



## Air Quality Assessment

**16- 20 Red Lion Street**

For BNP Paribas as Trustees of Mayfair Capital Commercial Property Trust

**November 2016**

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## 1. Executive Summary

An assessment of potential air quality impacts arising from the construction ~~and operation phase~~ of the proposed development at 16 – 20 Red Lion Street has been undertaken.

The proposed scheme comprises the erection of roof extension for the creation of a 6th floor and roof top plant above, creation of terraces at ground floor, 1st, 5th and 6th floor levels, extension to rear of building, replacement of all existing single glazed windows and new reception entrance along Red Lion Street and Sandland Street with associated re-cladding. Rendering of existing rear facade. Erection of a canopy to the rear area to create new cycle parking area. ~~an extension to the rear of the existing building, replacement of the existing single glazed windows on the rear facades, a roof extension and roof top plant and a new reception entrance along Red Lion Street and Sandland Street.~~

The London Borough of Camden (LBC) has declared a Borough-wide Air Quality Management Area (AQMA), due to exceedances of the air quality objectives for nitrogen dioxide (NO<sub>2</sub>) and particulate matter (PM<sub>10</sub>). The proposed development falls within the designated AQMA.

During the construction phase, the site has the potential to generate dust nuisance beyond the application boundary. However, through the implementation of a Dust Management Plan, the impacts will be effectively minimised and are unlikely to be significant.

The proposed development has no allocated parking, therefore the operational impact on local air quality is considered to be negligible.

## 2. Introduction

This report presents an assessment of the potential impact on local air quality of the construction of the proposed development at 16-20 Red Lion Street, Holborn. The proposed scheme comprises an extension to the rear of the existing building, replacement of the existing single glazed windows on the rear facades, a roof extension and roof top plant and a new reception entrance along Red Lion Street and Sandland Street.

The location of the proposed development site is presented in Figure 1. The site falls within the London Borough of Camden (LBC) Air Quality Management Area (AQMA), which is a borough-wide designation due to measured and modelled exceedances of the air quality objectives for nitrogen dioxide (NO<sub>2</sub>) and particulate matter (as PM<sub>10</sub>). The primary source of these pollutants in the Borough is road traffic.

The source and significance of potential ~~construction phase~~ impacts are identified and the measures that should be employed to minimise these impacts are described.

The proposed development has no allocated parking, therefore the operational impact on local air quality is considered to be negligible, however a review of local air quality has been undertaken to ascertain whether there is likely to be an exceedance of the short-term air quality standards for NO<sub>2</sub> and PM<sub>10</sub> at the site.

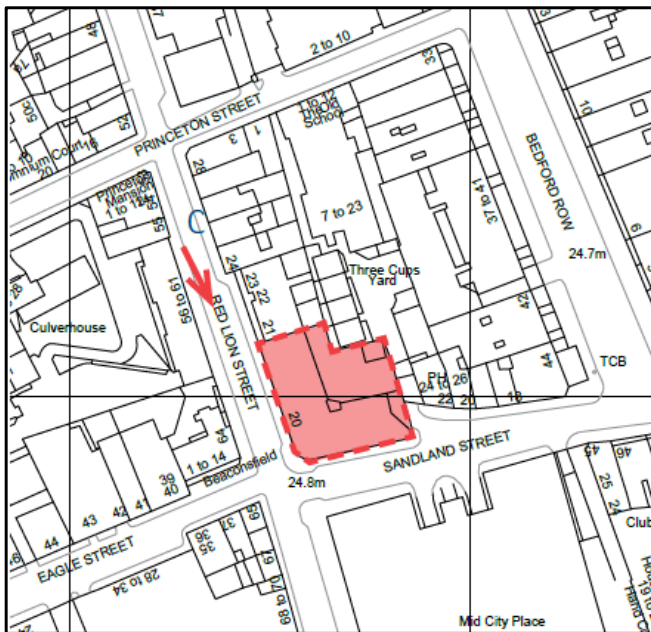


Figure 1. Location of Proposed Development

### 3. Policy Context

#### 3.1 European Legislation

Within the European Union, ambient air quality is currently regulated through the Ambient Air Quality Directive 2008/50/EC<sup>1</sup> and the Fourth Daughter Directive 2004/107/EC<sup>2</sup>. These directives set limit values and target values for ambient pollutant concentrations. The limit values are legally binding and must not be exceeded, whereas the target values are to be attained where it is cost effective to do so.

The Ambient Air Quality Directive provides limit values for sulphur dioxide (SO<sub>2</sub>), nitrogen dioxide (NO<sub>2</sub>), benzene (C<sub>6</sub>H<sub>6</sub>), carbon monoxide (CO), lead (Pb) and particulate matter (PM<sub>10</sub> and PM<sub>2.5</sub>)<sup>3</sup>. The Fourth Daughter Directive provides target values for arsenic (As), cadmium (Cd), nickel (Ni), benzo(a)pyrene (B(a)P), mercury (Hg) and polycyclic aromatic hydrocarbons (PAH)<sup>4</sup>.

The EU limit values have been adopted into UK law via the Air Quality Standards Regulations 2010<sup>5</sup>.

In the context of the proposed development, the primary pollutants of concern are NO<sub>2</sub> and PM<sub>10</sub> emitted from construction traffic and PM<sub>10</sub> released from construction activities on site. A summary of the European limit values for the protection of human health for these pollutants is presented in Table 1.

Table 2. European Limit Values for the Protection of Human Health

Pollutant	Averaging Period	Limit Value (µg/m <sup>3</sup> )	Comments
NO <sub>2</sub>	1-hour	200	Not to be exceeded more than 18 times per calendar year (equivalent to the 99.8 <sup>th</sup> percentile of 1-hour means)
	Calendar year	40	-
PM <sub>10</sub>	1-day	50	Not to be exceeded more than 35 times per year (equivalent to the 90.4 <sup>th</sup> percentile of 24-hour means)
	Calendar Year	40	-

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#### 3.2 National Legislation

##### 3.2.1 The Air Quality Strategy for England, Scotland, Wales and Northern Ireland

The Air Quality Strategy for England, Wales and Northern Ireland<sup>6</sup> was published in 2007 and sets out policy targets (objectives) for SO<sub>2</sub>, NO<sub>2</sub>, C<sub>6</sub>H<sub>6</sub>, CO, Pb, PM<sub>10</sub>, PM<sub>2.5</sub>, 1,3-butadiene (C<sub>4</sub>H<sub>6</sub>) and PAH. These objectives are generally in line with those set by the European Directives, although more stringent particulate and benzene objectives apply in Scotland (and in Northern Ireland for benzene).

The air quality objectives (AQO) for NO<sub>2</sub> and PM<sub>10</sub> in England do not differ from those presented in Table 1.

<sup>1</sup> Directive 2008/50/EC of the European Parliament and of the Council of 21 May 2008 on ambient air quality and cleaner air for Europe.

<sup>2</sup> Directive 2004/107/EC of the European Parliament and of the Council of 15 December 2004 relating to arsenic, cadmium, mercury, nickel and polycyclic aromatic hydrocarbons in ambient air.

<sup>3</sup> Particulate matter with an aerodynamic diameter below 10 µm and below 2.5 µm.

<sup>4</sup> Polycyclic aromatic hydrocarbons other than benzo(a)pyrene.

<sup>5</sup> The Air Quality Standards Regulations 2010, Statutory Instrument 2010 No. 1001, Environmental Protection.

<sup>6</sup> The Air Quality Strategy for England, Scotland, Wales and Northern Ireland, Department for Environment, Food and Rural Affairs in partnership with the Scottish Executive, Welsh Assembly Government and Department of the Environment Northern Ireland, July 2007.

### 3.2.2 Local Air Quality Management

The framework for Local Air Quality Management (LAQM) in the UK was introduced by the Environment Act 1995<sup>7</sup>. Local Authorities are required to regularly review and assess air quality to establish whether there are any locations where pollutant concentrations exceed the relevant air quality objectives or EU limit values. Where an exceedance is identified the local authority is obliged to declare an Air Quality Management Area (AQMA) and prepare an Action Plan setting out measures to improve air quality and achieve compliance with the objective(s).

### 3.2.3 The National Planning Policy Framework

The National Planning Policy Framework (NPPF)<sup>8</sup> sets out the Government's policies for planning and how these should be applied. With regard to air quality, the NPPF states that local "Planning policies should sustain compliance with and contribute towards EU limit values or national objectives for pollutants, taking into account the presence of Air Quality Management Areas and the cumulative impacts on air quality from individual sites in local areas. Planning decisions should ensure that any new development in Air Quality Management Areas is consistent with the local air quality action plan."

The National Planning Policy Guidance (NPPG)<sup>9</sup>, published in March 2014, outlines the principles upon which the planning process can take account of air quality impacts associated with new developments. It outlines the role of Local Plans in promoting sustainability and providing limitations on development in areas of poor air quality. An emphasis is placed on consultation with the planning authority to determine whether there are any local issues with the potential to affect the scope of an air quality assessment. Typical air quality mitigation measures are outlined highlighting the use of planning conditions and funding obligations to off-set any significant impacts.

## 3.3 Regional Policy

### 3.3.1 The London Plan

Policy 7.14 of the London Plan<sup>10</sup> sets out the Mayor of London's commitment to improving air quality and public health. It states that development proposals should 'minimise increased exposure to poor air quality' by:

- Promoting sustainable transport;
- Promoting sustainable design and construction;
- Being air quality neutral, particularly in AQMAs;
- Ensuring that where a potential impact on air quality is identified, appropriate mitigation measures are proposed which demonstrate a clear benefit to local air quality; and
- Providing detailed air quality assessments for non-transport sources such as on site biomass boilers and combined heat and power (CHP) plants to assess the potential impact of emissions on air quality.

### 3.3.2 The Mayor of London's Air Quality Strategy (2010)

The Mayor of London's Air Quality Strategy<sup>11</sup> outlines the Mayor's commitment to improving air quality in London. The objective of the plan is to significantly reduce NO<sub>2</sub> and PM<sub>10</sub> concentrations through a number of measures including:

- Ensuring all buses meet Euro IV emission standards;

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<sup>7</sup> Part IV of the Environment Act 1995

<sup>8</sup> National Planning Policy Framework, Department for Communities and Local Government, March 2012.

<sup>9</sup> <http://planningguidance.planningportal.gov.uk/blog/guidance/air-quality/>

<sup>10</sup> The London Plan, The Spatial Development Strategy for London Consolidated with Alterations Since 2011, March 2015

<sup>11</sup> Clearing the Air, The Mayor's Air Quality Strategy, December 2010.

- Introducing age limits for taxis and Private Hire Vehicles to remove older, more polluting vehicles from the roads;
- Including large vans and minibuses in the Low Emission Zone (LEZ)
- Introducing a new NO<sub>x</sub> standard in the LEZ; and
- Working with Borough to implement traffic management strategies to reduce congestion.

### 3.4 Local Policy

#### 3.4.1 The London Borough of Camden

A number of policies relating to improving air quality are contained within the London Borough of Camden's Core Strategy<sup>12</sup>. In particular policy CS16 (Improving Camden's health and wellbeing) recognises the impact of poor air quality on public health.

Camden's Clean Air Action Plan<sup>13</sup> outlines the Council's commitment to improving air quality in the Borough. The key objectives of the plan are to reduce PM<sub>10</sub> and NO<sub>2</sub> concentrations by:

- encouraging the use of clean fuels and technologies;
- promoting energy efficient to reduce fossil fuel usage;
- raising awareness of air quality issues and promoting lifestyle changes which reduce air pollution and improve the health of local residents; and
- working in partnership with other organisations to foster improvements in air quality.

The Action Plan is supported by The Camden Plan<sup>14</sup> and Camden's Environmental Sustainability Plan<sup>15</sup> drawing on European and National legislation in conjunction with national, regional and local policy to manage and improve air quality across the Borough.

The Borough has been designated a 'Clear Zone' focussing on reducing traffic congestion and promoting sustainable transport initiatives. Development Policy DP32 (Air Quality and Camden's Clear Zone)<sup>16</sup> states that planning permission will only be granted for developments that are likely to significantly increase travel demands where 'appropriate measures to minimise impacts are incorporated'.

#### 3.4.2 The London Borough of Camden Review and Assessment of Air Quality

LBC regularly review and assess air quality within the Borough in accordance with the requirements of Defra. Historically, routine monitoring has identified widespread exceedances of the air quality objectives for NO<sub>2</sub> and PM<sub>10</sub>. As a consequence, in 2002, the Council declared a Borough-wide AQMA for these pollutants. More recent monitoring indicates that the NO<sub>2</sub> objectives are still widely exceeded at roadside locations within the Borough, but PM<sub>10</sub> concentrations are now generally within the objective.

<sup>12</sup> Camden Core Strategy 2010 – 2025, Adopted 2010.

<sup>13</sup> London Borough of Camden, Camden's Clean Air Action Plan ~~2013-2016~~ ~~2015-2018~~.

<sup>14</sup> The Camden Plan 2012 - 2017

<sup>15</sup> Green Action for Change 2012 – 2020.

<sup>16</sup> Camden Development Policies 2010 – 2025

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## 4. Methodology

### 4.1 Construction Dust Impacts

The potential impact of dust generated during site enabling, earthworks and construction works at the proposed development has been undertaken in accordance with the Mayor of London's SPG for the Control of Dust and Emissions during Construction and Demolition<sup>17</sup>, which is closely aligned with the Institute of Air Quality Management (IAQM) construction dust guidance<sup>18</sup>. A full description of the construction dust methodology is provided in Appendix A.

A detailed assessment of dust impacts is required where there are human or ecological receptors within:

- 50m of the site boundary; or
- 50m of the route(s) used by construction vehicles on public roads, up to 500m from the site entrance(s).

The IAQM/ SPG methodology allows the potential risk of dust soiling and human health effects to be determined, based primarily on the sensitivity of nearby receptors (human and ecological) and the anticipated magnitude of the dust emission due to:

- Demolition;
- Earthworks;
- Construction; and
- Track-out (re-suspended dust from vehicle movements).

The assessment of dust risk is also based on professional judgement taking into account factors such as the prevailing wind direction, the proposed construction phasing, the likely duration of dust raising activities, local topography and existing air quality.

A range of best practice mitigation measures are provided within the guidance, which are dependent on the level of dust risk attributed to the site. It is recommended that these measures are incorporated into a Dust Management Plan (DMP) for the proposed development.

The significance of the residual impacts following appropriate mitigation is determined by professional judgement.

### 4.2 Construction Traffic Impacts

Construction traffic will contribute to existing traffic levels on the surrounding road network. However, the temporary increase in traffic is considered unlikely to be significant in terms of total flow or construction duration.

All non-road mobile machinery (NRMM) will comply with the emission standards specified in the Mayor of London's Control of Dust and Emissions during Construction and Demolition SPG.

The impact of vehicular emissions of NO<sub>2</sub> and PM<sub>10</sub> from construction traffic and on-site machinery on local air quality is considered to be negligible.

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<sup>17</sup> The Control of Dust and Emissions during Construction and Demolition Supplementary Planning Guidance, The Mayor of London, July 2014

<sup>18</sup> Guidance on the assessment of dust from demolition and construction, IAQM, February 2014 (Minor amendments, June 2016)

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4.3 Operational Traffic Impacts

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Planning guidance<sup>19</sup> published jointly by Environmental Protection UK (EPUK) and the IAQM, states that for developments within or near an AQMA, a detailed assessment of traffic-related impacts is required where:

- There is a change in the annual average daily traffic (AADT) flow of light goods vehicles (LGV) of more than 100 vehicles; and/or
• There is a change in the AADT flow of heavy goods vehicles (HGV) of more than 25 vehicles; and/or
• There is a change in the road re-alignment by more than 5m; and/or
• A new junction is introduced, which will significantly alter vehicle speeds.

The proposed development does not have any allocated parking and is therefore not expected to generate significant traffic during the operational phase. On the basis of the EPUK/IAQM criteria, a detailed assessment is therefore not required for operational traffic and the significance of the impact of traffic emissions associated with the development is considered to be negligible.

4.4 Impact on Future Occupants

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Since the proposed development will be effectively 'car-free', a survey of existing traffic movements on Red Lion Street and Sandland Street has not been undertaken in support of the application. As a consequence it has not been possible to undertake dispersion modelling to determine existing pollutant concentrations at the facade of the proposed building.

The proposed development will comprise commercial and business space and therefore there will be no new long term exposure to poor air quality associated with the site. However, a review of air quality monitoring data for the local area has been undertaken to determine the likelihood of an exceedance of the short-term air quality objectives for NO2 or PM10 at the proposed development.

4.5 Building-Related Emissions

The Mayor of London's Sustainable Design and Construction Supplementary Planning Guidance (SPG)<sup>20</sup> was published in April 2014 and sets out the requirements for undertaking impact assessments in accordance with the policies set out in the London Plan and the Mayor of London's Air Quality Strategy.

An additional planning support document was issued in April 2014<sup>21</sup>, which provides guidance on the implementation of the 'air quality neutral' policy for 'major developments' (over 10 residential dwellings or 1,000 m² floor space).

Air-source heat pumps will provide space heating to the proposed development and a low-NOx condensing gas boilers will supply hot water to communal shower and toilet facilities. The boilers will be compliant with the emission limit of 40 mg NOx/kWh, as specified by the SPG.

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19 Land-use Planning and Development Control: Planning for Air Quality, Guidance from Environmental Protection UK and the Institute of Air Quality Management for the consideration of air quality within the land use planning and development control process, May 2015.

20 Sustainable Design and Construction Supplementary Planning Guidance, Mayor of London, London Plan 2011 Implementation Framework, April 2014

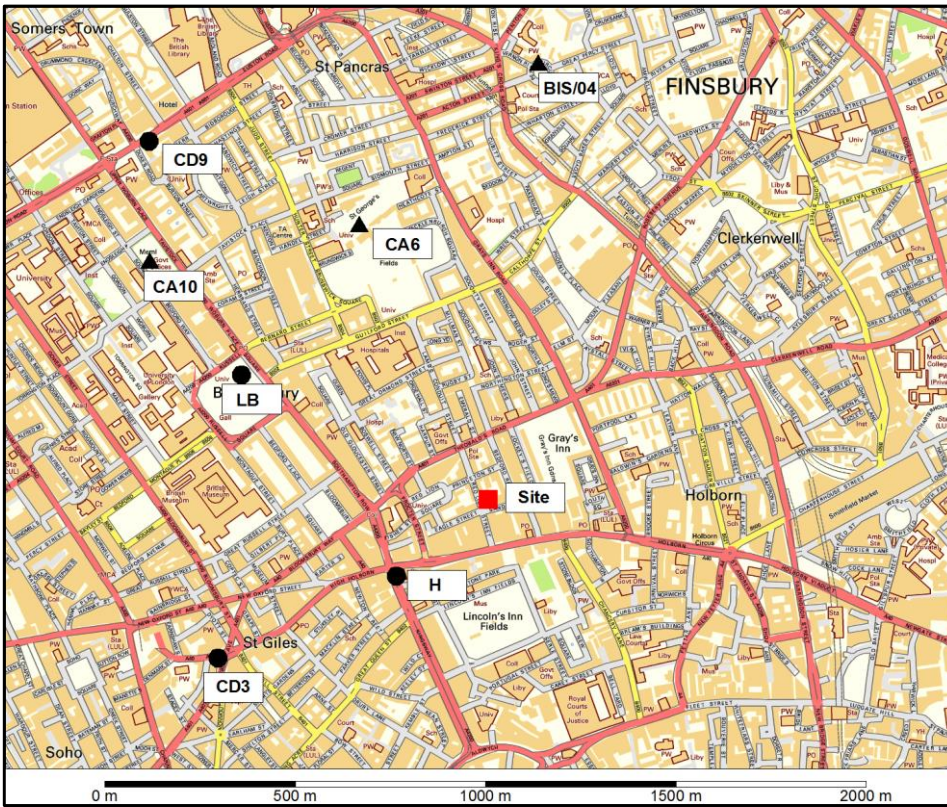
21 Air Quality Neutral Planning Support Update, GLA 80371, April 2014

## 5. Existing Air Quality

### 5.1 Automatic Monitoring

LBC currently operate five automatic air quality monitoring stations (AQMS) in the Borough. All five sites are affiliated to the London Air Quality Network (LAQN) and the data are therefore subject to high levels of quality assurance and control.

Details of the ~~three~~ four LBC AQMS sites measuring airborne particulate concentrations are summarised in Table 2. The location of the sites relative to the proposed development are presented in Figure 2. [A summary of NO<sub>2</sub> and PM<sub>10</sub> concentrations measured at these sites between 2011 and 2015 is presented in Tables 3 and 4 respectively. A summary of PM<sub>2.5</sub> concentrations measured at these sites between 2010 and 2014 is presented in Table 3.](#)



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*Figure 2. Location of Monitoring Sites (Contains Ordnance Survey data © Crown copyright and database right 2016)*

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Table 2. Automatic Air Quality Monitoring Sites

Site Name	Type	Easting	Northing	Pollutants Monitored	Distance from Kerb
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London Bloomsbury (LB - Camden)	Urban Background	530120	182034	NO <sub>2</sub> , PM <sub>10</sub> , PM <sub>2.5</sub>	27.0 m
Shaftsbury Avenue (CD3 - Camden)	Roadside	530060	181290	NO <sub>2</sub> , PM <sub>10</sub>	<1.0 m
Euston Road (CD9 - Camden)	Roadside	529878	182648	NO <sub>2</sub> , PM <sub>10</sub>	0.5 m
<b>Holborn (H - Camden)</b>	<b>Kerbside</b>	<b>530528</b>	<b>181505</b>	<b>NO<sub>2</sub></b>	<b>1 m</b>

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Table 3. NO<sub>2</sub> Concentrations Measured at AQMS's in the Vicinity of the Proposed Development

Site Name	2011	2012	2013	2014	2015
<b>Annual Mean NO<sub>2</sub> (µg/m<sup>3</sup>)</b>					
London Bloomsbury	50	55	44	45	48
Shaftsbury Avenue	76	71	74	69	n/a
Euston Road	122	106	106	98	91(a)
Holborn	n/a	n/a	n/a	94	85
<b>Number of Predicted Exceedances of the 1-Hour Mean AQO for NO<sub>2</sub> of 200 µg/m<sup>3</sup></b>					
London Bloomsbury	0	1	0	0	0
Shaftsbury Avenue	15	12	6	1	n/a
Euston Road	726	295	296	220	54(a)
Holborn	n/a	n/a	n/a	202	73
<b>(a) Data capture below 90% therefore results should be treated with caution</b>					

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Table 3a. PM<sub>10</sub> Concentrations Measured at AQMS's in the Vicinity of the Proposed Development

Site Name	2011-2010	2012-2011	2013-2012	2014-2013	2015-2014
<b>Annual Mean PM<sub>10</sub> (µg/m<sup>3</sup>)</b>					
London Bloomsbury	22±8	19±2	18±9	20±8	19(a)±0
Shaftsbury Avenue	32±9	29±2	29±9	25±9	22±5
Euston Road	n/a/n/a	n/a/n/a	n/a/n/a	29/n/a	28(a)±9
<b>Number of Predicted Exceedances of the 24-Hour Mean AQO for PM<sub>10</sub> of 50 µg/m<sup>3</sup></b>					
London Bloomsbury	17±	10±7	4±0	10±	6(a)±0
Shaftsbury Avenue	27±9	18±7	n/a±8	n/a/n/a	4/n/a
Euston Road	n/a/n/a	n/a/n/a	n/a/n/a	n/a/n/a	18(a)±0
<b>(a) Data capture below 90% therefore results should be treated with caution</b>					

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The data indicate that annual mean NO<sub>2</sub> concentrations at locations close to heavily trafficked and congested roads in the area are significantly in excess of the short and long-term AQOs, supporting the continued need for an AQMA.

Annual mean NO<sub>2</sub> concentrations measured at the London Bloomsbury urban background site also exceed the AQO of 40 µg/m<sup>3</sup>, however the number of hourly means in excess of 200 µg/m<sup>3</sup> is well below the 18 that are allowable within the objective

There have been no exceedances of the short or long-term AQOs for PM<sub>10</sub> at any of the sites shown in Table 3 over the past 5 years. The London Bloomsbury data indicate that baseline annual mean PM<sub>10</sub> concentrations at locations away from busy roads are likely to be around 50% of the AQO.

5.2 Non-Automatic Monitoring

Annual mean NO<sub>2</sub> concentrations are also measured by LBC and the adjacent local authorities via a network of passive diffusion tubes. A summary of the monitoring locations considered to be of relevance to the assessment is presented in Table 4. A summary of bias adjusted annual mean NO<sub>2</sub> concentrations measured between 2010 and 2014 is presented in Table 5.

**Table 5. Diffusion Tube Monitoring Sites in the Vicinity of the Proposed Development**

Site Name	Type	Easting	Northing	Distance from Kerb (m)	Approximate Location Relative to Proposed Development
Wakefield Gardens (CA6-Camden)	Urban Background	530430	182430	30.0	1.1 km NNW
Tavistock Gardens (CA10-Camden)	Urban Background	529880	182334	25.0	1.6 km NW
Percy Circus (BIS/04 - Islington)	Urban Background	530901	182855	n/a	1.2 km NW

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**Table 6. Annual Mean NO<sub>2</sub> Concentrations Measured by Diffusion Tube (µg/m<sup>3</sup>)**

Site Name	Type	2010	2011	2012	2013	2014
Wakefield Gardens (CA6-Camden)	Urban Background	34	45.6	39.3	40.3	36.4
Tavistock Gardens (CA10-Camden)	Urban Background	52	47.6	40.1	49.4	46.5
Percy Circus (BIS/04 - Islington)	Urban Background	38	42	40	38	40

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The diffusion data indicate that urban background annual mean NO<sub>2</sub> concentrations in the area are close to or exceed the AQO of 40 µg/m<sup>3</sup>. However, measurements across the UK have shown that the 1-hour mean AQO for NO<sub>2</sub> is unlikely to be exceeded unless the annual mean concentration is greater than 60 µg/m<sup>3</sup> (Laxen and Marner, 2003). On this basis it is unlikely that the short-term objective is being exceeded at any of the background monitoring sites.

### 5.3 Air Quality at the Proposed Development Site

The location of the AQMS and diffusion tube monitoring sites relative to the proposed development is presented in Figure 2.

The proposed development is situated at the junction of Red Lion Street with Sandland Street, over 100m from the nearest heavily trafficked road (High Holborn). Pollutant concentrations measured at urban background sites are therefore likely to be most representative of existing air quality at the site.

On the basis of the urban background data presented in Tables 3, 4 and 6, the risk of an exceedance of the short-term objectives for NO<sub>2</sub> and PM<sub>10</sub> at the proposed development site is considered to be negligible.

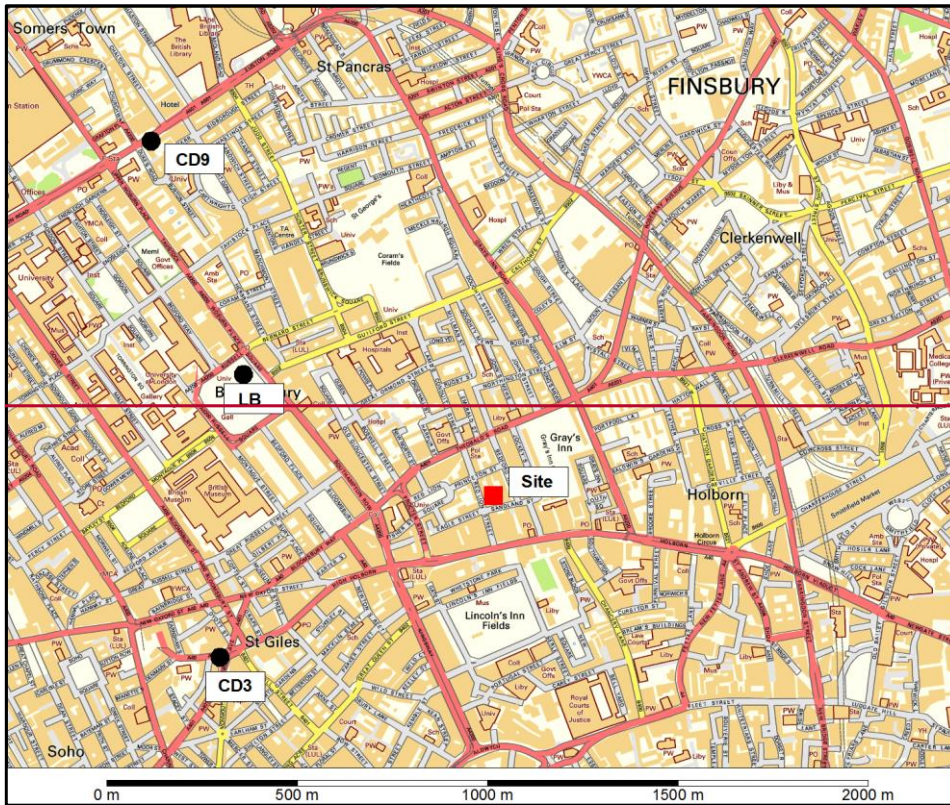


Figure 2. Location of Monitoring Sites (Contains Ordnance Survey data © Crown copyright and database right 2016)

**11.6 Construction Phase Impacts**

**11.6.1 Sensitivity of the Area to Dust Impacts**

The proposed development site is situated at the junction of Red Lion Street with Sandland Street. The buildings in the immediate vicinity of the site are primarily used for commercial or business purposes at ground floor level, with residential dwellings above. The sensitivity of the area to dust soiling impacts is therefore considered to be *high*.

The local air quality monitoring data indicates that existing PM<sub>10</sub> concentrations at the development site are likely to be well within the annual mean air quality objective, however due to the large number of receptors within 20m of the development site boundary, the sensitivity of the area to human health impacts is considered to be *medium*.

There are no dust sensitive ecological sites within 50 m of the proposed development, therefore impacts on ecology have not been considered in the assessment.

A wind rose from London City Airport is presented in Figure 3, which shows that the prevailing wind is from the southwest and west-southwest, therefore receptors to the northeast and east-northeast of the site are most likely to experience dust impacts during the construction phase.

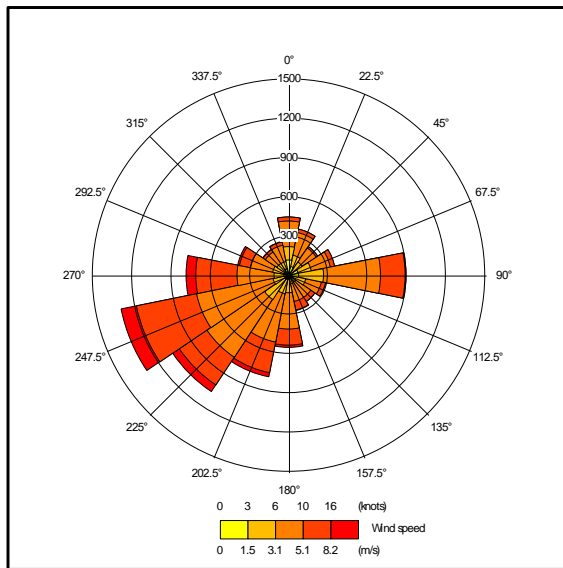


Figure 3. Wind Rose for London City Airport 2014

**11.6.2 Demolition**

Minor demolition works (<1,000 m<sup>3</sup>) will be undertaken at the rear of the existing building in preparation for the construction of the proposed extension. Based on the scale of the works, the magnitude of the dust emission during the demolition phase is considered to be *small*.

### 11.3.6.3 Earthworks

Earthworks will primarily involve excavating material, haulage, tipping and stockpiling. It may also involve levelling of the site and landscaping.

The development site is less than 0.1 ha in size and therefore it is unlikely that there will be large numbers of earth moving vehicles on site at any one time or sufficient room for long-term stockpiling of materials. The magnitude of the dust emission from earthworks is therefore considered to be *small*

### 11.3.6.4 Construction

Dust emissions during construction will depend on the scale of the works, method of construction, construction materials and duration of build. The rear extension will be steel framed, with composite material decks and brick slip cladding. Concrete will be pre-mixed and delivered to the site.

For the purposes of the assessment, it has been assumed that the development will be of standard brick and concrete construction. Given the scale of the proposed development, the dust emission magnitude for construction is considered to be *small*.

### 11.3.6.5 Trackout

The site is in an urban area and construction traffic will pass in close proximity to pedestrian footpaths. However, due to the small size of the site, there will be no on-site roads and therefore limited potential for HGVs to pass over dusty material. The dust emission magnitude due to trackout is therefore considered to be *small*.

### 11.3.6.6 Assessment of Dust Risk Prior to Mitigation

A summary of the potential risk of dust impacts prior to mitigation, based on the high overall sensitivity of the area to human health and dust soiling impacts is presented in Table 47.

Table 47. Risk of Dust Impacts Prior to Mitigation

Dust Source	Emission Magnitude	Human Health Risk	Dust Soiling Risk
Demolition	Small	Low	Medium
Earthworks	Small	Low	Medium
Construction	Small	Low	Medium
Trackout	Small	Negligible	Low
Overall Risk of Dust Impacts		Medium	

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**12-7. Mitigation**

**12-7.1 Construction Phase**

London Best Practice Guidance for dust control will be implemented, as appropriate, during the construction phase through the Dust Management Plan (DMP) for the proposed development.

The risk of dust impacts from the site has been assessed as *medium* prior to mitigation, therefore in accordance with the IAQM guidance it is recommended that the measures detailed in Table 5-8 are incorporated into the DMP.

Table 5-8. Recommended Mitigation Measures

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General	<ul style="list-style-type: none"> <li>• Develop and implement a stakeholder communications plan that includes community engagement before work commences on site.</li> <li>• Display the name and contact details of person(s) accountable for air quality and dust issues on the site boundary. This may be the environment manager/engineer or the site Manager.</li> <li>• Display the head or regional office contact information.</li> </ul>
Site management	<ul style="list-style-type: none"> <li>• Record all dust and air quality complaints, identify cause(s), take appropriate measures to reduce emissions in a timely manner, and record the measures taken.</li> <li>• Make the complaints log available to the local authority when asked.</li> <li>• Record any exceptional incidents that cause dust and/or air emissions, either on- or offsite, and the action taken to resolve the situation in the log book.</li> </ul>
Monitoring	<ul style="list-style-type: none"> <li>• Carry out regular site inspections to monitor compliance with the DMP, record inspection results, and make an inspection log available to the local authority when asked.</li> <li>• Increase the frequency of site inspections by the person accountable for air quality and dust issues on site when activities with a high potential to produce dust are being carried out and during prolonged dry or windy conditions.</li> <li>• Agree dust deposition, dust flux, or real-time PM<sub>10</sub> continuous monitoring locations with the Local Authority. Where possible commence baseline monitoring at least three months before work commences on site.</li> </ul>
Preparing and maintaining the site	<ul style="list-style-type: none"> <li>• Plan site layout so that machinery and dust causing activities are located away from receptors, as far as is possible.</li> <li>• Erect solid screens or barriers around dusty activities or at the site boundary that are at least as high as any stockpiles on site.</li> <li>• Fully enclose the site or specific operations where there is a high potential for dust production and the site is active for an extensive period</li> <li>• Avoid site runoff of water or mud.</li> <li>• Keep site fencing, barriers and scaffolding clean using wet methods.</li> <li>• Remove materials that have a potential to produce dust from site as soon as possible, unless being re-used on site.</li> <li>• Cover, seed or fence stockpiles to prevent wind whipping.</li> </ul>
Operating vehicle/machinery and sustainable travel	<ul style="list-style-type: none"> <li>• Ensure all on-road vehicles comply with the requirements of the London Low Emission Zone and the London NRMM standards, where applicable.</li> <li>• Ensure all vehicles switch off engines when stationary - no idling vehicles.</li> <li>• Avoid the use of diesel or petrol powered generators and use mains electricity or battery powered equipment where practicable.</li> </ul>

	<ul style="list-style-type: none"> <li>• Produce a Construction Logistics Plan to manage the sustainable delivery of goods and materials.</li> </ul>
Operations	<ul style="list-style-type: none"> <li>• 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.</li> <li>• Ensure an adequate water supply on the site for effective dust/particulate matter suppression/mitigation, using non-potable water where possible and appropriate.</li> <li>• Use enclosed chutes and conveyors and covered skips.</li> <li>• Minimise drop heights from conveyors, loading shovels, hoppers and other loading or handling equipment and use fine water sprays on such equipment wherever appropriate.</li> <li>• 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.</li> </ul>
Waste management	<ul style="list-style-type: none"> <li>• Avoid bonfires and burning of waste materials</li> </ul>
Demolition	<ul style="list-style-type: none"> <li>• Soft strip inside buildings before demolition (retaining walls and windows in the rest of the building where possible, to provide a screen against dust).</li> <li>• Ensure effective water suppression is used during demolition operations.</li> <li>• Avoid explosive blasting, using appropriate manual or mechanical alternatives.</li> <li>• Bag and remove any biological debris or damp down such material before demolition.</li> </ul>
Construction	<ul style="list-style-type: none"> <li>• 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.</li> </ul>
Trackout	<ul style="list-style-type: none"> <li>• Use water-assisted dust sweeper(s) on the access and local roads, to remove, as necessary, any material tracked out of the site.</li> <li>• Avoid dry sweeping of large areas.</li> <li>• Ensure vehicles entering and leaving sites are covered to prevent escape of materials during transport.</li> <li>• Implement a wheel washing system (with rumble grids to dislodge accumulated dust and mud prior to leaving the site where reasonably practicable).</li> <li>• Access gates to be located at least 10m from receptors where possible.</li> </ul>

The significance of dust impacts on nearby receptors following the implementation of appropriate and best practice mitigation is considered to be *negligible*.

## 7.2 Operational Phase

A review of local air quality monitoring data has indicated that short-term concentrations of NO<sub>2</sub> or PM<sub>10</sub> are unlikely to exceed the air quality objectives at the façade of the proposed development; therefore no mitigation is considered necessary on site.

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## ~~13-8.~~ Cumulative Impacts

### ~~13-8.1~~ Construction Phase

There are no committed developments in the local area with construction phases that are likely to coincide with that of the proposed development. Furthermore the significance of the off-site dust impacts associated with the proposed development is expected to be negligible following the implantation of the recommended mitigation measures. Cumulative impacts during the construction phase are therefore anticipated to be negligible.

### 8.2 Operational Phase

The proposed development will be 'car-free' and building emissions will be limited to one small low-NOx gas boiler providing domestic hot water, therefore the significance of cumulative impacts during the operational phase is considered to be negligible.

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#### 4.9. Summary and Conclusions

An assessment has been undertaken to determine the potential impact on local air quality associated with the construction ~~phase and operation~~ of the proposed development at 16-20 Red Lion Street, Holborn.

An assessment of the potential impacts during the construction phase has been carried out in accordance with the latest Institute of Air Quality Management guidance. This has shown that releases of dust and PM<sub>10</sub> are likely to occur during site activities. The risk of dust soiling and health impacts at neighbouring properties has been assessed as medium. Through good site practice and the implementation of suitable mitigation measures through a Dust Management Plan, the impact of dust and PM<sub>10</sub> releases may be effectively mitigated and the resultant impacts are considered to be negligible.

~~The proposed development has no allocated parking and does not include a centralised energy centre, therefore the impact of the site on local air quality during the operational phase is considered to be negligible.~~

~~A review of local monitoring data indicates that there is unlikely to be an exceedance of the short-term air quality objectives for NO<sub>2</sub> or PM<sub>10</sub> at the proposed development site.~~

~~It is therefore considered that air quality should not pose a constraint to the re-development of the site as proposed. It is therefore considered that air quality should not pose a constraint to the re-development of the site as proposed.~~

## Appendix A – IAQM Construction Dust Methodology

Factors defining the sensitivity of a receptor to dust impacts are presented in Table A1.

Table A1: Receptor Sensitivity

Sensitivity	Human Health	Dust Soiling	Ecological
High	<ul style="list-style-type: none"> <li>Locations where members of the public are exposed over a time period relevant to the air quality objectives for PM<sub>10</sub> (a)</li> <li>Examples include residential dwellings, hospitals, schools and residential care homes.</li> </ul>	<ul style="list-style-type: none"> <li>Regular exposure</li> <li>High level of amenity expected.</li> <li>Appearance, aesthetics or value of the property would be affected by dust soiling.</li> <li>Examples include residential dwellings, museums, medium and long-term car parks and car showrooms.</li> </ul>	<ul style="list-style-type: none"> <li>Nationally or Internationally designated site with dust sensitive features (b)</li> <li>Locations with vascular species (c)</li> </ul>
Medium	<ul style="list-style-type: none"> <li>Locations where workers are exposed over a time period relevant to the air quality objectives for PM<sub>10</sub> (a)</li> <li>Examples include office and shop workers (d)</li> </ul>	<ul style="list-style-type: none"> <li>Short-term exposure</li> <li>Moderate level of amenity expected</li> <li>Possible diminished appearance or aesthetics of property due to dust soiling</li> <li>Examples include parks and places of work</li> </ul>	<ul style="list-style-type: none"> <li>Nationally designated site with dust sensitive features (b)</li> <li>Nationally designated site with a particularly important plant species where dust sensitivity is unknown</li> </ul>
Low	<ul style="list-style-type: none"> <li>Transient human exposure</li> <li>Examples include public footpaths, playing fields, parks and shopping streets</li> </ul>	<ul style="list-style-type: none"> <li>Transient exposure</li> <li>Enjoyment of amenity not expected.</li> <li>Appearance and aesthetics of property unaffected</li> <li>Examples include playing fields, farmland (e), footpaths, short-term car parks and roads</li> </ul>	<ul style="list-style-type: none"> <li>Locally designated site with dust sensitive features (b)</li> </ul>
<p>(a) In the case of the 24-hour objective, a relevant location would be one where individuals may be exposed for eight hours or more in a day.</p> <p>(b) Ecosystems that are particularly sensitive to dust deposition include lichens and acid heathland (for alkaline dust, such as concrete).</p> <p>(c) Cheffing C. M. &amp; Farrell L. (Editors) (2005), The Vascular Plant. Red Data List for Great Britain, Joint Nature Conservation Committee.</p> <p>(d) Does not include workers exposure to PM<sub>10</sub> as protection is covered by Health and Safety at Work legislation.</p> <p>(e) Except commercially sensitive horticulture.</p>			

The sensitivity of the area as a whole is dependent on the number of receptors within each sensitivity class and their distance from the source. Human health impacts are also dependent on the existing PM<sub>10</sub> concentrations in the area.

Table A2 and Table A3 summarise the criteria for determining the overall sensitivity of the area to dust soiling and health impacts respectively. The sensitivity of the area to ecological impacts is presented in Table .

Table A2: Sensitivity of the Area to Dust Soiling Effects on People and Property

Receptor Sensitivity	Number of Receptors	Distance from the Source			
		<20m	<50m	<100m	<350m
High	>100	High	High	Medium	Low
	10-100	High	Medium	Low	Low
	1-10	Medium	Low	Low	Low
Medium	>1	Medium	Low	Low	Low
Low	>1	Low	Low	Low	Low

Table A3: Sensitivity of the Area to Health Impacts from Dust

Receptor Sensitivity	Annual Mean PM <sub>10</sub>	Number of Receptors	Distance from the Source				
			<20m	<50m	<100m	<200m	<350m
High	>32	>100	High	High	High	Medium	Low
		10-100	High	High	Medium	Low	Low
		1-10	High	Medium	Low	Low	Low
	28 - 32	>100	High	High	Medium	Low	Low
		10-100	High	Medium	Low	Low	Low
		1-10	High	Medium	Low	Low	Low
	24 - 28	>100	High	Medium	Low	Low	Low
		10-100	High	Medium	Low	Low	Low
		1-10	Medium	Low	Low	Low	Low
	<24	>100	Medium	Low	Low	Low	Low
		10-100	Low	Low	Low	Low	Low
		1-10	Low	Low	Low	Low	Low
Medium	>32	>10	High	Medium	Low	Low	Low
		1-10	Medium	Low	Low	Low	Low
	28 - 32	>10	Medium	Low	Low	Low	Low
		1-10	Low	Low	Low	Low	Low
	24 - 28	>10	Low	Low	Low	Low	Low
		1-10	Low	Low	Low	Low	Low
	<24	>10	Low	Low	Low	Low	Low
		1-10	Low	Low	Low	Low	Low
Low	-	≥1	Low	Low	Low	Low	Low

Table A4: Sensitivity of the Area to Ecological Impacts from Dust

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

The magnitude of the dust impacts for demolition, earthworks, construction and trackout is classified as small, medium or large depending on the scale of the proposed works as detailed in Table .

Table A5: Dust Emission Magnitude Criteria

Dust Source	Large	Medium	Small
Demolition	<ul style="list-style-type: none"> <li>Total building volume &gt;50,000m<sup>3</sup></li> <li>Potentially dusty material (e.g. concrete)</li> <li>Onsite crushing and screening</li> <li>Demolition activities &gt;20m above ground level.</li> </ul>	<ul style="list-style-type: none"> <li>Total building volume 20,000 - 50,000m<sup>3</sup></li> <li>Potentially dusty material</li> <li>Demolition activities 10 - 20m above ground level.</li> </ul>	<ul style="list-style-type: none"> <li>Total building volume &lt;20,000m<sup>3</sup></li> <li>Construction material with low potential for dust release</li> <li>Demolition activities &lt;10m above ground level</li> <li>Demolition during wetter months</li> </ul>
Earthworks	<ul style="list-style-type: none"> <li>Total site area &gt;10,000m<sup>2</sup></li> <li>Potentially dusty soil type (e.g. clay)</li> <li>&gt;10 heavy earth moving vehicles active at any one time</li> <li>Formation of bunds &gt;8m in height</li> <li>Total material moved &gt;100,000 tonnes</li> </ul>	<ul style="list-style-type: none"> <li>Total site area 2,500 - 10,000m<sup>2</sup></li> <li>Moderately dusty soil type (e.g. silt)</li> <li>10 heavy earth moving vehicles active at any one time</li> <li>Formation of bunds 4 - 8m in height</li> <li>Total material moved 20,000 - 100,000 tonnes</li> </ul>	<ul style="list-style-type: none"> <li>Total site area &lt;2,500m<sup>2</sup></li> <li>Soil type with large grain size (e.g. sand)</li> <li>&lt;5 heavy earth moving vehicles active at any one time</li> <li>Formation of bunds &lt;4m in height</li> <li>Total material moved &lt;20,000 tonnes</li> <li>Earthworks during wetter months</li> </ul>
Construction	<ul style="list-style-type: none"> <li>Total building volume &gt;100,000m<sup>3</sup></li> <li>On site concrete batching</li> <li>Sandblasting</li> </ul>	<ul style="list-style-type: none"> <li>Total building volume 25,000 - 100,000m<sup>3</sup></li> <li>Potentially dusty construction material (e.g. concrete)</li> <li>On site concrete batching</li> </ul>	<ul style="list-style-type: none"> <li>Total building volume &lt;25,000m<sup>3</sup></li> <li>Material with low potential for dust release (e.g. metal cladding or timber)</li> </ul>
Trackout	<ul style="list-style-type: none"> <li>&gt;50 HGV movements in any one day (a)</li> <li>Potentially dusty surface material (e.g. high clay content)</li> <li>Unpaved road length &gt;100m</li> </ul>	<ul style="list-style-type: none"> <li>10 - 50 HGV movements in any one day (a)</li> <li>Moderately dusty surface material (e.g. silt)</li> <li>Unpaved road length 50 - 100m</li> </ul>	<ul style="list-style-type: none"> <li>&lt;10 HGV movements in any one day (a)</li> <li>Surface material with low potential for dust release</li> <li>Unpaved road length &lt;50m</li> </ul>
HGV movements refer to outward trips (leaving the site) by vehicles of over 3.5 tonnes			

For each dust emission source, the worst-case area sensitivity is used in combination with the dust emission magnitude to determine the risk of dust impacts prior to mitigation as illustrated in Table A6 and Table A7.

Table A6: Risk of Dust Impacts from Demolition, Earthworks and Construction

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



Table A7: Risk of Dust Impacts from Trackout

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