Dust Management Plan:
Turing House School, Richmond

July 2020

Experts in air quality management & assessment

Document Control

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Contents

1 Introduction

1.1 This document sets out the Dust Management Plan (DMP) for the development of Turing House School in Richmond. It has been prepared by Air Quality Consultants Ltd on behalf of Bowmer and Kirkland Ltd. The DMP has been produced to satisfy condition NS46 of the planning permission for the development, which states:

"Unless otherwise agreed in writing by the Local Planning Authority, prior to the commencement of the development hereby approved, a Dust Management Plan for the groundworks, demolition and construction phases shall be submitted to and approved in writing by the Local Planning Authority. The development shall not be implemented other than in accordance with the approved scheme. The dust management plan shall include:

a. Demonstrate compliance with the guidance found in the control of dust and emissions from construction and demolition Best Practice produced by the Greater London Authority (GLA)http://static.london.gov.uk/mayor/environment/air_quality/docs/construction-dust-pg.pdf;

b. A risk assessment of dust generation for each phase of the demolition and construction. The assessment and identified controls must include the principles of prevention, suppression and containment and follow the format detailed in the guidance above. The outcome of the assessment must be fully implemented for the duration of the construction and demolition phase of the proposed development and include dust monitoring where appropriate;

c. Where the outcome of the risk assessment indicates that monitoring is necessary, a monitoring protocol including information on monitoring locations, frequency of data collection and how the data will be reported to the Local Planning Authority;

d. Details of dust generating operations and the subsequent management and mitigation of dust demonstrating full best practicable means compliance and covering construction activities, materials storage, on and off-site haul routes, operational control, demolition, and exhaust emissions, and;

e. Where a breach of the dust trigger level may occur a response procedure should be detailed including measures to prevent repeat incidence.

Reason: In order to safeguard the amenities of neighbouring residents."

1.2 The DMP describes the measures to be applied to minimise the risk of dust impacts during the whole of the construction works. The package of measures presented in Section 2 is based on the results of a risk assessment of potential impacts of dust and fine particulate matter (PM_{10}) emissions from the construction activities. The risk assessment has been carried out following the methodology published by the Institute of Air Quality Management (IAQM) (2016), upon which the GLA's

Supplementary Planning Guidance (SPG) on The Control of Dust and Emissions During Construction and Demolition (2014) has been based, as summarised in Appendix A1. The full risk assessment is set out in Appendix A2, while the findings, in terms of the risk rating for each stage of the works, are summarised in Table 1.

Table 1: Summary of Risk of Impacts Without Mitigation

Source	Dust Soiling	Human Health	Ecology
Demolition	None	None	None
Earthworks	Medium Risk	Low Risk	Low Risk
Construction	Medium Risk	Low Risk	Low Risk
Trackout	Medium Risk	Low Risk	Low Risk

1.3 The IAQM guidance is clear that, with appropriate mitigation in place, the impacts of construction dust will normally be 'not significant'. The aim of the assessment set out in Appendix A2 is thus to determine the appropriate level of mitigation so as to ensure that impacts will normally not be significant. The best-practice mitigation measures set out in Section 2 have been taken from Chapter 5 of the GLA's SPG. They are considered appropriate to mitigate the level of risk set out in Table 1, with some being clear that they are only required during certain stages of the works.

1.4 Responsibilities for the Dust Management Plan and the day-to-day actions to prevent dust issues are set out in Section 3. The monitoring to be undertaken is set out in Section 4. Section 5 sets out how the responsible person will respond to any dust events.

1.5 The DMP does not cover issues related to any contaminated materials. It is expected that these will be dealt with following standard methods.

2 Dust Management Measures to be Applied

2.1 Most of the mitigation measures set out below are derived from the GLA's Supplementary Planning Guidance on the Control of Dust and Emissions from Construction and Demolition (GLA, 2014). The best-practice measures set out in the guidance have been refined and added to, as necessary, in liaison with the construction contractor. The measures set out are considered to sufficient as to ensure that any dust impacts during the construction works will be 'not significant' However, the Dust Management Plan is a living document and should be amended as necessary should additional measures be identified as being required.

Preparing and Maintaining the Site

- The site layout will be planned so that machinery and dust-causing activities are located away from receptors, as far as is possible;
- site runoff of water or mud will be avoided;
- solid screens or barriers will be erected around dusty activities;
- green walls, screens or other green infrastructure will be installed to minimise the impact of dust and pollution;
- where there is a high potential for dust production and the site is active for an extensive period, the site or specific operations will be fully enclosed;
- stockpiles will be covered, seeded or fenced to prevent wind whipping;
- site fencing, barriers and scaffolding will be kept clean using wet methods; and
- materials that have a potential to produce dust will be removed from site as soon as possible, unless being re-used on site.
- carry out regular dust soiling checks of buildings within 100 m of site boundary and provide cleaning if necessary;
- put in place real-time dust and air quality pollutant monitors across the site and ensure they are checked regularly;
- agree monitoring locations with the Local Authority; and
- where possible, commence baseline monitoring at least three months before work begins.

Operating Vehicle/Machinery and Sustainable Travel

- All vehicles will have their engines switched off when stationary;
- ensure all on-road vehicles comply with the requirements of the London Low Emission Zone;
- all Non-road Mobile Machinery (NRMM) will comply with the standards set within the GLA's Control of Dust and Emissions During Construction and Demolition SPG. This outlines that,

from 1st September 2015, all NRMM of net power 37 kW to 560 kW used on the site of a major development in Greater London must meet Stage IIIA of EU Directive 97/68/EC (The European Parliament and the Council of the European Union, 1997) and its subsequent amendments as a minimum. From 1st September 2020 NRMM used on any site within Greater London will be required to meet Stage IIIB of the Directive as a minimum;

- the use of diesel- or petrol-powered generators will be avoided and mains electricity or battery-powered equipment will be used where practicable;
- a maximum-speed-limit of 15 mph on surfaced and 10 mph on un-surfaced haul roads and work areas will be imposed and signposted, as described in the Construction Traffic Management Plan. If longer haul routes are required, these speeds may be increased with suitable additional control measures provided, subject to the approval of the nominated undertaker and with the agreement of the local authority, where appropriate;
- produce a Construction Logistics Plan to manage the sustainable delivery of goods and materials; and
- implement a Travel Plan that supports and encourages sustainable staff travel (public transport, cycling, walking, and car-sharing).

Operations

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

- Waste will be reused and recycled to reduce dust from waste materials; and
- bonfires and burning of waste materials will be avoided.

Measures Specific to Earthworks

- Earthworks and exposed areas/soil stockpiles will be re-vegetated to stabilise surfaces as soon as practicable;
- hessian, mulches or trackifiers will be used where it is not possible to re-vegetate or cover with topsoil, as soon as practicable; and
- only small areas will be uncovered during work, not all at once.

Measures Specific to Construction

- Scabbling (roughening of concrete surfaces) will be avoided, if possible;
- sand and other aggregates will be stored in bunded areas and will not be allowed to dry out, unless this is required for a particular process, in which case appropriate additional control measures will be put in place;
- bulk cement and other fine powder materials will be delivered in enclosed tankers and stored in silos with suitable emission control systems to prevent the escape of material and overfilling during delivery; and
- only small supplies of fine powder materials will be used on site, and bags will be sealed after use and stored appropriately to prevent dust.

Measures Specific to Trackout

- Water-assisted dust sweeper(s) will be used on the access and local roads, to remove, as necessary, any material tracked out of the site;
- dry sweeping of large areas will be avoided;
- vehicles entering and leaving sites will be covered to prevent escape of materials during transport;
- an adequate area of hard surfaced road between the wheel wash facility and the site exit will be ensured, wherever the site size and layout permits;
- access gates will be located at least 10 m from receptors, where possible;
- dust suppressants will be applied to location where a large volume of vehicles enter and exit the construction site;
- a traffic management plan will be enforced to avoid lots of routes being used over potentially dusty ground; and
- a wheel washing system will be implemented (with rumble grids to dislodge accumulated dust and mud prior to leaving the site where reasonably practicable).

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

Adverse Weather

2.3 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 or dispersed over a greater distance. During any such events, water suppression will be used liberally in order to prevent dust emissions beyond the site boundary.

2.4 Short-term weather forecasts should be used to plan future site operations, and hard standing and external bulking bays should be wetted before winds blow towards sensitive receptors to prevent dust annoyance.

3 Responsibilities and Records

Key Responsibilities

Site Manager

3.1 The day-to-day operations at the site will be the responsibility of the Site Manager (Gary Walsh), who will be responsible for ensuring that the monitoring protocol set out in Section 4, and the response protocols in Section 5 are adhered to. If the monitoring indicates that dust emissions are likely to have an impact on the local community, then the London Borough (LB) of Richmond upon Thames will be informed.

3.2 If any exceptional dust and/or air emissions occur, or any complaints are received, they will be investigated by the Site Manager or a delegated representative, who will record the complaint. They will then identify the cause, take appropriate measures to reduce emissions in a timely manner, and record the measures taken. This information will be made available to the LB of Richmond upon Thames upon request. Section 5 details specific measures that will be taken to address dust issues, and the Appendices to this DMP provide example forms to be used to record dust events.

All Staff

3.3 All staff will be responsible for minimising dust emissions from the site, and will be responsible for reporting dust problems to the Site Manager immediately, on an on-going basis.

3.4 All operational staff will be trained in their responsibilities with regard to dust control at the site. The Site Manager will maintain a statement of training requirements for each operational position, and a record will be kept detailing the training received by each member of staff.

Contacts and Communications

3.5 The name and contact details of the Site Manager will be displayed at the site's boundary with Hospital Bridge Road. These signs will also include the address and phone number for the contractors' UK head office.

Managing the DMP

3.6 The Site Manager will review the DMP at least once a year, in light of any complaints or issues that have been identified during the previous year. The following issues will be considered during the review:

- effectiveness of mitigation measures employed;
- additional mitigation measures implemented within the previous 12 months;
- complaints received in relation to dust impacts at off-site receptors;

- review of any dust events recorded within the previous 12 months;
- review of the effectiveness of the visual monitoring scheme; and
- review of the effectiveness of personnel training on dust awareness.

3.7 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 DMP.

4 Monitoring

Visual Inspections

4.1 A weekly visual inspection of the site will be carried out by the Site Manager, or an appropriately trained operator. The inspection will consist of a walk around the entire perimeter with observations made of any dust emissions. Particular attention will be paid to any areas where professional experience would suggest that current operations have a higher-than-normal risk of dust emissions. This should include regular dust soiling checks of surfaces such as street furniture, cars and window sills within 50 m of the site boundary, with cleaning to be provided if necessary. Inspection results will be recorded and the logs (examples in Appendices A3 and A4) will be made available to the LB of Richmond upon Thames when requested. If significant dust is identified beyond the site boundary, a Dust Event Form will be completed (see Appendix A5), and investigation/remedial action will be taken, as outlined in Section 5. The Site Manager will review Dust Event Forms regularly to ensure that any necessary actions have been implemented, and to identify problem areas where additional mitigation against further dust emissions may be necessary.

4.2 The frequency of visual inspections will be increased when activities with a high potential to produce dust are being carried out on site and during periods of adverse weather.

Meteorology

4.3 Meteorological conditions at the time of any significant dust emissions will be recorded in the Dust Event Form.

PM_{10} Monitoring

4.4 The GLA's Supplementary Planning Guidance (SPG) on *The Control of Dust and Emissions During Construction and Demolition* (GLA, 2014) advises that for medium risk sites, dust and PM_{10} should be continuously measured during construction using a minimum of two automatic particulate monitors (such as, for example, Osiris dust monitors). The LB of Richmond upon Thames has confirmed that such monitoring will be required. In this instance, given the relatively small size of the site, two continuous monitoring locations are considered sufficient to alert the Site Manager of the potential impacts at nearby properties.

4.5 Osiris monitors (optical analysers, which utilise light scattering of particulates) are MCERTS accredited for PM_{10} measurements and are recommended for this purpose by the IAQM in its guidance on *Air Quality Monitoring in the Vicinity of Demolition and Construction Sites* (IAQM, 2018). Proposed locations for the two continuous monitors have been agreed with the LB of Richmond upon Thames, and are illustrated in Figure 1 below. The proposed monitoring locations are situated to the north and east of the new school building, which is the area that will see the majority of the construction activities and will therefore generate the most dust. The predominant wind direction is

from the west and southwest, thus the proposed monitoring locations capture the worst-case locations in terms of dust impacts, taking account of the nearby residential properties situated along Hospital Bridge Road and Montrose Avenue. The remainder of the construction works (to the west and southwest of the new school building) will consist of laying out the sports and MUGA pitches over the course of a 24-week period. Given the nature and duration of these works, and that the residential properties to the north along Redfern Avenue are somewhat shielded by green infrastructure, it is anticipated that these works will not generate large amounts of dust and additional monitoring is not necessary; this has been confirmed with the LB of Richmond upon Thames.

4.6 The two monitors should be installed on the site fence; the exact locations will depend on their practicability, in particular with regards to the site layout, accessibility, availability of a structure to fix the monitor, and proximity to a power connection.

Figure 1: Proposed Continuous Dust Monitoring Locations

4.7 The continuous dust monitoring will be required for the full duration of the construction works, which is from January 2020 to March 2021 in accordance with the current Construction Programme (Bowmer & Kirland, 2019).

5 Response and Reporting

5.1 All significant dust events will be investigated, addressed and, if necessary, reported to the regulator (in this case the Local Authority). The flowchart set out in Figure 2 sets out the approach that will be taken when such events occur.

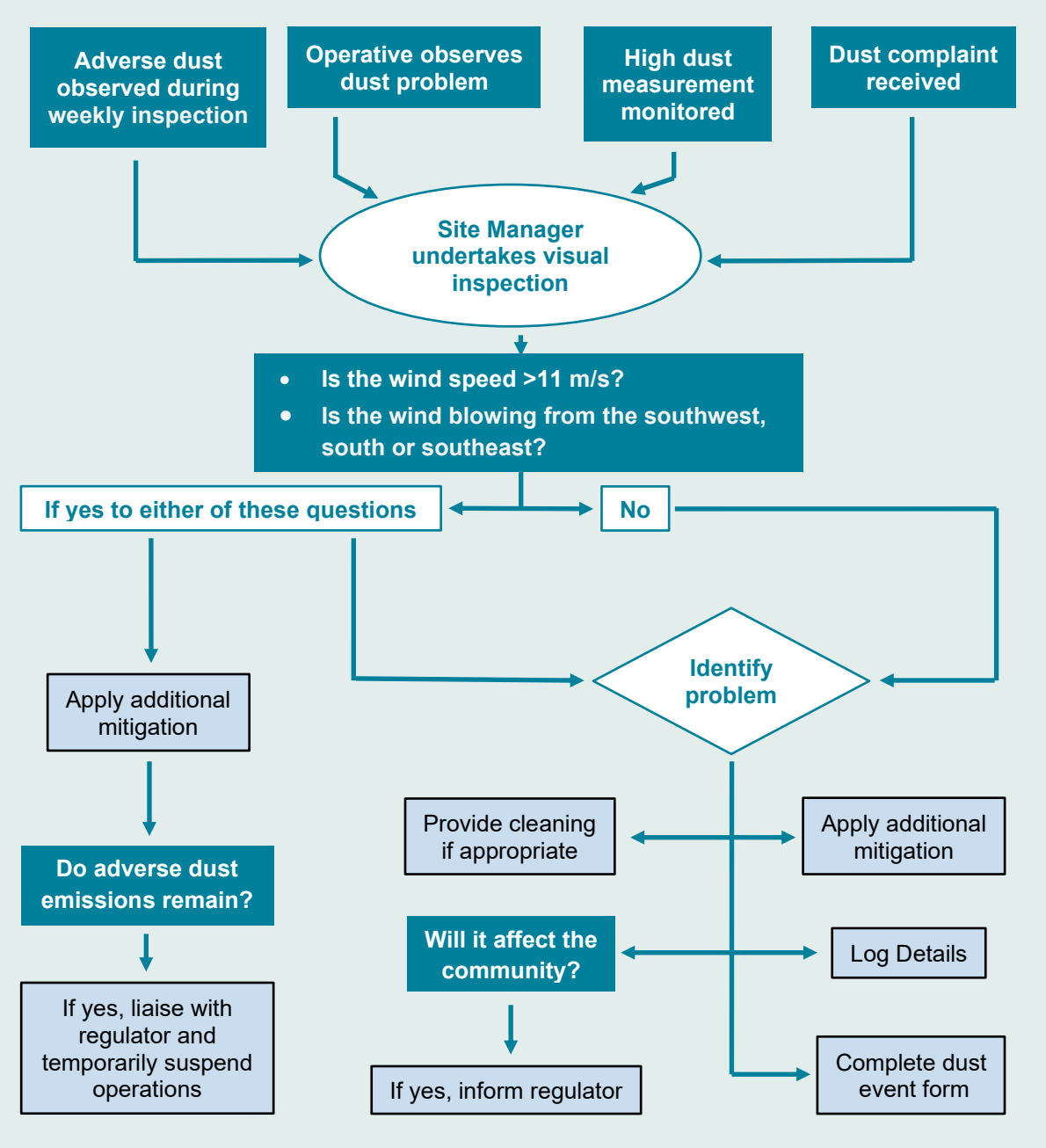

Figure 2: Dust Event Response Flowchart

5.2 In the event that significant levels of dust are experienced off-site, additional mitigation measures will be employed. These will include:

- immediate identification of the source of the dust;
- the liberal use of water suppression;
- covering or sheeting sources of unacceptable dust emissions; and
- removal of excessively dusty material from the site.

5.3 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 regulator, and temporarily suspending site operations until the issue can be resolved.

6 References

Bowmer & Kirland (2019) *Turing House School - Construction Programme Expanded Programme No/Ref: 68065 CONSTRUCTION, Revision: 01*.

British Geological Survey (2020) *UK Soil Observatory Map Viewer*, [Online], Available: http://mapapps2.bgs.ac.uk/ukso/home.html.

GLA (2014) *The Control of Dust and Emissions from Construction and Demolition SPG*, [Online], Available: https://www.london.gov.uk/sites/default/files/Dust%20and%20Emissions%20SPG%208%20July%202014_0.pdf.

IAQM (2016) *Guidance on the Assessment of Dust from Demolition and Construction v1.1*.

IAQM (2018) *Guidance on Monitoring in the Vicinity of Demolition and Construction Sites v1.1*, [Online], Available: https://iaqm.co.uk/text/guidance_monitoring_dust_2018.pdf.

The European Parliament and the Council of the European Union (1997) *Directive 97/68/EC of the European Parliament and of the Council*, Available: http://eur-lex.europa.eu/legal-content/EN/TXT/?uri=celex:31997L0068.

7 Glossary

AQC	Air Quality Consultants
DMP	Dust Management Plan
GLA	Greater London Authority
HDV	Heavy Duty Vehicles (> 3.5 tonnes)
IAQM	Institute of Air Quality Management
LB	London Borough
µg/m^3	Microgrammes per cubic metre
NRMM	Non-road Mobile Machinery
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
$PM_{2.5}$	Small airborne particles less than 2.5 micrometres in aerodynamic diameter
SPG	Supplementary Planning Guidance

8 Appendices

A1 Construction Dust Risk Assessment Procedure

A1.1 The criteria developed by IAQM (2016), upon which the GLA's guidance is based, divide the activities on construction sites into four types to reflect their different potential impacts. These are:

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

A1.2 The assessment procedure includes the four steps summarised below:

STEP 1: Screen the Need for a Detailed Assessment

A1.3 An assessment is required where there is a human receptor within 350 m of the boundary of the site 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 boundary of the site 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).

A1.4 Where the need for a more detailed assessment is screened out, it can be concluded that the level of risk is *negligible* and that any effects will be 'not significant'. No mitigation measures beyond those required by legislation will be required.

STEP 2: Assess the Risk of Dust Impacts

A1.5 A site is allocated to a risk category based on two factors:

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

A1.6 These two factors are combined in Step 2C, which is to determine the risk of dust impacts with no mitigation applied. The risk categories assigned to the site may be different for each of the four potential sources of dust (demolition, earthworks, construction and trackout).

Step 2A – Define the Potential Dust Emission Magnitude

A1.7 Dust emission magnitude is defined as either 'Small', 'Medium', or 'Large'. The IAQM guidance explains that this classification should be based on professional judgement, but provides the examples in Table A1.1.

Table A1.1: Examples of How the Dust Emission Magnitude Class May be Defined

Class	Examples
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 m3 – 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 <10,000 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), piling, 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

A1.8 The sensitivity of the area is defined taking account of a number of factors:

- the specific sensitivities of receptors in the area;
- the proximity and number of those receptors;

- in the case of PM_{10}, the local background concentration; and
- site-specific factors, such as whether there are natural shelters to reduce the risk of wind-blown dust.

A1.9 The first requirement is to determine the specific sensitivities of local receptors. The IAQM guidance recommends that this should be based on professional judgment, taking account of the principles in Table A1.2. These receptor sensitivities are then used in the matrices set out in Table A1.3, Table A1.4 and Table A1.5 to determine the sensitivity of the area. Finally, the sensitivity of the area is considered in relation to any other site-specific factors, such as the presence of natural shelters etc., and any required adjustments to the defined sensitivities are made.

Step 2C – Define the Risk of Impacts

A1.10 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 IAQM guidance provides the matrix in Table A1.6 as a method of assigning the level of risk for each activity.

STEP 3: Determine Site-specific Mitigation Requirements

A1.11 The IAQM guidance provides a suite of recommended and desirable mitigation measures which are organised according to whether the outcome of Step 2 indicates a low, medium, or high risk. The list provided in the IAQM guidance has been used as the basis for the requirements set out in Section 2.

STEP 4: Determine Significant Effects

A1.12 The IAQM guidance does not provide a method for assessing the significance of effects before mitigation, and advises that pre-mitigation significance should not be determined. With appropriate mitigation in place, the IAQM guidance is clear that the residual effect will normally be 'not significant'.

A1.13 The IAQM guidance recognises that, even with a rigorous dust management plan in place, it is not possible to guarantee that the dust mitigation measures will be effective all of the time, for instance under adverse weather conditions. The local community may therefore experience occasional, short-term dust annoyance. The scale of this would not normally be considered sufficient to change the conclusion that the effects will be 'not significant'.

Table A1.2: Principles to be Used When Defining Receptor Sensitivities

Class	Principles	Examples
Sensitivities of People to Dust Soiling Effects		
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 there is property that 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
Sensitivities of People to the Health Effects of PM_{10}		
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.	may include office and shop workers, but will generally not include workers occupationally exposed to PM10
Low	locations where human exposure is transient	public footpaths, playing fields, parks and shopping streets
Sensitivities of Receptors to Ecological Effects		
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 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 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 A1.3: 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

[1] For demolition, earthworks and construction, distances are taken either from the dust source or from the boundary of the site. For trackout, distances are measured from the sides of roads used by construction traffic. Without mitigation, trackout may occur from roads up to 500 m from sites with a *large* dust emission magnitude, 200 m from sites with a *medium* dust emission magnitude and 50 m from sites with a *small* dust emission magnitude, 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.

Table A1.4: Sensitivity of the Area to Human Health Effects

Receptor Sensitivity	Annual Mean PM_{10}	Number of Receptors	Distance from the Source (m)				
			<20	<50	<100	<200	<350
High	>32 µg/m³	>100	High	High	High	Medium	Low
		10-100	High	High	Medium	Low	Low
		1-10	High	Medium	Low	Low	Low
	28-32 µg/m³	>100	High	High	Medium	Low	Low
		10-100	High	Medium	Low	Low	Low
		1-10	High	Medium	Low	Low	Low
	24-28 µg/m³	>100	High	Medium	Low	Low	Low
		10-100	High	Medium	Low	Low	Low
		1-10	Medium	Low	Low	Low	Low
	<24 µg/m³	>100	Medium	Low	Low	Low	Low
		10-100	Low	Low	Low	Low	Low
		1-10	Low	Low	Low	Low	Low
Medium	>32 µg/m³	>10	High	Medium	Low	Low	Low
		1-10	Medium	Low	Low	Low	Low
	28-32 µg/m³	>10	Medium	Low	Low	Low	Low
		1-10	Low	Low	Low	Low	Low
	24-28 µg/m³	>10	Low	Low	Low	Low	Low
		1-10	Low	Low	Low	Low	Low
	<24 µg/m³	>10	Low	Low	Low	Low	Low
		1-10	Low	Low	Low	Low	Low
Low	-	>1	Low	Low	Low	Low	Low

Table A1.5: Sensitivity of the Area to Ecological Effects

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

Table A1.6: 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	Medium 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 Construction Dust Risk Assessment

A2.1 The construction dust assessment considers the potential for impacts within 350 m of the site boundary; or within 50 m of roads used by construction vehicles. The assessment methodology is that provided by the IAQM (2016). This is based around a sequence of steps. Step 1 is a basic screening stage, to determine whether the more detailed assessment provided in Step 2 is required. Step 2a determines the potential for dust to be raised from on-site works and by vehicles leaving the site. Step 2b defines the sensitivity of the area to any dust that may be raised. Step 2c combines the information from Steps 2a and 2b to determine the risk of dust impacts without appropriate mitigation. Step 3 uses this information to determine the appropriate level of mitigation required to ensure that there should be no significant impacts. Appendix A1 explains the approach in more detail.

A2.2 The construction works will give rise to a risk of dust impacts during earthworks and construction, as well as from trackout of dust and dirt by vehicles onto the public highway. Step 1 of the assessment procedure is to screen the need for a detailed assessment. There are receptors within the distances set out in the guidance (see Appendix A1), thus a detailed assessment is required. The following section sets out Step 2 of the assessment procedure.

Potential Dust Emission Magnitude

Demolition

A2.3 There is no requirement for demolition on site.

Earthworks

A2.4 The characteristics of the soil at the development site have been defined using the British Geological Survey's UK Soil Observatory website (British Geological Survey, 2020), as set out in Table A2.1. Overall, it is considered that, when dry, this soil has the potential to be moderately dusty.

Table A2.1: Summary of Soil Characteristics

Category	Record
Soil Layer Thickness	Deep
Soil Parent Material Grain Size	Mixed (Arenaceous [a] – Rudaceous [b])
European Soil Bureau Description	River Terrace Sand/Gravel
Soil Group	Light (Sandy) to Medium (Sandy)
Soil Texture	Sand to Sandy Loam [c]

[a] grain size 0.06 – 2.0 mm.

[b] grain size > 2.0 mm.

[c] a loam is composed mostly of sand and silt.

A2.5 The site covers some 9,500 m^2 and most of this will be subject to earthworks. The earthworks will last around 20 weeks and dust will arise mainly from vehicles travelling over unpaved ground and from the handling of dusty materials (such as dry soil). Based on the example definitions set out in Table A1.1 in Appendix A1, the dust emission class for earthworks is considered to be *medium*.

Construction

A2.6 The school building will be constructed using brick cladding, with a total building volume of around 29,600 m^3. Dust will arise from vehicles travelling over unpaved ground, the handling and storage of dusty materials, and from the cutting of concrete. The construction will take place over a 61-week period. Based on the example definitions set out in Table A1.1 in Appendix A1, the dust emission class for construction is considered to be *medium*.

Trackout

A2.7 The number of heavy vehicles accessing the site, which may track out dust and dirt, is estimated to be a maximum of 20 per day. Based on the example definitions set out in Table A1.1 in Appendix A1, the dust emission class for trackout is considered to be *medium*.

A2.8 Table A2.2 summarises the dust emission magnitude for the proposed development.

Table A2.2: Summary of Dust Emission Magnitude

Source	Dust Emission Magnitude
Demolition	None
Earthworks	Medium
Construction	Medium
Trackout	Medium

Sensitivity of the Area

A2.9 This assessment step combines the sensitivity of individual receptors to dust effects with the number of receptors in the area and their proximity to the site. It also considers additional site-specific factors such as topography and screening, and in the case of sensitivity to human health effects, baseline PM_{10} concentrations.

Sensitivity of the Area to Effects from Dust Soiling

A2.10 The IAQM guidance, upon which the GLA's guidance is based, explains that residential properties are 'high' sensitivity receptors to dust soiling (Table A1.2 in Appendix A1). There are between 30 and 60 residential properties within 20 m of the site (see Figure A2.1). Using the matrix set out in Table A1.3 in Appendix A1, the area surrounding the onsite works is of 'high' sensitivity to dust soiling.

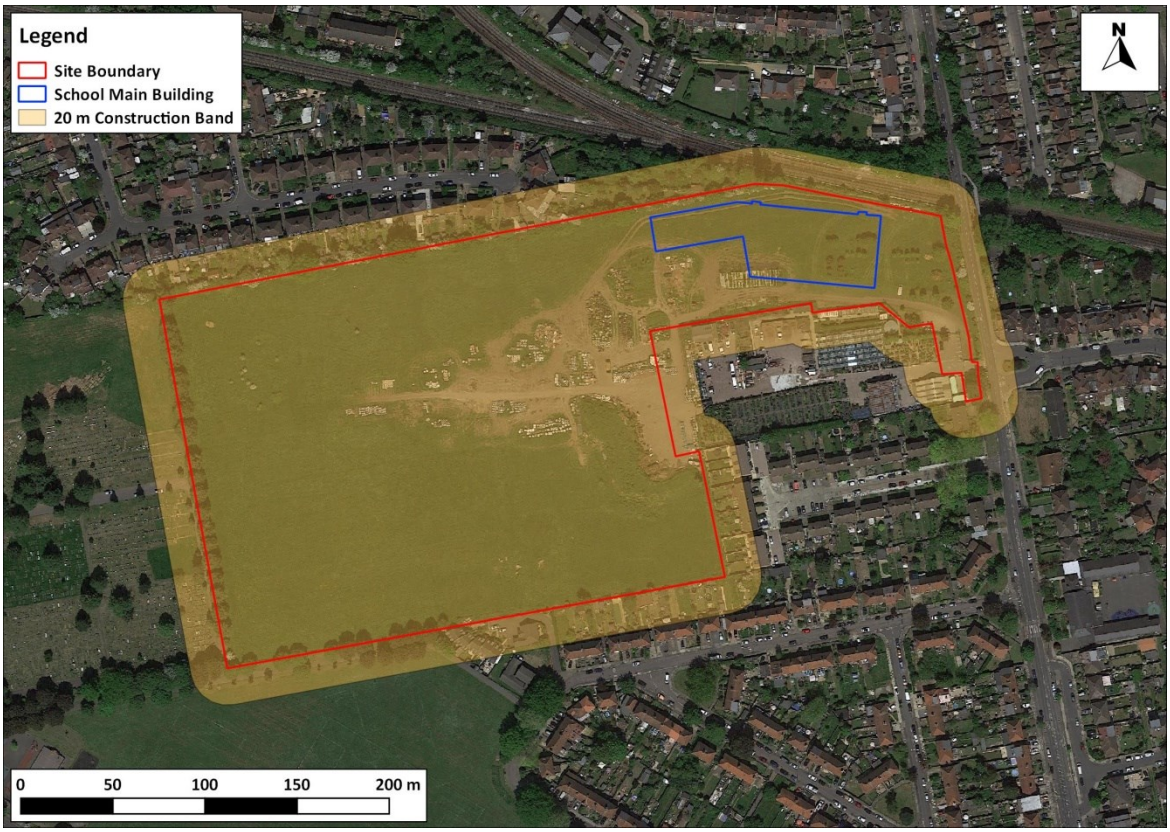

Figure A2.1: 20 m Distance Band around Site Boundary

Imagery ©2019 Google, Map data ©2019 Google.

A2.11 Table A2.2 shows that the dust emission magnitude for trackout is *medium* and Table A1.3 in Appendix A1 thus explains that there is a risk of material being tracked 200 m from the site exit. It has been assumed that all construction related traffic will travel along Hospital Bridge Road. There are between 40 and 50 residential properties within 20 m of the roads along which material could be tracked (see Figure A2.2), and Table A1.3 in Appendix A1 thus indicates that the area is of 'high' sensitivity to dust soiling due to trackout.

Figure A2.2: 20 m Distance Band around Roads Used by Construction Traffic Within 200 m of the Site Exit

Imagery ©2019 Google, Map data ©2019 Google.

Sensitivity of the Area to any Human Health Effects

A2.12 Residential properties are also classified as being of 'high' sensitivity to human health effects. The matrix in Table A1.4 in Appendix A1 requires information on the baseline annual mean PM_{10} concentration in the area. The maximum predicted existing baseline PM_{10} concentration at these receptors is 18.9 μg/m^3, and this value has been used. Using the matrix in Table A1.4 in Appendix A1, the areas surrounding the onsite works and the roads along which material may be tracked from the site are of 'low' sensitivity to human health effects.

Sensitivity of the Area to any Ecological Effects

A2.13 The Feltham Railsides Site of Importance for Nature Conservation (SINC) is located adjacent to the proposed development site. These SINC sites are also known nationally as Local Wildlife sites, thus according to the IAQM guidance, the Feltham Railsides SINC is considered to be of 'low' sensitivity to ecological effects.

Summary of the Area Sensitivity

A2.14 Table A2.3 summarises the sensitivity of the area around the proposed construction works.

Table A2.3: Summary of the Area Sensitivity

Effects Associated With:	Sensitivity of the Surrounding Area	
	On-site Works	Trackout
Dust Soiling	High Sensitivity	High Sensitivity
Human Health	Low Sensitivity	Low Sensitivity
Ecological	Low Sensitivity	Low Sensitivity

Risk and Significance

A2.15 The dust emission magnitudes in Table A2.2 have been combined with the sensitivities of the area in Table A2.3 using the matrix in Table A1.6 in Appendix A1, in order to assign a risk category to each activity. The resulting risk categories for the four construction activities, without mitigation, are set out in Table A2.4. These risk categories have been used to determine the appropriate level of mitigation as set out in Section 2 (step 3 of the assessment procedure).

Table A2.4: Summary of Risk of Impacts Without Mitigation

Source	Dust Soiling	Human Health	Ecology
Demolition	None	None	None
Earthworks	Medium Risk	Low Risk	Low Risk
Construction	Medium Risk	Low Risk	Low Risk
Trackout	Medium Risk	Low Risk	Low Risk

A2.16 The IAQM guidance does not provide a method for assessing the significance of effects before mitigation, and advises that pre-mitigation significance should not be determined. With appropriate mitigation in place, the IAQM guidance is clear that the residual effect will normally be 'not significant' (IAQM, 2016).

A3 Weekly Inspection Checklist

Turing House School
Weekly Inspection Checklist

Month of:						
Inspected Items	Frequency	Week 1	Week 2	Week 3	Week 4	Week 5
Person completing the checklist	*Initials*					
Date of inspection	*Date*					
Dust being controlled correctly by personnel	Weekly					
Visual inspection of mud/debris on haul routes	Weekly					
Visual inspection of dust soiling on local streets, cars and window sills	Weekly					

A4 Weekly Inspection Notes

Turing House School
Weekly Inspection Notes

Month of:
Week 1
Week 2
Week 3
Week 4
Week 5

A5 Dust Event Form

Turing House School
Dust Event Form

Sheet No.:
Time & date form completed:
Date, time and duration of event:
Location of dust:
Weather conditions (i.e. dry, rain, fog, snow):
Cloud cover (Cloud height (low, high, very high): none, slight, partial complete):
Wind strength (light, steady, strong, gusting):
Wind direction (from/to):
Description of dust event, dust (i.e. colour, particle size) & any other comments:
On-site activities at the time the dust emission occurred:
Has a previous event occurred relating to this source:
Any other relevant information:
Any upwind dust?:
Operating conditions at the time the dust emission occurred:
Any remedial actions taken or to be taken:
Form completed by (name & signature):

A6 Dust Complaint Form

Turing House School
Dust Complaint Form

Sheet No.:	
Date:	Time & date of complaint:
Name and address of complainant:	
Date, time and duration of offending dust:	
Location of dust, if not at the above address:	
Weather conditions (i.e. dry, rain, fog, snow):	
Cloud cover (Cloud height (low, high, very high): none, slight, partial complete):	
Wind strength (light, steady, strong, gusting):	
Wind direction (from/to):	
Complainant's description of dust & any other comments (i.e. colour, particle size):	
Has complainant previously made complaint relating to the site:	
Any other relevant information:	
Any upwind dust?:	
On-site activities at the time the dust emission occurred:	
Operating conditions at the time the dust emission occurred:	
Any remedial actions taken or to be taken:	
Form completed by (name & signature):	