AVONMOUTH WASTE TRANSFER STATION

Environmental Permit Variation Application

Dust Management Plan

Prepared for: Bristol Waste Company

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1.0 Introduction

This Dust Management Plan (DMP) has been prepared by SLR Consulting Limited (SLR) on behalf of Bristol Waste Company (Bristol Waste) and forms part of the Permit Variation Application for the proposed Avonmouth Waste Transfer Station (WTS) near Bristol, Avon, hereafter referred to as 'the Site'.

The Site will require an Environmental Permit (EP) to be issued by the Environment Agency (EA) before it can operate.

Proposed activities on Site will include:

- Reception of materials (see Appendix 03);
- Manual sorting and separation, crushing, compacting, shredding, and baling of material and materials collected from within the Bristol Area;
- Material storage; and
- Bulk removal of materials to authorised waste management facilities.

1.1 Scope of Dust Management Plan

It is recognised that activities on Site could lead to release of fugitive emissions of dust with the potential to reduce amenity in the local area due to visible dust plumes and dust soiling. Smaller dust particles have the potential to increase local ambient concentrations of suspended particulate matter (PM_{10} and $PM_{2.5}$).

Therefore it is a requirement to control activities on Site in order to prevent or mitigate potential releases of dust. The DMP provides a proactive approach to the effective management of dust during site works and operation.

This DMP sets out the potential sources of dust at the Site, the measures in place to control dust generation and monitor releases, and the management and monitoring actions that will be taken in response to a dust event. The determination of receptor sensitivity and dust emission magnitude has been determined with reference to the Institute of Air Quality Management (IAQM) Mineral Dust guidance[1].

The DMP is a 'live document', in this respect the dust control measures, and management procedures contained within it will be updated on a periodic basis. This DMP will be kept in the Site office and be available to all employees. The DMP will be implemented throughout the duration of the Site's operation.

1.2 Key Guidance

In developing the DMP, key guidance documents that have been consulted include:

- The Mineral Industry Research Organisation (MIRO), *Good practice guide: control and measurement of nuisance dust and PM_{10} from the extractive industries* (2011)[2]; and
- Institute of Air Quality Management (IAQM), *Guidance on the Assessment of Mineral Dust Impacts for Planning* (2016)[3].

[1] IAQM, Guidance on the Assessment of Mineral Dust Impacts for Planning, 2016.
[2] MIRO, Good practice guide: control and measurement of nuisance dust and PM_{10} from the extractive industries, February 2011.
[3] IAQM, Guidance on the Assessment of Mineral Dust Impacts for Planning, v1.1, May 2016.

2.0 Baseline Environment

2.1 Location

The Site is situated approximately 2km north-east of Avonmouth and 9km north-west of Bristol City Centre, at the approximate National Grid Reference (NGR): x353320, y179860. The Site is set within the wider commercial/industrial area of Avonmouth and is bounded by:

- Scrubland immediately to the north, with Merebank Road and industrial units further beyond;
- Lawrence Weston Road immediately to the east and industrial units further beyond;
- Bristol Wastewater Treatment Works (WwTW) immediately to the south; and
- Scrubland and open water immediately to the west, with Kings Weston Road and industrial units further beyond.

Access to the site is via Kings Weston Lane. The EP boundary and the Site location is illustrated in Figure 2-1.

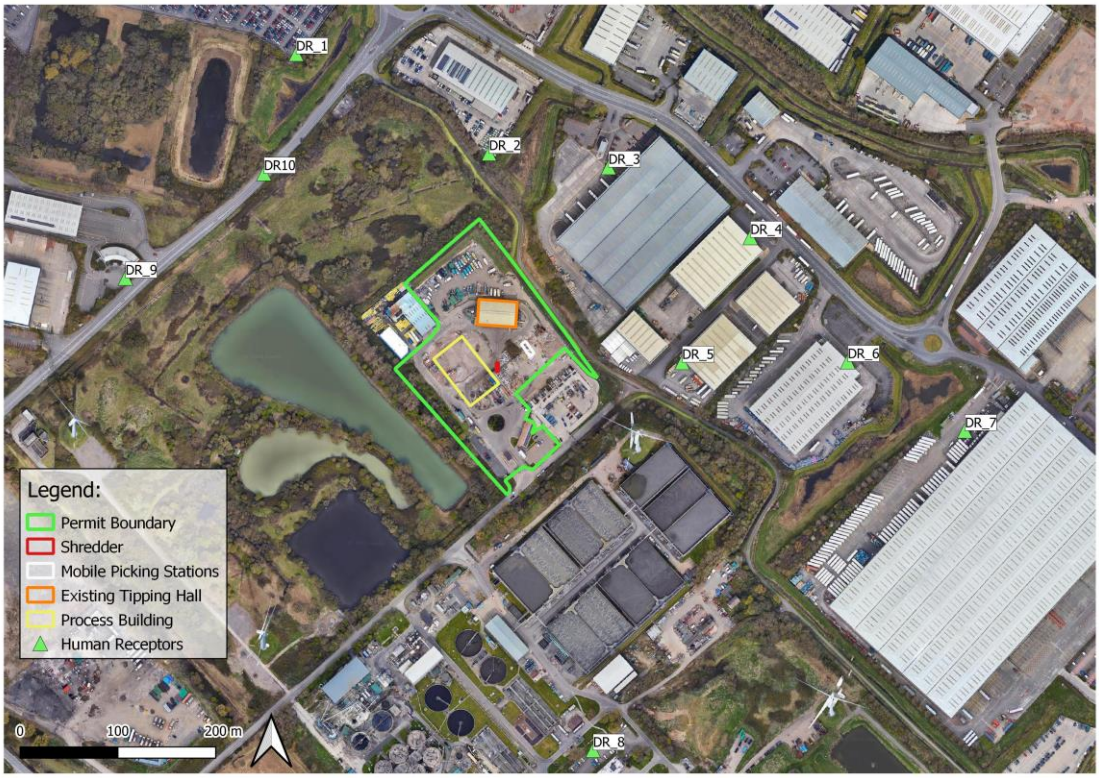

Figure 2-1
Site Location

2.1.1 Other Potential Sources of Dust

A review of other potential sources of dust in the Site locale has been undertaken through use of aerial imagery.

The only source of dust emissions identified within the Site locale is the Avonmouth Household Reuse and Recycling Centre (HRRC), which bounds the Site to the southeast. This represents a minor potential source of dust in the site locale.

2.2 Air Quality Setting

The Site is located within the administrative area of Bristol City Council (BCC) which currently has one Air Quality Management Area ('Bristol AQMA'), declare for the exceedances of annual nitrogen dioxide (NO_2) mean, 1-hour NO_2 mean and 24-hour particulate matter (PM_{10}) mean. The Bristol AQMA covers much of the city centre and parts of the main radial roads including the M32. The Site is located approximately 6.6km to the north of the AQMA and therefore, any proposed activities at the Site are not predicted to impact on the air quality with Bristol AQMA.

2.3 Sensitive Receptors

2.3.1 Human Receptors

The IAQM Mineral Dust guidance states two key screening distance for dust when determining human receptors. For soft rock quarries (i.e., Sands and Gravel), adverse dust impacts are uncommon beyond 250m. For hard rock quarries (i.e., Granite), adverse dust impacts are uncommon beyond 400m. These screening distances are typically measured to nearest dust generating source or activity. For the purpose of this DMP, the precautionary 400m screening distance has been applied. This represents a highly conservative approach given that the dust emission potential associated with WTS activities is typically much lower that the quarrying industry.

There are no residential properties within 400m of dust generating activities at the Site. The sensitivity of receptors to dust has been determined with reference to the Institute of IAQM Mineral Guidance. The closest human receptors considered to be sensitive to dust are presented in Table 2-1.

Table 2-1
Sensitive Receptors

Receptor	Receptor Type	Receptor Dust Sensitivity	UK NGR (m)		Distance from	
			X	Y	Permit Boundary	Nearest Potential Dust Source
DR_1	Long-term Carpark	High	353110	180183	245 m	350m
DR_2	Commercial Premises	Medium	353307	180081	75m	190m
DR_3	Commercial Premises	Medium	353429	180067	145m	215m
DR_4	Commercial Premises	Medium	353574	179995	210m	280m
DR_5	Commercial Premises	Medium	353504	179867	85m	195m
DR_6	Commercial Premises	Medium	353673	179868	245m	365m
DR_7	Commercial Premises	Medium	353793	179797	355m	490m
DR_8	Commercial Premises	Medium	353413	179471	280m	435m
DR_9	Commercial Premises	Medium	352935	179954	285m	475m
DR_10	Public Footpath	Low	353077	180061	185m	295m

A review of the BCC Planning Portal has been conducted; no additional receptors are proposed within the Site locale.

2.3.2 Ecological Receptors

There are no European, International or Local designated ecological sites within 1km of the Site. Therefore in reference to the IAQM Mineral Dust guidance, an assessment of disamenity dust on ecological receptors is not required.

2.4 Meteorological Conditions

The most important climatic parameters governing the release and dispersal of fugitive emissions from the site are wind speed, direction, and rainfall:

- Wind direction determines the broad direction of dispersal;
- Wind speed affects ground level concentrations by increasing the initial dilution of pollutants in the emission. It will also affect the potential for dust entrainment; and
- Rainfall naturally supresses dust release; >0.2mm of rainfall a day considered sufficient to suppress dust.

A wind rose for Filton meteorological recording station (5-year average, 2012-2016 inclusive), located approximately 8km to the east of the Site, is presented in Figure 2-2. It is evident that winds from the west and southwest sectors are predominant in the area, and therefore locations to the northeast and east of the site are most likely to be impacted by potential dust emissions.

Relevant rainfall data applicable to the site has been obtained from the Meteorological Office website[4] of UK mapped climate averages for 1991-2020. The annual average days of rain ≥0.2mm for the area of the site is 180 to 200 days per year, comprising 49% to 55% of the year.

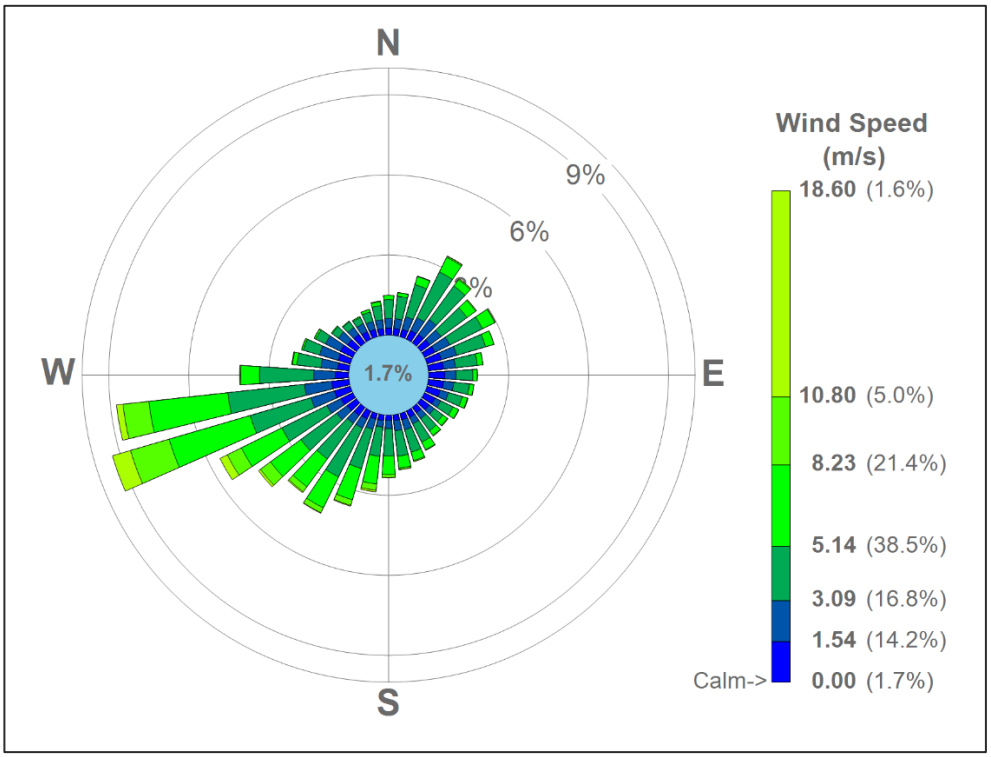

Figure 2-2
Wind Rose from Filton Meteorological Station (2012-2016 Average)

[4] Met Office, https://www.metoffice.gov.uk/research/climate/maps-and-data/uk-climate-averages, accessed February 2023.

3.0 Operations at Avonmouth Waste Transfer Station

This section identifies activities / sources of dust / PM emissions at the operational Site. Figure 3-1 illustrates the site layout in relation to the permit boundary (bounded in green below) and the Site locale.

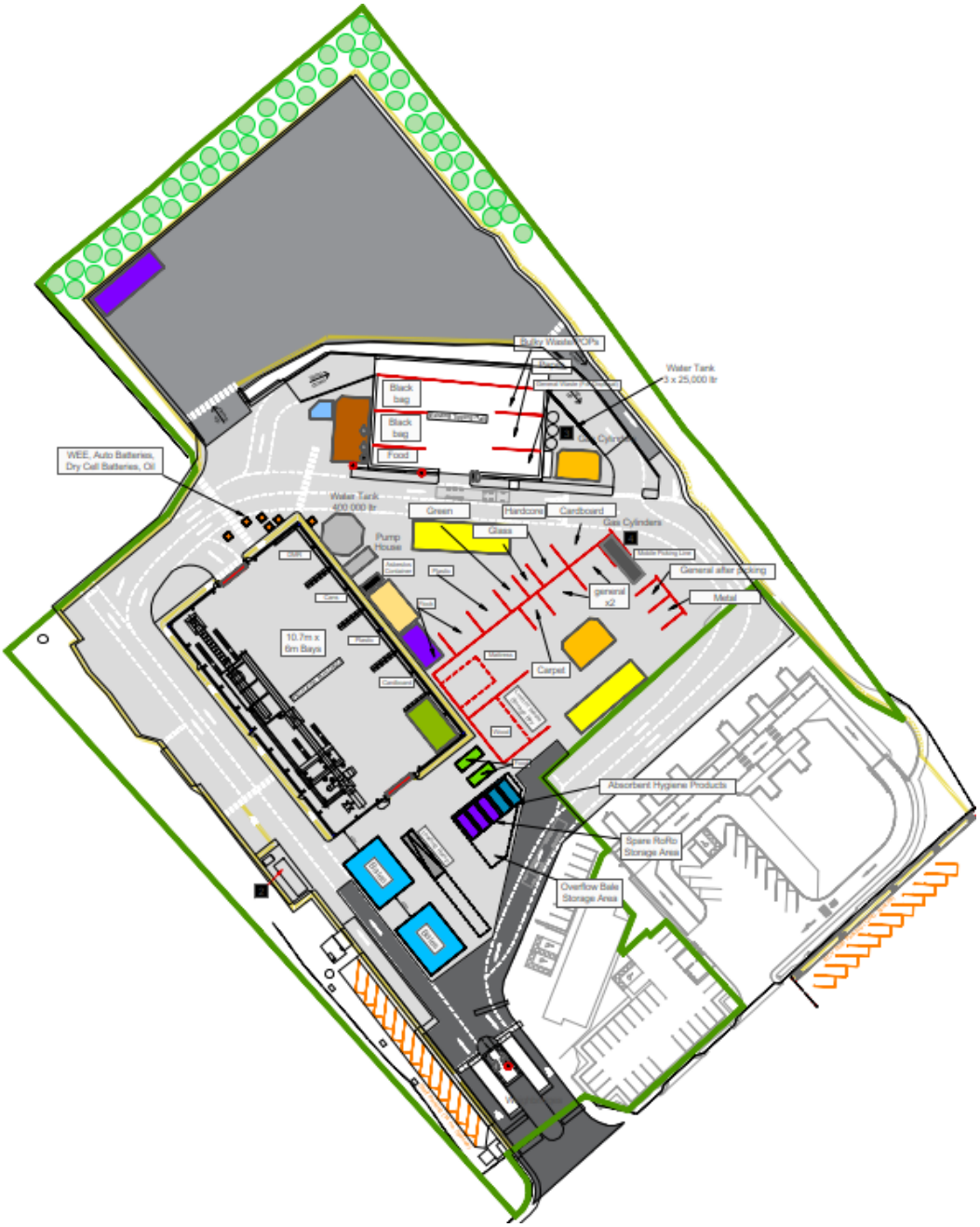

Figure 3-1
Site Layout

3.1 Site Operations

3.1.1 Hours of Operation

The current extant planning approval does not restrict the activities at the Site. Therefore, the Site may operate 24hr per day, 7 days per week. However, the current operational hours are 05:00 to 00:00 Monday to Sunday.

3.1.2 Deliveries

Avonmouth WTS is designed to receive a variety of waste types, with manual and mechanical sorting, shredding and baling undertaken on Site prior to bulk removal. Wastes are delivered to the Site in secure, steel sided lorries, skips and other vehicles (such as RCVs/RRVs as part of the ongoing municipal waste collection contract). The Site typically receives approximately 150,000 Tonnes Per Annum (TPA) of waste, comprising mainly:

- Non-Hazardous household wastes;
- Industrial and commercial wastes;
- Dry mixed recyclables (i.e. cardboard, plastic, paper);
- Green waste; and
- Segregated hazardous wastes.

There is also provision at the Site for receipt of End-of-Life refrigeration units (ELFs), gas bottles, hardcore, soils, scrap metals, glass, timber, furniture, plastics, paper, card, tyres, batteries and Waste Electrical and Electronic Equipment (WEEE).

A full list of the waste types, including EU codings and dust potential can be found in Annex 03[5].

All waste types are unloaded within the Waste Transfer Building (WTB), Waste Processing Building (WPB) or within the dedicated bay system outside.

3.1.3 Treatment of material

Only limited processing operations would be undertaken at the WTS as the primary function of the facility is for the acceptance, loading and transfer of materials to other authorised disposal or recovery facilities elsewhere. The limited processing operations would comprise crushing, compacting, baling, bulking, shredding, and limited manual and mechanical sorting and separation of wastes.

3.1.4 Storage of material

Recyclables (such as cardboard/paper and plastics/tins) would be stored within the WPB, and black bin waste, and food waste within the existing WTB. Food waste is deposited directly into the externally located dedicated sealed skips, or within the designated bay in the WTB. The remaining waste types (such as hardcore, stone and soil, metals, glass, timber, tyres and green waste are stored outside within the designated concrete bays.

Absorbent Hygiene Products (AHPs) are accepted on site bagged and then deposited directly into the externally located dedicated sealed skips.

Dry Mixed Recyclables (DMR) will be accepted within the building for processing. Wastes such as timber, furniture, scrap metal, batteries and WEEE may be removed from the tipped loads within the WPB, segregated/sorted, and subsequently stored either inside the WPB or in the relevant concrete bays area outside.

Waste gas bottles are stored securely outside the WPB, in a secure free-venting condition pending collection by one of the specialist services available. In the event of any approved source-segregated clinical waste being accepted, this will be stored in enclosed leak-proof containers on an impermeable base.

The ELF storage area holds local collections of refrigeration units. Units are stacked 2-units high, or 3.5 metres, whichever is the greater.

WEEE are stored separately in stillages.

Segregated tyres are stacked or containerised adjacent to the outside bays in stack volumes less than 50m^3.

[5] Section 3.2.2: Working Plan Avonmouth TS.

Under normal operating conditions putrescible waste is typically transported offsite within 48 hours of receipt, and for non-putrescible wastes within 2-6 weeks. Over the weekends putrescible waste may be retained at the site for a longer period (typically 72 hours). During bank holiday weekends waste may be retained at the site for up to 96 hours.

3.1.5 On-site transportation

There would be vehicle movements along the hard-standing areas of the Site during operational hours. Vehicle movements would arise from waste import, handling, stockpiling and export operations. The vehicle movements at the site would be primarily as a result of arctics, RCVs/RRVs and Street cleaning caged vans / tippers importing or exporting waste, as well as mobile plant in operation for handling and stockpiling operations (as detailed in Table 3-1 below).

3.1.6 Off-site transportation

There would be vehicle movements from the Site on to the local road network during operational hours. Vehicles leaving the Site on to the local road network would arise as a result of waste export operations. The vehicles leaving the site would typically comprise arctics, RCVs/RRVs and Street cleaning caged vans / tippers.

The areas of the site which would be accessed by the arctics, RCVs/RRVs and Street cleaning caged vans / tippers accessing the site would be hard paved. Good housekeeping measures (as outlined in Table 4-2) would ensure that stockpiles are suitably managed to stay within the designated bays.

3.1.7 Mobile Plant and Equipment

Particulate matter can be a by-product of internal combustion and the Site uses several items of plant with internal combustion engines. Table 3-1 presents the type, model and emission ratings for the mobile plant and equipment used on Site:

Table 3-1
Mobile Plant and Equipment

Description	Make	Model	Emission Rating
RCVs/RRVs	Various[(A)]	Various[(A)]	Euro VI compliant
Street cleaning caged vans / tippers	Various[(A)]	Various[(A)]	Unknown[(B)]
Other HGVs	Various[(A)]	26 tonne (various[(A)])	Unknown[(B)]
	Various[(A)]	16 tonne (various[(A)])	Unknown[(B)]
	Various[(A)]	15 tonne (various[(A)])	Unknown[(B)]
Mobile tele-handler	Various[(A)]	Various[(A)]	Unknown[(B)]
Mobile tele-truck	Various[(A)]	Various[(A)]	Unknown[(B)]
Shredder	Lindner	Urraco 75dk	Euro V & IIIA complaint
Loading Shovel	CAT	Various	Euro V
Material handling 360	Sennebogen	Various	Euro V
Bergmann Role packer	Bergmann	Various	Tier 4 Stage 111B

Description	Make	Model	Emission Rating
Fork lift truck	Jungheinrich	Various	Zero electric
Material recovery machine	TBC	TBC	Zero electric
Bale press machine	Godswill	GB-1575TR	Zero
Mobile Picking Units	Kiverco	PS122 Picking Station	Tire 4 stage 11b

Table Notes:
(A) The specific make and/or model of this type of vehicle which might be present at the site is not currently known.
(B) As the specific make and/or model of this type of vehicle is currently unknown the emission rating cannot be determined.

3.2 Potential Dust Sources and Magnitude

In review of the site operations outlined in Section 3.1 above, potential sources of dust at the Site and their potential magnitude of dust emissions have been identified, and are presented in Table 3-2 below. The potential magnitude of dust emissions for each source has been determined in reference to the IAQM Mineral Dust guidance, as well as consideration of the control measures in place.

Table 3-2
Dust Release Inventory

Dust Source	Potential Magnitude of Dust Emissions	Reasons / Controls
Road vehicles entering and leaving the site, tracking material out onto public highway	Small	• Paved access road. • Minimal trackout from Site due to hardstanding haul roads. • Municipal waste and recyclables generally have a low dust potential, reducing the significance of dust re-suspension by vehicles. • Nearest major road approximately 560m SSW of the Site.
Internal vehicle / plant movements within the Site on the hardstanding surface	Small	• Hardstanding haul roads. • Municipal waste and recyclables generally have a low dust potential, reducing the significance of dust re-suspension by vehicles.
Debris falling from loaded (covered) vehicles	Small	• Municipal waste and recyclables generally have a low dust potential, reducing the significance of dust re-suspension during transit. • Vehicles are covered when entering or exiting the site (sheeting or enclosed vehicles).
Unloading and loading of materials within the baling loading areas	Small	• Baled materials have a low dust potential, reducing the significance of dust re-suspension during loading transit.
Unloading and loading of materials within the WTB, WPB and outside	Small	• Municipal waste and recyclables generally have a low dust potential. • Tipping heights are minimised where possible. • Atomising dust suppression in WTB. • Fugitive dust releases are contained within the building, preventing wind whipping (through application of a physical barrier around the stockpile). • Roller shutter doors help maintain containment during vehicle ingress / egress. On WPB.

Dust Source	Potential Magnitude of Dust Emissions	Reasons / Controls
Shredding of green waste, wood and mattresses	Medium	• Green waste, and wood waste can have a high dust potential if stored for extended periods (i.e. if allowed to dry out and decompose). • Green waste and wood waste is removed from the Site regularly. • Potential for fugitive releases during periods of dry / windy weather. • Shredding operations are undertaken within an impermeable concrete area. • Water suppression will be used to dampen the stockpiles as required (i.e. during periods of dry / windy weather) to mitigate fugitive releases. • Restriction of vehicles movements within the bunded area, clear designation of stockpile base.
Mobile picking station areas	Small	• The picking station provides a covered and ventilated cabin; therefore a small dust emission potential can be applied here.
Storage of mixed municipal waste, waste construction materials, dry mixed recyclables, glass and green waste materials	Medium	• Glass recycling generally has a medium dust potential. • Construction material generally has a medium/high dust potential. • Green Waste generally has a medium/high dust potential (dependant on moisture content) • Green waste, mattresses and wood shredding activities are ongoing on the Site. The emission potential from these activities is considered to be 'medium' as covered above. • Mixed municipal waste and Mixed recyclables generally have low dust potential; • Fugitive releases during periods of dry / windy weather. • All waste types are stored either indoors or outdoors within impermeable concrete areas. • Water suppression will be used to dampen the stockpile where required to mitigate fugitive releases (i.e. during periods of dry / windy weather).
Crushing of aggregates	Medium	• Crushing of aggregate (such as construction materials) can have a high associated dust potential if uncontrolled.

Dust Source	Potential Magnitude of Dust Emissions	Reasons / Controls
		• Crushing operations would be intermittent, and undertaken on a periodic 'campaign' basis as required. In consideration of the current site operations this is anticipated that this may typically be required a few times per year. • Potential for fugitive releases during periods of dry / windy weather. • Water suppression will be used to dampen the stockpiles as required (i.e. during periods of dry / windy weather) to mitigate fugitive releases. • Crushing operations are undertaken within an impermeable concrete area. • Restriction of vehicles movements within the bunded area, clear designation of stockpile base.
Exhaust emissions from onsite vehicles / plant and from offsite HGVs	Small	• The RCV fleet accessing the site is Euro VI compliant. • Small number of vehicles in use at the Site (see Table 3-1).

4.0 Dust and PM_{10} Management

Potential emissions of dust and PM_{10} from the Site operations are mitigated through adoption of a range of operational and designed-in dust control measures. These measures have been determined in consideration of the Source-Pathway-Receptor routes, as outlined in Section 4.1 below.

4.1 Source-Pathway-Receptor Routes

The pathway for the majority of the releases is atmospheric dispersion; primary from the dust/particulate source (e.g. wind whipping of stockpiles and handling operations). The source-pathway-receptor routes are detailed in Table 4-1.

Table 4-1
Source-Pathway-Receptor Routes

Source	Pathway	Receptor	Type of Impact	Where Relationship Can Be Interrupted
Road vehicles entering and leaving the site, tracking material out onto public highway	Falling from lorries. Trackout from the Site onto the public road network by HGVs.	Medium sensitivity receptor (DR_2, commercial) located within 75m of the permit boundary.	Visual soiling, also consequent resuspension as airborne particulates.	Internal haul routes are tarmac, therefore the accumulation of debris on vehicles whilst on Site is anticipated to be minimal. All HGVs transferring material to or from the Site shall be covered (contained vehicles or sheeted). 'Control of Mud and Debris' forms part of the Sites Working Plan.
Material within the WTB and WPB (tipping, storage, removal)	Atmospheric dispersion of exhaust air from the WTB.	Medium sensitivity receptors located within 190m of the WTB.	Visual soiling, also consequent resuspension as airborne particulates.	The building facilitates a high level of containment of dust emissions. Roller-shutter-doors in place to minimise escape of dust during vehicle ingress / egress events.

Source	Pathway	Receptor	Type of Impact	Where Relationship Can Be Interrupted
Tipping, storage and removal of glass recycling and green waste (outdoors)	Atmospheric dispersion from external tipping, storage and removal operations.	High sensitivity receptors located within 160m of the designated glass and green waste storage areas.	Visual soiling, also consequent resuspension as airborne particulates.	Monitoring of meteorological conditions to ensure activities in proximity / upwind of offsite receptors are minimised / delayed during exceptionally dry / windy conditions. Minimise source dust potential by means of minimising drop heights and shielding of active stockpiles from wind whipping (retaining walls provide shielding from winds on 3 sides). Water suppression will be used to dampen stockpiles where required (i.e. during periods of dry / windy weather), minimising the fugitive dust source potential. Restriction of vehicles movements within the bunded area, clear designation of stockpile base to mitigate resuspension of dust by vehicles.
Exhaust emissions from onsite vehicles / plant and from offsite HGVs.	Atmospheric dispersion.	High sensitivity receptors located within 75m of the permit boundary.	Airborne particulates.	The RCVs/RRVs accessing the site are Euro VI compliant. Only a small number of operational plant in use at the Site.

4.2 Control of Fugitive Dust/Particulate Emissions

Dust control measures have been determined in consideration of the source-pathway-receptor routes outlined in Section 4.1 above. The key designed-in and operational dust control measures in place at the Site are summarised below:

- Waste acceptance procedures are in place to avoid receipt of unsuitable (i.e. excessively dusty) waste types;
- Particularly dusty loads will be classified as non-conforming waste and the appropriate procedure will be followed;
- Internal haul routes and operational areas are hardstanding, therein minimising resuspension of dust from the movement of vehicles at the Site;
- Internal haul routes are hardstanding, therein minimising accumulation of dust/dirt on vehicles visiting the Site and reducing the potential risk of trackout of dust and dirt from the Site onto the public road network;

- Tipping, stockpiling and bulk removal of waste is undertaken either:
    - Within the WTB or WPB which are enclosed and ventilated, accessed via roller shutter doors (WPB only) or
    - Designated outdoor bunded areas which provides shelter from the wind to reduce dust emissions.
- Drop heights for the tipping or handling of waste types are minimised where possible to reduce resuspension of dust;
- Stockpiles are maintained at a height lower than the height of the retaining walls. A freeboard space of 0.5m is maintained at the top, sides and front of all bays on site. Lines drawn on the inside of each bay mark the maximum height and width of each stockpile ensuring the maximum volumes are adhered to;
- Material storage areas comprise an impermeable hardstanding surface, thus minimising suspension of dust from stockpiling and handling operations;
- Daily Site walkovers are undertaken by the Site supervisor who will respond immediately in the event of any significant dust problem; and
- Any complaints from neighbours or other persons will be investigated and dealt with as necessary (road sweeping, water suppression and/or varied operational practice).

Further details on all dust control measures implemented are outlined in Table 4-2 below.

Table 4-2
Control Measures for Dust/PM_{10} and Other Emissions

Abatement Measure	Description / Effect	Overall Consideration and Implementation	Trigger for Implementation
Site / process layout in relation to receptors	The Permitted Operational Area is located in the centre of the Site. Majority of operations are taking place in an enclosed building eliminating pathways to sensitive receptors.	In combination with other measures to reduce dust and particulate generation this assists to maximise the distance between the source and receptor, reducing the pathway effectiveness.	Implemented at all times that the Site is operational.

Abatement Measure	Description / Effect	Overall Consideration and Implementation	Trigger for Implementation
Site speed limit and minimisation of vehicle movements on site	Reducing vehicle movements reduces emissions from vehicles. A speed limit of 5mph is enforced on internal haul roads which reduces re-suspension of particulates by vehicle movements.	Implement as part of good practice and incorporated into training / induction process. Clearly presented around the Site.	Used at all times that the site is operational.
Minimising drop heights for material	Minimisation of the height at which materials are handled reduces the distance over which debris, dust and particulates could be blown and dispersed by winds.	Implement as part of good practice and incorporated into the training process.	Implemented at all times that the Site is operational. During periods of prolonged dry and windy weather conditions, consideration given to visual assessment of dust plumes being generated from existing drop heights and reduced / ceased as required.
Good housekeeping	A consistent, regular housekeeping regime is in place to ensure Site is regularly checked and issues remedied to prevent and remove dust and particulate build up: The WTB and WPB floors are cleared of all wastes in a phased sequence that ensures all sections of the operational area are cleared completely at least once a fortnight. The cleared areas are swept clean and washed down as necessary to remove any adhering solids.	Easy to implement and requires minimal equipment. Encourages a sense of pride and satisfaction amongst the staff which promotes vigilance and a positive culture.	Implemented at all times that the Site is operational.

Abatement Measure	Description / Effect	Overall Consideration and Implementation	Trigger for Implementation
Sheeting of loaded vehicles (unless enclosed)	Prevents the escape of debris, dust and particulates from vehicles as they travel.	Vehicles would be checked upon entering and prior to leaving the Site.	Implemented at all times that the site is operational.
Surfacing of vehicle routes	Site haul roads and access roads are hardstanding. The operational areas have an impermeable surface.	Hardstanding surfaces reflect industry best practice.	Surfaces are periodically inspected for signs of wear or damage. Remedial works will be commissioned as required.
Special measures for materials with a high dust potential	It is anticipated that the majority of the material to be received at the Site will have a small-to-medium potential for the generation of dust emissions. Where it is identified that materials with a high dust potential have been received (i.e. very dry green material/construction materials), a number of special measures will be put in place to reduce the handling and retention time of that material.	Where materials are identified to have a high dust potential are received/stored at the Site (such as very dry green waste/construction waste), dust suppression will be utilised , to keep the material damp, thus reducing the dust potential. The Site operations are managed such that materials identified to have a high dust potential are removed from the Site within 24-hours.	Implemented where materials are identified to have a high dust potential.
Marking of Stockpile Base	Clear delineation of stockpile areas minimises the risk of vehicles traversing across loose particulates on the ground and causing re-suspension or re-distribution across the Site.	Easy method to implement, with clear line marking provided on the impermeable concrete at the storage areas.	Implemented at all times when the Site is operational.

Abatement Measure	Description / Effect	Overall Consideration and Implementation	Trigger for Implementation
Restriction of vehicles on unmade ground	Restricting the number of vehicles allowed to traverse on non-hardstanding surfaces. This significantly reduces the potential for material to be tracked across the Site and resuspended.	There are no areas of non-hardstanding ground at the Site. HGV access is limited to the hardstanding haul routes and is clearly signposted.	Implemented at all times when the Site is operational.
Dust Suppression	Water suppression can be a highly effective way of reducing the dust potential at-source, eliminating the pathway to the receptors.	Water suppression is available at all material storage areas.	Implemented as required, to be determined by the Site Manager by monitoring of meteorological conditions and identification of material received with a high dust potential. In the event that the water suppression is not operational for a short period of time (i.e. malfunction or maintenance) where it is identified to be required, handling and processing operations would be temporarily suspended.
Visual Dust Monitoring	Visual dust monitoring provides a cost-effective method of monitoring that allows for pro-active, immediate response to dust generating events.	Daily visual assessment is undertaken by site operatives for airborne or deposited dust. Daily assessments include the following areas: • Perimeter walk around for visible dust plumes travelling offsite; • If required, offsite walkover surveys; • Storage areas; and • Site haul roads, access road and public highway near Site exit.	In the event that visual dust monitoring identifies dust being transported beyond the Site boundary and mitigation measures fail to resolve the issue, all dust generating activities will cease until the source of the dust has been identified and steps taken to prevent the off-site emissions. Additional visual monitoring will be undertaken where:

Abatement Measure	Description / Effect	Overall Consideration and Implementation	Trigger for Implementation
		Site operatives who undertake visual assessments have appropriate training. Details recorded would include (as a minimum): • Weather conditions (qualitative wind speed, direction, rainfall) • Current site operations (location of activities); • Identification of any significant dust on site or dispersion beyond the site boundary; and • Additional mitigation measures put in place, if required.	Particularly dusty conditions are detected on site by operational staff; Dust emissions are evident near the boundary during any activity; and In response to complaints being received – in this situation off-site monitoring must also be carried out at appropriate locations.

4.3 Other Considerations

4.3.1 Water Usage / Availability

Usage of water for dust suppression is sporadic and short-term as its requirement is heavily dependent on both weather conditions and the dust potential of received material. On this basis, it can be sensibly determined that there is not a supply issue with regards to water for dust suppression.

Water for use in dust suppression is sourced from the mains. The Site has provision of a 400m^3 water tank and 3 25m^3 tanks which may be used for dust suppression purposed during times of drought if restrictions are put on industrial water used by BCC.

4.4 Responsibility for Implementation

A suitably trained Site Manager is on Site during operational hours who is responsible for the implementation of dust management measures where required. Responsibilities are allocated to specific personnel to ensure dust generation is effectively controlled as outlined in Table 4-3 below.

Table 4-3
Dust Management Responsibilities

Actions	Responsibility
Monitoring meteorological forecast	Site Manager
Routine daily visual dust monitoring	Site Manager
Routine monthly visual dust monitoring	Site Manager
Coordinating plant area cleaning	Site Manager
Application of plant dust suppression	Site Manager
Completing dust event forms	Site Manager
Liaison with public and regulator	Site Manager
Coordinating dust management plan updates	Site Manager
*The procedure for the Site Manager to review feedback from visual monitoring will be to review the visual monitoring record in the Site Logbook.	

All personnel on Site understand their responsibility to ensure the generation of dust is minimised. Each employee is made aware of the importance of dust control and the most effective measures available to minimise such emissions either as part of the induction process, or as a specific training exercise. Training incorporates the following aspects:

- Waste types that can be accepted at the site, as outlined within the Site's permit;
- Key activities with the highest potential for dust generation;
- Methodology of visual dust assessments;
- Importance of unofficial visual dust assessments during everyday work and how to report visible dust emissions;

- How to respond to a complaint from a member of the public;
- The complaints protocol and escalation method;
- What to do in the event of a dust emission incident, and who to inform;
- The importance of the DMP, its 'active' format and its location;
- Any dust monitoring methods incorporated on Site at the time;
- Overview of the prevailing winds and how this affects daily operations;
- Key aspects to look out for during routine operations with regard to dust generating activities;
- Cleaning regime on site (routine and intermittent);
- Regime of maintenance of onsite plant;
- Routine measures that can be incorporated into daily work schedules to minimise dust and emissions (i.e. no idling, minimise drop heights, traversing across base of stockpiles, covering of loads); and
- Additional measures that can be undertaken to minimise dust and emissions (i.e. notification of relevant person visual dust plumes are identified, remedial actions).

Refresher training is provided every two years.

4.5 Visual Dust Monitoring

Visual dust monitoring provides a cost-effective method of monitoring that allows for pro-active, immediate response to dust generating events.

Visual assessment is undertaken on a daily basis by Site operatives for airborne or deposited dust. Site operatives who undertake the visual dust assessments will receive appropriate training. Daily assessments include, as a minimum, a visual assessment of the following areas (identified as areas / activities with the highest potential for dust generation):

- Perimeter walk around;
- If required, offsite walkover surveys;
- Material storage areas;
- Internal haul routes; and
- Access road and public highway near Site exit.

Based upon the size of the Site, it is considered viable for daily monitoring to include a walkover of the entire perimeter (permit boundary) as the routine. If this is not possible, a minimum of 8 perimeter locations shall be assessed, including a minimum of one per boundary (i.e. northern / western / southern / eastern). The location of the monitoring points will be determined based upon the wind direction and the location of dust generating activities being undertaken on Site / off Site at the time.

All visual monitoring is recorded in the daily logbook and made available to the EA as required. Details recorded include (as a minimum):

- Weather conditions (qualitative wind speed, direction, rainfall);
- Current site operations (location of activities);
- Identification of any significant dust on site or dispersion beyond the site boundary; and
- Additional mitigation measures put in place, if required.

An increase in the frequency and scale of visual monitoring will be undertaken where:

- Particularly dusty conditions are detected on site by operational staff;
- Dust emissions are evident near the boundary during any activity; and/or
- In response to complaints being received – in this situation off site monitoring will also be carried out at appropriate locations.

The results of the visual dust monitoring will be monitored by the Site management. Where it is identified that significant dust levels are present on-site, or dust is visible beyond the Site boundary, Site management will ensure that the appropriate mitigation measures are adopted in response. In the event that visual dust monitoring identifies dust being transported beyond the Site boundary and mitigation measures fail to resolve the issue, all dust generating activities will cease until the source of the dust has been identified and steps taken to prevent the off-site emissions.

In the event that continuous offsite dust emissions are detected (i.e. more than 2 days in a row) alongside complaints being received by members of the public, correspondence with the EA will be undertaken to discuss subsequent steps.

It is not proposed to undertake any visual dust monitoring outside of the operational hours of the Site. However if monitoring was specifically required outside of the operational hours, a third-party monitoring company could be commissioned to undertake monitoring.

5.0 Dust Complaints Procedure

Complaints may be notified to the site either during or after an event, directly by the complainant or indirectly through a regulator (such as the Local Planning Authority or Environmental Health Department) who was notified.

Complaint records will include the following (recorded in the site logbook):

- Date, time, and name of complainant (if given);
- Nature of complaint;
- Locality of complaint; and
- A summary of the investigation and actions taken and the outcome.

Complaint response will have the objective of investigating the incident and preventing any continuing issue, for example by putting in place additional control measures to prevent re-occurrence of the incident and updating the DCS. Complainants will be informed of the findings of investigations and the actions taken (if contact details are provided at the time the complaint is made).

Investigations will include but not be limited to:

- Visit by site personnel to location of complainant to verify issue (if the complaint is made 'after' rather than 'during' a dust event this may not be possible);
- Review of activities at time of incident to investigate potential sources;
- If dust event is occurring or a recurring event undertake more frequent targeted on-site and off-site visual monitoring and record findings;
- Review of control measures and management actions at the time of the incident;
- Review of meteorological conditions at the time of the incident; and
- Reporting of findings (using Appendix 02 Example Dust Event Form or site logbook).

All complaints will be acknowledged within 2 working days and a response provided in line with Bristol Waste's Complaints Procedure. An example Dust Event Form is included in Appendix 02. Where a number of complaints are received (or recurring complaints are received), the complaints investigation would be escalated to the Site Manager, who will lead an investigation seeking to rectify the issue at the earliest opportunity. The Site Manager may engage the services of a specialist contractor to investigate where appropriate.

5.1 Engagement with the Community

The Site Manager (or nominated representative) will act as liaison with the regulator and local community for issues relating to dust nuisance.

The nominated representative will respond promptly to all complaints by undertaking an investigation into the dust event, including weather conditions, operations on Site and mitigation measures in place at the time of the complaint.

Complainants will be informed of the investigation.

Following the receipt of a complaint, the details of the complaint will be recorded (an example of a compliant record form is presented in Appendix 01), a Dust Event Form will be completed, and the results of the subsequent investigation kept in the Site Logbook.

Liaison with local residents and businesses can be undertaken through posts on Bristol Waste's website.

5.2 Management Responsibilities

There will be a trained Site Manager on site during operational hours, responsible for dealing with complaints (i.e. receipt, recording and investigation).

Contact details will be available at all times at the site entrance, with details (including a phone number / email address) provided for both operational hours and out-of-hour periods.

5.3 DMP Update and Review

This DMP is a controlled document, and forms part of the Environmental Management System (EMS). The DMP will be reviewed on an annual basis. However, the DMP is intended to be a 'live' document which serves as a reference during daily operations, and as such will be updated on a more frequent basis should the following occur:

- Significant changes are made to the plant or operational practices;
- The regulator requests that the DMP is updated; or
- Complaints are received, which on subsequent investigation result in the identification of further control measures or remedial action, in addition to those set out within this DMP.

APPENDIX 01

Dust Complaints Form

Complainant Details	
Complainant Name:	
Address and postcode:	
Complainant contact details (telephone/ email):	
Date & time of complaint:	
Complaint reference number:	
Complaint details:	
Investigation Details	
Investigation carried out by:	
Investigator position/role:	
Date & time of investigation:	
Weather conditions at time of complaint and investigation:	
Wind speed and direction at time of complaint and investigation:	
Investigation findings:	
Feedback given to the EA and/or local authority?	
Date feedback given:	

Feedback given to complainant and/or public?	
Date feedback given:	
Review and improve	
Improvements needed to prevent a reoccurrence:	
Proposed date for completion of required improvements:	
Actual date of completion (to be filled in once completed):	
If proposed date for completion of improvements was missed, state why:	
Does the dust management plan need updating?	
Date that the dust management plan was updated (if applicable):	
Closure	
Site manager review date:	
Site manager signature (to confirm no further action required):	

APPENDIX 02

Example Dust Event Form

Dust Event Form	
Name of Author	
Description of Event e.g. Complaint registered (name and address), or location of the visible dust crossing the site boundary	
Date / Time	
Activities taking place during time of event	
Dust mitigation techniques employed at time of event	
Summary of weather conditions leading up to and during the event	
Details of corrective actions	
Notes	

APPENDIX 03

Detailed List of Permitted Waste types

List of Waste Codes	Associated Dust Potential
20 03 01- mixed municipal waste	Small
20 01 01 - separately collected paper & cardboard	Medium
20 01 02 - separately collected glass	Medium
20 01 08 - separately collected biodegradable kitchen & canteen waste	Negligible
20 01 10 - separately collected clothes	Small
20 01 11- separately collected textiles	Small
20 01 25 - edible oil & fat	Negligible
20 01 34, 16 06 04 & 16 06 05 - batteries and accumulators (non-hazardous)	Negligible
16 06 04 - alkaline batteries (except 16 06 03)	Negligible
16 06 05 - other batteries and accumulators	Negligible
20 01 36 - separately collected WEEE (non-hazardous — except ELFs)	Small
20 01 38 - separately collected wood (non-hazardous)	Medium
20 01 39 - separately collected plastics	Small
20 01 40 - separately collected metals	Small
20 01 41 -separately collected wastes from chimney sweeping	Low to High
20 01 99 – offensive waste from non-healthcare sources (AHPs)	Negligible
20 02 01 - biodegradable waste (from gardens, parks & cemeteries)	Small
20 02 02 - Soil & stones (from gardens, parks & Cemeteries)	High
20 02 03 - non-biodegradable waste (from gardens, parks & cemeteries)	Small
20 03 02 - Waste from markets	Small
20 03 03 - street cleaning residues	Small
20 03 07 - bulky waste	Small
19 08 01 - Screenings	Small
19 12 01 - paper & cardboard from external mechanical treatment of waste	Medium
19 12 02 - ferrous metal from external mechanical treatment of waste	Small
19 12 03 - non-ferrous metal from external mechanical treatment of waste	Small
19 12 04 - plastic & rubber from external mechanical treatment of waste	Medium
19 12 05 - glass from external mechanical treatment of waste	Medium
19 12 07 - non-hazardous Wood from external mechanical treatment of waste	Medium
19 12 08 - textiles from external mechanical treatment of waste	Small
18 01 01 & 18 02 01 - sharps from health care	Small
18 01 04 & 18 02 03-general health care wastes (dressings, casts, linen, nappies etc)	Small
17 01 01 - Concrete from excavation, construction & demolition work	High
17 01 02 - bricks from excavation, Construction & demolition work	High
17 01 03 - tiles & ceramics from excavation, construction & demolition work	High

17 01 07 - mixtures of non-hazardous excavation, construction & demolition waste	High
17 02 01 - Wood from excavation, Construction & demolition work	Medium
17 02 02 - glass from excavation, construction & demolition work	Medium
17 02 03 - plastic from excavation, construction & demolition work	Small
17 03 02 - non-hazardous bituminous mixtures	Small
17 04 01 - copper, bronze, brass	Small
17 04 02- aluminium	Small
17 04 03 – lead	Small
17 04 04 - zinc	Small
17 04 05 - iron & steel	Small
17 04 07 - mixed metals from excavation, construction & demolition work	Small
17 04 11 - electrical cables	Small
17 05 04 - Soil & stones from excavation, construction & demolition work	Medium
17 06 04-non-hazardous insulating materials	Medium
17 03 0 - non-hazardous bituminous mixtures	Small
17 08 02 - non-hazardous gypsum based construction wastes	Small
17 09 04 - mixed non-hazardous wastes from excavation, construction & demolition	Medium
16 01 03 - tyres	Medium
16 01 06 - bicycles & other non-hazardous vehicles	Small
16 01 12 - car brake pads containing no dangerous substances	Small
16 02 14 - non-hazardous WEEE	Small
16 02 16 - non-hazardous components from WEEE	Small
16 05 05 - gas cylinders containing no dangerous substances	Small
15 01 01 - paper & cardboard (packaging)	Medium
15 01 02 - plastic packaging	Small
15 01 03 - wooden packaging	Small
15 01 04 - metallic packaging (e.g. steel cans, aluminium cans & foil)	Small
15 01 05 - composite packaging	Small
15 01 05 - composite packaging	Small
15 01 07 - glass packaging (e.g. mixed & segregated coloured bottles and jars)	Small
15 01 09 - textile packaging	Small
15 02 03 - absorbents, filter materials, wiping cloths and protective clothing containing no dangerous substances	Small
13 02 05* - mineral based non-chlorinated engine, gear and lubricating oils	
13 02 08* - other engine, gear and lubricating oils	
02 01 03-plant tissue from agriculture	Small
02 01 04-plastics from agriculture	Small
12 01 07 - forestry wastes	Small

02 01 03 - plant tissue waste	Medium
02 01 04 - waste plastics (except packaging)	Small
02 01 07 - waste from forestry	Medium
02 01 10 - waste metals from agriculture	Small
02 01 99 - other wastes from agriculture	Small
02 02 03 - materials unsuitable for consumption or processing	Small

The dust potential of the different types of material have been determined in reference to SLR's experience at similar sites across the UK. The dust potential of material is often linked to the moisture content of material; the higher the moisture content the lower the dust potential. Recyclables (specifically glass) tend to have a lower moisture content than mixed municipal wastes (which generally have a higher organic content).

It is noted that there can be a great deal of variation in the dust potential between loads of received green material. Green waste loads can be composed entirely of either new growth (low dust potential) or brittle and aged material (moderate dust potential).

EUROPEAN OFFICES

AYLESBURY
T: +44 (0)1844 337380

BELFAST
belfast@slrconsulting.com

BIRMINGHAM
T: +44 (0)121 2895610

BONN
T: +49 (0)176 60374618

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

BRISTOL
T: +44 (0)117 9064280

CARDIFF
T: +44 (0)2920 491010

CHELMSFORD
T: +44 (0)1245 392170

DUBLIN
T: +353 (0)1 296 4667

EDINBURGH
T: +44 (0)131 335 6830

EXETER
T: +44 (0)1392 490152

FRANKFURT
frankfurt@slrconsulting.com

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

LEEDS
T: +44 (0)113 5120293

LONDON
T: +44 (0)203 8056418

MAIDSTONE
T: +44 (0)1622 609242

MANCHESTER
T: +44 (0)161 8727564

NEWCASTLE UPON TYNE
T: +44 (0)1844 337380

NOTTINGHAM
T: +44 (0)115 9647280

SHEFFIELD
T: +44 (0)114 2455153

SHREWSBURY
T: +44 (0)1743 239250

STIRLING
T: +44 (0)1786 239900

WORCESTER
T: +44 (0)1905 751310