ARDENT
CONSULTING ENGINEERS
AN EMPLOYEE OWNED COMPANY

Antler Homes PLC

Land Rear of Chesapeke, Reeds Lane, Sayers Common, Mid Sussex

Air Quality Assessment

REPORT REF.

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Statement of Competence

The following authors of this report are Members of the Institute of Air Quality Management (IAQM) and possess the requisite qualifications, expertise, and experience to conduct robust air quality assessments and analyses in accordance with regulatory standards and best practices.

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1 Introduction

Background

1.1 Ardent Consulting Engineers Ltd. (ACE) have been commissioned by Antler Homes PLC to carry out an Air Quality Assessment (AQA) in support of a full planning application for a proposed residential development located at Land rear of Chesapeke, on Reeds Lane, Sayers Common, within the Mid Sussex District Council (MSDC) area.

1.2 The development proposals include the demolition of existing structures currently located on-site and the construction of 27 no. residential dwellings, with associated car parking and landscaping.

Site Location and Context

1.3 The site is located on land located at the approximate National Grid Reference (NGR): 526496 (x), 118023 (y).

1.4 The development has the potential to cause adverse impacts at sensitive locations, in ambient air quality terms. These may include fugitive dust emissions associated with construction works and road traffic exhaust emissions from vehicles travelling to and from the site during the operation phase. Further to this, the proposals may introduce future occupants to any existing air quality issues at the site.

1.5 An AQA has therefore been undertaken to determine baseline conditions, consider location suitability for the proposed end-use and consider potential effects likely to arise during construction and operation of the development.

2 Approach

2.1 The IAQM provides detailed guidance on how to conduct AQAs in the UK. The approach to assessment typically involves the following:

Screening and Scoping

2.2 Screening identifies if an AQA is needed by comparing details of the development with relevant criteria published in guidance, in order to determine the potential for adverse impacts to arise. This involves considering the type and scale of the project and its proximity to high sensitivity receptors (e.g., residential areas, schools, hospitals).

2.3 Scoping then defines the scope of the assessment, including the pollutants to be considered, the geographical area to be covered, and the receptors to be included (collectively the study area).

Baseline Assessment

2.4 Air quality data is collected in relation to recent or current air quality conditions. This can involve reviewing existing air quality monitoring data from local authorities and conducting additional monitoring if necessary.

2.5 Receptors (e.g., people, ecosystems) and emission sources (e.g., traffic, industry) are identified.

Impact Assessment

2.6 Where Screening has identified the need for assessment, it usually falls into one of two categories: Simple and Detailed

2.7 Simple Assessment is generally appropriate for developments with low potential to impact air quality or where the risk of exceeding Air Quality Assessment Levels (AQALs) is low (see Table 5-1). It relies more heavily on existing air quality monitoring data and less on extensive new data collection or complex modelling and typically uses simplified methods to estimate impacts such as spreadsheet tools, or simplified dispersion modelling.

2.8 Detailed Assessment is required for developments with a higher potential to impact air quality, where there is a risk of exceeding AQALs, or where the initial screening indicates the need for a more thorough analysis. It may require the collection of new air quality data and typically required the use advanced dispersion modelling techniques to predict the concentration of pollutants resulting from the development. This involves simulating various aspects of the local environment, validating it against existing data, and comparing various scenario outputs.

2.9 Both Simple and Detailed Assessments require a thorough analysis of the predicted impacts on air quality, comparing the results with air quality standards and objectives, and the evaluation of the significance of any changes in pollutant concentrations.

Mitigation Measures

2.10 Where adverse impacts on air quality are assessed, measures to mitigate them are then identified. This can include changes to the project design, operational practices, or implementing specific technologies to reduce emissions.

2.11 Once the effectiveness of the mitigation measures is considered, the residual effects on people and ecosystems can be concluded.

2.12 The approach to assessment of the Construction and Operation Phases of the development is described below:

Construction Phase

2.13 There is the potential for fugitive dust emissions to occur because of construction phase activities. These have been assessed in accordance with the methodology outlined within the IAQM document 'Guidance on the Assessment of Dust from Demolition and Construction V2.2 (2024)'.

2.14 Activities on the proposed construction site have been divided into 4 types to reflect their different potential impacts. These are:

- Demolition;
- Earthworks;

- Construction; and
- Trackout.

2.15 The potential for dust emissions was assessed for each activity that is likely to take place and considered 3 separate dust effects:

- Annoyance due to dust soiling;
- Harm to ecological receptors; and
- The risk of health effects due to a significant increase in exposure to PM_{10}.

2.16 The full construction phase assessment methodology is detailed in Appendix A.

Operation Phase

Road Traffic Emissions: Impact

2.17 The development has the potential to contribute to air pollution during operation. To assess the potential impact of road traffic emissions on the surrounding environment, consideration was made of the influence of the development on local traffic flows, composition and characteristics.

2.18 Likely air pollution concentrations at relevant receptors in the surrounding environment are compared against the relevant AQALs to determine the potential for increasing exposure to elevated pollutant concentrations and identify any appropriate mitigation.

Road Traffic Emissions: Exposure / Site Suitability

2.19 The proposals have the potential to expose future occupants to existing levels of poor air quality. Therefore, to assess air quality conditions across the development site, consideration was made of the proximity of the site to major roads and background pollution concentrations.

2.20 Likely pollution concentrations at the development site were compared against the relevant AQALs to determine the potential for exposure of future occupants to elevated pollutant concentrations and again identify any appropriate mitigation.

3 Screening

Construction Phase

3.1 There is the potential for fugitive dust emissions to occur because of construction phase activities, such as demolition, ground works, cutting, construction, concrete batching and storage of materials. Vehicle movements both on site and on the local road network also have the potential to result in the re-suspension of dust from haul roads and highway surfaces.

3.2 Activities on the proposed construction site have been divided into 4 types to reflect their different potential impacts. These are:

- Demolition;
- Earthworks;
- Construction; and
- Trackout.

3.3 The potential for dust emissions was assessed for each activity that is likely to take place and considered 3 separate dust effects:

- Annoyance due to dust soiling;
- Harm to ecological receptors; and
- The risk of health effects due to a significant increase in exposure to PM_{10}.

3.4 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.

3.5 The desk-study undertaken to inform the baseline identified several sensitive receptors within 250m of the site boundary, as per the IAQM 'Guidance on the Assessment of Dust from Demolition and Construction V1.1 (2024)'. As such, further assessment of potential dust impacts was required.

Operation Phase

Road Traffic Emissions: Impact

3.6 The development has been screened against the following IAQM indicative criteria for requiring a detailed AQA:

Table 3-1: IAQM Indicative Criteria for Requiring an Air Quality Assessment

Criteria	Evaluation
A change in Light-Duty Vehicle traffic flows of more than 100 Annual Average Daily Traffic (AADT) within or adjacent to an Air Quality Management Area (AQMA), or more than 500 AADT elsewhere on local roads with relevant receptors.	No
A change in Heavy-Duty Vehicle (HDV) flows of more than 25 AADT within or adjacent to an AQMA, or more than 100 AADT elsewhere on local roads with relevant receptors.	No
A change in the alignment of roads by 5m or more and the road is within an AQMA.	No
Introduction of a new junction or remove an existing junction that cause traffic to significantly change vehicle accelerate/decelerate, e.g., traffic lights, or roundabouts, near to relevant receptors.	No
Introduce or change a bus station, where bus flows will change by more than 25 AADT within or adjacent to an AQMA, or more than 100 AADT elsewhere.	No
Has an underground car park with an extraction system within 20 m of a relevant receptor. Coupled with the car park having more than 100 movements per day (total in and out).	No
Has one or more substantial combustion processes, including combustion plant associated with standby emergency generators (typically associated with centralised energy centres) and shipping, where there is a risk of impacts at relevant receptors.	No

3.7 The transport consultant at i-Transport have advised that the development is expected to generate a total of 158 AADT, consisting of 0 HDVs. As such, in accordance with the IAQM indicative criteria above, a detailed assessment of operation phase road traffic emissions is not required, and impacts can be concluded to be not significant.

Road Traffic Emissions: Exposure / Site Sensitivity

3.8 The main pollution sources identified within the site locale are vehicle emissions using the local road network; primarily Reeds Lane and B2118. Therefore, further consideration, of potential exposure to air pollution is needed.

Combustion Plant Emissions: Impact

3.9 The development is anticipated to comprise an all-electric energy strategy, excluding the use of emergency generators, and so will not be associated with any on-site combustion. As such, the potential for impacts to arise in release to combustion plant emission has been screened out.

Air Quality Emissions Mitigation (Sussex)

3.10 The Sussex-Air Air Quality Partnership's 'Air quality and emissions mitigation guidance for Sussex (2021)' includes a screening checklist to determine the action(s) required to be undertaken by a proposed development. This screening checklist is summarised in Table 3-2.

3.11 The development is classes as being a 'major' development and, therefore, it is necessary for an AQA and Emissions Mitigation Assessment (EMA) to be undertaken.

Questions to be Answered by the Developer:	Action Required Dependant on the Answer(s)
Is the proposed development: • A MAJOR development, as defined by Town and Country Planning (Development Management Procedure) Order (England) 2015[a]; • Within an AQMA; • In relevant proximity to an AQMA; • In an area close to exceeding the Air Quality Objectives; • B8 storage and distribution use class with a floorspace of 500 m^2 or more.	If NO to all, then advise the Local Planning Authority (LPA). No further action is required. If YES to ANY, then the following are required, <u>unless agreed in writing with the Air Quality Officer:</u> 1. An AQA; and 2. An EMA.

[a] Including the provision of dwellinghouses where i) the number of dwellinghouses to be provided is 10 or more; or ii) the development is to be carried out on a site having an area of 0.5 ha or more and it

is now known whether the development includes 10 or more dwellinghouses, and development carried out on a site having an area of 1 ha or more.

4 Scope

4.1 The development has the potential to cause air quality impacts at sensitive locations during the construction and operation phases, as well as expose future occupants to elevated pollution levels. As such, an air quality assessment was required to determine baseline conditions at the site, consider its suitability for the proposed end-use and assess potential effects associated with the scheme.

Scoped In

4.2 The following elements have been included with the scope of the AQA:

1. Construction Phase
    a. Construction Activities (Impacts)
        i. Dust, PM_{10}

2. Operation Phase
    a. Road traffic Emissions (Exposure)
        i. NO_2, PM_{10}, $PM_{2.5}$
    b. EMA and Damage Cost CalculationsS

Scoped Out

4.3 The following elements have been excluded with the scope of the AQA:

1. Construction Phase
    a. Road traffic Emissions (Impacts)
        i. NO_2, PM_{10}

2. Operation Phase
    a. Road traffic Emissions (Impacts)
        i. NO_2, PM_{10}, $PM_{2.5}$
    b. Combustion Plant Emissions (Impacts)
        i. NO_2, PM_{10}

5 Policy, Legislation and Guidance

5.1 To inform the assessment the following National and Local Policy, Legislation and Guidance have been considered:

Policy

National Planning Policy

National Planning Policy Framework

5.2 The National Planning Policy Framework (NPPF) sets out the Government's planning policies for England and how these are expected to be applied. The purpose of the planning system is to contribute to the achievement of sustainable development. To ensure this, the NPPF recognises 3 overarching objectives, including the following of relevance to air quality:

> *"Chapter 2 Achieving sustainable development*
>
> *Para. 8*
>
> *c) an environmental objective - to protect and enhance our natural, built and historic environment; including making effective use of land, improving biodiversity, using natural resources prudently, minimising waste and pollution, and mitigating and adapting to climate change, including moving to a low carbon economy."*

5.3 Chapter 15 of the NPPF details objectives in relation to conserving and enhancing the natural environment. It states that:

> *"Chapter 15 Conserving and enhancing the natural environment*
>
> *Para. 187*
>
> *Planning policies and decisions should contribute to and enhance the natural and local environment by:*
>
> *[…]*

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;"

5.4 The NPPF specifically recognises air quality as part of delivering sustainable development and states that:

"Ground conditions and pollution

Para. 198

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. In doing so they should:

a) mitigate and reduce to a minimum potential adverse impacts resulting from noise from new development – and avoid noise giving rise to significant adverse impacts on health and the quality of life

b) identify and protect tranquil areas which have remained relatively undisturbed by noise and are prized for their recreational and amenity value for this reason; and

c) limit the impact of light pollution from artificial light on local amenity, intrinsically dark landscapes and nature conservation

Para. 199

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."

5.5 The implications of the NPPF have been considered throughout this assessment.

Local Planning Policy

Mid Sussex District Plan

5.6 The Mid Sussex District Plan (MSDP) was adopted in March 2018 and covers the period between 2014 and 2031. A central aim of the MSDP is to "*increase the sustainability of communities within Mid Sussex …*" and "*…to make communities more sustainable by … reducing the environmental impacts of increased traffic and congestion on air pollution and quality of life*".

5.7 The MSDP includes the following relevant policy;

Policy DP29 'Noise, Air and Light Pollution' states:

"The environment, including nationally designated environmental sites, nationally protected landscapes, areas of nature conservation or geological interest, wildlife habitats, and the quality of people's life will be protected from unacceptable levels of … air pollution by only permitting development where the applicant can prove that the proposed development:…

Air Pollution:

- *It does not cause unacceptable levels of air pollution;*
- *Development on land adjacent to an existing use which generates air pollution or odour would not cause any adverse effects on the proposed development or can be mitigated to reduce exposure to poor air quality to recognised and acceptable levels;*

- *Development proposals … are consistent with Air Quality Management Plans".*

Legislation

Air Quality Standards Regulations

5.8 The Air Quality Standards (Amendment) Regulations (2016) came into force on 31st December 2016 and include Air Quality Limit Values for the following pollutants:

- NO_2;
- Sulphur dioxide (SO_2);
- Lead (Pb);
- Particulate matter with an aerodynamic diameter of less than 10µm (PM_{10});
- Particulate matter with an aerodynamic diameter of less than 2.5µm ($PM_{2.5}$);
- Benzene; and,
- Carbon monoxide (CO).

5.9 Target Values were also provided for an additional 5 pollutants. These include:

- Ozone (O_3);
- Arsenic;
- Cadmium;
- Nickel; and,
- Benzo(a)pyrene.

Environment Act

5.10 The Air Quality Strategy (AQS) sets out the government's policies and framework for improving air quality in the UK with the aim of meeting the requirements of the 2008/50/EC Directive. The AQS also outlines the Limit Values, Target Values, Standards, Objectives, Critical Levels, and Exposure Reduction Targets for the protection of human health and the environment.

5.11 The Environmental Targets (Fine Particulate Matter) (England) Regulations 2023 also brought forward a new target level for $PM_{2.5}$.

5.12 The relevant Limit Values, Target Values, Standards, Objectives, Critical Levels and Exposure Reduction Targets are collectively termed Air Quality Assessment Levels (AQALs) throughout this report.

Table 5-1: Air Quality Assessment Levels

Pollutant	Air Quality Assessment Levels	
	Concentration (µg/m³)	Averaging Period
NO_2	40	Annual mean
	200	1-hour mean, not to be exceeded on more than 18 occasions per annum
PM_{10}	40	Annual mean
	50	24-hour mean, not to be exceeded on more than 35 occasions per annum
$PM_{2.5}$	20	Annual mean
	12	12 µg/m³ (Annual mean interim target (to be met across England by 2028))
	10	Annual Mean Concentration Target (AMCT) – To be met across England by 2040
	-	Population Exposure Reduction Target (PERT) – 25% reduction in population exposure by 2040 (compared to a base year of 2018)

5.13 With reference to the Annual Mean Concentration Target (AMCT) for $PM_{2.5}$, it should be noted that that the date for compliance is 2040. The applicable $PM_{2.5}$ AQAL for the purposes of this assessment is therefore the current AQAL of 20µg/m³.

5.14 In line with the Defra "$PM_{2.5}$ Interim Planning Guidance on the consideration of the Environment Act $PM_{2.5}$ targets in planning decisions" the operational phase assessment will also aim to consider the 2040 AMCT for $PM_{2.5}$, identify key sources of $PM_{2.5}$ air pollution from the Proposed Development, and outline the measures proposed to minimise emissions of $PM_{2.5}$ and its precursors as far as is reasonably practicable.

Local Air Quality Management

5.15 Under Section 82 of the Environment Act (1995) (Part IV), as amended by the Environment Act (2021), Local Authorities (Councils) are required to periodically review and assess air quality within their area of jurisdiction under the system of Local Air Quality Management (LAQM). This Review and Assessment of air quality involves comparing present and likely future pollutant concentrations against the AQALs. If it is predicted that levels at locations of relevant exposure, as summarised in Table 5-2, are likely to be exceeded, the Council is required to declare an AQMA. For each AQMA the Council is required to produce an Air Quality Action Plan (AQAP), the objective of which is to reduce pollutant concentrations in pursuit of compliance with the AQALs.

Guidance

National Guidance

National Planning Practice Guidance

5.16 The National Planning Practice Guidance web-based resource was launched by the Department for Communities and Local Government on 6th March 2014 and updated on 1st November 2019 to support the NPPF and make it more accessible. The air quality pages are summarised under the following headings:

1. What air quality considerations does planning need to address?
2. What is the role of plan-making with regard to air quality?
3. Are air quality concerns relevant to neighbourhood planning?
4. What information is available about air quality?
5. When could air quality considerations be relevant to the development management process?
6. What specific issues may need to be considered when assessing air quality impacts?
7. How detailed does an air quality assessment need to be?
8. How can an impact on air quality be mitigated?

5.17 These were reviewed and the relevant guidance considered as necessary throughout the undertaking of this assessment.

Defra Technical Guidance

5.18 Table 5-2 summarises the advice provided in Defra's Local Air Quality Management Technical Guidance 2022 (LAQM TG (22)) on where the AQALs for pollutants considered within this report apply.

Table 5-2: Examples of Where the Air Quality Objectives Apply

Averaging Period	Objective Should Apply At	Objective Should Not Apply At
Annual mean	All locations where members of the public might be regularly exposed. Building façades of residential properties, schools, hospitals, care homes, etc.	Building façades of offices or other places of work where members of the public do not have regular access. Hotels, unless people live there as their permanent residence. Gardens of residential properties. Kerbside sites (as opposed to locations at the building façade), or any other location where public exposure is expected to be short term.
24-hour mean	All locations where the annual mean objective would apply, together with hotels. Gardens of residential properties.	Kerbside sites (as opposed to locations at the building façade), or any other location where public exposure is expected to be short term.
1-hour mean	All locations where the annual mean and 24 and 8-hour mean objectives apply. Kerbside sites (for example, pavements of busy shopping streets). Those parts of car parks, bus stations and railway stations etc which are not fully enclosed, where members of the public might reasonably be expected to spend one hour or more. Any outdoor locations where members of the public might reasonably be expected to spend one hour or longer.	Kerbside sites where the public would not be expected to have regular access.

Public Health England Guidance

5.19 Public Health England published a Review of interventions to improve outdoor air quality and public health in March 2019. The review provides local practitioners and policy-makers with an indication of the broad range of available interventions across 5 focal areas, 3 of which are relevant to road traffic emissions:

Vehicles and fuels

5.20 Air quality within urban areas is likely to be improved by any intervention that promotes the uptake of low and zero-exhaust emission vehicles, particularly electric vehicles. Traffic management interventions, such as access restrictions, have the potential to improve air quality and encourage the public to consider travel behaviour change and active travel options.

5.21 Intervention examples include:

1. Subsidising public transport
2. Promotion of abatement retrofit
3. Provision of school buses
4. Promote walking and cycling

Spatial planning

5.22 The interventions with the highest potential to be effective both at national but mainly at local level are related to traffic. Driving restrictions produced the largest and most consistent reductions in air pollution levels.

5.23 Potential to improve air quality and public health outcomes is associated with the co-implementation of a mix of various measures that provide/improve green and active travel infrastructure, prioritise road safety, provide public transport and discourage travel in private cars, together with policies focussing on reducing the emissions of vehicles.

5.24 Green infrastructure is potentially effective not only to improve air quality related public health outcomes, but also to improve health inequalities in urban areas and promote health and well-being. Green infrastructure has also the potential to impact positively on urban heat islands and reduce the negative impacts of flooding.

5.25 For speed limitations (traffic calming measures) and encouraging active transport, the public health 'co-benefits' are larger than benefits associated with reduction of exposure to air pollution alone, as speed limitations are associated with a reduced risk of pedestrian injury and traffic collisions, and increased physical activity is associated with multiple public health benefits (improved cardiovascular outcomes and improved weight status among children, adults and older adults).

5.26 Intervention examples include:

1. Co-implementation of various measures
2. Green Infrastructure – urban vegetation
3. Driving restriction
4. Encouraging walking and cycling

People's behaviour

5.27 The highest potential to improve air quality and public health outcomes is associated with combining behavioural interventions with other policy or infrastructure-based interventions (for example, improving public transport or cycling infrastructure and then using behavioural interventions to maximise its use). In this way, behavioural interventions can be used in parallel with other interventions and maximise their potential effectiveness.

5.28 Intervention examples include:

1. Exposure reduction programmes
2. Public engagement
3. Eco-driver training
4. Investment in public transport (Encouraging)
5. Air quality messages/alerts/indices
6. No idling campaigns

Local Guidance

Air Quality and Emissions Mitigation Guidance for Sussex

5.29 The Sussex-Air Air Quality Partnership published an updated version of the 'Air quality and emissions mitigation guidance for Sussex (2021)' in April 2021. This

guidance details when it is necessary to undertake an AQA and outlines standard mitigation requirements for developments.

5.30 The guidance details the EMA and Emissions Mitigation Statement (EMS) procedure that should be followed, including a method for calculating damage costs associated with a proposed development and recommendation of mitigation measures.

Air Quality Appraisal; Damage Cost Guidance

5.31 The latest version of the 'Air Quality Appraisal; Damage Cost Guidance' was published by Defra in March 2023. This guidance details the process for assessing the air quality impact of a project and sets out damage cost values for five pollutants. The guidance also references the 'Damage Costs Appraisal Toolkit' which can be used in conjunction with the guidance to calculate damage costs associated with a proposed development. This Toolkit has since been updated, and the current version is dated 2023.

6 Baseline Conditions

6.1 Existing air quality conditions in the vicinity of the development site were identified to provide a baseline for the assessment. These are detailed in the following Sections.

Local Air Quality Management

6.2 As required by the Environment Act (1995), as amended by the Environment Act (2021), MSDC has undertaken Review and Assessment of air quality within their area of jurisdiction. This process had indicated that annual mean concentrations of NO_2 were above the AQAL within the District in which one AQMA was declared in 2012. This AQMA has since been revoked in 2024.

6.3 MSDC has concluded that concentrations of all other pollutants considered within the AQS are currently below the relevant AQALs. As such, no further AQMAs have been designated.

Air Quality Monitoring

6.4 Monitoring of pollutant concentrations is undertaken by the Council throughout their area of authority. Annual mean NO_2 results recorded in the vicinity of the development taken from MSDC's ASR (2024) are shown in Table 6-1.

Table 6-1: Local Monitoring – NO_2

Site	Distance to Site (km)	Monitor Type	Monitored NO_2 Concentration (µg/m^3)				
			2019	2020	2021	2022	2023
MSAQ26	2.3	Suburban Diffusion Tube	21.5	16.1	16.8	16.8	15.3

6.5 As shown in Table 6-1, there is one monitoring site in the vicinity of the development. Monitored NO_2 concentrations have been well below the AQAL of 40 µg/m^3 in recent years.

6.6 Furthermore, concentrations of NO_2 monitored at the locations detailed in Table 6-1 are likely to be higher than the pollution environment within the development.

Monitoring location MSAQ26 is situated 2.1 m from the kerb of the nearest road. The nearest receptor proposed by the development is located approximately 88 m away from the kerb of the nearest road (Reeds Lane).

6.7 As such it can be considered conservative to compare monitored concentrations of NO_2 at MSAQ26 to concentrations across the development.

6.8 Monitoring of PM_{10} or $PM_{2.5}$ concentrations is not undertaken within the vicinity of the development.

Background Pollution Concentrations

6.9 Predictions of background pollutant concentrations on a 1km-by-1km grid basis have been produced by Defra for the entire of the UK to assist Local Authorities (LAs) in their Review and Assessment of air quality.

6.10 The development site is in grid square NGR: 526500, 118500. Data for this location was downloaded from the Defra website for the purpose of this assessment and is summarised in Table 6-2.

Table 6-2: Background Pollution Concentrations

Pollutant	Predicted Background Concentration (µg/m³)		
	2021	2025	2030
NO_2	9.3	8.2	6.8
PM_{10}	10.7	10.4	10.0
$PM_{2.5}$	6.3	6.0	5.7

6.11 As shown in Table 6-2, predicted background NO_2, PM_{10}, and $PM_{2.5}$ concentrations are below the relevant AQALs at the development site.

Sensitive Receptors

6.12 A sensitive receptor is defined as any location which may be affected by changes in air quality because of a development. These have been defined for dust in the following Sections.

Construction Phase

6.13 Receptors sensitive to potential dust impacts during demolition, earthworks and construction were identified from a desk top study of the area up to 250m from the development boundary. These are summarised in Table 6-3.

Table 6-3: Demolition, Earthworks and Construction Dust Sensitive Receptors

Distance from Site Boundary (m)	Approximate No. of Human Receptors	Approximate No. of Ecological Receptors
<20	10 – 100	0
<50	10 – 100	0
<100	10 – 100	0
<250	> 100	0

6.14 Receptors sensitive to potential dust impacts from trackout were identified from a desk top study of the area up to 50m from the road network within 500m of the site access. These are summarised in Table 6-4.

Table 6-4: Trackout Dust Sensitive Receptors

Distance from Roadside (up to 500m from Site Boundary) (m)	Approximate No. of Human Receptors	Approximate No. of Ecological Receptors
<20	10 – 100	0
<50	10 – 100	0

6.15 Several additional factors have been considered when determining the sensitivity of the surrounding area. These are summarised in Table 6-5.

Table 6-5: Additional Area Sensitivity Factors to Potential Dust Impacts

Factor	Comment
Whether there is any history of dust generating activities in the area.	The desk top study did not indicate any dust generating activities in the local area.
The likelihood of concurrent dust generating activity on nearby sites.	A review of the planning portal did not indicate any additional development proposals likely to result in concurrent dust generation in the vicinity of the site.
Pre-existing screening between the source and the receptors.	There is no pre-existing screening between the site and surrounding receptors.
Conclusions drawn from analysing local meteorological data which accurately represent the area: and if relevant the season during which works will take place.	The predominant wind bearing at the site is from the southwest. As such, receptors to the northeast are most likely to be affected by dust releases.
Conclusions drawn from local topography.	There are no significant topographical constraints to dust dispersion.
Duration of the potential impact, as a receptor may become more sensitive over time.	Currently it is unclear as to the duration of the construction phase. However, it is possible that it will extend over one year.
Any known specific receptor sensitivities which go beyond the classifications given in the document.	No specific receptor sensitivities identified during the baseline assessment.

6.16 The sensitivity of the receiving environment to specific potential dust impacts is shown in Table 6-6.

Table 6-6: Sensitivity of the Surrounding Area to Potential Dust Impacts

Potential Impact	Sensitivity of the Surrounding Area			
	Demolition	Earthworks	Construction	Trackout
Dust Soiling	High	High	High	High
Human Health	Low	Low	Low	Low

6.17 The sensitivity of the receiving environment to potential dust impacts was determined as high. This was because the identified receptors included residential properties. It should be noted that all human receptors were assumed to be of high sensitivity to provide a robust assessment.

6.18 Background concentrations for PM_{10} across the development are likely to be similar to background PM_{10} concentrations set out within Defra background maps, as shown in Table 6-2. Taking into account the assumed background PM_{10} concentrations and the number of sensitive receptors located within proximity of the development, the sensitivity of the surrounding area to human health impacts is, therefore, considered to be low.

7 Predicted Impacts

Construction Phase

Demolition

7.1 Table 7-1 shows the evaluation of the potential magnitude of impacts from demolition activities.

Table 7-1: Demolition Impact Magnitude

Category	Criteria	Evaluation
Large	Total building volume >75,000m^3.	No
	Potentially dusty construction material (e.g. concrete).	
	On-site crushing and screening	
	Demolition >12m above ground level	
Medium	Total building volume between 12,000 and 75,000m^3.	No
	Potentially dusty construction material.	
	Demolition between 6 and 12m above ground level	
Small	Total building volume <12,000m^3.	Yes
	Construction material with low potential for dust release (e.g. metal cladding or timber).	
	Demolition <6m above ground.	
	Demolition during wetter months	

7.2 The potential magnitude of impacts from earthworks activities is estimated to be Small.

Earthworks

7.3 Table 7-2 shows the evaluation of the potential magnitude of impacts from earthworks activities.

Table 7-2: Earthworks Impact Magnitude

Category	Criteria	Evaluation
Large	Total site area greater than 10,000m^2.	Yes
	Potentially dusty soil type (e.g., clay, which will be prone to suspension when dry due to small particle size).	
	More than 10 heavy earth moving vehicles active at any one time.	
	Formation of bunds greater than 8m in height.	
	More than 100,000 tonnes of material moved.	
Medium	Total site area 2,500m^2 to 10,000m^2.	No
	Moderately dusty soil type (e.g., silt).	
	5 to 10 heavy earth moving vehicles active at any one time.	
	Formation of bunds 4m to 8m in height.	
	Total material moved 20,000 tonnes to 100,000 tonnes.	
Small	Total site area less than 2,500m^2.	No
	Soil type with large grain size (e.g., sand).	
	Less than 5 heavy earth moving vehicles active at any one time.	
	Formation of bunds less than 4m in height.	
	Total material moved less than 20,000 tonnes.	
	Earthworks during wetter months.	

7.4 The potential magnitude of impacts from earthworks activities is estimated to be Large.

Construction

7.5 Table 7-3 shows the evaluation of the potential magnitude of impacts from construction activities.

Table 7-3: Construction Impact Magnitude

Category	Criteria	Evaluation
Large	Total building volume greater than 100,000m^3	No
	On site concrete batching	
	Sandblasting	
Medium	Total building volume 25,000m^3 to 100,000m^3	Yes
	Potentially dusty construction material (e.g., concrete)	
	On site concrete batching	
Small	Total building volume less than 25,000m^3	No
	Construction material with low potential for dust release (e.g., metal cladding or timber)	

7.6 The potential magnitude of impacts from construction activities is estimated to be Medium.

Trackout

7.7 Table 7-4 shows the evaluation of the potential magnitude of impacts from trackout activities.

Table 7-4: Trackout Impact Magnitude

Category	Criteria	Evaluation
Large	More than 50 HDV trips per day	No
	Potentially dusty surface material (e.g., high clay content)	
	Unpaved road length greater than 100m	
Medium	10 to 50 HDV trips per day	No
	Moderately dusty surface material (e.g., high clay content)	
	Unpaved road length 50m to 100m	
Small	Less than 10 HDV trips per day	Yes
	Surface material with low potential for dust release	
	Unpaved road length less than 50m	

7.8 The potential magnitude of impacts from trackout activities is estimated to be Medium.

Summary of Potential Unmitigated Dust Risks

7.9 A summary of the risk from each dust generating activity is provided in Table 7-5 below.

Table 7-5: Summary of Potential Unmitigated Dust Risks

Potential Impact		Risk				
		Demolition	Earthworks	Construction	Trackout	Overall
Magnitude / Sensitivity		Small	Large	Medium	Small	Large
Dust Soiling	High	Medium	High	Medium	Low	High
Human Health	Low	Negligible	Low	Low	Negligible	Low
Overall						**High**

7.10 It should be noted that the potential for impacts depends significantly on the distance between the dust generating activity and receptor location. Risk was predicted based on a worst-case scenario of works being undertaken at the site boundary closest to each sensitive receptor. Therefore, actual risk is likely to be lower than that predicted during most of the construction phase.

Operation Phase

Road Traffic Emissions: Exposure / Site Sensitivity

7.11 The Site is located adjacent to Reeds Lane (a minor road) and proposed residential properties are set back from this road by approximately 88 m. The B2118 is anticipated to be the greatest source of emissions in the local area; the Site is set back from this source by approximately 100 m.

7.12 As pollutant concentrations reduce rapidly with distance from the source (i.e. local roads), it is reasonable to expect emissions associated with these roads to disperse considerably before reaching the closest façades of the proposed residences. As such, pollutant concentrations within the Site are anticipated to be comparable to background conditions. Background concentrations are predicted to be well below the annual mean NO_2, PM_{10} and $PM_{2.5}$ objectives in the opening year (2030) (see Table 6-2).

7.13 Furthermore, annual mean NO_2 concentrations measured at local diffusion tube monitoring site MSAQ26 (as presented in Table 6-1) have measured NO_2 concentrations consistently below the annual mean objective between 2019 and 2023. Since the development Site is set back from B2118 by approximately 100 m it is reasonable, therefore, to assume that NO_2 concentrations within the development Site will be lower than those measured at MSAQ26 i.e. below the annual mean NO_2 objective.

7.14 It is considered therefore that future residents at the development site are unlikely to be exposed to pollution concentrations above AQALs.

Damage Cost Calculations

7.15 Annual emissions of NO_X and $PM_{2.5}$ have been calculated using Defra's Emission Factor Toolkit (EFT) v13 (EFT inputs are presented in Table 7-6) for the five-year period from 2030 (opening year) as per the Sussex-Air 'Air Quality and Emissions Mitigation Guidance for Sussex (2021).

7.16 For the purposes of this assessment, annual emissions have been calculated for five separate years (2030, 2031, 2032, 2033 and 2034) using the EFT; this approach is considered to provide a more representative indication of the costs required to address the impacts of transport emissions associated with the proposed development.

Table 7-6: Damage Cost Calculations; EFT Inputs

Area	Road Type	Traffic Flow	%HDV	Speed (kph)	Link Length (km)
England (not London)	Rural (not London)	158	0	50[a]	10[a]

[a] Based on the values provided by the Sussex-air guidance (Sussex-air, 2021).

7.17 The output of the damage cost calculation is shown below:

Table 7-7: Damage Cost Calculations (2030 – 2034

Pollutant	Central Present Value (£)
NOx	1,851
$PM_{2.5}$	2,811
Total	4,662

8 Mitigation

Construction Phase

8.1 IAQM guidance provides potential mitigation measures to reduce impacts because of fugitive dust emissions during the construction phase. These have been adapted for the development site as summarised in Table 8-1.

8.2 These may be reviewed prior to the commencement of construction works and incorporated into a Construction Environmental Management Plan or similar if required by the Local Authority.

Table 8-1: Fugitive Dust Emission Mitigation Measures

Issue / Control Measure	Site Risk		
	Low	Medium	High
General			
Develop and implement a stakeholder communications plan that includes community engagement before work commences on site.	-	Committed	
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.	Committed		
Display the head or regional office contact information.	Committed		
Develop and implement a Dust Management Plan (DMP), which may include measures to control other emissions, approved by the Local Authority. The level of detail will depend on the risk and should include as a minimum the Committed measures in this document. The desirable measures should be included as appropriate for the site. The DMP may include monitoring of dust deposition, dust flux, real-time PM_{10} continuous monitoring and/or visual inspections.	As required	Committed	
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.	Committed		

Issue / Control Measure	Site Risk		
	Low	Medium	High
Make the complaints log available to the Local Authority when asked.	Committed		
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 logbook.	Committed		
Hold regular liaison meetings with other high risk construction sites within 500 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 offsite transport/ deliveries which might be using the same strategic road network routes.	As required		Committed
Monitoring			
Undertake daily onsite and offsite 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 checks of surfaces such as street furniture, cars, and windowsills within 100 m of site boundary, with cleaning to be provided if necessary.	As required		Committed
Carry out regular site inspections to monitor compliance with the DMP, record inspection results, and inspect log available to the Local Authority when asked.	Committed		
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.	Committed		
Agree dust deposition, dust flux, or real-time PM_{10} continuous monitoring locations with the Local Authority. Where possible commence baseline monitoring at least 3 months before work commences on site or, if it a large site, before work on a phase commences. Further guidance is provided by IAQM on monitoring during demolition, earthworks, and construction.	As required	Committed	

Issue / Control Measure	Site Risk		
	Low	Medium	High
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.	Committed		
Erect solid screens or barriers around dusty activities or the site boundary that are at least as high as any stockpiles on site.	Committed		
Fully enclose site or specific operations where there is a high potential for dust production and the site is actives for an extensive period.	As required	Committed	
Install green walls, screens, or other green infrastructure to minimise the impact of dust and pollution.	Not required	As required	
Avoid site runoff of water or mud.	Committed		
Keep site fencing, barriers and scaffolding clean using wet methods.	As required	Committed	
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 on site cover as described below	As required	Committed	
Cover, seed, or fence stockpiles to prevent wind whipping.	As required	Committed	
Provide showers and ensure a change of shoes and clothes are required before going off site to reduce transport of dust.	Not required		As required
Operating Vehicle/Machinery and Sustainable Travel			
Ensure all non-road mobile machinery comply with the standards set within this guidance.	Committed		
Ensure all vehicles switch off engines when stationary - no idling vehicles.	Committed		
Avoid the use of diesel- or petrol-powered generators and use mains electricity or battery powered equipment where practicable.	Committed		

Issue / Control Measure	Site Risk		
	Low	Medium	High
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 appropriate).	As required		Committed
Produce a Construction Logistics Plan to manage the sustainable delivery of goods and materials.	Not required	Committed	
Implement a Travel Plan that supports and encourages sustainable travel (public transport, cycling, walking, and car-sharing).	Not required	As required	Committed
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.	Committed		
Ensure an adequate water supply on the site for effective dust/particulate matter suppression/mitigation, using non-potable water where possible and appropriate.	Committed		
Use enclosed chutes and conveyors and covered skips.	Committed		
Minimise drop heights from conveyors, loading shovels, hoppers and other loading or handling equipment and use fine water sprays on such equipment wherever appropriate.	Committed		
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.	As required	Committed	
Waste Management			
Avoid bonfires and burning of waste materials.	Committed		
Reuse and recycle waste to reduce dust from waste materials.	Committed		

Table 8-2: Fugitive Dust Emission Mitigation Measures Specific to Earthworks

Issue / Control Measure	Site Risk		
	Low	Medium	High
Re-vegetate earthworks and exposed areas/soil stockpiles to stabilise surfaces as soon as practicable.	Not required	As required	Committed
Use Hessian, mulches or tackifiers where it is not possible to re-vegetate or cover with topsoil, as soon as practicable.	Not required	As required	Committed
Only remove the cover in small areas during work and not all at once.	Not required	As required	Committed

Table 8-3: Fugitive Dust Emission Mitigation Measures Specific to Construction

Issue / Control Measure	Site Risk		
	Low	Medium	High
Avoid scabbling (roughening of concrete surfaces) if possible.	As required		Committed
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.	As required	Committed	
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.	Not required	As required	Committed
For smaller supplies of fine power materials ensure bags are sealed after use and stored appropriately to prevent dust.	Not required	As required	

Table 8-4: Fugitive Dust Emission Mitigation Measures Specific to Trackout

Issue / Control Measure	Site Risk		
	Low	Medium	High
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 continuously in use.	As required	Committed	
Avoid dry sweeping of large areas.	As required	Committed	
Ensure vehicles entering and leaving sites are covered to prevent escape of materials during transport.	As required	Committed	
Inspect on site haul routes for integrity and instigate necessary repairs to the surface as soon as reasonably practicable.	Not required	Committed	
Record all inspections of haul routes and any subsequent action in a site logbook.	As required	Committed	
Install hard surfaced haul routes, which are regularly damped down with fixed or mobile sprinkler systems, or mobile water bowsers and regularly cleaned.	Not required	Committed	
Implement a wheel washing system (with rumble grids to dislodge accumulated dust and mud prior to leaving the site where reasonably practicable).	As required	Committed	
Ensure there is an adequate area of hard surfaced road between the wheel wash facility and the site exit, wherever site size and layout permit.	Not required	Committed	
Access gates to be located at least 10 m from receptors where possible.	Not required	Committed	
Apply dust suppressants to locations where a large volume of vehicles enter and exit the construction site.	Not required	As required	Committed

Operation Phase

8.3 Based on the findings of this AQA, it is considered that no secondary mitigation measures are needed to manage the future exposure of residents to elevated air pollution concentrations.

8.4 In relation to the damage cost calculations, mitigation measures need to be costed and be proportionate to the damage cost value. A list of possible mitigation measures to be considered is provided below.

- Invest in EV charging infrastructure (minimum 7kW (fast) charger) within the development over and above the current recommended parking standards;
- Provide vouchers for alternatives to private car use;
- Provide public transport subsidy for residents;
- Set up a car club within the development or contribute to the cost of a local car club;
- Set up or join an existing car sharing scheme for residents;
- Designate parking spaces for car club/car sharing vehicles;
- Designate parking spaces for low emission vehicles;
- Provide electric bikes;
- Improve cycle paths to link to the existing local cycle network;
- Provide secure cycle storage;
- Invest in additional evergreen infrastructure to reduce particulates and other pollutants;
- Contribute to local low or zero emission vehicle refuelling/recharging infrastructure;
- Contribute to low emission bus service provision or waste collection services;
- Contribute to local bike/e-bike hire schemes;
- Contribute to renewable fuel and energy generation projects; and
- Fund incentives for the take-up of low emission technologies and fuels

9.3 Furthermore, the Sussex-air Air Quality Partnership guidance also requires that the mitigation measures selected should be relevant to the following:

- local policies;
- the local authority's Air Quality Action Plan (AQAP), if applicable; and
- the type, size and location of the development.

9 Conclusions

Construction Phase

9.1 Subject to the implementation of all relevant mitigation measures outlined in Table 8-1 to Table 8-4, the residual impacts from dust generating activities are predicted to be not significant, in accordance with the IAQM guidance.

Operation Phase

9.1 Impacts from operation phase road traffic emissions are considered not significant, and future residents at the development site are considered unlikely to be exposed to pollution concentrations above AQALs.

9.2 Damage costs have been calculated using guidance and tools provided by the Sussex-air Partnership and Defra. mitigation measures need to be costed and be proportionate to the damage cost value of £4,662. The selected mitigation measures shall be submitted to and approved by MSDC.

Overall

9.3 The impact and residual effect of the development on air quality has been considered in the context of compliance with National Planning Policy as follows:

Table 9-1: Policy Compliance

Criteria	Evaluation	Comment
Do the proposals include new development that contributes to unacceptable levels of air pollution at other new development?	No	Positive outcome
Do the proposals include new development that is being put at unacceptable risk from unacceptable levels of air pollution?	No	Positive outcome
Do the proposals include new development that is adversely affected by unacceptable levels of air pollution?	No	Positive outcome
Do the proposals contribute to unacceptable levels of air pollution at existing development?	No	Positive outcome
Do the proposals put existing development at unacceptable risk from unacceptable levels of air pollution?	No	Positive outcome

Criteria	Evaluation	Comment
Do the proposals sustain and contribute towards compliance with relevant limit values or national objectives for pollutants?	Yes	Positive outcome
Have opportunities to improve air quality or mitigate impacts been identified?	Yes	Positive outcome
Are the proposals consistent with the local air quality action plan?	Yes	Positive outcome
Have air pollution risks been properly considered and adequate mitigation included to ensure there are no adverse impacts as a result of the development?	Yes	Positive outcome

9.4 The development is considered therefore to fully comply with planning requirements.

10 Further Work

Pre-Construction

10.1 The following work is committed as part of the delivery of Construction Phase mitigation:

1. Stakeholder Communications Plan
2. Dust Management Plan
3. Monitoring of dust deposition, dust flux, real-time PM_{10} continuous monitoring
    a. To commence at least 3 months before site work
4. Construction Logistics Plan
5. Travel Plan

11 Appendices

Appendix A: Construction Phase Methodology

Step 1

11.1 Step 1 screens the requirement for a more detailed assessment. Should human receptors be identified within 250m of the boundary or 50m from the construction vehicle route up to 500m from the site entrance, then the assessment proceeds to Step 2. Additionally, should ecological receptors be identified within 50m of the site or the construction vehicle route, then the assessment also proceeds to Step 2.

11.2 Should sensitive receptors not be present within the relevant distances then negligible impacts would be expected and further assessment is not necessary.

Step 2

11.3 Step 2 assesses the risk of potential dust impacts. A site is allocated a risk category based on 2 factors:

- The scale and nature of the works, which determines the magnitude of dust arising as: small, medium, or large (Step 2A); and
- The sensitivity of the area to dust impacts, which can be defined as low, medium, or high sensitivity (Step 2B).

11.4 The 2 factors are combined in Step 2C to determine the risk of dust impacts without mitigation applied.

11.5 Step 2A defines the potential magnitude of dust emission through the construction phase. The relevant criteria are summarised in Table 11-1.

Table 11-1: Construction Dust - Magnitude of Emission

Magnitude	Activity	Criteria
Large	Demolition	Total volume of building to be demolished greater than 50,000m^3. Potentially dusty material (e.g., concrete).

Magnitude	Activity	Criteria
		On site crushing and screening. Demolition activities more than 20m above ground level.
	Earthworks	Total site area greater than 10,000m^2. Potentially dusty soil type (e.g., clay, which will be prone to suspension when dry due to small particle size). More than 10 heavy earth moving vehicles active at any one time. Formation of bunds greater than 8m in height. More than 100,000 tonnes of material moved.
	Construction	Total building volume greater than 100,000m^3. On site concrete batching. Sandblasting.
	Trackout	More than 50 HDV trips per day. Potentially dusty surface material (e.g., high clay content). Unpaved road length greater than 100m.
Medium	Demolition	Total volume of building to be demolished between 20,000m^3 and 50,000m^3. Potentially dusty construction material. Demolition activities 10m to 20m above ground level.
	Earthworks	Total site area 2,500m^2 to 10,000m^2. Moderately dusty soil type (e.g., silt). 5 to 10 heavy earth moving vehicles active at any one time. Formation of bunds 4m to 8m in height. Total material moved 20,000 tonnes to 100,000 tonnes.
	Construction	Total building volume 25,000m^3 to 100,000m^3. Potentially dusty construction material (e.g., concrete). On site concrete batching.
	Trackout	10 to 50 HDV trips per day. Moderately dusty surface material (e.g., high clay content).

Magnitude	Activity	Criteria
		Unpaved road length 50m to 100m.
Small	Demolition	Total volume of building to be demolished less than 20,000m^3. Construction material with low potential for dust release (e.g., metal cladding or timber). Demolition activities less than 10m above ground and during wetter months.
	Earthworks	Total site area less than 2,500m^2. Soil type with large grain size (e.g., sand). Less than 5 heavy earth moving vehicles active at any one time. Formation of bunds less than 4m in height. Total material moved less than 20,000 tonnes. Earthworks during wetter months.
	Construction	Total building volume less than 25,000m^3. Construction material with low potential for dust release (e.g., metal cladding or timber).
	Trackout	Less than 10 HDV trips per day. Surface material with low potential for dust release. Unpaved road length less than 50m.

11.6 Step 2B defines the sensitivity of the area around the development to potential dust impacts. The influencing factors are shown in Table 11-2.

Table 11-2: Construction Dust - Examples of Factors Defining Sensitivity of an Area

Receptor Sensitivity	Examples	
	Human Receptors	Ecological Receptors
High	Users expect of high levels of amenity. High aesthetic or value property.	Internationally or nationally designated site e.g.,

Receptor Sensitivity	Examples	
	Human Receptors	**Ecological Receptors**
	People expected to be present continuously for extended periods of time. Locations where members of the public are exposed over a time period relevant to the AQAL for PM_{10}. e.g., residential properties, hospitals, schools, and residential care homes.	Special Area of Conservation.
Medium	Users would expect to enjoy a reasonable level of amenity. Aesthetics or value of their property could be diminished by soiling. People or property wouldn't reasonably be expected to be present here continuously or regularly for extended periods as part of the normal pattern of use of the land e.g., parks and places of work.	Nationally designated site e.g., Sites of Special Scientific Interest.
Low	Enjoyment of amenity would not reasonably be expected. Property would not be expected to be diminished in appearance. Transient exposure, where people would only be expected to be present for limited periods. e.g., public footpaths, playing fields, shopping streets, farmland, short term car parks and roads.	Locally designated site e.g., Local Nature Reserve.

11.7 The guidance also provides the following factors to consider when determining the sensitivity of an area to potential dust impacts:

- Any history of dust generating activities in the area;
- The likelihood of concurrent dust generating activity on nearby sites;
- Any pre-existing screening between the source and receptors;
- Any conclusions drawn from analysing local meteorological data which accurately represent the area; and if relevant the season during which works will take place;
- Any conclusions drawn from local topography;

- Duration of the potential impact, as a receptor may become more sensitive over time; and
- Any known specific receptor sensitivities which go beyond the classifications given in the document.

11.8 These factors were considered during the undertaking of the assessment.

11.9 The criteria for determining the sensitivity of the area to dust soiling effects on people and property is summarised in Table 11-3.

Table 11-3: Construction Dust - Sensitivity of the Area to Dust Soiling Effects on People and Property

Receptor Sensitivity	No. of Receptors	Distance from the 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

11.10 Table 11-4 outlines the criteria for determining the sensitivity of the area to human health impacts.

Table 11-4: Sensitivity of the Area to Human Health Impacts

Receptor Sensitivity	Annual Mean PM_{10} Concentration	No. of Receptors	Distance from the Source (m)			
			<20	<50	<100	<250
High	>32 µg/m^3 (>18 µg/m^3 in Scotland)	>100	High	High	High	Medium
		10-100	High	High	Medium	Low

Receptor Sensitivity	Annual Mean PM_{10} Concentration	No. of Receptors	Distance from the Source (m)			
			<20	<50	<100	<250
		1-10	High	Medium	Low	Low
	28-32 µg/m³ (16-18 µg/m³ in Scotland)	>100	High	High	Medium	Medium
		10-100	High	Medium	Low	Low
		1-10	High	Medium	Low	Low
	24-28 µg/m³ (14-16 µg/m³ in Scotland)	>100	High	Medium	Low	Low
		10-100	High	Medium	Low	Low
		1-10	Medium	Low	Low	Low
	<24 µg/m³ (<14 µg/m³ in Scotland)	>100	Medium	Low	Low	Low
		10-100	Low	Low	Low	Low
		1-10	Low	Low	Low	Low
Medium	>32 µg/m³ (>18 µg/m³ in Scotland)	>10	High	Medium	Low	Low
		1-10	Medium	Low	Low	Low
	28-32 µg/m³ (16-18 µg/m³ in Scotland)	>10	Medium	Low	Low	Low
		1-10	Low	Low	Low	Low
	24-28 µg/m³ (14-16 µg/m³ in Scotland)	>10	Low	Low	Low	Low
		1-10	Low	Low	Low	Low
	<24 µg/m³ (<14 µg/m³ in Scotland)	>10	Low	Low	Low	Low
		1-10	Low	Low	Low	Low
Low	-	<1	Low	Low	Low	Low

11.11 Table 11-5 outlines the criteria for determining the sensitivity of the area to ecological impacts.

Table 11-5: Construction Dust - Sensitivity of the Area to Ecological Impacts

Receptor Sensitivity	Distance from the Source (m)	
	<20	<50
High	High	Medium
Medium	Medium	Low
Low	Low	Low

11.12 Step 2C combines the dust emission magnitude with the sensitivity of the area to determine the risk of unmitigated impacts. Table 11-6 outlines the risk category from demolition activities.

Table 11-6: Construction Dust - Dust Risk Category from Demolition Activities

Receptor Sensitivity	Distance from the Source (m)		
	Large	Medium	Small
High	High	Medium	Medium
Medium	High	Medium	Low
Low	Low	Low	Negligible

11.13 Table 11-7 outlines the risk category from earthworks and construction activities.

Table 11-7: Construction Dust - Dust Risk Category from Earthworks and Construction Activities

Receptor Sensitivity	Distance from the Source (m)		
	Large	Medium	Small
High	High	Medium	Low
Medium	Medium	Medium	Low
Low	Low	Low	Negligible

11.14 Table 11-8 outlines the risk category from trackout activities.

Table 11-8: Construction Dust - Dust Risk Category from Trackout Activities

Receptor Sensitivity	Distance from the Source (m)		
	Large	Medium	Small
High	High	Medium	Low
Medium	Medium	Low	Negligible
Low	Low	Low	Negligible

Step 3

11.15 Step 3 requires the identification of site-specific mitigation measures within the IAQM guidance to reduce potential dust impacts based upon the relevant risk categories identified in Step 2. For sites with negligible risk, mitigation measures beyond those required by legislation are not required. However, additional controls may be applied as part of good practice.

Step 4

11.16 Once the risk of dust impacts has been determined and the appropriate mitigation measures identified, the final Step is to determine the significance of any residual

impacts. For almost all construction activity, the aim should be to control effects using effective mitigation. Experience shows that this is normally possible. Hence the residual effect will normally be not significant.