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DUNTON BRIDGE STREET NORTH

APPLICATION TO VARY AN ENVIRONMENTAL PERMIT

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CONTENTS

1. NON-TECHNICAL SUMMARY

Dunton Technologies Limited ("Dunton") proposes to operate a Hazardous Waste Treatment Facility located at Bridge Street North, Smethwick, UK. The site currently operates under a Standard Rules Permit (EPR/QP3342YF/A001) to produce soils, soil substitutes and aggregate, issued on 18/01/2023. The site is therefore required to apply for a Substantial Variation to the existing Permit in order to undertake hazardous waste operations. This report has been prepared in support of that application.

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

- 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)(vi) Disposal or recovery of hazardous waste with a capacity exceeding 10 tonnes per day involving physico-chemical treatment; and
- Section 5.6 A1(a) Temporary storage of hazardous waste with a total capacity exceeding 50 tonnes.

Site treatment is to be via physio-chemical treatment and bioremediation and the Operator proposes to treat a maximum of 215,000 tonnes of hazardous waste per year in an indoor facility.

The principal treatment objective is to render the waste materials non-hazardous and appropriate for re-use at nearby restoration or environmental betterment schemes.

Best Available Techniques (BAT)

A BAT assessment has been undertaken and concluded that the site operations are representative of best available techniques for waste treatment

Management Techniques

The site will operate to an integrated management system that will be accredited to ISO14001. The management system has been reviewed and is considered to meet the requirements of BAT.

Specific procedures will be in place to manage site operations, in particular stringent waste pre-acceptance, waste acceptance procedures and emergency preparedness and response procedures will be in place.

Raw Materials

The raw material requirements for the site operations are quite minimal. Raw materials will be stored within a dedicated storage area within the main processing building. Storage will be in 25 kg/25 litre containers and drums.

A 5,000 litre diesel storage tank will be located on site for the refuelling of site vehicles. The diesel storage tank is a self-bunded tank that will be located within a dedicated concrete bund. Refuelling will be undertaken within a dedicated refuelling area; which will be of concrete construction with a humped concrete arrangement at the front of the bay to allow vehicles access whilst offering containment for any leaks or spills. A collision barrier will be installed in front of the diesel tank to prevent vehicles driving into it.

Emissions to Controlled Waters

There are no releases to controlled waters from site operations.

Emissions to Sewer

Potentially contaminated water from the site will be discharged to foul sewer under a trade effluent discharge consent with the relevant water undertaker.

Containment Strategy

The site has developed a containment strategy to prevent the release of potentially contaminated surface water. The main contaminative area of the site will be of concrete hardstanding that will naturally drain to a sump. The sump can be isolated to provide containment in the drainage system in the event of a significant spill.

The site drainage system will pass via a full retention interceptor and into two effluent storage tanks. The two effluent storage tanks have a capacity of 10,000 litres each and will located within a bund. Effluent will be isolated within the tanks and analysed to ensure that it is within the consent limits of the Trade Effluent Discharge Consent prior to discharge to sewer.

Emissions to Soil and Groundwater

There are no releases to soil or groundwater from site operations

Waste Generation

Waste is limited to asbestos that is removed during the asbestos treatment process. This will be double bagged and stored in a locked skip prior to offsite disposal with an approved waste disposal contractor.

Other wastes on site are general wastes, office waste, recyclables, scrap metal and raw material containers.

Energy Efficiency

The energy requirements of the site are mainly related to lighting, abatement systems and material transfers. Wherever possible, the most energy efficient equipment will be installed. The site will be included in the overall company objectives and targets for energy efficiency applied which includes consideration of Scope 1, 2 and 3 emissions of CO_2.

Noise and Vibration

The majority of process operations are undertaken within buildings which minimises the potential for noise nuisance. The majority of the noise is generated from the movement of vehicles on site. A noise assessment was undertaken to assess the noise on nearby receptors. The assessment concluded that sound levels at the nearest receptors were unlikely to have significant adverse effects.

Odour

Potential sources of odour are related to the treatment of hydrocarbon contaminated wastes. The wastes will only be accepted under stringent waste pre-acceptance and acceptance criteria which does not allow for odorous materials. In addition, processes for the storage and treatment of hydrocarbon contaminated wastes will be undertaken in the main processing building which has air extraction via HEPA and carbon filters which will effectively abate any potential odours.

Dust

Fugitive emissions of dust are minimised due to the storage and treatment of wastes being undertaken in the main processing building which has air extraction via HEPA and carbon filters which will effectively abate any potential dusts. During material transfers, materials will be dampened to prevent the formation of dust.

Site Condition Report

A site condition report covering the whole installation is appended. Monitoring of soils and groundwater was undertaken to establish a baseline for the permit.

Environmental Risk Assessment

A qualitative assessment of the potential risks to the environment was undertaken and concluded that the current mitigation measures are sufficient to minimise the risks to low or very low levels.

2. INTRODUCTION

Dunton Technologies Limited ("Dunton") proposes to operate a Hazardous Waste Treatment Facility located at Bridge Street North, Smethwick, UK. The site currently operates under a Standard Rules Permit (EPR/QP3342YF/A001) to produce soils, soil substitutes and aggregate, issued on 18/01/2023. The site is therefore required to apply for a Substantial Variation to the existing Permit in order to undertake hazardous waste operations. This report has been prepared in support of that application.

The process is treatment of contaminated soils in an indoor facility, 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 Schedule 1 of the Environmental Permitting (England and Wales) Regulations 2016 (as amended) as they relate to the treatment of waste, specifically:

- 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)(vi) Disposal or recovery of hazardous waste with a capacity exceeding 10 tonnes per day involving physico-chemical treatment; and
- Section 5.6 A1(a) Temporary storage of hazardous waste with a total capacity exceeding 50 tonnes.

The principal treatment objective is to render the waste materials non-hazardous and appropriate for re-use at nearby restoration or environmental betterment schemes.

The site will consist of an existing large warehouse type building that will be used to house waste storage areas and the bioremediation process.

Asbestos wastes will be treated in a dedicated asbestos picking station. Wastes will be delivered to site and following the acceptance procedures, will be transferred to asbestos storage bays within the main building. The storage bays will be connected to a ventilation system that will contain both HEPA and carbon filters for the abatement of dust and VOCs.

Materials accepted for bioremediation will be received into a reception bay and then, following confirmatory testing using a portable analyser, will be transferred to an engineered bioremediation bay known as a biopad. There will be two biopads located within the main building. Each will be connected to a ventilation system that will contain both HEPA and carbon filters for the abatement of dust and VOCs.

Wastes may be accepted that require both asbestos treatment and bioremediation. In this case, the waste will first be passed through the asbestos picking station prior to being transferred to a biopad for bioremediation.

Limited raw materials are required for site operations and consist of bacteria and nutrient to enhance bioremediation, asbestos penetrator, flocculant, associated maintenance materials and diesel. Diesel will be stored within a dedicated bunded storage tank and all other raw materials will be stored in kegs or drums within the main building.

Abatement of emissions to air is supplied by means of HEPA filters to prevent releases of particulate matter, and carbon filters to prevent releases of hydrocarbons/VOCs. Four release

points will vent to atmosphere from the roof of the main building, and a further release point will be associated with the asbestos picking station.

There will be no discharges to controlled waters; surface water from potentially contaminated areas will be discharged to foul sewer under a discharge consent with the relevant water undertaker.

The drainage strategy for the site is for all surface water from potentially contaminative areas to be discharged to foul sewer. Contaminative areas will be separated from non-contaminative areas by means of a concrete hump arrangement. In addition, a sump will be installed to contain surface water run-off from potentially contaminative areas. The sump can be isolated should there be a leak or spill identified in the area. The sump will also be isolated during refuelling operations involving the diesel tank.

The diesel tank will be of an integrated tank construction and will be located within a dedicated concrete bund. The diesel tank will be used for refuelling of site vehicles, for this reason a fuel delivery area will be constructed which will be bunded with a concrete hump at the front to allow vehicles to enter the area whilst providing secondary containment for any spillages.

Any effluents for discharge to foul sewer will pass through a full retention interceptor/silt trap prior to being transferred to one of two effluent storage tanks. The storage tanks can be isolated and then analysed prior to discharge to foul sewer.

The site will also operate a wheel wash that vehicles will pass through prior to leaving the site. The wheel wash will have an integral tank and the water will be recycled. Once the water is considered to be spent, it will be analysed prior to discharge to foul sewer via the site interceptor and tanks; should the effluent not meet the discharge criteria, then it will be removed from site for offsite treatment or disposal.

Treated wastes will be transferred to two post treatment storage bays. The bays are covered to prevent rainwater ingress. Materials will undergo verification sampling and analysis prior to being removed from the site for reuse.

The site will operate under an environmental management system that will be certified to the ISO14001 standard and process operations are considered to be representative of best available techniques (BAT) for the treatment of waste.

3. INSTALLATION DETAILS

3.1 Applicant Details

Company Name	Dunton Technologies Ltd.
Installation Name	Bridge Street North
Installation Address	The Bridge Trading Estate, Bridge Street North, Smethwick. B66 2BZ
Installation Contact	James Hill
Registered Office	Soterion House, Northgate, Aldridge, Walsall, West Midlands. WS9 8TH
Company Registration Number	09223580
Permit Reference	EPR/QP3342YF/A001

3.2 Scheduled Activities

Activity Listed in Schedule 1 of the EP Regulations	**Description of Specified Activity**	**Details**
S5.3 A1(a)(i) Disposal of hazardous waste with a capacity exceeding 10 tonnes per day involving biological treatment.	Biological treatment of hazardous waste for recovery (R5)	From storage of wastes to treatment using bioremediation in biopiles.
S5.3 A1(a)(vi) Disposal or recovery of hazardous waste with a capacity exceeding 10 tonnes per day involving physico-chemical treatment.	Asbestos removal from wastes (R5)	From storage of wastes to treatment via hand picking and despatch of waste off-site. Treatment in a dedicated enclosed and abated picking cabin.
S5.6 A1(a) Temporary storage of hazardous waste with a total capacity exceeding 50 tonnes.	Storage of hazardous waste prior to on-site treatment for the purpose of recovery (R13)	From receipt of waste to its treatment.
Directly Associated Activities		
Pre-treatment	Mechanical screening and sorting of waste to remove any materials not suitable for bioremediation and/ or solidification and/or stabilisation	No pre-treatment of asbestos containing materials. Separated oversize fractions will be stored separately prior to removal off site.

Storage of treated waste	Storage of treated wastes from asbestos picking and bioremediation treatment activities.	Two covered post treatment storage bays.
Storage of raw materials	Fuel storage and non-waste process additives	All fuels will be stored in tanks with secondary containment at a designated location on an impermeable surface with sealed drainage. Non-waste additives used in the waste treatment process will be stored in a dedicated storage area in the main building.

3.3 Site Setting and Permit Boundary

A plan showing the location of the site and a site plan showing the permit boundary (in green) is presented in Appendix 1.

3.4 Best Available Techniques

A Best Available Techniques (BAT) assessment has been undertaken in support of the application. The full assessment is presented in '1620013520-002 – Dunton Bridge Street North BAT Assessment, Ramboll, June 2023'.

The BAT Reference documents that were used to undertake the assessment are:

- Best available techniques (BAT) conclusions for waste treatment (2018).

The assessment concluded that the techniques undertaken at the site are considered to be representative of BAT and the processes are expected to achieve BAT-AELs for releases to air.

4. PROCESS DETAILS

4.1 Overview

It is proposed that there will be a total annual throughput of 215,000 tonnes per annum. This will be split approximately 75,000 tonnes for bioremediation and 140,000 tonnes for asbestos treatment, however the proportion of each treatment stream is likely to vary based on demand.

The standard Operating Hours for the facility are:-

- Monday – Friday 07:30 – 17:00; and
- Saturday 08:00 to 13:30.

The site will not undertake operations on Sundays or Public Holidays. Wastes will be accepted onto site from 08:00 up to 30 minutes prior to the site closing. Processing will continue until the end of the working day.

4.2 Permitted Waste Types

The site currently operates under a Standard Rules Permit, to produce soils, soil substitutes and aggregate. The waste types currently accepted at the site are defined in Table 2.3 of the existing Permit. Dunton would like to vary the Permit so that the following wastes can be accepted and treated at the site in addition to those already received. The proposed waste types for each treatment activity are provided in Tables 4.1 and 4.2. The wastes are listed with the description and code provided under the List of Wastes (England) Regulations 2005.

Table 4.1: Waste Types for Asbestos Picking

Code	Description
17	**CONSTRUCTION AND DEMOLITION WASTES (INCLUDING EXCAVATED SOIL FROM CONTAMINATED SITES)**
17 05	**Soil (including excavated soil from contaminated sites), stones and dredging spoil**
17 05 03*	Soil and stones containing hazardous substances
17 06	**Insulation materials and asbestos-containing construction materials**
17 06 05*	Construction materials containing asbestos
17 09	**Other construction and demolition wastes**
17 09 03*	other construction and demolition wastes (including mixed wastes) containing hazardous substances

Table 4.2: Waste Types for Bioremediation

Code	Description
13	**OIL WASTES AND WASTES OF LIQUID FUELS (EXCEPT EDIBLE OILS, AND THOSE IN CHAPTERS 05, 12 AND 19).**
13 05	**Oil/water separator contents**
13 05 01*	Mixtures of wastes from grit chambers and oil/water separators.
17	**CONSTRUCTION AND DEMOLITION WASTES (INCLUDING EXCAVATED SOILS FROM CONTAMINATED SITES).**

17 05	**Soil (including excavated soil from contaminated sites), stones and dredging spoil**
17 05 03*	Soil and stones containing hazardous substances.
17 05 05*	Dredging spoil containing hazardous substances.
17 05 07*	Track ballast containing hazardous substances.
19	**WASTES FROM WASTE MANAGEMENT FACILITIES, OFF-SITE WASTE WATER TREATMENT PLANTS AND PREPARATION OF WATER INTENDED FOR HUMAN CONSUMPTION AND WATER FOR INDUSTRIAL USE**
19 02	**wastes from physico/chemical treatments of waste (including dechromatation, decyanidation, neutralisation).**
19 02 04*	Premixed wastes composed of at least one hazardous waste.
19 02 11*	Other wastes containing hazardous substances
19 03	**Stabilised/solidified wastes**
19 03 04*	Wastes marked as hazardous, partly stabilised other than 19 03 08
19 03 06*	Wastes marked as hazardous, solidified
19 12	
19 12 11*	Other wastes (including mixtures of materials) from mechanical treatment of waste containing hazardous substances
19 13	**Wastes from soil and groundwater remediation**
19 13 01*	Solid wastes from soil remediation containing hazardous substances

4.3 Waste Acceptance Procedure and Pre-acceptance Procedures

Prior to waste soils being accepted on the site, waste pre-acceptance and acceptance testing is undertaken.

4.3.1 Waste Pre-Acceptance

The procedure requires that all wastes to be received on site are first screened for acceptability. Dunton's technical compliance department will screen each enquiry from a customer. Details will be taken on the nature of the material, where the waste originated, the List of Wastes category (EWC), chemical composition and any other pertinent details. A decision as to whether a waste can be treated will then be made.

Waste soils are sampled and analysed prior to being transported to the site for treatment. Wastes will be received from a single source and will be sampled every 250 tonnes of soil to ensure the composition is representative of the source. Samples of the soil will be analysed at a UKAS accredited laboratory to ensure that the waste acceptance criteria are met.

The acceptance limits for heavy metals, hydrocarbons and asbestos are presented in Table 4.3.

Table 4.3: Waste Acceptance Limits

Parameter	Units	Limits
pH		6 - 8
Asbestos – free fibres		<0.1%
Arsenic	mg/kg	To be assessed against non-hazardous waste threshold in WM3 guidance.
Cadmium	mg/kg	
Chromium (VI)	mg/kg	
Lead	mg/kg	
Mercury (Total)	mg/kg	
Nickel	mg/kg	
Selenium	mg/kg	
Copper	mg/kg	
Zinc	mg/kg	
TPH	mg/kg	30,000
Total PAHs	mg/kg	1,000
Moisture Content	%	<40

For soils containing asbestos, the material will not be accepted unless the fibre content has been demonstrated to be <0.1%.

4.3.2 Waste Acceptance

On receipt at the site, further testing will be undertaken prior to the materials being offloaded. This ensures that the waste delivered to the site conforms to the information provided at the pre-acceptance stage.

To ensure that sufficient capacity is available at the site, any waste deliveries are pre-booked with a minimum of 24 hours' notice. Waste loads are only accepted if there is sufficient capacity, if this is not the case then the load will be returned to the waste producer.

On arrival at the site, the load will undergo visual and olfactory inspection by the site manager or deputy. The waste is cross checked against the accompanying documentation; if it does not match the written description then it will be rejected and returned to the producer. At this point, if waste is noted to be significantly odorous, then the waste will be rejected.

In addition, the site will use portable analysers to provide reassurance that the waste received is of a similar chemical composition to the pre-acceptance analyses. Portable analysers will be used to detect hydrocarbons and x-ray fluorescence is used for heavy metal analysis.

Verification sampling and analysis is also undertaken with waste being representatively sampled; one sample (generated from three sub-samples) for every 250 tonnes of waste received. Verification samples are analysed at a UKAS accredited laboratory or equivalent standard.

The waste acceptance criteria contain a full suite of both aliphatic and aromatic hydrocarbons, as well as heavy metals and asbestos. Material will only be accepted where heavy metal concentrations are sufficient for non-hazardous determination.

Following waste acceptance checks, wastes are offloaded and transferred to dedicated storage bays within the main building.

In addition to the bioremediation and asbestos storage bays, the site has a separate quarantine bay. Wastes may be stored here whilst verification analysis is undertaken. Should the material fail the acceptance criteria, then it will be removed from the site within five working days.

4.4 Rejected Waste

It is unlikely that waste received at the site will need to be rejected due to the extensive pre-acceptance and acceptance procedures applied. However, if non-compliant or untreatable wastes are received on site, they will be returned to the producer if it is safe to load them back onto the vehicle that delivered them. Where this is not possible, they will be moved to the quarantine area and removed from site within five working days either to an alternative permitted facility that can treat them, or to a suitable disposal facility. Additionally, the producer of the waste will be notified.

The Environment Agency will be informed of any non-compliant wastes arriving at the site.

5. BIOREMEDIATON PROCESS

Wastes for bioremediation will be received in accordance with the site waste pre-acceptance and acceptance procedures.

On arrival at the site, waste will be inspected to ensure that it is consistent with the accompanying documentation. The site will also utilise portable analysers to provide reassurance that the waste received is of a similar chemical composition as the pre-acceptance testing. Portable analysers will be used to detect hydrocarbons and heavy metals.

If the waste fails either the visual, olfactory or waste acceptance criteria using the portable analyser, then the waste will be returned to the waste producer.

Sampling will also be undertaken at this point, with one sample being analysed for every 250 tonnes of material. Three subsamples will be taken to generate one composite sample. The analyses will be undertaken at a UKAS accredited laboratory or to an equivalent standard.

Following waste reception, waste is transferred into the bioremediation delivery bay. Waste delivery, storage and treatment will be undertaken within the main building. This limits the potential for nuisance to result from noise, dust or odour.

Once confirmatory analysis has determined that the waste meets the acceptance criteria, the soils will be transferred to an engineered bioremediation bay known a biopad. Biopad treatment is a controlled biological process where biodegradable contaminants are converted to their basic constituents under aerobic conditions. Soils will be screened prior to constructing the biopile to remove any large objects. Screening will be undertaken within the building.

Biopile technology involves forming hydrocarbon-contaminated soils into piles above ground and stimulating aerobic microbial activity within the soils through aeration. The aerobic microbial activity degrades the hydrocarbon-based constituents adsorbed to soil particles, thus reducing the concentrations of these contaminants.

The biopad base will consist of a kerbed concrete pad within the main process building that has a slight fall allow all process water to be collected in a sump at the rear of the pad.

When a biopile is set up, a network of perforated aeration pipes will be installed beneath and within the biopiles. These pipes are linked to a high-performance aeration system. Each aeration leg is joined to an air manifold header at branch points via a gate valve. The valve is used to adjust the airflow through each leg. This allows effective control of the oxygen levels and moisture content in the waste to maintain aerobic conditions.

The exhaust to air extraction system is connected to two carbon absorption units fitted in series followed by a HEPA filter. The abatement system is designed to capture and treat the degradation products (predominantly VOCs) and reduce particulate and odour emissions. The air extraction system draws air from the biopile where it is subsequently treated in the abatement system prior to release to atmosphere at roof height. This design applies a level of inbuilt redundancy, allowing for failure and replacement of one carbon filter without it impacting on the final emission quality.

Soils may be conditioned with bulking agents, bacteria and nutrients as required to optimise bioremediation. The waste will have already been characterised and the treatment strategy will have been determined prior to arriving at site.

The bioremediation process generally utilises the bacteria already present in the soil. In some instances, addition microbial innocula may be added to enhance the treatment process. Nutrients and moisture are also required to facilitate bioremediation. These will be sprayed onto the soil as the biopile is constructed. As moisture content is carefully controlled, there is limited potential for contaminated water to be generated. Any excess water will be collected within the sump and will be reapplied to the biopile as additional moisture is required.

Nutrients can be added as the biopile is formed by introducing commercial grade liquid-based nutrients. Nutrient addition will be controlled by calculating the nutrient requirements and applying the nutrients at a known rate to the biopile. Again, any excess will be contained within the sump.

Although the air supplied to the biopile and the hydrocarbons are consumed by biological action, the inorganic nutrients are recycled by the ecosystem. As a result, the nutrients do not have to be continually replenished. After the initial inorganic nutrient amendment is made (if needed), no further nutrient additions will be required.

Handheld probes will be used to monitor pH, temperature, moisture and oxygen; with a sample being removed to check on the nutrient concentrations. The ideal conditions for biodegradation are presented in Table 5.1

Table 5.1: Optimum Conditions for Biodegradation

Environmental Factor	**Biodegradation Conditions**
Total Bacteria (aerobic and facultative)	> 10^3 CFU / gram dry soil
Soil pH	6 to 8
Moisture Content	Typically, 12% – 30%
Soil Temperature	15°C - 20°C
Nutrient Concentrations (C:N:P)	Approx. 120:10:1 molar ratio
Minimum Oxygen	>0.2 mg/L DO >10% air/filled pore space

Every 4-6 weeks the biopile will be sampled and analysed to (a) determine the concentration of hydrocarbons and the rate of biodegradation, and (b) to ensure that optimum conditions are being maintained within the biopile.

Once the soil meets the external re-use criteria, the soil is removed from the biopad and transferred to the treated soils storage area or taken directly off-site. The post-treatment bioremediation bays are covered to prevent fugitive emissions of dust. The biological treatment process typically is between 8 to 16 weeks dependent on the contaminants present in the soil.

6. ASBESTOS TREATMENT

Wastes for asbestos treatment will be received in the same manner as wastes for bioremediation. However, should wastes be received that require both asbestos treatment and bioremediation, the waste will first undergo asbestos treatment.

Wastes will be transferred to site in either enclosed or sheeted vehicles. Asbestos wastes will be from single sources and will not be mixed with other asbestos contaminated wastes.

Following initial testing, wastes are unloaded into the dedicated asbestos delivery bay. The waste will be transferred to one of the five asbestos storage bays where it will remain until the results of the confirmatory testing are received.

The asbestos treatment facility will be designed to fulfil Health and Safety Regulations specifically HSG 248 and the Control of Asbestos Regulations 2012 (CAR 2012). The facility will consist of a purpose-built picking station comprising a raised conveyor belt enclosed by an airtight cabin. The treatment facility will be manned by up to six pickers who will be fully outfitted in suitable Personal Protective Equipment (PPE), including but not limited to fully enclosed suits, gloves, head covers, breathing masks and protective glasses as required by the CAR 2012 and other prevailing Health and Safety Regulations (including but not limited to: the Control of Substances Hazardous to Health Regulations (COSHH), Health and Safety at Work Act (HSWA) and Management of Health and Safety at Work Regulations (MHSWR).

The facility will consist of a six-bay picking station. Wastes will be transferred from the asbestos storage bays into a feed hopper. The storage bays and hopper are all located within the main processing building and connected to the abatement system. From the hopper, waste is transferred via covered conveyor into the picking station.

As the waste is transferred onto the conveyor, it is wetted down using a spray bar to prevent any fugitive releases of dust (or odours if also contaminated with hydrocarbons) as well as to prevent emissions of fibres (in accordance with Health and Safety Guidance EM5 and HSG 248). The fluid used at this point will be a solution of water and an asbestos penetrator. Whilst the pre-acceptance and acceptance criteria require asbestos fibres to be <0.1%, this solution is used to provide additional protection for the site operatives.

In the picking station, asbestos is manually removed from the waste. It should be noted that as per HSE guidance EM5 and HSG 248, the picking station environment will be controlled at all times and there will be specially fitted sprinklers installed to ensure that the asbestos wastes on the picking belt remain damp.

Picked asbestos will be placed into bags inside the picking station and transferred to an enclosed skip so that the bags are not exposed to the outside environment. Picked asbestos will be placed into skips which will contain double bag liners in accordance with health and safety requirements. Once double bagged, the asbestos will be locked securely in an onsite skip and will be bulked prior to transport off site for disposal to landfill, which normally takes approximately 15 days.

Treated soils will be discharged from the picking station via the conveyor system. The treated soils will then be stored in the covered post treatment bays until post treatment verification analysis has been undertaken.

Verification sampling requires three samples to be taken to form one composite sample from every 250 tonnes of treated soil. The composite sample will be analysed at a UKAS accredited laboratory for asbestos free fibres. Sampling will be undertaken in accordance with EBPRI 11507B and HSG 248.

If the sampling showed that the asbestos treatment was unsuccessful, then it may be passed back through the treatment process or removed for offsite disposal.

Provided that the analysis showed effective treatment then the material will be transferred offsite for use in restoration projects. If the material also contains hydrocarbons, then it would be transferred directly to one of the biopads for further treatment.

Emissions to air are controlled using the onsite abatement system. Each of the asbestos storage bays is connected to an extraction system that passes through a HEPA filter and carbon filter arrangement prior to discharge at roof height. The HEPA filters are highly effective for the removal of particulate matter and the carbon filters are installed to prevent releases of VOC from hydrocarbon contaminated soils. There are three release points relating to the asbestos treatment process, one from the storage area, one from the hopper and one from the picking station. Routine monitoring will be undertaken by site personnel to ensure that the HEPA and carbon filters remain effective and compliance monitoring will be undertaken every six months in line with BAT.

Effluent will not routinely be generated from the asbestos treatment process. Water will be used to minimise the generation of dust from the process. However, as the storage bays are located within a building, the moisture content can be carefully controlled. There will be four sumps within the main building to collect any excess water, but it is not expected that these sumps will require emptying. Water and asbestos penetrant sprayed onto the soils entering the picking station will be collected and recycled into a tank for reuse. Once spent, this water will be sampled and analysed prior to discharge to foul sewer in accordance with the Trade Effluent Discharge Consent, or removed for treatment at an approved offsite facility.

Fugitive emissions are controlled in accordance with the Dust Management Plan. Whilst fugitive releases are minimised by the majority of operations being undertaken inside a building, monitoring for dust will be undertaken at various points on the site.

7. OVERSIZE MATERIALS PROCESSING

Oversize material constitutes large pieces of concrete and similar building materials that is extracted from the waste soils prior to treatment. This process is infrequent and will only be undertaken once every few months. A crusher will be used to break down large pieces of material into smaller pieces. The resulting crushed material will be recovered as an aggregate subject to relevant end of waste testing.

This material is non-hazardous. The European Waste Catalogue code for the residual oversize waste would either be 17 01 01 (concrete) or 17 01 07 (mixture of ceramics, bricks, tiles and construction products).

The material will be processed in the southwest area of the site. This area will be considered to be a non-contaminative area and will be segregated from the contaminative area via a concrete hump arrangement.

The crusher will not be a permanent site fixture and will be hired when and as needed in accordance with Dunton's mobile plant permit (Reference FB3302YF/A001).

It is noted that the crusher will be used for both the asbestos and bioremediation treatment processes, as follows:

- Materials removed from asbestos-containing waste streams after on-site treatment (picking) and verification sampling. Oversize material cannot be removed prior to the treatment process due to the potential presence of large pieces of asbestos within the un-treated waste;

- Materials removed from hydrocarbon-impacted waste streams prior to treatment (bioremediation), but after completion of waste acceptance. Oversize materials have to be removed prior to the treatment process to remove items such as large pieces of wood, tree roots etc. and any concrete/stone that are not suitable for bioremediation.

The oversize material that will be crushed will not contain asbestos.

The oversize processing area will be constructed from concrete hardstanding. However, as the material is non-hazardous there are no specific provisions for the capture of surface water runoff from the area. Procedures will be in place such that oversize processing will only be undertaken in dry conditions to prevent rainwater being contaminated with dust/suspended solids.

During processing, a fine water mist will be used to prevent the formation of dust. However, this will be carefully controlled to ensure that water runoff is not generated. Crushing will also not be undertaken in strong winds to prevent fugitive releases of dust.

8. MANAGEMENT TECHNIQUES

8.1 Overview

Dunton operates several waste treatment facilities that all adhere to an integrated management system (IMS) accredited to the ISO 14001 standard and externally audited by Alcumus ISOQAR. The management systems have extensive operational and emergency preparedness procedures. The relevant procedures will be implemented at the site located at Bridge Street North.

Site management has reviewed the EMS with regards to the requirements defined in the Best Available Techniques (BAT) conclusions for "Waste Treatment, August 2018'". The review concluded that the EMS is compliant with BAT.

The environmental impacts of the new installation have been considered throughout its design and development. Where possible, the most efficient equipment has been installed and due consideration has been given to minimising environmental impacts from emissions to air, water and waste.

8.2 Technical Competence

The facility will be supervised by an appropriately experienced waste manager with Certificate of Technical Competence (COTC) Level 4 in managing hazardous treatment and transfer operations.

The transfer and treatment of the waste will be overseen by the Technically Competent Manager or other trained staff. This will include overseeing pre-acceptance procedures, waste acceptance procedures, storage and transfer.

All personnel involved in the waste treatment operation will have full training provided, as a minimum, by the Technically Competent Manager.

8.3 Emergency Response

During the development of the new process and equipment, 'other than normal operating conditions (OTNOC)' scenarios have been considered to ensure that potential pollution events resulting from abnormal and emergency conditions have been considered.

An Environmental Risk Assessment has been developed in support of the Permit application. The findings are presented in '1620013520-002 Dunton Bridge Street North, Environmental Risk Assessment', November 2022. (see also Section 16).

Procedures have been developed for potential emergency scenarios for the new site operations. Any incidents or near misses identified on site are recorded and investigated; and where necessary, corrective actions are implemented.

8.4 Incidents and Non-Conformances

In addition to the emergency response procedures, all incidents and non-conformances will be recorded and investigated. The site operates an electronic tracking tool (Be Safe) to ensure that all environmental, health and safety incidents and near misses are recorded and investigated.

Odour, dust and noise management plans have been developed for the site operations. The management plans include routine monitoring of potential nuisance.

Dunton has developed standard procedures for addressing complaints from third parties and these will be implemented at the site. All non-conformances will be recorded and investigated and where applicable, corrective actions will be implemented.

8.5 Maintenance

The site has a Planned Preventative Maintenance (PPM) system in place. Maintenance is planned and tracked using an electronic system. The maintenance system incorporates the inspection and maintenance of environmentally critical equipment.

Critical environmental equipment is identified as:

- HEPA filters
- Carbon filters
- Interceptor
- Isolation valve
- Diesel tank
- Secondary containment systems
- Effluent holding tanks.

It is proposed that critical spares will be maintained at the site. However, if there should be a complete breakdown of the abatement equipment, then site operations would cease until a repair could be facilitated.

The interceptor will be routinely inspected and cleaned. The carbon and HEPA filters will be inspected routinely and replaced as required.

8.6 Records

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

A Site Diary will be maintained. This diary will be 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 EMS.

The Site Diary will include:

- The name of the COTC holder in attendance on any particular date;
- Visitor log;
- Maintenance, breakdown, repair of equipment;
- Weather conditions, including wind direction and speed;

- Non-conforming wastes and actions taken;
- Any security breaches, including damage to vehicles, fences, gates and incidents of trespass.

A daily environmental monitoring checklist will also be completed in line with the dust, odour and noise management plans.

8.7 Waste Tracking

The site maintains a waste inventory and tracking spreadsheet so that all materials can be tracked throughout the treatment process from receipt until the treated material leaves the site.

Waste loads are single source only and are not mixed with other wastes. Treated wastes are not mixed until verification testing has been undertaken.

9. STORAGE

9.1 Storage of Soils

All waste storage is undertaken within the main building.

Waste delivered to the site will be stored in dedicated storage bays prior to treatment. Waste will be delivered into one of two waste delivery bays, one for receipt of waste for bioremediation and a second for receipt of asbestos containing waste. Each delivery bay will have a 252 m³ capacity.

Following receipt, waste for asbestos picking will be transferred to one of five storage bays, each with a capacity of 210 m³. An additional 455 m³ storage bay is available for overflow asbestos waste.

Waste received for bioremediation will remain in the delivery bay until verification testing has been undertaken using portable analysers. It will then be moved directly to one of two biopads that are also located within the building. Each biopad has a capacity of 455 m³.

Two post treatment bays are provided for the storage of material that has been successfully treated and has undergone verification sampling. Each storage bay has a capacity of 150 m³. The post treatment bays will be roofed to prevent surface water runoff during periods of heavy rain; and if required, kept damp to prevent the formation of dust. They will contain only materials that have been verified as non-hazardous.

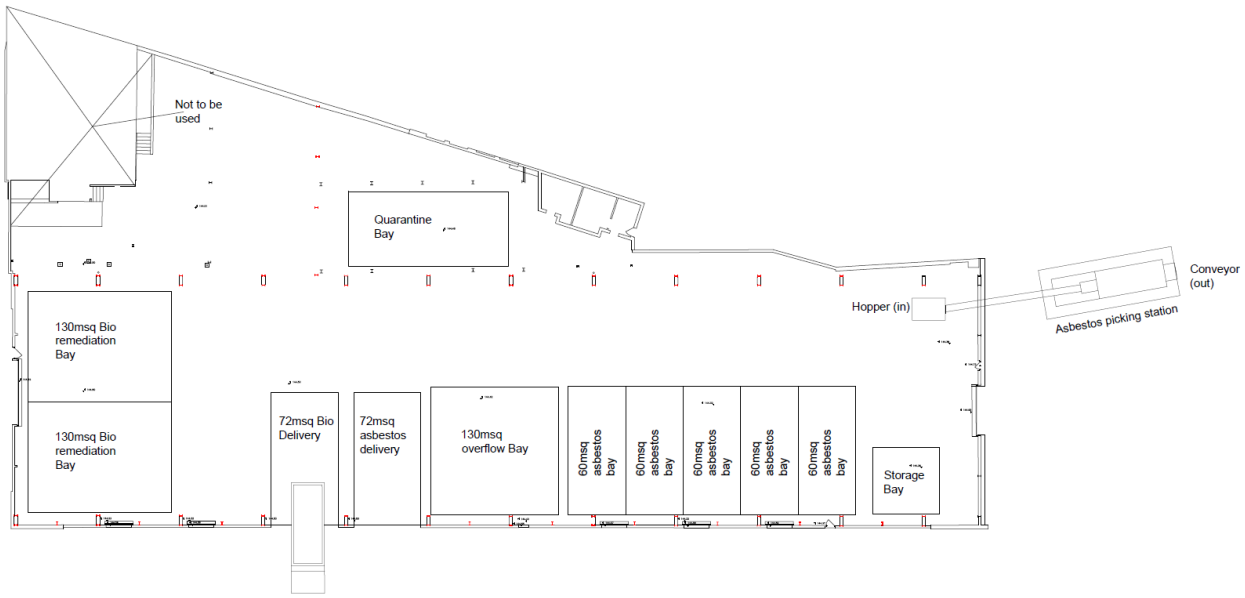
A quarantine bay is also provided which is located within the main building. The approximate storage capacity is 24 m³.

The dry density of soils normally ranges between 1.5 tonnes/m³ and 2.0 tonnes/m³ for wet soils. Given that the wastes will be relatively dry when they are accepted at the site, a conversion factor of 1.6 tonnes/m³ has been applied. This gives a total storage capacity of:

Material	Capacity (m³)	Capacity (tonnes)
Asbestos waste	1050	1680
Overflow asbestos waste	455	728
Bioremediation	910	1456
Quarantine	24	40
Post Treatment	300	480

A site plan showing the locations of the storage bays is presented in Figure 9.1.

Figure 9.1 Soil Storage Locations



9.2 Raw Materials

The following raw materials are used on site:

- Bio-accelerator
- Bacteria
- Asbestos penetrator
- Flocculant
- Plant and maintenance materials, lubricating grease, hydraulic oil etc
- Diesel
- AdBlue

The material safety data sheets for the raw materials are presented in Appendix 3.
With the exception of the diesel and hydraulic oils, the raw materials are not considered to be dangerous to the environment.

All raw materials with the exception of diesel, are stored within a dedicated area of the main processing building. Packed raw materials are stored in relatively low quantities in kegs or drums.

The building has a concrete base and there are no connections to the site drainage system. Any spillages would be contained within the storage area and would be cleaned up using the spill kits that will be located in the area.

Raw materials for the bioremediation process are limited to a bio-accelerator which provides nutrients to aid the bacteria present in the soil. The addition of nutrients optimises the rate of biodegradation. The bio-accelerator is stored in 205 litre drums.

The bioremediation process utilises the natural bacteria already present in the soils. However, in some instances, additional bacteria are added to the soils to enhance the process.

Soil conditioners will be brought onto site if they are deemed necessary to aid bioremediation. However, they will not be routinely stored on site.

The only raw material used for the asbestos treatment process is an asbestos penetrator. This is a compound that is utilised for binding asbestos fibres. It is only used for dampening of wastes entering the asbestos picking station and is applied using spray bars on the conveyor. Whilst there are extensive pre-acceptance and acceptance procedures in place that will ensure that the asbestos fibre content is <0.1%, the compound is used to provide additional safety measures for the operatives working within the cabin. The use of the asbestos penetrator is kept to a minimum as the water used within the picking station is recirculated.

A flocculant is added to the wheel wash water. Flocculant is used to stabilise the suspended solids and allow them to bind together and settle so that the water can be discharged to the site drainage system without silting up the interceptor.

Adblue is a diesel additive that is used to minimise emissions from the vehicles used on site.

The only other raw materials are those used for maintenance such as hydraulic and lubricating oils. These will be stored in 25 litre kegs in the material storage area.

9.3 Diesel Storage

A 5,000 litre diesel tank will be located on the site for refuelling of the site vehicles.

The diesel storage tank is a self-bunded tank that will be located within a dedicated concrete bund, providing containment for the refuelling pipework. Refuelling will be undertaken within a dedicated refuelling area; which will be of concrete construction with a humped concrete arrangement at the front of the bay to allow vehicles access into the bay but offer containment for any leaks or spills. A collision barrier will be installed in front of the diesel tank to prevent vehicles collision.

The fuel dispensing nozzle will be located within a locked cabinet when not in use. All hoses will remain within the bunded area.

The diesel tank and refuelling station will be located on an area of site that has kerbed and sealed hardstanding. The gradient of the hardstanding will direct any surface water from outside of the bund to a sump that will have an isolation valve installed.

During the fuelling of site vehicles and filling of the diesel tank, this isolation valve will be kept closed so that in the unlikely event of a significant spillage that overspills the bund, the diesel will be retained within the sump.

Site procedures require that spill kits are located within the area and that all fuelling of vehicles is supervised by site operatives.

9.4 Effluent Storage Tanks

Two effluent storage tanks will be installed downstream of the interceptor. The tanks will be located within a dedicated concrete bund. Effluent will be isolated within the tanks and analysed to ensure that it is within the consent limits of the Trade Effluent Discharge Consent. See Section 11.3.2.2 for further details.

10. EMISSIONS TO AIR

10.1 Point Source Release

There will be four emission points from the main processing building. The locations of the release points are shown on the site layout plan presented in Appendix 1.

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 cabin.

10.1.1 A1 Extraction from the Asbestos Storage Bays

Each of the five asbestos storage bays will be located within the main building. In addition, each storage bay will be roofed in order to facilitate effective extraction. The extraction units from each of the five bays will combine to a single release point located at roof height. This release point has been designated as A1.

The extracted air will pass through an abatement unit containing a HEPA filter and carbon filter. HEPA filters will be incorporated to remove potential releases of dust and asbestos fibres. HEPA filters are recognised as being highly efficient at removing dust and particulate matter. A carbon filter has been included on this release point as some of waste will be accepted for asbestos treatment and bioremediation. Where both treatment routes will be used, the waste will first pass through the asbestos picking cabin prior to being moved to a biopad for bioremediation. There is therefore potential for hydrocarbons to be present during the initial storage phase and the carbon filters will be used to prevent potential releases of VOCs and odour.

10.1.2 A2 Extraction from the Biopads

Bioremediation is undertaken on engineered biopads within the main building. The extraction from the biopads involves a network of perforated aeration pipes that are installed beneath and within the biopiles. The aeration pipes are linked to a high-performance aeration system to allow air to be drawn through the biopile. This allows effective control of the oxygen levels and moisture content in the waste to maintain aerobic conditions.

The exhaust to air extraction system is connected to HEPA filter and then two carbon absorption units fitted in series. The abatement system is designed to capture and treat the degradation products (predominantly VOCs) and reduce particulate and odour emissions. The air extraction system draws air from the biopile where it is subsequently treated in the abatement system prior to release to atmosphere. This design applies a level of inbuilt redundancy, allowing for failure and replacement of one carbon filter without it impacting on the final emission quality.

The extracted air will ultimately release to a combined vent at roof height which is designated as A2.

10.1.3 A3 Extraction from the Asbestos Hopper

Materials that are to be passed through the asbestos picking station are transferred from the waste storage bays, into a hopper. From the hopper the materials move via a covered conveyor into the asbestos picking cabin.

The hopper will have a separate extraction to roof level that is designated as release point A3. Again, the extracted air will pass through a HEPA and carbon filter arrangement to abate any potential releases of dust and VOCs.

10.1.4 A4 Extraction from the Asbestos Picking Cabin

Ventilation from the asbestos picking cabin will be extracted to release point A4 via a HEPA and carbon filter arrangement. The release point will be on the roof of the asbestos cabin. Since material for asbestos treatment may also contain hydrocarbons, the carbon filter is installed to prevent potential releases of VOCs.

HEPA filters are installed to abate potential releases of dust and asbestos fibres. However, it is unlikely that asbestos fibres will be released at this point since the pre-acceptance and acceptance procedures require the <0.1% asbestos fibres to be present in the waste materials. The waste soils will be kept damp to prevent dust formation and an additive is sprayed onto the soil which treats and binds any asbestos fibres present.

10.2 Fugitive Releases

The potential for fugitive releases is minimised due to the majority of process operations being undertaken indoors, with damping provided on dry materials.

Waste received on site are delivered into two indoor delivery bays that are located within the main building. Waste is tested using a portable analyser and provided they meet the waste acceptance criteria, it is moved to either asbestos storage bays, or if the waste is for bioremediation only it will be transferred into one of the dedicated biopads.

Wastes are kept damp to minimise the potential for dust and odour generation and the waste storage bays and biopads have HEPA and carbon filters installed.

Waste is transferred to the asbestos picking cabin via a hopper and covered conveyors. Again, the waste is kept damp via spray bars installed in the hopper to prevent the formation of dusts. Waste is transferred to the asbestos picking cabin via a covered conveyor.

10.3 Monitoring

10.3.1 Monitoring of Point Source Releases

10.3.1.1 Dust

The site proposes to undertake routine monitoring of dust using a portable air monitoring device for airborne particles. The unit is MCertS certified for accurate recording of PM_{10}. The unit can measure, TSP, PM_{10}, $PM_{2.5}$ and PM_1 particles with a resolution of 0.1 µg/m³. Air samples are continuously drawn through the nephelometer, which analyses individual particles as they pass

through a laser beam. The particles are then collected on the reference filter. The nephelometer's microprocessor has the capacity to analyse individual particles, even if there are millions of particles per litre.

In addition, the site proposes to undertake confirmatory MCertS accredited monitoring via a third-party following commissioning of the plant. This is to confirm that the abatement systems in place are performing as expected and to provide validation of the data provided by the portable dust monitor that will be used for routine monitoring.

MCertS monitoring of dust will be undertaken once every six months in line with BAT8 of the Waste Treatment BAT Conclusions. Monitoring will be undertaken at each of the release points A1 to A4.

10.3.1.2 Asbestos

Monitoring is undertaken within the asbestos picking station and the exit from the bag filters in the air abstraction unit in accordance with CIRIA C733 and HSG 248 as follows:
'Air sampling involves drawing a known flow rate of air through a filter for a measured time, so that airborne particles are collected. The filter is then prepared for microscopical examination. A known fraction of the filtered deposit is examined using X 500 phase contrast microscopy to count all fibres seen (particles >5 µm long, 3:1) in a known number of graticule areas. The calculated total number of fibres collected on the filter is divided by the volume of air sampled to determine the fibre concentration in terms of fibre per millilitre of air (f/ml)'.

Monitoring from the exit from the abstraction unit of the asbestos picking station (A4) will be undertaken on a monthly basis by a third party contractor.

10.3.1.3 VOCs

The site proposes to undertake routine monitoring of VOCs using a portable photoionisation detection unit. Monitoring of VOCs at Dunton's sister site has shown that the emissions are consistently <1ppm using the abatement techniques described.

A set of trigger value will be implemented for use with the portable unit. Results from daily monitoring of VOCs would result in the following actions to be taken at certain trigger values:

- <1ppm – No action
- 1-5 ppm – Take more samples
- 5-10ppm – Investigate
- >10ppm – Stop all work.

In addition to routine monitoring, compliance monitoring will be undertaken once every six months in line with BAT8 of the Waste Treatment BAT Conclusions. MCertS monitoring of VOCs will be undertaken at each of the release points A1 to A4.

10.3.2 Monitoring of Fugitive Releases

10.3.2.1 Dust

Monitoring of fugitive emissions of dust will be undertaken as described in the Dust Management Plan (1620013520-002 Bridge Street North Dust Management Plan). There are three dust monitoring stations that are located on the edge of the site boundary. The monitoring stations are presented in Appendix 1 of the Dust Management Plan.

Frisbee gauges will be used for the monitoring of fugitive emissions of dust. Monitoring is continuous and the gauges will be analysed monthly at a UKAS accredited laboratory.

Visual monitoring of dust will be undertaken throughout the site's operating hours. The following observations would result in action being taken:

- None observed – No action
- Slight Dust – Review working method, alter working method or areas being worked
- Moderate Dust – Temporarily suspend works, change working method or areas being worked
- Severe – Halt operations immediately.

Whilst this is a subjective scale, any visible dust will result in actions being taken quickly to prevent it becoming a nuisance.

10.3.2.2 Asbestos

Asbestos monitoring will be undertaken based on the requirements of Environment Agency Guidance Document 'M17 – Monitoring Particulate Matter in Ambient Air around Waste Facilities'.

M17 outlines that manual sampling should be undertaken using air-sampling pumps and membrane filters.

Sampling will be undertaken over a one-hour reference period at rate of 8 litres per minute to achieve a total sample volume of 480 litres. The samples will be analysed for fibre count via phase contrast microscopy (PCM).

Monitoring of asbestos will be undertaken approximately 20m downwind of the asbestos picking station.

The proposed monitoring for fugitive emissions of dust and asbestos is presented in the table below.

Monitoring Point	Parameter	Reference Period	Frequency	Method
Locations defined in Dust Management Plan	PM_{10}	Continuous	Monthly	As described in TGN M17

20m downwind of asbestos treatment area	Asbestos fibres	1 hour at 8l/min	Monthly (when asbestos treatment is operational)	Pumped Sampling 1m above ground level Flow rate = 4 litres/ minute Minimum sample volume = 480 litres Filter pore size = 1.2µm

10.4 Emissions Limits

The proposed abatement systems will achieve the BAT-AELs defined in the Waste Treatment BAT Conclusions.

10.4.1 Dust – Channelled Emission Limits

BAT Conclusions for Waste Treatment (2018) sets BAT associated emissions levels (BAT-AELs) for waste treatment activities.

Tables 6.3 defines the BAT-AELs for channelled dust emissions from the mechanical treatment of waste as 2 – 5 mg/Nm³ as an average over the sampling period.

Table 6.7 defines the BAT-AELs for channelled NH_3, odour, dust and TVOC emissions to air from biological treatment of waste. For dust, the BAT-AEL is 2 – 5 mg/Nm³ as an average over the sampling period.

The dust BAT-AEL of 5mg/Nm³ is considered to be achievable with the proposed abatement systems. This will be confirmed with a monitoring campaign when the plant becomes operational.

10.4.2 Dust – Fugitive Emission Limits

Dust monitored at the site boundary will be maintained within the limits of 200 mg m^2 day^{-1} for PM_{10} as is consistent with Environment Agency Guidance note M17.

Visual monitoring of dust will be undertaken throughout the site's operating hours. The following observations would result in action being taken:

- None observed – No action
- Slight Dust – Review working method, alter working method or areas being worked
- Moderate Dust – Temporarily suspend works, change working method or areas being worked
- Severe – Halt operations immediately.

10.4.3 Asbestos – Channelled Emission Limits

With regards to asbestos monitoring it is difficult to set emission limits. Section 7.4.3 of the M17 Guidance Note states guidance limits for fibres; "Asbestos is a proven human carcinogen. No safe level can be proposed for asbestos because a threshold is not known to exist. Exposure should

therefore be kept as low as possible and asbestos should not be found above background levels at site boundaries." There is also no EAL listed in the H1 – Environmental Risk Assessment for Permits.

The Control of Asbestos Regulations 2012 - Approved Code of Practice, refers to a 'control limit'; "the control limit" means a concentration of asbestos in the atmosphere when measured in accordance with the 1997 WHO recommended method, or by a method giving equivalent results to that method approved by the Executive, of 0.1 fibres per cubic centimetre of air averaged over a continuous period of 4 hours;"

This control limit has therefore been set for the outlet from the asbestos picking station.

10.4.4 Asbestos – Fugitive Emission Limits

Samples taken for dust monitoring will also be analysed for asbestos fibres. Where total fibre concentration exceeds 0.01 fibres/ml in any sample, that sample must be submitted for electron microscopy to confirm the concentration of asbestos fibres present.

Remedial actions will be undertaken based on the monitoring results from the asbestos picking station as it is very unlikely that asbestos fibres will be found in measurable concentrations at the site boundary.

10.4.5 VOCs - Channelled Emission Limits

BAT Conclusions for Waste Treatment (2018) sets BAT associated emissions levels (BAT-AELs) for waste treatment activities.

Table 6.7 defines the BAT-AELs for channelled NH_3, odour, dust and TVOC emissions to air from biological treatment of waste. For TVOC, the BAT-AEL is 5 - 40 mg/Nm³ as an average over the sampling period.

The TVOC BAT-AEL of 40 mg/Nm³ is considered to be achievable with the proposed abatement systems. This will be confirmed with a monitoring campaign when the plant becomes operational.

10.4.6 VOCs – Fugitive Emissions

Fugitive emissions of VOCs will be managed in accordance with the site's Odour Management Plan (OMP). The site has rigorous waste pre-acceptance and acceptance procedure that will ensure that odorous materials are not received on site.

However, odour monitoring will be undertaken in accordance with the OMP. This involves a subjective sniff testing exercise which will be undertaken each day. Additional monitoring will be undertaken should there be any complaints relating to odour at the site. See Section 13 for further information.

11. EMISSIONS TO WATER AND SEWER

11.1 Emissions to Controlled Waters

There are no releases to controlled waters from site operations.

11.2 Emissions to Sewer

All potentially contaminated water will be discharged to sewer under a Trade Effluent Discharge Consent (TEDC) with the relevant water undertaker. Should the discharge not meet the requirements of the TEDC, then it will be removed from site for treatment at an authorised third-party treatment facility. It should be noted that process operations do not routinely generate process effluent.

11.3 Drainage and Containment Strategy

The majority of process operations and storage of wastes will be undertaken within a building. As such, the potential for the generation of contaminated water and surface waters is minimised.

The site drainage strategy is presented in Appendix 2.

11.3.1 Main Process Building

All storage of waste materials will be undertaken within the main process building. Biopads for the bioremediation process will also be constructed within the building. This minimises the generation of contaminated surface water as there is no rainwater runoff.

Contaminated water generated in the process will be contained within dedicated sumps. There will be four sumps located within the main process building for the collection of any excess water that is used for damping down. The water used for damping can be easily controlled such that dust is suppressed without generating excess effluent.

Water is essential to the bioremediation process and to this end, water will be routinely sprayed onto the biopiles to maintain optimal moisture conditions. However, as the addition of water can be readily controlled, it is not envisaged that excess leachate will be generated from the process. Any leachate from the biopiles however, will be collected in the drainage sumps provided within the building.

The sumps do not have any connection to surface water or foul sewer. In the unlikely event that the sumps become full, the water can be reapplied for damping down or manually pumped out into a container prior to testing and discharge if appropriate, or removal for offsite disposal.

Surface water flows generated by the roof of the main process building are proposed to discharge to a rainwater harvesting tank located within the building. The harvested water will be reused as part of the operation process within the process building. Any excess water collected in the rainwater harvesting tank will discharge via an overflow to the below ground surface water network and in turn discharge to the public surface water sewer.

11.3.2 External Areas

The external areas of the site are segregated into potentially contaminative and non-contaminative areas.

11.3.2.1 Contaminative Areas

The area of the site that has the greatest potential for surface water to be contaminated is the area containing the asbestos picking station, the post-treatment storage bays, the diesel tank and refuelling area.

This area of the site will be of sealed hardstanding and fully kerbed. The diesel tank will be of an integral bund design and in addition contained within a concrete bund to provide additional secondary containment. The refuelling area will also be bunded and vehicles will enter via a concrete hump which will ensure any spilled fuel will be contained within the bund.

The external hardstanding area will be laid to fall to a sump that will have an isolation valve installed and the valve closed during fuel deliveries. The sump from this area will connect to the below ground drainage network via a full retention class one interceptor which will ultimately discharge to foul sewer via effluent holding tanks.. Process effluent is not routinely generated from site operations. These pollution prevention measures have been implemented to provide containment in the unlikely event that surface water becomes contaminated.

11.3.2.2 Effluent Holding Tanks

The site drainage strategy will also contain two 10,000 litre effluent holding tanks. The tanks will be located in a dedicated bund. The holding tanks will be used to isolate any potentially contaminated surface waters so that it can be tested to ensure compliance with the TEDC prior to discharge. All analyses will be undertaken at a UKAS accredited laboratory or equivalent.

Surface water runoff will pass through a silt trap and interceptor and into a small sump from where it will be pumped to the effluent holding tanks. There are two 10,000 litre tanks that are linked, but that can be isolated from one another. The standard procedure will be that effluent is pumped to one of the holding tanks, and once full, it will be sampled and analysed prior to being discharged to sewer. Whilst one tank is being analysed, effluent will then be pumped to the second tank.

The site will utilise a pre-formed packaged pump station to transfer effluent from the sump to the tanks. The pump will work on a level switch so that when level is detected in the sump it will pump the effluent to the tanks. It is proposed that this pump station will be fitted with a duty/stand-by pump set and will be connected to a back-up power supply. This will ensure that the pump station remains in operation at all times in the event of pump maintenance or loss of power supply.

Once analysed, the tanks will gravity discharge to foul sewer in accordance with the TEDC. If the analysis shows that the discharge is not in compliance with the TEDC, then it can be removed from the effluent tanks for offsite disposal.

11.3.2.3 Wheel Wash

Waste water will be generated from the wheel wash. The water contained within the wheel wash is recirculated through an integral tank. When the water becomes too contaminated to reuse, it

will be tested to ensure that it meets the parameters of the TEDC and then discharged to sewer via the interceptor and silt trap. Should the discharge not conform to the conditions of the TEDC, then it will be removed to an offsite facility for treatment.

11.3.2.4 Oversized Processing Area

On occasion, the intention is that the site will bring a mobile crusher to the site to process oversized material. This is not a routine operation, and it can be coordinated to coincide with favourable weather conditions.

Oversize processing will be undertaken on an area of hardstanding that will be segregated from the rest of the site by a concrete hump. The oversize material is non-hazardous. The crushing operation will be scheduled to operate only under dry conditions such that any surface water is not contaminated with dust.

11.3.2.5 Vehicle Processing Area

The front entrance to the site contains the office area, the staff car park and vehicle processing area.

Vehicles will enter the site via a weighbridge, and then will be inspected prior to being directed to unload materials into the dedicated bunkers in the main building. This area of site is considered to be non-contaminative and as such the roadways will be constructed of compacted hardcore. Due to the material of construction, any surface water in this area will soak away to ground under normal rainfall conditions. Provision for exceptional rainfall will be provided. Excess rainfall would drain to a series of channel drains or gullies which would discharge to the below ground network and ultimately to sewer.

12. WASTE MINIMISATION AND MANAGEMENT TECHNIQUES

Other than office and general waste, there is limited potential for waste to be generated on site.

Asbestos waste will be removed in the picking station. Any asbestos waste will be double bagged and stored within a locked skip prior to being removed offsite to an approved disposal facility.

A dedicated waste storage area will be defined for maintenance wastes. These will be removed from site by an approved third party waste contractor.

Kegs and drums used for raw materials will be returned to the supplier for reuse wherever possible. Otherwise, plastic containers will recycled if possible.

A skip will be provided for the collection of scrap metal which will be sent for recovery.

13. EMISSIONS TO SOIL AND GROUNDWATER

There are no emissions to soil and groundwater from site operations.

14. NOISE AND VIBRATION

The proposed operations will introduce noise sources from vehicle movements, plant and equipment, and storage areas. For this reason, a noise impact assessment was undertaken to establish the impact of noise sources on nearby receptors. A noise management plan (NMP) has also been prepared for the site (1620013520-002 Bridge Street North Noise Management Plan).

A noise impact assessment[1] was undertaken using the methodology defined in BS 4142:2014+A1:2019. The assessment involved noise measurements taken from the Dunton Horsely Fields site located in Wolverhampton. The site undertakes very similar activities to those that will be present at the Bridge Street North site. The noise measurements were then modelled in order to predict the impacts of noise in the local receptors.

Core hours will be 07:30 to 17:00 Monday to Friday with the main processes usually operational between 08:00 and 16:30. On Saturdays the site may be in use but normally just for maintenance purposes and not for routine operations.

The majority of the process operations are located within a building. Therefore, the main source of noise is from vehicle movements. Access to and from the site will be via Bridge Street North to the east of the site. 20-25 HGVs per day are expected. Vehicles will transfer waste materials to the site and remove treated material from the site. Vehicles will also be utilised to transfer materials around the site. Other equipment such as conveyor belts to the asbestos picking station are another potential source of noise.

In addition to routine operations, there may be occasional use of other machinery on the site for short periods which are not part of the primary operation of the site. This includes use of a hired mobile crusher for crushing oversized pieces. This would be used at the western end of the site where oversized materials are stored. This may be required perhaps every 2 months or so and run for 2/3 hours per day. This has been taken into account during the assessment.

The nearest sensitive receptors are residential housing with the closest being 90m from the site boundary. Additional houses are located on Bridge Street North at around 125m from the site. The remainder of the properties in the area are industrial in nature.

14.1 Noise Receptor impacts

The assessment concluded that the cumulative noise rating level from the proposed facility could be up to 5dB higher than the background noise level measured outside the nearest houses to the north. It should be noted however, that this is at the frontage of these houses where there are no external amenity areas.

The area facing the site includes access roads and parking only. The projected rating level is between the lowest observed adverse effect level (LOAEL) and significant observed adverse effect level (SOAEL) values for normal daytime operations.

At this level, industrial noise from the proposed development could result in small changes in behaviour, attitude or other physiological response, as the noise would be audible, however given the working hours of the site and the fact that the frontage of the houses are not used for relaxation etc, there is not expected to be any significant effects – i.e. change in the quality of life

[1] 1620013520-002 – Noise Impact Assessment

or change to the character of the area.

14.2 External amenity areas

When accounting for the site context, it is considered that industrial noise from the proposed development could have a greater impact on the external amenity areas associated with these properties. These include gardens of the houses, all of which are screened by the house itself or are further from the site.

On this basis, given the context of the area and the current industrial operations and traffic noise sources, industrial noise from the proposed development may be audible in gardens and amenity areas but is unlikely to result in any adverse effect on these areas (change in behaviour or quality of life to nearby residents). This is particularly the case given the limited working hours of the site - no significant noise would be generated at times when residents would be more sensitive to noise or using amenity areas, i.e. evenings, weekends and at night.

14.3 Conclusion

The noise assessment concluded that whilst industrial noise rating levels may exceed existing daytime background noise levels by up to 5dB at the frontage of the nearest houses, it is unlikely to result in any significant effects. This is because the existing environment already includes sound of an industrial nature at the nearest receptors and the elevated background noise will not be experienced in the areas typically used for amenity.

It is proposed that residual adverse effects due to industrial noise will be minimised through implementation of best practicable means of noise control and strict adherence to the operating hours for the site.

15. DUST AND PARTICULATE MATTER

A Dust and Emission Management Plan (DMP) has been developed for the site (1620013520-002 Bridge Street North Dust Management Plan). The DMP defines the procedures undertaken to manage and monitor fugitive emissions of dust and particulate matter.

The monitoring of fugitive emissions of dust and monitoring for asbestos is further defined in Section 10.

The majority of process operations and waste storage are undertaken inside the main building. This minimises the potential for fugitive emissions to result in nuisance. During material transfer, wastes will be kept damp to prevent the formation of dust. HEPA filters are installed on the point source releases to air.

Monitoring will be undertaken using frisbee gauges that will be located in three locations on site. Gauges will be analysed monthly at a UKAS accredited laboratory. Asbestos analysis will be undertaken on the same samples.

Any visible dust will result in actions being taken to prevent it becoming a nuisance. This may involve a review of the working method or in the worst case, operations would cease until the issue could be rectified.

16. ODOUR

An Odour Management Plan (OMP) has been developed for the site (1620013520-002 Bridge Street North Odour Management Plan). 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.

The site operates to rigorous waste pre-acceptance and acceptance procedures and odorous wastes are not accepted at the site. On arrival at the site, the waste is inspected to ensure that it complies with the waste descriptions and documentation, as well as ensuring that the material is not excessively odorous. If odorous material was received at the site, then it would be returned to the producer.

The majority of process operations and waste storage will be undertaken within a building which further reduces the potential for odour nuisance. There are also various abatement mechanisms in place to prevent releases of hydrocarbons to atmosphere. Carbon filters will be installed in all the point source releases to atmosphere.

The site will also undertake routine odour monitoring as part of the OMP. This will involve a subjective sniff testing exercise that will be undertaken each day that the site is operational. Additional sniff testing would be undertaken should there be any complaints relating to odour at the site.

The assessor will be a member of site personnel who is trained in this procedure. The assessor will be a member of staff who is based mainly inside the site office. Being located within a building the operative is likely to be less exposed to site odours and therefore less likely to be desensitised. The assessor will use their sense of smell to detect odours near the site and identify their sources.

The meteorological conditions during the assessment will be recorded and any relevant information relating to site operations will be noted. A note will also be made if there are any other noticeable sources of odour in the vicinity.

17. ENERGY MANAGEMENT

The site will operate to an integrated management system that will be certified to ISO14001. The site will therefore identify key performance indicators and develop objectives and targets relating to energy consumption.

The Bridge Street North site will report into a Group wide sustainability programme. This includes overall targets for carbon reduction and Scope 1, 2 and 3 emissions are reported.

The site is not an energy intensive site. The main users of energy are lighting and equipment such as conveyors and abatement systems. Where possible, energy efficient equipment will be installed (e.g. pumps, drives and lighting).

Based on data from Dunton's sister site the energy use is expected to be approximately:

- Electricity 132,000 kW per annum (27 tonnes of CO_2 equivalent[2]).
- Diesel 70,000 litres (186 tonnes of CO_2 equivalent).

There are no boilers on site. Domestic heating to the offices will be provided by electric heaters. All electricity will be supplied from the grid.

[2] https://www.gov.uk/government/collections/government-conversion-factors-for-company-reporting

18. WATER MANAGEMENT

The use of water will be minimised. Where feasible, water will be reused within the process.

When possible, rainwater will be harvested from the roof of the main process building and used for dust suppression.

The water in the wheel wash will be recirculated as far as possible prior to discharge.

The asbestos picking cabin utilises water and an asbestos penetrant to suppress dust formation and prevent the release of any asbestos fibres that may be present. The water is recirculated as far as possible prior to discharge.

Water use will be monitored and tracked in line with the EMS. Based on Dunton's sister site, water use is anticipated to be in the region of 2,100 m^3 per annum.

19. SITE CONDITION

Ramboll has produced a Site Condition Report (SCR) for the proposed facility (Ref. 1720013520-002 Site Condition Report 01) based on the Environment Agency, Environmental Permitting Regulations H5 Guidance, "Site Condition Report – Guidance and Templates", Version 3.0, 2013.

The purpose of the SCR is to describe and record the baseline condition of the land and groundwater at the site at the time of permit application. The information reported in the SCR is based upon the findings of a third-party investigation and published data. For the purposes of the SCR, diesel was considered to be the primary 'relevant hazardous substance' which will be in use at the site.

The SCR includes a summary of the environmental setting of the site. A 2022 ground investigation undertaken by a third-party contractor identified that the ground conditions comprised Made Ground to depths of between 0.8 m and 4.25 m below ground level (bgl), which is further underlain by superficial Glaciofluvial Deposits to depths of at least 5.45 m bgl (final depth of the deepest borehole).

No groundwater was encountered during the drilling works, and groundwater found within half of the wells during subsequent monitoring rounds was considered to be indicative of perched groundwater.

A total of 14 soil samples were taken and screened by laboratory analysis against multiple determinands, including metals, polycyclic aromatic hydrocarbons (PAH), total petroleum hydrocarbons (TPH) and asbestos. Three positive asbestos samples were identified. There were no exceedances of the Commercial/Industrial Suitable for Use Level (S4UL) Generic Assessment Criteria (GAC) for any of the analysed contaminants.

Only two boreholes had sufficient water to be sampled. Groundwater samples were analysed and assessed against the Environmental Quality Standards (EQS) for surface water, and levels of cadmium, copper, nickel and zinc slightly exceeded the EQS in one location. These levels are considered to be a baseline for the site.

Controls will be in place as part of facility operation to reduce the risk of pollution to ground and groundwater. These will include a bunded diesel tank and refuelling area, an isolation valve within the drainage system, appropriate storage of raw materials, daily plant checks and regular maintenance. With these control measures in place, the risk of the facility's permitted activities to ground and groundwater are considered to be low.

20. ENVIRONMENTAL RISK ASSESSMENT

20.1 Qualitative Environmental Risk Assessment

The site's management system incorporates a number of policies and procedures for emergency and incident response and that are relevant to this application.

- Accident, Incident Reporting and Investigation;
- Emergency Response Planning;
- Environmental Incidents Procedure;
- Fire Prevention and Control;
- Spill procedures;
- Authorised Discharges to the Environment.

The site has procedures in place for the reporting and investigating of incidents. Incidents and near misses are recorded in an electronic database and investigated and actioned appropriately.

A qualitative assessment of the potential risks to the environment has been undertaken. The assessment includes the potential for release under:-

- Normal and abnormal operating conditions;
- Foreseeable emergency and incident events;
- A review of prevention, control and mitigation techniques;
- A review of the pathways and receptors of any releases; and
- An assessment of the potential impacts.

A screening of exercise was undertaken which identified the following environmental risks associated with the facility:

- Accidents
- Odour
- Noise & Vibration
- Fugitive Emissions to air and water
- Controlled releases to air
- Global Warming Potential; and
- Facility waste

Sensitive receptors were identified as the underlying Secondary A and Principal Aquifers, the adjacent Birmingham Canal, the atmosphere, and facility workers and visitors to the site. Pollution pathways were identified as transmission through the air, transmission through ground vibration, flow over site surfaces and drainage systems and surface water run-off.

Using the identified sources, pathways and receptors, each hypothesised relationship between contaminants, pathways and receptors was assessed to determine the likelihood of the receptor being exposed to pollution and the consequence of exposure using the rankings 'Very Low', 'Low', 'Medium' and 'High'. The relationships were predominantly assessed as being 'Low' with the exception of three 'Medium' risk ratings given to the following relationships:

- Fugitive emissions transmitted through the air, impacting human receptors
- Fugitive emissions of contaminated surface water runoff through drainage systems to surface water; and

- Controlled releases to air transmitted through the air, impacting the atmosphere and human receptors.

Whilst these relationships were assessed to have a 'Medium' risk, the assessment demonstrated that with the appropriate management controls in place, the risks identified are at an acceptable level.

20.2 Quantitative Environmental Risk Assessment

20.2.1 Emissions to Air

Point source releases to air will be subject to HEPA and carbon filters. HEPA filters have proven to be extremely efficient at the removal of particulate matter. The carbon filters will be installed to prevent releases of VOCs that might result in nuisance. The hydrocarbons that will undergo bioremediation are long chain aromatic and aliphatic hydrocarbons that are not considered to be particularly volatile.

However, a risk assessment for point source releases to air has been prepared utilising the Environment Agency H1 assessment tool. The findings of this assessment are presented in 1620013520-002 Dunton Bridge Street North Emissions to Air Impact Assessment. The report concluded that the emissions to air can be screened out as being insignificant and no further assessment of the releases is required.

20.2.2 Emissions to Water

A quantitative risk assessment has not been prepared for emissions to water. Process effluent is not routinely generated from site operations. Discharges to sewer will be of surface waters only with occasional discharge of effluent from the wheel wash; provided that it meets the conditions of the TEDC. Surface water that comes into contact with areas of site that may be potentially contaminative (e.g. the area where diesel is stored) will be segregated and tested prior to discharge via a full retention interceptor to sewer.

Discharges to sewer will be made under the conditions of a Trade Effluent Discharge Consent with the relevant water undertaker. Sampling and analysis will ensure compliance with the conditions of the TEDC. There are no discharges to controlled waters as a result of site operations.

There is very limited potential for heavy metals to be present in the effluent. The site operates to stringent waste pre-acceptance and acceptance procedures that requires waste to be sampled and analysed prior to being transported to site; waste that contains heavy metals is not accepted.

In addition, the site utilises portable analysers to check for heavy metals on arrival at the site. The analyser uses XRF for heavy metal detection and if detected, the soils would not be accepted for treatment.

A full retention interceptor will be installed to prevent the discharge of hydrocarbons that may be present.

As the site will not discharge process effluent and the control measures that are in place, it is not deemed appropriate to undertake a risk assessment for emissions to sewer using the H1 methodology.

APPENDIX 1
SITE LOCATION AND LAYOUT PLAN

APPENDIX 2
DRAINAGE STRATEGY

APPENDIX 3
MATERIAL SAFTEY DATA SHEETS