Morgan Sindall Construction & Infrastructure Ltd

Dust Risk Assessment and Management Plan

248-250 Camden Road, London.

Project Number: 445584-02 (00)

FEBRUARY 2024

RSK air quality
MODELLING · MONITORING · PERMITTING

RSK GENERAL NOTES

Report No: 445584-02 (00)

Title: Dust Risk Assessment and Management Plan – 248-250 Camden Road, London.

Client: Morgan Sindall Construction & Infrastructure Ltd.

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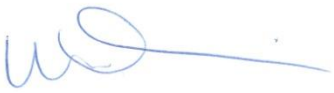
Signature		Signature	
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1 INTRODUCTION

1.1 Background

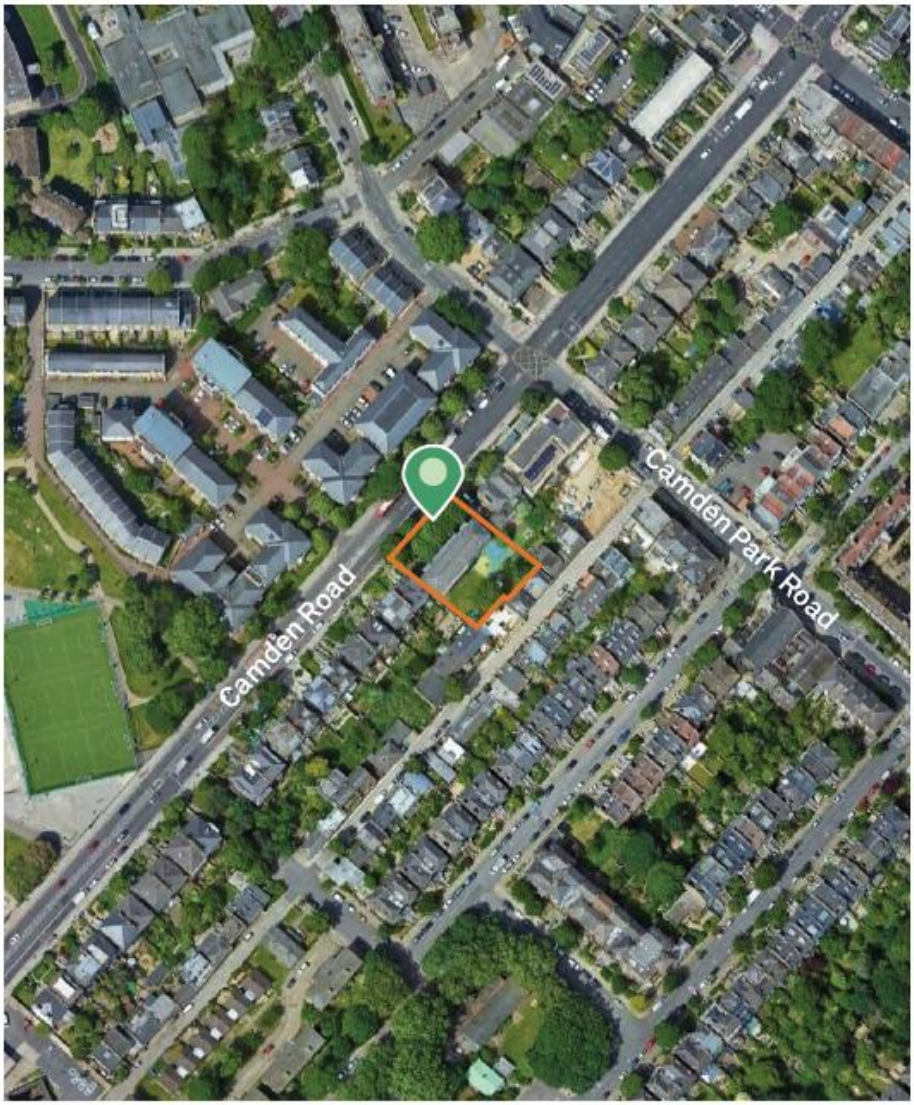
RSK Environment Limited (RSK) was commissioned by Morgan Sindall Construction & Infrastructure Ltd to prepare a Dust Risk Assessment and Management Plan (DMP) for the construction site at 248-250 Camden Road, Kentish town, London, NW1 9HE.

The proposed development is for a six storey building that will provide 39 bed new hostel accommodation. The goal for this project is to provide high quality council-owned family accommodation that is welcoming and secure while also improving the quality of this site on Camden Road.

The approximate grid reference of the development site is 529710, 184795. A site location plan is presented in Figure 1.1. The application site is located at Camden, London, which falls within the administrative area of London Borough of Camden (LBC). LBC has declared the whole borough as Air Quality Management Area (AQMA).

The aim of this Dust Risk Assessment and Management Plan is to provide an evidential basis for the specification of appropriate mitigation measures so that best practice is used to control potential impacts of the site activities on local air quality and amenity.

Figure 1.1: Proposed Development Site Location



2 KEY LEGISLATION AND RELEVANT GUIDANCE

2.1 Ambient Air Quality Standards referenced in assessment

The Environmental Protection Act 1990 may be used to regulate 'statutory nuisance', including dust and other specified 'nuisances' related to air quality. Section 3 empowers local authorities to issue abatement notices where a nuisance *"unreasonably and substantially interfere[s] with the use or enjoyment of a home or other premises"* or where it could *"injure health or be likely to injure health."* It may be a defence against statutory nuisance action to show that 'best practicable means' have been used to control the emission(s).

The ambient air quality objectives (AQOs) and air quality standards (AQSs) in the United Kingdom are derived from European Commission (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 Environment Act (2021) introduced a duty on government to set targets for concentrations of fine particulate matter ($PM_{2.5}$) in ambient air, and these were delivered in the Environmental Targets (Fine Particulate Matter) (England) Regulations 2023, as follows:

- Annual average Air Quality Objective for $PM_{2.5}$ of 10 µg/m3 by 2040;
- Interim target of 12 µg/m^3 by January 2028;
- 35% reduction in average population exposure by 2040;
- Interim target of a 22% reduction by January 2028, both compared to a 2018 baseline.

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

Table 2.1: Air Quality Standards 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	-	40
	1 hour	18	200

[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)
Fine particles (PM_{10})	1 calendar year	-	40
	24 hours	35	50
Fine particles ($PM_{2.5}$)	1 year	-	20
		-	12 (by 2028)
		-	10 (by 2040)

2.2 Relevant Guidance

2.2.1 Mayor of London Guidance

The Greater London Authority and Mayor of London supplementary planning guidance *'The Control of Dust and Emissions from Construction and Demolition' (2014)*, suggests an approach to the assessment and control of air quality impacts from construction activities.

2.2.2 Guidance on the assessment of dust from demolition and construction (Institute of Air Quality Management, construction dust) ('the IAQM construction dust construction dust guidance')

The Institute of Air Quality Management (IAQM) revised this guidance document in January 2024, updating the previous publication.

The emphasis of the methodology is on assessing the risk of impacts (in terms of dust nuisance, PM_{10} impacts on public exposure (i.e. human health) and impact upon sensitive ecological receptors) and recommendation of mitigation measures appropriate to the level of risk identified.

2.2.3 IAQM Guidance of Air Quality Monitoring in the Vicinity of Demolition and Construction Sites ('the IAQM 2018 guidance')

The IAQM published revised guidance in 2018 (Bull et al. 2018) on air quality monitoring in the vicinity of demolition and construction sites which provides high level advise on monitoring but is not designed to be prescriptive with regards the various monitoring techniques that can be used.

3 BASELINE AIR QUALITY 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.

A desk-based study was undertaken including a review of monitoring data available from LBC and estimated background data from the Local Air Quality Management (LAQM) Support website operated by the Department for Environment, Food and Rural Affairs (Defra).

3.1 Emissions Sources and Key Air Pollutants

Transport-related emissions are one of the main sources of air pollution in urban areas, such as the proposed development site. NO_2, PM_{10}, and $PM_{2.5}$ are generally regarded as the three most significant air pollutants released by vehicular combustion processes, or subsequently generated by vehicle emissions in the atmosphere through chemical reactions. These pollutants are generally considered to have the greatest potential to result in human health impacts and are the substances of most concern in terms of existing levels in the area, as discussed below.

The focus of this assessment is the construction work in relation to the development, for which emissions of dust, PM_{10} and $PM_{2.5}$ are likely to be the primary concern, and to a lesser extent NO_2 which will also be emitted by plant and site traffic during this phase.

3.2 Baseline Monitoring Data

According to the LBC's Air Quality Annual Status Report for 2022, there were five automatic monitoring stations and a network of 310 diffusion tube monitoring locations in 2022.

There were 23 diffusion tubes and no automatic monitoring station within 1km of the proposed development site. The annual average NO_2 concentrations from these are reproduced in Table 3.1 below. The NO_2 concentrations at Site ID CAM74 exceeded the annual mean objective in 2018 & 2019 and site ID CAM84 exceeded the annual mean objective in 2018 to 2021.

Table 3.1 Annual Mean Measured NO_2 Concentrations within 1km of the Proposed Development Site

Site ID	Location	Site type	Approximate Distance from Site (km)	Annual Mean Concentration (µg/m³)				
				2018	2019	2020	2021	2022
CAM74	Kentish Town Road	Roadside	0.8	**54.66**	**46.07**	34.23	32.57	28.97
CAM84	Camden Road	Roadside	0.9	**55.57**	**53.69**	**44.26**	36.85	38.08
CAM12	Schools AQ 12 - Cliff Villas (Brecknock Primary School)	Roadside	0.2	-	-	24.09	21.32	19.88
CAM27	HSS Phase 4&5 15 - Kentish Town CofE - Islip Street	Roadside	0.6	-	-	-	20.11	19.05
CAM28	HSS Phase 4&5 16 - Kentish Town CofE - Caversham Road	Roadside	0.6	-	-	-	18.98	21.69
CAM29	HSS Phase 4&5 17 - Kentish Town CofE - Gaisford Street	Roadside	0.6	-	-	-	19.7	19.86
CAM40	HSS Phase 4&5 28 - St Patricks - Raglan Street	Roadside	0.8	-	-	-	18.46	18.58
CAM41	HSS Phase 4&5 29 - St Patricks - Inkerman Road	Roadside	0.9	-	-	-	18.73	18.78
CAM42	HSS Phase 3 1 - Camden School for Girls - Sandall Road	Roadside	0.3	-	-	-	22.11	20.24
CAM106	Camden Square 1 - Murray Street	Roadside	0.4	-	30.49	-	20.87	18.93
CAM107	Camden Square 2 - Camden Square East	Roadside	0.3	-	29.02	-	20.32	19.52
CAM108	Camden Square 3 - Camden Terrace	Roadside	0.1	-	29.46	-	20.59	19.29
CAM109	Camden Square 4 - North Villas	Roadside	0.1	-	31.17	-	20.67	20.16
CAM110	Camden Square 5 - St. Augustine's Road	Roadside	0.3	-	31.26	-	21.49	20.51
CAM155	Queens Crescent 6 - Holmes Road outside St. Patrick's Catholic Primary School	Roadside	0.9	-	-	-	20.97	20.11
CAM161	Camden Park Road / Torriano Avenue 1 - Torriano Avenue	Roadside	0.3	-	-	-	21.47	20.78

	outside Torriano Primary School							
CAM162	Camden Park Road / Torriano Avenue 2 - Camden Park Road between South Villas and North Villas	Roadside	0.1	-	-	-	26.14	24.71
CAM163	Baynes Street (opposite K&I Kitchens, 31-37 Baynes Street)	Roadside	0.8	-	-	-	21.28	22.77
CAM164	Randolph Street	Roadside	0.8	-	-	-	26.22	24.48
CAM165	Royal College Street	Roadside	0.9	-	-	-	27.07	26.48
CAM253	Canal Location 1 - Rossendale Way	Roadside	0.9	-	-	-	21.78	21.00
CAM307	Agar Grove eastbound	Roadside	0.4	-	-	-	-	26.59
CAM308	Agar Grove westbound	Roadside	0.6	-	-	-	-	25.07

Note: The values highlighted in 'Bold' exceeded the air quality standard

3.3 LAQM Background Data

Estimated background air quality data available from the LAQM-Tools website, may also be used to establish likely background air quality conditions at the development site.

This website provides estimated annual average background concentrations of NO_2, PM_{10} and $PM_{2.5}$ on a 1km^2 grid basis. Table 3.2 identifies estimated annual average background concentrations for the grid square containing the development site for years from 2024, 2025 and 2026. No exceedances of the NO_2, PM_{10} or $PM_{2.5}$ AQOs are predicted.

Table 3.2: 2023, 2024 and 2025 Estimated Background Annual Average NO_2, PM_{10} and $PM_{2.5}$ Concentrations at Proposed Development Site

Assessment Year	Estimated Annual Average Pollutant Concentrations Derived from the LAQM Website (µg/m^3)		
	Annual Average NO_2	Annual Average PM_{10}	Annual Average $PM_{2.5}$
2024	25.8	18.4	11.8
2025	25.2	18.2	11.7
2026	25.0	18.2	11.7
Air Quality Objective	**40**	**40**	**20**

Note: Presented concentrations for 1 km^2 grid centred on 529500, 184500; approximate centre of development site is 529710, 184795.

3.4 Likely Air Quality At The Site

Based on diffusion tube monitoring data from LBC's annual status report, Tables 3.1 & 3.2, it is considered probable that the site is located in an area where the background annual mean concentrations of the are below the relevant Air Quality objectives and exceedance of the relevant air quality objectives at the application site is considered unlikely.

Although the Camden Road tube is within 5% of the objective, the 2022 annual mean nitrogen dioxide concentration at all diffusion tubes within 1km of the site were well below the objective. Additionally, the nearest urban background and Roadside monitoring at Islington Holloway Rd & Islington Arsenal recorded NO2 levels of 28 µg/m^3 and 19 µg/m^3, and PM_{10} levels of 16 µg/m^3 and 13 µg/m^3 , all of which did not exceed the annual mean, suggesting the application site is located in an area where the objective for nitrogen dioxide and PM_{10} has been met.

4 CONSTRUCTION PHASE IMPACT ASSESSMENT

This assessment has considered both the potential for dust and PM to be generated whilst construction related activities are undertaken, and the potential for construction-related vehicles at and around the site to affect air quality. The GLA SPG recommends that the dust risk assessment is carried out with reference to the latest version of the IAQM Guidance.

4.1 Construction Dust and Particulate Matter

4.1.1 Methodology

In accordance with the IAQM construction dust guidance (2014) the risk of dust and emissions affecting sensitive receptors in the area around the proposed development site was assessed, based on the 'area sensitivity' and the magnitude of emissions from each of the following types of construction activity:

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

For each activity, the risk of site-derived dust and emissions affecting local sensitive receptors is determined as either negligible, low, medium or high risk. The risk category may different for each of the activities and depends on the potential emissions magnitude and the sensitivity of the area. Three different types of impact are considered:

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

The assessment is used to define the appropriate level of mitigation required. Appendix A sets out the construction dust assessment methodology in further detail.

4.1.2 Potential Dust Emission Magnitude

With reference to the IAQM criteria outlined in Appendix A, the dust emission magnitudes for earthworks, construction and trackout activities are summarised in Table 4.1, based on information provided by the client. Where information was not available, the worst case has been assumed for the purpose of this dust management plan.

[2] Within the IAQM construction dust guidance, trackout is defined as "The transport of dust and dirt from the construction/ demolition site onto the public road network, where it may be deposited and then re-suspended by vehicles using the network. This arises when heavy duty vehicles (HDVs) leave the construction/demolition site with dusty materials, which may then spill onto the road, and/or when HDVs transfer dust and dirt onto the road having travelled over muddy ground on site."

Table 4.1: Summary of Dust Emission Magnitudes (Before Mitigation)

Activity	IAQM Criteria	Dust Emission Magnitude
Demolition	- Total area where demolition will take place is estimated to be <12,000m^2 - Removal of existing brickwork basement retaining walls	**Small**
Earthworks	- Total area where earthworks will take place is estimated to be 18,000-110,000m^2 - Ground contain various soil types - The number of heavy earthmoving vehicles is estimated to be <5 during peak of earthworks - Formation of bunds <3m	**Medium**
Construction	- 12,000-75,000m^3 - on-site concrete batching not proposed - No sandblasting proposed - Internal joinery works, Internal plasterboard cutting, External landscaping, cutting paving slabs	**Medium**
Trackout	- The maximum number of heavy-duty vehicle (HDV) outward a movement in any one day is anticipated to <20 - Concrete loading bay - Extent of unpaved road within the site Less than <50m	**Small**

4.1.3 Dust Sensitivity of the Receptors

The IAQM construction dust guidance indicates that the 'area sensitivity' can be determined based on the following factors:

- The sensitivity of individual 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 there are natural shelters, such as trees, to reduce the risk of wind-blown dust.

Dust sensitive receptors were identified in the vicinity of the proposed development site following the guidance published by IAQM. The sensitivity of the area to dust soiling, human health and ecological impacts is summarised in Table 4.2.

The Defra MAGIC Maps website indicates that there are no Sites of Special Scientific Interest, Special Areas of Conservation, Special Protection Areas, Ramsar sites, National Nature Reserves or Local Nature Reserves within 50m of the site boundary or potential trackout routes. Impacts of ecological receptors are therefore not considered applicable and have not been considered further.

The IAQM *"Guidance on the assessment of dust from demolition and construction, January 2024,"* does not suggest a distance from the site within which trackout effects could be significant, however the previously published V1.1 advises '*As general guidance, without site-specific mitigation, trackout may occur along the public highway up to 500 m from large sites …… 200 m from medium sites and 50 m from small sites, as measured from the site exit.* The Chester Road site has been assessed as 'small' with respect to trackout, therefore it was assumed effects may occur within 50m of the site entrance/exit.

Figure 4.1 and 4.2 show maps indicating the earthworks/construction and the trackout buffers, for identifying the sensitivity of the area.

Table 4.2: Summary of the Sensitivity of the Area to Dust Soiling and Human Health

Potential Impact	Sensitivity of the surrounding area				
		Demolition	Earthworks	Construction	Trackout
Dust soiling	Receptor sensitivity	High	High	High	High
	Number of receptors	10-100	10-100	10-100	10-100
	Distance from the source	<20m	<20m	<20m	<20m
	Overall Sensitivity of the Area	**High**	**High**	**High**	**High**
Human health	Receptor sensitivity	High	High	High	High
	Annual mean PM_{10} concentration	<24μg/m^3	<24μg/m^3	<24μg/m^3	<24μg/m^3
	Number of receptors	10-100	10-100	10-100	10-100
	Distance from the source	<20m	<20m	<20m	<20m
	Overall Sensitivity of the Area	**Low**	**Low**	**Low**	**Low**

Figure 4.1: Demolition/Earthworks/Construction Activity Buffer Map

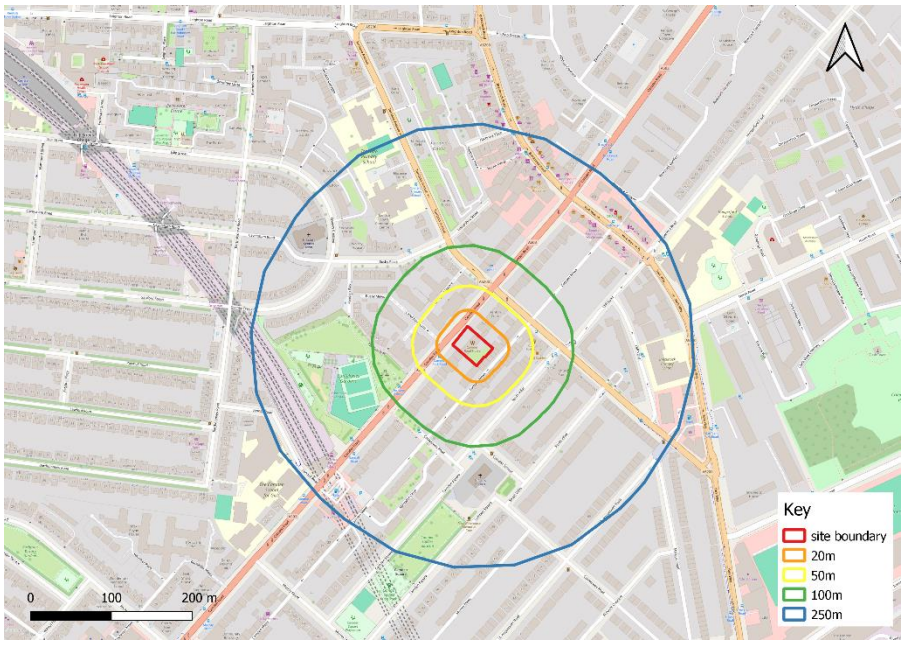


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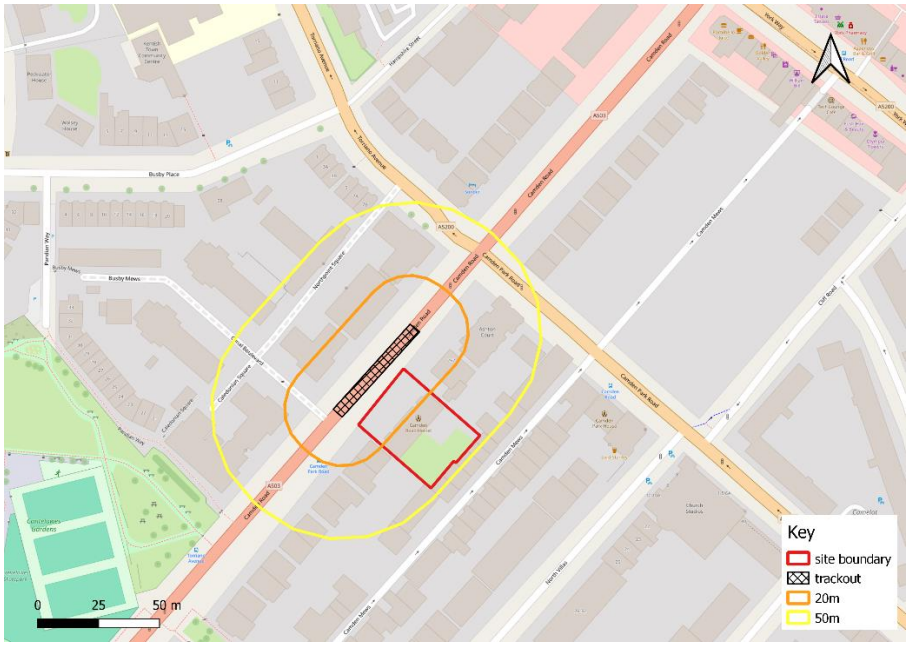
Figure 4.2: Trackout Activity Buffer Map



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4.1.4 Overall Dust Risks

Combining the dust emissions magnitude and the sensitivity of the surroundings, the overall dust risks associated with the proposed development were assessed and are presented in the below Table 4.3.

Table 4.3: Summary of the Dust Risk from all Construction Activities

Potential Impact		Dust Risk Impact		
	Demolition	Earthworks	Construction	Trackout
Dust soiling	Medium Risk	Medium Risk	Medium Risk	Low Risk
Human health	Negligible	Low Risk	Low Risk	Negligible

The aim of this Dust Risk Assessment and Management Plan is to specify appropriate mitigation such that, provided the mitigation is effectively applied, no significant effects are anticipated. Mitigation measures to reduce potential impacts, based on this assessment, are defined in Section 5.

5 CONTROL MEASURES AND MITIGATION

Mitigation measures recommended in the GLA SPG are divided into 'general measures', applicable to all sites and measures specific to demolition, earthworks, construction and trackout. Depending on the level of risk assigned to each site, different mitigation is recommended.

For those mitigation measures that are general, the highest risk assessed has been applied. In this case, the **'medium risk'** site mitigation measures have been applied, as determined by the dust risk assessment in Section 4. Two categories of mitigation measure are described in the IAQM guidance – 'highly recommended' and 'desirable', which are indicated according to the dust risk level identified in Table 4.3. Desirable measures are presented in *italics*.

Site Management

- Develop and implement a stakeholder communications plan that includescommunity engagement before work commence on site.
- Develop a Dust Management Plan (this document).
- Display the name and contact details of person(s) accountable for air qualitypollutant emissions and dust issues on the site boundary.
- Display the head or regional office contact information.
- Record and respond to all dust and air quality pollutant emissions complaints.
- Make the complaints log available to the local authority when asked.
- Carry out regular site inspections to monitor compliance with air quality and dust control procedures, record inspection results, and make an inspection log availableto the local authority when asked.
- Increase the frequency of site inspections by those accountable for dust and air quality pollutant emissions issues when activities with a high potential to produce dust and emissions and dust are being carried out, and during prolonged dry or windy conditions.
- Record any exceptional incidents that cause dust and air quality pollutant emissions, either on or off the site, and the action taken to resolve the situation is recorded in the log book.

Preparing and Maintaining the Site

- Plan site layout: machinery and dust causing activities should be located away fromreceptors.
- Erect solid screens or barriers around dusty activities or site boundary that are atleast as high as any stockpiles on site.

- Fully enclosure site or specific operations where there is a high potential for dustproduction and the site is active for an extensive period.
- *Install green walls, screens or other green infrastructure to minimise the impacts ofdust and pollution.*
- Avoid site runoff of water or mud.
- Keep site fencing, barriers and scaffolding clean using wet methods.
- Remove materials from site as soon as possible.
- Cover, seed or fence stockpiles to prevent wind whipping.
- *Carry out regular dust soiling checks of buildings within 100m of site boundary andcleaning to be provided if necessary.*
- Agree monitoring locations with the Local Authority.
- Where possible, commence baseline monitoring at least three months beforephase begins.
- Put in place real-time dust and air quality pollutant monitors across the site andensure they are checked regularly.

Operating vehicle/machinery and sustainable travel

- Ensure all on-road vehicles comply with the requirements of the London LowEmission Zone.
- Ensure all vehicle switch off engines when stationary – no idling vehicles.
- Avoid the use of diesel or petrol powered generators and use mains electricity orbattery powered equipment, where possible.
- *Impose and signpost a maximum-speed-limit of 10mph on surfaced haul routesand work areas.*
- Produce a Construction Logistics Plan to manage the sustainable delivery of goodsand materials.
- Implement the Travel Plan that supports and encourages sustainable travel.
- Details of all plant and machinery to be submitted to, and approved in writing by, the Local Planning Authority.
- An up-to-date list of all NRMM used on site will be maintained on the online registerat https://nrmm.london/.
- All Non Road Mobile Machinery (NRMM) of net power of 37kW and up to and including 560kW used or present on site shall meet the emission standards set outin the Mayor of London's 'Control of Dust and Emissions During Construction and Demolition' Supplementary Planning Guidance 2014.

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 mitigation (using recycled water where possible).
- Use enclosed chutes, conveyors and covered skips.
- Minimise drop heights from conveyors, loading shovels, hoppers and other loadingor 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 cleanup spillages as soon as reasonably practicable after the event using wet cleaning methods.

Waste management

- Reuse and recycle waste to reduce dust from waste materials
- No bonfires or burning of waste materials.

Specific to Earthworks

- *Re-vegetate earthworks and exposed areas/soil stockpiles to stabilise surfaces.*
- *Use Hessian, mulches or trackifiers where it is not possible to re-vegetate or coverwith topsoil.*
- *Only remove secure covers in small areas during work and not all at once.*

Specific to Construction

- *Avoid scabbling if possible.*
- Ensure sand and other aggregates are stored in bunded areas and are not allowedto dry out, unless this is required for a particular process, in which case ensure thatappropriate additional control measures are in place.
- *Ensure bulk cement and other fine powder materials are delivered in enclosed tankers and stored in silos with suitable emission control systems to prevent escape of material and overfilling during delivery.*
- *For smaller supplies of fine power materials ensure bags are sealed after use andstored appropriate to prevent dust.*

Specific to Trackout

- Regularly use a water-assisted dust sweeper on local roads, as necessary, toremove any material tracked out of the site.
- Avoid dry sweeping of large areas.
- Ensure vehicles entering and leaving sites are securely covered to

prevent escapeof materials during transport.

- Record all inspections of haul routes and any subsequent action in the site logbook.
- Install hard surfaced haul routes, which are regularly damped down with fixed ormobile sprinkler systems, or mobile water bowsers and regularly cleaned.
- Inspect haul routes for integrity and instigate necessary repairs to the surface assoon as reasonably practicable.
- Implement a wheel washing system (with rumble grids to dislodge accumulateddust and mud prior to leaving the site where reasonably practicable).
- Ensure there is an adequate area of hard surfaced road between the wheel washfacility and the site exit, wherever site size and layout permits.
- Access gates to be located at least 10 m from receptors where possible.
- *Apply dust suppressants to locations where a large volume of vehicles enter andexit the construction site.*

Specific to Paving Works

- Using lower energy equipment like a block splitter.
- Limiting the number of cuts during design / lay-out.
- Getting material cut off-site and delivered.
- When a cut-off saw required, the following further measures would be required:
    - Water – use a hand-held cut-off saw with a water suppression attachment. Connect this to a supply of pressurised water container. Use water resistantmarkers if needed.
    - On-tool extraction – use a specially adapted equipment with on-tool extraction. Select an H or M class extraction unit. Make sure the extractionflow rate is right for the work. Hose connections should be tight fitting and secure without obvious leaks.
    - Respiratory Protective Equipment (RPE) – you also need RPE with an assigned protection factor of 20 (eg FFP3 disposable mask or half mask with a P3 filter). Make sure it is compatible with other items of personal protective equipment being worn. Fit testing is needed for tight fitting masks.

This DMP provides a robust suite of control and mitigation measures for the demolition, earthworks, construction and trackout. The dust emitting activities outlined in Section 4.1

can be effectively controlled by implementing the appropriate dust control measures detailed and any adverse effects can be greatly reduced or eliminated. As noted within the 2024 IAQM guidance, with the use of effective mitigation it is normally possible to minimise impacts and therefore the residual effect will normally be 'not significant'. With the implementation of the proposed control/mitigation measures, the residual impacts have therefore been considered to be negligible.

5.1.1 Reducing Emissions from Plant (Non-Road Mobile Machinery (NRMM))

NRMM is defined as any mobile machine, item of transportable industrial equipment, or vehicle - with or without bodywork - that is:

- Not intended for carrying passengers or goods on the road; or,
- Installed with a combustion engine - either an internal spark ignition petrol engine,or a compression ignition diesel engine.

The MOL SPG requires that plant used at the proposed development site meet emission Stage IIIB (all sites within Greater London) or IV (all sites within either the Central Activities ZONE (CAZ) or Opportunity Areas (OAs)) of the NOx, PM and CO emissions standards specified in the EU Directive 97/68/EC and subsequent amendments as a minimum, where they have net power of between 37kW and 560kW. The emissions standards vary depending on the net power the engine produces. The nominated site person(s) (NSP) will be required to maintain a record to confirm that equipment used on-site complies with these standards; further information is available at www.nrmm.london.

The following actions will be taken to enable compliance:

- Reorganising the fleet;
- Replacing equipment if required;
- Installing retrofit abatement technology (such as by diesel particulate filters in existingNRMM); and,
- 'Re-engining'.

Where equipment complying with the emissions standards is unavailable or a comprehensive refit of existing equipment is not feasible, the site operator and/or their appointed contractors would need to ensure that NRMM exempt from the policy are utilised.

5.1.2 Construction Logistic Plan

Deliveries to construction sites can contribute greatly to congestion and emissions at and around sites. It is recommended that a construction logistics plan is developed and implemented, with reference to factors such as the following:

- The consolidation of deliveries so fewer journeys are needed; and,
- The use of sustainable delivery methods where feasible, such as via a canal orrailway.

A construction phase travel plan could also be implemented to encourage workers to use public transport, vehicle share and/or cycle to and from work as far as practicable. Consideration to mechanisms which could assist in the process should be considered

6 MONITORING PROTOCOL

Monitoring ambient pollutant levels during site activities can be used to:

- Demonstrate the efficiency of mitigation measures;
- Reduce costs by effective targeting of mitigation measures;
- Demonstrate compliance with regulatory or other standards;
- Demonstrate a commitment to reduce environmental impacts;
- Reduce complaints from site staff and the public;
- Reduce potential for conflict with regulators; and
- Speed up dispute resolution.

Monitoring regimes can range from real time, continuous monitoring to the visual assessment of dust generation. Simple and inexpensive monitoring of construction impacts may be conducted by means of a number of techniques, including dust deposition monitoring (e.g. by 'Frisbee' dust deposition gauge), and optical real-time continuous particle monitors (e.g. Nephelometers).

The risk of dust impacts from the site activities was identified in Table 4.3 as a maximum of 'Medium risk' for disamenity during earthwork, constrcution and low risk for human health

Therefore in accordance with the MOL SPG', the IAQM 2024 and 2018 guidance, a monitoring campaign including visual dust observation, dust deposition monitoring (using 'Frisbee' dust deposition gauges) and Indicative real-time particulate matter monitoring is recommended.

6.1 Visual Inspections and Site Logbook

The Site Manager or nominated person should undertake regular visual inspection/observation of visible dust, particularly where they suspect high levels of dust-generating activities may occur.

A visual inspection should be undertaken whenever a complaint regarding dust generation is received. The extent of the inspection will generally be on-site but should be extended to the trackout routes, especially on days with heavy traffic movements in and out of the site. These may include 'exceptional incidents', such as very dry, windy days; days when dust suppression techniques fail; etc.

The findings of visual inspections should be documented, and mitigation measures reviewed and implemented as appropriate. The record should include:

- Time & date;

- Reason for inspection (e.g. complaint received, regular inspection);
- Confirmation of any visible dust emissions and that these are being generated on site (and are thus within the control of site);
- Remedial actions taken if emissions observed; and
- Wind direction and strength (a weather station, wind sock or knowledge of the Beaufort Scale would assist in this).

It is important that all site personnel are aware of the requirement for the control of environmental impacts, and appropriate training should be given to all site personnel, covering:

- Health and environmental impacts of emissions to air;
- The benefits of controlling emissions to air;
- Emission control measures;
- Method statements; and
- Importance of good communication.

6.2 Dust Deposition Monitoring

The deposition of dust on surfaces may be one of the main causes of air pollution complaints from demolition, earthworks and construction activities. For this reason, it is recommended that a total of two 'Frisbee' dust deposition gauges or equivalent are to be installed close to the site boundary as shown in Figure 6.1 below.

The 'Frisbee' dust deposition gauge developed by the Stockholm Environment Institute (SEI) at the University of York, is established as a simple and robust method for the quantification of dust deposition. Dust is collected on a horizontal surface and collection bottle. The dust is determined gravimetrically on a filter paper in the laboratory.

The monitoring location is suggested to be located near the sensitive receptors and along site boundaries. It is recommended that dust deposition monitoring is undertaken and maintained throughout the work period. 'Frisbee' samples should be sent to an accredited laboratory for analysis.

The final selection of monitoring location may be subject to a degree of change prior to their installation, depending on practical issues on the site. They may also need to be moved at a later stage for various reasons, including if new dust sensitive premises were introduced, subject to the agreement of all relevant parties. Any proposed variation to the monitoring should be carried out in consultation with the local authority.

It is proposed that the Frisbee sample is changed every 4 weeks/month. The results will be compared with the Suggested Guidelines for Deposited Ambient Dust (Published by

Vallack & Shillito), with a trigger value of 200mg/m^2/day considered given the 'residential areas & urban outskirts' setting of the site.

6.3 PM_{10} Monitoring using Real-Time Dust Monitors

If high volumes of dust complaints are received or works likely to create significant dust are planned, it is recommended that real-time monitoring is undertaken, where practicable.

Nephelometer instruments, such as the Turnkey Osiris unit, are not a reference equivalent method for the determination of airborne particulates, however, they do provide continuous data in near real-time that may be related to site events and are considered an appropriate and economical technique for this type of application. It is recommended that two nephelometer instruments will be installed close to the site boundary as shown in Figure 6.1 below.

These instruments measure continuous indicative concentrations of the PM_{10} fraction of suspended particle matter and the data are posted in near real-time to a website and are immediately viewable.

A Site Action Level (SAL) level of 250µg/m^3 (15 min average PM_{10}) which is recommended in the GLA SPG will be adopted for the site. If this level is reached, an email will be sent to the air quality team at RSK and the Site Manager/other nominated site personnel (NSP).

Where the site threshold for PM10 is being significantly breached developers should stop work immediately and ensure best practice measures are in place before restarting. Where there are breaches of the PM10 threshold local authorities can use their powers to prevent the statutory nuisance.

If the Site Manager receives an email stating that the SAL has been exceeded, the following actions should be taken:

- Review the activities on site and investigate if the exceedance is due to on-site activities;
- If the exceedance is deemed to be from the site activities, apply additional mitigation as soon as is practicable;
- The additional mitigation measures should remain in place until a time that the ambient PM_{10} concentrations are below the SAL; and
- The incident and investigation should be recorded in the complaints log.

Where the Site Manager is not able to carry out these tasks, it should be ensured that a nominated person is on site in their absence.

Figure 6.1: Proposed Monitoring Locations

6.4 Proposed Reporting Programme

Monitoring reports should be prepared monthly and made available to the local authority on request. The content of the reports may vary according to future requirements of the programme, but it is anticipated that the reports will contain the following:

- Details of the monitoring programme and of the type of construction activities undertaken during the monitoring period;
- Presentation of dust deposition rates (and particulate matter concentrations, where monitored) at all monitoring locations;
- Discussion/explanation of any exceedances of the relevant dust standards and of any mitigation applied (where known); and,
- Recommendations for the site manager regarding how dust and emissions can be better controlled thereafter.

7 IMPLEMENTATION AND MANAGEMENT

7.1 Implementation of AQMP

The Site Manager (or other nominated site personnel as appropriate) shall be responsible for the control of environmental impacts of construction activities. The Site Manager should be provided with appropriate training so that they are aware of how dust and PM can be generated on site, are aware of the requirements of the DMP (including visual dust inspections) and are aware of the routine and emergency procedures designed to control dust emissions.

Site inductions and training for all site personnel should include dust management, sources of dust and PM on site, health and environmental impacts of emissions to air, and the control measures being used.

The Site Manager will keep a record documenting the maintenance of effective emissions control methods and details of any complaints or incidents, and actions taken.

Emissions control procedures and equipment will only work satisfactorily if carried out or used appropriately. The responsible person shall maintain good housekeeping and ensure that all equipment is well maintained and used appropriately.

7.2 Reactive Mitigation Measures

Following reports made by site personnel of visibly elevated concentrations of dust or following dust-related complaints from third parties, it is recommended that an investigation is carried out, documented and appropriate mitigation is applied.

The Site Manager should be responsible for ensuring that appropriate steps are taken to minimise the impacts of the dust event. Appropriate mitigation may include but not necessarily be limited to the following:

- Erect solid screens or barriers around the activities generating the elevated dust/ PM concentrations that are at least as high as the dust-generating activity;
- Cover or dampen stockpiles or other sources of dust (e.g. on-site haul roads) to reduce fugitive dust;
- Ensure that site personnel have switched off machinery when not in use and that all personnel are adhering to site speed limits;
- Ensure an adequate water supply on the site for effective dust/particulate matter mitigation (using recycled water where possible);
- Ensure that the other mitigation methods identified in Section 5 are complied with by undertaking visual inspections; and,
- Clean up any dry spillages using wet cleaning methods.

It may be appropriate to temporarily suspend particularly dusty site activities where dust concentrations are high for example during abnormal circumstances, where dust suppression equipment malfunctions, or ‘emergency’ circumstances.

It may be appropriate to temporarily stop work until dust concentrations return to acceptable levels.

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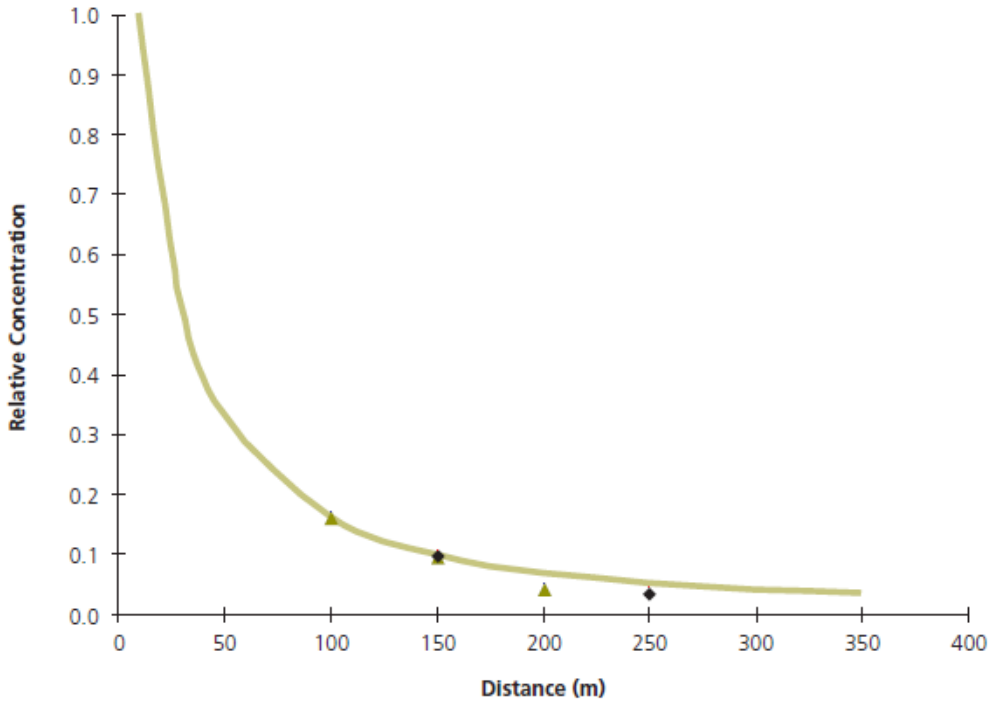
APPENDIX A

This appendix contains the construction dust assessment methodology used in the assessment. 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 construction dust 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.

The tendency of dust to remain airborne is determined by the particle size and weather conditions. Eventually, particles will drop from suspension as a deposit. The previous Local Air Quality Management Technical Guidance document (LAQM.TG(03))[3] identifies that PM_{10} concentrations fall-off rapidly with distance from source. Figure A1 shows the fall-off in PM_{10} concentration from source for a typical wind speed of 6m/s. At 100m from source, the PM_{10} concentration is predicted to be less than 20% of that at the point of generation.

Figure A1: Typical Fall-off in PM_{10} Concentration with Distance from Source



<u>Step 1</u>: Screen the requirement for assessment

[3] LAQM TG (03). The Local Air Quality Management Technical Guidance Note published by the Department for Food and Rural Affairs in 2003. This guidance note is revised in 2021 and is available as LAQM TG(16).

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 onto 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, 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, 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 >6 m in height
- **Medium**: Total site area 18,000 m2 – 110,000 m2, moderately dusty soil type (e.g. silt), 5-10 heavy earth moving vehicles active at any one time, formation of bunds 3m - 6m in height; and
- **Small**: Total site area <18,000 m2, soil type with large grainsize (e.g. sand), <5 heavy earth moving vehicles active at any one time, formation of bunds <4 m 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 >75,000 m3, 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) trips in any one day, potentially dusty surface material (e.g. high clay content), unpaved road length >100m;
- **Medium**: 20 – 50 HDV (>3.5t) trips in any one day, moderately dusty surface material (e.g. high clay content), unpaved road length 50 – 100m; and
- **Small**: <20 HDV (>3.5t) trips 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 Individual receptors in the area surrounding the Site

Sensitivity of Area	Dust Soiling	Human Receptors	Ecological Receptors
High	• Users can reasonably expect an enjoyment of a high level of amenity. • The appearance, aesthetics or value of their property would be diminished by soiling, and • The people or property would reasonably be expected to be present continuously, or at least regularly for extended periods, as part of the normal pattern of use of the land. • 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 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	<250
High	>100	High	High	Medium	Low
	10-100	High	Medium	Low	Low
	1-10	Medium	Low	Low	Low
Medium	>1	Medium	Low	Low	Low
Low	>1	Low	Low	Low	Low

Table A3: Sensitivity of the area to Human Health Impacts (IAQM construction dust guidance)

Receptor Sensitivity	Annual Mean PM_{10} Conc.	Number of Receptors	Distances from the Source (m)			
			<20	<50	<100	<250
High	>32µg/m^3	>100	High	High	High	Medium
		10-100	High	High	Medium	Low
		1-10	High	Medium	Low	Low
		>100	High	High	Medium	Low

Receptor Sensitivity	Annual Mean PM_{10} Conc.	Number of Receptors	Distances from the Source (m)			
			<20	<50	<100	<250
	28-32µg/m³	10-100	High	Medium	Low	Low
		1-10	High	Medium	Low	Low
	24-28µg/m³	>100	High	Medium	Low	Low
		10-100	High	Medium	Low	Low
		1-10	Medium	Low	Low	Low
	<24 µg/m³	>100	Medium	Low	Low	Low
		10-100	Low	Low	Low	Low
		1-10	Low	Low	Low	Low
Medium	>32µg/m³	>10	High	Medium	Low	Low
		1-10	Medium	Low	Low	Low
	28-32µg/m³	>10	Medium	Low	Low	Low
		1-10	Low	Low	Low	Low
	24-28µg/m³	>10	Low	Low	Low	Low
		1-10	Low	Low	Low	Low
	<24 µg/m³	>10	Low	Low	Low	Low
		1-10	Low	Low	Low	Low
Low	-	>1	Low	Low	Low	Low

Table A4: Sensitivity of the area to Ecological Impacts

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

<u>Step 2C</u>: 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	Low Risk
Low	Low Risk	Low Risk	Negligible