Saxon Pit Southern Buttress Environmental Permit Application

Dust Emissions Management Plan

East Midlands Waste Management Ltd

Saxon Works, Peterborough Road, Whittlesey, PE7 1PJ

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1.0 INTRODUCTION

SLR Consulting Ltd (SLR) has been instructed by East Midlands Waste Management Limited (EMWM) to prepare an application for a waste recovery Environmental Permit (EP) for the construction of a buttress to stabilise the southern face of Saxon Pit, located at Peterborough Road, Whittlesey, PE7 1PJ (the Site).

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

1.1 Scope

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

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

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

2.0 OVERVIEW & POTENTIAL FOR DUST EMISSIONS

2.1 Site Description

Saxon Pit is an inactive quarry site located immediately to the west of the town of Whittlesey in Cambridgeshire at National Grid Reference 525754E, 297057N. Saxon Pit comprises an excavation in the Oxford Clay which is between 18 and 27 metres deep and lies between the A605 Peterborough Road to the north and the Peterborough to March railway line to the south.

The eastern boundary of Saxon Pit is adjacent to a housing estate. To the southeast the canalised Kings Dyke flows beneath the Peterborough to March railway line. The original Saxon Brickworks and associated infrastructure which were located in the pit have now been demolished and/or repurposed/de-commissioned and the general site is now operated as a waste management and plant hire facility by EMWM.

The Site Location is shown in Drawing 001 and the Environmental Site Setting & Receptors are shown in Drawing 003.

Access to the site is via an established HGV access to the A605 to the north of the Site. This existing access serves the site and several other commercial developments, waste processing and recycling facilities all operating on adjacent sites, including the 'Phase 1' stabilisation scheme for the eastern part of the buttress.

The infrastructure on Site would include:

- Weighbridge;
- Wheel Wash;
- Site Offices;
- Welfare Facilities; and
- Car Park.

The access road from which joins the north of the Site and other internal haulage routes will be graded so as the prevent dust mobilisation.

2.2 Site Operations Description

The exhausted clay pit has historically suffered from several minor failures of the quarry face along its eastern and southern boundaries. Under an existing separate recovery permit, the eastern slope has been stabilised by regrading works which involved cutting back the slope crest combined with limited buttressing installed to the lower parts, using imported waste materials. Multiple shallow failures were subsequently observed in the south/south-western slope along the slope adjacent to the Peterborough to March railway line. As a consequence, it is now proposed to carry out a buttressing exercise on the southern quarry wall.

In addition to the permanent deposit of material to construct the buttress, the Site will also incorporate appropriate materials reception, screening and storage areas.

It is proposed to construct a buttress to increase the overall stability of the slope and address the hazard identified by the Geotechnical Assessment. Due to the presence of third-party land and rail infrastructure to the south, the crest of the existing slope cannot be cut back to reduce the gradient and therefore a buttress is considered to be the only effective solution.

The development proposes a total import of 216,700m^3 of material over a period of seven years. This equates to around 325,050 tonnes of total material, or 46,436 tonnes per annum.

2.3 Site Surroundings

The Site is located within a predominantly rural landscape to the north and south. Land to the west comprises a rural setting, interspersed with a number of commercial and industrial premises. The centre of the town of Whittlesey lies approximately 1km east of the Site.

The application Site is located at the former Saxon brickworks site, Peterborough Road, Whittlesey, Peterborough, PE7 1PD.

The Site is approximately 1.2km west of the centre of the town of Whittlesey and within the boundary of Whittlesey Town Council which is under the jurisdiction of Fenland District Council (FDC).

The application/development Site extends to 3.8ha in total with the proposed infilling and buttressing works located along the southern flank of the previously worked Saxon Pit clay works.

The Site is bounded on the east by another area of waste recovery, also owned by EMWM. The north-western boundary of the Site is bounded by Johnsons Aggregates and Recycling.

The nearest residential properties to the proposed application site are located around 210m to the northeast along Priors Road. There are a number of dwellings that front the A605, directly east of the existing site highway access.

The Site is bounded to the south by the Peterborough to Whittlesey railway line, with the Kings Dyke watercourse beyond that.

According to the Environment Agency Flood Map for Planning[1] website, the Site within a Flood Zone 3 which means it has a high probability of flooding from rivers and the sea.

Surface water at the base of the pit will be managed via an existing lagoon which houses a pumping station. The pumping station consists of a submersible pump that transfers water from the lagoon / pumping station to a discharge point direct into an existing dyke that is attached to the main Kings Dyke.

The Nene Washes SSSI and SPA are located over 2km to the north of the proposed site. The Kings Dyke Nature Reserve (LWS) is located immediately north of the haul route and site highway entrance.

The nearest Scheduled Monument is the Whittlesey Butter Cross about 1km to the east.

Access to the site is via an established HGV access to the A605 to the north of the proposed application site. This existing access serves the site and several other commercial developments, waste processing and recycling facilities all operating on adjacent sites, including the ‘Phase 1’ stabilisation scheme for the eastern part of the buttress

Local Authorities in close proximity to the Site have declared the following Air Quality Management Areas (AQMA)[2] in proximity to the Site:

- Fenland District Council: Whittlesey AQMA No.1 (SO_2) approximately 100m to the east, declared for SO_2; and
- Peterborough Council: AQMA No.1 approximately 1.8km west, declared for SO_2.

None of the AQMA’s in close proximity to the Site are designated for PM10,

[1] https://flood-map-for-planning.service.gov.uk

[2] UK Air Information Resource AQMAs interactive map, available at https://uk-air.defra.gov.uk/aqma/maps, accessed In October 2020.

Within the surrounding Site locale, there are a number of other sources that have the potential to release dust emissions. The predominant source within the immediate vicinity of the Site is considered to be other waste recovery activities to the east and Johnson's Aggregates & Recycling to the north-west. Table 1 below illustrates other sources of dust within 1km of the Site.

Table 1 Source of Dust Emissions within the Surrounding Area

Company	Location	Type of Business	Distance from the proposed EP boundary (m)
EMWM	East boundary of the Site	Waste recovery operation	Adjacent
Johnson's Aggregate & Recycling	North-West boundary of the Site	Aggregate recycling	Adjacent
K.D.S	South-West	Powder coating service	670
Forterra	North-West	Manufacture of bricks from site-won clay	800
Commercial haulage yard	West	Commercial haulage yard	1000

2.4 Potential Dust Sources

The operation to stabilise the unrestored southern face of the former Saxon brickworks site at Saxon Pit, has the potential to generate dust and can be divided into the following activities:

- handling of materials;
- on-site transportation;
- screening;
- stockpiles / exposed surfaces;
- inert stabilisation;
- importation and construction of office, welfare facilities and car park; and
- off-site transport.

3.0 POTENTIAL DUST EFFECTS

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

3.1 Prevailing Meteorological Conditions

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

- wind speed will affect the potential for dust entrainment and the distance it may travel;
- wind direction determines the broad transport of the emission and the sector of the compass into which the emission is dispersed; and
- Rainfall is an important climatological parameter in the generation of dust; sufficient amounts of rainfall can suppress dust at the source and eliminate the pathway to the receptor. According to Arup (1995)[3] rainfall greater than 0.2mm per day is sufficient to suppress dust emissions.

3.1.1 Local Wind Speed & Direction

Wind speed and direction data from the meteorological observation station at Wittering located 22km west of the Site, is considered to be broadly representative of the local Site conditions. A wind rose for Wittering is presented in Figure 1.

Figure 1 indicates that the prevailing wind direction is from the south-west, with almost 50% of the winds observed from this direction. Approximately only 30% of the wind occurs from the north, east and south collectively. Approximately 25% of the winds were observed from the north-west. On this basis, receptors to the north-east of the Site have the highest potential to be impacted from dust emissions originating from the Site.

3.1.2 Rainfall Data

Relevant rainfall data applicable to the Site has been obtained from the Met Office website[4] of UK mapped climate averages for 1991-2020. The average annual rainfall ≥ 1mm/day for the area of the Site is 113.12 days per year, comprising approximately 30% of the year. It is therefore considered that on those days the natural suppression afforded by the rain would eliminate all sources of dust across the Site.

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

[3] Arup & Ove Arup Environmental. Environment Effects of Surface Mineral Workings. DoE, October 1995

[4] Data from Heathrow Climate Station, accessed at https://www.metoffice.gov.uk/research/climate/maps-and-data/uk-climate-averages, accessed August 2024

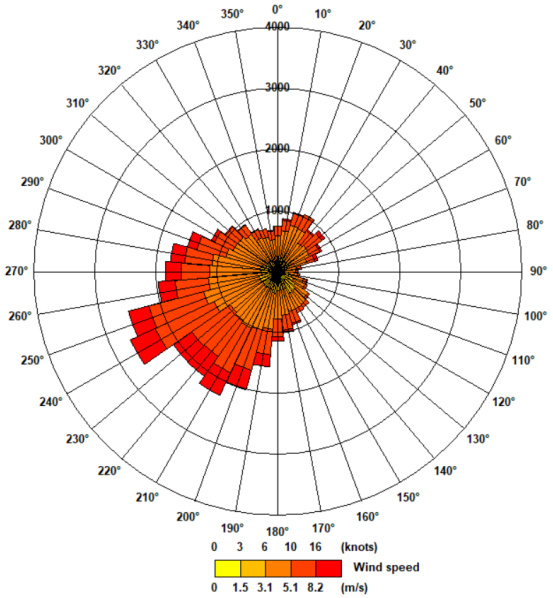


Figure 1 Windrose form Wittering Meteorological Station (2015-2019)

3.2 Source of Dust

3.2.1 Designed-in Dust Control Measures

The following measures that are incorporated into the working scheme are considered to afford a degree of reduction in the potential for dust generation. These "designed-in" control measures are presented in Table 2.

Table 2 Designed-in Dust Control Measures

Activity	Designed in Dust Control Measures
Management Procedures	The Site supervisor, or their nominee, will exercise day to day control on Site at all times. They will have particular responsibility for ensuring full compliance with the conditions attached to the permit. They will assume control either personally or by delegation to suitably trained and responsible staff of: • Vehicle movements; • All loading, tipping and materials handling operations; • Operation of dust suppression measures; and • Inspection, cleaning and maintenance of all plant and equipment. All staff will receive necessary training and instruction in their duties relating to the control of all operations and the potential sources of dust emissions. Particular emphasis will be given to dealing with plant malfunctions and abnormal conditions. Site staff will inform the manager whenever visible dust emissions are observed or appear likely to occur, as a result of any site operation. If at any time dust emissions likely to cause a nuisance beyond the Site boundary are detected by the Site staff or any complaints relating to dust is received, the incident will be recorded in the Site Diary, and immediate action taken to identify the cause of the problem. If a dust associated problem is related to a specific source of waste, then action will immediately be taken to suppress any aerial emissions by damping down or covering the waste with non-dusty materials.
Complaints Procedure	A complaints procedure will be established to ensure that any perceived nuisance being caused to local residents is dealt with effectively. A register of complaints

Activity	Designed in Dust Control Measures
	will be kept on Site to record all concerns made either directly to the Site Manager or via the regulatory authorities. Each complaint will be investigated and in the event of a complaint received it will be dealt with on the same working day. The Site Manager will report the findings and any action taken to the Management Team. The EA will be advised in writing within two weeks of any dust complaint together with the findings of the investigation and any corrective action.
Transportation of Materials	Internal haulage will be restricted to clearly delineated surfaces, on a prepared surface at low level where possible. Temporary haul roads will be maintained in good condition and kept free from mud by regular grading, good drainage and use of hardcore as necessary. A water bowser, which will be used to wet the roads as required. Water will be sources from a reservoir on land to the west of the site (grid reference TL2500897239), owned by the operator, which contains approx. 350,000m^3 water. All Site vehicles will be maintained in accordance with the manufacturer's manual. The Site will benefit from good housekeeping including the regular sweeping of road surfaces. Site haulage will be restricted to low speed limits (15mph) to minimise the mobilisation of dust particles. All drivers, including visitors, will be made aware of the Site's commitment to minimising dust. The Site supervisor will be responsible for checking the situation with regard to dust on a regular basis throughout working hours, and for ensuring that mitigating measures are provided as necessary. HGVs transporting dusty materials will be sheeted. A wheel wash will be implemented for vehicles, particularly HGVs, prior to leaving the Site.
Material Handling	Only inert waste that meets Waste Acceptance Criteria suitable for the construction will be accepted. When necessary, working areas and material stockpiles will be sprayed with water via a bowser. In unusually dry/windy conditions site activities will be suspended if it appears likely dust may be carried towards sensitive receptors.

The activities on Site that have the greatest potential for dust emissions have been identified as screening and inert stabilisation. Table 3 outlines the potential sources of dust associated with the proposed operations.

Table 3 Sources of Dust

Activity	Potential for Dust Generation	Description / Location
Handling of materials	Medium	Temporary operations. Potential for short term high dust emissions.

Activity	Potential for Dust Generation	Description / Location
On-site transportation	Medium	Dust will be created by the movement of the on-Site plant, particularly during dry spells. Additionally, delivery vehicles may cause moderate amounts of dust. However, there will be approximately 14 HGV truck movements per day.
Screening	High	All material brought to Site will undergo screening prior to being used for the stabilisation and buttressing. Screening operations will take place within the old quarry void.
Stockpiles / exposed surfaces	Medium	Potential for dust generation from storage of inert materials. Dust suppression will be in place on Site. All stockpiles and exposed surfaces will be within the quarry void.
Inert stabilisation	High	Approximately 216,700m^3 (325,050 tonnes) of material will be imported over 7 years. The southern face of the quarry will be stabilised in compliance with the restoration scheme.
Off-site transportation (track out)	Medium	Off-site transport will occur along A605 access road. Exiting vehicles will benefit from a wheel wash on-Site near the access road.

3.3 IAQM Assessment of Dust Impacts

In support of this environmental permit application, a dust impact assessment in accordance with the IAQM guidance[5] 'Guidance on the Assessment of Mineral Dust Impacts for Planning' has been undertaken.

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

The EA's DMP template requires a consideration of sensitive receptors, and so all sensitive receptors within 1km are listed in Table 4. However, IAQM guidance states that "where there are no receptors near to a mineral site there will be no significant effect". This is because at mineral operations, "the change in both airborne concentrations and the rate of deposition with distance, suggests that dust impacts will occur mainly within 400m of the operation, even at the dustiest of sites". Thus, dust is unlikely to have more than a negligible impact on receptors beyond 400m. On the basis of the IAQM screening criteria, an assessment of both deposited dust and PM10 has been undertaken on dust sensitive receptors located within 400m of the on-site activities.

[5] Guidance on the Assessment of Mineral Dust Impacts for Planning, May 2016 (v1.1), Institute of Air Quality Management (IAQM) http://www.iaqm.co.uk/text/guidance/mineralsguidance_2016.pdf accessed August 2024

Table 4 Dust Sensitive Receptors within 400m (shaded white) and 1km (all)

Ref No.	Receptor	Grid Reference		Distance from Site Boundary (m)	IAQM Distance	Direction from Site Boundary
		X	Y			
1	Johnsons Industries	525604	297119	0	Close	West
2	Kings Dyke footpath	525985	296763	60	Close	South
3	Deciduous woodland (5)	525302	296887	80	Close	South
4	Deciduous woodland (6)	525857	296698	140	Intermediate	South
5	Johnsons Aggregates & Recycling	525489	297178	150	Intermediate	North-West
6	Traditional Orchard	526018	296646	180	Intermediate	South
7	Deciduous woodland (9)	525564	297349	195	Intermediate	North
8	Priors Road – residential dwellings	526007	297200	210	Distant	East
9	Unnamed road - residential dwelling	526287	296678	280	Distant	South-East
10	Evans Trimming	525071	297325	420		North-West
11	Whittlesey Water Tower	525924	297573	450		North-East
12	Addend Care Services	525295	297485	465		North-West
13	BP Service Station	525887	297504	490		North-East
14	Peterborough Road – residential dwellings	525562	297518	375		North
15	Reach Drove – residential dwellings	526183	296410	535		South-East
16	Kings Dyke Nature Reserve	524902	297447	600		North-West
17	Footpath	525583	297764	620		North
18	St Andrews Church	526684	296919	710		West
19	Forterra	524745	297363	750		North-West
20	Deciduous woodland	526629	296344	770		South-East
21	Whittlesey Football Ground	525469	297670	780		North
22	Vicarage Car Sales	526542	296367	850		South-East
23	Deciduous woodland	524552	297350	910		North-West
24	The Electric Cable Company	524371	296979	980		West
25	M&R Van Sales & Service Centre	524308	296976	990		West
26	Commercial Haulage Yard	524267	296924	1000		West

The background concentrations of PM10 at the Site and the surrounding locale were obtained from UK AIR Information Resource (UK AIR)[6]. The maximum 2023 concentration at the Site is 15.65 µg/m3.

In accordance with the IAQM mineral guidance, 'If the long-term background PM10 concentration is less than 17µg/m3 there is little risk that the Process Contribution (PC) would lead to an exceedance of the annual-mean objective'. No further consideration of PM10 emissions was therefore required with the effects considered to be 'Not Significant'.

Further assessment of deposited dust was undertaken in accordance with the methodology contained within the IAQM minerals guidance. The Magnitude of Dust Effects were calculated for each relevant receptor within 400m, using the following methodology.

1. Identification of Residual Source Emission Category
2. Quantification of Frequency of Dusty Winds
3. Categorisation of Receptor Distance
4. Calculation of Pathway effectiveness (using 2 and 3)
5. Estimation of Dust Impact Risk (using 1 and 4)
6. Identification of Receptor Sensitivity
7. Calculation of Magnitude of Dust Effects (using 5 and 6)

3.3.1 Residual Source Emissions

The first step towards determining the impact of the dust from Site operations on the local receptors is the determination of the residual source emissions applicable to the Site. The operations were broken down into eight activities, as detailed in Section 3.2.

3.3.2 Frequency of Dust Winds

In Table A3-2 of Appendix 3 to the IAQM guidance, which has been replicated in Table 5 below, IAQM provides the following thresholds for determining the frequency of dust winds between an activity and a receptor:

Table 5 Criteria to Determine Frequency of Dust Winds

Frequency Category	Criteria
Infrequent	Frequency of winds (>5 m/s) from the direction of the dust source on dry days are less than 5%
Moderately Frequent	The frequency of winds (>5 m/s) from the direction of the dust source on dry days are between 5% and 12%
Frequent	The frequency of winds (>5 m/s) from the direction of the dust source on dry days are between 12% and 20%
Very Frequent	The frequency of winds (>5 m/s) from the direction of the dust source on dry days are greater than 20%

For each receptor, the Wind Rose in Figure 1 and additional data obtained from the met office (including wind frequencies over > 5m/s in each direction, and dry days) was used to observe the average windspeed and distance in each direction. This data was then compared to the thresholds given in Table 5 of this document to determine the probable

[6] DEFRA UK Air Information Resource (UK-AIR) website, available at https://uk-air.defra.gov.uk/data/laqm-background-maps, accessed August 2024

frequency of dust winds between the Site and receptor in question. Receptors as listed in Table 4 have been identified as follows:

- Kings Dyke footpath, deciduous woodland (5), Johnson's Recycling & Aggregate, traditional orchard, deciduous woodland (9), unnamed road – residential dwelling, Peterborough Road: infrequent;
- Deciduous woodland (6), BP Service Station: moderately frequent; and
- Johnsons (commercial), Priors Road – residential dwellings: frequent.

3.3.3 Receptor Distance

Table A3-3 of the IAQM guidance states that receptors less than 100m from the source are 'close', between 100 and 200m from the source are 'intermediate' and between 200-400m from the source are 'distant'. Using the IAQM guidance, distances were assigned to the 13 receptors within 400m of the Site, as detailed in Table 4.

3.3.4 Pathway Effectiveness

The frequencies of dust winds from section 3.3.2 and the receptor distances from Table 4 were then used to calculate the pathway effectiveness, in conjunction with the framework given in Table A3-4 of the guidance. Receptors as listed in Table 4 have been determined as having the following pathways:

- Johnsons (commercial): highly effective;
- Deciduous woodland (6), Priors Road – residential dwellings: moderately ineffective; and
- Kings Dyke footpath, deciduous woodland (5), Johnson's Recycling & Aggregate, traditional orchard, deciduous woodland (9), Johnson's Recycling & Aggregate, traditional orchard, deciduous woodland (9), BP Service Station: ineffective.

3.3.5 Dust Impact Risk

The Dust Impact Risk between each activity and each receptor was then calculated using the residual source emissions and the pathway effectiveness. The pathway effectiveness and residual source emissions scores were input into the framework given in Table A3-5 of Appendix 3 to the IAQM guidance.

The results of this step are presented in Table 6 below. The screening step identified that the activity with the highest dust impact risk is the screening and the inert stabilisation of waste.

Table 6 Dust Impact Risk Calculations

		Residual Source Emissions						
		Handling of materials - *Medium*	On-site Transportation - *Medium*	Screening - *High*	Stockpiles / exposed surfaces - *Medium*	Inert stabilisation - *High*	Construction of office, welfare, car park etc - *Medium*	Off-site transportation - *Medium*
Pathway Effectiveness for Each Receptor	Johnsons– *Highly Effective*	Medium	Medium	High	Medium	High	Medium	Medium
	Eco Plant Hire and Sales Ltd – *Moderately Effective*	Low	Low	Medium	Low	Medium	Low	Low
	King's Dike footpath - *Ineffective*	Negligible	Negligible	Low	Negligible	Low	Negligible	Negligible
	Deciduous woodland - *Ineffective*	Negligible	Negligible	Low	Negligible	Low	Negligible	Negligible
	Deciduous woodland - *Moderately Effective*	Low	Low	Medium	Low	Medium	Low	Low
	Johnsons Aggregates & Recycling - *Ineffective*	Negligible	Negligible	Low	Negligible	Low	Negligible	Negligible
	Traditional Orchard - *Ineffective*	Negligible	Negligible	Low	Negligible	Low	Negligible	Negligible
	Deciduous woodland - *Ineffective*	Negligible	Negligible	Low	Negligible	Low	Negligible	Negligible
	Priors Road – residential dwellings - *Moderately Effective*	Low	Low	Medium	Low	Medium	Low	Low
	Unnamed road - residential dwelling - *Ineffective*	Negligible	Negligible	Low	Negligible	Low	Negligible	Negligible
	Peterborough Road – residential dwellings - *Ineffective*	Negligible	Negligible	Low	Negligible	Low	Negligible	Negligible
	BP Service Station - *Ineffective*	Negligible	Negligible	Low	Negligible	Low	Negligible	Negligible

3.3.6 Receptor Sensitivity

IAQM guidance (Box 4) identified that several of the receptors within 400m of the Site that have been assessed are high sensitivity, including dwellings along Priors Road, an unnamed road and Peterborough Road.

Medium sensitivity receptors include Johnsons, Johnsons Aggregates & Recycling, BP Service Station.

Low sensitivity receptors include a number of areas of deciduous woodland and traditional orchard within 400m of the Site, and Kings Dyke footpath.

3.3.7 Magnitude of Dust Effects

The final step is combining the receptor sensitivity with the dust impact risk from the highest scoring activity, screening and inert stabilisation, for each receptor. After this, it is possible to determine the magnitude of dust effect that the Site could reasonably be expected to have on each receptor, as given below:

- Johnsons: Medium Sensitivity + High Dust Impact Risk = **Moderate Adverse Effect**
- King Dike's footpath: Low Sensitivity + Low Dust Impact Risk = **Negligible Effect**
- Deciduous woodland: Low Sensitivity + Low Dust Impact Risk = **Negligible Effect**
- Deciduous woodland: Low Sensitivity + Medium Dust Impact Risk = **Negligible Effect**
- Johnsons Aggregates & Recycling: Medium Sensitivity + Low Dust Impact Risk = **Negligible Effect**
- Traditional Orchard: Low Sensitivity + Low Dust Impact Risk = **Negligible Effect**
- Deciduous woodland: Low Sensitivity + Low Dust Impact Risk = **Negligible Effect**
- Priors Road – residential dwellings: High Sensitivity + Medium Dust Impact Risk = **Moderate Adverse Effect**
- Unnamed road - residential dwelling: High Sensitivity + Low Dust Impact Risk = **Slight Adverse Effect**
- Peterborough Road – residential dwellings: High Sensitivity + Low Dust Impact Risk = **Slight Adverse Effect**
- BP Service Station: Medium Sensitivity + Low Dust Impact Risk = **Negligible Effect**

In conclusion, seven of the receptors are expected to have negligible effect, three are predicted to experience slight adverse effect and three are predicted to experience moderate adverse effect from dust emissions emanating from the Site.

4.0 CONTROL OF DUST EMISSIONS

4.1 Overview

EMWM recognises the potential for the Site to generate dust emissions and is committed to preparing, operating and restoring the Site in accordance with industry best practice. The implementation of industry best practice measures to control and mitigate the generation and transportation of dust can ensure that dust Is adequately controlled.

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

- IAQM Guidance on the Assessment of Mineral Dust Impacts for Planning (2016);
- Mineral Industry Research Organisation (MIRO) Good practice guide: control and measurement of nuisance dust and PM10 from the extractive industries (AEA, 2011);
- Process Guidance Note 3/16 (12) Statutory guidance for mobile crushing and screening (Defra, 2012); and
- Local Air Quality Management (LAQM.TG (16)) (Defra, 2018).

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

4.2 Dust Control Measures

Dust control measures that will be employed at the Site as part of routine planning and operations are detailed below in Tables 7, 8 and 9.

Table 7 General Site Control Measures

Activity	Control Measures
Design and Location of dust – generating activities	Dust-generating activities will, where possible, be located where maximum protection can be obtained from topography, woodland or other sheltering features. Stockpiles, haul roads, screening operations, and exposed areas will be located as far away as possible from sensitive receptors. Where practicable they should not be located directly upwind of the sensitive receptors. The location of the site within a pit provides sufficient mitigation that a boundary fence for dust management is not deemed necessary.
Equipment and vehicles	The Site has been designed to minimise haul route distances and to locate haul routes away from receptors, where possible. A separate paved parking area for off-Site vehicles, such as staff cars, with no access to the working areas, will help prevent track-out of mud onto the public highway.
Planting	Existing vegetation (woodland to the east) will act to reduce wind speed and entrainment of dust and a barrier for airborne dust. Stripped soils/bunds will be grass-seeded where possible.
Communication	Good communication will be maintained to prevent anxieties between the operator and the surrounding communities. Regular, accessible liaison arrangements will be implemented in order to provide information as freely as possible.
Training	Training on dust mitigation will be provided to Site personnel. Training will also cover ‘emergency preparedness plans’ to react quickly in case of any failure of the planned dust mitigation.

Activity	Control Measures
Monitoring	Refer to Section 4.3
Management	All dust and air quality complaints will be recorded. The cause will be identified, and appropriate measures taken. See Section 5.0.

Table 8 Activity Specific Preventative Dust Control Measures

Activity	Management Actions and Preventative Dust Control Technique	Trigger for Implementation
Handling of materials	Handling of dusty material will be avoided during particularly dry and windy conditions.	Control measures will be implemented during all periods when the Site is operational.
On-site transportation	All vehicles will adhere to the Site speed limit of 10mph. Controlled use of fixed haul routes. Abrupt changes in direction will be avoided. Vehicles entering and leaving the Site will be covered to prevent escape of materials during transport. Haul roads will benefit from regular maintenance. Necessary repairs to the surface will be carried out as soon as reasonably practicable. Vehicle exhausts to be angled upwards. Adequate water supply will be provided for effective dust mitigation. Vehicles will be evenly loaded to avoid spillages; and A wheel wash is implemented onsite near the access road (See section 4.2.1).	Control measures will be implemented during all periods when the Site is operational.
Screening	Screening of dusty material will be avoided during particularly dry and windy conditions. Screening will take place within the quarry void with the quarry walls providing natural dust attenuation.	Control measures will be implemented during all periods when the Site is operational.
Stockpiles / exposed surfaces	Drop heights will be minimised. Vehicles will not be overloaded. Stockpiles of soil will be located in clearly designated areas within the permitted Site boundary. The permitted site is at the base of a disused quarry, therefore is below ground level. Temporary waste stockpiles will be located in a clearly designated area within the permitted Site boundary (i.e. within the base of the disused quarry). Existing trees/hedgerows to be retained. Minimise the duration of activity.	Control measures will be implemented during all periods when the Site is operational.

Activity	Management Actions and Preventative Dust Control Technique	Trigger for Implementation
Inert stabilisation	• Good standards of all plant and equipment will be maintained; • Drop heights will be minimised when depositing inert material; • Handling of soils will be avoided during adverse weather conditions; • Progressive restoration to minimise the exposed mineral area; and • In the event that visible plumes of dust emissions are identified crossing the EP boundary, operations will cease until dust can be satisfactorily managed.	Control measures will be implemented during all periods when the Site is operational. Daily monitoring will aid implementation decision making.
Off-site transport	• A wheel wash will be implemented at the site access at the north of the Site. • Vehicles will be covered to prevent escape of material during transport; and • An adequate area of hard surface road between the Site activities and Site exit will be maintained.	Control measures will be implemented during all periods when the Site is operational.

Table 9 Activity Specific Remedial Dust Control Measures

Activity	Management Actions and Remedial Dust Control Techniques	Trigger for Implementation
Handling of materials	• Dampening of material by water bowser as and when required.	Visible dust plumes carried towards / across site boundary
On-Site transportation	• Sweeping of Site using a road brush; and • Dampening of roads.	Visible dust plumes carried towards / across site boundary Visible track out on the access road
Screening of waste	• Dampening of material by water bowser as and when required.	Visible dust plumes carried towards / across site boundary
Stockpiles / exposed surfaces	• Water suppression including hoses and use of a water bowser to dampen operational area. Water-based suppression system will have coverage of all areas of the Site used for traffic and waste activities and sufficient water supply.	Visible dust plumes carried towards / across site boundary.
Inert Stabilisation	• Dampening of material • Use of a water bowser	Visible dust plumes carried towards / across site boundary
Off-Site transport	• Use of water dust sweeper to remove an tracks on roads.	Visible track on the access road and outer road

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

4.2.1 Wheel Wash

Exiting vehicles will move through a wheel bath installation, which cleans the lorries. The bath has internal grids submerged in the water which 'open up' the tyres and allow any remaining materials to fall out. The water then washes the surface of the tyre treads, resulting in an effective clean. The wheel bath will be used on every vehicle prior to exit of the Site. Should any additional cleaning be required, a manual jet wash station will also be installed for use.

The location of the wheel wash and additional manual jet wash are located near to the weighbridge so that they can be observed to ensure all vehicles use them. The concreted/tarmac'ed access road to the site exit is kept clean by wetting and sweeping, to ensure no additional debris is collected by vehicles wheels after being cleaned.

4.2.2 Housekeeping

Road sweeping on Site will be carried out regularly due to the risk of dust mobilisation from vehicles (estimated around 14 vehicles per day), and the proximity of the Site to sensitive receptors.

Other aspects of the housekeeping schedule for the Site include;

- Parking of lorries will be temporary while waiting to deposit load;
- Anti-idling policy for vehicles and machinery on Site;
- The existing internal roads are concrete and tarmac. Any additional haulage roads on the buttress will be compacted hardcore
- A wheel bath will be located near to the access road, together with an inspection area and additional manual jet wash; and
- Outgoing lorries will be segregated from incoming lorries to ensure wheel cleaning facilities aren't bypassed.

4.3 Monitoring

4.3.1 Meteorological Conditions

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

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

4.3.2 Visual Dust Monitoring

The Site will undertake regular visual monitoring to ensure that dust control techniques are being carried out effectively. The objective of the visual monitoring is to anticipate whether dust is being transported off-Site in quantities sufficient to cause a nuisance at off-Site receptor locations.

Visual monitoring of dust will be undertaken at the four dust monitoring points by the Site Manager / experienced Site operatives on a minimum of a daily basis, as per Table 10. The

monitoring points are not fixed, and can be undertaken anywhere within the EP boundary. Responsibilities can either be delegated to various Site operatives to carry out visual observations of their working areas during normal operations or be delegated to a single operative to perform daily visual checks of key areas.

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

- Stabilisation operations;
- Screening operations;
- Haul routes;

Monitoring locations were selected to be in proximity to the sensitive receptors identified in Section 3.3.

The results of all visual observations, along with any remedial actions implemented, will be recorded. Any personnel who undertake visual dust monitoring will have received appropriate training, guidance and instruction on how to carry out the task in line with the requirements of this DMP. EWMW Environmental Management System (EMS) procedures include for an at least annual senior management review of dust management on Site.

Table 10 Visible Dust Monitoring

Parameter	Limit	Frequency	Locations
Visible Dust Emissions	Visible Dust Emissions Crossing the Site Boundary	Daily	Operational Areas All Dust Monitoring Points will be located near sensitive receptors e.g. Monitoring positions located along eastern and southern of the Site, in proximity to receptors including a residential and footpath facilities. Monitoring positions on northern and north-western Site perimeters in close proximity to receptors including other workplaces.

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

- Weather conditions (rainfall, wind speed, wind direction);
- Current site activities;
- Identification of any visible dust emissions travelling beyond the Site boundary;
- Details of any remedial action undertaken as a result.

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

- Regular observations detect significant dust plumes crossing the Site boundary towards off-site receptors;
- Site operatives inform the Site Manager of significant dust emission within 100m of a Site boundary; and
- In response to a complaint being received by the Site or EA.

4.3.3 Air Quality Monitoring

The site is not located in any AQMA designated for PM10. The local authority do not currently carry out any monitoring for PM10.

4.3.4 Out of Hours Visual Monitoring

Out of hours visual monitoring is not considered to be required. This is due to there being no operations taking place outside of operational hours.

4.4 Site Management & Contingency Measures

This section details the responsibilities with regards of the Site Management with regards to the DMP, as illustrated in Figure 2.

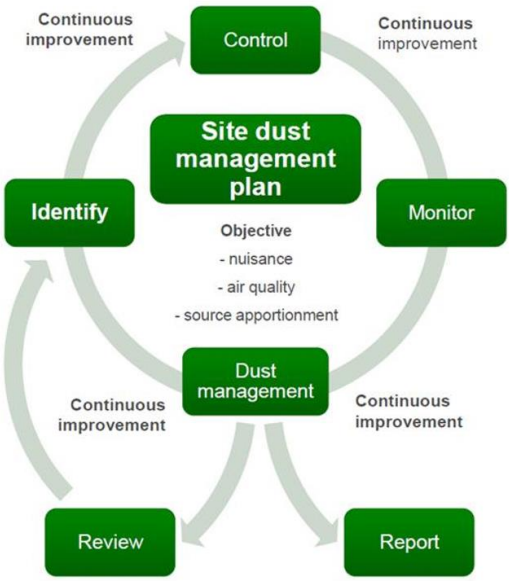


Figure 2 Dust Management Plan Responsibilities

4.5 Responsibilities

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

- identifying and monitoring the intensity of activities with a high potential for dust generation;
- monitoring weather conditions during periods of such activity;
- planning and preparing for the implementation of contingency measures;
- responding to potential and actual dust monitoring issues; and
- ceasing operations in the event that significant off-site impacts cannot be avoided.

Responsibilities will be allocated to specific personnel to ensure dust generation is avoided or effectively controlled, as presented in Table 11.

Table 11 Dust Management Plan

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

4.6 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 of dust control to the appropriate person.

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

4.7 Incident Reporting

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

4.8 Dust Complaint Procedure

Complaints may be notified by a member of the public either directly to the Site management or indirectly through the regulator. Complaints received directly by the Site management will be recorded in the Site log book and reported to the regulator. In the event of a complaint received they will be dealt with on the same working day. The following details shall be recorded in the Complaint and Investigation Record Form, included as Appendix 03:

- date, time and name of complainant (if provided);
- nature of complaint;
- locality of complaint;
- summary of resulting investigations and actions taken; and
- date at which the complainant was updated with the outcome / remedial actions undertaken, if required.

The objective of the response to complaints received is to investigate the incident and review the site practices and dust controls in place at the time of the event to allow for additional

controls to be put in place, thus preventing a repeat of the incident. If necessary, the complainant(s) and the regulator would be informed of the findings of the investigation and any actions subsequently taken.

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

- Visit by a member of Site Management to the location of the complaint, to verify the issue (If complaint is made after the event this may not be possible);
- A review of Site activities in operation at the time of the incident;
- A review of the dust monitoring results for the period of the incident, if applicable;
- For recurring events, the frequency of visual monitoring should be increased to a twice daily basis;
- A review of control measures and dust suppression in place at the time of the incident (i.e. application of water, drop heights during transfer etc);
- A review of the meteorological conditions at the time of the incident (i.e. recorded wind direction and wind speed recorded in the Site log book); and
- Reporting of findings (in Appendix 03 complaints and investigation record form).

The escalation procedures in the event that subsequent dust complaints are received are as follows:

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

The typical timescale within which EMWM respond to a complaint on Site can vary depending on how the compliant is raised. However, on a worst-case basis, complaints will be dealt with on the same working day and responded to within 7 days with a formal written response. Within this response time, action will be occurring on Site to investigate and correct any issues which the compliant has drawn attention to.

4.9 Liaison with Community Regulators

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

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

- Presentation of the monitoring scheme and the latest dust monitoring results;
- Update on the working scheme of the Site and when/where future operations will be;
- Summary of the dust controls on Site and any updates/improvements undertaken/planned;
- Provision of a contact for the Site should any issues arise between the meetings; and

- Observe and alleviate any anxieties or complaints member of the public have experienced.

4.10 Record Keeping

EMWM 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.

4.11 DMP Update and Review

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

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

On review of Site operations and the effectiveness of the DMP, senior management are required to make any changes deemed appropriate to ensure dust emissions are kept to a minimum.

5.0 CONTINGENCY ACTION PLAN

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

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

Contingency measures have been identified for the following scenarios, as presented in Table 12.

- observed change in wind direction towards nearby receptors during activities close to Site boundary;
- visual monitoring records visible dust plumes across the Site boundary in the direction / proximity to the off-site receptors;
- malfunction in water suppression techniques rendering them in-effective;
- malfunction of road sweeper rendering it in-effective;
- receipt of a particularly dusty load (inert material for stabilisation);
- complaints received from members of the public or neighbouring businesses, verified by visual monitoring on Site;
- malfunction of water collection system, resulting in inadequate water for dust suppression;
- malfunction of vehicle wheel wash, rendering it in effective; and
- prolonged periods of hot weather, resulting in very dry ground and limited supply of water.

Table 12 Contingency Plans

Event	Change in Wind Direction (mod-high wind) towards off-Site receptors.
Contingency Actions	The frequency of visual monitoring will increase to twice daily which will incorporate walkovers along boundary in question. Additional dust suppression will be implemented on high risk activities using water sprays, reduction in drop heights or cessation of material handling / transfer. In the event dust is visually observed to be crossing the boundary with additional dust suppression in place, any activities will be relocated or ceased until more effective mitigation is in place.
Comment	The weather forecasts will be monitored. The Site Manager will be informed of actions taken and the event will be recorded in the Site logbook.
Event	Visual monitoring records dust plumes across Site boundary in direction of off-Site receptors
Contingency Actions	The frequency of visual monitoring will increase to a minimum of twice daily, which will incorporate a walkover along the boundary in question. Wind direction will be determined. The likely dust source will be determined, and additional dust suppression will be implemented e.g. Increased frequency of water suppression on internal haul roads and commence water suppression on material using manual techniques on Site. If additional dust suppression not effective, activity operations will be relocated or ceased until dust can be satisfactorily controlled.
Comment	Water supply will be available for high-risk activities. The Site Manager will be informed of actions taken and the event will be recorded in Site logbook.
Event	Malfunction of water suppression techniques, rendering them ineffective
Contingency Actions	Repairs will be undertaken using on-Site spares if possible, or a technician will be called to repair at earliest opportunity. Manual methods will be undertaken to clean down vehicles. The frequency of visual monitoring will increase to twice daily, which will incorporate a walkover of the all the boundaries. Manual water techniques will be available on Site and at the location of the dust source.
Comment	Essential spares will be retained on Site. The Site Manager will be informed of actions taken and the event will be recorded in Site logbook.
Event	Receipt of a particularly dusty load (inert material for stabilisation)
Contingency Actions	Management will be notified, and receipt records will be updated. Loads will be investigated to ascertain whether they can be received without causing dust emissions to leave Site. The following will be reviewed: use of additional mitigation, e.g. use of water bowser during unloading for all loads use of subsequent cover material once deposited

	Ultimately, if waste cannot be received without dust emissions causing an unacceptable impact, then receipt of load (s) will cease, and the carrier (s) will be informed.
Comment	Details will be recorded in Site logbook.
Event	Complaints received from members of the public or neighbouring businesses, verified by visual monitoring on site
Contingency Actions	Management will be notified. Complaint reporting and investigation procedure will be undertaken, and appropriate contingency measures will be undertaken as detailed above. The frequency of visual monitoring will increase to twice daily and will focus on boundary locations in proximity to the location of complainants. If required, correspond with the Environment Agency to discuss the requirement of quantitative dust monitoring. Complaint escalation procedure: Initial Complaint - Initial/first time contact received – complaint investigated, and contingency actions taken by site management. Complaint level 1 - An Interaction that has not been resolved to the satisfaction of the complainant or where frequent contact has been received from the public via the Regulators. Complaints investigated by senior management team and remedial actions taken. Complaint level 2 Unresolved Complaint level 1 – this may involve support from Environmental Consultants to review, investigate, determined required actions and respond to the complaint.
Comment	DMP may require updating on basis of results of investigations.
Event	Malfunction of vehicle wheel wash, rendering it in effective
Contingency Actions	Undertake repairs using on Site spares if possible or call out technician to repair system. Use manual methods to clean down vehicles or truck wash as necessary. Increase frequency of visual monitoring and ensure monitoring of access road to identify track out. Increase frequency of road sweeper on access road, as required. Review requirement for additional mitigation, e.g. increase use of road sweeper on operational areas. If dust is being released in significant quantities likely to cause impact, then cease activities.
Comment	Essential spares retained on Site. Hoses for manual water application retained on Site. Frequency of street sweeping alone is likely to be an effective measure. The Site Manager will be informed of actions taken and a record will be entered into the Site logbook.
Event	Prolonged periods of hot weather, resulting in very dry ground and limited supply of water
Contingency Actions	Water suppression techniques to be prioritised for operational activities occurring closest to the off-Site receptors. Road sweeping to be undertaken if large material accumulating on haul roads, in operational areas and access road. However, be mindful this may resuspend the dust therefore not to be undertaken in windy conditions. If water supply on Site has significantly reduced, consider importing water onto Site. Increase daily monitoring to twice daily and if dust is being released in significant quantities likely to cause impact then cease activities.
Comment	Inform site manager of actions taken and record in Site logbook.

Appendix A Wind Record Form

Date	Initials of Author	Predominant Wind Direction	Wind Speed (Beaufort scale)	Rainfall	Areas of Working	Additional Comments (On- and Off-site)

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

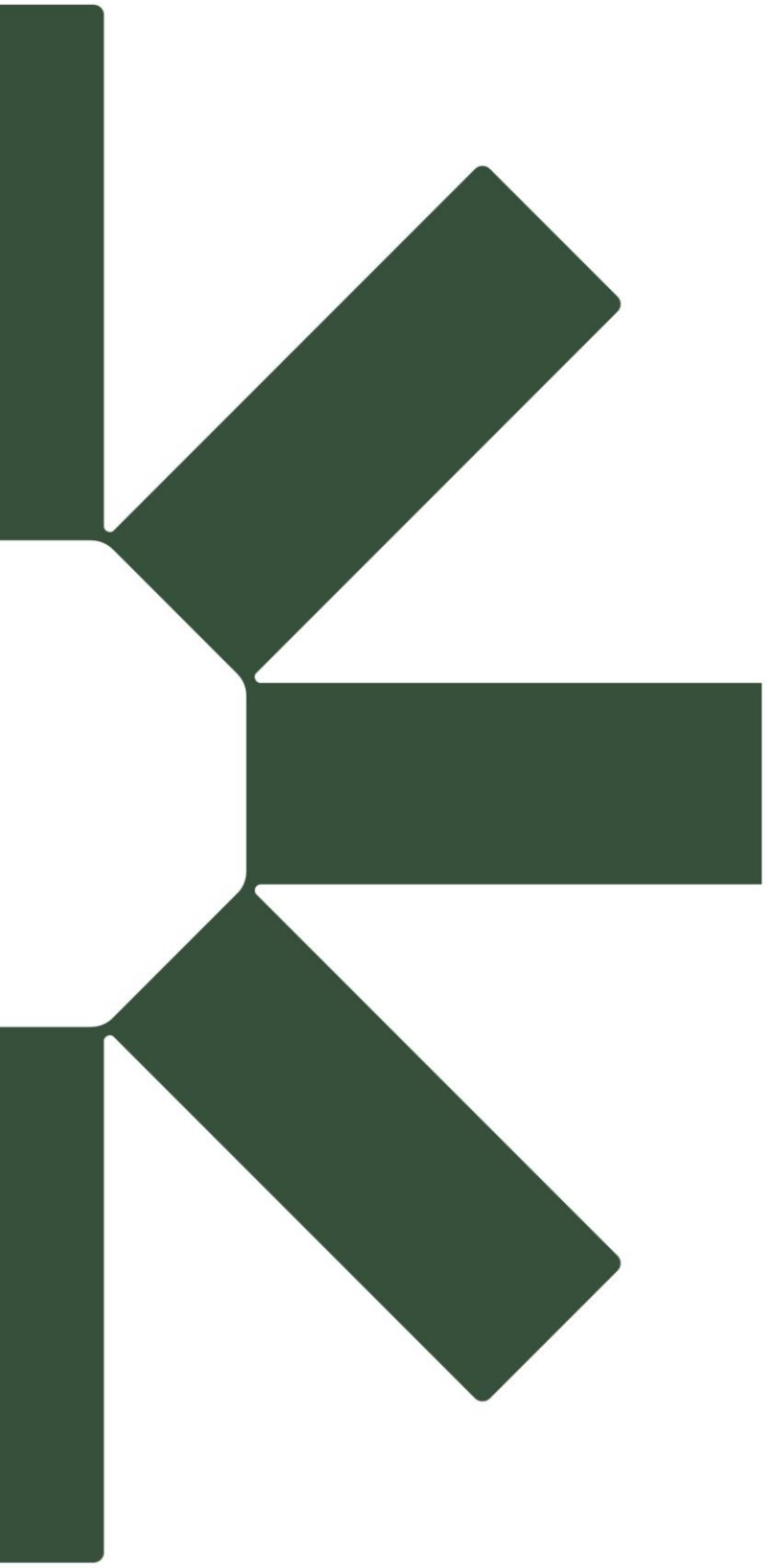
Appendix B Visual Observation Record Form

Visual Observations Record Form	
Name of Author	
Description of Event[(a)]	
Date / Time / Period	
Activities taking place during time / period of event:	
Dust control employed at the time of the event:	
Summary of weather conditions leading up to and during the event:	
Details of Corrective Action:	
Notes:	
E.g. complaint registered (name and address) or visible dust seen crossing site boundary during routine visual monitoring	

Appendix C Complaint and Investigation Form

Complaint and Investigation Form	
Customer Details	
Customer Name	
Address Postcode	
Telephone	
Email	
Date	
Complaint Ref Number	
Complaint Details	
Investigation Details	
Investigation carried out by	
Position	
Date & time investigation carried out	
Weather conditions	
Wind direction and speed	
Investigation findings	
Feedback given to Environment Agency and/or local authority	
Date feedback given	
Feedback given to public	
Date feedback given	
Review and Improve	

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



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