Report for:

Space Free Ltd

138 – 140 Highgate Road, Camden

Construction Dust Management Plan

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1. INTRODUCTION

ACCON UK Limited (ACCON) have been commissioned by Space Free Ltd to carry out a Construction Dust Management Plan to discharge planning condition 29 (a-c), for planning application for the proposed development at 138 – 140 Highgate Road, Camden (ref: 2018/1528/P). The condition states:

> *"A dust and emissions construction impacts risk assessment for the development should be undertaken by a qualified professional, in line with guidance outlined in the GLA's Control of Dust and Emissions during Construction and Demolition Supplementary Planning Guidance.*
>
> *a. Said construction impacts risk assessment should be submitted for approval by the Council at least 3 months prior to commencement, so as to permit the timely discharge of parts b) and c) if they apply;*
>
> *b. If air quality monitoring is required to be implemented on site, no development shall take place until full details of the monitors have been submitted to and approved by the local planning authority in writing. Such details shall include the location, number and specification of the monitors, including evidence of the fact that they have been installed in line with guidance outlined in the GLA's Control of Dust and Emissions during Construction and Demolition Supplementary Planning Guidance;*
>
> *c. prior to commencement, evidence should be submitted demonstrating that any required air quality monitors have been in place for at least 3 months prior to the proposed implementation date. The monitors shall be retained and maintained on site for the duration of the development in accordance with the details thus approved."*

The proposed development includes the demolition of petrol station and MOT centre at 138-140 Highgate Road and erection of a three-storey terrace building to provide 6 x 4 bedroomed dwelling houses with gardens with associated landscaping.

The proposed site is located on the site of a petrol station and car mechanics workshop near to where Highgate Road meets Chetwynd Road. The proposed development is within the London Borough of Camden's Air Quality Management Area (AQMA) which has been declared for NO_2 and PM_{10}.

An assessment of the potential risks associated with the proposed demolition and construction works on site has been undertaken using information in the Greater London Authority Supplementary Planning Guidance (The Control of Dust and Emissions from Construction and Demolition: Supplementary Planning Guidance, 2014) and the Institute of Air Quality Management (Guidance on Monitoring in the Vicinity of Demolition and Construction Site v1.1, 2018 and Guidance on the Assessment of Dust from Demolition and Construction v1.1, 2016). This report also addresses any monitoring and/or mitigation measures that may be required to reduce the risk of dust nuisance occurring.

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2. DUST & PARTICULATE MATTER FROM CONSTRUCTION SITES

2.1. Introduction

There are a number of sources of dust and emissions from construction related activities that can release a range of particles:

- **Dust** - defined as all particulate matter up to 75µm in diameter (according to BS 6069-2) and comprising both suspended and deposited dust; and
- **PM_{10}** - a mass fraction of airborne particles with an aerodynamic diameter of 10 microns or less. It is comprised of *coarse* particles (2.5-10 µm in diameter), which are primarily from non-combustion sources and *fine* particles (less than 2.5 µm), which includes combustion processes or are formed in the atmosphere through the chemical reaction of primary emissions of gases.

Dust and PM_{10} emissions can arise from a number of sources. Not only do construction activities need to be considered, but also emissions from on road vehicles associated with the construction site and on-site machinery (off-road emissions) - including both static and non-road mobile machinery (NRMM).

2.2. Dust Planning Policy and Standards

There are no specific legal standards relating to the acceptability of dust, however it is generally considered that dust nuisance is unlikely to occur beyond a distance of 200m from a construction boundary. Research conducted for the Department for Environment[1] shows that this is more likely under extreme climatic conditions.

The regional development strategy applicable for the site is the London Plan (2011), which states that: *"development proposals should… promote sustainable design and construction to reduce emissions from the demolition and construction of buildings following the best practice guidance in the GLA and London Councils' "The control of dust and emissions from construction and demolition".*

The requirements of the Dust Supplementary Planning Guidance (SPG) are shown in **Section 2.2.1** below.

2.2.1. London Construction Dust Supplementary Planning Guidance

The Control of Dust and Emissions during Construction and Demolition Supplementary Planning Guidance (SPG) was published in July 2014. The guidance should be considered as a material planning consideration by London Borough Councils in their development of Local or Neighbourhood Planning Documents.

It recommends that Local Authorities therefore consider requesting that developers submit an Air Quality and Dust Risk Assessment when planning applications are received.

At post-application phase, it recommends that the developer should provide an Air Quality and Dust Risk Assessment summarising how demolition, earthworks, construction and trackout activities could cause dust soiling or impact on human health or environmentally sensitive receptors (see **Section 5.7).** The dust assessment procedure replicates that previously set out in the Institute of Air Quality Management's 2016 guidance on the Assessment of Dust from Demolition and Construction, but

[1]Arup Environmental for Department for Environment. *Environmental Effects of Dust from Surface Mineral Workings*. HMSO, 1995.

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stipulates that a higher level of mitigation would be required if the effects of background PM_{10} and construction dust combined would increase ambient PM_{10} concentrations to within 10% of the annual NAQO.

The National Air Quality Objective (NAQO) annual mean for PM_{10} is 40µg/m^3 and the 24-hour mean is 50µg/m^3, which is not to be exceeded more than 35 times a year. The background maps produced by the Department of Environment, Food and Rural Affairs (DEFRA) indicate that the ambient PM_{10} concentration within the development area during 2018 is 17.24µg/m^3. According to **Table 4.3** (replicated below) of the Dust SPG this will mean the sensitivity of the area will be medium or less, depending on the number of sensitive receptors in close proximity to the site.

TABLE 4.3 SENSITIVITY OF THE AREA TO HUMAN HEALTH IMPACTS [A,B]

Receptor Sensitivity	Annual Mean PM_{10} concentration [C]	Number of Receptors [D]	Distance from the Source (m) [E]				
			<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
	24-28 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	-	1-10	Low	Low	Low	Low	Low

[A] The sensitivity of the area should be derived for each of the four activities: demolition, construction, earthworks and trackout. See STEP 2B.

[B] Estimate the total within the stated distance (e.g. the total within 350m and not the number between 200 and 350m), noting that only the highest level of area sensitivity from the table needs to be considered. For example, if there are 7 high sensitivity receptors < 20m of the source and 95 high sensitivity receptors between 20 and 50 m, then the total of number of receptors < 50 m is 102. If the annual mean PM10 concentration is 29µg/m ^{3}, the sensitivity of the area would be high

[C] Most straightforwardly taken from the national background maps, but should also take account of local sources. The values are based on 32 µg/m ^{3} being the annual mean concentration at which an exceedence of the 24-hour objective is likely in England, Wales and Northern Ireland. In Scotland there is an annual mean objective of 18µg/m^3.

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As the background concentrations, which take account of road traffic, industrial and domestic emissions from the nearby area, are less than half of the annual mean NAQO for PM_{10}, it is not considered that the construction dust associated with the development would elevate local PM_{10} pollutant concentrations above the NAQO.

The SPG recommends that planning conditions or Section 106 agreements could be used to inform an Air Quality and Dust Management Plan which should be submitted before works commence on site. These plans should detail the following:

- *"Confirmation of* dust *and air quality emission control measures to be implemented;*
- *Confirmation of what monitoring methods are to be implemented;*
- *From 2015, confirmation that construction standards will meet [Non-Road Mobile Machinery] standards, where possible."*

During the construction phase, the developer and planning authority should monitor demolition and construction works, reviewing and implementing control measures where required.

It recommends that all developments where construction dust risks are at least 'low' should implement monitoring mechanisms such as by reviewing "occupational exposure standards to minimise worker exposure and breaches of air quality objectives that may occur outside the site boundary", and by logging and acting upon public complaints. Further recommendations are outlined for sites where the assessed risk is greater.

2.3. Impacts of Dust and PM_{10}

Dust particles can lead to eye, nose and throat irritation and can be deposited on cars, windows and property, which contribute to a loss of visual amenity. Dust particles with a diameter of less than 10µm (PM_{10}) are generally considered inhalable and are of more concern to human health as the particles can enter the lungs, causing breathing and respiratory problems. The PM_{10} size fraction is associated with a range of effects on health including respiratory and cardiovascular systems (e.g. asthma) and premature mortality. Particles can also carry adhered carcinogenic compounds into the lungs. The most vulnerable people are the elderly, the very young and those with existing heart and lung conditions.

The detrimental health impacts of PM_{10} are not confined to the immediate environs of a site. These particles can travel further than coarser dust and so can potentially affect the health of people living and working in the surrounding area of the site.

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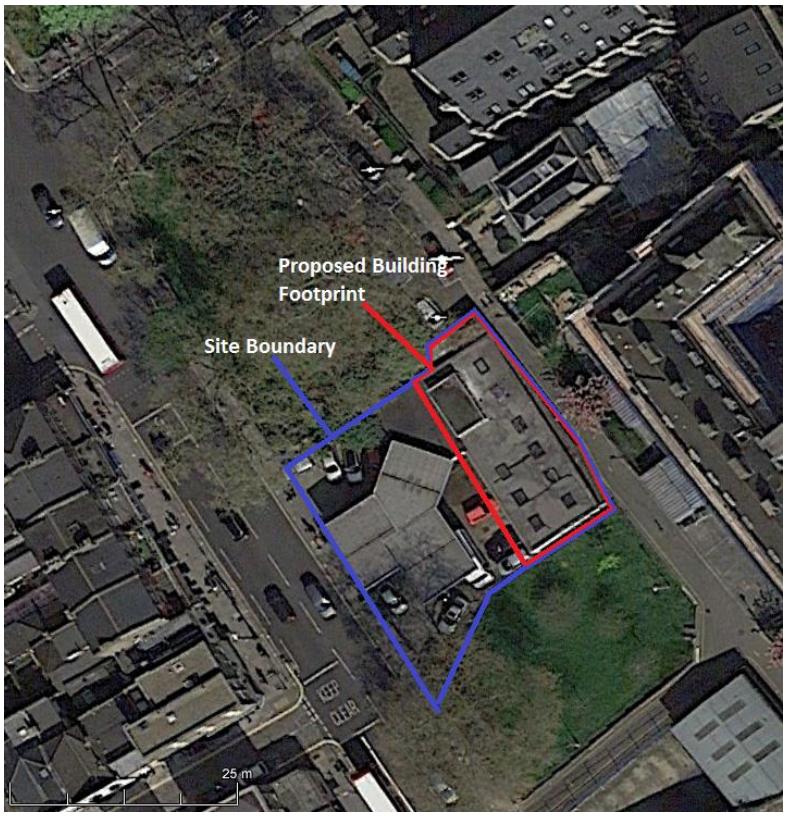
3. SITE DESCRIPTION AND BASELINE CONDITIONS

3.1. Site Description

The site is located north-east of Highgate Road and south-east of Chetwynd Road with a small lane (College Lane) running along the back. The location is detailed below in **Figure 3.1** and is currently occupied by a petrol station (where a grass verge to the front of the properties is planned) and a motor mechanics workshop (currently on the site of the proposed properties). Many of the properties in the surrounding area are residential in nature.

Figure 3.1: Location of the Site Boundary and Proposed Building Footprint



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4. RISK ASSESSMENT – METHODOLOGY

The dust risk assessment has been conducted in accordance with the "The Control of Dust and Emissions from Construction and Demolition: Supplementary Planning Guidance" (GLA, 2014), as well as guidance produced by the Institute of Air Quality Management (Guidance on the Assessment of Dust from Demolition and Construction v1.1, 2016).

During the construction phase, there will be a number of activities undertaken that have the potential to generate and/or re-suspend dust and PM_{10}/$PM_{2.5}$. At the time of assessment, the exact activities to be undertaken during construction are unknown. In order to evaluate the magnitude and extent of potential adverse impacts likely to result from the proposed development, it has been assumed that the following construction activities could be responsible for the emission of dust:

- Demolition of the petrol station and MOT centre;
- Handling, storing, stockpiling and disposing of materials, including potential spillages;
- Ground disturbance and exhaust emissions associated with the operation of site plant;
- Laying of hard surfaces and landscaping;
- Site clearance and preparation;
- Construction and fabrication processes; and
- Internal and external finishing.

The magnitude of the potential impacts of a construction site on air quality is mainly determined by its size, the range of activities undertaken across the site, the proximity of the site to sensitive receptors, the prevailing wind direction, the complexity of terrain and any barriers between the sources and receptors. A qualitative assessment of the potential impacts during construction has been undertaken using information in guidance documents produced by the Building Research Establishment[2] and the recent document produced by the Institute of Air Quality Management[3].

The dust assessment criteria are broken down into five steps, which have each been described in **Sections 4.1 to 4.4**.

- Step 1: Screen the need for a detailed assessment;
- Step 2: Assess the risk of dust impacts;
  - Step 2A – determine the scale and nature of the works;
  - Step 2B – assess the sensitivity of the area;
  - Step 2C – combine 2A and 2B to determine the risk of dust impacts;
- Step 3: Site Specific Mitigation;
- Step 4: Determine Significance of Effects; and
- Step 5: Dust Assessment Report.

[2] BRE, 2003. Control of Dust from Construction and Demolition Activities
[3] IAQM. 2016. Guidance on the Assessment of Dust from Demolition and Construction.

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According to the IAQM Guidance (2016), activities on construction sites can be divided into four types to reflect their different potential impacts, with the potential for dust emissions to be assessed only for each activity taking place:

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

The assessment methodology is to consider three separate dust effects:

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

Account is also to be taken of the distance of the receptors that may experience these effects. Receptors are generally considered to be of a medium or high sensitivity to each type of construction activity when they are situated within 200m of the site boundary. Human receptors include locations where people spend time and where property may be affected by dust. In terms of annoyance effects, this will most commonly relate to the loss of amenity due to dust deposition or visible dust plumes, often related to people making complaints, but not necessarily sufficient to be a statutory nuisance.

The wind rose provided in **Appendix 1**, identifies that the predominant wind direction in the region is from the south-west. As such, it is expected that receptors located to the north-east are more at risk of experiencing the effects of construction dust.

The sensitivity of human receptors to PM_{10} is also affected by the level of particulate matter. The ambient PM_{10} concentration of 17.24µg/m^3 in 2018 was therefore used to assist with assigning the human health impacts for each of the construction phases to the appropriate sensitivity category of low, medium or high.
The majority of dust releases are likely to occur during the typical 'working-week'. However, for some potential sources, for example exposed soil produced from earthwork activities, in the absence of dust control mitigation measures, dust generation has the potential to occur 24-hours per day over the period during which such activities take place.

4.1. Step 1: Screening

The SPG states that a detailed assessment will be required where there is a sensitive human receptor located *"within 50m of the boundary of the site; or 50m of the route(s) used by construction vehicles on the public highway, up to 500m from the site entrance(s)".* It defines human receptors as *"locations where people spend time and where property may be impacted by dust."* As the nearest human receptor location is a row of residential properties, approximately 8.5m north-east of the site, it is considered that a detailed assessment is required.

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4.2. Step 2A: Determining the Scale and Nature of the Works

The magnitude of the potential impacts of a construction site on air quality is mainly determined by its size, the range of activities undertaken across the site, proximity to sensitive receptors, prevailing wind direction, complexity of terrain and any barriers between sources and receptors.

In terms of annoyance effects, this will most commonly relate to the loss of amenity due to dust deposition or visible dust plumes, often related to people making complaints, but not necessarily sufficient to be a statutory nuisance.

According to the Dust SPG, activities on construction sites can be divided into four types to reflect their different potential impacts, with the potential for dust emissions to be assessed only for each activity taking place:

- demolition;
- earthworks (e.g. soil movement due to levelling and landscaping);
- construction; and
- trackout.

Table 4.1 identifies the activities that have the potential to produce dust and/or PM_{10} that are likely to take place at the proposed development site.

Table 4.1: Activities Taking Place on the Development Site

Phase	Site Activities
Demolition	• Demolition of the petrol station and MOT centre.
Earthworks	• Excavation to the rear of the site (north-east) to accommodate the lower ground floor of the proposed development
Construction	• Construction of six 3-storey, four-bedroom properties and the front portion of the site facing onto Highgate Road will be returned to a grassed area to match the adjacent green spaces either side of the plot
Trackout	• Movement of heavy-duty vehicles to and from site supplying equipment and materials

4.3. Step 2B: Assessing the Sensitivity of the Area

The assessment methodology considers the sensitivity of human and ecological receptors to dust generated in these three ways:

- annoyance due to soiling;
- harm to ecological receptors; and
- the risk of health effects due to a significant increase in exposure to PM_{10}.

The sensitivity of each of these receptors to each stage of these effects has been estimated. In doing so, account was taken of the distance (and therefore sensitivity) of the receptors that may experience these effects. Receptors are generally considered to be of a medium or high sensitivity to the effects of demolition, earthworks and construction when they are situated within 200m of the site boundary.

4.4. Step 2C: Assessing the Risk of Dust Impacts

The risk is then assigned based on the magnitude and sensitivity of the development, based on the categories defined in **Tables 4.2** to **4.5** below.

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Table 4.2: Risk Category from Demolition Activities

Sensitivity of the Area	Dust Emission Class		
	Large	Medium	Small
High	High Risk Site	Medium Risk Site	Medium Risk Site
Medium	High Risk Site	Medium Risk Site	Low Risk Site
Low	Medium Risk Site	Low Risk Site	Negligible

Table 4.3: Risk Category from Earthworks Activities

Sensitivity of the Area	Dust Emission Class		
	Large	Medium	Small
High	High Risk Site	Medium Risk Site	Low Risk Site
Medium	Medium Risk Site	Medium Risk Site	Low Risk Site
Low	Low Risk Site	Low Risk Site	Negligible

Table 4.4: Risk Category from Construction Activities

Sensitivity of the Area	Dust Emission Class		
	Large	Medium	Small
High	High Risk Site	Medium Risk Site	Low Risk Site
Medium	Medium Risk Site	Medium Risk Site	Low Risk Site
Low	Low Risk Site	Low Risk Site	Negligible

Table 4.5: Risk Category from Trackout

Sensitivity of the Area	Dust Emission Class		
	Large	Medium	Small
High	High Risk Site	Medium Risk Site	Low Risk Site
Medium	Medium Risk Site	Low Risk Site	Negligible
Low	Low Risk Site	Low Risk Site	Negligible

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5. RISK ASSESSMENT – RESULTS

5.1. Step 2A: Determining the Scale and Nature of the Works

The estimated magnitude of impacts is summarised in **Table 5.1** below.

Table 5.1: Magnitude of Impacts

Construction Activity	Magnitude of Impacts	Reason
Demolition	Small	Total building volume <20,000m^3, construction material with low potential for dust release (e.g. metal cladding or timber), demolition activities <10m above ground, demolition during wetter months.
Earthworks	Small	Total site area <2,500m^2, soil type with large grain size (e.g. sand), <5 heavy earth moving vehicles active at any one time, formation of bunds <4m in height, total material moved <20,000 tonnes, earthworks during wetter months
Construction	Small	Total building volume <25,000m^3, construction material with low potential for dust release (e.g. metal cladding or timber).
Trackout	Small	<10 HDV (>3.5t) outward movements in any one day, surface material with low potential for dust release, unpaved road length <50m.

5.2. Step 2B: Assessing the Sensitivity of the Impacts

The estimated sensitivity of human and ecological receptors to the dust generation activities has been summarised in **Table 5.2** below.

Table 5.2: Sensitivity of Impacts

Potential Impact	Sensitivity of Impacts	Reason
Dust soiling	High	Residences (human receptors) located within 10m north-east of site.
Human Health (PM_{10})	High	Residences (human receptors) located 10m north-east of site.
Ecological receptors	N/A	No sensitive ecological receptors within 500m of the proposed development site.

Based on these sensitivity classifications, the sensitivity has been modified to take account of local conditions and the different stages of construction (as described in **Section 5.2)**.

It is considered that human receptors are likely to demonstrate a **High** sensitivity to dust soiling effects as there are between 10 and 100 residences located within 20m of the site.

There are no sensitive ecological receptors within 500m of the site.

It is also considered that human receptors will demonstrate a **Low** sensitivity to the health effects of PM_{10} as the background monitoring is relatively low being between 19.5µg/m^3 and 20.4µg/m^3 at the closest automatic monitoring sites[4], although there are more than 10 residences within 20m of the

[4] Closest monitoring sites are in the neighbouring London Borough of Islington – IS2 Holloway Road (Roadside) and IS6 Arsenal (Urban Background)

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site, but it is reiterated that the background monitoring is between 19.5µg/m^3 and 20.4µg/m^3 at the closest automatic monitoring sites[5].

The area sensitivity to PM_{10} derived from trackout is low due to all the roads surrounding the site being paved and the small nature of the site.

5.3. Step 2C: Assessing the Risk of Dust Impacts

The estimated risk to each of the three receptor types has been described for each construction stage in **Table 5.3**. It has been assumed that no mitigation measures have been implemented for the purpose of this initial risk assessment.

Table 5.3: Summary of Risk Effects with No Mitigation

Potential Impact	Demolition	Earthworks	Construction	Trackout
Dust soiling	Medium risk	Low risk	Low risk	Low risk
Human Health (PM_{10})	Low risk	Low risk	Low risk	Low risk
Ecological receptors	N/A	N/A	N/A	N/A

[5] Closest monitoring sites are in the neighbouring London Borough of Islington – IS2 Holloway Road (Roadside) and IS6 Arsenal (Urban Background)

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6. BEST PRACTICE MITIGATION

The site has been categorised as **small**, as detailed in **Table 5.1**, therefore best practice mitigation measures should be used. The adoption of these mitigation measures will ensure that the impacts of dust generation should be limited and will be in line with the Mayor of London's SPG 8 Appendix 7 checklist.

6.1. Site Planning

- Limit the area(s) of working during construction so that vehicles are confined within an area that can be subjected to appropriate dust control;
- Erect solid barriers around the site boundary;
- Dust generating activities to be located away from sensitive receptors (where possible);
- Fully enclose site or specific operations where there is a high potential for dust generating activities;
- All site personnel will be fully trained;
- There will be a trained and responsible manager on site during working times to maintain a dust event logbook and carry out site inspections;
- There will be no runoff of mud or water from the Site;
- Stockpiles will be located as far as possible from sensitive properties and ecological receptors, taking account of the prevailing wind direction;
- Hard surface site haul roads will be maintained to minimise mud and dust build up;
- Record all dust and air quality complaints, identify cause(s), take appropriate measures to reduce emissions in a timely manner, and record the measures taken;
- Make the complaints log available to the LA, if requested; and
- Record any exceptional incidents that cause dust and/or air emissions, both on- or off-site and the action taken to resolve the situation in the logbook.

6.2. General Site Activities

- Undertake visual checks for windblown dust;
- Observation of wind speed and direction will be undertaken prior to conducting dust-generating activities to determine the potential for dust nuisance to occur. Potentially dust-generating activities will be avoided when the wind direction may carry dust into sensitive areas and dust-generating operations will be avoided during periods of high or gusty winds or by erecting barriers adjacent to sensitive receptors;
- Avoid the use of diesel- or petrol-powered generators and use mains electricity or battery powered equipment where practicable;
- Use of appropriately designed vehicles for material handling;
- Minimise dust generating activities where possible;
- Use water as a dust suppressant where applicable;
- Stockpiles will be covered, enclosed, seeded or kept sheeted;
- Smoke emissions or fumes from site plant or stored fuel will be limited;

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- On-site aggregate handling will be carried out in enclosed areas and transfer will be completed in a way that minimises the requirements to deposit materials from height; and
- If applicable, any concrete crushers/batchers will have the required permits.

6.3. Operations

- Only use cutting / grinding / sawing equipment fitted or in conjunction with suitable dust suppression techniques such as water sprays or local extraction e.g. suitable local exhaust ventilation systems;
- Ensure an adequate water supply on the site for effective dust/particulate matter suppression/mitigation, using non-potable water where possible and appropriate;
- Use enclosed chutes and conveyors and covered skips;
- Minimise drop heights from conveyors, loading shovels, hoppers and other loading or handling equipment and use fine water sprays on such equipment wherever appropriate; 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.

6.4. 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 effective water suppression is used during demolition operations. Handheld sprays are more effective than hoses attached to equipment as the water can be directed to where it is needed. In addition, high volume water suppression systems, manually controlled, can produce fine water droplets that effectively bring the dust particles to the ground; and
- Bag and remove any biological debris or damp down such material before demolition.

6.5. Earthworks

- Re-vegetate earthworks and exposed areas/soil stockpiles to stabilise surfaces as soon as practicable;
- Use hessian, mulches or trackifiers where it is not possible to re-vegetate or cover with topsoil, as soon as practicable; and
- Only remove the cover in small areas during work and not all at once.

6.6. 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.

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6.7. Construction Traffic

- All vehicles to switch off engines (no idling);
- On road vehicles will comply to set emission standards;
- Vehicles should be kept clean through the use of wheel washers as appropriate, particularly on departure from the development area onto the public highway;
- Vehicles carrying loose aggregate, fill materials or contaminated materials to and from the development area should be sheeted at all times;
- When loading materials into vehicles or using transfer chutes and skips, drop heights will be kept to a minimum and enclosed wherever possible;
- Ensure all on-road vehicles comply with the requirements of the London Low Emission Zone and the London NRMM standards, where applicable;
- Use water-assisted dust sweeper(s) on the access and local roads, to remove, as necessary, any material tracked out of the site. This may require the sweeper being continuously in use;
- Ensure vehicles entering and leaving sites are covered to prevent escape of materials during transport;
- Inspect on-site haul routes for integrity and instigate necessary repairs to the surface as soon as reasonably practicable;
- Record all inspections of haul routes and any subsequent action in a site logbook;
- Install hard surfaced haul routes, which are regularly damped down with fixed or mobile sprinkler systems, or mobile water bowsers and regularly cleaned;
- Implement a wheel washing system (with rumble grids to dislodge accumulated dust and mud prior to leaving the site where reasonably practicable);
- Ensure there is an adequate area of hard surfaced road between the wheel wash facility and the site exit, wherever site size and layout permits; and
- Access gates to be located at least 10m from receptors where possible.

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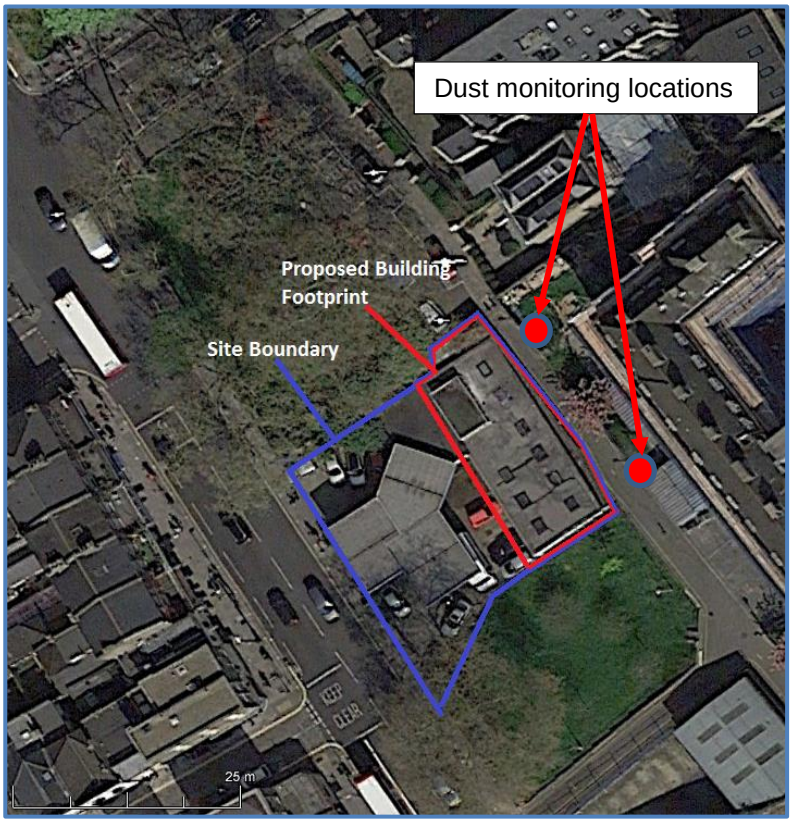
7. DUST MONITORING

If the Best Practicable measures, as identified in **Section 6,** are implemented the formation of dust and harmful emissions from the site should be minimised as much as possible.

The Council's Sustainability Officer has identified that as the dust risk assessment has identified a medium risk for demolition activities then real time dust monitoring would be required for the site and that this should include a least two appropriate monitoring systems.

As the site is relatively small it would be our proposal that a single particulate monitoring system should be utilised during demolition and that subject to access and mounting agreements it should be mounted on one of the light columns immediately in front of Denyer House as identified in **Figure 7.1** below. The distance between the lighting columns is 15 metres and therefore it is highly unlikely that there would be any significant difference between these potential monitoring positions. If the Council consider that two monitoring systems are absolutely necessary for the demolition phase then both positions could be utilised, however it is ACCON's professional opinion that a single monitoring position will suffice to provide the appropriate level of protection to sensitive receptors e.g. occupants of Denyer House.

Figure 7.1: Proposed dust monitoring position



7.1. Proposed monitoring system

The proposal is to install up to two of one of the following types of particulate monitoring systems:

- Earthsense Zephyr;
- AER-AQY Micros Air Quality Station; or

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- Osiris

The equipment would be installed prior to commencement of works on the site and would remain in place until the end of the construction period.

7.2. Dust Trigger Levels

The trigger levels for reporting would be set as:

- Period mean exceeding 40µg/m^3;
- Number of 24-hour mean concentrations exceeding 50µg/m^3; and
- Number of 15-minute concentrations exceeding a threshold of 200µg/m^3

7.3. Monthly Reporting during Demolition Activities

The monthly reporting would provide both tabular results and a graphical presentation and would include the following points:

- Details of the monitoring equipment used and dates of recent servicing and calibration;
- Site plan of the monitoring locations and photographs of the monitors on-site in their current locations (during that monitoring period);
- PM_{10} trigger levels;
- A Summary Table of exceedances of the trigger levels during the monitoring period;
- Average concentrations of PM_{10} during the monitoring period, at each of the monitoring locations
- Graphs of PM_{10} concentrations during the monitoring period;
- Valid data capture during the monitoring period;
- Details of the works being undertaken on-site during the monitoring period particularly where exceedances of the trigger levels are identified,
- Details of any moderate or high particulate episodes reported during the specific monthly period by the London Air Quality Networks (LAQN); and
- Dust mitigation measures utilised on site for preventative dust mitigation measures and any reactive dust mitigation required where exceedances occur related to site activities.

The graphs would typically be in the format shown in **Figure 7.2** below.

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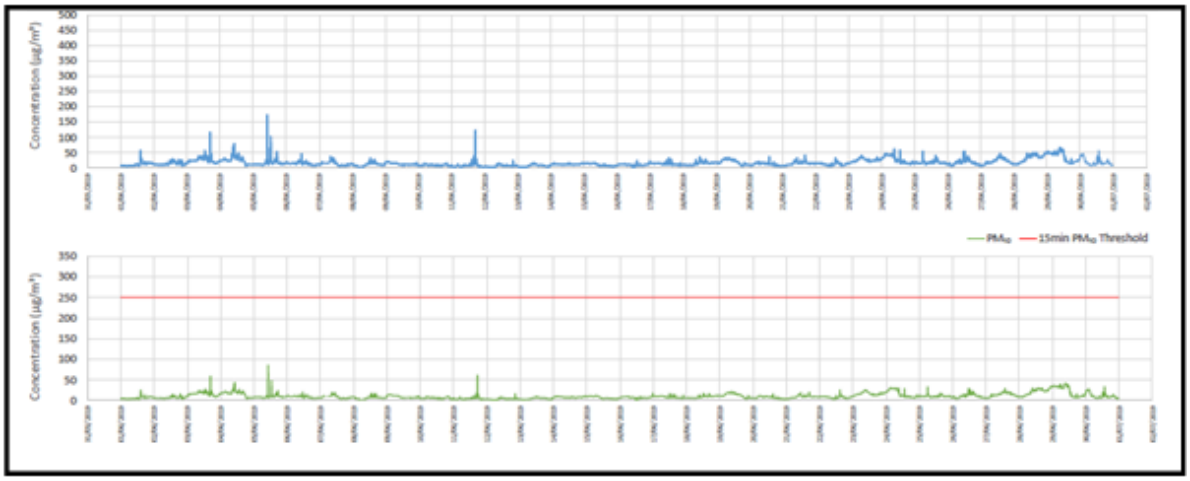
Figure 7.2: Graphical reporting of particulates



7.4. Post- demoilition dust monitoring

Beyond the demolition phase if a dust monitoring regime is required the following list is an example of suitable measures for monitoring dust from the low risk activities which could be considered:

- Keep an accurate log of complaints from the public;

- Carry out a visual inspection of site activities, dust controls and site conditions and record in a daily dust log; and
- If applicable, supplement with low cost dust monitoring at the closest sensitive receptor (Denyer House) across site e.g. glass slides etc.

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8. CONCLUSIONS

This risk assessment has concluded that the majority of the surrounding sensitive receptors are considered to be placed within the medium to low risk category prior to Best Practice mitigation measures. With these Best Practice measures in place those receptors previously categorised as medium risk are likely to be re-categorised as low risk, and those previously categorised as low risk would be re-categorised to negligible. However,

The Council have however indicated that their requirement would be that dust monitoring during the initial medium risk activity i.e. the demolition phase should be carried out and accordingly a suitable dust and particulate monitoring regime has been identified.

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Appendices

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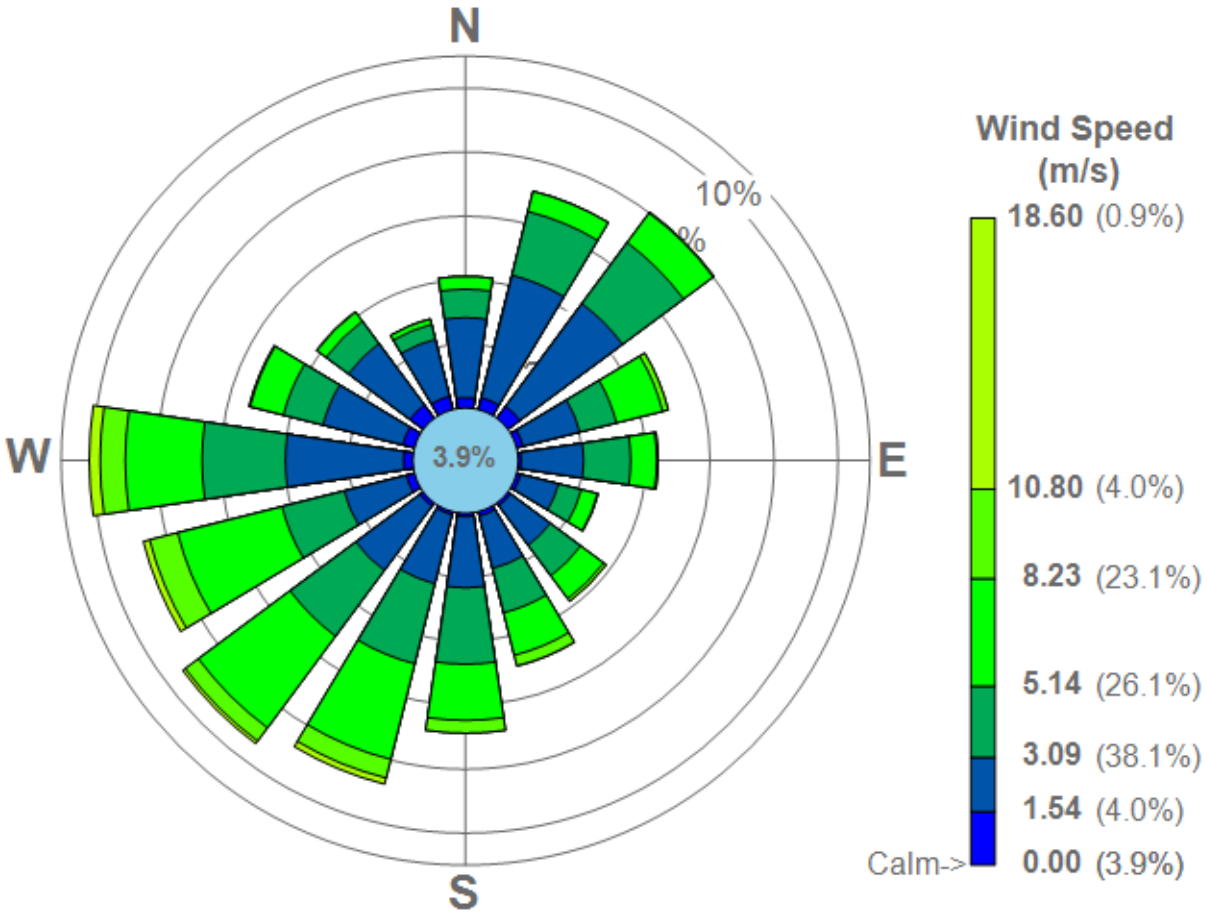
Appendix 1: 2018 Heathrow Airport Wind Rose



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Appendix 2: Tables from IAQM Guidance on the Assessment of Dust from Demolition and Construction

Table 1: Example of the How the Dust Emission Magnitude for a Site Could be Presented

Activity	Dust Emission Magnitude
Demolition	Large
Earthworks	Large
Construction	Medium
Trackout	Small

Table 2: Sensitivity of the Area to Dust Soiling Effects on People and Property [a b]

Receptor Sensitivity	Number of Receptors	Distance from the Source (m)[c]			
		‹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

[a] The sensitivity of the area should be derived for each of the four activities: demolition, construction, earthworks and trackout. See **STEP 2B**, **Box 6** and **Box 9.**

[b] Estimate the total number of receptors within the stated distance. Only the *highest level* of area sensitivity from the table needs to be considered. For example, if there are 7 high sensitivity receptors ‹20 m of the source and 95 high sensitivity receptors between 20 and 50 m, then the total of number of receptors ‹50 m is 102. The sensitivity of the area in this case would be high.

[c] For trackout, the distances should be 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 of the road.

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Table 3: Sensitivity of the Area to Human Health Impacts [a] [b]

Receptor Sensitivity	Annual Mean PM_{10} concentration[c]	Number of Receptors[d]	Distance from the Source (m)[e]				
			<20	<50	<100	<200	<350
High	>32 µg/m³ (>18 µg/m³ in Scotland)	>100	High	High	High	Medium	Low
		10-100	High	High	Medium	Low	Low
		1-10	High	Medium	Low	Low	Low
	28-32 µg/m³ (16-18 µg/m³ in Scotland)	>100	High	High	Medium	Low	Low
		10-100	High	Medium	Low	Low	Low
		1-10	High	Medium	Low	Low	Low
	24-28 µg/m³ (14-16 µg/m³ in Scotland)	>100	High	Medium	Low	Low	Low
		10-100	High	Medium	Low	Low	Low
		1-10	Medium	Low	Low	Low	Low
	<24 µg/m³ (<14 µg/m³ in Scotland)	>100	Medium	Low	Low	Low	Low
		10-100	Low	Low	Low	Low	Low
		1-10	Low	Low	Low	Low	Low
Medium	>32 µg/m³ (>18 µg/m³ in Scotland)	>10	High	Medium	Low	Low	Low
		1-10	Medium	Low	Low	Low	Low
	28-32 µg/m³ (16-18 µg/m³ in Scotland)	>10	Medium	Low	Low	Low	Low
		1-10	Low	Low	Low	Low	Low
	24-28 µg/m³ (14-16 µg/m³ in Scotland)	>10	Low	Low	Low	Low	Low
		1-10	Low	Low	Low	Low	Low
	<24 µg/m³ (<14 µg/m³ in Scotland)	>10	Low	Low	Low	Low	Low
		1-10	Low	Low	Low	Low	Low
Low	-	≥1	Low	Low	Low	Low	Low

[a] The sensitivity of the area should be derived for each of the four activities: demolition, construction, earthworks and trackout. See **STEP 2B**, **Box 7** and **Box 9**.

[b] Estimate the total within the stated distance (e.g. the total within 350 m and not the number between 200 and 350 m), noting that only the **highest level** of area sensitivity from the table needs to be considered. For example, if there are 7 high sensitivity receptors <20 m of the source and 95 high sensitivity receptors between 20 and 50 m, then the total of number of receptors <50 m is 102. If the annual mean PM_{10} concentration is 29 µg/m³, the sensitivity of the area would be high.

[c] Most straightforwardly taken from the national background maps, but should also take account of local sources. The values are based on 32 µg/m³ being the annual mean concentration at which an exceedence of the 24-hour objective is likely in England, Walesand Northern Ireland. In Scotland there is an annual mean objective of 18µg/m³.

[d] In the case of high sensitivity receptors with high occupancy (such as schools or hospitals) approximate the number of people likely to be present. In the case of residential dwellings, just include the number of properties.

[e] For trackout, the distances should be 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 of the road.

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Table 4: Sensitivity of the Area to Ecological Impacts [a] [b]

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

[a] The sensitivity of the area should be derived for each of the four activities: demolition, construction, earthworks and trackout and for each designated site. See **STEP 2B**, **Box 8** and **Box 9**.
[b] Only the highest level of area sensitivity from the table needs to be considered.
[c] For trackout, the distances should be 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.

Table 5: Example of the Outcome of Defining the Sensitivity of the Area

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

Table 6: Risk of Dust Impacts - Demolition

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

Table 7: Risk of Dust Impacts - Earthworks

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

Table 8: Risk of Dust Impacts - Construction

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

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Table 9: Risk of Dust Impacts - Trackout

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

Table 10: Example of a Summary Dust Risk Table to Define Site-Specific Mitigation

Potential Impact	Risk			
	Demolition	Earthworks	Construction	Trackout
Dust Soiling	High Risk	High Risk	Low Risk	Medium Risk
Human Health	High Risk	Medium Risk	Low Risk	Medium Risk
Ecological	Negligible	Negligible	Negligible	Negligible

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