Intended for
Dunton Technologies Limited

Date
December 2022

Project Number
1620013520-002

BRIDGE STREET NORTH
BAT ASSESSMENT

RAMBOLL Bright ideas. Sustainable change.

BRIDGE STREET NORTH
BAT ASSESSMENT

Project name	**Dunton Smethwick - BAT Assessment**
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Approved by	**Richard Wood**

CONTENTS

1. INTRODUCTION

Dunton Technologies Limited ("Dunton") proposes to operate a Hazardous Waste Treatment Facility located at Bridge Street North, Smethwick, UK.

The facility undertakes treatment of contaminated soils via physio-chemical treatment and bioremediation and with a maximum of treatment capacity of 215,000 tonnes of hazardous waste per year.

The proposed activities are subject to regulation under the under the Environmental Permitting (England and Wales) Regulations 2016 (as amended) (EPR) as they relate to the treatment of waste. Under provisions of Schedule 1:

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

Where a permit is required under the EPR, the operations must meet the 'Best Available Techniques' (BAT) requirements as set out in the relevant BAT Reference Documents relevant to the industry, in this case the Waste Treatment.

This report presents the findings of an assessment of site operations and techniques against the applicable BREF, BAT conclusions and Sector Guidance:

- Best Available Techniques (BAT) Conclusions for Waste Treatment – August 2018;
- Best Available Techniques (BAT) Reference Document for Waste Treatment – August 2018; and
- Sector Guidance Note S5.06 – Recovery and Disposal of Hazardous and Non Hazardous Waste; May 2013.

The proposed site layout and further details of the site and operations are described in more detail in the application document reference 1620013520-002, 'Dunton Bridge Street North, Application for an Environmental', December 2022.

2. BEST AVAILABLE TECHNIQUES (BAT) CONCLUSIONS FOR WASTE TREATMENT

<table>
<tr><th>BAT No</th><th>BAT Justification</th><th>Operating To BAT</th><th>Operator Comments</th></tr>
<tr><td>Scope</td><td>These BAT conclusions concern the following activities specified in Annex I to Directive 2018/1147/EU:
<table>
<tr><th>Activity listed in Schedule 1 of the EP Regulations</th><th>Description of specified activity</th><th>Details</th></tr>
<tr><td>S5.3 A(1)(a)(i) Disposal of hazardous waste with a capacity exceeding 10 tonnes per day involving biological treatment.</td><td>Biological treatment of hazardous waste for recovery (R5).</td><td>From storage of wastes to treatment using bioremediation in biopiles.</td></tr>
<tr><td>S5.3 A(1)(a)(ii) Disposal or recovery of hazardous waste with a capacity exceeding 10 tonnes per day involving physico-chemical treatment.</td><td>Asbestos removal from wastes (R5).</td><td>From storage of wastes to treatment via hand picking and despatch of wastes off-site. Treatment in a dedicated enclosed and abated picking cabin.</td></tr>
<tr><td>S5.6 A(1)(a) Temporary storage of hazardous waste with a total capacity exceeding 50 tonnes.</td><td>Storage of hazardous waste prior to on-site treatment for the purpose of recover (R13).</td><td>From receipt of waste to its treatment.</td></tr>
</table></td><td></td><td>The BAT Conclusions for Waste Treatment apply as the proposed permitted activities are defined under 5.3, and 5.6 of Schedule 1 to the Environmental Permitting Regulations 2016.</td></tr>
<tr><td>BAT 1</td><td>In order to improve the overall environmental performance, BAT is to implement and adhere to an environmental management system (EMS) that incorporates all of the following features:
i. commitment of the management, including senior management;
ii. definition, by the management, of an environmental policy that includes the continuous improvement of the environmental performance of the installation;
iii. planning and establishing the necessary procedures, objectives and targets, in conjunction with financial planning and investment;
iv. implementation of procedures paying particular attention to:
a. structure and responsibility,
b. recruitment, training, awareness and competence,
c. communication,
d. employee involvement,
e. documentation,
f. effective process control,
g. maintenance programmes,
h. emergency preparedness and response,
i. safeguarding compliance with environmental legislation;
v. checking performance and taking corrective action, paying particular attention to:
a. monitoring and measurement (see also the JRC Reference Report on Monitoring of emissions to air and water from IED installations – ROM),
b. corrective and preventive action,</td><td>Yes</td><td>As per Dunton’s sister sites, the facility will operate to an integrated management system that will be accredited to the ISO 14001 standard and externally audited by Alcumus ISOQAR.
Accreditation to this standard provides assurance that the site has extensive systems and procedures in place to ensure effective management of the site.
The site has reviewed the requirements of the BREF and has concluded that the management system will be representative of BAT, including but not limited to the following:
The site has extensive procedures for process operation and emergency preparedness.
The site is committed to continuous improvement and regularly reviews improvement opportunities with COTC and WAMITAB audits, providing corrective actions which are logged and subsequently tracked.
Senior management is heavily involved in the site’s management systems with annual reviews being undertaken and also involved in the development of the site’s environmental policy and procedures, in conjunction with financial planning and investment.
The site’s management systems are subject to periodic auditing. The site undertakes routine internal audits as well as periodic assessment by independent external auditors. The sites are also subject to regular customer audits.
The environmental impacts of the new site have been considered throughout its design and development. Where possible, the most efficient equipment has been chosen and due consideration has been given to minimising environmental impacts from emissions to air, water, energy use and waste.
During the development of the new process and equipment, ‘other than normal operating conditions’ (OTNOC) scenarios have been considered to ensure that potential pollution scenarios have been considered.</td></tr>
</table>

<table>
<tr><th>BAT No</th><th>BAT Justification</th><th>Operating To BAT</th><th>Operator Comments</th></tr>
<tr><td></td><td>
c. maintenance of records,
d. independent (where practicable) internal or external auditing in order to determine whether or not the EMS conforms to planned arrangements and has been properly implemented and maintained;
vi. review, by senior management, of the EMS and its continuing suitability, adequacy and effectiveness;
vii. following the development of cleaner technologies;
viii. consideration for the environmental impacts from the eventual decommissioning of the plant at the stage of designing a new plant, and throughout its operating life;
ix. application of sectoral benchmarking on a regular basis;
x. waste stream management (see BAT 2);
xi. an inventory of waste water and waste gas streams (see BAT 3);
xii. residues management plan (see description in Section 6.5);
xiii. accident management plan (see description in Section 6.5);
xiv. odour management plan (see BAT 12);
xv. noise and vibration management plan (see BAT 17).

Applicability: The scope (e.g. level of detail) and nature of the EMS (e.g. standardised or non-standardised) will generally be related to the nature, scale and complexity of the installation, and the range of environmental impacts it may have (determined also by the type and amount of wastes processed).
</td><td></td><td></td></tr>
<tr><td>BAT 2</td><td>
In order to improve the overall environmental performance of the plant, BAT is to use all of the techniques given below.
<table>
<tr><th colspan="2">Technique</th><th>Description</th></tr>
<tr><td>a</td><td>Set up and implement waste characterisation and pre-acceptance procedures</td><td>These procedures aim to ensure the technical (and legal) suitability of waste treatment operations for a particular waste prior to the arrival of the waste at the plant. They include procedures to collect information about the waste input and may include waste sampling and characterisation to achieve sufficient knowledge of the waste composition. Waste pre-acceptance procedures are risk-based considering, for example, the hazardous properties of the waste, the risks posed by the waste in terms of process safety, occupational safety and environmental impact, as well as the information provided by the previous waste holder(s).</td></tr>
<tr><td>b</td><td>Set up and implement waste acceptance procedures</td><td>Acceptance procedures aim to confirm the characteristics of the waste, as identified in the pre-acceptance stage. These procedures define the elements to be verified upon the arrival of the waste at the plant as well as the waste acceptance and rejection criteria. They may include waste sampling, inspection and analysis. Waste acceptance procedures are risk-based considering, for example, the hazardous properties of the waste, the risks posed by the waste in terms of process safety,</td></tr>
</table>
</td><td>Yes</td><td>
a) Dunton has rigorous waste pre-acceptance and acceptance procedures in place.
Prior to waste being transported to site, it is sampled and analysed at a UKAS accredited laboratory. All wastes are characterised by the client with support from Dunton. This information is provided on a site-specific basis and waste loads are from single sources.
Waste not conforming to the pre-acceptance criteria will be rejected.

b) Waste acceptance procedures are implemented when the waste arrives at the site.
Wastes are visually inspected and verification sampling is undertaken using a portable analyser. The portable analysers are capable of measuring hydrocarbons and heavy metals.
Where analysis shows wastes to approach (or exceed) waste acceptance thresholds, wastes will be stored within the quarantine bays until receipt of laboratory analysis.
When the composition has been confirmed, the material can then be transferred to the picking station for processing.

c) Dunton utilises an electronic system for tracking waste from arrival at the site, through treatment and to removal from the site. The system records the type and quantity of wastes as well as details such as the composition.

d) Verification sampling is undertaken for all wastes treated at the site. For verification sampling, three subsamples are taken for every 250 tonnes of waste material treated (using the Cone and Quarter Method). This forms one composite sample per 250 tonnes. The material is then stored until the results of the verification sampling are received to
</td></tr>
</table>

BAT No	BAT Justification			Operating To BAT	Operator Comments
			occupational safety and environmental impact, as well as the information provided by the previous waste holder(s).		ensure that the waste has been appropriately treated. Once the verification results show that treatment has been successful, the waste is moved to the post treatment bays where it may be mixed with other treated and verified wastes. e) The processes proposed do not involve incompatible wastes or the storage and treatment of wastes that require specific segregation. However, wastes for physico-chemical treatment (asbestos removal) and biological treatment are stored separately. Treated waste soils are not mixed until verification sampling has been undertaken and the results indicate that the treatment objectives have been successful. Analysis is undertaken by a UKAS accredited laboratory to confirm that the treatment standards have been achieved. f) Wastes arriving at the site are segregated and are not mixed until they have been successfully treated (confirmed by verification sampling), as stated above. g) Waste streams are limited to asbestos and hydrocarbon contaminated soils. Waste loads are sampled and analysed at a UKAS accredited laboratory prior to being transported to site. On receipt, waste loads are visually inspected and analysed using a portable analyser (hydrocarbons and heavy metals) to confirm that the waste meets the waste acceptance criteria.
		c	Set up and implement a waste tracking system and inventory	A waste tracking system and inventory aim to track the location and quantity of waste in the plant. It holds all the information generated during waste pre-acceptance procedures (e.g. date of arrival at the plant and unique reference number of the waste, information on the previous waste holder(s), pre-acceptance and acceptance analysis results, intended treatment route, nature and quantity of the waste held on site including all identified hazards), acceptance, storage, treatment and/or transfer off site. The waste tracking system is risk-based considering, for example, the hazardous properties of the waste, the risks posed by the waste in terms of process safety, occupational safety and environmental impact, as well as the information provided by the previous waste holder(s).	
		d	Set up and implement an output quality management system	This technique involves setting up and implementing an output quality management system, so as to ensure that the output of the waste treatment is in line with the expectations, using for example existing EN standards. This management system also allows the performance of the waste treatment to be monitored and optimised, and for this purpose may include a material flow analysis of relevant components throughout the waste treatment. The use of a material flow analysis is risk-based considering, for example, the hazardous properties of the waste, the risks posed by the waste in terms of process safety, occupational safety and environmental impact, as well as the information provided by the previous waste holder(s).	
		e	Ensure waste segregation	Waste is kept separated depending on its properties in order to enable easier and environmentally safer storage and treatment. Waste segregation relies on the physical separation of waste and on procedures that identify when and where wastes are stored.	
		f	Ensure waste compatibility prior to mixing or blending of waste	Compatibility is ensured by a set of verification measures and tests in order to detect any unwanted and/or potentially dangerous chemical reactions between wastes (e.g. polymerisation, gas evolution, exothermal reaction, decomposition, crystallisation, precipitation) when mixing, blending or carrying out other treatment operations. The compatibility tests are risk-based considering, for example, the hazardous properties of the waste, the risks posed by the waste in terms of process safety, occupational safety and environmental impact, as well as the information provided by the previous waste holder(s).	

<table>
<tr><th>BAT No</th><th>BAT Justification</th><th>Operating To BAT</th><th>Operator Comments</th></tr>
<tr><td></td><td>
<table>
<tr><td></td><td>g</td><td>Sort incoming solid waste</td><td>Sorting of incoming solid waste aims to prevent unwanted material from entering subsequent waste treatment process(es). It may include:
- manual separation by means of visual examinations;
- ferrous metals, non-ferrous metals or all-metals separation;
- optical separation, e.g. by near-infrared spectroscopy or X-ray systems;
- density separation, e.g. by air classification, sink-float tanks, vibration tables;
- size separation by screening/sieving.</td></tr>
</table>
</td><td></td><td></td></tr>
<tr><td>BAT 3</td><td>In order to facilitate the reduction of emissions to water and air, BAT is to establish and to maintain an inventory of waste water and waste gas streams, as part of the environmental management system (see BAT 1), that incorporates all of the following features:
i) information about the characteristics of the waste to be treated and the waste treatment processes, including:
a. simplified process flow sheets that show the origin of the emissions;
b. descriptions of process-integrated techniques and waste water/waste gas treatment at source including their performances;
ii) information about the characteristics of the waste water streams, such as:
a. average values and variability of flow, pH, temperature, and conductivity;
b. average concentration and load values of relevant substances and their variability (e.g. COD/TOC, nitrogen species, phosphorus, metals, priority substances/micropollutants);
c. data on bioeliminability (e.g. BOD, BOD to COD ratio, Zahn-Wellens test, biological inhibition potential (e.g. inhibition of activated sludge)) (see BAT 52);
iii) information about the characteristics of the waste gas streams, such as:
a. average values and variability of flow and temperature;
b. average concentration and load values of relevant substances and their variability (e.g. organic compounds, POPs such as PCBs);
c. flammability, lower and higher explosive limits, reactivity;
c. presence of other substances that may affect the waste gas treatment system or plant safety (e.g. oxygen, nitrogen, water vapour, dust).

Applicability: The scope (e.g. level of detail) and nature of the inventory will generally be related to the nature, scale and complexity of the installation, and the range of environmental impacts it may have (determined also by the type and amount of wastes processed).</td><td>Yes</td><td>i. Dunton operates a sister site based in Wolverhampton, utilising the same process operations for the treatment of waste. The processes are well defined and have been optimised. The process applied at Bridge Street North is described in detail in 1620013520-002 Dunton Bridge Street North, Permit Application, December 2022.

ii. There are no emissions to controlled waters from the site; effluent will be discharged to foul sewer under a Trade Effluent Discharge Consent with relevant water undertaker. The site will discharge to sewer in compliance with the emission limits stipulated in the consent.
As Dunton’s sister site processes similar materials, the waste water streams are characterised and well understood.

iii. Emissions to air are limited to dust generated from the movement of soils and potentially low concentrations of VOCs from soils that are contaminated with hydrocarbons. The emission profiles are well understood from the operations at Dunton’s sister site. Releases to atmosphere are below the BAT-AELs (see also BAT 8)</td></tr>
<tr><td>BAT 4</td><td>In order to reduce the environmental risk associated with the storage of waste, BAT is to use all of the techniques given below.
<table>
<tr><th></th><th>Technique</th><th>Description</th><th>Applicability</th></tr>
<tr><td>a</td><td>Optimised storage location</td><td>This includes techniques such as:
- the storage is located as far as technically and economically possible from sensitive receptors, watercourses, etc.;
- the storage is located in such a way so as to eliminate or minimise the unnecessary handling of wastes within the plant (e.g. the same wastes are handled twice or more or the transport distances on site are unnecessarily long).</td><td>Generally applicable to new plants.</td></tr>
</table>
</td><td>Yes</td><td>a) Wastes are segregated and stored within dedicated storage bays within a building.
• The storage bays contain a sump to provide containment of any liquids within the building. The air extraction system from the storage bays has HEPA and carbon filters to prevent any releases of dust and VOCs to atmosphere.
• Wastes received on site are received into a delivery bay which is located within the building. Waste is moved to storage and then to treatment. These movements are undertaken within the building and therefore minimise the potential for impacts resulting from storage. There are no other routine movements of waste on site.
b) The maximum storage capacity of the storage bays has been calculated. Dunton operates to rigorous pre-acceptance and acceptance procedures. Wastes are only booked for treatment if there is sufficient capacity available. There is an electronic tracking system that allows wastes quantities to be monitored throughout the treatment process.</td></tr>
</table>

<table>
<tr><th>BAT No</th><th colspan="4">BAT Justification</th><th>Operating To BAT</th><th>Operator Comments</th></tr>
<tr><td></td><td colspan="4"><table>
<tr><td>b</td><td>Adequate storage capacity</td><td>Measures are taken to avoid accumulation of waste, such as:
- the maximum waste storage capacity is clearly established and not exceeded taking into account the characteristics of the wastes (e.g. regarding the risk of fire) and the treatment capacity;
- the quantity of waste stored is regularly monitored against the maximum allowed storage capacity;
- the maximum residence time of waste is clearly established.</td><td rowspan="3">Generally applicable.</td></tr>
<tr><td>c</td><td>Safe storage operation</td><td>This includes measures such as:
- equipment used for loading, unloading and storing waste is clearly documented and labelled;
- wastes known to be sensitive to heat, light, air, water, etc. are protected from such ambient conditions;
- containers and drums are fit for purpose and stored securely.</td></tr>
<tr><td>d</td><td>Separate area for storage and handling of packaged hazardous waste</td><td>When relevant, a dedicated area is used for storage and handling of packaged hazardous waste.</td></tr>
</table></td><td></td><td>c) Wastes are stored within dedicated storage bays within the building. The waste tracking system allows the waste to be tracked throughout the system. Bays are allocated to specific types of waste.
d) n/a – bulk deliveries of waste soils only, no packaging.</td></tr>
<tr><td>BAT 5</td><td colspan="4">In order to reduce the environmental risk associated with the handling and transfer of waste, BAT is to set up and implement handling and transfer procedures.
Description
Handling and transfer procedures aim to ensure that wastes are safely handled and transferred to the respective storage or treatment. They include the following elements:
- handling and transfer of waste are carried out by competent staff;
- handling and transfer of waste are duly documented, validated prior to execution and verified after execution;
- measures are taken to prevent, detect and mitigate spills;
- operation and design precautions are taken when mixing or blending wastes (e.g. vacuuming dusty/powdery wastes).
Handling and transfer procedures are risk-based considering the likelihood of accidents and incidents and their environmental impact.</td><td>Yes</td><td>The site will operate under an Integrated Management System that will be accredited to ISO 14001. Dunton operates a sister site and many of the procedures already in place can be transferred to the site.
The site’s technically competent manager will have the Level 4 in Waste Management Operations – Managing / Treatment of Hazardous Waste (Remediation 4TMHCL) qualification and will be responsible for overseeing waste handling and treatment.
There are extensive emergency preparedness and response procedures that have been developed for site operations. These will include spillage response procedures.
All staff undertaking waste acceptance procedures will receive suitable training in the waste acceptance procedures, as well as in waste handling and the relevant health and safety and environmental procedures in place. The training will be delivered through the Roadmap of Personal Development, as described in the EMS. This comprises training matrices and skills gap analyses.</td></tr>
<tr><td>BAT 6</td><td colspan="4">For relevant emissions to water as identified by the inventory of waste water streams (see BAT 3), BAT is to monitor key process parameters (e.g. waste water flow, pH, temperature, conductivity, BOD) at key locations (e.g. at the inlet and/or outlet of the pre-treatment, at the inlet to the final treatment, at the point where the emission leaves the installation).</td><td>Yes</td><td>There are no emissions to controlled waters; effluent will be discharged to sewer in line with the conditions defined in the Trade Effluent Discharge Consent.
Effluent will be analysed prior to discharge to foul sewer.</td></tr>
<tr><td>BAT 7</td><td colspan="4">BAT is to monitor emissions to water with at least the frequency set out in BAT 7 table, and in accordance with EN standards. If EN standards are not available, BAT is to use ISO, national or other international standards that ensure the provision of data of an equivalent scientific quality.</td><td>N/A</td><td>There are no emissions to controlled waters.</td></tr>
</table>

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<tr><th>BAT No</th><th>BAT Justification</th><th>Operating To BAT</th><th>Operator Comments</th></tr>
<tr><td>BAT 8</td><td>BAT is to monitor channelled emissions to air with at least the frequency given below, and in accordance with EN standards. If EN standards are not available, BAT is to use ISO, national or other international standards that ensure the provision of data of an equivalent scientific quality.
<table>
<tr><th>Substance / Parameter</th><th>Standard(s)</th><th>Waste Treatment Process</th><th>Minimum Monitoring Frequency</th><th>Monitoring associated with</th></tr>
<tr><td>Brominated flame retardants (18)</td><td>No EN standard available</td><td>Mechanical treatment in shredders of metal waste</td><td>Once every year</td><td>BAT 25</td></tr>
<tr><td>CFC’s</td><td>No EN standard available</td><td>Treatment of WEEE containing VFCs and/or VHCs</td><td>Once every six months</td><td>BAT 29</td></tr>
<tr><td rowspan="2">Dioxin-like PCBs</td><td rowspan="2">EN 1948-1, -2, and -4</td><td>Mechanical treatment in shredders of metal waste</td><td>Once every year</td><td>BAT 25</td></tr>
<tr><td>Decontamination of equipment containing PCBs</td><td>Once every three months</td><td>BAT 51</td></tr>
<tr><td rowspan="4">Dust</td><td rowspan="4">EN 13284-1</td><td>Mechanical treatment of waste</td><td rowspan="4">Once every six months</td><td>BAT 25</td></tr>
<tr><td>Mechanical biological treatment of waste</td><td>BAT 34</td></tr>
<tr><td>Physico-chemical treatment of solid and/or pasty waste</td><td>BAT 41</td></tr>
<tr><td>Thermal treatment of spent activated carbon, waste catalysts and excavated contaminated soil</td><td>BAT 49</td></tr>
</table></td><td></td><td>Channelled emissions to air are limited to dusts and hydrocarbons.
There will be three emission points from the main processing building and one emission point from the asbestos picking station.
The point source release points to air are defined as:
A1 – extraction from the asbestos storage bays.
A2 – extraction from the biopads.
A3 – extraction from the asbestos hopper.
A4 – extraction from the asbestos picking station.
Emissions of dust (PM_{10}) will be minimised by the use of water sprays to limit the generation of dust from dry soils which will also minimise the release of hydrocarbons from the soil. In addition, high efficiency particulate air (HEPA) filters and carbon filters will be installed to abate the release of VOCs and dust.
Routine monitoring of PM_{10} and TVOCs will be undertaken in line with the BAT requirements.
Monitoring will be undertaken to MCERTS standards.</td></tr>
</table>

BAT No	BAT Justification					Operating To BAT	Operator Comments
			Water washing of excavated contaminated soil		BAT 50		
	HCl	EN 1911	Thermal treatment of spent activated carbon, waste catalysts and excavated contaminated soil	Once every six months	BAT 49		
			Treatment of water-based liquid waste		BAT 53		
	HF	No EN standard available	Thermal treatment of spent activated carbon, waste catalysts and excavated contaminated soil	Once every six months	BAT 49		
	Hg	EN 13211	Treatment of WEEE containing mercury	Once every three months	BAT 32		
	H2S	No EN standard available	Biological treatment of waste	Once every six months	BAT 34		
	Metals and metalloids except mercury (e.g. As, Cd, Co, Cr, Cu, Mn, Ni, Pb, Sb, Se, Tl, V) (18)	EN 14385	Mechanical treatment in shredders of metal waste	Once every year	BAT 25		
	NH_3	No EN standard available	Biological treatment of waste	Once every six months	BAT 34		
			Physico-chemical treatment of solid		BAT 41		

BAT No	BAT Justification					Operating To BAT	Operator Comments
			and/or pasty waste				
			Treatment of water-based liquid waste		BAT 53		
	Odour Concentration	EN 13725	Biological treatment of waste	Once every six months	BAT 34		
	PCDD/F (18)	EN 1948-1, -2 and -3 (19)	Mechanical treatment in shredders of metal waste	Once every year	BAT 25		
	TVOC	EN 12619	Mechanical treatment in shredders of metal waste	Once every six months	BAT 25		
			Treatment of WEEE containing VFCs and/or VHCs	Once every six months	BAT 29		
			Mechanical treatment of waste with calorific value	Once every six months	BAT 31		
			Mechanical biological treatment of waste	Once every six months	BAT 34		
			Physico-chemical treatment of solid and/or pasty waste	Once every six months	BAT 41		
			Re-refining of waste oil		BAT 44		
			Physico-chemical treatment of waste with calorific value		BAT 45		

<table>
<tr><th>BAT No</th><th>BAT Justification</th><th>Operating To BAT</th><th>Operator Comments</th></tr>
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<tr><td></td><td></td><td></td><td></td></tr>
<tr><td></td><td></td><td>Regeneration of spent solvents</td><td>BAT 47</td></tr>
<tr><td></td><td></td><td>Thermal treatment of spent activated carbon, waste catalysts and excavated contaminated soil</td><td>BAT 49</td></tr>
<tr><td></td><td></td><td>Water washing of excavated contaminated soil</td><td>BAT 50</td></tr>
<tr><td></td><td></td><td>Treatment of water-based liquid waste</td><td>BAT 53</td></tr>
<tr><td></td><td></td><td>Decontamination of equipment containing PCBs</td><td>BAT 51</td></tr>
</table>
</td><td></td><td></td></tr>
<tr><td>BAT 9</td><td>BAT is to monitor diffuse emissions of organic compounds to air from the regeneration of spent solvents, the decontamination of equipment containing POPs with solvents, and the physico-chemical treatment of solvents for the recovery of their calorific value, at least once per year using one or a combination of the techniques given below.
<table>
<tr><th colspan="2">Technique</th><th>Description</th></tr>
<tr><td>a</td><td>Measurement</td><td>Sniffing methods, optical gas imaging, solar occultation flux or differential absorption. See descriptions in Section 6.2.</td></tr>
<tr><td>b</td><td>Emissions factors</td><td>Calculation of emissions based on emissions factors, periodically validated (e.g. once every two years) by measurements.</td></tr>
<tr><td>c</td><td>Mass balance</td><td>Calculation of diffuse emissions using a mass balance considering the solvent input, channelled emissions to air, emissions to water, the solvent in the process output, and process (e.g. distillation) residues.</td></tr>
</table>
</td><td>N/A</td><td>Diffuse emissions of organic compounds will be managed under the site procedures and the site specific ‘Odour Management Plan’ (see ref 1620013520-002 Dunton Bridge Street North Odour Management Plan) that has been developed in support of the Permit application.
Odorous materials will not be accepted on-site in line with the site waste pre-acceptance and acceptance procedures.
It should be noted that the hydrocarbons present in the contaminated soils are typically long chain hydrocarbons and not solvents.</td></tr>
<tr><td>BAT 10</td><td>BAT is to periodically monitor odour emissions.

Description
Odour emissions can be monitored using:
- EN standards (e.g. dynamic olfactometry according to EN 13725 in order to determine the odour concentration or EN 16841-1 or -2 in order to determine the odour exposure);</td><td>Yes</td><td>Diffuse emissions of odour will be managed under the site procedures and the site specific ‘Odour Management Plan’ (see ref R1620013520-002 Dunton Bridge Street North Odour Management Plan).

The potential for odour is minimised due to the rigorous waste pre-acceptance and acceptance procedures. In addition, waste storage and treatment are undertaken within a building.</td></tr>
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<tr><th>BAT No</th><th>BAT Justification</th><th>Operating To BAT</th><th>Operator Comments</th></tr>
<tr><td></td><td>- when applying alternative methods for which no EN standards are available (e.g. estimation of odour impact), ISO, national or other international standards that ensure the provision of data of an equivalent scientific quality.
The monitoring frequency is determined in the odour management plan (see BAT 12).

Applicability
The applicability is restricted to cases where an odour nuisance at sensitive receptors is expected and/or has been substantiated.</td><td></td><td>Qualitative assessment of odour will be carried out three times per day in accordance with the OMP.

Where an odour issue is identified at the site, odour monitoring of specific emission points will be undertaken where identified through the Odour Management Plan.</td></tr>
<tr><td>BAT 11</td><td>BAT is to monitor the annual consumption of water, energy and raw materials as well as the annual generation of residues and waste water, with a frequency of at least once per year.

Description
Monitoring includes direct measurements, calculation or recording, e.g. using suitable meters or invoices. The monitoring is broken down at the most appropriate level (e.g. at process or plant/installation level) and considers any significant changes in the plant/installation.</td><td>Yes</td><td>The site will operate to an integrated management system (ISO 14001) that includes the monitoring of raw materials, energy and water in order to target improvements. Overall targets and monitoring are devised at Group-level.</td></tr>
<tr><td>BAT 12</td><td>Emissions to Air
In order to prevent or, where that is not practicable, to reduce odour emissions, BAT is to set up, implement and regularly review an odour management plan, as part of the environmental management system (see BAT 1), that includes all of the following elements:
- a protocol containing actions and timelines;
- a protocol for conducting odour monitoring as set out in BAT 10;
- a protocol for response to identified odour incidents, e.g. complaints;
- an odour prevention and reduction programme designed to identify the source(s); to characterise the contributions of the sources; and to implement prevention and/or reduction measures.

Applicability: The applicability is restricted to cases where an odour nuisance at sensitive receptors is expected and/or has been substantiated.</td><td>Yes</td><td>An Odour Management Plan (OMP) has been developed for the site (see ref 1620013520 002 Dunton Bridge Street North Odour Management Plan); however, it should be noted that odorous materials not accepted on site.

A qualitative olfactory testing exercise will be undertaken three times each day that the site is operational – first thing in the morning, at midday and in the afternoon. Additional sniff testing would be undertaken should there be any complaints relating to odour at the site.

The OMP defines the procedures undertaken to monitor for odours. The site operates a complaints procedure and any complaints are investigated and corrective actions implemented.</td></tr>
<tr><td>BAT 13</td><td>In order to prevent or, where that is not practicable, to reduce odour emissions, BAT is to use one or a combination of the techniques given below.
<table>
<tr><th></th><th>Technique</th><th>Description</th><th>Applicability</th></tr>
<tr><td>a</td><td>Minimising residence times</td><td>Minimising the residence time of (potentially) odorous waste in storage or in handling systems (e.g. pipes, tanks, containers), in particular under anaerobic conditions. When relevant, adequate provisions are made for the acceptance of seasonal peak volumes of waste.</td><td>Only applicable to open systems.</td></tr>
<tr><td>b</td><td>Using chemical treatment</td><td>Using chemicals to destroy or to reduce the formation of odorous compounds (e.g. to oxidise or to precipitate hydrogen sulphide).</td><td>Not applicable if it may hamper the desired output quality.</td></tr>
<tr><td>c</td><td>Optimising aerobic treatment</td><td>In the case of aerobic treatment of water-based liquid waste, it may include:
- use of pure oxygen;
- removal of scum in tanks;</td><td>Generally applicable.</td></tr>
</table></td><td>Yes</td><td>Odorous materials will not be accepted at the site. Wastes will be accepted in line with the waste pre-acceptance and acceptance procedures.

a) Residence times will be kept to a minimum and waste containing hydrocarbons will only be accepted when there is sufficient capacity for them to be treated.

b) Not applicable as the received waste is to be treated by biological means, which would be affected by chemical treatment.

c) Bioremediation will be undertaken under aerobic conditions. The biopads have been designed to optimise aerobic conditions with air being drawn through the pile. The aeration systems are maintained in line with the sites planned preventative maintenance system.

It should be noted that all soil treatment operations will be undertaken indoors and thereby significantly reducing the potential for odour nuisance. Waste will only be accepted if the site has capacity to treat it.</td></tr>
</table>

<table>
<tr><th>BAT No</th><th>BAT Justification</th><th>Operating To BAT</th><th>Operator Comments</th></tr>
<tr><td></td><td>
<table>
<tr><td></td><td></td><td>- frequent maintenance of the aeration system.

In the case of aerobic treatment of waste other than water-based liquid waste, see BAT 36.</td><td></td></tr>
</table>
</td><td></td><td></td></tr>
<tr><td>BAT 14</td><td>In order to prevent or, where that is not practicable, to reduce diffuse emissions to air, in particular of dust, organic compounds and odour, BAT is to use an appropriate combination of the techniques given below.
<table>
<tr><th colspan="2">Technique</th><th>Description</th><th>Applicability</th></tr>
<tr><td>a</td><td>Minimising the number of potential diffuse emission sources</td><td>This includes techniques such as:
- appropriate design of piping layout (e.g. minimising pipe run length, reducing the number of flanges and valves, using welded fittings and pipes);
- favouring the use of gravity transfer rather than using pumps;
- limiting the drop height of material;
- limiting traffic speed;
- using wind barriers.</td><td>Generally applicable</td></tr>
<tr><td>b</td><td>Selection and use of high-integrity equipment</td><td>This includes techniques such as:
- valves with double packing seals or equally efficient equipment;
- high-integrity gaskets (such as spiral wound, ring joints) for critical applications;
- pumps/compressors/agitators fitted with mechanical seals instead of packing;
- magnetically driven pumps/compressors/agitators;
- appropriate service hose access ports, piercing pliers, drill heads, e.g. when degassing WEEE containing VFCs and/or VHCs.</td><td>Applicability may be restricted in the case of existing plants due to operability requirements.</td></tr>
<tr><td>c</td><td>Corrosion prevention</td><td>This includes techniques such as:
- appropriate selection of construction materials;
- lining or coating of equipment and painting of pipes with corrosion inhibitors.</td><td>Generally applicable</td></tr>
<tr><td>d</td><td>Containment, collection and treatment of diffuse emissions</td><td>This includes techniques such as:
- storing, treating and handling waste and material that may generate diffuse emissions in</td><td>The use of enclosed equipment or buildings may be restricted by safety considerations</td></tr>
</table>
</td><td>Yes</td><td>a) The number of potential diffuse emission sources is limited by the majority of process operations being undertaken within a building. Waste soils are transported to the site in covered vehicles and then transferred to storage bays located within the treatment building. Only soils that have been validated as being treated will be stored outdoors in the post treatment bays.

b) Not applicable to site operations.

c) Not applicable to site operations; soils are maintained at approximately pH 7.

d) All treatment operations take place within a building with extraction to abatement systems (HEPA and carbon filters).

e) Dampening will be used as the primary prevention of fugitive emissions of dust and odours. Wastes arriving at the site will be dampened prior to being moved to the storage bays that are located within the treatment building. Waste in storage will be kept damp to prevent releases in storage.

Waste for bioremediation will be transferred into the biopads which are located within the building. These materials will only be transferred outdoors on validation of treatment. Wastes that arrive for asbestos picking will be dampened again prior to transfer into the asbestos picking cabin. The picking cabin has one release point to atmosphere which has a carbon filter and a HEPA filter installed to prevent releases.
After material is passed through the asbestos picking station, it will be either transferred to the post treatment bay; or if it requires further treatment by bioremediation, it will be immediately transferred into the building and into a biopad or storage bay.

f) The site machinery and abatement systems will be maintained in line with manufacturers specifications.

g) Cleaning will be carried out with road sweepers and the wheel-wash system. Additionally, cleaning and maintenance checks on workable plant is carried out daily.

h) Leak Detection and Repair systems are not applicable to site operations and the wastes accepted at site may be contaminated with hydrocarbons, but they are not highly volatile. Wastes contaminated with hydrocarbons will be stored within the building where the air is extracted via HEPA and carbon filters.</td></tr>
</table>

BAT No			BAT Justification		Operating To BAT	Operator Comments
			enclosed buildings and/or enclosed equipment (e.g. conveyor belts); - maintaining the enclosed equipment or buildings under an adequate pressure; - collecting and directing the emissions to an appropriate abatement system (see Section 6.1) via an air extraction system and/or air suction systems close to the emission sources.	such as the risk of explosion or oxygen depletion. The use of enclosed equipment or buildings may also be constrained by the volume of waste.		
	e	Dampening	This includes techniques such as: - ensuring access to potentially leaky equipment; - regularly controlling protective equipment such as lamellar curtains, fast-action doors.	Generally applicable		
	f	Maintenance	This includes techniques such as: - ensuring access to potentially leaky equipment; - regularly controlling protective equipment such as lamellar curtains, fast-action doors.	Generally applicable		
	g	Cleaning of waste treatment and storage areas	This includes techniques such as regularly cleaning the whole waste treatment area (halls, traffic areas, storage areas, etc.), conveyor belts, equipment and containers.	Generally applicable		
	h	Leak detection and repair (LDAR) programme	See Section 6.2. When emissions of organic compounds are expected, a LDAR programme is set up and implemented using a risk-based approach, considering in particular the design of the plant and the amount and nature of the organic compounds concerned.	Generally applicable		

<table>
<tr><th>BAT No</th><th>BAT Justification</th><th>Operating To BAT</th><th>Operator Comments</th></tr>
<tr><td>BAT 15</td><td>BAT is to use flaring only for safety reasons or for non-routine operating conditions (e.g. start-ups, shutdowns) by using both of the techniques given below.
<table>
<tr><th colspan="2">Technique</th><th>Description</th><th>Applicability</th></tr>
<tr><td>a</td><td>Correct plant design</td><td>This includes the provision of a gas recovery system with sufficient capacity and the use of high-integrity relief valves.</td><td>Generally applicable to new plants.

A gas recovery system may be retrofitted in existing plants.</td></tr>
<tr><td>b</td><td>Plant management</td><td>This includes balancing the gas system and using advanced process control.</td><td>Generally applicable.</td></tr>
</table></td><td>N/A</td><td>No flaring on-site.</td></tr>
<tr><td>BAT 16</td><td>In order to reduce emissions to air from flares when flaring is unavoidable, BAT is to use both of the techniques given below.
<table>
<tr><th></th><th>Technique</th><th>Description</th><th>Applicability</th></tr>
<tr><td>a</td><td>Correct design of flaring devices</td><td>Optimisation of height and pressure, assistance by steam, air or gas, type of flare tips, etc., to enable smokeless and reliable operation and to ensure the efficient combustion of excess gases.</td><td>Generally applicable to new flares. In existing plants, applicability may be restricted, e.g. due to maintenance time availability.</td></tr>
<tr><td>b</td><td>Monitoring and recording as part of flare management</td><td>This includes continuous monitoring of the quantity of gas sent to flaring. It may include estimations of other parameters (e.g. composition of gas flow, heat content, ratio of assistance, velocity, purge gas flow rate, pollutant emissions (e.g. NOX, CO, hydrocarbons), noise). The recording of flaring events usually includes the duration and number of events and allows for the quantification of emissions and the potential prevention of future flaring events.</td><td>Generally applicable.</td></tr>
</table></td><td>N/A</td><td>No flaring on-site.</td></tr>
</table>

<table>
<tr><th>BAT No</th><th>BAT Justification</th><th>Operating To BAT</th><th>Operator Comments</th></tr>
<tr><td>BAT 17</td><td>Noise and Vibration
In order to prevent or, where that is not practicable, to reduce noise and vibration emissions, BAT is to set up, implement and regularly review a noise and vibration management plan, as part of the environmental management system (see BAT 1), that includes all of the following elements:
i. a protocol containing appropriate actions and timelines;
ii. a protocol for conducting noise and vibration monitoring;
iii. a protocol for response to identified noise and vibration events, e.g. complaints;
iv. a noise and vibration reduction programme designed to identify the source(s), to measure/estimate noise and vibration exposure, to characterise the contributions of the sources and to implement prevention and/or reduction measures.

Applicability: The applicability is restricted to cases where a noise or vibration nuisance at sensitive receptors is expected and/or has been substantiated.</td><td>Yes</td><td>A noise survey has been undertaken as part of this application that considered:
• External sources of noise are generated from vehicle movements
• Noise report & mitigation
• Noise will be monitored when the plant is operational.
Data from noise monitoring was modelled to determine the impact at sensitive receptors.
The findings of the noise survey are presented in ref 1620013520-002 Noise Impact Assessment.
Further confirmatory noise monitoring will be undertaken when the site becomes operational and a Noise Management Plan developed based upon the findings.</td></tr>
<tr><td>BAT 18</td><td>In order to prevent or, where that is not practicable, to reduce noise and vibration emissions, BAT is to use one or a combination of the techniques given below.

<table>
<tr><th colspan="2">Technique</th><th>Description</th><th>Applicability</th></tr>
<tr><td>a</td><td>Appropriate location of equipment and buildings</td><td>Noise levels can be reduced by increasing the distance between the emitter and the receiver, by using buildings as noise screens and by relocating building exits or entrances.</td><td>For existing plants, the relocation of equipment and building exits or entrances may be restricted by a lack of space or excessive costs.</td></tr>
<tr><td>b</td><td>Operational measures</td><td>This includes techniques such as:
i. inspection and maintenance of equipment;
ii. closing of doors and windows of enclosed areas, if possible;
iii. equipment operation by experienced staff;
iv. avoidance of noisy activities at night, if possible;
v. provisions for noise control during maintenance, traffic, handling and treatment activities.</td><td>Generally applicable.</td></tr>
<tr><td>c</td><td>Low-noise equipment</td><td>This may include direct drive motors, compressors, pumps and flares.</td><td></td></tr>
<tr><td>d</td><td>Noise and vibration control equipment</td><td>This includes techniques such as:
i. noise reducers;
ii. acoustic and vibrational insulation of equipment;
iii. enclosure of noisy equipment;
iv. soundproofing of buildings.</td><td>Applicability may be restricted by a lack of space (for existing plants).</td></tr>
</table></td><td>Yes</td><td>Due to the location of the site, ambient levels of noise are high due to the presence of background operations of the industrial estate.

The majority of operations are undertaken within a building, and equipment will be maintained to minimise the risk of noise generation. Operating times are also restricted to limit noisy operations at night.

See ref 1620013520-002 Noise Impact Assessment for the findings of the noise survey.</td></tr>
</table>

BAT No	BAT Justification	Operating To BAT	Operator Comments

e	Noise attenuation	Noise propagation can be reduced by inserting obstacles between emitters and receivers (e.g. protection walls, embankments and buildings).	Applicable only to existing plants, as the design of new plants should make this technique unnecessary. For existing plants, the insertion of obstacles may be restricted by a lack of space. For mechanical treatment in shredders of metal wastes, it is applicable within the constraints associated with the risk of deflagration in shredders.

BAT 19	Emissions to Water In order to optimise water consumption, to reduce the volume of waste water generated and to prevent or, where that is not practicable, to reduce emissions to soil and water, BAT is to use an appropriate combination of the techniques given below.	Yes	a) Water consumption is optimised in many ways. Rainwater will be harvested (where possible) from the roof of the main building. The rainwater can be used for damping down of the soils to prevent dust and odours. The addition of water to the bioremediation process is carefully monitored to provide the optimum conditions. As the process is undertaken on engineered biopads within the building, the water use can be carefully applied to provide optimum conditions and avoid the generation of leachate. b) Water is used within the asbestos picking station to prevent the formation of dust. An asbestos penetrant is added to the water which will prevent the release of asbestos fibres should there be any present (the acceptance criteria is for asbestos fibres to be below hazardous determinisation; but the penetrant is used as an additional protection for the site operatives). The liquid is sprayed onto the conveyor in the asbestos picking station and will be collected in a holding tank and reused. The wheel wash will have a holding tank and the water will be recirculated until it is considered to be spent. c) Waste reception, handling, storage and dispatch areas will be located on impermeable hardstanding. The storage areas will be additionally located within the treatment building which will prevent any ingress of contamination to ground. d) The only storage tank on site will be that used for storage of diesel. Diesel will be used to refuel the vehicles used to transport waste around the site. The diesel will be stored in a self-bunded tank that will be located on impermeable hardstanding and will protected from collision by a barrier. The diesel tank will have dedicated secondary containment. Containment will also be provided in the refuelling area by means of a bund that is accessible via a concrete hump. Vehicles will be refuelled in accordance with site procedures and will be supervised at all times by Dunton personnel. Filling of the diesel tank will be undertaken by the delivery driver and will be supervised by site personnel. Spill kits and drip trays will be located next to the tank to facilitate clean-up of spillages. The drains in the areas of site that are considered to be potentially contaminative have an isolation valve installed. The valve will be closed routinely during refuelling operations. The site drains discharge to sewer via two effluent holding tanks that can be used to

Technique		Description	Applicability
a	Water management	Water consumption is optimised by using measures which may include: - water-saving plans (e.g. establishment of water efficiency objectives, flow diagrams and water mass balances); - optimising the use of washing water (e.g. dry cleaning instead of hosing down, using trigger control on all washing equipment); - reducing the use of water for vacuum generation (e.g. use of liquid ring pumps with high boiling point liquids).	Generally applicable.
b	Water recirculation	Water streams are recirculated within the plant, if necessary after treatment. The degree of recirculation is limited by the water balance of the plant, the content of impurities (e.g. odorous compounds) and/or the characteristics of the water streams (e.g. nutrient content).	Generally applicable.
c	Impermeable surface	Depending on the risks posed by the waste in terms of soil and/or water contamination, the surface of	Generally applicable

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BAT No		BAT Justification			Operating To BAT	Operator Comments
			the whole waste treatment area (e.g. waste reception, handling, storage, treatment and dispatch areas) is made impermeable to the liquids concerned.			isolate contaminated effluent prior to release to sewer. The discharge is made via a full retention interceptor and silt trap. e) Waste will be stored and treated inside a building which will prevent contact with rainwater and thereby minimise the volume of contaminated run-off water. Treated waste will be stored in two post treatment bays. Treatment will be validated prior to transfer to the post treatment bays. The bays will also be covered to prevent rainwater washout. f) Segregation of effluent and surface water runoff will be segregated and foul water will be discharged to sewer g) The waste treatment and storage areas are located within a building. The building has several sumps to collect water that is used for dampening the soils. Site procedures ensure that excess water is not used in dampening down and it is not expected that the sumps will be required to be emptied. However, there is no connection from the sumps to the drainage system. If necessary, the effluent in the sumps can be tested prior to being discharged to sewer under a trade effluent discharge consent or removed for offsite treatment. h) Routine, risk-based monitoring is carried out to monitor the condition of the drains on site. i) Effluent will be collected within sumps in the treatment building and in the asbestos picking area (see also g). The sumps have sufficient capacity to provide containment of any leachate that is generated in the building. An isolation valve is installed in the drains within potentially contaminative areas of the site. In the event of an incident, the drains can be isolated and any contaminated materials pumped out. The drainage system can also be pumped via two 10,000 litre effluent holding tanks. Material will be isolated in the holding tanks prior to discharge to foul sewer under the conditions of the TEDC.
	d	Techniques to reduce the likelihood and impact of overflows and failures from tanks and vessels	Depending on the risks posed by the liquids contained in tanks and vessels in terms of soil and/or water contamination, this includes techniques such as: - overflow detectors; - overflow pipes that are directed to a contained drainage system (i.e. the relevant secondary containment or another vessel); - tanks for liquids that are located in a suitable secondary containment; the volume is normally sized to accommodate the loss of containment of the largest tank within the secondary containment; - isolation of tanks, vessels and secondary containment (e.g. closing of valves).	Generally applicable		
	e	Roofing of waste storage and treatment areas	Depending on the risks posed by the waste in terms of soil and/or water contamination, waste is stored and treated in covered areas to prevent contact with rainwater and thus minimise the volume of contaminated run-off water.	Applicability may be constrained when high volumes of waste are stored or treated (e.g. mechanical treatment in shredders of metal waste).		
	f	Segregation of water streams	Each water stream (e.g. surface run-off water, process water) is collected and treated separately, based on the pollutant content and on the combination of treatment techniques. In particular, uncontaminated waste water streams are segregated from waste water streams that require treatment.	Generally applicable to new plants. Generally applicable to existing plants within the constraints associated with the layout of the water collection system.		
	g	Adequate drainage infrastructure	The waste treatment area is connected to drainage infrastructure.	Generally applicable to new plants.		

<table>
<tr><th>BAT No</th><th>BAT Justification</th><th>Operating To BAT</th><th>Operator Comments</th></tr>
<tr><td></td><td>
<table>
<tr><td></td><td></td><td>Rainwater falling on the treatment and storage areas is collected in the drainage infrastructure along with washing water, occasional spillages, etc. and, depending on the pollutant content, recirculated or sent for further treatment.</td><td>Generally applicable to existing plants within the constraints associated with the layout of the water drainage system.</td></tr>
<tr><td>h</td><td>Design and maintenance provisions to allow detection and repair of leaks</td><td>Regular monitoring for potential leakages is risk-based, and, when necessary, equipment is repaired.

The use of underground components is minimised. When underground components are used, and depending on the risks posed by the waste contained in those components in terms of soil and/or water contamination, secondary containment of underground components is put in place.</td><td>The use of above-ground components is generally applicable to new plants. It may be limited however by the risk of freezing.

The installation of secondary containment may be limited in the case of existing plants.</td></tr>
<tr><td>i</td><td>Appropriate buffer storage capacity</td><td>Appropriate buffer storage capacity is provided for waste water generated during other than normal operating conditions using a risk-based approach (e.g. taking into account the nature of the pollutants, the effects of downstream waste water treatment, and the receiving environment).

The discharge of waste water from this buffer storage is only possible after appropriate measures are taken (e.g. monitor, treat, reuse).</td><td>Generally applicable to new plants.

For existing plants, applicability may be limited by space availability and by the layout of the water collection system.</td></tr>
</table>
</td><td></td><td></td></tr>
<tr><td>BAT 20</td><td>In order to reduce emissions to water, BAT is to treat waste water using an appropriate combination of the techniques given below.
<table>
<tr><th colspan="2">Technique</th><th>Typical pollutants targeted</th><th>Applicability</th></tr>
<tr><td colspan="4">Preliminary and primary treatment, e.g.</td></tr>
<tr><td>a</td><td>Equalisation</td><td>All pollutants</td><td rowspan="2">Generally applicable</td></tr>
<tr><td>b</td><td>Neutralisation</td><td>Acids, alkalis</td></tr>
</table>
</td><td>Yes</td><td>The site drainage strategy employs a number of safety measures to prevent uncontrolled releases to sewer. These are defined in Section 11 of 1620013520-002 Dunton Bridge Street North, Application for an Environmental Permit.

The BAT-AELs defined in Table 6.2 apply to indirect discharges to a receiving water body. The wastewater discharged from site will be to foul sewer where it will be treated at the municipal wastewater treatment plant. The discharge to sewer will be in compliance with the conditions of the TEDC. Procedures will be in place to ensure that the limits of the consent will be adhered to.

The discharge to the ultimate receiving water is expected to be below the BAT-AELs for the following reasons:</td></tr>
</table>

BAT No	BAT Justification				Operating To BAT	Operator Comments
	c	Physical separation, e.g. screens, sieves, grit separators, grease separators, oil-water separation or primary settlement tanks	Gross solids, suspended solids, oil/grease			The wastewater from the site is generated from surface water runoff. Process effluent is not routinely generated by the processes employed. Physio-chemical treatment of asbestos involves the removal of asbestos from the soil. Water is used for damping down to prevent dust formation, but the water is recirculated within the process. Biological treatment is undertaken within a building. Water is applied to control moisture content and for damping down. However, as the process is undertaken indoors, there is limited wastewater generated from the process. Any excess water will be collected in a sump within the building and will be reapplied to the biopad. There are no routine discharges to sewer from the bioremediation process. Prior to discharge, wastewater from the site will be collected in two 10,000 litre effluent holding tanks. This will allow the effluent to be isolated and analysed prior to discharge to sewer to ensure that it is in compliance with the TEDC. Heavy metals Table 6.2 presents the BAT-AELs that are applicable to the physio-chemical treatment of solid waste. Heavy metals are difficult to treat in a wastewater treatment plant. However, the site has pre-acceptance and acceptance procedures that require the heavy metal content of waste soils to be below that for hazardous determination. Therefore, there is little potential for heavy metals to be present in the surface water run off that is discharged to sewer. The BAT-AELs are expected to be achieved without the requirement for no-site treatment. Hydrocarbons Hydrocarbon impacted soils will be bioremediated. The applicable BAT-AELs for COD and TOC therefore apply at the final release point. As discussed, wastewater from the bioremediation process is not routinely generated and the wastewater resulting from surface water runoff is unlikely to have high concentrations of hydrocarbons present. However, the wastewater will be analysed prior to discharge to ensure that it is in compliance with TOC/COD limits defined within the TEDC. In addition, the site drains are discharged via a full retention interceptor that will capture hydrocarbons prior to discharge. It is concluded that the discharge of wastewater to the ultimate receiving water will achieve BAT.
	Physico-chemical treatment, e.g.					
	d	Adsorption	Adsorbable dissolved non-biodegradable or inhibitory pollutants, e.g. hydrocarbons, mercury, AOX	Generally applicable		
	e	Distillation/rectification	Dissolved non-biodegradable or inhibitory pollutants that can be distilled, e.g. some solvents			
	f	Precipitation	Precipitable dissolved non-biodegradable or inhibitory pollutants, e.g. metals, phosphorus			
	g	Chemical oxidation	Oxidisable dissolved non-biodegradable or inhibitory pollutants, e.g. nitrite, cyanide			
	h	Chemical reduction	Reducible dissolved non-biodegradable or inhibitory pollutants, e.g. hexavalent chromium (Cr(VI))			
	i	Evaporation	Soluble contaminants			
	j	Ion exchange	Ionic dissolved non-biodegradable or inhibitory pollutants, e.g. metals			
	k	Stripping	Purgeable pollutants, e.g. hydrogen sulphide (H_2S), ammonia (NH_3), some adsorbable organically bound halogens (AOX), hydrocarbons			
	Biological treatment, e.g.					
	l	Activated sludge process	Biodegradable organic compounds	Generally applicable		
	m	Membrane bioreactor				
	Nitrogen removal					

BAT No	BAT Justification				Operating To BAT	Operator Comments
	n	Nitrification/denitrification when the treatment includes a biological treatment	Total nitrogen, ammonia	Nitrification may not be applicable in the case of high chloride concentrations (e.g. above 10 g/l) and when the reduction of the chloride concentration prior to nitrification would not be justified by the environmental benefits. Nitrification is not applicable when the temperature of the waste water is low (e.g. below 12 °C).		
	Solids removal, e.g.					
	o	Coagulation and flocculation	Suspended solids and particulate-bound metals	Generally applicable.		
	p	Sedimentation				
	q	Filtration (e.g. sand filtration, microfiltration, ultrafiltration)				
	r	Flotation				

Table 6.2

BAT-AELs for indirect discharges to a receiving water body

Substance/Parameter		BAT-AEL	Waste treatment process to which the BAT-AEL applies
Hydrocarbon oil index (HOI)		0,5-10 mg/l	- Mechanical treatment in shredders of metal waste - Treatment of WEEE containing VFCs and/or VHCs - Re-refining of waste oil - Physico-chemical treatment of waste with calorific value - Water washing of excavated contaminated soil - Treatment of water-based liquid waste
Free cyanide (CN-) (36)		0,02-0,1 mg/l	- Treatment of water-based liquid waste
Adsorbable organically bound halogens (AOX) (36)		0,2-1 mg/l	- Treatment of water-based liquid waste
Metals and metalloids (36)	Arsenic (expressed as As)	0,01-0,05 mg/l	- Mechanical treatment in shredders of metal waste

BAT No	BAT Justification				Operating To BAT	Operator Comments
		Cadmium (expressed as Cd)	0,01-0,05 mg/l	- Treatment of WEEE containing VFCs and/or VHCs - Mechanical biological treatment of waste - Re-refining of waste oil - Physico-chemical treatment of waste with calorific value - Physico-chemical treatment of solid and/or pasty waste - Regeneration of spent solvents - Water washing of excavated contaminated soil		
		Chromium (expressed as Cr)	0,01-0,15 mg/l			
		Copper (expressed as Cu)	0,05-0,5 mg/l			
		Lead (expressed as Pb)	0,05-0,1 mg/l (32)			
		Nickel (expressed as Ni)	0,05-0,5 mg/l			
		Mercury (expressed as Hg)	0,5-5 µg/l			
		Zinc (expressed as Zn)	0,1-1 mg/l (33)			
		Arsenic (expressed as As)	0,01-0,1 mg/l	- Treatment of water-based liquid waste		
		Cadmium (expressed as Cd)	0,01-0,1 mg/l			
		Chromium (expressed as Cr)	0,01-0,3 mg/l			
		Hexavalent chromium (expressed as Cr(VI))	0,01-0,1 mg/l			
		Copper (expressed as Cu)	0,05-0,5 mg/l			
		Lead (expressed as Pb)	0,05-0,3 mg/l			
		Nickel (expressed as Ni)	0,05-1 mg/l			
		Mercury (expressed as Hg)	1-10 µg/l			

<table>
<tr><th>BAT No</th><th>BAT Justification</th><th>Operating To BAT</th><th>Operator Comments</th></tr>
<tr><td></td><td>
<table>
<tr><td></td><td>Zinc (expressed as Zn)</td><td>0,1-2 mg/l</td><td></td></tr>
</table>
The associated monitoring is given in BAT 7.</td><td></td><td></td></tr>
<tr><td>BAT 21</td><td>Emissions from accidents and incidents
In order to prevent or limit the environmental consequences of accidents and incidents, BAT is to use all of the techniques given below, as part of the accident management plan (see BAT 1).
<table>
<tr><th colspan="2">Technique</th><th>Description</th></tr>
<tr><td>a</td><td>Protection measures</td><td>These include measures such as:
- Protection of the plant against malevolent acts;
- Fire and explosion protection system, containing equipment for prevention, detection, and extinction;
- Accessibility and operability of relevant control equipment in emergency situations.</td></tr>
<tr><td>b</td><td>Management of incidental/accidental emissions</td><td>Procedures are established and technical provisions are in place to manage (in terms of possible containment) emissions from accidents and incidents such as emissions from spillages, firefighting water, or safety valves.</td></tr>
<tr><td>c</td><td>Incident/accident registration and assessment system</td><td>This includes techniques such as:
- a log/diary to record all accidents, incidents, changes to procedures and the findings of inspections;
- procedures to identify, respond to and learn from such incidents and accidents.</td></tr>
</table></td><td>Yes</td><td>a) Security and protection measures include a CCTV system that is monitored remotely off-site and connects to a speaker system on-site. The site entrance is secured when the site is closed.

Fire risk assessments and fire/rescue plans will be developed by third party experts. These address topics such as arson, working at height, fire in buildings and fire water run-off.

Fire extinguishers are located throughout the site. However, the risks from fire are minimised due to the fact that the materials on site are not particularly combustible.

An isolation valve will be installed in the drainage system which can be used to isolate the drains in the main contaminative area. The site also has two effluent holding tanks that could be used to isolate fire water in an emergency.

b) Any incidents will be recording in the site diary/log in the first instance. Procedures are in place for foreseeable emergency response. For example, during refuelling operations the isolation valve will be routinely closed such that if there was a significant spillage that was not retained in the bund, it could be isolated in the drainage system.

A spill response flow chart has been developed; this is a simple chart showing the actions required in the event of a spillage. The flow chart includes the requirement to notify the Environment Agency. The flow chart is clearly visible in various locations around the site.

Site operatives undergo training in emergency preparedness and response, including fire response and spill response.

c) The site uses an electronic reporting system to register and assess incidents and accidents. The system is also used to develop action plans and timelines for corrective actions, which are presented at board level. Additionally, near misses are recorded and investigated.</td></tr>
<tr><td>BAT 22</td><td>Material efficiency
In order to use materials efficiently, BAT is to substitute materials with waste.

Description
Waste is used instead of other materials for the treatment of wastes (e.g. waste alkalis or waste acids are used for pH adjustment, fly ashes are used as binders).

Applicability
Some applicability limitations derive from the risk of contamination posed by the presence of impurities (e.g. heavy metals, POPs, salts, pathogens) in the waste that substitutes other materials. Another limitation is the compatibility of the waste substituting other materials with the waste input (see BAT 2).</td><td>N/A</td><td>N/A – the site is a waste treatment facility.</td></tr>
<tr><td>BAT 23</td><td>Energy efficiency
In order to use energy efficiently, BAT is to use both of the techniques given below.</td><td>Yes</td><td>The main users of energy are lighting and process equipment such as abatement systems, conveyors, and pumps. Where possible, energy efficient lighting and equipment will be installed.</td></tr>
</table>

<table>
<tr><th>BAT No</th><th>BAT Justification</th><th>Operating To BAT</th><th>Operator Comments</th></tr>
<tr><td></td><td>
<table>
<tr><th colspan="2">Technique</th><th>Description</th></tr>
<tr><td>a</td><td>Energy efficiency plan</td><td>An energy efficiency plan entails defining and calculating the specific energy consumption of the activity (or activities), setting key performance indicators on an annual basis (for example, specific energy consumption expressed in kWh/tonne of waste processed) and planning periodic improvement targets and related actions. The plan is adapted to the specificities of the waste treatment in terms of process(es) carried out, waste stream(s) treated, etc.</td></tr>
<tr><td>b</td><td>Energy balance record</td><td>An energy balance record provides a breakdown of the energy consumption and generation (including exportation) by the type of source (i.e. electricity, gas, conventional liquid fuels, conventional solid fuels, and waste). This includes:
i. information on energy consumption in terms of delivered energy;
ii. information on energy exported from the installation;
iii. energy flow information (e.g. Sankey diagrams or energy balances) showing how the energy is used throughout the process.

The energy balance record is adapted to the specificities of the waste treatment in terms of process(es) carried out, waste stream(s) treated, etc.</td></tr>
</table>
</td><td></td><td>Offices will be located in portable cabin, with electrical heating systems. There are no boilers on-site.

a) Energy efficiency is addressed as part of the site EMS.

Energy use will be a key performance indicator and will be reviewed at regular intervals to target potential improvements.

Carbon reduction commitments have been communicated at Group level, with a target to reduce carbon by 40% by 2025.

b) An energy balance record will be generated in support of the energy efficiency plan.</td></tr>
<tr><td>BAT 25</td><td>Reuse of packaging
In order to reduce the quantity of waste sent for disposal, BAT is to maximise the reuse of packaging, as part of the residues management plan (see BAT 1).

Description
Packaging (drums, containers, IBCs, pallets, etc.) is reused for containing waste, when it is in good condition and sufficiently clean, depending on a compatibility check between the substances contained (in consecutive uses). If necessary, packaging is sent for appropriate treatment prior to reuse (e.g. reconditioning, cleaning).

Applicability
Some applicability restrictions derive from the risk of contamination of the waste posed by the reused packaging.</td><td>Yes</td><td>Packaging materials are limited to the raw materials that are supplied to the site in 25L kegs, 205L drums and 1,000L IBCs.
Where possible, packaging will be recycled or reused; empty IBCs are sent to the supplier and drums are reused and recycled.</td></tr>
</table>

3. BEST AVAILABLE TECHNIQUES (BAT) CONCLUSIONS FOR THE BIOLOGICAL TREATMENT OF WASTE

<table>
<tr><th>BAT No</th><th>BAT Justification</th><th>Operating to BAT</th><th>Operator Comments</th></tr>
<tr><td>BAT 33</td><td>In order to reduce odour emissions and to improve the overall environmental performance, BAT is to select the waste input.

Description
The technique consists of carrying out the pre-acceptance, acceptance and sorting of the waste input (see BAT 2) so as to ensure the suitability of the waste input for the waste treatment, e.g. in terms of nutrient balance, moisture or toxic compounds which may reduce the biological activity.</td><td></td><td>See BAT 9 – 13 above and 1620013520-002 Dunton Bridge Street North, Odour Management Plan.</td></tr>
<tr><td>BAT 34</td><td>Emissions to air
In order to reduce channelled emissions to air of dust, organic compounds and odorous compounds, including H_2S and NH_3, BAT is to use one or a combination of the techniques given below.
<table>
<tr><th colspan="2">Technique</th><th>Description</th></tr>
<tr><td>a</td><td>Adsorption</td><td>See Section 6.1.</td></tr>
<tr><td>b</td><td>Biofilter</td><td>See Section 6.1.
A pre-treatment of the waste gas before the biofilter (e.g. with a water or acid scrubber) may be needed in the case of a high NH_3 content (e.g. 5-40 mg/Nm³) in order to control the media pH and to limit the formation of N_2O in the biofilter.
Some other odorous compounds (e.g. mercaptans, H_2S) can cause acidification of the biofilter media and necessitate the use of a water or alkaline scrubber for pre-treatment of the waste gas before the biofilter.</td></tr>
<tr><td>c</td><td>Fabric filter</td><td>See Section 6.1. The fabric filter is used in the case of mechanical biological treatment of waste.</td></tr>
<tr><td>d</td><td>Thermal oxidation</td><td>See Section 6.1.</td></tr>
<tr><td>e</td><td>Wet scrubbing</td><td>See Section 6.1. Water, acid or alkaline scrubbers are used in combination with a biofilter, thermal oxidation or adsorption on activated carbon.</td></tr>
</table>
Table 6.7
BAT-AELs for channelled NH_3, odour, dust and TVOC emissions to air from the biological treatment of waste
<table>
<tr><th>Parameter</th><th>Unit</th><th>BAT-AEL (Average over the sampling period)</th><th>Waste treatment process</th></tr>
<tr><td>NH_3</td><td>mg/Nm³</td><td>0,3-20</td><td rowspan="2">All biological treatments of waste</td></tr>
<tr><td>Odour concentration</td><td>ouE/Nm³</td><td>200-1 000</td></tr>
<tr><td>Dust</td><td>mg/Nm³</td><td>2-5</td><td rowspan="2">Mechanical biological treatment of waste</td></tr>
<tr><td>TVOC</td><td>mg/Nm³</td><td>5-40 (43)</td></tr>
</table>
The associated monitoring is given in BAT 8.</td><td></td><td>Channelled emissions to air from the bioremediation process are limited to dust and hydrocarbons.

The hydrocarbons present in the waste soils are typically long chain and not very volatile. Dust is generated from the movement of soils, but this is kept to a minimum due to operational controls such as dampening with water sprays.

Process operations and storage for the bioremediation process is located within a building with one release point to atmosphere from the biopads. The biopads will be aerated via a network of perforated pipes that are installed within the biopiles. The air is drawn through the biopile and the extracted at roof level via a carbon filter to remove any VOCs and a HEPA filter to prevent releases of dust.

The remainder of the release points to atmosphere are from the asbestos operation. There is a release point from the extract from the soil storage area, a second from the feed hopper to the asbestos picking station, and a final release point from the picking station. Each of the release points has a HEPA filter and carbon filter arrangement to prevent releases of dust and TVOCs.

The abatement system has been designed to meet BAT-AELs for dust and TVOC. This will be confirmed with routine monitoring.</td></tr>
</table>

<table>
<tr><th>BAT No</th><th>BAT Justification</th><th>Operating to BAT</th><th>Operator Comments</th></tr>
<tr><td>BAT 35</td><td>Emissions to water and water usage
In order to reduce the generation of waste water and to reduce water usage, BAT is to use all of the techniques given below.

<table>
<tr><th colspan="2">Technique</th><th>Description</th><th>Applicability</th></tr>
<tr><td>a</td><td>Segregation of water streams</td><td>Leachate seeping from compost piles and windrows is segregated from surface run-off water (see BAT 19f).</td><td>Generally applicable to new plants.

Generally applicable to existing plants within the constraints associated with the layout of the water circuits.</td></tr>
<tr><td>b</td><td>Water recirculation</td><td>Recirculating process water streams (e.g. from dewatering of liquid digestate in anaerobic processes) or using as much as possible other water streams (e.g. water condensate, rinsing water, surface run-off water). The degree of recirculation is limited by the water balance of the plant, the content of impurities (e.g. heavy metals, salts, pathogens, odorous compounds) and/or the characteristics of the water streams (e.g. nutrient content).</td><td>Generally applicable.</td></tr>
<tr><td>c</td><td>Minimisation of the generation of leachate</td><td>Optimising the moisture content of the waste in order to minimise the generation of leachate.</td><td>Generally applicable.</td></tr>
</table></td><td>Yes</td><td>a) Segregation of foul and surface water is undertaken at the site.

Bioremediation is undertaken in engineered biopads that are located within a building. Each biopad has a sump installed to collect any leachate. However, this is minimised due to the biopads being constructed inside a building and the careful control of moisture additions to the biopad. Effluent is not expected to be routinely generated in the biopads.

b) Water with an additive (asbestos penetrant) will be used to dampen soils containing asbestos in the asbestos picking station. The water will be sprayed onto soil on the conveyor and then collected into a holding tank and reused.

c) Moisture content will be optimised to drive the bioremediation process. Any leachate generated will be collected in the sump and reused.</td></tr>
</table>

4. BEST AVAILABLE TECHNIQUES (BAT) CONCLUSIONS FOR THE AEROBIC TREATMENT OF WASTE

<table>
<tr><th>BAT No</th><th>BAT Justification</th><th>Operating to BAT</th><th>Operator Comments</th></tr>
<tr><td>BAT 36</td><td>In order to reduce emissions to air and to improve the overall environmental performance, BAT is to monitor and/or control the key waste and process parameters.

Description
Monitoring and/or control of key waste and process parameters, including:
- waste input characteristics (e.g. C to N ratio, particle size);
- temperature and moisture content at different points in the windrow;
- aeration of the windrow (e.g. via the windrow turning frequency, O2 and/or CO2 concentration in the windrow, temperature of air streams in the case of forced aeration);
- windrow porosity, height and width.

Applicability
Monitoring of the moisture content in the windrow is not applicable to enclosed processes when health and/or safety issues have been identified. In that case, the moisture content can be monitored before loading the waste into the enclosed composting stage and adjusted when it exits the enclosed composting stage.</td><td></td><td>Process monitoring will be undertaken to ensure that the bioremediation process is optimised.

Biodegradation is maintained by a achieving a minimum temperature of between 15 and 20°C in the biopiles to ensure the mesophilic microflora are predominantly stimulated.
To enable biodegradation to occur the following parameters are monitored and manipulated:
• pH
• temperature
• moisture content
• oxygen levels
• nutrient concentrations

Handheld probes will be used to monitor, pH, temperature, moisture and oxygen; with a sample being removed to check on the nutrient concentrations. The aim is to achieve the following conditions for biodegradation:
• Total bacteria - >10³ CFU/g dry soil
• Soil pH – 6 – 8
• Moisture content - 12 – 30%
• Soil temperature 15 – 20°C (higher temperature unlikely in the UK)
• Nutrient concentration (C:N:P) – approx.. 120:10:1 molar ratio
• Minimum oxygen - > 0.2 mg/l DO, >10% air/filled pore space.</td></tr>
<tr><td>BAT 37</td><td>Odour and diffuse emissions to air
In order to reduce diffuse emissions to air of dust, odour and bioaerosols from open-air treatment steps, BAT is to use one or both of the techniques given below.
<table>
<tr><th colspan="2">Technique</th><th>Description</th><th>Applicability</th></tr>
<tr><td>a</td><td>Use of semipermeable membrane covers</td><td>Active composting windrows are covered by semipermeable membranes.</td><td>Generally applicable.</td></tr>
<tr><td>b</td><td>Adaptation of operations to the meteorological conditions</td><td>This includes techniques such as the following:
- Taking into account weather conditions and forecasts when undertaking major outdoor process activities. For instance, avoiding formation or turning of windrows or piles, screening or shredding in the case of adverse meteorological conditions in terms of emissions dispersion (e.g. the wind speed is too low or too high, or the wind blows in the direction of sensitive receptors).
- Orientating windrows, so that the smallest possible area of composting mass is exposed to the prevailing wind, to reduce the dispersion of pollutants from the windrow surface. The windrows and piles are preferably located at the lowest</td><td>Generally applicable.</td></tr>
</table></td><td></td><td>a) Bioremediation will be undertaken on engineered biopads that will be located within a building. Since the process will not be exposed to meteorological conditions, semi-permeable membranes are not deemed necessary. The risk of dust and odour generation is minimised as the release points from the biopads release to atmosphere via HEPA and carbon filters.

b) Not applicable as the operations will be undertaken inside a building.</td></tr>
</table>

BAT No	BAT Justification	Operating to BAT	Operator Comments
	elevation within the overall site layout.		

5. BEST AVAILABLE TECHNIQUES (BAT) CONCLUSIONS FOR THE PHYSICO-CHEMICAL TREATMENT OF SOLID AND/OR PASTY WASTE

<table>
<tr><th>BAT No</th><th>BAT Justification</th><th>Operating to BAT</th><th>Operator Comments</th></tr>
<tr><td>BAT 40</td><td>Overall environmental performance
In order to improve the overall environmental performance, BAT is to monitor the waste input as part of the waste pre-acceptance and acceptance procedures (see BAT 2).

Description
Monitoring the waste input, e.g. in terms of:
– content of organics, oxidising agents, metals (e.g. mercury), salts, odorous compounds;
– H_2 formation potential upon mixing of flue-gas treatment residues, e.g. fly ashes, with water.</td><td></td><td>Extensive pre-acceptance and acceptance procedures are in place and are described in BAT 2.</td></tr>
<tr><td>BAT 41</td><td>Emissions to air
In order to reduce emissions of dust, organic compounds and NH_3 to air, BAT is to apply BAT 14d and to use one or a combination of the techniques given below.
<table>
<tr><th colspan="2">Technique</th><th>Description</th></tr>
<tr><td>a</td><td>Adsorption</td><td rowspan="4">See Section 6.1</td></tr>
<tr><td>b</td><td>Biofilter</td></tr>
<tr><td>c</td><td>Fabric filter</td></tr>
<tr><td>d</td><td>Wet scrubbing</td></tr>
</table>
Table 6.1
BAT-associated emission level (BAT-AEL) for channelled emissions of dust to air from the physico-chemical treatment of solid and/or pasty waste.
<table>
<tr><th>Parameter</th><th>Unit</th><th>BAT-AEL (Average over the sampling period)</th></tr>
<tr><td>Dust</td><td>mg/Nm³</td><td>2-5</td></tr>
</table>
The associated monitoring is given in BAT 8.</td><td></td><td>Physico-chemical treatment at the site is limited to asbestos treatment.
Soils contaminated with asbestos are passed through a picking station using a conveyor where the asbestos is manually removed from the belt.

Waste pre-acceptance and acceptance procedures ensure that the presence of asbestos fibres is below the threshold for hazardous waste.

Waste that is brought to the site for bioremediation may also be contaminated with asbestos. In this case, waste will be passed through the asbestos removal process first prior to bioremediation.

There is potential for dust and VOCs to be present in the channelled emissions from the asbestos process and for this reason, HEPA and carbon filters will be installed in the single release point from the picking cabin to abate these emissions.

Waste soils will be stored inside the building in dedicated storage areas. Waste is transferred to the picking station via a hopper. The storage bays and the hopper will both have HEPA and carbon filters installed in the extraction to atmosphere.

HEPA filters are highly efficient at removing dust and the releases to air will meet the BAT-AELs.

Confirmatory monitoring will be undertaken following commissioning and for routine compliance monitoring.</td></tr>
</table>