

# HIGHGATE SCHOOL Science Block Refurbishment

## Dust and Emissions Assessment

13/01/2023

The results are summarized on the Dusk Risk table below.

## Authorisation Record

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This Air Quality and Dust Risk Assessment has received the following sign off:

| Authorisation                   | Authorisation Signature | Date       |
|---------------------------------|-------------------------|------------|
| Estates Director – Barry Carter |                         | 13/01/2023 |
| Bursar – John Pheasant          |                         | 13/01/2023 |
|                                 |                         | Date       |

## Revision and Amendment Record

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| Rev No: | Produced by:                               | Amendment(s) | Checked by: | Authorised | Date       |
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| 1       | Capital Project Manager – Daniel O'Connell | Final        | DOC         |            | 13/01/2023 |
| 2       | Click here to enter text.                  |              |             |            | -          |
| 3       | Click here to enter text.                  |              |             |            | -          |

This report has been prepared taking into account the agreed scope of works and referenced to: The Control of Dust and Emissions During Construction and Demolition, Supplementary Planning Guidance, July 2014, Mayor of London.

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# 1 Introduction

This Air Quality and Dust Risk Assessment has been prepared to assess the impact of the proposed refurbishment and extension of the Science Block. The document follows the methodology described by The Control of Dust and Emissions during Construction and Demolition, Supplementary Planning Guidance (SPG), July 2014, Mayor of London.

## 1.1 Description of proposed Works

The proposal is to add two new extensions to the existing building, extending towards Science Quad and Garner Quad, on the west and north faces respectively, alongside a full refurbishment of the existing building. Full details of which can be reviewed within the corresponding Design and Access Statement.

Works will include:

- A four storey plus basement extension on the west side of the East Wing (Science Quad Extension)
- A modest extension at ground floor and fuller extension at first and second floor (Garner Quad Extension)
- Creation of a plant room within the existing attic space, including extending the existing dormer roof for access
- Exterior refurbishment, including re-pointing of all masonry walls and cleaning of stone
- Refurbishment and replacement of existing timber windows, including introduction of double glazing
- New fully Part M compliant disabled lift to all floors
- Replacement of life expired mechanical and electrical services throughout
- Introduction of external bris soleil louveres to address existing solar glare and heat gain issues
- New internal joinery doors and skirting throughout
- New acoustic ceilings
- General remodelling of Science laboratories including fixtures and fittings
- New toilets and shower facilities
- External hard and soft landscaping

The construction will include underpinning to the existing ground floor and associated piling works for both extensions.

## 1.2 Operational impact

It is the intention of the proposed development to make improvements to the existing building. The building shall remain as a Non-Residential (D1) use educational facility, so it will not result in increased traffic emissions as student and staff numbers shall not increase.

In relation to the impacts of emissions from the proposed Class A gas boiler, it is anticipated that emissions will be reduced compared to the current old centrally serviced installation. The thermal performance of the refurbished building and new extension envelope will be considerably improved resulting in reduced thermal losses. The net effect is an overall improvement in PM10 and NOx emissions compared to the existing building.

## 2 Dust Risk Assessment

### 2.1 Introduction

Highgate School has prepared this Dust Risk Assessment (DRA) to be submitted with the planning application as part of the Air Quality Statement. The document includes:

- The Risk assessment for each phase of works (demolition, earthworks, construction, Track-out), which incorporates the risk evaluation process set out below, and identifies suitable mitigation measures (see Chapter 5) for the relevant level of risk.
- Identification of whether each phase of activity on-site represents a low, medium or high risk by following the guidance as set in "The control of Dust and Emissions during Construction and Demolition (SPG)", July 2014, Mayor of London.

A fuller detailed assessment will be carried out by the Main Contractor once appointed to the project. This shall form the Air Quality and Dust Management Plan (AQDMP) and will be submitted to the local authority prior to works commencing on-site following the guidance within the Mayor's Controlling Dust Emissions During Construction (SPG), July 2014.

### 2.2 Phases

The Air Quality and Dust Risk Assessment considers the following four phases of development:

- Demolition
- Earthworks
- Construction
- Track-out

#### 2.2.1 Dust Emission Magnitude

The dust emission magnitude is based on the scale of the anticipated works and is classified as Small, Medium, or Large. A classification will be noted for each of the four phases.

#### 2.2.1.1 Demolition Phase

##### 2.2.1.1.1 Phase Description

Demolition covers the partial demolition of elements within the building including the removal of existing staircase, apertures for the new staircase, and connection details associated with the two new extensions as indicated on the proposed demolition drawings.

##### Demolition Phase Dust Emission Magnitude

The proposed development is classified as small and it complies with the relevant criteria:

- Total volume of building to be demolished <20,000m<sup>3</sup>
- Construction material with low potential for dust release (ie. timber)
- Demolition activities <10m above ground

#### 2.2.1.2 Earthworks phase

##### 2.2.1.2.1 Phase Description

Earthworks primarily cover excavation, haulage, tipping and stockpiling of soil type materials. This includes levelling the site and landscaping.

The proposed development includes partial excavation to form a new basement, but no other external landscaping.

##### 2.2.1.2.2 Earthworks Phase Dust Emission Magnitude

The development is classified as small and it complies with the relevant criteria:

- Total site area <2,500m<sup>2</sup>
- <5 heavy earth moving vehicles active at any one time
- Total material moved <10,000 tonnes

#### 2.2.1.3 Construction phase

The key issues when determining the potential scale of dust emission during the construction phase include the size of the building(s)/infrastructure, method of construction, construction materials, and the duration of build.

#### 2.2.1.3.1 Construction Phase Dust Emission Magnitude

The proposed development is classified as small and it complies with the criteria below:

- Total building volume <25,000m<sup>3</sup>
- Construction material with low potential (e.g. metal cladding or timber)

#### 2.2.1.4 Track-out phase

##### 2.2.1.4.1 Phase Description

Factors which determine the risk of dust emissions from Track-out are vehicle size, vehicle speed, vehicle numbers, geology and duration.

Only receptors within 50m of the route(s) used by vehicles on the public highway and up to 500m from the site entrance(s) are considered to be at risk from the effects of dust.

##### 2.2.1.4.2 Track-out Phase Dust Emission Magnitude

The development is considered small and it complies with the following criteria:

- <10 HDV (>3.5t) trips in any one day
- Surface material with low potential for dust release
- Unpaved road length <50 m.

#### 2.2.1.5 Dust Emission Magnitude for all phases

Overall, the Dust Emission Magnitude for each phase is presented on the table below:

2.2.1.5.1.1 Table – Dust emission magnitude during development phases

| Activity     | Dust Emission Magnitude |
|--------------|-------------------------|
| Demolition   | Small                   |
| Earthworks   | Small                   |
| Construction | Small                   |
| Track-out    | Small                   |

## 2.3 Area sensitivity

The sensitivity of the area takes 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 PM10, the local background concentration and
- Site-specific factors, such as whether there are natural shelters, such as trees or other vegetation, to reduce the risk of wind-blown dust.

### 2.3.1 Sensitivity of People to Dust Soiling Effects

It is estimated that there are approximately 3nos 'receptors' 20m of the boundary of the site, 10nos 'receptors' within 50 m of the boundary of the site and no 'ecological receptor' within 50m of the boundary of the site (*the school's owned receptors i.e. Dyne House, Museum & Senior School Campus have been excluded from this calculation*).

All receptors are assumed to have High Sensitivity, under the following criteria:

- Users can reasonably expect an 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 to be present continuously, or at least regularly for extended periods as part of the normal pattern of use of the land.
- Indicative examples include dwellings, museums and other culturally important collections, medium and long term car parks and car showrooms.

### 2.3.2 Sensitivities of People to the Health Effects of PM10

All receptors are assumed to have High Sensitivity. Typical criteria include:

- Locations where members of the public are exposed over a time period relevant to the air quality objective for PM10 (in the case of the 24-hour objectives, a relevant location would be one where individuals may be exposed for eight hours or more in a day).
- Indicative examples include residential properties. Hospitals, schools and residential care homes should also be considered as having equal sensitivity to residential areas for the purposes of this assessment.

### 2.3.3 Sensitivities of Receptors to Ecological Effects

There are no known receptors within 50m. Typical criteria include:

- Locations with a local designation where the features may be affected by dust deposition.

### 2.3.4 Overall Area Sensitivity

The SPG provides tables to calculate the area sensitivity based on the number of receptors, distance from the proposed development and their sensitivity as presented above.

The area sensitivity will be calculated for the following categories:

1. Dust and soiling effects on people and property
2. Human health impacts (based on PM10 concentration increased due to the proposed development)
3. Ecological Impact

## 2.4 Dust and Soiling effects on people and property

Receptors and their sensitivity and respective distance from the proposed development are used on the table below to determine the area sensitivity. The area is considered of Medium Sensitivity.

2.4.1.1.1 Table – Sensitivity of the area to dust and soiling effects on people and property

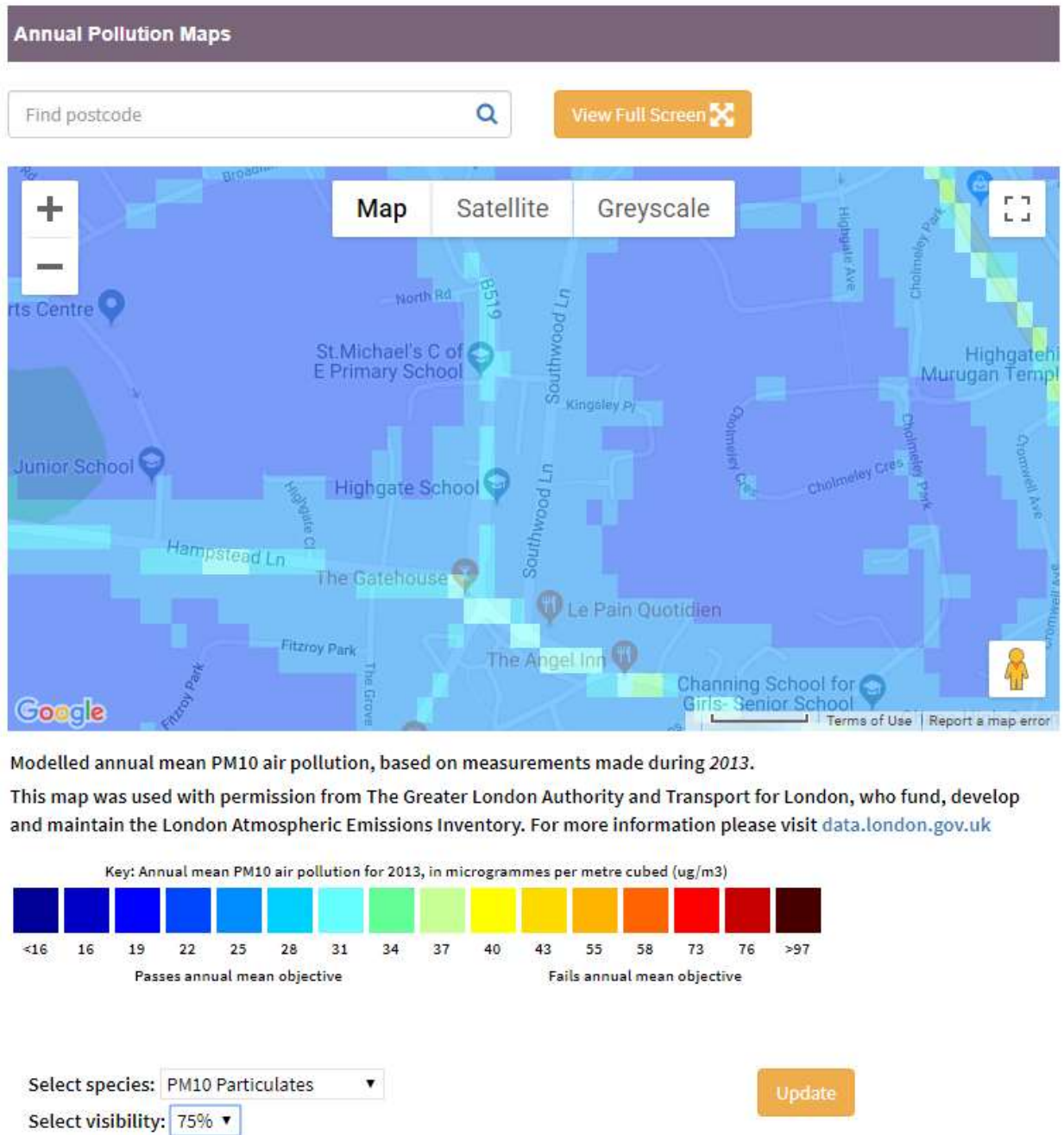
| Receptor Sensitivity | Number of Receptors | Distance from the Source (m) <sup>c</sup> |        |        |      |
|----------------------|---------------------|-------------------------------------------|--------|--------|------|
|                      |                     | <20                                       | <50    | <100   | <350 |
| High                 | >100                | High                                      | High   | Medium | Low  |
|                      | 10-100              | High                                      | Medium | Low    | Low  |
|                      |                     | Medium                                    | Low    |        |      |
| Receptor Sensitivity | Number of Receptors | Distance from the Source (m) <sup>c</sup> |        |        |      |
|                      |                     | <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  |

## 2.5 Human health impacts

Receptors and their sensitivity and respective distance from the proposed development are used on the table below to determine the area sensitivity. The area is considered of High Sensitivity.

2.5.1.1.1.1 Table - Sensitivity of the area to human health impacts

| Receptor Sensitivity | Annual Mean PM <sub>10</sub> concentration <sup>c</sup> | Number of Receptors <sup>d</sup> | Distance from the Source (m) <sup>e</sup> |        |        |        |      |
|----------------------|---------------------------------------------------------|----------------------------------|-------------------------------------------|--------|--------|--------|------|
|                      |                                                         |                                  | <20                                       | <50    | <100   | <200   | <350 |
| 1<br>High            | >32 µg/m <sup>3</sup>                                   | >100                             | High                                      | High   | High   | Medium | Low  |
|                      |                                                         | 10-100                           | High                                      | High   | Medium | Low    | Low  |
|                      |                                                         | 1-10                             | High                                      | Medium | Low    | Low    | Low  |
|                      | 28-32 µg/m <sup>3</sup>                                 | >100                             | High                                      | High   | Medium | Low    | Low  |
|                      |                                                         | 10-100                           | High                                      | Medium | Low    | Low    | Low  |
|                      |                                                         | 1-10                             | High                                      | Medium | Low    | Low    | Low  |
|                      | 24-28 µg/m <sup>3</sup>                                 | >100                             | High                                      | Medium | Low    | Low    | Low  |
|                      |                                                         | 10-100                           | High                                      | Medium | Low    | Low    | Low  |
|                      |                                                         | 1-10                             | Medium                                    | Low    | Low    | Low    | Low  |
|                      | 24-28 µg/m <sup>3</sup>                                 | >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  |

2.5.1.1.1.2 Modelled Annual Mean PM<sub>10</sub> Air Pollution Map

Source: London Air Website: [www.londonair.org.uk](http://www.londonair.org.uk)

## 2.6 Ecological Impacts

Receptors and their sensitivity and respective distance from the proposed development are used on the table below to determine the area sensitivity. The area is considered of Low Sensitivity.

2.6.1.1.1.1 Table - Sensitivity of the area to Ecological Impacts

| Receptor Sensitivity                                                                | Distance from the Source (m) <sup>c</sup> |        |
|-------------------------------------------------------------------------------------|-------------------------------------------|--------|
|                                                                                     | <20                                       | <50    |
| High                                                                                | High                                      | Medium |
| Medium                                                                              | Medium                                    | Low    |
| Low                                                                                 | Low                                       | Low    |
|    |                                           |        |
| Receptor Sensitivity                                                                | Distance from the Source (m) <sup>c</sup> |        |
|                                                                                     | <20                                       | <50    |
| High                                                                                | High                                      | Medium |
| Medium                                                                              | Medium                                    | Low    |
| Low                                                                                 | Low                                       | Low    |
|  |                                           |        |

## 2.7 Risk of Impacts

The dust emission magnitude determined above is combined with the sensitivity of the area to determine the risk of impacts with no mitigation applied.

The SPG provides the Risk tables below which will be used to calculate the Risk of Dust Impacts for each of the four phases, i.e. Demolition, Earthworks, Construction and Track-out.

2.7.1.1.1.1 Table - 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                 | Low Risk                | Low Risk    | Negligible  |

The Demolition phase Risk matrix for the Receptors/Sensitivity of Area/Dust Emission Magnitude is as follows:

2.7.1.1.1.2 Table – Risk of Dust Impacts on Receptors during Demolition phase

| Receptors    | Area Sensitivity | Dust Emission Magnitude | Risk of Dust Impacts Demolition |
|--------------|------------------|-------------------------|---------------------------------|
| Dust Soiling | Medium           | Small                   | Low Risk                        |
| Human Health | High             | Small                   | Medium Risk                     |
| Ecological   | Low              | Small                   | Negligible                      |

2.7.1.1.1.3 Table - 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                                                                                   |

The Earthworks phase Risk matrix for the Receptors / Sensitivity of Area / Dust Emission Magnitude is as follows:

2.7.1.1.1.4 Table – Risk of Dust Impacts on Receptors during Earthworks phase

| Receptors    | Area Sensitivity | Dust Emission Magnitude | Risk of Dust Impacts Demolition |
|--------------|------------------|-------------------------|---------------------------------|
| Dust Soiling | Medium           | Small                   | Low Risk                        |
| Human Health | High             | Small                   | Low Risk                        |
| Ecological   | Low              | Small                   | Negligible                      |

2.7.1.1.1.5 Table - Risk of dust impacts – Construction

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

The Construction phase Risk matrix for the Receptors / Sensitivity of Area / Dust Emission Magnitude is as follows:

2.7.1.1.1.6 Table – Risk of Dust Impacts on Receptors during Construction phase

| Receptors    | Area Sensitivity | Dust Emission Magnitude | Risk of Dust Impacts Demolition |
|--------------|------------------|-------------------------|---------------------------------|
| Dust Soiling | Medium           | Small                   | Low Risk                        |
| Human Health | High             | Small                   | Low Risk                        |

|            |     |       |            |
|------------|-----|-------|------------|
| Ecological | Low | Small | Negligible |
|------------|-----|-------|------------|

2.7.1.1.1.7 Table - Risk of dust impacts – Track-out

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

| 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 |

The Track-out phase Risk matrix for the Receptors / Sensitivity of Area / Dust Emission Magnitude is as follows:

2.7.1.1.1.8 Table – Risk of Dust Impacts on Receptors during Track-out phase

| Receptors    | Area Sensitivity | Dust Emission Magnitude | Risk of Dust Impacts Demolition |
|--------------|------------------|-------------------------|---------------------------------|
| Dust Soiling | Medium           | Small                   | Negligible                      |
| Human Health | High             | Small                   | Low Risk                        |
| Ecological   | Low              | Small                   | Negligible                      |

2.7.1.1.1.9 Table – Summary Dust Risk Table with no mitigation measures applied

| Potential impact | Risk        |            |              |            |
|------------------|-------------|------------|--------------|------------|
|                  | Demolition  | Earthworks | Construction | Track-out  |
| Dust Soiling     | Low Risk    | Low Risk   | Low Risk     | Negligible |
| Human Health     | Medium Risk | Low Risk   | Low Risk     | Low Risk   |
| Ecological       | Low Risk    | Negligible | Negligible   | Negligible |

### 3 Mitigation Measures

The developer will implement the appropriate dust and pollution control measures set out below to ensure the air quality impacts of construction and demolition are minimised and any mitigation measures employed are effective. Best practice methods will be adopted and staff will be trained to ensure these are implemented correctly. This is expected to minimise formation of dust and harmful emissions.

These measures are summarised below, and they are divided according to key construction and demolition stages and site risk. All measures are compulsory for site staff unless not feasible and alternative arrangements are agreed with site management. These measures are intended to be effective and deliverable and in-line with best practice.

The focus of the dust and pollution control measures to be outlined is to reduce health and dust annoyance impacts on existing local receptors. Potential health impacts from dust emissions to site personnel will also be considered and included in the site's health and safety documentation.

Contact details for the person responsible for dust and emissions generated from the site will be displayed on the site boundary so that local residents and businesses are able to contact the main contractor to raise any issues that they may have and report complaints. Site management has the authority to deal with complaints.

#### 3.1 Site inspections

The main contractor will actively monitor the site to ensure the control of dust and emissions. Dry and windy conditions increase the likelihood of dust and emissions being produced and dispersed, so extra site monitoring will take place during these times.

##### 3.1.1 Preparing and maintaining the site

###### 3.1.1.1 Site layout

- Machinery and dust generating activities will be located within the development enclosure and away from receptors
- Solid screens and / or monarflex sheeting will be used to enclose the site. Additional barriers will be provided around dust generating activities
- Materials will be always covered to prevent wind whipping
- Site will be cleaned daily and any loose materials will be removed as soon as possible

### 3.1.1.2 Site maintenance

The Main Contractor will keep their construction site clean and in good order. Measures will include:

- Eliminate runoff and mud as it can lead to dust once dry
- Hoardings, fencing, barriers and scaffolding will be regularly cleaned as required

### 3.1.1.3 Dealing with spillages

Spillages can occur with a wide range of liquid and materials. The following measures will address this issue:

- Use bunded areas wherever practicable
- Regularly inspect the site area for spillages
- Have spillage kits readily available
- Vacuum or sweep regularly to prevent the build-up of fine waste dust material, which has spilled on the site and is designated as waste that is no longer fit for use

### 3.1.1.4 Reducing emissions from vehicles

Emissions from vehicles associated with construction sites can significantly add to levels of local air pollution, so it is important that best practice is employed to reduce these.

All mobile vehicles associated with the demolition / construction will comply with the standards of the London Low Emission Zone. For HGVs, the standard is Euro IV for PM and for heavier vans and mini buses it is Euro 3.

### 3.1.1.5 Reducing vehicle idling

Site management will work with suppliers and other contractors to ensure that vehicles do not have to wait to park safely.

If vehicles have to load/unload they will not stay idle unless required to safely operate the vehicle.

### 3.1.1.6 Construction Traffic

A site specific Construction Traffic Management Plan has been developed to evaluate the impact to the local environment. Generally, site management is responsible to ensure deliveries and removals are managed so that they are made when they are most needed, at times when they will contribute less to congestion and at locations where loading and unloading can take place safely. Deliveries will be consolidated so fewer journeys are needed.

These measures will reduce congestion in the local area and inconvenience to local road users.

### 3.1.2 Operations

#### 3.1.2.1 Diesel or petrol generators

Generators will generally be avoided. Use will be allowed only in emergencies and site management will approve use only when no other option is available.

#### 3.1.2.2 Cutting, grinding and sawing

Cutting, grinding and sawing will be reduced. Where possible, materials will be prepared off-site. In cases where such work must take place, spraying water over the material as it is being cut will greatly reduce the amount of dust generated.

If scabbling (*grinding concrete using a machine tipped with steel or carbide material*) is required the following measures will be in place to comply with best practice:

- Pre-wash work surfaces
- Screen off work area
- sweeping away or use electric vacuum

#### 3.1.2.3 Chutes, conveyors and skips

Skips, chutes and the electric conveyor belt will be completely covered and, if necessary, completely enclosed to ensure that dust does not escape. Similarly, drop heights will be minimized to control the fall of materials.

### 3.1.3 Waste Management

- No burning of any material is permitted on-site
- Any excess material should be reused or recycled on or off-site in accordance with appropriate legislation
- The Main Contractor will identify the waste types that are likely to be produced and aim to reduce the amount of waste as much as possible, through identifying routes to reuse or recycle materials. The Main Contractor will refer to the Waste and Resources Action programme (WRAP- [www.wrap.org.uk](http://www.wrap.org.uk)) which provides a list of ten quick wins for reducing and re-using waste
- Control access to storage areas to minimize risk of theft or damage
- Set up a dedicated store for timber, from which workers can re-use supplies
- Store any materials away from sensitive locations in fenced off areas
- Employ a just-in-time policy to deliver materials in order to reduce the storage time on-site

- Recycled materials will be used where possible and any materials used on site will be recycled rather than disposed of (including timber, aggregates, soil, bricks, masonry, concrete).

#### 3.1.4 Mitigation measures specific to demolition

Demolition activities can generate significant dust and also cause re-suspension of dust currently within the building. The Main Contractor will carry out soft stripping to screen dust and prevent dispersion. Water suppression will be used to damp down dust and other debris that could generate dust, and where practical, manual or mechanical demolition techniques will be used.

#### 3.1.5 Measures specific to construction

Cement, sand, fine aggregates and other fine powders will be sealed after use and if necessary stored in enclosed or banded containers or silos. Some materials should be kept damp to reduce the risk of drying out.

For a comprehensive table of mitigation measures for Low, Medium and High Risk Sites please refer to Appendix A.

## 4 Site Monitoring

The correct implementation of the best practice methods identified above is expected to minimise the formation of dust and harmful emissions from the proposed development.

In addition, continuous site monitoring will allow the developer to manage the generation of dust including PM10 and PM2.5 and NOx emissions during construction and demolition. The site is considered to be Low Risk. For a Low Risk site the Control of Dust and Emissions during Construction and Demolition SPG July 2014 recommends to:

- Take into account the impact of air quality and dust on occupational exposure standards to minimize worker exposure and breaches of air quality objectives that may occur outside the site boundary, such as by visual assessment
- Keep an accurate log of complaints from the public, and the measures taken to address any complaints, where they were required

## 5 Conclusion

This document identifies the Dust Risks associated with the proposed development. Best practice methods have been identified and proposed to minimize the formation of dust and harmful emissions from the construction. Appropriate mitigations measures are proposed to minimize impact to the adjoining owners and other stakeholders.

In relation to operational impact, it is expected that the new gas boiler and improved thermal performance of the new building envelope will greatly reduce the emissions of PM<sub>10</sub> and NO<sub>x</sub>. It is anticipated that there will be no change in road traffic as a result of the proposed development.

## 6 Appendix A

Measures relevant for Demolition, Earthworks, Construction and Track-out

*Source: The control of Dust and Emissions during Construction and Demolition SPG, July 2014, Mayor of London*

| MITIGATION MEASURE                                                                                                                                                                                                                                                    | LOW RISK | MEDIUM RISK | HIGH RISK |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------|-------------|-----------|
| <b>Site management</b>                                                                                                                                                                                                                                                |          |             |           |
| Develop and implement a stakeholder communications plan that includes community engagement before work commences on site.                                                                                                                                             |          | XX          | XX        |
| Develop a Dust Management Plan.                                                                                                                                                                                                                                       |          | XX          | XX        |
| Display the name and contact details of person(s) accountable for air quality pollutant emissions and dust issues on the site boundary.                                                                                                                               | XX       | XX          | XX        |
| Display the head or regional office contact information.                                                                                                                                                                                                              | XX       | XX          | XX        |
| Record and respond to all dust and air quality pollutant emissions complaints.                                                                                                                                                                                        | XX       | XX          | XX        |
| Make a complaints log available to the local authority when asked.                                                                                                                                                                                                    | XX       | XX          | XX        |
| 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.                                                             | XX       | XX          | XX        |
| 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. | XX       | XX          | XX        |
| Record any exceptional incidents that cause dust and air quality pollutant emissions, either on or off the site, and the action taken to resolve the situation is recorded in the log book.                                                                           | XX       | XX          | XX        |

XX: Highly recommended, X: Desirable

| MITIGATION MEASURE                                                                                                                                                                                                                                                                                                                   | LOW RISK | MEDIUM RISK | HIGH RISK |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------|-------------|-----------|
| Put in place real-time dust and air quality pollutant monitors across the site and ensure they are checked regularly.                                                                                                                                                                                                                |          | XX          | XX        |
| <b>Operating vehicle/machinery and sustainable travel</b>                                                                                                                                                                                                                                                                            |          |             |           |
| Ensure all on-road vehicles comply with the requirements of the London Low Emission Zone.                                                                                                                                                                                                                                            | XX       | XX          | XX        |
| Ensure all non-road mobile machinery (NRMM) comply with the standards set within this guidance.                                                                                                                                                                                                                                      | XX       | XX          | XX        |
| Ensure all vehicles switch off engines when stationary - no idling vehicles.                                                                                                                                                                                                                                                         | XX       | XX          | XX        |
| Avoid the use of diesel or petrol powered generators and use mains electricity or battery powered equipment where possible.                                                                                                                                                                                                          | XX       | XX          | XX        |
| Impose and signpost a maximum-speed-limit of 10mph on surfaced haul routes and work areas (if long 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). | X        | X           | XX        |
| Produce a Construction Logistics Plan to manage the sustainable delivery of goods and materials.                                                                                                                                                                                                                                     |          | XX          | XX        |
| Implement a Travel Plan that supports and encourages sustainable travel (public transport, cycling, walking, and car-sharing).                                                                                                                                                                                                       | XX       | XX          | XX        |
| <b>Operations</b>                                                                                                                                                                                                                                                                                                                    |          |             |           |
| 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.                                                                                                                         | XX       | XX          | XX        |

| MITIGATION MEASURE                                                                                                                                                             | LOW RISK | MEDIUM RISK | HIGH RISK |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------|-------------|-----------|
| Ensure an adequate water supply on the site for effective dust/particulate matter mitigation (using recycled water where possible).                                            | XX       | XX          | XX        |
| Use enclosed chutes, conveyors and covered skips.                                                                                                                              | XX       | XX          | XX        |
| Minimise drop heights from conveyors, loading shovels, hoppers and other loading or handling equipment and use fine water sprays on such equipment wherever appropriate.       | XX       | XX          | XX        |
| 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. |          | XX          | XX        |
| <b>Waste management</b>                                                                                                                                                        |          |             |           |
| Reuse and recycle waste to reduce dust from waste materials                                                                                                                    | XX       | XX          | XX        |
| Avoid bonfires and burning of waste materials.                                                                                                                                 | XX       | XX          | XX        |

#### Measures specific to demolition

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

## Measures specific to Earthworks

| MITIGATION MEASURE                                                                                 | LOW RISK | MEDIUM RISK | HIGH RISK |
|----------------------------------------------------------------------------------------------------|----------|-------------|-----------|
| Re-vegetate earthworks and exposed areas/soil stockpiles to stabilise surfaces.                    |          | X           | XX        |
| Use Hessian, mulches or trackifiers where it is not possible to re-vegetate or cover with topsoil. |          | X           | XX        |
| Only remove secure covers in small areas during work and not all at once.                          |          | X           | XX        |

## Measures specific to Construction

| MITIGATION MEASURE                                                                                                                                                                                                           | LOW RISK | MEDIUM RISK | HIGH RISK |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------|-------------|-----------|
| Avoid scabbling (roughening of concrete surfaces) if possible                                                                                                                                                                | X        | X           | XX        |
| 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 | X        | XX          | XX        |
| 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.               |          | X           | XX        |
| For smaller supplies of fine powder materials ensure bags are sealed after use and stored appropriately to prevent dust.                                                                                                     |          | X           | X         |

## Measures specific to Track-out

| MITIGATION MEASURE                                                                                                                                | LOW RISK | MEDIUM RISK | HIGH RISK |
|---------------------------------------------------------------------------------------------------------------------------------------------------|----------|-------------|-----------|
| Regularly use a water-assisted dust sweeper on the access and local roads, as necessary, to remove any material tracked out of the site.          | X        | XX          | XX        |
| Avoid dry sweeping of large areas.                                                                                                                | X        | XX          | XX        |
| Ensure vehicles entering and leaving sites are securely covered to prevent escape of materials during transport.                                  | X        | XX          | XX        |
| Record all inspections of haul routes and any subsequent action in a site log book.                                                               |          | XX          | XX        |
| Install hard surfaced haul routes, which are regularly damped down with fixed or mobile sprinkler systems and regularly cleaned.                  |          | XX          | XX        |
| Inspect haul routes for integrity and instigate necessary repairs to the surface as soon as reasonably practicable;                               |          | XX          | XX        |
| Implement a wheel washing system (with rumble grids to dislodge accumulated dust and mud prior to leaving the site where reasonably practicable). | X        | XX          | XX        |
| 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.  |          | XX          | XX        |
| Access gates to be located at least 10m from receptors where possible.                                                                            |          | XX          | XX        |
| Apply dust suppressants to locations where a large volume of vehicles enter and exit the construction site                                        |          | X           | XX        |