AIR QUALITY ASSESSMENT

Shoot Up Hill

Produced by XCO2 for Notting Hill Genesis

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EXECUTIVE SUMMARY

An assessment has been undertaken to quantify the potential impacts on local air quality associated with the construction and operation of the proposed development. Based on the results of the assessment, it is considered that redevelopment of the site would not cause a significant impact on local air quality.

An assessment of potential air quality impacts arising from the construction and operation of the proposed development at Shoot Up Hill, in the London Borough of Camden has been undertaken.

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.

Emissions from operational traffic associated with the proposed development are not anticipated to significantly affect local air quality. The predicted pollutant concentrations at the site are within the relevant air quality standards set for the protection of health.

The proposed development is air quality neutral with respect to building and transport-related emissions.

INTRODUCTION

This report presents an assessment of the potential impact on local air quality of the construction and operation of the proposed development at Shoot Up Hill, in the London Borough of Camden, NW2 3QN.

The proposed development comprises six residential units (Use Class C3). The units are a mix of one, two and three bed apartments with associated amenity space.

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_2). Camden is currently meeting the required thresholds for particulate matter (PM_{10} and $PM_{2.5}$), although they recognise the importance of continually monitoring these as there is no safe exposure limit and therefore these remain part of the AQMA. The primary source of NO_2 in the Borough is road traffic.

The proposed development has potential to introduce the following air quality impacts:

- Suspended and re suspended fugitive dust emissions from demolition / construction activities;
- Emissions from construction traffic, including re suspended dust from HGV movements; and
- Emissions from operational traffic.

An assessment has been undertaken to determine the potential impact on local air quality during both the construction and operational phases of the development, with recommendations made for mitigation where appropriate.

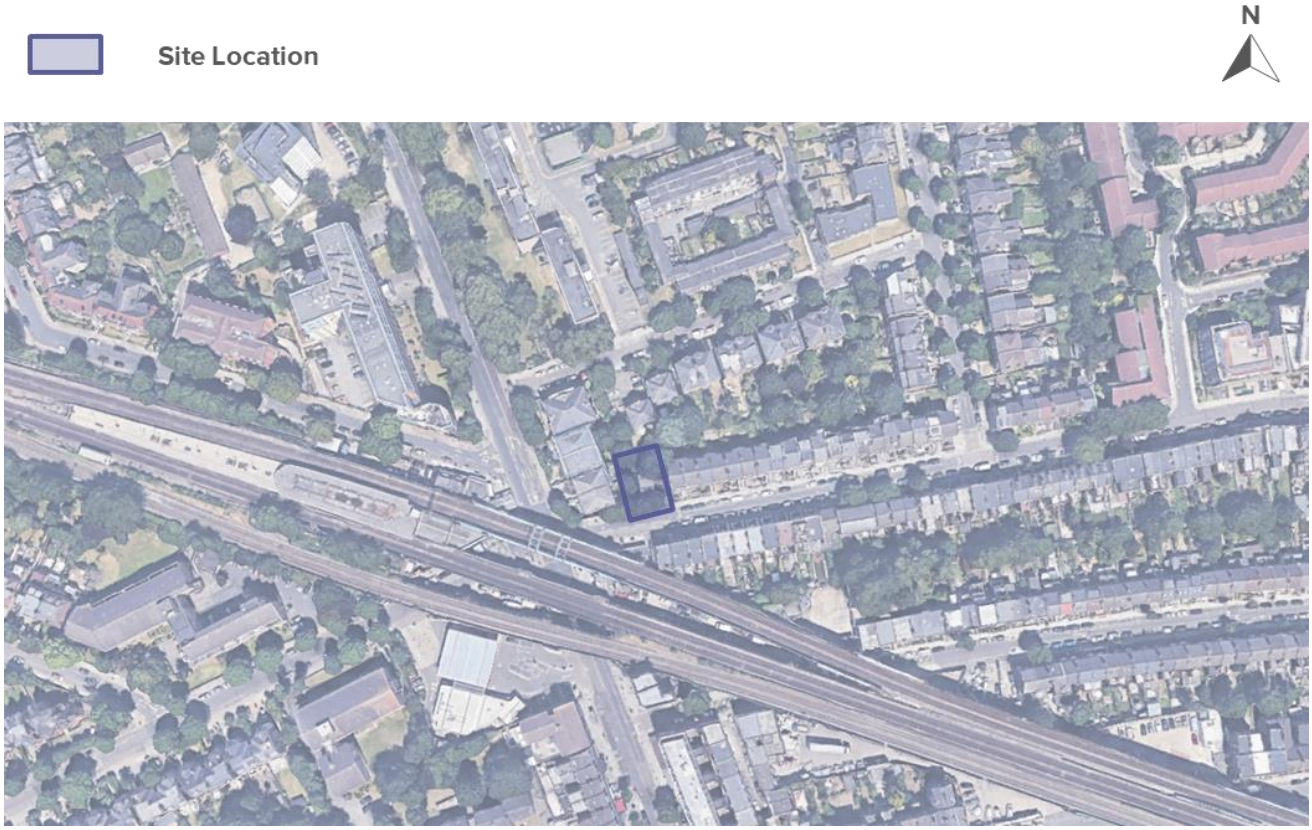

Figure 1: Site Location

POLICY CONTEXT

An overview of the relevant policy drivers for the assessment is provided in the following section.

NATIONAL LEGISLATION

THE AIR QUALITY STRATEGY FOR ENGLAND, SCOTLAND, WALES AND NORTHERN IRELAND

The Air Quality Strategy for England, Wales and Northern Ireland[6] was published in 2007 and sets out policy targets (objectives) for sulphur dioxide (SO_2), nitrogen dioxide (NO_2), benzene (C_6H_6), carbon monoxide (CO), lead (Pb), particulate matter (PM_{10}, $PM_{2.5}$), 1,3-butadiene (C_4H_6) and polyaromatic hydrocarbons (PAH). The Standards are concentrations measured over a specified time period that are considered acceptable in terms of the effect on health and the environment. The Objectives are the target date on which exceedance of a Standard must not exceed a specified number.

In the context of the proposed development, the primary pollutants of concern are nitrogen dioxide (NO_2) and particulate matter (PM_{10} and $PM_{2.5}$). The Air Quality Standards and Objectives for these pollutants, that are applicable in England, are presented in Table 1.

Table 1: National Air Quality Standards and Objectives

Pollutant	Averaging Period	Standard	Objective
NO_2	1-hour	200 µg/m^3, not to be exceeded more than 18 times per calendar year (a)	31 December 2005
	Annual	40 µg/m^3	
PM_{10}	24-hour	50 µg/m^3, not to be exceeded more than 35 times per calendar year (b)	31 December 2004
	Annual	40 µg/m^3	
$PM_{2.5}$	Annual	25 µg/m^3 (c)	2020

(a) Equivalent to the 99.8th percentile of 1-hour means.
(b) Equivalent to the 90.4th percentile of 24-hour means.
(c) National exposure reduction target

In January 2019, the UK government published a Clean Air Strategy[7], which outlines measures to reduce emissions from a wide range of sources including transport, farming and industry. The Strategy proposes new local powers to implement Clean Air Zones in problem areas, backed up by clear enforcement mechanisms. Whilst the UK has already adopted legally binding international targets to reduce emissions of key pollutants such as nitrogen oxides and particulate matter (as PM_{10}), the Strategy aims to reduce fine particulate emissions ($PM_{2.5}$) to ensure that public

[6] 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.
[7] Clean Air Strategy 2019, Defra, January 2019

exposure to concentrations above the more stringent WHO annual mean guideline value of 10 µg/m^3 is halved by 2025.

LOCAL AIR QUALITY MANAGEMENT

The framework for Local Air Quality Management (LAQM) in the UK was introduced by the Environment Act 1995[9] . 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).

THE NATIONAL PLANNING POLICY FRAMEWORK

The National Planning Policy Framework (NPPF)[10] 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 and decisions should sustain and contribute towards compliance with relevant limit values or national objectives for pollutants, taking into account the presence of Air Quality Management Areas and Clean Air Zones, and the cumulative impacts from individual sites in local areas. Opportunities to improve air quality or mitigate impacts should be identified, such as through traffic and travel management, and green infrastructure provision and enhancement. So far as possible these opportunities should be considered at the plan-making stage, to ensure a strategic approach and limit the need for issues to be reconsidered when determining individual applications". Planning decisions should "ensure that any new development in Air Quality Management Areas and Clean Air Zones is consistent with the local air quality action plan".

The National Planning Policy Guidance (NPPG)[11] for Air Quality, 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 offset any significant impacts.

REGIONAL POLICY

THE LONDON PLAN

The New London Plan[12] was published in March 2021 and includes Policy SI1 (Improving Air Quality). This policy states:

A) Development plans, through relevant strategic, site specific and area-based policies should seek opportunities to identify and deliver further improvements to air quality and should not reduce air quality benefits that result from the Mayor's or boroughs' activities to improve air quality.

[9] Part IV of the Environment Act 1995
[10] National Planning Policy Framework, Ministry for Housing, Communities and Local Government, July 2018.
[11] http://planningguidance.planningportal.gov.uk/blog/guidance/air-quality/
[12] The London Plan (published March 2021)

B) To tackle poor air quality, protect health and meet legal obligations the following criteria should be addressed:

1. Development proposals should not:

a) lead to further deterioration of existing poor air quality
b) create any new areas that exceed air quality limits, or delay the date at which compliance will be achieved in areas that are currently in exceedance of legal limits
c) create unacceptable risk of high levels of exposure to poor air quality.

2. In order to meet the requirements in Part 1, as a minimum:

a) Development proposals must be at least air quality neutral
b) Development proposals should use design solutions to prevent or minimise increased exposure to existing air pollution and make provision to address local problems of air quality in preference to post-design or retro-fitted mitigation measures
c) Major development proposals must be submitted with an Air Quality Assessment. Air quality assessments should show how the development will meet the requirements of B1
d) Development proposals in Air Quality Focus Areas or that are likely to be used by large numbers of people particularly vulnerable to poor air quality, such as children or older people, which do not demonstrate that design measures have been used to minimise exposure should be refused.

C) Masterplans and development briefs for large-scale development proposals subject to an Environmental Impact Assessment should consider how local air quality can be improved across the area of the proposal as part of an air quality positive approach. To achieve this a statement should be submitted demonstrating:

1. How proposals have considered ways to maximise benefits to local air quality, and
2. What measures or design features will be put in place to reduce exposure to pollution, and how they will achieve this.

D) In order to reduce the impact on air quality during the construction and demolition phase development proposals must demonstrate how they plan to comply with the Non-Road Mobile Machinery Low Emission Zone and reduce emissions from the demolition and construction of buildings following best practice guidance.

E) development proposals should ensure that where emissions need to be reduced to meet the requirements of Air Quality Neutral or to make the impact of development on local air quality acceptable, this is done on-site. Where it can be demonstrated that emissions cannot be further reduced by on-site measures, off-site measures to improve local air quality may be acceptable, provided that equivalent air quality benefits can be demonstrated within the area affected by the development.

The Greater London Authority (GLA) Sustainable Design and Construction supplementary planning guidance (SPG)[13] states that the requirement for a development to be at least 'air quality neutral' applies to major developments:

- *10 or more residential dwellings; or*
- *>1000m^2 of non-residential floorspace; or*
- *site area > 10,000m^2.*

To assess whether a development is air quality neutral, annual building and transport-related NOx and PM_{10} emissions are compared with 'air quality neutral' benchmarks provided within the SPG. Where these benchmarks

[13] Sustainable Design and Construction Supplementary Planning Guidance, Greater London Authority, April 2014.

are exceeded, following appropriate mitigation measures, the developer is required to off-set the impacts off-site make a financial contribution (e.g., through a section 106 agreement).

LONDON ENVIRONMENT STRATEGY (2018)

Chapter 4 of the London Environment Strategy[14] outlines the Mayor's commitment to improving air quality in London. The strategy aims plan to significantly reduce NO_2 and particulate (PM_{10}, $PM_{2.5}$ and black carbon) concentrations through a number of key objectives and policies:

Objective 4.1 support and empower London and its communities, particularly the most disadvantaged and those in priority locations, to reduce their exposure to poor air quality

- Policy 4.1.1 Make sure that London and its communities, particularly the most disadvantaged and those in priority locations, are empowered to reduce their exposure to poor air quality
- Policy 4.1.2 Improve the understanding of air quality health impacts to better target policies and action

Objective 4.2 achieve legal compliance with UK and EU limits as soon as possible, including by mobilising action from London boroughs, government and other partners

- Policy 4.2.1 Reduce emissions from London's road transport network by phasing out fossil fuelled vehicles, prioritising action on diesel, and enabling Londoners to switch to more sustainable forms of transport
- Policy 4.2.2 Reduce emissions from non-road transport sources, including by phasing out fossil fuels
- Policy 4.2.3 Reduce emissions from non-transport sources, including by phasing out fossil fuels
- Policy 4.2.4 The Mayor will work with the government, the London boroughs and other partners to accelerate the achievement of legal limits in Greater London and improve air quality
- Policy 4.2.5 The Mayor will work with other cities (here and internationally), global city and industry networks to share best practice, lead action and support evidence based steps to improve air quality

Objective 4.3 establish and achieve new, tighter air quality targets for a cleaner London by transitioning to a zero emission London by 2050, meeting World Health Organization health-based guidelines for air quality

- Policy 4.3.1 The Mayor will establish new targets for $PM_{2.5}$ and other pollutants where needed. The Mayor will seek to meet these targets as soon as possible, working with government and other partners
- Policy 4.3.2 The Mayor will encourage the take up of ultra-low and zero emission technologies to make sure London's entire transport system is zero emission by 2050 to further reduce levels of pollution and achieve WHO air quality guidelines
- Policy 4.3.3 Phase out the use of fossil fuels to heat, cool and maintain London's buildings, homes and urban spaces, and reduce the impact of building emissions on air quality
- Policy 4.3.4 Work to reduce exposure to indoor air pollutants in the home, schools, workplace and other enclosed spaces

[14] London Environment Strategy, The Mayor of London, May 2018

LOCAL POLICY

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. Widespread exceedances of the annual mean air quality objective for NO_2 and 24-hour mean objective for PM_{10} have been identified and as a consequence the entire borough has been designated an AQMA.

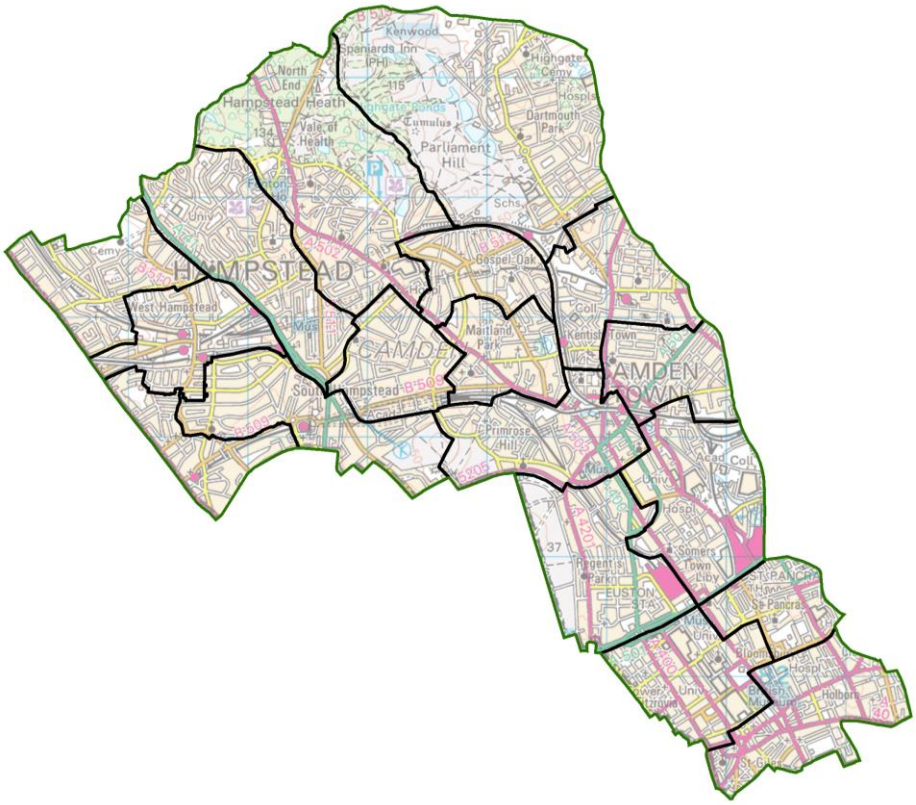

Figure 2: London Borough of Camden AQMA

The LBC's Air Quality Action Plan (AQAP) [15] outlines the council's commitment to improving air quality in the Borough. The key objectives of the plan include:

- Reducing emissions from the council's vehicle fleet;
- Increasing the number of electric vehicle charging points;
- Increasing the number of car club memberships;
- Promoting Travel Plans to schools and the Council;
- Implementation of reduced speed zones; and
- Improved cycling infrastructure.

The Action Plan draws on European and National legislation in conjunction with national, regional and local policy to manage and improve air quality across the Borough. The effectiveness of the AQAP is assessed though the council's ongoing air quality monitoring programme.

LONDON BOROUGH OF CAMDEN LOCAL PLAN

The strategic objectives relating to pollution and sustainable development as set out in the LBC Local Plan[16] are as follows:

- Policy CC4 Air Quality - to ensure that the impact of development on air quality is mitigated and ensure that exposure to poor air quality is reduced in the borough.
- Policy T2 Parking and car-free development – to limit the availability of parking and require all new developments in the borough to be car-free
- Policy A2 Open Space: will protect, enhance and improve access to Camden's parks, open spaces and other green infrastructure.
- Policy CC1 Climate change mitigation – all developments will be required to minimise the effects of climate change and encourage all developments to meet the highest feasible environmental standards that are financially viable during construction and occupation.
- Policy CC2 Adapting to Climate change – all developments will be required to be resilient to climate change.

[15] London Borough of Camden Air Quality Action Plan 2019 - 2022
[16] London Borough of Camden Local Plan 2017

METHODOLOGY

This section outlines the assessment methodology, taking into account all relevant national and local policies and technical guidance relating to air quality.

CONSTRUCTION DUST

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[17], which is closely aligned with the Institute of Air Quality Management (IAQM) construction dust guidance[18] . 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.

CONSTRUCTION TRAFFIC

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.

[17] The Control of Dust and Emissions during Construction and Demolition Supplementary Planning Guidance, The Mayor of London, July 2014
[18] Guidance on the assessment of dust from demolition and construction, IAQM,v1.1 June 2016

OPERATIONAL TRAFFIC

The Environmental Protection UK (EPUK)/ IAQM planning guidance[19] , 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.

Traffic generated during the operational phase is anticipated to have a positive impact with a reduction in traffic in the future scenario. Therefore, the development reflects an improvement in transport emissions impacting the air quality.

The existing site has a car repair workshop has a trip generation of 19 trips, however the future scenario following the development of the proposal, it is anticipated that there will be a reduction by 18 trips.

The proposed development does not include parking spaces, it is anticipated to generate well below the LGV, and HGV thresholds listed above for daily trips on the local road network, compared with the existing site use which is a car repair workshop. The proposed development has also made provision for 10 cycle parking spaces. On this basis, despite the development falling within an AQMA, the impact of operational traffic on local air quality has been screened out of the assessment.

BUILDING-RELATED EMISSIONS

Heating and hot water will be provided by electric systems.

[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.

BASELINE AIR QUALITY

Through an analysis of local monitoring data, a description of existing air quality near the proposed development is provided to determine whether on-site mitigation will be required to protect future occupants from poor air quality.

LOCAL AIR QUALITY MONITORING

Details of the three automatic monitoring sites in the London Borough of Camden are presented in Table 2. Sites are affiliated to the London Air Quality Network (LAQN); therefore, the measured data are subject to high levels of quality assurance (QA) and quality control (QC).

Table 2: Automatic Monitoring Locations in Camden

Site Name	Type	Easting	Northing	Pollutants Monitored	Approximate Location Relative to Proposed Development
BL0 London Bloomsbury	Urban Background	530123	530123	NO_2, PM_{10}, $PM_{2.5}$	6km south-east
CD1 Swiss Cottage	Kerbside	526629	184391	NO_2, PM_{10}, $PM_{2.5}$	2km to east
CD9 Euston Road*	Kerbside	529878	182648	NO_2, PM_{10}, $PM_{2.5}$	5.5km south-east
*CD9: Valid data capture 2019 78.3%					

Five years of annual mean NO_2 and $PM_{10,}$ $PM_{2.5}$ and concentrations measured at these locations are summarised in

Table 3, together with the number of measured exceedances of the short-term AQOs. Data between 2015 and 2019 was obtained from Camden Borough Council Air Quality Annual Status report (ASR)[20]. The data indicates that the last exceedances in the area were in 2016 for the annual mean roadside NO_2 concentrations.

[20] Camden Borough Council Air Quality Annual Status Report for 2019, June 2020

Table 3: Urban Background NO_2, PM_{10} and $PM_{2.5}$ Concentrations Measured at London Bloomsbury AQMS

Site Name	2015	2016	2017	2018	2019
Annual Mean NO_2 (µg/m^3)					
BL0	**48**	**42**	38	36	32
Number of Predicted Exceedances of the 1-Hour Mean AQO of 200 µg/m^3					
BL0	0	0	0	0	0
Annual Mean PM_{10} (µg/m3)					
BL0	22	20	19	17	18
Number of Predicted Exceedances of the 24-Hour Mean AQO of 50 µg/m^3					
BL0	6	9	6	1	9
Annual Mean $PM_{2.5}$ (µg/m3)					
BL0	11	12	13	10	11

NON-AUTOMATIC MONITORING DATA

London Borough of Camden Council also undertake monitoring of nitrogen dioxide concentrations at 6 locations using passive diffusion tubes. Details and locations of the tubes (x6) closest to the proposed development are shown in Table 4.

Table 4: Diffusion Tube Monitoring Locations

Site Name	Type	Easting	Northing
CA25A (new) Emmanuel Primary School	Roadside	525362	185255
CA25 Emmanuel Primary School	Roadside	525362	185255
CTLEN1 Haverstock School (Haverstock Hill)	Roadside	528081	184490
CA7 Frognal Way	Urban Background	526213	185519
CA24 Chetwynd Road	Roadside	528722	185950
CA17 Fitzjohn's Avenue	Roadside	526547	185125

A summary of the bias adjusted annual mean NO_2 concentrations measured between 2015 and 2019 is presented in Table 5. Of particular relevance to the assessment is the significant exceedance of the annual mean air quality objective on Fitzjohn's Avenue CA17 although this is 2.4km east to the development so is not considered a significant concern.

Table 5: Diffusion Tube Monitoring Sites

Site ID	Type	2015	2016	2017	2018	2019
CA25A	Roadside	-	-	-	-	37.88
CA25	Roadside	**47.70**	**52.18**	**50.68c**	39.75	-
CTLEN1	Roadside	-	-	-	-	32.31
CA7	Urban Background	27.78	27.91	29.64c	22.12	22.82
CA24	Roadside	46.52	41.96	50.55c	38.68	35.24

Site ID	Type	2015	2016	2017	2018	2019
CA17	Roadside	55.80	56.38	66.27c	48.13	42.53

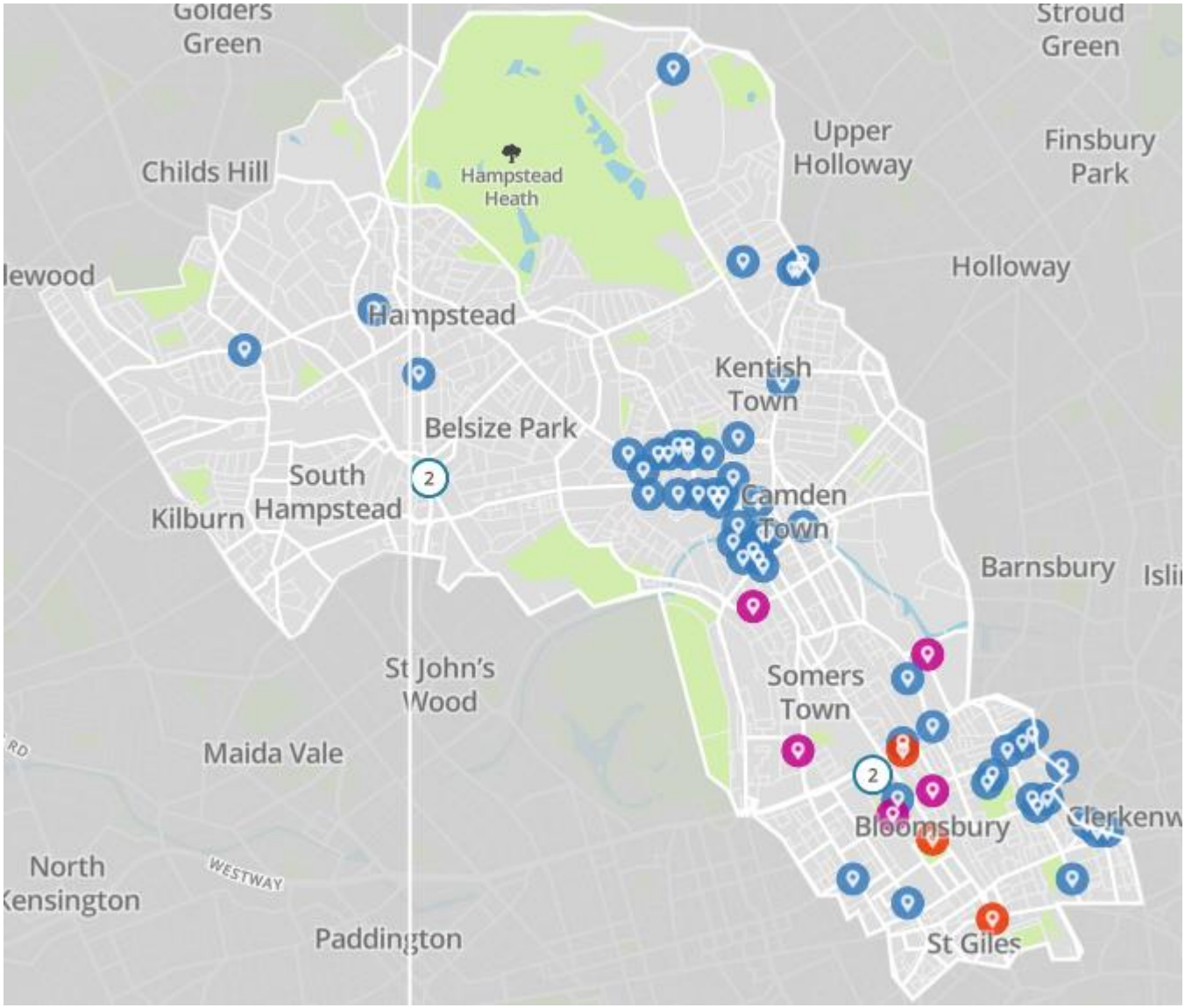

Figure 3: Location of Diffusion Tubes

POTENTIAL IMPACTS

The potential impacts and significance of these impacts on air quality during the construction and operational phases of the development are identified in this section. Recommended mitigation measures are outlined in a subsequent section of the report.

CONSTRUCTION DUST

SENSITIVITY OF THE AREA TO DUST IMPACTS

The assessment of dust impacts is dependent on the proximity of the most sensitive receptors to the site boundary. A summary of the receptor and area sensitivity to health and dust soiling impacts is presented in Table 6. Based on the mapped background concentrations, it is assumed that the existing PM_{10} concentrations in the area are below 24 µg/m^3.

Table 6 Sensitivity of Receptors and the Local Area to Dust Impacts

Receptor	Distance from Site Boundary	Number of Receptors	Sensitivity to Health Impacts (a)		Sensitivity to Dust Soiling Impacts	
			Receptor	**Area**	**Receptor**	**Area**
Residential Properties	<20 m	>100	High	Low	High	High
Brondesbury Station	<100 m	>100	Medium	Low	Medium	Medium
Crickets Montessori Nursery School	<350 m	<100	Low	Low	Low	Low
Overall Sensitivity of the Area			**Low**		**Medium**	

(a) Existing annual mean PM_{10} concentration < 24µg/m^3

The precise behaviour of the dust, its residence time in the atmosphere and the distance it may travel before being deposited, will depend upon a number of factors. These include wind direction and strength, local topography and the presence of intervening structures (buildings, etc.) that may intercept dust before it reaches sensitive locations. Furthermore, dust would be naturally suppressed by rainfall.

Wind rose for London Heathrow Airport is presented below, which shows that the prevailing wind is from the southwest, therefore receptors to the northeast of the site are most likely to experience dust impacts during the construction phase.

There are no dust sensitive habitat sites within 50m of the Site; therefore, impacts on ecology have not been considered in the assessment.

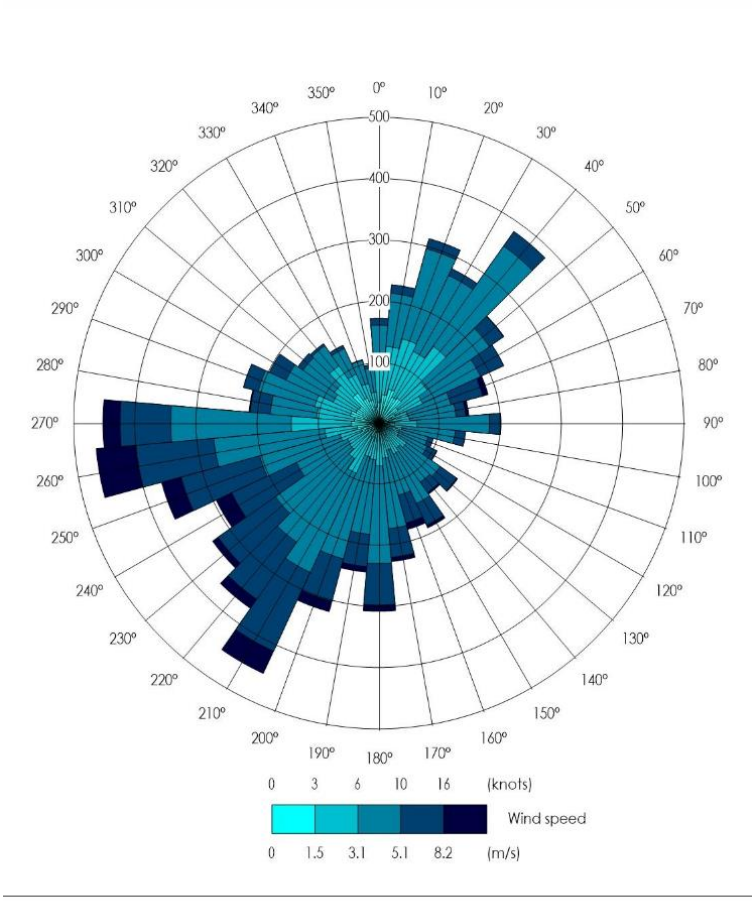

Figure 4: Wind rose for London Heathrow Airport 2019

DUST EMISSION MAGNITUDE

The magnitude of the likely dust emission from demolition, earthworks, construction and trackout, has been evaluated using the criteria in Table A5 of Appendix A and is presented in Table 7.

Table 7: Evaluation of Dust Emission Magnitude

Dust Source	IAQM Criteria	Proposed Development	Dust Emission Magnitude
Demolition	Total building volume (m^3)	$156m^3$	Small
	Potentially dusty material?	Unknown	Medium
	Demolition height (m)	4.1 – 2.7m	Small
	On-site crushing and screening?	No	Small
	Demolition during wetter months?	Unknown, assume yes.	Small
Overall Dust Emission Magnitude from Demolition			**Small**
Justification: Based on the minor scale of the works, which are also at a low level, the dust emission magnitude is considered to be 'medium' rather than 'large'.			
Earthworks	Total site area (m^2)	$285m^2$	Small
	Soil type?	Unknown	Medium
	Number of heavy earth moving vehicles active at any one time	Unknown, but based on size of site assumed <5	Small
	Maximum bund height (m)	Based on size of site, unlikely to be > 4m	Small
	Total material moved (tonnes)	Unknown, assumed < 20,000 tonnes	Small
	Earthworks during wetter months?	Unknown, assume yes	Medium
Overall Dust Emission Magnitude from Earthworks			**Small**
Construction	Total building volume (m^3)	$1,318m^3$	Small
	Potentially dusty construction materials?	Assume RC frame construction with SFS inner leaf between RC columns. Cladding: Facing brick with precast concrete sundry items (lintels, sills, copings and parapets).	Medium
	On-site concrete batching?	No	Small
	Sandblasting?	No	Small
Overall Dust Emission Magnitude from Construction			**Small**
Trackout	Number of outward HGV movements in any one day	N/A	N/A
	Dusty surface material?	N/A	N/A
	Unpaved road length (m)	N/A	N/A
Overall Dust Emission Magnitude from Trackout			**N/A**
Justification: Based on the size of the site, there is unlikely to be significant vehicle access over unmade ground, therefore the emission magnitude due to trackout is anticipated to be 'small', rather than 'medium'.			

ASSESSMENT OF DUST RISK PRIOR TO MITIGATION

A summary of the potential risk of dust impacts prior to mitigation, based on the medium sensitivity of the area to human health impacts and high sensitivity to dust soiling impacts is presented in Table 8.

Table 8: Risk of Dust Impacts Prior to Mitigation

Dust Source	Emission Magnitude	Human Health Risk	Dust Soiling Risk	Overall Risk
Demolition	Small	Low	Medium	**Low**
Earthworks	Small	Low	Medium	**Low**
Construction	Small	Low	Medium	**Low**
Trackout	N/A	N/A	N/A	**N/A**

MITIGATION

The following mitigation measures will be required during the construction and operational phases to minimise the air quality impacts arising from the development.

CONSTRUCTION PHASE

The IAQM 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 soiling and human health impacts from the site has been assessed as medium from demolition and earthworks, low from construction activities and trackout, prior to mitigation. In accordance with the IAQM guidance, it is recommended that the 'highly recommended' and 'desirable' measures detailed in Table 9 and Table 10 are incorporated into the DMP.

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

Table 9: Highly Recommended Mitigation Measures

Description	Mitigation Measure
Operating vehicle/machinery and sustainable travel	- Ensure all vehicles switch off engines when stationary - no idling vehicles. - Avoid the use of diesel- or petrol-powered generators and use mains electricity or battery powered equipment where practicable. - Produce a Construction Logistics Plan to manage the sustainable delivery of goods and materials.
Operations	- Only use cutting, grinding or sawing equipment fitted or in conjunction with suitable dust suppression techniques such as water sprays or local extraction, e.g. suitable local exhaust ventilation systems. - Ensure an adequate water supply on the site for effective dust/particulate matter suppression/mitigation, using non-potable water where possible and appropriate. - Use enclosed chutes and conveyors and covered skips. - Minimise drop heights from conveyors, loading shovels, hoppers and other loading or handling equipment and use fine water sprays on such equipment wherever appropriate. - Ensure equipment is readily available on site to clean any dry spillages, and clean up spillages as soon as reasonably practicable after the event using wet cleaning methods.
Waste management	- Avoid bonfires and burning of waste materials
Demolition	- Ensure effective water suppression is used during demolition operations. Hand held sprays are more effective than hoses attached to equipment as the water can be directed to where it is needed. In addition, high volume water suppression systems, manually controlled, can produce fine water droplets that effectively bring the dust particles to the ground. - Avoid explosive blasting, using appropriate manual or mechanical alternatives. - Bag and remove any biological debris or damp down such material before demolition.
Construction	- 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.
Trackout	- Use water-assisted dust sweeper(s) on the access and local roads, to remove, as necessary, any material tracked out of the site. - Avoid dry sweeping of large areas. - Ensure vehicles entering and leaving sites are covered to prevent escape of materials during transport. - Implement a wheel washing system (with rumble grids to dislodge accumulated dust and mud prior to leaving the site where reasonably practicable). - Access gates to be located at least 10m from receptors where possible.

Table 10 Desirable Mitigation Measures

Description	Mitigation Measure
Preparing and maintaining the site	- Plan site layout: machinery and dust causing activities should be located away from sensitive receptors such as the river to the east and residential units to the south - Fully enclosure specific operations where there is a high potential for dust production and the site is active for an extensive period. - Avoid site runoff of water or mud.
Operating vehicle/machinery and sustainable travel	- 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).
Earthworks	- Re-vegetate earthworks and exposed areas/soil stockpiles to stabilise surfaces. - Use Hessian, mulches or trackifiers where it is not possible to re-vegetate or cover with topsoil. - Only remove secure covers in small areas during work and not all at once.
Construction	- Avoid scabbling (roughening of concrete surfaces) if possible. - 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. - For smaller supplies of fine powder materials ensure bags are sealed after use and stored appropriately to prevent dust.
Trackout	- Regularly use a water-assisted dust sweeper on the access and local roads, as necessary, to remove any material tracked out of the site. - Avoid dry sweeping of large areas. - Ensure vehicles entering and leaving sites are securely covered to prevent escape of materials during transport. - Implement a wheel washing system (with rumble grids to dislodge accumulated dust and mud prior to leaving the site where reasonably practicable).

OPERATIONAL PHASE

During the operational phase of the proposed development, it is not expected to significantly affect local air quality, from both building-related and transport-related emissions. However, the following mitigation measures will be implemented to minimise any potential vehicle trips associated with the development:

- The site should consider operating a Travel Plan that will promotes public transport, carbon-neutral (cycling and walking) travel, and car club opportunities on site.
- 10 new cycle spaces have been proposed as part of the development.

AIR QUALITY NEUTRAL ASSESSMENT

This section presents an air quality neutral assessment in accordance with The London Plan (2021). It is found that the proposed development will be Air Quality Neutral with respect to transport and building-related emissions.

BUILDING EMISSIONS

The air quality neutral assessment for the proposed development is Air Quality Neutral with respect to building-related emissions. Heating and hot water will be provided by electric systems.

TRANSPORT EMISSIONS

The air quality neutral assessment for transport-related emissions compares the emissions from traffic generated by the site with benchmarked emissions based on land-use as specified in the Air Quality Neutral PSD. The proposed development is expected to generate 1 vehicle-movement per day. The transport emission benchmarks (TEBs) and benchmarked emissions for NOx and PM_{10} are presented in Table 11.

Table 11: Benchmarked Transport Emissions

Pollutant/ Land-Use	Number of Dwellings or GFA (m^2)	TEB (g /(GFA or m^2) /annum)	Benchmarked Emissions (kg/annum)
NOx			
Residential	6no.	558	**3.3**
PM_{10}			
Residential	6no.	100	**0.6**

Transport-related emissions associated with the residential and retail components of the proposed development are presented in Table 12 and have been calculated using the anticipated trip generation for the site, trip lengths and emission factors for inner London. The development transport emissions for NO_2 and PM_{10} are well below the benchmarked emissions, therefore the proposed development is Air Quality Neutral with respect to transport-related emissions.

Table 12: Development Transport Emissions

Parameter	NOx	PM_{10}
AADT	1	
Annual trips	365	
Average distance travelled per trip (km)	3.7	
Emission Factor (g/km)	0.370	0.0665
Development Emission (kg/annum)	**0.49**	**0.09**

SUMMARY AND CONCLUSIONS

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_{10} are likely to occur during site activities. However, through good site practice and the implementation of suitable mitigation measures, the impact of dust and PM_{10} releases may be effectively mitigated, and the resultant impacts are considered to be negligible.

Traffic generated during the operational phase is not anticipated to significantly affect local air quality as the scheme is car-free and not proposing any car parking spaces. When comparing the baseline scenario without the development against the future scenario with the development, an increase in traffic is not expected, and therefore negligible change in transport emissions impacting the air quality. A range of mitigation measures are however proposed to minimise any potential vehicle emissions associated with the site, such as cyclist facilities.

The energy strategy for the proposed development is based on electric systems only.

A review of local monitoring data indicates that there is unlikely to be an exceedance of the long or short-term air quality standards for NO_2 and PM_{10} at the site and therefore the proposed development will not create new exposure to poor air quality.

The proposed development is air quality neutral with respect to building and transport-related emissions.

APPENDIX A – IAQM CONSTRUCTION DUST METHODOLOGY

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

Table A: Sensitivity factors

Sensitivity	Human Health	Dust Soiling	Ecological
High	- Locations where members of the public are exposed over a time period relevant to the air quality objectives for PM_{10} (a) - Examples include residential dwellings, hospitals, schools and residential care homes.	- Regular exposure - High level of amenity expected. - Appearance, aesthetics or value of the property would be affected by dust soiling. - Examples include residential dwellings, museums, medium and long-term car parks and car showrooms.	- Nationally or Internationally designated site with dust sensitive features (b) - Locations with vascular species (c)
Medium	- Locations where workers are exposed over a time period relevant to the air quality objectives for PM_{10} (a) - Examples include office and shop workers (d)	- Short-term exposure - Moderate level of amenity expected - Possible diminished appearance or aesthetics of property due to dust soiling - Examples include parks and places of work	- Nationally designated site with dust sensitive features (b) - Nationally designated site with a particularly important plant species where dust sensitivity is unknown
Low	- Transient human exposure - Examples include public footpaths, playing fields, parks and shopping streets	- Transient exposure - Enjoyment of amenity not expected. - Appearance and aesthetics of property unaffected - Examples include playing fields, farmland (e), footpaths, short-term car parks and roads	- Locally designated site with dust sensitive features (b)

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.

b) Ecosystems that are particularly sensitive to dust deposition include lichens and acid heathland (for alkaline dust, such as concrete).

c) Cheffing C. M. & Farrell L. (Editors) (2005), The Vascular Plant. Red Data List for Great Britain, Joint Nature Conservation Committee.

d) Does not include workers' exposure to PM_{10} as protection is covered by Health and Safety at Work legislation.

e) Except commercially sensitive horticulture.

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_{10} 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 A4.

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_{10} Concentration ($\mu g/m^3$)	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 A5.

Table A5: Dust Emission Magnitude

Receptor Sensitivity	Large	Medium	Small
Demolition	- Total building volume >50,000m^3 - Potentially dusty material (e.g. concrete) - Onsite crushing and screening - Demolition activities >20m above ground level.	- Total building volume 20,000 - 50,000m^3 - Potentially dusty material - Demolition activities 10 - 20m above ground level.	- Total building volume <20,000m^3 - Construction material with low potential for dust release - Demolition activities <10m above ground level - Demolition during wetter months
Earthworks	- Total site area >10,000m^2 - Potentially dusty soil type (e.g. clay) - >10 heavy earth moving vehicles active at any one time - Formation of bunds >8m in height - Total material moved >100,000 tonnes	- Total site area 2,500 - 10,000m^2 - Moderately dusty soil type (e.g. silt) - 10 heavy earth moving vehicles active at any one time - Formation of bunds 4 - 8m in height - Total material moved 20,000 - 100,000 tonnes	- Total site area <2,500m^2 - Soil type with large grain size (e.g. sand) - <5 heavy earth moving vehicles active at any one time - Formation of bunds <4m in height - Total material moved <20,000 tonnes - Earthworks during wetter months
Construction	- Total building volume >100,000m^3 - On site concrete batching - Sandblasting	- Total building volume 25,000 - 100,000m^3 - Potentially dusty construction material (e.g. concrete) - On site concrete batching	- Total building volume <25,000m^3 - Material with low potential for dust release (e.g. metal cladding or timber
Trackout	- >50 HGV movements in any one day (a) - Potentially dusty surface material (e.g. high clay content)	- 10 - 50 HGV movements in any one day (a) - Moderately dusty surface material (e.g. silt)	- <10 HGV movements in any one day (a) - Surface material with low potential for dust release

	- Unpaved road length >100m	- Unpaved road length 50 - 100m	- Unpaved road length <50m
a) 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 Tables A6 and A7.

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

Area Sensitivity	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

Area Sensitivity	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

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