		Not Hazardous
					H317	HP13		Not Hazardous
					H319	HP4	20	Not Hazardous
					H400	HP14	0.1	Not Hazardous
					H410	HP14	0.1	Not Hazardous
Zinc	ICP/OES	0.006	zinc oxide	0.00744	H400	HP14	0.1	Not Hazardous
					H410	HP14	0.1	Not Hazardous
pH		9.9		<11.5		HP4/HP8		Not Hazardous

SAL Ref: 605011 006

Client Reference: Demolition Material MPS decommissioning

**HAZARDOUS PROPERTY ASSESSMENT**  
**Waste (England and Wales) Regulations 2011**

Date of Assessment 14th October 2016

Hazardous Property/Determinand Organic Compounds	Test/Assessment Method	Result %	Worst Case Compound	% Worst Case Compound	Hazard Statement	Hazardous Property	Threshold %	Conclusion
Total Petroleum Hydrocarbons		0.34%				HP5	10	Not Hazardous
			Benzo a Pyrene	<0.1		HP7	0.1	Not Hazardous
			which is less than 0.01%			HP11	0.1	Not Hazardous
			of the TPH ie 0.34mg/kg			HP10	3	Not Hazardous
			waste is not hazardous by HP7/11			HP14	2.5	Not Hazardous
Overall Conclusion EWC Code								Not Hazardous 17-09-04 MN

SAL Ref: 605011 006

Client Reference: Demolition Material MPS decommissioning

**HAZARDOUS PROPERTY ASSESSMENT**  
**Waste (England and Wales) Regulations 2011**

Date of Assessment 14th October 2016

Hazardous Property/Determinand	Test/Assessment Method	Result %	Worst Case Compound	% Worst Case Compound	Hazard Statement	Hazardous Property	Threshold %	Conclusion
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Assessment is based on SAL Report # 605011 which is included .

Risk Phrases used in this assessment are based on EU 1277 2008

The conclusions in this assessment are based on guidance taken from WM3 1st Edition 2015.

The terms “Hazardous” and “Not Hazardous” are used in the context of these Regulations. Further testing may be required if classification under the Waste Acceptance Criteria (Landfill Regulations 2000/EU Directive 99/3/EC as amended) is intended.

The term “Not Hazardous” does not imply that significant possibility of significant harm to human health or the environment is not present.

Assessment Prepared by W A Cohen

Hazardous Property/Determinand	Test/Assessment Method	Result %	Worst Case Compound	% Worst Case Compound	Hazard Statement	Hazardous Property	Threshold %	Conclusion
Arsenic	ICP/OES	0.0023	diasenic trioxide		H350	HP7	0.1	Not Hazardous
					H300	HP6	0.25	Not Hazardous
					H314	HP8	1	Not Hazardous
					H400	HP14	0,1	Not Hazardous
	contact with acid	no gas evolved			H410	HP12		Not Hazardous
Cadmium	ICP/OES	<0.001	cadmium carbonate	<0.001	H332	HP6	22.5	Not Hazardous
					H312	HP6	0.25	
					H302	HP6	0.25	
					H400	HP14	0.1	Not Hazardous
					H410	HP14	0.1	Not Hazardous
Chromium	ICP/OES	0.002	chromates	0.0063	H350	HP11	0.1	Not Hazardous
					H317			
					H416			
Mercury	ICP/OES	<0.0001		<0.0001				not detected -excluded
Lead	ICP/OES	0.0012	lead sulphate	0.0004	H360	HP10		Not Hazardous
					H332	HP6		Not Hazardous
					H302	HP6		Not Hazardous
					H373	HP5		Not Hazardous
					H400	HP14	0.10%	Not Hazardous
					H410	HP14		Not Hazardous
					H350	HP7		Not Hazardous
Selenium	ICP/OES	<0.001		<0.001				not detected -excluded
Copper	ICP/OES	0.0006	copper oxide	0.00075	H302	HP6		
					H400	HP14	0.1	Not Hazardous



Hazardous Property/Determinand	Test/Assessment Method	Result %	Worst Case Compound	% Worst Case Compound	Hazard Statement	Hazardous Property	Threshold %	Conclusion
Nickel	ICP/OES	0.0007	nickel carbonate	0.0014	H410	HP14	0.1	Not Hazardous
					H350	HP7	0.1	Not Hazardous
					H341	HP11		Not Hazardous
					H360	HP10	0.3	Not Hazardous
					H372	HP5	1	Not Hazardous
					H332	HP6		Not Hazardous
					H302	HP6		Not Hazardous
					H315	HP4	20	Not Hazardous
					H334	HP13		Not Hazardous
					H317	HP13		Not Hazardous
					H319	HP4	20	Not Hazardous
					H400	HP14	0.1	Not Hazardous
					H410	HP14	0.1	Not Hazardous
Zinc	ICP/OES	16	zinc oxide	19.84	H400	HP14	0.1	Not Hazardous
					H410	HP14	0.1	Not Hazardous
pH		9.9		<11.5		HP4/HP8		Not Hazardous

SAL Ref: 605011 007

Client Reference: Demolition Material MPS decommissioning

**HAZARDOUS PROPERTY ASSESSMENT**  
**Waste (England and Wales) Regulations 2011**

Date of Assessment 14th October 2016

Hazardous Property/Determinand	Test/Assessment Method	Result %	Worst Case Compound	% Worst Case Compound	Hazard Statement	Hazardous Property	Threshold %	Conclusion
Organic Compounds								
Total Petroleum Hydrocarbons		0.00070		0.00070		HP5	10	Not Hazardous
						HP7	0.1	Not Hazardous
						HP11	0.1	Not Hazardous
						HP10	3	Not Hazardous
						HP14	2.5	Not Hazardous
Overall Conclusion								Not Hazardous
EWC Code								17-09-04 MN

SAL Ref: 605011 007

Client Reference: Demolition Material MPS decommissioning

**HAZARDOUS PROPERTY ASSESSMENT**  
**Waste (England and Wales) Regulations 2011**

Date of Assessment 14th October 2016

Hazardous Property/Determinand	Test/Assessment Method	Result %	Worst Case Compound	% Worst Case Compound	Hazard Statement	Hazardous Property	Threshold %	Conclusion
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Assessment is based on SAL Report # 605011 which is included .

Risk Phrases used in this assessment are based on EU 1277 2008

The conclusions in this assessment are based on guidance taken from WM3 1st Edition 2015.

The terms “Hazardous” and “Not Hazardous” are used in the context of these Regulations. Further testing may be required if classification under the Waste Acceptance Criteria (Landfill Regulations 2000/EU Directive 99/3/EC as amended) is intended.

The term “Not Hazardous” does not imply that significant possibility of significant harm to human health or the environment is not present.

Assessment Prepared by W A Cohen

# Scientific Analysis Laboratories Ltd

## Certificate of Analysis

**Report Number:** 605856-1

**Date of Report:** 21-Oct-2016

**Customer:** ADI Associates Ltd  
Kappara Business Centre  
113 Triq Birkirkara  
San Gwann SGN4197  
Malta  
VAT Number: MT18486514

**Customer Contact:** M/S Krista Farrugia

**Customer Job Reference:** SBS002

**Customer Site Reference:** MPS Decommissioning

**Date Job Received at SAL:** 09-Oct-2016

**Date Analysis Started:** 10-Oct-2016

**Date Analysis Completed:** 21-Oct-2016

The results reported relate to samples received in the laboratory and may not be representative of a whole batch.

Opinions and interpretations expressed herein are outside the scope of UKAS accreditation

This report should not be reproduced except in full without the written approval of the laboratory

Tests covered by this certificate were conducted in accordance with SAL SOPs

All results have been reviewed in accordance with Section 25 of the SAL Quality Manual



Report checked  
and authorised by :  
Muhammad Waqas  
Project Manager

Issued by :  
Muhammad Waqas  
Project Manager



# Waste Acceptance Criteria

Customer Sample Reference : MPS15 Soil under evaporator

SAL Sample Reference : 605856 001

Project Site : MPS Decommissioning

Customer Reference : SBS002

Bulk Product					Result	Inert Waste Landfill	Stable non reactive	Hazardous Waste Landfill
Determinand	Technique	LOD	Units	Symbol				
Acid Neutralising Capacity (pH 4)	Titration	2	Mol/kg	N	<2			
Acid Neutralising Capacity (pH 7)	Titration (pH 7)	2	Mol/kg	N	<2			
BTEX (Sum)	Calc	0.0040	mg/kg	N	<b>0.017</b>	6.0		
Loss on Ignition	Grav	0.1	%	N	<b>12</b>			<b>10.0</b>
Moisture	Grav	0.1	%	N	<b>6.8</b>			
Total Organic Carbon	OX/IR	0.1	%	N	<b>3.0</b>	<b>3.0</b>	5.0	6.0
Total Petroleum Hydrocarbons C10-C40 (Sum)	Calc	1	mg/kg	N	<sup>(13)</sup> <b>1200</b>	<b>500.0</b>		
PAH (Sum)	Calc	1.6	mg/kg	N	<b>3.9</b>	100.0		
PCB EC7 (Sum)	Calc	0.0035	mg/kg	N	<b>0.13</b>	1.0		
pH	Probe			N	<b>8.1</b>		> 6.0	

Data for BS EN 12457-2 (10:1)					Result	Inert Waste Landfill	Stable non reactive	Hazardous Waste Landfill
Determinand	Technique	LOD	Units	Symbol				
Antimony	Calc WAC ICP/MS	0.010	mg/kg	N	<0.010	0.06	0.7	5.0
Arsenic	Calc WAC ICP/MS	0.0020	mg/kg	N	<b>0.0038</b>	0.5	2.0	25.0
Barium	Calc WAC ICP/MS	0.010	mg/kg	N	<b>0.27</b>	20.0	100.0	300.0
Cadmium	Calc WAC ICP/MS	0.00020	mg/kg	N	<b>0.00093</b>	0.04	1.0	5.0
Chromium	Calc WAC ICP/MS	0.010	mg/kg	N	<b>0.19</b>	0.5	10.0	70.0
Copper	Calc WAC ICP/MS	0.0050	mg/kg	N	<b>0.25</b>	2.0	50.0	100.0
Lead	Calc WAC ICP/MS	0.0030	mg/kg	N	<b>0.0047</b>	0.5	10.0	50.0
Mercury	Calc WAC ICP/MS	0.00050	mg/kg	N	<0.00050	0.01	0.2	2.0
Molybdenum	Calc WAC ICP/MS	0.010	mg/kg	N	<b>1.0</b>	<b>0.5</b>	10.0	30.0
Nickel	Calc WAC ICP/MS	0.010	mg/kg	N	<b>0.018</b>	0.4	10.0	40.0
Selenium	Calc WAC ICP/MS	0.0050	mg/kg	N	<0.0050	0.1	0.5	7.0
Zinc	Calc WAC ICP/MS	0.020	mg/kg	N	<b>0.18</b>	4.0	50.0	200.0
Chloride	Calc (W)	10	mg/kg	N	<b>4500</b>	<b>800.0</b>	15000.0	25000.0
Fluoride	Calc (W)	0.50	mg/kg	N	<0.50	10.0	150.0	500.0
Sulphate	Calc (W)	5	mg/kg	N	<b>15000</b>	<b>1000.0</b>	20000.0	50000.0
Phenols (Total-Mono)	Calc	1.0	mg/kg	N	<1.0	1.0		
Dissolved Organic Carbon	Calc	10	mg/kg	N	<b>110</b>	500.0	800.0	1000.0
Total Dissolved Solids	Calc WAC ICP/MS	1000	mg/kg	N	<b>18000</b>	<b>4000.0</b>	60000.0	100000.0

Following the recommendation from the Environment Agency (England and Wales)\*, the leachate preparation in this report has been carried out to BS EN 12457-2 : One Stage batch test at a liquid to solid ratio of 10 l/kg. This is also compliant with Schedule 10 of the Environmental Permitting Regulations 2010.

Note : This is the minimum amount of testing which is required.

Further testing may be required if :

- evidence of immediately leachable parameters becomes available.
- evidence to indicate that the sample could be classified as hazardous under H1-H14 of the Waste(England and Wales) Regulations 2011(as amended) becomes available.

Acceptance of waste at landfill is always at the discretion of the Landfill Operator.

\* Waste Sampling and Testing for Disposal at Landfill, EBPR1 11507B, Environment Agency (England and Wales) March 2013

<b>SAL Reference:</b> 605856 <b>Project Site:</b> MPS Decommissioning <b>Customer Reference:</b> SBS002  <b>Leachate to BS EN 12457-2 (10:1)</b> Analysed as Water <b>Waste Acceptance Criteria</b>					
<b>SAL Reference</b>				<b>605856 001</b>	
<b>Customer Sample Reference</b>				<b>MPS15 Soil under evaporator</b>	
<b>Test Sample</b>				<b>10:1</b>	
<b>Determinand</b>	<b>Method</b>	<b>LOD</b>	<b>Units</b>	<b>Symbol</b>	
Antimony (Dissolved)	ICP/MS (Filtered)	1	µg/l	U	<1
Arsenic (Dissolved)	ICP/MS (Filtered)	0.2	µg/l	U	<b>0.4</b>
Barium (Dissolved)	ICP/MS (Filtered)	1	µg/l	U	<b>27</b>
Cadmium (Dissolved)	ICP/MS (Filtered)	0.02	µg/l	U	<b>0.09</b>
Chromium (Dissolved)	ICP/MS (Filtered)	1	µg/l	U	<b>19</b>
Copper (Dissolved)	ICP/MS (Filtered)	0.5	µg/l	U	<b>25</b>
Lead (Dissolved)	ICP/MS (Filtered)	0.3	µg/l	U	<b>0.5</b>
Mercury (Dissolved)	ICP/MS (Filtered)	0.05	µg/l	U	<0.05
Molybdenum (Dissolved)	ICP/MS (Filtered)	1	µg/l	N	<b>100</b>
Nickel (Dissolved)	ICP/MS (Filtered)	1	µg/l	U	<b>2</b>
Selenium (Dissolved)	ICP/MS (Filtered)	0.5	µg/l	U	<0.5
Zinc (Dissolved)	ICP/MS (Filtered)	2	µg/l	U	<b>18</b>
Chloride	Discrete Analyser	1	mg/l	U	<b>450</b>
Fluoride	Discrete Analyser	0.05	mg/l	U	<0.05
Sulphate	Discrete Analyser	0.5	mg/l	U	<b>1500</b>
Phenols (Total-Mono)	Colorimetry	0.1	mg/l	U	<0.1
Dissolved Organic Carbon	OX/IR	1	mg/l	N	<b>11</b>
Total Dissolved Solids	Grav	100	mg/l	N	<b>1800</b>
Electrical Conductivity	Probe	10	µS/cm	N	<b>3100</b>
Volume	Vol	1	ml	U	-

<b>SAL Reference:</b> 605856 <b>Project Site:</b> MPS Decommissioning <b>Customer Reference:</b> SBS002  <b>Bulk Product</b> Analysed as Bulk Product <b>BTEX</b>					
<b>SAL Reference</b>				<b>605856 001</b>	
<b>Customer Sample Reference</b>				<b>MPS15 Soil under evaporator</b>	
<b>Test Sample</b>				<b>AR</b>	
<b>Determinand</b>	<b>Method</b>	<b>LOD</b>	<b>Units</b>	<b>Symbol</b>	
Benzene	GC/MS (Headspace)	1	µg/kg	N	<sup>(13)</sup> <1
Toluene	GC/MS (Headspace)	1	µg/kg	N	<b>17</b>
EthylBenzene	GC/MS (Headspace)	1	µg/kg	N	<1
Meta/Para-Xylene	GC/MS (Headspace)	1	µg/kg	N	<1
Ortho-Xylene	GC/MS (Headspace)	1	µg/kg	N	<1

<b>SAL Reference:</b> 605856 <b>Project Site:</b> MPS Decommissioning <b>Customer Reference:</b> SBS002  <b>Bulk Product</b> Analysed as Bulk Product <b>TPH</b>					
<b>SAL Reference</b>				<b>605856 001</b>	
<b>Customer Sample Reference</b>				<b>MPS15 Soil under evaporator</b>	
<b>Test Sample</b>				<b>AR</b>	
<b>Determinand</b>	<b>Method</b>	<b>LOD</b>	<b>Units</b>	<b>Symbol</b>	
Total Petroleum Hydrocarbons	GC/FID	1	mg/kg	N	<sup>(13)</sup> <b>1000</b>
Total Petroleum Hydrocarbons (C35-C40)	GC/FID	1	mg/kg	N	<sup>(13)</sup> <b>220</b>

<b>SAL Reference:</b> 605856 <b>Project Site:</b> MPS Decommissioning <b>Customer Reference:</b> SBS002  <b>Bulk Product</b> Analysed as Bulk Product <b>Polyaromatic Hydrocarbons (US EPA16) with Coronene</b>					
<b>SAL Reference</b>				<b>605856 001</b>	
<b>Customer Sample Reference</b>				<b>MPS15 Soil under evaporator</b>	
<b>Test Sample</b>				<b>AR</b>	
<b>Determinand</b>	<b>Method</b>	<b>LOD</b>	<b>Units</b>	<b>Symbol</b>	
Naphthalene	GC/MS	0.1	mg/kg	N	<0.1
Acenaphthylene	GC/MS	0.1	mg/kg	N	<0.1
Acenaphthene	GC/MS	0.1	mg/kg	N	<0.1
Fluorene	GC/MS	0.1	mg/kg	N	<0.1
Phenanthrene	GC/MS	0.1	mg/kg	N	<b>0.8</b>
Anthracene	GC/MS	0.1	mg/kg	N	<0.1
Fluoranthene	GC/MS	0.1	mg/kg	N	<b>1.2</b>
Pyrene	GC/MS	0.1	mg/kg	N	<b>0.8</b>
Benzo(a)Anthracene	GC/MS	0.1	mg/kg	N	<b>0.2</b>
Chrysene	GC/MS	0.1	mg/kg	N	<b>0.4</b>
Benzo(b/k)Fluoranthene	GC/MS	0.1	mg/kg	N	<b>0.4</b>
Benzo(a)Pyrene	GC/MS	0.1	mg/kg	N	<0.1
Indeno(123-cd)Pyrene	GC/MS	0.1	mg/kg	N	<0.1
Dibenzo(ah)Anthracene	GC/MS	0.1	mg/kg	N	<0.1
Benzo(ghi)Perylene	GC/MS	0.1	mg/kg	N	<b>0.1</b>
Coronene	GC/MS	0.1	mg/kg	N	<0.1
Polyaromatic Hydrocarbons (Total)	GC/MS	0.1	mg/kg	N	<b>3.9</b>

<b>SAL Reference:</b> 605856 <b>Project Site:</b> MPS Decommissioning <b>Customer Reference:</b> SBS002  <b>Bulk Product</b> Analysed as Bulk Product <b>PCB EC7</b>					
<b>SAL Reference</b>				<b>605856 001</b>	
<b>Customer Sample Reference</b>				<b>MPS15 Soil under evaporator</b>	
<b>Test Sample</b>				<b>AR</b>	
<b>Determinand</b>	<b>Method</b>	<b>LOD</b>	<b>Units</b>	<b>Symbol</b>	
Polychlorinated biphenyl BZ#28	GC/MS (HR)	0.5	µg/kg	N	<0.5
Polychlorinated biphenyl BZ#52	GC/MS (HR)	0.5	µg/kg	N	<b>0.8</b>
Polychlorinated biphenyl BZ#101	GC/MS (SIR)	0.5	µg/kg	N	<b>2.1</b>
Polychlorinated biphenyl BZ#118	GC/MS (SIR)	0.5	µg/kg	N	<b>1.4</b>
Polychlorinated biphenyl BZ#138	GC/MS (SIR)	0.5	µg/kg	N	<b>5.6</b>
Polychlorinated biphenyl BZ#153	GC/MS (SIR)	0.5	µg/kg	N	<b>25</b>
Polychlorinated biphenyl BZ#180	GC/MS (HR)	0.5	µg/kg	N	<b>100</b>

<b>SAL Reference:</b> 605856 <b>Project Site:</b> MPS Decommissioning <b>Customer Reference:</b> SBS002  <b>Bulk Product</b> Analysed as Bulk Product <b>Metals</b>					
<b>SAL Reference</b>				<b>605856 001</b>	
<b>Customer Sample Reference</b>				<b>MPS15 Soil under evaporator</b>	
<b>Test Sample</b>				<b>A40</b>	
<b>Determinand</b>	<b>Method</b>	<b>LOD</b>	<b>Units</b>	<b>Symbol</b>	
Antimony	ICP/OES	10	mg/kg	N	<b>17</b>
Cobalt	ICP/OES	10	mg/kg	N	<b>31</b>
Manganese	ICP/OES	1	mg/kg	N	<b>2100</b>
Thallium	ICP/OES	10	mg/kg	N	<b>10</b>
Tin	ICP/OES	2	mg/kg	N	<b>24</b>
Vanadium	ICP/OES	10	mg/kg	N	<b>330</b>

<b>SAL Reference:</b> 605856 <b>Project Site:</b> MPS Decommissioning <b>Customer Reference:</b> SBS002  <b>Bulk Product</b> Analysed as Bulk Product <b>Heavy Metals(9)</b>					
<b>SAL Reference</b>				<b>605856 001</b>	
<b>Customer Sample Reference</b>				<b>MPS15 Soil under evaporator</b>	
<b>Test Sample</b>				<b>A40</b>	
<b>Determinand</b>	<b>Method</b>	<b>LOD</b>	<b>Units</b>	<b>Symbol</b>	
Arsenic	ICP/OES	1	mg/kg	N	<b>42</b>
Cadmium	ICP/OES	1	mg/kg	N	<b>4</b>
Chromium	ICP/OES	1	mg/kg	N	<b>590</b>
Copper	ICP/OES	1	mg/kg	N	<b>17000</b>
Lead	ICP/OES	1	mg/kg	N	<b>950</b>
Mercury	ICP/OES	1	mg/kg	N	<b>2</b>
Nickel	ICP/OES	1	mg/kg	N	<b>560</b>
Selenium	ICP/OES	10	mg/kg	N	<b>&lt;10</b>
Zinc	ICP/OES	1	mg/kg	N	<b>22000</b>

<b>SAL Reference:</b> 605856 <b>Project Site:</b> MPS Decommissioning <b>Customer Reference:</b> SBS002  <b>Bulk Product</b> Analysed as Bulk Product <b>Misc</b>					
<b>SAL Reference</b>				<b>605856 001</b>	
<b>Customer Sample Reference</b>				<b>MPS15 Soil under evaporator</b>	
<b>Test Sample</b>				<b>AR</b>	
<b>Determinand</b>	<b>Method</b>	<b>LOD</b>	<b>Units</b>	<b>Symbol</b>	
Asbestos Bulk ID	PLM			SU	N.D.
Cyanide (Total)	Colorimetry	1	mg/kg	N	<1
Hazardous Waste Classification(H1-H14)	Visual			N	-

## Index to symbols used in 605856-1

Value	Description
10:1 S	Data for BS EN 12457-2 (10:1)
AR	As Received
10:1	Leachate to BS EN 12457-2 (10:1)
A40	Assisted dried < 40C
N.D.	Not Detected
13	Results have been blank corrected.
S	Analysis was subcontracted
U	Analysis is UKAS accredited
N	Analysis is not UKAS accredited

## Notes

Asbestos was subcontracted to REC Asbestos.



SAL Ref: 605011 001

Client Reference: MPS15 Soil under evaporator

**HAZARDOUS PROPERTY ASSESSMENT**  
Waste (England and Wales) Regulations 2011

Date of Assessment 30th October 2016

Hazardous Property/Determinand	Test/Assessment Method	Result %	Worst Case Compound	% Worst Case Compound	Hazard Statement	Hazardous Property	Threshold %	Conclusion
Arsenic	ICP/OES	0.0042	diasenic trioxide		H350	HP7	0.1	Not Hazardous
					H300	HP6	0.25	Not Hazardous
					H314	HP8	1	Not Hazardous
					H400	HP14	0,1	Not Hazardous
	contact with acid	no gas evolved			H410	HP12		Not Hazardous
Cadmium	ICP/OES	0.0004	cadmium carbonate	<0.001	H332	HP6	22.5	Not Hazardous
					H312	HP6	0.25	
					H302	HP6	0.25	
					H400	HP14	0.1	Not Hazardous
					H410	HP14	0.1	Not Hazardous
Chromium	ICP/MS (on leachate)	0.0000190	chromates	<0.01	H350	HP11	0.1	Not Hazardous
					H317			
					H416			
Mercury	ICP/OES	<0.0001		<0.0001				not detected -excluded
Lead	ICP/OES	0.0004	lead sulphate	0.0004	H360	HP10		Not Hazardous
					H332	HP6		Not Hazardous
					H302	HP6		Not Hazardous
					H373	HP5		Not Hazardous
					H400	HP14	0.10%	Not Hazardous
					H410	HP14		Not Hazardous
					H350	HP7		Not Hazardous
Selenium	ICP/OES	<0.001		<0.001				not detected -excluded
Copper	ICP/OES	1.7	copper oxide see Note 1	2.125	H302	HP6		
					H400	HP14	0.1	Hazardous

SAL Ref: 605011 001

Client Reference: MPS15 Soil under evaporator

**HAZARDOUS PROPERTY ASSESSMENT**  
Waste (England and Wales) Regulations 2011

Date of Assessment 30th October 2016

Hazardous Property/Determinand	Test/Assessment Method	Result %	Worst Case Compound	% Worst Case Compound	Hazard Statement	Hazardous Property	Threshold %	Conclusion
Nickel	ICP/OES	0.0009	nickel carbonate	0.0018	H410	HP14	0.1	Hazardous
					H350	HP7	0.1	Not Hazardous
					H341	HP11		Not Hazardous
					H360	HP10	0.3	Not Hazardous
					H372	HP5	1	Not Hazardous
					H332	HP6		Not Hazardous
					H302	HP6		Not Hazardous
					H315	HP4	20	Not Hazardous
					H334	HP13		Not Hazardous
					H317	HP13		Not Hazardous
					H319	HP4	20	Not Hazardous
					H400	HP14	0.1	Not Hazardous
					H410	HP14	0.1	Not Hazardous
Zinc	ICP/OES	2.2	zinc oxide see Note 1	2.728	H400	HP14	0.1	Hazardous
					H410	HP14	0.1	Hazardous
pH		8.1		<11.5		HP4/HP8		Not Hazardous

SAL Ref: 605011 001

Client Reference: MPS15 Soil under evaporator

**HAZARDOUS PROPERTY ASSESSMENT**  
**Waste (England and Wales) Regulations 2011**

Date of Assessment 30th October 2016

Hazardous Property/Determinand	Test/Assessment Method	Result %	Worst Case Compound	% Worst Case Compound	Hazard Statement	Hazardous Property	Threshold %	Conclusion
Organic Compounds								
Total Petroleum Hydrocarbons	GC FID	0.12%	see Note 2			HP5 HP7 HP11 HP10 HP14	10 0.1 0.1 3 2.5	Not Hazardous Not Hazardous Not Hazardous Not Hazardous Not Hazardous
Polychlorinated Biphenyls	GC MS	0.000014					0.005	Not Hazardous
<b>Overall Conclusion</b> <b>EWC Code</b>								<b>HAZARDOUS</b> <b>17-09-03* MH</b>

**Note 1**

The waste is Hazardous by the level of copper and zinc unless they can be determined to be present As compounds other than the oxides. This will require XRD analysis

**Note 2**

The TPH level indicates that the waste is Hazardous. However, the benzo a pyrene level is 0.00001% Which is less than 0.01% of the TPH level. Therefore the waste is Not Hazardous by this parameter.

SAL Ref: 605011 001

Client Reference: MPS15 Soil under evaporator

**HAZARDOUS PROPERTY ASSESSMENT**  
**Waste (England and Wales) Regulations 2011**

Date of Assessment 30th October 2016

Hazardous Property/Determinand	Test/Assessment Method	Result %	Worst Case Compound	% Worst Case Compound	Hazard Statement	Hazardous Property	Threshold %	Conclusion
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Assessment is based on SAL Report # 605011 which is included .

Risk Phrases used in this assessment are based on EU 1277 2008

The conclusions in this assessment are based on guidance taken from WM3 1st Edition 2015.

The terms “Hazardous” and “Not Hazardous” are used in the context of these Regulations. Further testing may be required if classification under the Waste Acceptance Criteria (Landfill Regulations 2000/EU Directive 99/3/EC as amended) is intended.

The term “Not Hazardous” does not imply that significant possibility of significant harm to human health or the environment is not present.

Assessment Prepared by W A Cohen  
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# Scientific Analysis Laboratories Ltd

## Certificate of Analysis

**Report Number:** 607591-1

**Date of Report:** 01-Nov-2016

**Customer:** ADI Associates Ltd  
Kappara Business Centre  
113 Triq Birkirkara  
San Gwann SGN4197  
Malta  
VAT Number: MT18486514

**Customer Contact:** M/S Krista Farrugia

**Customer Job Reference:** SBS002

**Customer Site Reference:** MPS Decommissioning

**Date Job Received at SAL:** 17-Oct-2016

**Date Analysis Started:** 18-Oct-2016

**Date Analysis Completed:** 01-Nov-2016

The results reported relate to samples received in the laboratory and may not be representative of a whole batch.

Opinions and interpretations expressed herein are outside the scope of UKAS accreditation

This report should not be reproduced except in full without the written approval of the laboratory

Tests covered by this certificate were conducted in accordance with SAL SOPs

All results have been reviewed in accordance with Section 25 of the SAL Quality Manual



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Report checked  
and authorised by :  
Stefan Kondziela  
Project Manager

Issued by :  
Stefan Kondziela  
Project Manager



# Waste Acceptance Criteria

Customer Sample Reference : MPS17

SAL Sample Reference : 607591 001

Project Site : MPS Decommissioning

Customer Reference : SBS002

Date Sampled : 13-OCT-2016

Bulk Product					Result	Inert Waste Landfill	Stable non reactive	Hazardous Waste Landfill
Determinand	Technique	LOD	Units	Symbol				
Acid Neutralising Capacity (pH 4)	Titration	2	Mol/kg	N	<2			
Acid Neutralising Capacity (pH 7)	Titration (pH 7)	2	Mol/kg	N	<2			
Loss on Ignition	Grav	0.1	%	N	32			10.0
Moisture	Grav	0.1	%	N	25.0			
pH	Probe			N	2.9		> 6.0	
Total Organic Carbon	OX/IR	0.1	%	N	0.1	3.0	5.0	6.0
BTEX (Sum)	Calc	0.0080	mg/kg	N	<sup>(100)</sup> <0.0080	6.0		
PAH (Sum)	Calc	1.6	mg/kg	N	<1.6	100.0		
PCB EC7 (Sum)	Calc	0.0035	mg/kg	N	<0.0035	1.0		
Total Petroleum Hydrocarbons C10-C40 (Sum)	Calc	1	mg/kg	N	<sup>(13)</sup> 23	500.0		

Data for BS EN 12457-2 (10:1)					Result	Inert Waste Landfill	Stable non reactive	Hazardous Waste Landfill
Determinand	Technique	LOD	Units	Symbol				
Antimony	Calc WAC ICP/MS	0.010	mg/kg	N	<0.010	0.06	0.7	5.0
Arsenic	Calc WAC ICP/MS	0.0020	mg/kg	N	0.45	0.5	2.0	25.0
Barium	Calc WAC ICP/MS	0.010	mg/kg	N	<0.010	20.0	100.0	300.0
Cadmium	Calc WAC ICP/MS	0.00020	mg/kg	N	<0.00020	0.04	1.0	5.0
Chloride	Calc (W)	10	mg/kg	N	91	800.0	15000.0	25000.0
Chromium	Calc WAC ICP/MS	0.010	mg/kg	N	2.7	0.5	10.0	70.0
Copper	Calc WAC ICP/MS	0.0050	mg/kg	N	8.7	2.0	50.0	100.0
Dissolved Organic Carbon	Calc	10	mg/kg	N	22	500.0	800.0	1000.0
Fluoride	Calc (W)	0.50	mg/kg	N	<0.50	10.0	150.0	500.0
Lead	Calc WAC ICP/MS	0.0030	mg/kg	N	<0.0030	0.5	10.0	50.0
Mercury	Calc WAC ICP/MS	0.00050	mg/kg	N	<0.00050	0.01	0.2	2.0
Molybdenum	Calc WAC ICP/MS	0.010	mg/kg	N	1.8	0.5	10.0	30.0
Nickel	Calc WAC ICP/MS	0.010	mg/kg	N	120	0.4	10.0	40.0
Phenols (Total-Mono)	Calc	1.0	mg/kg	N	<1.0	1.0		
Selenium	Calc WAC ICP/MS	0.0050	mg/kg	N	1.6	0.1	0.5	7.0
Sulphate	Calc (W)	5	mg/kg	N	220000	1000.0	20000.0	50000.0
Total Dissolved Solids	Calc WAC ICP/MS	1000	mg/kg	N	13000	4000.0	60000.0	100000.0
Zinc	Calc WAC ICP/MS	0.020	mg/kg	N	11	4.0	50.0	200.0

Following the recommendation from the Environment Agency (England and Wales)\*, the leachate preparation in this report has been carried out to BS EN 12457-2 : One Stage batch test at a liquid to solid ratio of 10 l/kg. This is also compliant with Schedule 10 of the Environmental Permitting Regulations 2010.

Note : This is the minimum amount of testing which is required.

Further testing may be required if :

- evidence of immediately leachable parameters becomes available.
- evidence to indicate that the sample could be classified as hazardous under H1-H14 of the Waste(England and Wales) Regulations 2011(as amended) becomes available.

Acceptance of waste at landfill is always at the discretion of the Landfill Operator.

\* Waste Sampling and Testing for Disposal at Landfill, EBPR1 11507B, Environment Agency (England and Wales) March 2013

<b>SAL Reference:</b> 607591 <b>Project Site:</b> MPS Decommissioning <b>Customer Reference:</b> SBS002  <b>Bulk Product</b> Analysed as Bulk Product <b>Misc</b>					
<b>SAL Reference</b>					<b>607591 001</b>
<b>Customer Sample Reference</b>					<b>MPS17</b>
<b>Test Sample</b>					<b>AR</b>
<b>Date Sampled</b>					<b>13-OCT-2016</b>
<b>Determinand</b>	<b>Method</b>	<b>LOD</b>	<b>Units</b>	<b>Symbol</b>	
Asbestos Bulk ID	PLM			SU	N.D.
Cyanide (Total)	Colorimetry	1	mg/kg	N	3
Hazardous Waste Classification(H1-H14)	Visual			N	-

<b>SAL Reference:</b> 607591 <b>Project Site:</b> MPS Decommissioning <b>Customer Reference:</b> SBS002  <b>Bulk Product</b> Analysed as Bulk Product <b>Additional Metals</b>					
<b>SAL Reference</b>					<b>607591 001</b>
<b>Customer Sample Reference</b>					<b>MPS17</b>
<b>Test Sample</b>					<b>A40</b>
<b>Date Sampled</b>					<b>13-OCT-2016</b>
<b>Determinand</b>	<b>Method</b>	<b>LOD</b>	<b>Units</b>	<b>Symbol</b>	
Aluminium	ICP/OES	1	mg/kg	N	7800
Barium	ICP/OES	1	mg/kg	N	28
Calcium	ICP/OES	1	mg/kg	N	33000
Silver	ICP/OES	1	mg/kg	N	<1

<b>SAL Reference:</b> 607591 <b>Project Site:</b> MPS Decommissioning <b>Customer Reference:</b> SBS002  <b>Bulk Product</b> Analysed as Bulk Product <b>BTEX</b>					
<b>SAL Reference</b>					<b>607591 001</b>
<b>Customer Sample Reference</b>					<b>MPS17</b>
<b>Test Sample</b>					<b>AR</b>
<b>Date Sampled</b>					<b>13-OCT-2016</b>
<b>Determinand</b>	<b>Method</b>	<b>LOD</b>	<b>Units</b>	<b>Symbol</b>	
Benzene	GC/MS (Headspace)	0.001	mg/kg	N	<sup>(100,13)</sup> <0.002
Toluene	GC/MS (Headspace)	0.001	mg/kg	N	<sup>(13)</sup> <b>0.002</b>
EthylBenzene	GC/MS (Headspace)	0.001	mg/kg	N	<sup>(100)</sup> <0.002
Meta/Para-Xylene	GC/MS (Headspace)	0.001	mg/kg	N	<sup>(100)</sup> <0.002
Ortho-Xylene	GC/MS (Headspace)	0.001	mg/kg	N	<sup>(100)</sup> <0.002

<b>SAL Reference:</b> 607591 <b>Project Site:</b> MPS Decommissioning <b>Customer Reference:</b> SBS002  <b>Bulk Product</b> Analysed as Bulk Product <b>PCB EC7</b>					
<b>SAL Reference</b>				<b>607591 001</b>	
<b>Customer Sample Reference</b>				<b>MPS17</b>	
<b>Test Sample</b>				<b>AR</b>	
<b>Date Sampled</b>				<b>13-OCT-2016</b>	
<b>Determinand</b>	<b>Method</b>	<b>LOD</b>	<b>Units</b>	<b>Symbol</b>	
Polychlorinated biphenyl BZ#28	GC/MS (HR)	0.0005	mg/kg	N	<0.0005
Polychlorinated biphenyl BZ#52	GC/MS (HR)	0.0005	mg/kg	N	<0.0005
Polychlorinated biphenyl BZ#101	GC/MS (SIR)	0.0005	mg/kg	N	<0.0005
Polychlorinated biphenyl BZ#118	GC/MS (SIR)	0.0005	mg/kg	N	<0.0005
Polychlorinated biphenyl BZ#138	GC/MS (SIR)	0.0005	mg/kg	N	<0.0005
Polychlorinated biphenyl BZ#153	GC/MS (SIR)	0.0005	mg/kg	N	<0.0005
Polychlorinated biphenyl BZ#180	GC/MS (HR)	0.0005	mg/kg	N	<0.0005

<b>SAL Reference:</b> 607591 <b>Project Site:</b> MPS Decommissioning <b>Customer Reference:</b> SBS002  <b>Bulk Product</b> Analysed as Bulk Product <b>Polyaromatic Hydrocarbons (US EPA16)</b>					
<b>SAL Reference</b>				<b>607591 001</b>	
<b>Customer Sample Reference</b>				<b>MPS17</b>	
<b>Test Sample</b>				<b>AR</b>	
<b>Date Sampled</b>				<b>13-OCT-2016</b>	
<b>Determinand</b>	<b>Method</b>	<b>LOD</b>	<b>Units</b>	<b>Symbol</b>	
Naphthalene	GC/MS	0.1	mg/kg	N	<0.1
Acenaphthylene	GC/MS	0.1	mg/kg	N	<0.1
Acenaphthene	GC/MS	0.1	mg/kg	N	<0.1
Fluorene	GC/MS	0.1	mg/kg	N	<0.1
Phenanthrene	GC/MS	0.1	mg/kg	N	<0.1
Anthracene	GC/MS	0.1	mg/kg	N	<0.1
Fluoranthene	GC/MS	0.1	mg/kg	N	<0.1
Pyrene	GC/MS	0.1	mg/kg	N	<0.1
Benzo(a)Anthracene	GC/MS	0.1	mg/kg	N	<0.1
Chrysene	GC/MS	0.1	mg/kg	N	<0.1
Benzo(b/k)Fluoranthene	GC/MS	0.1	mg/kg	N	<0.1
Benzo(a)Pyrene	GC/MS	0.1	mg/kg	N	<0.1
Indeno(123-cd)Pyrene	GC/MS	0.1	mg/kg	N	<0.1
Dibenzo(ah)Anthracene	GC/MS	0.1	mg/kg	N	<0.1
Benzo(ghi)Perylene	GC/MS	0.1	mg/kg	N	<0.1
Polyaromatic Hydrocarbons (Total)	GC/MS	0.1	mg/kg	N	<0.1
Coronene	GC/MS	0.1	mg/kg	N	<0.1

<b>SAL Reference:</b> 607591 <b>Project Site:</b> MPS Decommissioning <b>Customer Reference:</b> SBS002  <b>Bulk Product</b> Analysed as Bulk Product <b>TPH</b>					
<b>SAL Reference</b>				<b>607591 001</b>	
<b>Customer Sample Reference</b>				<b>MPS17</b>	
<b>Test Sample</b>				<b>AR</b>	
<b>Date Sampled</b>				<b>13-OCT-2016</b>	
<b>Determinand</b>	<b>Method</b>	<b>LOD</b>	<b>Units</b>	<b>Symbol</b>	
Total Petroleum Hydrocarbons	GC/FID	1	mg/kg	N	<sup>(100,13)</sup> <10
Total Petroleum Hydrocarbons (C35-C40)	GC/FID	1	mg/kg	N	<sup>(13)</sup> 23



<b>SAL Reference:</b> 607591 <b>Project Site:</b> MPS Decommissioning <b>Customer Reference:</b> SBS002  <b>Leachate to BS EN 12457-2 (10:1)</b> Analysed as Water <b>Waste Acceptance Criteria</b>					
<b>SAL Reference</b>					<b>607591 001</b>
<b>Customer Sample Reference</b>					<b>MPS17</b>
<b>Test Sample</b>					<b>10:1</b>
<b>Date Sampled</b>					<b>13-OCT-2016</b>
<b>Determinand</b>	<b>Method</b>	<b>LOD</b>	<b>Units</b>	<b>Symbol</b>	
Arsenic (Dissolved)	ICP/MS (Filtered)	0.2	µg/l	U	<b>45</b>
Barium (Dissolved)	ICP/MS (Filtered)	1	µg/l	U	<sup>(9)</sup> <100
Molybdenum (Dissolved)	ICP/MS (Filtered)	1	µg/l	N	<b>180</b>
Total Dissolved Solids	Grav	100	mg/l	N	<b>1300</b>
Phenols (Total-Mono)	Colorimetry	0.1	mg/l	U	<0.1
Dissolved Organic Carbon	OX/IR	1	mg/l	N	<b>2</b>
Electrical Conductivity	Probe	10	µS/cm	N	<b>2200</b>
Antimony (Dissolved)	ICP/MS (Filtered)	1	µg/l	U	<sup>(9)</sup> <100
Cadmium (Dissolved)	ICP/MS (Filtered)	0.02	µg/l	U	<sup>(9)</sup> <2.0
Chromium (Dissolved)	ICP/MS (Filtered)	1	µg/l	U	<b>270</b>
Copper (Dissolved)	ICP/MS (Filtered)	0.5	µg/l	U	<b>870</b>
Lead (Dissolved)	ICP/MS (Filtered)	0.3	µg/l	U	<0.3
Mercury (Dissolved)	ICP/MS (Filtered)	0.05	µg/l	U	<sup>(9)</sup> <5.0
Nickel (Dissolved)	ICP/MS (Filtered)	1	µg/l	U	<b>12000</b>
Selenium (Dissolved)	ICP/MS (Filtered)	0.5	µg/l	U	<b>160</b>
Zinc (Dissolved)	ICP/MS (Filtered)	2	µg/l	U	<b>1100</b>
Chloride	Discrete Analyser	1	mg/l	U	<b>9</b>
Fluoride	Discrete Analyser	0.05	mg/l	U	<0.05
Sulphate	Discrete Analyser	0.5	mg/l	U	<b>22000</b>

## Index to symbols used in 607591-1

Value	Description
AR	As Received
10:1	Leachate to BS EN 12457-2 (10:1)
A40	Assisted dried < 40C
10:1 S	Data for BS EN 12457-2 (10:1)
N.D.	Not Detected
13	Results have been blank corrected.
9	LOD raised due to dilution of sample
100	LOD determined by sample aliquot used for analysis
S	Analysis was subcontracted
U	Analysis is UKAS accredited
N	Analysis is not UKAS accredited

## Notes

Asbestos was subcontracted to REC Asbestos.

# Scientific Analysis Laboratories Ltd

## Certificate of Analysis

Hadfield House  
Hadfield Street  
Cornbrook  
Manchester  
M16 9FE  
Tel : 0161 874 2400  
Fax : 0161 874 2468

**Report Number:** 610966-1

**Date of Report:** 14-Nov-2016

**Customer:** ADI Associates Ltd  
Kappara Business Centre  
113 Triq Birkirkara  
San Gwann SGN4197  
Malta  
VAT Number: MT18486514

**Customer Contact:** M/S Krista Farrugia

**Customer Job Reference:** SBS002

**Customer Site Reference:** MPS Decommissioning

**Date Job Received at SAL:** 31-Oct-2016

**Date Analysis Started:** 02-Nov-2016

**Date Analysis Completed:** 14-Nov-2016

The results reported relate to samples received in the laboratory and may not be representative of a whole batch.

Opinions and interpretations expressed herein are outside the scope of UKAS accreditation

This report should not be reproduced except in full without the written approval of the laboratory

Tests covered by this certificate were conducted in accordance with SAL SOPs

All results have been reviewed in accordance with Section 25 of the SAL Quality Manual



Report checked  
and authorised by :  
Mr Richard Wong  
Project Manager

Issued by :  
Mr Richard Wong  
Project Manager



# Waste Acceptance Criteria

Customer Sample Reference : MPS18

SAL Sample Reference : 610966 001

Project Site : MPS Decommissioning

Customer Reference : SBS002

Date Sampled : 28-OCT-2016

Bulk Product					Result	Inert Waste Landfill	Stable non reactive	Hazardous Waste Landfill
Determinand	Technique	LOD	Units	Symbol				
Acid Neutralising Capacity (pH 4)	Titration	2	Mol/kg	N	<2			
Acid Neutralising Capacity (pH 7)	Titration (pH 7)	2	Mol/kg	N	<2			
BTEX (Sum)	Calc	0.0040	mg/kg	N	<b>0.0060</b>	6.0		
Loss on Ignition	Grav	0.1	%	N	<b>11</b>			<b>10.0</b>
Moisture	Grav	0.1	%	N	<b>18.5</b>			
Total Organic Carbon	OX/IR	0.1	%	N	<b>3.7</b>	<b>3.0</b>	5.0	6.0
Total Petroleum Hydrocarbons C10-C40 (Sum)	Calc	1	mg/kg	N	<sup>(13)</sup> <b>1700</b>	<b>500.0</b>		
PAH (Sum)	Calc	1.6	mg/kg	N	<b>10</b>	100.0		
PCB EC7 (Sum)	Calc	0.0035	mg/kg	N	<b>0.066</b>	1.0		
pH	Probe			N	<b>8.6</b>		> 6.0	

Data for BS EN 12457-2 (10:1)					Result	Inert Waste Landfill	Stable non reactive	Hazardous Waste Landfill
Determinand	Technique	LOD	Units	Symbol				
Antimony	Calc WAC ICP/MS	0.010	mg/kg	N	<b>0.011</b>	0.06	0.7	5.0
Arsenic	Calc WAC ICP/MS	0.0020	mg/kg	N	<b>0.073</b>	0.5	2.0	25.0
Barium	Calc WAC ICP/MS	0.010	mg/kg	N	<b>0.31</b>	20.0	100.0	300.0
Cadmium	Calc WAC ICP/MS	0.00020	mg/kg	N	<b>0.0043</b>	0.04	1.0	5.0
Chromium	Calc WAC ICP/MS	0.010	mg/kg	N	<0.010	0.5	10.0	70.0
Copper	Calc WAC ICP/MS	0.0050	mg/kg	N	<b>0.029</b>	2.0	50.0	100.0
Lead	Calc WAC ICP/MS	0.0030	mg/kg	N	<0.0030	0.5	10.0	50.0
Mercury	Calc WAC ICP/MS	0.00050	mg/kg	N	<b>0.0026</b>	0.01	0.2	2.0
Molybdenum	Calc WAC ICP/MS	0.010	mg/kg	N	<b>6.9</b>	<b>0.5</b>	10.0	30.0
Nickel	Calc WAC ICP/MS	0.010	mg/kg	N	<b>0.097</b>	0.4	10.0	40.0
Selenium	Calc WAC ICP/MS	0.0050	mg/kg	N	<0.0050	0.1	0.5	7.0
Zinc	Calc WAC ICP/MS	0.020	mg/kg	N	<0.020	4.0	50.0	200.0
Chloride	Calc (W)	10	mg/kg	N	<b>3100</b>	<b>800.0</b>	15000.0	25000.0
Fluoride	Calc (W)	0.50	mg/kg	N	<0.50	10.0	150.0	500.0
Sulphate	Calc (W)	5	mg/kg	N	<b>14000</b>	<b>1000.0</b>	20000.0	50000.0
Phenols (Total-Mono)	Calc	1.0	mg/kg	N	<1.0	1.0		
Dissolved Organic Carbon	Calc	10	mg/kg	N	<b>150</b>	500.0	800.0	1000.0
Total Dissolved Solids	Calc WAC ICP/MS	1000	mg/kg	N	<b>20000</b>	<b>4000.0</b>	60000.0	100000.0

Following the recommendation from the Environment Agency (England and Wales)\*, the leachate preparation in this report has been carried out to BS EN 12457-2 : One Stage batch test at a liquid to solid ratio of 10 l/kg. This is also compliant with Schedule 10 of the Environmental Permitting Regulations 2010.

Note : This is the minimum amount of testing which is required.

Further testing may be required if :

- evidence of immediately leachable parameters becomes available.
- evidence to indicate that the sample could be classified as hazardous under H1-H14 of the Waste(England and Wales) Regulations 2011(as amended) becomes available.

Acceptance of waste at landfill is always at the discretion of the Landfill Operator.

\* Waste Sampling and Testing for Disposal at Landfill, EBPR1 11507B, Environment Agency (England and Wales) March 2013

<b>SAL Reference:</b> 610966 <b>Project Site:</b> MPS Decommissioning <b>Customer Reference:</b> SBS002  <b>Leachate to BS EN 12457-2 (10:1)</b> Analysed as Water <b>Waste Acceptance Criteria</b>					
<b>SAL Reference</b>					<b>610966 001</b>
<b>Customer Sample Reference</b>					<b>MPS18</b>
<b>Test Sample</b>					<b>10:1</b>
<b>Date Sampled</b>					<b>28-OCT-2016</b>
<b>Determinand</b>	<b>Method</b>	<b>LOD</b>	<b>Units</b>	<b>Symbol</b>	
Antimony (Dissolved)	ICP/MS (Filtered)	1	µg/l	U	<b>1</b>
Arsenic (Dissolved)	ICP/MS (Filtered)	0.2	µg/l	U	<b>7.3</b>
Barium (Dissolved)	ICP/MS (Filtered)	1	µg/l	U	<b>31</b>
Cadmium (Dissolved)	ICP/MS (Filtered)	0.02	µg/l	U	<b>0.43</b>
Chromium (Dissolved)	ICP/MS (Filtered)	1	µg/l	U	<b>&lt;1</b>
Copper (Dissolved)	ICP/MS (Filtered)	0.5	µg/l	U	<b>2.9</b>
Lead (Dissolved)	ICP/MS (Filtered)	0.3	µg/l	U	<b>&lt;0.3</b>
Mercury (Dissolved)	ICP/MS (Filtered)	0.05	µg/l	U	<b>0.26</b>
Molybdenum (Dissolved)	ICP/MS (Filtered)	1	µg/l	N	<b>690</b>
Nickel (Dissolved)	ICP/MS (Filtered)	1	µg/l	U	<b>10</b>
Selenium (Dissolved)	ICP/MS (Filtered)	0.5	µg/l	U	<b>&lt;0.5</b>
Zinc (Dissolved)	ICP/MS (Filtered)	2	µg/l	U	<b>&lt;2</b>
Chloride	Discrete Analyser	1	mg/l	U	<b>310</b>
Fluoride	Discrete Analyser	0.05	mg/l	U	<b>&lt;0.05</b>
Sulphate	Discrete Analyser	0.5	mg/l	U	<b>1400</b>
Phenols (Total-Mono)	Colorimetry	0.1	mg/l	U	<b>&lt;0.1</b>
Dissolved Organic Carbon	OX/IR	1	mg/l	N	<b>15</b>
Total Dissolved Solids	Grav	100	mg/l	N	<b>2000</b>
Electrical Conductivity	Probe	10	µS/cm	N	<b>3300</b>
Volume	Vol	1	ml	U	<b>-</b>

<b>SAL Reference:</b> 610966 <b>Project Site:</b> MPS Decommissioning <b>Customer Reference:</b> SBS002  <b>Bulk Product</b> Analysed as Bulk Product <b>BTEX</b>					
<b>SAL Reference</b>					<b>610966 001</b>
<b>Customer Sample Reference</b>					<b>MPS18</b>
<b>Test Sample</b>					<b>AR</b>
<b>Date Sampled</b>					<b>28-OCT-2016</b>
<b>Determinand</b>	<b>Method</b>	<b>LOD</b>	<b>Units</b>	<b>Symbol</b>	
Benzene	GC/MS (Headspace)	1	µg/kg	N	<sup>(13)</sup> <b>2</b>
Toluene	GC/MS (Headspace)	1	µg/kg	N	<sup>(13)</sup> <b>1</b>
EthylBenzene	GC/MS (Headspace)	1	µg/kg	N	<b>2</b>
Meta/Para-Xylene	GC/MS (Headspace)	1	µg/kg	N	<b>1</b>
Ortho-Xylene	GC/MS (Headspace)	1	µg/kg	N	<b>&lt;1</b>

<b>SAL Reference:</b> 610966 <b>Project Site:</b> MPS Decommissioning <b>Customer Reference:</b> SBS002  <b>Bulk Product</b> Analysed as Bulk Product <b>TPH</b>					
<b>SAL Reference</b>					<b>610966 001</b>
<b>Customer Sample Reference</b>					<b>MPS18</b>
<b>Test Sample</b>					<b>AR</b>
<b>Date Sampled</b>					<b>28-OCT-2016</b>
<b>Determinand</b>	<b>Method</b>	<b>LOD</b>	<b>Units</b>	<b>Symbol</b>	
Total Petroleum Hydrocarbons	GC/FID	1	mg/kg	N	<sup>(13)</sup> <b>1500</b>
Total Petroleum Hydrocarbons (C35-C40)	GC/FID	1	mg/kg	N	<sup>(13)</sup> <b>190</b>

<b>SAL Reference:</b> 610966 <b>Project Site:</b> MPS Decommissioning <b>Customer Reference:</b> SBS002  <b>Bulk Product</b> Analysed as Bulk Product <b>Polyaromatic Hydrocarbons (US EPA16) with Coronene</b>					
<b>SAL Reference</b>					<b>610966 001</b>
<b>Customer Sample Reference</b>					<b>MPS18</b>
<b>Test Sample</b>					<b>AR</b>
<b>Date Sampled</b>					<b>28-OCT-2016</b>
<b>Determinand</b>	<b>Method</b>	<b>LOD</b>	<b>Units</b>	<b>Symbol</b>	
Naphthalene	GC/MS	0.1	mg/kg	N	<b>0.1</b>
Acenaphthylene	GC/MS	0.1	mg/kg	N	<0.1
Acenaphthene	GC/MS	0.1	mg/kg	N	<b>0.1</b>
Fluorene	GC/MS	0.1	mg/kg	N	<0.1
Phenanthrene	GC/MS	0.1	mg/kg	N	<b>0.2</b>
Anthracene	GC/MS	0.1	mg/kg	N	<b>0.2</b>
Fluoranthene	GC/MS	0.1	mg/kg	N	<b>0.2</b>
Pyrene	GC/MS	0.1	mg/kg	N	<b>0.2</b>
Benzo(a)Anthracene	GC/MS	0.1	mg/kg	N	<b>0.1</b>
Chrysene	GC/MS	0.1	mg/kg	N	<b>0.1</b>
Benzo(b/k)Fluoranthene	GC/MS	0.1	mg/kg	N	<0.1
Benzo(a)Pyrene	GC/MS	0.1	mg/kg	N	<0.1
Indeno(123-cd)Pyrene	GC/MS	0.1	mg/kg	N	<0.1
Dibenzo(ah)Anthracene	GC/MS	0.1	mg/kg	N	<0.1
Benzo(ghi)Perylene	GC/MS	0.1	mg/kg	N	<0.1
Coronene	GC/MS	0.1	mg/kg	N	<0.1
Polyaromatic Hydrocarbons (Total)	GC/MS	0.1	mg/kg	N	<b>10</b>

<b>SAL Reference:</b> 610966 <b>Project Site:</b> MPS Decommissioning <b>Customer Reference:</b> SBS002  <b>Bulk Product</b> Analysed as Bulk Product <b>PCB EC7</b>					
<b>SAL Reference</b>					<b>610966 001</b>
<b>Customer Sample Reference</b>					<b>MPS18</b>
<b>Test Sample</b>					<b>AR</b>
<b>Date Sampled</b>					<b>28-OCT-2016</b>
<b>Determinand</b>	<b>Method</b>	<b>LOD</b>	<b>Units</b>	<b>Symbol</b>	
Polychlorinated biphenyl BZ#28	GC/MS (HR)	0.5	µg/kg	N	<b>6.5</b>
Polychlorinated biphenyl BZ#52	GC/MS (HR)	0.5	µg/kg	N	<b>3.2</b>
Polychlorinated biphenyl BZ#101	GC/MS (SIR)	0.5	µg/kg	N	<b>4.4</b>
Polychlorinated biphenyl BZ#118	GC/MS (SIR)	0.5	µg/kg	N	<b>4.4</b>
Polychlorinated biphenyl BZ#138	GC/MS (SIR)	0.5	µg/kg	N	<b>5.8</b>
Polychlorinated biphenyl BZ#153	GC/MS (SIR)	0.5	µg/kg	N	<b>9.9</b>
Polychlorinated biphenyl BZ#180	GC/MS (HR)	0.5	µg/kg	N	<b>32</b>

<b>SAL Reference:</b> 610966 <b>Project Site:</b> MPS Decommissioning <b>Customer Reference:</b> SBS002  <b>Bulk Product</b> Analysed as Bulk Product <b>Additional Metals</b>					
<b>SAL Reference</b>					<b>610966 001</b>
<b>Customer Sample Reference</b>					<b>MPS18</b>
<b>Test Sample</b>					<b>A40</b>
<b>Date Sampled</b>					<b>28-OCT-2016</b>
<b>Determinand</b>	<b>Method</b>	<b>LOD</b>	<b>Units</b>	<b>Symbol</b>	
Silver	ICP/OES	1	mg/kg	N	<1
Calcium	ICP/OES	1	mg/kg	N	<b>130000</b>
Barium	ICP/OES	1	mg/kg	N	<b>290</b>
Aluminium	ICP/OES	1	mg/kg	N	<b>9700</b>

<b>SAL Reference:</b> 610966 <b>Project Site:</b> MPS Decommissioning <b>Customer Reference:</b> SBS002  <b>Bulk Product</b> Analysed as Bulk Product <b>Misc</b>					
<b>SAL Reference</b>				<b>610966 001</b>	
<b>Customer Sample Reference</b>				<b>MPS18</b>	
<b>Test Sample</b>				<b>AR</b>	
<b>Date Sampled</b>				<b>28-OCT-2016</b>	
<b>Determinand</b>	<b>Method</b>	<b>LOD</b>	<b>Units</b>	<b>Symbol</b>	
Cyanide (Total)	Colorimetry	1	mg/kg	N	<1
Asbestos Bulk ID	PLM			SU	Chrysotile Fibres Detected -

## Index to symbols used in 610966-1

Value	Description
10:1	Leachate to BS EN 12457-2 (10:1)
AR	As Received
A40	Assisted dried < 40C
10:1 S	Data for BS EN 12457-2 (10:1)
13	Results have been blank corrected.
S	Analysis was subcontracted
U	Analysis is UKAS accredited
N	Analysis is not UKAS accredited

## Notes

Asbestos ID performed at REC Asbestos

SCIENTIFIC ANALYSIS  
LABORATORIES

# Scientific Analysis Laboratories Ltd

## Certificate of Analysis

**Report Number:** 610972-1

**Date of Report:** 21-Nov-2016

**Customer:** ADI Associates Ltd  
Kappara Business Centre  
113 Triq Birkirkara  
San Gwann SGN4197  
Malta  
VAT Number: MT18486514

**Customer Contact:** Ms Rachel Xuereb

**Customer Job Reference:** SBS002

**Customer Site Reference:** MPS Decommissioning

**Date Job Received at SAL:** 31-Oct-2016

**Date Analysis Started:** 09-Nov-2016

**Date Analysis Completed:** 21-Nov-2016

The results reported relate to samples received in the laboratory and may not be representative of a whole batch.

Opinions and interpretations expressed herein are outside the scope of UKAS accreditation

This report should not be reproduced except in full without the written approval of the laboratory

Tests covered by this certificate were conducted in accordance with SAL SOPs

All results have been reviewed in accordance with Section 25 of the SAL Quality Manual



Report checked  
and authorised by :  
Mr Richard Wong  
Project Manager

Issued by :  
Mr Richard Wong  
Project Manager







AR	10	mg/l	60000
AR	10	mg/l	7300
AR	10	mg/l	<10
AR	0.5	C	18
AR			2.0

## Index to symbols used in 610972-1

Value	Description
AR	As Received
Total	Total
F	Filtered
64	Analysis was performed by an alternative technique
NR	No Result
S	Analysis was subcontracted
U	Analysis is UKAS accredited
N	Analysis is not UKAS accredited

## Notes

Nitrogen(Total) performed at NRM
Sample unsuitable for analysis by Colorimetry & Discrete Analyser

Value	Description
AR	As Received
Total	Total
F	Filtered
64	Analysis was performed by an alternative technique
NR	No Result
S	Analysis was subcontracted
U	Analysis is UKAS accredited
N	Analysis is not UKAS accredited

Nitrogen(Total) performed at NRM
Sample unsuitable for analysis by Colorimetry & Discrete Analyser

Value	Description
T4	Colorimetry
T686	Discrete Analyser
T2	Grav
T319	Colorimetric (Sub)
T301	ICP/MS (Total)
T7	Probe
T281	ICP/MS (Filtered)
T303	ICP-OES (Total)
T373	ICP/OES (Filtered)
T85	Calc
T22	Titration

Determinand	Method	Test Sample	LOD	Units	Symbol	SAL References
Chloride	T686	F	1	mg/l	U	001
Chlorine (Free)	T22	AR	0.05	mg/l	N	001
Cyanide(Total)	T4	AR	0.05	mg/l	U	001
Fluoride	T686	F	0.05	mg/l	U	001
Nitrogen (Total)	T319	AR	0.1	mg/l	SN	001
Sulphate	T686	F	0.5	mg/l	U	001
Sulphide	T4	AR	0.05	ma/l	N	001

Determinand	Method	Test Sample	LOD	Units	Symbol	SAL References
Suspended Solids (Total)	T2	AR	10	mg/l	N	001
Settleable Solids	T2	AR	10	mg/l	N	001
Oil and Grease	T2	AR	10	mg/l	N	001
Temperature	T7	AR	0.5	C	N	001
pH	T7	AR			U	001
As (Dissolved)	T281	F	0.2	µg/l	U	001
B (Dissolved)	T373	Total	0.01	mg/l	N	001
Cd (Dissolved)	T281	F	0.02	µg/l	U	001
Cr (Dissolved)	T281	F	1	µg/l	U	001
Cu (Dissolved)	T281	F	0.5	µg/l	U	001
Pb (Dissolved)	T373	Total	0.03	mg/l	U	001
Hg (Dissolved)	T281	F	0.05	µg/l	U	001
Ni (Dissolved)	T281	F	1	µg/l	U	001
P (Dissolved)	T373	AR	1	mg/l	N	001
Ag (Dissolved)	T373	Total	0.01	mg/l	N	001
Sn (Dissolved)	T373	AR	0.01	mg/l	U	001
V (Dissolved)	T281	F	2	µg/l	U	001
Zn (Dissolved)	T281	F	2	µg/l	U	001
Sum of Soluble Non Ferrous metals	T85	AR			N	001
As (Total)	T301	Total	0.2	µg/l	U	001
B (Total)	T303	Total	0.01	mg/l	N	001
Cd (Total)	T301	Total	0.02	µg/l	U	001
Cr (Total)	T301	Total	1	µg/l	U	001
Cu (Total)	T301	Total	0.5	µg/l	U	001
Pb (Total)	T301	Total	0.3	µg/l	U	001
Hg (Total)	T301	Total	0.05	µg/l	U	001
Ni (Total)	T301	Total	1	µg/l	U	001
P (Total)	T303	Total	1	mg/l	N	001
Ag (Total)	T303	Total	0.01	mg/l	N	001
Sn (Total)	T303	Total	0.01	mg/l	N	001
V (Total)	T301	Total	2	µg/l	U	001
Zn (Total)	T301	Total	2	µg/l	U	001
Sum of Total Non Ferrous metals	T85	AR			N	001



SAL Ref: 584632 002,4,6,7

**HAZARDOUS PROPERTY ASSESSMENT**  
Waste (England and Wales) Regulations 2011

Date of Assessment 11th August 2016

Client Reference: MPS Decommissioning-demolition material

Hazardous Property/Determinand	Test/Assessment Method	Result %	Worst Case Compound	% Worst Case Compound	Hazard Statement	Hazardous Property	Threshold %	Conclusion
Arsenic	ICP OES	<0.001%						Trace only :eliminated
Antimony	ICP OES	<0.001%						Trace only :eliminated
Cadmium	ICP/OES	<0.001						Trace only :eliminated
Chromium (highest result)	ICP/OES	0.014	chromates	0.0441	H350 H317 H416	HP11	0.1	Not Hazardous
Mercury	ICP/OES	<0.0001						not detected -eliminated
Selenium	ICP/OES	<0.001						Trace only :eliminated
Copper (highest result)	ICP/OES	0.031	copper oxide		H302 H400 H410	HP6 HP14 HP14	0.1 0.1	Not Hazardous Not Hazardous

SAL Ref: 584632 002,4,6,7

**HAZARDOUS PROPERTY ASSESSMENT**  
**Waste (England and Wales) Regulations 2011**

Date of Assessment 11th August 2016

Client Reference: MPS Decommissioning-demolition material

Hazardous Property/Determinand	Test/Assessment Method	Result %	Worst Case Compound	% Worst Case Compound	Hazard Statement	Hazardous Property	Threshold %	Conclusion
Nickel (average of 4 results)	ICP/OES	0.0828	nickel carbonate	0.1656	H350	HP7	0.1	Not Hazardous
					H341	HP11	1	Not Hazardous
					H360	HP10	0.3	Not Hazardous
					H372	HP5	0.1	Not Hazardous
					H332	HP6	1	Not Hazardous
					H302	HP6	1	Not Hazardous
					H315	HP4	20	Not Hazardous
					H334	HP13	1	Not Hazardous
					H317	HP13	1	Not Hazardous
					H400	HP14	0.1	Not Hazardous
Nickel highest result MPS6 SAL 584632	ICP/OES	0.27	nickel carbonate	0.54	H350	HP7	0.1	Hazardous
					H341	HP11	1	Not Hazardous
					H360	HP10	0.3	Hazardous
					H372	HP5	0.1	Hazardous
					H332	HP6	1	Not Hazardous
					H302	HP6	1	Not Hazardous
					H315	HP4	20	Not Hazardous
					H334	HP13	1	Not Hazardous
					H317	HP13	1	Not Hazardous
					H400	HP14	0.1	Hazardous
Lead	ICP/OES	0.03	(highest)		H410	HP14	0.1	Hazardous
								Trace only :eliminated
Zinc	ICP/OES	0.029	zinc oxide	0.03596	H400	HP14	0.1	Not Hazardous
Tin					H410	HP14	0.1	Not Hazardous
Vanadium		0.07						Trace only :eliminated
Manganese								Trace only :eliminated
Cobalt							2	Trace only :eliminated

**SCIENTIFIC ANALYSIS LABORATORIES LTD**  
**HADFIELD HOUSE**  
**HADFIELD STREET**  
**MANCHESTER M16 9FE**

SAL Ref: 601175

Client Reference: Demolition Material MPS decommissioning

# HAZARDOUS PROPERTY ASSESSMENT Waste (England and Wales) Regulations 2011

Date of Assessment 6th October 2016

Hazardous Property/Determinand	Test/Assessment Method	Result %	Worst Case Compound	% Worst Case Compound	Hazard Statement	Hazardous Property	Threshold %	Conclusion
Arsenic	ICP/OES	0.0013	darsenic trioxide	0.001716	H350	HP7	0.1	Not Hazardous
					H300	HP6	0.25	Not Hazardous
					H314	HP8	1	Not Hazardous
					H400	HP14	0,1	Not Hazardous
	contact with acid	no gas evolved			H410	HP12		Not Hazardous
Cadmium	ICP/OES	0.0001	cadmium carbonate	<0.001	H332	HP6	22.5	Not Hazardous
					H312	HP6	0.25	
					H302	HP6	0.25	
					H400	HP14	0.1	Not Hazardous
					H410	HP14	0.1	Not Hazardous
Chromium	ICP/OES	0.0027	chromates	0.008505	H350	HP11	0.1	Not Hazardous
					H317			
					H416			
Mercury	ICP/OES	<0.0001		<0.0001				not detected -excluded
Lead	ICP/OES	0.024	lead ion	0.024	H360	HP10		Not Hazardous
					H332	HP6		Not Hazardous
					H302	HP6		Not Hazardous
					H373	HP5		Not Hazardous
					H400	HP14	0.10%	Not Hazardous
					H410	HP14		Not Hazardous
					H350	HP7		Not Hazardous
Selenium	ICP/OES	<0.001		<0.001				not detected -excluded
Copper	ICP/OES	0.012	copper oxide	0.015	H302	HP6		
					H400	HP14	0.1	Not Hazardous

SAL Ref: 601175

Client Reference: Demolition Material MPS decommissioning

**HAZARDOUS PROPERTY ASSESSMENT**  
Waste (England and Wales) Regulations 2011

Date of Assessment 6th October 2016

Hazardous Property/Determinand	Test/Assessment Method	Result %	Worst Case Compound	% Worst Case Compound	Hazard Statement	Hazardous Property	Threshold %	Conclusion
Nickel	ICP/OES	0.0014	nickel carbonate	0.0028	H410	HP14	0.1	Not Hazardous
					H350	HP7	0.1	Not Hazardous
					H341	HP11		Not Hazardous
					H360	HP10	0.3	Not Hazardous
					H372	HP5	1	Not Hazardous
					H332	HP6		Not Hazardous
					H302	HP6		Not Hazardous
					H315	HP4	20	Not Hazardous
					H334	HP13		Not Hazardous
					H317	HP13		Not Hazardous
					H319	HP4	20	Not Hazardous
					H400	HP14	0.1	Not Hazardous
					H410	HP14	0.1	Not Hazardous
Zinc	ICP/OES	0.058	zinc oxide	0.07192	H400	HP14	0.1	Not Hazardous
					H410	HP14	0.1	Not Hazardous
pH		11.6		<11.5		HP4/HP8		Not Hazardous

SAL Ref: 601175

Client Reference: Demolition Material MPS decommissioning

**HAZARDOUS PROPERTY ASSESSMENT**  
**Waste (England and Wales) Regulations 2011**

Date of Assessment 6th October 2016

Hazardous Property/Determinand Organic Compounds	Test/Assessment Method	Result %	Worst Case Compound	% Worst Case Compound	Hazard Statement	Hazardous Property	Threshold %	Conclusion
		no significant compounds detected						
								below lowest threshold
Overall Conclusion EWC Code								<b>NOT HAZARDOUS</b> <b>17-09-04 MN</b>

SAL Ref: 601175

Client Reference: Demolition Material MPS decommissioning

**HAZARDOUS PROPERTY ASSESSMENT**  
**Waste (England and Wales) Regulations 2011**

Date of Assessment 6th October 2016

Hazardous Property/Determinand	Test/Assessment Method	Result %	Worst Case Compound	% Worst Case Compound	Hazard Statement	Hazardous Property	Threshold %	Conclusion
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Assessment is based on SAL Report # 601175 which is included .

Risk Phrases used in this assessment are based on EU 1277 2008

The conclusions in this assessment are based on guidance taken from WM3 1st Edition 2015.

The terms “Hazardous” and “Not Hazardous” are used in the context of these Regulations. Further testing may be required if classification under the Waste Acceptance Criteria (Landfill Regulations 2000/EU Directive 99/3/EC as amended) is intended.

The term “Not Hazardous” does not imply that significant possibility of significant harm to human health or the environment is not present.

Assessment Prepared by W A Cohen  
[bcohen@salltd.co.uk](mailto:bcohen@salltd.co.uk)



SAL Ref: 605011 001

Client Reference: Demolition Material MPS decommissioning

**HAZARDOUS PROPERTY ASSESSMENT**  
Waste (England and Wales) Regulations 2011

Date of Assessment 14th October 2016

Hazardous Property/Determinand	Test/Assessment Method	Result %	Worst Case Compound	% Worst Case Compound	Hazard Statement	Hazardous Property	Threshold %	Conclusion
Arsenic	ICP/OES	0.0009	diasenic trioxide		H350	HP7	0.1	Not Hazardous
					H300	HP6	0.25	Not Hazardous
					H314	HP8	1	Not Hazardous
					H400	HP14	0,1	Not Hazardous
	contact with acid	no gas evolved			H410	HP12		Not Hazardous
Cadmium	ICP/OES	<0.001	cadmium carbonate	<0.001	H332	HP6	22.5	Not Hazardous
					H312	HP6	0.25	
					H302	HP6	0.25	
					H400	HP14	0.1	Not Hazardous
					H410	HP14	0.1	Not Hazardous
Chromium	ICP/OES	0.0017	chromates	0.005355	H350	HP11	0.1	Not Hazardous
					H317			
					H416			
Mercury	ICP/OES	<0.0001		<0.0001				not detected -excluded
Lead	ICP/OES	0.0004	lead sulphate	0.0004	H360	HP10		Not Hazardous
					H332	HP6		Not Hazardous
					H302	HP6		Not Hazardous
					H373	HP5		Not Hazardous
					H400	HP14	0.10%	Not Hazardous
					H410	HP14		Not Hazardous
					H350	HP7		Not Hazardous
								not detected -excluded
Selenium	ICP/OES	<0.001		<0.001				
Copper	ICP/OES	0.02	copper oxide	0.025	H302	HP6		
					H400	HP14	0.1	Not Hazardous

SAL Ref: 605011 001

Client Reference: Demolition Material MPS decommissioning

**HAZARDOUS PROPERTY ASSESSMENT**  
Waste (England and Wales) Regulations 2011

Date of Assessment 14th October 2016

Hazardous Property/Determinand	Test/Assessment Method	Result %	Worst Case Compound	% Worst Case Compound	Hazard Statement	Hazardous Property	Threshold %	Conclusion
Nickel	ICP/OES	0.0009	nickel carbonate	0.0018	H410	HP14	0.1	Not Hazardous
					H350	HP7	0.1	Not Hazardous
					H341	HP11		Not Hazardous
					H360	HP10	0.3	Not Hazardous
					H372	HP5	1	Not Hazardous
					H332	HP6		Not Hazardous
					H302	HP6		Not Hazardous
					H315	HP4	20	Not Hazardous
					H334	HP13		Not Hazardous
					H317	HP13		Not Hazardous
					H319	HP4	20	Not Hazardous
					H400	HP14	0.1	Not Hazardous
					H410	HP14	0.1	Not Hazardous
Zinc	ICP/OES	0.0015	zinc oxide	0.00186	H400	HP14	0.1	Not Hazardous
					H410	HP14	0.1	Not Hazardous
pH		12.2		<11.5		HP4/HP8		Not Hazardous

SAL Ref: 605011 001

Client Reference: Demolition Material MPS decommissioning

**HAZARDOUS PROPERTY ASSESSMENT**  
**Waste (England and Wales) Regulations 2011**

Date of Assessment 14th October 2016

Hazardous Property/Determinand	Test/Assessment Method	Result %	Worst Case Compound	% Worst Case Compound	Hazard Statement	Hazardous Property	Threshold %	Conclusion
Organic Compounds								
Total Petroleum Hydrocarbons		5.10%				HP5	10	Not Hazardous
						HP7	0.1	Hazardous
						HP11	0.1	Hazardous
						HP10	3	Hazardous
						HP14	2.5	Hazardous
Overall Conclusion								<b>HAZARDOUS</b>
EWC Code								<b>17-09-03* MH</b>

SAL Ref: 605011 001

Client Reference: Demolition Material MPS decommissioning

**HAZARDOUS PROPERTY ASSESSMENT**  
**Waste (England and Wales) Regulations 2011**

Date of Assessment 14th October 2016

Hazardous Property/Determinand	Test/Assessment Method	Result %	Worst Case Compound	% Worst Case Compound	Hazard Statement	Hazardous Property	Threshold %	Conclusion
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Assessment is based on SAL Report # 605011 which is included .

Risk Phrases used in this assessment are based on EU 1277 2008

The conclusions in this assessment are based on guidance taken from WM3 1st Edition 2015.

The terms “Hazardous” and “Not Hazardous” are used in the context of these Regulations. Further testing may be required if classification under the Waste Acceptance Criteria (Landfill Regulations 2000/EU Directive 99/3/EC as amended) is intended.

The term “Not Hazardous” does not imply that significant possibility of significant harm to human health or the environment is not present.

Assessment Prepared by W A Cohen  
[bcohen@salltd.co.uk](mailto:bcohen@salltd.co.uk)

Hazardous Property/Determinand	Test/Assessment Method	Result %	Worst Case Compound	% Worst Case Compound	Hazard Statement	Hazardous Property	Threshold %	Conclusion
Arsenic	ICP/OES	0.0015	diasenic trioxide		H350	HP7	0.1	Not Hazardous
					H300	HP6	0.25	Not Hazardous
					H314	HP8	1	Not Hazardous
					H400	HP14	0,1	Not Hazardous
	contact with acid	no gas evolved			H410	HP12		Not Hazardous
Cadmium	ICP/OES	<0.001	cadmium carbonate	<0.001	H332	HP6	22.5	Not Hazardous
					H312	HP6	0.25	
					H302	HP6	0.25	
					H400	HP14	0.1	Not Hazardous
					H410	HP14	0.1	Not Hazardous
Chromium	ICP/OES	0.0019	chromates	0.005985	H350	HP11	0.1	Not Hazardous
					H317			
					H416			
Mercury	ICP/OES	<0.0001		<0.0001				not detected -excluded
Lead	ICP/OES	0.0012	lead sulphate	0.0012	H360	HP10		Not Hazardous
					H332	HP6		Not Hazardous
					H302	HP6		Not Hazardous
					H373	HP5		Not Hazardous
					H400	HP14	0.10%	Not Hazardous
					H410	HP14		Not Hazardous
					H350	HP7		Not Hazardous
Selenium	ICP/OES	<0.001		<0.001				not detected -excluded
Copper	ICP/OES	0.004	copper oxide	0.005	H302	HP6		
					H400	HP14	0.1	Not Hazardous

Hazardous Property/Determinand	Test/Assessment Method	Result %	Worst Case Compound	% Worst Case Compound	Hazard Statement	Hazardous Property	Threshold %	Conclusion
Nickel	ICP/OES	0.001	nickel carbonate	0.002	H410	HP14	0.1	Not Hazardous
					H350	HP7	0.1	Not Hazardous
					H341	HP11		Not Hazardous
					H360	HP10	0.3	Not Hazardous
					H372	HP5	1	Not Hazardous
					H332	HP6		Not Hazardous
					H302	HP6		Not Hazardous
					H315	HP4	20	Not Hazardous
					H334	HP13		Not Hazardous
					H317	HP13		Not Hazardous
					H319	HP4	20	Not Hazardous
					H400	HP14	0.1	Not Hazardous
					H410	HP14	0.1	Not Hazardous
Zinc	ICP/OES	0.0076	zinc oxide	0.009424	H400	HP14	0.1	Not Hazardous
					H410	HP14	0.1	Not Hazardous
pH		11.9		<11.5		HP4/HP8		Not Hazardous

SAL Ref: 605011 002

Client Reference: Demolition Material MPS decommissioning

**HAZARDOUS PROPERTY ASSESSMENT**  
**Waste (England and Wales) Regulations 2011**

Date of Assessment 14th October 2016

Hazardous Property/Determinand Organic Compounds	Test/Assessment Method	Result %	Worst Case Compound	% Worst Case Compound	Hazard Statement	Hazardous Property	Threshold %	Conclusion
Total Petroleum Hydrocarbons		3.7				HP5	10	Not Hazardous
						HP7	0.1	Hazardous
						HP11	0.1	Hazardous
						HP10	3	Hazardous
						HP14	2.5	Hazardous
Overall Conclusion EWC Code								<b>HAZARDOUS</b> <b>17-09-03* MH</b>

SAL Ref: 605011 002

Client Reference: Demolition Material MPS decommissioning

**HAZARDOUS PROPERTY ASSESSMENT**  
**Waste (England and Wales) Regulations 2011**

Date of Assessment 14th October 2016

Hazardous Property/Determinand	Test/Assessment Method	Result %	Worst Case Compound	% Worst Case Compound	Hazard Statement	Hazardous Property	Threshold %	Conclusion
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Assessment is based on SAL Report # 605011 which is included .

Risk Phrases used in this assessment are based on EU 1277 2008

The conclusions in this assessment are based on guidance taken from WM3 1st Edition 2015.

The terms “Hazardous” and “Not Hazardous” are used in the context of these Regulations. Further testing may be required if classification under the Waste Acceptance Criteria (Landfill Regulations 2000/EU Directive 99/3/EC as amended) is intended.

The term “Not Hazardous” does not imply that significant possibility of significant harm to human health or the environment is not present.

Assessment Prepared by W A Cohen



Hazardous Property/Determinand	Test/Assessment Method	Result %	Worst Case Compound	% Worst Case Compound	Hazard Statement	Hazardous Property	Threshold %	Conclusion
Arsenic	ICP/OES	0.0017	diasenic trioxide		H350	HP7	0.1	Not Hazardous
					H300	HP6	0.25	Not Hazardous
					H314	HP8	1	Not Hazardous
					H400	HP14	0,1	Not Hazardous
	contact with acid	no gas evolved			H410	HP12		Not Hazardous
Cadmium	ICP/OES	<0.001	cadmium carbonate	<0.001	H332	HP6	22.5	Not Hazardous
					H312	HP6	0.25	
					H302	HP6	0.25	
					H400	HP14	0.1	Not Hazardous
					H410	HP14	0.1	Not Hazardous
Chromium	ICP/OES	0.0019	chromates	0.005985	H350	HP11	0.1	Not Hazardous
					H317			
					H416			
Mercury	ICP/OES	<0.0001		<0.0001				not detected -excluded
Lead	ICP/OES	0.0006	lead sulphate	0.0004	H360	HP10	0.10%	Not Hazardous
					H332	HP6		Not Hazardous
					H302	HP6		Not Hazardous
					H373	HP5		Not Hazardous
					H400	HP14		Not Hazardous
					H410	HP14		Not Hazardous
					H350	HP7		Not Hazardous
Selenium	ICP/OES	<0.001		<0.001				not detected -excluded
Copper	ICP/OES	0.0025	copper oxide	0.003125	H302	HP6	0.1	Not Hazardous
					H400	HP14		

SAL Ref: 605011 003

Client Reference: Demolition Material MPS decommissioning

**HAZARDOUS PROPERTY ASSESSMENT**  
Waste (England and Wales) Regulations 2011

Date of Assessment 14th October 2016

Hazardous Property/Determinand	Test/Assessment Method	Result %	Worst Case Compound	% Worst Case Compound	Hazard Statement	Hazardous Property	Threshold %	Conclusion
Nickel	ICP/OES	0.0008	nickel carbonate	0.0016	H410	HP14	0.1	Not Hazardous
					H350	HP7	0.1	Not Hazardous
					H341	HP11		Not Hazardous
					H360	HP10	0.3	Not Hazardous
					H372	HP5	1	Not Hazardous
					H332	HP6		Not Hazardous
					H302	HP6		Not Hazardous
					H315	HP4	20	Not Hazardous
					H334	HP13		Not Hazardous
					H317	HP13		Not Hazardous
					H319	HP4	20	Not Hazardous
					H400	HP14	0.1	Not Hazardous
					H410	HP14	0.1	Not Hazardous
Zinc	ICP/OES	0.0033	zinc oxide	0.004092	H400	HP14	0.1	Not Hazardous
					H410	HP14	0.1	Not Hazardous
pH		12.2		<11.5		HP4/HP8		Not Hazardous

SAL Ref: 605011 003

Client Reference: Demolition Material MPS decommissioning

**HAZARDOUS PROPERTY ASSESSMENT**  
**Waste (England and Wales) Regulations 2011**

Date of Assessment 14th October 2016

Hazardous Property/Determinand	Test/Assessment Method	Result %	Worst Case Compound	% Worst Case Compound	Hazard Statement	Hazardous Property	Threshold %	Conclusion
Organic Compounds								
Total Petroleum								
Hydrocarbons		5.70%				HP5	10	Not Hazardous
						HP7	0.1	Hazardous
						HP11	0.1	Hazardous
						HP10	3	Hazardous
						HP14	2.5	Hazardous
Overall Conclusion								<b>HAZARDOUS</b>
EWC Code								<b>17-09-03* MH</b>

SAL Ref: 605011 003

Client Reference: Demolition Material MPS decommissioning

**HAZARDOUS PROPERTY ASSESSMENT**  
**Waste (England and Wales) Regulations 2011**

Date of Assessment 14th October 2016

Hazardous Property/Determinand	Test/Assessment Method	Result %	Worst Case Compound	% Worst Case Compound	Hazard Statement	Hazardous Property	Threshold %	Conclusion
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Assessment is based on SAL Report # 605011 which is included .

Risk Phrases used in this assessment are based on EU 1277 2008

The conclusions in this assessment are based on guidance taken from WM3 1st edition 2015.

The terms “Hazardous” and “Not Hazardous” are used in the context of these Regulations. Further testing may be required if classification under the Waste Acceptance Criteria (Landfill Regulations 2000/EU Directive 99/3/EC as amended) is intended.

The term “Not Hazardous” does not imply that significant possibility of significant harm to human health or the environment is not present.

Assessment Prepared by W A Cohen

SAL Ref: 605011 004

Client Reference: Demolition Material MPS decommissioning

**HAZARDOUS PROPERTY ASSESSMENT**  
Waste (England and Wales) Regulations 2011

Date of Assessment 14th October 2016

Hazardous Property/Determinand	Test/Assessment Method	Result %	Worst Case Compound	% Worst Case Compound	Hazard Statement	Hazardous Property	Threshold %	Conclusion
Arsenic	ICP/OES	0.0017	diasenic trioxide		H350	HP7	0.1	Not Hazardous
					H300	HP6	0.25	Not Hazardous
					H314	HP8	1	Not Hazardous
					H400	HP14	0,1	Not Hazardous
	contact with acid	no gas evolved			H410	HP12		Not Hazardous
Cadmium	ICP/OES	<0.001	cadmium carbonate	<0.001	H332	HP6	22.5	Not Hazardous
					H312	HP6	0.25	
					H302	HP6	0.25	
					H400	HP14	0.1	Not Hazardous
					H410	HP14	0.1	Not Hazardous
Chromium	ICP/OES	0.0019	chromates	0.005985	H350	HP11	0.1	Not Hazardous
					H317			
					H416			
Mercury	ICP/OES	<0.0001		<0.0001				not detected -excluded
Lead	ICP/OES	0.0006	lead sulphate	0.0004	H360	HP10	0.10%	Not Hazardous
					H332	HP6		Not Hazardous
					H302	HP6		Not Hazardous
					H373	HP5		Not Hazardous
					H400	HP14		Not Hazardous
					H410	HP14		Not Hazardous
					H350	HP7		Not Hazardous
Selenium	ICP/OES	<0.001		<0.001				not detected -excluded
Copper	ICP/OES	0.0025	copper oxide	0.003125	H302	HP6	0.1	Not Hazardous
					H400	HP14		

SAL Ref: 605011 004

Client Reference: Demolition Material MPS decommissioning

**HAZARDOUS PROPERTY ASSESSMENT**  
Waste (England and Wales) Regulations 2011

Date of Assessment 14th October 2016

Hazardous Property/Determinand	Test/Assessment Method	Result %	Worst Case Compound	% Worst Case Compound	Hazard Statement	Hazardous Property	Threshold %	Conclusion
Nickel	ICP/OES	0.0008	nickel carbonate	0.0016	H410	HP14	0.1	Not Hazardous
					H350	HP7	0.1	Not Hazardous
					H341	HP11		Not Hazardous
					H360	HP10	0.3	Not Hazardous
					H372	HP5	1	Not Hazardous
					H332	HP6		Not Hazardous
					H302	HP6		Not Hazardous
					H315	HP4	20	Not Hazardous
					H334	HP13		Not Hazardous
					H317	HP13		Not Hazardous
					H319	HP4	20	Not Hazardous
					H400	HP14	0.1	Not Hazardous
					H410	HP14	0.1	Not Hazardous
Zinc	ICP/OES	0.0033	zinc oxide	0.004092	H400	HP14	0.1	Not Hazardous
					H410	HP14	0.1	Not Hazrdous
pH		11.7		<11.5		HP4/HP8		Not Hazardous

SAL Ref: 605011 004

Client Reference: Demolition Material MPS decommissioning

**HAZARDOUS PROPERTY ASSESSMENT**  
**Waste (England and Wales) Regulations 2011**

Date of Assessment 14th October 2016

Hazardous Property/Determinand	Test/Assessment Method	Result %	Worst Case Compound	% Worst Case Compound	Hazard Statement	Hazardous Property	Threshold %	Conclusion
Organic Compounds								
Total Petroleum								
Hydrocarbons		2.00%				HP5	10	Not Hazardous
						HP7	0.1	Hazardous
						HP11	0.1	Hazardous
						HP10	3	Not Hazardous
						HP14	2.5	Not Hazardous
Overall Conclusion								<b>HAZARDOUS</b>
EWC Code								<b>17-09-03* MH</b>

SAL Ref: 605011 004

Client Reference: Demolition Material MPS decommissioning

**HAZARDOUS PROPERTY ASSESSMENT**  
**Waste (England and Wales) Regulations 2011**

Date of Assessment 14th October 2016

Hazardous Property/Determinand	Test/Assessment Method	Result %	Worst Case Compound	% Worst Case Compound	Hazard Statement	Hazardous Property	Threshold %	Conclusion
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Assessment is based on SAL Report # 605011 which is included .

Risk Phrases used in this assessment are based on EU 1277 2008

The conclusions in this assessment are based on guidance taken from WM3 1st Edition 2015.

The terms “Hazardous” and “Not Hazardous” are used in the context of these Regulations. Further testing may be required if classification under the Waste Acceptance Criteria (Landfill Regulations 2000/EU Directive 99/3/EC as amended) is intended.

The term “Not Hazardous” does not imply that significant possibility of significant harm to human health or the environment is not present.

Assessment Prepared by W A Cohen



Hazardous Property/Determinand	Test/Assessment Method	Result %	Worst Case Compound	% Worst Case Compound	Hazard Statement	Hazardous Property	Threshold %	Conclusion
Arsenic	ICP/OES	0.0017	diasenic trioxide		H350	HP7	0.1	Not Hazardous
					H300	HP6	0.25	Not Hazardous
					H314	HP8	1	Not Hazardous
					H400	HP14	0,1	Not Hazardous
	contact with acid	no gas evolved			H410	HP12		Not Hazardous
Cadmium	ICP/OES	<0.001	cadmium carbonate	<0.001	H332	HP6	22.5	Not Hazardous
					H312	HP6	0.25	
					H302	HP6	0.25	
					H400	HP14	0.1	Not Hazardous
					H410	HP14	0.1	Not Hazardous
Chromium	ICP/OES	0.0019	chromates	0.005985	H350 H317 H416	HP11	0.1	Not Hazardous
Mercury	ICP/OES	<0.0001		<0.0001				not detected -excluded
Lead	ICP/OES	0.0006	lead sulphate	0.0004	H360	HP10		Not Hazardous
					H332	HP6		Not Hazardous
					H302	HP6		Not Hazardous
					H373	HP5		Not Hazardous
					H400	HP14	0.10%	Not Hazardous
					H410	HP14		Not Hazardous
					H350	HP7		Not Hazardous
Selenium	ICP/OES	<0.001		<0.001				not detected -excluded
Copper	ICP/OES	0.0025	copper oxide	0.003125	H302	HP6		
					H400	HP14	0.1	Not Hazardous

Hazardous Property/Determinand	Test/Assessment Method	Result %	Worst Case Compound	% Worst Case Compound	Hazard Statement	Hazardous Property	Threshold %	Conclusion
Nickel	ICP/OES	0.0008	nickel carbonate	0.0016	H410	HP14	0.1	Not Hazardous
					H350	HP7	0.1	Not Hazardous
					H341	HP11		Not Hazardous
					H360	HP10	0.3	Not Hazardous
					H372	HP5	1	Not Hazardous
					H332	HP6		Not Hazardous
					H302	HP6		Not Hazardous
					H315	HP4	20	Not Hazardous
					H334	HP13		Not Hazardous
					H317	HP13		Not Hazardous
					H319	HP4	20	Not Hazardous
					H400	HP14	0.1	Not Hazardous
					H410	HP14	0.1	Not Hazardous
Zinc	ICP/OES	0.0033	zinc oxide	0.004092	H400	HP14	0.1	Not Hazardous
					H410	HP14	0.1	Not Hazardous
pH		11.7		<11.5		HP4/HP8		Not Hazardous

SAL Ref: 605011 005

Client Reference: Demolition Material MPS decommissioning

**HAZARDOUS PROPERTY ASSESSMENT**  
**Waste (England and Wales) Regulations 2011**

Date of Assessment 14th October 2016

Hazardous Property/Determinand Organic Compounds	Test/Assessment Method	Result %	Worst Case Compound	% Worst Case Compound	Hazard Statement	Hazardous Property	Threshold %	Conclusion
Total Petroleum Hydrocarbons		1.40%				HP5	10	Not Hazardous
			Benzo a Pyrene	<0.1		HP7	0.1	Not Hazardous
			which is less than 0.01%			HP11	0.1	Not Hazardous
			of the TPH			HP10	3	Not Hazardous
			waste is not hazardous by HP7/11			HP14	2.5	Not Hazardous
Overall Conclusion EWC Code								Not Hazardous 17-09-04 MN

SAL Ref: 605011 005

Client Reference: Demolition Material MPS decommissioning

**HAZARDOUS PROPERTY ASSESSMENT**  
**Waste (England and Wales) Regulations 2011**

Date of Assessment 14th October 2016

Hazardous Property/Determinand	Test/Assessment Method	Result %	Worst Case Compound	% Worst Case Compound	Hazard Statement	Hazardous Property	Threshold %	Conclusion
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Assessment is based on SAL Report # 605011 which is included .

Risk Phrases used in this assessment are based on EU 1277 2008

The conclusions in this assessment are based on guidance taken from WM3 1st Edition 2015.

The terms “Hazardous” and “Not Hazardous” are used in the context of these Regulations. Further testing may be required if classification under the Waste Acceptance Criteria (Landfill Regulations 2000/EU Directive 99/3/EC as amended) is intended.

The term “Not Hazardous” does not imply that significant possibility of significant harm to human health or the environment is not present.

Assessment Prepared by W A Cohen  
[bcohen@salltd.co.uk](mailto:bcohen@salltd.co.uk)

Hazardous Property/Determinand	Test/Assessment Method	Result %	Worst Case Compound	% Worst Case Compound	Hazard Statement	Hazardous Property	Threshold %	Conclusion
Arsenic	ICP/OES	0.0027	diasenic trioxide		H350	HP7	0.1	Not Hazardous
					H300	HP6	0.25	Not Hazardous
					H314	HP8	1	Not Hazardous
					H400	HP14	0,1	Not Hazardous
	contact with acid	no gas evolved			H410	HP12		Not Hazardous
Cadmium	ICP/OES	<0.001	cadmium carbonate	<0.001	H332	HP6	22.5	Not Hazardous
					H312	HP6	0.25	
					H302	HP6	0.25	
					H400	HP14	0.1	Not Hazardous
					H410	HP14	0.1	Not Hazardous
Chromium	ICP/OES	0.0025	chromates	0.007875	H350 H317 H416	HP11	0.1	Not Hazardous
Mercury	ICP/OES	<0.0001		<0.0001				not detected -excluded
Lead	ICP/OES	0.0012	lead sulphate	0.0004	H360	HP10		Not Hazardous
					H332	HP6		Not Hazardous
					H302	HP6		Not Hazardous
					H373	HP5		Not Hazardous
					H400	HP14	0.10%	Not Hazardous
					H410	HP14		Not Hazardous
					H350	HP7		Not Hazardous
Selenium	ICP/OES	<0.001		<0.001				not detected -excluded
Copper	ICP/OES	0.0012	copper oxide	0.0015	H302	HP6		
					H400	HP14	0.1	Not Hazardous

SAL Ref: 584632 002,4,6,7

**HAZARDOUS PROPERTY ASSESSMENT**  
Waste (England and Wales) Regulations 2011

Date of Assessment 11th August 2016

Client Reference: MPS Decommissioning-demolition material

Hazardous Property/Determinand	Test/Assessment Method	Result %	Worst Case Compound	% Worst Case Compound	Hazard Statement	Hazardous Property	Threshold %	Conclusion
pH	Probe							
	002	2.7				HP4/HP8	2<pH<11.5	Not Hazardous
	004	4.4				HP4/HP8	2<pH<11.5	Not Hazardous
	006	5.6				HP4/HP8	2<pH<11.5	Not Hazardous
	007	2.5				HP4/HP8	2<pH<11.5	Not Hazardous

SAL Ref: 584632 002,4,6,7

**HAZARDOUS PROPERTY ASSESSMENT**  
Waste (England and Wales) Regulations 2011

Date of Assessment 11th August 2016

Client Reference: MPS Decommissioning-demolition material

Hazardous Property/Determinand	Test/Assessment Method	Result %	Worst Case Compound	% Worst Case Compound	Hazard Statement	Hazardous Property	Threshold %	Conclusion
<b>Organic Compounds</b>								
Semi Volatiles PAHs and TPHs	GC MS	<0.1%			H341			
					H331	HP6	0.1	
					H311	HP6	0.1	
					H301	HP6	0.1	
					H373			
					H314			Not Hazardous
<b>Overall Conclusion</b>	Average of all 4 samples							<b>Not Hazardous</b>
<b>EWC Code</b>	MPS6							<b>Hazardous</b>

SAL Ref: 584632 002,4,6,7

**HAZARDOUS PROPERTY ASSESSMENT**  
**Waste (England and Wales) Regulations 2011**

Date of Assessment 11th August 2016

Client Reference: MPS Decommissioning-demolition material

Hazardous Property/Determinand	Test/Assessment Method	Result %	Worst Case Compound	% Worst Case Compound	Hazard Statement	Hazardous Property	Threshold %	Conclusion
<b>OIL Samples</b>								
PCBs	highest	0.00025		All oils are to be classified as hazardous				<b>EW Code 13 01 13* AH</b>
<b>Note: as PCB concentration is less than 50mg/kg, 13 01 01* does not apply</b>								

Assessment is based on SAL Report # 584632 which is included .

Risk Phrases used in this assessment are based on EU 1277 2008

The conclusions in this assessment are based on guidance taken from WM3 1st Edition 2015.

The terms "Hazardous" and "Not Hazardous" are used in the context of these Regulations. Further testing may be required if classification under the Waste Acceptance Criteria (Landfill Regulations 2000/EU Directive 99/3/EC as amended) is intended.

The term "Not Hazardous" does not imply that the product could present a significant possibility of significant harm to human health or the environment.

Assessment Prepared by W A Cohen  
[bcohen@salltd.co.uk](mailto:bcohen@salltd.co.uk)



SAL Ref: 597500

Client Reference: Demolition Material MPS decommissioning

# HAZARDOUS PROPERTY ASSESSMENT Waste (England and Wales) Regulations 2011

Date of Assessment 30th September 2016

Hazardous Property/Determinand	Test/Assessment Method	Result %	Worst Case Compound	% Worst Case Compound	Hazard Statement	Hazardous Property	Threshold %	Conclusion
Arsenic	ICP/OES	0.0007	diasenic trioxide	0.000924	H350	HP7	0.1	Not Hazardous
					H300	HP6	0.25	Not Hazardous
					H314	HP8	1	Not Hazardous
					H400	HP14	0,1	Not Hazardous
					H410	HP12		Not Hazardous
Cadmium	ICP/OES	0.0001	cadmium carbonate	<0.001				
Chromium	ICP/OES	0.0015	chromates	0.004725	H350	HP11	0.1	Not Hazardous
					H317			
					H416			
Mercury	ICP/OES	<0.0001		<0.0001				not detected -excluded
Lead	ICP/OES	0.003	lead sulphate	0.012	H360	HP10		Not Hazardous
					H332	HP6		Not Hazardous
					H302	HP6		Not Hazardous
					H373	HP5		Not Hazardous
					H400	HP14	0.10%	Not Hazardous
					H410	HP14		Not Hazardous
					H350	HP7		Not Hazardous
Selenium	ICP/OES	<0.001		<0.001				not detected -excluded
Copper	ICP/OES	0.0042	copper oxide	0.00525	H302	HP6		
					H400	HP14	0.1	Not Hazardous

SAL Ref: 597500

Client Reference: Demolition Material MPS decommissioning

**HAZARDOUS PROPERTY ASSESSMENT**  
Waste (England and Wales) Regulations 2011

Date of Assessment 30th September 2016

Hazardous Property/Determinand	Test/Assessment Method	Result %	Worst Case Compound	% Worst Case Compound	Hazard Statement	Hazardous Property	Threshold %	Conclusion
Nickel	ICP/OES	0.0008	nickel carbonate	0.0016	H410	HP14	0.1	Not Hazardous
					H350	HP7	0.1	Not Hazardous
					H341	HP11		Not Hazardous
					H360	HP10	0.3	Not Hazardous
					H372	HP5	1	Not Hazardous
					H332	HP6		Not Hazardous
					H302	HP6		Not Hazardous
					H315	HP4	20	Not Hazardous
					H334	HP13		Not Hazardous
					H317	HP13		Not Hazardous
					H319	HP4	20	Not Hazardous
					H400	HP14	0.1	Not Hazardous
					H410	HP14	0.1	Not Hazardous
Zinc	ICP/OES	0.0069	zinc oxide	0.008556	H400	HP14	0.1	Not Hazardous
					H410	HP14	0.1	Not Hazardous
pH		11.6		<11.5		HP4/HP8		Not Hazardous

SAL Ref: 597500

Client Reference: Demolition Material MPS decommissioning

**HAZARDOUS PROPERTY ASSESSMENT**  
**Waste (England and Wales) Regulations 2011**

Date of Assessment 30th September 2016

Hazardous Property/Determinand Organic Compounds	Test/Assessment Method	Result %	Worst Case Compound	% Worst Case Compound	Hazard Statement	Hazardous Property	Threshold %	Conclusion
		no significant compounds detected						
								below lowest threshold
Overall Conclusion EWC Code								<b>NOT HAZARDOUS</b> <b>17-09-04 MN</b>

SAL Ref: 597500

Client Reference: Demolition Material MPS decommissioning

**HAZARDOUS PROPERTY ASSESSMENT**  
**Waste (England and Wales) Regulations 2011**

Date of Assessment 30th September 2016

Hazardous Property/Determinand	Test/Assessment Method	Result %	Worst Case Compound	% Worst Case Compound	Hazard Statement	Hazardous Property	Threshold %	Conclusion
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Assessment is based on SAL Report # 597500 which is included .

Risk Phrases used in this assessment are based on EU 1277 2008

The conclusions in this assessment are based on guidance taken from WM3 1st Edition 2015.

The terms “Hazardous” and “Not Hazardous” are used in the context of these Regulations. Further testing may be required if classification under the Waste Acceptance Criteria (Landfill Regulations 2000/EU Directive 99/3/EC as amended) is intended.

The term “Not Hazardous” does not imply that significant possibility of significant harm to human health or the environment is not present.

Assessment Prepared by W A Cohen  
[bcohen@salltd.co.uk](mailto:bcohen@salltd.co.uk)

SAL Ref: 597225

Client Reference: Demolition Material MPS decommissioning

# HAZARDOUS PROPERTY ASSESSMENT Waste (England and Wales) Regulations 2011

Date of Assessment 29th September 2016

Hazardous Property/Determinand	Test/Assessment Method	Result %	Worst Case Compound	% Worst Case Compound	Hazard Statement	Hazardous Property	Threshold %	Conclusion
Arsenic	ICP/OES	0.02	diasenic trioxide	0.0264	H350	HP7	0.1	Not Hazardous
					H300	HP6	0.25	Not Hazardous
					H314	HP8	1	Not Hazardous
					H400	HP14	0,1	Not Hazardous
					H410	HP12		Not Hazardous
Cadmium	ICP/OES	0.0003	cadmium carbonate	<0.001				
Chromium	ICP/OES	0.012	chromates	0.0378	H332	HP6	22.5	Not Hazardous
					H312	HP6	0.25	
					H302	HP6	0.25	
					H400	HP14	0.1	Not Hazardous
					H410	HP14	0.1	Not Hazardous
Mercury	ICP/OES	0.012	lead sulphate	<0.0001	H350	HP11	0.1	Not Hazardous
					H317			
					H416			
Lead	ICP/OES	<0.0001	lead sulphate	0.012				not detected -excluded
					H360	HP10		Not Hazardous
					H332	HP6		Not Hazardous
					H302	HP6		Not Hazardous
					H373	HP5		Not Hazardous
Selenium	ICP/OES	<0.001	copper oxide	<0.001	H400	HP14	0.10%	Not Hazardous
					H410	HP14		Not Hazardous
					H350	HP7		Not Hazardous
								not detected -excluded
Copper	ICP/OES	0.02	copper oxide	0.025	H302	HP6		
					H400	HP14	0.1	Not Hazardous

SAL Ref: 597225

Client Reference: Demolition Material MPS decommissioning

**HAZARDOUS PROPERTY ASSESSMENT**  
Waste (England and Wales) Regulations 2011

Date of Assessment 29th September 2016

Hazardous Property/Determinand	Test/Assessment Method	Result %	Worst Case Compound	% Worst Case Compound	Hazard Statement	Hazardous Property	Threshold %	Conclusion
Nickel	ICP/OES	1.7	nickel carbonate	3.4	H410	HP14	0.1	Not Hazardous
					H350	HP7	0.1	<b>Hazardous</b>
					H341	HP11		Not Hazardous
					H360	HP10	0.3	<b>Hazardous</b>
					H372	HP5	1	<b>Hazardous</b>
					H332	HP6		Not Hazardous
					H302	HP6		Not Hazardous
					H315	HP4	20	Not Hazardous
					H334	HP13		Not Hazardous
					H317	HP13		Not Hazardous
					H319	HP4	20	Not Hazardous
					H400	HP14	0.1	<b>Hazardous</b>
					H410	HP14	0.1	<b>Hazardous</b>
Zinc	ICP/OES	0.058	zinc oxide	0.07192	H400	HP14	0.1	Not Hazardous
					H410	HP14	0.1	Not Hazardous
pH		11.3		<11.5		HP4/HP8		Not Hazardous

SAL Ref: 597225

Client Reference: Demolition Material MPS decommissioning

**HAZARDOUS PROPERTY ASSESSMENT**  
**Waste (England and Wales) Regulations 2011**

Date of Assessment 29th September 2016

Hazardous Property/Determinand Organic Compounds	Test/Assessment Method	Result %	Worst Case Compound	% Worst Case Compound	Hazard Statement	Hazardous Property	Threshold %	Conclusion
		no significant compounds detected						
								below lowest threshold
Overall Conclusion EWC Code								<b>HAZARDOUS</b> <b>17-09-03* MH</b>

Hazardous Property/Determinand	Test/Assessment Method	Result %	Worst Case Compound	% Worst Case Compound	Hazard Statement	Hazardous Property	Threshold %	Conclusion
Nickel	ICP/OES	0.0012	nickel carbonate	0.0024	H410	HP14	0.1	Not Hazardous
					H350	HP7	0.1	Not Hazardous
					H341	HP11		Not Hazardous
					H360	HP10	0.3	Not Hazardous
					H372	HP5	1	Not Hazardous
					H332	HP6		Not Hazardous
					H302	HP6		Not Hazardous
					H315	HP4	20	Not Hazardous
					H334	HP13		Not Hazardous
					H317	HP13		Not Hazardous
					H319	HP4	20	Not Hazardous
					H400	HP14	0.1	Not Hazardous
					H410	HP14	0.1	Not Hazardous
Zinc	ICP/OES	0.006	zinc oxide	0.00744	H400	HP14	0.1	Not Hazardous
					H410	HP14	0.1	Not Hazardous
pH		9.9		<11.5		HP4/HP8		Not Hazardous



SAL Ref: 605011 006

Client Reference: Demolition Material MPS decommissioning

**HAZARDOUS PROPERTY ASSESSMENT**  
**Waste (England and Wales) Regulations 2011**

Date of Assessment 14th October 2016

Hazardous Property/Determinand Organic Compounds	Test/Assessment Method	Result %	Worst Case Compound	% Worst Case Compound	Hazard Statement	Hazardous Property	Threshold %	Conclusion
Total Petroleum Hydrocarbons		0.34%				HP5	10	Not Hazardous
			Benzo a Pyrene	<0.1		HP7	0.1	Not Hazardous
			which is less than 0.01%			HP11	0.1	Not Hazardous
			of the TPH ie 0.34mg/kg			HP10	3	Not Hazardous
			waste is not hazardous by HP7/11			HP14	2.5	Not Hazardous
Overall Conclusion EWC Code								Not Hazardous 17-09-04 MN

SAL Ref: 605011 006

Client Reference: Demolition Material MPS decommissioning

**HAZARDOUS PROPERTY ASSESSMENT**  
**Waste (England and Wales) Regulations 2011**

Date of Assessment 14th October 2016

Hazardous Property/Determinand	Test/Assessment Method	Result %	Worst Case Compound	% Worst Case Compound	Hazard Statement	Hazardous Property	Threshold %	Conclusion
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Assessment is based on SAL Report # 605011 which is included .

Risk Phrases used in this assessment are based on EU 1277 2008

The conclusions in this assessment are based on guidance taken from WM3 1st Edition 2015.

The terms “Hazardous” and “Not Hazardous” are used in the context of these Regulations. Further testing may be required if classification under the Waste Acceptance Criteria (Landfill Regulations 2000/EU Directive 99/3/EC as amended) is intended.

The term “Not Hazardous” does not imply that significant possibility of significant harm to human health or the environment is not present.

Assessment Prepared by W A Cohen

Hazardous Property/Determinand	Test/Assessment Method	Result %	Worst Case Compound	% Worst Case Compound	Hazard Statement	Hazardous Property	Threshold %	Conclusion
Arsenic	ICP/OES	0.0023	diasenic trioxide		H350	HP7	0.1	Not Hazardous
					H300	HP6	0.25	Not Hazardous
					H314	HP8	1	Not Hazardous
					H400	HP14	0,1	Not Hazardous
	contact with acid	no gas evolved			H410	HP12		Not Hazardous
Cadmium	ICP/OES	<0.001	cadmium carbonate	<0.001	H332	HP6	22.5	Not Hazardous
					H312	HP6	0.25	
					H302	HP6	0.25	
					H400	HP14	0.1	Not Hazardous
					H410	HP14	0.1	Not Hazardous
Chromium	ICP/OES	0.002	chromates	0.0063	H350	HP11	0.1	Not Hazardous
					H317			
					H416			
Mercury	ICP/OES	<0.0001		<0.0001				not detected -excluded
Lead	ICP/OES	0.0012	lead sulphate	0.0004	H360	HP10		Not Hazardous
					H332	HP6		Not Hazardous
					H302	HP6		Not Hazardous
					H373	HP5		Not Hazardous
					H400	HP14	0.10%	Not Hazardous
					H410	HP14		Not Hazardous
					H350	HP7		Not Hazardous
Selenium	ICP/OES	<0.001		<0.001				not detected -excluded
Copper	ICP/OES	0.0006	copper oxide	0.00075	H302	HP6		
					H400	HP14	0.1	Not Hazardous

SAL Ref: 605011 007

Client Reference: Demolition Material MPS decommissioning

**HAZARDOUS PROPERTY ASSESSMENT**  
Waste (England and Wales) Regulations 2011

Date of Assessment 14th October 2016

Hazardous Property/Determinand	Test/Assessment Method	Result %	Worst Case Compound	% Worst Case Compound	Hazard Statement	Hazardous Property	Threshold %	Conclusion
Nickel	ICP/OES	0.0007	nickel carbonate	0.0014	H410	HP14	0.1	Not Hazardous
					H350	HP7	0.1	Not Hazardous
					H341	HP11		Not Hazardous
					H360	HP10	0.3	Not Hazardous
					H372	HP5	1	Not Hazardous
					H332	HP6		Not Hazardous
					H302	HP6		Not Hazardous
					H315	HP4	20	Not Hazardous
					H334	HP13		Not Hazardous
					H317	HP13		Not Hazardous
					H319	HP4	20	Not Hazardous
					H400	HP14	0.1	Not Hazardous
					H410	HP14	0.1	Not Hazardous
Zinc	ICP/OES	16	zinc oxide	19.84	H400	HP14	0.1	Not Hazardous
					H410	HP14	0.1	Not Hazardous
pH		9.9		<11.5		HP4/HP8		Not Hazardous

SAL Ref: 605011 007

Client Reference: Demolition Material MPS decommissioning

**HAZARDOUS PROPERTY ASSESSMENT**  
**Waste (England and Wales) Regulations 2011**

Date of Assessment 14th October 2016

Hazardous Property/Determinand	Test/Assessment Method	Result %	Worst Case Compound	% Worst Case Compound	Hazard Statement	Hazardous Property	Threshold %	Conclusion
Organic Compounds								
Total Petroleum Hydrocarbons		0.00070		0.00070		HP5	10	Not Hazardous
						HP7	0.1	Not Hazardous
						HP11	0.1	Not Hazardous
						HP10	3	Not Hazardous
						HP14	2.5	Not Hazardous
Overall Conclusion								Not Hazardous
EWC Code								17-09-04 MN

SAL Ref: 605011 007

Client Reference: Demolition Material MPS decommissioning

**HAZARDOUS PROPERTY ASSESSMENT**  
**Waste (England and Wales) Regulations 2011**

Date of Assessment 14th October 2016

Hazardous Property/Determinand	Test/Assessment Method	Result %	Worst Case Compound	% Worst Case Compound	Hazard Statement	Hazardous Property	Threshold %	Conclusion
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Assessment is based on SAL Report # 605011 which is included .

Risk Phrases used in this assessment are based on EU 1277 2008

The conclusions in this assessment are based on guidance taken from WM3 1st Edition 2015.

The terms “Hazardous” and “Not Hazardous” are used in the context of these Regulations. Further testing may be required if classification under the Waste Acceptance Criteria (Landfill Regulations 2000/EU Directive 99/3/EC as amended) is intended.

The term “Not Hazardous” does not imply that significant possibility of significant harm to human health or the environment is not present.

Assessment Prepared by W A Cohen

SAL Ref: 605011 001

Client Reference: MPS15 Soil under evaporator

**HAZARDOUS PROPERTY ASSESSMENT**  
Waste (England and Wales) Regulations 2011

Date of Assessment 30th October 2016

Hazardous Property/Determinand	Test/Assessment Method	Result %	Worst Case Compound	% Worst Case Compound	Hazard Statement	Hazardous Property	Threshold %	Conclusion
Arsenic	ICP/OES	0.0042	diasenic trioxide		H350	HP7	0.1	Not Hazardous
					H300	HP6	0.25	Not Hazardous
					H314	HP8	1	Not Hazardous
					H400	HP14	0,1	Not Hazardous
	contact with acid	no gas evolved			H410	HP12		Not Hazardous
Cadmium	ICP/OES	0.0004	cadmium carbonate	<0.001	H332	HP6	22.5	Not Hazardous
					H312	HP6	0.25	
					H302	HP6	0.25	
					H400	HP14	0.1	Not Hazardous
					H410	HP14	0.1	Not Hazardous
Chromium	ICP/MS (on leachate)	0.0000190	chromates	<0.01	H350	HP11	0.1	Not Hazardous
					H317			
					H416			
Mercury	ICP/OES	<0.0001		<0.0001				not detected -excluded
Lead	ICP/OES	0.0004	lead sulphate	0.0004	H360	HP10		Not Hazardous
					H332	HP6		Not Hazardous
					H302	HP6		Not Hazardous
					H373	HP5		Not Hazardous
					H400	HP14	0.10%	Not Hazardous
					H410	HP14		Not Hazardous
					H350	HP7		Not Hazardous
Selenium	ICP/OES	<0.001		<0.001				not detected -excluded
Copper	ICP/OES	1.7	copper oxide see Note 1	2.125	H302	HP6		
					H400	HP14	0.1	Hazardous

SAL Ref: 605011 001

Client Reference: MPS15 Soil under evaporator

**HAZARDOUS PROPERTY ASSESSMENT**  
Waste (England and Wales) Regulations 2011

Date of Assessment 30th October 2016

Hazardous Property/Determinand	Test/Assessment Method	Result %	Worst Case Compound	% Worst Case Compound	Hazard Statement	Hazardous Property	Threshold %	Conclusion
Nickel	ICP/OES	0.0009	nickel carbonate	0.0018	H410	HP14	0.1	Hazardous
					H350	HP7	0.1	Not Hazardous
					H341	HP11		Not Hazardous
					H360	HP10	0.3	Not Hazardous
					H372	HP5	1	Not Hazardous
					H332	HP6		Not Hazardous
					H302	HP6		Not Hazardous
					H315	HP4	20	Not Hazardous
					H334	HP13		Not Hazardous
					H317	HP13		Not Hazardous
					H319	HP4	20	Not Hazardous
					H400	HP14	0.1	Not Hazardous
					H410	HP14	0.1	Not Hazardous
Zinc	ICP/OES	2.2	zinc oxide see Note 1	2.728	H400	HP14	0.1	Hazardous
					H410	HP14	0.1	Hazardous
pH		8.1		<11.5		HP4/HP8		Not Hazardous



SAL Ref: 605011 001

Client Reference: MPS15 Soil under evaporator

**HAZARDOUS PROPERTY ASSESSMENT**  
**Waste (England and Wales) Regulations 2011**

Date of Assessment 30th October 2016

Hazardous Property/Determinand	Test/Assessment Method	Result %	Worst Case Compound	% Worst Case Compound	Hazard Statement	Hazardous Property	Threshold %	Conclusion
Organic Compounds								
Total Petroleum Hydrocarbons	GC FID	0.12%	see Note 2			HP5 HP7 HP11 HP10 HP14	10 0.1 0.1 3 2.5	Not Hazardous Not Hazardous Not Hazardous Not Hazardous Not Hazardous
Polychlorinated Biphenyls	GC MS	0.000014					0.005	Not Hazardous
<b>Overall Conclusion</b> <b>EWC Code</b>								<b>HAZARDOUS</b> <b>17-09-03* MH</b>

**Note 1**

The waste is Hazardous by the level of copper and zinc unless they can be determined to be present As compounds other than the oxides. This will require XRD analysis

**Note 2**

The TPH level indicates that the waste is Hazardous. However, the benzo a pyrene level is 0.00001% Which is less than 0.01% of the TPH level. Therefore the waste is Not Hazardous by this parameter.

SAL Ref: 605011 001

Client Reference: MPS15 Soil under evaporator

**HAZARDOUS PROPERTY ASSESSMENT**  
**Waste (England and Wales) Regulations 2011**

Date of Assessment 30th October 2016

Hazardous Property/Determinand	Test/Assessment Method	Result %	Worst Case Compound	% Worst Case Compound	Hazard Statement	Hazardous Property	Threshold %	Conclusion
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Assessment is based on SAL Report # 605011 which is included .

Risk Phrases used in this assessment are based on EU 1277 2008

The conclusions in this assessment are based on guidance taken from WM3 1st Edition 2015.

The terms “Hazardous” and “Not Hazardous” are used in the context of these Regulations. Further testing may be required if classification under the Waste Acceptance Criteria (Landfill Regulations 2000/EU Directive 99/3/EC as amended) is intended.

The term “Not Hazardous” does not imply that significant possibility of significant harm to human health or the environment is not present.

Assessment Prepared by W A Cohen  
[bcohen@salltd.co.uk](mailto:bcohen@salltd.co.uk)

# Scientific Analysis Laboratories Ltd

## Certificate of Analysis

**Report Number:** Supplemental to 607596-1

**Date of Report:** 02-Nov-2016

**Customer:** ADI Associates Ltd  
Kappara Business Centre  
113 Triq Birkirkara  
San Gwann SGN4197  
Malta  
VAT Number: MT18486514

**Customer Contact:** Ms Rachel Xuereb

**Customer Job Reference:**

**Date Job Received at SAL:** 17-Oct-2016

**Date Analysis Started:** 18-Oct-2016

**Date Analysis Completed:** 01-Nov-2016

The results reported relate to samples received in the laboratory and may not be representative of a whole batch.

Opinions and interpretations expressed herein are outside the scope of UKAS accreditation

This report should not be reproduced except in full without the written approval of the laboratory

Tests covered by this certificate were conducted in accordance with SAL SOPs

All results have been reviewed in accordance with Section 25 of the SAL Quality Manual



Report checked  
and authorised by :  
Stefan Kondziela  
Project Manager

Issued by :  
Stefan Kondziela  
Project Manager





<b>SAL Reference:</b> 607596 <b>Customer Reference:</b> <b>Water</b> Analysed as Water <b>Soluble Metals</b>					
<b>SAL Reference</b>				<b>607596 001</b>	
<b>Customer Sample Reference</b>				<b>MPS16H2O</b>	
<b>Date Sampled</b>				<b>13-OCT-2016</b>	
<b>Determinand</b>	<b>Method</b>	<b>Test Sample</b>	<b>LOD</b>	<b>Units</b>	
As (Dissolved)	T281	AR	0.2	µg/l	<0.2
B (Dissolved)	T373	AR	10	µg/l	<b>10</b>
Cd (Dissolved)	T281	AR	0.02	µg/l	<0.02
Cr (Dissolved)	T281	AR	1	µg/l	<1
Cu (Dissolved)	T281	AR	0.5	µg/l	<b>14</b>
Pb (Dissolved)	T373	AR	30	µg/l	<30
Hg (Dissolved)	T281	AR	0.05	µg/l	<0.05
Ni (Dissolved)	T281	AR	1	µg/l	<b>24</b>
P (Dissolved)	T373	AR	1000	µg/l	<1000
Ag (Dissolved)	T373	AR	10	µg/l	<b>30</b>
Sn (Dissolved)	T373	AR	10	µg/l	<10
V (Dissolved)	T281	AR	2	µg/l	<2
Zn (Dissolved)	T281	AR	2	µg/l	<b>15</b>
Sum of Soluble Non Ferrous metals	T85	AR			<b>93</b>

## Index to symbols used in Supplemental to 607596-1

<b>Value</b>	<b>Description</b>
F	Filtered
Total	Total
AR	As Received
S	Analysis was subcontracted
U	Analysis is UKAS accredited
N	Analysis is not UKAS accredited

## Notes

Supplemental report to amend sum of total non-ferrous metals.
Nitrogen testing was subcontracted to NRM.

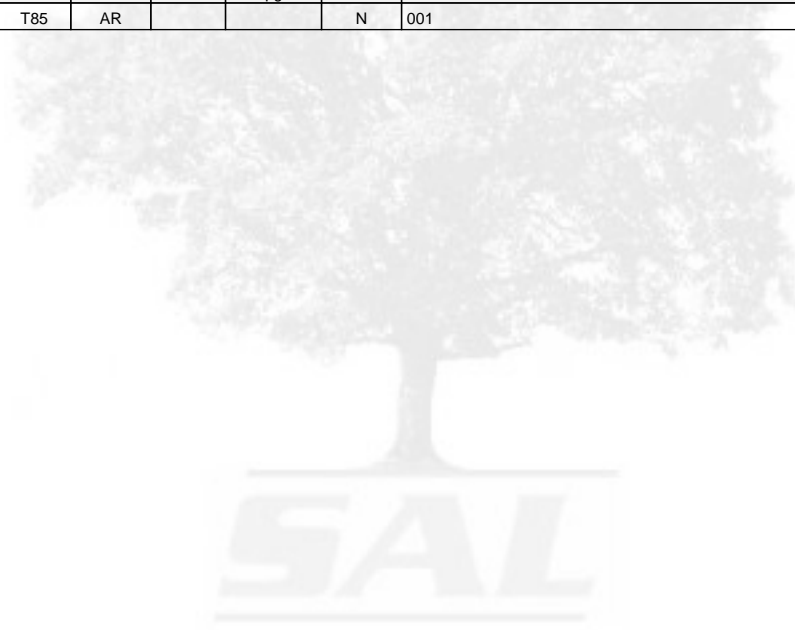
## Method Index

<b>Value</b>	<b>Description</b>
T319	Colorimetric (Sub)
T373	ICP/OES (Filtered)
T686	Discrete Analyser
T303	ICP-OES (Total)
T7	Probe
T281	ICP/MS (Filtered)
T2	Grav
T301	ICP/MS (Total)
T4	Colorimetry
T85	Calc

## Accreditation Summary

<b>Determinand</b>	<b>Method</b>	<b>Test Sample</b>	<b>LOD</b>	<b>Units</b>	<b>Symbol</b>	<b>SAL References</b>
Chloride	T686	F	1	mg/l	U	001
Cyanide(Total)	T4	AR	0.05	mg/l	U	001
Fluoride	T686	F	0.05	mg/l	U	001
Nitrogen (Total)	T319	AR	0.1	mg/l	SN	001
Oil and Grease	T2	AR	10	mg/l	N	001
pH	T7	AR			U	001
Settleable Solids	T2	AR	10	mg/l	N	001
Sulphate	T686	F	0.5	mg/l	U	001
Sulphide	T4	AR	0.05	mg/l	N	001

Determinand	Method	Test Sample	LOD	Units	Symbol	SAL References
Suspended Solids (Total)	T2	AR	10	mg/l	N	001
Temperature	T7	AR	0.5	C	N	001
As (Dissolved)	T281	AR	0.2	µg/l	U	001
B (Dissolved)	T373	AR	10	µg/l	N	001
Cd (Dissolved)	T281	AR	0.02	µg/l	U	001
Cr (Dissolved)	T281	AR	1	µg/l	U	001
Cu (Dissolved)	T281	AR	0.5	µg/l	U	001
Pb (Dissolved)	T373	AR	30	µg/l	U	001
Hg (Dissolved)	T281	AR	0.05	µg/l	U	001
Ni (Dissolved)	T281	AR	1	µg/l	U	001
P (Dissolved)	T373	AR	1000	µg/l	N	001
Ag (Dissolved)	T373	AR	10	µg/l	N	001
Sn (Dissolved)	T373	AR	10	µg/l	U	001
V (Dissolved)	T281	AR	2	µg/l	U	001
Zn (Dissolved)	T281	AR	2	µg/l	U	001
Sum of Soluble Non Ferrous metals	T85	AR			N	001
As (Total)	T301	Total	0.2	µg/l	U	001
B (Total)	T303	AR	10	µg/l	N	001
Cd (Total)	T301	Total	0.02	µg/l	U	001
Cr (Total)	T301	Total	1	µg/l	U	001
Cu (Total)	T301	Total	0.5	µg/l	U	001
Pb (Total)	T301	Total	0.3	µg/l	U	001
Hg (Total)	T301	Total	0.05	µg/l	U	001
Ni (Total)	T301	Total	1	µg/l	U	001
P (Total)	T303	AR	1000	µg/l	N	001
Ag (Total)	T303	AR	10	µg/l	N	001
Sn (Total)	T303	AR	10	µg/l	N	001
V (Total)	T301	Total	2	µg/l	U	001
Zn (Total)	T301	Total	2	µg/l	U	001
Sum of Total Non Ferrous metals	T85	AR			N	001



# Scientific Analysis Laboratories Ltd

## Certificate of Analysis

**Report Number:** 607591-1

**Date of Report:** 01-Nov-2016

**Customer:** ADI Associates Ltd  
Kappara Business Centre  
113 Triq Birkirkara  
San Gwann SGN4197  
Malta  
VAT Number: MT18486514

**Customer Contact:** M/S Krista Farrugia

**Customer Job Reference:** SBS002

**Customer Site Reference:** MPS Decommissioning

**Date Job Received at SAL:** 17-Oct-2016

**Date Analysis Started:** 18-Oct-2016

**Date Analysis Completed:** 01-Nov-2016

The results reported relate to samples received in the laboratory and may not be representative of a whole batch.

Opinions and interpretations expressed herein are outside the scope of UKAS accreditation

This report should not be reproduced except in full without the written approval of the laboratory

Tests covered by this certificate were conducted in accordance with SAL SOPs

All results have been reviewed in accordance with Section 25 of the SAL Quality Manual



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Report checked  
and authorised by :  
Stefan Kondziela  
Project Manager

Issued by :  
Stefan Kondziela  
Project Manager



# Waste Acceptance Criteria

Customer Sample Reference : MPS17

SAL Sample Reference : 607591 001

Project Site : MPS Decommissioning

Customer Reference : SBS002

Date Sampled : 13-OCT-2016

Bulk Product					Result	Inert Waste Landfill	Stable non reactive	Hazardous Waste Landfill
Determinand	Technique	LOD	Units	Symbol				
Acid Neutralising Capacity (pH 4)	Titration	2	Mol/kg	N	<2			
Acid Neutralising Capacity (pH 7)	Titration (pH 7)	2	Mol/kg	N	<2			
Loss on Ignition	Grav	0.1	%	N	32			10.0
Moisture	Grav	0.1	%	N	25.0			
pH	Probe			N	2.9		> 6.0	
Total Organic Carbon	OX/IR	0.1	%	N	0.1	3.0	5.0	6.0
BTEX (Sum)	Calc	0.0080	mg/kg	N	<sup>(100)</sup> <0.0080	6.0		
PAH (Sum)	Calc	1.6	mg/kg	N	<1.6	100.0		
PCB EC7 (Sum)	Calc	0.0035	mg/kg	N	<0.0035	1.0		
Total Petroleum Hydrocarbons C10-C40 (Sum)	Calc	1	mg/kg	N	<sup>(13)</sup> 23	500.0		

Data for BS EN 12457-2 (10:1)					Result	Inert Waste Landfill	Stable non reactive	Hazardous Waste Landfill
Determinand	Technique	LOD	Units	Symbol				
Antimony	Calc WAC ICP/MS	0.010	mg/kg	N	<0.010	0.06	0.7	5.0
Arsenic	Calc WAC ICP/MS	0.0020	mg/kg	N	0.45	0.5	2.0	25.0
Barium	Calc WAC ICP/MS	0.010	mg/kg	N	<0.010	20.0	100.0	300.0
Cadmium	Calc WAC ICP/MS	0.00020	mg/kg	N	<0.00020	0.04	1.0	5.0
Chloride	Calc (W)	10	mg/kg	N	91	800.0	15000.0	25000.0
Chromium	Calc WAC ICP/MS	0.010	mg/kg	N	2.7	0.5	10.0	70.0
Copper	Calc WAC ICP/MS	0.0050	mg/kg	N	8.7	2.0	50.0	100.0
Dissolved Organic Carbon	Calc	10	mg/kg	N	22	500.0	800.0	1000.0
Fluoride	Calc (W)	0.50	mg/kg	N	<0.50	10.0	150.0	500.0
Lead	Calc WAC ICP/MS	0.0030	mg/kg	N	<0.0030	0.5	10.0	50.0
Mercury	Calc WAC ICP/MS	0.00050	mg/kg	N	<0.00050	0.01	0.2	2.0
Molybdenum	Calc WAC ICP/MS	0.010	mg/kg	N	1.8	0.5	10.0	30.0
Nickel	Calc WAC ICP/MS	0.010	mg/kg	N	120	0.4	10.0	40.0
Phenols (Total-Mono)	Calc	1.0	mg/kg	N	<1.0	1.0		
Selenium	Calc WAC ICP/MS	0.0050	mg/kg	N	1.6	0.1	0.5	7.0
Sulphate	Calc (W)	5	mg/kg	N	220000	1000.0	20000.0	50000.0
Total Dissolved Solids	Calc WAC ICP/MS	1000	mg/kg	N	13000	4000.0	60000.0	100000.0
Zinc	Calc WAC ICP/MS	0.020	mg/kg	N	11	4.0	50.0	200.0

Following the recommendation from the Environment Agency (England and Wales)\*, the leachate preparation in this report has been carried out to BS EN 12457-2 : One Stage batch test at a liquid to solid ratio of 10 l/kg. This is also compliant with Schedule 10 of the Environmental Permitting Regulations 2010.

Note : This is the minimum amount of testing which is required.

Further testing may be required if :

- evidence of immediately leachable parameters becomes available.
- evidence to indicate that the sample could be classified as hazardous under H1-H14 of the Waste(England and Wales) Regulations 2011(as amended) becomes available.

Acceptance of waste at landfill is always at the discretion of the Landfill Operator.

\* Waste Sampling and Testing for Disposal at Landfill, EBPR1 11507B, Environment Agency (England and Wales) March 2013



<b>SAL Reference:</b> 607591 <b>Project Site:</b> MPS Decommissioning <b>Customer Reference:</b> SBS002  <b>Bulk Product</b> Analysed as Bulk Product <b>Misc</b>					
<b>SAL Reference</b>					<b>607591 001</b>
<b>Customer Sample Reference</b>					<b>MPS17</b>
<b>Test Sample</b>					<b>AR</b>
<b>Date Sampled</b>					<b>13-OCT-2016</b>
<b>Determinand</b>	<b>Method</b>	<b>LOD</b>	<b>Units</b>	<b>Symbol</b>	
Asbestos Bulk ID	PLM			SU	N.D.
Cyanide (Total)	Colorimetry	1	mg/kg	N	<b>3</b>
Hazardous Waste Classification(H1-H14)	Visual			N	-

<b>SAL Reference:</b> 607591 <b>Project Site:</b> MPS Decommissioning <b>Customer Reference:</b> SBS002  <b>Bulk Product</b> Analysed as Bulk Product <b>Additional Metals</b>					
<b>SAL Reference</b>					<b>607591 001</b>
<b>Customer Sample Reference</b>					<b>MPS17</b>
<b>Test Sample</b>					<b>A40</b>
<b>Date Sampled</b>					<b>13-OCT-2016</b>
<b>Determinand</b>	<b>Method</b>	<b>LOD</b>	<b>Units</b>	<b>Symbol</b>	
Aluminium	ICP/OES	1	mg/kg	N	<b>7800</b>
Barium	ICP/OES	1	mg/kg	N	<b>28</b>
Calcium	ICP/OES	1	mg/kg	N	<b>33000</b>
Silver	ICP/OES	1	mg/kg	N	<1

<b>SAL Reference:</b> 607591 <b>Project Site:</b> MPS Decommissioning <b>Customer Reference:</b> SBS002  <b>Bulk Product</b> Analysed as Bulk Product <b>BTEX</b>					
<b>SAL Reference</b>					<b>607591 001</b>
<b>Customer Sample Reference</b>					<b>MPS17</b>
<b>Test Sample</b>					<b>AR</b>
<b>Date Sampled</b>					<b>13-OCT-2016</b>
<b>Determinand</b>	<b>Method</b>	<b>LOD</b>	<b>Units</b>	<b>Symbol</b>	
Benzene	GC/MS (Headspace)	0.001	mg/kg	N	<sup>(100,13)</sup> <0.002
Toluene	GC/MS (Headspace)	0.001	mg/kg	N	<sup>(13)</sup> <b>0.002</b>
EthylBenzene	GC/MS (Headspace)	0.001	mg/kg	N	<sup>(100)</sup> <0.002
Meta/Para-Xylene	GC/MS (Headspace)	0.001	mg/kg	N	<sup>(100)</sup> <0.002
Ortho-Xylene	GC/MS (Headspace)	0.001	mg/kg	N	<sup>(100)</sup> <0.002

<b>SAL Reference:</b> 607591 <b>Project Site:</b> MPS Decommissioning <b>Customer Reference:</b> SBS002  <b>Bulk Product</b> Analysed as Bulk Product <b>PCB EC7</b>					
<b>SAL Reference</b>				<b>607591 001</b>	
<b>Customer Sample Reference</b>				<b>MPS17</b>	
<b>Test Sample</b>				<b>AR</b>	
<b>Date Sampled</b>				<b>13-OCT-2016</b>	
<b>Determinand</b>	<b>Method</b>	<b>LOD</b>	<b>Units</b>	<b>Symbol</b>	
Polychlorinated biphenyl BZ#28	GC/MS (HR)	0.0005	mg/kg	N	<0.0005
Polychlorinated biphenyl BZ#52	GC/MS (HR)	0.0005	mg/kg	N	<0.0005
Polychlorinated biphenyl BZ#101	GC/MS (SIR)	0.0005	mg/kg	N	<0.0005
Polychlorinated biphenyl BZ#118	GC/MS (SIR)	0.0005	mg/kg	N	<0.0005
Polychlorinated biphenyl BZ#138	GC/MS (SIR)	0.0005	mg/kg	N	<0.0005
Polychlorinated biphenyl BZ#153	GC/MS (SIR)	0.0005	mg/kg	N	<0.0005
Polychlorinated biphenyl BZ#180	GC/MS (HR)	0.0005	mg/kg	N	<0.0005

<b>SAL Reference:</b> 607591 <b>Project Site:</b> MPS Decommissioning <b>Customer Reference:</b> SBS002  <b>Bulk Product</b> Analysed as Bulk Product <b>Polyaromatic Hydrocarbons (US EPA16)</b>					
<b>SAL Reference</b>				<b>607591 001</b>	
<b>Customer Sample Reference</b>				<b>MPS17</b>	
<b>Test Sample</b>				<b>AR</b>	
<b>Date Sampled</b>				<b>13-OCT-2016</b>	
<b>Determinand</b>	<b>Method</b>	<b>LOD</b>	<b>Units</b>	<b>Symbol</b>	
Naphthalene	GC/MS	0.1	mg/kg	N	<0.1
Acenaphthylene	GC/MS	0.1	mg/kg	N	<0.1
Acenaphthene	GC/MS	0.1	mg/kg	N	<0.1
Fluorene	GC/MS	0.1	mg/kg	N	<0.1
Phenanthrene	GC/MS	0.1	mg/kg	N	<0.1
Anthracene	GC/MS	0.1	mg/kg	N	<0.1
Fluoranthene	GC/MS	0.1	mg/kg	N	<0.1
Pyrene	GC/MS	0.1	mg/kg	N	<0.1
Benzo(a)Anthracene	GC/MS	0.1	mg/kg	N	<0.1
Chrysene	GC/MS	0.1	mg/kg	N	<0.1
Benzo(b/k)Fluoranthene	GC/MS	0.1	mg/kg	N	<0.1
Benzo(a)Pyrene	GC/MS	0.1	mg/kg	N	<0.1
Indeno(123-cd)Pyrene	GC/MS	0.1	mg/kg	N	<0.1
Dibenzo(ah)Anthracene	GC/MS	0.1	mg/kg	N	<0.1
Benzo(ghi)Perylene	GC/MS	0.1	mg/kg	N	<0.1
Polyaromatic Hydrocarbons (Total)	GC/MS	0.1	mg/kg	N	<0.1
Coronene	GC/MS	0.1	mg/kg	N	<0.1

<b>SAL Reference:</b> 607591 <b>Project Site:</b> MPS Decommissioning <b>Customer Reference:</b> SBS002  <b>Bulk Product</b> Analysed as Bulk Product <b>TPH</b>					
<b>SAL Reference</b>				<b>607591 001</b>	
<b>Customer Sample Reference</b>				<b>MPS17</b>	
<b>Test Sample</b>				<b>AR</b>	
<b>Date Sampled</b>				<b>13-OCT-2016</b>	
<b>Determinand</b>	<b>Method</b>	<b>LOD</b>	<b>Units</b>	<b>Symbol</b>	
Total Petroleum Hydrocarbons	GC/FID	1	mg/kg	N	<sup>(100,13)</sup> <10
Total Petroleum Hydrocarbons (C35-C40)	GC/FID	1	mg/kg	N	<sup>(13)</sup> 23

<b>SAL Reference:</b> 607591 <b>Project Site:</b> MPS Decommissioning <b>Customer Reference:</b> SBS002  <b>Leachate to BS EN 12457-2 (10:1)</b> Analysed as Water <b>Waste Acceptance Criteria</b>					
<b>SAL Reference</b>					<b>607591 001</b>
<b>Customer Sample Reference</b>					<b>MPS17</b>
<b>Test Sample</b>					<b>10:1</b>
<b>Date Sampled</b>					<b>13-OCT-2016</b>
<b>Determinand</b>	<b>Method</b>	<b>LOD</b>	<b>Units</b>	<b>Symbol</b>	
Arsenic (Dissolved)	ICP/MS (Filtered)	0.2	µg/l	U	<b>45</b>
Barium (Dissolved)	ICP/MS (Filtered)	1	µg/l	U	<sup>(9)</sup> <100
Molybdenum (Dissolved)	ICP/MS (Filtered)	1	µg/l	N	<b>180</b>
Total Dissolved Solids	Grav	100	mg/l	N	<b>1300</b>
Phenols (Total-Mono)	Colorimetry	0.1	mg/l	U	<0.1
Dissolved Organic Carbon	OX/IR	1	mg/l	N	<b>2</b>
Electrical Conductivity	Probe	10	µS/cm	N	<b>2200</b>
Antimony (Dissolved)	ICP/MS (Filtered)	1	µg/l	U	<sup>(9)</sup> <100
Cadmium (Dissolved)	ICP/MS (Filtered)	0.02	µg/l	U	<sup>(9)</sup> <2.0
Chromium (Dissolved)	ICP/MS (Filtered)	1	µg/l	U	<b>270</b>
Copper (Dissolved)	ICP/MS (Filtered)	0.5	µg/l	U	<b>870</b>
Lead (Dissolved)	ICP/MS (Filtered)	0.3	µg/l	U	<0.3
Mercury (Dissolved)	ICP/MS (Filtered)	0.05	µg/l	U	<sup>(9)</sup> <5.0
Nickel (Dissolved)	ICP/MS (Filtered)	1	µg/l	U	<b>12000</b>
Selenium (Dissolved)	ICP/MS (Filtered)	0.5	µg/l	U	<b>160</b>
Zinc (Dissolved)	ICP/MS (Filtered)	2	µg/l	U	<b>1100</b>
Chloride	Discrete Analyser	1	mg/l	U	<b>9</b>
Fluoride	Discrete Analyser	0.05	mg/l	U	<0.05
Sulphate	Discrete Analyser	0.5	mg/l	U	<b>22000</b>

## Index to symbols used in 607591-1

Value	Description
AR	As Received
10:1	Leachate to BS EN 12457-2 (10:1)
A40	Assisted dried < 40C
10:1 S	Data for BS EN 12457-2 (10:1)
N.D.	Not Detected
13	Results have been blank corrected.
9	LOD raised due to dilution of sample
100	LOD determined by sample aliquot used for analysis
S	Analysis was subcontracted
U	Analysis is UKAS accredited
N	Analysis is not UKAS accredited

## Notes

Asbestos was subcontracted to REC Asbestos.

SAL Ref: 607591

Client Reference: Demolition Material MPS decommissioning

**HAZARDOUS PROPERTY ASSESSMENT**  
**Waste (England and Wales) Regulations 2011**

Date of Assessment  
 3rd November 2016

Hazardous Property/Determinand	Test/Assessment Method	Result %	Worst Case Compound	% Worst Case Compound	Hazard Statement	Hazardous Property	Threshold %	Conclusion
Arsenic	ICP/OES	<0.0001	diasenic trioxide		H350	HP7	0.1	Not Hazardous
					H300	HP6	0.25	Not Hazardous
					H314	HP8	1	Not Hazardous
					H400	HP14	0,1	Not Hazardous
	contact with acid	no gas evolved			H410	HP12		Not Hazardous
Cadmium	ICP/OES	<0.001	cadmium carbonate	<0.001	H332	HP6	22.5	Not Hazardous
					H312	HP6	0.25	
					H302	HP6	0.25	
					H400	HP14	0.1	Not Hazardous
					H410	HP14	0.1	Not Hazardous
Chromium	ICP/OES	0.00027	chromates	0.0008505	H350	HP11	0.1	Not Hazardous
					H317			
					H416			
Mercury	ICP/OES	<0.0001		<0.0001				not detected -excluded
Lead	ICP/OES	<0.0001	lead sulphate	0.0004	H360	HP10		Not Hazardous
					H332	HP6		Not Hazardous
					H302	HP6		Not Hazardous
					H373	HP5		Not Hazardous
					H400	HP14	0.10%	Not Hazardous
					H410	HP14		Not Hazardous
					H350	HP7		Not Hazardous
Selenium	ICP/OES	<0.001		<0.001				not detected -excluded
Copper	ICP/OES	<0.001	copper oxide	<0.001	H302	HP6		
					H400	HP14	0.1	Not Hazardous

SAL Ref: 607591

Client Reference: Demolition Material MPS decommissioning

**HAZARDOUS PROPERTY ASSESSMENT**  
Waste (England and Wales) Regulations 2011

Date of Assessment  
3rd November 2016

Hazardous Property/Determinand	Test/Assessment Method	Result %	Worst Case Compound	% Worst Case Compound	Hazard Statement	Hazardous Property	Threshold %	Conclusion
Nickel	ICP/OES	0.012	nickel carbonate	0.024	H410	HP14	0.1	Not Hazardous
					H350	HP7	0.1	Not Hazardous
					H341	HP11		Not Hazardous
					H360	HP10	0.3	Not Hazardous
					H372	HP5	1	Not Hazardous
					H332	HP6		Not Hazardous
					H302	HP6		Not Hazardous
					H315	HP4	20	Not Hazardous
					H334	HP13		Not Hazardous
					H317	HP13		Not Hazardous
					H319	HP4	20	Not Hazardous
					H400	HP14	0.1	Not Hazardous
					H410	HP14	0.1	Not Hazardous
Zinc	ICP/OES	0.0015	zinc oxide	0.00186	H400	HP14	0.1	Not Hazardous
					H410	HP14	0.1	Not Hazardous
pH		12.2		<11.5		HP4/HP8		Not Hazardous

SAL Ref: 607591

Client Reference: Demolition Material MPS decommissioning

**HAZARDOUS PROPERTY ASSESSMENT**  
Waste (England and Wales) Regulations 2011

Date of Assessment  
3rd November 2016

Hazardous Property/Determinand Organic Compounds	Test/Assessment Method	Result %	Worst Case Compound	% Worst Case Compound	Hazard Statement	Hazardous Property	Threshold %	Conclusion
Total Petroleum Hydrocarbons		0.00002				HP5	10	Not Hazardous
						HP7	0.1	Not Hazardous
						HP11	0.1	Not Hazardous
						HP10	3	Not Hazardous
						HP14	2.5	Not Hazardous
Overall Conclusion EWC Code								<b>NOT HAZARDOUS</b> 17-09-04 MN

SAL Ref: 607591

Client Reference: Demolition Material MPS decommissioning

**HAZARDOUS PROPERTY ASSESSMENT**  
Waste (England and Wales) Regulations 2011

Date of Assessment  
3rd November 2016

Hazardous Property/Determinand	Test/Assessment Method	Result %	Worst Case Compound	% Worst Case Compound	Hazard Statement	Hazardous Property	Threshold %	Conclusion
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Assessment is based on SAL Report # 607591  
which is included .

Risk Phrases used in this assessment are based on EU 1277 2008

The conclusions in this assessment are based on guidance taken from WM3 1st Edition 2015.

The terms “Hazardous” and “Not Hazardous” are used in the context of these Regulations. Further testing may be required if classification under the Waste Acceptance Criteria (Landfill Regulations 2000/EU Directive 99/3/EC as amended) is intended.

The term “Not Hazardous” does not imply that significant possibility of significant harm to human health or the environment is not present.

In preparation of this report I have exercised all reasonable skill and care based on the analytical information provided.

Assessment Prepared by W A Cohen  
williamacohen@gmail.com

# Scientific Analysis Laboratories Ltd

## Certificate of Analysis

**Report Number:** 610966-1

**Date of Report:** 14-Nov-2016

**Customer:** ADI Associates Ltd  
Kappara Business Centre  
113 Triq Birkirkara  
San Gwann SGN4197  
Malta  
VAT Number: MT18486514

**Customer Contact:** M/S Krista Farrugia

**Customer Job Reference:** SBS002

**Customer Site Reference:** MPS Decommissioning

**Date Job Received at SAL:** 31-Oct-2016

**Date Analysis Started:** 02-Nov-2016

**Date Analysis Completed:** 14-Nov-2016

The results reported relate to samples received in the laboratory and may not be representative of a whole batch.

Opinions and interpretations expressed herein are outside the scope of UKAS accreditation

This report should not be reproduced except in full without the written approval of the laboratory

Tests covered by this certificate were conducted in accordance with SAL SOPs

All results have been reviewed in accordance with Section 25 of the SAL Quality Manual



Report checked  
and authorised by :  
Mr Richard Wong  
Project Manager

Issued by :  
Mr Richard Wong  
Project Manager





# Waste Acceptance Criteria

Customer Sample Reference : MPS18

SAL Sample Reference : 610966 001

Project Site : MPS Decommissioning

Customer Reference : SBS002

Date Sampled : 28-OCT-2016

Bulk Product					Result	Inert Waste Landfill	Stable non reactive	Hazardous Waste Landfill
Determinand	Technique	LOD	Units	Symbol				
Acid Neutralising Capacity (pH 4)	Titration	2	Mol/kg	N	<2			
Acid Neutralising Capacity (pH 7)	Titration (pH 7)	2	Mol/kg	N	<2			
BTEX (Sum)	Calc	0.0040	mg/kg	N	0.0060	6.0		
Loss on Ignition	Grav	0.1	%	N	11			10.0
Moisture	Grav	0.1	%	N	18.5			
Total Organic Carbon	OX/IR	0.1	%	N	3.7	3.0	5.0	6.0
Total Petroleum Hydrocarbons C10-C40 (Sum)	Calc	1	mg/kg	N	<sup>(13)</sup> 1700	500.0		
PAH (Sum)	Calc	1.6	mg/kg	N	10	100.0		
PCB EC7 (Sum)	Calc	0.0035	mg/kg	N	0.066	1.0		
pH	Probe			N	8.6		> 6.0	

Data for BS EN 12457-2 (10:1)					Result	Inert Waste Landfill	Stable non reactive	Hazardous Waste Landfill
Determinand	Technique	LOD	Units	Symbol				
Antimony	Calc WAC ICP/MS	0.010	mg/kg	N	0.011	0.06	0.7	5.0
Arsenic	Calc WAC ICP/MS	0.0020	mg/kg	N	0.073	0.5	2.0	25.0
Barium	Calc WAC ICP/MS	0.010	mg/kg	N	0.31	20.0	100.0	300.0
Cadmium	Calc WAC ICP/MS	0.00020	mg/kg	N	0.0043	0.04	1.0	5.0
Chromium	Calc WAC ICP/MS	0.010	mg/kg	N	<0.010	0.5	10.0	70.0
Copper	Calc WAC ICP/MS	0.0050	mg/kg	N	0.029	2.0	50.0	100.0
Lead	Calc WAC ICP/MS	0.0030	mg/kg	N	<0.0030	0.5	10.0	50.0
Mercury	Calc WAC ICP/MS	0.00050	mg/kg	N	0.0026	0.01	0.2	2.0
Molybdenum	Calc WAC ICP/MS	0.010	mg/kg	N	6.9	0.5	10.0	30.0
Nickel	Calc WAC ICP/MS	0.010	mg/kg	N	0.097	0.4	10.0	40.0
Selenium	Calc WAC ICP/MS	0.0050	mg/kg	N	<0.0050	0.1	0.5	7.0
Zinc	Calc WAC ICP/MS	0.020	mg/kg	N	<0.020	4.0	50.0	200.0
Chloride	Calc (W)	10	mg/kg	N	3100	800.0	15000.0	25000.0
Fluoride	Calc (W)	0.50	mg/kg	N	<0.50	10.0	150.0	500.0
Sulphate	Calc (W)	5	mg/kg	N	14000	1000.0	20000.0	50000.0
Phenols (Total-Mono)	Calc	1.0	mg/kg	N	<1.0	1.0		
Dissolved Organic Carbon	Calc	10	mg/kg	N	150	500.0	800.0	1000.0
Total Dissolved Solids	Calc WAC ICP/MS	1000	mg/kg	N	20000	4000.0	60000.0	100000.0

Following the recommendation from the Environment Agency (England and Wales)\*, the leachate preparation in this report has been carried out to BS EN 12457-2 : One Stage batch test at a liquid to solid ratio of 10 l/kg. This is also compliant with Schedule 10 of the Environmental Permitting Regulations 2010.

Note : This is the minimum amount of testing which is required.

Further testing may be required if :

- evidence of immediately leachable parameters becomes available.
- evidence to indicate that the sample could be classified as hazardous under H1-H14 of the Waste(England and Wales) Regulations 2011(as amended) becomes available.

Acceptance of waste at landfill is always at the discretion of the Landfill Operator.

\* Waste Sampling and Testing for Disposal at Landfill, EBPR1 11507B, Environment Agency (England and Wales) March 2013

<b>SAL Reference:</b> 610966 <b>Project Site:</b> MPS Decommissioning <b>Customer Reference:</b> SBS002  <b>Leachate to BS EN 12457-2 (10:1)</b> Analysed as Water <b>Waste Acceptance Criteria</b>					
<b>SAL Reference</b>					<b>610966 001</b>
<b>Customer Sample Reference</b>					<b>MPS18</b>
<b>Test Sample</b>					<b>10:1</b>
<b>Date Sampled</b>					<b>28-OCT-2016</b>
<b>Determinand</b>	<b>Method</b>	<b>LOD</b>	<b>Units</b>	<b>Symbol</b>	
Antimony (Dissolved)	ICP/MS (Filtered)	1	µg/l	U	<b>1</b>
Arsenic (Dissolved)	ICP/MS (Filtered)	0.2	µg/l	U	<b>7.3</b>
Barium (Dissolved)	ICP/MS (Filtered)	1	µg/l	U	<b>31</b>
Cadmium (Dissolved)	ICP/MS (Filtered)	0.02	µg/l	U	<b>0.43</b>
Chromium (Dissolved)	ICP/MS (Filtered)	1	µg/l	U	<b>&lt;1</b>
Copper (Dissolved)	ICP/MS (Filtered)	0.5	µg/l	U	<b>2.9</b>
Lead (Dissolved)	ICP/MS (Filtered)	0.3	µg/l	U	<b>&lt;0.3</b>
Mercury (Dissolved)	ICP/MS (Filtered)	0.05	µg/l	U	<b>0.26</b>
Molybdenum (Dissolved)	ICP/MS (Filtered)	1	µg/l	N	<b>690</b>
Nickel (Dissolved)	ICP/MS (Filtered)	1	µg/l	U	<b>10</b>
Selenium (Dissolved)	ICP/MS (Filtered)	0.5	µg/l	U	<b>&lt;0.5</b>
Zinc (Dissolved)	ICP/MS (Filtered)	2	µg/l	U	<b>&lt;2</b>
Chloride	Discrete Analyser	1	mg/l	U	<b>310</b>
Fluoride	Discrete Analyser	0.05	mg/l	U	<b>&lt;0.05</b>
Sulphate	Discrete Analyser	0.5	mg/l	U	<b>1400</b>
Phenols (Total-Mono)	Colorimetry	0.1	mg/l	U	<b>&lt;0.1</b>
Dissolved Organic Carbon	OX/IR	1	mg/l	N	<b>15</b>
Total Dissolved Solids	Grav	100	mg/l	N	<b>2000</b>
Electrical Conductivity	Probe	10	µS/cm	N	<b>3300</b>
Volume	Vol	1	ml	U	<b>-</b>

<b>SAL Reference:</b> 610966 <b>Project Site:</b> MPS Decommissioning <b>Customer Reference:</b> SBS002  <b>Bulk Product</b> Analysed as Bulk Product <b>BTEX</b>					
<b>SAL Reference</b>					<b>610966 001</b>
<b>Customer Sample Reference</b>					<b>MPS18</b>
<b>Test Sample</b>					<b>AR</b>
<b>Date Sampled</b>					<b>28-OCT-2016</b>
<b>Determinand</b>	<b>Method</b>	<b>LOD</b>	<b>Units</b>	<b>Symbol</b>	
Benzene	GC/MS (Headspace)	1	µg/kg	N	<sup>(13)</sup> <b>2</b>
Toluene	GC/MS (Headspace)	1	µg/kg	N	<sup>(13)</sup> <b>1</b>
EthylBenzene	GC/MS (Headspace)	1	µg/kg	N	<b>2</b>
Meta/Para-Xylene	GC/MS (Headspace)	1	µg/kg	N	<b>1</b>
Ortho-Xylene	GC/MS (Headspace)	1	µg/kg	N	<b>&lt;1</b>

<b>SAL Reference:</b> 610966 <b>Project Site:</b> MPS Decommissioning <b>Customer Reference:</b> SBS002  <b>Bulk Product</b> Analysed as Bulk Product <b>TPH</b>					
<b>SAL Reference</b>					<b>610966 001</b>
<b>Customer Sample Reference</b>					<b>MPS18</b>
<b>Test Sample</b>					<b>AR</b>
<b>Date Sampled</b>					<b>28-OCT-2016</b>
<b>Determinand</b>	<b>Method</b>	<b>LOD</b>	<b>Units</b>	<b>Symbol</b>	
Total Petroleum Hydrocarbons	GC/FID	1	mg/kg	N	<sup>(13)</sup> <b>1500</b>
Total Petroleum Hydrocarbons (C35-C40)	GC/FID	1	mg/kg	N	<sup>(13)</sup> <b>190</b>

<b>SAL Reference:</b> 610966 <b>Project Site:</b> MPS Decommissioning <b>Customer Reference:</b> SBS002  <b>Bulk Product</b> Analysed as Bulk Product <b>Polyaromatic Hydrocarbons (US EPA16) with Coronene</b>					
<b>SAL Reference</b>					<b>610966 001</b>
<b>Customer Sample Reference</b>					<b>MPS18</b>
<b>Test Sample</b>					<b>AR</b>
<b>Date Sampled</b>					<b>28-OCT-2016</b>
<b>Determinand</b>	<b>Method</b>	<b>LOD</b>	<b>Units</b>	<b>Symbol</b>	
Naphthalene	GC/MS	0.1	mg/kg	N	<b>0.1</b>
Acenaphthylene	GC/MS	0.1	mg/kg	N	<0.1
Acenaphthene	GC/MS	0.1	mg/kg	N	<b>0.1</b>
Fluorene	GC/MS	0.1	mg/kg	N	<0.1
Phenanthrene	GC/MS	0.1	mg/kg	N	<b>0.2</b>
Anthracene	GC/MS	0.1	mg/kg	N	<b>0.2</b>
Fluoranthene	GC/MS	0.1	mg/kg	N	<b>0.2</b>
Pyrene	GC/MS	0.1	mg/kg	N	<b>0.2</b>
Benzo(a)Anthracene	GC/MS	0.1	mg/kg	N	<b>0.1</b>
Chrysene	GC/MS	0.1	mg/kg	N	<b>0.1</b>
Benzo(b/k)Fluoranthene	GC/MS	0.1	mg/kg	N	<0.1
Benzo(a)Pyrene	GC/MS	0.1	mg/kg	N	<0.1
Indeno(123-cd)Pyrene	GC/MS	0.1	mg/kg	N	<0.1
Dibenzo(ah)Anthracene	GC/MS	0.1	mg/kg	N	<0.1
Benzo(ghi)Perylene	GC/MS	0.1	mg/kg	N	<0.1
Coronene	GC/MS	0.1	mg/kg	N	<0.1
Polyaromatic Hydrocarbons (Total)	GC/MS	0.1	mg/kg	N	<b>10</b>

<b>SAL Reference:</b> 610966 <b>Project Site:</b> MPS Decommissioning <b>Customer Reference:</b> SBS002  <b>Bulk Product</b> Analysed as Bulk Product <b>PCB EC7</b>					
<b>SAL Reference</b>					<b>610966 001</b>
<b>Customer Sample Reference</b>					<b>MPS18</b>
<b>Test Sample</b>					<b>AR</b>
<b>Date Sampled</b>					<b>28-OCT-2016</b>
<b>Determinand</b>	<b>Method</b>	<b>LOD</b>	<b>Units</b>	<b>Symbol</b>	
Polychlorinated biphenyl BZ#28	GC/MS (HR)	0.5	µg/kg	N	<b>6.5</b>
Polychlorinated biphenyl BZ#52	GC/MS (HR)	0.5	µg/kg	N	<b>3.2</b>
Polychlorinated biphenyl BZ#101	GC/MS (SIR)	0.5	µg/kg	N	<b>4.4</b>
Polychlorinated biphenyl BZ#118	GC/MS (SIR)	0.5	µg/kg	N	<b>4.4</b>
Polychlorinated biphenyl BZ#138	GC/MS (SIR)	0.5	µg/kg	N	<b>5.8</b>
Polychlorinated biphenyl BZ#153	GC/MS (SIR)	0.5	µg/kg	N	<b>9.9</b>
Polychlorinated biphenyl BZ#180	GC/MS (HR)	0.5	µg/kg	N	<b>32</b>

<b>SAL Reference:</b> 610966 <b>Project Site:</b> MPS Decommissioning <b>Customer Reference:</b> SBS002  <b>Bulk Product</b> Analysed as Bulk Product <b>Additional Metals</b>					
<b>SAL Reference</b>					<b>610966 001</b>
<b>Customer Sample Reference</b>					<b>MPS18</b>
<b>Test Sample</b>					<b>A40</b>
<b>Date Sampled</b>					<b>28-OCT-2016</b>
<b>Determinand</b>	<b>Method</b>	<b>LOD</b>	<b>Units</b>	<b>Symbol</b>	
Silver	ICP/OES	1	mg/kg	N	<1
Calcium	ICP/OES	1	mg/kg	N	<b>130000</b>
Barium	ICP/OES	1	mg/kg	N	<b>290</b>
Aluminium	ICP/OES	1	mg/kg	N	<b>9700</b>

<b>SAL Reference:</b> 610966 <b>Project Site:</b> MPS Decommissioning <b>Customer Reference:</b> SBS002  <b>Bulk Product</b> Analysed as Bulk Product <b>Misc</b>					
<b>SAL Reference</b>				<b>610966 001</b>	
<b>Customer Sample Reference</b>				<b>MPS18</b>	
<b>Test Sample</b>				<b>AR</b>	
<b>Date Sampled</b>				<b>28-OCT-2016</b>	
<b>Determinand</b>	<b>Method</b>	<b>LOD</b>	<b>Units</b>	<b>Symbol</b>	
Cyanide (Total)	Colorimetry	1	mg/kg	N	<1
Asbestos Bulk ID	PLM			SU	Chrysotile Fibres Detected -

## Index to symbols used in 610966-1

Value	Description
10:1	Leachate to BS EN 12457-2 (10:1)
AR	As Received
A40	Assisted dried < 40C
10:1 S	Data for BS EN 12457-2 (10:1)
13	Results have been blank corrected.
S	Analysis was subcontracted
U	Analysis is UKAS accredited
N	Analysis is not UKAS accredited

## Notes

Asbestos ID performed at REC Asbestos

SCIENTIFIC ANALYSIS  
LABORATORIES

Client Reference: MPS 18

**HAZARDOUS PROPERTY ASSESSMENT**  
Waste (England and Wales) Regulations 2011

Date of Assessment 18th January 2017

Hazardous Property/Determinand	Test/Assessment Method	Result %	Worst Case Compound	Result as Worst Case Compound	Hazard Statement	Hazardous Property	Threshold %	Conclusion
Arsenic	ICP/OES	0.0017	diasenic trioxide	0.0023	H350	HP7	0.1	Not Hazardous
					H300	HP6	0.25	Not Hazardous
					H314	HP8	1	Not Hazardous
					H400	HP14	0,1	below generic cut-off
					H410	HP14	0.1	below generic cut-off
Antimony	ICP/OES	0.0022	antimony trichloride	0.0041	H302	HP6	5	Not Hazardous
					H314	HP4 HP8	25	Not Hazardous
					H335	HP6	5	Not Hazardous
					H411	HP14	0.1	below generic cut-off
Aluminium	ICP/OES	0.97	aluminium nitrate		H314	HP4&8	2<pH<11.5	Not Hazardous
Barium	ICP/OES	0.03	barium sulphide		H301	HP6	5	Not Hazardous
					H332	HP6	22.5	Not Hazardous
					H400	HP14	0.1	Not Hazardous
					H410	HP14	0.1	Not Hazardous
Cadmium	ICP/OES	0.001	cadmium ion	0.0010	H332	HP6	22.5	Not Hazardous
					H312	HP6	0.25	Not Hazardous
					H302	HP6	0.25	Not Hazardous
					H400	HP14	0.1	below generic cut-off
					H410	HP14	0.1	below generic cut-off
Calcium	ICP/OES	13	expected to be inert aggregate material					Not Hazardous
Chromium	ICP/OES	0.0019	chromates	0.0060	H350	HP11	0.1	Not Hazardous
					H317	HP13	10	Not Hazardous
Cobalt	ICP/OES	0.0053	cobalt sulphate	0.0139	H302	HP6	25	Not Hazardous

William A Cohen B.Sc  
Consultant Environmental Chemist

Client Reference: MPS 18

**HAZARDOUS PROPERTY ASSESSMENT**  
Waste (England and Wales) Regulations 2011

Date of Assessment 18th January 2017

Hazardous Property/Determinand	Test/Assessment Method	Result %	Worst Case Compound	Result as Worst Case Compound	Hazard Statement	Hazardous Property	Threshold %	Conclusion
					H317	HP13	10	Not Hazardous
					H350	HP7	0.1	Not Hazardous
					H400	HP14		below generic cut-off
					H410	HP14		below generic cut-off
Mercury	ICP/OES	0.0001		0.0001				not detected -excluded
Manganese	ICP/OES	0.065	manganese sulphate	0.1785	H302	HP6	25	Not Hazardous
					H373	HP5	10	Not Hazardous
					H411	HP14	1	Not Hazardous
Lead	ICP/OES	0.0006	lead ion	0.0006	H360	HP10	0.3	Not Hazardous
					H332	HP6	22.5	Not Hazardous
					H302	HP6	25	Not Hazardous
					H373	HP5	10	Not Hazardous
					H400	HP14	0.1	below generic cut-off
					H410	HP14	0.1	below generic cut-off
					H350	HP7	0.1	Not Hazardous
Selenium	ICP/OES	<0.001		<0.001	H331	HP6	3.5	not detected -excluded
					H301	HP6	5	not detected -excluded
					H373	HP6	5	not detected -excluded
					H410	HP14	0.1	not detected -excluded
Copper	ICP/OES	0.0025	copper oxide	0.0031	H302	HP6	25	Not Hazardous
					H400	HP14	0.1	below generic cut-off

William A Cohen B.Sc  
Consultant Environmental Chemist

Client Reference: MPS 18

**HAZARDOUS PROPERTY ASSESSMENT**  
Waste (England and Wales) Regulations 2011

Date of Assessment 18th January 2017

Hazardous Property/Determinand	Test/Assessment Method	Result %	Worst Case Compound	Result as Worst Case Compound	Hazard Statement	Hazardous Property	Threshold %	Conclusion
Nickel	ICP/OES	0.0008	nickel carbonate	0.0016	H350	HP7	0.1	Not Hazardous
					H341	HP11	1	Not Hazardous
					H360	HP10	0.3	Not Hazardous
					H372	HP5	1	Not Hazardous
					H332	HP6	22.5	Not Hazardous
					H302	HP6	25	Not Hazardous
					H315	HP4	20	Not Hazardous
					H334	HP13	10	Not Hazardous
					H317	HP13	10	Not Hazardous
					H319	HP4	20	Not Hazardous
					H400	HP14	0.1	below generic cut-off
					H410	HP14	0.1	below generic cut-off
Thallium	ICP/OES	0.001	thallium sulphate	0.0012	H300	HP6	0.1	Not Hazardous
					H315	HP4	pH	Not Hazardous
					H372	HP5	1	Not Hazardous
					H411	HP14	0.1	below generic cut-off
Zinc	ICP/OES	0.11	zinc oxide	0.1364	H400	HP14	0.1	Not Hazardous-Note 2
					H410	HP14	0.1	Not Hazardous -Note 2
pH		8.6		2<pH<11.5		HP4/HP8		Not Hazardous
Contact with acids	no gas evolved							Not Hazardous
Explosivity	no reaction							Not Hazardous
Asbestos				trace detected -probably less than 0.1%				(Not Hazardous) -see Note 1

Client Reference: MPS 18

**HAZARDOUS PROPERTY ASSESSMENT**  
Waste (England and Wales) Regulations 2011

Date of Assessment 18th January 2017

Hazardous Property/Determinand	Test/Assessment Method	Result %	Worst Case Compound	Result as Worst Case Compound	Hazard Statement	Hazardous Property	Threshold %	Conclusion
<b>Organic Compounds</b>								
Total Petroleum Hydrocarbons		0.17				HP5	10	Not Hazardous
Polyaromatic Hydrocarbons-BaP marker	GC MS	0.0001				HP7	0.1	Not Hazardous
						HP11	0.1	Not Hazardous
						HP10	3	Not Hazardous
						HP14	2.5	Not Hazardous
Polychlorinated Biphenyls	GC MS	0.0001						
BTEX Compounds	negligible							



Client Reference: MPS 18

**HAZARDOUS PROPERTY ASSESSMENT**  
**Waste (England and Wales) Regulations 2011**

Date of Assessment 18th January 2017

Hazardous Property/Determinand	Test/Assessment Method	Result %	Worst Case Compound	Result as Worst Case Compound	Hazard Statement	Hazardous Property	Threshold %	Conclusion
Overall Conclusion EWC Code								Not Hazardous 17-09-04

**Note 1** Lab report indicates traces only of fibres. Very unlikely to be in excess of 0.1%.

**Note 2** Equations 5-9 of Appendix 14 (WM3) ; triggers not exceeded, therefore not hazardous.

Assessment is based on SAL Report #610966 and 623374 which should ne included with this one.

Risk Phrases used in this assessment are based on EU 1277 2008

The conclusions in this assessment are based on guidance taken from WM3 1st edition 2015.

The terms “Hazardous” and “Not Hazardous” are used in the context of these Regulations. Further testing may be required if classification under the Waste Acceptance Criteria (Landfill Regulations 2000/EU Directive 99/3/EC as amended) is intended.

The term “Not Hazardous” does not imply that significant possibility of significant harm to human health or the environment is not present.

In preparation of this report all reasonable  
skill and care has been exercised.

Assessment Prepared by W A Cohen

# Scientific Analysis Laboratories Ltd

## Certificate of Analysis

**Report Number:** 610972-1

**Date of Report:** 21-Nov-2016

**Customer:** ADI Associates Ltd  
Kappara Business Centre  
113 Triq Birkirkara  
San Gwann SGN4197  
Malta  
VAT Number: MT18486514

**Customer Contact:** Ms Rachel Xuereb

**Customer Job Reference:** SBS002

**Customer Site Reference:** MPS Decommissioning

**Date Job Received at SAL:** 31-Oct-2016

**Date Analysis Started:** 09-Nov-2016

**Date Analysis Completed:** 21-Nov-2016

The results reported relate to samples received in the laboratory and may not be representative of a whole batch.

Opinions and interpretations expressed herein are outside the scope of UKAS accreditation

This report should not be reproduced except in full without the written approval of the laboratory

Tests covered by this certificate were conducted in accordance with SAL SOPs

All results have been reviewed in accordance with Section 25 of the SAL Quality Manual



Report checked  
and authorised by :  
Mr Richard Wong  
Project Manager

Issued by :  
Mr Richard Wong  
Project Manager





AR	10	mg/l	<b>6000</b>
AR	10	mg/l	<b>7300</b>
AR	10	mg/l	<b>&lt;10</b>
AR	0.5	C	<b>18</b>
AR			<b>2.0</b>

## Index to symbols used in 610972-1

Value	Description
AR	As Received
Total	Total
F	Filtered
64	Analysis was performed by an alternative technique
NR	No Result
S	Analysis was subcontracted
U	Analysis is UKAS accredited
N	Analysis is not UKAS accredited

## Notes

Nitrogen(Total) performed at NRM
----------------------------------

Value	Description
AR	As Received
Total	Total
F	Filtered
64	Analysis was performed by an alternative technique
NR	No Result
S	Analysis was subcontracted
U	Analysis is UKAS accredited
N	Analysis is not UKAS accredited

Nitrogen(Total) performed at NRM
Sample unsuitable for analysis by Colorimetry & Discrete Analyser

Value	Description
T4	Colorimetry
T686	Discrete Analyser
T2	Grav
T319	Colorimetric (Sub)
T301	ICP/MS (Total)
T7	Probe
T281	ICP/MS (Filtered)
T303	ICP-OES (Total)
T373	ICP/OES (Filtered)
T85	Calc
T22	Titration

Determinand	Method	Test Sample	LOD	Units	Symbol	SAL References
Chloride	T686	F	1	mg/l	U	001
Chlorine (Free)	T22	AR	0.05	mg/l	N	001
Cyanide(Total)	T4	AR	0.05	mg/l	U	001
Fluoride	T686	F	0.05	mg/l	U	001
Nitrogen (Total)	T319	AR	0.1	mg/l	SN	001
Sulphate	T686	F	0.5	mg/l	U	001
Sulphide	T4	AR	0.05	ma/l	N	001

Determinand	Method	Test Sample	LOD	Units	Symbol	SAL References
Suspended Solids (Total)	T2	AR	10	mg/l	N	001
Settleable Solids	T2	AR	10	mg/l	N	001
Oil and Grease	T2	AR	10	mg/l	N	001
Temperature	T7	AR	0.5	C	N	001
pH	T7	AR			U	001
As (Dissolved)	T281	F	0.2	µg/l	U	001
B (Dissolved)	T373	Total	0.01	mg/l	N	001
Cd (Dissolved)	T281	F	0.02	µg/l	U	001
Cr (Dissolved)	T281	F	1	µg/l	U	001
Cu (Dissolved)	T281	F	0.5	µg/l	U	001
Pb (Dissolved)	T373	Total	0.03	mg/l	U	001
Hg (Dissolved)	T281	F	0.05	µg/l	U	001
Ni (Dissolved)	T281	F	1	µg/l	U	001
P (Dissolved)	T373	AR	1	mg/l	N	001
Ag (Dissolved)	T373	Total	0.01	mg/l	N	001
Sn (Dissolved)	T373	AR	0.01	mg/l	U	001
V (Dissolved)	T281	F	2	µg/l	U	001
Zn (Dissolved)	T281	F	2	µg/l	U	001
Sum of Soluble Non Ferrous metals	T85	AR			N	001
As (Total)	T301	Total	0.2	µg/l	U	001
B (Total)	T303	Total	0.01	mg/l	N	001
Cd (Total)	T301	Total	0.02	µg/l	U	001
Cr (Total)	T301	Total	1	µg/l	U	001
Cu (Total)	T301	Total	0.5	µg/l	U	001
Pb (Total)	T301	Total	0.3	µg/l	U	001
Hg (Total)	T301	Total	0.05	µg/l	U	001
Ni (Total)	T301	Total	1	µg/l	U	001
P (Total)	T303	Total	1	mg/l	N	001
Ag (Total)	T303	Total	0.01	mg/l	N	001
Sn (Total)	T303	Total	0.01	mg/l	N	001
V (Total)	T301	Total	2	µg/l	U	001
Zn (Total)	T301	Total	2	µg/l	U	001
Sum of Total Non Ferrous metals	T85	AR			N	001



# Scientific Analysis Laboratories Ltd

## Certificate of Analysis

**Report Number:** 620904-1

**Date of Report:** 29-Dec-2016

**Customer:** ADI Associates Ltd  
Kappara Business Centre  
113 Triq Birkirkara  
San Gwann SGN4197  
Malta  
VAT Number: MT18486514

**Customer Contact:** M/S Krista Farrugia

**Customer Job Reference:** SBS002

**Customer Site Reference:** MPS Decommissioning

**Date Job Received at SAL:** 13-Dec-2016

**Date Analysis Started:** 13-Dec-2016

**Date Analysis Completed:** 28-Dec-2016

The results reported relate to samples received in the laboratory and may not be representative of a whole batch.

Opinions and interpretations expressed herein are outside the scope of UKAS accreditation

This report should not be reproduced except in full without the written approval of the laboratory

Tests covered by this certificate were conducted in accordance with SAL SOPs

All results have been reviewed in accordance with Section 25 of the SAL Quality Manual



Report checked  
and authorised by :  
Sara Abou-Shakra  
Project Manager

Issued by :  
Sara Abou-Shakra  
Project Manager



# Waste Acceptance Criteria

Customer Sample Reference : MPS20

SAL Sample Reference : 620904 001

Project Site : MPS Decommissioning

Customer Reference : SBS002

Date Sampled : 06-DEC-2016

Bulk Product					Result	Inert Waste Landfill	Stable non reactive	Hazardous Waste Landfill
Determinand	Technique	LOD	Units	Symbol				
Acid Neutralising Capacity (pH 4)	Titration	2	Mol/kg	N	<2			
Acid Neutralising Capacity (pH 7)	Titration (pH 7)	2	Mol/kg	N	<2			
BTEX (Sum)	Calc	0.0040	mg/kg	N	<0.0040	6.0		
Loss on Ignition	Grav	0.1	%	N	2.6			10.0
Moisture	Grav	0.1	%	N	1.9			
PAH (Sum)	Calc	1.6	mg/kg	N	<1.6	100.0		
PCB EC7 (Sum)	Calc	0.0035	mg/kg	N	<0.0035	1.0		
pH	Probe			N	3.1		> 6.0	
Total Organic Carbon	OX/IR	0.1	%	N	<0.1	3.0	5.0	6.0
Total Petroleum Hydrocarbons C10-C40 (Sum)	Calc	2	mg/kg	N	(13, 100) <2	500.0		

Data for BS EN 12457-2 (10:1)					Result	Inert Waste Landfill	Stable non reactive	Hazardous Waste Landfill
Determinand	Technique	LOD	Units	Symbol				
Antimony	Calc WAC ICP/MS	0.010	mg/kg	N	0.012	0.06	0.7	5.0
Arsenic	Calc WAC ICP/MS	0.0020	mg/kg	N	0.0082	0.5	2.0	25.0
Barium	Calc WAC ICP/MS	0.010	mg/kg	N	0.37	20.0	100.0	300.0
Cadmium	Calc WAC ICP/MS	0.00020	mg/kg	N	0.0053	0.04	1.0	5.0
Chloride	Calc (W)	10	mg/kg	N	<10	800.0	15000.0	25000.0
Chromium	Calc WAC ICP/MS	0.010	mg/kg	N	4.5	0.5	10.0	70.0
Copper	Calc WAC ICP/MS	0.0050	mg/kg	N	1.7	2.0	50.0	100.0
Dissolved Organic Carbon	Calc	10	mg/kg	N	<10	500.0	800.0	1000.0
Fluoride	Calc (W)	0.50	mg/kg	N	<0.50	10.0	150.0	500.0
Lead	Calc WAC ICP/MS	0.0030	mg/kg	N	0.024	0.5	10.0	50.0
Mercury	Calc WAC ICP/MS	0.00050	mg/kg	N	<0.00050	0.01	0.2	2.0
Molybdenum	Calc WAC ICP/MS	0.010	mg/kg	N	0.056	0.5	10.0	30.0
Nickel	Calc WAC ICP/MS	0.010	mg/kg	N	59	0.4	10.0	40.0
Phenols (Total-Mono)	Calc	1.0	mg/kg	N	<1.0	1.0		
Selenium	Calc WAC ICP/MS	0.0050	mg/kg	N	0.016	0.1	0.5	7.0
Sulphate	Calc (W)	5	mg/kg	N	11000	1000.0	20000.0	50000.0
Total Dissolved Solids	Calc WAC ICP/MS	1000	mg/kg	N	11000	4000.0	60000.0	100000.0
Zinc	Calc WAC ICP/MS	0.020	mg/kg	N	5.3	4.0	50.0	200.0

Following the recommendation from the Environment Agency (England and Wales)\*, the leachate preparation in this report has been carried out to BS EN 12457-2 : One Stage batch test at a liquid to solid ratio of 10 l/kg. This is also compliant with Schedule 10 of the Environmental Permitting Regulations 2010.

Note : This is the minimum amount of testing which is required.

Further testing may be required if :

- evidence of immediately leachable parameters becomes available.
- evidence to indicate that the sample could be classified as hazardous under H1-H14 of the Waste(England and Wales) Regulations 2011(as amended) becomes available.

Acceptance of waste at landfill is always at the discretion of the Landfill Operator.

\* Waste Sampling and Testing for Disposal at Landfill, EBPR1 11507B, Environment Agency (England and Wales) March 2013

# Waste Acceptance Criteria

Customer Sample Reference : MPS21

SAL Sample Reference : 620904 002

Project Site : MPS Decommissioning

Customer Reference : SBS002

Date Sampled : 06-DEC-2016

Bulk Product					Result	Inert Waste Landfill	Stable non reactive	Hazardous Waste Landfill
Determinand	Technique	LOD	Units	Symbol				
Acid Neutralising Capacity (pH 4)	Titration	2	Mol/kg	N	<2			
Acid Neutralising Capacity (pH 7)	Titration (pH 7)	2	Mol/kg	N	<2			
BTEX (Sum)	Calc	0.0040	mg/kg	N	<0.0040	6.0		
Loss on Ignition	Grav	0.1	%	N	1.9			10.0
Moisture	Grav	0.1	%	N	1.6			
PAH (Sum)	Calc	1.6	mg/kg	N	<1.6	100.0		
PCB EC7 (Sum)	Calc	0.0035	mg/kg	N	<0.0035	1.0		
pH	Probe			N	3.2		> 6.0	
Total Organic Carbon	OX/IR	0.1	%	N	<0.1	3.0	5.0	6.0
Total Petroleum Hydrocarbons C10-C40 (Sum)	Calc	2	mg/kg	N	(13, 100) <2	500.0		

Data for BS EN 12457-2 (10:1)					Result	Inert Waste Landfill	Stable non reactive	Hazardous Waste Landfill
Determinand	Technique	LOD	Units	Symbol				
Antimony	Calc WAC ICP/MS	0.010	mg/kg	N	<0.010	0.06	0.7	5.0
Arsenic	Calc WAC ICP/MS	0.0020	mg/kg	N	0.0046	0.5	2.0	25.0
Barium	Calc WAC ICP/MS	0.010	mg/kg	N	0.20	20.0	100.0	300.0
Cadmium	Calc WAC ICP/MS	0.00020	mg/kg	N	0.0035	0.04	1.0	5.0
Chloride	Calc (W)	10	mg/kg	N	<10	800.0	15000.0	25000.0
Chromium	Calc WAC ICP/MS	0.010	mg/kg	N	1.5	0.5	10.0	70.0
Copper	Calc WAC ICP/MS	0.0050	mg/kg	N	1.9	2.0	50.0	100.0
Dissolved Organic Carbon	Calc	10	mg/kg	N	<10	500.0	800.0	1000.0
Fluoride	Calc (W)	0.50	mg/kg	N	<0.50	10.0	150.0	500.0
Lead	Calc WAC ICP/MS	0.0030	mg/kg	N	0.0057	0.5	10.0	50.0
Mercury	Calc WAC ICP/MS	0.00050	mg/kg	N	<0.00050	0.01	0.2	2.0
Molybdenum	Calc WAC ICP/MS	0.010	mg/kg	N	0.019	0.5	10.0	30.0
Nickel	Calc WAC ICP/MS	0.010	mg/kg	N	33	0.4	10.0	40.0
Phenols (Total-Mono)	Calc	1.0	mg/kg	N	<1.0	1.0		
Selenium	Calc WAC ICP/MS	0.0050	mg/kg	N	0.011	0.1	0.5	7.0
Sulphate	Calc (W)	5	mg/kg	N	8400	1000.0	20000.0	50000.0
Total Dissolved Solids	Calc WAC ICP/MS	1000	mg/kg	N	9300	4000.0	60000.0	100000.0
Zinc	Calc WAC ICP/MS	0.020	mg/kg	N	3.3	4.0	50.0	200.0

Following the recommendation from the Environment Agency (England and Wales)\*, the leachate preparation in this report has been carried out to BS EN 12457-2 : One Stage batch test at a liquid to solid ratio of 10 l/kg. This is also compliant with Schedule 10 of the Environmental Permitting Regulations 2010.

Note : This is the minimum amount of testing which is required.

Further testing may be required if :

- evidence of immediately leachable parameters becomes available.
- evidence to indicate that the sample could be classified as hazardous under H1-H14 of the Waste(England and Wales) Regulations 2011(as amended) becomes available.

Acceptance of waste at landfill is always at the discretion of the Landfill Operator.

\* Waste Sampling and Testing for Disposal at Landfill, EBPR1 11507B, Environment Agency (England and Wales) March 2013



<b>SAL Reference:</b> 620904 <b>Project Site:</b> MPS Decommissioning <b>Customer Reference:</b> SBS002  <b>Bulk Product</b> Analysed as Bulk Product <b>Additional Metals</b>						
<b>SAL Reference</b>				<b>620904 001</b>	<b>620904 002</b>	
<b>Customer Sample Reference</b>				<b>MPS20</b>	<b>MPS21</b>	
<b>Test Sample</b>				<b>A40</b>	<b>A40</b>	
<b>Date Sampled</b>				<b>06-DEC-2016</b>	<b>06-DEC-2016</b>	
<b>Determinand</b>	<b>Method</b>	<b>LOD</b>	<b>Units</b>	<b>Symbol</b>		
Silver	ICP/OES	1	mg/kg	N	3	2
Calcium	ICP/OES	1	mg/kg	N	870	550
Barium	ICP/OES	1	mg/kg	N	43	36
Aluminium	ICP/OES	1	mg/kg	N	3500	2800

<b>SAL Reference:</b> 620904 <b>Project Site:</b> MPS Decommissioning <b>Customer Reference:</b> SBS002  <b>Bulk Product</b> Analysed as Bulk Product <b>Misc</b>						
<b>SAL Reference</b>				<b>620904 001</b>	<b>620904 002</b>	
<b>Customer Sample Reference</b>				<b>MPS20</b>	<b>MPS21</b>	
<b>Test Sample</b>				<b>AR</b>	<b>AR</b>	
<b>Date Sampled</b>				<b>06-DEC-2016</b>	<b>06-DEC-2016</b>	
<b>Determinand</b>	<b>Method</b>	<b>LOD</b>	<b>Units</b>	<b>Symbol</b>		
Asbestos Bulk ID	PLM			SU	N.D.	N.D.
Cyanide (Total)	Colorimetry	1	mg/kg	N	<1	<1

<b>SAL Reference:</b> 620904 <b>Project Site:</b> MPS Decommissioning <b>Customer Reference:</b> SBS002  <b>Bulk Product</b> Analysed as Bulk Product <b>BTEX</b>						
<b>SAL Reference</b>				<b>620904 001</b>	<b>620904 002</b>	
<b>Customer Sample Reference</b>				<b>MPS20</b>	<b>MPS21</b>	
<b>Test Sample</b>				<b>AR</b>	<b>AR</b>	
<b>Date Sampled</b>				<b>06-DEC-2016</b>	<b>06-DEC-2016</b>	
<b>Determinand</b>	<b>Method</b>	<b>LOD</b>	<b>Units</b>	<b>Symbol</b>		
Ethyl/Benzene	GC/MS (Headspace)	1	µg/kg	N	<1	<1
Ortho-Xylene	GC/MS (Headspace)	1	µg/kg	N	<1	<1
Benzene	GC/MS (Headspace)	1	µg/kg	N	(13) <1	(13) <1
Meta/Para-Xylene	GC/MS (Headspace)	1	µg/kg	N	<1	<1
Toluene	GC/MS (Headspace)	1	µg/kg	N	<1	<1

<b>SAL Reference:</b> 620904 <b>Project Site:</b> MPS Decommissioning <b>Customer Reference:</b> SBS002  <b>Bulk Product</b> Analysed as Bulk Product <b>PCB EC7</b>						
<b>SAL Reference</b>				<b>620904 001</b>	<b>620904 002</b>	
<b>Customer Sample Reference</b>				<b>MPS20</b>	<b>MPS21</b>	
<b>Test Sample</b>				<b>AR</b>	<b>AR</b>	
<b>Date Sampled</b>				<b>06-DEC-2016</b>	<b>06-DEC-2016</b>	
<b>Determinand</b>	<b>Method</b>	<b>LOD</b>	<b>Units</b>	<b>Symbol</b>		
Polychlorinated biphenyl BZ#28	GC/MS (HR)	0.5	µg/kg	N	<0.5	<0.5
Polychlorinated biphenyl BZ#52	GC/MS (HR)	0.5	µg/kg	N	<0.5	<0.5
Polychlorinated biphenyl BZ#101	GC/MS (SIR)	0.5	µg/kg	N	<0.5	<0.5
Polychlorinated biphenyl BZ#118	GC/MS (SIR)	0.5	µg/kg	N	<0.5	<0.5
Polychlorinated biphenyl BZ#138	GC/MS (SIR)	0.5	µg/kg	N	<0.5	<0.5
Polychlorinated biphenyl BZ#153	GC/MS (SIR)	0.5	µg/kg	N	<0.5	<0.5
Polychlorinated biphenyl BZ#180	GC/MS (HR)	0.5	µg/kg	N	<0.5	<0.5

<b>SAL Reference:</b> 620904 <b>Project Site:</b> MPS Decommissioning <b>Customer Reference:</b> SBS002  <b>Bulk Product</b> Analysed as Bulk Product <b>Volatile Organic Compounds (USEPA 624)</b>						
<b>SAL Reference</b>			<b>620904 001</b>		<b>620904 002</b>	
<b>Customer Sample Reference</b>			<b>MPS20</b>		<b>MPS21</b>	
<b>Test Sample</b>			<b>AR</b>		<b>AR</b>	
<b>Date Sampled</b>			<b>06-DEC-2016</b>		<b>06-DEC-2016</b>	
<b>Determinand</b>	<b>Method</b>	<b>LOD</b>	<b>Units</b>	<b>Symbol</b>		
1,1,1,2-Tetrachloroethane	GC/MS (Headspace)	5	µg/kg	N	<5	<5
1,1,1-Trichloroethane	GC/MS (Headspace)	5	µg/kg	N	<5	<5
1,1,2,2-Tetrachloroethane	GC/MS (Headspace)	5	µg/kg	N	<5	<5
1,1,2-Trichloroethane	GC/MS (Headspace)	5	µg/kg	N	<5	<5
1,1,2-Trichloroethylene	GC/MS (Headspace)	5	µg/kg	N	<5	<5
1,1-Dichloroethane	GC/MS (Headspace)	5	µg/kg	N	<5	<5
1,1-Dichloroethylene	GC/MS (Headspace)	5	µg/kg	N	<5	<5
1,1-Dichloropropene	GC/MS (Headspace)	5	µg/kg	N	<5	<5
1,2,3-Trichlorobenzene	GC/MS (Headspace)	5	µg/kg	N	<5	<5
1,2,3-Trichloropropane	GC/MS (Headspace)	5	µg/kg	N	<5	<5
1,2,4-Trichlorobenzene	GC/MS (Headspace)	5	µg/kg	N	<5	<5
1,2,4-Trimethylbenzene	GC/MS (Headspace)	5	µg/kg	N	<5	<5
1,2-dibromoethane	GC/MS (Headspace)	5	µg/kg	N	<5	<5
1,2-Dichlorobenzene	GC/MS (Headspace)	5	µg/kg	N	<5	<5
1,2-Dichloroethane	GC/MS (Headspace)	5	µg/kg	N	<5	<5
1,2-Dichloropropane	GC/MS (Headspace)	5	µg/kg	N	<5	<5
1,3,5-Trimethylbenzene	GC/MS (Headspace)	5	µg/kg	N	<5	<5
1,3-Dichlorobenzene	GC/MS (Headspace)	5	µg/kg	N	<5	<5
1,3-Dichloropropane	GC/MS (Headspace)	5	µg/kg	N	<5	<5
1,4-Dichlorobenzene	GC/MS (Headspace)	5	µg/kg	N	<5	<5
2,2-Dichloropropane	GC/MS (Headspace)	5	µg/kg	N	<5	<5
2-Chlorotoluene	GC/MS (Headspace)	5	µg/kg	N	<5	<5
4-Chlorotoluene	GC/MS (Headspace)	5	µg/kg	N	<5	<5
Benzene	GC/MS (Headspace)	1	µg/kg	N	<sup>(13)</sup> <1	<sup>(13)</sup> <1
Bromobenzene	GC/MS (Headspace)	5	µg/kg	N	<5	<5
Bromochloromethane	GC/MS (Headspace)	5	µg/kg	N	<5	<5
Bromodichloromethane	GC/MS (Headspace)	5	µg/kg	N	<5	<5
Bromoform	GC/MS (Headspace)	5	µg/kg	N	<5	<5
Bromomethane	GC/MS (Headspace)	5	µg/kg	N	<5	<5
Carbon tetrachloride	GC/MS (Headspace)	5	µg/kg	N	<5	<5
Chlorobenzene	GC/MS (Headspace)	5	µg/kg	N	<5	<5
Chlorodibromomethane	GC/MS (Headspace)	5	µg/kg	N	<5	<5
Chloroethane	GC/MS (Headspace)	5	µg/kg	N	<5	<5
Chloroform	GC/MS (Headspace)	5	µg/kg	N	<5	<5
Chloromethane	GC/MS (Headspace)	5	µg/kg	N	<5	<5
Cis-1,2-Dichloroethylene	GC/MS (Headspace)	5	µg/kg	N	<5	<5
Cis-1,3-Dichloropropene	GC/MS (Headspace)	5	µg/kg	N	<5	<5
Dibromomethane	GC/MS (Headspace)	5	µg/kg	N	<5	<5
Dichlorodifluoromethane	GC/MS (Headspace)	5	µg/kg	N	<5	<5
Dichloromethane	GC/MS (Headspace)	100	µg/kg	N	<100	<100
Ethylbenzene	GC/MS (Headspace)	1	µg/kg	N	<1	<1
Isopropyl benzene	GC/MS (Headspace)	5	µg/kg	N	<5	<5
Meta/Para-Xylene	GC/MS (Headspace)	1	µg/kg	N	<1	<1
n-Propylbenzene	GC/MS (Headspace)	10	µg/kg	N	<10	<10
Ortho-Xylene	GC/MS (Headspace)	1	µg/kg	N	<1	<1
p-Isopropyltoluene	GC/MS (Headspace)	10	µg/kg	N	<10	<10
Sec-Butylbenzene	GC/MS (Headspace)	10	µg/kg	N	<10	<10
Styrene	GC/MS (Headspace)	5	µg/kg	N	<5	<5
Tert-Butylbenzene	GC/MS (Headspace)	10	µg/kg	N	<10	<10
Tetrachloroethylene	GC/MS (Headspace)	5	µg/kg	N	<5	<5
Toluene	GC/MS (Headspace)	1	µg/kg	N	<1	<1
Trans-1,2-Dichloroethylene	GC/MS (Headspace)	5	µg/kg	N	<5	<5
Trans-1,3-Dichloropropene	GC/MS (Headspace)	5	µg/kg	N	<5	<5
Trichlorofluoromethane	GC/MS (Headspace)	5	µg/kg	N	<5	<5
Vinyl chloride monomer	GC/MS (Headspace)	5	µg/kg	N	<5	<5

<b>SAL Reference:</b> 620904 <b>Project Site:</b> MPS Decommissioning <b>Customer Reference:</b> SBS002  <b>Bulk Product</b> Analysed as Bulk Product <b>Polyaromatic Hydrocarbons (US EPA16)</b>						
<b>SAL Reference</b>				<b>620904 001</b>	<b>620904 002</b>	
<b>Customer Sample Reference</b>				<b>MPS20</b>	<b>MPS21</b>	
<b>Test Sample</b>				<b>AR</b>	<b>AR</b>	
<b>Date Sampled</b>				<b>06-DEC-2016</b>	<b>06-DEC-2016</b>	
<b>Determinand</b>	<b>Method</b>	<b>LOD</b>	<b>Units</b>	<b>Symbol</b>		
Naphthalene	GC/MS	0.1	mg/kg	N	<0.1	<0.1
Acenaphthylene	GC/MS	0.1	mg/kg	N	<0.1	<0.1
Acenaphthene	GC/MS	0.1	mg/kg	N	<0.1	<0.1
Fluorene	GC/MS	0.1	mg/kg	N	<0.1	<0.1
Phenanthrene	GC/MS	0.1	mg/kg	N	<0.1	<0.1
Anthracene	GC/MS	0.1	mg/kg	N	<0.1	<0.1
Fluoranthene	GC/MS	0.1	mg/kg	N	<0.1	<0.1
Pyrene	GC/MS	0.1	mg/kg	N	<0.1	<0.1
Benzo(a)Anthracene	GC/MS	0.1	mg/kg	N	<0.1	<0.1
Chrysene	GC/MS	0.1	mg/kg	N	<0.1	<0.1
Benzo(b/k)Fluoranthene	GC/MS	0.1	mg/kg	N	<0.1	<0.1
Benzo(a)Pyrene	GC/MS	0.1	mg/kg	N	<0.1	<0.1
Indeno(123-cd)Pyrene	GC/MS	0.1	mg/kg	N	<0.1	<0.1
Dibenzo(ah)Anthracene	GC/MS	0.1	mg/kg	N	<0.1	<0.1
Benzo(ghi)Perylene	GC/MS	0.1	mg/kg	N	<0.1	<0.1
Polyaromatic Hydrocarbons (Total)	GC/MS	0.1	mg/kg	N	<0.1	<0.1
Coronene	GC/MS	0.1	mg/kg	N	<0.1	<0.1

<b>SAL Reference:</b> 620904 <b>Project Site:</b> MPS Decommissioning <b>Customer Reference:</b> SBS002  <b>Bulk Product</b> Analysed as Bulk Product <b>Total Petroleum Hydrocarbons</b>						
<b>SAL Reference</b>				<b>620904 001</b>	<b>620904 002</b>	
<b>Customer Sample Reference</b>				<b>MPS20</b>	<b>MPS21</b>	
<b>Test Sample</b>				<b>AR</b>	<b>AR</b>	
<b>Date Sampled</b>				<b>06-DEC-2016</b>	<b>06-DEC-2016</b>	
<b>Determinand</b>	<b>Method</b>	<b>LOD</b>	<b>Units</b>	<b>Symbol</b>		
Total Petroleum Hydrocarbons	GC/FID	1	mg/kg	N	(100,13) <2	(100,13) <2
Total Petroleum Hydrocarbons (C35-C40)	GC/FID	1	mg/kg	N	(13,100) <2	(100,13) <2

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<b>SAL Reference:</b> 620904 <b>Project Site:</b> MPS Decommissioning <b>Customer Reference:</b> SBS002  <b>Leachate to BS EN 12457-2 (10:1)</b> Analysed as Water <b>Waste Acceptance Criteria</b>						
<b>SAL Reference</b>			<b>620904 001</b>	<b>620904 002</b>		
<b>Customer Sample Reference</b>			<b>MPS20</b>	<b>MPS21</b>		
<b>Test Sample</b>			<b>10:1</b>	<b>10:1</b>		
<b>Date Sampled</b>			<b>06-DEC-2016</b>	<b>06-DEC-2016</b>		
<b>Determinand</b>	<b>Method</b>	<b>LOD</b>	<b>Units</b>	<b>Symbol</b>		
Arsenic (Dissolved)	ICP/MS (Filtered)	0.2	µg/l	U	<b>0.8</b>	<b>0.5</b>
Barium (Dissolved)	ICP/MS (Filtered)	1	µg/l	U	<b>37</b>	<b>20</b>
Molybdenum (Dissolved)	ICP/MS (Filtered)	1	µg/l	N	<b>6</b>	<b>2</b>
Total Dissolved Solids	Grav	100	mg/l	N	<b>1100</b>	<b>930</b>
Phenols (Total-Mono)	Colorimetry	0.1	mg/l	U	<0.1	<0.1
Dissolved Organic Carbon	OX/IR	1	mg/l	N	<1	<1
Electrical Conductivity	Probe	10	µS/cm	N	<b>1800</b>	<b>1500</b>
Antimony (Dissolved)	ICP/MS (Filtered)	1	µg/l	U	<b>1</b>	<1
Cadmium (Dissolved)	ICP/MS (Filtered)	0.02	µg/l	U	<b>0.53</b>	<b>0.35</b>
Chromium (Dissolved)	ICP/MS (Filtered)	1	µg/l	U	<b>450</b>	<b>150</b>
Copper (Dissolved)	ICP/MS (Filtered)	0.5	µg/l	U	<b>170</b>	<b>190</b>
Lead (Dissolved)	ICP/MS (Filtered)	0.3	µg/l	U	<b>2.4</b>	<b>0.6</b>
Mercury (Dissolved)	ICP/MS (Filtered)	0.05	µg/l	U	<0.05	<0.05
Nickel (Dissolved)	ICP/MS (Filtered)	1	µg/l	U	<b>5900</b>	<b>3300</b>
Selenium (Dissolved)	ICP/MS (Filtered)	0.5	µg/l	U	<b>1.6</b>	<b>1.1</b>
Zinc (Dissolved)	ICP/MS (Filtered)	2	µg/l	U	<b>530</b>	<b>330</b>
Chloride	Discrete Analyser	1	mg/l	U	<1	<1
Fluoride	Discrete Analyser	0.05	mg/l	U	<0.05	<0.05
Sulphate	Discrete Analyser	0.5	mg/l	U	<b>1100</b>	<b>840</b>

## Index to symbols used in 620904-1

Value	Description
A40	Assisted dried < 40C
10:1	Leachate to BS EN 12457-2 (10:1)
10:1 S	Data for BS EN 12457-2 (10:1)
AR	As Received
N.D.	Not Detected
13	Results have been blank corrected.
100	LOD determined by sample aliquot used for analysis
S	Analysis was subcontracted
U	Analysis is UKAS accredited
N	Analysis is not UKAS accredited

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# Scientific Analysis Laboratories Ltd

## Certificate of Analysis

**Report Number:** 626897-1

**Date of Report:** 19-Jan-2017

**Customer:** ADI Associates Ltd  
Kappara Business Centre  
113 Triq Birkirkara  
San Gwann SGN4197  
Malta  
VAT Number: MT18486514

**Customer Contact:** Ms Rachel Xuereb

**Customer Job Reference:** SBS002

**Customer Site Reference:** MPS Decommissioning

**Date Job Received at SAL:** 13-Dec-2016

**Date Analysis Started:** 18-Jan-2017

**Date Analysis Completed:** 19-Jan-2017

The results reported relate to samples received in the laboratory and may not be representative of a whole batch.

This report should not be reproduced except in full without the written approval of the laboratory

Tests covered by this certificate were conducted in accordance with SAL SOPs

All results have been reviewed in accordance with Section 25 of the SAL Quality Manual

Report checked  
and authorised by :  
Mr Richard Wong  
Project Manager

Issued by :  
Mr Richard Wong  
Project Manager



<b>SAL Reference:</b> 626897 <b>Project Site:</b> MPS Decommissioning <b>Customer Reference:</b> SBS002  <b>Bulk Product</b> Analysed as Bulk Product <b>Metals</b>						
<b>SAL Reference</b>			<b>626897 001</b>		<b>626897 002</b>	
<b>Customer Sample Reference</b>			<b>MPS20 (620904/001)</b>		<b>MPS21 (620904/002)</b>	
<b>Date Sampled</b>			<b>06-DEC-2016</b>		<b>06-DEC-2016</b>	
<b>Determinand</b>	<b>Method</b>	<b>Test Sample</b>	<b>LOD</b>	<b>Units</b>		
Antimony	T6	A40	10	mg/kg	<10	<10
Arsenic	T6	A40	1	mg/kg	3	2
Cadmium	T6	A40	1	mg/kg	<1	<1
Chromium	T6	A40	1	mg/kg	21	22
Chromium VI	T6	A40	1.0	mg/kg	4.2	3.8
Cobalt	T6	A40	10	mg/kg	<10	<10
Copper	T6	A40	1	mg/kg	9	10
Lead	T6	A40	1	mg/kg	6	3
Manganese	T6	A40	1	mg/kg	41	32
Mercury	T6	A40	1	mg/kg	<1	<1
Nickel	T6	A40	1	mg/kg	130	82
Selenium	T6	A40	10	mg/kg	<10	<10
Thallium	T6	A40	10	mg/kg	<10	<10
Tin	T6	A40	2	mg/kg	<2	<2
Vanadium	T6	A40	10	mg/kg	290	180
Zinc	T6	A40	1	mg/kg	30	14

## Index to symbols used in 626897-1

Value	Description
A40	Assisted dried < 40C
N	Analysis is not UKAS accredited

## Method Index

Value	Description
T6	ICP/OES

## Accreditation Summary

<b>Determinand</b>	<b>Method</b>	<b>Test Sample</b>	<b>LOD</b>	<b>Units</b>	<b>Symbol</b>	<b>SAL References</b>
Antimony	T6	A40	10	mg/kg	N	001-002
Arsenic	T6	A40	1	mg/kg	N	001-002
Cadmium	T6	A40	1	mg/kg	N	001-002
Chromium	T6	A40	1	mg/kg	N	001-002
Chromium VI	T6	A40	1.0	mg/kg	N	001-002
Cobalt	T6	A40	10	mg/kg	N	001-002
Copper	T6	A40	1	mg/kg	N	001-002
Lead	T6	A40	1	mg/kg	N	001-002
Manganese	T6	A40	1	mg/kg	N	001-002
Mercury	T6	A40	1	mg/kg	N	001-002
Nickel	T6	A40	1	mg/kg	N	001-002
Selenium	T6	A40	10	mg/kg	N	001-002
Thallium	T6	A40	10	mg/kg	N	001-002
Tin	T6	A40	2	mg/kg	N	001-002
Vanadium	T6	A40	10	mg/kg	N	001-002
Zinc	T6	A40	1	mg/kg	N	001-002

Client Reference: MPS20 Decommissioning

**HAZARDOUS PROPERTY ASSESSMENT**  
Waste (England and Wales) Regulations 2011

Date of Assessment 19th January 2017

Hazardous Property/Determinand	Test/Assessment Method	Result %	Worst Case Compound	Result as Worst Case Compound	Hazard Statement	Hazardous Property	Threshold %	Conclusion
Arsenic	ICP/OES	0.0003	diasenic trioxide	0.0004	H350	HP7	0.1	Not Hazardous
					H300	HP6	0.25	Not Hazardous
					H314	HP8	1	Not Hazardous
					H400	HP14	0,1	Not Hazardous
					H410	HP14		Not Hazardous
Antimony	ICP/OES	0.001	antimony trichloride	0.0019	H302	HP6	5	Not Hazardous
					H314	HP4 HP8	25	Not Hazardous
					H335	HP6	5	Not Hazardous
					H411	HP14	0.1	Not Hazardous
Aluminium	ICP/OES	0.35	aluminium nitrate		H314	HP4 HP8	2<pH<11.5	Not Hazardous
Barium	ICP/OES	0.0043	barium sulphide	0.0050	H301	HP6	5	Not Hazardous
					H332	HP6	22.5	Not Hazardous
					H400	HP14	0.1	Not Hazardous
					H410	HP14	0.1	Not Hazardous
Calcium	ICP/OES	0.09	inert aggregate material					Not Hazardous
Cadmium	ICP/OES	<0.001	cadmium carbonate	<0.001	H332	HP6	22.5	Not Hazardous
					H312	HP6	0.25	Not Hazardous
					H302	HP6	0.25	Not Hazardous
					H400	HP14	0.1	Not Hazardous
					H410	HP14	0.1	Not Hazardous
Chromium	ICP/OES	0.0022	chromates	0.0069	H350	HP11	0.1	Not Hazardous
					H317	HP13	10	Not Hazardous

Client Reference: MPS20 Decommissioning

**HAZARDOUS PROPERTY ASSESSMENT**  
Waste (England and Wales) Regulations 2011

Date of Assessment 19th January 2017

Hazardous Property/Determinand	Test/Assessment Method	Result %	Worst Case Compound	Result as Worst Case Compound	Hazard Statement	Hazardous Property	Threshold %	Conclusion
Cobalt	ICP/OES	0.001	cobalt sulphate	0.0026	H302	HP6	25	Not Hazardous
					H317	HP13	10	Not Hazardous
					H350	HP7	0.1	Not Hazardous
					H400	HP14	0.1	Not Hazardous
					H410	HP14	0.1	Not Hazardous
Mercury	ICP/OES	<0.0001		<0.0001				not detected -excluded
Manganese	ICP/OES	0.0041	manganese sulphate	0.0113	H302	HP6	25	Not Hazardous
					H373	HP5	10	Not Hazardous
					H411	HP14	0.1	Not Hazardous
Lead	ICP/OES	0.0009	lead ion	0.0009	H360	HP10	0.3	Not Hazardous
					H332	HP6	22.5	Not Hazardous
					H302	HP6	25	Not Hazardous
					H373	HP5	10	Not Hazardous
					H400	HP14	0.1	Not Hazardous
					H410	HP14	0.1	Not Hazardous
					H350	HP7	0.1	Not Hazardous
Selenium	ICP/OES	<0.001		<0.001	H331	HP6	3.5	not detected -excluded
					H301	HP6	5	not detected -excluded
					H373	HP6	5	not detected -excluded
					H410	HP14	0.1	not detected -excluded



Client Reference: MPS20 Decommissioning

**HAZARDOUS PROPERTY ASSESSMENT**  
Waste (England and Wales) Regulations 2011

Date of Assessment 19th January 2017

Hazardous Property/Determinand	Test/Assessment Method	Result %	Worst Case Compound	Result as Worst Case Compound	Hazard Statement	Hazardous Property	Threshold %	Conclusion
Copper	ICP/OES	0.0009	copper oxide	0.0011	H302	HP6	25	Not Hazardous
					H400	HP14	0.1	Not Hazardous
Nickel	ICP/OES	0.013	nickel carbonate	0.0260	H410	HP14	0.1	Not Hazardous
					H350	HP7	0.1	Not Hazardous
					H341	HP11	1	Not Hazardous
					H360	HP10	0.3	Not Hazardous
					H372	HP5	1	Not Hazardous
					H332	HP6	22.5	Not Hazardous
					H302	HP6	25	Not Hazardous
					H315	HP4	20	Not Hazardous
					H334	HP13	10	Not Hazardous
					H317	HP13	10	Not Hazardous
					H319	HP4	20	Not Hazardous
					H400	HP14	0.1	Not Hazardous
					H410	HP14	0.1	Not Hazardous
Thallium	ICP/OES	0.001	thallium sulphate	0.0012	H300	HP6	0.1000	Not Hazardous
					H315	HP4	2<pH<11.5	Not Hazardous
					H372	HP5	1	Not Hazardous
					H411	HP14	0.1	Not Hazardous
Zinc	ICP/OES	0.0032	zinc oxide	0.0040	H400	HP14	0.1	Not Hazardous
					H410	HP14	0.1	Not Hazardous
pH		3.1		2<pH<11.5		HP4/HP8		Not Hazardous
Contact with acids			no reaction					Not Hazardous
Explosivity			no reaction					Not Hazardous
Asbestos	plm	ND						not detected -excluded

William A Cohen B.Sc  
Consultant Environmental Chemist

Client Reference: MPS20 Decommissioning

**HAZARDOUS PROPERTY ASSESSMENT**  
Waste (England and Wales) Regulations 2011

Date of Assessment 19th January 2017

Hazardous Property/Determinand	Test/Assessment Method	Result %	Worst Case Compound	Result as Worst Case Compound	Hazard Statement	Hazardous Property	Threshold %	Conclusion
<b>Organic Compounds</b>								
Total Petroleum Hydrocarbons		0.0002				HP5	10	Not Hazardous
Polyaromatic Hydrocarbons	GC MS	0.0002		0.0002		HP7	0.1	Hazardous
						HP11	0.1	Hazardous
						HP10	3	Hazardous
						HP14	2.5	Hazardous
<b>Overall Conclusion</b> <b>EWC Code</b>								<b>Not Hazardous</b> <b>17-09-04</b>

Assessment is based on SAL Report # 626897 and 620904 which should be included with this report.

Risk Phrases used in this assessment are based on EU 1277 2008

The conclusions in this assessment are based on guidance taken from WM3 1st edition 2015.

The terms "Hazardous" and "Not Hazardous" are used in the context of these Regulations. Further testing may be required if classification under the Waste Acceptance Criteria (Landfill Regulations 2000/EU Directive 99/3/EC as amended) is intended.

The term "Not Hazardous" does not imply that significant possibility of significant harm to human health or the environment is not present.

All reasonable skill and care has been exercised in production of this assessment.

Assessment Prepared by W A Cohen

Client Reference: MPS21 Decommissioning

**HAZARDOUS PROPERTY ASSESSMENT**  
Waste (England and Wales) Regulations 2011

Date of Assessment 19th January 2017

Hazardous Property/Determinand	Test/Assessment Method	Result %	Worst Case Compound	Result as Worst Case Compound	Hazard Statement	Hazardous Property	Threshold %	Conclusion
Arsenic	ICP/OES	0.0002	diasenic trioxide	0.0003	H350	HP7	0.1	Not Hazardous
					H300	HP6	0.25	Not Hazardous
					H314	HP8	1	Not Hazardous
					H400	HP14	0,1	Not Hazardous
					H410	HP14		Not Hazardous
Antimony	ICP/OES	0.001	antimony trichloride	0.0019	H302	HP6	5	Not Hazardous
					H314	HP4 HP8	25	Not Hazardous
					H335	HP6	5	Not Hazardous
					H411	HP14	0.1	Not Hazardous
Aluminium	ICP/OES	0.28	aluminium nitrate		H314	HP4 HP8	2<pH<11.5	Not Hazardous
Barium	ICP/OES	0.0036	barium sulphide	0.0043	H301	HP6	5	Not Hazardous
					H332	HP6	22.5	Not Hazardous
					H400	HP14	0.1	Not Hazardous
					H410	HP14	0.1	Not Hazardous
Calcium	ICP/OES	0.055	inert aggregate material					Not Hazardous
Cadmium	ICP/OES	<0.001	cadmium carbonate	<0.001	H332	HP6	22.5	Not Hazardous
					H312	HP6	0.25	Not Hazardous
					H302	HP6	0.25	Not Hazardous
					H400	HP14	0.1	Not Hazardous
					H410	HP14	0.1	Not Hazardous
Chromium	ICP/OES	0.0004	chromates	0.0013	H350	HP11	0.1	Not Hazardous
					H317	HP13	10	Not Hazardous

William A Cohen B.Sc  
Consultant Environmental Chemist

Client Reference: MPS21 Decommissioning

**HAZARDOUS PROPERTY ASSESSMENT**  
Waste (England and Wales) Regulations 2011

Date of Assessment 19th January 2017

Hazardous Property/Determinand	Test/Assessment Method	Result %	Worst Case Compound	Result as Worst Case Compound	Hazard Statement	Hazardous Property	Threshold %	Conclusion
Cobalt	ICP/OES	0.001	cobalt sulphate	0.0026	H302	HP6	25	Not Hazardous
					H317	HP13	10	Not Hazardous
					H350	HP7	0.1	Not Hazardous
					H400	HP14	0.1	Not Hazardous
					H410	HP14	0.1	Not Hazardous
Mercury	ICP/OES	<0.0001		<0.0001				not detected -excluded
Manganese	ICP/OES	0.0032	manganese sulphate	0.0088	H302	HP6	25	Not Hazardous
					H373	HP5	10	Not Hazardous
					H411	HP14	0.1	Not Hazardous
Lead	ICP/OES	0.0003	lead ion	0.0003	H360	HP10	0.3	Not Hazardous
					H332	HP6	22.5	Not Hazardous
					H302	HP6	25	Not Hazardous
					H373	HP5	10	Not Hazardous
					H400	HP14	0.1	Not Hazardous
					H410	HP14	0.1	Not Hazardous
					H350	HP7	0.1	Not Hazardous
Selenium	ICP/OES	<0.001		<0.001	H331	HP6	3.5	not detected -excluded
					H301	HP6	5	not detected -excluded
					H373	HP6	5	not detected -excluded
					H410	HP14	0.1	not detected -excluded

Client Reference: MPS21 Decommissioning

**HAZARDOUS PROPERTY ASSESSMENT**  
Waste (England and Wales) Regulations 2011

Date of Assessment 19th January 2017

Hazardous Property/Determinand	Test/Assessment Method	Result %	Worst Case Compound	Result as Worst Case Compound	Hazard Statement	Hazardous Property	Threshold %	Conclusion
Copper	ICP/OES	0.001	copper oxide	0.0013	H302	HP6	25	Not Hazardous
					H400	HP14	0.1	Not Hazardous
Nickel	ICP/OES	0.0082	nickel carbonate	0.0164	H410	HP14	0.1	Not Hazardous
					H350	HP7	0.1	Not Hazardous
					H341	HP11	1	Not Hazardous
					H360	HP10	0.3	Not Hazardous
					H372	HP5	1	Not Hazardous
					H332	HP6	22.5	Not Hazardous
					H302	HP6	25	Not Hazardous
					H315	HP4	20	Not Hazardous
					H334	HP13	10	Not Hazardous
					H317	HP13	10	Not Hazardous
					H319	HP4	20	Not Hazardous
Thallium	ICP/OES	0.001	thallium sulphate	0.0012	H400	HP14	0.1	Not Hazardous
					H410	HP14	0.1	Not Hazardous
					H300	HP6	0.1000	Not Hazardous
					H315	HP4	2<pH<11.5	Not Hazardous
Zinc	ICP/OES	0.0014	zinc oxide	0.0017	H372	HP5	1	Not Hazardous
					H411	HP14	0.1	Not Hazardous
pH		3.2		2<pH<11.5		HP4/HP8		Not Hazardous
Contact with acids			no reaction					Not Hazardous
Explosivity			no reaction					Not Hazardous
Asbestos	plm	ND						not detected -excluded

William A Cohen B.Sc  
Consultant Environmental Chemist

Client Reference: MPS21 Decommissioning

**HAZARDOUS PROPERTY ASSESSMENT**  
**Waste (England and Wales) Regulations 2011**

Date of Assessment 19th January 2017

Hazardous Property/Determinand	Test/Assessment Method	Result %	Worst Case Compound	Result as Worst Case Compound	Hazard Statement	Hazardous Property	Threshold %	Conclusion
<b>Organic Compounds</b>								
Total Petroleum Hydrocarbons	GC FID	0.0002				HP5	10	Not Hazardous
Polychlorinated Biphenyls		0.0001				H350	0.1	Not Hazardous
Polyaromatic Hydrocarbons	GC MS	0.0002		0.0002		HP7	0.1	Hazardous
						HP11	0.1	Hazardous
						HP10	3	Hazardous
						HP14	2.5	Hazardous
<b>Overall Conclusion</b> <b>EWG Code</b>								<b>Not Hazardous</b> <b>17-09-04</b>

Assessment is based on SAL Report # 626897 and 620904 which should be included with this report.

Risk Phrases used in this assessment are based on EU 1277 2008

The conclusions in this assessment are based on guidance taken from WM3 1st edition 2015.

The terms "Hazardous" and "Not Hazardous" are used in the context of these Regulations. Further testing may be required if classification under the Waste Acceptance Criteria (Landfill Regulations 2000/EU Directive 99/3/EC as amended) is intended.

The term "Not Hazardous" does not imply that significant possibility of significant harm to human health or the environment is not present.

All reasonable skill and care has been exercised in production of this assessment.

Assessment Prepared by W A Cohen

# Scientific Analysis Laboratories Ltd

## Certificate of Analysis

**Report Number:** 626637-1

**Date of Report:** 31-Jan-2017

**Customer:** ADI Associates Ltd  
Kappara Business Centre  
113 Triq Birkirkara  
San Gwann SGN4197  
Malta  
VAT Number: MT18486514

**Customer Contact:** M/S Krista Farrugia

**Customer Job Reference:** SBS002

**Customer Site Reference:** MPS Decommissioning

**Date Job Received at SAL:** 16-Jan-2017

**Date Analysis Started:** 16-Jan-2017

**Date Analysis Completed:** 27-Jan-2017

The results reported relate to samples received in the laboratory and may not be representative of a whole batch.

Opinions and interpretations expressed herein are outside the scope of UKAS accreditation

This report should not be reproduced except in full without the written approval of the laboratory

Tests covered by this certificate were conducted in accordance with SAL SOPs

All results have been reviewed in accordance with Section 25 of the SAL Quality Manual



Report checked  
and authorised by :  
Mr Richard Wong  
Project Manager

Issued by :  
Mr Richard Wong  
Project Manager



# Waste Acceptance Criteria

Customer Sample Reference : MPS22

SAL Sample Reference : 626637 001

Project Site : MPS Decommissioning

Customer Reference : SBS002

Date Sampled : 12-JAN-2017

Bulk Product					Result	Inert Waste Landfill	Stable non reactive	Hazardous Waste Landfill
Determinand	Technique	LOD	Units	Symbol				
Acid Neutralising Capacity (pH 4)	Titration	2	Mol/kg	N	<2			
Acid Neutralising Capacity (pH 7)	Titration (pH 7)	2	Mol/kg	N	<2			
BTEX (Sum)	Calc	0.0040	mg/kg	N	<b>0.0050</b>	6.0		
Loss on Ignition	Grav	0.1	%	N	<b>14</b>			<b>10.0</b>
Moisture	Grav	0.1	%	N	<b>6.4</b>			
Total Organic Carbon	OX/IR	0.1	%	N	<b>2.7</b>	3.0	5.0	6.0
Total Petroleum Hydrocarbons C10-C40 (Sum)	Calc	1	mg/kg	N	<sup>(13)</sup> <b>1500</b>	<b>500.0</b>		
PAH (Sum)	Calc	1.6	mg/kg	N	<1.6	100.0		
PCB EC7 (Sum)	Calc	0.0035	mg/kg	N	<0.0035	1.0		
pH	Probe			N	<b>11.7</b>		> 6.0	

Data for BS EN 12457-2 (10:1)					Result	Inert Waste Landfill	Stable non reactive	Hazardous Waste Landfill
Determinand	Technique	LOD	Units	Symbol				
Antimony	Calc WAC ICP/MS	0.010	mg/kg	N	<0.010	0.06	0.7	5.0
Arsenic	Calc WAC ICP/MS	0.0020	mg/kg	N	<0.0020	0.5	2.0	25.0
Barium	Calc WAC ICP/MS	0.010	mg/kg	N	<b>0.71</b>	20.0	100.0	300.0
Cadmium	Calc WAC ICP/MS	0.00020	mg/kg	N	<0.00020	0.04	1.0	5.0
Chromium	Calc WAC ICP/MS	0.010	mg/kg	N	<b>0.091</b>	0.5	10.0	70.0
Copper	Calc WAC ICP/MS	0.0050	mg/kg	N	<b>0.0072</b>	2.0	50.0	100.0
Lead	Calc WAC ICP/MS	0.0030	mg/kg	N	<0.0030	0.5	10.0	50.0
Mercury	Calc WAC ICP/MS	0.00050	mg/kg	N	<0.00050	0.01	0.2	2.0
Molybdenum	Calc WAC ICP/MS	0.010	mg/kg	N	<b>0.022</b>	0.5	10.0	30.0
Nickel	Calc WAC ICP/MS	0.010	mg/kg	N	<b>0.011</b>	0.4	10.0	40.0
Selenium	Calc WAC ICP/MS	0.0050	mg/kg	N	<0.0050	0.1	0.5	7.0
Zinc	Calc WAC ICP/MS	0.020	mg/kg	N	<0.020	4.0	50.0	200.0
Chloride	Calc (W)	10	mg/kg	N	<b>29</b>	800.0	15000.0	25000.0
Fluoride	Calc (W)	0.50	mg/kg	N	<b>1.2</b>	10.0	150.0	500.0
Sulphate	Calc (W)	5	mg/kg	N	<b>160</b>	1000.0	20000.0	50000.0
Phenols (Total-Mono)	Calc	1.0	mg/kg	N	<1.0	1.0		
Dissolved Organic Carbon	Calc	10	mg/kg	N	<b>74</b>	500.0	800.0	1000.0
Total Dissolved Solids	Calc WAC ICP/MS	1000	mg/kg	N	<b>12000</b>	<b>4000.0</b>	60000.0	100000.0

Following the recommendation from the Environment Agency (England and Wales)\*, the leachate preparation in this report has been carried out to BS EN 12457-2 : One Stage batch test at a liquid to solid ratio of 10 l/kg. This is also compliant with Schedule 10 of the Environmental Permitting Regulations 2010.

Note : This is the minimum amount of testing which is required.

Further testing may be required if :

- evidence of immediately leachable parameters becomes available.
- evidence to indicate that the sample could be classified as hazardous under H1-H14 of the Waste(England and Wales) Regulations 2011(as amended) becomes available.

Acceptance of waste at landfill is always at the discretion of the Landfill Operator.

\* Waste Sampling and Testing for Disposal at Landfill, EBPR1 11507B, Environment Agency (England and Wales) March 2013



<b>SAL Reference:</b> 626637 <b>Project Site:</b> MPS Decommissioning <b>Customer Reference:</b> SBS002  <b>Leachate to BS EN 12457-2 (10:1)</b> Analysed as Water <b>Waste Acceptance Criteria</b>					
<b>SAL Reference</b>					<b>626637 001</b>
<b>Customer Sample Reference</b>					<b>MPS22</b>
<b>Test Sample</b>					<b>10:1</b>
<b>Date Sampled</b>					<b>12-JAN-2017</b>
<b>Determinand</b>	<b>Method</b>	<b>LOD</b>	<b>Units</b>	<b>Symbol</b>	
Antimony (Dissolved)	ICP/MS (Filtered)	1	µg/l	U	<1
Arsenic (Dissolved)	ICP/MS (Filtered)	0.2	µg/l	U	<0.2
Barium (Dissolved)	ICP/MS (Filtered)	1	µg/l	U	<b>71</b>
Cadmium (Dissolved)	ICP/MS (Filtered)	0.02	µg/l	U	<0.02
Chromium (Dissolved)	ICP/MS (Filtered)	1	µg/l	U	<b>9</b>
Copper (Dissolved)	ICP/MS (Filtered)	0.5	µg/l	U	<b>0.7</b>
Lead (Dissolved)	ICP/MS (Filtered)	0.3	µg/l	U	<0.3
Mercury (Dissolved)	ICP/MS (Filtered)	0.05	µg/l	U	<0.05
Molybdenum (Dissolved)	ICP/MS (Filtered)	1	µg/l	N	<b>2</b>
Nickel (Dissolved)	ICP/MS (Filtered)	1	µg/l	U	<b>1</b>
Selenium (Dissolved)	ICP/MS (Filtered)	0.5	µg/l	U	<0.5
Zinc (Dissolved)	ICP/MS (Filtered)	2	µg/l	U	<2
Chloride	Discrete Analyser	1	mg/l	U	<b>3</b>
Fluoride	Discrete Analyser	0.05	mg/l	U	<b>0.12</b>
Sulphate	Discrete Analyser	0.5	mg/l	U	<b>16</b>
Phenols (Total-Mono)	Colorimetry	0.1	mg/l	U	<0.1
Dissolved Organic Carbon	OX/IR	1	mg/l	N	<b>7</b>
Total Dissolved Solids	Grav	100	mg/l	N	<b>1200</b>
Electrical Conductivity	Probe	10	µS/cm	N	<b>2000</b>
Volume	Vol	1	ml	U	-

<b>SAL Reference:</b> 626637 <b>Project Site:</b> MPS Decommissioning <b>Customer Reference:</b> SBS002  <b>Bulk Product</b> Analysed as Bulk Product <b>BTEX</b>					
<b>SAL Reference</b>					<b>626637 001</b>
<b>Customer Sample Reference</b>					<b>MPS22</b>
<b>Test Sample</b>					<b>AR</b>
<b>Date Sampled</b>					<b>12-JAN-2017</b>
<b>Determinand</b>	<b>Method</b>	<b>LOD</b>	<b>Units</b>	<b>Symbol</b>	
Ortho-Xylene	GC/MS (Headspace)	1	µg/kg	N	<1
Meta/Para-Xylene	GC/MS (Headspace)	1	µg/kg	N	<1
Benzene	GC/MS (Headspace)	1	µg/kg	N	(13) <1
EthylBenzene	GC/MS (Headspace)	1	µg/kg	N	<1
Toluene	GC/MS (Headspace)	1	µg/kg	N	(13) <b>5</b>

<b>SAL Reference:</b> 626637 <b>Project Site:</b> MPS Decommissioning <b>Customer Reference:</b> SBS002  <b>Bulk Product</b> Analysed as Bulk Product <b>TPH</b>					
<b>SAL Reference</b>					<b>626637 001</b>
<b>Customer Sample Reference</b>					<b>MPS22</b>
<b>Test Sample</b>					<b>AR</b>
<b>Date Sampled</b>					<b>12-JAN-2017</b>
<b>Determinand</b>	<b>Method</b>	<b>LOD</b>	<b>Units</b>	<b>Symbol</b>	
Total Petroleum Hydrocarbons	GC/FID	1	mg/kg	N	(13) <b>1300</b>
Total Petroleum Hydrocarbons (C35-C40)	GC/FID	1	mg/kg	N	(13) <b>170</b>

<b>SAL Reference:</b> 626637 <b>Project Site:</b> MPS Decommissioning <b>Customer Reference:</b> SBS002  <b>Bulk Product</b> Analysed as Bulk Product <b>Polyaromatic Hydrocarbons (US EPA16) with Coronene</b>					
<b>SAL Reference</b>					<b>626637 001</b>
<b>Customer Sample Reference</b>					<b>MPS22</b>
<b>Test Sample</b>					<b>AR</b>
<b>Date Sampled</b>					<b>12-JAN-2017</b>
<b>Determinand</b>	<b>Method</b>	<b>LOD</b>	<b>Units</b>	<b>Symbol</b>	
Naphthalene	GC/MS	0.1	mg/kg	N	<0.1
Acenaphthylene	GC/MS	0.1	mg/kg	N	<0.1
Acenaphthene	GC/MS	0.1	mg/kg	N	<0.1
Fluorene	GC/MS	0.1	mg/kg	N	<0.1
Phenanthrene	GC/MS	0.1	mg/kg	N	<0.1
Anthracene	GC/MS	0.1	mg/kg	N	<0.1
Fluoranthene	GC/MS	0.1	mg/kg	N	<0.1
Pyrene	GC/MS	0.1	mg/kg	N	<0.1
Benzo(a)Anthracene	GC/MS	0.1	mg/kg	N	<0.1
Chrysene	GC/MS	0.1	mg/kg	N	<0.1
Benzo(b/k)Fluoranthene	GC/MS	0.1	mg/kg	N	<0.1
Benzo(a)Pyrene	GC/MS	0.1	mg/kg	N	<0.1
Indeno(123-cd)Pyrene	GC/MS	0.1	mg/kg	N	<0.1
Dibenzo(ah)Anthracene	GC/MS	0.1	mg/kg	N	<0.1
Benzo(ghi)Perylene	GC/MS	0.1	mg/kg	N	<0.1
Coronene	GC/MS	0.1	mg/kg	N	<0.1
Polyaromatic Hydrocarbons (Total)	GC/MS	0.1	mg/kg	N	<0.1

<b>SAL Reference:</b> 626637 <b>Project Site:</b> MPS Decommissioning <b>Customer Reference:</b> SBS002  <b>Bulk Product</b> Analysed as Bulk Product <b>PCB EC7</b>					
<b>SAL Reference</b>					<b>626637 001</b>
<b>Customer Sample Reference</b>					<b>MPS22</b>
<b>Test Sample</b>					<b>AR</b>
<b>Date Sampled</b>					<b>12-JAN-2017</b>
<b>Determinand</b>	<b>Method</b>	<b>LOD</b>	<b>Units</b>	<b>Symbol</b>	
Polychlorinated biphenyl BZ#28	GC/MS (HR)	0.5	µg/kg	N	<0.5
Polychlorinated biphenyl BZ#52	GC/MS (HR)	0.5	µg/kg	N	<0.5
Polychlorinated biphenyl BZ#101	GC/MS (SIR)	0.5	µg/kg	N	<0.5
Polychlorinated biphenyl BZ#118	GC/MS (SIR)	0.5	µg/kg	N	<0.5
Polychlorinated biphenyl BZ#138	GC/MS (SIR)	0.5	µg/kg	N	<0.5
Polychlorinated biphenyl BZ#153	GC/MS (SIR)	0.5	µg/kg	N	<0.5
Polychlorinated biphenyl BZ#180	GC/MS (HR)	0.5	µg/kg	N	<0.5

<b>SAL Reference:</b> 626637 <b>Project Site:</b> MPS Decommissioning <b>Customer Reference:</b> SBS002  <b>Bulk Product</b> Analysed as Bulk Product <b>Metals</b>					
<b>SAL Reference</b>					<b>626637 001</b>
<b>Customer Sample Reference</b>					<b>MPS22</b>
<b>Test Sample</b>					<b>A40</b>
<b>Date Sampled</b>					<b>12-JAN-2017</b>
<b>Determinand</b>	<b>Method</b>	<b>LOD</b>	<b>Units</b>	<b>Symbol</b>	
Antimony	ICP/OES	10	mg/kg	N	<10
Arsenic	ICP/OES	1	mg/kg	N	<b>3</b>
Cadmium	ICP/OES	1	mg/kg	N	<1
Chromium	ICP/OES	1	mg/kg	N	<b>35</b>
Chromium VI	ICP/OES	1.0	mg/kg	N	<1.0
Copper	ICP/OES	1	mg/kg	N	<b>47</b>
Cobalt	ICP/OES	10	mg/kg	N	<10
Lead	ICP/OES	1	mg/kg	N	<b>25</b>
Manganese	ICP/OES	1	mg/kg	N	<b>310</b>
Mercury	ICP/OES	1	mg/kg	N	<1
Nickel	ICP/OES	1	mg/kg	N	<b>22</b>
Selenium	ICP/OES	10	mg/kg	N	<10
Thallium	ICP/OES	10	mg/kg	N	<10
Tin	ICP/OES	2	mg/kg	N	<2
Vanadium	ICP/OES	10	mg/kg	N	<b>39</b>
Zinc	ICP/OES	1	mg/kg	N	<b>82</b>

<b>SAL Reference:</b> 626637 <b>Project Site:</b> MPS Decommissioning <b>Customer Reference:</b> SBS002  <b>Bulk Product</b> Analysed as Bulk Product <b>Misc</b>					
<b>SAL Reference</b>					<b>626637 001</b>
<b>Customer Sample Reference</b>					<b>MPS22</b>
<b>Test Sample</b>					<b>AR</b>
<b>Date Sampled</b>					<b>12-JAN-2017</b>
<b>Determinand</b>	<b>Method</b>	<b>LOD</b>	<b>Units</b>	<b>Symbol</b>	
Cyanide (Total)	Colorimetry	1	mg/kg	N	<1
Asbestos Bulk ID	PLM			SU	N.D.

SCIENTIFIC ANALYSIS  
LABORATORIES

<b>SAL Reference:</b> 626637 <b>Project Site:</b> MPS Decommissioning <b>Customer Reference:</b> SBS002  <b>Bulk Product</b> Analysed as Bulk Product <b>Volatile Organic Compounds (USEPA 624)</b>					
<b>SAL Reference</b>					<b>626637 001</b>
<b>Customer Sample Reference</b>					<b>MPS22</b>
<b>Test Sample</b>					<b>AR</b>
<b>Date Sampled</b>					<b>12-JAN-2017</b>
<b>Determinand</b>	<b>Method</b>	<b>LOD</b>	<b>Units</b>	<b>Symbol</b>	
1,1,1,2-Tetrachloroethane	GC/MS (Headspace)	5	µg/kg	N	<5
1,1,1-Trichloroethane	GC/MS (Headspace)	5	µg/kg	N	<5
1,1,2,2-Tetrachloroethane	GC/MS (Headspace)	5	µg/kg	N	<5
1,1,2-Trichloroethane	GC/MS (Headspace)	5	µg/kg	N	<5
1,1,2-Trichloroethylene	GC/MS (Headspace)	5	µg/kg	N	<5
1,1-Dichloroethane	GC/MS (Headspace)	5	µg/kg	N	<5
1,1-Dichloroethylene	GC/MS (Headspace)	5	µg/kg	N	<5
1,1-Dichloropropene	GC/MS (Headspace)	5	µg/kg	N	<5
1,2,3-Trichlorobenzene	GC/MS (Headspace)	5	µg/kg	N	<5
1,2,3-Trichloropropane	GC/MS (Headspace)	5	µg/kg	N	<5
1,2,4-Trichlorobenzene	GC/MS (Headspace)	5	µg/kg	N	<5
1,2,4-Trimethylbenzene	GC/MS (Headspace)	5	µg/kg	N	<5
1,2-dibromoethane	GC/MS (Headspace)	5	µg/kg	N	<5
1,2-Dichlorobenzene	GC/MS (Headspace)	5	µg/kg	N	<5
1,2-Dichloroethane	GC/MS (Headspace)	5	µg/kg	N	<5
1,2-Dichloropropane	GC/MS (Headspace)	5	µg/kg	N	<5
1,3,5-Trimethylbenzene	GC/MS (Headspace)	5	µg/kg	N	<5
1,3-Dichlorobenzene	GC/MS (Headspace)	5	µg/kg	N	<5
1,3-Dichloropropane	GC/MS (Headspace)	5	µg/kg	N	<5
1,4-Dichlorobenzene	GC/MS (Headspace)	5	µg/kg	N	<5
2,2-Dichloropropane	GC/MS (Headspace)	5	µg/kg	N	<5
2-Chlorotoluene	GC/MS (Headspace)	5	µg/kg	N	<5
4-Chlorotoluene	GC/MS (Headspace)	5	µg/kg	N	<5
Benzene	GC/MS (Headspace)	1	µg/kg	N	(13) <1
Bromobenzene	GC/MS (Headspace)	5	µg/kg	N	<5
Bromochloromethane	GC/MS (Headspace)	5	µg/kg	N	<5
Bromodichloromethane	GC/MS (Headspace)	5	µg/kg	N	<5
Bromoform	GC/MS (Headspace)	5	µg/kg	N	<5
Bromomethane	GC/MS (Headspace)	5	µg/kg	N	<5
Carbon tetrachloride	GC/MS (Headspace)	5	µg/kg	N	<5
Chlorobenzene	GC/MS (Headspace)	5	µg/kg	N	<5
Chlorodibromomethane	GC/MS (Headspace)	5	µg/kg	N	<5
Chloroethane	GC/MS (Headspace)	5	µg/kg	N	<5
Chloroform	GC/MS (Headspace)	5	µg/kg	N	<5
Chloromethane	GC/MS (Headspace)	5	µg/kg	N	<5
Cis-1,2-Dichloroethylene	GC/MS (Headspace)	5	µg/kg	N	<5
Cis-1,3-Dichloropropene	GC/MS (Headspace)	5	µg/kg	N	<5
Dibromomethane	GC/MS (Headspace)	5	µg/kg	N	<5
Dichlorodifluoromethane	GC/MS (Headspace)	5	µg/kg	N	<5
Dichloromethane	GC/MS (Headspace)	100	µg/kg	N	<100
Ethylbenzene	GC/MS (Headspace)	1	µg/kg	N	<1
Isopropyl benzene	GC/MS (Headspace)	5	µg/kg	N	<5
Meta/Para-Xylene	GC/MS (Headspace)	1	µg/kg	N	<1
n-Propylbenzene	GC/MS (Headspace)	10	µg/kg	N	<10
Ortho-Xylene	GC/MS (Headspace)	1	µg/kg	N	<1
p-Isopropyltoluene	GC/MS (Headspace)	10	µg/kg	N	<10
Sec-Butylbenzene	GC/MS (Headspace)	10	µg/kg	N	<10
Styrene	GC/MS (Headspace)	5	µg/kg	N	<5
Tert-Butylbenzene	GC/MS (Headspace)	10	µg/kg	N	<10
Tetrachloroethylene	GC/MS (Headspace)	5	µg/kg	N	<5
Toluene	GC/MS (Headspace)	1	µg/kg	N	(13) 5
Trans-1,2-Dichloroethylene	GC/MS (Headspace)	5	µg/kg	N	<5
Trans-1,3-Dichloropropene	GC/MS (Headspace)	5	µg/kg	N	<5
Trichlorofluoromethane	GC/MS (Headspace)	5	µg/kg	N	<5
Vinyl chloride monomer	GC/MS (Headspace)	5	µg/kg	N	<5

## Index to symbols used in 626637-1

Value	Description
AR	As Received
A40	Assisted dried < 40C
10:1	Leachate to BS EN 12457-2 (10:1)
10:1 S	Data for BS EN 12457-2 (10:1)
N.D.	Not Detected
13	Results have been blank corrected.
S	Analysis was subcontracted
U	Analysis is UKAS accredited
N	Analysis is not UKAS accredited

## Notes

Asbestos ID performed at REC Asbestos



Client Reference: MPS22 Decommissioning

**HAZARDOUS PROPERTY ASSESSMENT**  
Waste (England and Wales) Regulations 2011

Date of Assessment 2nd February 2017

Hazardous Property/Determinand	Test/Assessment Method	Result %	Worst Case Compound	Result as Worst Case Compound	Hazard Statement	Hazardous Property	Threshold %	Conclusion
Arsenic	ICP/OES	0.0003	diasenic trioxide	0.0004	H350	HP7	0.1	Not Hazardous
					H300	HP6	0.25	Not Hazardous
					H314	HP8	1	Not Hazardous
					H400	HP14	0,1	Not Hazardous
					H410	HP14		Not Hazardous
Antimony	ICP/OES	0.001	antimony trichloride	0.0019	H302	HP6	5	Not Hazardous
					H314	HP4 HP8	25	Not Hazardous
					H335	HP6	5	Not Hazardous
					H411	HP14	0.1	Not Hazardous
Barium	ICP/OES	0.0043	barium sulphide	0.0050	H301	HP6	5	Not Hazardous
					H332	HP6	22.5	Not Hazardous
					H400	HP14	0.1	Not Hazardous
					H410	HP14	0.1	Not Hazardous
Calcium	ICP/OES	40	inert aggregate material					Not Hazardous
Cadmium	ICP/OES	<0.001	cadmium carbonate	<0.001	H332	HP6	22.5	Not Hazardous
					H312	HP6	0.25	Not Hazardous
					H302	HP6	0.25	Not Hazardous
					H400	HP14	0.1	Not Hazardous
					H410	HP14	0.1	Not Hazardous
Chromium	ICP/OES	0.0035	chromates	0.0110	H350	HP11	0.1	Not Hazardous
					H317	HP13	10	Not Hazardous
Cobalt	ICP/OES	0.001	cobalt sulphate	0.0026	H302	HP6	25	Not Hazardous
					H317	HP13	10	Not Hazardous

William A Cohen B.Sc  
Consultant Environmental Chemist

Client Reference: MPS22 Decommissioning

**HAZARDOUS PROPERTY ASSESSMENT**  
Waste (England and Wales) Regulations 2011

Date of Assessment 2nd February 2017

Hazardous Property/Determinand	Test/Assessment Method	Result %	Worst Case Compound	Result as Worst Case Compound	Hazard Statement	Hazardous Property	Threshold %	Conclusion
					H350	HP7	0.1	Not Hazardous
					H400	HP14	0.1	Not Hazardous
					H410	HP14	0.1	Not Hazardous
Mercury	ICP/OES	<0.0001		<0.0001				not detected -excluded
Manganese	ICP/OES	0.031	manganese sulphate	0.0851	H302	HP6	25	Not Hazardous
					H373	HP5	10	Not Hazardous
					H411	HP14	0.1	Not Hazardous
Lead	ICP/OES	0.0025	lead ion	0.0025	H360	HP10	0.3	Not Hazardous
					H332	HP6	22.5	Not Hazardous
					H302	HP6	25	Not Hazardous
					H373	HP5	10	Not Hazardous
					H400	HP14	0.1	Not Hazardous
					H410	HP14	0.1	Not Hazardous
					H350	HP7	0.1	Not Hazardous
Selenium	ICP/OES	<0.001		<0.001	H331	HP6	3.5	not detected -excluded
					H301	HP6	5	not detected -excluded
					H373	HP6	5	not detected -excluded
					H410	HP14	0.1	not detected -excluded

Client Reference: MPS22 Decommissioning

**HAZARDOUS PROPERTY ASSESSMENT**  
Waste (England and Wales) Regulations 2011

Date of Assessment 2nd February 2017

Hazardous Property/Determinand	Test/Assessment Method	Result %	Worst Case Compound	Result as Worst Case Compound	Hazard Statement	Hazardous Property	Threshold %	Conclusion
Copper	ICP/OES	0.0009	copper oxide	0.0011	H302	HP6	25	Not Hazardous
					H400	HP14	0.1	Not Hazardous
Nickel	ICP/OES	0.0022	nickel carbonate	0.0044	H410	HP14	0.1	Not Hazardous
					H350	HP7	0.1	Not Hazardous
					H341	HP11	1	Not Hazardous
					H360	HP10	0.3	Not Hazardous
					H372	HP5	1	Not Hazardous
					H332	HP6	22.5	Not Hazardous
					H302	HP6	25	Not Hazardous
					H315	HP4	20	Not Hazardous
					H334	HP13	10	Not Hazardous
					H317	HP13	10	Not Hazardous
					H319	HP4	20	Not Hazardous
					H400	HP14	0.1	Not Hazardous
					H410	HP14	0.1	Not Hazardous
Thallium	ICP/OES	0.001	thallium sulphate	0.0012	H300	HP6	0.1000	Not Hazardous
					H315	HP4	2<pH<11.5	Not Hazardous
					H372	HP5	1	Not Hazardous
					H411	HP14	0.1	Not Hazardous
Zinc	ICP/OES	0.0082	zinc oxide	0.0102	H400	HP14	0.1	Not Hazardous
					H410	HP14	0.1	Not Hazardous
pH		3.1		2<pH<11.5		HP4/HP8		Not Hazardous
Contact with acids			no reaction					Not Hazardous
Explosivity			no reaction					Not Hazardous
Asbestos	plm	ND						not detected -excluded

William A Cohen B.Sc  
Consultant Environmental Chemist



Client Reference: MPS22 Decommissioning

**HAZARDOUS PROPERTY ASSESSMENT**  
Waste (England and Wales) Regulations 2011

Date of Assessment 2nd February 2017

Hazardous Property/Determinand	Test/Assessment Method	Result %	Worst Case Compound	Result as Worst Case Compound	Hazard Statement	Hazardous Property	Threshold %	Conclusion
<b>Organic Compounds</b>								
Total Petroleum Hydrocarbons		0.1500				HP5	10	Not Hazardous
Polyaromatic Hydrocarbons	GC MS	0.0002		0.0002		HP7	0.1	Hazardous
						HP11	0.1	Hazardous
						HP10	3	Hazardous
						HP14	2.5	Hazardous
<b>Overall Conclusion</b> <b>EWG Code</b>								<b>Not Hazardous</b> <b>17-09-04</b>

Assessment is based on SAL Report #626637 which should be included with this report.

Risk Phrases used in this assessment are based on EU 1277 2008

The conclusions in this assessment are based on guidance taken from WM3 1st edition 2015.

The terms "Hazardous" and "Not Hazardous" are used in the context of these Regulations. Further testing may be required if classification under the Waste Acceptance Criteria (Landfill Regulations 2000/EU Directive 99/3/EC as amended) is intended.

The term "Not Hazardous" does not imply that significant possibility of significant harm to human health or the environment is not present.

All reasonable skill and care has been exercised in production of this assessment.

Assessment Prepared by W A Cohen

William A Cohen B.Sc  
Consultant Environmental Chemist

# Scientific Analysis Laboratories Ltd

## Certificate of Analysis

**Report Number:** 635594-1

**Date of Report:** 07-Mar-2017

**Customer:** ADI Associates Ltd  
Kappara Business Centre  
113 Triq Birkirkara  
San Gwann SGN4197  
Malta  
VAT Number: MT18486514

**Customer Contact:** Ms Rachel Xuereb

**Customer Job Reference:** SBS002

**Customer Site Reference:** MPS Decommissioning

**Date Job Received at SAL:** 23-Feb-2017

**Date Analysis Started:** 23-Feb-2017

**Date Analysis Completed:** 05-Mar-2017

The results reported relate to samples received in the laboratory and may not be representative of a whole batch.

This report should not be reproduced except in full without the written approval of the laboratory

Tests covered by this certificate were conducted in accordance with SAL SOPs

All results have been reviewed in accordance with Section 25 of the SAL Quality Manual

Report checked  
and authorised by :  
Sara Abou-Shakra  
Project Manager

Issued by :  
Sara Abou-Shakra  
Project Manager



<b>SAL Reference:</b> 635594 <b>Project Site:</b> MPS Decommissioning <b>Customer Reference:</b> SBS002  Oil Miscellaneous					
<b>SAL Reference</b>				<b>635594 001</b>	
<b>Customer Sample Reference</b>				<b>MPS23</b>	
<b>Date Sampled</b>				<b>21-FEB-2017</b>	
<b>Determinand</b>	<b>Method</b>	<b>Test Sample</b>	<b>LOD</b>	<b>Units</b>	
PCB (Total Tri-Hepta)	T149	AR	50	µg/kg	<b>310</b>
Polychlorinated Terphenyls	T16	AR	0.1	mg/kg	<sup>(9)</sup> <10

## Index to symbols used in 635594-1

Value	Description
AR	As Received
9	LOD raised due to dilution of sample
N	Analysis is not UKAS accredited

## Method Index

Value	Description
T16	GC/MS
T149	GC/MS (SIR)

## Accreditation Summary

Determinand	Method	Test Sample	LOD	Units	Symbol	SAL References
PCB (Total Tri-Hepta)	T149	AR	50	µg/kg	N	001
Polychlorinated Terphenyls	T16	AR	0.1	mg/kg	N	001

SCIENTIFIC ANALYSIS  
LABORATORIES

# Concept Life Sciences

## Certificate of Analysis

Hadfield House  
Hadfield Street  
Cornbrook  
Manchester  
M16 9FE  
Tel : 0161 874 2400  
Fax : 0161 874 2468

**Report Number:** 638303-1

**Date of Report:** 20-Mar-2017

**Customer:** ADI Associates Ltd  
Kappara Business Centre  
113 Triq Birkirkara  
San Gwann SGN4197  
Malta  
VAT Number: MT18486514

**Customer Contact:** Ms Rachel Xuereb

**Customer Job Reference:** SBS002

**Customer Site Reference:** MPS Decommissioning

**Date Job Received at Concept:** 08-Mar-2017

**Date Analysis Started:** 08-Mar-2017

**Date Analysis Completed:** 18-Mar-2017

The results reported relate to samples received in the laboratory and may not be representative of a whole batch.

This report should not be reproduced except in full without the written approval of the laboratory

Tests covered by this certificate were conducted in accordance with Concept SOPs

Report checked  
and authorised by :  
Sara Abou-Shakra  
Project Manager

Issued by :  
Sara Abou-Shakra  
Project Manager



<b>Concept Reference:</b> 638303							
<b>Project Site:</b> MPS Decommissioning							
<b>Customer Reference:</b> SBS002							
<b>Oil</b>				Analysed as Oil			
<b>Miscellaneous</b>							
<b>Concept Reference</b>				<b>638303 001</b>	<b>638303 002</b>	<b>638303 003</b>	
<b>Customer Sample Reference</b>				<b>MPS24</b>	<b>MPS25</b>	<b>MPS26</b>	
<b>Date Sampled</b>				<b>07-MAR-2017</b>	<b>07-MAR-2017</b>	<b>07-MAR-2017</b>	
<b>Determinand</b>		<b>Method</b>	<b>Test Sample</b>	<b>LOD</b>	<b>Units</b>		
PCB (Total Tri-Hepta)		T149	AR	50	µg/kg	<b>170</b>	<b>310</b>
Polychlorinated Terphenyls		T16	AR	0.1	mg/kg	<sup>(9)</sup> <10	<sup>(9)</sup> <10
						<sup>(9)</sup> <10	<sup>(9)</sup> <10

## Index to symbols used in 638303-1

Value	Description
AR	As Received
9	LOD raised due to dilution of sample
N	Analysis is not UKAS accredited

## Method Index

Value	Description
T16	GC/MS
T149	GC/MS (SIR)

## Accreditation Summary

Determinand	Method	Test Sample	LOD	Units	Symbol	Concept References
PCB (Total Tri-Hepta)	T149	AR	50	µg/kg	N	001-003
Polychlorinated Terphenyls	T16	AR	0.1	mg/kg	N	001-003

Sampling Code	Laboratory Code	Location of sample
MPS01	584632 001	Transformer 8 (from area 5)
MPS02	584632 002	Chimney 4 bricks
MPS03	584632 003	Transformer Tx1 (from area 3)
MPS04	584632 004	Boiler 4 quarl
MPS05	584632 005	Transformer Tx5 (from area 4)
MPS06	584632 006	Boiler 5 bottom ash
MPS07	584632 007	Chimney 3 bricks
MPS08	584632 008	Transformer Tx7A (from area 6)
MPS09	597500 001	Concrete sample (2 places) in Boiler 8
MPS10	597225 001	Bottom Ash from Boiler 6
MPS11 A-13B	605011 001-005	Surface and sub surface samples of concrete from turbine hall 8
MPS14A, MPS14B	605011 006-007	Concrete plinth outside concrete turbine hall – one surface, one sub surface sample
MPS15	605856 001	Mud under the evaporator (zone 5 near boiler 8)
MPS16	607596 001	Water from Bonello tanks
MPS17	607591 001	White material from boiler 2
MPS18	610966 001	Mud between zones 3 and 4
MPS19	610972 001	Green liquid from chimney 4
MPS 20	626897 001 620904 001	Sample of bricks from chimney 4 during part demolition

MPS 21	626897 002 620904 002	Sample of bricks from chimney 4 during part demolition
MPS 22	626637001	Concrete turbine hall 8 after scraping stained concrete
MPS 23	635594 001	Transformer oil from under control room
MPS24-26	638303 001-003	Switchgear oil 1 KV Brush S/G, Switchgear oil 33KV Gwarator No 3, Switchgear oil 3 KV Brush S/G respectively

**Appendix 2:**

**Asbestos Containing Materials Survey Results**



**Dr. George Peplow** B.Sc.(Hons.)(Lond.), M.Sc.(Salford), Ph.D.(Salford), EurChem, C.Chem., F.R.S.C.

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# **SITE SURVEY, SAMPLING, ANALYSIS AND EVALUATION OF ASBESTOS CONTAINING MATERIALS AT THE MARSA POWER STATION.**

## **PRELIMINARY REPORT 1.**

**AMENDED REPORT 3.0**

## **REPORTING SURVEY OF ZONE Nr 3**

Report and Register for:

Mr Ranier Bezzina

Bezzina Group – Malta

T: 21244613, 21 240887 Mob: 9942 9707 eM: [rbezzina@bezzinagroup.com](mailto:rbezzina@bezzinagroup.com)

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EXECUTIVE SUMMARY. SURVEY OF ACM WITHIN ZONE 3.

### JUSTIFICATION FOR AMENDMENTS

### AMENDED SECTIONS.

0.0 INTRODUCTION AND SCOPE OF WORK.

1.0 GENERAL SITE AND SURVEY INFORMATION.

2.0 SURVEY RESULTS (INCLUDING MATERIAL ASSESSMENT RESULTS).

3.0 ADDITIONAL INVESTIGATIONS CARRIED OUT CONFIRMING THE  
ABSENCE OF ASBESTOS-CONTAINING-MATERIAL IN THE TURBINES 1,  
2, 3 AND 4, AND BOILER NO 3 AND BOILER NO 4.

4.0 CONCLUSIONS AND ACTION.

Figure 1. Marsa Power Station Delineated Zones (Reference: Tender  
Decommissioning, Dismantling & Demolition, Marsa Power Station. Project  
Description Statement)

Figure 2 Delineated area of Zone 3.

Figure 3. Boilers 2, 3 and 4 in space between Turbine hall and cliff face

Figure 4. Turbine Hall – West End – Turbine 1 in foreground

Figure 5 Presence of ACM in Ground Floor Level ZONE 3.

Figure 6 Presence of ACM in 2<sup>nd</sup> Floor and 3<sup>rd</sup> Floor Levels ZONE 3.

Figure 7 Presence of ACM Pipe Lagging in 2<sup>nd</sup> Floor Level Boiler 2 ZONE 3.

Figure 8 Typical Heavy Duty Switchgear with ACM on Ground Level ZONE 3.

Figure 9 Typical Low Tension Switchgear with ACM on Ground Level ZONE 3.

Figure 10 Typical ACM Liners present in Switchgear with ACM on three Levels ZONE 3.

Figure 11 Typical, opened switchbox with ACM liners in ZONE 3.

Figure 12 Boiler Nr 3: shot taken from the north side of Zone 3.

Figure 13 Sampling point for Boiler Nr 2 on Ground Level ZONE 3.

Figure 5.1 Sampling Point Areas for Boiler No 3 and Boiler No 4: All confirming the  
Absence of ACM.

Figure 5.2 Boiler No 3. Sampling of insulation from opened side panel.

Figure 5.3 Boiler No 3. Sampling of insulation from opened side panel.

Figure 5.4 Boiler No 3. Entry to furnace through manhole on

Figure 5.5 Boiler No 3. Entry to furnace through manhole on LHS of Boiler, north end, LHS of Boiler.

Figure 5.6 Boiler No 4. Sampling from behind rusted cover panels.

Figure 5.7 Boiler No 4. Sampling from beneath Boiler structure.

Figure 5.8 Boiler No 4. Sampling from side insulation over tubing.

Figure 5.9 Boiler No 4. Sampling from side insulation over tubing.

Figure 5.10 Boiler No 4. Sampling from side insulation over cover plate.

Figure 5.11 Boiler No 4. Entry to inner boiler through manhole.

Figure 5.12 Boiler No 4. Entry to inner boiler through manhole on

Figure 5.13 Boiler No 4. Pipework to front of Boiler 4. the LHS, north end of Boiler 4.

Table 1. Material Assessment Algorithm for Electrical Switchgear in Zone 3.

Table 2. Summary Report. Presence of ACM in Electrical Switchgear.

Table 3. Material Assessment Algorithm for Boiler Nr 2 in Zone 3.

Table 4. Summary Report. Presence of ACM in Boiler No2.

Table 5. Material Assessment Algorithm for Galbestos.

Table 6. Summary Report. Presence of ACM in 'Galbestos' on Turbine Hall roof sheeting.

## EXECUTIVE SUMMARY. SURVEY OF ACM WITHIN ZONE 3.

This Summary is designed to give a glance at the findings and conclusions of the Survey for ZONE 3. However it should be read in conjunction with the full report.

### Findings.

1. Following the full survey over the whole area of Zone 3, **SUSPECTED** asbestos containing material was confirmed to be **ABSENT** in the following general areas:
  - All pipework lagging at ground and upper levels inclusive of elbow lagging in Turbines 1, 2, 3 and 4.
  - All pipework lagging at ground and upper levels inclusive of elbow lagging in the Boilers 3 and 4. The latter are very often composed of ACM material.
2. Following the survey over the whole area of Zone 3, asbestos containing material **WAS FOUND TO BE PRESENT** in the following areas:
  - Coating of ACM on the steel roof panels of the roof – termed ‘galbestos’
  - Electrical switchgear located mostly on the ground floor, second and top floor level.
  - Boiler Nr 2 pipework lagging protruding from the south face of the Boiler.
  - Boiler Nr 2, notably the insulation material protruding from the outer plates.
  - Used and new gaskets strewn in areas around Boilers 2, 3 and 4.
  - Asbestos coating on the steel outer wall panels running across the outer roof top level.
3. This summary is **exclusive of inspections** on certain items which were either sealed or still electrically live.
  - Certain live electrical switchgear.
  - Sealed gaskets in the respective pipe flanges.
  - Transformer units on the ground floor level.

### Executive Summary Conclusions.

1. The removal of the non-asbestos lagging and insulation material may be removed, using standard technical and H&S procedures.
2. The switchgear shall be considered as asbestos contaminated, and their handling and disposal shall be conducted according to standard procedures for the removal of ACM.
3. Although no ACM was identified on the outer parts of Turbines 1, 2, 3 and 4, further confirmatory tests may have to be carried out during their dismantling.
4. Although no ACM was identified on the outer parts of Boilers 3 and 4, , further confirmatory tests may have to be carried out during their dismantling.
5. Boiler Nr 2 was confirmed to contain ACM lagging along its body as well as a steam pipe lagging on its face. The dismantling shall have to be carried out under stringent asbestos removal procedures.
6. Coating of ACM on the steel roof panels of the roof-‘galbestos’ shall be carried out under stringent asbestos removal procedures.

## JUSTIFICATION FOR AMENDMENTS

Request by ERA to correct paragraphs 3 and 4 in the Executive Summary Conclusions.

## AMENDED SECTIONS in this Report, to REPORT 1.0 AMENDED REPORT 2.0

1. In the Executive Summary Conclusions, paragraphs 3 and 4 of Amended Report 2.0, the following were amended in this Amended Report 3.0:  
Para 3 from “Although no ACM was identified on the outer parts of Turbines 1, 2, 3 and 4” to “Although no ACM was identified on the outer parts of Turbines 1, 2, 3 and 4, further confirmatory tests may have to be carried out during their dismantling”.  
Para 4 from “Although no ACM was identified on the outer parts of Boilers 3 and 4” to “Although no ACM was identified on the outer parts of Boilers 3 and 4, , further confirmatory tests may have to be carried out during their dismantling”.

### 1.0 INTRODUCTION AND SCOPE OF WORK.

- 1.1 This Amended Report 2.0 overrides all other Reports for Zone 3.
- 1.2 Mr Ranier Bezzina of Bezzina Group Limited, of Marsa, appointed the undersigned to undertake an inspection of each of the TEN (10) ZONES at the Marsa Power station, as indicated in Figure 1.
- 1.3 The survey was conducted by Dr George Peplow as the Principal Surveyor, and proceeded according to the Risk Assessment: Survey for the Presence of Asbestos Material at the Marsa Power Station, Dated 6 May 2016, as an Updated Version to the Risk Assessment Report dated 9 April 2016.
- 1.4 ACM sampling and analysis was carried out by Dr George Peplow.
- 1.5 The objectives of the survey were to establish the location of any asbestos containing material (ACM) during the demolition of the power station. For this purpose a Type Three survey, was carried out to assess, identify and evaluate the presence of ACM.
- 1.6 Type Three Surveys involves Full Access Sampling & Identification Surveys. This type of survey will be conducted prior to any major refurbishment or Demolition works. The survey is conducted by means of visual inspection and subsequent sampling of suspect bulk materials. Where the surveyor suspects a material to contain asbestos, a sample will be taken for analysis. The samples taken will be chosen as being representative of the material under investigation. Therefore, visually similar areas should be regarded as being of uniform composition. Samples will be taken using a sharp knife, a cork borer or hand drill and will be collected in self seal plastic bags. The sample reference number will be recorded on the sample bag. Where appropriate, a label will be left on the site adjacent to the sample location. This label indicates the sample number for cross-reference with the report. Photographs will be taken at every sampling location to confirm site details.

The object of carrying out sampling is to identify the nature and extent of any visible asbestos.

- 1.7 Due to the age, use and construction of the Marsa Power Station, ACM may have been used/ present in the past but may have been removed or part removed and some residue may still exist. The only knowledge and documentation of any past ACM activity or monitoring is being referred by the undersigned from his personal files.
- 1.8 The Guidelines, LN's and EC Directives that were followed during the survey were the following:
  - 1.8.1 The UK HSE HSG264, The Asbestos Survey HSE Books, 2010
  - 1.8.2 Legal Notice 122 of 2003.
  - 1.8.3 Legal Notice 123 of 2003 amended by L.N. 323 of 2006.
  - 1.8.4 OSHA Consultation Process on Amending OHS Legislation on Asbestos, 2006.
  - 1.8.5 Guide to good practice for Working in Confined Spaces, ATEX Directive 1999/92/EC - The Work Place (Minimum Requirements for Work).
  - 1.8.6 UK HSE Asbestos: The analysts' guide for sampling, analysis and clearance procedures, 2005.
  - 1.8.7 LN323 of 2006 Protection of Workers from Risks related to Exposure to asbestos at Work Regulations.
  - 1.8.8 Enemalta Asbestos Policy Document provided in Appendix 4: Documents Doc1 - Asbestos Policy.
- 1.7.9 Extracts from Tender GN/MPS/T/17/2010 found in Appendix 3  
Procedures Pro 3 - Extracts from Removal of Asbestos  
T/17/2010.pdf

## 2.0 GENERAL SITE AND SURVEY INFORMATION.

- 2.1 The Marsa Power Station structures are to be demolished except for:
  - 2.1.1 The underground 'A' Station.
  - 2.1.2 The Administration Building and Main gate security rooms.
  - 2.1.3 The inlet Jetty and Gas Turbine 9, its associated fuel tank (situated in Zone 5, with all its piping and control equipment.
- 2.2 This PRELIMINARY REPORT 1 refers to the Survey carried out over the Marsa Power Station Zone 3, as shown in Figure 2, as the area delineated inside the white border.
- 2.3 The Survey was carried out during the period 30 May to 6 June 2016
- 2.4 The Details of the Buildings within Zone 3 consisted of the following:
  - 2.4.1 The turbine hall housing turbines 1, 2, 3 and 4 with their respective auxiliaries such as pumps, vessels, fans, compressors, transformers, electrical switchgear etc.
  - 2.4.2 The turbine hall is constructed from stone, with a pre-cast concrete roof supported on steel beams. The sides of the roof area consist of steel sheets which are coated with a fire-retardant and thermal insulation coating containing asbestos fibres, which is termed 'galbestos' in the tender document. This ACM material extends through the whole Turbine Hall, including the area of the Turbines 5, 6 and 7, in Zone 4. Also forming part of this turbine hall area is an office building annex, an electrical workshop, the old control room, a battery room, switchgear rooms, operators' washrooms and locker rooms.



- 2.4.3 An open area on the north side of the turbine hall housing the boilers and some of their auxiliaries. The area is sandwiched between the turbine hall and the cliff face of the Jesuit Hill housing the underground station galleries. Boiler 1 was removed some years ago. The other 3 boilers remaining in this area are Boilers 2, 3 and 4. These boilers are decommissioned and some minor dismantling of boiler sub systems has already occurred in house. There is also Chimney No1 and two degassing towers that were used by the old sea water distillers.
- 2.4.4 The Old control room is situated on the south side of the turbine hall. Inside the old control room one can find the 11KV & 33KV switchgears and respective busbars. This equipment would need to be retained for some time.

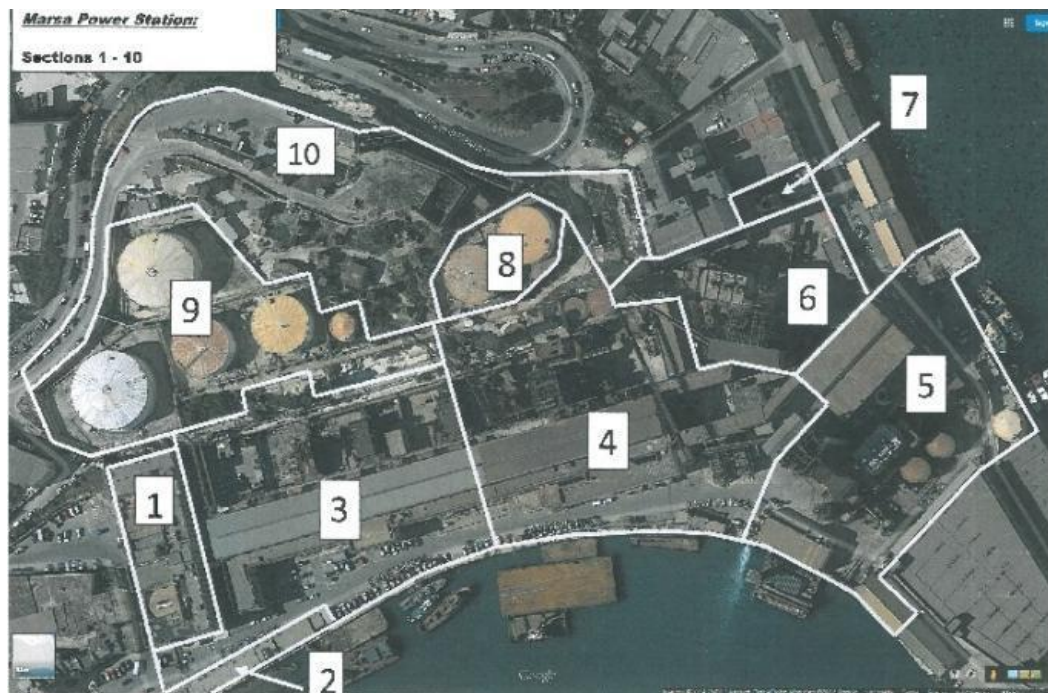


Figure 1. Marsa Power Station Delineated Zones (Reference: Tender Decommissioning, Dismantling & Demolition, Marsa Power Station. Project Description Statement)

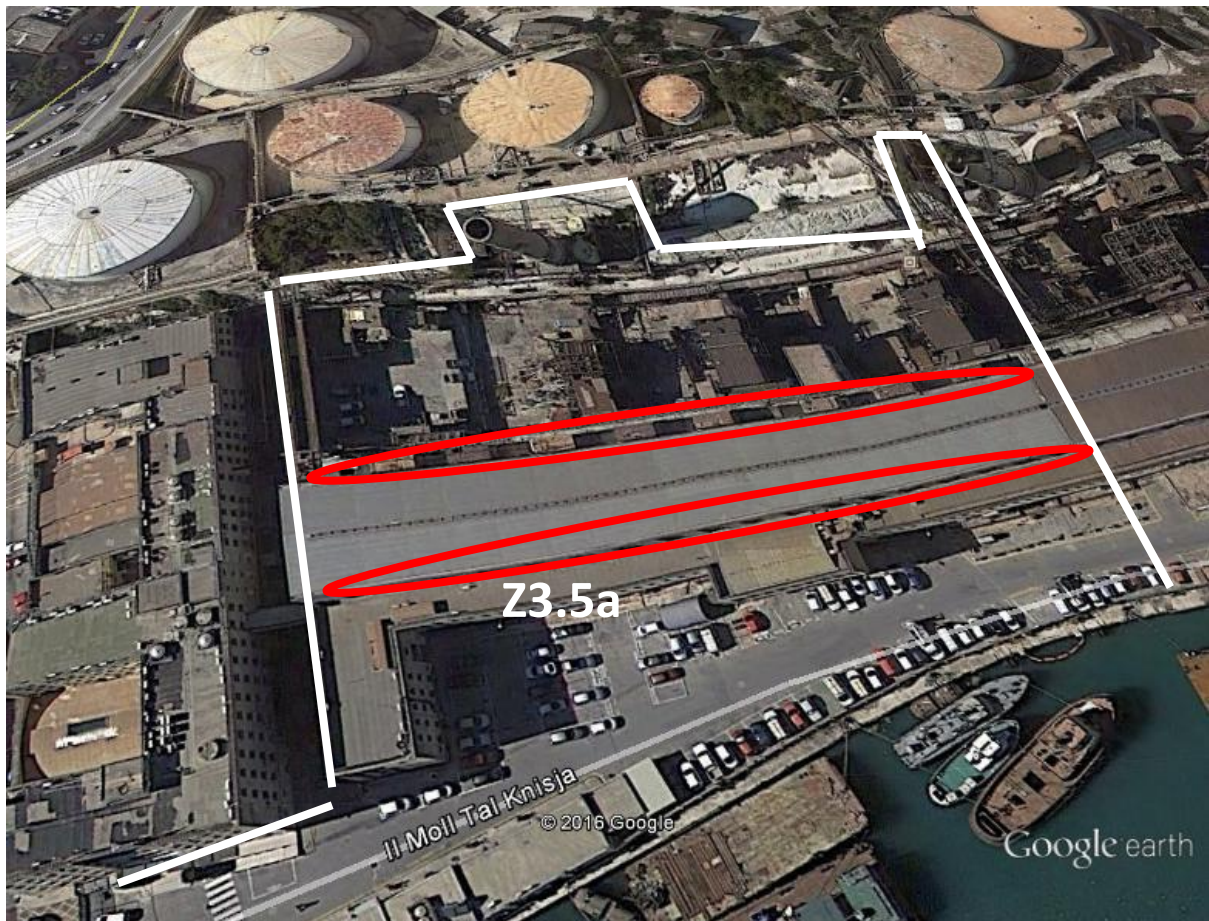


Figure 2 Delineated area of Zone 3 with location and reference of ‘Galbestos’ sampling.



Figure 3. Boilers 2, 3 and 4 in space between Turbine hall and cliff face





Figure 4. Turbine Hall – West End – Turbine 1 in foreground

### 3.0 SURVEY RESULTS (INCLUDING MATERIAL ASSESSMENT RESULTS).

3.1 By referring to Figure 2, the following items located on the THIRD FLOOR level were confirmed to contain asbestos fibres:

3.1.1 Sample Z3.5a: ACM coating (galbestos) on steel sheets on the sides of the Turbine Hall.

3.2 By referring to Figure 5, the following items, located on the GROUND FLOOR level were confirmed to contain asbestos fibres:

3.2.1 Sample Z3.1a: Electrical Equipment with ACM insulators.

3.2.2 Sample Z3.1b: Electrical Equipment with ACM insulators.

3.2.3 Sample Z3.1c: Electrical Equipment with ACM insulators.

3.2.4 Sample Z3.1d: Electrical Equipment with ACM insulators.

3.2.5 Sample Z3.2a: Electrical Switchgear with ACM liners.

3.2.6 Sample Z3.2b: Electrical Switchgear with ACM liners.

3.2.7 Sample Z3.2c: Electrical Switchgear with ACM liners.

3.2.8 Sample Z3.2d: Electrical Switchgear with ACM liners.

3.2.9 Sample Z3.3a: Friable Insulation material from plating of Boiler N 2

3.2.10 Sample Z3.3b: Friable Insulation material from plating of Boiler N 2

3.2.11 Sample Z3.3c: Friable Insulation material on steam pipe as shown in Photo from plating of Boiler N 2

3.3 By referring to Figure 6, the following items located on the THIRD FLOOR level were confirmed to contain asbestos fibres:

3.3.1 Sample Z3.4a and Z3.4b: Switchgear with ACM liners.

- 3.4 Sampling and analysis of the bulk samples collected throughout the survey was based on the United Kingdom Health and Safety Executive 'Asbestos: The Analysts' guide for sampling, analysis and clearance procedures'. The microscopical measurements were conducted on a polarized light microscopy 100X magnification on the isolated suspect single fibres.

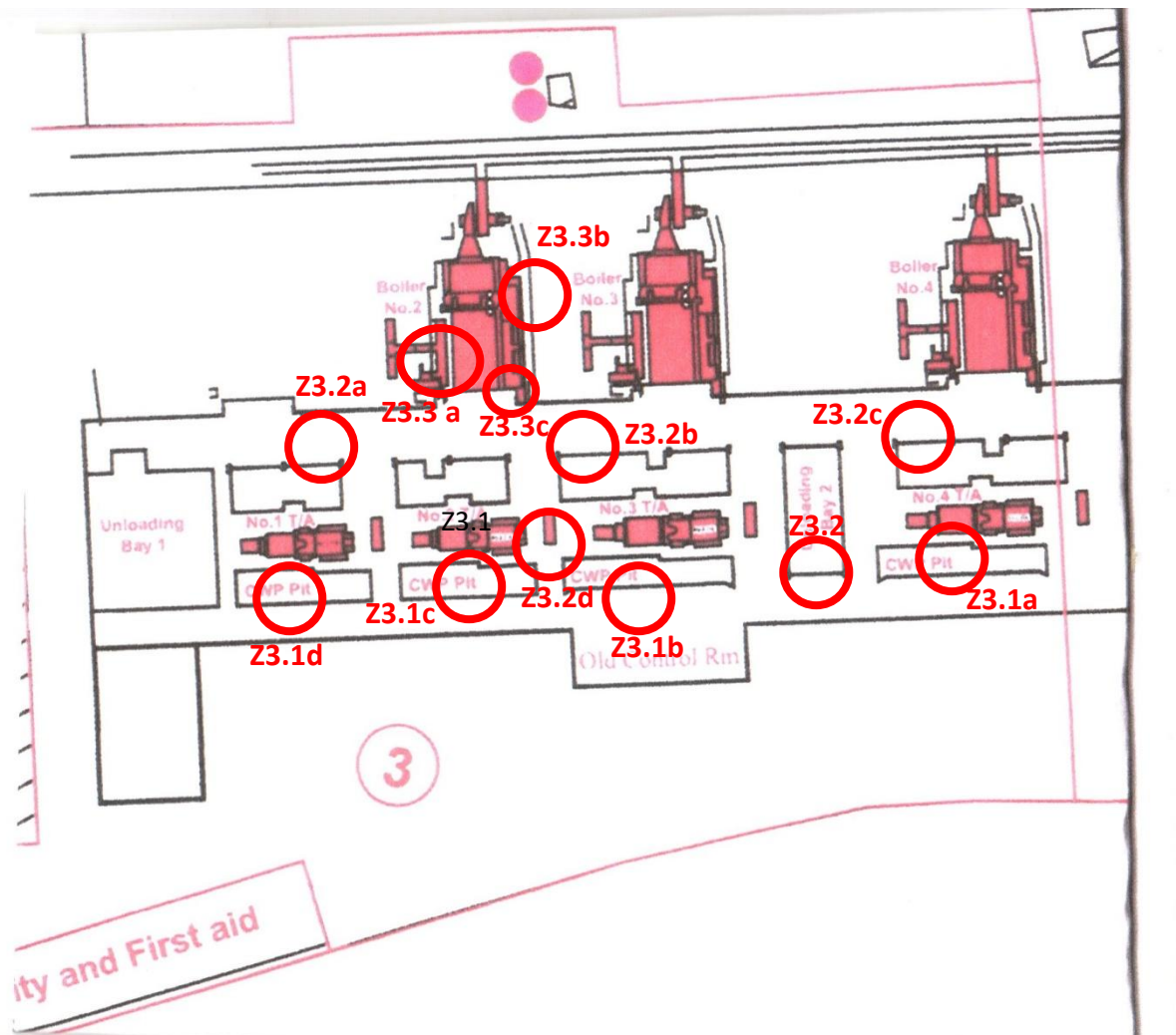


Figure 5 Presence of ACM in Ground Floor Level ZONE 3.

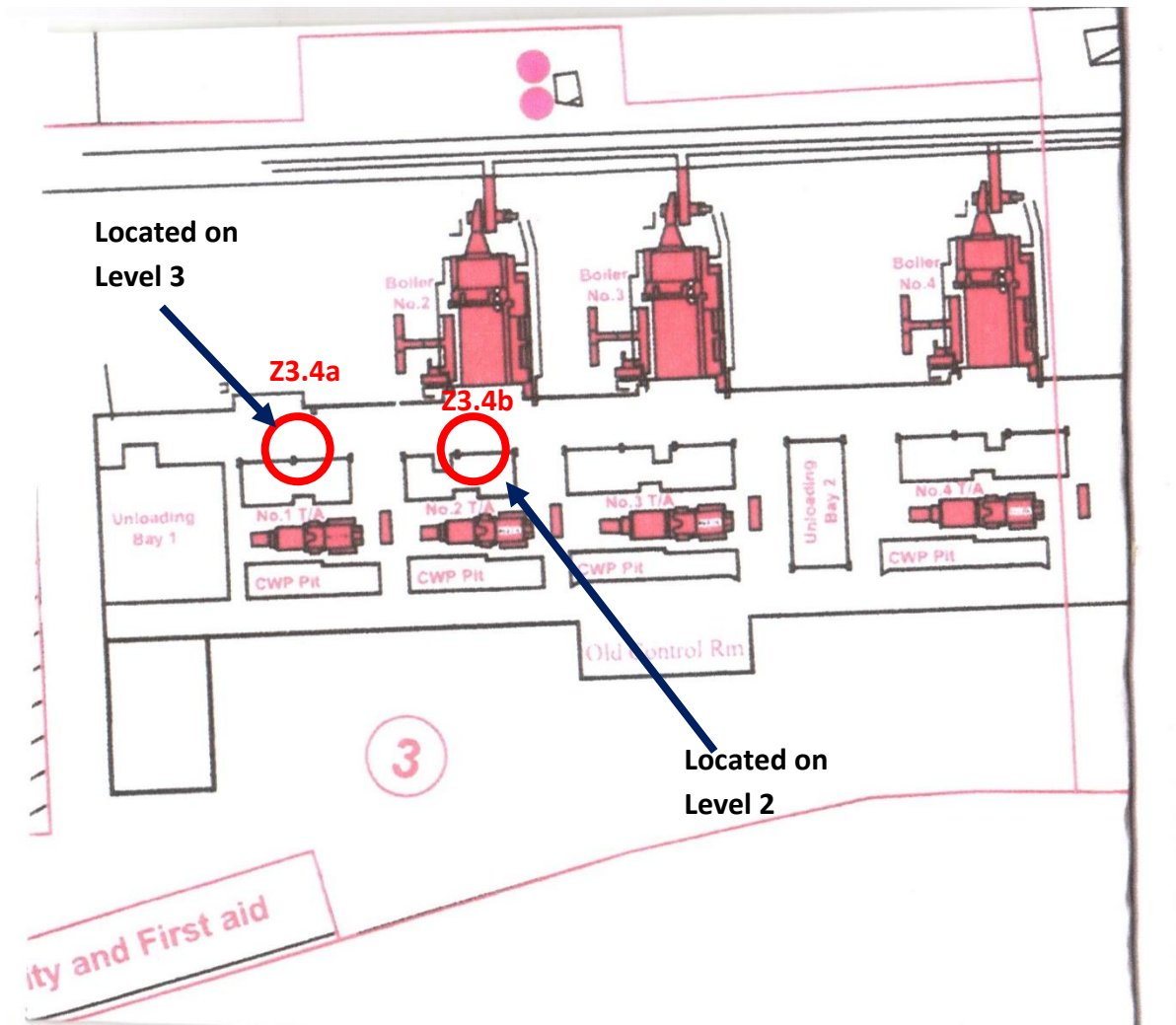


Figure 6 Presence of ACM in 2<sup>nd</sup> Floor and 3<sup>rd</sup> Floor Levels ZONE 3.





Figure 7 Presence of ACM Pipe Lagging in 2<sup>nd</sup> Floor Level Boiler 2 ZONE 3.



Figure 8 Typical Heavy Duty Switchgear with ACM on Ground Level ZONE 3.





Figure 9 Typical Low Tension Switchgear with ACM on Ground Level ZONE 3.



Figure 10 Typical ACM Liners present in Switchgear with ACM on three Levels ZONE 3.





Figure 11 Typical, opened switchbox with ACM liners in ZONE 3.



Figure 12 Boiler Nr 3: shot taken from the north side of Zone 3.




Figure 13 Sampling point for Boiler Nr 2 on Ground Level ZONE 3.



Location Description		Zone 3. ACM in Electrical Switchgear Material assessment algorithm	
ACTION following survey			
Sample variable	Score	Examples of scores	
Product type (or debris from product)	1	Asbestos-reinforced composites (plastics, resins, mastics, roofing felts, vinyl floor tiles, semi-rigid paints or decorative finishes, asbestos cement etc).	
	2	AIB, millboards, other low-density insulation boards, asbestos textiles, gaskets, ropes and woven textiles, asbestos paper and felt.	
	3	Thermal insulation (eg pipe and boiler lagging), sprayed asbestos, loose asbestos, asbestos mattresses and packing.	
Extent of damage/deterioration	0	Good condition: no visible damage.	
	1	Low damage: a few scratches or surface marks, broken edges on boards, tiles etc.	
	2	Medium damage: significant breakage of materials or several small areas where material has been damaged revealing loose asbestos fibres.	
	3	High damage or delamination of materials, sprays and thermal insulation. Visible asbestos debris.	
Surface treatment	0	Composite materials containing asbestos: reinforced plastics, resins, vinyl tiles.	
	1	Enclosed sprays and lagging, AIB (with exposed face painted or encapsulated) asbestos cement sheets etc.	
	2	Unsealed AIB, or encapsulated lagging and sprays.	
	3	Unsealed lagging and sprays.	
Asbestos type	1	Chrysotile.	
	2	Amphibole asbestos excluding crocidolite.	
	3	Crocidolite.	
Total	8	REMARKS: MEDIUM POTENTIAL RELEASE OF ASBESTOS FIBRES.	
Score	Potential to release asbestos fibres		
10 or more	High		
7-9	Medium		
5-6	Low		
4 or less	Very Low		
Non-asbestos materials have no potential to release asbestos fibres			
DATE OF ASSESSMENT		6/6/16	
NAME OF SURVEYOR		Dr George Peplow	
Reference	The Asbestos survey HSE Books 2010 Appendix 4 page 68		

Table 1. Material Assessment Algorithm for Electrical Switchgear in Zone 3.




SURVEY SUMMARY REPORT: PRESENCE OF ACM IN ZONE 3. ELECTRICAL SWITCHGEAR			
BUILDING	Turbine Hall 1-4 and Boilers 2-4	INSPECTION DATE	30/5/16 to 6/6/16
LOCATION ID	Figures 7-11. Located within the Hall on Ground, second and third level	ACCESS RISKS: Accessible only when switchgear is opened and tampered with.	
ROOM/ AREA	Inside turbine hall.		
FLOOR LEVEL	Ground, 2 <sup>nd</sup> and 3 <sup>rd</sup> Floor	SAMPLE ID's Ground: Z3.1a, Z3.1b, Z3.1c, Z3.1d, Z3.2a, Z3.2b, Z3.2c, Z3.2d. Second Level: Z3.4b, Third Level Z3.4a	
LABORATORY RESULTS	RESULTS	Contains chrysotile and crocidolite asbestos	
	RESULT REF	Z3.1a, Z3.1b, Z3.1c, Z3.1d, Z3.2a, Z3.2b, Z3.2c, Z3.2d, Z3.4b, Z3.4a,	
MATERIAL/ DESCRIPTION/ ACTION (Amounts shown are approximate and must be checked on site.)	AREA <b>N/A</b> THICKNESS <b>variable</b>  Consists of various arc-barrier and liners in switches.		
		PRODUCT TYPE	Arc plates, insulators and liners
		EXTENT OF DAMAGE	Undamaged ACM
		CONDITION	Satisfactory
		SURFACE TREATMENT	N/A
		FRIABILITY	High
		ASSESSMENT SCORE	8 (Refer to Table 2B)

<b>SURVEY SUMMARY REPORT: PRESENCE OF ACM IN ZONE 3. ELECTRICAL SWITCHGEAR, cont'd</b>  COMMENTS: The handling of the electrical Switchgear should be carried out with caution. All the asbestos containing switchgear were marked 'X' in RED. The switchgear which could not be inspected were marked '?' in RED.	
REMOVAL POTENTIAL RISK	Low if standard procedures are adopted
DISTURBANCE RISK	Unlikely
APPROX REMOVAL TIME	4-6 days
DATE OF SURVEY	6/6/16
NAME OF SURVEYOR	Dr George Peplow

Table 2, cont'd. Summary Report. Presence of ACM

Location Description		Zone 3. ACM in Boiler Number 2 Material assessment algorithm	
ACTION following survey			
Sample variable	Score	Examples of scores	
Product type (or debris from product)	①	Asbestos-reinforced composites (plastics, resins, mastics, roofing felts, vinyl floor tiles, semi-rigid paints or decorative finishes, asbestos cement etc).	
	②	AIB, millboards, other low-density insulation boards, asbestos textiles, gaskets, ropes and woven textiles, asbestos paper and felt.	
	③	Thermal insulation (eg pipe and boiler lagging), sprayed asbestos, loose asbestos, asbestos mattresses and packing.	
Extent of damage/deterioration	0	Good condition: no visible damage.	
	1	Low damage: a few scratches or surface marks, broken edges on boards, tiles etc.	
	2	Medium damage: significant breakage of materials or several small areas where material has been damaged revealing loose asbestos fibres.	
	③	High damage or delamination of materials, sprays and thermal insulation. Visible asbestos debris.	
Surface treatment	0	Composite materials containing asbestos: reinforced plastics, resins, vinyl tiles.	
	1	Enclosed sprays and lagging, AIB (with exposed face painted or encapsulated) asbestos cement sheets etc.	
	②	Unsealed AIB, or encapsulated lagging and sprays.	
	3	Unsealed lagging and sprays.	
Asbestos type	①	Chrysotile.	
	2	Amphibole asbestos excluding crocidolite.	
	③	Crocidolite.	
Total	15	REMARKS: HIGH POTENTIAL RELEASE OF ASBESTOS FIBRES.	
Score	Potential to release asbestos fibres		
10 or more	High		
7-9	Medium		
5-6	Low		
4 or less	Very Low		
Non-asbestos materials have no potential to release asbestos fibres			
DATE OF ASSESSMENT		6/6/16	
NAME OF SURVEYOR		Dr George Peplow	
Reference	The Asbestos survey HSE Books 2010 Appendix 4 page 68		

Table 3. Material Assessment Algorithm for Boiler Nr 2 in Zone 3.


SURVEY SUMMARY REPORT: PRESENCE OF ACM IN ZONE 3. BOILER NUMBER 2			
BUILDING	Boiler Nr 2	INSPECTION DATE	30/5/16 to 6/6/16
LOCATION ID	<b>Figures 7, 12, 13</b>	ACCESS RISKS: Partially exposed friable ACM.	
ROOM/ AREA	<b>Inside/ outside turbine hall.</b>		
FLOOR LEVEL	Ground, 2 <sup>nd</sup> and 3 <sup>rd</sup> Floor	SAMPLE ID's Ground: Z3.3a (inclusive of burner quarls, Z3.3b, 1 <sup>st</sup> Level Z3.3c	
LABORATORY RESULTS	RESULTS	Contains chrysotile and crocidolite asbestos	
	RESULT REF	Z3.3a, Z3.3b, Z3.3c	
MATERIAL/ DESCRIPTION/ ACTION (Amounts shown are approximate and must be checked on site.)	AREA <b>N/A</b> THICKNESS <b>variable</b> Estimate of about 200m³; but needs to be verified during the dismantling operation.		
		PRODUCT TYPE	Friable thermal insulation
		EXTENT OF DAMAGE	Damaged/ Undamaged ACM
		CONDITION	Not Satisfactory
		SURFACE TREATMENT	N/A
		FRIABILITY	High
		ASSESSMENT SCORE	15 (Refer to Table 1B)

<b>SURVEY SUMMARY REPORT: PRESENCE OF ACM IN ZONE 3. BOILER NUMBER 2, cont'd</b>	
<p>COMMENTS: Since ACM was confirmed to be present in several samples collected from the outer areas of Boiler Nr 2, the whole boiler is considered to contain ACM. Its dismantling should therefore be carried out under standard safety precautions to handle ACM for eventual export for disposal.</p>	
REMOVAL POTENTIAL RISK	Low if standard procedures are adopted
DISTURBANCE RISK	Unlikely
APPROX REMOVAL TIME	7-8 days
DATE OF SURVEY	6/6/16
NAME OF SURVEYOR	Dr George Peplow

Table 4. Summary Report. Presence of ACM

Location Description	Zone 3. ACM in Asbestos Coating (galbestos) on Roof side Panels Turbine Hall Material assessment algorithm	
ACTION following survey		
Sample variable	Score	Examples of scores
Product type (or debris from product)	1	Asbestos-reinforced composites (plastics, resins, mastics, roofing felts, vinyl floor tiles, semi-rigid paints or decorative finishes, asbestos cement etc).
	2	AIB, millboards, other low-density insulation boards, asbestos textiles, gaskets, ropes and woven textiles, asbestos paper and felt.
	3	Thermal insulation (eg pipe and boiler lagging), sprayed asbestos, loose asbestos, asbestos mattresses and packing.
Extent of damage/deterioration	0	Good condition: no visible damage.
	1	Low damage: a few scratches or surface marks, broken edges on boards, tiles etc.
	2	Medium damage: significant breakage of materials or several small areas where material has been damaged revealing loose asbestos fibres.
	3	High damage or delamination of materials, sprays and thermal insulation. Visible asbestos debris.
Surface treatment	0	Composite materials containing asbestos: reinforced plastics, resins, vinyl tiles.
	1	Enclosed sprays and lagging, AIB (with exposed face painted or encapsulated) asbestos cement sheets etc.
	2	Unsealed AIB, or encapsulated lagging and sprays.
	3	Unsealed lagging and sprays.
Asbestos type	1	Chrysotile.
	2	Amphibole asbestos excluding crocidolite.
	3	Crocidolite.
Total	15	REMARKS: HIGH POTENTIAL RELEASE OF ASBESTOS FIBRES.
Score	Potential to release asbestos fibres	
10 or more	High	
7-9	Medium	
5-6	Low	
4 or less	Very Low	
Non-asbestos materials have no potential to release asbestos fibres		
DATE OF ASSESSMENT		6/6/16
NAME OF SURVEYOR		Dr George Peplow
Reference	The Asbestos survey HSE Books 2010 Appendix 4 page 68	

Table 5. Material Assessment Algorithm for Galbestos.

SURVEY SUMMARY REPORT: PRESENCE OF ACM IN ZONE 3. ASBESTOS COATING ON STEEL PANELS ON ROOF – GALBESTOS			
BUILDING	Boiler Nr 2	INSPECTION DATE	30/5/16 to 6/6/16
LOCATION ID	Figures 2	ACCESS RISKS: Partially exposed friable ACM.	
ROOM/ AREA	Along the sides of the outside area of the Turbine hall roof.		
FLOOR LEVEL	3 <sup>rd</sup> Floor	SAMPLE ID: Z3.5a	
LABORATORY RESULTS	RESULTS	Contains chrysotile and crocidolite asbestos	
	RESULT REF	Z3.5a	
MATERIAL/ DESCRIPTION/ ACTION (Amounts shown are approximate and must be checked on site.)	AREA: Length of Turbine Hall 130m. Height of ACM-coated steel sheets 10m .  TOTAL AREA FOR BOTH SIDES OF THE HALL IS 2600 m².		
		PRODUCT TYPE	Friable fire retardant and thermal insulation
		EXTENT OF DAMAGE	Damaged/ Undamaged ACM
		CONDITION	Not Satisfactory
		SURFACE TREATMENT	N/A
		FRIABILITY	High
		ASSESSMENT SCORE	15 (Refer to Table 5)

**SURVEY SUMMARY REPORT: PRESENCE OF ACM IN ZONE 3. ASBESTOS COATING ON STEEL PANELS ON ROOF – GALBESTOS, cont'd**

COMMENTS: Since ACM was confirmed to be present in several samples collected from the outer surfaces of the metal sheets, the whole area of the panels is considered to contain and be contaminated with ACM. Its dismantling should therefore be carried out under standard safety precautions to handle ACM for eventual export for disposal.

REMOVAL POTENTIAL RISK	Low if standard procedures are adopted
DISTURBANCE RISK	Unlikely
APPROX REMOVAL TIME	10-15 days
DATE OF SURVEY	6/6/16
NAME OF SURVEYOR	Dr George Peplow

Table 6. cont'd. . Summary Report. Presence of ACM in 'Galbestos' on Turbine Hall roof sheeting.

**4.0 ADDITIONAL INVESTIGATIONS CARRIED OUT CONFIRMING THE ABSENCE OF ASBESTOS-CONTAINING-MATERIAL IN THE TURBINES 1, 2, 3 AND 4, AND BOILER NO 3 AND BOILER NO 4.**

4.1 On the request of Enemalta, an invasive sampling and analysis programme was carried out on Boilers Nos 3 and 4 in order to confirm the absence of ACM on the external and internal construction of the Boilers.

4.2 Following the report dated 22 June 2016, entitled  
*"Site Survey, sampling, analysis and evaluation of asbestos containing materials at the Marsa Power station. Preliminary Report 1, Amended 1.0"*

the additional and invasive survey was conducted on Boiler No 3 and Boiler No 4, with the assistance of Bezzina Group technical personnel, on Tuesday 12 July 2016.

4.3 Thorough representative sampling and analysis for the presence of asbestos fibres in bulk samples, was carried out on the following parts of Boilers Nos 3 and 4:

4.3.1 insulation materials just inside the manholes leading to both boilers,

4.3.2 residues and furnace linings from deep inside the boilers, which were accessed through open manholes,

4.3.3 insulation material from the metal plate-faces enclosing the boilers,

4.3.4 representative samples of tubing insulation leading into and out of the two boilers

4.4 Thorough representative sampling and analysis for the presence of asbestos fibres in bulk samples, was carried out on the following parts of Turbines 1, 2, 3 and 4:

4.4.1 representative samples of insulation material from the risers and pipes going from the ground floor to the turbines,



- 4.4.2 representative samples of insulation material from the risers and pipes just below the turbine units,
- 4.4.3 insulation material from the metal plate-faces enclosing the turbines.
- 4.5 All analytical results of all the collected samples proved negative and confirmed the ABSENCE of asbestos-containing-materials in Boiler No 3 and Boiler No 4.
- 4.6 The sampling points included, but were NOT EXCLUSIVE TO, the areas indicated in the following figures.

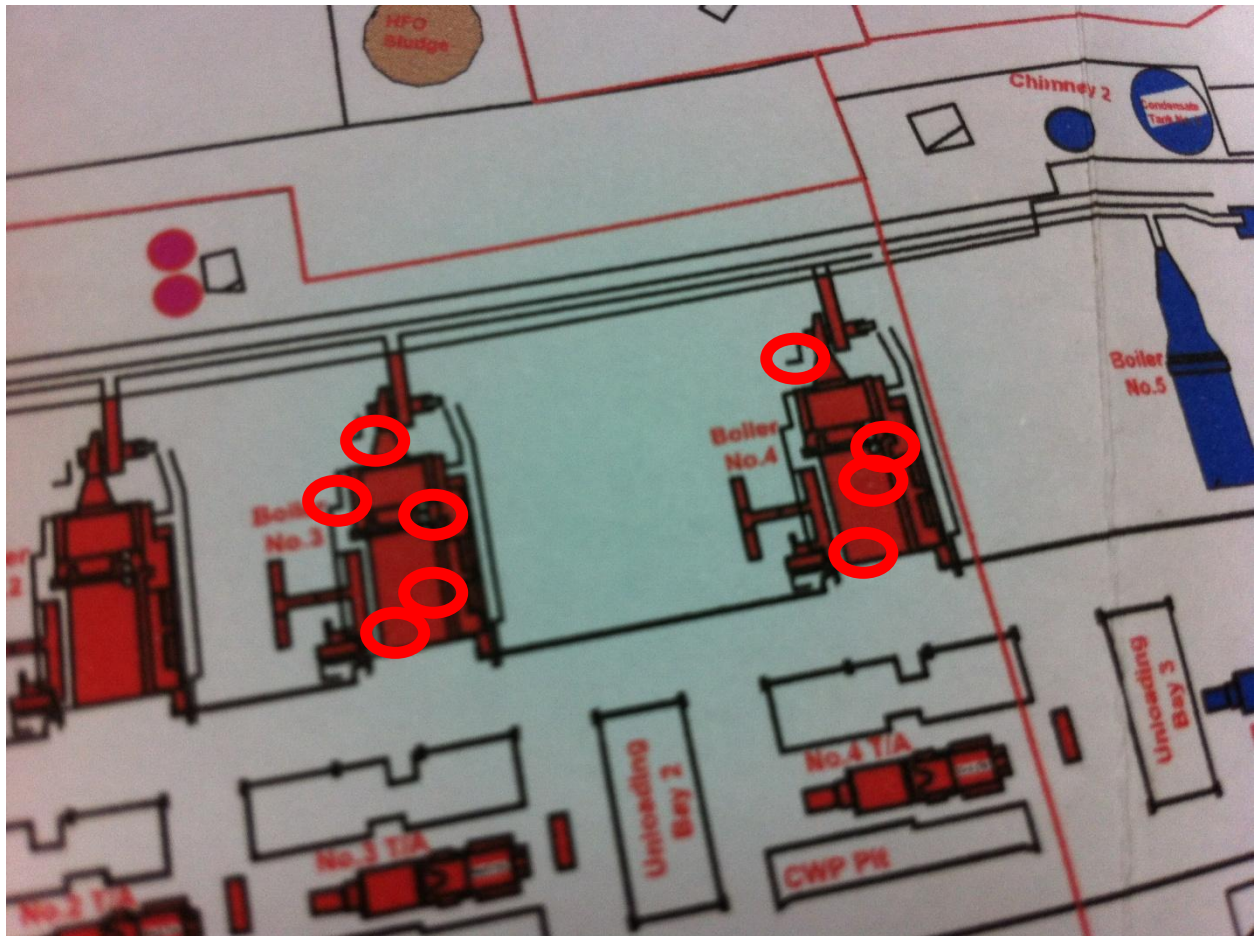


Figure 5.1 Sampling Point Areas for Boiler No 3 and Boiler No 4: All confirming the Absence of ACM.



Figure 5.2 Boiler No 3. Sampling of insulation from opened side panel.



Figure 5.3 Boiler No 3. Sampling of insulation from opened side panel.





Figure 5.4 Boiler No 3. Entry to furnace through manhole on LHS of Boiler, north end



Figure 5.5 Boiler No 3. Entry to furnace through manhole on LHS of Boiler.



Figure 5.6 Boiler No 4. Sampling from behind rusted cover panels.



Figure 5.7 Boiler No 4. Sampling from beneath Boiler structure.





Figure 5.8 Boiler No 4. Sampling from side insulation over tubing.



Figure 5.9 Boiler No 4. Sampling from side insulation over tubing.



Figure 5.10 Boiler No 4. Sampling from side insulation over cover plate.



Figure 5.11 Boiler No 4. Entry to inner boiler through manhole.





Figure 5.12 Boiler No 4. Entry to inner boiler through manhole on the LHS, north end of Boiler 4..



Figure 5.13 Boiler No 4. Pipework to front of Boiler 4.

5.0 CONCLUSIONS AND ACTIONS INCLUSIVE OF ALL REPORTS AND  
ADDITIONAL INVESTIGATIONS

- 5.1 ACM Switchgear: the contaminated switchgear shall be dismantled in the standard methodology established by law, wrapped in high density polyethylene sheets and carted out from the MPS.
- 5.2 BOILER NO 2: The contaminated Boiler Nr 2 shall be dismantled according to standard methodology established by law. The ACM shall be enclosed in appropriate high density big-bags and carted out from the MPS. The steel components should be completely decontaminated from any asbestos fibre residues.
- 5.3 ACM-COATED ROOF METAL SHEETS: Coating of ACM on the steel roof panels of the roof-‘galbestos’ shall be removed together with the underlying matrix of steel, and shall be considered as asbestos-containing waste.
- 5.4 Turbines 1, 2, 3 and 4 have been confirmed to be free from asbestos material and may be dismantled in the standard procedures.
- 5.5 Boilers 3 and 4 have been confirmed to be free from asbestos material and may be dismantled in the standard procedures.
- 5.6 Used and unused gaskets near Boilers 2, 3 and 4 and throughout Zone 3 should be considered as containing ACM.
- 5.7 Some switchgear items could not be inspected since they were still connected during the inspection.

DR GEORGE PELOW

12 October 2016



**Dr. George Peplow** B.Sc.(Hons.)(Lond.), M.Sc.(Salford), Ph.D.(Salford), EurChem, C.Chem., F.R.S.C.

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15 October 2016

Perit George Farrugia  
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Dear Perit Farrugia

## **INSPECTION, SAMPLING AND ANALYSIS OF INSULATION MATERIAL FROM CHIMNEY M4, MARSA POWER STATION**

### Executive Summary.

The undersigned inspected, sampled and analysed representative samples of insulation material collected from inside Chimney Nr M4, located adjacent to Boiler No 8. The material was located at specific points shown in the attached drawing, indicated as 'suspected asbestos'. The fleecy material was confirmed to consist of rock-wool. No traces of asbestos fibres could be identified. The method of analysis was based on the UK Health and Safety Executive standard method.

### 1.0 Introduction.

#### 1.1 Scope of Inspection.

- 1.1.1 Enemalta requested Bezzina Group to inspect, sample and analyses samples of suspect material from Chimney Number M4 since 'old' drawings indicated the possibility of asbestos presence at specific areas along the height of the chimney.
- 1.1.2 Bezzina Group appointed the undersigned to carry out he requested inspection with the objective of confirming the absence of asbestos containing material (ACM) on the inside surface of the chimney.

#### 1.2 Location information.

- 1.2.1 Chimney Number M4 is located adjacent to Boiler Number 8 and is projected to be dismantled by the Bezzina Group. Diagram 1 shows the location of the alleged asbestos material at certain points inside the chimney.

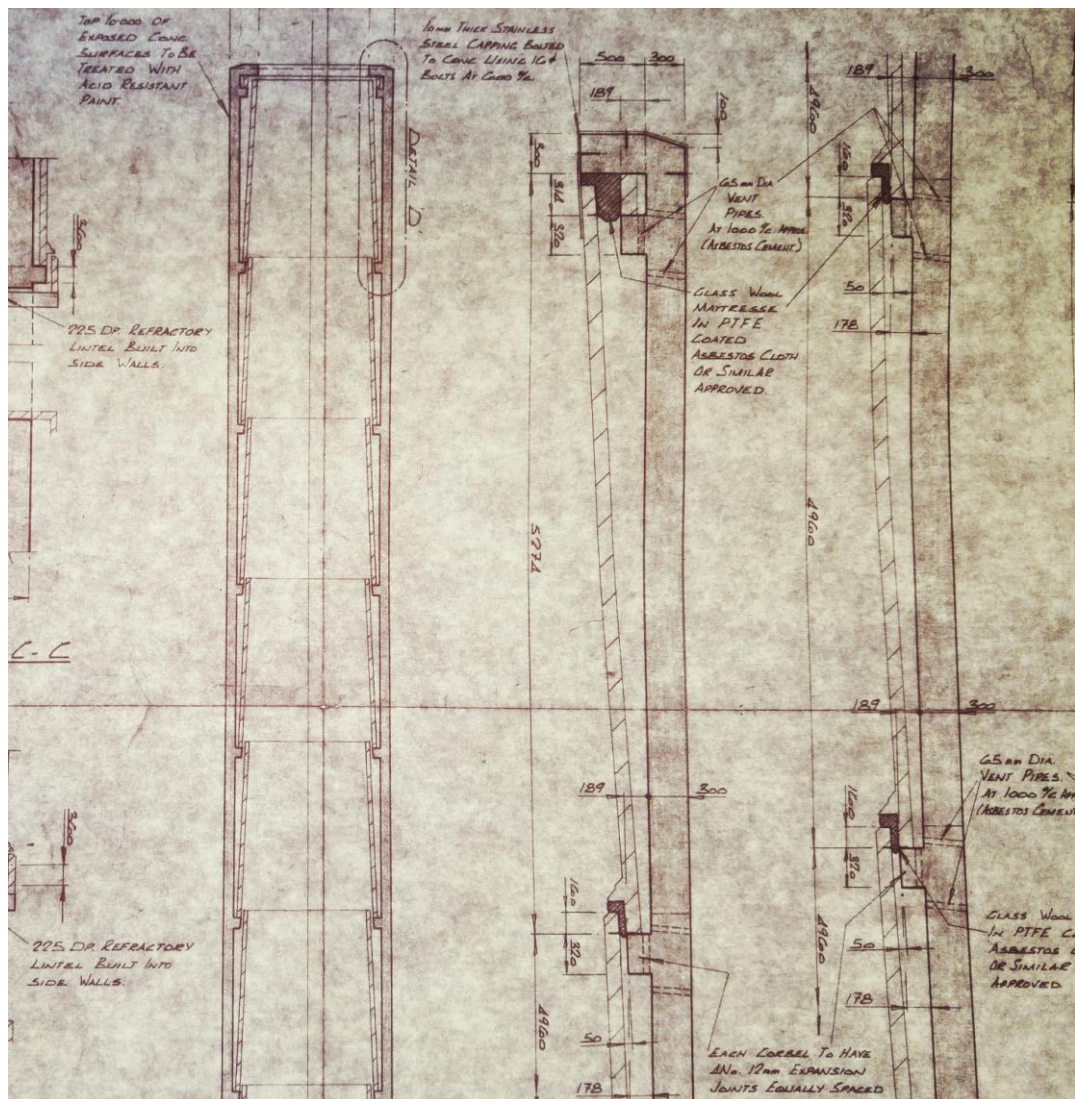


Diagram 1 The alleged sites of the presence of asbestos materials.

## 2.0 Inspection, Observations, Sampling and Analysis.

- 2.1 The inspection was carried out on Monday 10 October 2016. Members present during the inspection were: Ing Albert Bonnet for Enemalta, Perit George Farrugia and Mr Gino Gambin for Bezzina Group.
- 2.2 Access to the inside of the Chimney was through the exhaust ducting from Boiler Nr 8 into the side of the Chimney, about 10 metres from ground level. At this level, the Chimney floor was composed of caked ash. Access to the levels of clefts where ACM material was alleged to be present, were gained by means of telescopic ladders.
- 2.3 The fleecy material was first exposed by means of a light pick, to remove caked deposits of ash material. Representative quantities of the material was collected in plastic bags.
  - 1.1.1 The samples were analysed in the lab by microscopic analysis according to the UK HSE Asbestos: The analysts' guide for sampling, analysis and clearance procedures, 2005.

- 2.4 The analysis confirmed the ABSENCE of asbestos fibres in the collected representative samples.
- 2.5 The analysis confirmed that the insulation material consisted of ROCK WOOL insulation material.

### 3.0 Conclusion.

The material indicated in the chimney drawing as suspected asbestos consists of rockwool which is free from asbestos fibres.

DR GEORGE PELOW

15 October 2016.

**Dr. George Peplow** B.Sc.(Hons.)(Lond.), M.Sc.(Salford), Ph.D.(Salford), EurChem, C.Chem., F.R.S.C.

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# **SITE SURVEY, SAMPLING, ANALYSIS AND EVALUATION OF ASBESTOS CONTAINING MATERIALS AT THE MARSA POWER STATION.**

## **PRELIMINARY REPORT 2.**

<b>REPORT REF: ZONE 4 Nr 1.0</b>
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## **REPORTING SURVEY OF ZONE Nr 4**

Report and Register for:

Mr Ranier Bezzina

Bezzina Group – Malta

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## EXECUTIVE SUMMARY. SURVEY OF ACM WITHIN ZONE Nr 4.

This Summary is designed to give a glance at the findings and conclusions of the Survey for ZONE Nr4. However it should be read in conjunction with the full report.

### Findings.

1. Following the full survey over the whole area of Zone 4, **SUSPECTED** asbestos containing material was confirmed to be **ABSENT** in the following general areas:
  - All pipework insulation and lagging at ground and upper levels inclusive of elbow lagging in Turbines 5, 6 and 7.
  - All pipework lagging and insulation material on the external and internal areas of Boiler 5, the latter being inspected through the available manholes
  - All pipework lagging and insulation material on the external area ONLY of Boiler 6, since no open manholes were available, due to the 'standby' status of Boiler 6.
  - The Seawater Evaporators.
  - The Demineralising Plant.
2. Following the survey over the whole area of Zone 4, asbestos containing material **WAS FOUND TO BE PRESENT** in the following areas:
  - The asbestos-containing (ACM) corrugated cement roof of the Acid Storage Facility, located to the north east of Zone 4.
  - A disused ACM water tank located on the roof of the 'old' demineralisation plant, located adjacent to the Acid Storage Facility.
  - The extension of the roof steel panels which are coated with ACM (termed 'galbestos'), as described in the ZONE 3 Amended Report 2.0, dated 23 July 2016.
3. This summary is **exclusive** of inspections on certain items which were either sealed or still electrically live.
  - Live electrical switchgear.
  - Sealed gaskets in pipe flanges.
  - Transformer units on the ground floor level.
  - Internal areas of Boiler 6.
  - The Internal parts of Chimney MPS 2.

### Executive Summary Conclusions.

1. The removal of the non-asbestos lagging and insulation material may be removed, using standard technical and H&S procedures.
2. The removal of the cement ACM panels and tank shall be removed according to local legal notices and international guidelines.
3. The removal of the 'galbestos' ACM roof panels shall be removed according to local legal notices and international guidelines.
4. The switchgear shall be considered as asbestos contaminated unless otherwise classified with further sampling and analysis, since inspections and laboratory tests on some of the switchgears in other Zones, confirmed the presence of ACM. The switchgear in this Zone shall be inspected as soon as Enemalta declare the equipment to be neutral.
5. The internal areas of Boiler 6 shall be inspected as soon as Zone 4 is released of its 'standby' status by Enemalta.



6. The internal areas of MPS Chimney 2 shall be inspected as soon as Zone 4 is released of its 'standby' status by Enemalta.

## 1.0 INTRODUCTION AND SCOPE OF WORK.

- 1.1 Mr Ranier Bezzina of Bezzina Group Limited, of Marsa, appointed the undersigned to undertake an inspection of each of the TEN (10) ZONES at the Marsa Power station, as indicated in Figure 1.
- 1.2 The survey was conducted by Dr George Peplow as the Principal Surveyor, and proceeded according to the Risk Assessment: Survey for the Presence of Asbestos Material at the Marsa Power Station, Dated 6 May 2016, as an Updated Version to the Risk Assessment Report dated 9 April 2016.
- 1.3 ACM sampling and analysis was carried out by Dr George Peplow.
- 1.4 The objectives of the survey were to establish the location of any asbestos containing material (ACM) during the demolition of the power station. For this purpose a Type Three survey, was carried out to assess, identify and evaluate the presence of ACM.
- 1.5 Type Three Surveys involves Full Access Sampling & Identification Surveys. This type of survey will be conducted prior to any major refurbishment or Demolition works. The survey is conducted by means of visual inspection and subsequent sampling of suspect bulk materials. Where the surveyor suspects a material to contain asbestos, a sample will be taken for analysis. The samples taken will be chosen as being representative of the material under investigation. Therefore, visually similar areas should be regarded as being of uniform composition. Samples will be taken using a sharp knife, a cork borer or hand drill and will be collected in self seal plastic bags. The sample reference number will be recorded on the sample bag. Where appropriate, a label will be left on the site adjacent to the sample location. This label indicates the sample number for cross-reference with the report. Photographs will be taken at every sampling location to confirm site details. The object of carrying out sampling is to identify the nature and extent of any visible asbestos.
- 1.6 Due to the age, use and construction of the Marsa Power Station, ACM may have been used/ present in the past but may have been removed or part removed and some residue may still exist. The only knowledge and documentation of any past ACM activity or monitoring is being referred by the undersigned from his personal files.
- 1.7 The Guidelines, LN's and EC Directives that were followed during the survey were the following:
  - 1.7.1 The UK HSE HSG264, The Asbestos Survey HSE Books, 2010
  - 1.7.2 Legal Notice 122 of 2003.
  - 1.7.3 Legal Notice 123 of 2003 amended by L.N. 323 of 2006.
  - 1.7.4 OHSa Consultation Process on Amending OHS Legislation on Asbestos, 2006.
  - 1.7.5 Guide to good practice for Working in Confined Spaces, ATEX Directive 1999/92/EC - The Work Place (Minimum Requirements for Work).
  - 1.7.6 UK HSE Asbestos: The analysts' guide for sampling, analysis and clearance procedures, 2005.
  - 1.7.7 LN323 of 2006 Protection of Workers from Risks related to Exposure to asbestos at Work Regulations.

- 1.7.8 Enemalta Asbestos Policy Document provided in Appendix 4: Documents Doc1 - Asbestos Policy.
- 1.7.9 Extracts from Tender GN/MPS/T/17/2010 found in Appendix 3 Procedures Pro 3 - Extracts from Removal of Asbestos T/17/2010.pdf

## 2.0 GENERAL SITE AND SURVEY INFORMATION.

- 2.1 The Marsa Power Station structures are to be demolished except for:
  - 2.1.1 The underground 'A' Station.
  - 2.1.2 The Administration Building and Main gate security rooms.
  - 2.1.3 The inlet Jetty and Gas Turbine 9, its associated fuel tank (situated in Zone 5, with all its piping and control equipment.

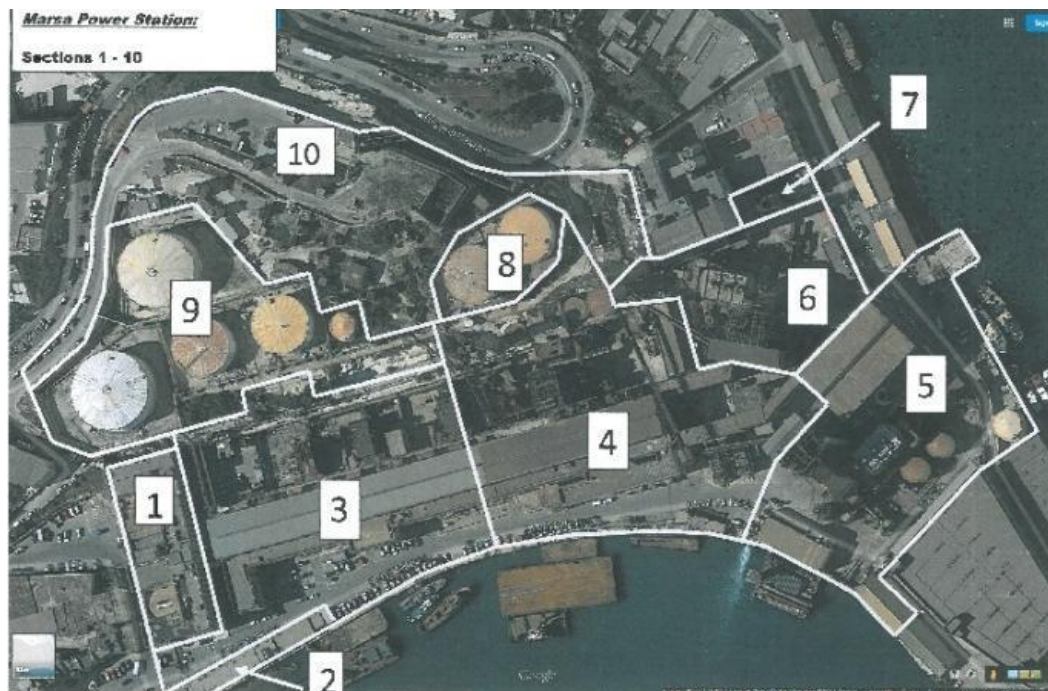


Figure 1. Marsa Power Station Delineated Zones (Reference: Tender Decommissioning, Dismantling & Demolition, Marsa Power Station. Project Description Statement)

- 2.2 This PRELIMINARY REPORT 2 refers to the Survey carried out over the Marsa Power Station Zone 4, as shown in Figure 2, as the area delineated inside the white border. Zone 4 is an extension of Zone 3 keeping with the same basic layout as found in Zone 3.
- 2.3 The Survey was carried out during the period 10 – 15 July 2016.
- 2.4 The Details of the Buildings within Zone 4 consists of the following:
  - 2.4.1 The Turbine Hall, Figure 3, which is an extension of the Turbine Hall found in Zone 3. This extension houses the auxiliaries and structures connected with Turbines 5, 6 and 7.
  - 2.4.2 Boilers Nos 5 and 6, Figure 4, which is located in the open space to the North of the Turbine Hall houses two Boilers Basically Boiler 5 and Boiler 6 together with their auxiliary equipment.
  - 2.4.3 Chimney MPS2.



- 2.4.4 The Sea Water Evaporators, Figure 5.
- 2.4.5 The Demineralization Plants, Figure 6.
- 2.4.6 The Acid Storage Facility, Figure 7.
- 2.4.7 The control room, Sea Water screen house filtration system and an independent garage.



Figure 2 Delineated area of Zone 4.

### 3.0 SURVEY RESULTS (INCLUDING MATERIAL ASSESSMENT RESULTS).

3.1 By referring to Figure 9, the following items located within Zone 4 were confirmed to contain asbestos fibres:

3.1.1 Sample Z4.1: Figure 7, ACM-containing corrugated cement roof panels, covering the whole area of the Acid Storage Facility.

3.1.2 Sample Z4.2: Figure 8, ACM-containing disused water tank located on the roof of the old demineralising plant, adjacent to the Acid Storage Facility.

3.2 Furthermore Sample Z3.5a, was collected and confirmed to contain ACM coating (galbestos) on steel sheets on the sides of the Turbine Hall, as reported in the report for Zone 3, dated 23 July 2016.



Figure 3. Turbine Hall – West End – Turbines 5, 6 and 7 at the far end



Figure 4. Boilers 5 and 6 between the east end of the Turbine Hall and the cliff face.





Figure 5. The Seawater Evaporators



Figure 6. The 'Old' Demineralisation Plant and water storage Tanks



Fig 7. Acid Storage Facility



Figure 8. The Old Demineralising Plant.



- 3.3 Thorough representative sampling and analysis for the presence of asbestos fibres in bulk samples, was carried out on the following parts of Turbines 5, 6 and 7:
  - 5.1.1 representative samples of insulation material from the risers and pipes going from the ground floor to the turbines,
  - 5.1.2 representative samples of insulation material from the risers and pipes just below the turbine units,
  - 5.1.3 insulation material from the metal plate-faces enclosing the turbines.
- 3.4 All analytical results of all the collected samples proved negative and confirmed the ABSENCE of asbestos-containing-materials in Turbines 5, 6 and 7.
- 3.5 Sampling and analysis of the bulk samples collected throughout the survey was based on the United Kingdom Health and Safety Executive 'Asbestos: The Analysts' guide for sampling, analysis and clearance procedures'. The microscopical measurements were conducted on a polarized light microscopy 100X magnification on the isolated suspect single fibres.

#### 4.0 SAMPLING AREAS FROM BOILERS 5 AND 6 CONFIRMING THE ABSENCE OF ASBESTOS-CONTAINING-MATERIALS.

- 1.1 Thorough representative sampling and analysis for the presence of asbestos fibres in bulk samples, was carried out on the following parts of Boilers Nos 5 and 6:
  - 1.1.1 insulation materials on the internal parts of Boiler No 5, which were accessible through opened manholes,
  - 1.1.2 residues and furnace linings from deep inside Boiler 5,
  - 1.1.3 insulation material from the metal plate-faces enclosing both Boiler 5 and Boiler 6,
  - 1.1.4 representative samples of tubing insulation leading into and out of the two boilers
- 1.2 All analytical results of all the collected samples proved negative and confirmed the ABSENCE of asbestos-containing-materials in the external and internal parts of Boiler No 5 and the external parts of Boiler No 6.
- 1.3 It must be emphasised that the internal parts of Boiler No 6 shall be sampled and analysed as soon as manhole for accessing the internal parts of Boiler No 6 are made available.
- 1.4 Furthermore Chimney No 2 could not be sampled as it is still under stand-by conditions.
- 1.5 The sampling points included, but were NOT EXCLUSIVE TO, the areas indicated in the following figures:

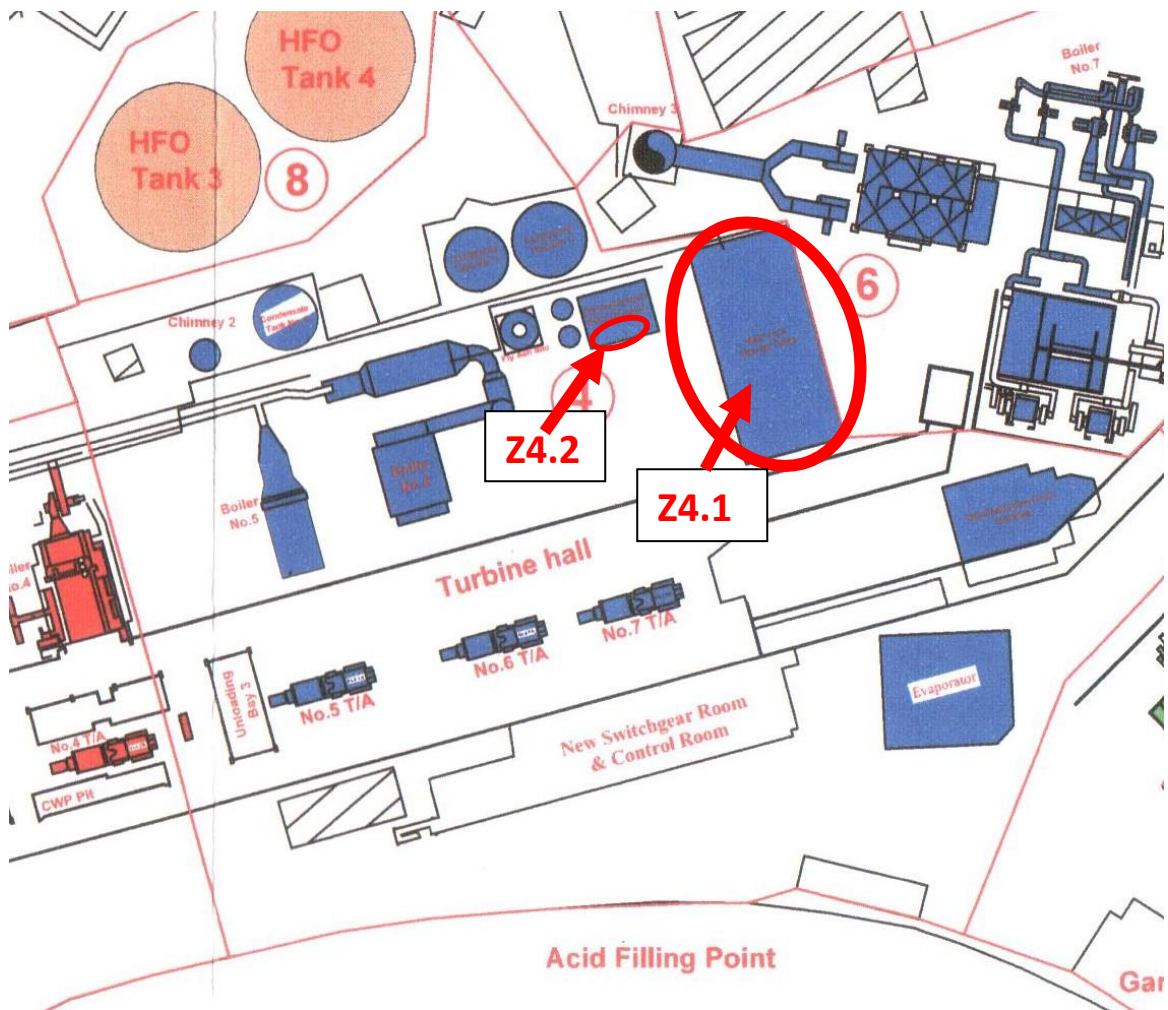




Figure 9 Presence of ACM within ZONE 4.

Location Description		Zone 4. ACM Material assessment algorithm: Acid Storage Facility ACM Roof Panels and Water Tank	
ACTION following survey			
Sample variable	Score	Examples of scores	
Product type (or debris from product)	1	Asbestos-reinforced composites (plastics, resins, mastics, roofing felts, vinyl floor tiles, semi-rigid paints or decorative finishes, asbestos cement etc).	
	2	AIB, millboards, other low-density insulation boards, asbestos textiles, gaskets, ropes and woven textiles, asbestos paper and felt.	
	3	Thermal insulation (eg pipe and boiler lagging), sprayed asbestos, loose asbestos, asbestos mattresses and packing.	
Extent of damage/deterioration	0	Good condition: no visible damage.	
	1	Low damage: a few scratches or surface marks, broken edges on boards, tiles etc.	
	2	Medium damage: significant breakage of materials or several small areas where material has been damaged revealing loose asbestos fibres.	
	3	High damage or delamination of materials, sprays and thermal insulation. Visible asbestos debris.	
Surface treatment	0	Composite materials containing asbestos: reinforced plastics, resins, vinyl tiles.	
	1	Enclosed sprays and lagging, AIB (with exposed face painted or encapsulated) asbestos cement sheets etc.	
	2	Unsealed AIB, or encapsulated lagging and sprays.	
	3	Unsealed lagging and sprays.	
Asbestos type	1	Chrysotile.	
	2	Amphibole asbestos excluding crocidolite.	
	3	Crocidolite.	
Total	2	REMARKS: VERY LOW POTENTIAL RELEASE OF ASBESTOS FIBRES.	
Score	Potential to release asbestos fibres		
10 or more	High		
7-9	Medium		
5-6	Low		
4 or less	Very Low		
Non-asbestos materials have no potential to release asbestos fibres			
DATE OF ASSESSMENT		16/7/16	
NAME OF SURVEYOR		Dr George Peplow	
Reference	The Asbestos survey HSE Books 2010 Appendix 4 page 68		

Table 1. Material Assessment Algorithm for ACM in Zone 4.

SURVEY SUMMARY REPORT: PRESENCE OF ACM IN ZONE 4. Acid Storage Facility and Water Tank			
BUILDINGS	Acid Storage Facility and Demin Plant	INSPECTION DATE	10 – 15 July 2016
LOCATION ID	Figures 7-9	ACCESS RISKS: No risks if panels are removed without any breakages.	
ROOM/ AREA	Roof of Acid Storage Facility and Roof of Demin Plant		
LABORATORY RESULTS	RESULTS	Contain chrysotile asbestos fibres	
	RESULT REF	Z4.1 and Z4.2	
MATERIAL/ DESCRIPTION/ ACTION (Amounts shown are approximate and must be checked on site.)	1. Acid Storage Facility ACM Roof. <b>AREA: 560 m²</b> <b>THICKNESS: 3mm</b>  2. ACM Water Tank Capacity: <b>500lts</b>		
 	PRODUCT TYPE	ACM cement	
	EXTENT OF DAMAGE	Undamaged ACM	
	CONDITION	Satisfactory	
	SURFACE TREATMENT	N/A	
	FRIABILITY	Low	
	ASSESSMENT SCORE	2 (Refer to Table 1)	



<b>SURVEY SUMMARY REPORT: PRESENCE OF ACM IN ZONE 4. Acid Storage Facility and Water Tank</b> , continued.  COMMENTS: The handling of the Panels and Tank should be carried out with caution, avoiding any accidental breakages during handling. All the asbestos containing material locations were marked 'X' in RED.		
REMOVAL POTENTIAL RISK	Low if standard procedures are adopted	
DISTURBANCE RISK	Unlikely	
APPROX REMOVAL TIME	4-6 days	
DATE OF SURVEY	16/7/16	
NAME OF SURVEYOR	Dr George Peplow	

Table 2, cont'd. Summary Report. Presence of ACM

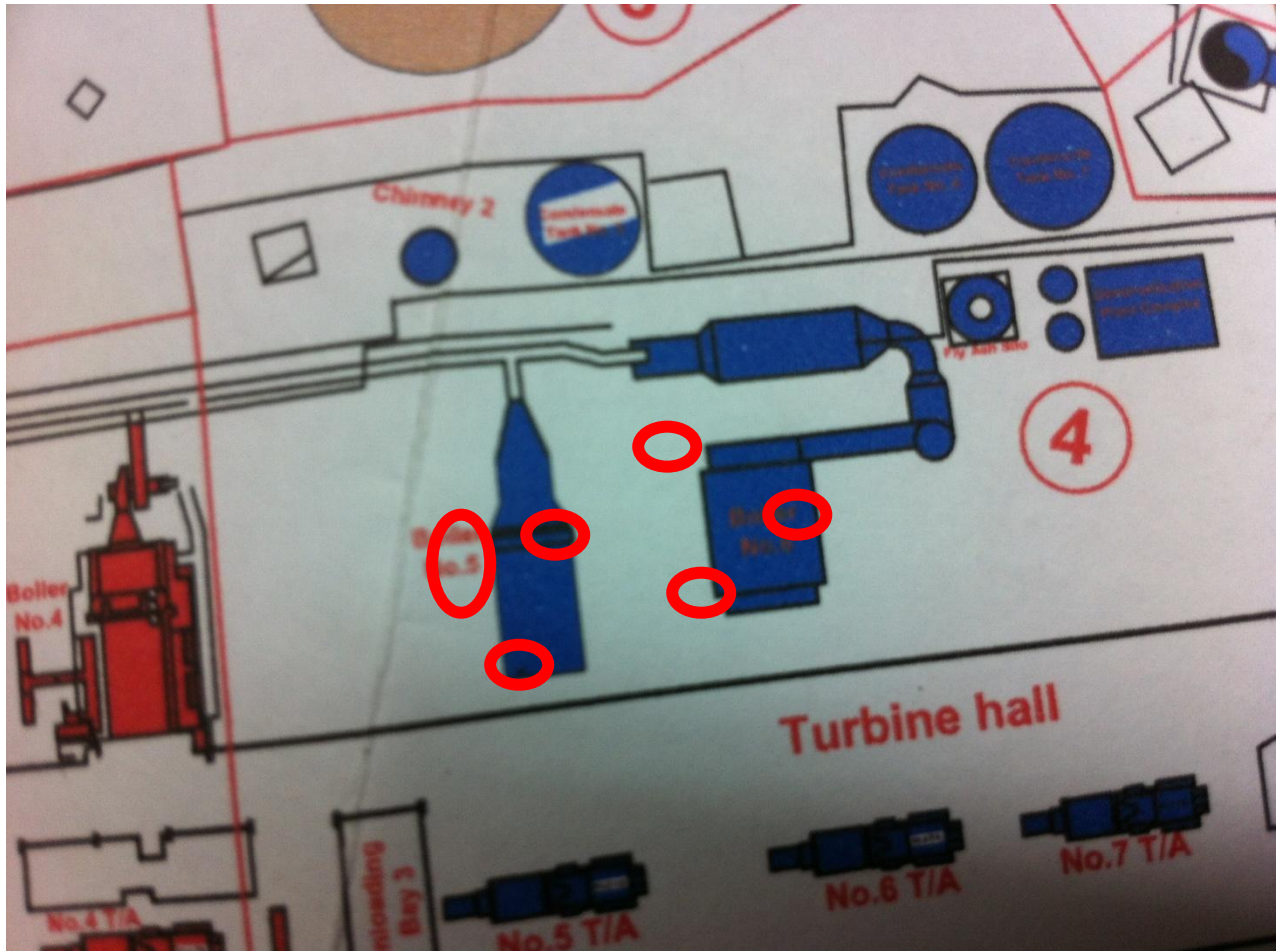


Figure 10. Sampling Points Boiler No 5 and Boiler No 6



Figure 11. Boiler No 5. Entry Manholes



Figure 12. Boiler No 5. Access to insulation material through exposed outer panels





Figure 13. Boiler No 5. Various insulation materials covering pipework, in front of boiler.



Figure 14. Boiler No 6. Sampling from exposed insulation.





Figure 15. Boiler No 6. Sampling from exposed insulation covering tubing.



Figure 16. Boiler No 6. Sampling from exposed insulation tubing beneath Boiler.

## 2.0 CONCLUSIONS AND ACTIONS.

- 2.1 ACM Panels and Tank: the ACM panels and tank shall be dismantled without breakages in the standard methodology established by law, wrapped in high density polyethylene sheets and carted out from the MPS.
- 2.2 Used bolts and supports should be considered as containing ACM, and should either be decontaminated rigorously or exported as ACM.
- 2.3 The outer parts of Boiler No 6 have been found to consist of non-asbestos material; however the internal parts shall be sampled when manhole entry ports are made available.
- 2.4 The internal lagging of Chimney No 2 shall be sampled when entry ports are cut on the sides to access the internal parts.
- 2.5 Some switchgear items present within Zone 4 could not be inspected since they were still connected to the grid during the inspection.
- 2.6 It is being recommended that sampling for the possible presence of ACM in the electrical switchgear mentioned, is conducted during the dismantling operation. As soon as the dismantling operation is under way, the undersigned shall conduct the necessary sampling and issue the result within 2 hours from sampling. The removal of any asbestos-contaminated switchgear may then commence forthwith.

DR GEORGE PEPLOW

24 JULY 2016

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# **SITE SURVEY, SAMPLING, ANALYSIS AND EVALUATION OF ASBESTOS CONTAINING MATERIALS AT THE MARSA POWER STATION.**

## **PRELIMINARY REPORT 1.**

### **REPORTING SURVEY OF ZONE Nr 5**

Report and Register for:

Mr Ranier Bezzina

Bezzina Group – Malta

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#### 1.0 INTRODUCTION AND SCOPE OF WORK.

#### 2.0 GENERAL SITE AND SURVEY INFORMATION.

#### 3.0 SURVEY RESULTS (INCLUDING MATERIAL ASSESSMENT RESULTS).

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Figure 1. Marsa Power Station Delineated Zones

Figure 2 Delineated area of Zone 5

Figure 3. Boiler Nr 8

Figure 4. Turbine Hall of Boiler No 8

Figure 5. Location of various electrical switchgear along the east wall inside Turbine Hall containing ACM material

Figure 6 Location of various switchgear containing ACM material

Figure 7. Location of various water drain pipes containing ACM material

Figure 8. Location of various electrical switchgear along the east wall inside Turbine Hall containing ACM material

Table 1. Zone Labelling and Action

Table 2A. ACM Material Assessment Algorithm. Drain Pipes along East Wall of Turbine Hall Boiler 8

Table 3A. Summary Report. Presence of ACM Drain Pipes

Table 2B. ACM Material Assessment Algorithm.

Table 3B. Summary Report. Presence of ACM Switchgear

### EXECUTIVE SUMMARY. SURVEY OF ACM WITHIN ZONE 5.



This Summary is designed to give a glance at the findings and conclusions of the Survey for ZONE 5. However it should be read in conjunction with the full report.

#### Findings.

1. Following the full survey over the whole area of Zone 5, **SUSPECTED** asbestos containing material was confirmed to be **ABSENT** in the following general areas:
  - All pipework cladding at ground and upper levels inclusive of elbow cladding in the Turbine Hall.
  - All pipework cladding at ground and upper levels inclusive of elbow cladding in the Boiler Structure.
2. Following the survey over the whole area of Zone 5, asbestos containing material **WAS FOUND TO BE PRESENT** in the following areas:
  - The FOUR storm water pipes along the east wall of the Turbine Hall 8.
  - Electrical switchgear located on the north and east walls on the third floor level of the Turbine Hall.
3. This summary is exclusive of inspections on certain items which were either sealed or still electrically live.
  - Sealed turbine windings.
  - Gaskets sealed in the various pipe flanges.
  - Certain live electrical switchgear.

#### Executive Summary Conclusions.

1. The removal of the non-asbestos cladding and insulation material may be removed, using standard technical and H&S procedures.
2. The storm water asbestos pipes shall be removed according to standard procedures for the removal of ACM.
3. Since gasket material may contain ACM, their removal should be carried out with the necessary caution.
4. The switchgear shall be considered as asbestos contaminated, and their handling and disposal shall be conducted according to standard procedures for the removal of ACM.

## 1.0 INTRODUCTION AND SCOPE OF WORK.

- 1.1 Mr Ranier Bezzina of Bezzina Group Limited, of Marsa, appointed the undersigned to undertake an inspection of each of the TEN (10) ZONES at the Marsa Power station, as indicated in Figure 1.
- 1.2 The survey was conducted by Dr George Peplow as the Principal Surveyor, and proceeded according to the Risk Assessment: Survey for the Presence of Asbestos Material at the Marsa Power Station, Dated 6 May 2016, as an Updated Version to the Risk Assessment Report dated 9 April 2016.
- 1.3 ACM sampling and analysis was carried out by Dr George Peplow.
- 1.4 The objectives of the survey were to establish the location of any asbestos containing material (ACM) during the demolition of the power station. For this purpose a Type Three survey, was carried out to assess, identify and evaluate the presence of ACM.
- 1.5 Type Three Surveys involves Full Access Sampling & Identification Surveys. This type of survey will be conducted prior to any major refurbishment or Demolition works. The survey is conducted by means of visual inspection and subsequent sampling of suspect bulk materials. Where the surveyor suspects a material to contain asbestos, a sample will be taken for analysis. The samples taken will be chosen as being representative of the material under investigation. Therefore, visually similar areas should be regarded as being of uniform composition. Samples will be taken using a sharp knife, a cork borer or hand drill and will be collected in self seal plastic bags. The sample reference number will be recorded on the sample bag. Where appropriate, a label will be left on the site adjacent to the sample location. This label indicates the sample number for cross-reference with the report. Photographs will be taken at every sampling location to confirm site details. The object of carrying out sampling is to identify the nature and extent of any visible asbestos.
- 1.6 DUE TO THE AGE, USE AND CONSTRICTION OF THE Marsa Power Station, ACM may have been used/ present in the past but may have been removed or part removed and some residue may still exist. The only knowledge and documentation of any past ACM activity or monitoring is being referred by the undersigned from his personal files.
- 1.7 The Guidelines, LN's and EC Directives that were followed during the survey were the following:
  - 1.7.1 The UK HSE HSG264, The Asbestos Survey HSE Books, 2010
  - 1.7.2 Legal Notice 122 of 2003.
  - 1.7.3 Legal Notice 123 of 2003 amended by L.N. 323 of 2006.
  - 1.7.4 OHSa Consultation Process on Amending OHS Legislation on Asbestos, 2006.
  - 1.7.5 Guide to good practice for Working in Confined Spaces, ATEX Directive 1999/92/EC - The Work Place (Minimum Requirements for Work).
  - 1.7.6 UK HSE Asbestos: The analysts' guide for sampling, analysis and clearance procedures, 2005.
  - 1.7.7 LN323 of 2006 Protection of Workers from Risks related to Exposure to asbestos at Work Regulations.
  - 1.7.8 Enemalta Asbestos Policy Document provided in Appendix 4: Documents Doc1  
– Asbestos Policy.

- 1.7.9 Extracts from Tender GN/MPS/T/17/2010 found in Appendix 3  
Procedures Pro 3 - Extracts from Removal of Asbestos  
T\_17\_2010.pdf

## 2.0 GENERAL SITE AND SURVEY INFORMATION.

- 2.1 The Marsa Power Station structures are to be demolished except for:
- 2.1.1 The underground 'A' Station.
  - 2.1.2 The Administration Building and Main gate security rooms.
  - 2.1.3 The inlet Jetty and Gas Turbine 9, its associated fuel tank (situated in Zone  
all its piping and control equipment.

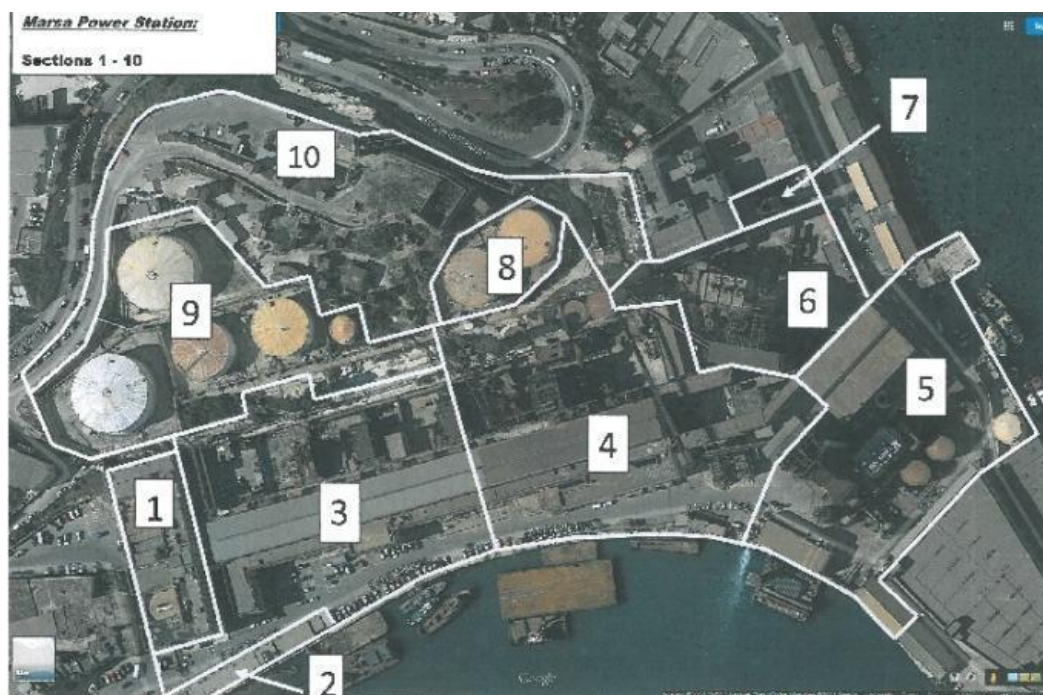


Figure 1. Marsa Power Station Delineated Zones (Reference: Tender Decommissioning, Dismantling & Demolition, Marsa Power Station. Project Description Statement)

- 2.2 This PRELIMINARY REPORT 1 refers to the Survey carried out over the Marsa Power Station Zone 5, as shown in Figure 2, as the area delineated inside the white border.
- 2.3 The Survey was carried out during the period 8 May to 10 June 2016
- 2.4 The Details of the Buildings within Zone 5 consisted of the following:
- 2.4.1 The STEAM TURBINE in Figure 3, powered by steam generated by Boiler 8 which fires HFO. Boiler 8 like Boiler 7 used to be operated on coal but both boilers were converted to fire only HFO in the early 90s. However the structures connected with coal firing are still present.
  - 2.4.2 The TURBINE HALL in Figure 4, covers an area of approx 40 m x 35 m. Inside this turbine hall is the Steam Unit 8 which is the biggest steam turbine at MPS with a capacity of 60MW together with various auxiliaries for the proper operation of the steam turbine.



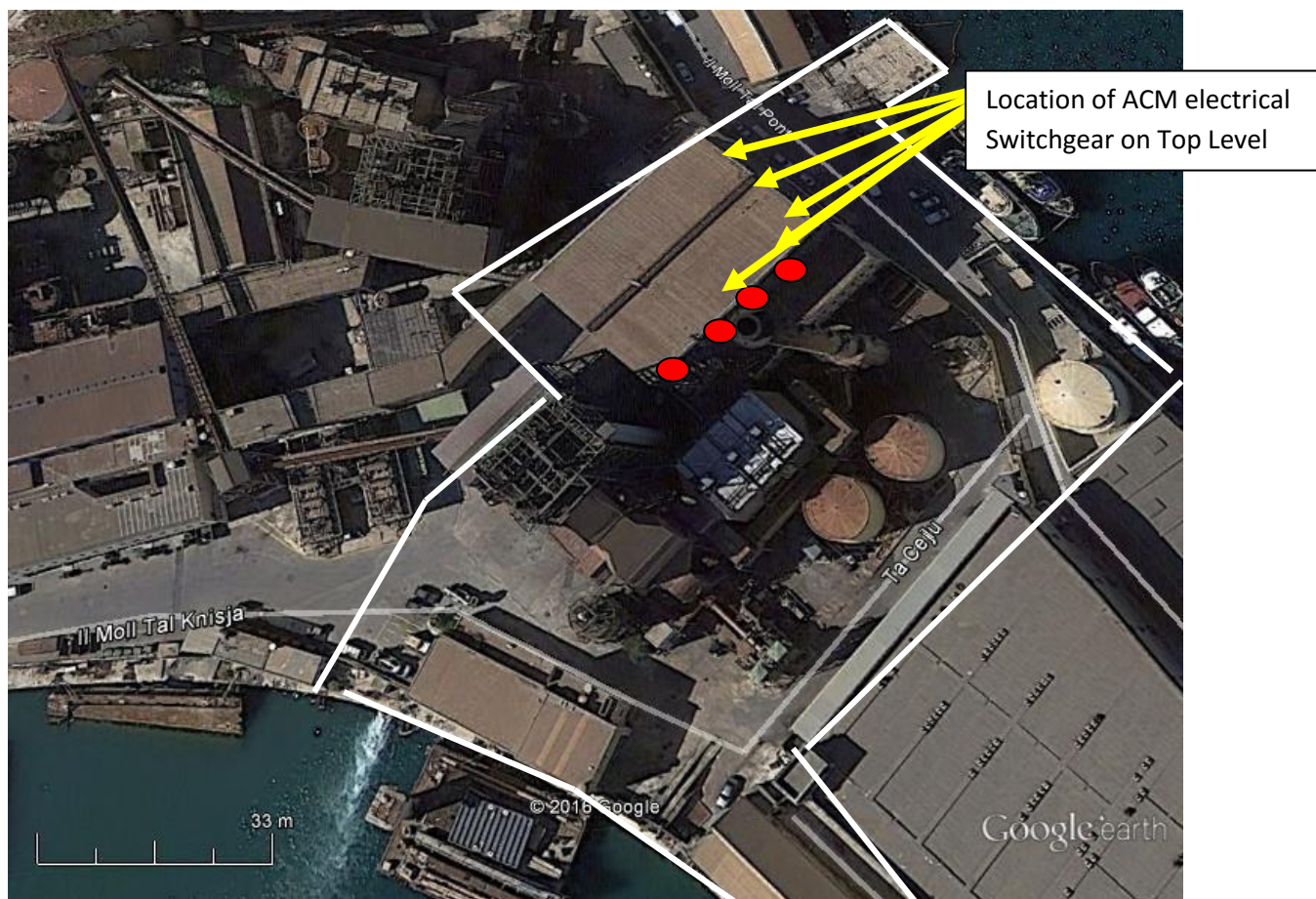


Figure 2 Delineated area of Zone 5. ● Location of ACM drain pipes.

2.4.3 Other major equipment found in Zone 5 of the Power station include:

- 2.4.3.1 Transport Division Maintenance garage, Figure 5.
- 2.4.3.2 Condensate Storage Tanks
- 2.4.3.3 Chimney MPS 4
- 2.4.3.4 Gasoil storage Tank used by the Gas turbine
- 2.4.3.5 Sea water intake jetty

Zone	Name of Zone	Main Structures/Equipment present in Zone	Intended Status
1	Administration Bld.	Administration Building – Offices, distribution workshop & stores.	To be retained
2	Gatehouse/ Canteen	Security gate house, attendance room, canteen and stores	To retain security guard room. The other structures are to be demolished
3	Turbine Hall West	Turbines 1 – 4, Boilers 2 – 4, old control room & office annex building	To be demolished
4	Turbine Hall East	Turbines 5 – 7 & Boilers 5 & 6, water production facilities, new control room. Garage facility	To be demolished

Table 1. Zone Labelling and Action

<b>Zone</b>	<b>Name of Zone</b>	<b>Main Structures/Equipment present in Zone</b>	<b>Intended Status</b>
<b>5</b>	Unit 8	Turbine 8 & Boiler 8 including Gas oil storage tank and auxiliaries. Main transport Garage for maintenance of cars. Sea water intake jetty	To be demolished. However sea water intake Jetty to be retained
<b>6</b>	Boiler 7	Boiler 7, laboratory building including stores/workshop	To be demolished
<b>7</b>	Gas Turbine	Gas turbine	To be removed
<b>8</b>	Small Tank Farm	Heavy Fuel Oil Storage Tanks Nos. 3 & 4	To be demolished
<b>9</b>	Large Tank Farm	Heavy Fuel Oil Storage Tanks Nos. 1, 2, 5 & 6	To be demolished
<b>10</b>	A station Hill top	Boiler 7 and Boiler 8 Coal Bunker, Blr 6 coal structures, Stores, Gate- house, Substation, Operators rest room, A station Gas turbine chimney and filter house	To be demolished.

Table 1. Cont'd. Zone Labelling and Action



Figure 3. Boiler Nr 8





Figure 4. Turbine Hall of Boiler No 8



Figure 5. Location of various electrical switchgear along the east wall inside Turbine Hall containing ACM material

- 3.0 SURVEY RESULTS (INCLUDING MATERIAL ASSESSMENT RESULTS).
- 3.1 All materials which were suspected to contain asbestos were invariably sampled and measured for the confirmed presence of asbestos fibres.
  - 3.2 Collected samples that **CONFIRMED THE PRESENCE** of asbestos fibres are listed in the various Tables 3, each referring to the different types of ACM identified.
  - 3.3 An evaluation of the hazards associated with the identified ACM is shown in the Materials Assessment Algorithm in the various Tables 2, each referring to the different types of ACM identified.
  - 3.4 The following photos refer to the samples listed in Tables 3.



Figure 6 Location of various **switchgear containing ACM** material



Figure 7. Location of various **water drain pipes** containing ACM material






Figure 8. Location of various electrical switchgear along the east wall inside Turbine Hall containing ACM material



SURVEY SUMMARY REPORT: PRESENCE OF ACM IN ZONE 5. <u>DRAIN PIPES</u>		
Material assessment algorithm		
Location Description	Boiler Nr 8 Turbine Hall East Walls. <u>WATER DRAIN PIPES</u>	
ACTION following survey		
Sample variable	Score	HAZARD SCORES
Product type (or debris from product)	①	Asbestos-reinforced composites (plastics, resins, mastics, roofing felts, vinyl floor tiles, semi-rigid paints or decorative finishes, asbestos cement etc).
	2	AIB, millboards, other low-density insulation boards, asbestos textiles, gaskets, ropes and woven textiles, asbestos paper and felt.
	3	Thermal insulation (eg pipe and boiler lagging), sprayed asbestos, loose asbestos, asbestos mattresses and packing.
Extent of damage/deterioration	0	Good condition: no visible damage.
	①	Low damage: a few scratches or surface marks, broken edges on boards, tiles etc.
	2	Medium damage: significant breakage of materials or several small areas where material has been damaged revealing loose asbestos fibres.
	3	High damage or delamination of materials, sprays and thermal insulation. Visible asbestos debris.
Surface treatment	①0	Composite materials containing asbestos: reinforced plastics, resins, vinyl tiles.
	1	Enclosed sprays and lagging, AIB (with exposed face painted or encapsulated) asbestos cement sheets etc.
	2	Unsealed AIB, or encapsulated lagging and sprays.
	3	Unsealed lagging and sprays.
Asbestos type	①1	Chrysotile.
	2	Amphibole asbestos excluding crocidolite.
	3	Crocidolite.
Total	3	REMARKS: VERY LOW RISK OF ASBESTOS RELEASE
Score	Potential to release asbestos fibres	
10 or more	High	
7-9	Medium	
5-6	Low	
4 or less	Very Low	
Non-asbestos materials have no potential to release asbestos fibres		
DATE OF ASSESSMENT		28/5/16
NAME OF SURVEYOR		Dr George Peplow
Reference	The Asbestos survey HSE Books 2010 Appendix 4 page 68	

Table 2A. ACM Material Assessment Algorithm. Drain Pipes along East Wall of Turbine Hall Boiler 8


**Table 3A. Summary Report. Presence of ACM Drain Pipes**

BUILDING	Eastern Walls of Turbine Hall	INSPECTION DATE	28/5/16
LOCATION ID	Figure 7. Photos	ACCESS RISKS: Accessible from outside of Turbine Hall of Boiler Nr 8	
ROOM/ AREA	Outer walls		
FLOOR LEVEL	Ground to Roof	SAMPLE ID	Z5.01
LABORATORY RESULTS	RESULT	Presence of crysotile asbestos	
	RESULT REF	Z5.01	
MATERIAL/ DESCRIPTION/ ACTION (Amounts shown are approximate and must be checked on site.)	AREA N/A THICKNESS Dia 20 cm  LENGTH 2 drains x 3.5m MASS 200kg		
		PRODUCT TYPE	Asbestos cement pipe
		EXTENT OF DAMAGE	Slight breakages at base
		CONDITION	Satisfactory
		SURFACE TREATMENT	N/A
		FRIABILITY	High
		ASSESSMENT SCORE	3 (refer to Table 2A)
COMMENTS: N/A			
REMOVAL POTENTIAL RISK		Low if standard procedures are adopted	
DISTURBANCE RISK		Unlikely	
APPROX REMOVAL TIME		1 days	
DATE OF SURVEY		28/5/16	
NAME OF SURVEYOR		Dr George Peplow	

Location Description		Hall 8. ACM in Electrical Switchgear Material assessment algorithm
ACTION following survey		
Sample variable	Score	Examples of scores
Product type (or debris from product)	①	Asbestos-reinforced composites (plastics, resins, mastics, roofing felts, vinyl floor tiles, semi-rigid paints or decorative finishes, asbestos cement etc).
	②	AIB, millboards, other low-density insulation boards, asbestos textiles, gaskets, ropes and woven textiles, asbestos paper and felt.
	3	Thermal insulation (eg pipe and boiler lagging), sprayed asbestos, loose asbestos, asbestos mattresses and packing.
Extent of damage/deterioration	0	Good condition: no visible damage.
	①	Low damage: a few scratches or surface marks, broken edges on boards, tiles etc.
	2	Medium damage: significant breakage of materials or several small areas where material has been damaged revealing loose asbestos fibres.
	3	High damage or delamination of materials, sprays and thermal insulation. Visible asbestos debris.
Surface treatment	①	Composite materials containing asbestos: reinforced plastics, resins, vinyl tiles.
	1	Enclosed sprays and lagging, AIB (with exposed face painted or encapsulated) asbestos cement sheets etc.
	2	Unsealed AIB, or encapsulated lagging and sprays.
	3	Unsealed lagging and sprays.
Asbestos type	①	Chrysotile.
	2	Amphibole asbestos excluding crocidolite.
	③	Crocidolite.
Total	8	REMARKS: MEDIUM POTENTIAL RELEASE OF ASBESTOS FIBRES.
Score	Potential to release asbestos fibres	
10 or more	High	
7-9	Medium	
5-6	Low	
4 or less	Very Low	
Non-asbestos materials have no potential to release asbestos fibres		
DATE OF ASSESSMENT		30/5/16
NAME OF SURVEYOR		Dr George Peplow
Reference	The Asbestos survey HSE Books 2010 Appendix 4 page 68	

Table 2B. ACM Material Assessment Algorithm.

**Table 3B SURVEY SUMMARY REPORT: PRESENCE OF ACM IN ZONE 5.  
ELECTRICAL SWITCHGEAR**

BUILDING	Turbine Hall 8	INSPECTION DATE	30/5/16
LOCATION ID	Figure 6. Photos. Located along the north and east top floor walls	ACCESS RISKS: Accessible only when switchgear is opened and tampered with.	
ROOM/ AREA	Inside turbine hall.		
FLOOR LEVEL	3 <sup>o</sup> Floor	SAMPLE ID	Z5.02
LABORATORY RESULTS	RESULT	Contains chrysotile and crocidolite asbestos	
	RESULT REF	Z5.02	
MATERIAL/ DESCRIPTION/ ACTION (Amounts shown are approximate and must be checked on site.)	AREA <b>N/A</b> THICKNESS <b>variable</b>  Consists of various arc-barrier and liners in switches.		
		PRODUCT TYPE	Arc plates, insulators and liners
		EXTENT OF DAMAGE	Undamaged ACM
		CONDITION	Satisfactory
		SURFACE TREATMENT	N/A
		FRIABILITY	High
		ASSESSMENT SCORE	8 (Refer to Table 2B)
COMMENTS: The handling of the electrical Switchgear should be carried out with caution. All the asbestos containing switchgear were marked ‘X’ in RED. The switchgear which could not be inspected were marked ‘?’ in RED.			
REMOVAL POTENTIAL RISK		Low if standard procedures are adopted	
DISTURBANCE RISK		Unlikely	
APPROX REMOVAL TIME		2-3 days	
DATE OF SURVEY		30/5/16	

NAME OF SURVEYOR	Dr George Peplow
------------------	------------------

#### 4.0 Conclusions and Actions.

- 4.1 ACM Cement drain pipes: these may be dismantled in the standard methodology established by law, wrapped in high density polyethylene sheets and carted out from the MPS.
- 4.2 ACM Switchgear: the contaminated switchgear shall be dismantled in the standard methodology established by law, wrapped in high density polyethylene sheets and carted out from the MPS.
- 4.3 The contaminated Switchgear were marked X in red.
- 4.4 Some switchgear items could not be inspected since they were still connected during the inspection.

DR GEORGE PEPLow

JUNE 2016

**Dr. George Peplow** B.Sc.(Hons.)(Lond.), M.Sc.(Salford), Ph.D.(Salford), EurChem, C.Chem., F.R.S.C.

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# **SITE SURVEY, SAMPLING, ANALYSIS AND EVALUATION OF ASBESTOS CONTAINING MATERIALS AT THE MARSA POWER STATION.**

## **PRELIMINARY REPORT 2.**

<b>REPORT REF: ZONES 6-7 1.0</b>
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## **REPORTING SURVEY OF ZONES Nos 6 and 7**

Report and Register for:

Mr Ranier Bezzina

Bezzina Group – Malta

T: 21244613, 21 240887 Mob: 9942 9707 eM: [rbezzina@bezzinagroup.com](mailto:rbezzina@bezzinagroup.com)

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EXECUTIVE SUMMARY, SURVEY OF ACM WITHIN ZONE 6 AND ZONE 7.

### 1.0 INTRODUCTION AND SCOPE OF WORK.

### 2.0 GENERAL SITE AND SURVEY INFORMATION.

### 3.0 SURVEY RESULTS (INCLUDING MATERIAL ASSESSMENT RESULTS).

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Figure 13. Boiler No 7 Insulation from exposed parts middle areas.

Figure 14. Boiler No 7 Open porthole, residue samples.

Table 1. Material Assessment Algorithm for ACM in Zone 6.

Table 2. Summary Report. Presence of ACM

## EXECUTIVE SUMMARY. SURVEY OF ACM WITHIN ZONE Nr 6-7.

This Summary is designed to give a glance at the findings and conclusions of the Survey for ZONES Nos 6 and 7. However it should be read in conjunction with the full report.

### Findings.

1. Following the full survey over the whole area of Zones 6 and 7, **SUSPECTED** asbestos containing material was confirmed to be **ABSENT** in the following general areas:  
All pipework insulation and lagging at ground and upper levels inclusive of elbow lagging in Boiler Nr 7.
2. Following the survey over the whole area of Zone 4, asbestos containing material **WAS FOUND TO BE PRESENT** in the following areas:  
The asbestos-containing (ACM) water drain pipes located to the north-east of Zone 6, against the west wall of Turbine Hall 8.
3. This summary is exclusive of inspections on certain items which were either sealed or still electrically live.  
Sealed electrical windings.  
Live electrical switchgear.  
Sealed gaskets in pipe flanges.  
The Gas Turbine in Zone 7 which was padlocked.  
Chimney No 3.

### Executive Summary Conclusions.

1. The removal of the non-asbestos lagging and insulation material may be removed, using standard technical and H&S procedures.
2. The removal of the cement ACM drain pipes shall be removed according to local legal notices and international guidelines.
3. The switchgear shall be considered as asbestos contaminated, since cursory inspections and laboratory tests on some of the switchgears in other Zones, confirmed the presence of ACM. The switchgear in this Zone shall be inspected as soon as Enemalta declare the equipment to be neutral.



## 1.0 INTRODUCTION AND SCOPE OF WORK.

- 1.1 Mr Ranier Bezzina of Bezzina Group Limited, of Marsa, appointed the undersigned to undertake an inspection of each of the TEN (10) ZONES at the Marsa Power station, as indicated in Figure 1.
- 1.2 The survey was conducted by Dr George Peplow as the Principal Surveyor, and proceeded according to the Risk Assessment: Survey for the Presence of Asbestos Material at the Marsa Power Station, Dated 6 May 2016, as an Updated Version to the Risk Assessment Report dated 9 April 2016.
- 1.3 ACM sampling and analysis was carried out by Dr George Peplow.
- 1.4 The objectives of the survey were to establish the location of any asbestos containing material (ACM) during the demolition of the power station. For this purpose a Type Three survey, was carried out to assess, identify and evaluate the presence of ACM.
- 1.5 Type Three Surveys involves Full Access Sampling & Identification Surveys. This type of survey will be conducted prior to any major refurbishment or Demolition works. The survey is conducted by means of visual inspection and subsequent sampling of suspect bulk materials. Where the surveyor suspects a material to contain asbestos, a sample will be taken for analysis. The samples taken will be chosen as being representative of the material under investigation. Therefore, visually similar areas should be regarded as being of uniform composition. Samples will be taken using a sharp knife, a cork borer or hand drill and will be collected in self seal plastic bags. The sample reference number will be recorded on the sample bag. Where appropriate, a label will be left on the site adjacent to the sample location. This label indicates the sample number for cross-reference with the report. Photographs will be taken at every sampling location to confirm site details. The object of carrying out sampling is to identify the nature and extent of any visible asbestos.
- 1.6 Due to the age, use and construction of the Marsa Power Station, ACM may have been used/ present in the past but may have been removed or part removed and some residue may still exist. The only knowledge and documentation of any past ACM activity or monitoring is being referred by the undersigned from his personal files.
- 1.7 The Guidelines, LN's and EC Directives that were followed during the survey were the following:
  - 1.7.1 The UK HSE HSG264, The Asbestos Survey HSE Books, 2010
  - 1.7.2 Legal Notice 122 of 2003.
  - 1.7.3 Legal Notice 123 of 2003 amended by L.N. 323 of 2006.
  - 1.7.4 OSHA Consultation Process on Amending OHS Legislation on Asbestos, 2006.
  - 1.7.5 Guide to good practice for Working in Confined Spaces, ATEX Directive 1999/92/EC - The Work Place (Minimum Requirements for Work).
  - 1.7.6 UK HSE Asbestos: The analysts' guide for sampling, analysis and clearance procedures, 2005.
  - 1.7.7 LN323 of 2006 Protection of Workers from Risks related to Exposure to asbestos at Work Regulations.
  - 1.7.8 Enemalta Asbestos Policy Document provided in Appendix 4: Documents Doc1 - Asbestos Policy.

- 1.7.9 Extracts from Tender GN/MPS/T/17/2010 found in Appendix 3  
Procedures Pro 3 - Extracts from Removal of Asbestos  
T/17/2010.pdf

2.0 GENERAL SITE AND SURVEY INFORMATION.

- 2.1 The Marsa Power Station structures are to be demolished except for:
- 2.1.1 The underground 'A' Station.
  - 2.1.2 The Administration Building and Main gate security rooms.
  - 2.1.3 The inlet Jetty and Gas Turbine 9, its associated fuel tank (situated in Zone 5, with all its piping and control equipment.



Figure 1. Marsa Power Station Delineated Zones (Reference: Tender Decommissioning, Dismantling & Demolition, Marsa Power Station. Project Description Statement)

- 2.2 This PRELIMINARY REPORT 2 refers to the Survey carried out over the Marsa Power Station Zone 6 and Zone 7, as shown in Figure 2, as the areas delineated inside the white borders.
- 2.3 The major equipment in Zone 6 is Boiler Nr 7 which is physically linked through a common steam header to steam Turbines 2 to 7.
- 2.4 The Survey was carried out during the period 10 – 17 July 2016.
- 2.5 The Details of the Buildings within Zone 6 and Zone 7 consist of the following:
- 2.5.1 Boiler Nr 7.
  - 2.5.2 Chimney MPS 3.
  - 2.5.3 The MPS laboratory building.
  - 2.5.4 The Open Cycle Gas Turbine in Zone 7.

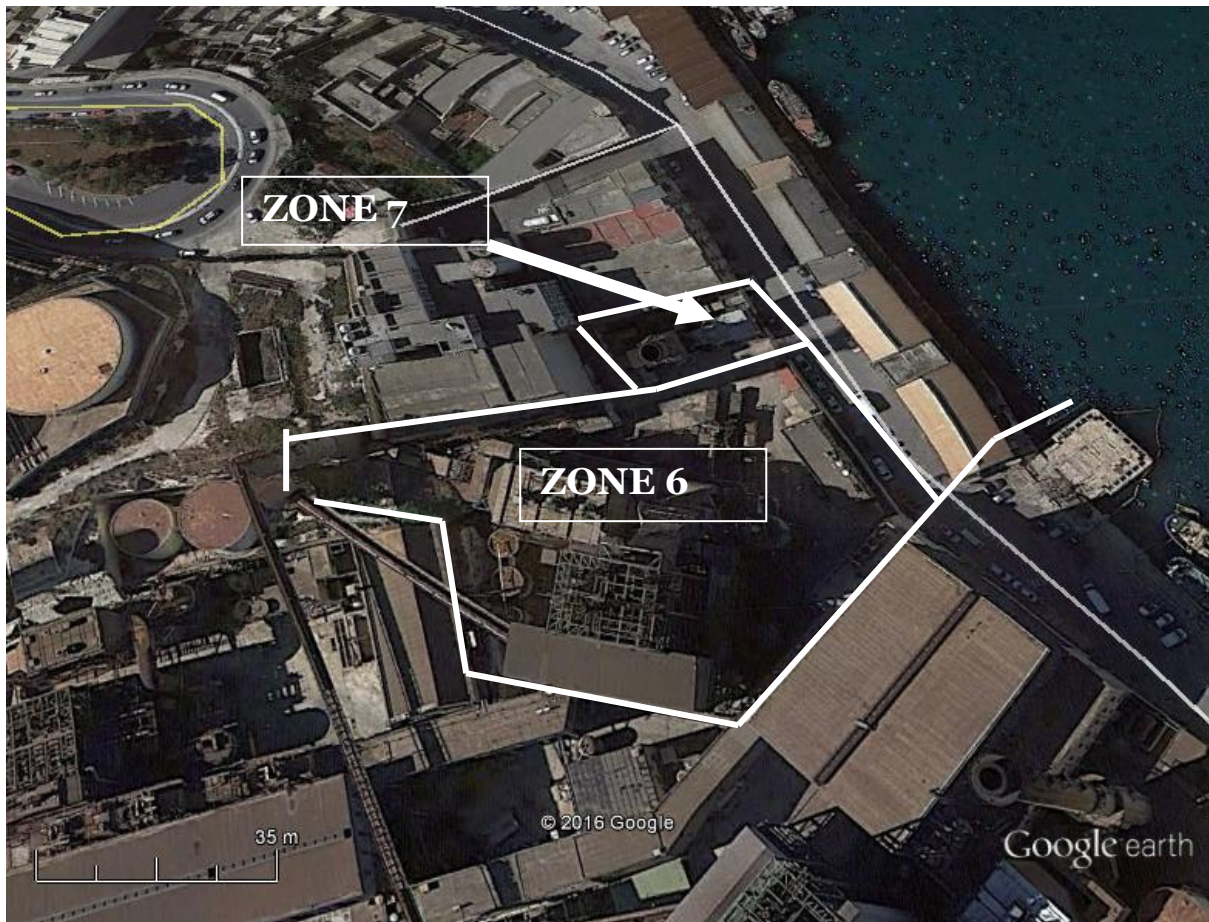


Figure 2. Delineated areas of Zone 6 and Zone 7





Figure 3. Boiler Number 7



Figure 4. Laboratory Building



Figure 5. Open cycle Gas Turbine



Figure 6. Water Drain pipes located on the south-east side of Zone 6.



### 3.0 SURVEY RESULTS (INCLUDING MATERIAL ASSESSMENT RESULTS).

3.1 By referring to Figure 7, the following items located within Zone 6 were confirmed to contain asbestos fibres:

3.1.1 Samples Z6.1 from FOUR identical storm water drain pipes, fixed against the western wall of the Turbine Hall 8, on the side of Zone 6.  
The pipes consist of ACM-containing cement pipes.

3.2 Sampling from the base of Chimney No 3 was carried out by ADI personnel. The sample collected was measured for the presence of ACM and proved to be negative. However, Enemalta's records indicate that ACM may be present in the upper sections of this Chimney, at levels greater than 10m from the ground. Further sampling would therefore have to be carried out when appropriate scaffolding is erected around the upper levels of Chimney 3.

3.2 Sampling and analysis of the bulk samples collected throughout the survey was based on the United Kingdom Health and Safety Executive 'Asbestos: The Analysts' guide for sampling, analysis and clearance procedures'. The microscopical measurements were conducted on a polarized light microscopy 100X magnification on the isolated suspect single fibres.

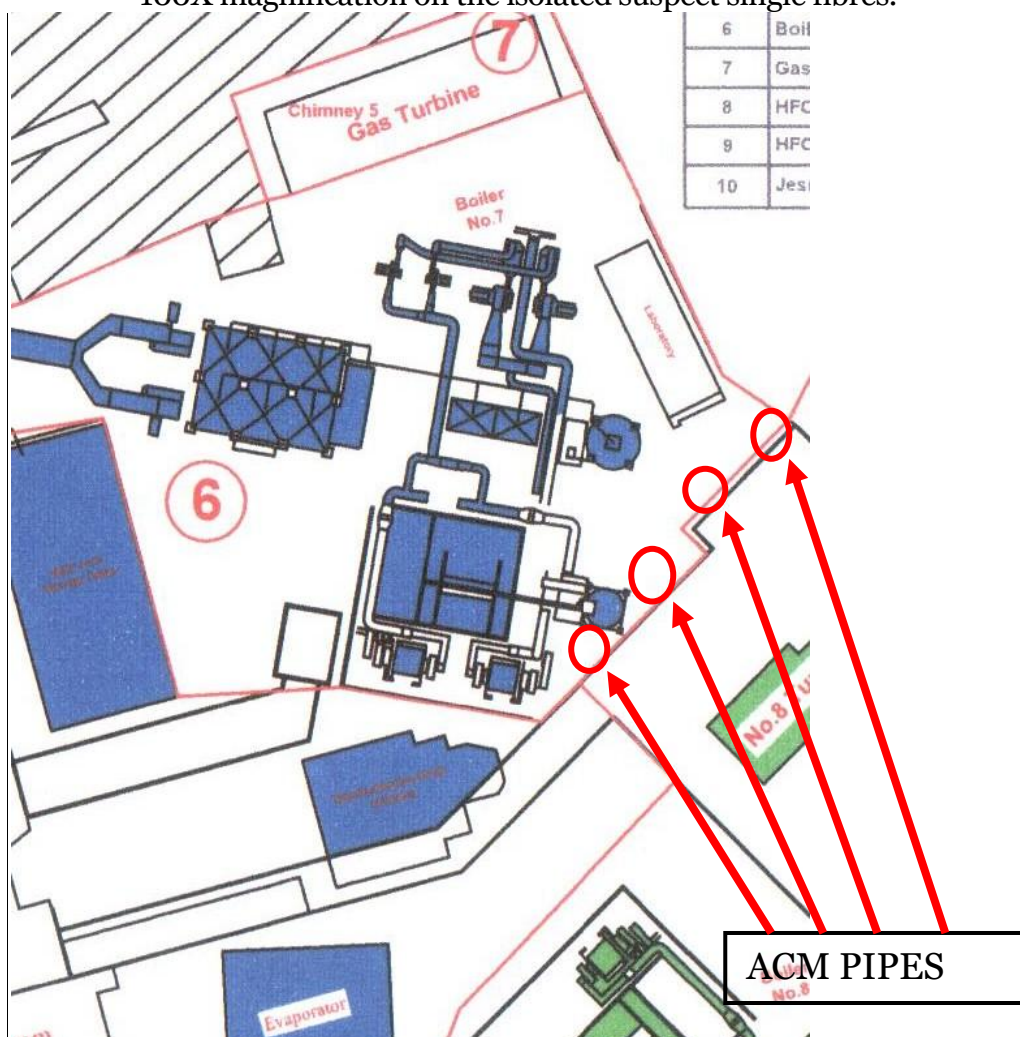



Figure 7 Presence of ACM within ZONE 6 and ZONE 7.

Location Description		Zone 6. ACM Material assessment algorithm: Storm Water Drain Pipes	
ACTION following survey			
Sample variable	Score	Examples of scores	
Product type (or debris from product)	1	Asbestos-reinforced composites (plastics, resins, mastics, roofing felts, vinyl floor tiles, semi-rigid paints or decorative finishes, asbestos cement etc).	
	2	AIB, millboards, other low-density insulation boards, asbestos textiles, gaskets, ropes and woven textiles, asbestos paper and felt.	
	3	Thermal insulation (eg pipe and boiler lagging), sprayed asbestos, loose asbestos, asbestos mattresses and packing.	
Extent of damage/ deterioration	0	Good condition: no visible damage.	
	1	Low damage: a few scratches or surface marks, broken edges on boards, tiles etc.	
	2	Medium damage: significant breakage of materials or several small areas where material has been damaged revealing loose asbestos fibres.	
	3	High damage or delamination of materials, sprays and thermal insulation. Visible asbestos debris.	
Surface treatment	0	Composite materials containing asbestos: reinforced plastics, resins, vinyl tiles.	
	1	Enclosed sprays and lagging, AIB (with exposed face painted or encapsulated) asbestos cement sheets etc.	
	2	Unsealed AIB, or encapsulated lagging and sprays.	
	3	Unsealed lagging and sprays.	
Asbestos type	1	Chrysotile.	
	2	Amphibole asbestos excluding crocidolite.	
	3	Crocidolite.	
Total	2	REMARKS: VERY LOW POTENTIAL RELEASE OF ASBESTOS FIBRES.	
Score	Potential to release asbestos fibres		
10 or more	High		
7-9	Medium		
5-6	Low		
4 or less	Very Low		
Non-asbestos materials have no potential to release asbestos fibres			
DATE OF ASSESSMENT		16/7/16	
NAME OF SURVEYOR		Dr George Peplow	
Reference	The Asbestos survey HSE Books 2010 Appendix 4 page 68		

Table 1. Material Assessment Algorithm for ACM in Zone 6.

**SURVEY SUMMARY REPORT: PRESENCE OF ACM IN ZONE 6. Storm Water Drain Pipes.** Table 2, cont'd. Summary Report. Presence of ACM

BUILDINGS	West outside wall of Hall Turbine 8	INSPECTION DATE	10 – 15 July 2016
LOCATION ID	Figures 6-7	ACCESS RISKS: No risks if pipes are removed without any breakages.	
ROOM/ AREA	West outside wall of Hall Turbine 8, south-west side of Zone 6		
LABORATORY RESULTS	RESULTS	Contain chrysotile asbestos fibres	
	RESULT REF	Z6.1	
MATERIAL/ DESCRIPTION/ ACTION (Amounts shown are approximate and must be checked on site.)	FOUR storm water Drain Pipes.  <b>Length 12m                      Diameter 35 cm</b>		
	PRODUCT TYPE	ACM cement	
	EXTENT OF DAMAGE	Undamaged ACM	
	CONDITION	Satisfactory	
	SURFACE TREATMENT	N/A	
	FRIABILITY	Low	
	ASSESSMENT SCORE	2 (Refer to Table 1)	
<b>SURVEY SUMMARY REPORT: PRESENCE OF ACM IN ZONE 6. Drain Pipes,</b> continued.			
COMMENTS: The handling of the Pipes should be carried out with caution, avoiding any accidental breakages during handling. All the asbestos containing material locations were marked 'X' in RED.			
REMOVAL POTENTIAL RISK	Low if standard procedures are adopted		
DISTURBANCE RISK	Unlikely		
APPROX REMOVAL TIME	2-3 days		
DATE OF SURVEY	16/7/16		
NAME OF SURVEYOR	Dr George Peplow		



4.0 SAMPLING AREAS FROM BOILER NO 7 CONFIRMING THE ABSENCE OF ASBESTOS-CONTAINING-MATERIALS.

- 4.1 Thorough representative sampling and analysis for the presence of asbestos fibres in bulk samples, was carried out on the following parts of Boiler No 7:
- 4.1.1 insulation materials on the external parts of Boiler No 7,
  - 4.1.2 insulation material from the metal plate-faces enclosing Boiler 7,
  - 4.1.3 representative samples of tubing insulation leading into and out of the boiler,
- 4.2 All analytical results of all the collected samples proved negative and confirmed the ABSENCE of asbestos-containing-materials in the external parts of Boiler No 7.
- 4.3 The sampling points included, but were NOT EXCLUSIVE TO, the areas indicated in the following figures:

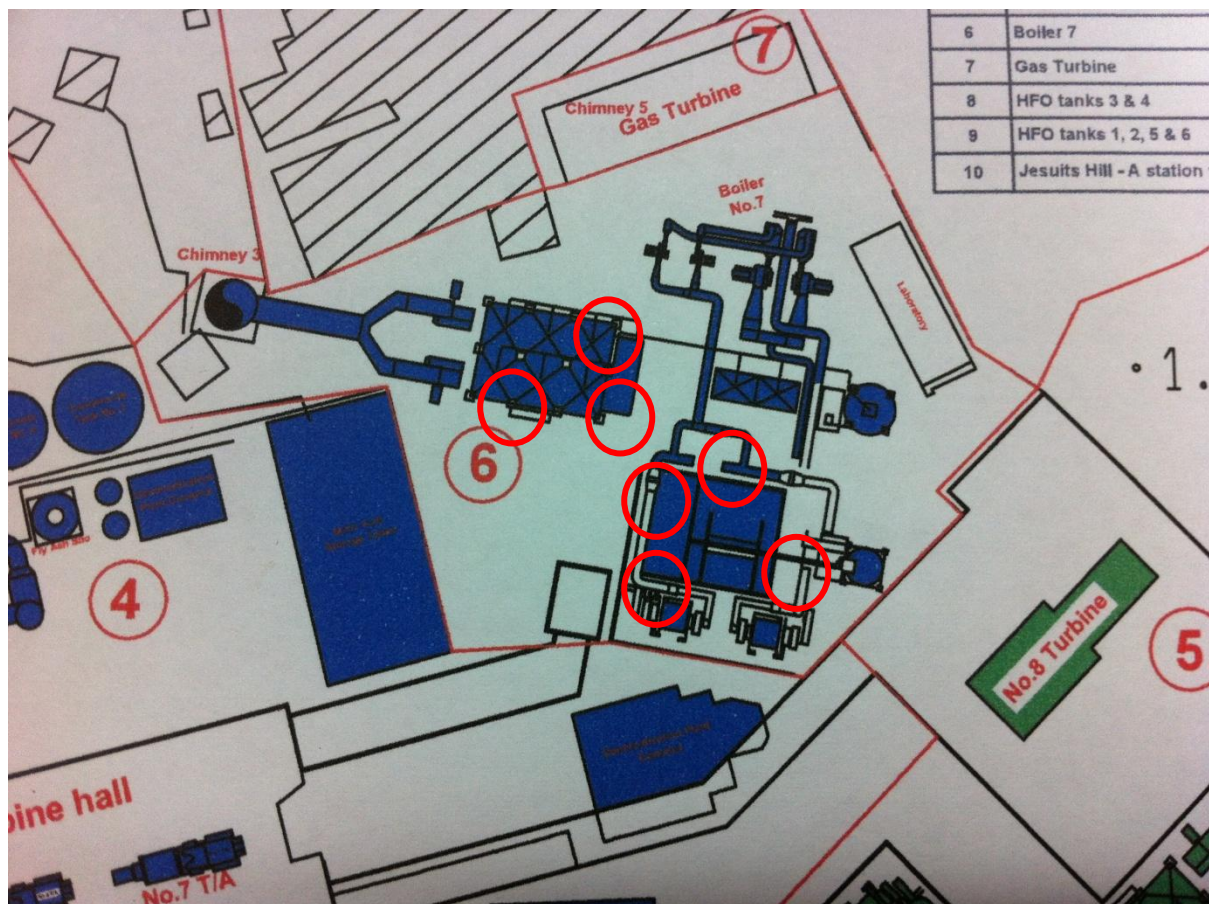


Figure 8. Sampling Areas in Boiler 7 for ACM. Absence of ACM confirmed.



Figure 9. Boiler No 7. South side sampling.



Figure 10. Boiler Nr 7. Sampling beneath structure





Figure 11. Boiler No 7 Various insulation from pipework



Figure 12. Boiler No 7 Insulation from underneath cover panels, north side.



Figure 13. Boiler No 7 Insulation from exposed parts middle areas.



Figure 14. Boiler No 7 Open porthole, residue samples.

## 5.0 CONCLUSIONS AND ACTIONS.

- 5.1 ACM Drain Pipes: the ACM pipes shall be dismantled without breakages in the standard methodology established by law, wrapped in high density polyethylene sheets and carted out from the MPS.
- 5.2 Used bolts and supports should be considered as containing ACM, and should either be decontaminated rigorously or exported as ACM.
- 5.3 Some switchgear items present within Zone 6 and Zone 7 could not be inspected since they were still connected to the grid during the inspection.
- 5.4 It is being recommended that sampling for the possible presence of ACM in the electrical switchgear mentioned, is conducted during the dismantling operation. As soon as the dismantling operation is under way, the undersigned shall conduct the necessary sampling and issue the result within 2 hours from sampling. The removal of any asbestos-contaminated switchgear may then commence forthwith.
- 5.5 Additional sampling has to be carried out from the upper parts of Chimney No 3, at levels greater than 10m from ground levels. For this purpose it is necessary to erect appropriate scaffolding.
- 5.6 The Gas Turbine in Zone 7 would have to be sampled since it is currently padlocked.

DR GEORGE PEPLow

28 JULY 2016



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15 October 2016

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Dear Perit Farrugia

## **INSPECTION, SAMPLING AND ANALYSIS OF INSULATION MATERIAL FROM CHIMNEY M4, MARSA POWER STATION**

### Executive Summary.

The undersigned inspected, sampled and analysed representative samples of insulation material collected from inside Chimney Nr M4, located adjacent to Boiler No 8. The material was located at specific points shown in the attached drawing, indicated as 'suspected asbestos'. The fleecy material was confirmed to consist of rock-wool. No traces of asbestos fibres could be identified. The method of analysis was based on the UK Health and Safety Executive standard method.

### 1.0 Introduction.

#### 1.1 Scope of Inspection.

- 1.1.1 Enemalta requested Bezzina Group to inspect, sample and analyses samples of suspect material from Chimney Number M4 since 'old' drawings indicated the possibility of asbestos presence at specific areas along the height of the chimney.
- 1.1.2 Bezzina Group appointed the undersigned to carry out he requested inspection with the objective of confirming the absence of asbestos containing material (ACM) on the inside surface of the chimney.

#### 1.2 Location information.

- 1.2.1 Chimney Number M4 is located adjacent to Boiler Number 8 and is projected to be dismantled by the Bezzina Group. Diagram 1 shows the location of the alleged asbestos material at certain points inside the chimney.

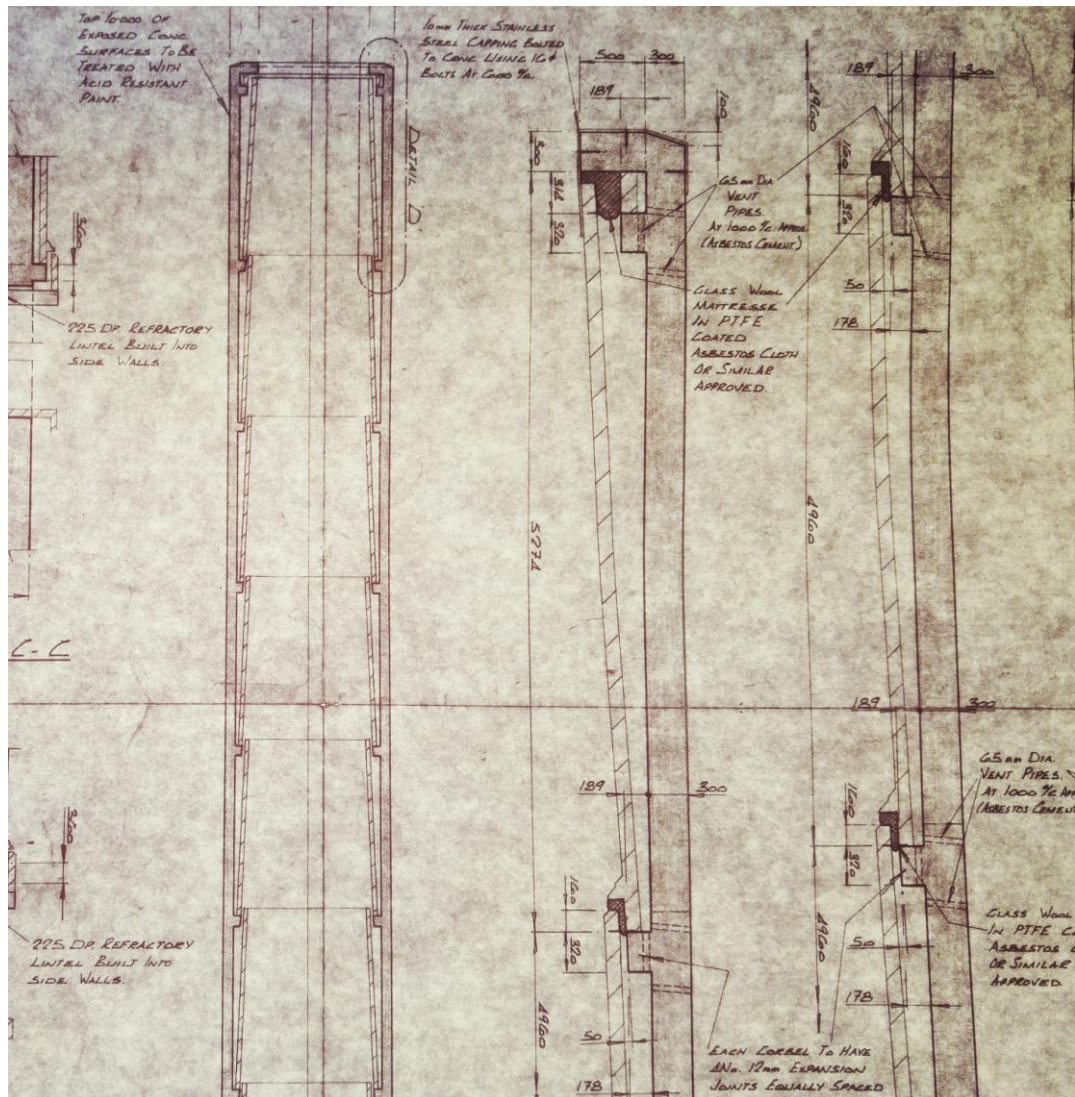


Diagram 1 The alleged sites of the presence of asbestos materials.

## 2.0 Inspection, Observations, Sampling and Analysis.

- 2.1 The inspection was carried out on Monday 10 October 2016. Members present during the inspection were: Ing Albert Bonnet for Enemalta, Perit George Farrugia and Mr Gino Gambin for Bezzina Group.
- 2.2 Access to the inside of the Chimney was through the exhaust ducting from Boiler Nr 8 into the side of the Chimney, about 10 metres from ground level. At this level, the Chimney floor was composed of caked ash. Access to the levels of clefts where ACM material was alleged to be present, were gained by means of telescopic ladders.
- 2.3 The fleecy material was first exposed by means of a light pick, to remove caked deposits of ash material. Representative quantities of the material was collected in plastic bags.
  - 1.1.1 The samples were analysed in the lab by microscopic analysis according to the UK HSE Asbestos: The analysts' guide for sampling, analysis and clearance procedures, 2005.

- 2.4 The analysis confirmed the ABSENCE of asbestos fibres in the collected representative samples.
- 2.5 The analysis confirmed that the insulation material consisted of ROCK WOOL insulation material.

### 3.0 Conclusion.

The material indicated in the chimney drawing as suspected asbestos consists of rockwool which is free from asbestos fibres.

DR GEORGE PELOW

15 October 2016.



**Appendix 3:**  
**Results of coal testing for radioactivity**



# TRITON NDT LTD.

Level 1, Mon. Services Center,  
National Rd., Blata l-Bajda HMR9011  
Malta  
Tel: +356 79733875  
VAT Reg. No.1994-7719  
Email: aldo@tritonmalta.com

## RADIATION SURVEY REPORT

Doc. No.: TR QD007

Report N°.: TR RSURV 05/16

Job No.: TR NDT- 785

Sheet: 1 of 1

### Location Details

**Location:** Marsa Power Station - Coal Hopper Spreader

**Substance:** Coal


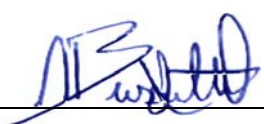

**Client:** ADI Associates

### Measurements in $\mu\text{Sv/h}$

Maximum dose rate value of coal	0.1 $\mu\text{Sv/h}$ @ contact
Background radiation value in the area	0.1 $\mu\text{Sv/h}$
Details of the monitoring equipment used for scanning	Mini 900 Scintillation monitor. Ser No.B0000510
Details of the monitoring equipment used for recording dose rate	Gamma-Scout. Ser No.043737

**Hazards:** No Radiation Hazard.



Name of person conducting the monitoring	Aldo Busuttill - Qualified Expert (OHSa Malta) I.D.:315574
Official stamp of monitoring organisation/company	
Signature of persons conducting monitoring	 
Date of monitoring	19 / 04 / 2016

**Appendix 4:**

**List of the mercury switches found at the Marsa Power Station**

## **MERCURY SWITCHES AT MARSA POWER STATION**

### **33KV/ 11 kV Transformers used at MPS**

Description	Manufacturer	Serial No.	No. of Mercury Switches
Interbus No.1	Yorkshire	Y17331	8
Generator No.3	Yorkshire	17329	8
Generator No.4	Yorkshire	17330	8
Generator Trans. No.5	Parsons Peebles	44366	10
Generator Trans. No.6	Parsons Peebles	44367	10
Generator Trans. No.7	A.B.B	NT7458A	10
Interbus No.2	Parsons Peebles	44368	10
No.8 Gen. Trans.	Pauwels Trafo	85.4.4836	8
Reactor Voltage Booster No.1			8
Reactor Voltage Booster No.2			8

### **33KV/ 3.3 kV Station Transformers**

Description	Manufacturer	Serial No.	No. of Mercury Switches
Station Tx1	Brush	64588	4
Station Tx2	Brush	64589	4
Station Tx3	Brush	64590	4
Station Tx3A	YORKSHIRE	Y17332	4
Station Tx4	YORKSHIRE	Y17333	4
Station Tx5	Parsons Peebles	1PA3921	4
Station Tx6	Parsons Peebles	2PA3921	4
Station Tx7	O.T.E	70679	6
UNIT 8A	STEM TRENTO Spa	6323/1	2
UNIT 8B	BRYCE	10664/1	5
Boiler Tx. 7	O.T.E	70680	6

### Generation Auxiliary transformers 3.3 kV / 415 V and 3.1 kV / 230 V

Description	Manufacturer	Serial No.	No. of Mercury Switches
BOILER DISTILLER Tx2	Brush	64593	4
T/A 1 AUX. Tx	Brush	64595	4
T/A 2 AUX. Tx	Brush	64594	4
GEN AUX. Tx. A	Brush	64596	4
GEN AUX. Tx. B	Brush	64597	4
GEN AUX. Tx. C	YORKSHIRE	Y17337	4
GEN AUX. Tx. D	YORKSHIRE	Y17338	4
BOILER DISTILLER Tx3	YORKSHIRE	Y17335	4
BOILER DISTILLER Tx4	YORKSHIRE	Y17330	4
T/A 3 AUX. Tx	YORKSHIRE	Y17339	4
T/A 4 AUX. Tx	YORKSHIRE	Y17340	4
Station Aux. Tx 5	s.e.a. S.p.a	23829	*
Station Aux. Tx 6	s.e.a. S.p.a	23827	*
Precipitator Tx. 6	Parsons Peebles	IPA 3922	*
T/A AUX. Tx 7A	s.e.a. S.p.a	23828	*
T/A AUX. Tx 7B	O.T.E	70681	*
Boiler Aux. Tx. 7A	Elettromeccanica Verbano S.p.a	12905	*
Boiler Aux. Tx. 7B	Elettromeccanica Verbano S.p.a	12907	*
UNIT AUX. Tx. 8A	STEM TRENTO Spa	6324/1	*
UNIT AUX. Tx. 8B	STEM TRENTO Spa	6324/2	*
415 V Supplies Tx. 8C	BRYCE ELECTRIC CONST. Co Ltd	10664/5	*
415 V Supplies Tx. 8D	BRYCE ELECTRIC CONST. Co Ltd	10664/4	*
Precipitator Tx. 8E	BRYCE ELECTRIC CONST. Co Ltd	10664/9	*
Precipitator Tx. 8F	BRYCE ELECTRIC CONST. Co Ltd	10664/6	*
GENERAL services Tx 8j	BRYCE ELECTRIC CONST. Co Ltd	10664/7	*
GENERAL services Tx 8H	BRYCE ELECTRIC CONST. Co Ltd	10664/8	*
Distillate Pump Rm.	YORKSHIRE	Y17334	4

Tx1			
Distillate Pump Rm. Tx2	BRUSH	Y17334	4

### Others

Description	No. of Mercury Switches
Turbine 5 Lube Oil Panel	5
Turbine 6 Lube Oil Panel	5
Turbine 8 Lube Oil Panel	3

\* From outside, Buchholtz relay cannot be identified if it contains mercury switches for its alarm and trip signals, as they are sealed.

**Appendix 5:**

**List of Batteries found at the Marsa Power Station**

## **Batteries Information – Weight and Dimensions**

<b>Location (No. of cells)</b>	<b>Manufacturer name</b>	<b>Capacity</b>	<b>Weight per cell</b>	<b>Dimensions per cell</b>
PABX room 24dc (12 cells)	Tungstone - Hawker cell type HAPI3 Lead acid - Planté	62.4Ah @10hours to 1.75Vpc	Filled/dry weight = 9.3 kg/6.0 kg Acid volume = 2.7 litres	LXWXH = 191X134X261mm
220V dc units 1 – 4 (110 cells)	Tungstone – Hawker cell type HBP25 Lead acid - Planté	300Ah @ 10 hours to 1.85Vpc	Filled/dry weight = 40.7 kg/30.8 kg Acid volume = 8.0 litres	LXWXH = 274X189X406mm
120V dc units 5 – 7 (60 cells)	Chloride – Hawker cell type YCP25 Lead acid - Planté	300Ah @ 10 hours to 1.85Vpc	Filled weight =43.4 kg Acid Volume = 10.0 Litres	LXWXH = 286X203X423mm
220V dc units 5 – 7 (110 cells)	Chloride – Hawker cell Lead acid - Planté type YHPII	500Ah @ 10 hours to 1.85Vpc	Filled weight =95.2 kg Acid volume = 27.1 Litres	LXWXH = 230X368X682mm
Siemens 110V Control room (55 cells)	Fiamm Cell type SGH 15D Lead acid - Planté	700Ah@ 10 hours to 1.85Vpc	Filled/dry weight = 114 kg/82 kg Acid volume = 26.2 litres	LXWXH = 328X268X607mm
Siemens 110V Control room (55 cells)	Fiamm Cell type SGH 15D Lead acid - Planté	700Ah@ 10 hours to 1.85Vpc	Filled/dry weight = 114 kg/82 kg Acid volume = 26.2 litres	LXWXH = 328X268X607mm
125V dc Boiler 7 (64 cells)	CEAC – Sonnenschein 8GROE 200R Lead acid - Planté	200Ah @ 10 hours	Filled weight =33.2 kg Acid weight = 9.4 kg	LXWXH = 192X228X411mm
220V dc Boiler 7 (110 cells)	Powersafe VRLA Type RG13	400Ah @ 10 hours to 1.80Vpc	Filled weight = 26.2 kg	LXWXH = 195X208X260mm
110V Unit 8 (55 cells)	Tungstone – Hawker HCPI3 Lead acid - Planté	600Ah @ 10 hours to 1.85Vpc	Filled/dry weight = 105 kg/71.4 kg Acid volume = 28.0 litres	LXWXH = 257X366X592mm
240V dc Unit 8 (120 cells)	Tungstone – Hawker HBS33 Lead acid - Planté	400Ah @ 10 hours to 1.85Vpc	Filled/dry weight = 52.7 kg/39.9 kg Acid volume = 10.5 litres	LXWXH = 350X189X406mm
Fire pump room	2 X ALCAD	55Ah @ 5 hours	Acid volume =	



Location (No. of cells)	Manufacturer name	Capacity	Weight per cell	Dimensions per cell
8 24Vdc	UHP55 – 20 cells NiCD		1.2 litres	
Screen house Cummins 24Vdc	2 X ALCAD UHP50 - 20 cells NiCD	45Ah @ 5 hours	Acid volume = 0.7 litres	
Screen house Iveco 24Vdc	2 X 12V batteries 638CCA Lead acid – vehicle type	120Ah		