RH19 Estates Ltd

Queensmere House, East Grinstead

Air Quality Assessment

Report No: 446006-01 (00)

NOVEMBER 2024

RSK air quality
MODELLING · MONITORING · PERMITTING

RSK GENERAL NOTES

Report No.: 4456006-01 (00)

Title: Air Quality Assessment – Queensmere House, East Grinstead

Client: RH19 Estates Ltd

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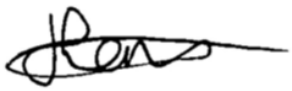
Signature		Signature	
Date:	4th November 2024	Date:	4th November 2024

Abbreviations

AADT	Annual Average Daily Traffic
AQAP	Air Quality Action Plan
AQMA	Air Quality Management Area
AQS	Air Quality Standard
Defra	Department for Environment, Food and Rural Affairs
DMP	Dust Management Plan
EC	European Commission
EPUK	Environmental Protection UK
EU	European Union
HDV	Heavy Duty Vehicle
IAQM	Institute of Air Quality Management
LAQM	Local Air Quality Management
LDV	Light Duty Vehicle
MSDC	Mid Sussex District Council
NPPF	National Planning Policy Framework
NO_2	Nitrogen dioxide
NO_x	Oxides of nitrogen
$PM_{2.5}$	Particulate matter of size fraction approximating to <2.5mm diameter
PM_{10}	Particulate matter of size fraction approximating to <10mm diameter
RSK	RSK Environment Limited
WSCC	West Sussex County Council

Contents

1 INTRODUCTION

1.1 Background

RSK Environment Ltd (RSK) were commissioned to undertake an assessment of the potential air quality impacts for the proposed redevelopment for residential use of Queensmere House, East Grinstead, RH19 1BG. Figure 1.1 shows the red line boundary.

The approximate grid reference of the centre of the site is 539328 , 138092 (British National Grid). The proposed site lies within the administrative area of West Sussex County Council (WSCC). The proposed site location is shown in Figure 1.1, for reference.

The following report presents the findings of an assessment of relevant policy, existing/baseline air quality conditions and qualitative consideration of potential air quality impacts during both the construction and operational phase of the proposed development. The potential impacts on local air quality have been considered and, where appropriate, mitigation measures have been recommended.

Figure 1.1: Redline Boundary

2 LEGISLATION, PLANNING POLICY & GUIDANCE

2.1 Air Quality Strategy

UK air quality policy is published under the umbrella of the Environment Act 1995, Part IV and specifically Section 80, the National Air Quality Strategy. The latest *Air Quality Strategy for England, Scotland, Wales and Northern Ireland – Working Together for Clean Air*, published in July 2007 sets air quality standards and objectives for ten key air pollutants to be achieved between 2003 and 2020.

The EU (European Unit) Air Quality Framework Directive (1996) established a framework under which the European Commission (EC) could set limit or target values for specified pollutants. The directive identified several pollutants for which limit or target values have been or will be set in subsequent 'daughter directives'. The framework and daughter directives were consolidated by Directive 2008/50/EC on Ambient Air Quality and Cleaner Air for Europe, which retains the existing air quality standards and introduces new objectives for fine particulates ($PM_{2.5}$).

The Clean Air Strategy 2019 supersedes the policies outlined in the 2007 strategy. This latest strategy aims to have a more joined-up approach, outlining actions the Government plans to take to reduce emissions from transport, homes, agriculture and industry. However, the air quality objectives remain as previously detailed within the 2007 strategy.

2.1.1 Air Quality Standards

The air quality standards (AQSs) in the United Kingdom are derived from EC directives and are adopted into English law via the Air Quality (England) Regulations 2000 and Air Quality (England) Amendment Regulations 2002. The Air Quality Limit Values Regulations 2003 and subsequent amendments implement the Air Quality Framework Directive into English Law. Directive 2008/50/EC was translated into UK law in 2010 via the Air Quality Standards Regulations 2010.

The relevant[1] AQS for England and Wales to protect human health are summarised in Table 2.1.

Table 2.1: Air Quality Standards (AQS) Relevant to the Proposed Development

Substance	Averaging period	Exceedances allowed per year	Ground level concentration limit (µg/m^3)
Nitrogen dioxide (NO_2)	1 calendar year	N/A	40
	1 hour	18	200
Fine particles (PM_{10})	1 calendar year	N/A	40

[1] Relevance, in this case, is defined by the scope of the assessment.

Substance	Averaging period	Exceedances allowed per year	Ground level concentration limit (µg/m^3)
	24 hours	35	50
Fine particles ($PM_{2.5}$)	1 year	N/A	20

2.1.2 The Environment Act, 1995

These objectives are to be used in the review and assessment of air quality by local authorities under Section 82 of the Environment Act (1995). If exceedances are measured or predicted through the review and assessment process, the local authority must declare an Air Quality Management Area (AQMA) under Section 83 of the Act, and produce an Air Quality Action Plan (AQAP) to outline how air quality is to be improved.

2.1.3 The Environment Act, 2021

The Environment Act (2021) amends the Environment Act (1995) to reinforce the local air quality management (LAQM) framework, in order to encourage cooperation at the local level and broaden the range of organisations that play a role in improving local air quality. Part 1 of The Environment Act requires targets to be set for fine particulate matter $PM_{2.5}$, and these were introduced in The Environmental Targets (Fine Particulate Matter) (England) Regulations 2023, as follows:

- $PM_{2.5}$ concentration interim target, annual mean of 12µg/m^3 by 2028;
- $PM_{2.5}$ exposure reduction interim target of 22% reduction compared to 2018 by 2028;
- $PM_{2.5}$ concentration binding target of annual mean of 10µg/m^3 by 2040;
- $PM_{2.5}$ exposure reduction binding target of 35% reduction compared to 2018 by 2040.

2.2 Planning Policy

The land use planning process is a key means of improving air quality, particularly in the long term, through the strategic location and design of new developments. Any air quality concern that relates to land use and its development can, depending on the details of the proposed development, be a material consideration in the determination of planning applications.

2.2.1 National Planning Policy Framework

In December 2023 the revised National Planning Policy Framework (NPPF) was published, superseding the previous NPPF with immediate effect. The NPPF includes a presumption in favour of sustainable development.

Section 15 of the NPPF deals with Conserving and Enhancing the Natural Environment, and states that the intention is that the planning system should prevent '*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 .'

With specific regard to air quality, the NPPF states that:

'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.

2.2.2 Mid Sussex District Plan (2014- 2031)

The Mid Sussex District Plan (2014 – 2031) states that a development should be considerate of the following:

- 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; and
- Development proposals (where appropriate) are consistent with Air Quality Management Plans.

A new District Plan (2021 – 2039) is in development and expected to be adopted in 2025. Updated/additional measures (from the 2014 – 2031 plan) to be adopted by a new development proposal includes:

- Development proposals will need to take into account the Council's air quality guidance;
- The Council will require applicants to demonstrate that there is not an unacceptable impact on air quality. The development should minimise any air quality impacts, including cumulative impacts from committed developments, both during the construction process and lifetime of the completed development, either through a redesign of the development proposal or, where this is not possible or sufficient, through appropriate mitigation;
- Where sensitive development is proposed in areas of existing poor air quality and/ or where major development is proposed, including the development types set out in the Council's current guidance (Air Quality and Emissions Mitigation Guidance for Sussex (2021 or as updated)) an air quality assessment (this document) will be required; and
- Development proposals that are likely to have an impact on local air quality, including those in or within relevant proximity to existing or candidate Air Quality

Management Areas (AQMAs) or designated nature conservation areas sensitive to changes in air quality, will need to demonstrate 70 measures/ mitigation that are incorporated into the design to minimise any impacts associated with air quality.

2.3 Best Practice Guidance Documents

2.3.1 Guidance on the Assessment of Dust from Demolition and Construction

The Institute of Air Quality Management (IAQM) published a guidance document in 2014 and revised in 2024 (Stoaling et al., 2024) on the assessment of construction phase impacts (herein the 'IAQM construction dust guidance'). The guidance was produced to provide advice to developers, consultants and environmental health officers on how to assess the impacts arising from construction activities. The emphasis of the methodology is on classifying sites according to the risk of impacts (in terms of dust nuisance, PM_{10} impacts on public exposure and impact upon sensitive ecological receptors) and to identify mitigation measure appropriate to the level of risk identified.

2.3.2 Local Air Quality Management Review and Assessment Technical Guidance

The Department for Environment, Food and Rural Affairs (Defra) has published technical guidance for use by local authorities in their air quality review and assessment work. This guidance, referred to in this document as the Local Air Quality Management Technical Guidance (Defra, 2022) ('LAQM TG.22')

2.3.3 Land-Use Planning & Development Control: Planning for Air Quality

Environmental Protection UK's (EPUK) and the IAQM jointly published a revised version of the guidance note 'Land-Use Planning & Development Control: Planning for Air Quality' in 2017 (herein the 'EPUK-IAQM guidance') to facilitate consideration of air quality within local development control processes. It provides a framework for air quality considerations, promoting a consistent approach to the treatment of air quality issues within development control decisions.

The guidance includes methods for screening the requirement for an air quality assessment, the undertaking of an air quality assessment and assessing the significance of effects. The guidance note is widely accepted as an appropriate reference method for this purpose.

3 ASSESSMENT SCOPE

3.1 Overall Approach

The approach taken for assessing the potential air quality impacts of the proposed development site may be summarised as follows:

- Review of relevant policy;
- Baseline characterisation of local air quality;
- Qualitative impact assessment of the construction phase of the development using the 2024 IAQM guidance;
- Qualitative assessment of air quality impacts during the operational phase of the proposed development using the 2017 EPUK-IAQM guidance;
- Recommendation of mitigation measures, where appropriate, to ensure any adverse effects on air quality are minimised; and
- Identification of residual impacts from the proposed development.

It is understood that all space heating and hot water sources have not yet been determined for this development, although it is expected that there will be a move towards electric as a primary source.

3.2 Consultation

We are grateful for the help and support of Mid Sussex District Council (MSDC) in the preparation of this air quality assessment. Records show that a singular dust complaint was made in 2020 from a residential occupant on Railway Approach in regard to dust within the local area.

3.3 Baseline Characterisation

Existing or baseline air quality refers to the concentrations of relevant substances that are already present in ambient air. These substances are emitted by various sources, including road traffic, industrial, domestic, agricultural and natural sources.

Currently, WSCC does not undertake air quality monitoring. Therefore, all baseline data information has been collected from MSDC.

A desk based study has been undertaken including a review of monitoring data publicly available from the MSDC website and estimated background data from the LAQM Support website maintained by Defra. Background concentrations have been mapped by Defra at a grid resolution of 1x1km for the whole of the UK. Consideration has also been given to potential sources of air pollution and any AQMAs in the vicinity of the site.

3.4 Construction Phase Assessment

3.4.1 Construction Dust and Particulate Matter

Construction works for the proposed development have the potential to lead to the release of fugitive dust and particulate matter. An assessment of the likely significant effects of construction phase dust and particulate matter at sensitive receptors has therefore been undertaken following the IAQM's construction dust guidance.

Three separate dust impacts were considered:

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

In order to assess the potential impacts of construction, activities are divided into four types:

- Demolition;
- Earthworks;
- Construction; and
- Trackout[2].

The risk of dust and PM_{10} arising to cause disamenity and/or health or ecological impacts was based on an assessment of likely emissions magnitude and the sensitivity of the surrounding environment. The risk category may be different for each of the four 'construction' activities.

Appendix A sets out the construction dust assessment methodology in detail as per IAQM guidance.

It is proposed that no demolition works occur, with the development comprising of internal works only. Therefore, demolition activities have not been considered further.

The Magic Map application available online by Natural England was used to identify statutory ecological receptors near the proposed development site area.

3.4.2 Emissions to Air from Construction Traffic and Plant

Exhaust emissions from construction phase vehicles and plant may have an impact on local air quality adjacent to the routes used by these vehicles to access the proposed development site and in the vicinity of the proposed development site itself. Detailed information on the number of vehicles and plant associated with the construction phase is not available at this stage. Therefore, a qualitative impact assessment of vehicles and

[2] Trackout is defined as the transport of dust and dirt from the construction / demolition sites onto public road network, where it may be deposited and then re-suspended by vehicles using the network.

plant associated with the construction phase was undertaken using professional judgement and considering the following factors:

- The size and type of site works occurring;
- The potential number and type of construction traffic and plant required; and
- The number and proximity of sensitive receptors to the proposed development sites and along the likely construction vehicle routes.

3.5 Operational Phase Impact Assessment

3.5.1 Emissions to Air from Operational Phase Traffic

Once occupied, the proposed development will generate traffic on the surrounding road network. The emissions to air associated with this traffic have the potential to impact on nearby sensitive receptors. The EPUK-IAQM 2017 guidance provides indicative criteria for when an air quality assessment is required, if none of the criteria are exceeded, it is considered unlikely that there will be any significant impacts on air quality during the operational phase. A simple screening level assessment against these criteria has been undertaken in **Section 5.2** of this report.

3.5.2 Exposure of Future Occupants to Air Pollution

The potential exposure of future users of the proposed development has been considered by reviewing the baseline conditions (Section 4) and the locations of sensitive receptors within the proposed development, as well as considering the EPUK-IAQM guidance.

4 BASELINE AIR QUALITY CHARACTERISATION

4.1 Local Emission Sources and Key Air Pollutants

The application site is located in an area where the main source of air pollution is likely to be roads therefore, the principal pollutants relevant to this assessment are considered to be NO_2, PM_{10} and $PM_{2.5}$, generally regarded as the most significant air pollutants released by vehicular combustion processes, or subsequently generated by vehicle emissions in the atmosphere through chemical reactions. Concentrations of these pollutants are more likely to exceed the relevant air quality objectives in urban areas and therefore are generally considered to have a higher risk of resulting in human health impacts.

4.2 Presence of AQMAs

As directed by the Environment Act 2021, local authorities are required to review and assess air quality with respect to the standards and objectives for the pollutants specified in the Government's National Air Quality Strategy (2007). Local Authorities are required to undertake annual reporting of the concentrations of defined pollutants in their area.

Where objectives are not predicted to be met, local authorities must declare an AQMA. In addition, local authorities are required to produce an AQAP, which outlines measures aimed at improving air quality within the designated AQMA.

Following a review of local air quality, it is noted that there is one AQMA declared by MSDC. The proposed development is neither within or close to the AQMA.

4.3 Local Authority Air Quality Baseline Monitoring Data

According to MDSC's 2024 Air Quality Annual Status Reports, there was 1 automatic (continuous) monitoring station and 36 diffusion tubes sites in 2023.

There were 7 NO_2 diffusion tubes within 5km of the proposed development site. The monitoring data from this site is reproduced in Table 1 below. There was one exceedance of the annual mean NO_2 AQS recorded at MSAQ29 in 2019.

Table 4.1: Annual Mean NO_2 Concentrations at the Diffusion Tube Location within 5km of the Proposed Development Site

Site ID	Site Type	Approx. Distance from Site (km)	Annual Mean NO_2 Concentration (µg/m³)				
			2019	2020	2021	2022	2023
MSAQ39	Roadside	0.4	-	23.6	25.0	25.3	21.3
MSAQ43a, MSAQ43b, MSAQ43c	Roadside	0.4	-	-	-	27.4	22.5
MSAQ29	Roadside	0.5	**44.1**	32.5	33.4	31.6	29.6
MSAQ38	Roadside	0.5	-	20.4	20.6	21.0	17.0
MSAQ3	Kerbside	0.9	31.7	22.7	23.4	22.8	19.7
MSAQ36	Roadside	2.2	-	31.6	32.7	33.5	29.8
MSAQ5	Suburban	2.2	28.6	20.9	22.5	20.7	17.8
AQS			**40**				

According to MSDC's annual status report 2024, NO_2 and PM_{10} monitoring was undertaken at continuous monitoring sites between 2022 and 2023. Results recorded are reproduced in Tables 4.2 – 4.4 below. No exceedances of the annual mean objectives were recorded. MDSC does not currently monitor $PM_{2.5}$.

Table 4.2: Annual Measured NO_2 Concentrations at all Continuous Monitoring Locations

Site ID	Approximate Distance from Site (Km)	Valid Data Capture for Monitoring Period (%)	Annual Mean Concentration (µg/m³)				
			2019	2020	2021	2022	2023
MSAQ43	0.4	99.5	-	-	-	24.3	21.1

Table 4.3: Annual Measured PM_{10} Concentrations at Continuous Monitoring Locations

Site ID	Approximate Distance from Site (Km)	Valid Data Capture for Monitoring Period (%)	Annual Mean Concentration (µg/m³)				
			2019	2020	2021	2022	2023
MSAQ43	0.4	99.5	-	-	-	18.8	17.0

4.4 LAQM Background Data

Estimated background air quality data are available from the LAQM Support website operated by Defra. The website provides estimated annual average background concentrations of NO_2, PM_{10} and $PM_{2.5}$ on a 1 km^2 grid basis.

Table 4.5 reproduces estimated annual average background NO_2, PM_{10} and $PM_{2.5}$ concentrations at the proposed development site for 2024-2026. No exceedances of the annual average AQSs for NO_2, PM_{10} or $PM_{2.5}$ have been predicted. As background concentrations are predicted to fall with time, background concentrations in future years would not be expected to exceed their respective annual mean standards.

Table 4.5: Defra LAQM Estimated Background Annual Average NO_2, PM_{10} and $PM_{2.5}$ Concentrations at the Proposed Development Site (from 2018 base map)

Assessment Year	Estimated Annual Average Pollutant Concentrations Derived from the LAQM Support Website		
	Annual Average NO_2 ($\mu g/m^3$)	Annual Average PM_{10} ($\mu g/m^3$)	Annual Average $PM_{2.5}$ ($\mu g/m^3$)
2024	10.3	13.5	9.3
2025	10.0	13.4	9.1
2026	9.7	13.4	9.1
AQS	**40**	**40**	**20**

Note: Presented concentrations for 1 km^2 grid centred on 539328 , 138092; approximate centre of development site is 539500, 138500.

5 ASSESSMENT OF IMPACTS

5.1 Construction Phase

Atmospheric emissions from construction activities will depend on a combination of the potential for emissions (the type of activity and prevailing conditions) and the effectiveness of control measures. In general terms, there are two sources of emissions that will need to be controlled to minimise the potential for adverse environmental effects:

- Exhaust emissions from site plant, equipment and vehicles; and,
- Fugitive dust emissions from site activities.

5.1.1 Fugitive Dust Emissions

Fugitive dust emissions arising from construction activities are likely to be variable in nature and will depend upon the type and extent of the activity, soil type and moisture, road surface conditions and weather conditions. Periods of dry weather combined with higher than average wind speeds have the potential to generate more dust.

Construction activities that are considered likely to be the most significant potential sources of fugitive dust emissions at the proposed development site are:

- Construction aggregate usage, due to the transport, unloading, storage and use of dry and dusty materials (such as cement and sand);
- Movement of heavy site vehicles on dry or untreated haul routes; and,
- Movement of vehicles over surfaces where muddy materials have been transferred off-site (for example, on to public highways).

Fugitive dust and emissions arising from construction activities is mainly of a particle size greater than the PM_{10} fraction (that which can potentially impact upon human health); however it is noted that construction activities may contribute to local PM_{10} concentrations. Appropriate dust control measures can be highly effective for controlling emissions from potentially dust generating activities identified above, and adverse effects can be greatly reduced or eliminated. For a conservative assessment, the potential impacts considered below are based on a pre-mitigation scenario.

5.1.2 Potential Dust Emission Magnitude

With reference to the IAQM 2024 criteria outlined in **Appendix A**, the estimation of dust emission magnitudes for earthworks, construction and trackout activities are presented in Table 5.1. Details given in the sections below have been provided by the client and where details are unknown professional judgement has been used where appropriate.

Table 5.1: Summary of Dust Emission Magnitudes (Before Mitigation)

Activity	IAQM Criteria	Dust Emission Magnitude
Demolition	- No demolition works proposed	**n/a**
Earthworks	- Total area where earthworks will take place <18,000m^2 - Number of earthmoving equipment <5 - No stockpiling - Timing of works will be all year around	**Small**
Construction	- Total building volume will be <12,000m^3. - No on-site concrete batching or sandblasting will take place - It is assumed there will be some potentially dusty materials onsite	**Small**
Trackout	- The average number of heavy vehicles in/out of the site <20 per day - Site surface is predominantly made ground, pre-existing road network, no unpaved road	**Small**

5.1.3 Sensitivity of the Area

As per the IAQM Guidance, the sensitivity of the area takes into account a number of factors, including:

- The sensitivity of individual receptors in the area;
- The proximity and number of those receptors;
- For the human health assessment, the local background annual mean PM_{10} concentration (taken from the mapped estimates in Table 4.2); and,
- Site specific factors, such as whether there are natural shelters, such as trees, to reduce the risk of wind-blown dust.

Consideration is given to human and ecological receptors, where present, from the impact of the construction site boundary and routes along which Heavy Duty Vehicles (HDVs) may facilitate trackout.

Construction and trackout 'buffers' were used to identify the sensitivity of the area. Figures 5.1 and 5.2 show maps indicating the earthworks/construction and trackout buffers, respectively, for identifying the sensitivity of the area and Table 5.2 presents the determined sensitivity of the area with the factors itemised which have helped to define this.

Earthworks and construction activities are relevant up to 250m from the proposed development site boundary whereas trackout activities are only considered relevant up to 50m from the edge of the road up to 200m from the site access (based on medium dust emission magnitude), as per the guidance. Therefore, only 20m and 50m buffers are considered for trackout activities. The site access for construction traffic will be from Queens Road.

There are no ecological receptors within 1km of the site.

Table 5.2: Sensitivity of the Area

Potential Impact		Sensitivity of the Surrounding Area	
		Construction	Trackout
Dust soiling	Receptor sensitivity	High	High
	Number of receptors	10-100	10-100
	Distance from the source	<100m	<100m
	Sensitivity of the area	**Low**	**Low**
Human health	Receptor sensitivity	High	High
	Annual mean PM_{10} concentration	<24µg/m^3	<24µg/m^3
	Number of receptors	10-100	10-100
	Distance from the source	<100m	<50m
	Sensitivity of the area	**Low**	**Low**

5.1.4 Risk of Impacts

The dust emission magnitude summarised in Table 5.1 has been combined with the sensitivity of the area in Table 5.2 to determine the risk of impacts of construction activities before mitigation; these have been evaluated based on risk categories of each activity in **Appendix A**.

The risk of dust impacts from construction activities is identified as negligible as shown in Table 5.3.

Table 5.3: Summary of the Dust Risk from Construction Activities

Potential Impact	Earthworks	Construction	Trackout
Dust soiling	Negligible	Negligible	Negligible
Human health	Negligible	Negligible	Negligible
Ecological	N/A	N/A	N/A

5.1.5 Exhaust Emissions from Construction Plant and Vehicles

The operation of vehicles and equipment powered by internal combustion engines results in the emission of exhaust gases containing pollutants including NO_x, PM_{10}, $PM_{2.5}$, volatile organic compounds, and carbon monoxide. The quantities emitted depend on factors such as engine type, service history, pattern of usage and fuel composition.

Construction traffic will likely comprise of haulage vehicles and vehicles used for workers' trips to and from the application site. The greatest impact on air quality due to emission from construction phase vehicles will be in areas adjacent to the application site access and nearby road network. It is estimated that that there will be less than 100 HDV outward movements per day, which is considered unlikely to cause a significant impact on local air quality, in accordance with the IAQM guidance.

The operation of site equipment and machinery/plant during the construction phase will result in emissions to the atmosphere of exhaust gases, but with suitable controls and site management such emissions are unlikely to be significant (as per guidance within LAQM TG(22)).

Figure 5.1: Construction & Earthworks Buffers

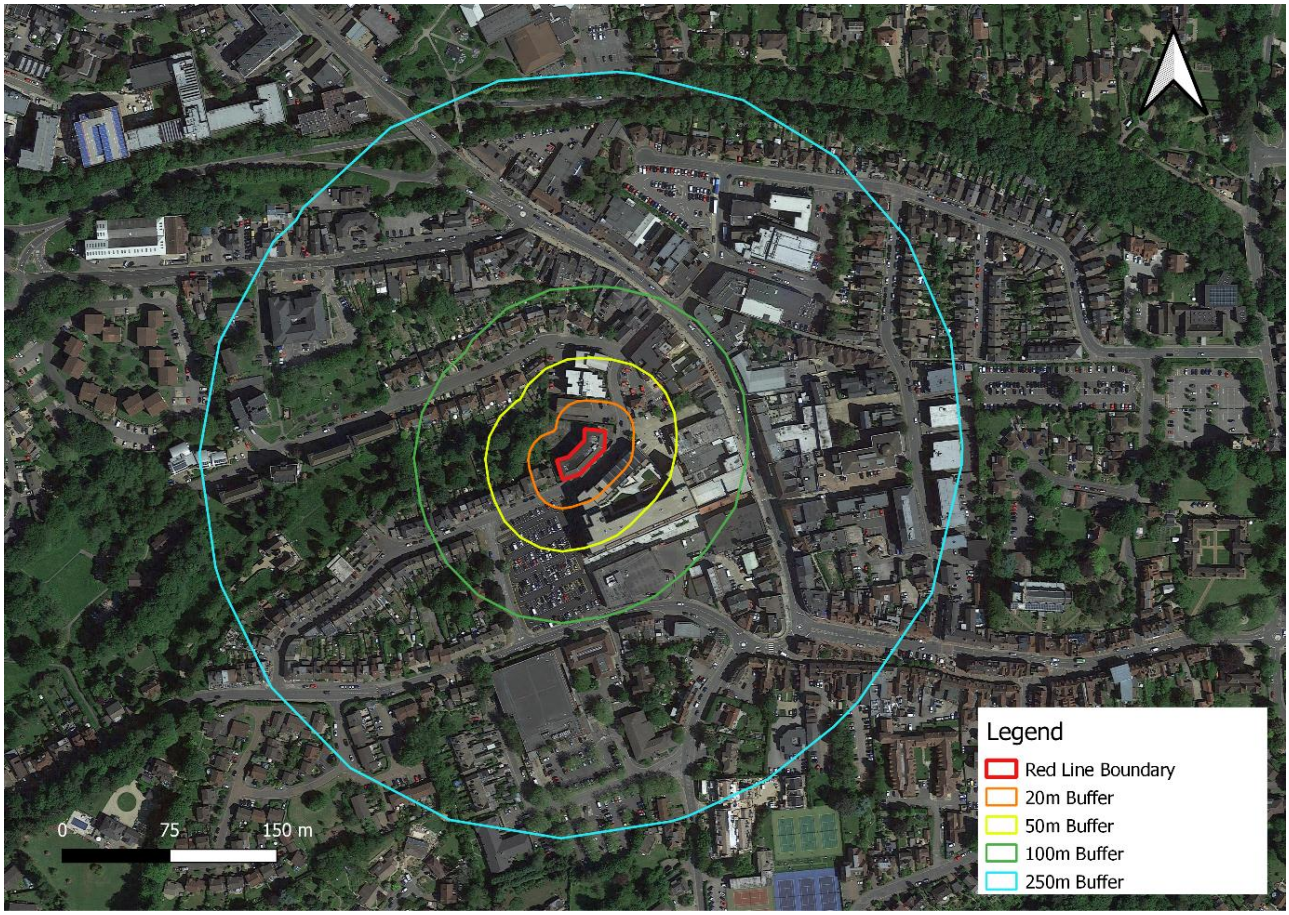
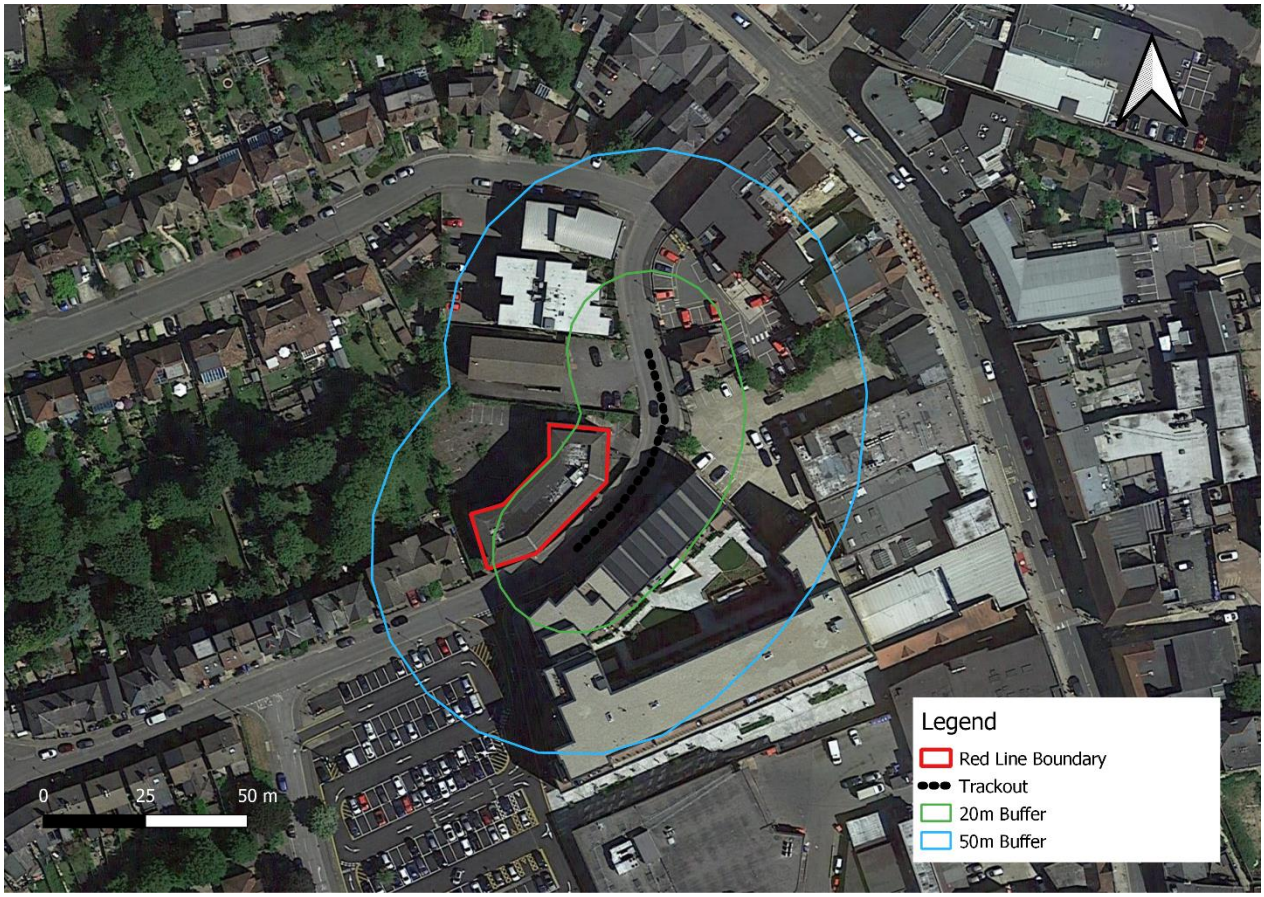


Figure 5.2 Trackout Buffers



5.2 Operational Phase

5.2.1 Emissions to Air from Operational Phase Traffic

The principal operational phase air quality impact is likely to be associated with traffic emissions as a result of any changes in traffic flows or flow composition the development may bring. The EPUK-IAQM 2017 guidance provides indicative criteria to determine when an air quality assessment is likely to be required. Table 5.4 presents a comparison of the relevant EPUK-IAQM screening criteria with traffic and other information on the proposed development.

Currently, no information regarding traffic data is available for this development. Therefore, assumptions have been made using professional judgement based on the size, type and use of development.

Due to the nature of works at the proposed development is not predicted to cause an increase of more than 25 AADT for HDVs or 100 AADT for LDVs, and none of the other EPUK-IAQM criteria are exceeded. Therefore, we anticipate that the proposed development is unlikely to cause a significant impact on local air quality.

Table 5.4: Screening Criteria from EPUK-IAQM Guidance and Comparison with the Proposed Development Operational Phase

EPUK-IAQM Screening Criteria	Comparison of proposed development to screening criteria
A change of Light Duty Vehicles (LDVs) of: – More than 500 Annual Average Daily Traffic (AADT) not within an AQMA – More than 100 AADT within an AQMA	The development is unlikely generate more than 100 AADT LDV movements.
A change of Heavy Duty Vehicles (HDVs) of: – More than 100 AADT not within an AQMA – More than 25 AADT within an AQMA	**Criterion not exceeded:** The development is not expected to generate more than 25 AADT HDV movements.
Road realignment, where the change is 5m or more and the road is within an AQMA.	**Criterion not exceeded:** No road realignment is likely
Introduction of a new junction or the removal of an existing junction near to relevant receptors. This applies to junctions that cause traffic to significantly change vehicle accelerate/ decelerate, e.g. traffic lights, or roundabouts.	**Criterion not exceeded:** Introduction of a new junction or removal of an existing junction is unlikely

EPUK-IAQM Screening Criteria	Comparison of proposed development to screening criteria
Introduction or change of a bus station, where bus flows will change by: - more than 25 AADT within or adjacent to an AQMA - more than 100 AADT elsewhere.	**Criterion not exceeded:** No introduction or change to existing bus station and no expected change in bus flows is likely
Have an underground car park with extraction system, where the ventilation extract for the car park will be within 20m of a relevant receptor. Coupled with the car park having more than 100 movements per day (total in and out).	**Criterion not exceeded:** Car parking will be outdoors
Have one or more substantial combustion processes, where there is a risk of impacts at relevant receptors.	**Criterion not exceeded:** It is understood that substantial combustion processes are unlikely.

5.2.2 Exposure of Future Development Users to Air Pollution

The potential exposure of future users of the proposed development to poor air quality has been considered by undertaking a qualitative review of the baseline conditions (Section 4) and the locations of sensitive receptors within the proposed development.

6 MITIGATION MEASURES & RESIDUAL IMPACTS

6.1 Construction Phase Mitigation

The dust emitting activities outlined in **Section 5.1** can be effectively controlled by appropriate dust control measures and any adverse effects can be greatly reduced or eliminated.

Prior to commencement of construction activities, it is anticipated that a Construction Environmental Management Plan (CEMP), which can be secured via Condition, for the construction phase will be reached with the local authority to ensure that the potential for adverse environmental effects on local receptors is minimised. The following mitigation measures may be applied as part of good practice, desirable measures are presented in *italics*.

Communications

- 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.
- *Develop and implement a Dust Management Plan (DMP), which may include measures to control other emissions, approved by the Local Authority.*

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.

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.*
- Carry out regular site inspections to monitor compliance with the DMP, 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 PM10 continuous monitoring locations with the Local Authority.

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 actives for an extensive period.*
- 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 on-site cover as described below.*
- *Cover, seed or fence stockpiles to prevent wind whipping.*

Operating vehicle/machinery and sustainable travel

- Ensure all on-road vehicles comply with the requirements of the London Low Emission Zone and the London NRMM standards, where applicable.
- 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.*

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.

Measures specific to demolition and earthworks – not applicable

Measures specific to 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.*

Measures specific to trackout

- *Use water-assisted dust sweeper(s) on the access and local roads, to remove, as necessary, any material tracked out of the site.*
- *Avoid dry sweeping of large areas.*
- *Ensure vehicles entering and leaving sites are covered to prevent escape of materials during transport.*
- *Record all inspections of haul routes and any subsequent action in a site log book.*
- *Implement a wheel washing system (with rumble grids to dislodge accumulated dust and mud prior to leaving the site where reasonably practicable).*

6.2 Operational Phase Mitigation

The assessment predicts that the operational phase of the proposed development will have a negligible impact on local air quality. Moreover, based on monitoring data and predicted background concentrations, future users of the proposed development are not expected to be exposed to poor air quality.

7 CONCLUSIONS

A qualitative air quality assessment for the proposed internal re-development of Queensmere House, East Grinstead has been prepared with reference to existing air quality in the area and relevant air quality legislation, policy and guidance.

The construction phase works may have the potential to impact on dust nuisance and local air quality, and this was assessed in accordance with the IAQM guidance. The potential risk of construction phase impacts, prior to mitigation, was predicted to be a maximum of 'small risk'.

A qualitative assessment of the operational impacts has been undertaken against the screening criteria outlined in the EPUK-IAQM guidance. It is considered unlikely that the development will have a significant impact on local air quality. Furthermore, a review of baseline conditions found that development would not introduce additional sensitive receptors into an area of known poor air quality. Therefore, the overall air quality impact of the development is considered to be 'not significant'.

Based on the results of the assessment, it is judged that with appropriate mitigation, the proposed development complies with relevant national and local planning policies and that there are no air quality constraints.

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APPENDIX A CONSTRUCTION DUST ASSESSMENT METHODOLOGY

To assess the potential impacts, construction activities are divided into demolition, earthworks, construction and trackout. The descriptors included in this section are based upon the IAQM guidance. The assessment follows the steps recommended in the guidance.

Step 1 and Step 2 methods from the IAQM guidance are described in this Appendix to assign dust risk categories for each of the construction activities.

Step 1: Screen the requirement for assessment

The first step is to screen out the requirement for a construction dust assessment, this is usually a somewhat conservative level of screening. An assessment is usually required where there is:

- a 'human receptor' within:
  - 250m of the boundary of the site; or
  - 50m of the route used by construction vehicles on the public highway, up to 250m from the site entrance(s).
- an 'ecological receptor':
  - 50m of the boundary of the site; or
  - 50m of the route(s) used by construction vehicles on the public highway, up to 250m from the site entrance(s).

Step 2A: Defining the Potential Dust Emission Magnitude

Demolition

The dust emission magnitude category for demolition is varied for each site in terms of timing, building type, duration and scale. Examples of the potential dust emission classes are provided in the guidance as follows:

- **Large**: Total building volume >75,000m^3, potentially dusty construction material (e.g. concrete), on-site crushing and screening, demolition activities >12m above ground level;
- **Medium**: Total building volume 12,000m^3 – 75,000m^3, potentially dusty construction material, demolition activities 6m – 12m above ground level; and
- **Small**: Total building volume <12,000m^3, construction material with low potential for dust release (e.g. metal cladding or timber), demolition activities <6m above ground, demolition during wetter months.

Earthworks

The dust emission magnitude category for earthworks is varied for each site in terms of timing, geology, topography and duration. Examples of the potential dust emission classes are provided in the guidance as follows:

- **Large**: Total site area >110,000m^2, potentially dusty soil type (e.g. clay, which will be prone to suspension when dry due to small particle size), >10 heavy earth moving vehicles active at any one time, formation of bunds >6m in height;

- **Medium**: Total site area 18,000 – 110,000m^2, moderately dusty soil type (e.g. silt), 5 – 10 heavy earth moving vehicles active at any one time, formation of bunds 4 – 6m in height; and
- **Small**: Total site area <18,000m^2, soil type with large grain size (e.g. sand), <5 heavy earth moving vehicles active at any one time, formation of bunds <4m in height.

Construction

The dust emission magnitude category for construction is varied for each site in terms of timing, building type, duration, and scale. Examples of the potential dust emissions classes are provided in the guidance as follows:

- **Large**: Total building volume >75,000m^3, on site concrete batching, sandblasting;
- **Medium**: Total building volume 12,000 – 75,000m^3, potentially dusty construction material (e.g. concrete), on site concrete batching; and
- **Small**: Total building volume <12,000m^3, construction material with low potential for dust release (e.g. metal cladding or timber).

Trackout

Factors which determine the dust emission magnitude class of trackout activities are vehicle size, vehicle speed, vehicle number, geology and duration. Examples of the potential dust emissions classes are provided in the guidance as follows:

- **Large**: >50 HDV (>3.5t) outward movements in any one day, potentially dusty surface material (e.g. high clay content), unpaved road length >100m;
- **Medium**: 20 – 50 HDV (>3.5t) outward movements in any one day, moderately dusty surface material (e.g. high clay content), unpaved road length 50 – 100m; and
- **Small**: <20 HDV (>3.5t) outward movements in any one day, surface material with low potential for dust release, unpaved road length <50m.

Step 2B: Defining the Sensitivity of the Area

The sensitivity of the area is defined for dust soiling, human health and ecosystems. 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 PM_{10}, the local background concentration; and
- Site-specific factors, such as whether here are natural shelters such as trees, to reduce the risk of wind-blown dust.

Table A1 has been used to define the sensitivity of different types of receptors to dust soiling, health effects and ecological effects.

Table A1: Sensitivity of the Area Surrounding the Site

Sensitivity of Area	Dust Soiling	Human Receptors	Ecological Receptors
High	• Users can reasonably expect enjoyment of a high level of amenity. • The appearance, aesthetics or value of their property would be diminished by soiling. • The people or property would reasonably be expected to be present continuously, or at least regularly for extended periods, as part of the normal pattern of use of the land. • Examples include dwellings, museums and other culturally important collections, medium and long term car parks and car showrooms.	• Locations where members of the public are exposed over a time period relevant to the air quality objective for PM_{10} (in the case of the 24-hour objectives, a relevant location would be one where individuals may be exposed for eight hours or more in a day) • Examples include residential properties, hospitals, schools and residential care homes should also be considered as having equal sensitivity to residential areas for the purposes of this assessment.	• Locations with an international or national designation *and* the designated features may be affected by dust soiling. • Locations where there is a community of a particularly dust sensitive species such as vascular species included in the Red Data List For Great Britain. • Examples include a Special Area of Conservation (SAC) designated for acid heathlands or a local site designated for lichens adjacent to the demolition of a large site containing concrete (alkali) buildings.
Medium	• Users would expect to enjoy a reasonable level of amenity, but would not reasonably expect to enjoy the same level of amenity as in their home. • The appearance, aesthetics or value of their property could be diminished by soiling. • The 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. • Examples include parks and places of work.	• Locations where the people exposed are workers and exposure is over a time period relevant to the air quality objective for PM_{10} (in the case of the 24-hour objectives, a relevant location would be one where individuals may be exposed for eight hours or more in a day). • Examples include office and shop workers, but will generally not include workers occupationally exposed to PM_{10}, as protection is covered by Health and Safety at Work legislation.	• Locations where there is a particularly important plant species, where its dust sensitivity is uncertain or unknown. • Locations with a national designation where the features may be affected by dust deposition. • Example is a Site of Special Scientific Interest (SSSI) with dust sensitive features.

Sensitivity of Area	Dust Soiling	Human Receptors	Ecological Receptors
Low	• The enjoyment of amenity would not reasonably be expected. • Property would not reasonably be expected to be diminished in appearance, aesthetics or value by soiling. • There is transient exposure, where the people or property would reasonably be expected to be present only for limited periods of time as part of the normal pattern of use of the land. • Examples include playing fields, farmland (unless commercially-sensitive horticultural), footpaths, short term car parks and roads.	• Locations where human exposure is transient. • Indicative examples include public footpaths, playing fields, parks and shopping streets.	• Locations with a local designation where the features may be affected by dust deposition. • Example is a local Nature Reserve with dust sensitive features.

Based on the sensitivities assigned of the different types of receptors surrounding the site and numbers of receptors within certain distances of the site, a sensitivity classification for the area can be defined for each. Tables A2 to A4 indicate the method used to determine the sensitivity of the area for dust soiling, human health and ecological impacts, respectively.

For trackout, as per the IAQM construction dust guidance, it is only considered necessary to consider trackout impacts up to 50m from the edge of the road.

Table A2: Sensitivity of the area to dust soiling effects on people and property

Receptor Sensitivity	Number of Receptors	Distances from the Source (m)			
		<20	<50	<100	<350
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 A3: Sensitivity of the area to Human Health Impacts

Receptor Sensitivity	Annual Mean PM_{10} Conc.	Number of Receptors	Distances from the Source (m)				
			<20	<50	<100	<200	<350
High	>32μg/m^3	>100	High	High	High	Medium	Low
		10-100	High	High	Medium	Low	Low
		1-10	High	Medium	Low	Low	Low
	28-32μg/m^3	>100	High	High	Medium	Low	Low
		10-100	High	Medium	Low	Low	Low

Receptor Sensitivity	Annual Mean PM_{10} Conc.	Number of Receptors	Distances from the Source (m)				
			<20	<50	<100	<200	<350
		1-10	High	Medium	Low	Low	Low
	24-28µg/m^3	>100	High	Medium	Low	Low	Low
		10-100	High	Medium	Low	Low	Low
		1-10	Medium	Low	Low	Low	Low
	<24 µg/m^3	>100	Medium	Low	Low	Low	Low
		10-100	Low	Low	Low	Low	Low
		1-10	Low	Low	Low	Low	Low
Medium	>32µg/m^3	>10	High	Medium	Low	Low	Low
		1-10	Medium	Low	Low	Low	Low
	28-32µg/m^3	>10	Medium	Low	Low	Low	Low
		1-10	Low	Low	Low	Low	Low
	24-28µg/m^3	>10	Low	Low	Low	Low	Low
		1-10	Low	Low	Low	Low	Low
	<24 µg/m^3	>10	Low	Low	Low	Low	Low
		1-10	Low	Low	Low	Low	Low
Low	-	>1	Low	Low	Low	Low	Low

Table A4: Sensitivity of the area to Ecological Impacts

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

Step 2C: Defining the Risk of Impacts

The final step is to use both the dust emission magnitude classification with the sensitivity of the area, to determine a potential risk of impacts for each construction activity, before the application of mitigation. Tables A5 to A7 indicate the method used to assign the level of risk for each construction activity.

Table A5: Risk of Dust Impacts from 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 A6: Risk of Dust Impacts from Earthworks/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 A7: Risk of Dust Impacts from Trackout

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