



Clockhouse Quarry Restoration Environmental Permit Application

Dust & Emissions Management Plan

SUEZ Recycling and Recovery UK Limited

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Basis of Report

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1.0 Introduction

This Dust and Emissions Management Plan (DEMP) has been prepared to support the Environmental Permit application for the proposed importation and use of suitable waste for the restoration of Clockhouse Quarry, Capel, 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.

This DEMP 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.

This DEMP is a controlled document, and forms part of the Environmental Management System (EMS). The DEMP will be reviewed on an annual basis. However, the DEMP 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 DEMP 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 DEMP.

This DEMP will be kept in the Site office and be available to all employees.



2.0 Site Operations

2.1 Description of Operations

The Site will require the importation of approximately 686,000m³ inert material and soils for the purpose of waste recovery with a **maximum** annual throughput of 500,000 tonnes per annum (tpa). The imported materials would facilitate the low-level restoration of the mineral site.

Only suitable waste material will be used for general fill in the restoration of the site. The clean, suitable waste types will come from multiple sources and will consist of materials such as soils, and overburden recovered from local construction projects. Suitable topsoil will also be required to supplement the sites shortfall in topsoil.

Materials would be imported by Heavy Goods Vehicles (HGVs) accessing the site via the established access off the A24 at NGR TQ 17271 38633 and using a paved access road running between the weighbridge and the brickworks access.

Material imported would not typically require any processing, however the intermittent use of a mobile crushing and screening plant would be used on site to ensure a suitable specification of soil material for the top restoration layers. The plant would be located within the infilling area and not in close proximity to the site boundary.

The overall duration of the development would be around 14 years, comprising:

- Phase 1: ten years for the infilling and restoration operations in Area 3 and the northern part of Area 2;
- A potential 2-year gap to allow habitats to establish; and
- Phase 2: a final two years to complete regarding / limited infill works within the southern part of Area 2.

2.2 Hours of Operation

Operating hours at the Site would be as follows:

- Monday to Friday: 0700 to 1900 hrs; and
- Saturday: 0800 to 1300 hrs.

There would be no working outside of these hours or on Sundays or Bank Holidays, with the exception of an emergency or essential maintenance.

2.3 Receipt of Materials

Wastes received at the Site are summarised in Table 2-1.

Table 2-1: Waste Types Received

The waste categories which will be accepted, and for what purpose are detailed in the following tables:

- Table 2-2 which lists waste types to be deposited below the water table;
- Table 2-3 which lists waste types to be used as general fill; and
- Table 2-4 which lists waste types for the restoration layer.



Table 2-2 Wastes to be accepted for below the water table

Waste Code	Description	Comments
01	Wastes resulting from exploration mining, quarrying and physical and chemical treatment of minerals	
01 01	wastes from mineral excavation	
01 01 02	wastes from mineral non-metalliferous excavation	Restricted to waste overburden and interburden only.
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	
17	Construction and demolition wastes (including excavated soil from contaminated sites)	
17 01	concrete, bricks, tiles and ceramics	
17 01 01	concrete	low contents of other types of materials (like metals, plastic, soil, organics, wood, rubber, etc). The origin of the waste must be known.
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 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	To exclude topsoil and peat. To exclude soils and stones from contaminated sites.
20	Municipal wastes (household waste and similar commercial, industrial and institutional wastes) including separately collected fractions	
20 02	garden and park wastes (including cemetery waste)	
20 02 02	soil and stones	To exclude topsoil and peat.

Table 2-3 Wastes to be accepted for General Fill

Waste Code	Description	Comments
01	Wastes resulting from exploration mining, quarrying and physical and chemical treatment of minerals	
01 01	wastes from mineral excavation	
01 01 02	wastes from mineral non-metalliferous excavation	Restricted to waste overburden and interburden only.
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	



Waste Code	Description	Comments
01 04 09	waste sand and clays	
10	Wastes from thermal processes	
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 and articles and products made from them	
10 13 14	waste concrete and concrete sludge	
17	Construction and demolition wastes (including excavated soil from contaminated sites)	
17 01	concrete, bricks, tiles and ceramics	
17 01 01	concrete	low contents of other types of materials (like metals, plastic, soil, organics, wood, rubber, etc). The origin of the waste must be known.
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 03	bituminous mixtures	
17 03 02	bituminous mixtures other than those mentioned in 17 03 01	Road plannings only. This material will only be used for the creation of the access track (if required).
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	To exclude topsoil and peat. To exclude soils and stones from contaminated sites.
19	Wastes from waste management facilities, off-site waste water treatment plants and the preparation of water intended for human consumption and water for industrial use	
19 12	wastes from the mechanical treatment of waste (for example sorting, crushing, compacting, pelletising) not otherwise specified	
19 12 09	minerals (for example sand, stones)	Restricted to wastes from treatment of waste aggregates that are otherwise naturally occurring minerals. Does not include fines from treatment of any



Waste Code	Description	Comments
		non-hazardous waste or gypsum from recovered plasterboard.
20	Municipal wastes (household waste and similar commercial, industrial and institutional wastes) including separately collected fractions	
20 02	garden and park wastes (including cemetery waste)	
20 02 02	soil and stones	To exclude topsoil and peat.

Table 2-4 Wastes to be accepted for the Restoration Layer

Waste Code	Description	Comments
01	Wastes resulting from exploration mining, quarrying and physical and chemical treatment of minerals	
01 01	wastes from mineral excavation	
01 01 02	wastes from mineral non-metalliferous excavation	Restricted to waste overburden only.
02	Waste from agriculture, horticulture, aquaculture, forestry, hunting and fishing, food preparation and processing	
02 04	wastes from sugar processing	
02 04 01	soil from cleaning and washing beet	
17	Construction and demolition wastes (including excavated soil from contaminated sites)	
17 05	soil (including excavated soil from contaminated sites), stones and dredging spoil	
17 05 04	soil and stones other than those mentioned in 17 05 03	To exclude soils and stones from contaminated sites. Topsoil and peat will only be used in the top 50cm of the restoration layer.
17 05 06	dredging spoil other than those mentioned in 17 05 05	
19	Wastes from waste management facilities, off-site waste water treatment plants and the preparation of water intended for human consumption and water for industrial use	
19 12	wastes from the mechanical treatment of waste (for example sorting, crushing, compacting, pelletising) not otherwise specified	
19 12 09	minerals (for example sand, stones)	Restricted to wastes from treatment of waste aggregates that are otherwise naturally occurring minerals.



Waste Code	Description	Comments
		Does not include fines from treatment of any non-hazardous waste or gypsum from recovered plasterboard.
20	Municipal wastes (household waste and similar commercial, industrial and institutional wastes) including separately collected fractions	
20 02	garden and park wastes (including cemetery waste)	
20 02 02	soil and stones	Topsoil and peat will only be used in the top 50cm of the restoration layer.

Imported wastes would be received at the Site by a fleet of HGVs accessing the site via the established access for the existing brickworks off the A24 and a new paved access road running between the brickworks access and the wheel wash. HGVs would enter the site and be routed to the weighbridge and then directed to the appropriate infilling area. All imported waste would be securely sheeted / enclosed until received at the infilling area.

Based on an average payload of 15t per HGV, there would typically be 66 HGV movements per working day. Material would be imported in campaigns (i.e. from specific construction projects) and therefore the daily number of HGV movements could be higher, but in any case will not go beyond the maximum limit of 100 movements per day Monday to Friday and 84 movements over the weekend period as defined within the Planning Permission..

2.4 Waste Acceptance Procedures

HGVs would enter the site and be routed to the weighbridge where the quantity of imported material would be recorded and paperwork inspected. Checks would also be carried out to ensure the load is consistent with the description of the transfer note.

Loads would be inspected for any contaminants or unusually dusty loads prior to being directed to the appropriate infilling area to offload. Loads would be deposited, inspected and the HGV would return to the weighbridge before leaving Site.

Waste acceptance procedures are followed as per details provided within the Integrated Management System (IMS). This includes a procedure for how to manage rejected loads and the completion of a rejected load form.

Rejected loads that cannot be removed from Site immediately would be placed within a designated quarantine area until they can be removed from Site as soon as practicable.

2.5 Storage of Materials

There would be minimal on-site storage of the imported material with all materials being placed directly into the void. The exception to this is:

- material that has been rejected due to visual or suspected non-compliance and is placed into the quarantined area;
- certain areas of the void are inaccessible (i.e. during wetter periods).

In the event that waste has to be stockpiled temporarily, material would be located in a designated area between Area 1 and 2 as illustrated in Figure 2-1. Stockpiles of material



onsite would have a maximum capacity of 10,000t with stockpiles no higher than 5m above restoration height.

2.6 Deposition of Materials

Following direct deposition of materials by the importing fleet of HGVs, a tracked dozer would be used to spread and a separate compactor to flatten the material, with an excavator on site for intermittent earthworks or transfer of large stones.

2.7 General Housekeeping

Regular cleaning of the paved access and internal haulage routes within the Site are undertaken, in line with the daily inspections. Where required, appropriate remedial and corrective action will be implemented as soon as practicable.

2.8 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 2-5 lists the likely type of plant along with the area of operation and emission rating.

Table 2-5: Mobile Plant and Equipment in Operation

Description	Number in Operation	Operational Areas	Emission Rating
Bulldozer	1 (up to 2 in winter months)	Infilling / restoration area	Min. Euro IV compliant
360 excavators	2	Infilling / restoration area	Min. Euro IV compliant
Dump truck	1 (as required)	Infilling / restoration area Access road / internal haulage routes	Min. Euro IV compliant
Compactor	1	Infilling / restoration area	Min. Euro IV compliant
Tractor / water bowser	1	Infilling / restoration area Access road / internal haulage routes	Min. Euro IV compliant
Road sweeper	1 (available, as required)	Access road / internal haulage routes	Min. Euro IV compliant
Screening / crushing plant	1 each (as required)	Infilling / restoration area	Min. Euro IV compliant
HGVs – vehicles delivering materials	Maximum of 100 loads per day	Access road / internal haulage routes	Min. Euro VI compliant

All mobile plant and equipment are to be checked routinely and maintained as per manufacturer's recommendations to ensure correct and efficient operation.

2.9 Mitigation of Community Impacts

The following measures are adopted to ensure a 'good neighbour' approach to local residents:



- A phone number for members of the public to contact the Site Management Team will be visible on the Site board at the entrance; and
- Responding to dust complaints promptly and keeping the complainant informed of outcome of investigation (as detailed in Section 5.2).



3.0 Site Location

The site is situated approximately 950m south of the village of Capel and approximately 10km west of Crawley. The total area of the site to be restored is approximately 12 hectares. The site is accessed off Horsham Road (A24) which runs to the west of the site. The National Grid Reference (NGR) for the site is TQ 17719 38525.

The site is situated within an area of undulating, largely wooded countryside, mainly in agricultural use. Immediately to the west of the Site is the Clockhouse Brickworks which is currently mothballed. Further to the west is the A24 and the railway line, along with a number of residential properties and the dormant 'Auclaye' clay quarry.

Public right of way Bridleway BW 186 is routed along the northern boundary of the site, running in an east to west direction.

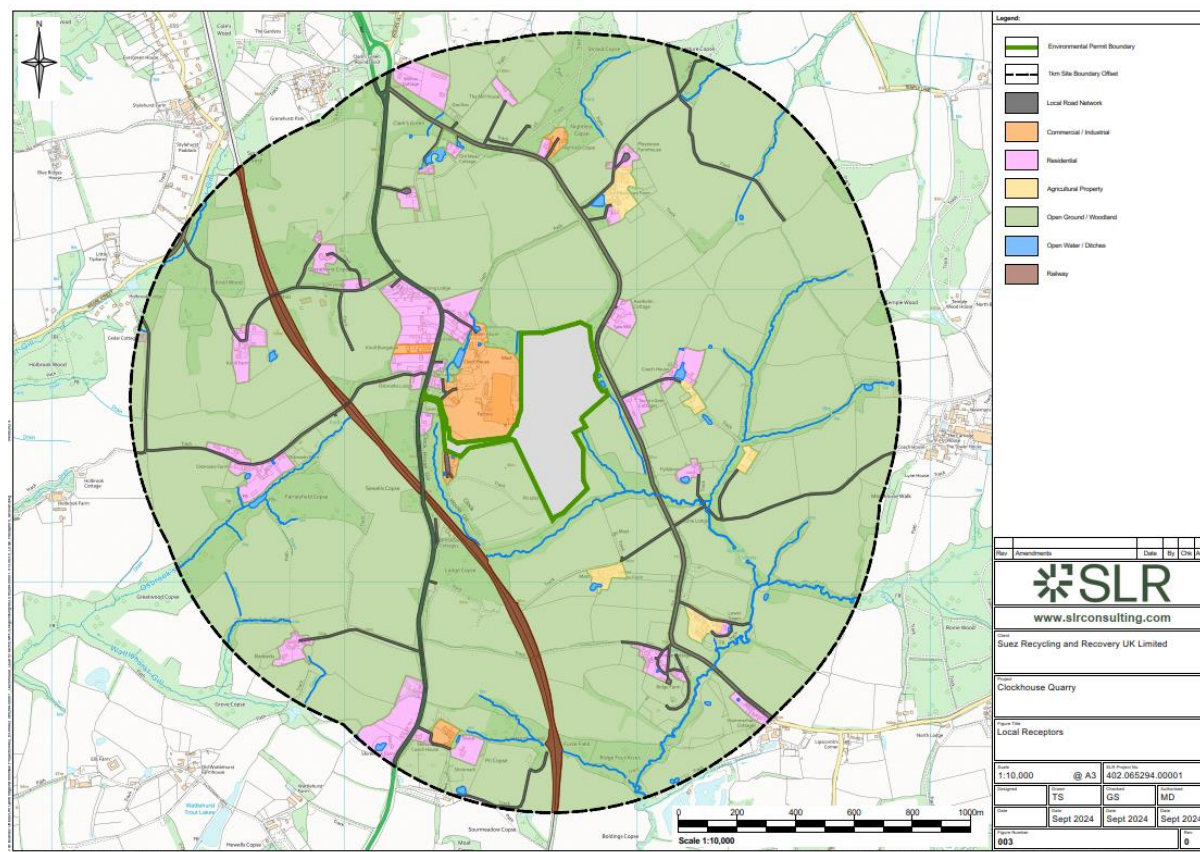
The site's location and surrounding land use is summarised in Table 3-1 illustrated in Figure 3-1.

Table 3-1: Surrounding Land Uses

Boundary	Description
North	Fields and open/agricultural land followed by Rusper Road, and Clark's Green.
East	Rusper Road lies immediately to the east followed by open/agricultural land and individual residential properties. Individual commercial/industrial properties including RMV Heating & Plumbing Dorking, and Surrey Hills Bikes – Servicing and Coaching also lie in this direction.
South	Heavy vegetation along the boundary. Fields and open/agricultural land, the railway line and Ridge Farm.
West	Heavy vegetation along the boundary. The previously infilled Area 1 of Clockhouse Quarry, and Clockhouse Brickworks followed by the Horsham Road (A24) and the railway line. Beyond this lies open/agricultural land and residential properties.



Figure 3-1: Surrounding Land Use



3.1 Human Receptors

The Site is set within a rural context away from large concentrations of residential dwellings. A representative selection of human receptors in each direction of the Site is presented in Table 3-2 and illustrated in Figure 3-2. The receptors identified are not exhaustive but represent the closest receptor in each direction. The receptor sensitivity has been determined in reference to the Institute of Air Quality Management Minerals Dust Guidance¹.

Table 3-2: Potentially Sensitive Human Receptors

Receptor	Receptor Type	Sensitivity to Dust	Direction from Site	Distance (approx.) from:	
				Permit Boundary	Dust Source
DR1	Residential	High	East	65m	105m (infilling of void)
DR2	Residential	High	Northeast	95m	105m (infilling of void)
DR3	Residential	High	Northwest	140m	150m (infilling of void)

¹ Guidance on the Assessment of Mineral Dust for Planning, Impacts Institute of Air Quality Management, v1.1, May 2016.



Receptor	Receptor Type	Sensitivity to Dust	Direction from Site	Distance (approx.) from:	
				Permit Boundary	Dust Source
DR4	Residential	High	West	35m	35m (paved access road)
DR5	Residential	High	South	250m	265m (infilling of void)
DR6	Residential	High	Southwest	220m	220m (paved access road)
DR7	Residential	High	West	45m	45m (paved access road)
DR8	Commercial	High	Northwest	155m	155m (paved access road)
DR9	Public RoW	Low	North	<20m	30m (infilling of void)
DR10	Public RoW	Low	North	<20m	30m (infilling of void)

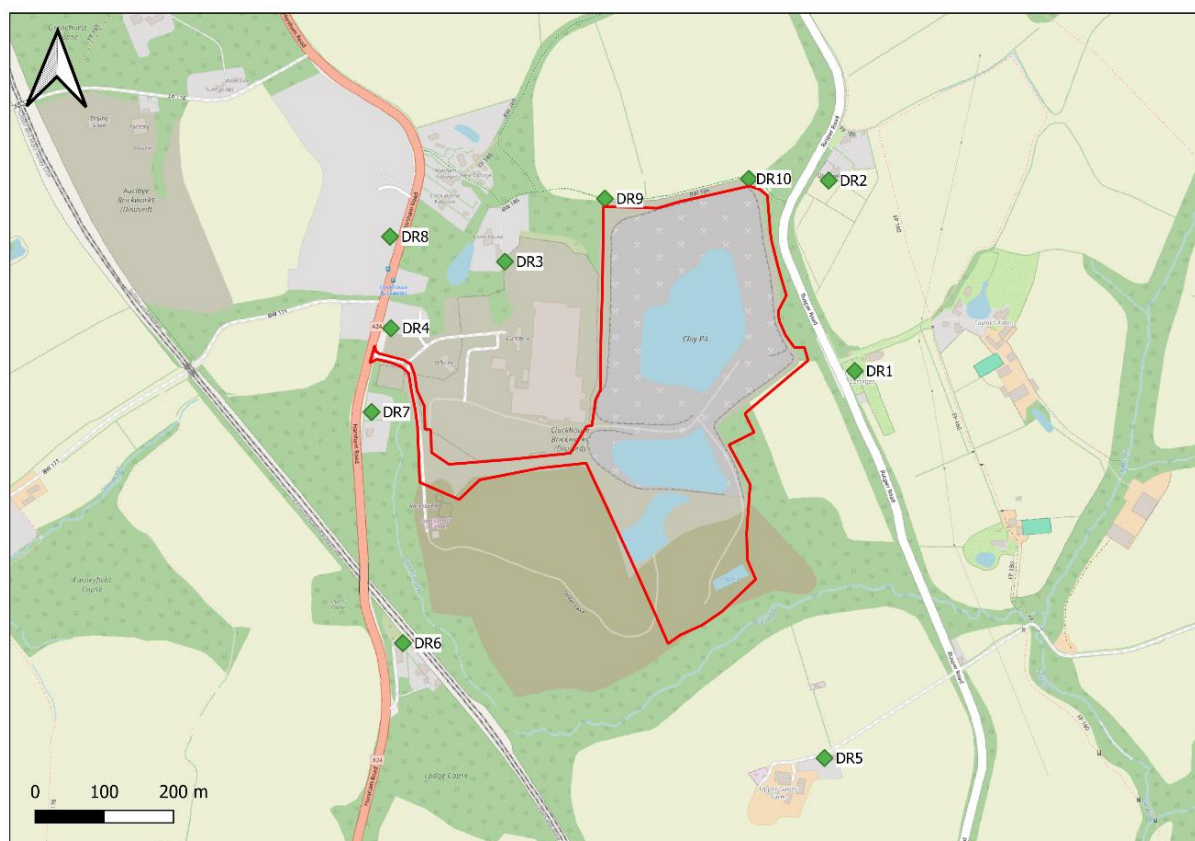


Figure 3-2: Sensitive Human Receptors

3.2 Ecological Receptors

The Multi-Agency Geographic Information for the Countryside (MAGIC) website was utilised to identify sensitive ecological sites in proximity to the Site. The following European or International designations were considered:

- Special Scientific Interest (SSSI)
- Special Area of Conservation (SAC);
- Special Protection Areas (SPA);
- RAMSAR;
- Local Wildlife Sites;
- Local Nature Reserves; and
- Ancient Woodland.

The nearest statutory ecological designation is the Vann Lake and Ockley Woods Site of Special Scientific Interest (SSSI) approximately 1.8km from the Site.

Ancient semi-natural woodland surround the Site to the east, south and west. A number of the woodland areas are also designated by Surrey County Council as Sites of Nature Conservation Importance (SNCI), the closest to the Site being Fylls Brook / Clockhouse Gill SNCI to the east and south.



4.0 Sources, Releases and Impacts

4.1 Identification of Dust Sources

In reference to the Site operations (as outlined in Section 2.0) the following potential dust sources at the Site are identified:

- Road vehicles entering and leaving the site, tracking material out onto the public highway;
- Internal vehicle / plant movements within the Site;
- Debris, dust or particulates released from loaded vehicles;
- Infilling activities (unloading, storage and deposition / compaction of materials); and
- Exhaust emissions from vehicles/plant operated.

4.2 Control Measures

The following dust control measures are adopted at the Site. In the first instance, operational measure have been adopted to minimise or prevent the release of dust. Where dust emissions cannot be prevented, mitigation measures (such as suppression and containment) would be adopted to further minimise or prevent the release of dust. The 'routine' measures, which would be adopted on a regular basis, are outlined in Table 4-1.

Additional 'reactive' measures can be implemented as/when it is identified that they may be required (i.e. in response to visual dust monitoring or complaints), as summarised in Table 4-2.

Table 4-1: Routine Control Measures for Dust / Particulates

Abatement Measure	Description / Effect	Overall Consideration and Implementation	Trigger for Implementation
General	Minimising activities with high dust potential during dry / windy weather conditions / optimising timings of site operations	Implement as part of good practice and incorporated into the training process. Avoidance of extensive materials handling / disruption during adverse dry / windy weather. Utilise weather forecast to plan activities / site operations	Designed-in measure (always in place).
Stand Offs	Maintaining a minimum distance between offsite receptors and certain operations reduces the effectiveness of the pathway between the source and the receptor	A minimum of 100m between internal (unpaved) haul roads / on-site stockpiles and residential receptors. A minimum of 200m between the crushing / screening plant and residential receptors.	Designed-in measure (always in place).



Abatement Measure	Description / Effect	Overall Consideration and Implementation	Trigger for Implementation
Low storage Requirements	Minimises the potential for emissions from stockpiles	Occasional storage of materials undertaken within designated area within void, maximum height 5m Location of storage benefits from >200m from nearest residence and the sheltering effect of the quarry void	Designed-in measure (always in place).
Designated storage area	Vehicles traversing across loose particulates on the ground could cause resuspension of dust from the materials. Stockpiles with maximum distance to off-site receptors have a reduced pathway for dust emissions	Clear delineation of material stockpile area; minimises the risk of vehicles traversing across loose particulates on the ground. Designation of storage area (see Figure 2-1), >200m from offsite sensitive receptors.	Designed-in measure (always in place).
Phased / progressive restoration	Infilling activities limited to distinct areas at any one time, with seeding of soils undertaken as soon as practicable.	Minimises the potential for emissions from surface material Implemented as part of the scheme design,	Designed-in measure (always in place).
Site speed limit and minimisation of vehicle movements on site	Reducing vehicle speeds reduces dust emissions from vehicles movements. A speed limit of 10mph 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. Speed limit clearly presented around the Site. Included within staff induction training	Enforced at all times when the Site is operational. Included within staff induction training
Minimising material drop heights	Reducing the height at which materials are handled reduces the potential for debris, dust and particulates to be suspended 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.
Good housekeeping	A consistent, regular housekeeping regime is in place to ensure Site is kept clean, and in doing so prevents dust and particulate	Easy to implement and requires minimal equipment. Encourages a sense of pride and satisfaction amongst the staff which	Implemented at all times that the Site is operational.



Abatement Measure	Description / Effect	Overall Consideration and Implementation	Trigger for Implementation
	build up within the operational areas. Less dust present in operational areas would limit the potential for resuspension of that dust from site operations (such and vehicle movements).	promotes vigilance and a positive culture.	
Sheeting of loaded vehicles (unless enclosed)	Minimises the escape of debris, dust and particulates from loaded vehicles.	Loaded vehicles would be checked for coverings upon entering the Site and kept covered until arrival at the relevant infilling area.	Implemented for all loaded vehicles entering the Site.
Surfacing of vehicle access routes	Site access road (between brickworks and wheelwash) is made up of hardstanding. Internal road between site infrastructure and quarry void is made up of compacted aggregate	Hardstanding or impermeable surfaces limit the potential for vehicles movements to resuspend dust/particulates.	Surfaces are periodically inspected for signs of wear or damage. Remedial works will be commissioned as required.
Cleaning of Vehicles	Ensuring vehicle tyres and undercarriages are clean before leaving Site onto the access road and public highway minimises the availability of dust and particulates to be traversed out of the site. Minimises the potential for material to be tracked out onto the access road and local road network.	Wheelwash located at end of paved haulage route (see Figure 2-1). Hard paved road between wheelwash and public road network (A24) Included within staff induction training Clear signage	Implemented for <u>all</u> vehicles leaving the Site that have accessed unpaved areas onsite.
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 monitoring to identify any dust travelling beyond the Site boundary from the Site with investigations and remedial actions undertaken as outlined in Section 5.1.	Routine dust monitoring is undertaken on all working days as detailed in Section 5.1.
Maintenance of Plant and Equipment	Maintain plant and machinery in accordance with the	Implement as part of good practice and	Implemented at all times that the Site is operational.



Abatement Measure	Description / Effect	Overall Consideration and Implementation	Trigger for Implementation
	manufacturers guidelines to ensure statutory limits / opacity tests are reached	incorporated into the training process.	Maintenance work logged in site log book
Cleaning of paved surfaces	Keeping the site access road clean minimises the potential for dust particulates to be resuspended from vehicle movements and tracked out onto the local road network	Hard paved surfaces are cleaned regularly using a road sweeper. Regular hire of the street sweeper scheduled in on a minimum of a monthly basis	Implemented at all times that the Site is operational.

Table 4-2: Reactive Control Measures for Dust / Particulates

Abatement Measure	Description / Effect	Overall Consideration and Implementation	Trigger for Implementation
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 (via a tractor / bowser) for all internal haulage routes and restoration areas. Wetting down of materials would greatly reduce the dust potential of those materials.	Implemented as required, to be determined by the Site Manager by monitoring of meteorological conditions (i.e. identify periods of low rainfall, high temperatures and/or low wind speeds blowing towards sensitive receptors).
Cleaning of paved surfaces	Removal of any material deposited on the hard paved access road, removing the material at source before it is tracked out onto the local road network	Frequency of road sweeper use shall be increased as required.	Implemented as required, to be determined by the Site Manager by routine visual monitoring.
Visual Dust Monitoring	Visual dust monitoring provides a cost-effective method of monitoring that allows for pro-active, immediate response to dust generating events.	Where monitoring identifies that dust from the Site operations is present beyond the Site boundary, investigation would be undertaken, and remedial measures implemented, as outlined in Section 5.1.	Reactive dust monitoring is undertaken as detailed in Section 5.1.
Temporary cessation of dust generating activities	Temporary stopping dust generating activities can significantly reduce	Ceasing dust generating activities would reduce dust emissions from the Site, however this would have implications for the operational effectiveness	This is to be adopted as a final contingency measure, only where other reactive mitigation measures have been implemented and visual



Abatement Measure	Description / Effect	Overall Consideration and Implementation	Trigger for Implementation
	dust emission from the Site.	of the Site, so should only be adopted where other control measures have been exhausted.	dust monitoring identifies that dust is still being transported beyond the Site boundary.
Cessation of machinery	Emissions from machinery that appear as dark smoke are likely to be an indication of emissions that are not in accordance with manufacturer guidelines	Visual monitoring of machinery emissions as part of staff training; where dark smoke is identified (except during start up), machinery is stopped immediately and the problem rectified and logged.	Implemented as required. Visual monitoring as part of daily observations

4.3 Magnitude of Dust Emissions

Potential magnitude of dust emissions from sources at the Site are presented in Table 4-3. The potential magnitude of emissions has been determined in consideration of the proposed Site operations (Section 2.0), dust potential of materials and routine control measures (Section 4.2).

Table 4-3: Dust Release Inventory

Dust Source	Potential Magnitude of Emissions	Reasons
Access road (up to wheel wash)	Small	Hardstanding access road Wheel wash, tractor and bowser and road sweeper onsite 10mph speed limit Maximum of 200 HGV movements per day during campaigns
Haul roads (beyond wheel wash)	Small - Medium	Compacted aggregate internal haul roads 10mph speed limit Tractor and bowser onsite Maximum of 200 HGV movements per day during campaigns
Debris from loaded vehicles	Small	Loaded vehicles are covered when entering the site (sheeting or enclosed vehicles).
Infilling	Small - Medium	Progressive restoration scheme, small discrete operational areas <5 mobile plant working at one time Water suppression available, as required
Storage of Material	Small	Minimal storage required, imported infill material directed to the void for deposition. Temporary storage would be undertaken within the quarry void in a designated area Water suppression available, as required



Dust Source	Potential Magnitude of Emissions	Reasons
Vehicle emissions	Small	The fleet accessing the site is minimum of Euro VI compliant. Relatively small number of vehicles in use at the Site (see Table 2-5).

4.4 Pathway

The primary pathway by which dust and particulates may be transported to sensitive receptors is by atmospheric dispersion. In general, higher wind speeds lead to effective dispersion and dilution of dust emissions due to turbulence. Conversely, dust impacts at sensitive receptors are more likely during period of low wind speeds (below 5m/s).

The nearest meteorological recording station to the Site is Gatwick Airport, located approximately 8km east of the Site. In reference to the five-year average metrological data acquired from this recording station (2016, 18, 19, 22 and 23), the prevailing winds in the Site locale are from the southwest. As such, the potential impact of emissions is likely to be greater to the northeast of the Site. A composite wind rose from Gatwick Airport meteorological recording station, showing the frequency of wind speed and direction, is presented in Figure 4-1.

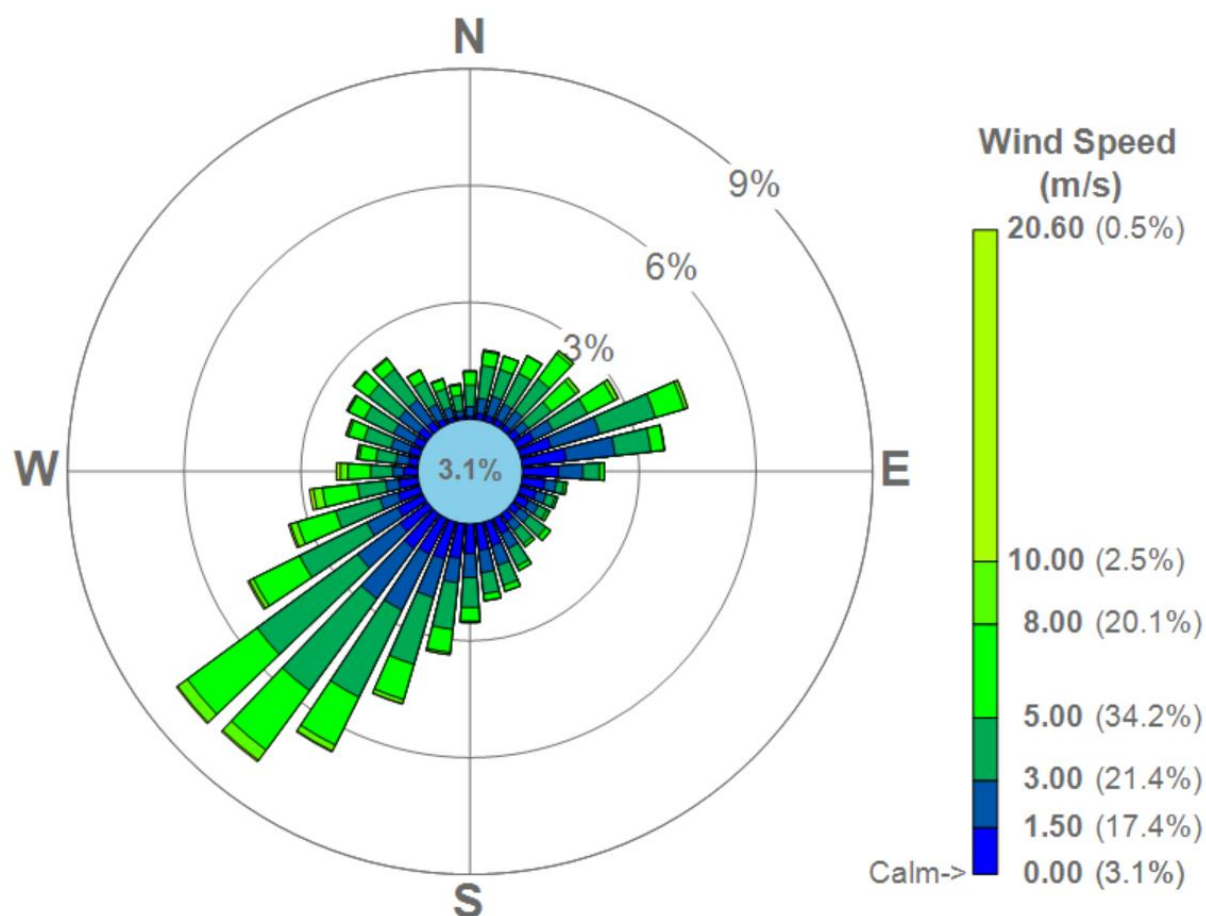


Figure 4-1: Gatwick Airport Recording Station Wind Rose (5-year average)

There are sensitive receptors located within relative proximity (i.e. within 250m) downwind (i.e. to northeast of activities) of the Site. In consideration of the above, there is potential for the pathway effectiveness between sources and receptors to be moderately effective.

4.5 Source-Pathway-Receptor Routes

The pathway for the majority of the releases is atmospheric dispersion; wind whipping of stockpiles and handling operations. The source-pathway-receptor routes are detailed in Table 4-4.

Table 4-4: Source-Pathway-Receptor Routes

Source	Pathway	Receptor	Type of Impact	Where Relationship Can Be Interrupted
Vehicle and plant movements	Suspension of dust and particulates as a result of vehicle movements. Atmospheric dispersion of materials transported.	High sensitivity receptors located within approximately 50m of the nearest internal or access haul road.	Visual soiling, also consequent resuspension as airborne particulates.	All external and internal haul routes are either hardstanding or impermeable surfaces, therefore the suspension and accumulation of debris by vehicles whilst on Site (or leaving Site) is anticipated to be minimal. All HGVs transferring material to or within the Site shall be covered (contained vehicles or sheeted). A speed limit of 10mph (or less) is in place for vehicles or plant at the Site.
Unloading, compaction, processing and storage of materials	Suspension of dust and particulates as a result of material handling, storage and processing activities. Atmospheric dispersion of stored materials.	High sensitivity receptors located within approximately 110m of restoration area	Visual soiling, also consequent resuspension as airborne particulates.	Unloading, spreading and compaction activities and temporary stockpiling of materials generally undertaken within the quarry void, benefitting from a sheltering effect.



Source	Pathway	Receptor	Type of Impact	Where Relationship Can Be Interrupted
				Drop heights are minimised where possible. Water suppression will be used to dampen infill material which are identified to be a significant source of dust emissions during periods of dry / windy weather. Mobile crushing and screening plant located as far away from site boundary as practicable.
Vehicle emissions	Atmospheric dispersion of exhaust emissions.	High sensitivity receptors located within approximately 50m of the nearest internal or access haul road.	Airborne particulates.	The HGVs accessing the Site are Euro VI compliant.



5.0 Monitoring and Complaints Procedure

5.1 Dust Monitoring

5.1.1 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 dust monitoring also enables the effectiveness of the operational and mitigation measures in place to be assessed.

Visual assessment is undertaken on a weekly basis by Site operatives for airborne or deposited dust. Weekly assessments include, as a minimum, a visual assessment of the following areas (identified as areas / activities with the highest potential for dust generation):

- Active restoration area;
- Internal haul routes;
- Access road and public highway near Site exit; and
- If required, offsite walkover surveys

Based upon the size of the Site, it is considered viable for weekly monitoring to include a walkover of the northeastern permit boundary (i.e. downwind (prevailing) boundary closest to high sensitivity receptors) as the routine. 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 on SUEZ online applications and made available to the EA as required. Details recorded include (as a minimum):

- Weather conditions (qualitative wind speed, direction, rainfall), sourced from publicly available data from the nearby Gatwick Airport meteorological recording station;
- Any non-standard site operations;
- Identification of any significant dust on site or dispersion beyond the site boundary; and
- Additional mitigation measures put in place, if required.

A visual dust monitoring check-sheet is provided in Appendix C as an example, although check sheets are maintained in online applications. 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;
- The Site Manager identifies a period of adverse meteorological conditions (i.e. prolonged dry periods and or low wind speeds blowing towards sensitive receptors); and/or
- In response to complaints being received – in this situation off site monitoring will also be carried out at locations in proximity to where the complaint was received.

The results of the visual dust monitoring will be monitored by the Site Manager (or suitably trained delegated persons). Where it is identified that significant dust levels are present on-site, or dust is visible beyond the Site boundary, the Site Manager will ensure that the appropriate mitigation measures are adopted in response (see Table 4-2). 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.

5.1.2 Responsibility for Implementation

A suitably trained Site Manager (or suitably trained delegated persons) 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 5-1 below.

Table 5-1: Dust Management Responsibilities

Actions	Responsibility
Monitoring meteorological forecast	Site Manager (or suitably trained delegated persons)
Routine (weekly) visual dust monitoring	Site Manager (or suitably trained delegated persons)
Routine monthly visual dust monitoring	Site Manager (or suitably trained delegated persons)
Coordinating plant area cleaning	Site Manager (or suitably trained delegated persons)
Application of plant dust suppression	Site Manager (or suitably trained delegated persons)
Completing online dust event forms	Site Manager (or suitably trained delegated persons)
Liaison with public and regulator	Site Management Team
Coordinating dust management plan updates	Site Management Team
*The procedure for the Site Manager (or suitably trained delegated persons) to review feedback from visual monitoring will be to review the visual monitoring record in SUEZ online applications.	

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 DEMP, 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, 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 will be provided every two years.

5.2 Monitoring Meteorological Conditions

The Site Manager or other designated responsible person records daily weather conditions in SUEZ online applications, sourced from publicly available meteorological data (such as The Met Office).

The recording of meteorological data is an effective management tool and can be used for the following reasons:

- Prior to visual dust monitoring, to plan where boundary monitoring should be focussed;
- During abnormal events (i.e. plant breakdown) to predict where dust impacts could occur; and
- In the investigation of dust complaints or to verify community observations.

5.3 Training

All personnel on site will understand their responsibility to ensure the generation of dust is avoided, minimised and controlled. Each employee shall be made 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 will be 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 dust control to the appropriate person.

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



5.4 Complaints Procedure

Complaints may be notified to the Site Manager (or suitably trained delegated persons) either during or after an event, by the complainant or indirectly through a regulator who was notified. Complaints will be logged and investigated and only where relevant reported to the relevant authorities by the operator and will include the following (recorded on SUEZ online applications):

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

Complaint response will have the objective of investigating the incident and preventing any continuing issue by putting in place additional control or management measures to prevent re-occurrence of incident and updating the DEMP. Complainants will be informed of findings of investigation and actions taken.

Investigations will include but not be limited to:

- Visit by Site Manager (or suitably trained delegated persons) to the location of the complainant to verify issue (if the complaint is made 'after' rather than 'during' a dust event this may not be possible);
- Review of Site activities at the time of the incident to investigate potential sources;
- If a dust event is occurring, or a recurring event, undertake more frequent on-site monitoring and instigate off-site visual monitoring and record findings;
- Review of control measures and management actions at time of incident;
- Review of meteorological conditions at time of incident; and
- Reporting of findings in SUEZ online applications.

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

5.5 Engagement with the Community

The Site Manager (or suitably trained delegated persons) 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 complaint record form is presented in Appendix B), a Dust Event Form will be completed, and the results of the subsequent investigation kept in SUEZ online systems.



5.6 Record Keeping

The operator will 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.



Appendix A Dust Event Form

Dust & Emissions Management Plan



Staff Details	
Name of Author	
Event notified by	
Description of Event	
Date	
Time	
Investigation Details	
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, i.e. predominant wind direction, wind speed (beaufort scale), rainfall	
Details of corrective actions	
Notes	
Closure	
Site Manager (or suitably trained delegated persons) review date	
Site Manager (or suitably trained delegated persons) signature, to confirm no further action required	

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 B Dust Complaint Form

Dust & Emissions Management Plan

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 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 C Visual Dust Monitoring Form

Dust & Emissions Management Plan

Background Information			
Person Undertaking Survey (& Position)			
Date:		Time:	
Description of Wind Strength (i.e. strong, gusty)			
Wind Direction			
Weather observations (i.e. sunny/overcast)			
Ambient temperature (degree Celsius)			
Survey Results			
Monitoring location (to be defined based upon wind direction)		Observations	
ID	Description (i.e. boundary)	Airborne dust visible on Site?	Airborne dust visible beyond Site boundary?
1		Y/N	Y/N
2		Y/N	Y/N
3		Y/N	Y/N
4		Y/N	Y/N
5		Y/N	Y/N
6		Y/N	Y/N
7		Y/N	Y/N
8		Y/N	Y/N
Dust visible on-site or beyond boundary?			
If dust visible, identify possible source(s)			
If dust is visible beyond the Site boundary, or significant levels of dust are observed at the Site, the following remedial measures should be considered:			
Good housekeeping	Reduce dust emissions resulting from events such as overspill of stockpiles onto access roads through cleaning/sweeping.		
Minimising of drop heights	Reduce the drop height of material to reduce resuspension of dust.		
Enforcement of Site speed limit	Ensure vehicles adhere to the 10mph site speed limit to reduce resuspension of dust.		
Vehicle sheeting	Ensure vehicles have sheeting in place covering loads upon arrival to and exit from the Site.		
Dust Suppression	Suppression measures should be adopted to wet down stockpiles or surfaces to reduce dust emissions.		
Temporary cease of operations	If adopted mitigation measures are not effective, a temporary cease to those operations may be required		
This is a non-exhaustive list of measures			
Summary of mitigation measures adopted (also fill in a Dust Event form)			



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