Chapter 8: Air Quality

TOPIC	AIR QUALITY
AUTHOR	Entran Ltd
SUPPORTING APPENDIX	**ES Volume 2: Appendix: Air Quality**: Annex 1: Glossary; Annex 2: Traffic Data; and Annex 3: Model Verification Study.
KEY CONSIDERATIONS	London Borough of Tower Hamlets (LBTH) has declared a borough wide Air Quality Management Area due to exceedances of the air quality objectives for nitrogen dioxide (NO_2) and particulate matter (as PM_{10}). The potential air quality effects associated with the Proposed Development are: • Dust arising because of the demolition and construction works, with potential impacts on amenity and human health. A qualitative dust risk assessment has therefore been carried out; • Construction vehicle and plant emissions from the demolition and construction works; and • Impacts of road traffic emissions from traffic generated by the operational Proposed Development on existing and proposed receptors.
CONSULTATION	The EIA Scoping Opinion is presented in **ES Volume 2 Appendix: EIA Methodology – Annex 2** which raised several points regarding air quality, which have been addressed. The points raised are as follows: • The assessment of vehicle emissions is to include assessment of NO_2, PM_{10}, and $PM_{2.5}$; • The layout of the Proposed Development is to be considered to limit the potential exposure to unacceptable air quality; • The ES is to ensure that realistic background air quality concentrations are used in the assessment, and a robust model verification exercise is undertaken; • Meteorological data from London City Airport should also be used to inform the assessment, along with the most recent local monitoring data; • The dispersion modelling must enable the future baseline with and without the Proposed Development to be understood, and in accordance with Paragraph 6.20 of the Institute of Air Quality Management (IAQM) guidance 'Planning for Air Quality' (2017), comparison should also be provided against the existing baseline. The ES should also include an assessment of the worst case (peak) demolition and construction effects, and an interim construction and operation effects of the Proposed Development. The scenarios must be clearly differentiated; • The ES must ensure the spatial extent of the assessment of vehicle emissions is sufficient, to ensure the likely significant effects of the Proposed Development can be understood; • The ES is to illustrate the location of air quality receptors, their use type (e.g. school, nursery, residential) and their sensitivity to poor air quality/changes in air quality. The ES should include a figure(s) showing the location of identified air quality receptors, as well as the background monitoring stations utilised in the assessment; • The ES shall have regard to the Greater London Authority (GLA) Supplementary Planning Guidance (SPG) on Sustainable Design and Construction with regards to impacts on future users of the building and the impact of emissions from the building on both the Proposed Development itself and surrounding areas; • The Applicant should also have regard to the London Plan with particular reference to Policy SI 1, the London Mayor's Environment Strategy with particular reference to Policy 4.3.3a, with regards to new developments being 'air quality positive', and the air quality recommendations in the Tower Hamlets Local Plan 2031: Managing Growth and Sharing the Benefits (2020) in particular policy ES2 - improving air quality; • An air quality neutral assessment should be carried out following the methodology outlined in the GLA Sustainable Design and Construction Supplementary Planning Guidance (SPG). In addition, the Air Quality Neutral Planning Support Update (2014) should be used to inform the assessment as referenced in the Scoping Report; • The demolition and construction assessment should include a worst-case assessment in which the effects of construction on new on-site receptors (e.g. residents) are considered; • The ES should clearly set out the definition of 'temporary' effects as, whilst the Scoping Report refers to 'temporary generation of dust from construction works' and 'temporary changes in traffic related emissions during the construction works', the demolition and construction programme is anticipated to be ten years in duration; therefore, it is likely that that demolition and construction related effects are long term; • The ES should also consider the potential effects arising from any required remediation of the Application Site, which can result in emissions to air and as a result, risk to human health and nuisance; • The Air Quality (Dust) Risk-Assessment (AQDRA) is to provide a detailed risk-assessment for each construction sub-phase as outlined in the Control of Dust and Emissions During Construction SPG 2014, Mayor of London. The ES should identify adherence to the GLA Control of Dust and Emissions SPG as a mitigation measure to be secured within any given planning permission; • The potential for cumulative construction traffic effects is to be sufficiently considered and assessed as required; • LBTH expects that should the air quality assessment identify levels of air pollution above the National Air Quality Objective levels, mitigation is to be provided, noting that the use of filtered inlet air is not normally considered to be acceptable. Occupants of the proposed residential units are not to be exposed to air in excess of the UK air quality objectives, the effect on future on-site receptors is to be assessed as confirmed in Paragraph 134 of the Scoping Report; • The Scoping Report confirms that open space is proposed as part of the Proposed Development. The position of such space, including any play space, should be considered in the ES in relation to air quality, to avoid adverse effects; • The ES is to provide a transparent account of the modelling undertaken, all assumptions made and all input data used, including datasets used, methodologies (monitoring, modelling, and scenarios), meteorological data, background concentrations, traffic data (flow, speeds, etc.), dispersion model type; and • Given the height of the Proposed Development, the Air Quality aspect chapter will need to assess the effects at various heights and identify at which levels mitigation is required. If mechanical ventilation is required, the ES should specify at what level/location air of a suitable quality can be utilised and ensure the ventilation strategy is consistent between the overheating strategy and noise assessments i.e. whether other assessments are relying on open or closed windows.

ASSESSMENT METHODOLOGY

Air Quality Standards (AQS)

8.1 The Air Quality Standards Regulations 2010[1] came into force on the 10th June 2010 and have adopted into UK law the limit values required by EU Directive 2008/50/EC. These regulations prescribe the 'relevant period' (referred to in Part I2V of the Environment Act 1995) that local authorities must consider in their review of the future quality of air within their area. The regulations also set out the air quality objectives to be achieved by the end of the 'relevant period'.

8.2 Of the pollutants included in the AQS, NO_2, PM_{10} and $PM_{2.5}$ will be particularly relevant to this project as these are the primary pollutants associated with road traffic.

8.3 The air quality standards and objectives for the pollutants considered in this assessment are set out in **Table 8.1.**

Table 8.1 Air Quality Standards and Objectives

Pollutant	Standard (µg/m3)	Averaging Period	No. of Permitted Exceedances
NO_2	200	1-Hour	18 per annum (99.8th percentile)
	40	Annual	-
PM_{10}	200	24-Hour	35 per annum (90.4th percentile)
	50	Annual	-
$PM_{2.5}$	25	Annual	-

Defining the Baseline

Current Baseline Conditions

8.4 Existing sources of emissions within the study area have been identified through examination of the Council's Air Status reports[2]. Information on existing (2019) air quality has been obtained by collating the results of

[1] *The Air Quality Standards Regulations 2010 – Statutory Instrument 2010 No. 1001*

[2] *London Borough of Tower Hamlets (2020) Air Quality Annual Status Report for 2019, [Online], Available: The London Borough of Tower Hamlets Air Quality Annual Status Report for 2019*

monitoring carried out by LBTH[2]. This covers both the study area and nearby sites (closest sites to the Proposed Development); the latter being used to provide context for the assessment. Background concentrations have been defined using the national pollution maps published by Defra[3].

8.5 At the time of undertaking this assessment, the most recent published measurement data available from LBTH was from 2019. Therefore, to allow for model verification, the 2019 measurement data has been used to represent the baseline year.

8.6 Exceedances of the annual mean European Union (EU) limit value for NO_2 in the study area have been identified using the maps of roadside concentrations published by Defra[4]. These are the maps used by the UK Government, together with the results from national Automatic Urban and Rural Network (AURN) monitoring sites that operate to EU data quality standards, to report exceedances of the limit value to the EU. The national maps of roadside PM_{10} and $PM_{2.5}$ concentrations[5], which are available for the years 2009 to 2017, show no exceedances of the limit values anywhere in the UK in 2017.

8.7 Baseline traffic flows for roads in the vicinity of the Proposed Development have been provided by the transport consultants for the Project and are summarised in **ES Volume 3, Annex 2 – Traffic Data**. Current baseline concentrations of NO_2, PM_{10} and $PM_{2.5}$ at the Proposed Development have been predicted using the ADMS-Roads dispersion model.

Evolution of the Baseline

8.8 Baseline air quality is likely to improve in future years as a result of improvements in vehicle emissions technology regardless of whether the Proposed Development comes forward or not. To provide a worst-case assessment of potential impacts, the existing baseline pollutant concentrations are assumed to be representative of future air quality at sensitive receptor locations.

8.9 The future baseline known as the "Future Without Development" refers to the scenario which assumes all Committed Developments are built and all associated traffic movements are included within the traffic flows, in the absence of the Proposed Development being implemented. Effectively this describes the future environment in the absence of the Proposed Development.

8.10 Future baseline traffic flows have been provided by the transport consultants for the expected year of completion (2031) and are summarised in **ES Volume 3, Annex 2 – Traffic Data**. These flows incorporate the projected traffic flows associated with cumulative schemes in the vicinity of the Site.

Impact Assessment Methodology

Demolition and Construction

8.11 **ES Volume 1, Chapter 5: Demolition and Construction** outlines the proposed demolition and construction works. Consideration has been given to the potential for significant effects from the following impacts that will occur during the demolition and construction stage:

- Dust emissions; and
- Construction traffic and plant emissions.

Dust

8.12 The potential impact of dust generated during site enabling, earthworks and construction works at the Proposed Development has been undertaken in accordance with the Institute of Air Quality Management (IAQM) construction dust guidance[6], which is closely aligned with the GLA's Supplementary Planning Guidance (SPG) for the control of dust and emissions during construction and demolition[7].

8.13 . Guidance provided by the IAQM includes the following criteria for assessing the effects of construction dust:

- A sensitive 'human receptor' within 350m of the Proposed Development Site boundary or within 50m of the route used by construction vehicles on public highways up to 500m from the Site entrance; and
- A sensitive 'ecological receptor' within 50m of the Proposed Development Site boundary or within 50m of the route used by construction vehicles on the public highway, up to 500m from the Site entrance. /or

8.14 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).

8.15 The risk of dust effects (low, medium or high) is determined by the scale (magnitude) and nature of the works and the proximity of sensitive human and ecological receptors.

8.16 All construction sites are different and the potential for dust impacts are dependent on a number of local factors such as the prevailing wind direction, the proposed construction phasing, the likely duration of dust raising activities, local topography and existing air quality. The methodology set out in the IAQM guidance is therefore considered as a framework for assessing dust impacts and a certain level of professional judgement is required in determining the effects from each Site.

Construction Traffic and Plant Emissions

8.17 The Environmental Protection UK (EPUK) / IAQM planning guidance[8] states that for developments that are within or close to 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.

8.18 Construction traffic will contribute to existing traffic levels on the surrounding road network. The greatest potential for impacts on air quality will be in the areas immediately adjacent to the principal means of access for construction traffic.

8.19 Data provided by the transport consultants[9] indicates that the Proposed Development will result in an increase in Heavy Duty Vehicles (HDVs), in excess of the threshold values for locations inside an AQMA along several roads in the vicinity. An assessment of impacts arising from construction vehicle emissions using the local roads has therefore been included in the assessment. Construction traffic data has been provided for the worst-case construction year, which is assessed to be 2026. The assessment for construction phase traffic impacts follows the methodology outlined for the operational traffic of the Completed Development (see below).

Phasing

8.20 The worst-case scenario is based on peak Heavy Goods Vehicle (HGV) construction flows as discussed in **ES Volume 1, Chapter 5: Demolition and Construction**. Peak HGV construction occurs at a point where Phase B is under construction and the Detailed Proposals (Phase A) are occupied and represents a worst case for construction traffic on Site. The assessment of Demolition and Construction within this chapter therefore applies to other phases of the Proposed Development and therefore the mitigation identified within this ES Chapter would apply to other phases of the Proposed Development.

8.21 Consideration has therefore been given to phasing of the Proposed Development through modelling of an interim a traffic data scenario (2026). This is considered a worst-case scenario for construction traffic on-Site as it represents a period with peak HGV traffic occurs (i.e. Phase B is under construction and the Detailed Proposals (Phase A) are occupied)

---

[3] *Defra (2019) Local Air Quality Management (LAQM) Support Website, [Online], Available: http://laqm.defra.gov.uk/.*
[4] *Defra (2019) 2019 NO_2 projections data (2018 reference year), [Online], Available: https://uk-air.defra.gov.uk/data/laqm-background-maps?year=2018*
[5] *Defra (2019) UK Ambient Air Quality Interactive Map, [Online], Available: https://uk-air.defra.gov.uk/data/gis-mapping/*
[6] *Guidance on the assessment of dust from demolition and construction, IAQM, February 2014. Available: construction-dust-2014.pdf (iaqm.co.uk)*
[7] *The Control of Dust and Emissions during Construction and Demolition Supplementary Planning Guidance, The Mayor of London, July 2014*
[8] *EPUK/ IAQM (2017), Land-Use Planning & Development Control: Planning for Air Quality, January 2017(v1.2)*
[9] *Velocity (2021) Traffic data for EIA*

Completed Development

Road Traffic Impacts

8.22 A summary of baseline and development traffic flows is presented in **ES Volume 3, Appendix Traffic and Transport, Annex 2 – Traffic Data**. The Proposed Development is expected to result in a minor increase in total trips due to servicing vehicles. The impact of the Proposed Development in transport terms comes from the infrastructure changes proposed (closure of the underpass and a signalised bus gate onto the A12), as described in full in **ES Volume 1, Chapter 4: The Proposed Development**. The infrastructure changes have been tested in a strategic transport model. The results show that, although the overall traffic volume would not change, drivers might choose a different route to get to their destination, resulting in changes to the traffic flows on certain links. An assessment of impacts arising from vehicle emissions using the local roads has therefore been included in the assessment. Consideration has also been given to the suitability of the Site for its proposed use.

Roads Modelling Methodology

8.23 Air quality at the Proposed Development has been predicted using the ADMS Roads dispersion (Version 5.0.0, April 2020). This is a commercially available dispersion model and has been widely validated for this type of assessment and used extensively in the Air Quality Review and Assessment process.

8.24 The model uses detailed information regarding traffic flows on the local road network and local meteorological conditions to predict pollution concentrations at specific locations selected by the user. Meteorological data from the London City Airport Meteorological Station for the year 2019 has been used for the assessment.

8.25 The model has been used to predict road specific concentrations of oxides of nitrogen (NO_x) and Particulate Matter (PM_{10} and $PM_{2.5}$) at selected receptors. The predicted concentrations of NO_x have been converted to NO_2 using the NO_x to NO_2 calculator available on the Defra air quality website[10].

8.26 Traffic data for road links adjacent to the Site has been provided by the Transport Consultants[9].

8.27 A summary of the traffic data used in the assessment can be found in **ES Volume 3, Appendix Traffic and Transport, Annex 3 – Traffic Data**. The data includes details of annual average daily traffic flows (AADT), vehicle speeds and percentage Heavy Duty Vehicles (HDV) for the assessment years considered. Low traffic speeds have been assigned to appropriate road links to account for congestion and queuing vehicles.

8.28 The following scenarios have been included in the assessment:

- 2019 – baseline traffic (for verification purposes);
- 2026 – baseline traffic (hereafter referred to as 'without construction' scenario);
- 2026 – baseline and construction traffic (hereafter referred to as 'with construction' scenario). This is the interim 'Phasing' assessment year as discussed within **Paragraph 8.20**;
- 2031 – future base scenario plus cumulative developments (hereafter referred to as 'without Development' scenario); and
- 2031 – future base scenario plus cumulative developments plus the Development (hereafter referred to as 'with Development' scenario).

8.29 The emission factors released by Defra in August 2020, provided in the emissions factor toolkit EFT2020_10.1 have been used to predict traffic related emissions for 2019 (for verification purposes), 2026 and 2030.

8.30 To predict local air quality, traffic emissions predicted by the model must be added to local background concentrations. Background concentrations of NO_2, PM_{10} and $PM_{2.5}$ have been taken from the 2018 Defra background maps (issued August 2020). The maps provide an estimate of background concentrations between 2018 and 2030. The data used for the modelling assessment are set out in **Table 8.12**.

8.31 Background concentrations for 2019 have been used to predict concentrations in 2026 and 2031 assuming no change in future years. This is considered to represent a conservative prediction of future concentrations.

8.32 To determine the performance of the model at a local level, a comparison of modelled results with the results of monitoring carried out within the study area was undertaken. This process aims to minimise modelling uncertainty and systematic error by correcting the modelled results by an adjustment factor to gain greater confidence in the final results. This process was undertaken using the methodology outlined in Chapter 7, Section 4 of LAQM.TG(16).

8.33 A verification factor of 1.47 was determined which indicates that the model is under-predicting in this area. This factor was applied to the modelled road-NO_x concentrations prior to conversion to annual mean NO_2 concentrations using the NO_x to NO_2 calculator. Further details of the determination of the verification factor are provided in **ES Volume 3, Appendix Air Quality, Annex 3 – Model Verification Study.**

8.34 The predicted concentrations have been compared with the current statutory standards and objectives set out in **Table 8.1** to determine whether mitigation is required on site to ensure that future occupants of the Proposed Development are not exposed to poor air quality.

Site Suitability

8.35 Receptors within the Proposed Development have been included in the modelling of both the construction traffic (receptors within the Detailed proposals) and the completed development. The results have been compared against the air quality objectives to determine site suitability in relation to air quality.

Energy Centre Impacts

8.36 Air and water source heat pumps are proposed for the majority of the Proposed Development, with the exception of Blocks F1, H1, H2 and H3 which will be connected to the existing energy centre within the 2012 Outline Planning Permission (2012 OPP) (to the south of the Site). The additional demand will be provided by air and water source heat pumps. As such, energy centre impacts have been scoped out of this assessment and will not be assessed further.

Air Quality Neutral

8.37 According to the Greater London Authority (GLA) Sustainable Design and Construction SPG[11], developers are to design their projects so that they are "*at least 'air quality neutral' and not lead to any further deterioration of existing poor air quality*". The 2010 Mayor's Air Quality Strategy (MAQS)[12] also references developments achieving 'air quality neutral' *"through the adoption of best practice in the management and mitigation of emissions"*.

8.38 Since the Proposed Development contains more than 10 flats, an Air Quality Neutral Assessment is required.

8.39 The Proposed Development is expected to use Air Source Heat Pumps (ASHP's) and Water Source Heat Pump (WSHP) as part of an ambient loop system and will have no gas fired boilers or combined heat and power system, hence building emissions are not significant for the Air Quality Neutral assessment. Emissions benchmarks have not been calculated for this assessment as the emissions from the Proposed Development will be negligible.

Air Quality Positive

8.40 Air Quality positive will follow the Air Quality Positive approach required by Policy SI1 (part C) of the London Plan[13,14]. At early design stages, consideration will need to be given to how the Proposed Development is designed and built to improve local air quality and reduce the influence area to which the general public is exposed to poor air quality.

8.41 At the time of the design stage of the Proposed Development, the supporting guidance on Air Quality Positive was not published yet, however Entran have been involved in the design process, providing advice to the Project architects in relation to baseline conditions and recommended measures to be incorporated into the design (where possible).

Assumptions and Limitations

8.42 For the operational phase assessment, it should be noted that there are a number of potential sources of error, particularly in terms of model inputs, due to the complexities of pollutant dispersion and atmospheric chemistry. However, conservative estimates of emission magnitudes and their significance should be produced as a number of worst-case assumptions have been incorporated into the model.

8.43 Furthermore, it is noted that the model will only predict the potential effects at existing receptors close to the Site due to the availability of traffic data. However, changes in traffic volumes will decrease with distance from the Site as vehicles disperse into the road network and/or reach their destinations. As a result, the largest (and

[10] *http://uk-air.defra.gov.uk*
[11] *Sustainable Design and Construction. Supporting Planning Guidance. Greater London Authority (2014).*
[12] *GLA, (2010); Air Quality Strategy*
[13] *The London Plan (2021). Spatial Development Strategy for Greater London.*
[14] *Air Quality Positive. London Plan Guidance (GLA). March 2021.*

often most significant) impacts tend to be experienced by those receptors closest to the Site, with receptors further away experiencing smaller changes in pollutant concentration.

Methodology for Defining Effects

Receptors and Receptor Sensitivity

Demolition and Construction

8.44 Factors defining the sensitivity of a receptor for demolition and construction, in accordance with the IAQM guidance, are presented in **Table 8.2**.

Table 8.2 Factors Defining the Sensitivity of a Receptor

Sensitivity	Human (Health)	Human (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 objectives, 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.

8.45 The sensitivity of a receptor will also depend on a number of additional factors including any history of dust generating activities in the area, likely cumulative dust impacts from nearby construction sites, any pre-existing screening such as trees or buildings and the likely duration of the impacts. In addition, the influence of the prevailing wind direction and local topography may be of relevance when determining the sensitivity of a receptor.

Area Sensitivity

8.46 The sensitivity of the area to dust soiling and health impacts is dependent on the number of receptors within each sensitivity class and their distance from the source. In addition, human health impacts are dependent on the existing PM_{10} concentrations in the area. **Table 8.3** and **Table 8.4** summarise the criteria for determining the overall sensitivity of the area to dust soiling and health impacts respectively.

Table 8.3 Sensitivity of the Area to Dust Soiling Effects on People and Property

Receptor Sensitivity	Number of Receptors	Distance from the source (a)			
		<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

A) For trackout, the distance is measured from the side of roads used by construction traffic. Beyond 50m, the impact is negligible.

Table 8.4 Sensitivity of the Area to Human Health Impacts

Receptor Sensitivity	Annual Mean PM_{10} ($\mu g/m^3$)	Number of Receptors	Distance from the source (a)				
			<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 $\mu g/m^3$	> 10	High	Medium	Low	Low	Low
		1 - 10	Medium	Low	Low	Low	Low
	28-32 $\mu g/m^3$	> 10	Medium	Low	Low	Low	Low
		1 - 10	Low	Low	Low	Low	Low
	<28 $\mu g/m^3$	-	Low	Low	Low	Low	Low
Low	-	>1	Low	Low	Low	Low	Low

Receptor Sensitivity	Annual Mean PM_{10} ($\mu g/m^3$)	Number of Receptors	Distance from the source (a)				
			<20m	<50m	<100m	<200m	<350m
A) For trackout, the distance is measured from the side of roads used by construction traffic. Beyond 50m, the impact is negligible.							

Completed Development

8.47 The Air Quality Strategy (AQS) defines the locations where the applicable objective values for air pollutants apply as locations where members of the public are regularly present and might reasonably be expected to be exposed over the relevant averaging period of the objectives. Typically, these include residential properties, hospitals and schools for the longer averaging periods (i.e. annual mean) pollutant objectives.

8.48 On this basis, for the purposes of this EIA, receptors of high sensitivity are considered in relation to changes in road traffic (and impact on local air quality) and include residential properties, schools, hospitals and care homes.

8.49 Sensitive ecological receptors are those whose features have been described as being directly or indirectly responsive to air pollutants. High levels of NO_2 deposition may be toxic to vegetation, potentially leading to changes in ecosystems. The closest ecological site which is known to be sensitive to NO_2 deposition is the Epping Forest Special Area of Conservation (SAC), located approximately 6.4km from the Site. Changes to traffic data this distance from the Site will not be detectable and therefore this ecological site has not been considered within this assessment as it is considered too far from the Site and is unlikely to be affected by the Proposed Development[15].

Magnitude of Impact

Demolition and Construction

Dust Emission Magnitude

8.50 The magnitude of the dust impacts for each source is classified as Small, Medium or Large depending on the scale of the proposed works. **Table 8.5** summarises the IAQM criteria that may be used to determine the magnitude of the dust emission. These criteria are used in used in combination with site specific information and professional judgement.

Table 8.5 Dust Emission Magnitude Criteria

Source	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) • 5 - 10 heavy earth moving vehicles active at any one time • Formation of bunds 4 - 8m in height	• 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
		• Total material moved 20,000 - 100,000 tonnes	
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) • Unpaved road length >100m	• 10 - 50 HGV movements in any one day (a) • Moderately dusty surface material (e.g. silt) • Unpaved road length 50 - 100m	• <10 HGV movements in any one day (a) • Surface material with low potential for dust release • Unpaved road length <50m

Risk of Dust Impacts

8.51 The risk of dust impacts prior to mitigation for each emission source is presented in **Tables 8.6, 8.7** and **8.8.**

Table 8.6 Risk of Dust Impacts – Demolition

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

Table 8.7 Risk of Dust Impacts – Earthworks and Construction

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

Table 8.8 Risk of Dust Impacts – Trackout

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

[15] *Air Emissions Risk Assessment for your Environmental Permit (Guidance). Environment Agency and DEFRA (2021). Available at: https://www.gov.uk/guidance/air-emissions-risk-assessment-for-your-environmental-permit#screening-for-protected-conservation-areas*

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

Completed Development

8.52 The significance of the predicted impacts has been determined following the advice provided in the EPUK & IAQM planning guidance, in combination with professional judgement. The guidance recommends that the impact at individual receptors is described by expressing the magnitude of incremental change in pollution concentrations as a proportion of the relevant assessment level and examining this change in the context of the new total concentration and its relationship with the assessment criterion as summarised in **Table 8.9**.

8.53 The term Air Quality Assessment Level or 'AQAL' has been used here, which covers all pollutants, i.e., those with and without formal standards. Typically, as is the case for this assessment, the AQAL will be the air quality objective value. Impacts may be adverse or beneficial, depending on whether the change in concentration is positive or negative.

Table 8.9 Impact Descriptors for Individual Receptors

Long Term Average Concentration at Receptor in Assessment Year	% Change in concentration relative to AQAL (a)			
	1	2-5	5-10	>10
75% or less of AQAL	Negligible	Negligible	Minor adverse	Moderate adverse
76-94% of AQAL	Negligible	Minor adverse	Moderate adverse	Moderate adverse
95-102% of AQAL	Minor adverse	Moderate adverse	Moderate adverse	Major adverse
103-109% of AQAL	Moderate adverse	Moderate adverse	Major adverse	Major adverse
110% or more of AQAL	Moderate adverse	Major adverse	Major adverse	Major adverse

(a) A change in concentration of less than 0.5% of the AQAL is considered insignificant, however changes between 0.5% and 1% are rounded up to 1%.

8.54 The EPUK & IAQM guidance notes that the criteria in **Table 8.9** should be used to describe impacts at individual receptors and should be considered as a starting point to make a judgement on significance of effects, as other influences may need to be accounted for. The EPUK & IAQM guidance states that the assessment of overall significance should be based on professional judgement, taking into account several factors, including:

- The existing and future air quality in the absence of the development;
- The extent of current and future population exposure to the impacts; and
- The influence and validity of any assumptions adopted when undertaking the prediction of impacts.

8.55 The EPUK & IAQM guidance also provides significance criteria for short term impacts which are defined for averaging periods of 1-hour or less. The EPUK & IAQM guidance states that for point sources short-term impacts of less than 10% of the AQAL are described as 'negligible' regardless of existing air quality. Where short-term process concentrations are 11-20% of the AQAL the severity of the impact is described as 'slight'. Impacts of 21-50 and over 51% are described as 'moderate' and 'substantial' respectively.

Defining the Effect

Demolition and Construction

8.56 For each dust emission source (demolition, construction, earthworks and trackout), the worst-case area sensitivity is used in combination with the dust emission magnitude to determine the risk of dust impacts.

8.57 The IAQM guidance provides a range of mitigation measures which are dependent on the level of dust risk attributed to the Proposed Development. Site specific mitigation measures are also included where appropriate.

8.58 The IAQM assessment methodology recommends that significance criteria are only assigned to the identified risk of dust impacts occurring from a construction activity following the application of appropriate mitigation measures. For almost all construction activities, the application of effective mitigation should prevent any significant effects occurring to sensitive receptors and therefore the residual effects will normally be negligible.

8.59 Effects are defined based on the risk of impacts (see **Table 8.7 and 8.8**) as follows:

- High risk = Major adverse effect;
- Medium risk = Moderate adverse effect; and
- Low risk = Minor adverse effect.

Completed Development

8.60 The effects of the completed development are defined based on the criteria set out in **Table 8.9**.

Categorising Likely Significant Effects

8.61 In general, negligible, and minor effects are considered to be 'not significant', and moderate and major effects are considered to be 'significant'. Factors such as the source type, location of the receptor, location of the effect, and professional judgment may also contribute to the determination of significance and will be considered using professional judgement.

BASELINE CONDITIONS

8.62 LBTH declared a borough wide AQMA in 2000, due to exceedances of the air quality objectives for annual mean NO_2 and 24-hour mean PM_{10}. Consequently, the Site falls within the designated AQMA.

8.63 LBTH operates four automatic monitors within the borough, the closest of which is located adjacent to the Site (Blackwall). Bias adjusted data obtained from the Blackwall automatic monitoring site is presented in **Table 8.10**.

Table 8.10 Pollutant Concentrations Measured Automatically at Blackwall Roadside Automatic Monitor

Statistic	2015	2016	2017	2018	2019
Annual Mean NO_2 ($\mu g/m^3$)	58	59	56	51	47
Number of Predicted Exceedances of the 1 Hour Mean AQO for NO_2 of 200 $\mu g/m^3$	0	9	0	0	0
Annual Mean PM_{10} ($\mu g/m^3$)	22	23	25	20	20
Number of Predicted Exceedances of the 24 Hour Mean AQO for PM_{10} of 50 $\mu g/m^3$	-	-	-	4	-
Annual Mean $PM_{2.5}$ ($\mu g/m^3$)	14	20	13	13	12.4

8.64 Annual mean NO_2 concentrations were above the 40 $\mu g/m^3$ objective at the Blackwall automatic monitor. Exceedances of the hourly objective were recorded at Blackwall. However, the objective allows for 18 exceedances of the 200 $\mu g/m^3$ limit in any given year, therefore the objective was met in all five monitoring years.

8.65 Annual mean PM_{10} concentrations were well below the 40 $\mu g/m^3$ objective at Blackwall. Exceedances of the 24-hour objective have been recorded at Blackwall. However, the objective allows for 35 exceedances of the 50 $\mu g/m^3$ limit in any given year, therefore the objective was met in all five monitoring years.

8.66 Annual mean $PM_{2.5}$ concentrations were below the 25 µg/m^3 objective at Blackwall in all five monitoring years.

8.67 LBTH also operates a network of passive diffusion tubes to monitor ambient concentrations of NO_2 in the borough. Three of these diffusion tubes are located in the vicinity of the Proposed Development. Bias adjusted data from these monitoring sites is presented in **Table 8.11**.

Table 8.11 Annual Mean NO_2 Concentration Measured by Diffusion Tube (µg/m^3)

Site	OS Grid Reference	Distance from Kerb (m)	Type	2015	2016	2017	2018	2019
83 – Zetland Street/A12	538280,185359	0.5	Kerbside	66	63	62	63	52
84 – Blair Street (End of Street)	539572,184659	5	Roadside	52	48	52	44	39
85 – Portree Street	541954,185430	0.5	Kerbside	48	48	48	45	38

8.68 At roadside and kerbside locations in the vicinity of the Site, the AQS objective for annual mean NO_2 concentrations has generally been exceeded over the five-year period.

8.69 Diffusion tubes cannot monitor short-term NO_2 concentrations, however, as previously discussed, research has concluded that exceedances of the 1-hour mean objective are generally unlikely to occur where annual mean concentrations do not exceed 60 µg/m^3. Concentrations above 60µg/m^3 have been recorded at Zetland Street/A12, therefore it is likely that the short-term objective is currently being breached at kerbside locations in the vicinity of the Site.

8.70 Additional information on background concentrations in the vicinity of the Proposed Development have been obtained from the Defra background pollutant maps. The average pollutant concentrations from the grid squares representing the assessment area have been extracted from the maps which include the modelled receptors and road links included in the modelling assessment.

8.71 The 2018 Defra background maps, which provide estimated background concentrations between 2018 and 2030, have been used to obtain the pollutant concentrations for 2019. The data is set out in **Table 8.12.**

8.72 The data presented in **Table 8.12** shows background concentrations of all three pollutants to be below the relevant annual mean objective.

Table 8.12 Annual Mean Measured and Mapped Background Pollutant Concentrations (µg/m^3)

Grid Square	Receptor	NO_2	PM_{10}	$PM_{2.5}$
538500,181500	P1-P20, R1-R5, R8, R9, R21-R23, R26-R28, R30-R32	35.5	20.2	13.0
537500,181500	R6, R11-R16	28.8	19.3	12.3
538500, 180500	R7, R10	39.8	20.3	13.0
537500, 182500	R17-R20	29.6	19.9	12.6
539500, 182500	R24	26.9	19.4	12.8
539500, 181500	R25, R29	36.5	20.3	13.1

RECEPTORS AND RECEPTOR SENSITIVITY

Existing

Demolition and Construction

8.73 The assessment of dust impacts is dependent on the proximity of the most sensitive receptors to the Site boundary. A summary of the existing receptor and area sensitivity to health and dust soiling impacts is presented in **Table 8.13**. The sensitivity of the area to health impacts is dependent on the existing PM_{10} concentration.

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

8.75 The overall sensitivity of the area to human health and dust soiling dust impacts is' Medium' and 'High', respectively.

Table 8.13 Sensitivity of Existing Receptors and the Local Area to Health and Dust Soiling Impacts

Receptor	Distance from Site Boundary	Number of Receptors	Sensitivity to Health Impacts (a)		Sensitivity to Dust Soiling Impacts (a)	
			Receptor	Area	Receptor	Area
Residential properties	<20m	10 - 100	High	Medium	High	High
Culloden Primary Academy	<20m	>100	High	Medium	High	High
Overall Sensitivity of the Area to Dust Impacts			**Medium**		**High**	
(a) Existing annual mean PM_{10} concentration below 24 µg/m^3						

Traffic Impacts

8.76 LAQM.TG(16) describes in detail typical locations where consideration should be given to pollutants defined in the Air Quality Regulations. Generally, the guidance suggests that all locations where members of the public are regularly present' should be considered. At such locations, members of the public will be exposed to pollution over the time that they are present, and the most suitable averaging period of the pollutant needs to be used for assessment purposes.

8.77 For instance, on a footpath, where exposure will be transient (for the duration of passage along that path) comparison with short-term standard (i.e. 15-minute mean or 1-hour mean) may be relevant. In a school, or adjacent to a private dwelling, however; where exposure may be for longer periods, comparison with long-term (such as 24-hour mean or annual mean) standards may be most appropriate. In general terms, concentrations associated with long-term standards are lower than short-term standards owing to the chronic health effects associated with exposure to low level pollution for longer periods of time.

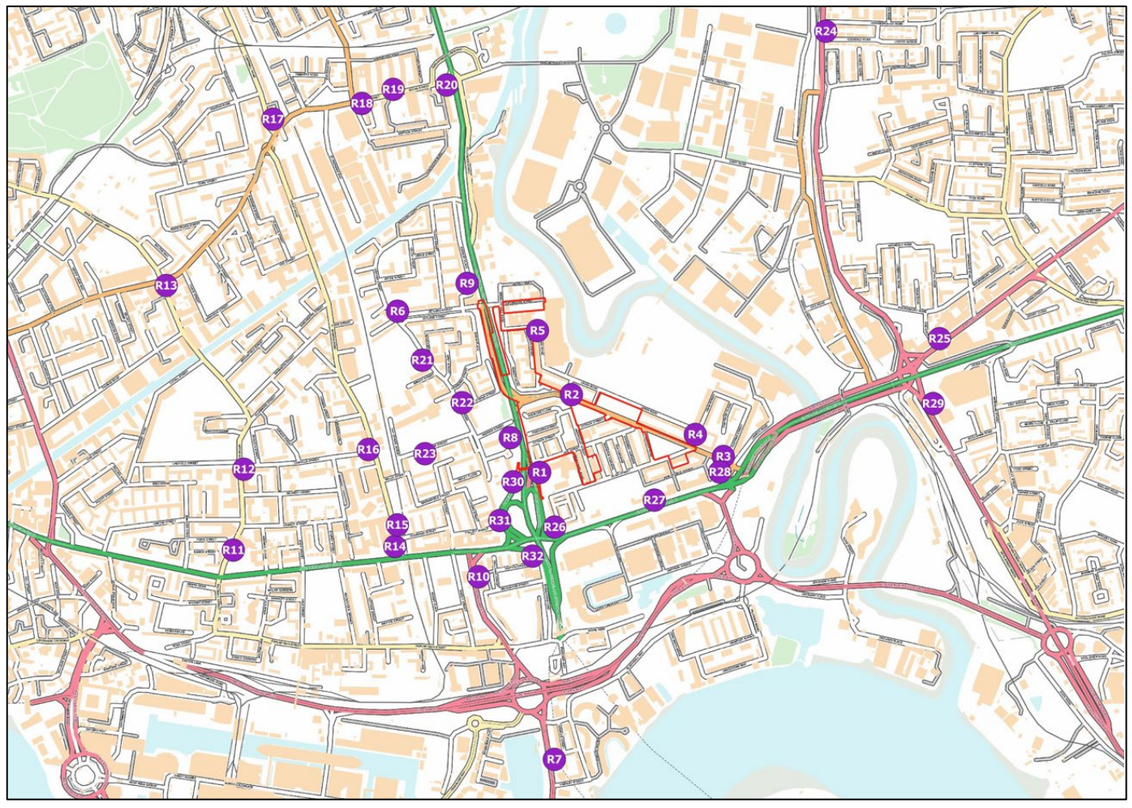
8.78 To assess the impact of emissions arising from the Proposed Development concentrations have been predicted at 32 existing sensitive receptors within the vicinity of the Site which represent the location of nearby residential properties and Culloden Primary Academy. Receptors from cumulative schemes have not been included as there are sufficient existing receptors along roads affected by the Proposed Development to determine impact. Details of these sensitive receptors are presented in **Table 8.14** and the locations are illustrated in **Figure 8.1**. The sensitivity of these receptors is considered to be 'High'.

Table 8.14 Location of Existing Sensitive Receptors

ID	Receptor	Type	Easting	Northing	Height (m)
R1	Culloden Primary Academy	School	538353.4	181256.0	1.5
R2	Abbott Road	Residential	538445.4	181480.3	1.5
R3	Abbott Road	Residential	538885.4	181301.9	1.5
R4	Oban Street	Residential	538804.2	181365.4	1.5
R5	Leven Road	Residential	538346.9	181665.1	4.5
R6	Zetland Street	Residential	537941.7	181721.0	1.5
R7	Preston's Road	Residential	538395.8	180428.3	1.5
R8	A12	Residential	538268.3	181356.2	1.5
R9	A12	Residential	538143.3	181801.3	1.5
R10	Cotton Street	Residential	538176.4	180955.1	7.5
R11	Upper North Street	Residential	537465.9	181031.9	1.5
R12	Upper North Street	Residential	537496.3	181265.2	1.5
R13	Bow Common Lane	Residential	537271.4	181795.1	4.5
R14	Chrisp Street	Residential	537934.1	181042.6	4.5
R15	Chrisp Street	Residential	537941.2	181104.7	4.5
R16	Cordelia Street	Residential	537856.9	181322.1	4.5
R17	Campbell Road	Residential	537580.6	182274.8	1.5

ID	Receptor	Type	Easting	Northing	Height (m)
R18	Devas Street	Residential	537838.2	182320.2	1.5
R19	Devas Street	Residential	537929.1	182360.8	1.5
R20	Devas Street	Residential	538084.1	182373.4	4.5
R21	St Leonards Road	Residential	538013.4	181579.7	1.5
R22	St Leonards Road	Residential	538128.8	181457.1	1.5
R23	Burcham Street	Residential	538021.2	181310.0	1.5
R24	Manor Road	Residential	539182.1	182528.4	1.5
R25	Barking Road	Residential	539511.4	181641.9	4.5
R26	Athol Square	Residential	538396.6	181098.4	1.5
R27	East India Dock Road	Residential	538685.6	181176.1	3.5
R28	East India Dock Road	Residential	538875.2	181257.2	4.5
R29	A1011	Residential	539493.0	181454.6	7.5
R30	A102	Residential	538276.2	181228.8	1.5
R31	A102	Residential	538237.6	181117.2	4.5
R32	A102	Residential	538332.7	181014.6	4.5

Figure 8.1 Existing Sensitive Receptors



Introduced

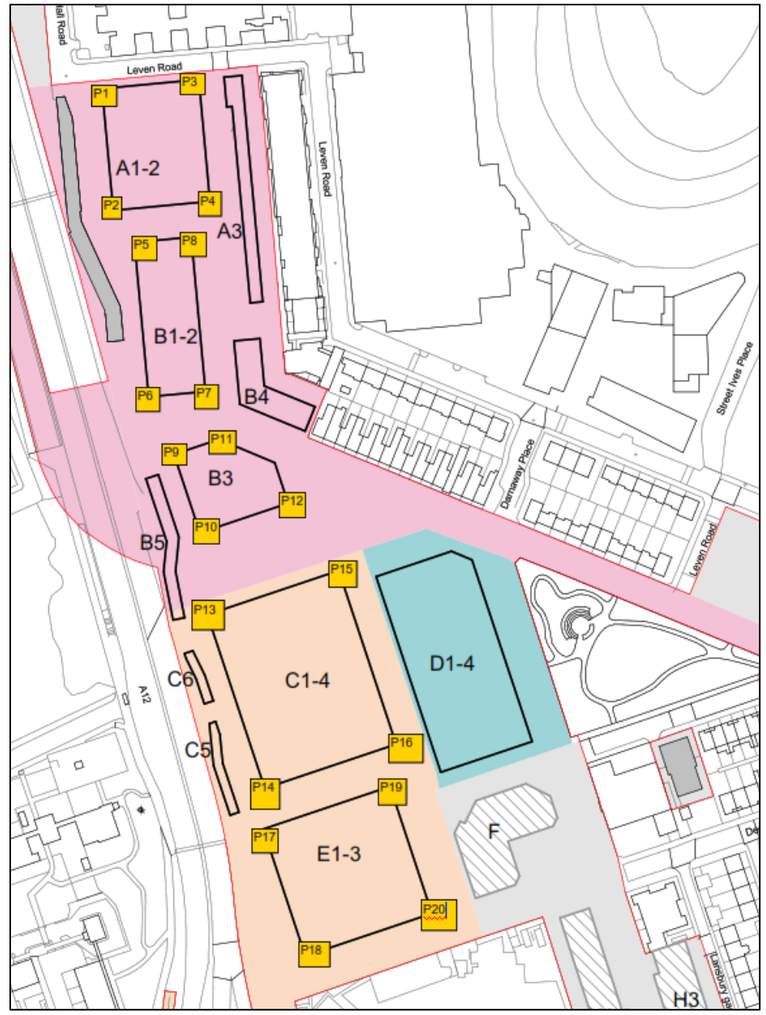
Demolition and Construction

8.79 The construction of the Proposed Development will occur in phases, with previous phases becoming occupied prior to the completion of the following phase. This will introduce new receptors to dust-related impacts, however since there are existing high sensitivity receptors within 20m of the Site boundary, the sensitivity of the area to dust soiling impacts will remain as 'High' and the sensitivity of the area to human health impacts will remain as 'Medium' throughout the development of the Site. The sensitivity of the area will also remain the same with the introduction of new receptors within the cumulative schemes.

Traffic Impacts

8.80 To assess the suitability of the Site for residential development, pollutant concentrations have been predicted at a number of locations on the façades of the new buildings as shown in **Figure 8.2**. These locations have been chosen based on where concentrations are expected to be highest across the Proposed Development Concentrations have been predicted up to third floor level.

Figure 8.2 Sensitive Receptors (Proposed Development)



POTENTIAL EFFECTS

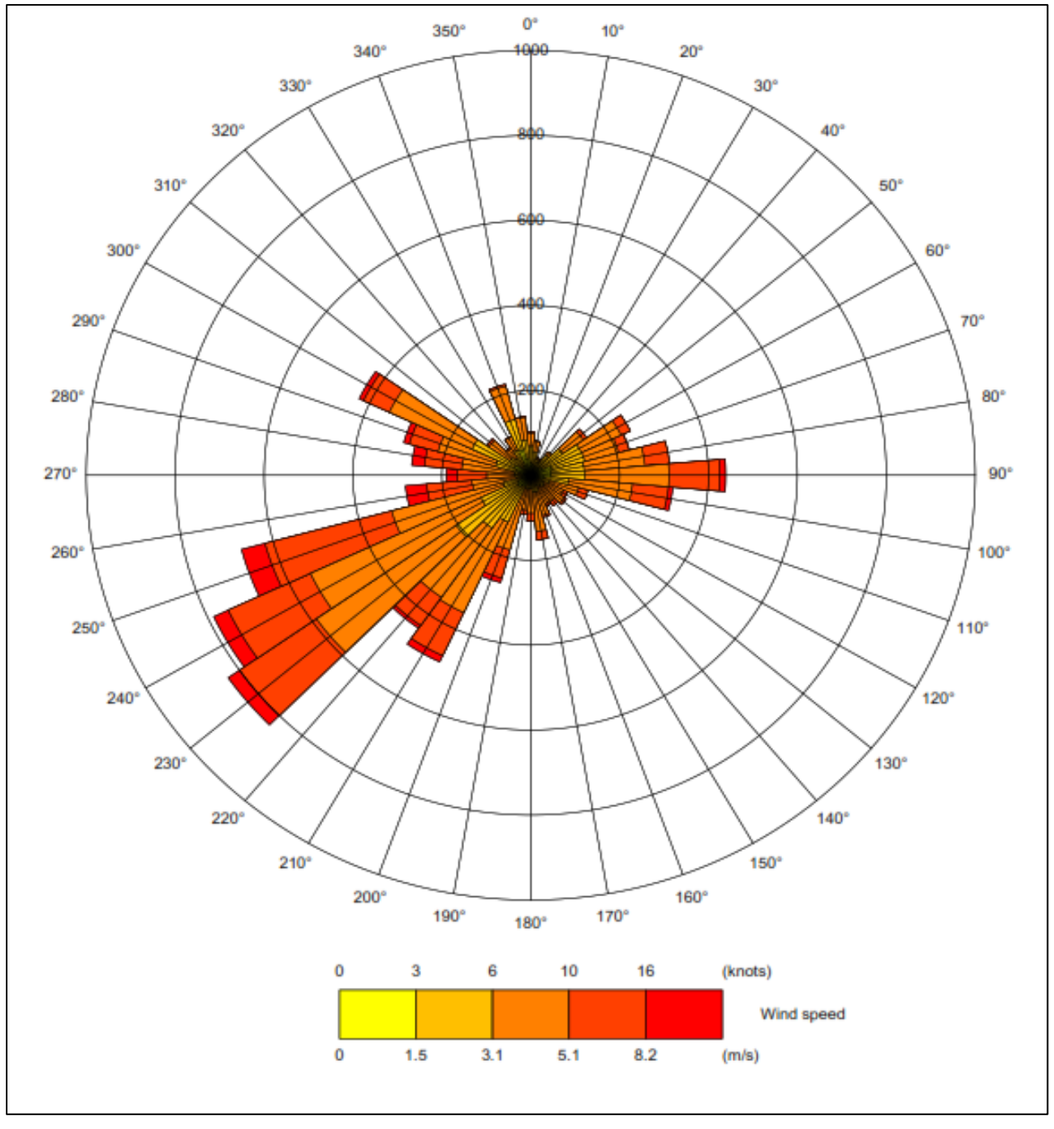
Demolition and Construction

Dust

8.81 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.

8.82 A wind rose from London City Airport is provided in **Figure 8.3**, which shows that the prevailing wind is from the south-west, therefore receptors to the northeast are the most likely to experience dust impacts from the Site.

Figure 8.3 Wind Rose for London City Airport (2019)



8.83 The Site is currently occupied by several buildings, which will require demolition as part of the proposals. Based on the scale of the works, the dust emission magnitude from demolition is considered to be 'Large'.

8.84 Earthworks will primarily involve excavating material, haulage, tipping and stockpiling. This may also involve levelling of the Site and landscaping. Given the size of the Site, the magnitude of the dust emission for the earthworks phase is therefore considered to be 'Large'.

8.85 Dust emissions during construction will depend on the scale of the works, method of construction, construction materials and duration of build. Based on the overall size of the Proposed Development and the construction materials, the dust emission magnitude is considered to be 'Large'.

8.86 Factors influencing the degree of trackout and associated magnitude of effect include vehicle size, vehicle speed, vehicle numbers, geology and duration. The Site is expected to generate more than 50 daily HGV movements during the peak construction period. The magnitude of the dust emission due to trackout is considered to be 'Large'.

8.87 A summary of the potential risk of dust impacts, prior to mitigation and based on the 'Medium' sensitivity of the area to human health impacts and 'High' sensitivity to dust soiling impacts, is presented in **Table 8.15**.

Table 8.15 Dust Risk Impacts

Source	Emission Magnitude	Human Health Risk	Dust Soiling Risk	Overall Risk
Demolition	Large	Medium	High	High
Earthworks	Large	Medium	High	High
Construction	Large	Medium	High	High
Trackout	Large	Medium	High	High

Phasing

Existing Receptors

8.88 As set out in the methodology, an interim traffic data scenario (2026) has been modelled based on peak HGV flows as the Detailed Proposals (Phase A) will be occupied whilst construction activities continue on the Outline Proposals (and therefore represents a worst case).The results are set out in **Table 8.16** to **Table 8.18**.

Table 8.16 Interim Year Predicted Annual Mean NO_2 Concentrations (µg/m³)

Receptor Number	2026 Without Construction	2026 With Construction	Change as a result of Development (as % of the AQAL)	Magnitude of Impact
R1	39.5	39.5	0.0	Negligible
R2	37.5	37.5	0.0	Negligible
R3	39.5	39.5	0.0	Negligible
R4	37.8	37.8	0.0	Negligible
R5	37.3	37.3	0.0	Negligible
R6	29.8	29.8	0.0	Negligible
R7	43.4	43.4	0.0	Negligible
R8	38.7	38.7	0.0	Negligible
R9	39.5	39.5	0.0	Negligible
R10	42.1	42.1	0.0	Negligible
R11	30.2	30.2	0.0	Negligible
R12	30.1	30.1	0.0	Negligible
R13	30.4	30.4	0.0	Negligible
R14	30.4	30.4	0.0	Negligible
R15	30.7	30.7	0.0	Negligible
R16	30.1	30.1	0.0	Negligible
R17	31.1	31.1	0.0	Negligible

Receptor Number	2026 Without Construction	2026 With Construction	Change as a result of Development (as % of the AQAL)	Magnitude of Impact
R18	30.9	30.9	0.0	Negligible
R19	30.8	30.8	0.0	Negligible
R20	32.6	32.6	0.0	Negligible
R21	36.6	36.6	0.0	Negligible
R22	37.1	37.1	0.0	Negligible
R23	36.8	36.8	0.0	Negligible
R24	28.3	28.3	0.0	Negligible
R25	39.5	39.5	0.0	Negligible
R26	41.4	41.4	0.1	Negligible
R27	39.9	39.9	0.0	Negligible
R28	39.4	39.4	0.0	Negligible
R29	38.8	38.8	0.0	Negligible
R30	39.9	40.0	0.0	Negligible
R31	38.7	38.7	0.0	Negligible
R32	40.1	40.1	0.0	Negligible

Table 8.17 Interim Year Predicted Annual Mean PM_{10} Concentrations (µg/m^3)

Receptor Number	2026 Without Construction	2026 With Construction	Change as a result of Development (as % of the AQAL)	Magnitude of Impact
R1	22.6	22.6	0.0	Negligible
R2	21.3	21.3	0.0	Negligible
R3	22.0	22.0	0.0	Negligible
R4	21.3	21.3	0.0	Negligible
R5	21.1	21.1	0.0	Negligible
R6	19.7	19.7	0.0	Negligible
R7	21.8	21.8	0.0	Negligible
R8	21.9	21.9	0.0	Negligible
R9	22.3	22.3	0.0	Negligible
R10	21.3	21.3	0.0	Negligible
R11	19.8	19.8	0.0	Negligible
R12	19.8	19.8	0.0	Negligible
R13	19.9	19.9	0.0	Negligible
R14	20.0	20.0	0.0	Negligible
R15	20.1	20.1	0.0	Negligible
R16	19.8	19.8	0.0	Negligible
R17	20.5	20.5	0.0	Negligible
R18	20.5	20.5	0.0	Negligible
R19	20.5	20.5	0.0	Negligible
R20	21.1	21.1	0.0	Negligible
R21	20.7	20.7	0.0	Negligible
R22	20.9	20.9	0.0	Negligible
R23	20.8	20.8	0.0	Negligible
R24	20.0	20.0	0.0	Negligible
R25	21.8	21.8	0.0	Negligible
R26	23.3	23.3	0.0	Negligible
R27	22.5	22.5	0.0	Negligible
R28	22.1	22.1	0.0	Negligible
R29	21.4	21.4	0.0	Negligible
R30	22.6	22.6	0.0	Negligible
R31	21.8	21.8	0.0	Negligible
R32	22.5	22.5	0.0	Negligible

Table 8.18 Interim Year Predicted Annual Mean $PM_{2.5}$ Concentrations (µg/m^3)

Receptor Number	2026 Without Construction	2026 With Construction	Change as a result of Development (as % of the AQAL)	Magnitude of Impact
R1	14.3	14.3	0.0	Negligible
R2	13.6	13.6	0.0	Negligible
R3	14.0	14.0	0.0	Negligible
R4	13.6	13.6	0.0	Negligible
R5	13.5	13.5	0.0	Negligible
R6	12.5	12.5	0.0	Negligible
R7	13.9	13.9	0.0	Negligible
R8	14.0	14.0	0.0	Negligible
R9	14.2	14.2	0.0	Negligible
R10	13.6	13.6	0.0	Negligible
R11	12.6	12.6	0.0	Negligible
R12	12.6	12.6	0.0	Negligible
R13	12.6	12.6	0.0	Negligible
R14	12.7	12.7	0.0	Negligible
R15	12.7	12.7	0.0	Negligible
R16	12.6	12.6	0.0	Negligible
R17	13.0	13.0	0.0	Negligible
R18	13.0	13.0	0.0	Negligible
R19	12.9	12.9	0.0	Negligible
R20	13.5	13.5	0.0	Negligible
R21	13.3	13.3	0.0	Negligible
R22	13.4	13.4	0.0	Negligible
R23	13.3	13.3	0.0	Negligible
R24	13.1	13.1	0.0	Negligible
R25	14.0	14.0	0.0	Negligible
R26	14.7	14.7	0.0	Negligible
R27	14.3	14.3	0.0	Negligible
R28	14.0	14.1	0.0	Negligible
R29	13.8	13.8	0.0	Negligible

Receptor Number	2026 Without Construction	2026 With Construction	Change as a result of Development (as % of the AQAL)	Magnitude of Impact
R30	14.3	14.3	0.0	Negligible
R31	13.9	13.9	0.0	Negligible
R32	14.3	14.3	0.0	Negligible

Introduced Receptors

8.89 A summary of the predicted annual mean NO_2, PM_{10} and $PM_{2.5}$ concentrations at the Proposed Development for the interim year (2026) is presented in **Table 8.19**.

Table 8.19 Interim Year Predicted Annual Mean Pollutant Concentrations (µg/m³)

Floor	Receptor Number	Annual Mean NO_2 Concentration	Annual Mean PM_{10} Concentration	Annual Mean $PM_{2.5}$ Concentration
Ground	P1 – Commercial	39.2	22.1	14.1
	P2 – Residential	39.3	22.3	14.2
	P3 – Residential	38.0	21.4	13.7
	P4 – Residential	37.8	21.4	13.7
	P5 – Commercial	39.0	22.1	14.0
	P6 – Commercial	40.2	22.7	14.4
	P7 – Commercial	39.0	22.0	14.0
	P8 – Residential	38.2	21.6	13.8
	P9 – Residential	39.9	22.6	14.3
	P10 – Residential	39.6	22.4	14.2
	P11 – Residential	38.9	22.0	14.0
	P12 – Residential	38.0	21.5	13.7
	P13 – Commercial	40.0	22.7	14.4
	P14 – Commercial	39.7	22.5	14.3
	P15 – Residential	37.7	21.3	13.6
	P16 – Residential	37.6	21.3	13.6
	P17 – Commercial	40.3	22.8	14.5
	P18 – Commercial	39.6	22.4	14.2
	P19 – Residential	37.8	21.4	13.7
	P20 – Residential	37.8	21.4	13.7
First	P1 – Commercial	38.8	21.9	13.9
	P2 – Residential	38.9	22.0	14.0
	P3 – Residential	37.8	21.3	13.6
	P4 – Residential	37.7	21.3	13.6
	P5 – Commercial	38.6	21.9	13.9
	P6 – Commercial	39.5	22.3	14.2
	P7 – Commercial	38.6	21.8	13.9
	P8 – Residential	38.0	21.5	13.7
	P9 – Residential	39.4	22.2	14.1
	P10 – Residential	39.1	22.1	14.1
	P11 – Residential	38.6	21.8	13.9
	P12 – Residential	37.8	21.4	13.7
	P13 – Commercial	39.3	22.3	14.2
	P14 – Commercial	39.2	22.2	14.1
	P15 – Residential	37.6	21.3	13.6
	P16 – Residential	37.6	21.3	13.6
	P17 – Commercial	39.6	22.4	14.2
	P18 – Commercial	39.2	22.2	14.1
	P19 – Residential	37.7	21.4	13.7
	P20 – Residential	37.7	21.3	13.6
Second	P1 – Commercial	38.1	21.5	13.8
	P2 – Residential	38.2	21.6	13.8
	P3 – Residential	37.5	21.2	13.6
	P4 – Residential	37.5	21.2	13.6
	P5 – Commercial	38.1	21.5	13.8
	P6 – Commercial	38.4	21.7	13.9
	P7 – Commercial	38.0	21.5	13.7
	P8 – Residential	37.7	21.3	13.6
	P9 – Residential	38.4	21.7	13.9
	P10 – Residential	38.3	21.7	13.8
	P11 – Residential	38.0	21.5	13.7
	P12 – Residential	37.6	21.3	13.6
	P13 – Commercial	38.4	21.8	13.9
	P14 – Commercial	38.4	21.8	13.9
	P15 – Residential	37.4	21.2	13.6
	P16 – Residential	37.4	21.2	13.6
	P17 – Commercial	38.6	21.9	13.9
	P18 – Commercial	38.6	21.8	13.9
	P19 – Residential	37.5	21.3	13.6
	P20 – Residential	37.6	21.3	13.6
Third	P1 – Commercial	37.5	21.2	13.6
	P2 – Residential	37.5	21.2	13.6
	P3 – Residential	37.2	21.0	13.5
	P4 – Residential	37.2	21.1	13.5
	P5 – Commercial	37.5	21.2	13.6
	P6 – Commercial	37.6	21.3	13.6
	P7 – Commercial	37.5	21.2	13.6
	P8 – Residential	37.3	21.1	13.5
	P9 – Residential	37.6	21.3	13.6
	P10 – Residential	37.6	21.3	13.6
	P11 – Residential	37.5	21.2	13.6
	P12 – Residential	37.3	21.1	13.5
	P13 – Commercial	37.6	21.3	13.6
	P14 – Commercial	37.7	21.4	13.7
	P15 – Residential	37.2	21.1	13.5

Floor	Receptor Number	Annual Mean NO_2 Concentration	Annual Mean PM_{10} Concentration	Annual Mean $PM_{2.5}$ Concentration
	P16 – Residential	37.3	21.1	13.5
	P17 – Commercial	37.8	21.4	13.7
	P18 – Commercial	37.9	21.5	13.7
	P19 – Residential	37.3	21.2	13.5
	P20 – Residential	37.4	21.2	13.6

8.90 The change in pollutant concentrations is less than 0.5% of the relevant objectives at all receptors in this scenario. In accordance with the IAQM/ EPUK screening criteria, the effect of the construction traffic in conjunction with the operation of the Detailed Proposals is **negligible** (not significant) at all receptors.

Completed Development

Road Traffic Impacts

Existing Receptors

8.91 A summary of the predicted annual mean NO_2, PM_{10} and $PM_{2.5}$ concentrations at existing receptors for the operational phase opening year (2031) is presented in **Tables 8.20 to Table 8.22**.

Table 8.20 Opening Year Predicted Annual Mean NO_2 Concentrations (µg/m^3)

Receptor Number	2031 Without Development	2031 With Development	Change as a result of Development (as % of the AQAL)	Magnitude of Impact
R1	38.5	38.6	0.1	Negligible
R2	37.0	36.9	-0.2	Negligible
R3	38.6	38.3	-0.6	Minor Beneficial
R4	37.3	37.2	-0.2	Negligible
R5	36.9	37.0	0.2	Negligible
R6	29.5	29.6	0.0	Negligible
R7	42.6	42.6	0.0	Negligible
R8	37.9	37.9	0.1	Negligible
R9	38.6	38.6	0.2	Negligible
R10	41.6	41.5	-0.1	Negligible
R11	29.9	29.9	0.0	Negligible
R12	29.8	29.8	0.0	Negligible
R13	30.0	30.0	-0.1	Negligible
R14	30.0	30.1	0.1	Negligible
R15	30.2	30.3	0.2	Negligible
R16	29.8	29.8	0.0	Negligible
R17	30.8	30.7	-0.1	Negligible
R18	30.6	30.7	0.3	Negligible
R19	30.5	30.6	0.2	Negligible
R20	31.9	32.0	0.3	Negligible
R21	36.4	36.4	0.2	Negligible
R22	36.7	36.8	0.2	Negligible
R23	36.5	36.6	0.2	Negligible
R24	28.0	28.0	0.0	Negligible
R25	38.8	38.8	0.0	Negligible
R26	40.0	40.1	0.1	Negligible
R27	38.9	38.9	0.0	Negligible
R28	38.5	38.5	-0.1	Negligible
R29	38.2	38.2	0.0	Negligible
R30	38.9	38.9	0.1	Negligible
R31	37.9	37.9	0.0	Negligible
R32	39.0	39.0	-0.1	Negligible

Table 8.21 Opening Year Predicted Annual Mean PM_{10} Concentrations (µg/m^3)

Receptor Number	2031 Without Development	2031 With Development	Change as a result of Development (as % of the AQAL)	Magnitude of Impact
R1	22.5	22.6	0.1	Negligible
R2	21.2	21.0	-0.6	Negligible
R3	22.0	21.9	-0.3	Negligible
R4	21.2	21.2	-0.1	Negligible
R5	21.1	21.1	0.1	Negligible
R6	19.7	19.7	0.0	Negligible
R7	21.8	21.8	0.0	Negligible
R8	21.9	21.9	0.1	Negligible
R9	22.3	22.4	0.1	Negligible
R10	21.3	21.3	0.0	Negligible
R11	19.8	19.8	0.0	Negligible
R12	19.8	19.8	0.0	Negligible
R13	19.8	19.8	0.0	Negligible
R14	20.0	20.0	0.0	Negligible
R15	20.1	20.1	0.1	Negligible
R16	19.8	19.8	0.0	Negligible
R17	20.5	20.5	-0.1	Negligible
R18	20.5	20.5	0.1	Negligible
R19	20.5	20.5	0.1	Negligible
R20	21.1	21.2	0.2	Negligible
R21	20.7	20.7	0.1	Negligible
R22	20.9	21.0	0.1	Negligible
R23	20.8	20.8	0.1	Negligible
R24	20.0	20.0	0.0	Negligible
R25	21.8	21.8	0.0	Negligible
R26	23.2	23.3	0.1	Negligible
R27	22.4	22.5	0.0	Negligible
R28	22.0	22.0	0.0	Negligible
R29	21.4	21.4	0.0	Negligible
R30	22.5	22.6	0.1	Negligible
R31	21.8	21.8	0.0	Negligible
R32	22.5	22.5	0.0	Negligible

Table 8.22 Opening Year Predicted Annual Mean $PM_{2.5}$ Concentrations (µg/m^3)

Receptor Number	2031 Without Development	2031 With Development	Change as a result of Development (as % of the AQAL)	Magnitude of Impact
R1	14.3	14.3	0.1	Negligible
R2	13.6	13.5	-0.5	Negligible
R3	14.0	13.9	-0.2	Negligible
R4	13.6	13.6	-0.1	Negligible
R5	13.5	13.5	0.1	Negligible
R6	12.5	12.5	0.0	Negligible
R7	13.8	13.9	0.0	Negligible
R8	13.9	14.0	0.1	Negligible
R9	14.2	14.2	0.1	Negligible
R10	13.6	13.6	0.0	Negligible
R11	12.6	12.6	0.0	Negligible
R12	12.6	12.6	0.0	Negligible
R13	12.6	12.6	0.0	Negligible
R14	12.7	12.7	0.0	Negligible
R15	12.7	12.7	0.1	Negligible
R16	12.6	12.6	0.0	Negligible
R17	13.0	13.0	-0.1	Negligible
R18	12.9	13.0	0.1	Negligible
R19	12.9	13.0	0.1	Negligible
R20	13.5	13.5	0.1	Negligible
R21	13.3	13.3	0.1	Negligible
R22	13.4	13.4	0.1	Negligible
R23	13.3	13.4	0.1	Negligible
R24	13.1	13.1	0.0	Negligible
R25	14.0	13.9	0.0	Negligible
R26	14.7	14.7	0.1	Negligible
R27	14.2	14.3	0.0	Negligible
R28	14.0	14.0	0.0	Negligible
R29	13.7	13.7	0.0	Negligible
R30	14.3	14.3	0.1	Negligible
R31	13.9	13.9	0.0	Negligible
R32	14.3	14.3	0.0	Negligible

8.92 The change in pollutant concentrations is less than 0.5% of the relevant objectives at all receptors in all scenarios. In accordance with the IAQM/ EPUK screening criteria, operational traffic associated with the Proposed Development is expected to have a negligible impact on local air quality.

Introduced Receptors

8.93 A summary of the predicted annual mean NO_2, PM_{10} and $PM_{2.5}$ concentrations at the Proposed Development is presented in **Table 8.23**.

Table 8.23 Opening Year Predicted Annual Mean Pollutant Concentrations (µg/m^3)

Floor	Receptor Number	Annual Mean NO_2 Concentration	Annual Mean PM_{10} Concentration	Annual Mean $PM_{2.5}$ Concentration
Ground	P1 – Commercial	38.4	22.1	14.1
	P2 – Residential	38.5	22.3	14.2
	P3 – Residential	37.5	21.5	13.7
	P4 – Residential	37.3	21.4	13.7
	P5 – Commercial	38.2	22.1	14.0
	P6 – Commercial	39.1	22.7	14.4
	P7 – Commercial	38.2	22.0	14.0
	P8 – Residential	37.6	21.6	13.8
	P9 – Residential	39.1	22.6	14.3
	P10 – Residential	38.6	22.4	14.2
	P11 – Residential	38.1	22.0	14.0
	P12 – Residential	37.4	21.5	13.7
	P13 – Commercial	39.0	22.7	14.4
	P14 – Commercial	38.8	22.5	14.3
	P15 – Residential	37.1	21.3	13.6
	P16 – Residential	37.1	21.3	13.6
	P17 – Commercial	39.2	22.8	14.5
	P18 – Commercial	38.7	22.4	14.2
	P19 – Residential	37.2	21.4	13.7
	P20 – Residential	37.2	21.4	13.7
First	P1 – Commercial	38.1	21.9	13.9
	P2 – Residential	38.1	22.0	14.0
	P3 – Residential	37.3	21.4	13.6
	P4 – Residential	37.2	21.4	13.7
	P5 – Commercial	37.9	21.9	13.9
	P6 – Commercial	38.5	22.3	14.2
	P7 – Commercial	37.9	21.8	13.9
	P8 – Residential	37.4	21.5	13.7
	P9 – Residential	38.5	22.2	14.1
	P10 – Residential	38.2	22.1	14.1
	P11 – Residential	37.8	21.8	13.9
	P12 – Residential	37.3	21.4	13.7
	P13 – Commercial	38.5	22.3	14.2
	P14 – Commercial	38.3	22.2	14.1
	P15 – Residential	37.1	21.3	13.6
	P16 – Residential	37.1	21.3	13.6
	P17 – Commercial	38.6	22.4	14.2
	P18 – Commercial	38.3	22.2	14.1
	P19 – Residential	37.2	21.3	13.6

Floor	Receptor Number	Annual Mean NO_2 Concentration	Annual Mean PM_{10} Concentration	Annual Mean $PM_{2.5}$ Concentration
	P20 – Residential	37.2	21.3	13.6
Second	P1 – Commercial	37.6	21.6	13.8
	P2 – Residential	37.6	21.6	13.8
	P3 – Residential	37.0	21.2	13.6
	P4 – Residential	37.0	21.2	13.6
	P5 – Commercial	37.5	21.6	13.8
	P6 – Commercial	37.8	21.8	13.9
	P7 – Commercial	37.4	21.5	13.7
	P8 – Residential	37.2	21.3	13.6
	P9 – Residential	37.7	21.7	13.9
	P10 – Residential	37.6	21.7	13.8
	P11 – Residential	37.4	21.5	13.7
	P12 – Residential	37.1	21.3	13.6
	P13 – Commercial	37.7	21.8	13.9
	P14 – Commercial	37.7	21.8	13.9
	P15 – Residential	36.9	21.2	13.6
	P16 – Residential	37.0	21.2	13.6
	P17 – Commercial	37.9	21.9	13.9
	P18 – Commercial	37.8	21.8	13.9
	P19 – Residential	37.0	21.3	13.6
	P20 – Residential	37.1	21.3	13.6
Third	P1 – Commercial	37.1	21.2	13.6
	P2 – Residential	37.0	21.2	13.6
	P3 – Residential	36.8	21.0	13.5
	P4 – Residential	36.8	21.1	13.5
	P5 – Commercial	37.0	21.2	13.6
	P6 – Commercial	37.1	21.3	13.6
	P7 – Commercial	37.0	21.2	13.6
	P8 – Residential	36.9	21.2	13.5
	P9 – Residential	37.1	21.3	13.6
	P10 – Residential	37.1	21.3	13.6
	P11 – Residential	37.0	21.2	13.6
	P12 – Residential	36.9	21.1	13.5
	P13 – Commercial	37.1	21.3	13.6
	P14 – Commercial	37.2	21.4	13.7
	P15 – Residential	36.8	21.1	13.5
	P16 – Residential	36.8	21.1	13.5
	P17 – Commercial	37.2	21.4	13.7
	P18 – Commercial	37.3	21.5	13.7
	P19 – Residential	36.9	21.1	13.5
	P20 – Residential	36.9	21.2	13.5

8.94 Annual mean NO_2 concentrations are predicted to be below or at the objective of 40 µg/m^3 at the proposed residential receptors. LAQM.TG(16) does not include a conversion between annual and hourly mean NO_2, however research has determined that where the annual mean NO_2 concentration is below 60µg/m^3, it is unlikely that the hourly mean NO_2 objective will be breached. As the predicted annual mean NO_2 concentrations are well below 60µg/m^3, it is considered extremely unlikely that the operation of the Proposed Development will lead to any breaches of the hourly mean AQS objective level at the proposed receptors. The impact with regards to new exposure is therefore considered to be negligible.

8.95 Predicted annual mean PM_{10} concentrations are well below (less than 75%) the objective of 40 µg/m^3 at the proposed residential receptors. The risk of an exceedance of the long-term air quality objective is therefore considered to be negligible. LAQM.TG(16) provides a relationship between predicted annual mean PM_{10} concentrations and the likely number of exceedances of the short-term (24-hour mean) PM_{10} objective of 50 µg/m^3. The objective allows 35 exceedances per year, which is equivalent to an annual mean of 32 µg/m^3. On this basis, the dispersion modelling indicates that compliance with the short-term PM_{10} objective is also likely to be achieved at the Proposed Development.

8.96 Predicted annual mean $PM_{2.5}$ concentrations are well below (less than 75%) the AQS objective level of 25 µg/m^3 at the proposed residential receptors. The risk of an exceedance is therefore considered to be negligible.

MITIGATION, MONITORING AND RESIDUAL EFFECTS

Demolition and Construction Mitigation

8.97 London Best Practice Guidance[16] for dust control will be implemented, as appropriate, during the construction phase through the Dust Management Plan (DMP) to be secured by condition for the Proposed Development.

8.98 The risk of dust soiling and human health impacts from the site has been assessed as 'High', prior to mitigation. In accordance with the IAQM guidance, Mayor of London's SPG and the LBTH Code of Construction Practice, it is therefore recommended that the 'highly recommended' measures detailed in **Table 8.24** are incorporated into the DMP.

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

Table 8.24 Highly Recommended Mitigation Measures

Description	Mitigation Measure
General	- Develop and implement a stakeholder communications plan that includes community engagement before work commences on site. - Display the name and contact details of person(s) accountable for air quality and dust issues on the Site boundary. - Display the head or regional office contact information. - Develop and implement a Dust Management Plan (DMP), which may include measures to control other emissions, approved by the Local Authority. The level of detail will depend on the risk and should include as a minimum the highly recommended measures in this document. The desirable measures should be included as appropriate for the Site. In London additional measures may be required to ensure compliance with the Mayor of London's guidance. The DMP may include monitoring of dust deposition, dust flux, real time PM10 continuous monitoring and/or visual inspections.
Site management	- Record all dust and air quality complaints, identify cause(s), take appropriate measures to reduce emissions in a timely manner, and record the measures taken. - Make the complaints log available to the local authority when asked. - 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.

[16] *The control of dust and emissions from construction and demolition Best Practice Guidance, Greater London Authority and London Council's, November 2006.*

Description	Mitigation Measure
	- Hold regular liaison meetings with other high risk construction sites within 500 m of the Site boundary, to ensure plans are co-ordinated and dust and particulate matter emissions are minimised. It is important to understand the interactions of the off-site transport/ deliveries which might be using the same strategic road network routes
Monitoring	- Undertake daily on-site and off-site inspection, where receptors (including roads) are nearby, to monitor dust, record inspection results, and make the log available to the local authority when asked. This should include regular dust soiling checks of surfaces such as street furniture, cars and window sills within 100 m of Site boundary, with cleaning to be provided if necessary. - 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. - 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. - Agree dust deposition, dust flux, or real-time PM_{10} continuous monitoring locations with the Local Authority. Where possible commence baseline monitoring at least three months before work commences on site.
Preparing and maintaining the site	- Plan site layout so that machinery and dust causing activities are located away from receptors, as far as is possible. - Erect solid screens or barriers around dusty activities or at the Site boundary that are at least as high as any stockpiles on site. - 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 - Avoid site runoff of water or mud. - Keep site fencing, barriers and scaffolding clean using wet methods. - Remove materials from Site as soon as possible. - Cover, seed or fence stockpiles to prevent wind whipping.
Operating vehicle/machinery and sustainable travel	- Ensure all on-road vehicles comply with the requirements of the London Low Emission Zone and the London NRMM standards, where applicable. - 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. - 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). - Produce a Construction Logistics Plan to manage the sustainable delivery of goods and materials. - Implement a Travel Plan that supports and encourages sustainable travel (public transport, cycling, walking, and car-sharing).
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	- Reuse and recycle waste to reduce dust from waste materials. - Avoid bonfires and burning of waste materials.
Demolition	- Soft strip inside buildings before demolition (retaining walls and windows in the rest of the building where possible, to provide a screen against dust). - Ensure water suppression is used during demolition operations. - Avoid explosive blasting, using appropriate manual or mechanical alternatives. - Bag and remove any biological debris or damp down such material before demolition.
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	- 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. - For smaller supplies of fine powder materials ensure bags are sealed after use and stored appropriately to prevent dust. - 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.
Trackout	- Use water-assisted dust sweeper(s) on the access and local roads, to remove, as necessary, any material tracked out of the Site. This may require the sweeper being continuously in use. - Avoid dry sweeping of large areas. - Ensure vehicles entering and leaving sites are covered to prevent escape of materials during transport. - Record all inspections of haul routes and any subsequent action in a site log book. - Implement a wheel washing system (with rumble grids to dislodge accumulated dust and mud prior to leaving the Site where reasonably practicable). - Apply dust suppressants to locations where a large volume of vehicles enter and exit the construction site.

Completed Development Mitigation

8.100 The results of the assessment indicate that the impact of the operation of the Proposed Development on existing sensitive receptors and proposed receptors will be negligible. Nonetheless, the units will be mechanically ventilated to ensure that there is no new exposure to poor air quality.

Residual Effects

8.101 Following the implementation of the above mitigation measures, all effects of the Proposed Development on air quality are assessed to be negligible (not significant).

Summary

8.102 **Table 8.25** provides a summary of the identified mitigation and [enhancement] measures committed to, and **Table 8.26** provides a tabulated summary of the outcomes of the air quality impact assessment of the Proposed Development.

Table 8.25 Summary of Proposed Mitigation and Enhancement Measures

Potential Effects Identified	Proposed Mitigation / Enhancement Measures
Demolition and Construction	
Dust soiling	Best Practice dust control

Table 8.26 Summary of Residual Effects

Receptor and Receptor Sensitivity	Description of the Residual Effect	Nature* and Scale**	+ve -ve	D I	P T	R IR	St Mt Lt
Demolition and Construction							
High sensitivity residential dwellings within 20m of the Site	Dust Soiling	Negligible	-ve	D	T	n/a	Lt
High sensitivity residential	Change in NO_2, PM_{10} and $PM_{2.5}$ concentrations from construction traffic emissions	Negligible	-ve	D	T	n/a	Lt

dwellings and School							
Completed Development							
High sensitivity residential dwellings and School	Change in pollutant concentrations as a result of emissions from road vehicles generated by the operation of the Development	Negligible	-ve	D	P	n/a	Lt

Notes:
*Nature = Beneficial or Adverse;
**Scale = Negligible / Minor / Moderate / Major
D = Direct / I = Indirect;
P = Permanent / T = Temporary;
R = Reversible / IR= Irreversible;
St = Short Term / Mt = Medium Term / Lt = Long Term.
n/a = not applicable / not assessed

Air Quality Neutral Assessment

8.103 Space heating and hot water will be provided to the residential dwellings by air/water source heat pumps as well as the existing energy centre. Therefore there will be no building-related emissions directly associated with the Proposed Development.

8.104 The daily operational traffic associated with the Site will be insignificant and therefore the Proposed Development is considered to be Air Quality Neutral with respect to transport-related emissions.

8.105 Considering the above, the Proposed Development is considered to be Air Quality Neutral.

Air Quality Positive Statement

8.106 The Proposed Development is expected to be air quality neutral. In addition, the Proposed Development will not introduce a combustion-based CHP system. As such, the Proposed Development is considered to be Air Quality Positive.

SITE SUITABILITY

8.107 Modelling results show that pollutant concentrations at receptors within the Proposed Development are predicted to be below the respective air quality objective values for NO_2, PM_{10} and $PM_{2.5}$ in both future years 2026 and 2031. Future residents will therefore not experience adverse impacts in terms of air quality and, the Site is therefore deemed suitable for its intended use.

CLIMATE CHANGE

8.108 There are no significant effects on air quality arising from the Proposed Development and therefore the impact on climate change is anticipated to be negligible. Predicted emissions from vehicle movements are predicted to be negligible. The heating for the Proposed Development will be provided by air and water source heat pumps, which are considered to minimise impacts on climate change.

ASSESSMENT OF THE FUTURE ENVIRONMENT

Evolution of the Baseline Scenario

8.109 The 'evolved baseline' refers to the scenario which assumes all the Committed Developments are built, in the absence of the Proposed Development being implemented. Effectively, it is envisaged that this is the cumulative assessment scenario, which describes the future environment in the absence of the Proposed Development.

8.110 This is assessed in this ES chapter through quantitative detailed dispersion modelling, the results of which are provided in **Tables 8.20** to **Table 8.22** under the column headed '2031 Without Development'. The results show that the air quality objective values would be achieved at all receptors in the future baseline scenario.

Cumulative Effects Assessment

Demolition and Construction

8.111 There are a number of proposed and committed developments within 350m of the Site boundary. Should the construction phases overlap with the Proposed Development's construction, there is the potential for increased risk of dust effects at sensitive locations in the vicinity of the Site. However, the cumulative air quality effects of the demolition and construction of these developments is predicted to be negligible, as each development is expected to have suitable dust management and mitigation measures conditioned as part of their planning consent, which would control emissions to an acceptable level through a Construction Environmental Management Plan, Construction Logistics Plan, or similar.

Completed Development

8.112 The Proposed Development is not anticipated to significantly affect local air quality, therefore any cumulative impact with other schemes will also be negligible.

8.113 The cumulative effects of the Proposed Development with other committed developments has been taken into account in the above assessment. The traffic data provided for the 'Without Development' scenario in 2031 includes the traffic from the consented and committed developments in the vicinity of the Site. The cumulative effect once the Proposed Development is complete and operational is therefore considered to be negligible (not significant).

LIKELY SIGNIFICANT EFFECTS

8.114 There are no significant effects arising from the Proposed Development.