

Chapter 14 – Air Quality Appendices.

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Appendix 14.1 – Legislation, Policy and Guidance Documents.

The Environment Act 1995

The Environment Act 1995¹ was the original piece of legislation to establish the Environment Agency to take on the responsibility of protecting ecosystems and controlling pollution. It introduced the requirement for the government to produce an annual Air Quality Strategy, setting out air quality standards, objectives and measures for improving ambient air quality. It has since been amended by The Environment Act 2021, as described below.

The Environment Act 2021

The Environment Act 2021² acts as the UK's new framework of environmental protection and came into force on 1st April 2022. With regard to air quality, the Environment Act establishes a legally binding duty on government to bring forward at least two new air quality targets in secondary legislation by 31st October 2022. However, these targets have since been delayed indefinitely³. Target objectives⁴ under consideration for air quality include:

- Reducing the annual mean level of fine particulate matter (PM_{2.5}) in ambient air (as required by Clause 2 of the Environment Act); and
- Reducing population exposure to PM_{2.5}.

Air Quality Strategy.

The Environment Act 1995 (Part IV)⁵ requires the Secretary of State to publish an air quality strategy and local authorities to review and assess the quality of air within their boundaries. The latter has become known as Local Air Quality Management (LAQM).

The Air Quality Strategy⁶ provides the policy framework for local air quality management and assessment in the UK. It sets out air quality standards and objectives for key air pollutants. These standards and objectives are designed to protect human health and the environment. The Strategy also sets out how the different sectors of industry, transport and local government, can contribute to achieving these Air Quality Objectives (AQOs).

Local authorities are required to identify whether the AQOs have been, or will be, achieved at relevant locations. If the objectives are not achieved, the authority must declare an Air Quality Management Area (AQMA) and should prepare an Air Quality Action Plan (AQAP) within 12 months. An action plan must identify appropriate measures and policies that can be introduced in order to work towards achieving the AQO(s).

The AQOs set out the extent to which the Government expects the standards to be achieved by a certain date. They take account of economic efficiency, practicability, technical feasibility and timescale. The AQOs for use by local authorities are prescribed within the Air Quality (England) Regulations 2000⁷, and the Air Quality (England) (Amendment) Regulations 2002⁸.

The objectives for nitrogen dioxide (NO₂) and fine particulate matter (PM₁₀ and PM_{2.5}) are set out in Table A14.1. The AQOs for NO₂, PM₁₀ and PM_{2.5} were to have been achieved by 2005, 2004 and 2020 respectively and continue to apply in all future years thereafter.

¹ The Stationary Office (1995) The Environment Act 1995, London

² The Stationary Office (2021) Statutory Instrument 2021, The Environment Act 2021, London

³ UK Parliament (2022) Update on the progress of the Environmental Act Targets – [online] (Last Accessed: 18/11/2022). Available at: <https://www.gov.uk/government/news/update-on-progress-on-environmental-targets>.

⁴ UKAIR (2022) Air Quality Targets in the Environment Act – [online] (Last Accessed: 23/06/2022), Available at: [https://uk-air.defra.gov.uk/library/air-quality-targets#:~:text=The%20Environment%20Act%202021%20establishes,Environment%20Act%20\(Part%201\)](https://uk-air.defra.gov.uk/library/air-quality-targets#:~:text=The%20Environment%20Act%202021%20establishes,Environment%20Act%20(Part%201).).

⁵ The Stationary Office (1995) The Environment Act 1995 (Part IV), London

⁶ Defra (2007) The Air Quality Strategy for England, Scotland, Wales and Northern Ireland – [online] (Last accessed: 24/07/2024), Available at: www.gov.uk/government/publications/the-air-quality-strategy-for-england-scotland-wales-and-northern-ireland-volume-1

⁷ The Stationary Office (2000) Statutory Instrument 2000, No 928, The Air Quality (England) Regulations 2000, London

⁸ The Stationary Office (2002) Statutory Instrument 2002, No 3043, The Air Quality (England) (Amendment) Regulations 2002, London

The Environment Act 2021⁹ acts as the UK's new framework of environmental protection and came into force on 1st April 2022. With regard to air quality, the Environment Act establishes a legally binding duty on government to bring forward at least two new air quality targets in secondary legislation. This was implemented through the Environmental Improvement Plan¹⁰ which outlines new PM_{2.5} targets for future years. These are a long term target of 10 µg/m³ by 2040 and an interim target of 12 µg/m³ by 31st January 2028. These targets are expected to focus on reducing concentrations of, and exposure to, PM_{2.5}.

Additionally, a new Air Quality Strategy has been published in April 2023 which sets out a framework which should be followed by local authorities in support of Defra's long term air quality goals including new PM_{2.5} targets¹¹.

Table A14.1: Air Quality Objectives for NO₂, PM₁₀ and PM_{2.5}

Pollutant	Time Period	Objective
Nitrogen Dioxide (NO ₂)	1-hour Mean	200 µg/m ³ Not to be exceeded more than 18 times a year
	Annual Mean	40 µg/m ³
Fine Particles (PM ₁₀)	24-hour Mean	50 µg/m ³ Not to be exceeded more than 35 times a year
	Annual Mean	40 µg/m ³
Fine Particles (PM _{2.5}) *	Annual Mean	20 µg/m ³
Notes: Measured gravimetrically *The time period in LAQM.TG(22) ²⁰ states "Work towards reducing emissions/ concentrations of fine particulate matter (PM _{2.5})"		

The AQOs apply at locations where members of the public are likely to be regularly present and exposed over the averaging period of the AQO. Examples of where the annual mean AQOs should apply are provided in the Local Air Quality Management Technical Guidance (LAQM.TG(22))²⁰, and include: building façades of residential properties, schools, hospitals. The annual mean AQOs are not relevant for the building façades of offices or other places of work where members of the public do not have regular access, kerbsides or gardens.

The 24-hour mean AQO for PM₁₀ is considered to apply at the same locations as the annual mean AQO, as well as in gardens of residential properties and at hotels.

The 1-hour mean AQO for NO₂ also applies wherever members of the public might regularly spend 1-hour or more, including outdoor eating locations, pavements of busy shopping streets, car parks and bus stations which are not fully enclosed. The 1-hour mean AQO does not apply at kerbside sites where the public do not have regular access.

EU Limit Values.

The European Union (EU) has also set limit values for NO₂, PM₁₀ and PM_{2.5}; these are legally binding and have been implemented into English legislation by The Air Quality Standards Regulations 2010 and The Air Quality Standards (Amendment) Regulations 2016.

⁹ The Stationary Office (2021) Statutory Instrument 2021, The Environment Act 2021, London

¹⁰ Department for Environment, Food & Rural Affairs (2023) Environmental Improvement Plan 2023 –[online], (Last accessed: 24/07/2024), Available at: <https://www.gov.uk/government/publications/environmental-improvement-plan>

¹¹ Defra(2023) Air Quality Strategy: framework for local authority delivery [online] (Last accessed: 24/07/2024), – <http://www.gov.uk/government/consultations/revised-national-air-quality-strategy>

The limit values for NO₂, PM₁₀ and PM_{2.5} are the same as the English AQOs (given in Table A14.1), but applied from 2010 for NO₂, 2005 for PM₁₀ and 2015 for PM_{2.5}. The limit values apply at all locations (apart from where the public does not have access, where health and safety at work provisions apply and on the road carriageway).

Clean Air Strategy.

The Clean Air Strategy (CAS)¹², published in 2019, sets out the Government's proposals aimed at delivering cleaner air in England and indicates how devolved administrations intend to make emission reductions. It sets out the comprehensive action that is required across all parts of government and society to deliver clean air.

Planning Policy

Overarching National Policy Statement for Energy (EN-1)

The Department of Energy and Climate Change published the Overarching National Policy Statement for Energy (EN-1)¹³ was updated in November 2023. It sets out the policy and guidance on generic impacts to help inform Local Planning Authorities (LPAs) in preparing local impact reports. Section 5.2 provides an overview on assessments, decision making and mitigation that should be implemented to manage adverse air quality impacts caused by energy infrastructure development. They are in line with the government's goals to transition to net zero¹⁴.

National Policy Statement for Renewable Energy Infrastructure (EN-3)

The Department of Energy and Climate Change published the National Policy Statement for Renewable Energy Infrastructure (EN-3)¹⁵ was updated in November 2023. In conjunction with EN-1, this provides the primary basis for decisions by the Infrastructure Planning Committee (IPC) on applications it receives for nationally significant renewable energy infrastructure. They are in line with the government's goals to transition to net zero¹⁶.

National Planning Policy.

National Planning Policy Framework

The National Planning Policy Framework (NPPF)¹⁷ sets out planning policy for England. It includes advice on when air quality should be a material consideration in development control decisions. Relevant sections are set out below:

Paragraph 8: "Achieving sustainable development means that the planning system has three overarching objectives, which are interdependent and need to be pursued in mutually supportive ways (so that opportunities can be taken to secure net gains across each of the different objectives): [...]"

c) an environment objective – to protect and enhance our natural, built and historic environment; including making effective use of land, improving biodiversity, using resources prudently, minimising waste and pollution, and mitigating and adapting to climate change, including moving to a low carbon economy. [...]"

Paragraph 56: "Local planning authorities should consider whether otherwise unacceptable development could be made acceptable through the use of conditions or planning obligations. Planning obligations should only be used where it is not possible to address unacceptable impacts through a planning condition."

¹² Defra (2019) The Clean Air Strategy 2019, London

¹³ Department of Energy and Climate Change (2023) Overarching National Policy Statement for Energy (EN-1) – [online] (Last accessed: 18/11/2024), Available at: EN-1 Overarching National Policy Statement for Energy

¹⁴ HM Treasury (2022) Autumn Statement 2022 – [online], (Last accessed: 20/12/2022), Available at: <https://www.gov.uk/government/publications/autumn-statement-2022-documents/autumn-statement-2022-html>

¹⁵ Department of Energy and Climate Change (2023) National Policy Statement for Renewable Energy Infrastructure (EN-3) – [online] (Last accessed: 18/11/2024), Available at: National Policy Statement for renewable energy infrastructure (EN-3)

¹⁶ HM Treasury (2022) Autumn Statement 2022 – [online], (Last accessed: 20/12/2022), Available at: <https://www.gov.uk/government/publications/autumn-statement-2022-documents/autumn-statement-2022-html>

¹⁷ Department for Levelling Up, Housing and Communities, (2024) National Planning Policy Framework, Department for Levelling Up, Housing and Communities, London. Available: National Planning Policy Framework (publishing.service.gov.uk)

Paragraph 107: “The planning system should actively manage patterns of growth in support of these objectives. Significant development should be focused on locations which are or can be made sustainable, through limiting the need to travel and offering a genuine choice of transport modes. This can help to reduce congestion and emissions, and improve air quality and public health. However, opportunities to maximise sustainable transport solutions will vary between urban and rural areas, and this should be taken into account in both plan-making and decision-making.”

Paragraph 180: “Planning policies and decisions should contribute to and enhance the natural and local environment by: [...]”

l) preventing new and existing development from contributing to, being put at unacceptable risk from, or being adversely affected by, unacceptable levels of soil, air, water or noise pollution or land instability. Development should, wherever possible, help to improve local environmental conditions such as air and water quality, taking into account relevant information such as river basin management plans. [...]”

Paragraph 191: “Planning policies and decisions should also ensure that new development is appropriate for its location taking into account the likely effects (including cumulative effects) of pollution on health, living conditions and the natural environment, as well as the potential sensitivity of the site or the wider area to impacts that could arise from the development.”

Paragraph 192: “Planning policies and decisions should sustain and contribute towards compliance with relevant limit values or national objectives for pollutants, taking into account the presence of Air Quality Management Areas and Clean Air Zones, and the cumulative impacts from individual sites in local areas. Opportunities to improve air quality or mitigate impacts should be identified, such as through traffic and travel management, and green infrastructure provision and enhancement. So far as possible these opportunities should be considered at the plan-making stage, to ensure a strategic approach and limit the need for issues to be reconsidered when determining individual applications. Planning decisions should ensure that any new development in Air Quality Management Areas and Clean Air Zones is consistent with the local air quality action plan.”

Paragraph 194: “The focus of planning policies and decisions should be on whether proposed development is an acceptable use of land, rather than the control of processes or emissions (where these are subject to separate pollution control regimes). Planning decisions should assume that these regimes will operate effectively. Equally, where a planning decision has been made on a particular development, the planning issues should not be revisited through the permitting regimes operated by pollution control authorities.”

The NPPF is supported by Planning Practice Guidance (PPG)¹⁸.

The PPG states that:

Paragraph 001 (Reference ID: 32-001-20191101): “Defra carries out an annual national assessment of air quality using modelling and monitoring to determine compliance relevant Limit Values. It is important that the potential impact of new development on air quality is taken into account in planning where the national assessment indicates that relevant limits have been exceeded or are near the limit or where the need for emissions reductions has been identified.”

Paragraph 002 (Reference ID: 32-002-20191101): “Plans may need to consider ways in which the development could be made appropriate in locations where air quality is or is likely to be a concern, and not give rise to unacceptable risks from pollution. This could, for example entail identifying measures for offsetting the impact on air quality arising from new development including supporting measures in an air quality action plan or low emissions strategy where applicable.”

Paragraph 005 (Reference ID: 32-005-20191101): “Whether air quality is relevant to a planning decision will depend on the proposed development and its location. Concerns could arise if the development is likely to have an adverse effect on air quality in areas where it is already known to be poor, particularly if it could affect the implementation of air quality strategies and action plans and / or breach legal obligations (including those relating to the conservation of habitats and species). Air quality may also be a material consideration if the proposed development would be particularly sensitive to poor air quality in its vicinity.”

¹⁸ Ministry of Housing, Communities & Local Government (2019) Planning Practice Guidance, London

The PPG also sets out the information that may be required in an air quality assessment, stating that:

Paragraph 007 (Reference ID: 32-007-20191101): “Assessments need to be proportional to the nature and scale of development proposed and the potential impacts (taking into account existing air quality conditions), and because of this are likely to be locationally specific. The scope and content of supporting information is best discussed and agreed between the local planning authority and applicant before it is commissioned.”

It also provides guidance on options for mitigating air quality impacts, and makes clear that:

Paragraph 008 (Reference ID: 32-008-20191101): “Mitigation options will need to be locationally specific, will depend on the proposed development and need to be proportionate to the likely impact.”

Local Planning Policy.

Bassetlaw Local Plan 2020 – 2038 (Part 1 Local Plan)

The Bassetlaw Local Plan¹⁹ was adopted in May 2024. The Local Plan forms part of the Council’s statutory development plan and will help shape the future of the District by guiding where and how development will come forward. The Local Plan will manage new growth within the district up until 2038.

The following policies relating to air quality are contained within the Local Plan:

Policy ST42 -Promoting Healthy, Active Lifestyles

1. The Council, with its partners will create an environment which supports healthy, active, inclusive and safe communities. Healthy, active and safe lifestyles will be enabled by

[..]

g) ensuring that the current air quality in the District is maintained and, where possible improved;

h) minimising and mitigating against potential harm from risks such as pollution and other environmental hazards and climate change

[..]

Policy 46. Amenity

Proposals for development should be designed and constructed to avoid and minimise impacts on the amenity of existing and future users, individually and cumulatively, within the development and close to it. As such, proposals will be expected to:

[..]

b) not generate a level of activity, noise, light, air quality, odour, vibration or other pollution which cannot be mitigated to an appropriate standard.

[..]

Policy ST48. Reducing Carbon Emissions, Climate Change Mitigation and Adaptation

All proposals, including the change of use of existing buildings and spaces, should be designed to improve resilience to the anticipated effects of climate change taking into account the design principles in the Bassetlaw Design Quality SPD and the Bassetlaw Design Code. Proposals should incorporate, where appropriate, the following measures that address issues of climate change mitigation and adaptation through:

a) ensuring no unacceptable adverse impact on local air quality;

¹⁹ Bassetlaw District Council (2024) Bassetlaw Local Plan 2020 – 2038 – [online], (Last accessed: 19/11/2024). Available at: Bassetlaw Local Plan 2020-2038

[...]

Assessment Guidance.

The primary guidance documents consulted in undertaking this assessment are detailed below.

Defra Local Air Quality Management Technical Guidance

The Defra Local Air Quality Management Technical Guidance (LAQM.TG(22))²⁰ was published for use by local authorities in their LAQM review and assessment work. The document provides key guidance in aspects of air quality assessment, including screening, use of monitoring data, and use of background data that are applicable to all air quality modelling assessments.

EPUK-IAQM ‘Air Quality Guidance for Planning’

Environmental Protection UK (EPUK) and the Institute of Air Quality Management (IAQM) have published guidance²¹ to help ensure that air quality is properly accounted for in the development control process. It clarifies when an air quality assessment should be undertaken, what it should contain, and how impacts should be described and assessed including guidelines for assessing the significance of impacts.

IAQM ‘Construction and Demolition Dust Guidance’

Guidance on the assessment of dust from demolition and construction has been published by the IAQM²². The guidance provides a methodology to determine the dust emission magnitude and provides a series of matrices to determine the risk magnitude of potential dust sources associated with construction activities. This allows for the identification of appropriate mitigation measures that are defined within further IAQM guidance.

Design Manual for Roads and Bridges

The Design Manual for Roads and Bridges²³ (DMRB) (LA 105) considers any receptor within 200 m of a road source to be potentially affected by that operation. Receptors, including ecological designations within 200 m of a road source require further assessment of potential impacts.

IAQM ‘A Guide To The Assessment Of Air Quality Impacts On Designated Nature Conservation Sites’

The IAQM has published ‘A guide to the assessment of air quality impacts on designated nature conservation sites’²⁴ which assists in understanding air quality impacts on European, national and local designated sites. It should be noted that this guidance should be utilised to determine whether there will be a likely ‘significant effect’ on a habitat; however, an appropriately qualified and experienced ecologist should assess the significance of the potential effects on the habitat.

²⁰ Defra (2022) Local Air Quality Management Technical Guidance (TG22) – [online] (Last accessed: 24/07/2024), Available at: <https://laqm.defra.gov.uk/wp-content/uploads/2022/08/LAQM-TG22-August-22-v1.0.pdf>

²¹ Environmental Protection UK and Institute of Air Quality Management (2017), Land-Use Planning & Development Control: Planning For Air Quality v1.2 – [online] (Last accessed: 24/07/2024), Available at: iaqm.co.uk/text/guidance/air-quality-planning-guidance.pdf

²² Institute of Air Quality Management (2024) Guidance on the assessment of dust from demolition and construction v2.2 – [online], (Last accessed: 24/07/2024), Available at: iaqm.co.uk/wp-content/uploads/2013/02/Construction-Dust-Guidance-Jan-2024.pdf

²³ Standards for Highways (2019) Design Manual for Roads and Bridges LA 105 Air Quality (Last accessed: 24/07/2024), Available at: <https://www.standardsforhighways.co.uk/tses/attachments/10191621-07df-44a3-892e-c1d5c7a28d90?inline=true>

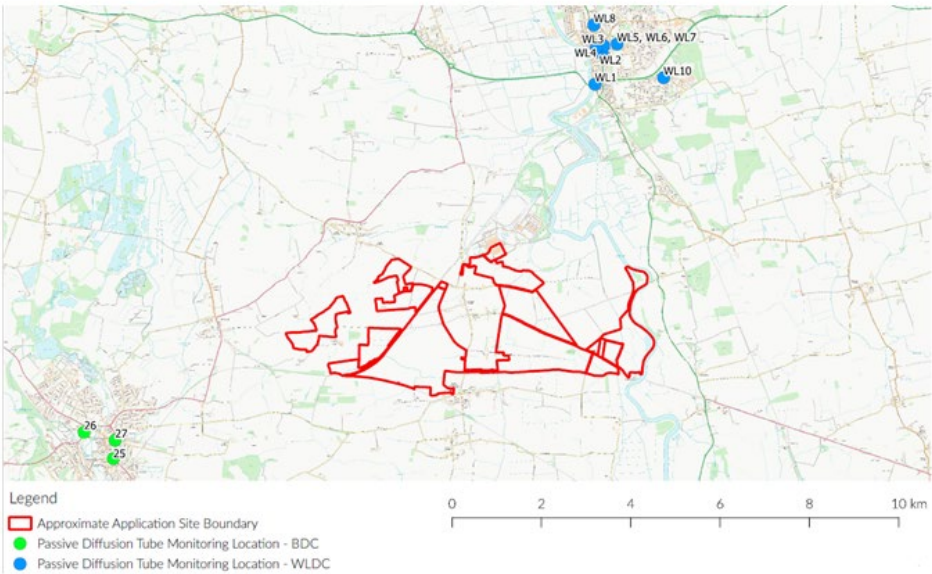
²⁴ Institute of Air Quality Management (2020) A guide to the assessment of air quality impacts on designated nature conservation sites – [online], (Last accessed: 24/07/2024), Available at: iaqm.co.uk/text/guidance/air-quality-impacts-on-nature-sites-2020.pdf

Appendix 14.2 - Environmental Health Officer Consultation

From: [REDACTED]
Sent: Monday, June 10, 2024 4:40 PM
To: [REDACTED]
Subject: Air Quality Methodology Approval - Solar Farm Project

External Message - Be aware that the sender of this email originates from outside of the Council. Please be cautious when opening links or attachments in email

Good Afternoon,
We are currently in process of undertaking some baseline air quality for the Solar Farm Project around Sturton le Steeple.



- Hoare Lea propose to undertake the assessment using the following methodology:
- A baseline assessment of air quality will be undertaken using Bassetlaw District Council and West Lindsay District Council data, taken from the most recently available Annual Status Report/s.
 - Monitoring data for 2020 and 2021 will not be included as part of our assessment, owing to the effects of the COVID-19 pandemic. Monitoring data from 2022 will be used to establish the baseline.
 - A review of the BDC will be carried out.
 - DEFRA's background pollution maps will be used to establish background concentrations in the area.
 - An assessment of the construction impacts on air quality and dust using the IAQM methodology, in compliance with 'The Control of Dust and Emissions During Construction and Demolition'.
 - Any construction or operational phase mitigation will be recommended as necessary in line with IAQM guidance.

There are currently no passive diffusion tube monitoring locations in the immediate vicinity of the Assessment Area, however there are ten passive diffusion tube monitoring locations positioned within 6 km of the Assessment Area. Three passive diffusion tube monitoring locations are situated in BDC's administrative area whereas seven passive diffusion tube monitoring locations are placed within the WLDC area of administration. For the purpose of any dispersion modelling that is required for the project, road traffic data associated with the Proposed Development is to be provided by Pegasus, the appointed Transport Consultants for the project and will be screened against the relevant EPUK and IAQM criteria, where modelling is deemed necessary during construction and/or operational phases. Concentrations of NO₂, PM₁₀ and PM_{2.5} will be predicted at existing receptors in the vicinity of the Application Site. We are proposing to verify the dispersion model using data from existing monitoring locations in both Bassetlaw and West Lindsay Council. The following passive diffusion tube/automatic monitoring locations have been identified as potential sites to be used for verification purposes using 2022 data and are outlined in the table below.

Site ID	Site Type	Site Name	Local Authority	Distance from EIA Assessment Area (km)	Annual Mean NO ₂ Concentration (µg/m ³)				
					2018	2019	2020	2021	2022
WL1	Roadside	3 Lea Road, Gainsborough	WLDC	4.6	24.6	22.8	16.3	20.6	-
WL2	Roadside	58 Etherington Street, Gainsborough	WLDC	5.3	18.6	19.0	14.4	15.0	14.1
WL4	Roadside	Heaton Street	WLDC	5.3	21.4	20.7	15.2	16.7	15.3
27	Roadside	Arlington Way / Grove Street, Retford 27	BDC	5.4	28.2	28.7	22.6	23.2	22.8
WL3	Roadside	19 Spring Gardens, Gainsborough	WLDC	5.4	20.6	17.3	14.2	13.8	14.1
25	Roadside	London Road Junction, Retford 25	BDC	5.5	25.7	24.7	21.7	21.3	20.8
WL10	Roadside	Marshall Way, Gainsborough	WLDC	5.6	16.8	15.0	12.0	11.7	12.3
WL5, WL6, WL7	Industrial	Gainsborough Cemetery, Gainsborough	WLDC	5.6	11.5	11.3	9.1	8.7	9.1
WL8	Kerbside	Cherry Tree Road, Gainsborough	WLDC	5.7	15.0	14.7	11.9	11.3	10.6
26	Roadside	Hospital Road, Retford 26	BDC	6.0	31.1	30.1	23.8	26.1	25.2

Please could you provide comment on the suitability of this data and its use for verification purposes?
Any question please let me know.
Kind Regards,
Rachael Harrison (She / Her)
Senior Air Quality Consultant

Thanks Rachael I can confirm this methodology is acceptable.

Sincerely

Appendix 14.3– Construction Dust Assessment.

Methodology.

The assessment of construction dust impacts has been undertaken in line with the methodology outlined in the IAQM construction guidance²². The methodology outlined within this Appendix is also applicable to the decommissioning phase, as the associated activities and potential effects are assumed to be similar in nature to the construction phase. Activities on the Site have been divided into three types to reflect their different potential impacts. These are:

- Earthworks
- Construction; and
- Trackout

The risk of dust emissions was assessed for each activity with respect to:

- Potential loss of amenity due to dust soiling;
- The risk of health effects due to a significant increase in exposure to PM₁₀; and
- The risk of ecological impacts due to a significant increase in exposure to PM₁₀.

The first stage of the assessment involves screening to determine whether there are any sensitive receptors within the threshold distances defined by the IAQM construction guidance²². A detailed assessment of the impact of dust from construction sites will be required where:

- A ‘human receptor’ is located within 250 m of the boundary of the Site or within 50 m of the route(s) used by construction vehicles on the public highway, up to 250 m from the Site entrance;
- An ‘ecological receptor’ is located within 50 m of the boundary of the Site or within 50 m of the route(s) used by construction vehicles on the public highway, up to 250 m from the Site entrance.

The magnitude of dust emission for each activity is determined on the basis of the guidance, indicative thresholds, information available relating to the project and expert judgement. The risk of dust impacts arising is based upon the relationship between the dust emission magnitude and the sensitivity of the area. The risk of dust impacts is then used to determine the mitigation requirements. Following the implementation of the appropriate mitigation, residual effects are considered to be not significant.

Table A14.2: Sensitivity of the Area to Dust Soiling Effects on People and Property

Receptor Sensitivity	Number of Receptors	Distance from Source (m)			
		<20	<50	<100	<250
High	>100	High	High	Medium	Low
	10 – 100	High	Medium	Low	Low
	1 – 10	Medium	Low	Low	Low
Medium	>1	Medium	Low	Low	Low
Low	>1	Low	Low	Low	Low

Table A14.3: Sensitivity of the Area to Human Health Effects

Receptor Sensitivity	Annual Mean PM ₁₀ Concentration	Number of Receptors	Distance from the Source (m)			
			<20	<50	<100	<250
High	>32 µg/m ³	>100	High	High	High	Low
		10 – 100	High	High	Medium	Low
		1 – 10	High	Medium	Low	Low
	28 – 32 µg/m ³	>100	High	High	Medium	Low
		10 – 100	High	Medium	Low	Low
		1 – 10	High	Medium	Low	Low
	24 – 28 µg/m ³	>100	High	Medium	Low	Low
		10 – 100	High	Medium	Low	Low
		1 – 10	Medium	Low	Low	Low
	<24 µg/m ³	>100	Medium	Low	Low	Low
		10 – 100	Low	Low	Low	Low
		1 – 10	Low	Low	Low	Low
Medium	>32 µg/m ³	>10	High	Medium	Low	Low
		1 – 10	Medium	Low	Low	Low
	28 – 32 µg/m ³	>10	Medium	Low	Low	Low
		1 – 10	Low	Low	Low	Low
	24 – 28 µg/m ³	>10	Low	Low	Low	Low
		1 – 10	Low	Low	Low	Low
	<24 µg/m ³	>10	Low	Low	Low	Low
		1 – 10	Low	Low	Low	Low
Low	-	1	Low	Low	Low	Low

Table A14.4 to Table A14.7 illustrate how the dust emission magnitude should be combined with the sensitivity of the area to determine the risk of impacts with no mitigation measures applied.

Table A14.4: Risk of Dust Impacts – Demolition

Sensitivity of Area	Dust Emission Magnitude		
	Large	Medium	Small
High	High Risk	Medium Risk	Medium Risk
Medium	High Risk	Medium Risk	Low Risk
Low	Medium Risk	Low Risk	Negligible

Table A14.5: Risk of Dust Impacts – Earthworks

Sensitivity of Area	Dust Emission Magnitude		
	Large	Medium	Small
High	High Risk	Medium Risk	Low Risk
Medium	Medium Risk	Medium Risk	Low Risk
Low	Low Risk	Low Risk	Negligible

Table A14.6: Risk of Dust Impacts – Construction

Sensitivity of Area	Dust Emission Magnitude		
	Large	Medium	Small
High	High Risk	Medium Risk	Low Risk
Medium	Medium Risk	Medium Risk	Low Risk
Low	Low Risk	Low Risk	Negligible

Table A14.7: Risk of Dust Impacts – Trackout

Sensitivity of Area	Dust Emission Magnitude		
	Large	Medium	Small
High	High Risk	Medium Risk	Low Risk
Medium	Medium Risk	Medium Risk	Low Risk
Low	Low Risk	Low Risk	Negligible

The risk of dust impacts is based on the potential dust emissions magnitude and the sensitivity of the area. These two factors are then combined to determine the risk of dust impacts with no mitigation applied. In the absence of any site-specific information, a higher risk category has been applied to represent a worst-case scenario.

Assessment Screening

There are 'human receptors' within 250 m of the Site alongside various designated habitat sites both within the Site and within 50 m of the Site boundary. Additionally, a single habitat site has been identified within 50 m of the route(s) used by construction vehicles on the public highway, up to 250 m from the Site entrance.

There are five locally designated Sites of Importance for Nature Conservation (SINCs) within the Site Boundary; Thornhill Lane Drain, Mother Drain, Littleborough Lagoons, Blue Stocking Lane and High House Road Verges, which are classed as low sensitivity receptors in line with the IAQM guidance²². It is anticipated that best practice construction measures, controlled and implemented by the outline Construction Environmental Management Plan (oCEMP), will be sufficient to avoid any likely significant effects on these existing sensitive ecological receptors within the Site boundary.

However, the closest statutory designated ecological receptor to the Site is Clarborough Tunnel, classified as a Site of Special Scientific Interest (SSSI), located approximately 40 m to the south west of the Site boundary. Clarborough Tunnel SSSI therefore falls within the 50 m distance criteria outlined in the IAQM guidance²² where it is considered that there is the potential of a risk of dust impact from on-site activities (earthworks and construction). Additionally, West Burton Meadow SINC, is also located within 50 m of the Site Boundary. Therefore, the SSSI and various locally designated SINCs are sensitive to fugitive dust emissions during the construction phase. An assessment of construction dust risk on these ecological receptors has therefore been undertaken.

Regarding trackout, there are no statutory designated ecological sites (including the Clarborough Tunnel SSSI) within 50 m of any of the specified construction traffic routes (outlined in Section 14.3.1) up to 250 m from the Site boundary. However, the locally designated SINC, West Burton Meadow, is located within 50 m of the Gainsborough Road access point to the Primary construction Compound in the eastern half of the Site. As such, this SINC is sensitive to fugitive dust emissions from trackout and an assessment of the potential dust impacts from trackout on this sensitive ecological receptor has therefore been undertaken.

A visual representation of Clarborough Tunnel SSSI and the other surrounding SINCs both within and in 50 m of the Site boundary is shown in Figure A14.2.

Therefore, an assessment of construction dust impacts and dust impact from trackout activities has been conducted for both human and ecological receptors.

Potential Dust Emission Magnitude

The potential magnitude of dust emissions from earthworks, construction and trackout has been assessed, as identified in Table A14.8.

Table A14.8: Predicted Magnitude of Dust Emissions

Activity	Magnitude	Justification
Earthworks	Large	Extensive landscaping will be required as part of the proposals and earthworks across the entirety of the Site will be required. The total Site area is greater than 110,000 m ² . The soil type at the Site has been classed as predominately "Loamy some clayey" which is a potentially dusty soil type using the application Soilscape ²⁵ . Therefore, in line with the IAQM construction guidance ²² , the magnitude of dust emissions from earthworks is anticipated to be large.
Construction	Small	As construction will involve a few hard standing structures and electrical equipment, the construction volume is expected to be less than 25,000 m ³ . This will primarily involve the installation of solar modules which are not anticipated to have a high

²⁵ Cranfield Soil and Agrifood Institute Soilscape map – [online], (Last accessed: 24/07/2024), Available at: <http://www.landis.org.uk/soilscape/>

Activity	Magnitude	Justification
		potential for dust. As such, the magnitude of dust emissions from construction is expected to be small.
Trackout	Large	The unpaved road length will be greater than 100 m after analysis of the Site using QGIS and Google Maps. As outlined in Section 14.6, it is anticipated that there will be an AADT of 69 LDV and 66 HDV during the construction phase (over a 24-month construction period), with further information on construction routes covered in Chapter 13 of the PEIR. The soil type at the Site has been previously classed as “loamy some clayey” using the application Soilscape ²⁵ which is a potentially dusty soil type. Therefore, in line with IAQM construction guidance ²² , the magnitude of dust emissions from construction is anticipated to be large as a worst case.

Sensitivity of the Study Area

The sensitivity of the area takes into account the following factors:

- The specific sensitivities of receptors in the area;
- The proximity and number of those receptors;
- In the case of PM₁₀, the local background concentration; and
- Site-specific factors, such as whether there are natural shelters, such as trees or other vegetation, to reduce the risk of wind-blown dust.

The sensitivity of the area and the factors considered are detailed in Table A14.9 with the construction distance band criteria illustrated in Figure A14.1 below.

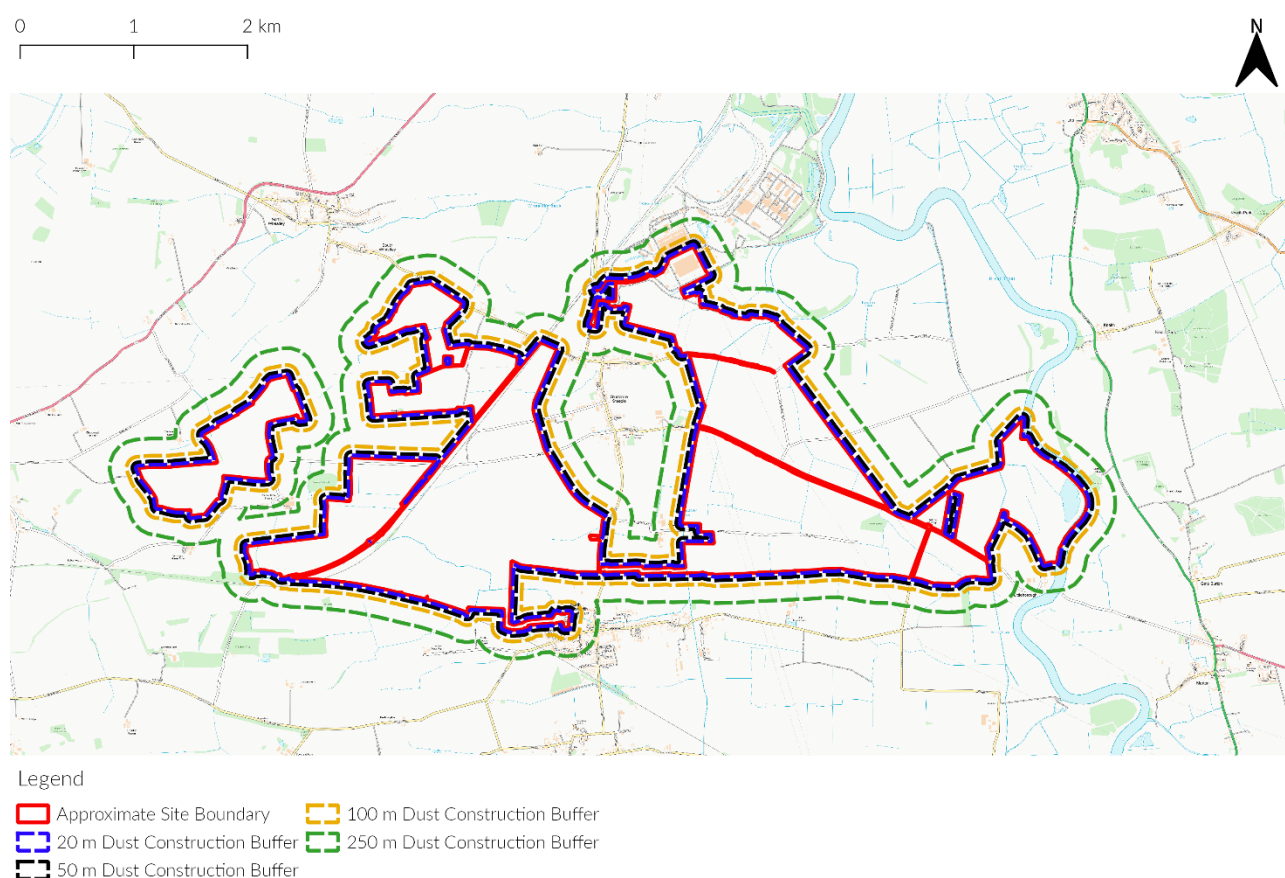


Figure A14.1: IAQM Demolition and Construction Dust Distance Criteria from Study Area Site boundary. Contains OS Data © Crown Copyright and Database rights 2024.

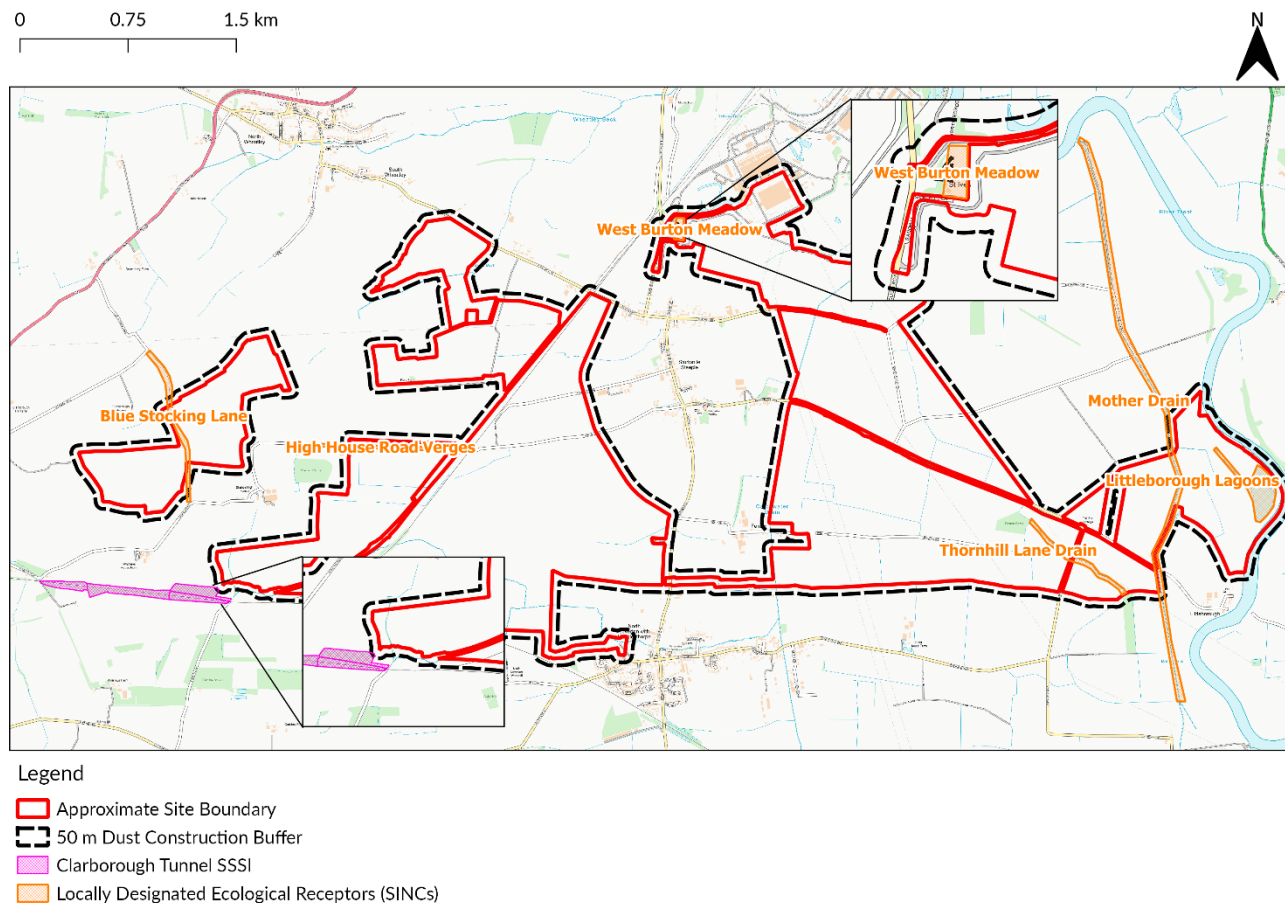


Figure A14.2: Ecological receptor Locations from Study Area Site boundary. Contains OS Data © Crown Copyright and Database rights 2024.

Table A14.9: Sensitivity of the Area

Sensitivity Type	Factors	Sensitivity of Area	
		On – Site	Trackout
Dust Soiling	<p>For construction activities, there are between 10 -100 high sensitivity residential receptors within 20 m of the Site Boundary, located within North Leverton and Sturton le Steeple. Within 250 m southwest of the Site boundary there are greater than 100 high sensitivity receptors located centrally within Sturton le Steeple.</p> <p>For trackout, there are greater than 100 high sensitivity residential receptors within 20 m of the routes to be used by construction vehicles up to 250 m from the Site boundary.</p> <p>Therefore, the sensitivity of the area surrounding the Site has been classified as high sensitivity with regards to dust soiling for both on-site and trackout activities.</p>	High	High
Human Health	As shown in Table 14.5, the Defra predicted background PM ₁₀ concentration for the worst-case grid square in which the Site is	Medium	Medium

Sensitivity Type	Factors	Sensitivity of Area	
		On – Site	Trackout
	<p>located, is 15.4 µg/m³ in 2022, the most recent year with available monitoring data. For construction activities, there are greater than 100 high sensitivity receptors (residential) within 20 m of the Site Boundary, located within North Leverton and Sturton le Steeple.</p> <p>For trackout, there are greater than 100 high sensitivity residential receptors in total within 20 m of the routes to be used by construction vehicles up to 250 m from the Site boundary.</p> <p>Therefore, the sensitivity of the area surrounding the Site has been classified as medium with regards to human health impacts for on-site and trackout activities.</p>		
Ecological	<p>Clarborough Tunnel SSSI, located within 50 m of the Site boundary, is classed as a medium sensitivity receptor to the risk of dust impacts from construction and earthworks activities, in line with IAQM construction guidance. In addition, five low sensitivity (locally designated) SINC's have been identified within the Site boundary (Thornhill Lane Drain, Mother Drain, Littleborough Lagoons, Blue Stocking Lane and High House Road Verges). The low sensitivity West Burton Meadow SINC is also located within 50 m of the Site boundary.</p> <p>Therefore, the sensitivity of the area surrounding the Site has been classed as low with respect to ecological impacts for on-site activity (earthworks and construction activities only).</p> <p>For trackout, the single low sensitivity West Burton Meadow SINC has been identified within 50 m of anticipated construction routes, up to 250 m from the Site boundary. Therefore, in line with the IAQM construction guidance, the sensitivity of the area surrounding the Site has been classed as low with respect to ecological impacts for trackout.</p>	Low	Low

Risk of Dust Impacts

The outcomes of the assessments of potential magnitude of dust emissions and the sensitivity of the area are combined to determine the risk of impact. This risk is then used to inform the selection of appropriate mitigation. Table A14.10 details the risk of dust impacts for earthworks, construction and trackout activities.

Table A14.10: Summary of Unmitigated Dust Risks

Potential Impact	Sensitivity – Onsite Activity	Sensitivity - Trackout	Magnitude		
			Earthworks	Construction	Trackout
Magnitude			Large	Small	Large
Dust Soiling Impacts	High	High	High Risk	Low Risk	High Risk
Human Health Impacts	Medium	Medium	Medium Risk	Low Risk	Medium Risk
Ecological	Low	Low	Low Risk	Low Risk	Low Risk

To mitigate the potential impacts during the construction phase it is recommended that mitigation measures as detailed in the IAQM construction guidance²² are implemented. These mitigation measures have been carefully selected for the Proposed Development and are based upon the dust risk categories outlined above in Table A14.10. The mitigation measures are provided in Table A14.11 below. These mitigation measures would be included in the oCEMP, to be secured via DCO requirement and implemented on the Site before any works take place.

Table A14.11: Mitigation Measures for the Construction Phase

Issue	Mitigation Measure
Communications	Develop and implement a stakeholder communications plan that includes community engagement before work commences on site.
	Display the name and contact details of person(s) accountable for air quality and dust issues on the site boundary. This may be the environment manager/ engineer or the site manager.
	Display the head or regional office contact information.
Dust Management Plan	Develop and implement a Dust Management Plan (DMP), which may include measures to control other emissions, approved by the Local Authority. The DMP may include monitoring of dust deposition, dust flux, real-time PM ₁₀ continuous monitoring and/ or visual inspections.
Site Management	Record all dust and air quality complaints, identify cause(s), take appropriate measures to reduce emissions in a timely manner, and record the measures taken.
	Make the complaints log available to the Local Authority when asked.
	Record any exceptional incidents that cause dust and/ or air emissions, either on- or off- site, and the action taken to resolve the situation in the log book.
	Hold regular liaison meetings with other high risk construction sites within 250 m of the site boundary, to ensure plans are co-ordinated and dust and particulate matter emissions are minimised. It is important to understand the interactions of the off-site transport/ deliveries which might be using the same strategic road network routes.
Monitoring	Undertake daily on-site and off-site inspection, where receptors (including roads) are nearby, to monitor dust, record inspection results, and make the log available to the Local Authority when asked. This should include regular dust soiling check of surfaces such as street furniture, cars, window sills within 100 m of the site boundary, with cleaning to be provided if necessary.
	Carry out regular site inspections to monitor compliance with the D ²⁶ MP, record inspection results, and make an inspection log available to the Local Authority when asked.
	Increase the frequency of site inspections by the person accountable for air quality and dust issues on site when activities with a high potential to produce dust are being carried out and during prolonged dry or windy conditions.
	Agree dust deposition, dust flux, or real-time PM ₁₀ continuous monitoring locations with the Local Authority. Where possible, commence baseline monitoring at least three months before work commences on site or, if it is a large site, before work on a phase commences.
Preparing and maintaining the site	Plan site layout so that machinery and dust causing activities are located away from receptors, as far as is possible.
	Erect solid screens or barriers around dusty activities or the site boundary that are at least as high as any stockpiles on site.
	Fully enclose site or specific operations where there is a high potential for dust production and the site is active for an extensive period.

Issue	Mitigation Measure
	Avoid site runoff of water or mud.
	Keep site fencing, barriers and scaffolding clean using wet methods.
	Remove materials that have a potential to produce dust from site as soon as possible, unless being re-used on site. If they are being re-used cover as described below.
	Cover, seed or fence stockpiles to prevent wind whipping.
Operating vehicles/machinery and sustainable travel	Ensure all vehicles switch off engines when stationary – no idling vehicles.
	Avoid the use of diesel or petrol-powered generators and use mains electricity or battery powered equipment where practicable.
	Impose and signpost a maximum-speed-limit of 15 mph on surfaced and 10 mph on unsurfaced haul roads and work areas (if long haul routes are required these speeds may be increased with suitable additional control measures provided, subject to the approval of the nominated undertaker and with the agreement of the Local Authority, where applicable).
	Produce a Construction Logistics Plan to manage the sustainable delivery of goods and materials.
	Implement a Travel Plan that supports and encourages sustainable travel (public transport, cycling, walking and car-sharing)
Operations	Only use cutting, grinding or sawing equipment fitted or in conjunction with suitable dust suppression techniques such as water sprays or local extraction, e.g. suitable local exhaust ventilation systems.
	Ensure an adequate water supply on the site for effective dust/particulate matter suppression/ mitigation, using non-potable water where possible and appropriate.
	Use enclosed chutes and conveyors and covered skips.
	Minimise drop heights from conveyors, loading shovels, hoppers and other loading or handling equipment and use fine water sprays on such equipment wherever appropriate.
	Ensure equipment is readily available on site to clean any dry spillages, and clean up spillages as soon as reasonably practicable after the event using wet cleaning methods.
Waste management	Avoid bonfires and burning of waste materials.
Earthworks	Re-vegetate earthworks and exposed areas/soil stockpiles to stabilise surfaces as soon as practicable.
	Use Hessian, mulches or trackifiers where it is not possible to re-vegetate or cover with topsoil, as soon as practicable.
	Only remove the cover in small areas during work and not all at once.
Construction	Avoid scabbling (roughening of concrete surfaces) if possible.
	Ensure sand and other aggregates are stored in bunded areas and are not allowed to dry out, unless this is required for a particular process, in which case ensure that appropriate additional control measures are in place.
	Ensure bulk cement and other fine powder materials are delivered in enclosed tankers and stored in silos with suitable emission control systems to prevent escape of material and overfilling during delivery.
	For smaller supplies of fine powder materials, ensure bags are sealed after use and stored appropriately to prevent dust.
Trackout	Use water-assisted dust sweeper(s) on the access and local roads, to remove, as necessary, any material tracked out of the site. This may require the sweeper being in continuous use.

Issue	Mitigation Measure
	Avoid dry sweeping of large areas.
	Ensure vehicles entering and leaving sites are covered to prevent escape of materials during transport.
	Inspect on-site haul routes for integrity and instigate necessary repairs to the surface as soon as reasonably practicable.
	Record all inspections of haul routes and any subsequent action in a site log book.
	Install hard surfaced haul routes, which are regularly damped down with fixed or mobile sprinkler systems, or mobile water bowzers and regularly cleaned.
	Implement a wheel washing system (with rumble grids to dislodge accumulated dust and mud prior to leaving the site where reasonably practicable).
	Ensure there is an adequate area of hard surfaced road between the wheel wash facility and the site exit, wherever site size and layout permits.
	Access gates to be located at least 10 m from receptors where possible.