WEST MEADOWS WASTE RECOVERY FACILITY

OPERATING TECHNIQUES DOCUMENT

[APPENDIX 9 – ZLF_OTD]

FEBRUARY 2022

1 INTRODUCTION

1.1 Report background

1.1.1 This section specifically details the operating, monitoring and management procedures for the activities to be undertaken on site.

1.1.2 The current permit allows for the treatment and storage of hazardous wastes which is limited to 10 tonnes per day.

1.1.3 This variation application seeks to increase the current permitted hazardous waste treatment from 10t per day to a maximum of 100t per day and to increase the storage capacity to 150t at any one time. These amendments to the operation move it from a waste 'facility' to a waste 'installation' under the Regulations.

1.1.3 The facility currently has a permitted throughput of 65 000 tonnes and this variation does not seek to increase this amount, rather it seeks to increase the hazardous waste treatment portion of the 65 000 tonnes to a maximum of. 26 000 tonnes, leaving the remainder of the original tonnage dedicated to non-hazardous treatment.

This document forms part of the site Environmental Management System (EMS) and will be reviewed on an annual basis and in the event of any incidents.

2 SITE SETTING

2.1 Site location

2.1.1 The site is located approximately 1km east of Derby City Centre and is centred within the West Meadows Industrial Estate, NGR SK 36807 36177.

2.1.2 The site location and the environmental permit boundary is provided in ZLF_SP.

2.1.3 Access for staff and visitors to the site is achieved via Downing Road off Chequers Road which is located to the north of the site.

2.1.4 HGV access is via the A52 towards the north of the site.

2.1.5 The immediate surroundings of the site largely comprise an industrial setting with the nearest residential dwelling located approximately 516m east of the site off Highfield Cottages.

2.2 Geology

2.2.1 British Geological Survey's (BGS) 'Geology of Britain Viewer' indicates that the bedrock geology comprises of siltstone of the Tarporley Siltstone Formation. The bedrock was formed approximately 242 to 250 million years ago in the Triassic Epoch period.

2.2.2 The superficial geology comprises Alluvium which was formed approximately two million years ago, in the Quaternary Period.

2.3 Hydrogeology

2.3.1 With reference to the Magic Maps Website, the site is not situated within a Groundwater Source Protection Zone (GSPZ).

2.3.2 The bedrock deposits are designated as Secondary B Aquifer which is defined as lower permeability layers which may store limited amounts of groundwater due to localised features.

2.3.3 The superficial deposits are designated as Secondary A which is defined as permeable layer capable of water supplied at a local rather than strategic scale.

2.4 Hydrology

2.4.1 The River Derwent is situated approximately 370m to the south of the site.

2.4.2 The Environment Agency's flood mapping website states that 'the site is situated within an area with a 'Very High' chance of flooding in any given year with land having a 1 in 100 greater chance of flooding. However, as the overall amount of waste to be treated and the footprint of site has not changed, we do not consider the risk to have increased.

2.5 Ecology

2.5.1 A 'Nature and Heritage Conservation Screen' (EPR/AB3904UQ/V005) was requested from the Environment Agency. The screen determines the presence of any site of nature and heritage conservation, or protected species or habitats that may be impacted by the proposal. The results of the screen are provided in Appendix A of this report.

The results of the screen identified 1 designated site within 2km of the site which is summarised in Table 1below.

Table 1: Designated sites

Name of Site	Designation	Distance from site (m)	Direction
The Sanctuary	Local Nature Reserve	1200	SE

3 PROPOSED ACTIVITIES

3.1 Site layout

3.1.1 The site layout can be seen in ZLF_SP.

3.1.2 The site comprises of designated waste reception and storage areas, including a weighbridge for incoming wastes and a quarantine area for non-conforming incoming wastes which ensures that quarantined wastes do not contaminate those which have been deemed suitable for treatment. There is also a treatment area for hazardous waste and for non-hazardous waste.

3.1.3 There are specific areas for the segregated storage of hazardous and non-hazardous wastes awaiting treatment and treated wastes to prevent the cross contamination of waste loads.

3.1.4 Waste is brought onto site in LGVs/HGVs and the design of the main reception area ensures that Waste Collection Vehicles (WCVs) can safely deposit waste within the hazardous waste reception area.

3.2 Plant and Equipment

3.2.1 The following items and machinery are available for use on site:

- Wheeled loading shovel(s).
- Wheel wash.
- Vehicle washing facility.
- Soil washing facility – Non-hazardous.
- Soil washing facility – Hazardous.
- Hazardous waste storage area.
- Non-hazardous waste storage bays.
- Post treatment storage bays.
- Screener.
- Water tanks; and
- Dump truck.

3.2.2 All plant and equipment will be maintained in accordance with manufacturer guidance.

3.2.3 Staff will only be permitted to operate machinery and undertake activities for which they have received appropriate training, as detailed in Section 6 of this report.

3.3 Operating Hours

3.3.1 The standard Operating Hours for the facility, in accordance with the Planning Permission are:

- Monday to Sunday: 00:00 to 23:59

3.3.2 The site will not undertake operations on Public Holidays.

3.4 Permitted Activities

3.4.1 This application seeks to allow 2ZLF Ltd to undertake the following Schedule 1 activities:

i. *Section 5.3 Part A (1) (a) (ii) – Disposal or recovery of hazardous waste with a capacity exceeding 10 tonnes per day involving physico-chemical treatment of hazardous soils (soil washing); and*
ii. *Section 5.6 Part A (1) (a) – Temporary storage of hazardous waste with a total capacity exceeding 50 tonnes pending any of the activities listed in Sections 5.1, 5.2 and 5.3.*

3.4.2 In addition, the following Directly Associated Activities (DAA) will be undertaken:

- Treatment of wastewater.
- On-site storage of fuel and raw materials.
- Storage of site surface water.
- Storage of wastes pending any of the above treatments, wastes will be stored on an impermeable surface with sealed drainage; and
- Storage of wastes post treatment, wastes will be stored on concrete area while awaiting removal from site.

3.4.3 This variation does not seek to add any further waste types.

3.4.4 The facility will accept up to 100t of hazardous waste per day with an aim to be able to process up to 500t of this waste per week.

3.4.5 The facility will have the ability to store up to 150 tonnes of hazardous waste awaiting treatment at any one time.

3.6 Waste Storage

3.6.1 There are clearly defined areas for waste storage and treatment at the site.

3.6.2 Separate storage areas and sumps are provided for the hazardous and non-hazardous waste storage areas to ensure that there is no mixing of these wastes.

3.6.3 The hazardous waste storage area benefits from impermeable concrete surfaces with sealed drainage. Drainage details are provided in ZLF_SP.

3.6.4 All surface water runoff from the waste treatment areas is directed and stored in accordance with details are provided in ZLF_SP.

3.6.5 There is no mixing of runoff from hazardous waste treatment and non-hazardous waste treatment areas.

3.6.6 Runoff from the hazardous waste treatment area is pumped into a holding tank and treated within the onsite water treatment facility so that the water is used on site, negating the need for mains water.

3.6.7 The site currently has a sewer discharge consent as provided by Seven Trent Water. However, it is the Operator's aim to be able to recycle all water within the facility via the effluent treatment plant attached to the soil washing facility. This negates the need to discharge any water from the facility to sewer and instead will create a filter cake which may be removed off site for disposal – ensuring that the water is constantly recycled and treated through the system.

3.6.8 Hazardous wastes will be stored in a single bay on site which is 10 x 12 x 3 m in volume. Vehicles will be directed to discharge their loads by the site manager or site foreman. The site manager and site foreman will have a clearly defined role to ensure that hazardous wastes are not deposited with non-hazardous wastes.

3.6.9 All hazardous storage areas will be provided with an impermeable surface (concrete) with sealed drainage. The impermeable concrete surface will meet the following intended design objectives:

- Impermeable to incidental rain fall.
- Sufficient strength to accommodate plant and equipment.
- Designed with kerbing or edge bunds to retain all incidental rainfall; and

- Designed with sealed joints where applicable and with sufficient falls so that collected surface water can only discharge to engineered sump(s).

3.7 Soil Washing

3.7.1 Hazardous wastes will continue to be bought onto site in either enclosed or sheeted vehicles and will be bound for the washing facility (wastes given in Appendix 8).

3.7.2 Vehicles are directed to the reception area by the site manager where the waste will be visually inspected to ensure it is consistent with the relevant accompanying documentation. The site manager has a clearly defined role to ensure that any non-compliant wastes are not accepted at the site.

3.7.3 Once the hazardous wastes have been accepted, the material will be unloaded into a specially provided bay. The site can safely store up to 150 tonnes of hazardous wastes pre-treatment and propose to treat a maximum of 100t per day.

3.7.4 The hazardous soil washing facility methodology is as follows (note a flow diagram is provided):

- The material is loaded into a hopper which can process 10 tonnes per hour. From here the waste is passed through a screener to remove all oversized components down to 5mm – all oversize which exceeds 25mm is sent off site for disposal. All components between 5 – 25mm are non-hazardous and are either treated in the system or removed from site.
- Once the material has been screened it is then 'scrubbed' with water to remove the contaminants from the soil/sands. The soils/sands are then subjected to a density separator which separates fine and coarse sands by weight. Course clean sand is separated out and removed from the system.
- The finer sand is then treated by a hydro-cyclone which separates out particles by applying a centripetal force – i.e., the material is suspended via a liquid suspension and the hydro-cyclone spins the waste, separating it from the rest of the medium based on the density of the sand. The sand is then passed through a dewatering screen and removed from the system.
- The next step of treatment is to then remove any oil from the system.
- Once the fines have been removed from the system, an anti-foam polymer is added to suppress the production of foam from the hydro-cyclone. The material is then passed through to the Lamella. The Lamella is a series of plates which are set on an angle and are designed to remove

oil from suspension (the oil adheres to the plates). The oil is then recovered and removed off site.

- The fines are then dropped out of the system to a sludge tank and are then subject to a centrifuge, which separates out the water from the material – forming a filter cake. The filter cake is then removed from the site as waste material.
- The resulting water is recycled back to the water tank where it is either reused in the treatment process, or it is treated before being reintroduced back into the treatment process or is used for washdown water. This ensures that all water which is used in the system is ultimately recycled through the system.

3.8 Recovered outputs from the washing process

3..8.1 The washing process produces the following:

Table 2: Recovered materials

Recovered material	Properties	Comment
Oversize Material +80mm	Rocks, soil lumps and other oversize	Rework into the process again and disposal
20-80mm	Stones, rocks	C&D Waste recycler
5-20	Aggregate – clean	Potentially end of waste
63 µ to 5mm	Sand – clean	Potentially end of waste
<63 µ	Cake	Dependent on waste being treated
Water	Treated within plant	Reuse within process
Oil	Recovered	Dispose to oil recovery company
DAF Scum	Contaminated material for disposal	Haz waste disposal

4 WASTE ACCEPTANCE PROCEDURES

4.1 Pre-acceptance procedure

4.1.1 Waste will not be accepted without a prior booking. When an enquiry is made the following information is requested from the potential customer:

- The process producing the waste.
- The quantity of the waste.
- Chemical/radiological analysis of the waste (if applicable).
- The form the waste takes (i.e., solid, liquid, sludge, etc.).
- Any hazards associated with the waste.
- Any specific handling/storage requirements; and
- An EWC code.

4.1.2 The client will always request a waste characterisation or testing report from the holder of the waste.

4.1.3 Photographs of the materials will be provided to enable verification during the waste acceptance stage.

4.1.4 The reports (and photos) are reviewed by qualified members of staff to ensure that the waste is suitable for the proposed treatment process and compliant with the conditions of the Environmental Permit.

4.1.5 Each client must complete a Waste Information Form (WIF), sent to them by 2ZLF, detailing all the information outlined in 4.1.1.

4.1.6 The client will also be required to give an estimation of quantities to be delivered so that 2ZLF can ensure that there will be sufficient capacity for waste storage and treatment.

4.1.7 On occasion 2ZLF retain the right to visit the site where the waste is produced or stored to obtain representative samples for chemical analysis by an accredited laboratory.

4.1.8 By obtaining all the information above, the operator will be able to assess the suitability of the waste for treatment.

4.2 Acceptance procedure

4.2.1 The on-site acceptance procedure is followed to ensure that the waste delivered to the site conforms to the information provided at the pre-acceptance stage.

4.2.2 Waste arriving at the site is pre-booked (minimum 24hrs notice) which ensures that capacity is available, and it is compliant with the conditions of the permit and suitable for the activity.

4.2.3 Waste is only be accepted where there is sufficient capacity and delivery is always planned with delivery date agreed by the client and the waste holder.

4.2.4 Waste is only delivered to site by licensed waste carriers.

4.2.5 The documentation is checked on arrival and if it is incorrect or the waste does not match the written description then the waste is rejected.

4.2.6 Where possible, loads will be visually inspected prior to unloading to ensure compliance with the permit. In addition, a sample of the waste may be taken for verification of the waste.

4.2.7 The following details will be recorded by the member of staff receiving the waste:

- The date and time of delivery of the load.
- The origin of the waste.
- The quantity and characteristics of the waste.
- The producer; and
- Details and description of the vehicle delivering the waste, the driver's signature, and the operator of the vehicle.

4.2.8 The waste deliveries are accompanied by a waste consignment note if the waste is hazardous.

4.2.9 In accordance with Sector Guidance Note SGN5.06, the Operator will ensure that waste delivered to the site is accompanied by a written description of the waste describing:

- The physical and chemical composition.
- Characteristics and handling precautions.
- Compatibility issues; and
- Information specifying the original waste producer and process.

4.2.10 In accordance with Sector Guidance Note SGN5.06, on site verification will confirm;

- The identity of the waste.
- The description of the waste.
- Consistency with pre-acceptance information and the proposed treatment method; and
- Compliance with the permit.

4.2.11 A note is made in the site diary of any incidents involving unauthorised waste, and a record of the rejected waste maintained.

4.2.12 All loads are visually inspected when unloaded into the appropriate storage bay to ensure that the load is compliant with the conditions of the permit and the documentation provided by the waste producer.

4.2.13 Both hazardous and non-hazardous waste are currently accepted at site.

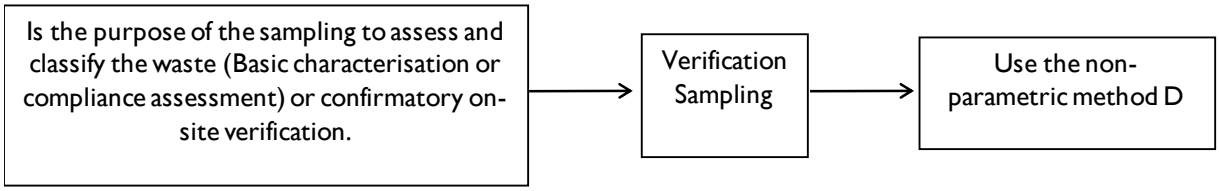
4.2.14 If unpermitted wastes are inadvertently delivered to the site, the unauthorised waste will be loaded back on to the vehicle that discharged it, if possible and safe to do so. If this is not possible, then the unpermitted waste will be stored on the site in the designated quarantine area located within the permitted area. Such wastes would then be removed from the site as soon as practicable and in any case no later than 48 hours after receipt.

4.3 Verification sampling

4.3.1 Verification sampling is undertaken at the waste acceptance stage to enable 2ZLF to confirm the exact composition of the waste to enable them to match the treatment required to each load or job.

4.3.2 Wastes that do not match accompanying documentation will be turned away.

4.3.3 Waste verification has been developed in conjunction with Environment Agency Guidance Note WM3 and Waste Sampling and Testing for Disposal to Landfill as follows:



4.3.4 The nature of the waste is well characterised prior to arrival on site.

4.3.5 2ZLF samples at a minimum of every 500 tonnes of hydrocarbon/oil or heavy metal contaminated wastes, unless the wastes are from a single site (in the case of contaminated soils), in which case it is sampled at a frequency of one sample every 500 tonnes until a total of 2,000 tonnes has been received on site.

4.3.6 Where the site receives more than 2 000 tonnes of material from the same source, verification sampling decreases to once 2 000 tonnes has been received, to one sample per 1 000 tonnes to a total of 10 000 tonnes.

4.3.7 If the site receives over 10 000 tonnes, then sampling of wastes received over 10 000 tonnes shall consist of one sample per 2 000 tonnes.

4.3.8 If the waste source produces less waste than 500 tonnes, the site ensures at least one verification sample is taken for the incoming waste to ensure compliance with the Regulations.

4.3.9 Verification sampling of incoming wastes is undertaken for the contaminants as set out in Table 5 below to ensure that the site can determine the effectiveness of the treatment.

Table 3 Verification sampling of incoming wastes

Parameter	**Parameter acceptance limit (mg/kg)**
Asbestos Free Fibres	<0.1%
Zinc	No Limit
Copper	
Nickel	
Cadmium	
Lead	
Mercury (organic)	
Chromium (VI)	
Selenium	
Arsenic	
TPH	
PAH	

5 SITE SECURITY

5.1 Cameras and lighting

5.1.1 The site is fully fenced with lockable gates and gates are always kept locked when the site is not operational.

5.1.2 The site has CCTV cameras which are placed strategically around the site.

5.2 Maintenance

5.2.1 Site staff is briefed so that in the event of evidence suggesting unauthorised access or vandalism being found, the matter must be reported to the site office. If the incident involved unauthorised tipping or spillage of any waste, the Environment Agency will be informed.

5.2.2 Any identified damage to the buildings structure that could prejudice the security will be recorded and temporarily repaired as necessary before the end of that working day. Permanent repair or replacement will be undertaken as soon as practicable.

6 RECORD KEEPING

6.1 Record keeping and documentation

6.1.1 The operator has an Environmental Management System (EMS) in place which includes procedures and check sheets for the recording of accidents and incidents, maintenance of the site and any plant and equipment, as well as staff training, technical competence and health and safety. A summary of the EMS is provided in Appendix 3.

6.1.2 Records relating to waste pre-acceptance, acceptance and treatment will be kept for a minimum of six years.

6.1.3 Records relating to waste characterisation and any compliance sampling and testing or on-site verification will be maintained at the site's head office.

7 MANAGEMENT

7.1 Technical competence

7.1.1 Technical competence will be provided by Mr S Hodges who holds the appropriate level of competence for hazardous treatment and a copy of the WAMITAB is included in Appendix 2 of this document. The technically competent manager will record all time spent on site in the Site Diary.

7.2 Management system

7.2.1 The operator has an Environmental Management System (EMS) that meets the requirements of the EA's relevant guidance. A summary of the EMS is provided in Appendix 3 of this document.

7.2.2 The EMS identifies and minimises the risk of pollution from the activities associated with the operation, particularly operations, maintenance, accidents, incidents and non-conformance. Relevant sections of the EMS are described below.

a) Operations

Documented procedures are in place to control operations that may have an adverse impact on the environment.

b) Maintenance

All plant and equipment will be operated and maintained in accordance with the manufacturer's specifications. All plant and equipment will be supported by a maintenance log.

An inventory of the plant will be kept on site together with details on routine maintenance. Each item of plant will have a dedicated Maintenance log. These measures will reduce the likelihood of plant failure.

All site staff will be suitably trained and will report any such incidents to the Site Manager.

c) Accidents/incidents/non-conformance

It is essential that all necessary measures are taken to prevent accidents, which may have environmental consequences, and to have procedures in place to limit those consequences should they occur. To fulfil this requirement it will be necessary to follow these basic principles:

- Identification of hazard;
- Likelihood of occurrence;

- Consequence of occurrence; and
- Mitigation measures.

The risk of accidents will be minimised by appropriate staff training together with staff awareness of the safety and environmental risks.

All operatives involved in the waste handling and treatment operations shall always wear appropriate PPE, such as hard hats, high visibility jackets, ear defenders and gloves. Dust masks are available.

Incidents and non-conformances may include:

- The rejection of waste;
- Complaints made relating to odour, noise, air quality; and
- The breach of conditions of the Environmental Permit.

All non-conformances will be recorded on a Non-Compliance Report (NCR).

The NCR will describe the non-conformance and action taken. All non-conformances will be discussed at Senior Management meetings to prevent a recurrence.

With incidents and non-conformance there may be complaints raised. If this should occur there is a Complaints Procedure that will be implemented to investigate the source of the complaint, provide appropriate corrective action, and report the findings.

7.3 Spills & leaks

In the unlikely event of a leak or spillage from on-site plant or wastes received, the procedures identified in the current EMS will be followed.

7.4 Fires

In the highly unlikely event that an ignited load arrives at the site, the waste will be placed at least 10m away from wastes currently on site. This waste will be visually monitored from a safe distance and the Fire Brigade and Environment Agency will be immediately notified.

Appropriate firefighting equipment is available at the site. Fire on the site will be treated as an emergency and site staff will be instructed to take the following actions in such an event:

- Notify Fire and Rescue Service without delay;

- Notify the Environment Agency as soon as practicable;
- If safe, isolate the burning area and attempt to extinguish the fire; and
- Evacuate the area if necessary, with staff proceeding to the designated muster point.

Any waste used in firefighting will be contained where possible by placement of booms and closing surface water discharge outlet valves. Retained liquids will be disposed of appropriately.

7.5 Records

7.5.1 A record of all waste delivered to the site and recycled/unrecoverable materials leaving the site will be maintained (including transfer notes and weighbridge tickets) will be kept on site for a minimum of 6 years.

7.5.2 A Site Diary is kept in the site office and updated daily.

7.5.3 The diary is used to record all incidents on site involving accidents, spillages, vandalism, complaints etc. This will provide an ongoing record and allow for investigative and corrective action to take place in line with the requirements of the client's EMS.

7.5.4 The Site Diary will include the following:

- The name of the Certificate of Technical Competence holder attending the site on any particular date;
- Details of all visitors, including status and times of arrival and departure;
- Details of maintenance, modification, repair, replacement, delivery and return, and breakdown of any plant and machinery in line with the principles of planned preventative maintenance;
- Weather conditions;
- Non-conforming wastes and actions taken; and
- Damage to vehicles, fences, gates, etc. and incidents of trespass.

7.5.5 In addition to this, a daily environmental monitoring checklist will be completed.

7.5.6 A copy of the Environmental Permit for the site is displayed in a convenient location in the site office, allowing suitable access for all persons working on or visiting the site.

9 ENERGY AND RESOURCES

9.1 Energy use

9.1.1 The energy requirements of the facility are low and are associated with the treatment processes as well as the lighting of this area.

9.1.2 As the energy requirements of the facility in general are low, no improvements are considered necessary. Basic energy saving measures will be adopted and continually reviewed. This includes measures such as:

- Efficient use of plant and machinery to avoid unnecessary ignition;
- Plant and machinery to be switched off when not in use; and
- Regular maintenance of all plant and machinery.

9.2 Resource use

9.2.1 The activities on site require low amounts of resources.

9.2.2 Water may be used at the site during dry conditions to control the generation of dust and will be utilised within the soil washing facility. The water will be used only when necessary, and the minimum amount will be used. Water collected in the sealed drainage system will be treated in the sites effluent treatment plant before being used on site.

9.2.3 Fuels and chemicals associated with on-site plant are stored in the location as detailed in ZLF_SP.

9.2.4 All fuels and chemicals are appropriately stored and bunded.

9.2.5 Monitoring of the use of diesel will be undertaken in accordance with the site's EMS.

10 MONITORING

10.1 Fugitive emissions

10.1.1 Further to the assessment of the operations in accordance with the Environment Agency's H1 Guidance, fugitive air quality monitoring is proposed for PM10's at the facility.

10.1.2 While the West Meadows Waste Recovery Facility isn't located within an Air Quality Management Area (AQMA), it is within 200m of the air quality management area located on the A52.

10.1.3 Monitoring is proposed to be undertaken in accordance with Environment Agency guidance (SGN5.06 – Treatment of Hazardous and Non-hazardous Waste) as set out in Table 6 below:

Table 4: Particulate benchmarks

Activity Benchmark Value	Activity Benchmark Value
Fugitive emissions from equipment, plant buildings, storage yards and materials handling	"No visible dust" criteria may normally be appropriate

10.1.4 Agency Guidance note M17 sets out emission guidelines for waste sites to ensure that nuisance dust will not impact on sensitive receptors. M17 sets out that dust is not likely to cause a nuisance at sensitive receptors provided it does not exceed 200 mg $m^{-2}day^{-1}$. Monitoring is normally undertaken using a Frisbee Gauge.

10.1.5 M17 set out that dust should be monitored at the sensitive receptors. However, given that the site is within an industrial setting which contains the potential for several dust sources, it has been determined that it would be more useful to place the Frisbee Gauges at the site boundary rather than at sensitive receptors.

10.1.6 Frisbee Gauges will be placed with one upwind at the site boundary to provide background air quality, and two downwind of the facility at the site boundary to ensure any dust generated is intercepted from the 2ZLF activities. This will ensure that the site can accurately measure their own dust emissions, if emission limits were to be exceeded at the downwind boundary, levels could then be compared with

the upwind levels to determine if the site has breached, or if off site activities have caused the exceedances.

Table 5 Proposed monitoring to be undertaken at the site for fugitive emissions.

Monitoring Point reference	Parameter	Parameter	Reference Period	Monitoring Frequency	Monitoring standard or method
Monitoring Points A, B and C as shown in the Dust Management Plan, Appendix D	PM_{10}	200 mg m^{-2} day^{-1}	Continuous	Daily for the first week of operations, then monthly thereafter	As per M17

10.2 Process monitoring

10.2.1 Wastes will be treated to a required end specification depending where the waste products are to be sent to i.e. if they will be sent for disposal, further recovery or will be sold as sand and aggregate. To this end, the major outputs of the system are as follows:

Table 6: Endpoint of recovered materials from the hazardous washing facility:

Item	End designation
Sand	Sold as inert
Filter Cake	Sent for further treatment
Wash Water	Treated and reused on site
Oversize	Disposal
Recovered Oil	Recovery

10.2.2 Tables 9 – 12 below outlines the process monitoring that will be undertaken to provide confirmation that all outputs of the facility undergo suitable process monitoring to ensure that they are sent to the correct facility for onwards recovery or disposal.

Table 6: Treatment endpoint for produced sands

Parameter	Units	Treatment end point	Derivation tool
pH		-	
Asbestos		0	
Heavy Metals			
Arsenic	mg/kg	37	C4SL
Cadmium	mg/kg	22	C4SL
Chromium (VI)	mg/kg	21	C4SL
Lead	mg/kg	200	C4SL
Mercury (Total)	mg/kg	1.2	CIEH/LQM S4ULs
Nickel	mg/kg	110	CIEH/LQM S4ULs
Selenium	mg/kg	250	CIEH/LQM S4ULs
Copper	mg/kg	200	CIEH/LQM S4ULs
Zinc	mg/kg	450	CIEH/LQM S4ULs
Hydrocarbons			
Naphthalene	mg/kg	5.6	CIEH/LQM S4ULs
Fluorene	mg/kg	400	CIEH/LQM S4ULs
Phenanthrene	mg/kg	220	CIEH/LQM S4ULs
Acenaphthene	mg/kg	510	CIEH/LQM S4ULs
Acenaphthylene	mg/kg	420	CIEH/LQM S4ULs
Anthracene	mg/kg	5,400	CIEH/LQM S4ULs
Benzo(a)Anthracene	mg/kg	11	CIEH/LQM S4ULs
Benzo(b)fluoranthene	mg/kg	3.3	CIEH/LQM S4ULs
Benzo(k)fluoranthene	mg/kg	93	CIEH/LQM S4ULs
Benzo(g,h,i)perylene	mg/kg	340	CIEH/LQM S4ULs
Benzo(a)Pyrene	mg/kg	5	C4SL, CLEA v1.071 model
Chrysene	mg/kg	22	CIEH/LQM S4ULs
Indeno(1,2,3-cd)pyrene	mg/kg	36	CIEH/LQM S4ULs

Di-enzo(a,h)anthracene	mg/kg	0.28	CIEH/LQM S4ULs
Fluoranthene	mg/kg	560	CIEH/LQM S4ULs
Total EPA – 16 PAH's			
Aliphatic >C5 - C6	mg/kg	78	CIEH/LQM S4ULs
Aliphatic >C6 - C8	mg/kg	230	CIEH/LQM S4ULs
Aliphatic >C8 - C10	mg/kg	65	CIEH/LQM S4ULs
Aliphatic >C10 - C12	mg/kg	330 (118)vap	CIEH/LQM S4ULs
Aliphatic >C12 - C16	mg/kg	2,400 (59)sol	CIEH/LQM S4ULs
Aromatic >C5 - C7	mg/kg	0.41	CIEH/LQM S4ULs
Aromatic >C7 - C8	mg/kg	290	CIEH/LQM S4ULs
Aromatic >C8 - C10	mg/kg	83	CIEH/LQM S4ULs
Aromatic >C10 - C12	mg/kg	180	CIEH/LQM S4ULs
Aromatic >C12 - C16	mg/kg	330	CIEH/LQM S4ULs
Aromatic >C16 - C21	mg/kg	540	CIEH/LQM S4ULs
Aromatic >C21 - C35	mg/kg	1,500	CIEH/LQM S4ULs
Aromatic (C5 - C35)	mg/kg		
Total >C5 - C35	mg/kg		
Benzene	mg/kg	0.41	C4SL App D, CLEA v1.071 model
Toluene	mg/kg	290	CIEH/LQM S4ULs
Ethylbenzene	mg/kg	110	CIEH/LQM S4ULs
p -xylene	mg/kg	130	CIEH/LQM S4ULs
m-xylene	mg/kg	140	CIEH/LQM S4ULs
o-xylene	mg/kg	140	CIEH/LQM S4ULs
MTBE	µg/l	15	WHO

Table 7: Testing regime for filter cake

Parameter	Units	Level	Derivation tool
pH			
Asbestos			
Heavy Metals			
Arsenic	mg/kg	-	C4SL
Cadmium	mg/kg	-	C4SL
Chromium (VI)	mg/kg	-	C4SL
Lead	mg/kg	-	C4SL
Mercury (Total)	mg/kg	-	CIEH/LQM S4ULs
Nickel	mg/kg	-	CIEH/LQM S4ULs
Selenium	mg/kg	-	CIEH/LQM S4ULs
Copper	mg/kg	-	CIEH/LQM S4ULs
Zinc	mg/kg	-	CIEH/LQM S4ULs
Naphthalene	mg/kg	-	CIEH/LQM S4ULs
Fluorene	mg/kg	-	CIEH/LQM S4ULs
Phenanthrene	mg/kg	-	CIEH/LQM S4ULs
Acenaphthene	mg/kg	-	CIEH/LQM S4ULs
Acenaphthylene	mg/kg	-	CIEH/LQM S4ULs
Anthracene	mg/kg	-	CIEH/LQM S4ULs
Benzo(a)Anthracene	mg/kg	-	CIEH/LQM S4ULs
Benzo(b)fluoranthene	mg/kg	-	CIEH/LQM S4ULs
Benzo(k)fluoranthene	mg/kg	-	CIEH/LQM S4ULs
Benzo(g,h,i)perylene	mg/kg	-	CIEH/LQM S4ULs
Benzo(a)Pyrene	mg/kg	-	C4SL, CLEA v1.071 model
Chrysene	mg/kg	-	CIEH/LQM S4ULs
Indeno(1,2,3-cd)pyrene	mg/kg	-	CIEH/LQM S4ULs
Di-enzo(a,h)anthracene	mg/kg	-	CIEH/LQM S4ULs
Fluoranthene	mg/kg	-	CIEH/LQM S4ULs

Total EPA – 16 PAH's		-	
Aliphatic >C5 - C6	mg/kg	-	CIEH/LQM S4ULs
Aliphatic >C6 - C8	mg/kg	-	CIEH/LQM S4ULs
Aliphatic >C8 - C10	mg/kg	-	CIEH/LQM S4ULs
Aliphatic >C10 - C12	mg/kg	-	CIEH/LQM S4ULs
Aliphatic >C12 - C16	mg/kg	-	CIEH/LQM S4ULs
Aromatic >C5 - C7	mg/kg	-	CIEH/LQM S4ULs
Aromatic >C7 - C8	mg/kg	-	CIEH/LQM S4ULs
Aromatic >C8 - C10	mg/kg	-	CIEH/LQM S4ULs
Aromatic >C10 - C12	mg/kg	-	CIEH/LQM S4ULs
Aromatic >C12 - C16	mg/kg	-	CIEH/LQM S4ULs
Aromatic >C16 - C21	mg/kg	-	CIEH/LQM S4ULs
Aromatic >C21 - C35	mg/kg	-	CIEH/LQM S4ULs
Aromatic (C5 - C35)	mg/kg	-	
Total >C5 - C35	mg/kg	-	
Benzene	mg/kg	-	C4SL App D, CLEA v1.071 model
Toluene	mg/kg	-	CIEH/LQM S4ULs
Ethylbenzene	mg/kg	-	CIEH/LQM S4ULs
p -xylene	mg/kg	-	CIEH/LQM S4ULs
m-xylene	mg/kg	-	CIEH/LQM S4ULs
o-xylene	mg/kg	-	CIEH/LQM S4ULs
MTBE	µg/l	-	WHO

Table 8: Testing regime for oversize materials

Parameter	Units	Level	Derivation tool
pH			
Asbestos			
Heavy Metals			
Arsenic	mg/kg	-	C4SL
Cadmium	mg/kg	-	C4SL
Chromium (VI)	mg/kg	-	C4SL
Lead	mg/kg	-	C4SL
Mercury (Total)	mg/kg	-	CIEH/LQM S4ULs
Nickel	mg/kg	-	CIEH/LQM S4ULs
Selenium	mg/kg	-	CIEH/LQM S4ULs
Copper	mg/kg	-	CIEH/LQM S4ULs
Zinc	mg/kg	-	CIEH/LQM S4ULs
Naphthalene	mg/kg	-	CIEH/LQM S4ULs
Fluorene	mg/kg	-	CIEH/LQM S4ULs
Phenanthrene	mg/kg	-	CIEH/LQM S4ULs
Acenaphthene	mg/kg	-	CIEH/LQM S4ULs
Acenaphthylene	mg/kg	-	CIEH/LQM S4ULs
Anthracene	mg/kg	-	CIEH/LQM S4ULs
Benzo(a)Anthracene	mg/kg	-	CIEH/LQM S4ULs
Benzo(b)fluoranthene	mg/kg	-	CIEH/LQM S4ULs
Benzo(k)fluoranthene	mg/kg	-	CIEH/LQM S4ULs
Benzo(g,h,i)perylene	mg/kg	-	CIEH/LQM S4ULs
Benzo(a)Pyrene	mg/kg	-	C4SL, CLEA v1.071 model
Chrysene	mg/kg	-	CIEH/LQM S4ULs
Indeno(1,2,3-cd)pyrene	mg/kg	-	CIEH/LQM S4ULs
Di-enzo(a,h)anthracene	mg/kg	-	CIEH/LQM S4ULs
Fluoranthene	mg/kg	-	CIEH/LQM S4ULs

Total EPA – 16 PAH's		-	
Aliphatic >C5 - C6	mg/kg	-	CIEH/LQM S4ULs
Aliphatic >C6 - C8	mg/kg	-	CIEH/LQM S4ULs
Aliphatic >C8 - C10	mg/kg	-	CIEH/LQM S4ULs
Aliphatic >C10 - C12	mg/kg	-	CIEH/LQM S4ULs
Aliphatic >C12 - C16	mg/kg	-	CIEH/LQM S4ULs
Aromatic >C5 - C7	mg/kg	-	CIEH/LQM S4ULs
Aromatic >C7 - C8	mg/kg	-	CIEH/LQM S4ULs
Aromatic >C8 - C10	mg/kg	-	CIEH/LQM S4ULs
Aromatic >C10 - C12	mg/kg	-	CIEH/LQM S4ULs
Aromatic >C12 - C16	mg/kg	-	CIEH/LQM S4ULs
Aromatic >C16 - C21	mg/kg	-	CIEH/LQM S4ULs
Aromatic >C21 - C35	mg/kg	-	CIEH/LQM S4ULs
Aromatic (C5 - C35)	mg/kg	-	
Total >C5 - C35	mg/kg	-	
Benzene	mg/kg	-	C4SL App D, CLEA v1.071 model
Toluene	mg/kg	-	CIEH/LQM S4ULs
Ethylbenzene	mg/kg	-	CIEH/LQM S4ULs
p -xylene	mg/kg	-	CIEH/LQM S4ULs
m-xylene	mg/kg	-	CIEH/LQM S4ULs
o-xylene	mg/kg	-	CIEH/LQM S4ULs
MTBE	µg/l	-	WHO

Table 9: Testing regime for recovered oil

Parameter	Units	Level	Derivation tool
pH			
Chrysene	mg/kg	-	CIEH/LQM S4ULs
Indeno(1,2,3-cd)pyrene	mg/kg	-	CIEH/LQM S4ULs
Di-enzo(a,h)anthracene	mg/kg	-	CIEH/LQM S4ULs
Fluoranthene	mg/kg	-	CIEH/LQM S4ULs
Total EPA – 16 PAH's		-	
Aliphatic >C5 - C6	mg/kg	-	CIEH/LQM S4ULs
Aliphatic >C6 - C8	mg/kg	-	CIEH/LQM S4ULs
Aliphatic >C8 - C10	mg/kg	-	CIEH/LQM S4ULs
Aliphatic >C10 - C12	mg/kg	-	CIEH/LQM S4ULs
Aliphatic >C12 - C16	mg/kg	-	CIEH/LQM S4ULs
Aromatic >C5 - C7	mg/kg	-	CIEH/LQM S4ULs
Aromatic >C7 - C8	mg/kg	-	CIEH/LQM S4ULs
Aromatic >C8 - C10	mg/kg	-	CIEH/LQM S4ULs
Aromatic >C10 - C12	mg/kg	-	CIEH/LQM S4ULs
Aromatic >C12 - C16	mg/kg	-	CIEH/LQM S4ULs
Aromatic >C16 - C21	mg/kg	-	CIEH/LQM S4ULs
Aromatic >C21 - C35	mg/kg	-	CIEH/LQM S4ULs
Aromatic (C5 - C35)	mg/kg	-	
Total >C5 - C35	mg/kg	-	
Benzene	mg/kg	-	C4SL App D, CLEA v1.071 model
Toluene	mg/kg	-	CIEH/LQM S4ULs
Ethylbenzene	mg/kg	-	CIEH/LQM S4ULs
p -xylene	mg/kg	-	CIEH/LQM S4ULs
m-xylene	mg/kg	-	CIEH/LQM S4ULs
o-xylene	mg/kg	-	CIEH/LQM S4ULs

MTBE	µg/l	-	WHO

10.3 Vermin and pests

10.3.1 The proposed waste types to be accepted at the site will not attract vermin and pests.

10.3.2 If, on detection or notification of scavenging animals or birds that are causing a nuisance, immediate action will be taken to; remove or deter them from site; and to isolate and secure the wastes attracting the scavengers against further scavenging where possible.

10.3.3 On detection of pests, insects or vermin an appropriate professional pest/vermin control contractor will be employed. In addition, any waste subject to infestation or that has attracted vermin will be considered for removal from the site.

10.4 Control and monitoring of litter

10.4.1 The overall risk presented by the escape of litter from the facility has been assessed to be low. The site will be monitored daily for signs of escaping materials. An inspection around the site will be undertaken every day and any litter noted will be collected and placed in the untreated waste storage area.

10.4.2 If there is an escape of litter from the site, arrangements will be made for its collection as soon as is practicable. Spillage of materials on the site will be cleaned as soon as is practicable. Monitoring and actions will be recorded.