HILL BARTON SOIL RECYCLING FACILITY

Environmental Permit Variation Application

Dust Management Plan

Prepared for: Stuart Partners Limited

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DOCUMENT CONTROL

Version	Date	Author	Change Description
1	August 2019	SLR	Original
2	February 2021	SLR	Update to incorporate revised site layout, wash plant activity, increased storage capacity for Table 2 waste types

1.0 Introduction

Stuart Partners Limited (SPL) has retained SLR Consulting Limited (SLR) to prepare an Environmental Permit (EP) variation application for the Hill Barton Soil Recycling Facility, Hill Barton Business Park, Sidmouth Road, Clyst St Mary, Exeter, EX5 1DR, hereafter referred to as 'the site'.

This variation application seeks vary the EP as follows:

- The installation of a new MATEC 150 wash plant at the site in order to improve the quality of the facility's outputs and enable grading of smaller fractions. The wash plant will comprise a sealed process with no emissions of effluent proposed on site.
- Add the storage and transfer of imported IBAA without treatment under EWC code 19 12 12 as a separate activity undertaken on site;
- Increase the maximum volume of wastes from Table 2 in the Operations and Environmental Management Plan that can be stored on site at any one time to 30,000 tonnes; and
- Extend the site's EP boundary to accommodate the new wash plant area and IBAA storage and transfer area, as shown on Drawing 002 Site Layout Plan.

The EP application currently permits the storage and treatment of non-hazardous waste to produce soil, soil substitute and aggregate.

This Dust Management Plan (DMP) had been prepared in support of the EP application. The implementation of the DMP shall be under the control of the site management. This plan shall be incorporated into the site procedures and shall be revised as necessary to ensure it remains appropriate to the activates occurring on site and that any changes in conditions relating to dust management are dealt with as part of those revisions. In particular, the monitoring procedures and compliance actions will be updated as required by the procedures within the DMP.

1.1 Scope

The objective of this document is to specify a range of measures to manage the environmental impacts that could arise during the activities taking place on site, in respect of managing dust emissions. A series of site-specific control measures as described will therefore minimise potential risks to surrounding receptors and the environment.

The components of the DMP are set out within this document as follows:

- Section 2 – Overview and Potential for Dust emissions;
- Section 3 - Potential Dust Effects;
- Section 4 - Dust Control Measures;
- Section 5 - Site Management & Contingency Measures; and
- Section 6 – Contingency Action Plan.

This version (2.0) represents the situation in February 2021 and is based on the proposed activities as detailed in supporting documentation to the EP variation application.

2.0 OVERVIEW & POTENTIAL FOR DUST EMISSIONS

2.1 Site Description

The site is a Soil and Aggregate Recycling Facility (SRF) operated by SPL in accordance with an EP (ref. EPR/CB3100UB).

The site treats up to 130,000 tonnes per annum (tpa) of a range of processing, packaging, waste management, municipal, construction, demolition and excavation waste materials arising from local developments for treatment.

The site is centred on National Grid Reference (NGR) SY 00550 91050 on Sidmouth Road, Clyst St Mary, Exeter, EX5 1DR and is located on Hill Barton Business Park, approximately 1.8km south of Clyst Honiton. The site is accessed from the A3052 via Blackmore Road, then Stuart Way then Sidmouth Road. The site location is illustrated on Drawing 001 Site Location Plan.

The EP boundary and proposed area of extension is illustrated on Drawing 002 Site Layout Plan. The environmental site setting is illustrated on Drawing 003 Environmental Site Setting, and receptors of cultural and natural heritage within 2km of the installation on Drawing 004 Cultural and Natural Heritage.

The site is located within a predominantly agricultural area, with industrial and commercial facilities associated with Hill Barton Business Park located to the north, west and southwest.

2.2 Site Operations Description

The site treats up to 130,000 tpa of non-hazardous wastes to produce soil, soil substitute and aggregate which will ultimately enter local markets for reuse. Any nonrecyclable waste is disposed of in the adjacent landfill owned by SPL, if inert. Alternatively, the waste is disposed of at a suitably licenced facility.

The site will also contain a soil washing plant (a MATEC 150 soil washing plant) which comprises a sealed wet system to separate fine materials from aggregate. The fines are then pressed through a filter to the remove water. This process improves the quality of the outputs from the site and enables grading of smaller fractions. The site will also store and transfer imported IBAA without treatment.

The waste is stored externally in segregated stockpiles, as illustrated on Drawing 002. All storage areas benefit from stone hardstanding.

Incoming waste is stored for a maximum of 12 months before being transferred off site. Treated materials are stored for a maximum of 6 months before being transferred off site.

The waste list is shown in Table 1 below. No more than 80,000 tonnes of waste are stored on site at any one time, comprising a maximum of 30,000 tonnes from Table 2 and a maximum of 60,000 from Table 1.

Table 1 Waste List

Waste Code	Description
01	WASTES RESULTING FROM EXPLORATION, MINING, QUARRYING AND PHYSICAL AND CHEMICAL TREATMENT OF MINERALS
01 04	wastes from physical and chemical processing of non-metalliferous minerals
01 04 08	waste gravel and crushed rocks other than those mentioned in 01 04 07
01 04 09	waste sand and clays

Waste Code	Description
03	WASTES FROM WOOD PROCESSING AND THE PRODUCTION OF PANELS AND FURNITURE, PULP, PAPER AND CARDBOARD
03 01	**wastes from wood processing and the production of panels and furniture**
03 01 01	waste bark and cork
03 03	**wastes from pulp, paper and cardboard production and processing**
03 03 01	waste bark and wood
10	WASTES FROM THERMAL PROCESSES
10 01	**waste from power stations and other combustion plants**
10 01 01	bottom ash and slag only
10 01 02	pulverised fuel ash only
10 01 05	gypsum (solid) only
10 01 07	gypsum (sludge) only
10 01 15	bottom ash and slag only from co-incineration other than those mentioned in 10 01 14
10 11	**wastes from manufacture of glass and glass products**
10 11 12	clean glass other than those mentioned in 10 11 11
10 12	**wastes from manufacture of ceramic goods, bricks, tiles and construction products**
10 12 08	waste ceramics, bricks, tiles and construction products (after thermal processing)
10 13	**wastes from manufacture of cement, lime and plaster products and articles and products made from them**
10 13 14	waste concrete only
15	WASTE PACKAGING
15 01	packaging
15 01 07	clean glass only
17	CONSTRUCTION AND DEMOLITION WASTES (INCLUDING EXCAVATED SOIL FROM CONTAMINATED SITES)
17 01	**concrete, bricks, tiles and ceramics**
17 01 01	concrete
17 01 02	Bricks
17 01 03	Tiles and ceramics
17 01 07	Mixtures of concrete, bricks, tiles and ceramics other than those mentioned in 17 01 06
17 02	Wood, glass and plastic
17 02 02	Clean glass only
17 03	Bituminous mixtures, coal tar and tarred products

Waste Code	Description
17 03 02	Road base and road planings (other than those containing coal tar) only
17 05	**soil (including excavated soil from contaminated sites) stones and dredging spoil**
17 05 04	soil and stones other than those mentioned in 17 05 03
17 05 06	dredging spoil other than those mentioned in 17 05 05
17 05 08	track ballast other than those mentioned in 17 05 07
17 08	**gypsum based construction material**
17 08 02	gypsum only other than that mentioned in 17 08 01
19	WASTES FROM WASTE MANAGEMENT FACILITIES, OFF SITE WASTE WATER TREATMENT PLANTS AND PREPARATION OF WATER INTENDED FOR HUMAN CONSUMPTION / INDUSTRIAL WASTE
19 12	**wastes from the mechanical treatment of wastes**
19 12 05	clean glass only
19 12 09	minerals (for example sand, stones)
19 12 12	treated bottom ash including IBA and slag other than that containing dangerous substances only
19 13	**wastes from soil and groundwater remediation**
19 13 02	solid wastes from soil remediation other than those mentioned in 19 13 01
20	MUNICIPAL WASTES (HOUSEHOLD WASTE AND SIMILAR COMMERCIAL, INDUSTRIAL AND INSTITUTIONAL WASTES) INCLUDING SEPARATELY COLLECTED FRACTIONS
20 01	**separately collected fractions**
20 01 02	clean glass only
20 02	**garden and park wastes**
20 02 02	soil and stones

Table 2 Wastes with a Total Storage Limit of 30,000 tonnes

Waste Code	Description
03 01 01	Waste bark and cork
03 03 01	Waste bark and wood
10 01 01	Bottom ash and slag only
10 01 05	Gypsum (solid) only
10 01 15	Bottom ash and slag only from co-incineration other than those mentioned in 10 01 14
17 05 06	Dredging spoil other than those mentioned in 17 05 05
17 08 02	Gypsum only other than that mentioned in 17 08 01

Waste Code	Description
19 12 12	Treated bottom ash including IBA and slag other than that containing dangerous substances only
19 13 02	Solid wastes from soil remediation other than those mentioned in 19 13 01

Table 3 details the waste operation activities carried out on site.

Table 3 Description of Waste Operations

Activity Reference	Activity Description	Limits of Activity
Treatment of waste to produce soil, soil substitutes and aggregate	R13: Storage of wastes pending the operations numbered R3 and R5. R3: Recycling or reclamation of organic substances which are not used as solvents R5: Recycling or reclamation of other inorganic materials	Treatment of wastes listed in Table 1 consisting only of sorting, separation, screening, crushing and blending of waste for recovery as a soil, soil substitute or aggregate. Secure storage of wastes listed in Table 1 pending treatment. Storage of wastes listed in Table 2 shall not exceed 30,000 tonnes in total at any one time. All other wastes stored shall not exceed 60,000 tonnes in total at any one time. No more than 130,000 tonnes of waste shall be treated per year.
Storage and transfer of waste	R13: Storage of wastes pending the operations numbered R1 to R12 (excluding temporary storage, pending collection, on the site where it is produced)	Secure storage of wastes listed in Table 1 pending transfer off-site for recovery. Storage of wastes listed in Table 2 shall not exceed 30,000 tonnes in total at any one time. All other wastes stored shall not exceed 60,000 tonnes in total at any one time. No more than 130,000 tonnes of waste shall be accepted per year.

Only scheduled waste delivery vehicles are allowed access. Site operations are carried out as follows:

- Vehicles arrive at the main site office, located near to the permitted site boundary;
- Waste undergoes acceptance checks prior to being unloaded into one of two stockpiles:
    - Stockpile for incoming materials for recycling to produce WRAP Quality Protocol Aggregates; or
    - Stockpile for incoming materials unsuitable for recycling to produce WRAP Quality Protocol Aggregates

From the stockpiles, Site Operatives transport input materials, as per the Site Manager's pre-production run instruction, into the hopper of the aggregate screening plant.

The aggregate screening plant comprises a double deck Sandvik screener. The screener is an automated process incorporating the following steps:

- Materials are loaded into a hopper which controls feed rate onto a conveyor.
- A feed conveyor transports input material to a screen box.

- Oversized (>50mm) materials are crushed using a Sandvick Jaw Crusher before passing over a manual picking line for inspection and removal of incidental contamination.
- <50mm are fed into the wash plant automatically by the screener.

The stockpiled outputs are to be transported to the stock bays for product. The product stockpiles are kept separate from incoming materials, materials in processing and other grades of output. Unrecyclable inert material is sent to the adjacent landfill or to a suitably licensed facility if non-hazardous. Recycled waste materials are sent onwards to customers for sale.

2.2.1 Wash Plant

The washing plant will treat wastes by screening, washing and separating the material into different size fractions suitable for use as recycled aggregate, sand or soils. The process will also remove metal, wood and residual organics.

Waste materials will be fed into a scalping unit to remove excess oversized material before passing into the washing equipment. A magnet will extract ferrous metals before the material enters the wash plant. The unit will screen 50mm and oversize material for subsequent crushing, with the remaining material passing through the unit, designated for attrition, to remove adherent clays and sizing. The unit will include a floatation stage to remove silt/clay and lighter density contaminants (e.g. wood, plastic) to produce clean, organic free aggregates.

Wash water from the unit will be collected and returned through the process to recover fines. Hydrocyclones will be used to separate coarse and fine sand fractions which are dewatered to provide clean and ready-to-handle materials for stockpiling.

Dirty water from the hydrocyclones will be treated in the integral water management system where a flocculant will be used to coagulate suspended solids in a thickener. The thickened mud will then be screened and dewatered in a filter press. The resulting filter cake will be stored in a bay directly below the plate filter press in a covered concrete bay. The filter cake will be tested and classified to determine the possible outlets for the material offsite.

Process water will be recycled and transferred to a storage tank for re-use in the process. The process is capable of recycling 90% of the input water and there will be no effluent produced from the process.

2.3 Site Surroundings

The surrounding locale of the site is defined by predominantly agricultural areas, with industrial and commercial facilities associated with Hill Barton Business Park located to the north, west and southwest. A summary of the immediate surrounding land use is provided in Table 4.

Table 4 Surrounding Land Use

Direction	Land Use
North	Hill Barton Business Park, Woodland and Agricultural Land
East	Hill Barton Landfill, Agricultural Land and Residential Properties
South	Hill Barton Landfill, Agricultural Land, Residential Properties
West	Hill Barton Business Park, Agricultural Land and Residential Properties

The closest residential dwelling to the site is Hill Barton located approximately 100m southwest of the site boundary off Stuart Way. Other nearby residential properties include those surrounding Princes Cottage (260m

west), Fearndun House (350m south), Waldrons Farm (390m southeast) and those surrounding Crealy Lodge (400m southwest) (see Table 5 and Drawing 003).

There are no designated habitat receptors within 2km of the site. Due to the distance, it is considered unlikely site operations would impact on the ecological receptors given '*the greatest impacts will be within 100m of a source but may travel up to 400m. Smaller particles have the potential to persist beyond 400m but with minimal significance due to dispersion*'[1].

There are no Air Quality Management Areas (AQMAs) within close proximity to the site. The closest AQMA to the site is the Exeter AQMA designated for nitrogen dioxide (NO_2), approximately 4.8km to the east of the site. The closest AQMA designated for particulate matter is the Crediton AQMA approximately 18km to the northwest of the site.

Based on the distance and direction of the AQMAs, site operations at the Hill Barton SRF are deemed to have no impact on the AQMAs and as such, are not considered further within this document.

Within the surrounding site locale, there are a number of other sources that have the potential to release dust emissions. The predominant source within the immediate vicinity of the site is considered to be the adjacent landfill site. Table 5 below illustrates other sources of dust within 1km of the site.

Table 5 Source of Dust Emissions within the Surrounding Area

Company	Location	Type of Business	Distance from Hill Barton Soil Recycling Facility (m)
Stuart Partners	Stuart Way, Clyst St Mary	Inert Landfill	Adjacent to west
UK Remediation	Stuart Way, Clyst St Mary	Soil Remediation	Adjacent to north
EMS Waste Services	Mushroom Road, Clyst St Mary	Skip Hire and Waste Transfer Station	60m west
Tarmac	Mushroom Road, Clyst St Mary	Asphalt Plant	230m northwest
EMS Waste Services	Stuart Way, Clyst St Mary	Skip Hire and Waste Transfer Station	180m north

2.4 Potential Dust Sources

The storage, handling and processing of soil and aggregate waste materials at Hill Barton SRF has the potential to generate dust and can be divided into the following activities:

- Site surfacing;
- Preparation and stockpiles;
- Handling of materials;
- On-site transportation;

[1] *Guidance on the Assessment of Mineral Dust Impacts for Planning*. Institute of Air Quality Management, London

- Screening and crushing of waste;
- Wash plant activity and operations;
- Storage of products / residual wastes following processing; and
- Export of products and residual wastes off site.

3.0 POTENTIAL DUST EFFECTS

This section presents a review of the potential risk of dust effects and has been completed in order to inform the selection of appropriate dust control techniques to mitigate against the release of dust emissions.

3.1 Prevailing Meteorological Conditions

The most important climatic parameters governing the generation and dispersal of fugitive dust are:

- Wind speed will affect the potential for dust entrainment and the distance it may travel;
- Wind direction determines the broad transport of the emission and the sector of the compass into which the emission is dispersed; and
- Rainfall is an important climatological parameter in the generation of dust; sufficient amounts of rainfall can suppress dust at the source and eliminate the pathway to the receptor. According to Arup (1995)[2] rainfall greater than 0.2mm per day is sufficient to suppress dust emissions.

3.1.1 Local Wind Speed & Direction Data

Wind speed and direction data from the meteorological observation station at Exeter Airport located 3km to the north of the site is considered to be broadly representative of the local site conditions. A windrose for Exeter Airport is presented in Figure 1.

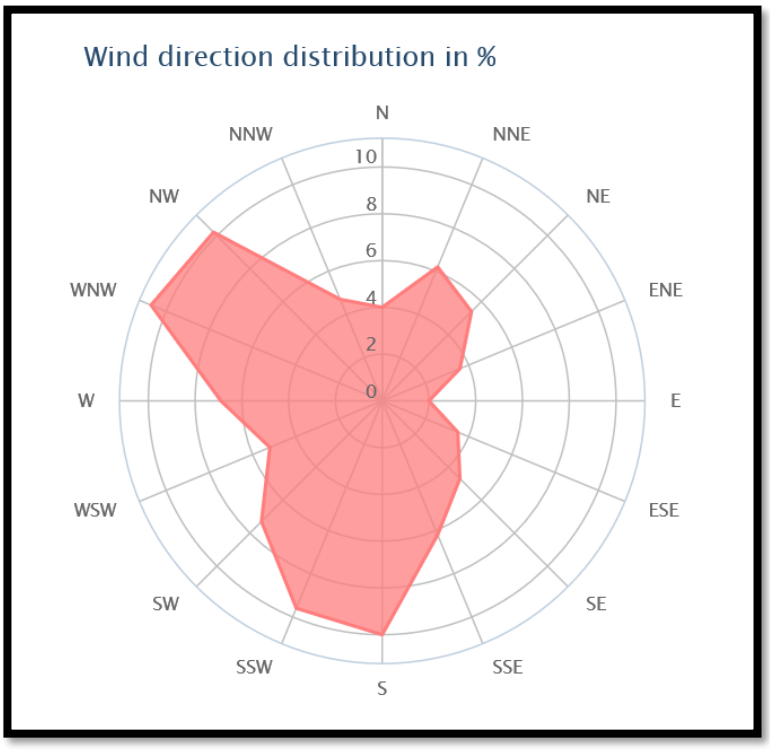


Figure 1 Windrose for Exeter Airport (2000-2019)[3]

Figure 1 indicates that the prevailing wind direction is from the northwest and south, with the wind blowing in these directions approximately 10% of the time. Winds from the north and east are relatively infrequent.

[2] Arup & Ove Arup Environmental. Environment Effects of Surface Mineral Workings. DoE, October 1995.
[3] https://www.windfinder.com/windstatistics/exeter

On this basis, locations to the north and southeast sectors have the highest potential for impacts from any dust emissions originating from the site.

Wind speeds typically vary from 0-15.5 knots (calm to fresh breeze) over the course of the year, rarely exceeding 25 knots (strong breeze). As shown in Figure 2, the probability of wind speeds exceeding 11 knots (the point at which dust is raised) ranges from a maximum of 42% in March to a low of 30% in September.

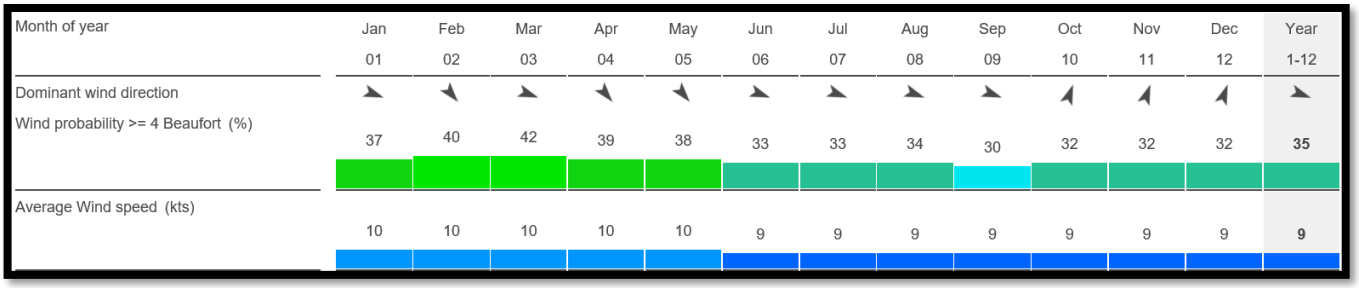


Figure 2 Wind Statistics for Exeter Airport (2000-2019)

Average wind speed is at its highest during the period January to May at 10 knots (gentle breeze), during the remainder of the year, the average wind speed is slightly lower at 9 knots.

3.1.2 Rainfall Data

Relevant rainfall data applicable to the site has been obtained from the Met Office website[4] of UK mapped climate averages for 1981-2010. The average annual rainfall >1mm/day for the area of the site is 121 days per year, comprising approximately 33% of the year. It is therefore considered that on those days the natural suppression afforded by the rain would eliminate all sources of dust across the site.

Rainfall is typically lower in the summer months, combined with higher temperatures to increase the drying time of material. The potential for dust generation and subsequent transfer of airborne dust emissions beyond the site boundary is therefore higher during the summer months.

3.2 Sources of Dust

3.2.1 Designed in Dust Control Measures

The following measures, that are incorporated into operations at the site, are considered to afford a degree of reduction in the potential for dust generation. These 'designed in' control measures are presented in Table 6.

Table 6 Designed in Dust Control Measures

Activity	Designed in Dust Control Measures
Management Procedures	The site supervisor, or his nominee, will exercise day to day control on site at all times. They will have particular responsibility for ensuring full compliance with the conditions attached to the permit. They will assume control either personally or by delegation to suitably trained and responsible staff of: • Vehicle movements; • All loading, tipping and materials handling operations;

[4] http://www.metoffice.gov.uk/public/weather/climate accessed August 2019

Activity	Designed in Dust Control Measures
	• Operation of dust suppression measures; and • Inspection, cleaning and maintenance of all plant and equipment.
	All staff receive necessary training and instruction in their duties relating to the control of all operations and the potential sources of dust emissions. Particular emphasis is given to dealing with plant malfunctions and abnormal conditions. Site staff must inform the manager whenever visible dust emissions are observed or appear likely to occur, as a result of any site operation.
	If at any time dust emissions likely to cause a nuisance beyond the site boundary are detected by the site staff or any complaints relating to dust are received, the incident is recorded in the Site Diary, and immediate action taken to identify the cause of the problem.
	If a dust associated problem is related to a specific source of waste, then action will immediately be taken to suppress any aerial emissions by damping down or covering the waste with non-dusty materials.
Complaints Procedure	A complaints procedure is in place to ensure that any perceived nuisance being caused to local residents is dealt with effectively. A register of complaints is kept on site to record all concerns made either directly to the Site Manager or via the regulatory authorities.
	Each complaint is investigated. The Site Supervisor will report the findings and the action taken to the Site Manager. The EA will be advised in writing within two weeks of any dust complaint together with the findings of the investigation and any corrective action taken.
Transportation of Materials	Internal haulage restricted to clearly delineated routes, on a prepared surface at a low level where possible.
	Temporary haul roads will be maintained in good condition and kept free from mud by regular grading, good drainage and use of hardcore as necessary.
	All equipment will have upward discharge exhaust systems, thereby eliminating surface disturbance.
	A water bowser is available on site to supress dust emissions.
	All site vehicles will be maintained in accordance with the manufacturer's specification.
	A tractor mounted road brush (Road Sweeper) is available for road-cleaning purposes as required.
	Site haulage speeds are restricted to 10mph to minimise dust entrainment. Appropriate instruction is issued to all vehicle drivers.
	The Site Supervisor is responsible for checking the situation regarding dust on a regular basis throughout working hours, and for ensuring that mitigation measures are employed as necessary.

Activity	Designed in Dust Control Measures
	Road going vehicles are prevented from tracking on areas of unmade ground.
	Vehicles used for transporting residual materials to the adjacent landfill site are prevented from use on the public highway network.
Material Handling	When necessary working areas will be sprayed with water with the use of a bowser.
	In unusually dry / windy conditions site activities will be suspended if it appears likely that dust may be carried towards sensitive receptors.

The activities on site that have the greatest potential for dust emissions have been identified as movements on internal haul roads and waste processing operations. Table 7 outlines the potential sources of dust associated with the proposed operations.

Table 7 Sources of Dust

Activity	Potential for Dust Generation	Description / Location
Material handling & storage	Medium	Temporary, intermittent operations. Potential for short term high dust emissions. Processed materials will be stored in piles.
Screening and crushing operations	Large	Waste undergoes screening and crushing operation to recycle soil and aggregates.
Wash plant operations	Small	Waste undergoes washing in sealed wet system.
Transport – internal movements	Large	Potential for dust to be generated by the movement of the dump truck between the recycling facility and landfill, particularly in dry spells. Approximately 20 in-out truck movements per day.
Transport – access road	Small	Paved access road approximately 50m before joining the public highway (Stuart Way). Less than 50 in-out heavy-duty vehicle movements per day.

3.3 IAQM Assessment of Dust Impacts

In support of this EP variation application, a dust impact assessment in accordance with the Institute of Air Quality Management guidance[5] '*Guidance on the Assessment of Mineral Dust Impacts for Planning'* has been undertaken.

The IAQM mineral guidance presents a simple distance-based screening process to identify those mineral sites where the dust impacts are unlikely to be significant and require further assessment. Where a more detailed assessment is required, a basic assessment framework is presented which employs the Source – Pathway – Receptor approach to evaluate the risk of dust impacts and effects.

Based on the IAQM screening criteria, an assessment of both deposited dust and PM_{10} has been undertaken on dust sensitive receptors located within 400m of the on-site activities as shown in Table 8.

The closest residential dwelling to the site is Hill Barton located approximately 100m southwest of the site boundary off Stuart Way. Other nearby residential properties include those surrounding Princes Cottage (260m west), Fearndun House (350m south), Waldrons Farm (390m southeast) and those surrounding Crealy Lodge (400m southwest) (see Table 5 and Drawing 003).

Table 8 Dust Sensitive Receptors within 400m

Ref No.	Receptor	Grid Reference		Distance from Site Boundary (m)	IAQM Distance	Direction from Site Boundary
		x	y			
DR1	Residential – Hill Barton	300340	090872	100	Intermediate	SW
DR2	Residential – Properties around Princes Cottage	300985	090950	260	Distant	W
DR3	Residential – Fearndun House	300732	090647	350	Distant	S
DR4	Residential – Waldrons Farm	300837	090587	390	Distant	SE
DR5	Residential – Crealy Lodge	300197	090692	400	Distant	SW

The background concentrations of PM_{10} at the site and the surrounding locale were obtained from UK Air Information Resource (UK AIR)[6]. The maximum 2019 concentration at the site is 10.8µg/m^3.

In accordance with the IAQM mineral guidance, '*If the long-term background PM_{10} concentration is less than 17µg/m^3 there is little risk that the Process Contribution (PC) would lead to an exceedance of the annual-mean objective'*. No further consideration of PM_{10} emissions is therefore required with the effects considered to be '*Not Significant*'.

[5] Guidance on the Assessment of Mineral Dust Impacts for Planning, May 2016 (v1.1), Institute of Air Quality Management (IAQM) http://www.iaqm.co.uk/text/guidance/mineralsguidance_2016.pdf accessed August 2018
[6] DEFRA, UK Air Information Resource (UK-AIR) website, https://uk-air.defra.gov.uk/data/laqm-background-maps?year=2015 accessed August 2019

Further assessment of deposited dust was undertaken in accordance with the methodology contained within the IAQM minerals guidance. The *Dust Impact Risk* was determined from the *Source Emission Magnitude* for each activity and the *Pathway Effectiveness* for dust emissions towards each individual receptor. The *Pathway Effectiveness* was determined using the distance and direction of individual receptors relative to the prevailing wind direction as summarised in Table 9 and Table 10.

Table 9 Category of Frequency of Potentially Dusty Winds

Receptor	Direction from site	% time down wind of Site	Time downwind days / year	Frequency of winds > 5m/s	Frequency of days with precipitation	Frequency of winds from direction of dust source on dry days	Category of frequency of potentially dust winds
DR1	SW	7	26	<42%	33%	0.97%	Infrequent
DR2	W	7	26	<42%	33%	0.97%	Infrequent
DR3	S	10	36	<42%	33%	1.39%	Infrequent
DR4	SE	5	18	<42%	33%	0.69%	Infrequent
DR5	SW	7	26	<42%	33%	0.97%	Infrequent

Table 10 Pathway Effectiveness

Receptor	Frequency of potentially dusty winds	Receptor distance category	Pathway effectiveness
DR1	Infrequent	Intermediate	Ineffective
DR2	Infrequent	Distant	Ineffective
DR3	Infrequent	Distant	Ineffective
DR4	Infrequent	Distant	Ineffective
DR5	Infrequent	Distant	Ineffective

The likely *Magnitude of Effect* at each receptor was determined using the *Dust Impact Risk* and the sensitivity of the receptor, as defined within the IAQM mineral guidance. The outcome of the impact assessment identified, in the absence of dust control measures on site, a low risk of impact from screening and crushing operations and internal vehicle movements. A negligible risk is associated with material handling and storage, transport via the access road and wash plant activities and operations

3.4 Dust Complaints

To date, no complaints have been received regarding dust emissions from the site.

4.0 CONTROL OF DUST EMISSIONS

4.1 Overview

SPL recognises the potential for the site to generate dust emissions and is committed to operating the site in accordance with industry best practise. The implementation of industry best practice measures to control and mitigate the generation and transportation of dust can ensure that dust is adequately controlled.

The dust control measures contained within this DMP have been defined based on the findings of the IAQM dust impact assessment and regulatory guidance as follows:

- IAQM Guidance on the Assessment of Mineral Dust Impacts for Planning (2016);
- Mineral Industry Research Organisation (MIRO) Good practice guide: control and measurement of nuisance dust and PM_{10} from the extractive industries (AEA, 2011);
- Technical Guidance to the National Planning Policy Framework (Department for Communities and Local Government, 2012);
- Process Guidance Note 3/16 (04) Statutory guidance for mobile crushing and screening (Defra, 2012); and
- Local Air Quality Management (LAQM.TG(16)) (Defra, 2016).

The key method for controlling dust emissions is through good site design, management practices and subsequent good housekeeping, i.e. avoidance of dust generation.

4.2 Dust Control Measures

Dust control measures that will be employed at the site as part of routine planning and operations are detailed below in Table 11, Table 12 and Table 13.

Table 11 General Site Control Measures

Activity	Control Measures
Design and location of dust-generating activities	Dust-generating activities are, where possible, located where maximum protection can be obtained from topography, woodland or other sheltering features. Stockpiles, haul roads, tips and mounds, and exposed areas are located as far away as possible from sensitive receptors. They are not located directly upwind of the sensitive receptors.
Equipment and Vehicles	The site has been designed to minimise haul route distances and to locate haul routes away from receptors. A separate paved parking area for off-site vehicles, such as staff cars, with no access to the working areas, helps prevent track-out of mud onto the public highway.

Activity	Control Measures
Planting	Existing hedgerows along the landfill site's boundaries are maintained. Any dead or diseased trees, shrubs will be replaced.
Communication	Good communication is maintained to prevent anxieties between the operator and the surrounding communities. Regular, accessible liaison arrangements are implemented in order to provide information as freely as possible.
Training	Training on dust mitigation is provided to site personnel. Training will also cover 'emergency preparedness plans' to react quickly in case of any failure of the planned dust mitigation.
Monitoring	See Section 4.3
Management	All dust and air quality complaints are recorded. The cause will be identified, and appropriate measures taken. See Section 5.0.

Table 12 Activity Specific Preventative Dust Control Measures

Activity	Management Actions and Preventative Dust Control Technique	Trigger for Implementation
Handling & storage	Drop heights are minimised. Vehicles are not to be overloaded. Stockpiles are in clearly designated areas to prevent vehicle tracking over the base.	Control techniques will be implemented during all periods when the site is operational.
	Handling activities are avoided during dry and windy conditions.	Daily monitoring to assist with this decision.
	Stored aggregates will not be allowed to dry out.	Control techniques will be implemented during all periods when the site is operational.
Processing and screening operations	The following measures are effective in minimizing dust emissions during the screening process: • Screening plant is used within its design capacity; • Screening plant is located away from the site boundary and sensitive receptors; • Good standards of plant and equipment are maintained; and	Control techniques will be implemented during all periods when the site is operational.

Activity	Management Actions and Preventative Dust Control Technique	Trigger for Implementation
	• Drop heights are minimised.	
Wash plant operations	The following measures are effective in minimizing dust emissions during the washing process: • Wash plant machinery is used within its design capacity; • Wash plant machinery is located sufficient distance away from the site boundary and sensitive receptors; and • Good standards of plant and equipment are maintained.	Control techniques will be implemented during all periods when the site is operational.
Transport – internal movements	All vehicles arriving to and leaving site will be sheeted. All vehicles will adhere to the site speed limit of 10mph. Unsurfaced routes are to be well maintained and compacted to minimise spillages from passing vehicles and erosion of road surface. Necessary repairs to the surface will be instigated as soon as reasonably practicable. All inspections will be record in the site log book. Adequate water supply is provided for effective dust mitigation. Movement of traffic around site is minimised where possible. Abrupt changes in direction are avoided. Vehicles are evenly loaded to avoid spillages.	Control techniques will be implemented during all periods when the site is operational.
Transport – access road	An adequate area of hard surfaced road between site activities and site exit is maintained. Vehicles entering and leaving site will be covered to prevent escape of materials during transport	Control techniques will be implemented during all periods when the site is operational.

Table 13 Activity Specific Remedial Dust Control Measures

Activity	Management Actions and Remedial Dust Control Technique	Trigger for Implementation
Material handling & storage	Water suppression with a water bowser to dampen down processing/operational area.	Visible dust plumes carried towards site boundary. Limited by the availability and quantity of water given the measure can be water intensive.

Activity	Management Actions and Remedial Dust Control Technique	Trigger for Implementation
	Dampen material whilst screening process being undertaken.	Visible dust plumes carried towards / across site boundary.
Transport – internal movements	On-site sweeping using a tractor mounted road brush. Use water bowser to dampen down haul roads and large surface areas.	If large quantities of debris and dust has accumulated on haul roads/access roads. Material to be damped down first before sweeping. Not to be undertaken during dry, windy conditions as may resuspend the dust.
Transport – access road	Use a water assisted dust sweeper to remove any material tracked out from the site.	Visible track out on the access road.

The remedial dust control measures outlined above would be undertaken until the dust emissions were contained within the site boundary and significantly reduced. The decision would be at the discretion of the Site Supervisor.

4.3 Monitoring

4.3.1 Meteorological Conditions

On operational days, weather forecasts will be monitored daily to predict weather conditions such as prolonged dry, hot spells or significantly strong winds which may generate elevated levels of dust for which additional dust control would need to be planned / prepared. Using this information, the necessary precautionary measures will be planned or employed on site, and if necessary, suspension or relocation of certain activities may be undertaken.

Wind direction and wind speed will be recorded daily within the Site Log Book or using the example record sheet in Appendix 01. This information is beneficial when dust events / complaints are reviewed retrospectively, and the source of dust is trying to be identified.

4.3.2 Visual Dust Monitoring

The site will undertake regular visual monitoring to ensure that dust control techniques in operation are being carried out effectively. The objective of the visual monitoring is to anticipate whether dust is being transported off-site in quantities sufficient to cause a nuisance at off-site receptor locations. Visual monitoring undertaken on a regular basis allows immediate action to be instigated.

Visual monitoring of dust will be undertaken by the Site Supervisor on a minimum of a daily basis (See Table 14). Responsibilities can either be delegated to various Site Operatives to carry out visual observations of their working areas during normal operations or be delegated to a single Operative to perform a daily visual check of key areas.

The areas that require consideration for inclusion within the visual observations are as follows:

- Screening and crushing operations;
- Wash plant activities and operations;
- Truck movements on haul roads;
- Export of materials off site; and
- Construction of internal haul roads.

Figure 3 illustrates the visual monitoring locations.

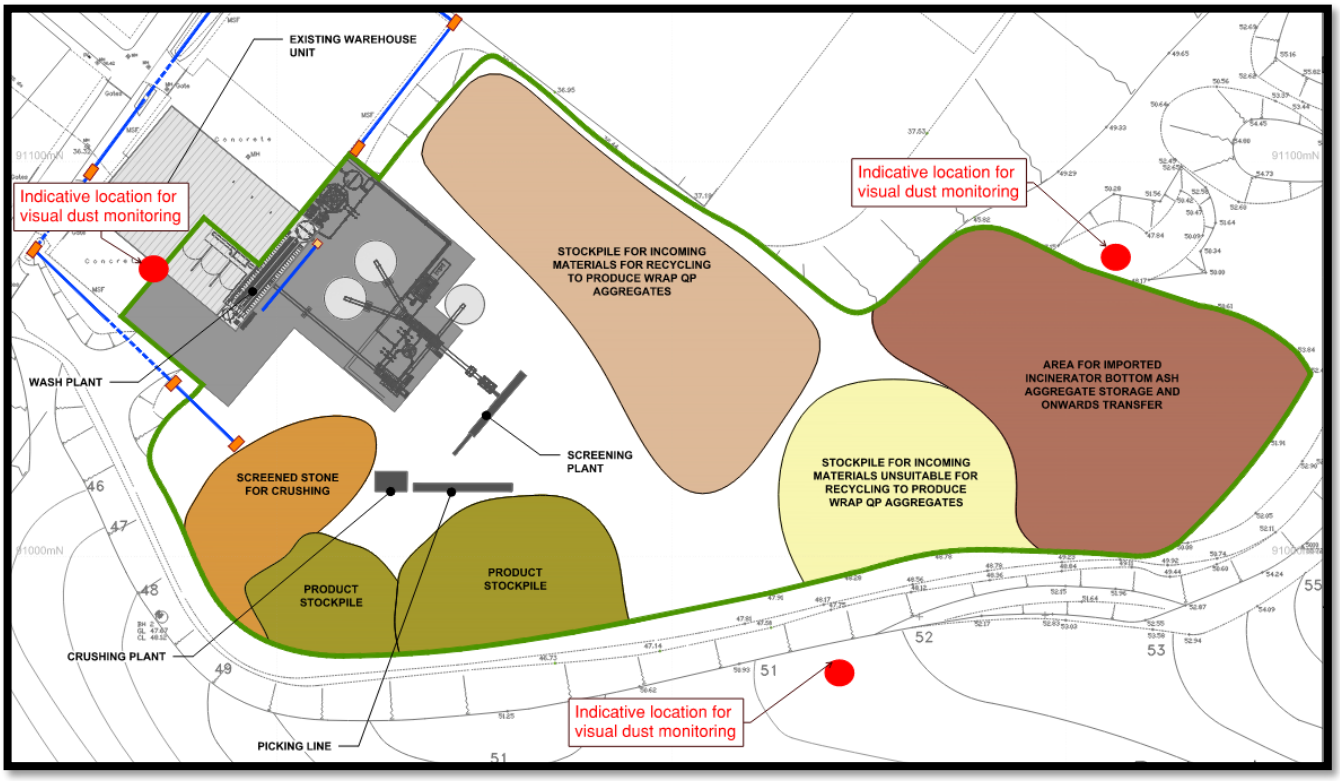


Figure 3 Indicative locations of Visual Dust Monitoring

The results of all visual observations, along with any remedial actions implemented will be recorded. Any personnel who undertake visual dust monitoring will have received appropriate training, guidance and instruction on how to carry out the task in line with the requirements of this DMP.

Table 14 Visual Dust Monitoring

Parameter	Limit	Frequency	Locations
Visible dust emissions	Visible dust emissions crossing the site boundary	Daily	As shown on Figure 3

Results of the visual observations will be recorded in the Site Log book which is kept in the site office (an example Pro-Forma is included within Appendix 02). The following details shall be noted:

- Weather conditions (rainfall, wind speed, wind direction);
- Current site activities;

- Identification of any visible dust emissions travelling beyond the Site boundary; and
- Details of any remedial action undertaken as a result.

The frequency of visual monitoring will be increased to twice daily observations in the following scenarios:

- Regular observations detect significant dust plumes crossing the Site boundary towards off-site receptors; or
- In response to a complaint being received by the Site or the EA.

5.0 SITE MANAGEMENT & CONTINGENCY MEASURES

This section details the responsibilities of management within the DMP, as annotated in Figure 4.

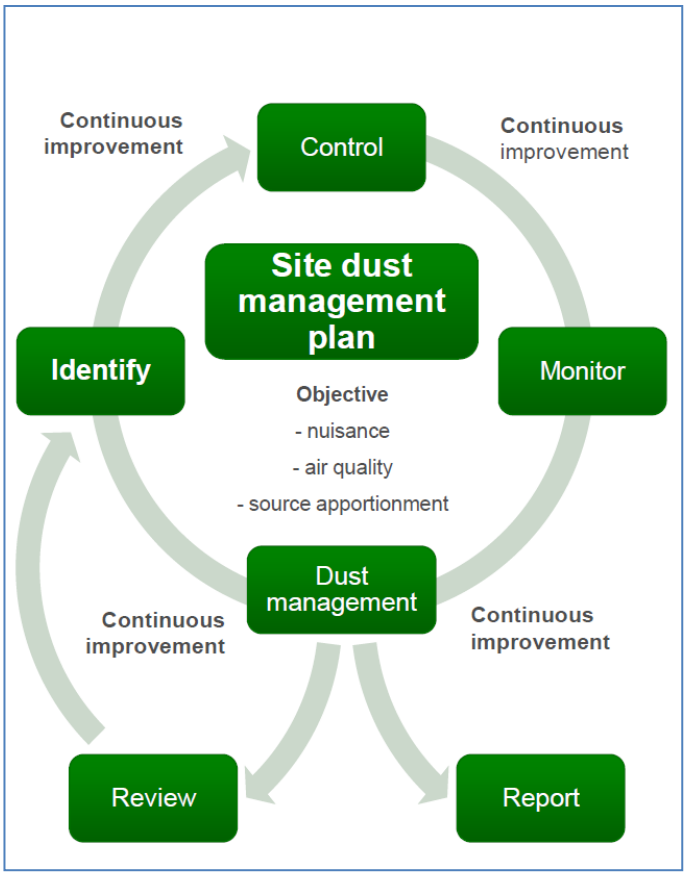


Figure 4 Dust Management Plan Process[7]

5.1 Responsibilities

There will be a trained Site Supervisor on site during working hours responsible for dust management and visual observations. The Site Supervisor will be responsible for ensuring effective dust control is achieved by good operational practises, including:

- Identifying and monitoring the intensity of activities with a high potential for dust generation;
- Monitoring weather conditions during periods of such activity;
- Planning and preparing for the implementation of contingency measures;
- Responding to potential and actual dust monitoring issues; and
- Ceasing operations if significant off-site impacts cannot be avoided.

Responsibilities will be allocated to specific personnel to ensure dust generation is avoided or effectively controlled, as presented in Table 15.

[7] Reproduced from - Report to The Mineral Industry Research Organisation (MIRO), *Good practice guide: control and measurement of nuisance dust and PM_{10} from the extractive industries* AEAT/ENV/R3140 Issue 1 (February 2011)

Table 15 Dust Management Responsibilities

Actions	Responsibility
Monitoring weather forecasts and current wind directions on site	Site Supervisor
Routine visual observation monitoring	Site Supervisor
Coordination of application of water dust suppression	Site Supervisor
Completion of dust event forms	Site Supervisor
Activation of contingency action plans	Site Supervisor
Liaison with public and regulator	Site Supervisor
Coordinating reviews and updates of DMP	Site Supervisor

5.2 Training

All personnel on site understand their responsibility to ensure the generation of dust is avoided, minimised and controlled. Each employee is aware of the importance of effective dust control and the most effective measures available to minimise such emissions from the various activities. Such training shall be provided as part of the induction process for all new employees.

Specific training is provided to:

- Operatives in use of the water suppression techniques; and
- All site personnel on the importance of reporting potential / actual dust emissions or the malfunctioning of dust control to the appropriate person.

Training also covers 'emergency preparation plans' to ensure rapid reactions to any failure of dust control.

5.3 Incident Reporting

Incidents of high dust levels will be reported to the Site Manager and recorded in the Site Log Book. Any incidents that have created significant dust issues off site shall be reported to the EA as appropriate.

5.4 Dust Complaint Procedure

Complaints may be notified by a member of the public either directly to the site management or indirectly through the regulator. Complaints received directly by the site management will be recorded in the Site Log Book and reported to the regulator. The following details shall be recorded:

- Date, time and name of complainant (if provided);
- Nature of complaints;
- Locality of complaint;
- Summary of resulting investigations and actions taken; and
- Date at which the complainant was updated with the outcome / remedial actions undertaken, if required.

The objective of this response to complaints received is to investigate the incident and review the site practises and dust controls in place at the time of the event to allow for additional controls to be put in place, thus preventing a repeat of the incident. If necessary, the complainant(s) and the regulator would be informed of the findings of the investigation and any actions subsequently taken.

Investigations will include, but not be limited to the following:

- Visit by a member of Site Management to location of complainant to verify the issue (if complaint is made after the event this may not be possible);
- A review of site activities in operation at the time of the incident;
- A review of the dust monitoring results for the period of the incident, if applicable;
- For recurring events, the frequency of visual monitoring should be increased to a twice daily basis;
- A review of control measures and dust suppression in place at the time of the incident (i.e. application of water, frequency of water bowser on internal haulage routes, drop heights during transfer);
- A review of the meteorological conditions at the time of the incident (i.e. recorded wind direction and wind speed recorded in the Site Log Book); and
- Reporting of findings (either in Appendix 03 pro-forma or in Site Log Book).

The escalation procedures if subsequent dust complaints are received are as follows:

- Initial Complaint - Initial/first time contact received – complaint investigated, and contingency actions taken by site management.
- Complaint level 1 - An interaction that has not been resolved to the satisfaction of the complainant or where frequent contact has been received from the public via the Regulators. Complaints investigated by Senior Management Team and remedial actions taken.
- Complaint level 2 - Unresolved complaint level 1 – this may involve support from Environmental Consultants to review, investigate, determine required actions and respond to the complaint.

5.5 Liaison with Community and Regulators

The Site Manager (or nominated representative) shall act as liaison with the regulator and local community for issues relating to dust emissions off-site. Maintaining good communications with the local community will help prevent anxieties occurring.

If appropriate, key issues will be communicated between both sides, including but not limited to the following:

- Presentation of the monitoring scheme and the latest dust monitoring results;
- Update on the working scheme of the site and when / where future operations will be;
- Summary of the dust controls on site and any updates / improvements undertaken / planned;
- Provision of a contact for the site should any issues arise between the meetings; and
- Observe and alleviate any anxieties or complaints member of the public have experienced.

5.6 Record Keeping

Stuart Partners keep records of all dust monitoring, dust contingency actions, investigations and complaints on site for a minimum period of 2 years; these shall be made available to the regulator for examination on request.

5.7 DMP Update and Review

This DMP is an active, controlled document which forms part of the site management documentation. It shall be reviewed on an annual basis, as a minimum by senior site management. Given that the document is a point of reference for daily operations, it shall be updated as required should any of the following situations occur:

- Significant changes are made to the plant or operational practises;
- The regulator specifically requests for the DMP to be updated; or
- Following investigations into dust control, additional measures are adopted that are not contained within the document.

On review of site operations and the effectiveness of the DMP, Senior Management are required to make any changes deemed appropriate to ensure dust emissions are kept to a minimum

6.0 CONTINGENCY ACTION PLAN

A contingency action plan has been defined to react to situations whereby visual monitoring of dust indicates that a potential dust source is not being mitigated effectively, appropriate control measures are not in place or that an adverse impact has / may occur.

This includes incidents or accidents which would result in the loss of control of potential dust sources and have the potential to cause an unacceptable impact on the environment. The contingency action plan therefore includes both pro-active and re-active actions to events.

Contingency measures have been identified for the following scenarios, as presented in Table 16.

- Observed change in wind direction towards nearby receptors during activities close to site boundary;
- Visual monitoring records visible dust plumes across the site boundary in the direction / proximity to the off-site receptors.
- Malfunction in water suppression techniques rendering them in-effective;
- Malfunction of road sweeper rendering it in-effective;
- Receipt of a particularly dusty load;
- Complaints received from members of the public or neighbouring businesses, verified by visual monitoring on site; and
- Prolonged periods of hot weather, resulting in very dry ground and limited supply of water.

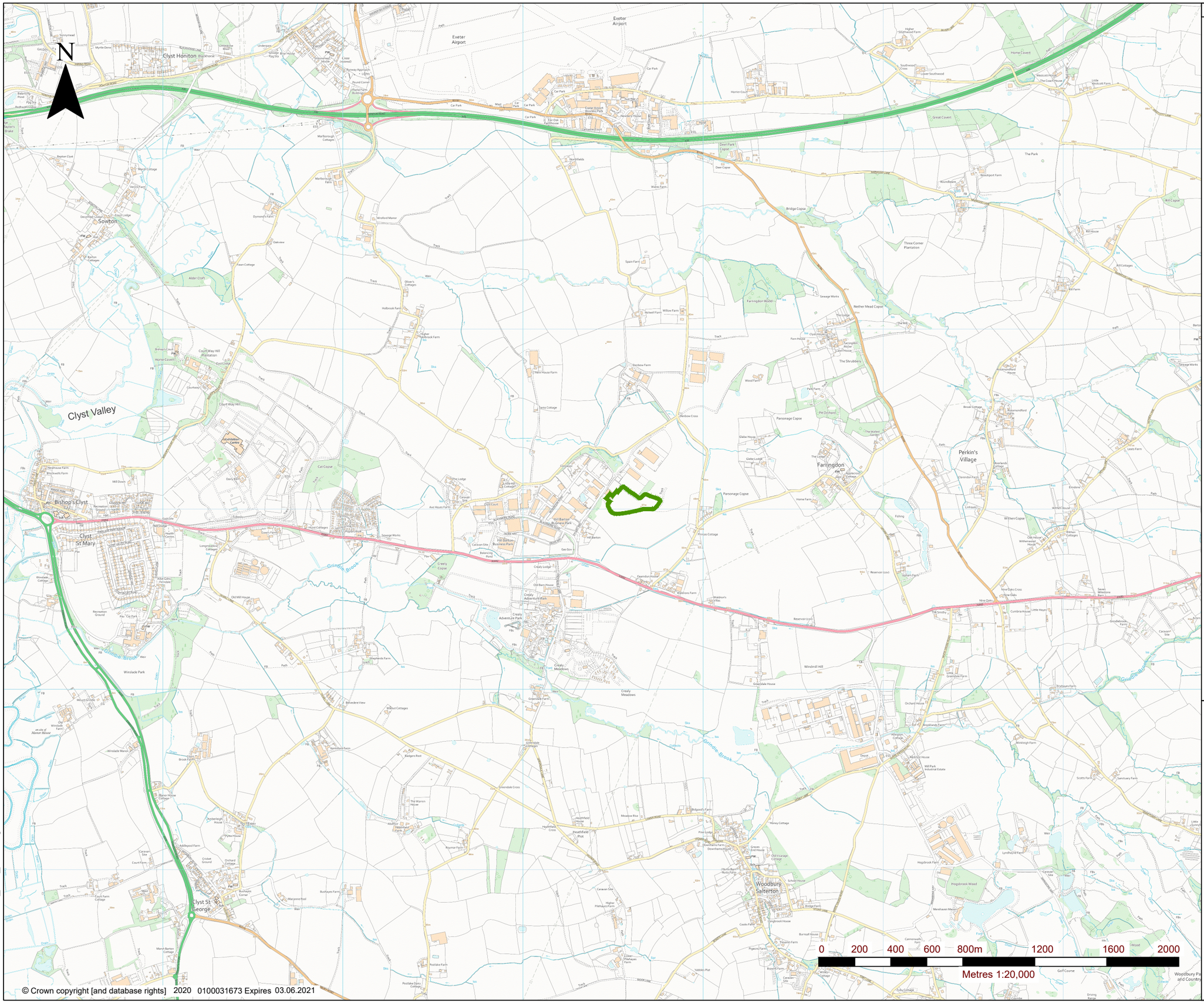
Table 16 Contingency Plans

Event	Change in wind direction (moderate-high winds) towards off-site receptors
Contingency Actions	The frequency of visual monitoring will increase to twice daily which will incorporate walkovers along boundary in question. Additional dust suppression will be implemented on high risk activities using water sprays, reduction in drop heights or cessation of material handling / transfer. In the event dust is visually observed to be crossing the boundary with additional dust suppression in place, any activities will be relocated or ceased until more effective mitigation is in place.
Comment	The weather forecasts will be monitored. The Site Manager will be informed of actions taken and the event will be recorded in Site Log Book.
Event	Visual monitoring records dust plumes across site boundary in direction of offsite receptors
	The frequency of visual monitoring will increase to a minimum of twice daily, which will incorporate a walkover along the boundary in question. Wind direction will be determined.

	The likely dust source will be determined, and additional dust suppression will be implemented e.g. Increased frequency of water suppression on internal haul roads and commence water suppression on material using manual techniques on site. If additional dust suppression not effective, activity operations will be relocated or ceased until dust can be satisfactorily controlled.
Comment	Water supply will be available for high-risk activities. The Site Manager will be informed of actions taken and the event will be recorded in Site Log Book.
Event	Malfunction of water suppression techniques, rendering them ineffective
Contingency Actions	Repairs will be undertaken using on-site spares if possible, or a technician will be called to repair at earliest opportunity. Manual methods will be undertaken to clean down vehicles. The frequency of visual monitoring will increase to twice daily, which will incorporate a walkover of the all the boundaries. Manual water techniques will be available on site and at the location of the dust source.
Comment	Essential spares will be retained on site. The Site Manager will be informed of actions taken and the event will be recorded in Site Log Book.
Event	Malfunction of road sweeper rendering it in-effective
Contingency Actions	If required, a functioning road sweeper will be hired.
Comment	The Site Manager will be informed of actions taken and the event will be recorded in Site Log Book
Event	Receipt of a particularly dusty load
Contingency Actions	Management will be notified, and receipt records will be updated. Loads will be investigated to ascertain whether they can be received without causing dust emissions to leave site. The following be will be reviewed: • Use of additional mitigation, e.g. use of water bowser during unloading for all loads; and • Use of subsequent cover material once deposited. Ultimately, if waste cannot be received without dust emissions causing an unacceptable impact, then the load will be rejected in accordance with site procedures.
Comment	Details will be recorded in Site Log Book.
Event	Complaints received from members of the public or neighbouring businesses, verified by visual monitoring on site

Contingency Actions	Management will be notified. Complaint reporting and investigation procedure will be undertaken, and appropriate contingency measures will be undertaken as detailed above. The frequency of visual monitoring will increase to twice daily and will focus on boundary locations in proximity to the location of complainants. If required, correspond with the EA to discuss the requirement of quantitative dust monitoring. Complaint escalation procedure: • Initial Complaint - Initial/first time contact received – complaint investigated, and contingency actions taken by site management. • Complaint level 1 - An interaction that has not been resolved to the satisfaction of the complainant or where frequent contact has been received from the public via the Regulators. Complaints investigated by senior management team and remedial actions taken. • Complaint level 2 - Unresolved complaint level 1 – this may involve support from Environmental Consultants to review, investigate, determined required actions and respond to the complaint.
Comment	DMP may require updating on basis of results of investigations.
Event	Prolonged periods of hot weather, resulting in very dry ground and limited supply of water
Contingency Actions	Water suppressant techniques to be prioritised for operational activities. Road sweeping to be undertaken if large material accumulating on access road. However, be mindful this may resuspend the dust therefore not to be undertaken in windy conditions. If water supply on site has significantly reduced, consider importing water onto site. Increase daily monitoring to twice daily and if dust is being released in significant quantities likely to cause impact then cease activities.
Comment	Inform Site Manager of actions taken and record in Site Log Book.

DRAWINGS



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LEGEND

ENVIRONMENTAL PERMIT VARIATION BOUNDARY

stuart PARTNERS

SLR global environmental solutions
3RD FLOOR
THE BREW HOUSE
JACOB STREET
BRISTOL, BS2 0EQ
T: 01179 064280
www.slrconsulting.com

HILL BARTON SOIL RECYCLING FACILITY

ENVIRONMENTAL PERMIT VARIATION APPLICATION

SITE LOCATION PLAN

DRAWING 001

Scale	Date
1:20,000 @ A3	JANUARY 2021

05631.00009.13.001.2_Site_Loc.dwg

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N

EXISTING WAREHOUSE UNIT

WASH PLANT

SCREENED STONE FOR CRUSHING

SCREENING PLANT

PRODUCT STOCKPILE

PRODUCT STOCKPILE

CRUSHING PLANT

PICKING LINE

STOCKPILE FOR INCOMING MATERIALS FOR RECYCLING TO PRODUCE WRAP QP AGGREGATES

AREA FOR IMPORTED INCINERATOR BOTTOM ASH AGGREGATE STORAGE AND ONWARDS TRANSFER

STOCKPILE FOR INCOMING MATERIALS UNSUITABLE FOR RECYCLING TO PRODUCE WRAP QP AGGREGATES

Restored

0 10 20 30 40m 60 80 100

Metres 1:1000

NOTES

1. DRAWING IS BASED ON CLIENT SUPPLIED TOPOGRAPHICAL DRAWING.

LEGEND

- ENVIRONMENTAL PERMIT VARIATION BOUNDARY
- CONCRETE SURFACE
- SEDIMENT TRAP
- DRAINAGE SUMP
- DRAINAGE RUN
- CULVERT

stuart PARTNERS

SLR global environmental solutions

3RD FLOOR
THE BREW HOUSE
JACOB STREET
BRISTOL, BS2 0EQ

T: 01179 064280
www.slrconsulting.com

HILL BARTON SOIL RECYCLING FACILITY

ENVIRONMENTAL PERMIT VARIATION APPLICATION

SITE LAYOUT PLAN

DRAWING 002

Scale 1:1000 @ A3

Date JANUARY 2021

05631.00009.13.002.3_Site_Layout.dwg

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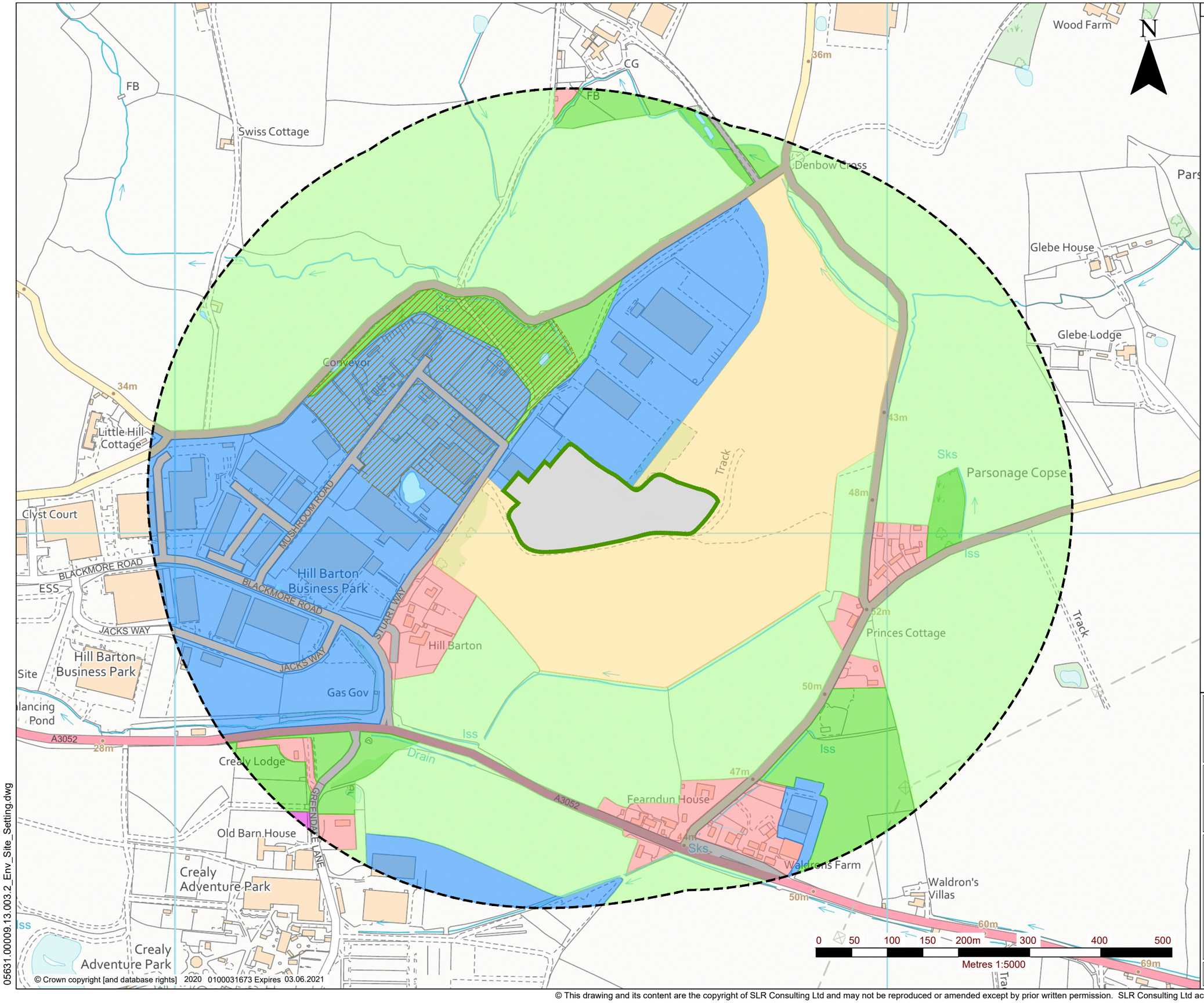

LEGEND

- ENVIRONMENTAL PERMIT VARIATION BOUNDARY
- 500m OFFSET BOUNDARY
- AGRICULTURAL
- OPEN LAND / WOODLAND
- RESIDENTIAL
- COMMERCIAL / INDUSTRIAL
- RECREATIONAL
- LANDFILL
- HISTORIC LANDFILL
- LOCAL ROAD NETWORK
- SURFACE WATER BODIES / DITCHES

stuart PARTNERS

SLR global environmental solutions

3RD FLOOR
THE BREW HOUSE
JACOB STREET
BRISTOL, BS2 0EQ

T: 01179 064280
www.slrconsulting.com

HILL BARTON SOIL RECYCLING FACILITY

ENVIRONMENTAL PERMIT VARIATION APPLICATION

ENVIRONMENTAL SITE SETTING

DRAWING 003

Scale: 1:5000 @ A3

Date: JANUARY 2021

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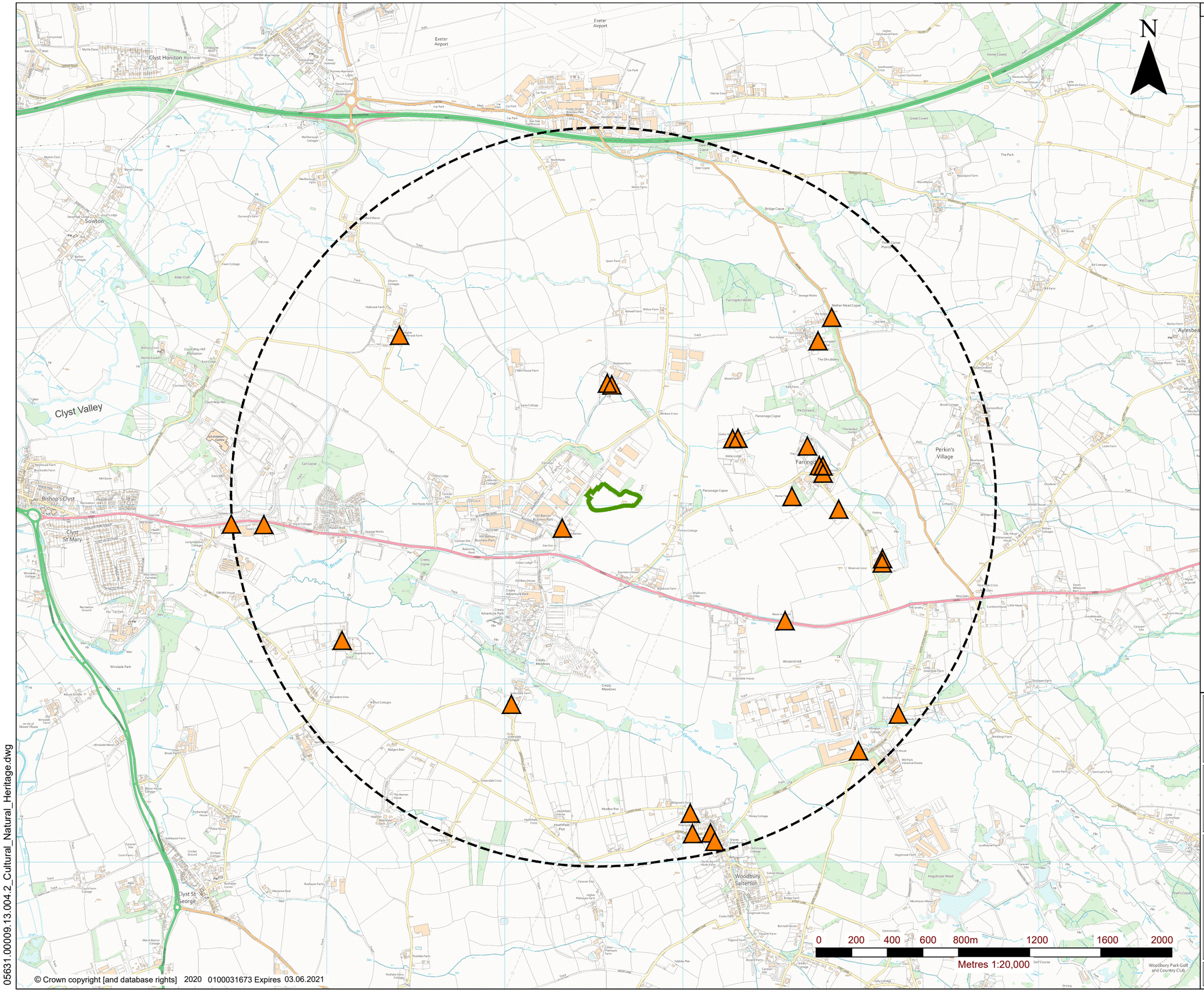

LEGEND

- ENVIRONMENTAL PERMIT VARIATION BOUNDARY
- 2km OFFSET BOUNDARY
- LISTED BUILDINGS

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05631.00009.13.004.2_Cultural_Natural_Heritage.dwg

stuart PARTNERS

SLR global environmental solutions
3RD FLOOR
THE BREW HOUSE
JACOB STREET
BRISTOL, BS2 0EQ
T: 01179 064280
www.slrconsulting.com

HILL BARTON SOIL RECYCLING FACILITY

ENVIRONMENTAL PERMIT VARIATION APPLICATION

CULTURAL & NATURAL HERITAGE

DRAWING 004

Scale 1:20,000 @ A3

Date JANUARY 2021

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APPENDIX 01

Example Meteorological Condition Record Sheet

Date	Initials of Author	Predominant Wind Direction	Wind Speed (Beaufort scale)	Rainfall	Areas of Working	Additional Comments (On- and Off-site)
11/02/17 Example	*AB*	*W- NW*	*1-2 Light air – light breeze*	*Dry*	*Topsoil Stripping*	*Agricultural operations in field adjacent to Site active with visible dust emissions*

Beaufort Scale Definitions:

0 – Calm
1 – Light air
2 – Light breeze
3 – Gentle breeze
4 – Moderate breeze
5 – Fresh breeze
6 – Strong breeze
7 – Near gale
8 – Gale
9 – Strong gale
10–Storm

APPENDIX 02

Example Dust Event Form

Visual Monitoring and Dust Event Form	
Name of Author	
Description of Event[a]	
Date / Time / Period	
Activities taking place during time / period of event:	
Dust control employed at the time of the event:	
Summary of weather conditions leading up to and during the event:	
Details of Corrective Action:	
Notes:	

(a) E.g. complaint registered (name and address) or visible dust seen crossing site boundary during routine visual monitoring

APPENDIX 03

Dust Complaint Form

Customer Details	
Customer Name	
Address Postcode	
Customer Contact Details	
Telephone	
Email	
Date	
Complaint Ref Number	
Complaint Details	

Investigation Details	
Investigation carried out by	
Position	
Date & time investigation carried out	
Weather conditions	
Wind direction and speed	
Investigation findings	
Feedback given to EA and/or local authority	
Date feedback given	
Feedback given to public	
Date feedback given	

Review and Improve	
Improvements needed to prevent a reoccurrence -	

Customer Details	
Proposed date for completion of the improvements -	
Actual date for completion -	
If different insert reason for delay -	
Does the dust management plan need to be updated -	
Date that the dust management plan was updated -	
Closure	
Site manager review date	
Site manager signature to confirm no further action required	

EUROPEAN OFFICES

United Kingdom

AYLESBURY
T: +44 (0)1844 337380

BELFAST
belfast@slrconsulting.com

BRADFORD-ON-AVON
T: +44 (0)1225 309400

BRISTOL
T: +44 (0)117 906 4280

CARDIFF
T: +44 (0)29 2049 1010

CHELMSFORD
T: +44 (0)1245 392170

EDINBURGH
T: +44 (0)131 335 6830

EXETER
T: + 44 (0)1392 490152

GLASGOW
T: +44 (0)141 353 5037

GUILDFORD
T: +44 (0)1483 889800

LONDON
T: +44 (0)203 805 6418

MAIDSTONE
T: +44 (0)1622 609242

MANCHESTER (Denton)
T: +44 (0)161 549 8410

MANCHESTER (Media City)
T: +44 (0)161 872 7564

NEWCASTLE UPON TYNE
T: +44 (0)191 261 1966

NOTTINGHAM
T: +44 (0)115 964 7280

SHEFFIELD
T: +44 (0)114 245 5153

SHREWSBURY
T: +44 (0)1743 23 9250

STIRLING
T: +44 (0)1786 239900

WORCESTER
T: +44 (0)1905 751310

Ireland

DUBLIN
T: + 353 (0)1 296 4667

France

GRENOBLE
T: +33 (0)6 23 37 14 14