Dust and Emissions Management Plan

304 Station Road, Isham, Kettering

Presented to: Easimix Concrete and Screed Ltd

Issued: December 2022

Delta-Simons Project No: 22-1135.02 / 87952.545851

Protecting people and planet

Report Details

Client	Easimix Concrete and Screed Ltd
Report Title	Dust and Emissions Management Plan
Site Address	304 Station Road, Isham, Kettering
Project No.	22-1135.02 / 87952.545851
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Quality Assurance

Issue No.	Status	Issue Date	Comments	Author	Technical Review	Authorised
2	Issue	5th December 2022	Addressing EPO Comments	S. Goodman Siobhan Goodman Senior Consultant	G. Antony Gabor Antony Unit Manager	G. Antony Gabor Antony Unit Manager

About Us

Delta-Simons is a trusted, multidisciplinary environmental consultancy, focused on delivering the best possible project outcomes for customers. Specialising in Environment, Health & Safety and Sustainability, Delta-Simons provide support and advice within the property development, asset management, corporate and industrial markets. Operating from across the UK we employ over 180 environmental professionals, bringing experience from across the private consultancy and public sector markets.

As part of Lucion Services, our combined team of 500 in the UK has a range of specialist skill sets in over 50 environmental consultancy specialisms including asbestos, hazardous materials, ecology, air and water services, geo-environmental and sustainability amongst others.

Delta-Simons is proud to be a founder member of the Inogen Environmental Alliance, enabling us to efficiently deliver customer projects worldwide by calling upon over 5,000 resources in our global network of consultants, each committed to providing superior EH&S and sustainability consulting expertise to our customers. Through Inogen we can offer our Clients more consultants, with more expertise in more countries than traditional multinational consultancy.

Delta-Simons is a 'Beyond Net-Zero' company. We have set a Science-Based Target to reduce our Scope 1 and Scope 2 carbon emissions in line with the Paris Agreement and are committed to reducing Scope 3 emissions from our supply chain. Every year we offset our residual emissions by 150% through verified carbon removal projects linked to the UN Sustainable Development Goals. Our consultancy services to you are climate positive.

If you would like support in understanding your carbon footprint and playing your part in tackling the global climate crisis, please get in touch with your Delta-Simons contact above who will be happy to help.

Executive Summary

Site and Report Context	Delta-Simons Limited ('Delta-Simons') was instructed by Easimix Concrete and Screed Ltd (the 'Client') to prepare a Dust and Emissions Management Plan (DEMP) to inform the application for a Part B permit for blending, packing, loading, unloading and use of bulk cement, at 304 Station Road in Isham, Kettering (the 'Site'). The main operations at the Site comprise the delivery and storage of materials that are required to make concrete and screed, the loading of these materials and cement from on-site silos onto vehicles via a loading shovel, and the washing of concrete from the vehicles on-Site, the waste from which is collected and stored in the material bay to be reused (the 'Operations'). The Environmental Protection Officer (EPO) at North Northamptonshire Council (NNC) has requested a 'Dust and Emissions Management Plan' to inform the application for a Part B permit for the Operations at the Site. The Site is located in an area where air quality is mainly influenced by road traffic emissions along the adjacent Station Road, the A509 and the local road network and as such, elevated pollutant concentrations may be experienced at this location. Subsequently, the Operations have the potential to cause adverse impacts to existing pollutant levels at nearby sensitive human receptors, as a result of fugitive dust and plant/vehicle emissions at the Site. Accordingly, a DEMP, inclusive of an operational phase Qualitative Dust Risk Assessment, is required to determine baseline conditions at the Site, to consider the potential for dust impacts at nearby sensitive receptors and to identify where necessary, additional mitigation measures to reduce air quality and dust effects to an appropriate level.
Summary	The Qualitative Dust Risk Assessment results, based on a review of prevailing meteorological conditions in relation to the relative positions of the Site and its Operations, concluded that emissions associated with these Operations will have a **slight adverse** to **negligible** impact on nearby sensitive receptor locations, with regard to dust. An impact of this magnitude would be considered to have an effect that is **not significant**, i.e., it would not be a deciding factor in planning and/or permitting determination and would not trigger the implementation of additional mitigation. Based on the assessment results, more stringent mitigation measures are therefore, not required to be considered and employed on Site. It is concluded, therefore, that the dust emissions associated with the Operations at the Site are not considered to result in significant loss of local amenity and consequently the resulting risk of potential dust complaints is **low**. This DEMP presents a Site-specific plan to minimise dust emissions during the Operations at the Site, prepared in accordance with the Department for Environment, Food and Rural Affairs (Defra) Process Guidance (PG) Note 3/01(12) and associated Best Available Techniques (BAT).
Conclusions and Recommendations	Based on the findings of the Qualitative Dust Risk Assessment, it is considered that the Site Operations comply with national and local planning policies and there are no air quality or dust constraints considered to restrict planning and/or permitting consent. Accordingly, there is no requirement for further assessment of potential air quality or dust effects and the Site is considered to be suitable for the current Operations. The DEMP includes guidance and procedures to reduce, manage and mitigate dust emissions as a result of the Operations at the Site, along with suitable control measures/conditions in line with the relevant PG Note 3/01(12).
This is intended as a summary only. Further detail and limitations of the DEMP are provided within the main body of the statement.	

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1.0 Introduction

1.1 Appointment

1.1.1 Delta-Simons Limited ('Delta-Simons'), was instructed by Easimix Concrete and Screed Ltd (the 'Client') to prepare a Dust and Emissions Management Plan (DEMP) to inform the application for a Part B permit for blending, packing, loading, unloading and use of bulk cement, at 304 Station Road in Isham, Kettering (the 'Site').

1.1.2 The main operations at the Site comprise the delivery and storage of materials that are required to make concrete and screed, the loading of these materials and cement from on-Site silos onto vehicles via a loading shovel, and the washing of concrete from the vehicles on-Site, the waste from which is collected and stored in the material bay to be reused (the 'Operations').

1.1.3 The Operations at the Site fall under Schedule 1, Chapter 3, Section 3.1 of the Environmental Permitting (England and Wales) Regulations 2016 (as amended), and as such, require a Part B environmental permit application to be submitted to NNC.

1.1.4 As such, the Environmental Protection Officer (EPO) at North Northamptonshire Council (NNC) has requested a 'Dust and Emissions Management Plan' to inform the application for a Part B permit for the Operations at the Site.

1.2 Site Location and Context

1.2.1 Reference should be made to **Figure 1** for a map of the Site and surrounding area.

1.2.2 The Site is located in an area where air quality is mainly influenced by road traffic emissions along the adjacent Station Road, the A509 and the local road network and as such, elevated pollutant concentrations may be experienced at this location.

1.2.3 Immediately adjacent to the east of the Site are existing sensitive residential receptors at 300 and 302 Station Road. Additional existing sensitive residential receptors within 500m-1km of the Site comprise the dwellings to the north-east through to the south-east in Burton Latimer and dwellings to the east-south-east through to the west-south-west, in Isham. There are also existing commercial/light industrial units to the north-east of the Site and agricultural fields bordering the Site to the south across Station Road, and to the west and north. It is noted that there is a large warehouse construction project taking place approximately 150m north of the Site. There are no schools, hospitals or other such high occupancy receptors have been identified within 1km of the Site.

1.2.4 With regard to ecological receptors, an initial desk survey has indicated that there is a Site of Special Scientific Interest (SSSI), Southfield Farm Marsh, located approximately 900m north of the Site, within the relevant screening distance of 1km for installations involving cement activities.

1.2.5 Subsequently, the Operations have the potential to cause adverse impacts to existing pollutant levels at nearby sensitive human and ecological receptors, as a result of fugitive dust and plant/vehicle emissions at the Site.

1.2.6 Accordingly, a DEMP, inclusive of an operational phase Qualitative Dust Risk Assessment, is required to determine baseline conditions at the Site, to consider the potential for dust impacts at nearby sensitive receptors and to identify where necessary, additional mitigation measures to reduce air quality and dust effects to an appropriate level.

1.2.7 This DEMP presents the findings of the Qualitative Dust Risk Assessment, which addresses the potential dust impacts associated with the Operations at the Site. For this, the type, source and significance of potential impacts are identified, and the measures that should be employed to minimise these described.

1.2.8 Furthermore, the DEMP also includes guidance and procedures to reduce, manage and mitigate dust emissions as a result of the Operations at the Site, along with suitable control measures/conditions in line with the Department for Environment, Food and Rural Affairs (Defra) Process Guidance (PG) Note 3/01(12)[1], and associated Best Available Techniques (BAT).

1.2.9 The standard limitations associated with this DEMP are presented in **Appendix A**.

1.2.10 A glossary of terms used in this statement is provided in **Appendix B**.

[1] Department for Environment, Food and Rural Affairs (Defra) (2012) Process Guidance Note 3/01(12) Statutory guidance for blending, packing, loading, unloading and use of cement [Online] Available at: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/573004/blending-packing-loading-unloading-and-use-of-cement-process-guidance-note-3-01_12_.pdf [Accessed on 30/11/2022].

2.0 Scope, Methodology and DEMP Responsibilities

2.1 Scope

2.1.1 The scope of the DEMP has been determined in the following way:

- Review of the latest available Air Quality Annual Status Report (ASR) from NNC[2], and air quality data for the area surrounding the Site, including from NNC, Defra[3] and the Environment Agency (EA)[4];
- Desk study to confirm the locations of nearby existing receptors that may be sensitive to changes in local air quality, as a result of the Operations at the Site. This included a review of information on ecological receptors from the Multi-Agency Geographic Information for the Countryside (MAGIC) on-line mapping website[5] and the UK Air Pollution Information Service (APIS)[6];
- Appraisal of potential operational phase dust emissions from the Operations at the Site; and
- Preparation of a Dust and Emissions Management Plan for use at the Site, to mitigate and manage the risk of dust emissions associated with the Operations, in accordance with Defra's PG Note 3/01(12)[1] for blending, packing, loading, unloading and use of bulk cement, and the associated BAT.

2.1.2 The scope of the DEMP includes consideration of the potential impacts on local air quality resulting from:

- Operational phase dust emissions associated with the activities undertaken at the Site.

2.2 Methodology

Dust and Emissions Management Plan

2.2.1 The DEMP includes written guidance on ways to improve, manage and mitigate the dust and emissions generated around the Site. As such, the following aspects are included:

- Establish the location of the nearest receptor locations sensitive to dust emissions generated by the Operations at the Site;
- Provide a detailed description of the Operations that take place at the Site, including deliveries, storage of materials, operation of vehicles/plant and any cleaning/maintenance;
- Measures to be taken to manage the release of dust and particulate matter associated with the Site's activities, including any potential monitoring methods;
- Actions to be taken when dust and particulate matter levels rise above agreed upon limits; and
- Procedures for managing reports and complaints.

2.2.2 The DEMP applies to the Operations at the Site which are regularly undertaken by employees.

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2 North Northamptonshire Council (2022) 2022 Air Quality Annual Status Report (ASR) Provided via email from Environmental Protection Team at NNC on 27/09/2022.

3 Department for Environment, Food and Rural Affairs (Defra) Local Air Quality Management (LAQM) Support Pages [Online] Available at: http://laqm.defra.gov.uk/ [Accessed on 27/09/2022].

4 Environment Agency (2022) Pollution Inventory [Online] Available at: https://data.gov.uk/dataset/cfd94301-a2f2-48a2-9915-e477ca6d8b7e/pollution-inventory [Accessed on 27/09/2022].

5 Multi-Agency Geographic Information for the Countryside [Online] Available at: https://magic.defra.gov.uk/MagicMap.aspx [Accessed on 30/11/2022].

6 UK Air Pollution Information System (APIS) [Online] Available at: http://www.apis.ac.uk/ [Accessed on 30/11/2022].

Operational Phase Assessment - Dust Emission Impacts

2.2.3 The IAQM minerals guidance document[7] employs the 'Source-Pathway-Receptor' approach to evaluate the risk of dust impacts and effects and it aims to provide advice on robust and consistent good-practice approaches that can be used to assess the potential operational phase dust impacts.

2.2.4 There is the potential for fugitive dust emissions to occur in the vicinity of the Site as a result of its Operations. Vehicle movements around the Site also have the potential to result in the re-suspension of dust from road surfaces.

2.2.5 The potential for impacts at sensitive locations depends significantly on local meteorology during the undertaking of dust-generating activities, with the most significant effects likely to occur during dry and windy conditions.

2.2.6 The scope of the Qualitative Dust Risk Assessment has been determined in the following way:

- Establish baseline conditions of the existing dust climate by the current Operations at the Site;
- Identify activities that could lead to dust emissions without mitigation;
- Identify Site parameters which may increase potential impacts from dust; and
- If required, propose mitigation measures, including modification of Site design.

2.2.7 A summary of the dust assessment methodology is provided in **Appendix D**.

2.3 Dust and Emissions Management Plan Responsibilities

Management

2.3.1 The Site Manager is responsible for providing the tools and resources necessary to implement this DEMP, and for making sure that the provisions within are being followed by the employees and Site Foreman.

Employees and Site Foreman

2.3.2 The employees of the Site, in particular the on-duty Site Foreman, are responsible for the following:

- Addressing the DEMP observations from employees, management and the public;
- Conducting annual Site walk-through assessments;
- Reviewing new construction and operational projects/procedures for DEMP observations;
- Making sure that the Maintenance, Safety and Security departments have a copy of the DEMP;
- Scheduling employee training and making sure that new hires receive reporting instructions; and
- Periodically reviewing the DEMP and updating as needed.

Maintenance/Training

2.3.3 All employees will:

- Attend DEMP training;
- Follow all DEMP requirements; and
- Perform preventative maintenance as per the plan.

[7] Institute of Air Quality Management (Version 1.1 Updated May 2016) Guidance on the Assessment of Mineral Dust Impacts for Planning.

Site Occupants and Employees

2.3.4 All employees will:

- Read all DEMP materials;
- Report DEMP observations to their supervisor, management or the Site Foreman;
- Report incidents likely to result in an increase in dust emissions immediately;
- Discard all waste in the appropriate containers; and
- Follow operating procedures regarding minimising dust emission release during all aspects of work.

3.0 Dust and Emissions Management Plan

3.1 Introduction

3.1.1 The following DEMP takes into account the potential for dust emissions associated with the Operations at the Site. The DEMP is a 'live document' subject to on-going review and updates, as appropriate, to make sure that it is reflective of the current Operations at the Site and is being effective.

3.1.2 The DEMP is based on current guidance provided by the IAQM[7], the EA and Defra[8] and has been prepared in accordance with Defra's PG Note 3/01(12)[1] for blending, packing, loading, unloading and use of bulk cement, and the associated BAT.

3.1.3 The DEMP has also been prepared with reference to the EA Dust and Emissions Management Plan template[9].

3.2 Site Setting

Sensitive Receptors

3.2.1 The Site is located at 304 Station Road in Isham, Kettering. Immediately adjacent to the east of the Site are existing sensitive residential receptors at 300 and 302 Station Road. Additional existing sensitive residential receptors within 500m-1km of the Site comprise the dwellings to the north-east through to the south-east in Burton Latimer and dwellings to the east-south-east through to the west-south-west, in Isham.

3.2.2 There are also existing commercial/light industrial units to the north-east of the Site and agricultural fields bordering the Site to the south across Station Road, and to the west and north. It is noted that there is a large warehouse construction project taking place approximately 150m north of the Site.

3.2.3 There are no schools, hospitals or other such high occupancy receptors have been identified within 1km of the Site.

3.2.4 The human receptors in the vicinity of the Site are detailed below in **Table 1**. The sensitivity of receptors to dust has been determined through reference to the IAQM Guidance[7].

Table 1 - Nearest Human Receptors

Receptor	Type	Sensitivity to Deposition Dust	Distance and Orientation from Site
300 Station Road	Residential	High	<30m, E
302 Station Road	Residential	High	<10m, E
Auto Parts Store, Burton Latimer	Commercial	Medium	120m, E
Weetabix Factory and Distribution Centre	Commercial/Light Industrial	Medium	225m, NE
Residential Properties on Kingfishers Way, Burton Latimer	Residential	High	400-450m, E-SE
Residential Properties in NE Isham	Residential	High	400-550m, ESE-WSE
Symmetry Park, Kettering*	Commercial/Light Industrial	Medium	150m, N

* Still under construction at time of writing.

8 Environment Agency and Department for Environment, Food and Rural Affairs (2021) Guidance: Control and monitor emissions for your environmental permit [Online] Available at: https://www.gov.uk/guidance/control-and-monitor-emissions-for-your-environmental-permit#emissions-management-plan-for-dust [Accessed on 27/09/2022].

9 Environment Agency (2018) Example Dust Emissions Management Plan, v10.

3.2.5 With regard to ecological receptors, an initial desk survey has indicated that Southfield Farm Marsh SSSI is located approximately 900m north of the Site, within the relevant screening distance of 1km for installations involving cement activities[1].

3.2.6 The ecological receptors in the vicinity of the Site are detailed below in **Table 2**. The sensitivity of receptors to dust has been determined through reference to the IAQM Guidance[7].

Table 2 - Nearest Ecological Receptors

Receptor	Type	Sensitivity to Deposition Dust	Distance and Orientation from Site
Southfield Farm Marsh	SSSI	Medium	900m, N

3.2.7 With reference to the IAQM guidance[7] potential impacts with respect to fugitive dust would not be expected at either human or ecological receptors beyond a distance of 400m, even from the dustiest of sites. As such, the only highly sensitive receptors within this distance are the residential receptors adjacent to the Site on Station Road. Other receptors within this distance include an Auto Parts Store to the east and the development at Symmetry Park to the north, though it is noted that this is still under construction. There are no local or nationally designated ecological sites within 400m of the Site.

Baseline

Local Air Quality Management

3.2.8 According to the latest available Air Quality ASR from NNC[2]and Defra[10], there are currently no Air Quality Management Areas (AQMAs) designated within the district. Due to the scale of the Site, its Operations, and the distance away from any AQMAs, potential effects associated with the development have not been considered at sensitive receptors within these areas.

Local Emission Sources

3.2.9 The Site is located in an area where air quality is mainly influenced by road traffic emissions along the adjacent Station Road, the A509 and the local road network. There are potential commercial sources identified in the vicinity of the Site, that may also influence the local air quality, however, these would be characteristic of the mixed-use area in which the Site is located.

Air Quality Monitoring

3.2.10 Monitoring of pollutant concentrations is undertaken throughout NNC's area of jurisdiction utilising non-automatic (passive) methods. The closest monitoring location, diffusion tube W8, is located approximately 225m south-west of the Site. The most recent diffusion tube monitoring results recorded within the vicinity of the Site are shown in **Table 3**. NNC does not currently undertake automatic (continuous) monitoring.

[10] Department for Environment, Food and Rural Affairs (Defra) (undated) List of Local Authorities with AQMAs [Online] Available at: https://uk-air.defra.gov.uk/aqma/list [Accessed on 27/09/2022].

Table 3 - Diffusion Tube Monitoring Results

Monitoring Site			Monitored NO_2 Concentration (µg/m³)*				
ID	**Location**	**Type**	**2017**	**2018**	**2019**	**2020**	**2021**
KT11	London Road/Bowling Green Road	Roadside	**40.2**	38.3	37.3	26.9	30.9
KT13	London Road Cemetery	Urban background	18.4	15.6	15.2	11.4	13.2
KT20	Bowling Green Road No 9	Roadside	-	38.0	35.0	26.4	29.8
KT21	London Road/Southlands	Roadside	-	35.8	32.9	23.9	28.6
KT22	Woodcroft Way by flats	Roadside	-	22.7	22.0	15.3	17.9
KT23	Bowling Green Road Council Offices	Roadside	-	-	34.1	23.9	30.1
KT24	Sheep Street HSS Hire shop	Roadside	-	-	25.3	18.8	22.2
KT25	47 Bowling Green Road	Roadside	-	-	29.9	21.9	25.6
KT26	112 London Road	Roadside	-	-	26.3	20.0	22.9
KT28	London Road/St Mary's Road Junction	Roadside	-	-	30.4	20.7	24.6
KT29	Opposite 1 St Mary's Road	Roadside	-	-	25.7	18.6	22.9
KT31	London Road Pocket Park	Roadside	-	-	28.3	22.5	24.6
KT32	London Road Cemetery	Roadside	-	-	29.1	22.6	25.9
KT33	15 London Road	Roadside	-	-	25.1	18.9	22.3
KT34	Horsemarket Bus Stop	Roadside	-	-	28.8	18.9	22.7
KT44	St Edwards Church London Rd	Roadside	-	-	-	24.3	23.6
KT45	Pytchley Road No 6	Roadside	-	-	-	22.9	21.1
KT46	Northfield Avenue opposite Carpet Right	Roadside	-	-	-	24.7	23.2
W8	Kettering Road	Roadside	25.9	21.6	24.2	17.0	17.0

* Exceedances of the relevant Air Quality Objective (AQO) are shown in **bold**.

3.2.11 As shown in **Table 3**, annual mean NO_2 concentrations did not exceed the relevant AQO at any monitoring Site during the most recent monitoring year, 2021. However, an exceedance was recorded at monitoring Site KT11 in 2017, although this location is not representative of the Site. It is noted that pollutant concentrations in the most recent monitoring years, 2020 and 2021, are likely to have been affected by the prevailing Travel Restrictions.

3.2.12 Reference should be made to **Figure 1** for a map of the diffusion tube positions.

3.2.13 No monitoring of PM_{10} or $PM_{2.5}$ is undertaken in the vicinity of the Site.

Background Pollutant Concentrations

3.2.14 Predictions of background pollutant concentrations on a 1km by 1km grid basis have been produced by Defra for the entire UK to assist Local Authorities in their Review and Assessment of air quality. The Site is located within grid square NGR: 488500, 274500. Data for this location were downloaded from the Defra website[11] for the purpose of the project. These data are summarised in **Table 4**.

Table 4 - Predicted Background Pollutant Concentrations (2022)

Location	NO_2	NO_x	PM_{10}	$PM_{2.5}$
The Site	13.2	17.9	15.5	9.4

3.2.15 As shown in **Table 4**, predicted background NO_2, PM_{10} and $PM_{2.5}$ concentrations are below the relevant AQOs across the assessment extents.

[11] Department for Environment, Food and Rural Affairs (Defra) (2022) Background Concentrations [Online] Available at: https://uk-air.defra.gov.uk/data/laqm-background-home [Accessed on 27/09/2022].

Nearby Dust Sources

3.2.16 There are a number of commercial/light industrial uses in the vicinity of the Site that are identified as potential dust generating sources. In particular, the Weetabix Factory/Distribution Centre has the potential to contribute to local dust levels. In addition, the development at Symmetry Park to the north of the Site has the potential to contribute, particularly during the construction phase.

3.2.17 The agricultural fields in the vicinity of the Site also have the potential to become dust generating sources, particularly when agricultural vehicles/machinery are being used at these locations, and when they are travelling to and from the fields.

Wind Direction and Speed

3.2.18 Reference has been made to wind speed and directional data obtained from the meteorological station located at Bedford, approximately 20km to the south-east. Local variations will exist in meteorological conditions, but the Bedford wind data are considered appropriate for this DEMP.

3.2.19 A wind rose generated using the meteorological data used for the consideration of operational phase impacts is provided in **Appendix E**. This shows that the prevailing wind direction is mainly from the south-west. Therefore, receptors located to the north-east of the Site are more likely to be affected by dust and PM emitted and re-suspended during the Operations at the Site.

3.2.20 Under low wind speed conditions, it is likely that the majority of dust would be deposited in the area immediately surrounding the source. Receptors to the north-east of the Site have the greatest potential to be affected as a result of the prevailing wind direction.

3.3 Operations at the Site

Deliveries to the Site

3.3.1 Raw material deliveries, including aggregate and cement, are made to the Site via the local road network. The delivery vehicles are tipper lorry units with tarpaulins covering the material, all with emission rating of Euro 6. Whilst on Site, all vehicles will be limited to 5mph, and new signage will be put up to enforce this requirement. All deliveries of raw materials are directed on Site to their designated aggregate bays.

3.3.2 All raw material orders and deliveries are scheduled and noted in advance. All materials delivered to Site are recorded for the purposes of stock control and planning of storage and vehicle movements on the Site.

3.3.3 A summary of the current stages of ordering and delivery of raw materials to the Site, and the proposed future change to this procedure, is provided below in **Table 5**.

Table 5 - Current and Proposed Methods for Ordering Deliveries

Current Method	Proposed Method
Raise order against Kanban	Raise order against Kanban
Order is delivered to Site/location	Order is delivered to Site/location
Quantity and material check performed	Site Foreman to decide if the weather suitable to load/unload
Stock control updated/available	Quantity and material check performed
Material usage planned created	Stock control updated/available
Materials loaded out to vehicles	Material usage plan created
	Materials loaded out to vehicles

Overview of Process, Dust, and Other Emission Controls

General Operations and Site Observations

3.3.4 There are four volumetric vehicles/tipper lorry units on Site, with two storage bays for cement/screed mixing materials. The first bay on the Site is used to store ballast, which is loaded into the volumetric vehicles/tipper lorry units. The second bay on Site is used to store sharp sand, this is also loaded into volumetric vehicles/tipper lorry units when clients request a screed delivery. The materials are loaded into the volumetric vehicles/tipper lorry units by operation of a Wheel Loader.

3.3.5 There are also two cement silos at the Site, which are loaded with cement one-two times per week, depending on demand. The cement is loaded into one compartment of the volumetric vehicles/tipper lorry units, along with either the ballast or sharp sand into another compartment, depending on the customer requirements. One water tank is also located at the Site. This is used to fill up the volumetric vehicles/tipper lorry units' water tanks, used to mix the two components stored on the vehicle when on Site to create either concrete or screed for the client at the required locations.

3.3.6 No batching of concrete takes place on Site and as such, all mixing takes place at the delivery location.

3.3.7 The materials are loaded as required into vehicles ready for deliveries on the day. No materials are sorted on Site, and once delivered they are stored into the relevant location until required for a delivery, upon client request. As such, the Site can produce dust when meteorological conditions are dry and windy, primarily from uncovered material storage and vehicle movement.

3.3.8 The Site surface consists of concrete and is therefore easy to maintain and clean. Trials were performed on Site to determine which activities have the greatest potential to lead to dust emissions. These trials identified that dust emissions were more prevalent during vehicle movements across the Site. Therefore, all vehicles will be limited to 5mph whilst on Site and signage is to be put up enforcing this action.

3.3.9 Sprinklers are installed at the Site by the storage container nearest the entrance and the aggregate bays. The installation of sprinklers near to the storage bays and the main Site route near the entrance has proven to keep dust and particulate matter distribution to a minimum within the Site boundary.

3.3.10 The sprinklers on the main Site route, where vehicles are loaded and unloaded, are orientated so that the spread of the arc covers the maximum area possible between the aggregate storage bays and the Site entrance. The type of sprinklers employed are standard garden sprinklers that provide sufficient coverage to the stockpiles and when vehicles are moving across the Site. Due to the flow of water on the wet concrete surface, this helps mitigate any dust from the stockpiles and also dust from vehicles becoming airborne.

3.3.11 The Site receives deliveries of aggregate which are stored in designated bays, with protection from the wind and other meteorological conditions and are kept to a maximum height of 0.5m below the back wall in the bays. The cement silos on the Site are fitted with high-level audio and visual alarms which are visually checked on a daily basis. Due to the vehicles having an opening hatch at the top of the vehicle for cement storage, the cement in the silo is fed directly into these and are then closed, helping keep dust emissions to a minimal amount. When the cement silo needs refilling, a cement tanker is ordered and a blow off valve is used to prevent the associated dust from escaping during discharge from the lorry. This blow-off valve is visually checked before every delivery and if there are any issues with the silo and associated equipment, a company is available on call (Silo Services Ltd) to fix/rectify the problem promptly.

3.3.12 The stockpile areas on Site are created from concrete blocks that link together to form pens around the material that has been deposited. These blocks act as wind breakers with the material being held 0.5m from the top of the pens.

Mobile Plant and Equipment

3.3.13 The Site uses plant units with internal combustion engines. The make, model and emission ratings for the relevant mobile plant and equipment used on Site are provided below in **Table 6**.

Table 6 - Description of Mobile Plant and Equipment used on Site

Description	Make	Model	Emission Rating
Wheel Loader with Shovel	Case	621B	Tier 3a

3.3.14 All equipment is serviced regularly by either an on-site fitter/local fitter or by the manufacturer.

Hours of Operation

3.3.15 The Site operates between 0700 - 1730, Monday to Friday. The Site also operates on the occasional Saturday between 0800 - 1300, depending on client orders. The finishing times may vary depending on orders placed, but the Site normally ceases operations by 1730 on weekdays and by 1300 on Saturdays. During a weekend, there would be only 1-2 drivers on Site at any one time.

3.3.16 The Wheel Loader is only operated to load vehicles for around 4-5 minutes max at a time, approximately 10-15 times a day. The lorries coming to the Site reverse in under the cement silo to get loaded and are turned off while getting loaded (to avoid unnecessary emissions while idling). As such, vehicles at the Site are running for a maximum of 2 minutes per Site visit, whilst driving on/off Site, and for 4-5 minutes in the early mornings to warm up the vehicles for use.

3.4 Operational Phase Dust Assessment

Overview

3.4.1 The Site is located adjacent to a number of residential properties, bordering the Site to the east, and may result in dust emissions at these locations during normal operation. The Site is also located approximately 300-500m of existing residential housing estates in Burton Latimer and Isham, beyond a series of existing fields and hedgerows/trees, and as such, may also result in dust emissions at these locations during normal operation.

Prevailing Meteorological Conditions

3.4.2 The potential for dust to impact at sensitive locations depends significantly on prevailing meteorological conditions, particularly wind direction and wind speed, during emissions. In order to consider prevailing conditions in the vicinity of the Site, a review of historical weather data was undertaken. The closest observation station with suitable dataset to the Site is Bedford observation station, which is located approximately 20km to the south-east of the Site. It is anticipated that conditions would be reasonably similar over a distance of this magnitude. The data were, therefore, considered suitable for an assessment of this nature.

3.4.3 Meteorological data were obtained from Bedford meteorological station over the period 1st January 2012 to 31st December 2021 (inclusive). The frequency of wind from the 12 sectors that best describe the directions which may cause impacts in the vicinity of Site is shown in **Table 7**. The directions which have the potential to impact at the closest existing sensitive receptors are shown in **bold**. Reference should be made to **Appendix E** for a wind rose of the meteorological data.

Table 7 - Wind Frequency Data

Wind Direction (Degrees)	Direction (blowing from)	Frequency of Wind (%)	Directional Wind Speed >5m/s
345 - 15	**N**	**5.70**	**1.90**
15 - 45	**NNE**	**8.54**	**3.03**
45 - 75	**ENE**	**5.68**	**1.81**
75 - 105	E	3.25	0.72
105 - 135	ESE	3.41	0.98
135 - 165	SSE	5.02	1.36
165 - 195	S	7.78	3.11
195 - 225	SSW	14.25	6.93
225 - 255	**WSW**	**18.74**	**6.03**
255 - 285	**W**	**10.43**	**3.72**

Wind Direction (Degrees)	Direction (blowing from)	Frequency of Wind (%)	Directional Wind Speed >5m/s
285 - 315	**WNW**	**7.29**	**3.00**
315 - 345	**NNW**	**5.48**	**1.89**
Total	-	95.57	34.49
Missing/Incomplete	-	4.18	-
Calms	-	0.70	-

3.4.4 As shown in **Table 7**, the prevailing wind direction at the Site is from the west-south-west. Winds from other directions are relatively infrequent, which is indicative of conditions throughout much of the UK.

Qualitative Dust Risk Assessment

3.4.5 There is the potential for fugitive dust emissions to occur at existing sensitive receptors to the north-east through to the east and east-south-east through to the west-south-west of the Site as a result of the Operations taking place at the Site. Therefore, this could result in loss of amenity at existing sensitive receptor locations. Key sources were identified as:

- Dust arising from the movement of vehicles/plant within the Site;
- The handling and storage of materials required to make concrete and screed (mixing is done off-site); and
- The washing of concrete from vehicles and collecting of waste materials for re-use.

3.4.6 It is noted that the distance between the closest sensitive receptor locations and the Site boundary is less than 25m to the east, which is considered '**close**', in line with IAQM terminology. However, it is screened by a small series of hedgerows/trees, which provides a buffer for dispersion during wind conditions where wind is blowing towards the nearest sensitive receptor locations from the Site. It is also understood that a sufficiently high concrete wall is to be built along the eastern Site boundary to further minimise dust dispersion at these locations.

3.4.7 In order to represent a robust assessment approach, wind directions with the potential to affect nearby existing sensitive residential receptors have been grouped based on the relative orientation to the Site. Existing sensitive receptors to the east-north-east and east, adjacent to the Site boundary and in Burton Latimer, are considered to be downwind from the Site in the sectors of 225 -285° occurring for a total of 29.17% of the time annually, with the greatest frequency occurring within the 225 -255° sector for 18.75% of the time. In addition, existing sensitive residential receptors to the east-south-east, south-south-east, south, south-south-west and west-south-west, in Isham, are considered to be downwind from the Site in the sectors of 285 -345° and 345 -75° occurring for a total of 32.69% of the time annually, with the greatest frequency occurring within the 15 -45° sector for 8.54% of the time.

3.4.8 Additionally, dust episodes tend to occur during high wind speed and low rainfall conditions, which increases the likelihood of dust being raised and blown from the Site. The IAQM guidance[7] states that dry materials are more easily raised into the air and so rainfall acts as a natural dust suppressant. High-risk meteorological conditions are therefore, when the wind is coming from the direction of the dust source at a sufficient strength, during periods of little or no rainfall.

3.4.9 Existing sensitive receptors in the vicinity of the Site boundary in all directions can be affected under these conditions. The IAQM guidance states that dust impacts are, however, more likely to occur downwind of the prevailing wind direction and close to the boundary. Overall, therefore, receptors that are downwind with respect to the prevailing wind direction have the greatest potential to be affected the most by dust impacts.

3.4.10 Analysis of the 10-years of meteorological data from Bedford meteorological station indicated wind speeds of 5m/s or more occur on average for approximately 34.49% of the year. A review of the 30-year Climate Averages obtained from the Met Office[12] from Northampton Moulton Park Climate Station indicated that the average annual rainfall is 649.16mm, with 117 days of rainfall greater than 1mm. As such, the potential for entrainment of dust into the air and its subsequent transport is limited by both wind speed and rainfall.

3.4.11 The analysis of cumulative effects of the directional winds and wind speeds indicated that existing sensitive residential receptors to the east-north-east and east of the Site (particularly those along the eastern Site boundary), adjacent to the Site boundary and in Burton Latimer, could be affected by potential dust episodes for approximately 6.03% and 3.72% of the time, respectively, in accordance with the main wind frequency directions as assessed in **Table 7**. In addition, existing sensitive residential receptors to the east-south-east, south-south-east, south, south-south-west and west-south-west of the Site, in Isham, could be affected by potential dust episodes for approximately 3.00%, 1.89%, 1.90%, 3.03% and 1.81% of the time, respectively, in accordance with the main wind frequency directions as assessed in **Table 7**.

Risk Assessment

3.4.12 The Risk Assessment has been undertaken in accordance with the general principles of the IAQM guidance[7], as detailed in **Appendix D**.

Source Dust Potential

3.4.13 The main potential sources of dust affecting nearby existing sensitive receptor locations are from the Operations at the Site.

3.4.14 The Site and its Operations utilise materials with a medium dust potential. As such, the residual source emission magnitude is considered to be '**medium**', with reference to the IAQM guidance.

Effectiveness of Pathway

3.4.15 The closest existing sensitive residential receptors to the east, adjacent to the Site boundary, are located at a distance of less than 25m from the Site and its Operations, as such, the separation distance is classified as '**close**' to the source in the IAQM terminology. It should be noted that there are additional existing sensitive residential receptors to the north-east through to the east and also the east-south-east through to the west-south-west of the Site that are greater than 200m away from the Site, and as such, effects associated with dust emissions generated by the Operations at the Site are expected to be lower in these locations.

3.4.16 Winds blow from the direction of the dust source at the Site towards existing sensitive residential receptors to the east-north-east through to the east, adjacent to the Site boundary and in Burton Latimer, for approximately 29.17% of the time, but with the potential to result in dust impact due to high wind speeds at existing sensitive receptor locations for approximately 9.75% of the time. Winds also blow from the direction of the dust source at the Site towards existing sensitive residential receptors to the east-south-east through to the west-south-west, in Isham, for approximately 32.69% of the time, but with the potential to result in dust impact due to high wind speeds at the closest existing sensitive receptor locations for approximately 11.64% of the time Therefore, the frequency of potentially dusty winds is classed as '**moderately frequent**'.

3.4.17 With a '**close**' receptor separation distance and '**moderately frequent**' potentially dusty winds, the effectiveness of the pathway is therefore assessed as '**moderately effective**' with reference to the IAQM definitions.

[12] Met Office UK Climate Averages [Online] Available at: https://www.metoffice.gov.uk/research/climate/maps-and-data/uk-climate-averages/gcr37upbm [Accessed on 27/09/2022].

Risk of Dust Exposure

3.4.18 With a '**medium**' residual source emission magnitude and a '**moderately effective**' pathway, the risk of dust exposure of existing sensitive receptors is '**low**'.

Assessment of Impact

3.4.19 The sensitivity of the closest existing residential receptor locations, adjacent to the Site boundary, are considered to be '**high**', therefore in line with the IAQM impact assessment criteria for a '**high**' sensitivity receptor and a '**low risk**' of dust exposure, a '**slight adverse effect**' is anticipated.

3.4.20 As noted above, the additional existing sensitive residential receptors to the north-east through to the east, in Burton Latimer, and also the east-south-east through to the west-south-west, in Isham, are greater than 200m away from the Site and as such, based on the IAQM guidance, the Operations at the Site are anticipated to have a '**negligible effect**' with regards to dust exposure, at these locations.

Summary

3.4.21 Applying the IAQM assessment methodology indicates that the Operations at the Site are likely to have an overall '**negligible effect**' on the nearby existing sensitive residential receptor locations, with the exception of those immediately adjacent to the eastern boundary of the Site, which are likely to experience a **'slight adverse'** effect due to the Operations. Effects of these magnitudes are considered **not significant**, i.e., they would not be a deciding factor in planning and/or permitting determination and would not trigger the implementation of additional mitigation. Based on the assessment results, more stringent mitigation measures are therefore, not required to be considered and employed on Site.

3.5 Dust Generation and Control

General Requirements

3.5.1 The objective of this section is to specify suitable mitigation measures to control the likely sources of dust during normal and abnormal operations at the Site, incorporating the requirements and recommendations set out in current EA guidance[8] and Defra's PG Note 3/01(12)[1].

3.5.2 A summary of measures to control dust/PM_{10} is provided in **Appendix G**.

Dust Generation

3.5.3 The activities at the Site most likely to generate dust include:

- The unloading, loading, movement and transfer of cement-mixing materials at the Site, including to bins, mixers or lorries;
- Dust arising from the movement of vehicles/plant within the Site, including the dust on the surface of the vehicles;
- Storage of materials in silos and aggregate stockpiles;
- The transfer, handling and storage of materials required to make concrete and screed (mixing is done off-site);
- The blending and packing processes;
- External operations including conveyors, stockpiles and roadways; and
- The washing of concrete/dust from vehicles and plant and collecting of waste materials for re-use.

Dust Control

3.5.4 The main hierarchy of principles for preventing dust emissions at the Site includes avoiding, where possible, any dust emitting activities in the first instance. Where this is not possible, the next steps are to contain and then sufficiently suppress any dust producing processes at the Site. The most suitable dust management measures for the Site are detailed in the sections below, and have been prepared in accordance with the BAT detailed in Defra's PG Note 3/01(12).

Avoidance/Containment

- Positioning of loading and unloading vehicles/plant downwind of stockpiles, to provide shelter from the wind when material is moved, especially during high wind conditions;
- All materials entering and exiting the Site to be transported in covered or enclosed trailers/vehicles;
- A method of screening, such as a sufficiently high concrete wall with significantly reduced dust risk potential, should be provided on the eastern Site boundary, to protect the closest sensitive receptors from potential dust impacts;
- Road sweeping of Site entrance and main access routes should be frequently undertaken, either at agreed times or as required following Site observations;
- If necessary, and where appropriate, stockpiled material should be dampened to reduce potential release of dust into the air;
- All stockpiled material should be sheeted when the Site is not operational or when it is left unattended for any period of time;
- Stockpiled materials should adhere to the maximum height in their designated storage areas (0.5m or lower, below the back wall);
- Use of ring spray bars to reduce drop heights;
- Use of variable height conveyors;
- Use of enclosed chutes; and
- Use of dust arrestment (loading areas), bag filters and cartridge filters.

3.5.5 In accordance with Defra's PG Note 3/01(12), any powdered material should be transferred through a closed system of heavy-duty hoses to storage silos, using compressed air as a carrier medium. Silos should be vented to allow air to escape through filters, so controlling dust emission.

Dust Suppression

3.5.6 It is recommended that a reliable dust suppression system be provided across the Site for all potential dusty areas and materials. This will include the provision of dust suppression within any storage bays and heavily trafficked areas.

3.5.7 A sprinkler system is currently installed at the Site by the storage container nearest the entrance and the aggregate bays. This installation of sprinklers near to the storage bays and the main Site route near the entrance has proven to keep dust and particulate matter distribution to a minimum within the Site boundary.

3.5.8 The sprinklers on the main Site route, where vehicles are loaded and unloaded, are orientated so that the spread of the arc covers the maximum area possible between the aggregate storage bays and the Site entrance. The type of sprinklers employed are standard garden sprinklers that provide sufficient coverage to the stockpiles and when vehicles are moving across the Site. Due to the flow of water on the wet concrete surface, this helps mitigate any dust from the stockpiles and also dust from vehicles becoming airborne.

3.5.9 Site observations should be undertaken, especially at the Site entrance and exit, with roads to be swept as necessary. Provision of a manual jet-wash is encouraged to be provided, should any vehicles require cleaning before departing.

Weather Conditions

3.5.10 The prevailing meteorological factors most likely to affect the risk of dust generation and dispersion from the Site are wind and rainfall, with conditions comprising little or no rainfall (typically taken as <0.2mm rainfall per day) coinciding with winds of sufficient strength to raise dust (typically taken as about 5.5m/s) giving rise to an increased risk of wind-blown dust.

3.5.11 The installation of an inhouse Weather Station at the Site will allow for daily records to be kept of wind direction and wind speed, with trigger points to be set when airborne dust becomes a nuisance factor. This, along with the installation of mirror panes at strategic locations around the Site, will allow for on Site determination and monitoring of dust generation and allow for an evidence log to be created, that will provide a representation of real-time weather events. These data will also be used internally to establish a kick-in point whereby internal movements and operations within the Site boundary should temporarily cease, should wind speeds (along with other meteorological factors) be above the defined trigger points.

3.5.12 Daily Site observations should be undertaken, including a review of the meteorological conditions to determine the likelihood of dust generation at the Site and the requirement for any additional mitigation measures to be used, such as enhanced dust suppression. The data collected in these daily reviews are to be retained in a secure location to provide information in the event of any complaints.

Movement of Material

3.5.13 The material arriving at and leaving the Site are either transported in fully enclosed or sheeted vehicles to minimise the risk of any airborne dust during transportation. The material is typically delivered in volumetric vehicles/tipper lorry units which are used to minimise the disturbance of the material as it is unloaded into the designated bays at the Site. It is not recommended that vehicles without the ability to quickly unload the material, whilst minimising disturbances, are used on Site. Where this is unavoidable, the material should be dampened down as it is unloaded, where possible.

3.5.14 Following a review of the meteorological conditions at the Site, if the wind conditions at the time of unloading are deemed to be strong enough to risk uncontrollable dust emissions, the unloading of material should be delayed or postponed until such time that the Site Manager deems the wind speeds to not cause any significant dust risk.

3.5.15 Unloading of material within the allocated bays should be undertaken immediately adjacent to the area where it will be stored, or directly into the storage location, if possible, to mitigate against potential dust risk. Where possible, sprinklers or misters, should be used to minimise dust outside of the immediate unloading area.

3.5.16 There is a risk of dust generation from the wheels of plant or vehicles transporting material within the Site, however through good Site practice and housekeeping, the potential for dust to be made airborne can be minimised. These measures include the introduction of a maximum speed limit of 5mph, and signs erected to enforce this policy, which will minimise the risk of transportation dust becoming airborne at the Site.

3.5.17 In accordance with Defra's PG Note 3/01(12), a record of all start and finish times of deliveries should be kept by the operator to enable any dust-related problems arising from a delivery to be traced to the particular delivery tanker driver responsible.

Storage of Material

3.5.18 Due to the nature of operations at the Site, deliveries of aggregate are transported across Site and stored in the designated bays with protection from the wind. Stockpiles are not to exceed the maximum height of 0.5m adjacent to any wall.

3.5.19 Storage of cement at the Site is within a silo, with a high-level audio and visual alarm that is visually checked on a daily basis, to make sure that they are not over-filled or over-pressurised.

3.5.20 The discharge of materials into the silos is controlled by the trained personnel and as such, it is their responsibility to monitor the pressure of the system.

3.5.21 In accordance with Defra's PG Note 3/01(12), should the silo become pressurised, the pressure relief valve should lift for safety reasons. This valve requires regular maintenance, to make sure it can relieve pressure quick enough, as cement dust can rapidly set around the valve itself, causing blockages that can rupture the silo or eject the filter unit from the top of the silo, resulting in unacceptable emissions to the atmosphere.

3.5.22 The silos are filled directly from an opening hatch at the top of the vehicle, and as such, dust is kept to a minimal amount. Furthermore, there is a blow off valve which also prevents the dust from escaping during discharge from the lorry into the silo.

3.5.23 Raw materials are also stored in stockpiles, which are created from concrete Lego type blocks that link together to form pens which the material is to be deposited in. These stockpiles therefore, act as wind breakers with the material being held 0.5m from the top of the pen. These should be located away from the Site boundary, especially if located close to residential receptor locations.

3.5.24 As part of routine inspections by the Site Manager and employees at the Site, all stockpiles are regularly monitored, recorded and assessed. Where there is a potential risk of dust generation and nuisance complaints due to the size and nature of a specific stockpile, steps should be taken to mitigate against this, as recognised as being suitable and necessary.

3.5.25 A summary of measures to manage and maintain the storage of materials and stockpiles is provided below:

- Visual inspection of all incoming material should be undertaken in accordance with the relevant Site protocols, prior to unloading, to make sure that sufficient space is available and stockpile areas are not to be overloaded;
- In accordance with the Site's maintenance programme, all plant and storage areas associated with the stockpiling of materials should be regularly maintained and kept in good condition, with spare parts kept on Site to enable efficient plant/storage area repair, if required;
- Shrouding should be provided at all transfer points and discharges where visible dust emissions occur;
- Wind dynamics management including the use of fencing, bunding, profiling;
- Stockpiles should be at least 0.5m lower than windbreaks and walls, with visual inspections regularly undertaken to check that this is not breached anywhere on Site;
- Suppress material with water using well-positioned sprays;
- Material should be covered where possible, utilising dust covers;
- In the event of any spillage of material, with potential for dust release, efficient clearance should be undertaken to mitigate against the accumulation of loose, dry material around plant;
- Drop heights at loading and discharge points should be minimised, to reduce potential for dust release affecting nearby sensitive receptors, and the use of wind boards is encouraged; and
- High maintenance schedules should be followed, allowing for inspection of plant and any external conveyors on a weekly basis.

Dust from Vehicle Movements and Machinery

3.5.26 The potential risk of dust from the movement of machinery and vehicles on Site is to be reduced or controlled by the implementation of the following measures:

- The Site access road and surfaces within the Site are concrete and as such easy to maintain and clean;

- The Site entrance and operational areas are to be dampened as necessary with the on Site sprinkler system;
- Regular sweeping of areas with high dust potential are to be undertaken;
- Any spillages onto roads/operational areas are to be cleared/cleaned immediately;
- Vehicles are not to exceed the maximum speed limit of 5mph when on Site;
- All plant on Site is to be kept clean from the build-up of mud or dust, leading to potential trackout along the local road network and resultant airborne dust; and
- Prior to leaving the Site, visual inspections of all vehicles or plant are to be undertaken to make sure that no materials with potential to become airborne dust are deposited on the external surfaces, otherwise they must be cleaned using on site provision of wheel and vehicle washing facilities.

Dust from Loading/Removal Activities

3.5.27 A wheel loader is used to manage the loading/removal of material from the Site. Where there is the potential for dust generation during the loading/unloading of vehicles, dust suppression techniques and operating procedures will be employed in the first instance to reduce and, in extreme cases, delay the loading activities. Material should not be loaded into the vehicle at a height greater than the sides. Any spillages during loading will be cleaned up immediately as part of routine housekeeping at the Site. All vehicles must be enclosed or sheeted immediately after loading and prior to moving around and exiting the Site.

Maintenance

3.5.28 To mitigate against airborne dust emissions at the Site, a programme of regular, planned maintenance work will be carried out by trained professionals on all plant in accordance with the manufacturer's recommendations to make sure that all equipment operates at optimum efficiency. Where a piece of equipment requires a replacement part, stocks of essential spares will be kept on Site readily available for use at short notice and to avoid potential delay to the day-to-day efficiency of the system.

3.5.29 Where a malfunction or breakdown leads to abnormal dust emissions, this will be dealt with promptly and with urgency, modifying and/or suspending operations until normal working practices can be restored. All maintenance work, no matter how small, should be recorded in the Site logbook.

3.5.30 The Site Manager is responsible for the written maintenance programme for all pollution control equipment at the Site and must keep a record of all maintenance work undertaken. This should be available to the regulator upon request.

Abnormal Conditions

3.5.31 The dust mitigation measures contained within this DEMP relate to reasonably foreseeable events and conditions that may result in dust generation as a result of Operations at the Site. Where abnormal events occur, additional provisions will be considered that may involve a temporary cease of Operations at the Site or rescheduling of deliveries, until such matters are resolved. These measures include for:

- Abnormal weather conditions including prolonged dry periods and/or windy periods;
- Accidental spillages or releases;
- Malfunction of plant and machinery that cannot be repaired/replaced within 24-hours; and
- Failure of the dust suppression system, including through freezing of water and abnormal weather conditions.

3.5.32 In the event of a drought, the Site will still be required to abate fugitive emissions and not cause pollution. Therefore, if there is a heavy reliance on water supply, the Operations will have to cease during this time, unless other suppression measures can be utilised.

3.5.33 In these circumstances, in accordance with the PG Note 3/01(12), it is the Site Manager's responsibility to investigate and undertake remedial action, adjust the process/activity to minimise emissions and promptly record the events and actions taken to remediate.

3.5.34 The regulator should be informed of any such occurrences, regardless of whether emissions are likely to have an effect on the local community. The Site Manager should have a list of all key arrestment plant and written procedures for dealing with failure, to minimise adverse effects in any such occurrence.

3.6 Dust Emissions Monitoring

Visual Monitoring

3.6.1 Regular Site observations will be undertaken by the Site Manager, or a delegated member of staff, at designated locations marked on a Site plan, at least once a day. Should these observations identify any potential risk of dust episodes at the Site during the day, additional inspections will be undertaken, as necessary and as required, particularly during the following conditions:

- Any occurrences of dust emissions that have potential to affect the closest sensitive receptors at the Site boundaries; and
- During dry or windy conditions.

3.6.2 The Site observations will involve the following stages:

- Record the prevailing weather conditions and likelihood for increased risk of dust generation;
- Identify the potential dust generating activities undertaken on Site;
- Review conditions at the sensitive Site boundaries; and
- Observe the condition of road surfaces and dirt accumulation outside the Site entrance.

3.6.3 After every observation, all findings will be noted in the Site's logbook, to keep a record of daily activity and conditions at the Site. These records should be kept on Site for at least two years, and made available to the regulator upon request.

3.6.4 All employees will receive specific training in the identification of fugitive dust emissions and what to look out for to proactively prevent fugitive emissions release from Operations at the Site, Should visible dust emissions be observed, all employees should inform the Site Manager, especially when dust has been observed at the Site boundaries, as a result of the operation or processes being undertaken.

3.6.5 Excessive dust emissions are those which are considered to be capable of migrating off-site with potential to affect the local sensitive human receptors. Where these high levels of dust have been identified on Site, the Site Manager will temporarily cease operations until a review of dust suppression techniques has been undertaken and they are confident that the Site can operate without causing potential dust impacts off-site.

3.6.6 In addition, should the local weather forecast predict moderate wind speeds outside of the Site's operational hours, exceeding 15-18mph, then stockpiles containing fine materials which are at risk of creating airborne dust, will need to be dampened down before the Site is closed for the day.

Quantitative Monitoring

3.6.7 In accordance with Defra's PG Note 3/01(12), all activities should comply with the emission limits and provisions with regard to releases outlined in Table 4.1 of the document and summarised in **Table 8**.

Table 8 - Emission Limits, Monitoring and Other Provisions

Substance	Source	Emission Limits/Provisions	Type of Monitoring	Monitoring Frequency
Particulate Matter	Whole Process	No visible airborne emission	Operator observations	At least daily

Substance	Source	Emission Limits/Provisions	Type of Monitoring	Monitoring Frequency
Particulate Matter		to cross the Site boundary where harm or nuisance may be caused		
	Silo inlets and outlets for silos new since 1st July 2004	Designed to emit less than 10mg/m^3	Operator observations	At time of delivery
	Silo inlets and outlets	No visible emission		
	Arrestment equipment, or any point where dust contaminated air is extracted from the process to atmosphere, with exhaust flow >300m^3/min. (other than silo arrestment plant)	50mg/m^3	Recorded indicative monitoring	Continuous
			Isokinetic sampling	At least once to demonstrate compliance, then as necessary to provide a reference for the continuous indicative monitor.
	Arrestment equipment, or any point where dust contaminated air is extracted from the process to atmosphere, with exhaust flow >100m^3/min. (other than silo arrestment plant)	No visible emission Arrestment equipment should be provided with a design guarantee that the equipment can meet 50mg/m^3	Indicative monitoring to demonstrate that the arrestment equipment is functioning correctly	Continuous
	Arrestment equipment, or any point where dust contaminated air is extracted from the process to atmosphere, with exhaust flow <100m^3/min. (other than silo arrestment plant)	No visible emission	Operator observation Or Indicative monitoring	At least daily Or Continuous

Note: Only emissions to atmosphere are required to comply with the emission limits within this table.

3.6.8 These emission limit values and provisions are achievable using the BAT detailed in this DEMP and Defra's PG Note 3/01(12).

3.6.9 Based on **Table 8**, the qualitative monitoring approach, through operator observations, is considered appropriate based on the low-risk nature of the Operations at the Site and is sufficient to address the appropriate dust management at the Site.

3.6.10 The operator should keep all records of inspections, tests and monitoring, including all visual inspections, on Site for at least two years and should be made available to the regulator upon request.

3.6.11 These records should include the time, location and result of these checks, along with weather conditions such as indicative wind direction and strength.

3.6.12 Whilst no permanent dust and particulate monitors and/or trigger alarms are considered a requirement for the Operations at the Site, a series of panes of glass mirrors are to be installed and positioned at representative locations throughout the Site to the north, east, south and west. These panes will allow for identification and evaluation of the total dust concentrations at each location across the Site, and allow for tailored mitigation measures to be identified based on where the potential risk of dust impacts is greatest. These will also be used to establish a pattern of wind direction within the Site, with further data collected through the use of a weather station that will collect data from two metres above the Site.

3.6.13 To establish an accurate representation of daily dust levels at the Site, the mirror panes will need to be cleaned daily and given a score rating detailing the build-up of dust over a 24-hour period, where 1 represents good conditions and 5 represents a heavy build-up of dust. This information would need to be obtained daily along with wind speed and direction from the installed weather station, and recorded in the Site logbook as an evidence base. The data collected would be downloaded daily and graphed, with each file stored against each date of operation and kept for a minimum period of 6 months.

3.6.14 Whilst not explicitly categorised as a BAT, the use of glass mirror panes allows for continuous indicative on-site monitoring, whereby the information provided can be used as a management tool, in accordance with Defra's PG Note 3/01(12). Where used, these panes act as monitors which provide a baseline output when the plant is known to be operating under the best possible conditions and emissions are complying with the requirements of the permit. These mirror panes are to be located in representative locations around the Site, and allow for suitable mitigation measures to be implemented in the instances of high dust levels at the Site.

Complaints and Incident Review

3.6.15 Should a complaint relating to dust emissions be received at the Site, or an incident identified by employees, this should be manually recorded and reported to the Site Manager, who is responsible for investigating the circumstances and making sure that any necessary measures are taken to rectify the situation and to prevent re-occurrence.

3.6.16 The record needs to include the date and time of the complaint/incident, source of the dust that triggered the complaint, name of the individual who raised the complaint, what preventative measures were in place at the time and what further actions are required to be undertaken, where necessary.

3.6.17 In any instance where dust resulting from the Operations is detected at the Site boundary, records need to be made in the Site diary and the Site Manager informed, who will take appropriate steps to mitigate the dust. These steps may comprise, at a minimum:

- Visual inspection of the Operations at the Site to identify the dust source;
- Cease the activity generating the dust, until such mitigative measures are in place to prevent re-occurrence;
- Taking appropriate action at the source, including reviewing the dust suppression techniques and adjusting operating procedures, where necessary; and
- Review the Site operating procedures to reduce likelihood of re-occurrence.

3.6.18 Dust complaints received at the Site also need to be reported to the relevant authorities and followed up with on-site and off-site investigations. A dust complaint and incident form should also be completed, which is included in **Appendix F**.

3.6.19 On completion of the on-site and off-site investigations, a prompt response will be made to the complainant detailing observations, feedback and the nature of any proposed corrective and mitigative actions.

3.6.20 All complaint records will be retained for a specified period of time, in agreement with the Site Operator and Local Planning Authority.

3.6.21 Further to any complaint/incident raised, the DEMP will be reviewed and amended as necessary, in agreement with the EA and Local Planning Authority.

3.7 Implementation, Review and Update

3.7.1 This DEMP takes into account the potential for dust emissions associated with the Operations at the Site. The DEMP is a 'live document' subject to on-going review and updates, as appropriate, to make sure that it is reflective of the current Operations at the Site and is being effective.

3.7.2 The first formalised review of the DEMP will be 6 months from its implementation date at the Site. This process will consider whether any complaints have been made at the Site and if so, will evaluate the evidence and reasoning to determine whether any further mitigation measures can be implemented at the Site, and detailed within the DEMP, to eliminate any potential risk.

3.7.3 The daily Site observations, recorded in the logbook, will be reviewed as required, including observations of dust, changes in Site operations and processes and whether any sensitive receptors have been affected. Where potential improvements can be made, the DEMP will be updated and revised as appropriate.

3.7.4 The DEMP will then be subject to periodic review of its effectiveness to date, every 2 years, as appropriate.

3.8 Training

3.8.1 In accordance with Defra's PG Note 3/01(12), all employees at the Site should receive specific training within their roles that allow for an increased awareness of their responsibilities under the environmental permit, actions to take should abnormal conditions be experienced, including spillages and accidents that could lead to potential emissions to air, and an understanding of the necessary steps involved in minimising emissions during start-up, shut down and abnormal conditions.

3.8.2 The Site Manager should keep a record of all training requirements and evidence of completion, which should be made available to the regulator upon request.

4.0 Summary and Conclusions

4.1.1 Delta-Simons has been appointed to prepare this DEMP to inform the application for a Part B permit for blending, packing, loading, unloading and use of bulk cement, at 304 Station Road in Isham, Kettering.

4.1.2 The main operations at the Site comprise the delivery and storage of materials that are required to make concrete and screed, the loading of these materials and cement from on-Site silos onto vehicles via a loading shovel, and the washing of concrete from the vehicles on-Site, the waste from which is collected and stored in the material bay to be reused.

4.1.3 The EPO at NNC has requested a 'Dust and Emissions Management Plan' to inform the application for a Part B permit for the Operations at the Site.

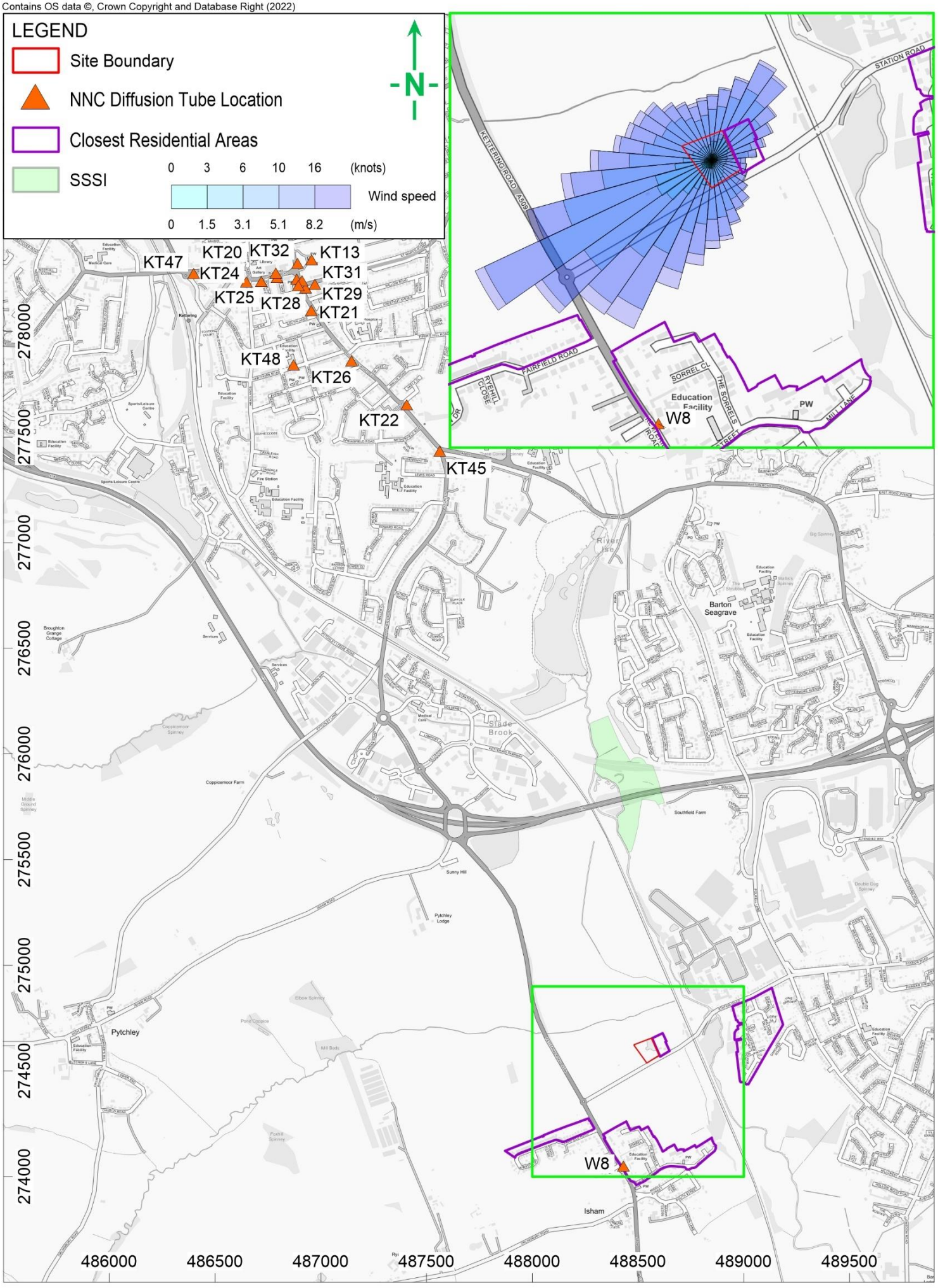
4.1.4 The Qualitative Dust Risk Assessment results, based on a review of prevailing meteorological conditions in relation to the relative positions of the Site and its Operations, concluded that emissions associated with these operations will have a **slight adverse** to **negligible** impact on nearby sensitive receptor locations, with regard to dust. An impact of these magnitudes would be considered to have an effect that is **not significant**, i.e., it would not be a deciding factor in planning and/or permitting determination and would not trigger the implementation of additional mitigation. Based on the assessment results, more stringent mitigation measures are therefore, not required to be considered and employed on Site.

4.1.5 It is concluded, therefore, that the dust emissions associated with the Operations at the Site are considered to result in a not significant loss of amenity and consequently the resulting risk of potential complaints is **low**.

4.1.6 This DEMP presents a Site-specific plan to minimise dust emissions during the Operations at the Site, prepared in accordance with the Defra PG Note 3/01(12) and associated BAT. It includes guidance and procedures to reduce, manage and mitigate dust emissions as a result of the Operations at the Site, along with suitable control measures/conditions.

4.1.7 Based on the findings of the assessment and following the implementation of the DEMP, there is no requirement for further assessment of potential air quality and dust effects associated with the Operations at the Site and the Site is considered to be suitable for the Operations.

Figures



DeltaSimons

TITLE: Site Location and Assessments Extents

DRAWN BY:	SCALE:	PROJECT NO:
SG	NTS	22-1135.02 / 545851
CHECKED BY:	REVISION:	FIGURE NO:
GA	-	1
DATE: 30th November 2022		

Appendices

Appendix A - Limitations

Limitations

The recommendations contained in this Report represent Delta-Simons' professional opinions, based upon the information listed in the Report, exercising the duty of care required of an experienced Environmental Consultant. Delta-Simons does not warrant or guarantee that the Site is free of hazardous or potentially hazardous materials or conditions.

Delta-Simons obtained, reviewed and evaluated information in preparing this Report from the Client and others. Delta-Simons' conclusions, opinions and recommendations have been determined using this information. Delta-Simons does not warrant the accuracy of the information provided to it and will not be responsible for any opinions which Delta-Simons has expressed, or conclusions which it has reached in reliance upon information which is subsequently proven to be inaccurate.

This Report was prepared by Delta-Simons for the sole and exclusive use of the Client and for the specific purpose for which Delta-Simons was instructed. Nothing contained in this Report shall be construed to give any rights or benefits to anyone other than the Client and Delta-Simons, and all duties and responsibilities undertaken are for the sole and exclusive benefit of the Client and not for the benefit of any other party. In particular, Delta-Simons does not intend, without its written consent, for this Report to be disseminated to anyone other than the Client or to be used or relied upon by anyone other than the Client. Use of the Report by any other person is unauthorised and such use is at the sole risk of the user. Anyone using or relying upon this Report, other than the Client, agrees by virtue of its use to indemnify and hold harmless Delta-Simons from and against all claims, losses and damages (of whatsoever nature and howsoever or whensoever arising), arising out of or resulting from the performance of the work by the Consultant.

Please note that Dust and Emissions Management Plans and associated reports are generally considered valid for a period of two years, or potentially less, if the baseline on which the report is based changes significantly. Accordingly, reliance on this report beyond this period is not afforded.

Appendix B - Glossary

Glossary

Term	Definition
Air quality objective	Policy target generally expressed as a maximum ambient concentration to be achieved, either without exception or with a permitted number of exceedances within a specific timescale (see also air quality standard).
Air quality standard	The concentrations of pollutants in the atmosphere which can broadly be taken to achieve a certain level of environmental quality. The standards are based on the assessment of the effects of each pollutant on human health including the effects on sensitive sub groups (see also air quality objective).
Ambient air	Outdoor air in the troposphere, excluding workplace air.
Annual mean	The average (mean) of the concentrations measured for each pollutant for one year.
AQMA	Air Quality Management Area
AQO	Air Quality Objective
Defra	Department for Environment, Food and Rural Affairs
DEMP	Dust and Emissions Management Plans
EA	Environment Agency
EPO	Environmental Protection Officer
Exceedance	A period of time where the concentration of a pollutant is greater than the appropriate air quality standard.
HDV/HGV	Heavy Duty Vehicle/Heavy Goods Vehicle
IAQM	Institute of Air Quality Management
LAQM	Local Air Quality Management
NNC	North Northamptonshire Council
NO_2	Nitrogen dioxide
NO_x	Nitrogen oxides
PM_{10}	Particulate matter with an aerodynamic diameter of less than 10 micrometres.
$PM_{2.5}$	Particulate matter with an aerodynamic diameter of less than 2.5 micrometres.
$\mu g/m^3$ micrograms per cubic metre	A measure of concentration in terms of mass per unit volume. A concentration of $1\mu g/m^3$ means that one cubic metre of air contains one microgram (millionth of a gram) of pollutant.

Appendix C - Relevant UK Air Quality Strategy Objectives

Relevant UK Air Quality Strategy Objectives

National Air Quality Objectives and European Directive Limit Values for the Protection of Human Health						
Pollutant	**Applies To**	**Objective**	**Measured As**	**Date to be achieved by and maintained thereafter**	**European Obligations**	**Date to be achieved by and maintained thereafter**
Nitrogen dioxide (NO_2)	UK	40µg/m^3	annual mean	31.12.2005	40µg/m^3	01.01.2010
	UK	200µg/m^3 not to be exceeded more than 18 times a year	1-hour mean	31.12.2005	200µg/m^3 not to be exceeded more than 18 times a year	01.01.2010
Particulate Matter (PM_{10}) (gravimetric)[A]	UK (except Scotland)	40µg/m^3	annual mean	31.12.2005	40µg/m^3	01.01.2010
	UK (except Scotland)	50µg/m^3 not to be exceeded more than 35 times a year	24-hour mean	31.12.2004	50µg/m^3 not to be exceeded more than 35 times a year	01.01.2005
Particulate Matter ($PM_{2.5}$)	UK (except Scotland)	20µg/m^3	annual mean	01.01.2020	Stage 1 Limit - 25µg/m^3 Stage 2 Limit - 20µg/m^3	01.01.2015 01.01.2020

[A] Measured using the European gravimetric transfer sampler or equivalent

µg/m^3 = micrograms per cubic metre

Appendix D - IAQM Mineral Dust Assessment Methodology

IAQM Mineral Dust Assessment Methodology

The IAQM methodology for Qualitative Dust Risk Assessments comprises four stages:

Stage 1 - Determining Source Emission Magnitude

The IAQM guidance refers to three categories of residual source emission magnitude: Large, Medium and Small. The determination of the emissions magnitude of a source is based on the following seven types of dust-generating activities, as these are likely to have the greatest potential for dust emissions:

- Site preparation/restoration (including soil and overburden handling);
- Mineral extraction (including blasting);
- Materials handling (e.g. loading onto haul trucks or conveyors);
- On-site transportation (haul roads);
- Mineral processing (e.g. crushing and screening);
- Stockpiling/exposed surfaces; and
- Off-site transportation (e.g. leading to trackout onto external road network).

The residual source emission magnitude categories for each activity have been derived from the methodology described in the IAQM guidance, as detailed in **Table D1**.

Table D1 - Residual Source Emission Magnitude

Residual Source Emission Magnitude	Suggested Definition
Large	**Site Preparation/Restoration:** Working area >10ha, bunds >8m in height, >100,000m3 of material movement, >10 heavy plants simultaneously active, bunds un-seeded, fine grained and friable material used on-site **Mineral Extraction:** Working area >100 ha, drilling and blasting frequently used, dusty mineral of small particle size and/or low moisture content used on-site, 1,000,000 tonnes per annum (tpa) extraction rate **Materials Handling:** >10 loading plants within 50m of the site boundary, the transfer of material of a high dust potential and/or low moisture content on dry, poorly surfaced ground **On-site Transportation:** >250 movements in any one day on unpaved surfaces of potentially dusty material **Mineral Processing:** Mobile crusher and screener with concrete batching plant used on-site, processing >1,000,000tpa of material with a high dust potential and/or low moisture content e.g. hard rock **Stockpiles and Exposed Surfaces:** Total exposed area >10ha in an area of high wind speeds located <50m of the site boundary, daily transfer of material with a high dust potential and/or low moisture content, stockpile duration >12 months and quarry production >1,000,000tpa **Off-site Transportation:** >200 total Heavy duty vehicle (HDV) movements in any one day on unsurfaced site access road <20m in length with no HDV cleaning facilities, no road sweeper available
Medium	**Site Preparation/Restoration:** Working area between 2.5 and 10ha, bunds between 4 and 8m in height, between 20,000 and 100,000m3 of material movement, between 5 to 10 heavy plants simultaneously active, most bunds seeded, material with a medium moisture content used on-site **Mineral Extraction:** Working area between 20 and 100ha, drilling and blasting not frequently used, dusty mineral of larger particle size and/or medium moisture content used on-site, between 200,000 and 1,000,000tpa extraction rate **Materials Handling:** Between 5 to 10 loading plants from 50 to 100m of the site boundary, transferring material of a medium dust potential and/or medium moisture content on semi-dry ground

Residual Source Emission Magnitude	Suggested Definition
Medium	**On-site Transportation:** Between 100 and 250 movements in any one day on unpaved surfaces of low dust potential, <500m in length **Mineral Processing:** Fixed screening plant with concrete batching plant on-site, processing between 200,000 to 1,000,000tpa of material with a medium dust potential and/or medium moisture content e.g. semi-dry sand and gravel **Stockpiles and Exposed Surfaces:** Total exposed area between 2.5 and 10ha in an area of medium wind speeds located between 50 and 100m of the site boundary, daily transfer of material with a medium dust potential and/or medium moisture content, stockpile duration between 1 and 12 months and quarry production between 200,000 and 1,000,000tpa **Off-site Transportation:** Between 25 and 200 HDV movements in any one day on site access road with medium dust potential between 20 to 50m in length with HDV cleaning facilities or road sweeper available
Small	**Site Preparation/Restoration:** Working area <2.5ha, bunds <4m in height, <20,000m3 of material movement, <5 heavy plant simultaneously active, all bunds seeded, material with a high moisture content **Mineral Extraction:** Working area <20ha, hydraulic excavator, coarse material and/or low moisture content, <200,000tpa extraction rate **Materials Handling:** <5 plants >100m from the site boundary within the quarry void or clean hardstanding, transferring material of low dust potential and/or high moisture content **On-site Transportation:** Employment of covered conveyors used for the majority of the on-site transportation of material, <100 movements of vehicles per day, with surface materials of compacted aggregate, <500m in length and a maximum speed of 15mph **Mineral Processing:** Fixed screening plant with effective design in dust control, processing <200,000tpa of material with a low dust potential and/or high moisture content e.g. wet sand and gravel **Stockpiles and Exposed Surfaces:** Stockpile duration of <1 month with a total area <2.5ha in an area of low wind speeds, located >100m from the site boundary, weekly transfers of material with a low dust potential and/or high moisture content, quarry production <200,000tpa **Off-site Transportation:** <25 HDV movements in any one day, paved surfaced site access road <20m in length, with effective HDV cleaning facilities and procedures, the employment of an effective road sweeper

Stage 2 - Assess Effectiveness of Transport Mechanism to a Receptor

This stage aims to assess the means by which dust released from the source may affect sensitive receptors. The effectiveness of dust transport (referred to as the pathway effectiveness) takes into account two main factors:

- The frequency of potentially dusty winds; and
- Receptor distance from source.

Suggested categorisations of the frequency of potentially dusty winds are provided by the guidance and summarised in **Table D2**.

Table D2 - Categorisation of Frequency of Potentially Dusty Winds

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

Suggested categorisations of receptor distance from the source are provided by the guidance and summarised in **Table D3**.

Table D3 - Categorisation of Receptor Distance from Source

Category	Criteria
Distant	Receptor is between 200m and 400m from the dust source
Intermediate	Receptor is between 100m and 200m from the dust source
Close	Receptor is less than 100m from the dust source

The pathway effectiveness was classified using a matrix-based approach combining the frequency of potentially dusty winds from **Table D2** and the receptor distance from source from **Table D3**, replicated in **Table D4**.

Table D4 - Pathway Effectiveness

Receptor Distance Category	Frequency of Potentially Dusty Winds			
	Infrequent	Moderately Frequent	Frequent	Very frequent
Close	Ineffective	Moderately Effective	Highly Effective	Highly Effective
Intermediate	Ineffective	Moderately Effective	Moderately Effective	Highly Effective
Distant	Ineffective	Ineffective	Moderately Effective	Highly Effective

Stage 3 - Estimation of Dust Impact Risk

At this stage the residual source emissions magnitude and pathway effectiveness are combined to predict the risk of dust impact at the identified sensitive receptors. The guidance recommends that this is achieved via a matrix approach, replicated in **Table D5**.

Table D5 - Dust Impact Risk

Pathway Effectiveness	Residual Source Emissions Magnitude		
	Small	Medium	Large
Highly Effective	Low Risk	Medium Risk	High Risk
Moderately Effective	Negligible Risk	Low Risk	Medium Risk
Ineffective	Negligible Risk	Negligible Risk	Low Risk

Stage 4 - Estimation of Likely Magnitude of Loss of Amenity Effects

Receptor Sensitivity

The likely loss of amenity effects at sensitive receptor locations are determined through combining the dust impact risk and the sensitivity of receptors. Different land uses include receptors of varying sensitivities to potential dust soiling effects. These are defined in IAQM guidance document as summarised in **Table D6**.

Table D6 - Sensitivities of People to Dust Soiling Effects

Receptor Sensitivity	Examples
High	Users can reasonably expect enjoyment of a high level of amenity; or The appearance, aesthetics or value of users' property would be diminished by soiling; and the people or property would reasonably be expected to be present continuously, or at least regularly for extended periods, as part of the normal pattern of use of the land. Indicative examples include dwellings, medium and long term car parks and car showrooms.
Medium	Users would expect a to enjoy a reasonable level of amenity, but would not reasonably expect to enjoy the same level of amenity as in their home; or The appearance, aesthetics or value of users' property could be diminished by soiling; or The people or property wouldn't reasonably be expected to be present continuously or regularly for extended periods as part of the normal pattern of use of the land. Indicative examples include parks and places of work.
Low	The enjoyment of amenity would not reasonably be expected; or The appearance, aesthetics or value of users' property would not be diminished by soiling; or There is transient exposure, where the people or property would reasonably be expected to be present only for limited periods of time as part of the normal pattern of use of the land. Indicative examples include playing fields, farmland (unless commercially-sensitive horticultural), footpaths, short term car parks and roads.

Magnitude of Loss of Amenity Effects

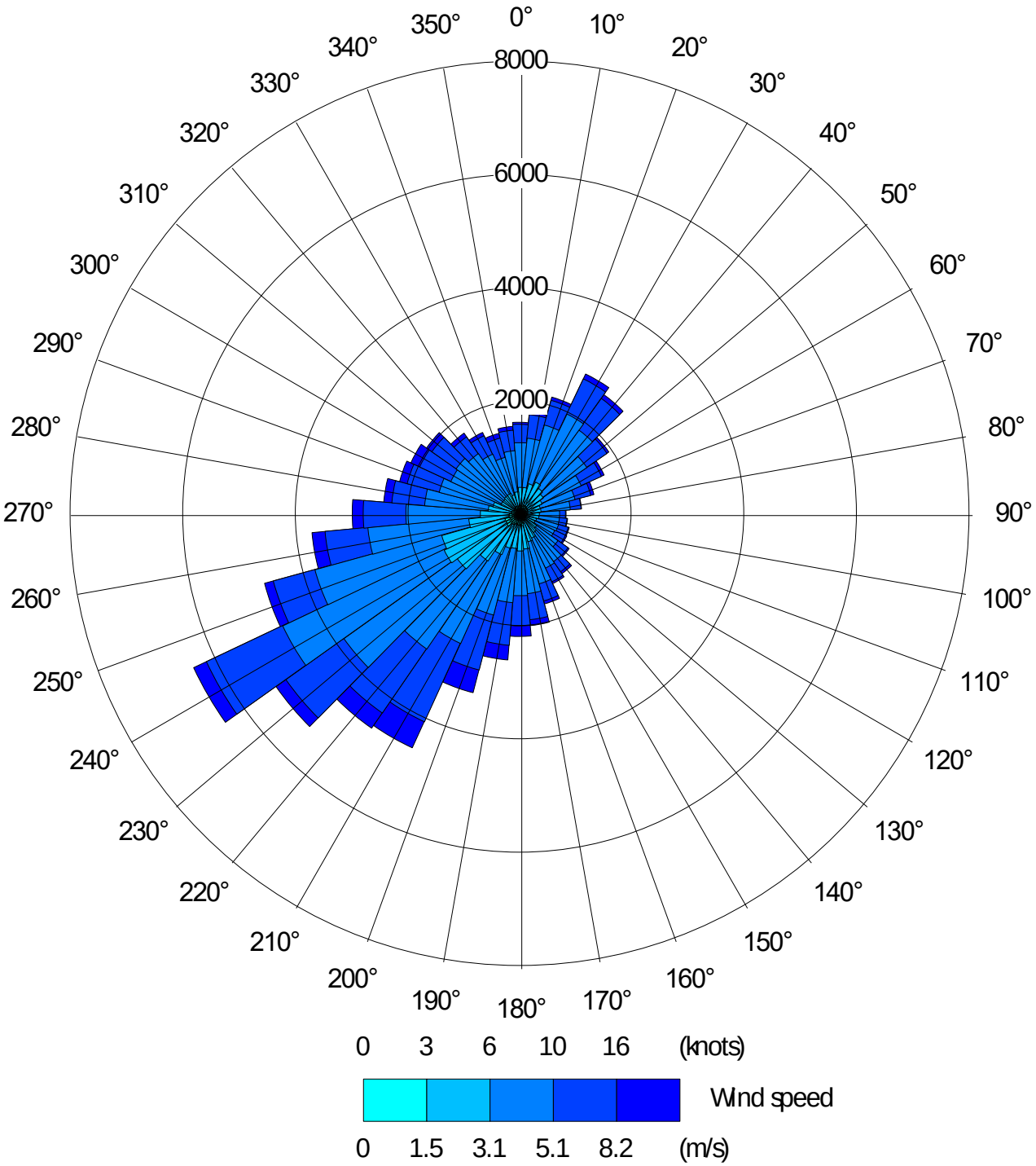
The final stage in the methodology involves using the dust impact risk to assess the likely impact on sensitive receptors. Differing levels of receptor sensitivity are defined by the guidance but this assessment is only concerned with residential receptors, which corresponds to high sensitivity. The matrix used to provide the descriptors for the magnitude of dust impact is summarised in **Table D7**.

Table D7 - Magnitude of Dust Effects

Risk of Dust Impact	Receptor Sensitivity		
	Low	Medium	High
High	Slight Adverse Effect	Moderate Adverse Effect	Substantial Adverse Effect
Medium	Negligible Effect	Slight Adverse Effect	Moderate Adverse Effect
Low	Negligible Effect	Negligible Effect	Slight Adverse Effect
Negligible	Negligible Effect	Negligible Effect	Negligible Effect

Appendix E - Wind Rose for Bedford (2012 - 2021)

Wind Rose for Bedford (2012 - 2021)



Appendix F - Dust Complaint and Incident Form

Dust Complaint and Incident Form

Personal Information	
Name	
Address	
Postcode	
Telephone Number	
Email	
Date	
Complaint Reference Number	
Complaint Details	
Investigation Details	
Investigation carried out by	
Position	
Date and time of investigation	
Weather Conditions	
Investigation Findings	
Feedback given to EA and/or LA	
Date feedback given	
Review and Improvements to Mitigation Measures/Operating Procedures	
Improvements needed to prevent reoccurrence	
Proposed timeline for completion of improvement works	
Actual date of completion	
Reasons for any delays	
Does the DEMP need updating?	
If yes, date of DEMP update	
For Completion upon Resolution of Complaint/Incident	
Site Manager Review Date	
Site Manager Signature	
Notes:	

Appendix G - Measures to Control Dust/Particulates (PM_{10}) and Other Emissions

Abatement Measure	Description / Effect	Overall Consideration and Implementation	Trigger for implementation
Preventative Measures			
Enclosure within a building	Creating a solid barrier between the source of dust and particulates and receptors is likely to be the most effective method of control, provided that the building entrances and exits are well managed.	Not practical due to cost	N/A
Negative pressure extraction	Within enclosed buildings, controlled extraction can be undertaken to ensure a constant negative pressure relative to the outside air. This system should prevent the emission of particulates from any openings in the building. Extracted air should be treated through a suitable filtration system prior to discharge to atmosphere. This method is more frequently applied for odour control.	Not practical due to cost	Water suspension used
Dust Extraction Systems	A large variety of abatement technologies exist for the removal of dust and particulates from a flowing gas and have typically been applied to combustion plants and other sites where controlled emissions of particulates occur. These include Electrostatic Precipitators (ESPs), wet scrubbers, baghouses (bag filters), viscous media (e.g. oil) filters and gravitational settling. Although not all of these may be appropriate for dust and particulate suppression at material management sites, and they cannot be applied to controlling external fugitive emissions, they may be effective when coupled with local exhaust extraction, ventilation or negative pressure extraction systems from enclosed buildings to remove dust and particulates from the airstream.	Airborne is kept to a minimum with the use of sprinklers on site	Ongoing addition of further units if it felt the current units are not sufficient.
Site / process layout in relation to receptors	Locating particulate emitting activities at a greater distance and downwind from receptors may reduce receptor exposure, provided that emissions from the source are not dispersed over significant distances.	Site is laid out with the minimum of travel from stockpile to vehicle and this also applies to the Silo's for Powdered Cement.	Current method used is the best practice for the task.

Abatement Measure	Description / Effect	Overall Consideration and Implementation	Trigger for implementation
Site speed limit, 'no idling' policy and minimisation of vehicle movements on site	Reducing vehicle movements and idling should reduce emissions from vehicles. Procurement policy to only purchase clean burn road vehicles and non-road going mobile machinery. Enforcement of a speed limit may reduce re-suspension of particulates by vehicle wheels.	A new site policy has now been adopted with maximum speed limit applied whilst on site to be 5 mph and signs erected to enforce this ruling.	This will be standard practice and ongoing
Minimising drop heights for material. Use of enclosed chutes for material drops/end of conveyor transfers and covered skips / storage vessels.	Minimising the height at which material is handled should reduce the distance over which debris, dust and particulates could be blown and dispersed by winds. Enclosing processes will further reduce dispersion.	Vehicles making deliveries are all fitted with tarpaulins as standard and would be unloaded in the area covered by sprinklers when being unloaded by the loading shovel.	Standard practice
Good house-keeping	Having a consistent, regular housekeeping regime that is supported by management, will ensure site is regularly checked and issues remedied to prevent and remove dust and particulate build up.	The main course way when entering site is covered by a sprinkler that's washes the dust away, this also to include the loading/Unloading area.	Standard Practice
Sheeting of vehicles	Prevents the escape of debris, dust and particulates from vehicles as they travel.	Vehicles making deliveries Into Easimix are all fitted with tarpaulins as standard. Our vehicles that making deliveries to sites are enclosed whereby the materials are loaded into separate compartments. When on site they get mixed together by computer and is blended on discharge to the exact amounts required.	Standard Practice
Hosing of vehicles on exit	May remove some dirt, dust and particulates from the lower parts of vehicles although likely to be less effective than a more powerful wheel wash.	Not necessary as the vehicle is being moved from an area covered by sprinklers	Standard Practice
Ceasing operation during high winds and/or prevailing wind direction	Mobilisation of dust and particulates is likely to be greater during periods of strong winds and hence ceasing operation at these times may reduce peak pollution events.	Likely to reduce dust and particulate emissions, however, not a long-term solution.	Implementation of Weather Station and Dust Mirrors - a Director will be informed of

Abatement Measure	Description / Effect	Overall Consideration and Implementation	Trigger for implementation
		Procedures should be in place to identify when operations will cease. May require a weather station to be installed.	the situation and a decision to halt operations.
Installed wheel wash	Provides a high pressure wash of vehicle wheels and lower parts (including under body) using a series of jet sprays. More effective if vehicles drive through the wheel wash slowly in order that there is sufficient time for dirt to be removed.	Not necessary as the vehicle is being moved from an area covered by sprinklers	Standard Practice
Easy to clean concrete impermeable surfaces	Creating an easy to clean impermeable surface, using materials such as concrete as opposed to unmade (rocky or muddy) ground within the site and on site haul roads. This should reduce the amount of dust and particulate generated at ground level by vehicles and site activities.	This method is already applied to Easimix	Standard Practice
Minimisation of material storage heights and volumes on site	Minimising the height at which material is handled should reduce the distance over which debris, dust and particulates could be blown and dispersed by winds. Reducing storage volumes should reduce the surface area over which particulates can be mobilised.	Silos that are site are designed as so to hold specific amounts of materials and ours has fitted a high-level audio and visual alarm which is visually checked on a daily basis, due to having an opening hatch of the top of our vehicles for cement storage, we fill straight into this the compartment then close the lid which keeps almost all dust to a minimal amount.	All necessary precautions already applied.
Reduction in operations (material throughput, vehicle size, operational hours)	Reducing the amount of activity on site, including no tipping, shredding, chipping or screening of high risk loads during windy weather as well as associated traffic movements should result in reduced emissions and re-suspension of dust and particulates from a site.	Not practical as we supply against demand and not having enough material to satisfy is false economy.	Not Practical Materials are ordered against working levels and when at an ordering point more materials are brought in.

Abatement Measure	Description / Effect	Overall Consideration and Implementation	Trigger for implementation
Remedial Measures			
Netting / micro netting around equipment	Erecting netting around equipment that could give rise to large amounts of dust and particulates may be effective within the site boundary and prevent their dispersion off-site / their re-suspension within the site.	Reduces wind speed across the site which indirectly controls the potential for dust and particulate emissions. Maintenance should be covered in the management system and procedures. Effective for use as litter netting, but not for stopping dust from leaving the site boundary.	We are happy with a sprinkler system and see no justifiable reason to change. This does not however mean we will not consider micro netting if needed.
On-site sweeping	Sweeping could be effective in managing larger debris, dust and particulates but may also cause the mobilisation of smaller particles. Road sweeping vehicles damp down dust and particulates whilst brushing and collecting dust and particulates from the road surface, particularly at the kerbside. This may generate dust and particulate movement that may become a Health and Safety issue if the filters and spray bars on the sweepers are not maintained.	Easy to apply but less effective than other measures. Should be covered in the management system and procedures and implemented thoroughly. Be specific and consider including photos of the apparatus. The range of roadsweeping equipment is very broad and you should detail what is being used. We would expect to see training procedures to ensure that staff are clear on what needs to happen and when. We would expect to see maintenance scehdules detailing when consumable items on road sweepers are replaced (Filters, brushes etc).	This is applied from time to time where a build-up of dust is becoming apparent.
Site perimeter netting / micro netting	Erecting netting around the site perimeter may capture released debris and dust and particulates prior to it being dispersed off-site.	Reduces wind speed across the site which indirectly controls the potential for dust and particulate emissions.	We would rather erect a substantial boundary wall between Easimix &

Abatement Measure	Description / Effect	Overall Consideration and Implementation	Trigger for implementation
		Maintenance should be covered in the management system and procedures. Can look untidy and dirty creating negative impression of the facility. Not very effective at reducing dust and emissions from leaving the site boundary.	302 Station Road as this would act as a shroud against No.302.
Water suppression with hoses & water jets	Damping down of site areas using hoses can reduce dust and particulate re-suspension and may assist in the cleaning of the site if combined with sweeping.	Already in Practice	Standard Practice on a daily basis
Water suppression with mist sprays	Installation of mist sprays around sites, at building entrances/exits and within buildings at point source emissions like conveyors, trommels etc. It can also assist in the damping down of dust and particulates, therefore, reducing emissions from site.	As above	As above
Water suppression with bowser	Using bowsers is a quick method of damping down large areas of the site with large water jets. This method could also be used on easy-to-clean, impermeable concrete surfaces.	Not Practical	Happy with present system of sprinkles.
Dust and particulate monitor with trigger alarm	Installation of a dust and particulate monitor with specified alarm trigger level can alert site staff when short-term particulate concentrations are elevated in order that site practices can be reviewed or application of mitigation measures increased.	The company to invest in an onsite weather station to produce data that can be used for analysis. The Weather station to coupled with visual indicators of mirrors that would be cleaned daily to establish dust movement on site.	This is due to be purchased
Shaker grids	Similar to cattle grids, these are installed at a site entrance and exit. The movement of vehicles over the grids shakes dust and particulates from the wheels, thus removing them before vehicles enter the site.	Not Practical	No benefit as site has sprinklers
Water Cannons	Water cannons provide a means for delivery of powerful water streams from a water truck. With variable nozzles, the spray pattern can be controlled and varied between jet and fog. Typical water flows are up to 5000 litres per minute.	Sprinkler system already installed so not practical.	Not needed

Abatement Measure	Description / Effect	Overall Consideration and Implementation	Trigger for implementation
	Water cannons are most often used for fire protection, mining operations, heavy machinery wash down, cleaning and dust and particulate abatement.		
Screening of buildings / reducing large apertures using plastic strips	Installing plastic strips to cover entrances/exits to buildings may reduce emissions of dust and particulates dispersing through doorways.	Not Practical as a minimum of dust raised due to sprinklers	Not needed
Application of CMA / chemical suppressant	Diluted Calcium Magnesium Acetate (CMA) or other chemical based dust suppressant is regularly applied by spraying using a back-pack applicator for small areas or by road sweeper to cover larger areas. CMA acts as a suppressant with the aim of reducing dust and particulate re-suspension and hence ambient concentrations.	Trials indicate this can be an effective process. It shouldn't be applied during rain and once applied it needs to be re-applied regularly. Works best when applied to clean surfaces, and can also be applied to stockpiles to form a 'crust' and reduce wind-whipping. Price and efficacy vary depending on the brand selected. Maintenance should be covered in the management system and procedures.	This is something we could possibly look into and requires further investigation.
Heavy Water	Heavy water is used to improve the compaction and stability and reduce dust and particulates on unsealed roads or areas of land. Ideally it is blended into the road construction material as the road is constructed, but where this is not possible it can be sprayed onto the top of the road. Heavy water combines fast acting wetting agents with polymer binders, to allow penetration deep into the material and to 'agglomerate' the dust and particles together.	Not required	Not needed due to sprinklers being employed
Foam Suppression	The aggregate and mining industries frequently use foam suppression for the control of dust and particulate emissions, mixing the foam with broken material to increase efficiency. Foaming agents can be added to increase the efficiency of dust and particulate reduction.	Not required	Not needed due to sprinklers being employed

Abatement Measure	Description / Effect	Overall Consideration and Implementation	Trigger for implementation
	Foam suppression has seen increased attention in recent years and has previously been applied to material transfer facilities where crushing of material occurs. If using foam suppression to control dust and particulates from material drops, the foam must be entrained within the material and as such must be injected prior to dropping the material rather than at the bottom of the drop.		