



Operational Techniques and Monitoring Plan

Pengarnddu Industrial Estate Transfer Station

Hampshire Demolition and Recycling Limited

Report No: CRM.0127.001.PE.R.006



Contact Details:

Enzygo Ltd. (Bristol Office)
The Byre
Woodend Lane
Cromhall
Gloucestershire
GL12 8AA

tel: 01454 269237
email: steph.charnaud@enzygo.com
www: enzygo.com

Operational Techniques and Monitoring Plan

Project:	Pengarnddu Industrial Estate Transfer Station
For:	Hampshire Demolition and Recycling Limited
Status:	FINAL
Date:	May 2020
Author:	Steph Charnaud, Director of Permitting
Reviewer:	Peter Cumberlidge, Company Director

Disclaimer:

This report has been produced by Enzygo Limited within the terms of the contract with the client and taking account of the resources devoted to it by agreement with the client.

We disclaim any responsibility to the client and others in respect of any matters outside the scope of the above.

This report is confidential to the client and we accept no responsibility of whatsoever nature to third parties to whom this report, or any part thereof, is made known. Any such party relies on the report at their own risk.

Enzygo Limited Registered in England No. 6525159

Registered Office Stag House Chipping Wotton-Under-Edge Gloucestershire GL12 7AD

Contents

1.0	Introduction	1
1.1	Overview	1
1.2	Site Location	1
1.3	Regulated Activities	1
1.4	Relevant Legislation and Guidance	1
1.5	Scope of the Report	1
2.0	Operating Techniques	2
2.1	Overview	2
2.2	Waste Storage	2
2.3	Waste Treatment	1
2.4	Description and Location of Stockpile 13	1
2.5	Pre-acceptance Procedures for Stockpile 13	1
2.6	Waste Acceptance Procedures for Stockpile 13	1
2.7	Waste Treatment Proposed for Stockpile 13	1
3.0	Emissions Control	2
3.1	Overview of Releases	2
3.2	Control of Point Source Emissions to Water and Land	2
3.3	Control of Point Source Emissions to Air	2
3.4	Control of Fugitive Releases to Water, Land and Groundwater	1
3.5	Control of Emissions of Odour	1
3.6	Site Security	1
3.7	Management	1
3.8	Waste Recovery or Disposal	1
3.9	Noise	1
3.10	Accidents	1

3.11	Monitoring.....	1
3.12	Decommissioning and Closure	1
3.13	Operator Competency.....	1
4.0	Records and Reporting.....	3
4.1	General Overview.....	3
4.2	Reporting.....	3

Tables and Figures

Table 1.3.1:	Regulated Activities	1
Table 2.2.1:	Waste Types and Storage Capacities	1
Table 2.3.1:	Proposed Waste Treatment Methods	1
Table 2.5.1	Indicative BAT requirements for Waste Pre- acceptance	1
Table 2.5.1	Indicative BAT requirements for Waste Acceptance	1
Table 3.3.1:	Indicative BAT Requirements for Control of Fugitive Emissions to Air (Dust)	1
Table 3.4.1:	Indicative BAT Requirements for Control of Fugitive Emissions to Water	1
Table 3.5.1:	Indicative BAT Requirements for control of odour	1
Table 3.9.1:	Indicative BAT Requirement for the Control of Noise and Vibration	1
Table 3.11.1:	Point Source Emissions to Land	1

Drawings and Appendices

Appendix A – Waste Codes.....	4
Appendix B – Environmental Management System Summary	9
Appendix C – Opus International Consultants, Environmental Assessment Report	10

Appendix D -Stockpile 2 Waste Transfer Information	11
--	----

1.0 Introduction

1.1 Overview

- 1.1.1 This Operational Techniques and Monitoring Plan (OTMP) provides information to support an Environmental Permit Application for a hazardous waste transfer station with treatment. It provides details of operational techniques that will be used to minimise and control emissions from the proposed waste transfer station.
- 1.1.2 The Facility is to occupy an area of approximately 1.73ha and is located on Pengarnddu Industrial Estate. The site was previously operated by Merthyr Industrial Services Limited (MIS) who operated a waste management facility and biomass boiler. That operation was abandoned in December 2014 after court proceedings and numerous piles of waste and plant and equipment were left on the site, the majority of which are still in-situ.
- 1.1.3 This Permit Application is to permit the treatment and removal of waste, plant and equipment currently present on the site. MIS left 13 piles of waste on the land at Pengarnddu Industrial Estate. The Proposed Permit Boundary will cover 12 no. of the material stockpiles and the operational areas where waste treatment processes will be undertaken. The only waste the Operator intends on importing into the site is the waste present in the material stockpiles referred to as 'Stockpile 2' and Stockpile 13'.
- 1.1.4 The Site shall be operated by Hampshire Demolition and Recycling Limited, hereby referred to as 'the Operator'.

1.2 Site Location

- 1.2.1 The Facility will be located at:

Pengarnddu Industrial Estate Transfer Station
Unit 2 Pengarnddu Industrial Estate
Pengarnddu
Merthyr Tydfil
Wales
CF48 2TA

- 1.2.2 The site is centred at National Grid Reference (NGR) **SO 07780 08940**. The site location is shown on the drawing referenced CRM.0127.001.PE.D.001 Site Location Plan.
- 1.2.3 The boundary of the Facility is illustrated in green on the drawing referenced CRM.0127.001.PE.D.002 Site Layout Plan.

1.3 Regulated Activities

- 1.3.1 The Operator is applying to Natural Resources Wales (NRW) to operate a Waste Transfer Facility with Treatment to treat the waste which has been abandoned at the above site. As such, a bespoke waste operation application has been prepared to fully assess the risks posed by the activity, by comparing the proposed techniques with those recommended in the relevant Natural Resources Wales (NRW) guidance documents and the Best Available Techniques (BAT) Reference document for Waste Treatment.
- 1.3.2 The proposed facility will initially be treating material stockpiles already present within the proposed permit boundary in addition to the imported 'Stockpile 2', with a view to clearing the

site. Once areas are cleared within the site, the Operator will begin to import material from 'Stockpile 13'.

1.3.3 The waste codes to be treated at the site have been agreed with Catriona Harvey at NRW and a full list of these are provided in Appendix A.

1.3.4 The scope of all proposed regulated activities is summarised in Table 1.3.1 below.

Table 1.3.1: Regulated Activities

Name of the Waste Operation	Description of the Waste operation	Annex I (D Codes) and Annex II (R Codes) and Descriptions	
Pengarnddu Industrial Estate Transfer Station	Treatment and Transfer of hazardous and non-hazardous wastes: Household, Commercial and Industrial	Annex I Codes and descriptions	
		D13: Blending or mixing prior to submission to any disposal operation numbered D1 to D12	
		D14: Repackaging prior to submission to any of the operations numbered D1 to D13.	
		D15: Storage pending any of the operations numbered D1 to D14 (excluding temporary storage, pending collection, on the site where it is produced).	
		D9: Physico-chemical treatment of waste not listed elsewhere in this Part of this Schedule which results in the final compounds or mixtures with are discarded by means of any of the operations listed in paragraphs 1 to 12 of this Part of this Schedule (for example evaporation, drying, calcination)	
		Annex II Codes and Descriptions	
		R2: Recycling or reclamation of organic substances which are not used as solvents.	
		R3: Recycling/reclamation of organic substances which are not used as solvents (including composting and other biological transformation processes).	
		R4: Recycling/reclamation of metals and metal compounds.	
		R5: Recycling/reclamation of other inorganic materials.	
		R13: Storage of wastes pending any of the operations numbered R1 to R12 (excluding temporary storage, pending collection, on the site where it is produced).	
		<u>Total Waste Storage Capacity</u>	3,500 tonnes
		<u>Non-Hazardous Waste Treatment Capacity</u>	28 tonnes per day
		<u>Hazardous Waste Treatment Capacity</u>	10 tonnes per day
		<u>Hazardous Waste Storage Capacity</u>	< 50 tonnes at any one time

1.4 Relevant Legislation and Guidance

1.4.1 The proposed activities are subject to a number of National, European and International legislation and statutory and non-statutory guidance documents. Operators are required, through the Environmental Permitting Application process, to demonstrate how they will comply with the relevant requirements of this legislation and guidance.

1.4.2 In relation to the proposed waste operations, the following legislation and guidance are considered relevant:

- Waste Framework Directive;
- Environmental Permitting (England and Wales) Regulations 2016 (as amended 2019);
- How to Comply with your Environmental Permit, V8 October 2014;
- Sector Guidance Note S5:06: Guidance on the Recovery and Disposal of hazardous and Non-Hazardous Waste, May 2013 (updated October 2018);
- Best Available Techniques Reference Document for Waste Treatment, 2018;
- Natural Resources Wales Horizontal Guidance Notes; and
- Natural Resources Wales Regulatory Guidance Notes.

1.5 Scope of the Report

1.5.1 This OTMP outlines the operating procedures of the proposed Facility and describes how they meet the standards set out in relevant NRW guidance and industry best practice. The report also describes how emissions from the facility will be controlled and monitored, and how the site will be managed in accordance with the Environmental Permit.

2.0 Operating Techniques

2.1 Overview

- 2.1.1 The first stage of the operation is focussed on the treatment of waste material which is currently present on the site - in preparation for recovery, recycling or disposal. The purpose of the operation is to clear the site of waste in preparation for future uses.
- 2.1.2 The report produced by Opus on behalf of Merthyr Tydfil County Borough Council (MTCBC) in February 2017 gives an indication of the quantity of waste currently on the site. The known quantity of waste material within the Proposed Permit Boundary is approximately 2,704.3 tonnes, based on assumed density factors. Redundant plant and machinery from the previous operator also remain on site which is also considered to be waste.
- 2.1.3 The second phase of the operation will involve importing material from Stockpile 13 into the Proposed Permit Boundary.
- 2.1.4 Stockpile 13 comprises approximately 13,982 tonnes of material. Its estimated composition, based on the Opus reports provided, is as follows:
- 9,651 tonnes of hazardous trommel fine type material (including wood fragments and asbestos);
 - 3,205 tonnes of inert demolition type material; and
 - 1,126 tonnes of non-hazardous household waste type material (if separable from surround trommel fines).
- 2.1.5 A further 3,000m³ of 'unknown wastes' are located in the area referred to in the report as 'unmade ground,' outside of the Proposed Permit Boundary. This material is currently inaccessible and located underneath Stockpile 13. Treating this material has not been considered within this permit application as the Operator has been unable to characterise it sufficiently at this stage.
- 2.1.6 The Facility will have the capacity to process 11,600 tonnes of waste per annum, consisting of 8,550 tonnes of non-hazardous and 3,050 tonnes of hazardous waste, based on 305 operational days per annum. Hazardous material from Stockpile 13 will be imported, treated and exported from the site in a phased approach to ensure no more than 50 tonnes is stored within the Proposed Permit Boundary at any one time.
- 2.1.7 A complete list of waste types to be treated is provided within Appendix A to this report.

2.2 Waste Storage

- 2.2.1 Current storage arrangements of the material already located within the Proposed Permit Boundary (Stockpiles 1 to 12) are detailed in Table 2.2.1 below. The majority of the wood from Stockpile 2 has been removed and taken to Trecatti Landfill site. The records of this removal are included in Appendix D to this report.
- 2.2.2 Information is taken from the report produced by Opus on behalf of Merthyr Tydfil County Borough Council.

Table 2.2.1: Waste Types and Storage Capacities

Stockpile Number	Description of Wastes Present	Location of Waste	Quantity of Waste Present
1	Unprocessed/Screened oversize wood/timber EWC 19 12 07. Testing by Opus showed one sample with a lead value of 222mg/kg. No asbestos recorded	Located on the bituminous surfaced area in front of the exiting site building. To the northern end. Located on concrete hardstanding	Approximately 223 tonnes
2	Chipped Screened timber – EWC 19 05 03 Testing by Opus showed one sample with a lead value of 222mg/kg. No asbestos recorded	Located on the bituminous surfaced area in front of the exiting site building. To the southern end Located on concrete hardstanding	Approximately 50.7 tonnes
3	Rubble and General Waste EWC 19 12 12	Located partially within a drainage ditch on the north western corner of the site.	Approximately 25 tonnes
4	Wood EWC 17 02 01	Located within the site building Located on concrete hardstanding	Approximately 0.7 tonnes
5	Bagged domestic waste	Has been removed by MTCBC	N/A
6	Unprocessed wood, all appears to be untreated timber. EWC 19 12 07	Some of the timber has been racked the remaining timber is in a stockpile. Located on concrete hardstanding	Approximately 4.8 tonnes
7	Mixed wood chippings and waste EWC 19 05 03	Located adjacent to the eastern side of the building, immediately south of the roller shutter door. Located on concrete hardstanding	Approximately 52 tonnes
8	Mixed Municipal Waste Testing by Opus showed no mineral oils or BTEX were recorded above the laboratory detection limit - no asbestos fibres recorded	Located to the south east of stockpile 6 Located on concrete hardstanding.	Approximately 402 tonnes
9	Mixed Municipal Waste No asbestos fibres recorded	Small irregular mounds located around an old screener with blower, magnet and 2 man picking station in the southern area of the site. The mounds making up stockpile 9 are	Approximately 55 tonnes

Stockpile Number	Description of Wastes Present	Location of Waste	Quantity of Waste Present
		located adjacent to those making up stockpile 10.	
10	Mixed Municipal Waste No asbestos fibres recorded	Small irregular mounds located around an old screener with blower, magnet and 2 man picking station in the southern area of the site. The mounds making up stockpile 10 are located adjacent to those making up stockpile 9.	Approximately 0.8 tonnes
11	Mixed Municipal Waste No asbestos fibres recorded	3m high stockpile of general waste materials	Approximately 34 tonnes
12	Mixed Municipal Waste Testing by Opus showed no mineral oils or BTEX were recorded above the laboratory detection limit. No asbestos fibres recorded	Located to the east of the site building between stockpile 7 and stockpile 13	Approximately 1222 tonnes
Miscellaneous other wastes which do not form part of any stockpiles	Non-operational machinery Liquid containers Any liquids Glass panes and window frames Tyres and wheels	Found at numerous locations around the site.	Unknown at this time.

2.3 Waste Treatment

2.3.1 The Operator is proposing the treatment of material stockpiles in a phased approach as detailed below. This approach has been designed to minimise the risk of any further environmental impact by restoring the sites drainage system and interceptor and creating a safe and functional operational area on the concrete hardstanding on site.

2.3.2 A brief summary of the approach to processing material stockpiles on site is provided below:

1. Disused plant and equipment located immediately to the east of the building on site will be either taken off site, or have the fluids drained before being removed from the concrete hardstanding to create a processing area for the other material on site.
2. Stockpile 3 will be removed from the drainage ditch and treated as described below. Details of the storage of processed material is described in the Fire Prevention and Mitigation Plan document referenced CRM.0127.001.PE.R.008.
3. Once an operational area has been created on the hardstanding on site and the site's drainage system and interceptor are fully operational, waste stockpiles 6, 7, 1, 2, 8, 9, 10, 11 and 12 will be processed in accordance with the methods described below.
4. Once sufficient space within the site is cleared, the Operator will begin to import material into the site from Stockpile 13.

2.3.3 Table 2.3.1 below describes the proposed treatment methods for each of the material stockpiles in Table 2.2.1 above.

Table 2.3.1: Proposed Waste Treatment Methods

Pile Number	Proposed Treatment Method
1	The material will be loaded through a three-way screener to segregate the material into regular, oversized and fine material. The resultant stockpiles will then be loaded onto a conveyor belt and hand picking shall occur to remove any non-wood waste materials Timber fines shall be tested , in accordance with BSI PAS 100, to determine their suitability for composting within compost which is compliant with the Compost Quality Protocol. Where fines are not suitable for composting they will be temporarily stockpiled and removed off site for disposal. The regular and oversized timber material will be fed through a slow speed shredder then a fast feed shredder. This timber will then be stockpiled before being removed off site for recycling or energy recovery. Plastics shall be segregated and graded for removal either as recyclable material or material available for energy recovery or other appropriate forms of recovery. Plastics will be stored in skips prior to removal off-site. Metals shall be stored in skips before being taken off- site for recycling. Rubble shall be crushed on-site to produce a graded aggregate and stockpiled in preparation for re-use.
2	The majority of the wood in pile has been taken off site for recycling at a local Permitted Site, Trecatti Landfill to be recycled. See details in Appendix D. Plastics shall be segregated and graded for removal either as recyclable material or material available for energy recovery or other appropriate forms of recovery. Plastics will be stored in skips prior to removal off-site. Metals shall be stored in skips before being taken off- site for recycling. Rubble shall be crushed on-site to produce a graded aggregate and stockpiled in preparation for re-use.
3	The material will be loaded through a three-way screener to segregate the material into regular, oversized and fine material. The resultant stockpiles will then be loaded onto a conveyor belt and hand picking shall occur to remove any non-wood waste materials Timber will be shredded and stockpiled before being removed off site for recycling or energy recovery. Plastics shall be segregated and graded for removal as either recyclable material or material available for energy recovery or other appropriate forms of recovery. Plastics will be stored in skips prior to removal off-site. Rubble shall be crushed on-site to produce a graded aggregate and stockpiled in preparation for re-use Soils shall be tested and recycled or disposed of depending on the outcome of the tests.
4	The material will be loaded through a three-way screener to segregate the material into regular, oversized and fine material. The resultant stockpiles will then be loaded onto a conveyor belt and hand picking shall occur to remove any non-wood waste materials Timber fines shall be tested , in accordance with BSI PAS 100, to determine their suitability for composting within compost which is compliant with the Compost Quality Protocol. Where fines are not suitable for composting they will be temporarily stockpiled and removed off site for disposal.

Pile Number	Proposed Treatment Method
	The regular and oversized timber material will be fed through a slow speed shredder then a fast feed shredder. This timber will then be stockpiled before being removed off site for recycling or energy recovery. Plastics shall be segregated and graded for removal either as recyclable material or material available for energy recovery or other appropriate forms of recovery. Plastics will be stored in skips prior to removal off-site.
5	N/A
6	Logs shall be removed from the racking and cut down to a manageable size. Plastics shall be separated from the wood/logs and stockpiled with plastic products for further segregation processing The regular and oversized wood shall then be fed through a slow speed shredder before being fed through a fast speed shredder. The shredded timber shall then be stockpiled before being removed off site for recycling or energy recovery. Timber fines shall be tested , in accordance with BSI PAS 100, to determine their suitability for composting within compost which is compliant with the Compost Quality Protocol. Where fines are not suitable for composting they will be temporarily stockpiled and removed off site for disposal. Plastics will be segregated and graded for removal as recyclable material or material available for energy recovery or other appropriate forms of recovery. Plastics will be stored in skips prior to removal off-site.
7	The material will be loaded through a three-way screener to segregate the material into regular, oversized and fine material. The resultant stockpiles will then be loaded onto a conveyor belt and hand picking shall occur to remove any non-wood waste materials Timber fines shall be tested , in accordance with BSI PAS 100, to determine their suitability for composting within compost which is compliant with the Compost Quality Protocol. Where fines are not suitable for composting they will be temporarily stockpiled and removed off site for disposal. The regular and oversized timber material will be fed through a slow speed shredder then a fast feed shredder. This timber will then be stockpiled before being removed off site for recycling or energy recovery. Plastics shall be segregated and graded for removal either as recyclable material or material available for energy recovery or other appropriate forms of recovery. Plastics will be stored in skips prior to removal off-site. Rubble shall be crushed on-site to produce a graded aggregate and stockpiled in preparation for re-use. Soils shall be tested and disposed of accordingly.
8	The material will be loaded through a three-way screener to segregate the material into regular, oversized and fine material. The resultant stockpiles will then be loaded onto a conveyor belt and hand picking shall occur to remove items such as plastic, carpet, timber, metal and rubber which have all been identified as being present in the stockpile Timber fines shall be tested , in accordance with BSI PAS 100, to determine their suitability for composting within compost which is compliant with the Compost Quality Protocol. Where fines are not suitable for composting they will be temporarily stockpiled and removed off site for disposal.

Pile Number	Proposed Treatment Method
	The regular and oversized timber material will be fed through a slow speed shredder then a fast feed shredder. This timber will then be stockpiled before being removed off site for recycling or energy recovery. Plastics shall be segregated and graded for removal either as recyclable material or material available for energy recovery or other appropriate forms of recovery. Plastics will be stored in skips prior to removal off-site. Oversize rubble shall be crushed on site to produce a graded aggregate and stockpiled for re-use Soils shall be tested and disposed of accordingly Metals shall be stored in skips before being taken off- site for recycling. General waste shall be disposed of in accordance with Sector Guidance Note Guidance for the Recovery and Disposal of Hazardous and Non-Hazardous Waste.
9	Removal of large material unsuitable for the screener, e.g. UPVC windows and doors, which will be stockpiled until removal for recycling or disposal. Loading of material through a three-way screener to segregate the material into regular, oversized and fine material. These stockpiles shall then be loaded onto a conveyor belt and handpicked to remove items such as glass, plastics and rubber. Plastics shall be segregated and graded for removal either as recyclable material or material available for energy recovery or other appropriate forms of recovery. Plastics will be stored in skips prior to removal off-site. Oversized rubble will be crushed on-site to produce a graded aggregate and stockpiled for re-use Soils shall be tested and disposed of accordingly General waste will be disposed of in accordance with Sector Guidance Note Guidance for the Recovery and Disposal of Hazardous and Non-Hazardous Waste
10	Removal of large material unsuitable for the screener, e.g. UPVC windows and doors, which will be stockpiled until removal for recycling or disposal. Loading of material through a three-way screener to segregate the material into regular, oversized and fine material. These stockpiles shall then be loaded onto a conveyor belt and handpicked to remove items such as glass, plastics and rubber. Plastics shall be segregated and graded for removal either as recyclable material or material available for energy recovery or other appropriate forms of recovery. Plastics will be stored in skips prior to removal off-site. Oversized rubble will be crushed on-site to produce a graded aggregate and stockpiled for re-use. Soils shall be tested and disposed of accordingly General waste will be disposed of in accordance with Sector Guidance Note Guidance for the Recovery and Disposal of Hazardous and Non-Hazardous Waste
11	Removal of large material unsuitable for the screener, e.g. large boulders of concrete and sandstone, which will be stockpiled for appropriate processing.

Pile Number	Proposed Treatment Method
	Loading of material through a three-way screener to segregate the material into regular, oversized and fine material. These stockpiles shall then be loaded onto a conveyor belt and handpicked to remove items such as plastic, material, timber and boulders Any timber fines will be tested in accordance with BSI PAS 100 to determine to determine their suitability for composting within compost which is compliant with the Compost Quality Protocol. Where fines are not suitable for composting they will be temporarily stockpiled and removed off site for disposal. The regular and oversized timber material will be fed through a slow speed shredder then a fast speed shredder. Wood chips will be stockpiled prior to removal off site for recycling or energy recovery. Plastics will be segregated and graded for removal either as recyclable material or material available for energy recovery or other appropriate forms of recovery. Plastics will be stored in skips prior to removal off-site. Oversized rubble will be crushed on-site to produce a graded aggregate and stockpiled for re-use. Soils shall be tested and disposed of accordingly General waste will be disposed of in accordance with Sector Guidance Note Guidance for the Recovery and Disposal of Hazardous and Non-Hazardous Waste
12	Removal of large material unsuitable for the screener, e.g. tyres and larger pieces of concrete including those with rebars, which will be segregated and stockpiled for appropriate processing. Loading of material through a three-way screener to segregate the material into regular, oversized and fine material. These stockpiles shall then be loaded onto a conveyor belt and handpicked to remove items such as plastic, carpet, material, timber, metal and rubber Any timber fines will be tested in accordance with BSI PAS 100 to determine to determine their suitability for composting within compost which is compliant with the Compost Quality Protocol. Where fines are not suitable for composting they will be temporarily stockpiled and removed off site for disposal. The regular and oversized timber material will be fed through a slow speed shredder then a fast speed shredder. Wood chips will be stockpiled prior to removal off site for recycling or energy recovery. Plastics will be segregated and graded for removal either as recyclable material or material available for energy recovery or other appropriate forms of recovery. Plastics will be stored in skips prior to removal off-site. Oversized rubble will be crushed on-site to produce a graded aggregate and stockpiled for re-use. Soils will be tested and disposed of accordingly Metals shall be stored in skips before being taken off- site for recycling. General waste will be disposed of in accordance with Sector Guidance Note Guidance for the Recovery and Disposal of Hazardous and Non-Hazardous Waste
Additional material at eastern end of the site	Removal of large material unsuitable for the screener, which will be segregated and stockpiled for appropriate processing. Loading of material through a three-way screener to segregate the material into regular, oversized and fine material. These stockpiles shall then be loaded onto a conveyor belt and handpicked to remove items for reuse/recycling or disposal.

Pile Number	Proposed Treatment Method
(within Proposed Permit Boundary)	Plastics will be segregated and graded for removal either as recyclable material or material available for energy recovery or other appropriate forms of recovery. Plastics will be stored in skips prior to removal off-site. Any timber will be fed through a slow speed then fast speed shredder then stockpiled before removal off site for recycling or energy recovery. Oversized rubble will be crushed on-site to produce a graded aggregate and stockpiled for re-use. Soils shall be tested and disposed of accordingly. Metals shall be stored in skips before being taken off-site for recycling. General waste will be disposed of in accordance with Sector Guidance Note Guidance for the Recovery and Disposal of Hazardous and Non-Hazardous Waste. Due to the unknown nature of the materials located in this area appropriate health and safety measures including damping down shall take place while moving and processing the waste.
Miscellaneous Wastes (within Proposed Permit Boundary)	Wastes shall be stockpiled depending on type before transportation off site for re-use, recycling or disposal. The liquids present on site in IBC's, paint tins, and 5no 45-gallon drums shall be taken off site for recycling or disposal. The liquids in the 3no. bunded tanks two of which, are labelled as hydraulic oil and engine oil shall be tested and if the integrity of the bunds is such that the oils can be safely stored on site they shall be used in the plant and machinery on site. Otherwise they will be removed from site for recycling. The inspection pit in the workshop shall have any liquids within it sucked out and taken off site for disposal.

2.4 Description and Location of Stockpile 13

2.4.1 Stockpile 13 is located on land immediately east of the Proposed Permit Boundary. This land is within the operator's control. Details of the lease agreement between the operator and Merthyr Council have been provided to NRW.

2.4.2 Table 2.4.1 below provides details of the composition and location of stockpile 13.

Stockpile Number	Description of Wastes Present	Location of Waste	Quantity of Waste Present
13	Fines, (EWC 19 12 11) large fragments (EWC 19 12 09) and household type wastes (EWC 20 03 01) Testing by Opus was undertaken, of 116 samples taken laterally and with depth tested for the presence of asbestos 33 detected the presence of asbestos. Further testing was carried out on 19 of these positive samples which showed that the loose fibres Low concentrations of predominantly heavy end hydrocarbon (C16-C35 range) were detected along with low levels of Polycyclic Aromatic Hydrocarbons (PAH) - given the observed presence of asphalt within most of the exploratory hole locations, it is likely that the C16-C35 hydrocarbons and PAHs are associated with the asphalt rather than any absorbed soil concentrations. Mercury was detected in one sample as a concentration of 1.8mg/kg	Located to the east of the site possibly partially on an area of made ground mentioned below	Approximately 13,982 tonnes

2.5 Pre-acceptance Procedures for Stockpile 13

2.5.1 Table 2.5.1 compares the pre-acceptance procedures proposed for Stockpile 13 with the standards set out in Sector Guidance Note S5.06: Recovery and disposal of hazardous and non-hazardous waste.

2.5.2 Stockpile 13 is located adjacent to the Proposed Permit Boundary and within land under the Operators control. The material is well characterised by previous assessments and no other waste material will be imported to the site. As such, indicative BAT requirements for pre-acceptance and waste acceptance procedures have been included only where relevant to the proposed activities.

2.5.3 Stockpile 13 will be imported into the site at a rate not exceeding 10 tonnes per day for the hazardous wastes and 20 tonnes per day for the non-hazardous wastes.

Table 2.5.1 Indicative BAT requirements for Waste Pre- acceptance

Requirement	Procedures Proposed by Operator	Meets requirements of TGN 5.06?
From the waste disposal enquiry, the Operator should obtain information in writing relating to: • the type of process producing the waste • the specific process from which the waste derives • the quantity of waste; • chemical analysis of the waste (individual constituents and as a minimum their percentage compositions) • the form the waste takes (solid, liquid, sludge etc) • hazards associated with the waste • sample storage and preservation techniques	The type, quantity, form and hazards of Stockpile 13 have been characterised. Details are summarised within this application, taken from the Opus reports. Initial chemical testing has been undertaken on Stockpile 13 and further chemical testing will take place where required as it is imported into the site. As the stockpile is uncovered, appropriately trained site operatives will further characterise the material and ensure that any wastes identified are permitted to be accepted under the permit and that the Operator can process them in accordance with the procedures set out in this document.	Yes
Unless a sample and analysis has already been completed by a third party and the Operator has sufficient written information from them, then the Operator should in every case obtain representative sample(s) of the waste from the production process /current holder and compare it against the written description to ensure that it is consistent.	Representative samples have been taken of Stockpile 13 and all EWC codes are included within this permit application.	Yes
The Operator should ensure that the sample is representative of the waste and has been obtained by a person who is technically competent to undertake the sampling process.	As Stockpile 13 is uncovered, further testing will be undertaken to ensure initial samples are representative of the entire stockpile. Further waste samples will be obtained by a person who is technically competent to undertake the sampling process.	Yes
Wastes should not be accepted at the installation without a clear method or defined treatment and disposal route being determined in advance and costed before the waste is accepted at the installation	The Operator has proposed the waste treatment techniques and processes relating to Stockpile 13 within this document. If materials are uncovered that cannot be processed under the conditions of the Environmental permit these will not be brought onto the site.	Yes
There must be a clear distinction between sales and technical staff roles and responsibilities. If non-technical sales staff are involved in waste disposal enquiries, then a final technical assessment prior to approval should be made. It is this final technical checking that should be used to avoid build-up of accumulations of wastes.	No additional material will be imported into the site other than Stockpile 13.	Yes

Requirement	Procedures Proposed by Operator	Meets requirements of TGN 5.06?
All records relating to pre-acceptance should be maintained at the installation for cross-reference and verification at the waste acceptance stage. These records should be kept for a minimum of 3 years	Records of any further testing of characterisation of Stockpile 13 prior to import to the site will be maintained. These will be held by the Operator for 3 years and made available to NRW on request.	Yes

2.6 Waste Acceptance Procedures for Stockpile 13

- 2.6.1 Table 2.6.1 below compares the waste acceptance procedures proposed for Stockpile 13 with the standards set out in Sector Guidance Note S5.06: Recovery and disposal of hazardous and non-hazardous waste (where relevant).

Table 2.5.1 Indicative BAT requirements for Waste Acceptance

Requirement set out in S5.06	Procedures Proposed by Operator	Meets requirements of TGN 5.06?
On arrival loads should: • be weighed, unless alternative reliable volumetric systems linked to specific gravity data are available • not be accepted into site unless sufficient storage capacity exists and site is adequately manned to receive waste • have all documents checked and approved, and any discrepancies resolved before the waste is accepted	Material from Stockpile 13 will be weighed as it is brought into the site with records maintained. This will ensure no more than 10 tonnes of hazardous waste per day is processed at the site. Material will not be brought in to be processed unless there is sufficient space to store treated material, in accordance with the requirements and volumes set out in the FPMP documentation.	Yes
Hazardous wastes should only be received under the supervision of a suitably qualified person (HNC qualified chemist or higher)	The Operator has sufficient competence and training to supervise the import of hazardous material. Copies of the relevant WAMITAB certificates will be provided to NRW.	Yes
Visual inspection. Where possible, confirmatory checks should be undertaken before offloading where safety is not compromised. Inspection must in any event be carried out immediately upon offloading at the installation.	All material within Stockpile 13 will be visually inspected before it is imported onto the site.	Yes
The inspection, unloading and sampling areas should be marked on a plan and have suitably sealed drainage systems.	Stockpile 13 is being imported onto hardstanding on the site with suitably sealed drainage. The waste processing areas are shown on the site layout plan provided.	Yes
The Operator should ensure that waste delivered to the installation is accompanied by a written description of the waste describing: • the physical and chemical composition • hazard characteristics and handling precautions • compatibility issues • information specifying the original waste producer and process	The Operator will prepare a full written transfer note and/or consignment note as required in accordance with the Waste (England and Wales) Regulations 2011 and the Hazardous Waste (England and Wales) Regulations 2005. The description will include: • the physical and chemical composition • hazard characteristics and handling precautions • information specifying the original waste producer and process	Yes

Requirement set out in S5.06	Procedures Proposed by Operator	Meets requirements of TGN 5.06?
On-site verification and compliance testing should take place to confirm: identity of the waste description of the waste consistency with pre-acceptance information and proposed treatment method compliance with permit	Material will be visually inspected as it is imported into the site to ensure it conforms to the chemical and physical characteristics determine through prior testing. If the operator is not confident that they process the material in accordance with the procedures within this document and the permit it will not be accepted into the site.	Yes
The Operator should have clear and unambiguous criteria for the rejection of wastes, together with a written procedure for tracking and reporting such non-conformance. Written/computerised records should form part of the waste tracking system information.	Wastes will only be accepted where they comply with the EWC codes listed in the environmental permit. Where waste is not in compliance, the material will not be brought onto the site. Where material has inadvertently ended up on site it will be directed to the quarantine area and arrangements will be made for it to be removed to a permitted site as soon as possible. If EWC codes or levels of contamination are identified within Stockpile 13 above and beyond what is anticipated, then the Operator will liaise with NRW and Merthyr Council before proceeding to import material. Records of rejected wastes will be made in the recording system.	Yes
Wastes must not be deposited within a reception area without adequate space.	Material will not be brought in to be processed unless there is sufficing space to store treated material, in accordance with the requirements and volumes set out in the FPMP Layout.	Yes
Should the inspection or analysis indicate that the wastes fail to meet the acceptance criteria, then such loads should be stored in a dedicated quarantine area and dealt with appropriately. Such storage should be for a maximum of five working days. Written procedures should be in place for dealing with wastes held in quarantine, together with a maximum storage volume.	Where material has inadvertently ended up on site it will be directed to the quarantine area and arrangements will be made for it to be removed to a permitted site as soon as possible (max 5 days). Maximum storage volumes are in accordance with FPMP requirements, shown on the FPMP site layout.	Yes
If the cause of failure to meet acceptance criteria is due to incompatibility, then the waste should be segregated immediately to remove the hazard.	If material does not meet the acceptance criteria it will left in situ outside of the proposed permit boundary.	Yes
Waste Rejection procedures The operator should have clear and unambiguous criteria for the rejection of wastes, together with a written procedure for tracking and reporting such non-	If material does not meet the acceptance criteria it will left in situ outside of the proposed permit boundary.	Yes

Requirement set out in S5.06	Procedures Proposed by Operator	Meets requirements of TGN 5.06?
conformance. This should include notification to the customer/waste producer and the Environment Agency. Written/computerised records should form part of the waste tracking system information. The operator should also have a clear and unambiguous policy for the subsequent storage and disposal of such rejected wastes. This policy should achieve the following: • identifies the hazards posed by the rejected wastes • labels rejected wastes with all information necessary to allow proper storage and segregation arrangements to be put in place • segregates and stores rejected wastes safely pending removal.	The Operator will liaise with NRW and Merthyr Council before proceeding to import further material.	
Records The waste tracking system should hold all the information generated during pre-acceptance, acceptance, storage, treatment and/or removal off-site. Records should be made and kept up to date on an ongoing basis to reflect deliveries, on-site treatment and despatches. The tracking system should operate as a waste inventory/stock control system and include as a minimum: • date of arrival on-site • producers' details • all previous holders • a unique reference number for waste • pre-acceptance and acceptance analysis results • package type and size • intended treatment/disposal route • record accurately the nature and quantity of wastes held on site, including all hazards and identification of primary hazards	Records will be maintained of each movement of material from Stockpile 13 into the, including details of: • date of arrival on-site • pre-acceptance and acceptance analysis results • intended treatment/disposal route • records of the nature and quantity of wastes held on site, including all hazards and identification of primary hazards • identification of operator's staff who have taken any decisions re. acceptance or rejection of waste streams and decided upon recovery/disposal options Records will be kept on site, in either electronic or hard copy format and stored within the site office. The tracking system will be kept up-to date on an ongoing basis to reflect deliveries, on-site treatment and despatches.	Yes

Requirement set out in S5.06	Procedures Proposed by Operator	Meets requirements of TGN 5.06?
• where the waste is physically located in relation to a site plan • where the waste is in the designated disposal route • identification of operator's staff who have taken any decisions pre acceptance or rejection of waste streams and decided upon recovery/disposal options		
All records relating to pre-acceptance should be maintained and kept readily available at the installation for cross-reference and verification at the waste acceptance stage. Records should be held for a minimum of two years after the waste has been treated or removed off-site. Records should be held in an area well removed from hazardous activities to ensure their accessibility during any emergency.	As above.	Yes
The system adopted should be capable of reporting on all of the following: • total quantity of waste present on-site at any one time, in appropriate units, for example, 205 litre drum equivalents • breakdown of waste quantities being stored pending on-site treatment, classified by treatment route • breakdown of waste quantities on-site for storage only, that is, awaiting onward transfer • breakdown of waste quantities by hazard classification • indication of where the waste is located on site relative to a site plan • comparison of the quantity on site against total permitted • comparison of time the waste has been on-site against permitted limit	The operator's system will be capable of reporting on the indicators identified.	Yes

Requirement set out in S5.06	Procedures Proposed by Operator	Meets requirements of TGN 5.06?
These records should be held in a designated area, away from hazardous activities to ensure their accessibility during any emergency		
Back-up copies of computer records should be maintained off-site.	The operator will be back-up computer records regularly and hold these off-site.	Yes
Wastes should not be accepted at the installation without a clear defined method of recovery or disposal being determined and costed and ensuring there is sufficient capacity being available. These checks should be performed before the waste acceptance stage is reached.	Pre-acceptance checks will confirm that the wastes are suitable for treatment on site.	Yes
The Operator should ensure that the installation personnel who may be involved in the sampling, checking and analysis procedures are suitably qualified (HNC qualified chemist or higher) and adequately trained, and that the training is updated on a regular basis	Sampling, checking or analysis of waste will be undertaken by suitably qualified staff where required. Operational staff will receive full training to undertake their roles at the site.	Yes

2.7 Waste Treatment Proposed for Stockpile 13

2.7.1 Table 2.7.1 below described the treatment techniques proposed for Stockpile 13.

Pile Number	Proposed Treatment Method
13	Asbestos has been identified as being present in some parts of this pile. The Opus International Consultants Environmental Assessment Report dated December 2017 and included in Appendix describes the tests which have been carried out on this pile of waste. It concludes that the household type waste (EWC 20 03 01) can be classified as being non-hazardous if removed from the trommel fines, the large >10mm, fragments of brick, concrete and other inert material (EWC 19 12 09) would be classified as inert, and the trommel fines would be conservatively considered as being hazardous waste. To limit the quantity of the trommel fines considered to be hazardous waste and therefore the quantity of waste having to be disposed of to landfill, further testing shall be carried out on the fines in stockpile 13. Those parts of the stockpile which are considered to be hazardous shall be covered prior to being damped down and loaded into skips, which will also be covered and taken off site. Waste which is not deemed to be hazardous, including any fines shown not to be hazardous after further testing shall, be subject to the following treatment. Removal of large material unsuitable for the screener, e.g. boulders, which will be segregated and stockpiled for appropriate processing. Loading of material through a three-way screener to segregate the material into regular, oversized and fine material. These stockpiles shall then be loaded onto a conveyor belt and handpicked to remove items such as plastic, carpet, material, timber, metal and rubber (tyres) Plastics will be segregated and graded for removal either as recyclable material or material available for energy recovery or other appropriate forms of recovery. Plastics will be stored in skips prior to removal off-site. Oversized rubble will be crushed on-site to produce a graded aggregate and stockpiled for re-use. Soils and trommel fines shall be further tested and disposed of accordingly Metals shall be stored in skips before being taken off- site for recycling. General waste will be disposed of in accordance with Sector Guidance Note Guidance for the Recovery and Disposal of Hazardous and Non-Hazardous Waste Due to the potential presence of asbestos, during the processing of materials from stockpile 13 appropriate measures including damping down of the material while moving and processing it will take place

3.0 Emissions Control

3.1 Overview of Releases

- 3.1.1 There are no point source emissions to air or sewer.
- 3.1.2 There are no connections to foul sewer in relation to the proposed site operations.
- 3.1.3 There is currently one point source emission to water as stockpile 3 is stored within a drainage ditch on the north western side of the site. According to the Opus Report, the wastes listed as being present in this stockpile include concrete with reinforcement bars attached, rubble, plastics, metals and general waste. This waste pile shall be treated as a matter of priority once the Environmental Permit is in place to ensure that the point source emission is removed.
- 3.1.4 A qualitative assessment of emissions from the site, along with amenity and accident risks, is provided in the Environmental Risk Assessment document referenced CRM.0127.001.PE.R.005.
- 3.1.5 The following management plans have also been prepared to support the application, which will be transposed into the site's EMS following approval by NRW:
- Dust and Emissions Management Plan - CRM.0127.001.PE.R.010;
 - Odour Management Plan - CRM.0127.001.PE.R.011; and
 - Noise and Vibration Management Plan - CRM.0127.001.PE.R.012.

3.2 Control of Point Source Emissions to Water and Land

- 3.2.1 The designated area where treatment of the waste will occur on the site is concrete hardstanding. The drainage from that area runs to the site interceptor which has an integral silt trap to an existing drainage ditch. Silt traps are an effective technology designed to minimise pollution from silt to the aquatic environment.
- 3.2.2 Table 2.3.1 above describes the order in which the waste piles located on the site will be treated. This order has been determined to ensure that the waste treatment can be carried out on the concrete hardstanding and to ensure that NRW's Fire Prevention and Mitigation Plan Guidance can be met.
- 3.2.3 Fuel oil storage areas will be adequately bunded in accordance with Control of Pollution (Oil Storage) (Wales) Regulations 2016 to protect both surface and groundwater.
- 3.2.4 As the main pollutants potentially comprise of suspended solids and oil, the pollution prevention measures in place will comprise of an oil interceptor and silt traps. These will operate in conjunction with a programme of planned preventative maintenance and procedures within the Environment Management Systems to provide adequate control to minimise emissions to surface water and land.

3.3 Control of Point Source Emissions to Air

- 3.3.1 The main sources of fugitive emissions will be from the shredding, screening and crushing processes. The prevailing wind direction at the site is from the south west and west south west, with the majority of the sensitive receptors being to the south, east and west of the site.

- 3.3.2 The Environmental Risk Assessment referenced CRM.0127.001.PE.R.005 and the Dust and Emissions Management Plan referenced CRM.0127.001.PE.R.010 describe the measures in place to control dust and fibres.
- 3.3.3 Sector Guidance Note '*S5:06:Guidance on the Recovery and Disposal of Hazardous and Non-Hazardous Waste*' references specific controls specific controls for minimisation of dust emissions in Section 3.3.4. Good management practices and procedures proposed will minimise emissions and prevent unacceptable levels of dust impacting local receptors.
- 3.3.4 Table 3.3.1 below compares measures proposed at the site with indicative BAT requirements.

Table 3.3.1: Indicative BAT Requirements for Control of Fugitive Emissions to Air (Dust)

Requirement	Mitigation measures proposed by Operator	Meets requirements of TGN 5.06?
Covering of skips and vessels	Loaded vehicles are sheeted to minimise spillages and prevent wind blowing loose materials.	Yes
Avoidance of outdoor or uncovered stockpiles (where possible)	Outdoor stockpiles are unavoidable however dust minimisation techniques (water sprays with year-round supply of water) are applied to all operations and storage areas which may generate dust.	Yes
Where dust creation is unavoidable, use of sprays, binders, stockpile management techniques, windbreaks and so on	Use of water sprays to moisten material with year-round supply of water to ensure availability of dust suppression technique. Load in areas protected from wind. Undertake shredding, screening and crushing activities when the prevailing wind direction is away from the sensitive receptors and provide a wind break Use of water sprays on unsurfaced roads and paved roads if required.	Yes
Regular wheel and road cleaning (avoiding transfer of pollution to water and wind blow)	Wheel cleaning will be in place on-site and will be employed as required on should inspection deem it necessary. Vehicles are inspected for mud, litter, dust and debris prior to leaving site. Speed restrictions are in place on-site at 15mph.	Yes
Closed conveyors, pneumatic or screw conveying (noting the higher energy needs), minimising drops. Filters on the conveyors to clean the transport air prior to release	Closed conveyors will be used on site where possible, as processing will be taking place outside of a building. Drop heights will be minimised	Yes
Regular housekeeping	The site access road will be inspected by the Site Manager on a daily basis to determine the need for maintenance, cleaning and dust suppression. All departing road transport will be inspected for cleanliness, prior to leaving the site. Paved roads will be swept and washed regularly as determined by Site Manager inspections. A Dust and Emissions Management Plan CRM 0127 001 PE R 010 has been developed as part of the Permit application.	Yes
Enclosed silos (for storage of bulk powder materials) vented to fabric filters. The recycling of collected material should be considered under Section 2.6.	Not applicable, no silos are required on-site.	Not applicable
Enclosed containers or sealed bags used for smaller quantities of fine materials	All dust-generating materials will leave site via sheeted or enclosed vehicles.	Yes

- 3.3.5 It can be concluded that the measures proposed to control fugitive emissions to air meet the requirements laid out in Sector Guidance Note '*S5.06 Guidance on the Recovery and Disposal of Hazardous and Non-Hazardous Waste*'.

3.4 Control of Fugitive Releases to Water, Land and Groundwater

- 3.4.1 The main sources of fugitive emissions are deposition of airborne particles from wastes stored and/or processed on-site, in particular from the crushing shredding and screening processes and suspended particles entrained within the run-off from the wastes stored on-site.
- 3.4.2 Before Permitted activities start at the site the current onsite drainage will be sealed off to protect the unnamed brook at the rear of the site. Stockpile 3 shall be the first to be treated as it is currently located partially within a drainage ditch on the north western edge of the site.
- 3.4.3 Fuel storage areas will be adequately bunded in accordance with the Control of Pollution (Oil Storage) (Wales) Regulations 2016 to protect both ground and surface water.
- 3.4.4 Operational procedures will ensure that the areas of hardstanding are inspected for damage on a weekly basis and any repairs are carried out promptly and to the original standard and specification.
- 3.4.5 All treatment operations will be carried out on areas of hardstanding with sealed drainage. The current piles will remain to be stored in their current locations until they are processed. Processing of the stockpiles will take place on areas of sealed drainage with.
- 3.4.6 The runoff from the waste treatment areas and from the treated stockpiles will be directed to the site's interceptor.
- 3.4.7 The site's interceptor will be inspected on a regular basis to check its integrity and be maintained as per the manufacturer's instructions to prevent overfilling.
- 3.4.8 All site personnel will be tasked with monitoring for evidence of spills, mud and debris during their day to day routine. Any evidence of spill, mud and debris will be reported to the Site Manager. Clean-up procedures will be implemented to contain and remove potentially polluting material. Records of any pollution incidents including corrective actions will be maintained. NRW will be notified as per requirements of the Environmental Permit.
- 3.4.9 Spill kits will be maintained in order to respond to any spill. The Operator will also have in place emergency measures to deal with any spillages (e.g. the deployment of absorbent mats and booms).
- 3.4.10 Training will be provided to all staff relating to the use of spill kits and the Spill Clean-Up Procedures.
- 3.4.11 All site personnel will be tasked with monitoring for evidence of spillages and leakage during their day to day routine. Any evidence of spillage or leakage will be reported to the Site Manager or his nominated deputy for remedial action.
- 3.4.12 Sector Guidance Note '*S5.06: Guidance on the Recovery and Disposal of Hazardous and Non-Hazardous Waste*', May 2013 references specific controls for minimisation of fugitive releases to water, sewer and groundwater in Section 2.2.5 which has been compared with measures proposed by the Operator in Table 3.4.1 below.

Table 3.4.1: Indicative BAT Requirements for Control of Fugitive Emissions to Water

Requirement	Mitigation measures proposed by Operator	Meets requirements of TGN 5.06?
For surfacing: - design appropriate surfacing and containment or drainage facilities for all operational areas, taking into consideration collection capacities, surface thicknesses, strength/reinforcement; falls, materials of construction, permeability, resistance to chemical attack, and inspection and maintenance procedures; - have an inspection and maintenance programme for impervious surfaces and containment facilities; - unless the risk is negligible, have improvement plans in place where operational areas have not been equipped with: – an impervious surface – spill containment kerbs – sealed construction joints – connection to a sealed drainage system	With the exception of a portion of stockpile 13 which has asbestos fibres, waste materials are non-hazardous, so the pollution risk is negligible. The main risk to the environment is sediment which will be removed by silt traps. Drainage system is connected to the site's interceptor which is subject to regular inspection and maintenance. All surfacing will be inspected regularly in accordance with the site's EMS.	Yes
Above ground tanks: All above-ground tanks containing liquids whose spillage could be harmful to the environment should be bunded.	Fuel oil will be stored in a fully bunded area in accordance with Natural Resources Wales requirements and guidance, to meet the Control of Pollution (Oil Storage) (Wales) regulations 2016. The interceptor is subject to regular inspection and maintenance.	Yes
All sumps should: - be impermeable and resistant to stored materials; - be subject to regular visual inspection and any contents pumped out or otherwise removed after checking for contamination; - where not frequently inspected, be fitted with a high level probe and alarm, as appropriate; - be subject to programmed engineering inspection (normally visual, but extending to water testing where structural integrity is in doubt).	N/A no sumps to be utilised on site	N/A

3.4.13 It can be concluded that the measures proposed to control fugitive emissions to water, land and groundwater meet the requirements set out in Sector Guidance Note: *S5:06 Guidance on the Recovery and Disposal of Hazardous and Non-Hazardous Waste*.

3.5 Control of Emissions of Odour

3.5.1 Odour emissions are discussed in detail in document referenced CRM.0127.001.PE.R.005 Environmental Risk Assessment and CRM.0127.001.PE.R.011 Odour Management Plan. Handling and storage of waste on-site has the potential to generate odour. Unlike the majority of waste operations, it is obviously is not possible to control the type of wastes which are on site as all the wastes to be treated under the permit application are already at the site.

3.5.2 Given the information provided in the Opus Report, it was considered that only a small quantity of wastes present at the site (less than 10% of the waste) has the potential to generate odour.

3.5.3 As the waste has been stored for a number of years without being disturbed there is a risk that decomposition of any biological elements of the waste within the stockpiles may have occurred. If odour is encountered when the stockpiles are moved or processed, checks shall be made to ensure the impacts to surrounding sensitive receptors are minimised. These checks include the prevailing wind direction, monitoring for odours beyond the Permit boundary. If a particularly odorous waste pile is encountered the pile should be sheeted when not being treated and treatment will only occur when the prevailing wind direction is away from local sensitive receptors.

Table 3.5.1: Indicative BAT Requirements for control of odour

Requirement	Mitigation measures proposed by Operator	Meets requirements of TGN 5.06?
Where odour can be contained, for example within buildings, the Operator should maintain the containment and manage the operations to prevent its release at all times.	The proposed activities are not being undertaken within a building – all wastes are already outside either within the Permit boundary or immediately next to the Permit boundary	N/A
Where odour releases are expected to be acknowledged in the Permit, (i.e. contained and treated prior to discharge or discharged for atmospheric dispersion) requirements are detailed in Section 2.2.6 of the sector guidance in relation to modelling of odour and plant design.	There are no point source emissions of odour. Odour generating wastes comprise a small proportion of wastes present on-site. This operation is short term and is required to clear the site of waste. These points are not applicable to this application Odour modelling is not necessary.	N/A
Where odour generating activities take place in the open, (or potentially odorous materials are stored outside) a high level of management control and use of best practice will be expected.	Only a small proportion of the waste present at the site has the potential to be odorous. When stockpiles are initially turned an assessment of odour shall be undertaken at the site boundary. If no odour is observed the pile shall continue to be treated. If odour is present the steps outlined in 3.5.3 above and in the Environmental Risk Assessment and Odour Management Plan shall be followed.	Yes
Where an installation releases odours but has a low environmental impact by virtue of its remoteness from sensitive receptors, it is expected that the Operator will work towards achieving the standards described in this Note, but the timescales allowed to achieve this might be adjusted according to the perceived risk.	N/A	N/A
The objective is to prevent emissions of odorous releases that are offensive and detectable beyond the site boundary. This may be judged by the likelihood of complaints. However, the lack of complaint should not necessarily imply the absence of an odour problem.	Noted	Yes
Assessment of odour impact should cover a range of reasonably foreseeable odour generation and receptor exposure scenarios, including emergency events and the effect of different mitigation options.	This is presented in document CRM.0127.001.PE.R.011.	Yes

Requirement	Mitigation measures proposed by Operator	Meets requirements of TGN 5.06?
For complex installations, for example where there are a number of potential sources of odorous releases or where there is an extensive programme of improvements to bring odour under control, an odour management plan should be maintained	Pengarnddu Industrial Estate Transfer Station is not a complex installation.	N/A
Emphasis should be placed on pre-acceptance screening (see Section 2.1.1 on page 20) and the rejection of specific wastes, for example, mercaptans, low molecular weight amines, acrylates or other similarly highly odorous materials that are only suitable for acceptance under special handling requirements. These may include dedicated sealed handling areas with extraction to abatement.	Pre-acceptance procedures are in place for stockpile 13 to ensure that material can be brought onto the site and treated in accordance with the permit conditions. It is not anticipated by the operator that material encountered in stockpile 13 will be particularly odorous.	N/A
Scrubber liquors should be monitored to ensure optimum performance, i.e. correct pH, replenishment and replacement.	Not applicable as there are no scrubbing techniques employed on site.	Not applicable

- 3.5.4 It can be concluded that the measures proposed to control odour meet the requirements laid out in Sector Guidance Note '*S5.06: Guidance on the Recovery and Disposal of Hazardous and Non-Hazardous Waste*'.

3.6 Site Security

- 3.6.1 The Site will be surrounded by a perimeter fence.
- 3.6.2 Access to the site shall be restricted to the workforce. No unauthorised access will be permitted at any time.
- 3.6.3 The entrance gate shall be locked and secured when the site is unattended.

3.7 Management

- 3.7.1 The approach to permitting and regulation under the Environmental Permitting Regulations 2016 (as amended 2019) by Natural Resources Wales relies heavily upon the use of Environmental Management Systems (EMS) as a driver for environmental compliance. All Operators who hold a Permit under the Environmental Permitting (England and Wales) Regulations are required to have in place an EMS.
- 3.7.2 Hampshire Demolition and Recycling Limited is the Operator of the Facility. An outline of the EMS can be found in Appendix B.

3.8 Waste Recovery or Disposal

- 3.8.1 The Operator aims to divert approximately 85% of the waste present on the site from landfill by recycling or recovery wherever possible.
- 3.8.2 Waste will only be sent to landfill as a final option after all other avenues, (reuse, recycling and energy recovery) have been investigated.

3.9 Noise

- 3.9.1 Waste treatment and processing activities are to be carried out in the open. Activities which are likely to generate noise shall be carried out during reasonable working hours, 7:30am – 6pm Monday to Friday and 8am – 1pm on Saturdays.
- 3.9.2 A Noise and Vibration Management Plan referenced CRM.0127.001.PE.R.012 has been prepared to support the application.
- 3.9.3 Sector Guidance Note '*S5.06: Guidance on the Recovery and Disposal of Hazardous and Non-Hazardous Waste*', references specific controls for minimisation of noise emissions in Section 2.9: Noise which has been compared with measures proposed by the Operator in Table 3.9.1 below.

Table 3.9.1: Indicative BAT Requirement for the Control of Noise and Vibration

Requirement	Mitigation measures proposed by Operator	Meets requirements of TGN 5.06?
The Operator should employ basic good practice measures for the control of noise, including adequate maintenance of any parts of plant or equipment whose deterioration may give rise to increases in noise (for example, bearings, air handling plant, the building fabric, and specific noise attenuation kit associated with plant or machinery).	Operator will employ basic good practice measures for the control of noise. Equipment associated with waste processing is covered by a maintenance contract and/or a programme of planned preventative maintenance.	Yes
The Operator should employ such other noise control techniques necessary to ensure that the noise from the installation does not give rise to reasonable cause for annoyance, in the view of the Regulator. In particular, the Operator should justify where Rating Levels ($L_{Aeq,T}$) from the installation exceed the numerical value of the Background Sound Level ($L_{A90,T}$).	Operator will employ basic good practice measures for the control of noise and monitor the prevailing wind direction when inherently noisy activities to reduce the impact on local sensitive receptors.	Yes
In some circumstances "creeping background" (i.e. creeping ambient) may be an issue.	This is not deemed to be applicable.	N/A
Noise surveys, measurements, investigations (e.g. on sound power levels of individual items of plant) or modelling may be necessary for either new or for existing installations, depending upon the potential for noise problems. Where appropriate, the Operator should have a noise management plan as part of its management system.	Please see the noise and vibration management plan CRM.0127.001.PE.R.012 Noise from the site shall be monitored if there is reason to suppose that excessive noise will occur and noise complaints are received.	Yes

3.10 Accidents

- 3.10.1 An assessment of potential accidents and measures taken to reduce the risk of them occurring has been undertaken in line with Environment Agency Guidance; *Risk Assessments for your environmental permit, January 2019* and *How to Comply with your Environmental Permit, October 2014* and is included within the Environmental Risk Assessment (ERA) referenced CRM.0127.001.PE.R.005.
- 3.10.2 Along with the site-specific ERA a Fire Prevention and Mitigation Plan (FPMP) has also been produced referenced CRM.0127.001.PE.R.008. The FPMP identify the potential hazards posed by the facility under both normal and abnormal operating conditions. An assessment of each hazard identified has been evaluated and the potential risk and prevention measures described.
- 3.10.3 Operational procedures which identify the actions to be taken to minimise the potential causes of accidents, and the consequences in the event of an accident occurring will be implemented through the site's Environment Management System.
- 3.10.4 All personnel will be provided with suitable training to ensure they are familiar with the site's Environment Management System and their individual responsibilities in the event of an incident.

3.11 Monitoring

- 3.11.1 There will be one point source emission to the drainage ditch along the south western site boundary. Emissions will be from uncontaminated surface water run-off and clean roof water which will be discharged via sediment traps and an oil interceptor. Table 3.11.1 below shows emissions points for discharge of surface water from the facility to land and water.

Table 3.11.1: Point Source Emissions to Land

Emission Ref.	Point	Parameter	Emission Limit Value	Comments	Discharges to
SW1 Approximate NGR: SO 07658 08872		Sediment, oils (visual inspection)	No Limits Proposed	Surface water run-off from the areas of hardstanding on the site via silt traps and oil interceptor (inspected visually).	Drainage ditch as shown on CRM.0127.001.PE.D.002 'Site Layout'

3.12 Decommissioning and Closure

- 3.12.1 The Operator will prepare a site closure plan in line with Natural Resources Wales Guidance when operations cease. The Site Closure Plan will confirm how the site shall be decommissioned to return it to a satisfactory state upon cessation of activities. Records shall be maintained of the location of facilities and infrastructure, as well as any sub surface structures installed during the operational phase of the facility.
- 3.12.2 Decommissioning will be in compliance with procedures outlined in the Site Closure Plan. If areas of deterioration are identified these areas will be re-examined and the site will be returned to a satisfactory state as defined at the Permit Application stage.

3.13 Operator Competency

3.13.1 The Technically Competent Manager for the site is Lisa Wright.

3.13.2 Certification is included in Appendix C.

4.0 Records and Reporting

4.1 General Overview

4.1.1 The Operator will ensure that the following information is recorded:

- Any material changes to the site layout or operations;
- Site inspections taken by the Operator or any other body and any subsequent issues and corrective actions taken;
- Emergencies;
- Complaints and actions taken;
- Critical plant/equipment failure;
- Records relating to pre-acceptance for cross reference and verification at the waste acceptance stage;
- A record of any additional hazardous waste found at the site;
- Technically competent manager – attendance on site;
- Any Incidents/accidents on site and actions taken;
- Security failures;
- Severe weather conditions;
- Waste accepted and dispatched from the site;
- Details of the quantities and types of wastes stored at the site at any one time;
- Natural Resources Wales Compliance Inspection Reports (CARS);
- Details of emissions reportable incidents in accordance with the Permit; and
- Monitoring Data - process monitoring and emissions monitoring.

4.1.2 All records will be held in the site office and will be available on request. All records, which are required under the conditions of the Environmental Permit, shall be maintained and kept secure from loss, damage or deterioration. Any records held electronically will be backed up on a regular basis.

4.2 Reporting

4.2.1 As part of the site's Management System, audits will be carried out to check that all activities are being carried out in line with the requirements of the Environmental Permit, Management Procedures and associated legislation.

4.2.2 A summary record of the waste types and quantities removed from the site will be made at the frequencies and in a format to be agreed in writing with Natural Resources Wales.

4.2.3 Reports will be submitted to Natural Resources Wales using the appropriate reporting forms as required.

Appendix A – Waste Codes

Pengarnddu Industrial Estate Waste Transfer and Treatment Facility - Waste Types	
17	CONSTRUCTION AND DEMOLITION WASTES (INCLUDING EXCAVATED SOIL FROM CONTAMINATED SITES)
17 01	concrete, bricks, tiles and ceramics
17 01 01	concrete
17 01 02	bricks
17 01 03	tiles and ceramics
17 01 06*	Mixtures of, or separate fractions of concrete, bricks, tiles and ceramics containing hazardous substances
17 01 07	mixtures of concrete, bricks, tiles and ceramics other than those mentioned in 17 01 06
17 02	wood, glass and plastic
17 02 01	wood
17 02 02	glass
17 02 03	plastic
17 02 04*	glass, plastic and wood containing or contaminated with hazardous substances
17 03	bituminous mixtures, coal tar and tarred products
17 03 01*	bituminous mixtures containing coal tar
17 03 02	bituminous mixtures other than those mentioned in 17 03 01
17 03 03*	coal tar and tarred products
17 04	metals (including their alloys)
17 04 01	copper, bronze, brass
17 04 02	aluminium
17 04 03	lead
17 04 04	zinc
17 04 05	iron and steel
17 04 06	tin
17 04 07	mixed metals
17 04 09*	metal waste contaminated with hazardous substances
17 04 10*	cables containing oil, coal tar and other hazardous substances
17 04 11	cables other than those mentioned in 17 04 10

17 05	soil (including excavated soil from contaminated sites), stones and dredging spoil
17 05 03*	soil and stones containing hazardous substances
17 05 04	soil and stones other than those mentioned in 17 05 03
17 05 05*	dredging spoil containing hazardous substances
17 05 06	dredging spoil other than those mentioned in 17 05 05
17 05 07*	track ballast containing hazardous substances
17 05 08	track ballast other than those mentioned in 17 05 07
17 06	insulation materials and asbestos-containing construction materials
17 06 01*	insulation materials containing asbestos
17 06 03*	other insulation materials consisting of or containing hazardous substances
17 06 04	insulation materials other than those mentioned in 17 06 01 and 17 06 03
17 06 05*	construction materials containing asbestos
17 08	gypsum-based construction material
17 08 01*	gypsum-based construction materials contaminated with hazardous wastes
17 08 02	gypsum-based construction materials other than those mentioned in 17 08 01
17 09	other construction and demolition wastes
17 09 01*	construction and demolition wastes containing mercury
17 09 02*	construction and demolition wastes containing PCB (for example PCB-containing sealants, PCB-containing resin-based floorings, PCB-containing sealed glazed units, PCB-containing capacitors)
17 09 03*	Other construction and demolition wastes (including mixed wastes) containing hazardous substances
17 09 04	mixed construction and demolition wastes other than those mentioned in 17 09 01, 17 09 02 and 17 09 03
19	WASTES FROM WASTE MANAGEMENT FACILITIES, OFF-SITE WASTE WATER TREATMENT PLANTS AND PREPARATION OF WATER INTENDED FOR HUMAN CONSUMPTION/INDUSTRIAL USE
19 01	wastes from incineration or pyrolysis of waste
19 01 02	ferrous materials removed from bottom ash
19 01 11*	bottom ash and slag containing hazardous substances
19 01 12	bottom ash and slag other than those mentioned in 19 01 11
19 01 13*	fly ash containing hazardous substances
19 01 14	fly ash other than those mentioned in 19 01 13
19 01 15*	boiler dust containing hazardous substances
19 01 16	boiler dust other than those mentioned in 19 01 15
19 01 17*	pyrolysis wastes containing hazardous substances

19 01 18	pyrolysis wastes other than those mentioned in 19 01 17
19 01 99	wastes not otherwise specified
19 05	wastes from aerobic treatment of solid wastes
19 05 01	non-composted fraction of municipal and similar wastes
19 05 02	non-composted fraction of animal and vegetable waste
19 05 03	off-specification compost
19 05 99	wastes not otherwise specified
19 06	wastes from the anaerobic treatment of waste
19 06 03	liquor from anaerobic treatment of municipal waste
19 06 04	digestate from anaerobic treatment of municipal waste
19 06 05	liquor from anaerobic treatment of animal and vegetable waste
19 06 06	digestate from the anaerobic treatment of animal and vegetable waste
19 06 99	wastes not otherwise specified
19 07	landfill leachate
19 07 02*	landfill leachate containing hazardous substances
19 07 03	landfill leachate other than those mentioned in 19 07 02
19 10	wastes from shredding or metal-containing wastes
19 10 01	Iron and steel waste
19 10 02	Non-ferrous waste
19 10 03*	fluff-light fraction and dust containing hazardous substances
19 10 04	fluff-light fraction and dust other than those mentioned in 19 10 03
19 10 05*	other fractions containing hazardous substances
19 10 06	other fractions other than those mentioned in 19 10 05
19 12	wastes from the mechanical treatment of waste (for example sorting, crushing, compacting, pelletising) not otherwise specified
19 12 01	paper and cardboard
19 12 02	ferrous metal
19 12 03	non-ferrous metal
19 12 04	plastic and rubber
19 12 05	glass
19 12 06*	wood containing hazardous substances

19 12 07	wood other than that mentioned in 19.12 06
19 12 08	textiles
19 12 09	minerals (for example sand, stones)
19 10 10	combustible waste (refuse derived fuel)
16 10 11	other wastes (including mixtures of materials) from mechanical treatment of wastes containing hazardous substances
19 12 12	other wastes (including mixtures of materials) from mechanical treatment of wastes other than those mentioned in 19 12 11
19 13	wastes from soil and groundwater remediation
19 13 01*	solid wastes from soil remediation containing hazardous substances
19 13 02	solid wastes from soil remediation other than those mentioned in 19 13 01
19 13 03*	sludges from soil remediation containing hazardous substances
19 13 04	sludges from soil remediation other than those mentioned in 19 13 03
19 13 05*	sludges from groundwater remediation containing hazardous substances
19 13 06	sludges from groundwater remediation other than those mentioned in 19 13 05
20	MUNICIPAL WASTES (HOUSEHOLD WASTE AND SIMILAR COMMERCIAL AND INSTITUTIONAL WASTES) INCLUDING SEPARATELY COLLECTED FRACTIONS)
20 01	separately collected fractions (except 15 01)
20 01 01	paper and cardboard
20 01 02	glass
20 01 08	biodegradable kitchen and canteen waste
20 01 10	clothes
20 01 11	textiles
20 01 13*	solvents
20 01 14*	acids
20 01 15*	alkalines
20 01 17*	photochemicals
20 01 19*	pesticides
20 01 21*	fluorescent tubes and other mercury containing waste
20 01 23*	discarded equipment containing chlorofluorocarbons
20 01 25	edible oil and fat
20 01 26*	oil and fat other than those mentioned in 20 01 25
20 01 27*	paint, inks, adhesives and resins containing hazardous substances

20 01 28	paint, inks, adhesives and resins other than those mentioned in 20 01 27
20 01 29*	detergents containing hazardous substances
20 01 30	detergents other than those mentioned in 20 01 29
20 01 31*	cytotoxic and cytostatic medicines
20 01 32	medicines other than those mentioned in 20 01 31
20 01 33*	batteries and accumulators included in 16 06 01, 16 06 02 or 16 06 03 and unsorted batteries and accumulators containing these batteries.
20 01 34	batteries and accumulators other than those mentioned in 20 01 33
20 01 35*	discarded electrical and electronic equipment other than those mentioned in 20 01 21 and 20 01 23 containing hazardous components
20 01 36	discarded electrical and electronic equipment other than those mentioned in 20 01.21 20 01.23 and 20 01 35
20 01 37	wood containing hazardous substances
20 01 38	wood other than that mentioned in 20 01 37
20 01 39	plastics
20 01 40	metals
20 01 99	other fractions not otherwise specified
20 02	garden and park wastes (including cemetery waste)
20 02 01	biodegradable waste
20 02 02	soil and stones
20 02 03	Other non-biodegradable waste
20 03	Other municipal wastes
20 03 01	mixed municipal waste
20 03 02	waste from markets
20 03 03	street-cleaning residues
20 03 04	septic tank sludge
20 03 06	waste from sewage cleaning
20 03 07	bulky waste
20 03 99	municipal waste not otherwise specified

Appendix B – Environmental Management System Summary

EP
ENVIRONMENTAL MANAGEMENT

TABLE OF CONTENTS

- 1. OBJECTIVE**
- 2. SCOPE**
- 3. TERMS AND DEFINITIONS**
- 4. CONTEXT OF THE ORGANISATION**
- 5. LEADERSHIP**
 - ENVIRONMENTAL POLICY
 - ORGANISATIONAL ROLE, RESPONSIBILITIES AND AUTHORITIES
- 6. PLANNING**
 - ENVIRONMENTAL ASPECTS
 - COMPLIANCE OBLIGATIONS (LEGAL REQUIREMENTS)
 - ENVIRONMENTAL OBJECTIVES
- 7. SUPPORT**
 - TRAINING (COMPETENCE AND AWARENESS)
 - COMMUNICATION (INTERNAL AND EXTERNAL)
 - CONTROL OF DOCUMENTED INFORMATION INCL. REGISTRATION
- 8. OPERATION**
 - OPERATIONAL PLANNING AND CONTROL
 - EMERGENCY PREPAREDNESS AND RESPONSE
- 9. PERFORMANCE EVALUATION**
 - AUDITING
 - MANAGEMENT REVIEW
- 10. IMPROVEMENT**
 - NON-CONFORMITIES, CORRECTIVE AND PREVENTIVE ACTIONS

1. OBJECTIVE

The objective of this document is to establish the main guidelines of the Environmental Management System (EMS) of HDR. The Environmental Management System is detailed in the Environmental Management Manual; this manual includes this document, the accompanying general procedures, and those documents of the Quality Management System that will apply as specified herewith.

2. SCOPE

The EMS applies to all HDR operations.

3. TERMS AND DEFINITIONS

This EMS Manual will follow the terms set out in ISO14001:2015, Section 3 Terms and Conditions, where possible.

4. CONTEXT OF THE ORGANISATION

Hampshire Demolition and Recycling Ltd is one of the UK's leading decommissioning companies, having successfully traded for many years as a private business, HDR became incorporated in 2013.

HDR's developing reputation for quality and safety throughout the UK is now bringing demolition projects from mainland Europe.

HDR's head office has been strategically placed in Warwickshire, giving HDR easy access to any parts of the UK. HDR are regularly working on demolition, site clearance and recycling projects in major cities such as London, Birmingham, Cardiff and Manchester.

5. LEADERSHIP

ENVIRONMENTAL POLICY

The Environmental Policy, established by the Managing Director, is contained in EMS-POL-01.

ORGANISATIONAL ROLE, RESPONSIBILITIES AND AUTHORITIES

Environmental Committee

The Environmental Committee is the senior body for Environmental matters within the Company. Its members are the Managing Director, relevant managers, the HSEQ Representative and any other person that the Managing Director sees fit. The Environmental Committee will be responsible for reviewing the EMS and will also establish its annual objectives.

The Committee will meet at least once a year, in the first three months and whenever any member requires it. The minutes of that meeting will be recorded after the meeting and kept on file.

With a view to continuously improving the system, the Committee's main aims are as follows:

- To establish the EMS requirements, as well as the resources for its suitable and effective implantation within HDR. Particularly, it will make the proposals of modification of the Environmental Policy for approval by the Managing Director.
- To revise the EMS based on analyses of results and identified areas of improvement, authorizing the necessary changes so that the integrity of the system is maintained.
- To set the annual environmental objectives, verifying their fulfilment and evaluating their effectiveness.

HSEQ Representative

The HSEQ Representative reports to the Managing Director and is responsible for:

- Applying the Environmental Policy and decisions of the Environmental Committee.
- Designing, implementing and maintaining the EMS.
- Reporting to the Environmental Committee on the functioning of the System, proposing its review and improvement whenever it is considered necessary.
- Directing and coordinating HSEQ actions.
- Representing HDR in all external Environmental related matters.
- Participating in the planning, development and implementation of the EMS and its review, whenever required.
- Advising on the implementation of the EMS and monitoring its functioning.
- Analysing corrective and preventive actions and, in general, identifying and recording any incidents related to the EMS.
- Recommending or providing solutions or improvement actions via the established channels and verifying their implementation.
- To identify the legal requirements applicable to HDR operations.
- Supervising and controlling the EMS Procedures Library.
- Managing and coordinating the actions of auditors.
- Drawing up the audit schedule and supervising implementation in accordance with this Manual.
- Scheduling external audits of the EMS and providing any support necessary.
- Arranging, together with the HR Manager, environmental-related training.
- To make an annual integration of the set of environmental aspects with significant impact on HDR
- To produce the annual report for the review of the System.
- To keep the quality records corresponding to the System.

Environment at the Site

The Site Manager will be responsible for the development and implementation of the Environmental Plan. They will take account of advice and support from the HSEQ Representative. The Site Manager is responsible for:

- Identifying the Environmental conditions of the manufacturing process.
- Establishing and assigning tasks to specific staff.
- Identifying and assessing existing and potential environmental aspects of the manufacturing process.
- Identifying and summarising the legal requirements supplied by the HSEQ Representative.
- Identifying the waste that the manufacturing activities will originate.
- Establishing the operational criteria of the most significant environmental aspects and the follow-up programmes for the most significant environmental aspects.
- Establishing the control programs in accordance with any pre-existing environmental regulations on site.
- Establishing emergency plans.

To implement the Environment Plan, they must:

- Request the necessary licences and authorisations that correspond to the environmental matters that will be affected manufacturing.
- Carry out the control of the corresponding licences and authorizations.
- Contract the necessary services for the removal of waste generated by manufacturing (Haulage, Dumps, etc.)
- Carry out the control of the waste disposal.
- Comply with the legal and environmental requirements that affect manufacturing.
- Carry out an assessment every six months, to confirm that the works comply with the Requirements.
- Sign off the Operation Control Sheets, in case of an anomaly.
- Identify and register any Non-Conformity that could occur in relation to the environmental plan and to implement solutions when an incident occurs.
- Verify the implementation and efficiency of the solutions given.
- Take appropriate action in case of emergency.
- Identify and register the external communications, prepare a reply once management have been consulted.
- Apply the procedures and instructions.

They must establish and assess the additional specific Environmental Objectives and Targets including:

- Identifying those objectives that must be applied to manufacturing among those that apply to the company in general.
- Establishing the additional specific Environmental Objectives and Targets.

6. PLANNING

ENVIRONMENTAL ASPECTS

The HSEQ Representative will analyse the activities to be carried out by HDR, identifying those aspects that could have a negative impact on the Environment.

All the aspects that are included in the Annex of the Procedure EP-01 “Aspects and Impacts” will be used as a basis for the environmental impact assessment at the HDR office. The main aspects to be considered will include the following:

- Use of raw materials and material resources
- Pollution of the atmosphere - Dust, Noise.
- Water pollution.
- Disposal of waste
- Soil pollution
- Other impacts

To identify the Environmental impacts, the HSEQ Representative will prepare a comprehensive schedule of them, including any activities that can cause a negative impact.

In addition, they will establish a relationship between each impact and its applicable mitigation measures. These relationships will be included in a Library available to all. The HSEQ Representative will make sure that this information is regularly updated. The Procedure EP-01 “Aspects and Impacts” of this Manual establishes how to identify the impact and how to assess them on each site.

The HSEQ Representative will prepare an annual report gathering all the aspects with significant impacts that have occurred in HDR activities, so that they can be considered when establishing the environmental objectives for the coming year.

COMPLIANCE OBLIGATIONS (LEGAL REQUIREMENTS)

The HSEQ Representative will maintain a general list of legislation relating to HDR operations. It will also incorporate to that list any amendments that will be published in the future. Each revision or amendment will be recorded, and details of the requirements will be included in a way that it can be easily accessed.

The Procedure EP-03 “Identification of the Legal Requirements” establishes how these documents are managed.

ENVIRONMENTAL OBJECTIVES

The Environmental Committee will establish the objectives of HDR that will comply with the criteria established in the Environmental Policy.

To establish the objectives, account will be taken of the legal requirements and any other requirements that may have to be applied. In addition, account will be taken of the company’s significant environment practices, new technological options and publications related to the environment.

The objectives, which will be fixed annually, will be of a general character, and will be applicable to all HDR operations. Additionally, any working centre e.g. offices, yard etc., can establish additional objectives on a discretionary basis.

To comply with the objectives established, a working programme will be prepared in which the tasks to be carried out will be detailed, identifying specific targets, and nominating the persons responsible for the different tasks with the deadlines and resources to be employed.

The HSEQ Representative will carry out and will document regular follow-up checks stating whether the objectives and targets have been fulfilled in accordance with the Programme. A report will be prepared every six months. The HSEQ Representative will prepare a report with the level of delivery of the objectives and targets, and it will be sent to the Managing Director.

The periodic pursuit of its fulfilment will be made and documented, through the annual report.

7. SUPPORT

TRAINING (COMPETENCE AND AWARENESS)

The HSEQ Representative, in conjunction with the HR Manager, will verify that all relevant personnel have received the necessary training. They will ensure that all personnel receive details of the annual environmental training plan.

This plan will include:

- Environmental Policy.
- Objectives and targets.
- Procedures and requirements of the System: Environmental and potential, Requisite of
- Legal aspects, Operational Control, Pursuit and measurement, Waste Management, among others
- Environmental benefits of a better personal performance
- Responsibilities and functions to achieve conformity with the requirements.

The annual Training Plan will be applied in general to all. The Plan is developed according to the General Procedure GP-3.03 “Personnel Training” that forms part of the Quality Management Manual.

COMMUNICATION (INTERNAL AND EXTERNAL)

The communications related to the EMS will be controlled according to the Procedure EP-05 “Communication”. The external communication of information of significant environmental aspects, will be made through the Managing Director (or his appointed person) following the guidelines and instructions established by them.

CONTROL OF DOCUMENTED INFORMATION

When developing or changing a procedure, the General Procedure GP-0.01 “Preparation, Control, Alter Procedures” of the Quality Management Manual will be applied.

All the documentation in relation to the EMS must be filed to ensure that can be easily located and distributed to the persons that need it. Non-valid documents should be removed, and the superseded documentation should be clearly identified as such.

To control, distribute and file the Environmental Management Manual, the criteria established in the General Procedures GP-0.02. “Document Control” of the Quality Management Manual must be implemented.

All documents relating to the environment and environmental impacts will form a register that ensures that the EMS has been correctly implemented.

The environmental register must be easy to understand; it must be clearly indexed and be kept updated. In the case of registration documents that do not require the Management signature, electronic copies retained on computer will be considered valid. The environmental registrations may include:

External registration

The registers generated because of the external work of the company:

- Minutes of the Environmental Committee
- Training of the personnel
- Environmental auditing

Registration relating to the site environment:

- Operational Control sheets
- Results of measurements and tests.
- Reports on external communications, and communications received, and the replies given i.e. to/from suppliers, customers etc.
- Licences and Authorizations and the request for said licences and authorizations.
- Waste/pest control.
- Documents relating to disposal of waste.
- Environmental Objectives and Targets, Environmental Management Program and assessment of its follow-up.
- Documents supplied by contractors related to the management of waste.
- Safety data of products and substances.
- Non-conformity reports.
- Corrective actions report.
- Preventive actions report.

The following documentation will be filed in the office:

- Objectives and Minutes of the Environmental Committee
- Follow-up of the Objectives and targets.
- Reports of Audits.
- Reports of non-conformities, corrective and preventive actions
- Communications referring to the environment

- Registration of environmental courses.
- Management of waste in the offices.
- Identification of environmental aspects and their assessment in the office.
- List of applicable requirements and the assessment reports.

At the Site, the specific file on Environment will be the following:

1.- Operational Control	2.- Communications
1. Operations Control Sheets 2. Results of measures and tests (*)	1. List and reports of external communication (*) 2. Internal communications
3.- Emergencies	4.- Licences and authorisations
1. Emergency Plan	2. Request for licences (*) 3. Licences and authorizations (*) 4. Control of Licences and authorizations
5.- Waste	6.- Miscellaneous
1. Request for removal of waste (*) 2. Waste licences & permits (*) 3. Waste control 4. Authorizations of persons that withdraw the waste (*) 5. Delivery and withdrawal of waste Documents (*)	1. Objectives and targets. Follow-up 2. Previous assessments of the environmental and potential aspects 3. Documentation of contractors (machinery, waste, etc.) 4. Safety data sheets related to substances and products. 5. Other documents (regulations, legislative cards, management list, etc.)

The documents and registers identified with (*) will be kept at least ten years. The non-conformities, corrective and preventive actions and the audit will be included in the Quality File, with those that come from the Environment system clearly identified to differentiate them from those that come from Quality.

In addition, copies of the Environmental Plan and operational/manufacturing environmental requirements will be kept at the HDR office.

The sections of non-Conformities, Corrective actions, Preventive actions, Audits, Control of the Documentation and Formation are common with Quality. Thus, they will be included and clearly identified in the Quality File.

Documentation of a legal character will be kept for a minimum of five years.

8. OPERATION

OPERATIONAL PLANNING AND CONTROL

The planning of the EMS is specified in the Environmental Plan, considering the specific characteristics of the HDR site location. The plan defines the tasks to be carried out, in accordance with the main guidelines included in this Manual. The Procedure EP-06 “Environmental Plan” details how this is developed.

To achieve the objectives and to fulfil the targets of the Environmental Policy it is essential that mitigation measures and operations are planned so that adequate controls are in place to ensure the reduction of the associated adverse impacts. For its compliance, the corresponding operational criteria will stipulate the specific conditions, under which the operations must be executed.

To complement the planned operational criteria, a review will be carried out of the existing conditions, by means of the identification and assessment of environmental aspects of HDR operations that could cause significant impacts.

This will stipulate the limits or defect acceptance numbers in accordance with the applicable requirements. Also, the fulfilment of the requirements will be evaluated periodically in accordance with the procedures contained in EP-02 "Operational Control" of this Manual. This sets out the criteria to follow in scheduling and controlling the operations and activities related to the environmental aspects present in HDR operations and for compliance with the applicable environmental regulations.

EMERGENCY PREPAREDNESS AND RESPONSE

Where there is a risk of environmental impacts arising from an accident or emergency, the Emergency Plan will include contingencies and procedures on how to respond in such situations and to reduce the negative impacts. Procedure EP-04 “Emergency Plans” of this Manual describes how to develop these plans.

9. PERFORMANCE EVALUATION

AUDITING

Internal audits will be carried out to assess how the EMS is working. If non-conformities are detected (non-conformities that are not related to documents themselves), the Auditor will identify in their report the causes and the measures to be implemented to correct them. The HSEQ Representative will verify its efficacy and implementation.

In addition to these audits, the HSEQ Representative will carry out an annual general audit, which will include an assessment. The adequacy of the Environmental Management System will be rated with respect to the Standard ISO 14001:2015. Audits will be implemented in accordance with the General Procedure GP-4.03 “Internal System Audits” of the Quality Management Manual.

MANAGEMENT REVIEW

The Management of HDR, throughout the Environmental Committee will review the EMS annually to assess its efficiency and its adaptation to company policy. Additionally, if during the implementation of the System deficiencies of sufficient importance are detected, or if significant changes in the Organization occur or if the Committee of considers it opportune further revisions can be made. A review of the EMS will be carried out including the following:

- Results of internal audits.
- Evaluations of fulfillment with legal requirements and other requirements that the company has set.
- External communications with interested parties.
- Environmental performance of the company (nonconformities, indicators, etc.).
- Degree of fulfillment of the objectives.
- State of the improvement actions (corrective and preventive).
- Pursuit of the resulting actions of the previous revisions, carried out by the management.
- Changes in the circumstances, including changes in the legal requirements and others related to the environmental aspects.
- Recommendations for improvement.

On completion of this analysis, appropriate modifications as considered necessary will be made. The results of each revision will be documented by means of a corresponding record. This will include the decisions taken and actions related to the proposed changes in the Environmental Policy, objectives and targets and other specific elements of the system while always maintaining a commitment to continuous improvement.

In order to make the revision, the procedures of General Procedure GP-1.01 will be followed "System Analysis and Review", Quality Management Manual.

10.IMPROVEMENT

NON-CONFORMITIES, CORRECTIVE AND PREVENTIVE ACTIONS

Non-conformities occurring during the implementation of the Environmental Plan will be controlled and investigated, and appropriate actions will be taken to reduce possible impacts and whenever necessary corresponding corrective actions will be taken.

General Procedures GP-4.01 "Treatment of Non-conformities" and GP-4.02 "Corrective and Preventive Actions" of the Quality Management Manual will be implemented, considering that in the case of the environment, most of the non-conformities will also require a corrective action.

Whenever an environmental non-conformity occurs, not only it will be necessary both to take actions to reduce the negative impact but also to eliminate the non-conformity cause.

The Site Manager must investigate the possible causes of all non-conformities and establish the necessary controls. They must ensure that the corrective actions have achieved their objectives. Alternatively, they must re-examine the causes and modify the existing controls.

Once they have confirmed that the corrective action is effective, the relevant written procedures that affect the same will be updated.

Appendix C – Opus International Consultants, Environmental Assessment Report

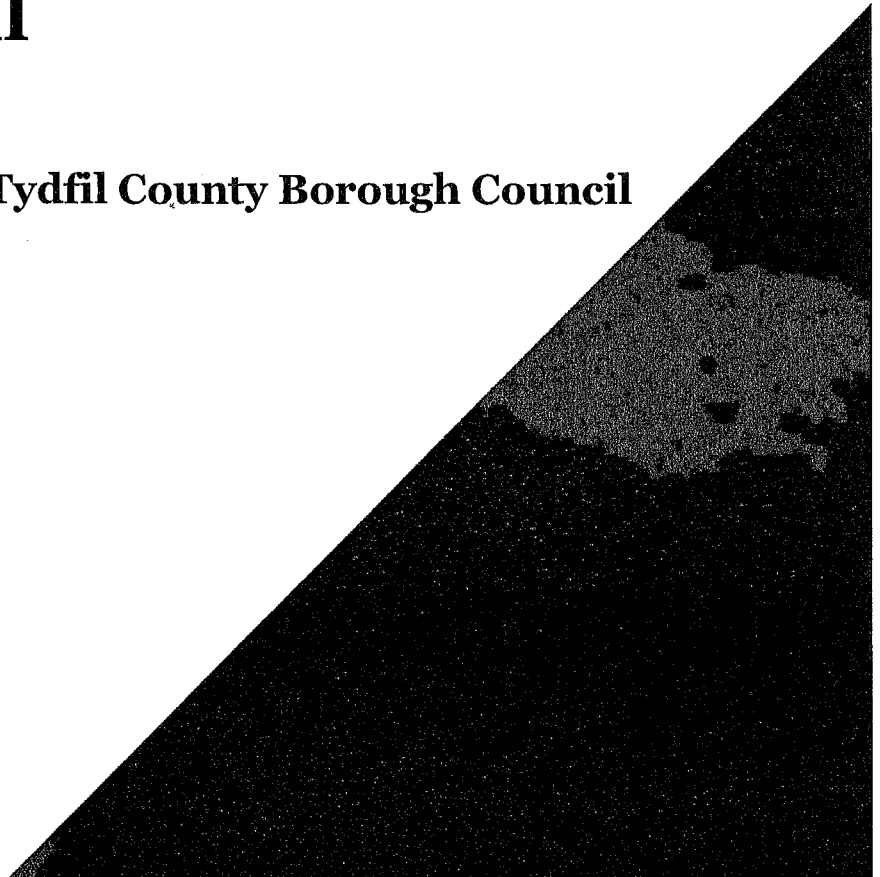


Volume 1 - Environmental Assessment Report

Former Merthyr Industrial Services Limited Site, Pengarnddu, Merthyr Tydfil

for

Merthyr Tydfil County Borough Council





Volume 1 - Environmental Assessment Report

Former Merthyr Industrial Services Limited Site, Pengarnddu, Merthyr Tydfil

for

Merthyr Tydfil County Borough Council

Prepared By

Simon Howard
Principal Geo-Environmental Engineer
simon.howard@opusinternational.co.uk

Reviewed
By;

Neil Morris
Technical Director
neil.morris@opusinternational.co.uk

Approved
for Release
By

P Eastwood
Director- Environment
paul.eastwood@opusinternational.co.uk

Opus International Consultants (UK) Ltd

Cardiff Office
Unit 2 Fountain Court,
Fountain Lane,
St Mellons
Cardiff,
CF3 0FB
United Kingdom
Telephone:

Date: 9th November 2017
Reference: J-W 577.01_V1_R1
Status: Final

Contents

1.0 INTRODUCTION	1
2.0 THE SITE	2
2.1 Location & Access.....	2
2.2 Site Description and Site History	2
2.3 Proposed Future Developments.....	3
3.0 SUMMARY OF PREVIOUS REPORTS AND ADDITIONAL INFORMATION	4
3.1 Opus Report.....	4
3.2 RICARDO-AEA Report.....	5
3.3 Original Waste Management License Application Document	9
3.4 Prosecution	11
3.5 Recent Works.....	11
3.6 Aerial Photography	11
4.0 SITE WORKS.....	14
4.1 Methodology	14
4.2 Volumetric Survey	14
4.3 Site Walkover and Waste Inspection / Sampling.....	15
4.4 Weight Assessment	41
4.5 Chemical Laboratory Testing	42
5.0 RESULTS.....	44
5.1 Summary of Volumes and Weights.....	44
5.2 Recent Chemical Laboratory Testing	46

DRAWINGS

J-W0577.00_G001 R1	Site Location Plan
J-W0577.00_G002 R1	Stockpile Location Plan
J-W0577.00_G003 R1	Waste Sample and Sample Description Plan
J-W0577.01_01_R0	Exploratory Hole Location Plan
J-W0577.01_02_R0	Cross Sections A-A and B-B
J-W0577.01_03_R0	Cross Sections C-C, D-D and E-E

APPENDICES

APPENDIX 1	Site Photographs (January 2017 and September)
APPENDIX 2	Previous Opus Report
APPENDIX 3	Redacted Ricardo-AEA Report
APPENDIX 4	MIS EA Licence Documents
APPENDIX 5	Freedom of Information Documentation received from Natural Resources Wales
APPENDIX 6	OPUS Tower Surveys Topographical Survey
APPENDIX 7	Chemical Test Results
APPENDIX 8	Exploratory Hole Logs

EXECUTIVE SUMMARY

Site Location	The site is located at NGR SO076 089 approximately 3km north east of the centre of Merthyr Tydfil, adjacent to the “Dowlais Top” junction of the A465 Heads of the Valleys Trunk Road.
Report Requirement	The site has been used for waste processing for a number of years and following a prosecution of the former waste operator (Merthyr Industrial Services Ltd) ownership now rests with Merthyr Tydfil County Borough Council, who are now considering two options with regards to the disposal of the land as detailed below: 1) Sale of the land ‘as is’, with the onus on the purchaser to remediate the site to Natural Resource Wales (NRW) approved status; or, 2) MTCBC to remove the stockpiles prior to sale of the site, via a fixed price contract with an earthworks contractor, such that the site can then be sold with reduced environmental liabilities. The removal works would involve the complete stockpiled waste materials above the current level of the surface concrete (i.e. above a nominal level of 408m AOD).
Current Site Condition	The waste processing operations were not complete and the site now suffers from a number of legacies arising from the presence of a number of “waste” stockpiles, amounting to some 17,700m³ of solid material, estimated to be equivalent to 17,500 Tonnes. In addition there are a small number of bulk stored liquids. Natural Resources Wales consider the stockpiled material present on site to be “<i>Illegally Stored Waste</i>”. A small amount of UPVC window frames and glass panes have recently been illegally deposited on site (adjacent to the north west corner of main building and adjacent to Stockpile 8 since the first issue of this report). This report revision includes further detail on the internal composition of Stockpile 13, the largest of the stockpiles at (potentially) 14,792 Tonnes.
Extent of Current Works	Opus have undertaken a detailed volumetric assessment based on survey work, together with an investigation of the material content and contamination analysis. It was discovered that there is a significant amount of household type waste (plastic, metal, rubber and textile etc) below the surface of Stockpile 13, together with a large quantity of coarse (>10mm) stone. The chemical testing has confirmed the findings of previous work at the site, and has specifically confirmed quantities of both Chrysotile and Amosite asbestos within the ‘finer’ (<10mm) fraction of the soils of Stockpile 13.

1.0 INTRODUCTION

- 1.1 Opus International Consultants (UK) Ltd, (Opus) have been appointed by Merthyr Tydfil Borough Council (MTCBC) to prepare a report on a former waste handling site at Unit 2 Pengarnddu Industrial Estate, Merthyr Tydfil. CF48 2TA.
- 1.2 This report has been produced to detail the findings of a review of previous documents, a site inspection, sampling and investigation of waste types, and further limited chemical contamination testing. This updated version of the report also describes a detailed intrusive investigation to determine the internal physical and chemical composition of Stockpile 13.
- 1.3 This report has been prepared by Opus with all reasonable skill, care and attention within the terms of the Contract with the Client, Merthyr Tydfil Borough Council (MTCBC/ The Council), and taking account of the information made available by the Client, as well as the manpower and resources devoted to it by agreement with the Client. Opus disclaims any responsibility to the Client and others in respect of any matters outside the scope of the above Contract.
- 1.4 This report has been produced on behalf of the Client and no responsibility is accepted to any Third Party for all or any part. This report should not be relied upon or transferred to any other parties without the express written authorisation of Opus. If any unauthorised Third Party comes into possession of this report, they rely on it at their own risk and the authors owe them no duty of care or skill.
- 1.5 Opus have been provided with a number of documents which Opus believes are reliable. Nevertheless, Opus cannot and does not guarantee the authenticity or reliability of the information it has relied upon from these sources.
- 1.6 Whilst this report may express an opinion on the likely composition of the on-site stockpiles, this is based on a visual inspection of the surface of the mounds, and limited sampling of Stockpile 13, and no guarantee can be provided that the materials within the mounds are the same. Hence, the information contained within is for guidance only, and no liability can be accepted for its accuracy.

2.0 THE SITE

2.1 Location & Access

- 2.1.1 The site is located at NGR SO076 089 approximately 3km north east of the centre of Merthyr Tydfil, adjacent to the “Dowlais Top” junction of the A465 Heads of the Valleys Trunk Road.
- 2.1.2 Access to the site is gained via the Pengarnddu Industrial Estate Access Road, which is in turn accessed from the Heads of the Valleys Trunk Road adjacent to the Asda (Merthyr Tydfil) Superstore.

2.2 Site Description and Site History

- 2.2.1 The site is irregular in shape and occupies an area of approximately 1.93 hectares. Review of archival data including historical plans indicates that the slopes on the southern section of the site are artificial and have likely been created by a cut and fill operation to create a working area at the site. The slope in the northern section of the site is considered to represent the natural dip of the ground as rock outcrops are visible in the bank and watercourse along the western boundary. There is a small stream which runs along the western boundary of the site and standing water present along the northern boundary.
- 2.2.2 The site was formerly owned by Merthyr Industrial Services Limited (MIS) who operated waste management services at the site and received cardboard and wood from industrial contracts, builders and demolition rubble, waste from a kerbside collection scheme and fluorescent tubes. The operations were undertaken under Environment Agency (Wales) Waste Management License EAWML30299. MIS have since been prosecuted for breaches of their environmental permits and the land obtained by Merthyr Tydfil County Borough Council.
- 2.2.3 The site comprises a roughly square building in the western section of the site, at the head of the access road from Pengarnddu Industrial Estate. The building houses a Biomass/CHP/gasification plant with ancillary plant & machinery, which forms part of the property. The plant includes a large hopper with a walking floor which appears to be full of dried wood pieces (as per Stockpile 4). Access to the hopper was not possible during the recent works.
- 2.2.4 In the north western corner of the building, there is a small workshop with a roller shutter door to the external yard. The workshop includes an inspection pit covered by wooden sleepers. In addition, there are a number of tanks, drums and paint tins, many full or part full, although the contents are not confirmed. The following were noted:
 - 1 no. IBC containing approximately 800 litres of unknown liquid. The IBC is raised approximately 1m off the floor.
 - 3 no. banded R1220 tanks. The contents are unconfirmed but labelling suggests two may contain hydraulic oil and one engine oil.
 - 5 no. 45 gallon drums. Two of these drums are labelled as antifreeze.
 - Numerous small paint tins.

- 2.2.5 The Council is understood to have re-entered/repossessed the property following court proceedings in December 2014.
- 2.2.6 On the site is a large amount of mixed waste in a number of discrete stockpiles, which has in the past been the subject of criminal/court proceedings against the previous site occupiers. MTCBC indicate that the waste stockpiled on site comprises a mix of household rubbish, wood/wood chip [tanalized], “fines” and builders/demolition waste etc.
- 2.2.7 The Council through its appointed contractors is believed to have removed some 3,000 tonnes of [recyclable] waste – rubble and soil in the period February to March 2016.
- 2.2.8 A series of photographs of the site taken during the site inspection on 16th and 17th January 2017 together with September 2017 are presented in Appendix 1.
- 2.2.9 Opus previously undertook an investigation at the site during 2014 on behalf of the Environment Agency. That report is included herewith as Appendix 2, and summarised in Section 3.1.
- 2.2.10 Subsequently Ricardo - AEA (Ricardo) undertook a further assessment of the site on behalf of MTCBC, as part of the proceedings carried out against the previous site occupiers. A redacted copy of that report has been provided by MTCBC and is included as Appendix 3 and summarised in Section 3.2 of this current report.
- 2.2.11 Opus previously produced an Environmental Assessment Report (dated February 2017), which has now been superseded by this report, which incorporates the findings of the February 2017 report with intrusive ground investigation works into Stockpile 13.

2.3 Proposed Future Developments

- 2.3.1 Opus understand that it is the intention of MTCBC to dispose of the whole site. MTCBC have indicated that they anticipate the site being suitable for potentially contaminative land use, subject to appropriate safeguards and new permissions / licences being in place. The site is not currently considered suitable for land use associated with residential developments or open public access. It is understood the site has the benefit of Planning, however all environmental permits have been revoked.
- 2.3.2 Prospective purchasers should undertake all necessary due diligence to satisfy themselves that the site is suitable for its intended use prior to purchase.

3.0 SUMMARY OF PREVIOUS REPORTS AND ADDITIONAL INFORMATION

3.1 Opus Report

3.1.1 The Opus Site Assessment Report at Merthyr Industrial Services Limited on behalf of Environment Agency Wales, referenced K-25100.44_RepG01(R1) and dated November 2012 was undertaken when the site was still operational and hence the waste mounds may have changed significantly between the date of the report and the closure of the site operations. It is however considered that the vast majority, if not all, of the finer material stockpile present at the time of the Opus report will not have been moved.

3.1.2 Whilst the report was commissioned to investigate for breaches of the Waste Management Licence for the site, the following conclusions were made which are considered relevant to the current works:

- The 'Household Waste' stockpile within the processing yard comprised an admixture of electrical items, timber, metal, brick, plastics and fabric materials with a significant proportion of fines including sand, gravel, clay and silts. This stockpile corresponds to the working stockpile referenced by Ricardo-AEA as the 'working stockpile' and by Opus in their current works as stockpiles 8 and 12 (which appeared to have been moved to facilitate the rubble removal works).
- The Finer Grade Material Stockpile comprised an admixture of materials ranging from wood, metal, brick, plastic, electrical cabling, ceramic and glass. Whilst predominately in a sandy, silty clay matrix, particle sizes ranged from gravel through to cobble and locally boulder sized fragments of limestone and mudstone
- Chemical analyses were generally below the Opus Tier 1 Trigger Levels for a Commercial or Residential with plant uptake end use, elevated levels of Copper, Fluoranthene, Benzo(a)pyrene and Total Polycyclic Aromatic Hydrocarbons in a water sample suggested a risk to Controlled Waters.
- All five samples of the finer grade materials, referenced Fines 1 to Fines 5, recorded elevated levels of Bis(2-ethylhexyl)phthalate (307, 3173, 30525, 1157 and 26106 µg/kg respectively). The presence of this organic compound suggests the leaching from plastics contained within the mound.
- The suggestion of degradation and leaching of plasticisers within the mound was also considered evident by the presence of Dimethylphthalate in samples Fines 2 to Fines 5, reaching a maximum concentration of 1835µg/kg in sample Fines 4.
- Asbestos Containing Material consisting of Chrysotile fibres was observed in three samples taken from the Finer Grade Material Stockpile.
- Potentially significant concentrations of individual polyaromatic hydrocarbons were identified in surface water samples at the time however waste mounds were partially

blocking the channels at that time and the water was flowing through the waste stockpiles.

3.2 RICARDO-AEA Report

3.2.1 Ricardo-AEA were commissioned by Grech Gooden Solicitors to prepare expert evidence whilst some operations were still ongoing. Opus were supplied with a heavily redacted copy of the report, entitled 'Expert Evidence R. vs. XXXXXX Quantifying the Costs of Disposal of Materials, Merthyr Industrial Services Limited, Merthyr Tydfil' referenced Ricardo-AEA/R/ED60045 and dated 22/09/2014. As well as providing comments on cost figures at that time, Ricardo-AEA were to undertake the following tasks:

- Quantify the waste stockpiles (referred to as the timber stockpile, household waste stockpile and finer grade material stockpile) including through a site visit undertaken on 23 July 2014.
- Comment on the volume calculations prepared by others.

Site Inspection

3.2.2 Their work was based on visual assessment only. Information was provided to Ricardo-AEA by Environment Agency Wales (the immediate regulatory precursor to Natural Resources Wales (NRW)) who had commissioned an analysis of the levels of contamination in the stockpiles. Their assessment of this report indicated no significant risk to human health or the environment arising from the storage of the material and that if a recovery or recycling option was available for any part of the waste on site at that time, there was unlikely to be any adverse impact arising from further short term storage to enable such recovery or recycling to take place.

3.2.3 Ricardo-AEA identified a number of waste stockpiles and made a review of their superficial appearance but did not undertake an intrusive survey. Hence, they assumed that the material that was visible in each stockpile was representative of the whole. They recorded the following stockpiles:

- **Fines stockpile.** In the north east part of the site. They understand that the waste comprised undersize material resulting from screening waste using the original separation equipment that was present on site although not in use. They understand that this waste had been stored for up to several years.
This corresponds to the 'Finer Material' stockpiles referenced in the previous and current Opus reports (stockpile 13 in the current work)
- **Demolition waste stockpile.** Located in the area between the fines stockpile and the working stockpile and comprised materials such as bricks and broken concrete.
It is assumed that this is the material that has recently been removed by MTCBC.
- **Working stockpile.** Located in the centre of the operational area and comprised waste that had previously been processed to remove <20mm (screened) and oversize (manually removed) fraction using separation equipment. Further processing to screen <40mm fraction was to start shortly after the Ricardo site visit.
This corresponds to the 'Household Waste' stockpile referenced in the previous Opus report and stockpiles 8 and 12 in the current work.

- **Screened oversize for landfill.** Located in the centre south of the operational area and comprised the oversize material manually and mechanically removed from the working stockpile waste during processing.
Stockpile not evident during current works. Remnants of the pile around the screening unit in the south of the yard.
 - **Screened undersize waste.** Located to the west of the operational area, adjacent to the site buildings. Fine material from a 20mm screen (<20mm).
This material is no longer at this location and may have been added to the finer materials stockpile.
 - **Screened oversize wood.** Located to the south of the site buildings in the west of the operational area on what was previously the car park. Coarse material from a 40mm screen (>40mm).
Timber stockpile referenced in the previous Opus report and the unprocessed/oversize timber stockpile referenced in the recent works as Stockpile 1.
 - **Screened undersize wood.** Located to the south of the screened oversize wood in the west of the operational area stockpile, also on the carpark area. Undersize material from a 40mm screen (<40mm). A separate stockpile of fine wood waste (assumed <20mm) was also present in this area.
Timber stockpile referenced in the previous Opus report and the chipped/screened timber stockpile referenced in the recent works as Stockpile 2.
- 3.2.4 Ricardo-AEA recorded that during their visit, there was a mobile trommel screen and manual picking station on site and preparations were being made to screen the working stockpile. It was apparent that some screening had already taken place. In addition, there was an inoperative trommel screen and picking station to the south of the fines stockpile on the southern boundary of the site that appeared not to have worked for some time. On the northern boundary and surrounded by waste was a small piece of equipment that was reported to be a waste wood incinerator, which also appeared not to have been used for some time.
- 3.2.5 Ricardo were informed that MISL had accepted waste that comprised mainly commercial and industrial waste from local companies and construction and demolition type waste. They were also informed that no household or municipal type waste was accepted.
- 3.2.6 Ricardo were informed that Environment Agency Wales began enforcement action in October 2012 as a result of several breaches of the conditions of the Environmental Permit namely, the storage of asbestos on site in a manner other than permitted, the storage of waste exceeding 500 tonnes and the storage of waste exceeding 2 metres in height. The site subsequently ceased receiving waste following an Enforcement Notice.
- 3.2.7 Since closure of the site, MISL had continued to process the remaining waste on site to assist with securing appropriate disposal routes. The wood stockpile was screened to remove the <40mm fraction which had resulted in the formation of a screened oversize wood stockpile and a screened undersize wood stockpile on the tarmac area previously used as a carpark. MISL indicated that they intended to further screen the undersize stockpile to remove the

<20mm fraction. MISL explained that they had investigated potential outlets for the >40mm wood with potential outlets being Celtic Community Wood Fuel Ltd and South West Wood Products.

- 3.2.8 Ricardo-AEA understood that the waste wood stored on site had originally been accepted for the purpose of gasification but that the process had not operated successfully. Hence, MISL had subsequently ensure that the waste wood accepted on site was of suitable quality for treatment and comprised mainly pallets. At the time of the Ricardo inspection, the waste wood had been stored on site for a considerable time and had been both size reduced (chipped) and subject to natural biodegradation.
- 3.2.9 Ricardo-AEA were informed that the working stockpile in the centre of the operational area had been screened to remove the <20mm fraction. This had generated a stockpile of screened undersize material adjacent to the building and a pile of screened oversize material to the south of the operational area.
- 3.2.10 MISL intended to further screen the working stockpile to remove the <40mm fraction which would be disposed of as biodegradable waste to landfill. Then MISL proposed to screen the large fines stockpile in the north eastern area of the site to remove material <20mm.

Assessment

- 3.2.11 The Environment Agency commissioned a survey using LIDAR (light detection and Ranging) technology to estimate the volume of the waste on site. The LIDAR survey compared an aerial photograph of the site taken in January 2004 with one taken in May 2012 and estimated that the volume of waste on site increased by 18,635m³ (at least 17,958m³ at the 99% confidence level) and that it comprised:
 - Area 1 (wood stockpile) 3,045m³ (at least 2,921m³ at 99% confidence level)
 - Area 2 (working stockpile) 3,213m³ (at least 3,083m³ at 99% confidence level)
 - Area 3 (combined fines and demolition waste stockpiles) 12,368m³ (at least 11,945m³ at 99% confidence level).
- 3.2.12 At the time of the Ricardo visit, the wood stockpile (Area 1) had been screened and processed and comprised two stockpiles, the screened undersize (<40mm) and the screened oversize (>40mm). Ricardo assessed that the oversize material appeared to be approximately one third of the total material in area 1, with the remaining two thirds being more similar to compost than wood given its degraded nature. A site assessment report carried out for NRW indicated that the waste wood stockpile analysis indicated wood degradation. Ricardo assessed the weight of the timber using density factors of 0.24 and 0.43 for the >40mm and <20mm materials respectively.
- 3.2.13 The general waste was assessed as having a density factor of 0.37tm³ which was slightly higher than the 0.3tm³ assumption used by NRW but significantly less than the 1.3t/m³ which NRW suggested was more appropriate for this waste due to its decomposition.

- 3.2.14 The waste in Area 3 comprised mostly trommel fines but also included a small area of demolition rubble. Ricardo agreed with the NRW density factor of 1.3t/m³ to calculate the weight of waste in this stockpile.
- 3.2.15 MISL had carried out a Loss on Ignition test on the fines and that the resultant value was 12%, which exceeded the proposed threshold of 10% for acceptance of the material at a landfill site with the lower rate of landfill tax.

Conclusions

- 3.2.16 Ricardo did not accept that the remaining waste on site could be treated in order to generate lower rated trommel fines.
- 3.2.17 The Ricardo-AEA assessment identified that the fines stockpile was the <40mm fraction produced by the screening of construction and demolition waste received on site. The site walkover confirmed that the surface of the stockpile contained soil, wood, plastics and other material.

Working Stockpile and Screened Undersize (<40mm) and Oversize (>40mm)

- 3.2.18 At the time of the Ricardo site visit, site operatives were preparing to screen the working stockpile to remove the <20mm fraction which was to be disposed of as inert waste to a local landfill.

Oversize (>40mm) Wood

- 3.2.19 Ricardo-AEA stated that the Wood Recyclers Association had developed a grading structure which clarified what types of recovered wood were suitable for different end markets. The grades were:

Grade A: “Clean” recycled wood. Material produced from pallets and secondary manufacture etc. and suitable for producing animal bedding and mulches.

Grade B: Industrial feedstock grade. Including Grade 4 material plus construction and demolition waste, this is suitable for making panel board.

Grade C: Fuel grade. This is made from all of the above material plus that from municipal collections and civic amenity sites and can be used for biomass fuel.

Grade D: Hazardous waste. This includes all grades of wood including treated material, such as fencing and track work and requires disposal at special facilities.

- 3.2.20 The majority of waste wood on site was considered to represent grade C as it originated from a waste management site and was heavily degraded. They also considered that there was a possibility that wood contaminated with preservatives and other substances e.g. power poles, fencing etc., could be included in the stockpiles and therefore there could be a proportion of grade D wood. A site assessment report carried out for NRW indicated that the wood stockpile did include treated wood.
- 3.2.21 Ricardo-AEA contacted 2 large wood recovery and biomass combustion companies and provided them with photographs and outline descriptions of the oversize (>40mm) and undersize (<40mm) stockpiles. Both South Wales Wood recycling Ltd and R Plevin & Sons Ltd advised that the material in both stockpiles would be unsuitable for their operations as it

was too degraded and contaminated. Both suggested that, at that time, the material was only suitable for landfill.

Undersize (<40mm) Wood.

- 3.2.22 Ricardo-AEA enquiries with both South Wales Wood Recycling Ltd and R Plevin 7 Sons Ltd confirmed that they would not be interested in this fraction of the wood as it was heavily degraded and appeared to be more similar to compost than wood. South Wales Wood Recycling Ltd suggested that a composting facility may be more suitable outlet. Ricardo discounted this as the potential physical and chemical contamination in the waste would make it an unsuitable feedstock for composting.
- 3.2.23 Ricardo-AEA concluded that they did not consider that any of the waste types could be recovered. They therefore concluded that all stockpiled waste should be disposed to landfill.

3.3 Original Waste Management License Application Document

- 3.3.1 The license application document produced by Blandford Consultancy, titled 'Application for Waste Management Licence to Keep and Treat Waste at the Pengarnddu Transfer Station, Pengarnddu Industrial Estate', and referenced BEA/MB/02.98.01 (date unknown but delivered to the EA in 2000) identified the proposed development:
- 3.3.2 At the time of the application, assumed to be 1999/2000, the area to the north-east for the main building was to be levelled and a waste reception and sorting area be established there. The facilities were to be comprised of a receiving hopper that would be housed on a concrete pad and fed waste onto a conveyor belt. The waste was to be carried by a conveyor over a screen, which would separate the waste into over and under size products. The undersize products were to be fed off on a conveyor belt to a stockpile area from where it would be recycled as soil/soil making material.
- 3.3.3 The oversize materials would progress along the conveyor belt into a covered picking area where a series of skips would be located alongside the belt. Waste would be hand-picked and sorted into skips by material type, separate skips would be available for plastics, ferrous materials, non-ferrous metals, aluminium, timber and cardboard. At any time, the number of skips in the picking area could include spare skips or the number, if skips for a particular waste material, could be increased to accommodate the type of waste being handled. Builder's tubular chutes were to be used to deposit material into the separate skip so as to minimise dust and noise from the operation. There would be an overband magnet at the end of the picking area in order to remove any ferrous items that had been missed by the picking operations.
- 3.3.4 The remaining waste would be comprised principally of stone, concrete, brick, slate, etc., and this material would continue along the conveyor and be fed into a crusher where it would be crushed to a product that could be recycled as a hardcore material.
- 3.3.5 Timber and cardboard products brought to the site as exempt operations would continue to be received in the covered area within the main building, where they would be sorted and treated. A further storage area for timber products was located within the station outside the main building.

- 3.3.6 The application document identified the following proposed maximum stockpiles of untreated waste and quantities of licensed segregated products:

Maximum Stockpiles of Untreated Waste

		Max. Storage Times
Mixed Waste	500 tonnes	4 days
Wood	400 tonnes	4 weeks
Cardboard	100 tonnes	5 weeks
Asbestos Cladding	6 tonnes	3 months
Fluorescent Tubes	6 tonnes	2 weeks

Maximum Stockpiles of Licensed Segregated Products

Shredded Wood (mulch)	2000 tonnes
Soils and Fine Stone	200 tonnes
Stone for Hardcore	200 tonnes
Cullett	60 tonnes
Baled Paper and Magazines	20 tonnes
Metal (ferrous)	6 tonnes
Metal (non-ferrous)	6 tonnes
Inert Waste (non-recyclable)	6 tonnes
Active Waste (for landfilling)	6 tonnes
Asbestos	6 tonnes
Crushed Tubes	3 tonnes
Difficult Waste	3 tonnes
Aluminium Cans	2 tonnes
Fluid/Malodorous Waste	2 tonnes
Baled Plastic	1 tonne

- 3.3.7 The subsequent Environment Agency Wales Waste Management License, referenced EAWML/30299 and dated 8 May 2001, permitted the following annual quantities:

Permitted Waste Categories	Maximum Permitted Quantities (tonnes/year)
Inert	45,401
Metal Wastes	1,005
Special Wastes (Asbestos)	100
Degradable Household Wastes Degradable Commercial wastes Degradable Industrial Wastes (excepting wastes specifically categorised under 'other wastes below')	1,550
Other Wastes: Fluorescent tubes	60

3.4 Prosecution

- 3.4.1 Both the previous Opus and Ricardo-AEA reports were prepared as evidence in connection with the prosecution of Merthyr Industrial Services Limited for breaches of their approved licence / permit conditions. A number of documents arising from the prosecution have been made available from NRW under a Freedom of Information request and are included in Appendix 5.

3.5 Recent Works

- 3.5.1 It is understood that MTCBC have recently had contractors on site removing hardcore materials from within the waste stockpiles. Hence the two main waste stockpiles have been disturbed and approximately 3000 tonnes of recyclable material (stone / hardcore / rubble) was removed.

3.6 Aerial Photography

- 3.6.1 Aerial photography of the site has been inspected for the years 2001, 2004, 2006, 2008, 2010 and 2013. The 'development' of the site over these timescales is summarised below:

Photograph Date	Key Features
2001	A stockpile is shown on the tarmac roadway/parking area at the front of the building (in the area of current stockpile 1+2). A large stockpile is shown in the northern section of the main processing yard (in the area of the current stockpile 12). A small number of skips are shown in the southern section of the processing yard. A circular mound is shown immediately east of the building with machinery adjacent to it. This appears to be processed materials. In the eastern section of the site (now covered by the finer material stockpile no. 13), there appears to be a number of small mounds and numerous pieces of equipment/skips. There do not appear to be any significant slopes suggesting the ground in this area is similar in level to the main processing yard.
2004	The stockpile shown on the tarmac roadway/parking area at the front of the building is no longer present. A large stockpile is shown in the southern section of the main processing yard, with associated machinery. A small number of skips/bays are shown in the northern section of the processing yard. In the eastern section of the site (now covered by the finer material stockpile 13), there appears to have been more materials deposited and the area raised.
2006	Very little changes are shown to the site other than the finer materials mound in the eastern section of the site (the area of stockpile 13) appears to have increased in size.
2008	There appears to be a concrete slab having been constructed to the west of the building. A small stockpile, probably of timber, is shown within the car parking area at the front of the building (area of current stockpile 1+2). Two circular mounds are shown immediately east of the building with machinery adjacent to it. These appear to be processed materials. A large stockpile is shown in the southern section of the main processing yard (in the area of the current stockpile 8). The formal bays and a number of small stockpiles are still shown in the northern section of the processing yard.

Photograph Date	Key Features
	In the eastern section of the site, the finer materials mound has greatly increased in size (area of stockpile 13). The mound has extended up the slope towards the northern site boundary. Some materials also appear to be moved down the slope towards the southern site boundary.
2010	The plant and machinery associated with the biomass process is shown to the west of the building. A large stockpile, probably of timber, is shown within the car parking area at the front of the building (area of current stockpile 1+2). Coarser material appears to form the northern third of the mound. A small circular mound is shown within the processing yard which appears to be processed material. A mound of material is present adjacent the eastern side of the building. A stockpile is shown in the southern section of the main processing yard, with a piece of machinery adjacent (area of current stockpile 8). The formal bays are still shown in the northern section of the processing yard. In the eastern section of the site, the finer materials mound (stockpile 13) has greatly increased in size with a track onto the mound evident and a tracked excavator present on the top. The mound has extended further up the slope towards the northern site boundary.
2013	A stockpile, probably of timber, shown within the car parking area at the front of the building has increased in size (area of stockpile 1+2). A small circular mound is shown to the east of the building which appears to be processed material. A large stockpile is shown in the southern section of the main processing yard, with a piece of machinery adjacent (area of current stockpiles 8, 9, 10 and 12). A number of skips are shown along the northern boundary of the yard. A narrow roadway is shown between the skips and the mound. In the eastern section of the site, the finer materials mound (stockpile 13) appears to have again increased in size. The mound has extended further up the slope towards the northern site boundary. The eastern and southern slopes of the mound have been vegetated.

4.0 SITE WORKS

4.1 Methodology

- 4.1.1 The methodology for the works was an initial visual inspection of the site, along with the surveyors from Opus Tower Surveys, to allow the extents of the stockpiles to be determined.
- 4.1.2 The assessment of randomly selected samples of the exposed surface and top 300mm of the stockpiled waste types would be undertaken in accordance with Appendix C of the CL:AIRE Research Bulletin RB17 (Nov 2012) whereby a sample with a weight of 10 to 15kg is obtained, spread out on a suitable surface (in this case a tarpaulin) and divided into the following fractions:
- Fine material including gravel less than 10mm
 - Coarse inert material including gravel, concrete, brick etc. greater than 10mm
 - Wood
 - Vegetable matter
 - Cloth
 - Metal
 - Paper / card
- 4.1.3 The weight of each individual fraction is then obtained. The results are presented in graphical and tabular form within the following sections.
- 4.1.4 Selected samples from the main stockpiles were to be obtained for chemical contamination testing.
- 4.1.5 This revision of Volume 1 also includes a physical investigation of Stockpile 13, which comprised a total of six trial pits, which were advanced to depths of between 3.00 and 6.00m below surface level of the stockpile. To compliment this, six boreholes were advanced to depths of between 2.30m and 6.20m again below the surface level of the stockpile. The location of the exploratory holes is provided in drawing J-W0577.01_01_R0.

4.2 Volumetric Survey

- 4.2.1 Opus Tower Surveys undertook a topographical survey of the site along with an assessment of the volumes of the individual stockpiles. The volume assessments have been based upon assumed base levels using the existing ground levels around the mounds.
- 4.2.2 In the case of the finer material stockpile (stockpile 13), the volume has been calculated based upon an assumption that the original ground level was at the same level as the existing concrete yard, and that all materials below this level were in place before the waste processing operation commenced. The 408.0m contour has been utilised as the 'original ground level' beneath stockpile 13, based on the approximate level of the edge of the concrete yard. The 408m contour is highlighted by the blue line around the mound on the Opus Tower Survey topographical survey drawing. The Made Ground material beneath the 408.0m contour, has been calculated based upon an interpolated 'original' contour based upon the existing slope profiles on the eastern and western site boundaries.



4.3.3 **Stockpile 1** appears to have been placed more recently against the chipped / screened material of Stockpile 2 and appears to represent the previously identified screened oversize wood. The material comprised broken pieces of timber, from approximately 700mm long down to 50mm long, with occasional pieces of plastic, metal and brick. The timber was noted to contain nails and was previously noted to include pieces of tannellised timber.



4.3.4 Stockpile 1 has been assessed to comprise a volume of approximately 572m³. The percentages of the different fractions from a random sample of the stockpile are summarised below in tabular and graphical form:

Sample No.	Percentage (by weight)							
	Plastic	Stone	Timber	Metal	Material /Carpet	Rubber	Finer material and Timber Fragments	Finer material
2	0.6	1.1	98.3	-	-	-	-	-

- 4.2.2 The topographical survey drawings are presented in Appendix 6 and the volume assessment is summarised below:

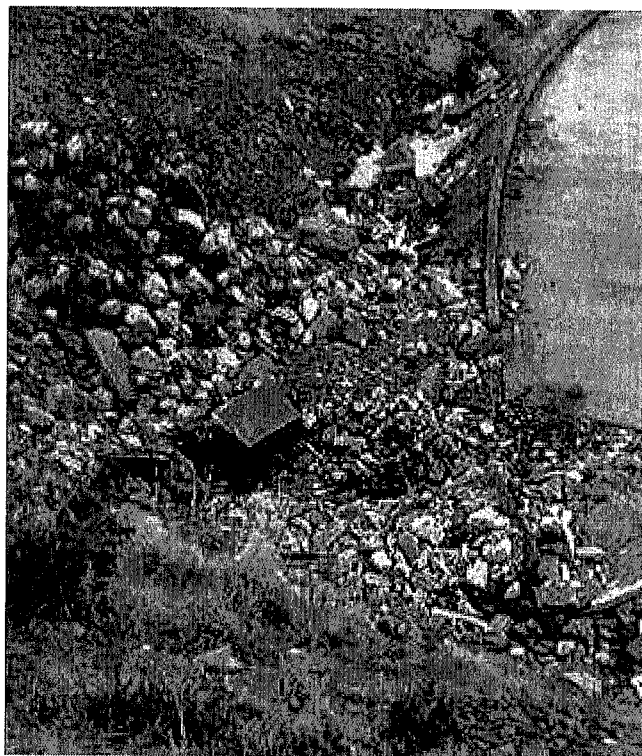
Stockpile Number	Waste Type	Volume m ³
1	Wood	572
2	Chipped timber	1,087
3	Rubble and general waste	19
4	Wood – in building	3
5	Bagged domestic waste	3
6	Unprocessed timber	20
7	Chipped timber, sand and waste	73
8	'Household' waste	717
9	Finer material with 'household' waste	42
10	'Household' waste	2
11	'Household' waste	92
12	'Household' waste	3,302
13	Finer material	11,740
	TOTAL WASTE	17,672
	Made Ground (below 408m contour)	3,000

4.3 Site Walkover and Waste Inspection / Sampling

- 4.3.1 The stockpiles referenced in the following sections are shown on Opus Drawing J-Wo577.00_G002_R1 Detailed cross-sectional drawings from Stockpile 13 are shown on Drawings J_Wo577.01_02_Ro and J-Wo577.01_03_Ro.

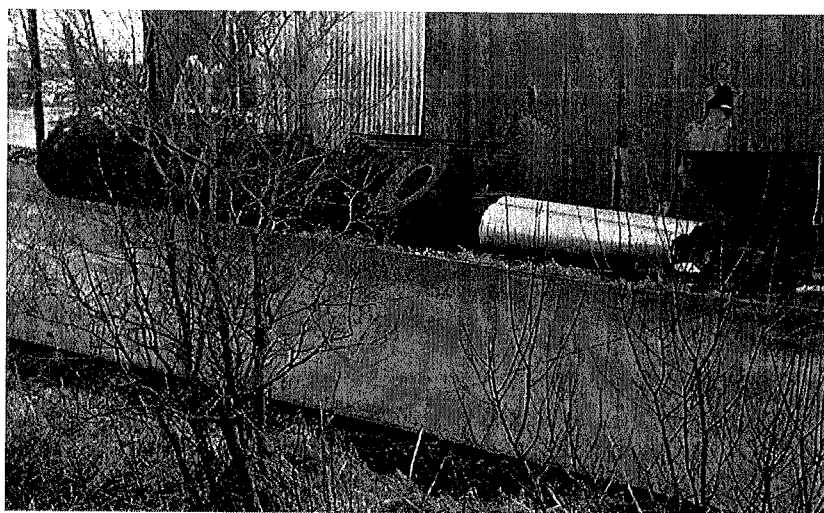
Stockpile 1 + 2

- 4.3.2 These stockpiles are located on the bituminous surfaced area at the front of the existing building. The stockpile has been split into two sections for the purposes of the report, with the main proportion being labelled "Stockpile 2" and comprising chipped / screened timber which is in varying stages of decomposition. The individual timber pieces are in the region of 10mm-100mm in length but would probably pass through a 40mm screen (photograph below). Small quantities of plastic and stone / concrete were present within the material.

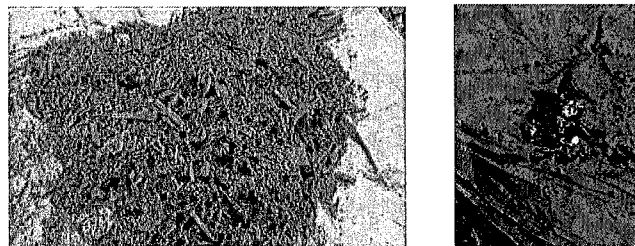
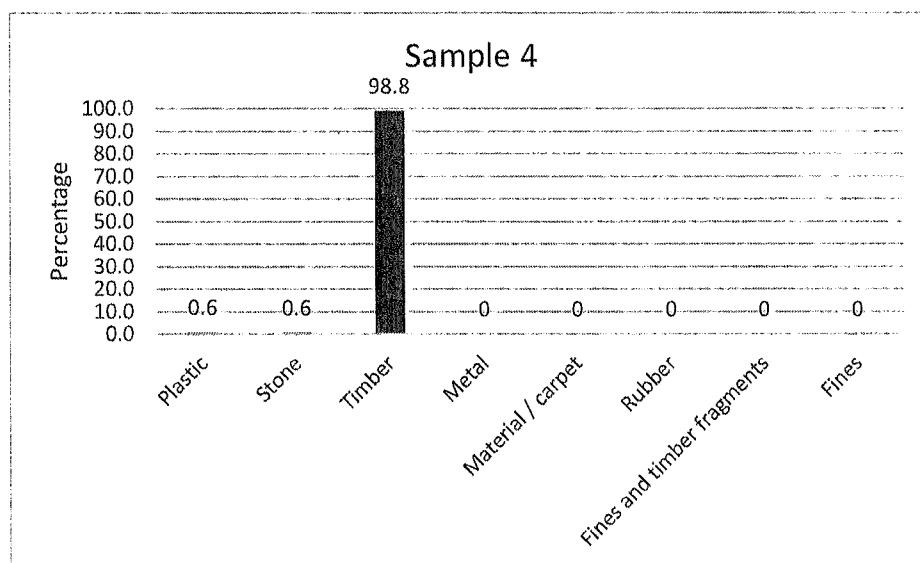
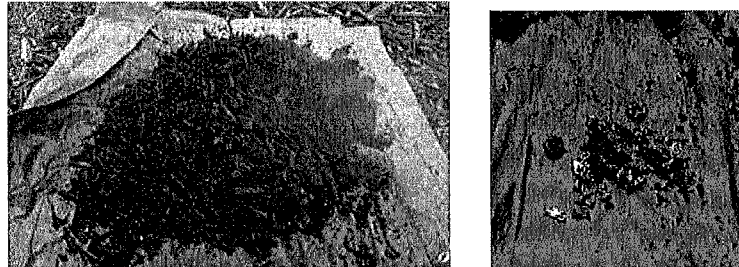


4.3.7 **Stockpile 3** has been assessed to comprise a volume of approximately 19m³.

4.3.8 In addition, in the yard area immediately north of the building, there are a small number of sections of metal ducting and 27 truck and machine tyres (photograph below).

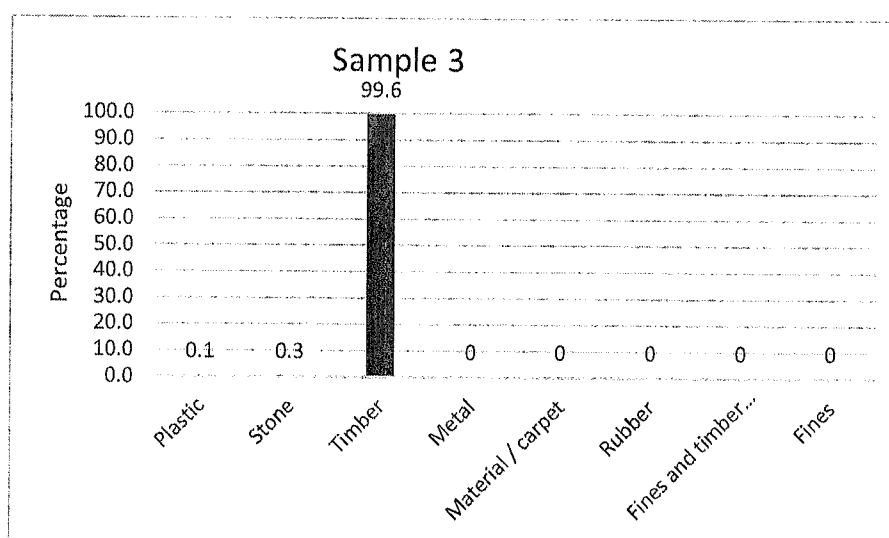
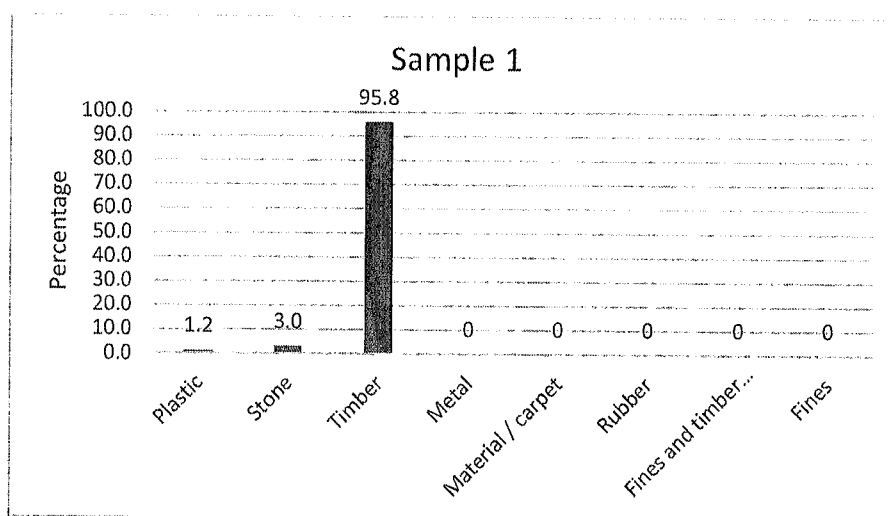


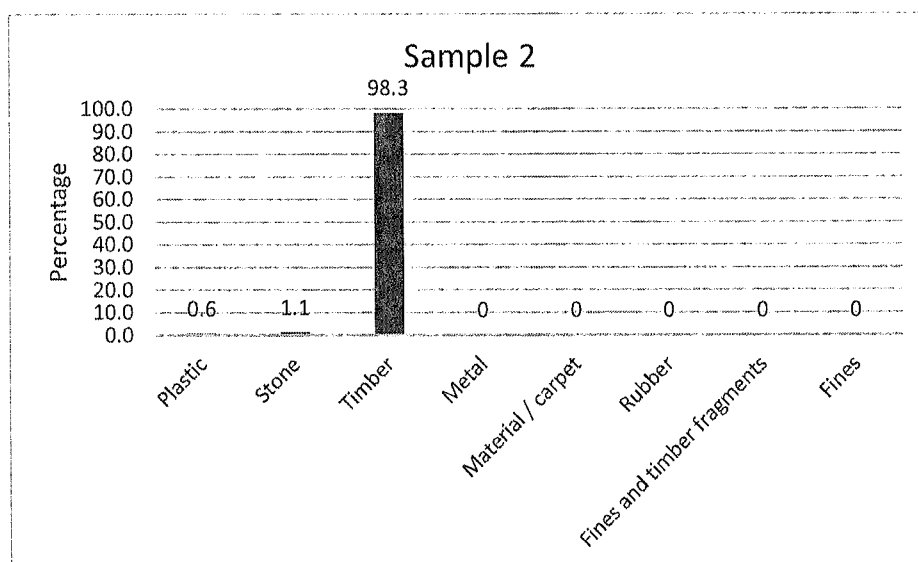
4.3.9 A former above ground tank bund is present in the northern section of the yard. It comprises blockwork walls on what the tank probably sat, with a concrete base which is heavily oil stained. Within the walls, there are currently 3 large tyres and an old oil drum (photograph below).



Stockpile 3

- 4.3.6 Stockpile 3 comprises some general waste materials which currently block / restrict the flow of a drainage ditch around the external yard to the north and west of the building. The waste materials include concrete pieces (cobble and boulder size) with reinforcement bars attached, rubble and some small and large pieces of plastic, metal and general waste (photograph below).





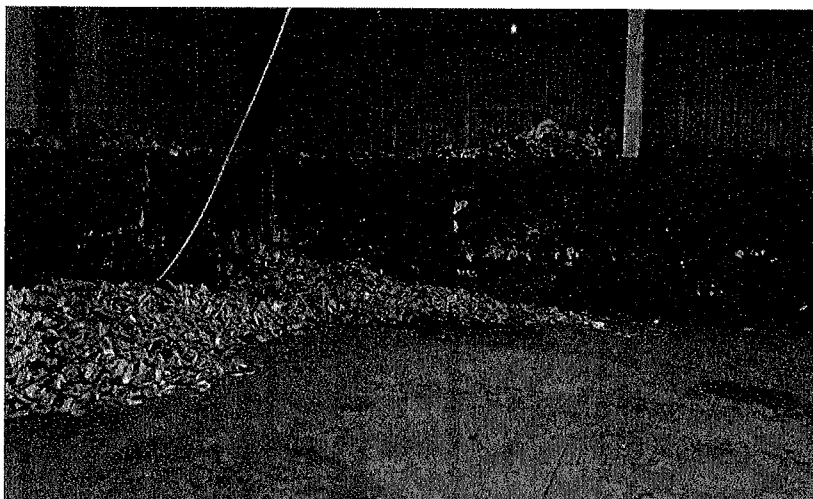
4.3.5 **Stockpile 2** has been assessed to comprise a volume of approximately 1,087m³. The percentages of the different fractions from the random samples of the stockpile are summarised below in tabular and graphical form:

Sample No.	Percentage (by weight)							
	Plastic	Stone	Timber	Metal	Material /Carpet	Rubber	Finer material and Timber Fragments	Finer material
1	1.2	3.0	95.8	-	-	-	-	-
3	0.1	0.3	99.6	-	-	-	-	-
4	0.6	0.6	98.8	-	-	-	-	-



Stockpile 4

- 4.3.10 Stockpile 4 comprises a small amount of dry wood pieces within the building. The pieces appear to have been cut to an approximate size of 100mm x 100mm x 20mm (photograph below). The same size pieces appear to be within the hopper / walking floor as detailed previously.



- 4.3.11 Stockpile 4 has been assessed to comprise a volume of approximately 3m³.

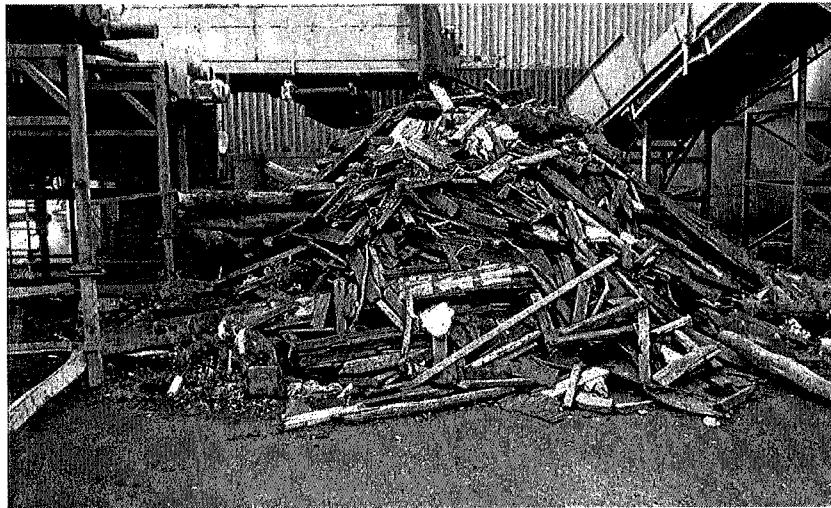
Stockpile 5

- 4.3.12 Stockpile 5 is a small stockpile of household waste generated as a consequence of the security operation on site. It is currently stored in black plastic bags. It is understood that this

stockpile (approximately 3m³) is to be removed by MTCBC in advance of the forthcoming auction.

Stockpile 6

- 4.3.13 Stockpile 6 comprises a pile of untreated timber comprising large pieces of wood, logs and some small pieces of plastic. The stockpile has been assessed to comprise a volume of approximately 20m³.



- 4.3.14 In addition, a further 70-75 logs of different diameters, but all approximately 3 m long, are present upon the adjacent rack structure.



Stockpile 7

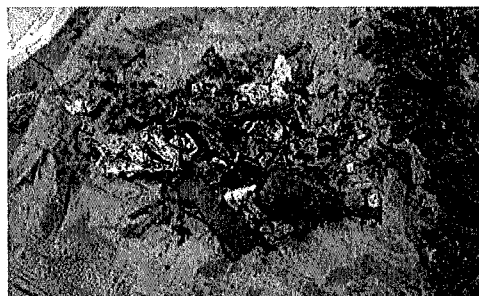
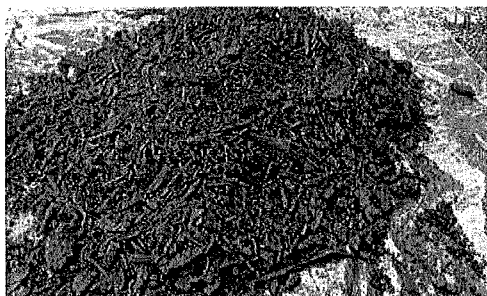
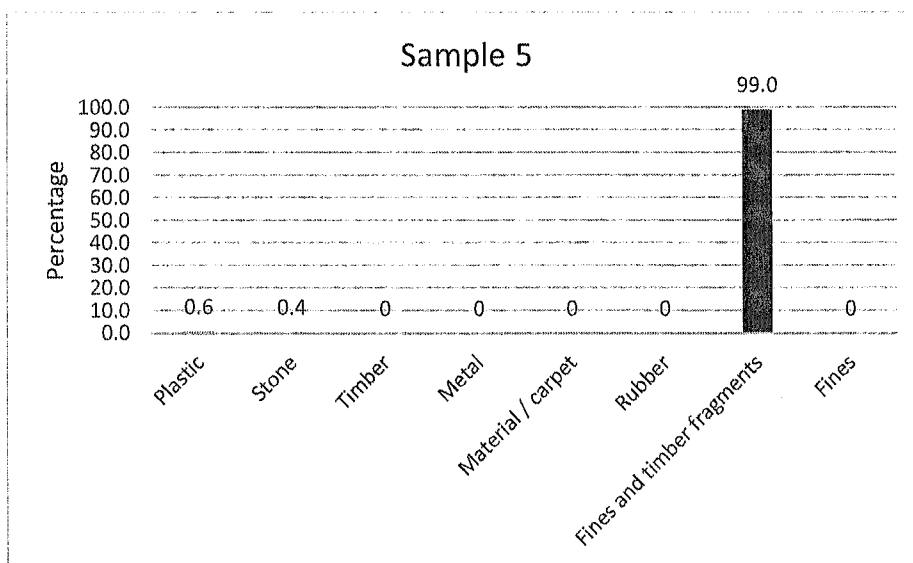
- 4.3.15 Stockpile 7 is located adjacent to the eastern side of the building, immediately south of the roller shutter door. The stockpile is in the region of 2.5-2.7m high and has been assessed as comprising a volume of 73m³.

- 4.3.16 The stockpile comprises wood chippings, in varying degrees of degradation, with some dark brown sand and occasional pieces of brick and plastic. The timber fragments appear to be 100mm long and smaller, probably previously classified as screened wood (less than 40mm). Plastic debris and a large tyre appear to have been added to the stockpile. A photograph of the stockpile is shown below.



- 4.3.17 A random sample of the stockpile material was obtained and logged in accordance with RB17 methodology. It was not possible to segregate the chipped timber and clayey sands, although the concrete / stones and plastic were removed. The result of the logging is presented in geographical and tabular form below:

Sample No.	Percentage (by weight)							Finer material
	Plastic	Stone	Timber	Metal	Material /Carpet	Rubber	Finer material and Timber Fragments	
5	0.6	0.4	-	-	-	-	99.0	-



Stockpile 8

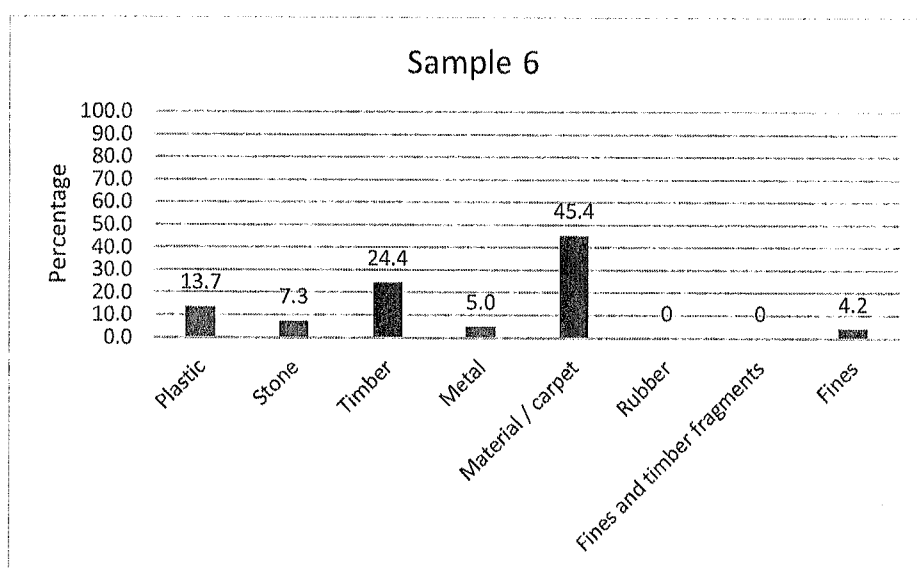
- 4.3.17 Stockpile 8 comprises what has previously been identified as 'household waste', however it appears to predominantly comprise builders / contractors general waste containing large amounts of plastic, carpet / material and some timber, metal, rubber and dark brown sand. Two areas of chipped wood have been placed against the western side of the mound and UPVC doors and windows against the eastern side (photographs below).

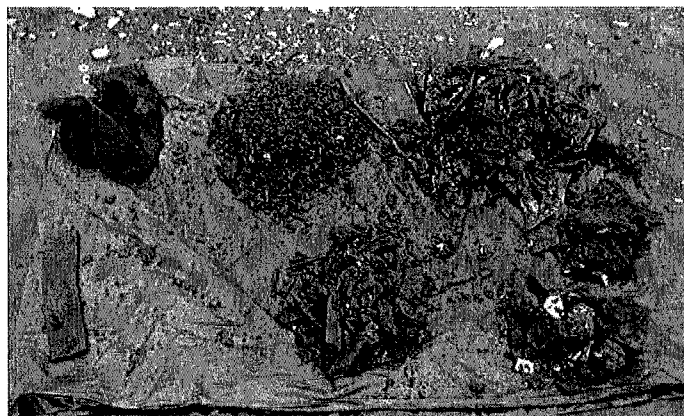
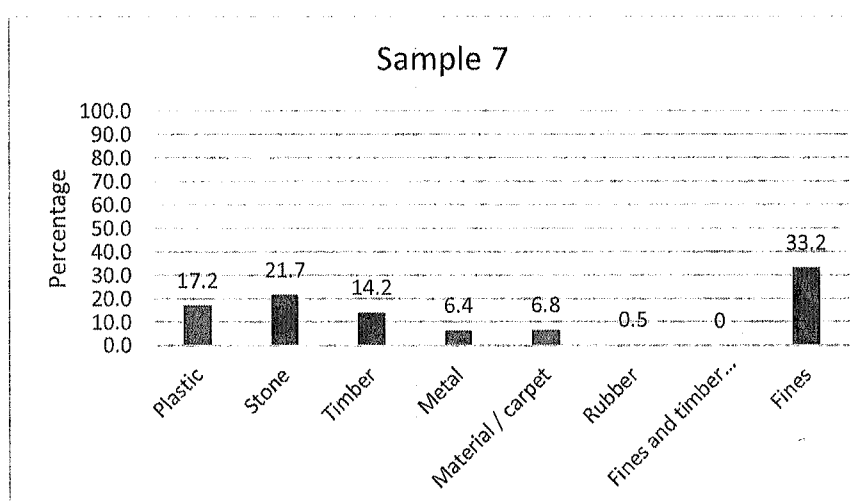


4.318 The stockpile is approximately 5m high and has been estimated to have a volume of 717m³.

4.3.19 Two random samples of the waste were obtained and logged in accordance with RB17. The results are summarized below:

Sample No.	Percentage (by weight)							
	Plastic	Stone	Timber	Metal	Material /Carpet	Rubber	Finer material and Timber Fragments	Finer material
6	13.7	7.3	24.4	5.0	45.4	-	-	4.2
7	17.2	21.7	14.2	6.4	6.8	0.5	-	33.2

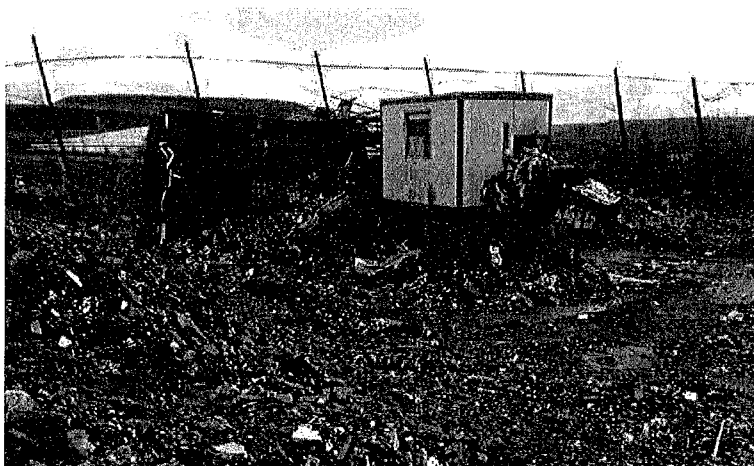




Stockpiles 9 + 10

- 4.3.20 Stockpiles 9 and 10 comprise a series of small irregular mounds located around an old screen with blower, magnet and 2 man picking station. The materials predominantly comprise finer material of dark brown sand but with large quantities of plastic, and occasional rubber and glass. Further UPVC doors and windows were also present.
- 4.3.21 The stockpiles together comprise an estimated volume of 44m³ although waste material is also present on the screening machinery.





Stockpile 11

- 4.3.22 Stockpile 11 comprises a small mound of general waste (builders / contractors waste), approximately 3m high. The stockpile comprises mixed waste of dark brown sand with much plastic, wood chippings, material, metal and some large boulders of concrete / sandstone. A photograph of the stockpile is presented below.



- 4.3.23 The volume of the mound is calculated as being approximately 92m³.

Stockpile 12

- 4.3.24 Stockpile 12 also comprises builders / contractors general waste (formerly recorded as 'household waste'), containing large volumes of plastic, carpet / material and some wood, pieces of concrete and brick, some dark grey sand and wood chippings. Occasional tyres are also evident. An area of concrete fragments with reinforcing bars (rebars) attached is present on the southern side of the pile. It is understood that this stockpile, along with stockpile 8 have recently been moved / turned and a significantly quantity of rubble removed.

- 4.3.25 The mound is approximately 7m high and has an estimated volume of 3,302m³.

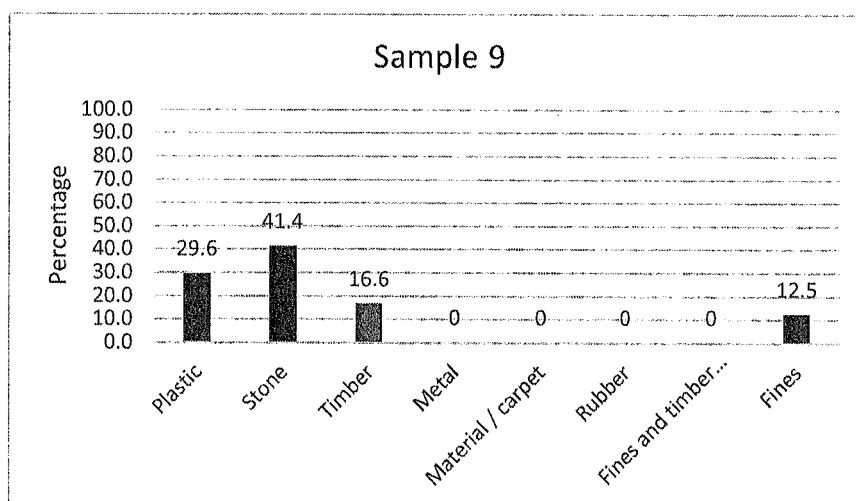
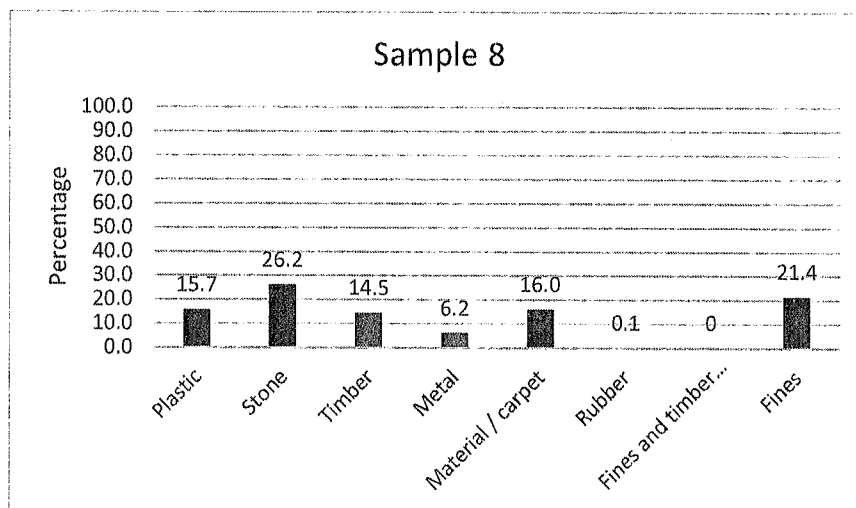


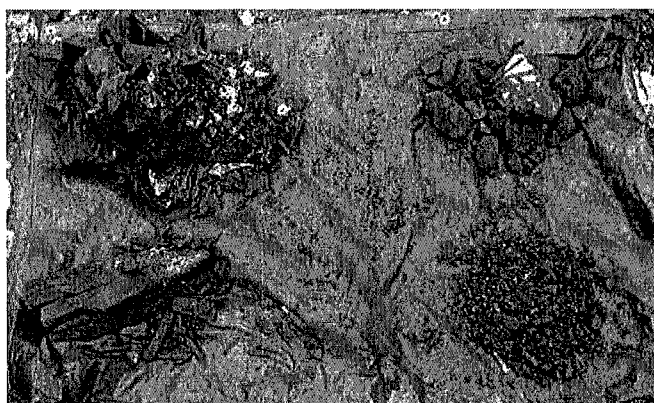
4.3.26 A section on the eastern side of the pile appears to contain a large amount of brick and concrete along with much plastic and general waste.



4.3.27 Two random samples of the waste were obtained and logged in accordance with RB17. The results are summarised below:

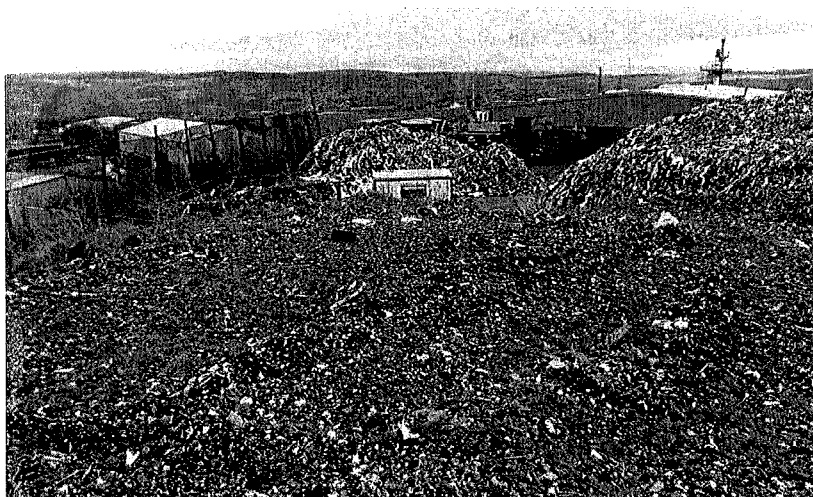
Sample No.	Percentage (by weight)							
	Plastic	Stone	Timber	Metal	Material /Carpet	Rubber	Finer material and Timber Fragments	Finer material
8	15.7	26.2	14.5	6.2	16.0	-	-	21.5
9	29.6	41.4	16.6	-	-	-	-	12.5





Stockpile 13

- 4.3.29 Stockpile 13 is a large mound on finer material. It generally comprised dark brown and grey fine to coarse sand with some to many gravel sized fragments of plastic, some concrete, brick and pottery and occasional timber (photographs below).



- 4.3.30 Boulders of concrete, brickwork and sandstone, occasionally bituminous material, are evident along the vegetated northern slope of the mound. In addition, large concrete boulders including concrete 'L' sections and a manhole 'biscuit', are present on the lower slopes on the eastern edge of the mound, below the 408.0m contour. (Photograph below).



- 4.3.31 Fifty samples varying laterally and vertically through Stockpile 13 have been analysed and logged in accordance with RB17 and the results along with photographs taken during the intrusive investigation are provided in tabulated and graphical forms herein. Visually suspected potentially asbestos bulk product was sampled and weighed as part of this process; however subsequent chemical analysis has determined that the then viewed suspected bulk asbestos product was not proven to be asbestos according to the laboratory analysis, as such no % by weights for asbestos are discussed in this section. Note, that there is no guarantee that there are no asbestos bulk products elsewhere within the waste mass.

Location	% by Weight									
	Depth (mbgl)	Fines (including gravel <10mm)	Coarse Inert Particles (Stone, gravel brick >10mm)	Wood, bark, branches, vegetable matter	Cloth, Leather	Metal, glass, ceramics and other inter material	Paper and Card	Other degradable material (Rubber, plastic)	Fibrous Material (Potentially not asbestos)	Loose Fibre Bundles (Potentially not asbestos)
TP201	0.00-1.00	71.83	18.70	2.27	0.73	4.50		1.86	0.12	
	1.00-2.00	70.78	17.52	0.83	0.18	8.02		2.57	0.09	
	2.00-3.00	70.90	19.62	2.85	0.00	4.18		2.09	0.36	
	3.00-4.00	66.97	20.14	0.54	0.39	8.81		3.08	0.07	
	4.00-5.00	70.80	17.50	3.76	0.59	4.03		3.18	0.14	
	5.00-6.00	64.64	24.39	3.14	0.22	4.02		3.56	0.04	
TP202	0.00-1.00	79.21	14.95	1.63	0.66	1.38		2.02	0.14	
	1.00-2.00	66.00	28.69	1.70	0.22	1.43		1.96	0.00	
	2.00-3.00	66.75	27.45	2.61	0.07	1.20		1.82	0.10	
	3.00-4.00	70.77	26.03	0.57	0.11	1.23		1.29	0.00	
TP203	1.00-2.00	65.54	24.58	3.40	0.69	2.23		3.46	0.10	
	2.00-3.00	21.58	19.90	8.75	7.53	3.90		35.95	2.40	
	3.00-4.00	44.13	30.47	0.84	0.55	0.00		23.77	0.24	
	4.00-5.00	57.91	22.19	0.14	0.00	15.48		4.28	0.00	
TP204	0.00-1.00	75.32	19.95	0.82	0.32	2.33		1.20	0.06	
	1.00-2.00	50.19	31.50	2.32	2.37	6.21		7.01	0.41	
	2.00-3.00	44.35	44.57	5.23		0.34		5.52		
	3.00-4.00	56.12	21.53	0.43	1.24	10.55			10.14	
	4.00-4.50	81.43	14.36	1.37		0.60		0.99	1.25	
TP205	0.00-1.00	58.46	25.54	1.26	1.42	2.44		10.71	0.17	
	1.00-2.00	73.58	14.16	3.77	0.26	3.66		4.31	0.26	
	2.00-3.00	55.24	20.54	15.34	2.41	1.94		4.39	0.13	
	3.00-4.00	64.38	15.65	6.20	0.66	3.00		9.95		
	4.00-5.00	41.71	41.13	8.43		2.04		6.69		
TP206	1.00-2.00	11.10	6.20	14.60	7.10	13.50	23.20	24.40		
	2.00-3.00	20.20	37.30	12.40	0.30	23.40		6.30		
BH1	0.00-1.00	51.30	44.60	1.20	0.00	0.10	0.70	2.30		
	1.00-2.00	42.80	10.00	0.00	0.00	47.10	0.00	0.00		

Location	Depth (mbgl)	% by Weight								
		Fines (including gravel <10mm)	Coarse Inert Particles (Stone, gravel brick >10mm)	Wood, bark, branches, vegetable matter	Cloth, Leather	Metal, glass, ceramics and other inter material	Paper and Card	Other degradable material (Rubber, plastic)	Fibrous Material (Potentially not asbestos)	Loose Fibre Bundles (Potentially not asbestos)
BH1 (cont.)	2.00-3.00	37.30	27.50	13.60	0.60	19.80	0.00	1.20		
	3.00-4.00	17.90	25.60	30.30	0.00	19.20	2.50	4.60		
	4.00-5.00	29.50	6.30	16.70	22.30	22.20	0.00	3.00		
	5.00-6.00	12.30	23.50	0.40	1.80	57.80	1.10	3.10		
BH2	0.00-1.00	91.60	6.63	1.26		0.21		0.29		
	1.00-2.00	85.25	7.11	0.95		2.42		4.23	0.03	
BH2A	2.00-3.00	86.97	2.68	2.16	0.52	1.85		4.57	1.25	
BH2B	3.00-4.00	32.60	25.80	11.80	5.10	18.10	1.90	4.70		
	4.00-5.00	28.70	39.90	7.40	2.80	17.00	1.10	3.10		
BH3	0.00-1.00	55.25	36.42	5.42	0.58	0.52		1.80		
	1.00-2.00	52.65	10.90	24.78	1.30	0.51		9.47	0.39	
	2.00-3.00	65.17	16.16	5.24	1.01	0.89		8.63	2.90	
	3.00-4.00	65.58	22.80	2.36	0.66	0.72		7.75	0.14	
	4.00-5.00	71.54	10.32	5.68	0.00	2.10		10.36		
	5.00-6.00	0.90	59.00	7.00		15.90		17.30		
	6.00-6.20	7.00	14.00	22.70				21.30		
BH4	0.00-1.00	31.10	47.30	5.00	1.00	14.60		1.00		
	1.00-2.00	63.17	8.34	11.78	0.28	3.22	1.92	6.21	5.78	
	2.00-3.00	65.61	7.51	17.85	0.16	2.18		6.48	0.21	
	3.00-4.00	88.65	1.33	2.21	1.07	0.14		5.90	0.70	
	4.00-5.00	68.21	5.36	0.66		20.74		5.03		
	5.00-6.00	8.20	23.90	7.90	2.80	17.30	1.20	29.70		

Notes:

Mbgl = m below ground level (of the stockpile)



Plate 1 above shows the excavated trial pit TP201

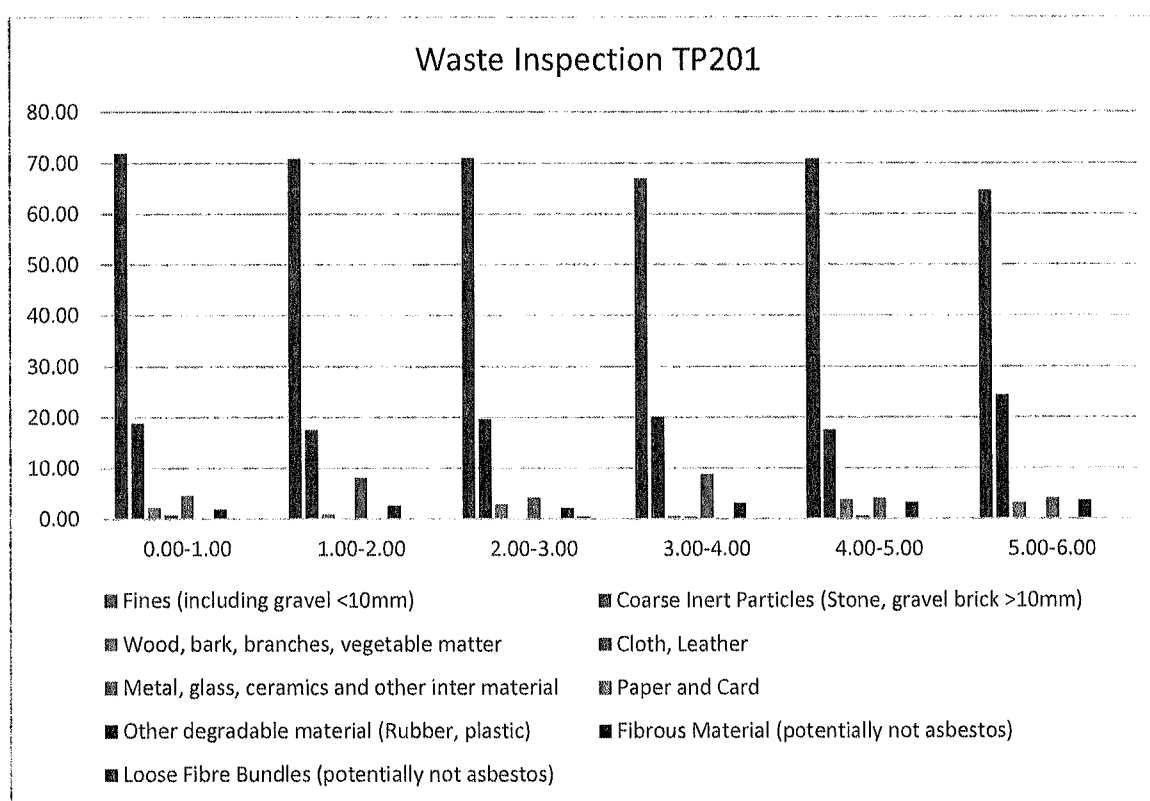




Plate 2 above shows the excavated trial pit TP202

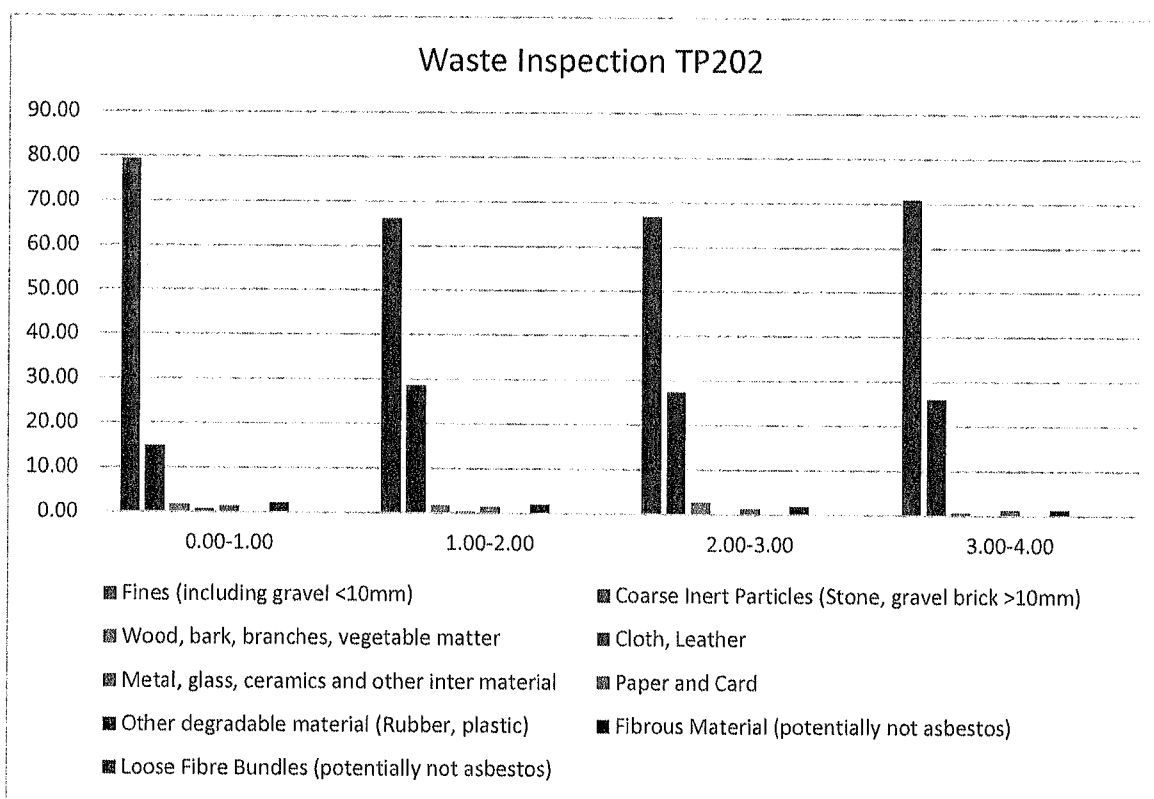




Plate 3 shows a bucket of excavated material from circa 2.00m from TP203

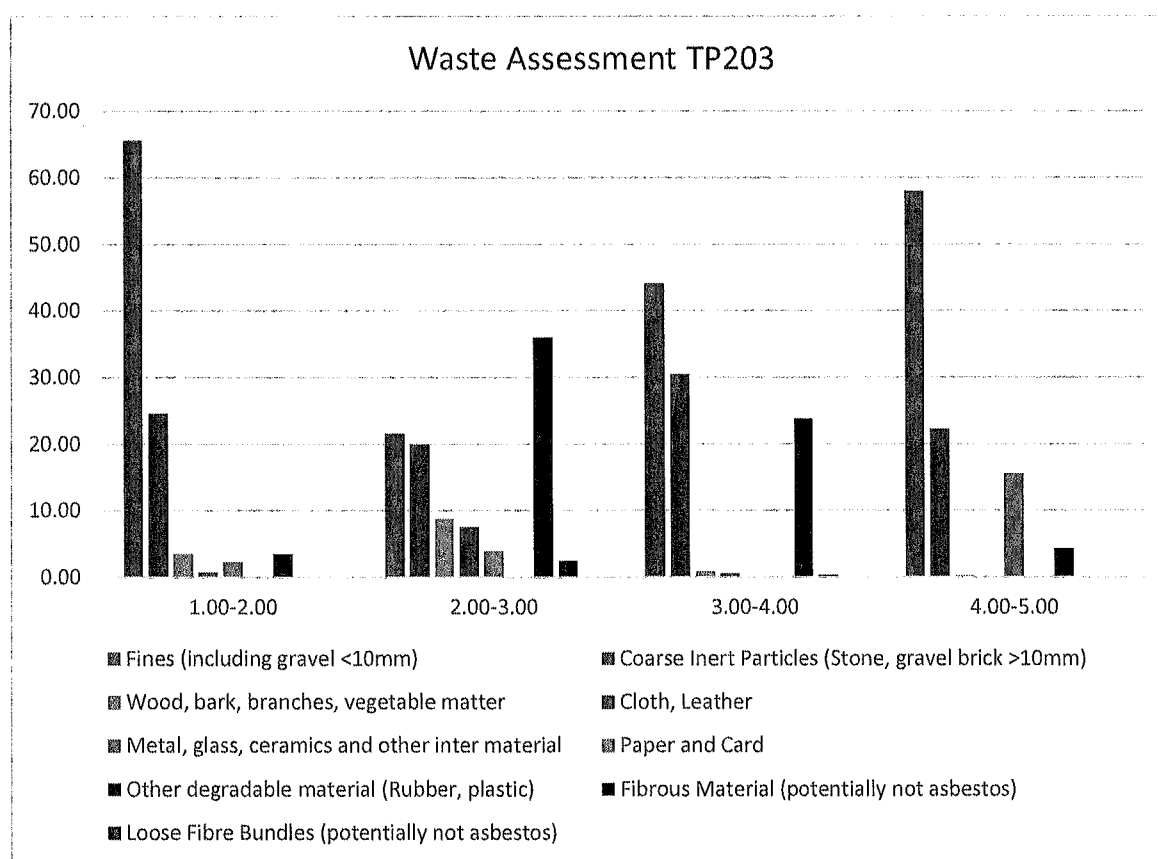




Plate 4 shows a bucket of excavated material from TPO4 at circa 2.00m

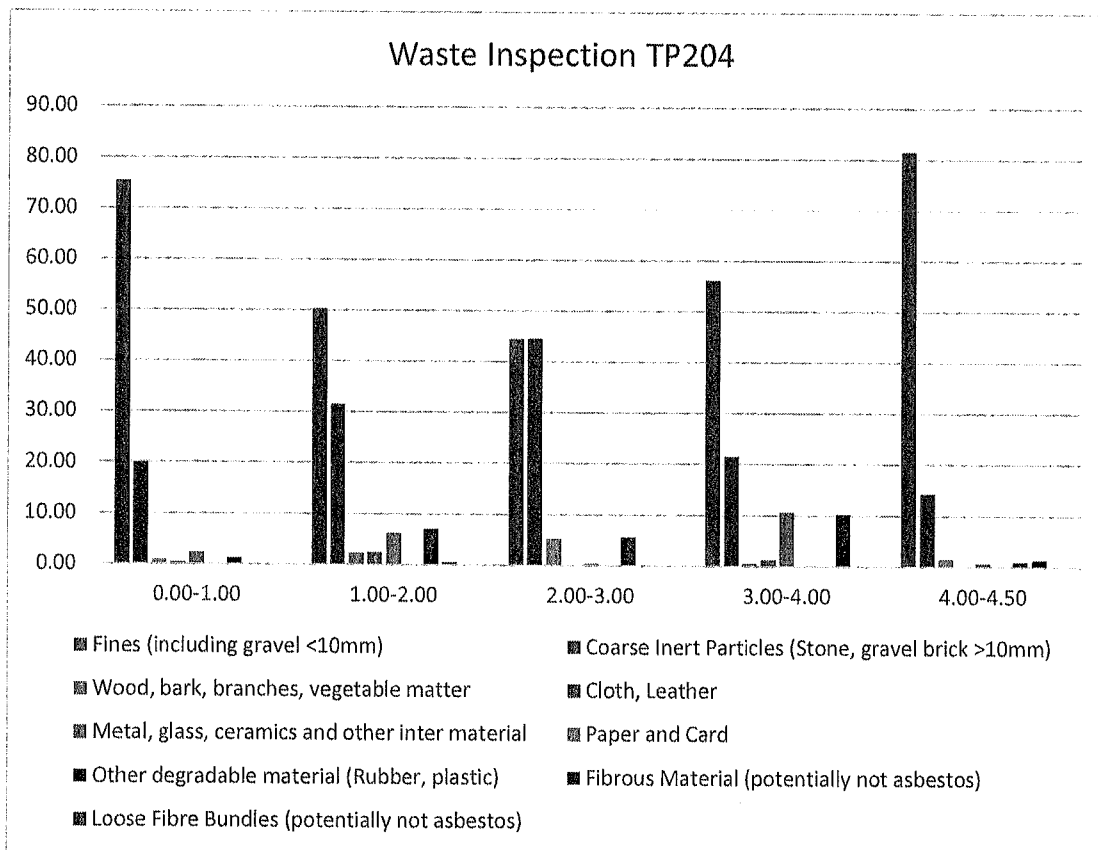
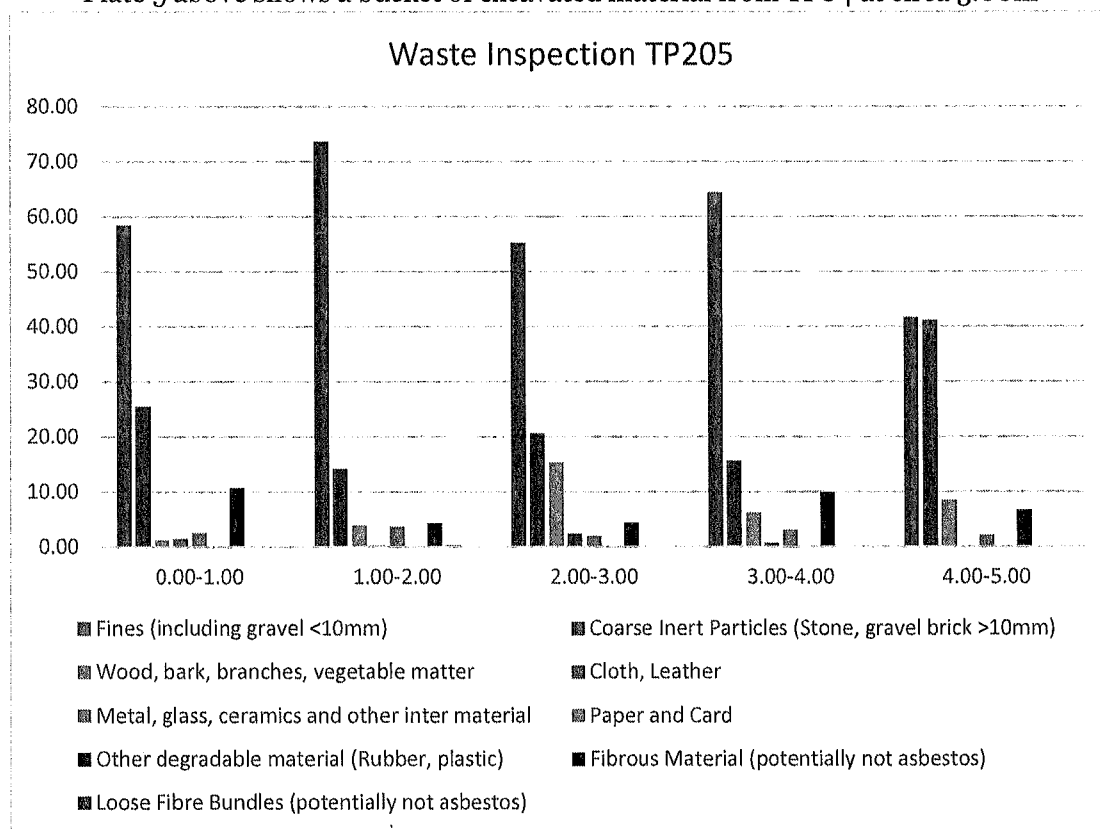
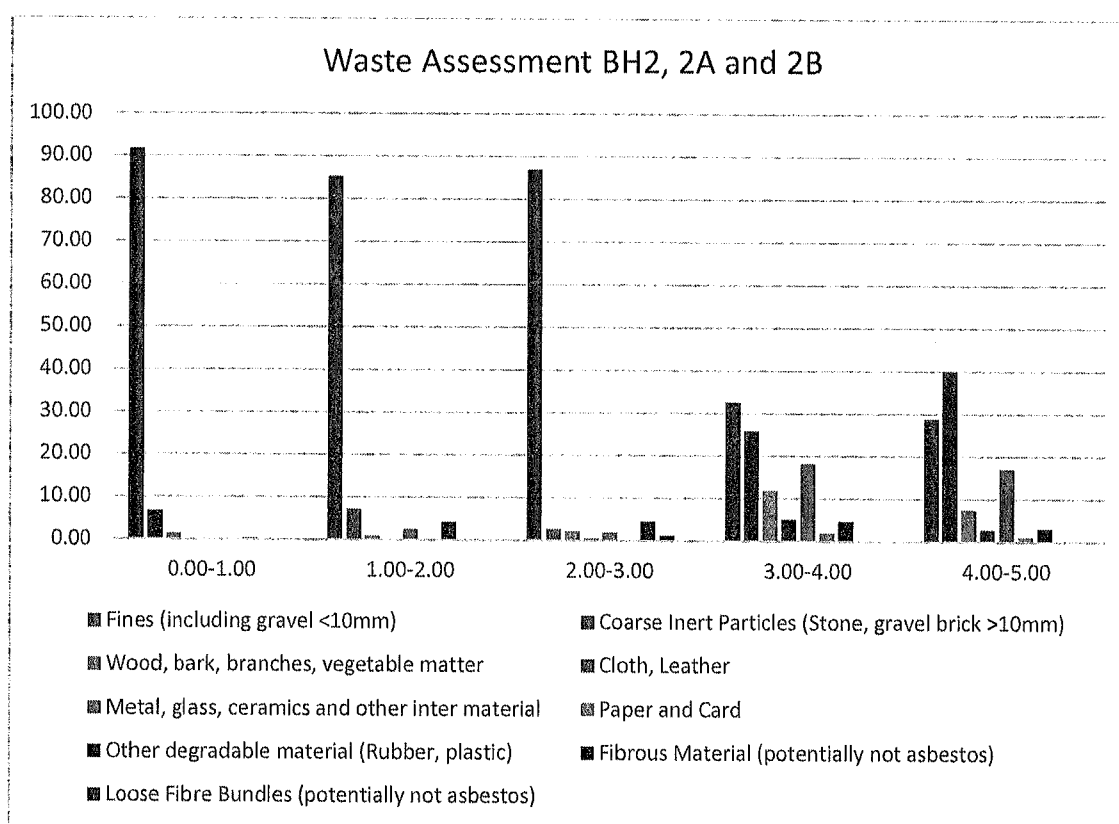
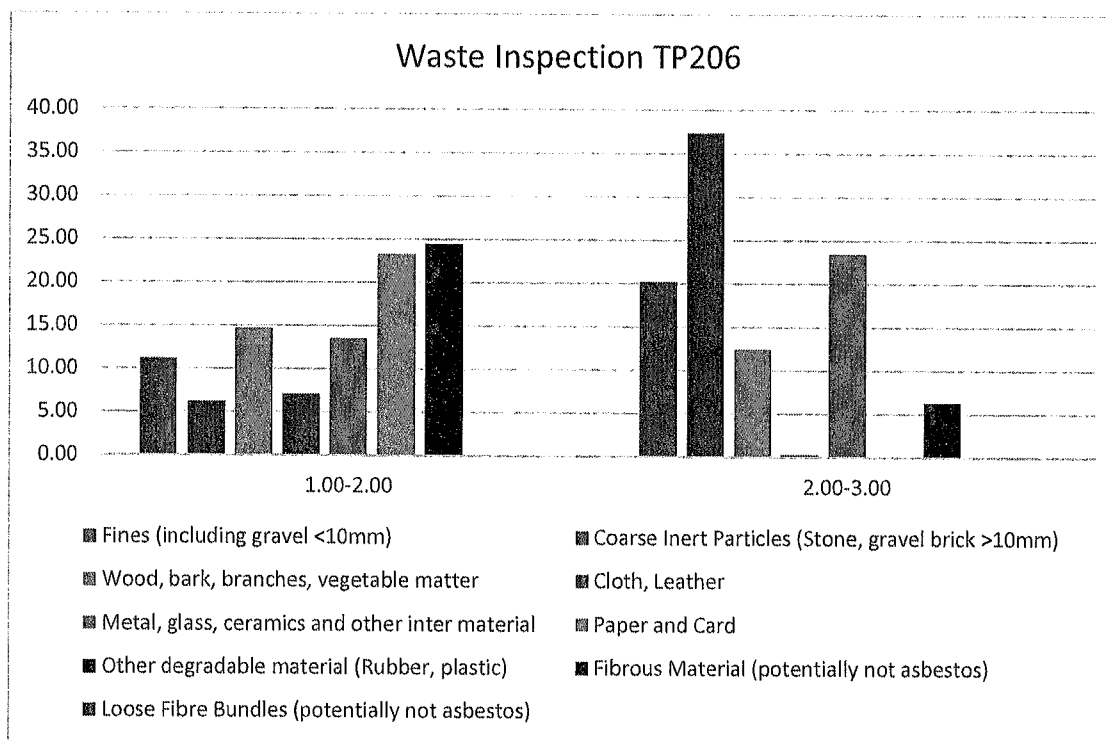
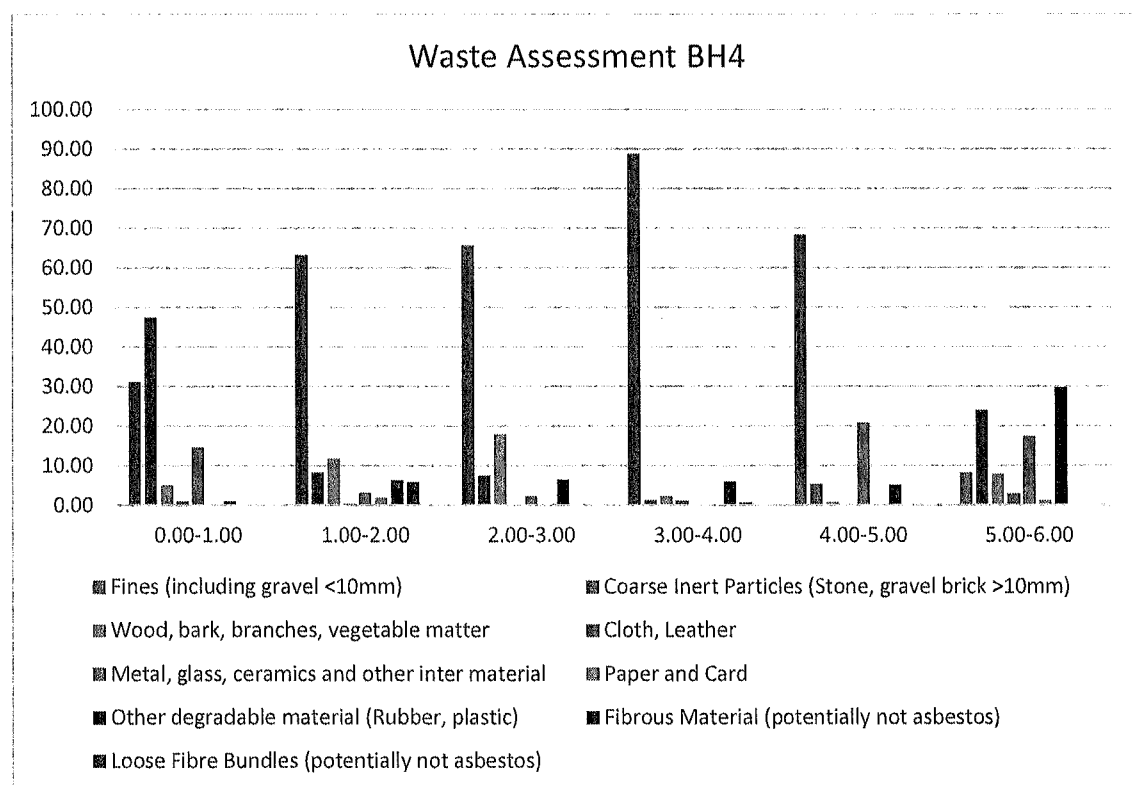
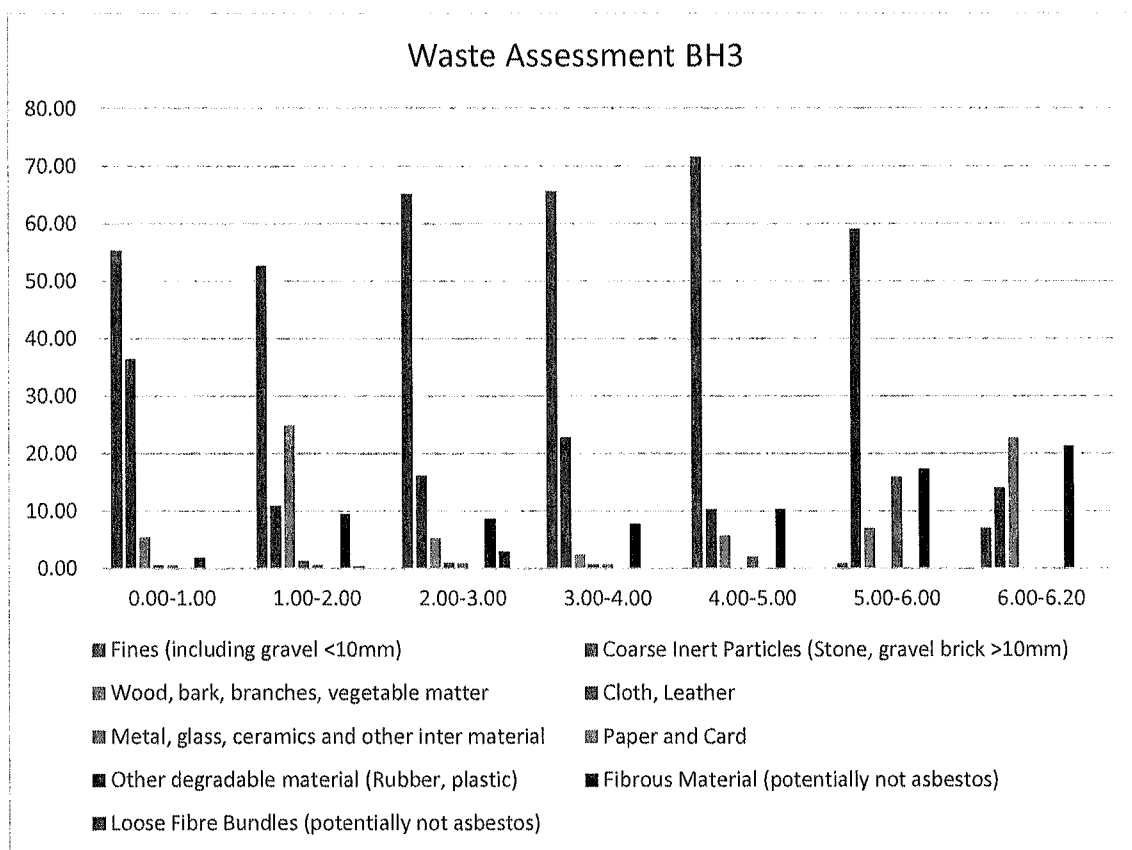




Plate 5 above shows a bucket of excavated material from TPO4 at circa 3.00m







4.4 Weight Assessment

4.4.1 Samples of the waste materials were lightly compacted by hand into a container of known volume and a rough assessment of the weight of the waste was calculated. This was considered to be an appropriate approach as the materials were considered to have already been subjected to bulking due to recent movement of the mounds. Only the finer material mound is likely to exhibit significant bulking when excavated due to its nature and height.

4.4.2 The results of the preliminary weight assessment for stockpiles 1-12 are summarised below:

Materials	Unit Weight (kg/m3)								
	Total	Plastic	Stone	Timber	Metal	Material / carpet	Rubber	Fines and timber fragments	Fines
Stockpile 1	392	2.4	4.4	385.2					
Stockpile 2	633.2	7.6	19.2	606.4					
Stockpile 2	618.8	0.8	1.6	616.4					
Stockpile 2	640	4.0	3.6	632.4					
Stockpile 7	706.8	4.4	2.8					699.6	
Stockpile 8	362	49.6	26.4	88.4	18	164.4			15.2
Stockpile 8	651.6	112	141.2	92.4	42	44.4	3.2		216.4
Stockpile 12	650	102	170.4	94	40	104	0		139.6
Stockpile 12	578	170.8	239.2	96					72

4.4.3 The results of the preliminary weight assessment for stockpiles 13 is summarised below:

Unit Weight (kg/m3)									
Stockpile 13	Fines (including gravel <10mm)	Coarse Inert Particles (Stone, gravel brick >10mm)	Wood, bark, branches, vegetable matter	Cloth, Leather	Metal, glass, ceramics and other inter material	Paper and Card	Other degradable material (Rubber, plastic)	Fibrous Material (Potentially not asbestos)	Loose Fibre Bundles (Potentially not asbestos)
TP201	4651.4	1322.6	148.4	23.7	378.9		184	9	
TP202	3986.5	1401.8	91.2	13.9	74		99.4	3.2	
TP203	2293.1	1134.7	160.2	102.3	256.3		742	31.4	
TP204	3802.7	1674.7	136.6	49.4	227.5		202.9	121.2	
TP205	3167.1	1209.1	360.1	49.3	142		379.4	8	
BH2	1777	137.6	22.4	0	25.3		43.4	0.3	
BH2A	654.9	20.2	16.3	3.9	13.9		34.4	9.4	
BH3	2521.6	866.1	383.7	32.7	33.6		295.7	29.6	

BH4	2310	173.2	236.1	12.1	236	7.9	187.4	45.3	
Total	25164.3	7940	1555	287.3	1387.5	7.9	2168.6	257.4	

- 4.4.4 Natural moisture contents of the materials are likely to vary significantly within the different stockpiles, both vertically and laterally and also due to prevailing weather conditions. Hence the unit weight used in our assessment could be higher at different points within the stockpiles. As an example, within the 'Finer Materials' in Stockpile 13, the moisture content determinations on the random surface samples have recorded values of between 12.1% and 20.4%, but with an average of 18.3%.

4.5 Chemical Laboratory Testing

- 4.5.1 Selected samples were obtained from the main stockpiles and have been tested at the UKAS and MCERTS accredited laboratory of QTS Environmental Ltd in Lenham Heath, Kent. The following analysis have been carried out.

Stockpile 1 – Chipped Timber

- 1 sample for CLEA metals (As, Ba, Be, WSB, Cd, Cr, Cu, Pb, Hg, Ni, Se, V & Zn)
- 1 sample for an asbestos screen
- 1 sample for pH

Stockpile 7 – Mixed Chipped Timber and Waste

- 1 sample for CLEA metals (As, Ba, Be, WSB, Cd, Cr, Cu, Pb, Hg, Ni, Se, V & Zn)
- 1 sample for an asbestos screen
- 1 sample for pH

Stockpile 8 - Finer Material within 'Household' Waste

- 1 sample for CLEA metals (As, Ba, Be, WSB, Cd, Cr, Cu, Pb, Hg, Ni, Se, V & Zn)
- 1 sample for an asbestos screen
- 1 sample for pH
- 1 sample for speciated PAH's (17)
- 1 sample for Loss on Ignition
- 1 sample for Total Organic Carbon
- 1 sample for Mineral Oils
- 1 sample for BTEX (benzene, toluene, ethylbenzene and xylene)

Stockpile 12 - Finer Material within 'Household' Waste

- 1 sample for CLEA metals (As, Ba, Be, WSB, Cd, Cr, Cu, Pb, Hg, Ni, Se, V & Zn)
- 1 sample for an asbestos screen
- 1 sample for pH
- 1 sample for speciated PAH's (17)
- 1 sample for Loss on Ignition
- 1 sample for Total Organic Carbon
- 1 sample for Mineral Oils
- 1 sample for BTEX (benzene, toluene, ethylbenzene and xylene)

Stockpile 13 - Finer Material

- 2 samples for Mercury
- 47 samples for CLEA metals (As, Ba, Be, WSB, Cd, Cr, Cu, Pb, Hg, Ni, Se, V & Zn)
- 116 samples for an asbestos screen
- 54 samples for bulk asbestos identification and Asbestos Quantification (Stages 1, 2 or 3)
- 45 samples for speciated PAH's (17)
- 45 samples for Total Organic Carbon
- 5 samples for Loss on Ignition
- 40 samples for TPH CWG
- 45 samples for BTEX (benzene, toluene, ethylbenzene and xylene)
- 5 samples for Mineral Oils and,
- 7 Waste Acceptance Criteria Testing

5.0 RESULTS

5.1 Summary of Volumes and Weights

5.1.1 The Ricardo-AEA report adopted the following density factors

- >40mm timber materials 0.24 t/m³
- <20mm timber materials 0.43 t/m³
- General Waste 0.37 t/m³
- Trommel Finer Materials 1.30 t/m³

5.1.2 The following table summarises the identified waste stockpiles (1-13), calculated density factors where material permitted and assumed density factors. Stockpile 13 has been summarised below and detailed in a table separately due to the multiple waste types contained within.

Stockpile Number	Waste Description	Calculated Volume m ³	Calculated Density Factor (average) t/m ³	Assumed Density Factor t/m ³	Potential Tonnage tonnes
1	Wood	572	0.39 (1)	-	223
2	Chipped timber	1,087	0.63 (3)	-	685
3	Rubble and general waste	19	-	1.30	25
4	Wood – in building	3	-	0.24	0.7
5	Bagged domestic waste	3	-	-	-
6	Unprocessed timber	20	-	0.24	4.8
7	Chipped timber, sand and waste	73	0.71 (1)	-	52
8	'Household' waste	717	0.56 (4)	-	402
9	Finer material with 'household' waste	42	-	1.30	55
10	'Household' waste	2	-	0.37	0.8
11	'Household' waste	92	-	0.37	34
12	'Household' waste	3,302	-	0.37	1,222
13	'Finer Material'	11,740	various	various	13,982
	TOTAL WASTE	17,672			16,686.30

Note: Value in brackets denotes number of samples assessed

5.1.3 Based on the detailed Forensic TOC analysis undertaken in line with the recommendations in RB17 and using the assumed and calculated and assumed bulking factors from the Opus, the table overleaf give an approximation on the potential weight (tonnes) of the various waste types within Stockpile 13.

Stockpile 13	Calculated Stockpile Volume m ³	Overall Contribution %	Volume m ³	Calculated Density Factor (average) t/m ³ (i)	Assumed Density Factor t/m ³ (ii)	Potential Tonnage (tonnes)
Fines (including gravel <10mm)	11,740	64.00	7,514	1.26 (2)		9,468
Coarse Inert Particles (Stone, gravel brick >10mm)		21.00	2,465		1.30	3,205
Wood, bark, branches, vegetable matter		4.00	470	0.39		183
Cloth, Leather		1.00	117.4		0.37	118
Metal, glass, ceramics and other inter material		4.00	470		1.30	611
Paper and Card		0.02	2.4		1.30	3
Other degradable material (Rubber, plastic)		6.00	704	0.56		394
Total Waste						13,982

Notes:

- i) Value in brackets denotes number of samples assessed
- ii) To be conservative, percentages, volumes and weights have been rounded up to the nearest whole number (where practical).

5.2 Recent Chemical Laboratory Testing

- 5.2.1 The locations of the samples are shown on Opus Drawing J-W0577.00_G003 and the laboratory certificates are presented in Appendix 7.

Timber Stockpiles (Stockpiles 1 + 2)

- 5.2.2 The samples of the waste stockpiles recorded no significant concentrations of heavy metals or speciated PAH's, with the exception of one sample which recorded a lead value of 222mg/kg.
- 5.2.3 No asbestos fibres were recorded in the fines element of the waste stockpile.

Waste Stockpiles (Stockpiles 8 and 12)

- 5.2.4 The samples of the waste stockpiles recorded no significant concentrations of heavy metals or speciated PAH's. (i.e. below residential with plant uptake screening values).
- 5.2.5 No mineral oils or BTEX were recorded above the laboratory detection limit.
- 5.2.6 Total organic carbon values of 3.3% and 4.9% have been recorded.
- 5.2.7 Loss on ignition values of 15.4% and 15.6% have been recorded.
- 5.2.8 No asbestos fibres were recorded in the fines element of the waste stockpile.

Finer Material Stockpile (Stockpile 13)

- 5.2.9 The large stockpile (Stockpile 13) at the eastern end of the site comprises at least three distinct material types, one is a dark brown and grey fine to coarse sand with some to many gravel sized fragments of plastic, some concrete, brick and pottery and occasional timber (Trommell Fines). The second comprises large (>10mm) fragments of brick, concrete and other inert material and the third material type comprises house hold type waste containing significant amounts of plastic, carpet / material, timber, metal, paper, rubber mixed with 'Trommell Fine' material. Localised areas also included tyres and fibrous material which according to the samples we took was proven not to be asbestos by the laboratory.
- 5.2.10 Of the 116 asbestos samples (soils and bulk) analysed across the stockpile varying laterally and with depth, 33 detected the presence of asbestos (28%). The types of asbestos were observed as Chrysotile (white) and Amosite (brown) and were identified both as bound products (i.e. cement fragments) and as loose amosite and chrysotile fibres.
- 5.2.11 Stage 2 (gravimetric) and 3 (PCM) quantification was undertaken on 19 of the positive detections. The results can be summarised as follows:

Bound Product (small fragments of hard cement / bituminous type material)

Quantifications between 0.175% wt/wt and 0.483% wt/wt; and

Loose Fibres

Quantifications between <0.001% wt/wt and 0.003% wt/wt

- 5.2.12 According to the Joint Industry Working Group (JIWG) and Contaminated Land in Real World Environments (CL:AIRE) the definition of quantities would suggest that it would be

reasonable to say that from the data set analyses, the stockpile seems to contain a 'Very Low' (i.e. 0.001% wt./wt. -0.01% wt./wt.) concentration of asbestos, with pockets of 'Large' quantities (i.e. >0.1 % wt./wt.). Given the variance in quantities and types of material (loose fibres and bulk product), it is not possible to give an overall quantification results which is typical of the stockpile as a whole.

- 5.2.13 Concentrations of inorganic compounds were identified in all samples analysed at levels above the limit of detections; however none were significantly elevated. Of specific note was however the presence of Mercury, at a maximum concentration of 1.8mg/kg in TP204 at 0.00-1.00m.
- 5.2.14 No significant concentrations of soluble or volatile organic compounds were identified. Low concentrations of predominantly heavy end hydrocarbon (C₁₆-C₃₅ range) were detected along with low levels of Polycyclic Aromatic Hydrocarbons (PAH). Given the observed presence of asphalt within most of the exploratory hole locations, it is likely that the C₁₆-C₃₅ hydrocarbons and PAHs are associated with the asphalt rather than any sorbed soil concentrations.
- 5.2.15 Loss on ignition values of between 9.5% and 11.4% have been recorded (average 10.8%).
- 5.2.16 Waste Acceptance Criteria (WAC) testing has been undertaken to assess the leachable concentration of the compounds with the results compared against the standard criteria for acceptance within Inert, Non-Hazardous and Hazardous waste management facilities. The soils chemical testing has also been used in the assessment of the classification of the waste and is summarised as follows:
 - Trommell Fines type material would likely have a Waste Code of 19 – 12 - 11 "Waste from mechanically treating waste - Other wastes (including mixtures of materials) from mechanical treatment of waste containing hazardous substances". This code has been adopted given the confirmed presence of asbestos throughout the material and would conservatively be classified as a Hazardous Waste.
 - The large (>10mm) fragments of brick, concrete and other inert material, is considered to be representative of Waste Code 19 – 12 – 09 and would be classified as Inert.
 - The house hold type waste containing significant amounts of plastic, carpet / material, timber, metal, paper, rubber mixed with 'Trommell Fine' material. These materials are considered to be representative of Waste Code 20-03-01 ("Mixed Municipal waste") and is Non-Hazardous only if completely separated from the Trommell Fines, otherwise it would have to be classified as Hazardous.
 - Localised areas also included tyres.

Summary

- 5.2.17 The results of the recent sampling and laboratory testing have recorded varying results to those obtained by Opus within our earlier report. Opus has confirmed that the material within Stockpile 13, is non-homogenous and rather the stockpile is comprised of approximately 9,651 tonnes of hazardous 'Trommell Fines' type material (including wood fragments and asbestos), 3,205 tonnes of inert demolition type material and 1,126 tonnes of Non-Hazardous (if separated from the surrounding Trommell Fines) house hold waste type material.

- 5.2.18 A further clarification from the previous reports, was that the asbestos quantification testing varied significantly, between <0.001 % wt. /wt. and 0.483% wt./wt, as such it is not possible to attribute a single % wt/wt value for asbestos to the whole stockpile 13.
- 5.2.19 In addition to the specific named stockpiles, there exists a number of ancillary waste items which also are located on site and are also illegally stored waste. These include but is not limited to, all non-operational machinery, any liquid containers, liquids themselves, waste UPVC frames and glass panes and tyres etc.

Registered in England & Wales
Company Reg. No: 2847568
Reg Office: Willow House, Brotherswood Court
Great Park Road, Bristol, BS32 4QW



Opus International Consultants (UK)
Unit 2 Fountain Court, Fountain Lane,
St Mellons
Cardiff, CF3 0FB
United Kingdom

t: +44 2920777373
w: www.opusinternational.co.uk

Appendix D -Stockpile 2 Waste Transfer Information

Contract:

Address:

Project Number:

Disposal Graph:

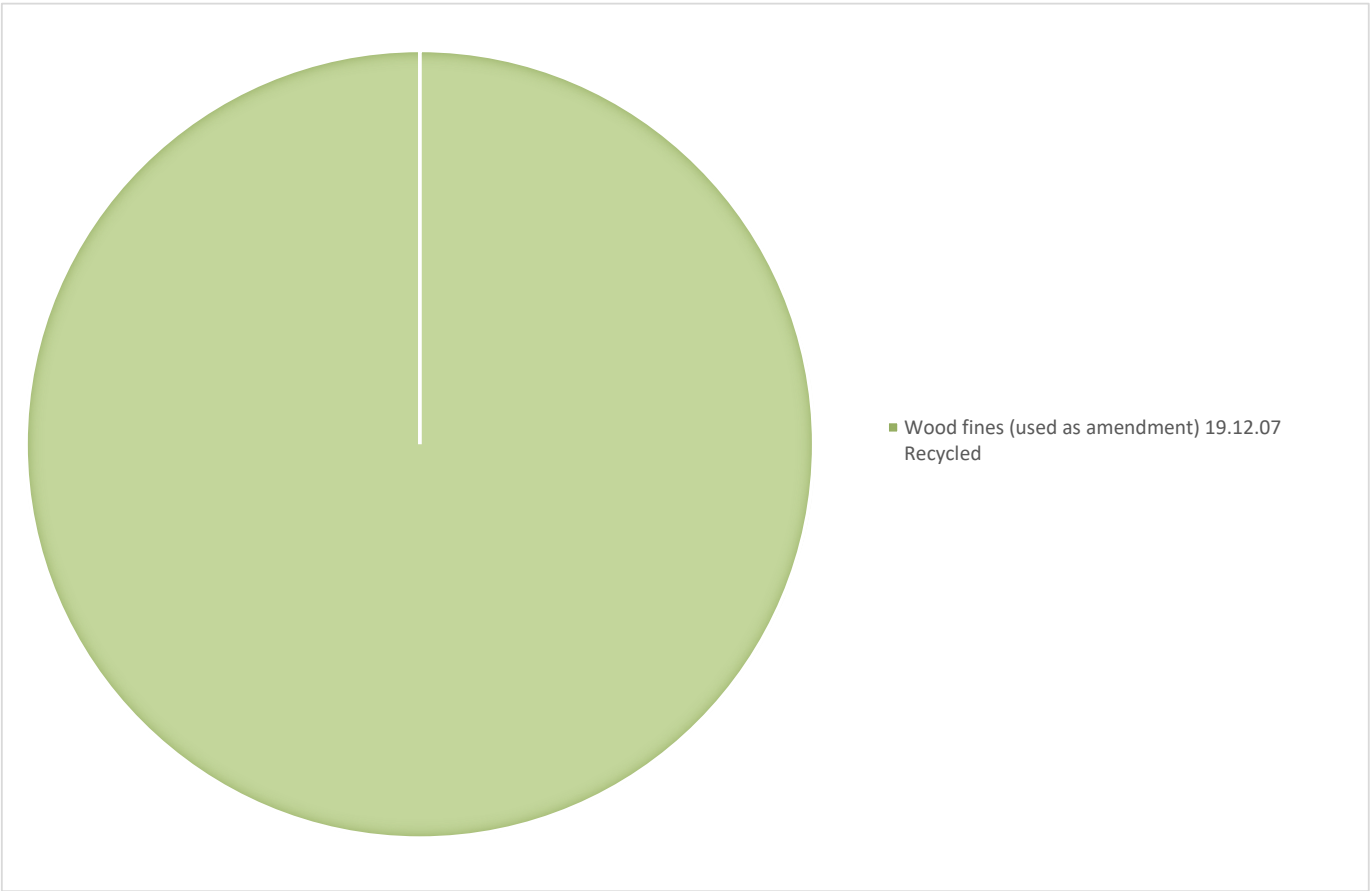
Merthyr Tydfil

Former Merthyr Industrial, Services Limited Site, Pengarnddu, Merthyr Tydfil

T2135

Mar 2020 -

Description	Waste Code	Process	Tonnes	% Recycled	% to landfill
Wood fines (used as amendment)	19.12.07	Recycled	634.30	100.00%	
PERCENTAGE RECYCLED			634.30	100.00%	0.00%



Contract: Merthyr Tydfil
Address: Former Merthyr Industrial, Services Limited Site, Pengarnddu, Merthyr Tydfil
Project Number: T2135
Disposal Log: Mar 2020 -



Date	Conveyance Ticket No.	Disposal Ticket No.	EW C	Action	Waste Type	Weight Tonnes	m3 / Tonne	m3	Reg.No.	Container Type	Disposal Point
11/03/2020	11164	L633093	19.12.07	Collection	Wood fines (used as amendment)	13.360	0.630	21.206	SF09 LVR	40 Yard Container	Biffa-Tracatti Landfill
11/03/2020	11165	L633100	19.12.07	Collection	Wood fines (used as amendment)	12.040	0.630	19.111	SF09 LVR	40 Yard Container	Biffa-Tracatti Landfill
11/03/2020	11166	L633103	19.12.07	Collection	Wood fines (used as amendment)	12.300	0.630	19.524	SF09 LVR	40 Yard Container	Biffa-Tracatti Landfill
11/03/2020	11167	L633105	19.12.07	Collection	Wood fines (used as amendment)	15.060	0.630	23.905	SF09 LVR	40 Yard Container	Biffa-Tracatti Landfill
11/03/2020	11168	L633121	19.12.07	Collection	Wood fines (used as amendment)	15.240	0.630	24.190	SF09 LVR	40 Yard Container	Biffa-Tracatti Landfill
11/03/2020	11169	L633123	19.12.07	Collection	Wood fines (used as amendment)	16.600	0.630	26.349	SF09 LVR	40 Yard Container	Biffa-Tracatti Landfill
12/03/2020	11170	L633150	19.12.07	Collection	Wood fines (used as amendment)	17.600	0.630	27.937	SF09 LVR	40 Yard Container	Biffa-Tracatti Landfill
12/03/2020	11171	L633156	19.12.07	Collection	Wood fines (used as amendment)	16.940	0.630	26.889	SF09 LVR	40 Yard Container	Biffa-Tracatti Landfill
12/03/2020	11172	L633158	19.12.07	Collection	Wood fines (used as amendment)	17.120	0.630	27.175	SF09 LVR	40 Yard Container	Biffa-Tracatti Landfill
12/03/2020	11173	L633168	19.12.07	Collection	Wood fines (used as amendment)	12.460	0.630	19.778	SF09 LVR	40 Yard Container	Biffa-Tracatti Landfill
12/03/2020	11174	L633175	19.12.07	Collection	Wood fines (used as amendment)	14.360	0.630	22.794	SF09 LVR	40 Yard Container	Biffa-Tracatti Landfill
12/03/2020	11175	L633187	19.12.07	Collection	Wood fines (used as amendment)	13.100	0.630	20.794	SF09 LVR	40 Yard Container	Biffa-Tracatti Landfill
12/03/2020	11176	L633192	19.12.07	Collection	Wood fines (used as amendment)	14.820	0.630	23.524	SF09 LVR	40 Yard Container	Biffa-Tracatti Landfill
12/03/2020	11177	L633200	19.12.07	Collection	Wood fines (used as amendment)	13.740	0.630	21.810	SF09 LVR	40 Yard Container	Biffa-Tracatti Landfill
12/03/2020	11178	L633205	19.12.07	Collection	Wood fines (used as amendment)	14.960	0.630	23.746	SF09 LVR	40 Yard Container	Biffa-Tracatti Landfill
12/03/2020	11179	L633210	19.12.07	Collection	Wood fines (used as amendment)	16.460	0.630	26.127	SF09 LVR	40 Yard Container	Biffa-Tracatti Landfill
13/03/2020	11180	L633235	19.12.07	Collection	Wood fines (used as amendment)	16.360	0.630	25.968	SF09 LVR	40 Yard Container	Biffa-Tracatti Landfill
13/03/2020	11181	L633238	19.12.07	Collection	Wood fines (used as amendment)	16.160	0.630	25.651	SF09 LVR	40 Yard Container	Biffa-Tracatti Landfill
13/03/2020	11182	L633246	19.12.07	Collection	Wood fines (used as amendment)	15.600	0.630	24.762	SF09 LVR	40 Yard Container	Biffa-Tracatti Landfill
13/03/2020	11183	L633254	19.12.07	Collection	Wood fines (used as amendment)	17.140	0.630	27.206	SF09 LVR	40 Yard Container	Biffa-Tracatti Landfill
13/03/2020	11184	L633256	19.12.07	Collection	Wood fines (used as amendment)	12.700	0.630	20.159	SF09 LVR	40 Yard Container	Biffa-Tracatti Landfill
13/03/2020	11185	L633265	19.12.07	Collection	Wood fines (used as amendment)	13.480	0.630	21.397	SF09 LVR	40 Yard Container	Biffa-Tracatti Landfill
13/03/2020	11186	L633270	19.12.07	Collection	Wood fines (used as amendment)	13.580	0.630	21.556	SF09 LVR	40 Yard Container	Biffa-Tracatti Landfill
13/03/2020	11187	L633278	19.12.07	Collection	Wood fines (used as amendment)	14.340	0.630	22.762	SF09 LVR	40 Yard Container	Biffa-Tracatti Landfill
13/03/2020	11188	L633285	19.12.07	Collection	Wood fines (used as amendment)	15.600	0.630	24.762	SF09 LVR	40 Yard Container	Biffa-Tracatti Landfill
16/03/2020	11189	L633347	19.12.07	Collection	Wood fines (used as amendment)	12.640	0.630	20.063	SF09 LVR	40 Yard Container	Biffa-Tracatti Landfill
16/03/2020	11190	L633361	19.12.07	Collection	Wood fines (used as amendment)	14.220	0.630	22.571	SF09 LVR	40 Yard Container	Biffa-Tracatti Landfill
16/03/2020	11191	L633364	19.12.07	Collection	Wood fines (used as amendment)	14.200	0.630	22.540	SF09 LVR	40 Yard Container	Biffa-Tracatti Landfill
16/03/2020	11192	L633372	19.12.07	Collection	Wood fines (used as amendment)	14.780	0.630	23.460	SF09 LVR	40 Yard Container	Biffa-Tracatti Landfill
16/03/2020	11193	L633381	19.12.07	Collection	Wood fines (used as amendment)	16.260	0.630	25.810	SF09 LVR	40 Yard Container	Biffa-Tracatti Landfill
16/03/2020	11194	L633386	19.12.07	Collection	Wood fines (used as amendment)	17.840	0.630	28.317	SF09 LVR	40 Yard Container	Biffa-Tracatti Landfill
17/03/2020	11195	L633406	19.12.07	Collection	Wood fines (used as amendment)	14.100	0.630	22.381	SF09 LVR	40 Yard Container	Biffa-Tracatti Landfill
17/03/2020	11196	L633414	19.12.07	Collection	Wood fines (used as amendment)	11.740	0.630	18.635	SF09 LVR	40 Yard Container	Biffa-Tracatti Landfill
17/03/2020	11197	L633421	19.12.07	Collection	Wood fines (used as amendment)	13.240	0.630	21.016	SF09 LVR	40 Yard Container	Biffa-Tracatti Landfill
17/03/2020	11198	L633435	19.12.07	Collection	Wood fines (used as amendment)	14.640	0.630	23.238	SF09 LVR	40 Yard Container	Biffa-Tracatti Landfill
17/03/2020	11199	L633438	19.12.07	Collection	Wood fines (used as amendment)	14.980	0.630	23.778	SF09 LVR	40 Yard Container	Biffa-Tracatti Landfill

Contract: Merthyr Tydfil
Address: Former Merthyr Industrial, Services Limited Site, Pengarnddu, Merthyr Tydfil
Project Number: T2135
Disposal Log: Mar 2020 -



Date	Conveyance Ticket No.	Disposal Ticket No.	EWC	Action	Waste Type	Weight Tonnes	m3 / Tonne	m3	Reg.No.	Container Type	Disposal Point
17/03/2020	11200	L633440	19.12.07	Collection	Wood fines (used as amendment)	14.020	0.630	22.254	SF09 LVR	40 Yard Container	Biffa-Tracatti Landfill
17/03/2020	12170	L633443	19.12.07	Collection	Wood fines (used as amendment)	16.320	0.630	25.905	SF09 LVR	40 Yard Container	Biffa-Tracatti Landfill
17/03/2020	12171	L633459	19.12.07	Collection	Wood fines (used as amendment)	14.000	0.630	22.222	SF09 LVR	40 Yard Container	Biffa-Tracatti Landfill
17/03/2020	12172	L633463	19.12.07	Collection	Wood fines (used as amendment)	16.100	0.630	25.556	SF09 LVR	40 Yard Container	Biffa-Tracatti Landfill
17/03/2020	12173	L633470	19.12.07	Collection	Wood fines (used as amendment)	15.420	0.630	24.476	SF09 LVR	40 Yard Container	Biffa-Tracatti Landfill
17/03/2020	12174	L633486	19.12.07	Collection	Wood fines (used as amendment)	13.300	0.630	21.111	SF09 LVR	40 Yard Container	Biffa-Tracatti Landfill
18/03/2020	12175	L633517	19.12.07	Collection	Wood fines (used as amendment)	15.380	0.630	24.413	SF09 LVR	40 Yard Container	Biffa-Tracatti Landfill
						634.300		1,006.83			

Information Obtained from Opus-Pengarnddu Volume 1 - Revision 1a - November 2017

5.0 RESULTS

5.1.1 The Ricardo-AEA report adopted the following density factors

40mm timber materials	0.24 t/m ³
20mm timber materials	0.43 t/m ³
General Waste	0.37 t/m ³
Trommel Finer Materials	1.30 t/m ³

5.1.2 The following table summarises the identified waste stockpiles (1-13), calculated density factors where material permitted and assumed density factors. Stockpile 13 has been summarised below and detailed in a table separately due to the multiple waste types contained within.

Stockpile Number	Waste Description	Calculated Volume m ³	Calculated Density Factor (average) t/m ³	Assumed Density Factor t/m ³	Potential Tonnage tonnes
1	Wood	572	0.39 (1)	-	223
2	Chipped timber	1,087	0.63 (3)	-	685
3	Rubble and general waste	19	-	1.30	25
4	Wood – in building	3	-	0.24	0.7
5	Bagged domestic waste	3	-	-	-
6	Unprocessed timber	20	-	0.24	4.8
7	Chipped timber, sand and waste	73	0.71 (1)	-	52
8	'Household' waste	717	0.56 (4)	-	402
9	Finer material with 'household' waste	42	-	1.30	55
10	'Household' waste	2	-	0.37	0.8
11	'Household' waste	92	-	0.37	34
12	'Household' waste	3,302	-	0.37	1,222
13	'Finer Material'	11,740	various	various	13,982
	TOTAL WASTE	17,672			16,686.30

Note: Value in brackets denotes number of samples assessed

5.1.3 Based on the detailed Forensic TOC analysis undertaken in line with the recommendations in RB17 and using the assumed and calculated and assumed bulking factors from the Opus, the table overleaf give an approximation on the potential weight (tonnes) of the various waste types within Stockpile 13.



Enzygo specialise in a wide range of technical services:

Property and Sites

Waste and Mineral Planning

Flooding, Drainage and Hydrology

Landscape Architecture

Arboriculture

Permitting and Regulation

Waste Technologies and Renewables

Waste Contract Procurement

Noise and Vibration

Ecology Services

Contaminated Land and Geotechnical

Traffic and Transportation

Planning Services

BRISTOL OFFICE

The Byre
Woodend Lane
Cromhall
Gloucestershire GL12 8AA
Tel: 01454 269 237

SHEFFIELD OFFICE

Samuel House
5 Fox Valley Way
Stocksbridge
Sheffield S36 2AA
Tel: 0114 321 5151

MANCHESTER OFFICE

Ducie House
Ducie Street
Manchester
M1 2JW
Tel: 0161 413 6444

Please visit our website for more information.

enzygo.com