Construction Dust Assessment & Dust Management Plan	
Holmes Road, Camden	
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Contents

1 Introduction

1.1. Proposed Development

1.1.1 Air Quality Assessments Ltd (AQA) has been commissioned by Contemporary Design Solutions LLP to undertake an air quality and construction dust risk assessment and to prepare an Air Quality and Dust Management Plan (AQDMP) for the demolition and construction phase of the development at 65-69 Holmes Road, Camden (see **Figure 1**). The construction phase will involve the demolition of existing buildings at the site followed by the construction of a new seven storey building. Planning permission for the development was granted on 6th March 2014 (Application Ref: 2013/7130/P. The site is bounded by Holmes Road to the north, with existing residential use located to the north, east, south and west.

1.2. Scope of Assessment

1.2.1 The relevant air quality legislation and the background air quality are presented to provide context with regard to fine particulate matter (PM_{10}).

1.2.2 The construction dust risk assessment describes the potential for construction activities to impact upon existing properties. The main pollutants of concern related to construction activities are dust and PM_{10}. The risk assessment has been prepared taking into account all relevant local and national guidance and regulations and follows the methodology in the London Plan SPG on The Control of Dust and Emissions During Construction and Demolition (GLA, 2014). The risk assessment forms part of, and informs, the AQDMP. The AQDMP will form part of the Construction Management Plan for the site.

1.2.3 The AQDMP is a working document that sets out the management and control procedures that will be put in place at the site to manage air quality and dust during the construction phase. The AQDMP aims to ensure that dust assessment forms part of daily inspection, and that dust is primarily controlled by good operational practices, with appropriate measures undertaken to prevent dust beyond the site boundary. The AQDMP includes the following:

- A general description of the site, its location and the on-site operations during the construction phase;
- A description of the likely dust sources, pathways and receptors and the outcome of the construction dust risk assessment;
- The control procedures used to manage dust at the site on a daily basis;
- The roles and responsibilities of site personnel;
- Trigger levels and risk factors and the corrective actions to be taken during abnormal conditions;
- The monitoring and auditing of the effectiveness of the control procedures; and
- Details and responsibilities regarding record keeping, and the implementation and maintenance of the AQDMP.

1.2.4 The references and a glossary of common air quality terminology used in this assessment are shown in **Section 6** and **Section 7** respectively.

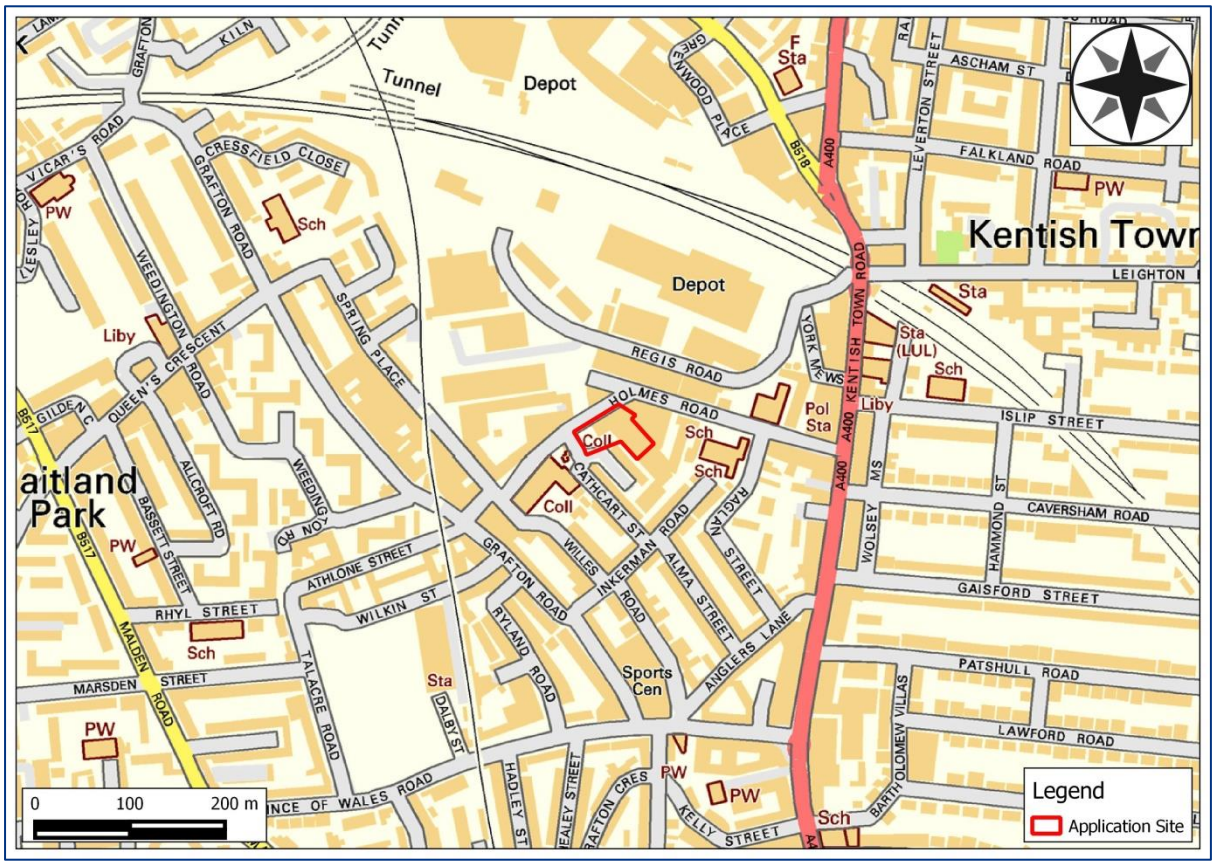

Figure 1: Site Location
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2 Air Quality Legislation

2.1. EU Limit Values

2.1.1 The European Union's Directive on ambient air quality and cleaner air for Europe (European Parliament, Council of the European Union, 2008) set legally binding limit values for PM_{10}. The Air Quality Standards Regulations 2010 (The Stationary Office, 2010) implement the EU Directive limit values in English legislation. Achievement of the limit values is a national obligation rather than a local one.

2.1.2 The limit values are the same as the objective values (see **Table 1**) however, the compliance dates differ, and the limit values apply at all locations (apart from where the public does not have access, where health and safety at work provisions apply and on the road carriageway). The PM_{10} limit value applied from 2005.

2.2. The Air Quality Strategy

2.2.1 Part IV of The Environment Act 1995 required the UK Government to prepare an Air Quality Strategy. The Air Quality Strategy (Defra, 2007), provides an overview and outline of ambient air quality policy in the UK and the devolved administrations. The strategy sets out air quality standards and objectives intended to protect human health and the environment.

2.2.2 Standards are the concentrations of pollutants in the atmosphere, below which there is a minimum risk of health effects or ecosystem damage; they are set with regard to scientific and medical evidence. Objectives are the policy targets set by the Government, taking account of economic efficiency, practicability, technical feasibility and timescale, where the standards are expected to be achieved by a certain date.

2.2.3 The Air Quality Strategy also describes the system of Local Air Quality Management (LAQM), introduced in Part IV of the Environment Act 1995, which requires every local authority to carry out regular review and assessments of air quality in its area. Where an objective has not been, or is unlikely to be achieved, the local authority must declare an Air Quality Management Area (AQMA), and prepare an action plan which sets out appropriate measures to be introduced in pursuit of the objectives.

2.2.4 The objectives for PM_{10}, as prescribed by the Air Quality (England) Regulations 2000 and the Air Quality (England) (Amendment) Regulations 2002 (The Stationary Office, 2000; The Stationary Office, 2002), are shown in **Table 1**. The objectives for PM_{10} were to have been achieved by 2004, and continue to apply in all future years thereafter.

Table 1: The Objectives for PM_{10}

Pollutant	Concentration Measured As	Objective
PM_{10}	24-hour Mean	50 µg/m^3 not to be exceeded more than 35 times a year
	Annual Mean	40 µg/m^3

2.2.5 The objectives apply at locations where members of the public are likely to be regularly present and are likely to be exposed for a period of time appropriate to the averaging period of the objective. Examples of where the objectives should apply are provided in the London Local Air Quality Management Technical Guidance (Mayor of London, 2016). The annual mean PM_{10} objectives should apply at the building façades of residential properties, schools, hospitals, care homes etc.; they should not apply at the building façades of places of work, hotels, gardens or kerbside sites. The 24-hour mean PM_{10} objective should apply at all locations where the annual mean objective applies, as well as the gardens of residential properties and hotels.

3 Air Quality and Dust Risk Assessment

3.1. Introduction

3.1.1 Without mitigation, there is a risk that the construction phase of the development will lead to dust soiling and elevated concentrations of PM_{10}. These impacts may occur during demolition, earthworks and construction, as well as from trackout of dust onto the public highway, as vehicles leave the construction site.

3.2. Existing Conditions

LAQM Review and Assessment

3.2.1 Camden Council has declared the entire borough an air quality management area (AQMA) due to exceedences of the annual mean nitrogen dioxide and 24-hour mean PM_{10} objectives.

Local Air Quality Monitoring

3.2.2 Camden Council operates four automatic monitoring sites within its area that measure PM_{10} concentrations. Measured data from the closest monitoring site, at Swiss Cottage, approximately 2.2 km west of the construction site, are shown in **Table 2,** and the monitoring site location is shown in **Figure 2**.

Table 2: Summary of PM_{10} Monitoring Data (2009 to 2014) [a]

Site Name	Site Type	2009	2010	2011	2012	2013	2014
Annual Mean (µg/m^3)							
Swiss Cottage	Kerbside	25	26	27	23	21	22
Objective		**40**					
Number of Days > 50 µg/m^3							
Swiss Cottage	Kerbside	25	26	31	21	8	12 (40.8) [b]
Objective		**35**					

a The data have been taken from the most recent Progress Report and Updating and Screening Assessment (London Borough of Camden, 2014; London Borough of Camden, 2015).

b The number in parenthesis is the 90th percentile of 24-hr mean concentrations as data capture was less than 90%.

3.2.3 The data in **Table 2** shows that the annual mean and 24-hour mean objectives for PM_{10} have been achieved at the kerbside monitoring site at Swiss Cottage between 2009 to 2014. The monitoring site is located adjacent to the heavily trafficked Finchley Road (A41) close to a congested junction. The construction site is in a residential area adjacent to a quiet road, where PM_{10} concentrations are likely to be much lower, and close to background levels.

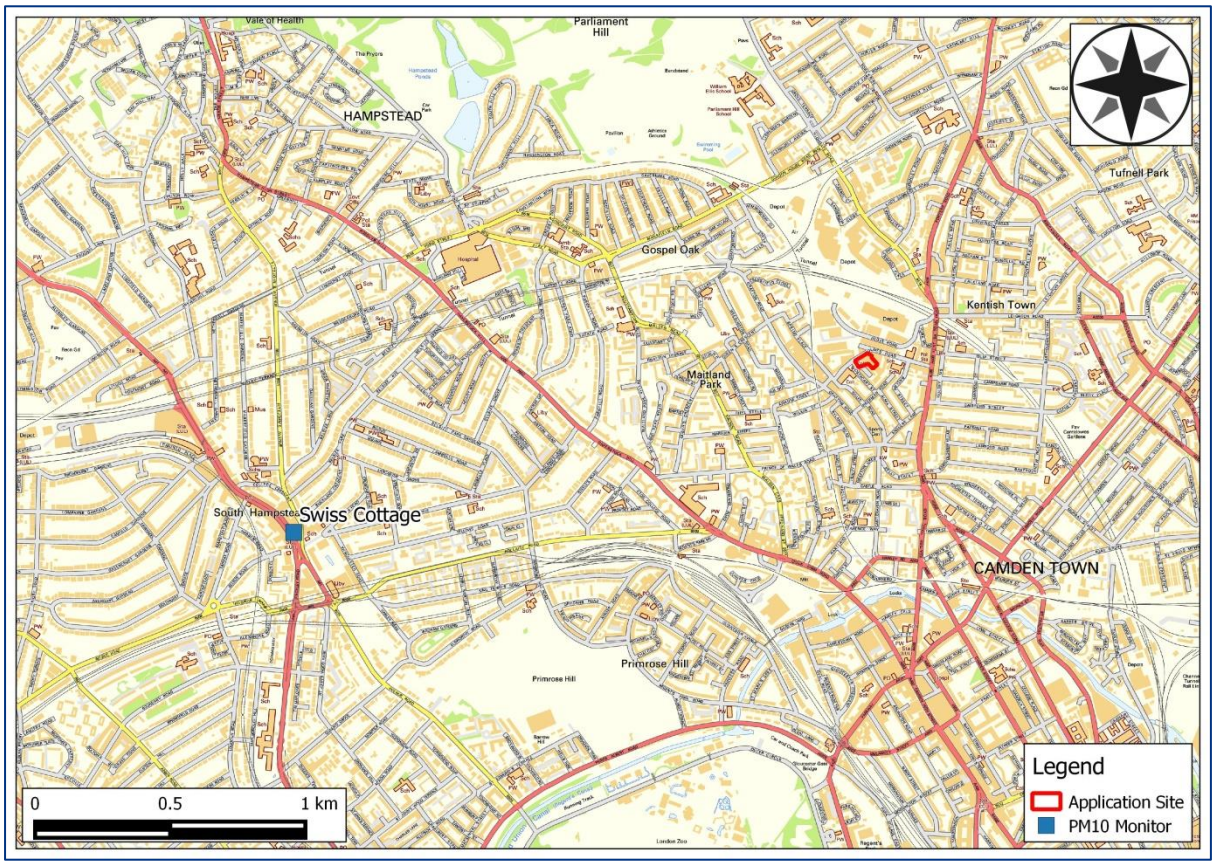

Figure 2: Camden Council's Swiss Cottage PM_{10} Monitoring Site
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Background Concentrations

3.2.4 The estimated annual mean background concentration of PM_{10} at the construction site, taken from background pollutant concentration maps published by Defra (Defra, 2017), are shown in **Table 3**. The estimated background concentration is well below the annual mean objective.

Table 3: Estimated Annual Mean Background Concentrations in 2017 (µg/m^3)

Grid	PM_{10}
528500,185500	18.8
Objective	**40**

3.3. Dust Sources and Pathways

Potential Dust Sources

3.3.1 Dust emissions may arise from the following activities:

- The demolition of buildings;
- The excavation works to the lower basement level and trenches for sheet piling;

- The loading of waste materials being removed from the site and the unloading of materials being delivered to the site;
- Stockpiles of materials;
- The movement of earth during remodelling and landscaping;
- Resuspension of dust as vehicles move around the site; and
- Vehicles tracking dust off the site on their wheels.

3.3.2 The demolition works will last approximately five weeks, with the construction phase expected to be completed within 20 months. Full details of the programme of works are available in the Construction Management Plan.

3.3.3 The standard working hours for all construction activity will be from 08:00 to 18:00, Monday to Friday, and 08:00 to 13:00 on Saturdays. No continuous 24-hour activities are envisaged and there will be no Sunday or Bank Holiday working, unless otherwise agreed with Camden Council in advance and the local neighbourhood notified.

3.3.4 In order to minimise the impact of the construction on the surrounding highway network, the delivery of construction materials and removal of excavation materials will be limited to between the hours of 09:30-15:00 Monday to Friday and 08:00-13:00 on Saturdays during school term time.

3.3.5 During school holidays, it is proposed that construction vehicle movements take place between 09:30-16:30 Monday to Friday with deliveries permitted to take place between 08:00-18:00 during certain phases/tasks e.g. concrete pours.

3.3.6 The likely magnitude of the dust emissions during each phase of construction are considered in the Risk Assessment (see **Section 3.4**).

Pathways

3.3.7 The transport of fugitive dust in the air is dependent on the prevailing meteorological conditions. Receptors downwind of the dust emissions source, with regard to the prevailing wind, will be exposed to dust more frequently than those located upwind. The 10 year average wind rose from the Heathrow meteorological station (**Figure 3**) and the data in **Table 4** show that the prevailing wind direction is from the southwest through to the west.

3.3.8 There is a risk that dust will be entrained from the ground even when no dust generating activities are taking place. Wind speeds greater than 3 m/s are considered strong enough to initiate the suspension of dust from the ground, and the risk is increased on dry days, i.e. when <0.2 mm of rainfall are recorded over a 24 hour period. The prevailing wind data in **Table 4** show that, for approximately 32% of the time, wind speeds are likely to be below 3 m/s, when dust is unlikely to become suspended in the air.

Table 4: 10 Year Average Wind Direction Heathrow (2005 to 2014)

Direction	Sectors (° From North)	Frequency (%)	Frequency >3 m/s (%)
N	340-20	10.1	5.2
NE	30-60	11.3	6.8
E	70-110	7.6	4.9
SE	120-150	5.5	3.8
S	160-200	14.1	11.9
SW	210-240	19.4	16.8
W	250-290	20.5	14.8
NW	300-330	9.0	4.0
Calms (<0.5 m/s)	-	2.6	-
Total	**-**	**100**	**68**

3.3.9 Analysis of average rainfall data for the area shows that, over the 30 year period from 1981 to 2010, an average of 150-160 days will be wet days, i.e. rainfall will be greater than 0.2 mm (Met Office, 2015). Therefore, for approximately 42% of the time, daily rainfall will be greater than 0.2 mm, when there will be natural dust suppression.

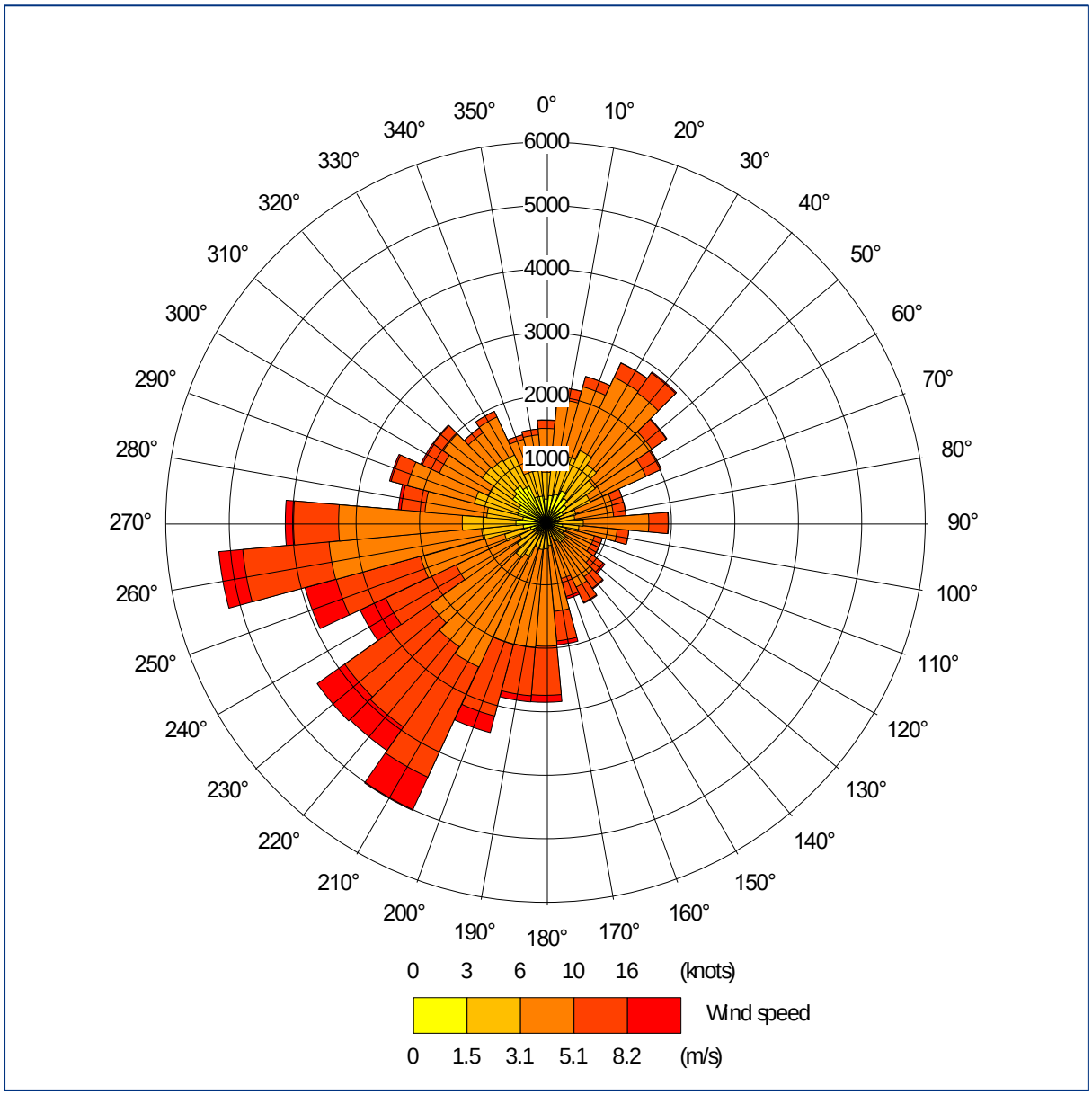

Figure 3: 10 Year Average Wind Rose Heathrow (2005 to 2014)

3.4. Dust Risk Assessment

Methodology

3.4.1 A construction dust risk assessment has been undertaken following the guidance in the London Plan SPG on The Control of Dust and Emissions During Construction and Demolition (GLA, 2014), which utilises the methodology in the Institute of Air Quality Management (IAQM) Guidance on the Assessment of Dust from Demolition and Construction (IAQM, 2014).

3.4.2 The guidance divides activities on construction sites into four main types: demolition, earthworks, construction and trackout. The methodology is based on a sequence of steps. Step 1 screens the requirement for more detailed assessment; if

there are no receptors within 50 m of the site boundary, or within 50 m of roads used by construction vehicles, then there is no need for further assessment. Step 2 assesses the risk of dust impacts from each of the four activities, considering the scale and magnitude of the works (Step 2A), and the sensitivity of the area (Step 2B). Site-specific mitigation for each of the four activities is then determined based on a dust risk category defined at Step 2C. **Appendix A1** sets out the construction dust assessment methodology in more detail.

Screening

3.4.3 There are human receptors within 50 m of the construction site to the north, east, south and west. There are also receptors within 50 m of the route used by construction vehicles on the public highway, up to 500 m from the site entrance. Therefore, further assessment of the construction phase impacts is necessary. There are no ecological receptors within 50 m of the construction site, and the effects on ecology will not be considered further.

Risk of Dust Impacts

Potential Dust Emission Magnitude

3.4.4 Buildings with a total volume of less than 20,000 m^3 and less than 10 m high will need to be demolished. These buildings have a varied construction, including timber and steel; however there are also potentially dusty materials, such as brick and concrete. Full details of the demolition works are included in the Demolition Management Plan and Method Statement (Embassy Demolition Contractors Ltd, 2016; Embassy Demolition Contractors Ltd, 2017). Given the low volume and height of the buildings to be demolished and based on the example definitions in **Table A1** in **Appendix A1**, the dust emission class for demolition is considered to be small.

3.4.5 Earthworks will take place across most of the construction site during remodelling and landscaping works, and the excavation of the basement. The total area of earthworks will be approximately 2,400 m^2. Tracked excavators will be used; however, there will be no more than 5 vehicles active at any one time. An earth access ramp will be formed as the work to dig the basement proceeds, and excavated material will be transported up the ramp and loaded onto 32 ton gross vehicles for removal. Full details of vehicle movements to and from the site are included in the Construction Traffic Management Plan (AECOM, 2017). Data from the UK Soil Observatory (NERC, 2017) have been used to determine that the soil at the site is in the medium to light (silty) to heavy soil group with a clay to silt soil texture, and may be prone to suspension when dry: however, the excavated material will be inherently wet, minimising dust emissions. Given the small size of the site, and based on the example definitions in **Table A1** in **Appendix A1**, the dust emission class for earthworks is considered to be small.

3.4.6 The new building, including the basement, will have a total volume of approximately 45,000 m^3. The construction will be undertaken using methods that will minimise the risk of dust emissions. Sheet piling will be installed around the perimeter of the site using a Kowan Still Worker, which utilises hydraulic pressure to press the piling into position, with no hammering. Continuous flight auger (CFA) piling will also be

used, with an excavator used to remove the spoil. Water jetting will be used during the piling processes, minimising the risk of dust emissions. Steel reinforced concrete will be used to form the underpinning, basement perimeter walls and slab, which will utilise ready mixed concrete poured onto steel cage. No mixing of concrete will occur on-site. The building will be constructed using a steel framework and a pre-fabricated pod system. The living areas will be pre-constructed off-site, delivered using articulated lorries and lifted into position by mobile crane, as per the construction sequence. As each pod is installed, the pod connections will be welded vertically and horizontally in sequence with the adjoining pod below and beside. This method of construction will mean that there will be very little dust generating activity at the site, and no dusty materials used. The size of the construction would usually be considered to be of a medium scale; however, given the low potential for dust release due to the construction method, the dust emission class for construction is considered to be small, using the example definitions in **Table A1** in **Appendix A1**.

3.4.7 The maximum number of daily outward heavy duty vehicle (HDV) movements from the application site during the construction phase has been estimated at 25 during the soil removal phase, which would last for around 15 weeks. Therefore, based on the example definitions in **Table A1** in **Appendix A1**, the dust emission class for trackout is considered to be medium.

3.4.8 A summary of the likely dust emission magnitudes is shown in **Table 5**.

Table 5: Likely Dust Emission Magnitudes

Source	Dust Emission Magnitude
Demolition	Small
Earthworks	Small
Construction	Small
Trackout	Medium

Sensitivity of the Area

3.4.9 The sensitivity of the area depends on the specific sensitivities of local receptors, the proximity and number of receptors, local PM_{10} background concentrations and other site specific factors, e.g. natural screening by trees.

Sensitivity of the Area to Dust Soiling

3.4.10 Residential properties are considered to be 'high' sensitivity receptors to dust soiling (see **Table A2** in **Appendix A1**).

3.4.11 There are residential buildings within 20 m of the construction site, to the north, south, east and west. These buildings are apartment blocks, and there are likely to be more than 100 dwellings located within 20 m of the construction site. Parts of the College Français Bilingue de Londres are also located within 20 m of the construction site. With reference to **Table A5** in **Appendix A1**, the area is thus considered to be of high sensitivity to dust soiling.

3.4.12 **Table 5** shows that the dust emission magnitude for trackout is medium; therefore there is a risk of material being tracked up to 200 m from the site exit. Site traffic will leave the site onto Cathcart Street, and then Holmes Road. There are over 100 residential dwellings within within 50 m of the roads along which material could be tracked. With reference to **Table A5** in **Appendix A1**, the area is thus considered to be of high sensitivity to dust soiling from trackout.

Sensitivity of the Area to the Health Effects of PM_{10}

3.4.13 There are likely to be more than 100 receptors considered to be 'high' sensitivity receptors to the health effects of PM_{10}, including residential properties and the school are (see **Table A3** in **Appendix A1**), within 20 m of construction activities.

3.4.14 The construction site is located in a residential area, away from any significant PM_{10} emissions sources (i.e. road traffic), and air quality at receptors near the site is likely to be close to the annual mean background level of 18.8 µg/m^3 (see **Section 3.2**).

3.4.15 With reference to **Table A6** in **Appendix A1**, the area is thus described to be of medium sensitivity to the health effects of PM_{10} from the site.

3.4.16 Holmes Road is not included in the London Atmospheric Emissions Inventory, and is thus likely to be relatively lightly trafficked, and PM_{10} concentrations are likely to remain close to background levels. However, there are likely to be over 100 sensitive receptors within 20 m of roads within 200 m of the construction site, and with reference to **Table A6** in **Appendix A1**, the area is thus described to be of medium sensitivity to the health effects of PM_{10} from trackout.

3.4.17 A summary of the sensitivity of the area to the effects of the construction works is shown in **Table 6**.

Table 6: Summary of the Area Sensitivity

Potential Effect	Sensitivity of the Area	
	On-site Works	**Trackout**
Dust Soiling	High	High
Health	Medium	Medium

Risk of Impact and Significance

3.4.18 The dust emission magnitudes in **Table 5** have been combined with the area sensitivities in **Table 6** and a risk category has been assigned to each construction activity using the matrix in **Table A8** in **Appendix A1**. The resultant risk categories, shown in **Table 7**, have then been used to determine the appropriate level of mitigation necessary.

Table 7: Summary of the Risk of Impacts Without Mitigation

Construction Activity	Dust Soiling	Health
Demolition	Medium	Low
Earthworks	Low	Low
Construction	Low	Low
Trackout	Medium	Low

4 Air Quality and Dust Management Plan

4.1. Mitigation

4.1.1 Overall, the construction site has been identified as a low-medium risk site for dust soiling and a low risk site for health effects, as set out in **Table 7**. The dust risk categories have been used, along with the professional judgement of the consultant, to determine the appropriate level of mitigation at the site. The professional experience of the consultant preparing the report is set out in **Appendix A2**.

4.1.2 The mitigation measures, taken from the London Plan SPG on The Control of Dust and Emissions During Construction and Demolition (GLA, 2014), are described below.

Site Management

- Develop and implement a stakeholder communications plan that includes community engagement before work commences on site;
- Develop a dust management plan;
- Display the name and contact details of person(s) accountable for air quality pollutant 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 a 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 available to 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; and
- 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 in the log book.

Preparing and Maintaining the Site

- Plan the site layout: machinery and dust-causing activities should be located away from receptors;
- Erect solid screens or barriers around dust activities or the site boundary that are, at least, as high as any stockpiles on site;
- Fully enclose site or specific operations where there is a high potential for dust production and the site is active for an extensive period;
- 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; and
- Carry out regular dust soiling checks of buildings within 100 m of site boundary and cleaning to be provided if necessary.

Operating Vehicle/Machinery and Sustainable Travel

- Ensure all on-road vehicles comply with the requirements of the London Low Emission Zone;
- Ensure all non-road mobile machinery (NRMM) comply with the standards set within the London Plan SPG on The Control of Dust and Emissions During Construction and Demolition;
- Ensure all vehicles switch off their engines when stationary – no idling vehicles;
- Avoid the use of diesel- or petrol-powered generators and use mains electricity or battery-powered equipment where possible;
- Produce a Construction Logistics Plan to manage the sustainable delivery of goods and materials; and
- Implement a Travel Plan that supports and encourages sustainable travel (public transport, cycling, walking, and car-sharing).

Operations

- Only use cutting, grinding or sawing equipment fitted or in conjunction with suitable dust suppression techniques such as water sprays or local extraction, e.g. suitable local exhaust ventilation systems;
- Ensure an adequate water supply on the site for effective dust/particulate matter mitigation (using recycled water where possible);
- Use enclosed chutes, 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; and
- 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

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

Measures Specific to Demolition

- Soft strip inside buildings before demolition (retaining walls and windows in the rest of the building where possible, to provide a screen against dust);
- Ensure water suppression is used during demolition operations;
- Avoid explosive blasting, using appropriate manual or mechanical alternatives; and
- Bag and remove any biological debris or damp down such material before demolition.

Measures Specific to Earthworks

- Re-vegetate earthworks and exposed areas/soil stockpiles to stabilise surfaces;
- Use Hessian, mulches or tackifiers where it is not possible to re-vegetate or cover with topsoil; and

- Only remove secure covers in small areas during work and not all at once.

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;
- 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; and
- For smaller supplies of fine powder materials ensure bags are sealed after use and stored appropriately to prevent dust.

Measures Specific to Trackout

- Regularly use a water-assisted dust sweeper on the access and local roads, as necessary, to remove 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;
- Install hard surfaced haul routes, which are regularly damped down with fixed or mobile sprinkler systems and regularly cleaned;
- Inspect haul routes for integrity and instigate necessary repairs to the surface as soon as reasonably practicable;
- Implement a wheel washing system (with rumble grids to dislodge accumulated dust and mud prior to leaving the site where reasonably practicable);
- Ensure there is an adequate area of hard surfaced road between the wheel wash facility and the site exit, wherever site size and layout permits;
- Access gates to be located at least 10 m from receptors where possible; and
- Apply dust suppressants to locations where a large volume of vehicles enter and exit the construction site.

4.2. Non-Road Mobile Machinery (NRMM)

4.2.1 All NRMM of net power between 37kW and 560 kW used at the construction site will comply with Stage IIIA of EU Directive 97/68/EC (as amended), unless it can be demonstrated that the machinery is not available or that comprehensive retrofit to meet emission standards is not feasible. Where the use of compliant NRMM is not possible, the local planning authority will be consulted and the least polluting alternative will be used where an exemption is possible.

4.2.2 An inventory of all NRMM will be kept on-site stating the emission limits for all equipment. The Site Construction Manager will also sign up for the GLA's NRMM database at https://nrmm.london/user-nrmm/register and maintain an online inventory of NRMM at the site.

4.3. Roles and Responsibilities

4.3.1 Designated Contractors Ltd is committed to the effective management of dust emissions from the construction site. Designated Contractors Ltd conducts its operations within its internal Quality and Environmental Management System. The Quality and Environmental System includes documents that set out the roles and responsibilities of Designated Contractors Ltd management, including those responsible for identifying environmental risks at the construction site, and for ensuring that relevant employees and contractors are aware of these risks.

4.3.2 The day-to-day operations at the site will be the responsibility of the Site Construction Manager (Denis Enright). All operational staff member are responsible for minimising any dust emissions from the site. When abnormal dust emissions are observed, operators are instructed to report this to the Site Construction Manager without delay. It is the responsibility of the Site Construction Manager to organise action to mitigate emissions of fugitive dust.

4.3.3 Community liaison throughout the site works will be undertaken by Simon Hikmet (Designated Contractors Ltd).

4.4. Training and Competence

4.4.1 All operational staff at the construction site will be trained in their responsibilities with regard to dust control at the site. Management will maintain a statement of training requirement for each operational position, and a record will be kept detailing the training received by each operator.

4.5. Monitoring

Dust Monitoring

4.5.1 All site personnel will be responsible for reporting dust problems to the Site Construction Manager immediately, on an on-going basis.

4.5.2 A twice-daily visual inspection of the site will be carried out by the Site Construction Manager, or an appropriately trained operator. The inspection will consist of a walk around entire perimeter with observations made of any dust emissions detected. Particular attention will be paid to any areas where there is a greater risk of dust emissions. If significant dust is identified beyond the site boundary, a Dust Event Form should be completed (an example of which is provided in **Appendix A3**) and immediate investigation/remedial action will be taken, as outlined in **Section 4.6**. The Site Construction Manager will review Dust Event Forms regularly to ensure that any necessary actions have been implemented, and to identify problem areas where more may need to be done to mitigate against further dust emissions.

4.5.3 During adverse meteorological conditions, additional inspections shall be carried out downwind of any dust generating activities.

4.5.4 The local authority shall be informed if dust emissions are likely to have an effect on the local community.

Weather Monitoring

4.5.5 A meteorological station will be installed at the site to record real-time wind speed and direction data. The data will be monitored throughout the day by the Site Construction Manager in order to alert staff to potential adverse conditions that may trigger the requirement for the additional mitigation measures outlined in **Section 4.6**. Meteorological conditions at time of any significant dust emissions beyond the site boundary will be recorded in the Dust Event Form.

4.6. Trigger Levels, Risk Factors and Corrective Action

Trigger Levels

Dust

4.6.1 A daily inspection of the site will be carried out by the Site Construction Manager, or an appropriately trained operator, to make observations on the meteorological conditions and dust emissions.

4.6.2 In the event that the following conditions are experienced on site, additional mitigation measures will be employed:

- Wind speeds of above 9 m/s, i.e. a fresh breeze (9-11 m/s); and
- Observations of dust extending beyond the site boundary due to construction site operations.

4.6.3 The additional measures will include:

- Immediate identification of the source of the dust;
- The liberal use of water suppression; and
- Covering or sheeting sources of unacceptable dust emissions.

4.6.4 In the event that unacceptable dust emissions continue, despite the additional mitigation measures, consideration should be given to modifying site operations, in liaison with the local authority, and temporarily suspending site operations until the issue can be resolved.

4.6.5 The following risk factors have also been identified as occurrences that may arise that will need contingency action in order to prevent dust emissions.

Equipment Failure

4.6.6 In the event of a failure of the dust control mechanism on any tools or equipment, water suppression will be utilised where appropriate, or the use of the tools/equipment will cease until the dust control mechanism has been repaired.

4.6.7 In the event of disruption to the water supply during dry weather, all dust generating activities will cease until the water supply has been restored.

Adverse Weather

4.6.8 During extreme weather conditions, such as long periods of dry weather and/or high wind speeds, there is a risk that dust may be entrained and dispersed over a greater distance from the construction site.

4.6.9 Water suppression will be used liberally in order to prevent dust emissions beyond the site boundary.

4.6.10 Short-term weather forecasts should be used to plan future site operations, and hard standing and the haul road should be wetted before winds blow towards sensitive receptors to prevent dust annoyance.

4.7. Record Keeping and Auditing

Complaints Log

4.7.1 Should a complaint be made directly to the site, a Site Dust Complaint Form will be completed (an example of which is provided in **Appendix A4**), and the Site Construction Manager informed. The dust emission source will be investigated immediately and remedial action taken. The Site Construction Manager will determine appropriate actions to prevent further occurrences.

4.7.2 Any complaints received through the Designated Contractors Ltd customer service team, or through the local authority, will be logged and reviewed in line with Designated Contractors Ltd procedures.

4.7.3 The Site Construction Manager will try to establish what on-site activity was going on at time the complaint was made, and review the meteorological conditions at the time of the complaint. The Site Construction Manager will then determine appropriate actions to prevent further occurrences.

4.7.4 Records of complaints and investigations will be stored by the Site Construction Manager, and made available to the local authority to examine on request.

Communications

4.7.5 Following investigation of the complaint, feedback will be provided to the complainant outlining the findings of the investigation, and the remedial actions taken, as well as apologising and explaining the commitment to prevent further occurrences. A record of the feedback given will be retained.

4.7.6 Camden Council will be informed of any complaints received relating to operations at the construction site.

AQDMP Audit

4.7.7 The Site Construction Manager will review the AQDMP once every three months, in light of any complaints or issues that have been identified. The following issues will be considered during the review:

- Effectiveness of mitigation measures employed;
- Additional mitigation measures implemented within the previous 3 months;
- Complaints received in relation to dust impacts at offsite receptors;

- Review of any dust events recorded within the previous 3 months;
- Review of the effectiveness of the visual monitoring scheme; and
- Review of the effectiveness of personnel training on dust awareness.

4.7.8 Should any control measures be shown to be failing, or should a need for further control measures be identified, new controls will be agreed and implemented in an updated AQDMP.

5 References

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6 Glossary

AQMA	Air Quality Management Area
Defra	Department for Environment, Food and Rural Affairs
Exceedence	A period of time when the concentration of a pollutant is greater than the appropriate air quality objective. This applies to specified locations with relevant exposure
HDV	Heavy Duty Vehicles (> 3.5 tonnes)
IAQM	Institute of Air Quality Management
LAQM	Local Air Quality Management
µg/m^3	Microgrammes per cubic metre
Objectives	A nationally defined set of health-based concentrations for nine pollutants, seven of which are incorporated in Regulations, setting out the extent to which the standards should be achieved by a defined date. There are also vegetation-based objectives for sulphur dioxide and nitrogen oxides
PM_{10}	Small airborne particles, more specifically particulate matter less than 10 micrometres in aerodynamic diameter
Standards	A nationally defined set of concentrations for nine pollutants below which health effects do not occur or are minimal

7 Appendices

A1 Air Quality and Dust Risk Assessment Methodology

A1.1. Introduction

A1.1.1 The London Plan SPG on the Control of Dust and Emissions During Construction and Demolition (GLA, 2014) divides activities on construction sites into four types to reflect their different potential impacts:

- demolition;
- earthworks;
- construction; and
- trackout.

A1.1.2 A series of steps then consider the potential impact due to:

- the risk of health effects from an increase in exposure to PM_{10} and $PM_{2.5}$;
- annoyance due to the deposition of dust;
- harm to the natural environment.

A1.2. Step 1: Screen the Need for a Detailed Assessment

A1.2.1 An assessment is required where there is a human receptor within 50 m of the site boundary, and/or within 50 m of the route(s) used by construction vehicles on the public highway, up to 500 m from the site entrance(s), or where there is an ecological receptor within 50 m of the site boundary, and/or within 50 m of the route(s) used by construction vehicles on the public highway, up to 500 m from the site entrance(s).

A1.2.2 Where the need for a more detailed assessment is screened out, it can be concluded that the level of risk is negligible, and any effects will be not significant.

A1.3. Step 2: Assess the Risk of Dust Impacts

A1.3.1 A site is allocated to a risk category based on two factors:

- the scale and nature of the works, which determines the potential dust emissions magnitude (Step 2A); and
- the sensitivity of the area to dust impacts (Step 2B).

A1.3.2 These two factors are combined at Step 2C to determine the risk of dust impacts from each type of construction activity, with no mitigation applied.

Step 2A: Potential Dust Emissions Magnitude

A1.3.3 The dust emission magnitude is classified as small, medium or large. Examples of how the potential dust emission magnitude for each activity can be defined are shown in **Table A1**.

Table A1: Examples of How the Dust Emission Magnitude can be Defined

Class	Example
Demolition	
Large	Total building volume >50,000 m^3, potentially dusty construction material (e.g. concrete), on site crushing and screening, demolition activities >20 m above ground level.
Medium	Total building volume 20,000 m^3 – 50,000 m^3, potentially dusty construction material, demolition activities 10-20 m above ground level.
Small	Total building volume <20,000 m^3, construction material with low potential for dust release (e.g. metal cladding or timber), demolition activities <10 m above ground, demolition during wetter months.
Earthworks	
Large	Total site area >10,000 m^2, potentially dusty soil type (e.g. clay, which will be prone to suspension when dry to due small particle size), >10 heavy earth moving vehicles active at any one time, formation of bunds >8 m in height, total material moved >100,000 tonnes.
Medium	Total site area 2,500 m^2 – 10,000 m^2, moderately dusty soil type (e.g. silt), 5-10 heavy earth moving vehicles active at any one time, formation of bunds 4 m – 8 m in height, total material moved 20,000 tonnes – 100,000 tonnes.
Small	Total site area <2,500 m^2, soil type with large grain size (e.g. sand), <5 heavy earth moving vehicles active at any one time, formation of bunds <4 m in height, total material moved <20,000 tonnes, earthworks during wetter months.
Construction	
Large	Total building volume >100,000 m^3, piling, on site concrete batching; sandblasting.
Medium	Total building volume 25,000 m^3 – 100,000 m^3, potentially dusty construction material (e.g. concrete), on site concrete batching.
Small	Total building volume <25,000 m^3, construction material with low potential for dust release (e.g. metal cladding or timber).
Trackout [a]	
Large	>50 HDV (>3.5t) outward movements in any one day, potentially dusty surface material (e.g. high clay content), unpaved road length >100 m.
Medium	10-50 HDV (>3.5t) outward movements in any one day, moderately dusty surface material (e.g. high clay content), unpaved road length 50 m – 100 m.
Small	<10 HDV (>3.5t) outward movements in any one day, surface material with low potential for dust release, unpaved road length <50 m.

a These numbers are for vehicles that leave the site after moving over unpaved ground.

Step 2B: Define the Sensitivity of the Area

A1.3.4 The sensitivity of the area takes account of:

- the specific sensitivities of receptors in the area;
- the proximity and number of those receptors;
- in the case of PM_{10}, the local background concentrations; and
- site-specific factors, such as whether there are natural shelters, such as trees, to reduce the risk of wind-blown dust.

A1.3.5 The specific sensitivities of different types of receptor to dust soiling and PM_{10} are shown **Table A2**, **Table A3** and **Table A4**. Professional judgement should be used to identify where on the spectrum of sensitivity a receptor lies, taking account of specific circumstances, i.e. the first occupants of residential units on a phased development may be expected to be less sensitive to dust soiling.

A1.3.6 The sensitivity of the area is then determined from the specific sensitivities of the receptors using the matrices set out in **Table A5**, **Table A6** and **Table A7**. Professional judgement should be used to determine the final sensitivity of the area, taking account of:

- any history of dust generating activities in the area:
- the likelihood of concurrent dust generating activity on nearby sites;
- any pre-existing screening between source and receptors;
- any conclusions drawn from analysing local meteorological data which accurately represents the area; and if relevant, the season during which the works will take place;
- any conclusions drawn from local topography;
- duration of the potential impact, as a receptor may become more sensitive over time; and
- any other known specific receptor sensitivities.

Step 2C: Define the Risk of Impacts

A1.3.7 The dust emission magnitude determined at Step 2A is combined with the sensitivity of the area determined at Step 2B to determine the risk of impacts with no mitigation applied. The level of risk for each activity is determined using the matrix in **Table A8**.

A1.4. Determine Site Specific Mitigation

A1.4.1 The dust risk category determined at Step 2C has been used, along with the professional judgement of the consultant, to determine the appropriate level of mitigation at the site. The highly recommended and desirable mitigation measures set out in the London Plan SPG form the basis of the mitigation set out in **Section 4**.

A1.4.2 The mitigation measures will inform an Air Quality and Dust Management Plan (AQDMP), which will be submitted to the local authority for approval prior to works commencing on-site.

A1.4.3 The London Plan SPG is clear that the primary aim of the risk assessment is to identify site specific mitigation that, once adopted, will ensure that there will be no significant effect.

Table A2: Sensitivities of People to Dust Soiling

Class	Principles	Examples
High	Users can reasonably expect enjoyment of a high level of amenity; or the appearance, aesthetics or value of their property would be diminished by soiling; and the people or property would reasonably be expected a to be present continuously, or at least regularly for extended periods, as part of the normal pattern of use of the land.	Dwellings, museum and other culturally important collections, medium and long term car parks and car showrooms.
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; or the appearance, aesthetics or value of their property could be diminished by soiling; or 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.	Parks and places of work.
Low	The enjoyment of amenity would not reasonably be expected; or property would not reasonably be expected to be diminished in appearance, aesthetics or value by soiling; or there is transient exposure, where the people or property would reasonably be expected to be present only for limited periods of time as part of the normal pattern of use of the land.	Playing fields, farmland (unless commercially-sensitive horticultural), footpaths, short term car parks and roads.

Table A3: Sensitivities of People to PM_{10}

Class	Principles	Examples
High	Locations where members of the public may be exposed for eight hours or more in a day.	Residential properties, hospitals, schools and residential care homes.
Medium	Locations where the people exposed are workers, and where individuals may be exposed for eight hours or more in a day.	Office and shop workers, but will generally not include workers occupationally exposed to PM_{10}
Low	Locations where human exposure is transient.	Public footpaths, playing fields, parks and shopping streets.

Table A4: Sensitivities of Receptors to Ecological Effects

Class	Principles	Examples
High	Locations with an international or national designation and the designated features may be affected by dust soiling; or locations where there is a community of a particularly dust sensitive species.	Special Areas of Conservation (SAC) with dust sensitive features.
Medium	Locations where there is a particularly important plant species, where its dust sensitivity is uncertain or unknown; or locations with a national designation where the features may be affected by dust deposition.	Sites of Special Scientific Interest (SSSI) with dust sensitive features.
Low	Locations with a local designation where the features may be affected by dust deposition.	Local Nature Reserves with dust sensitive features.

Table A5: Sensitivity of the Area to Dust Soiling Effects on People and Property[1]

Receptor Sensitivity	Number of Receptors	Distance 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 A6: Sensitivity of the Area to Human Health Effects[1]

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

[1] For demolition, earthworks and construction, the distances are measured from the dust source, or the application site boundary. For trackout, the distances are measured from the side of the roads used by construction traffic. Without site-specific mitigation, trackout may occur from roads 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 impact declines with distance from the site, and it is only necessary to consider trackout impacts up to 50 m from the edge or the road.

Table A7: Sensitivity of the Area to Ecological Effects[1]

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

Table A8: Defining the Risk of Dust Impacts

Sensitivity of the Area	Dust Emission Magnitude		
	Large	Medium	Small
Demolition			
High	High Risk	Medium Risk	Medium Risk
Medium	High Risk	Medium Risk	Low Risk
Low	Low Risk	Low Risk	Negligible
Earthworks			
High	High Risk	Medium Risk	Low Risk
Medium	Medium Risk	Medium Risk	Low Risk
Low	Low Risk	Low Risk	Negligible
Construction			
High	High Risk	Medium Risk	Low Risk
Medium	Medium Risk	Medium Risk	Low Risk
Low	Low Risk	Low Risk	Negligible
Trackout			
High	High Risk	Medium Risk	Low Risk
Medium	Medium Risk	Low Risk	Negligible
Low	Low Risk	Low Risk	Negligible

A2 Professional Experience

Bob Thomas, BSc (Hons) PgDip MSc MIEnvSc MIAQM CSci

Bob Thomas is a Director at AQA, with over nine years' experience in the field of air quality management and assessment. He has carried out air quality assessments for a wide range of developments, including residential, commercial, industrial, minerals and waste developments. He has been responsible for air quality projects that include ambient air quality monitoring of nitrogen dioxide, dust and PM_{10}, the assessment of nuisance odours and dust, and the preparation of Review and Assessment reports for local authorities. He has extensive dispersion modelling experience for road traffic, energy centre and industrial sources, and has completed many stand-alone reports and chapters for inclusion within an Environmental Statement. Bob has worked with a variety of clients to provide expert air quality services and advice, including local authorities, planners, developers, architects and process operators, and has provided expert witness services at public inquiry. He is a Chartered Scientist, a Member of the Institute of Air Quality Management and a Member of the Institution of Environmental Sciences.

A full CV for Bob Thomas is available at http://aqassessments.co.uk/about

A3 Dust Event Form

Dust Event Form	
Name of author	
Description of event [a]	
Time / Date	
Activities taking place at time of event	
Dust mitigation employed to control event	
Summary of weather conditions at time of event [b]	
Details of corrective actions to prevent repeat of event	
Notes	

[a] e.g. complaint registered (name and address) or visible dust crossing site boundary during visual assessment.

[b] wind speed, wind direction, dry/wet, prolonged spell of dry weather etc.

A4 Site Dust Complaint Form

Site Dust Complaint Form			
Site		**Operator**	
Complaint Ref.		**Time and Date**	
Complainant Details			
Name			
Address			
Telephone			
Complaint Details			
Time, date and duration of offending dust			
Location of dust			
Complainants description of dust			
Intensity of dust (light, moderate, strong, persistent)			
Other comments about dust			
Weather conditions at time of dust			
For Completion by Site Manager			
Have any other complaints been made relating to this location			
Have any other complaints been made relating to this dust episode			
On-site activities at time the dust occurred			
Remedial action taken			
Corrective action planned			
Corrective action completed			
Completed by		**Date**	