

Chapter 8: Air Quality

AIR QUALITY	
AUTHOR	Air Quality Consultants Ltd
SUPPORTING APPENDIX	<p>ES Volume 3: Appendix: Air Quality:</p> <p>Annex 1: Glossary;</p> <p>Annex 2: Legislative and Planning Policy Context;</p> <p>Annex 3: Construction Dust Assessment Procedure;</p> <p>Annex 4: EPUK & IAQM Planning for Air Quality Guidance;</p> <p>Annex 5: Professional Experience;</p> <p>Annex 6: Modelling Methodology;</p> <p>Annex 7: Air Quality Positive Statement;</p> <p>Annex 8: Construction Mitigation;</p> <p>Annex 9: Preliminary Air Quality Assessment;</p> <p>Annex 10: References;</p> <p>Annex 11: Air Quality Monitoring Report (February 2023).</p>
KEY CONSIDERATIONS	<p>The London Borough of Southwark (LBS) has declared an Air Quality Management Area (AQMA), encompassing the entire borough, due to the exceedances of the annual mean nitrogen dioxide (NO₂) and the 24-hour mean particulate matter (PM₁₀) objectives.</p> <p>Activities associated with the enabling, demolition and construction works of the Proposed Development will give rise to a risk of dust impacts at existing sensitive receptors during enabling works, demolition, earthworks and construction, as well as from trackout of dust and dirt by vehicles onto the public highway. Based on LBS's Technical Guidance for Enabling Works and Construction¹ the site is considered to be a high-risk site and therefore mitigation measures to control dust are detailed in this chapter.</p> <p>The potential for construction vehicle emissions to impact upon local air quality has been considered quantitatively within the earliest occupation year. Whilst the earliest occupation year (as detailed in ES Volume 1, Chapter 5: Demolition and Construction) is 2029, the assessment has been undertaken using 2028. 2028 has been taken as the opening year of the completed Proposed Development to ensure a worst-case assessment. The main air pollutants of concern related to construction traffic emissions are NO₂ and fine particulate matter (PM₁₀ and PM_{2.5}).</p> <p>Once complete and operational, the Proposed Development will lead to changes in vehicle flows on local roads which may impact on air quality at existing residential properties. A qualitative assessment has been undertaken, to investigate the air quality impacts on existing properties, as the traffic generation from the Proposed Development is below the published screening thresholds for requiring a quantitative assessment. Consideration is also given to the air quality conditions that future users of the Proposed Development will experience, taking account of traffic emissions from the adjacent road network. The main air pollutants of concern related to road traffic emissions are NO₂ and fine particulate matter (PM₁₀ and PM_{2.5}).</p> <p>The Proposed Development includes an all-electric system comprising Air-Source Heat Pumps (ASHPs) and Water-Source Heat Pumps (WSHPs), supplemented by photovoltaic panels (PVs) for the provision of heat and hot water, which have no on-site emissions. Two life-safety generators are, however, being considered, as well as two diesel sprinkler pumps to service the commercial floorspace and the replacement supermarket. One of the life-safety generators and one of the diesel sprinkler pumps will exhaust from the rooftop of Building Q, while the second life-safety generator will exhaust from the top of Building G and the second diesel sprinkler will exhaust from the top of Block M. All the plant will exhaust vertically, unimpeded, to the atmosphere and will run for five minutes on a monthly basis for the purposes of testing and maintenance.</p> <p>In summary, in terms of the potential air quality effects, the assessment considers:</p> <ul style="list-style-type: none">• The impacts of the demolition and construction works associated with the Proposed Development on dust soiling and concentrations of PM₁₀ at existing sensitive receptors during the demolition and construction period;• The impact of the construction of the Proposed Development on concentrations of NO₂, PM₁₀ and PM_{2.5} from demolition and construction traffic;• The impacts of the operation of the Proposed Development on concentrations of NO₂, PM₁₀ and PM_{2.5} from road traffic at existing local sensitive receptors;• The impacts of existing and proposed emission sources of NO₂, PM₁₀ and PM_{2.5} on future residents and users of the Proposed Development (site suitability);• Whether or not the Proposed Development is 'air quality neutral';

	<ul style="list-style-type: none">• The measures the Proposed Development includes to maximise benefits to local air quality and reduce exposure (Air Quality Positive Statement, in alignment with the requirements of the Greater London Authority's London Plan); and• The cumulative impacts on air quality of the Proposed Development in combination with cumulative schemes identified in the local area. <p>This ES chapter describes existing local air quality conditions (2022) and the predicted air quality in the future assuming that the Proposed Development does, or does not, proceed. The assessment of operational and construction traffic-related impacts focuses on 2028, which is the earliest year of occupation of the Proposed Development. This is considered to be a worst-case assessment as, although the peak year of construction is anticipated to be 2031, vehicle emissions and background pollutant concentrations will be higher in 2028. 2022 has been taken as the baseline year to align with air quality monitoring undertaken in 2022 (ES Volume 3, Appendix: Air Quality – Annex 11) and the latest air quality monitoring data available from the LBS.</p> <p>This ES chapter has been prepared considering all relevant local and national guidance and regulations.</p>
CONSULTATION	<p>An EIA Scoping Report was prepared and submitted to LBS on 11th January 2024 (ref: 20/AP/0749), requesting an EIA Scoping Opinion. The EIA Scoping Report is appended to this ES in ES Volume 3, Appendix: EIA Methodology – Annex 1.</p> <p>An EIA Scoping Opinion was issued by LBS on 27th March 2024 and is provided in ES Volume 3, Appendix: EIA Methodology – Annex 1, in which the methodology proposed for the air quality assessment was accepted but clarification was requested on the cumulative impacts of the Proposed Development's emissions from the operational traffic and the nearby Peckham Bus Station, which has been addressed in paragraph 8.174</p>

ASSESSMENT METHODOLOGY

Defining the Baseline

Current Baseline Conditions

- 8.1 Existing sources of emissions within the study area have been defined using a number of approaches. Industrial and waste management sources that may affect the area have been identified using the Department for the Environment, Food and Rural Affairs (Defra) Pollutant Release and Transfer Register². Local sources have also been identified through examination of LBS's Air Quality Review and Assessment reports.
- 8.2 Information on existing air quality has been obtained by collating the results of monitoring carried out by LBS and a local monitoring study (**ES Volume 3, Appendix: Air Quality – Annex 11**) to provide information about the influence of emissions from Peckham Bus Station, as identified in the EIA Scoping Opinion (**ES Volume 3, Appendix: EIA Methodology – Annex 1**). Background concentrations have been defined using the national pollution maps published by Defra³. These cover the whole country on a 1x1km grid. Further details are provided in **ES Volume 3, Appendix: Air Quality – Annex 6**.
- 8.3 Exceedances of the annual mean limit value for NO₂ in the study area have been identified using the maps of roadside concentrations published by Defra^{4,5}. These are the maps used by the UK Government, together with results from national Automatic Urban and Rural Network (AURN) monitoring sites that operate to the required data quality standards, to report exceedances of the limit value. The national maps of roadside PM₁₀ and PM_{2.5} concentrations, which are available for the years 2009 to 2019, show no exceedances of the limit values anywhere in the UK in 2019.
- 8.4 Current baseline concentrations have been modelled using the ADMS-Roads dispersion model. Details of the model inputs, assumptions and the verification are provided in **ES Volume 3, Appendix: Air Quality – Annex 6**. Where assumptions have been made, a realistic worst-case approach has been adopted, as discussed in paragraph 8.55.

¹ LBS (2016) *Technical Guidance for Enabling works and Construction*. Available: <https://www.southwark.gov.uk/assets/attach/3011/Technical-Guidance-for-Demolition-Construction.pdf>

² Defra (2024) *UK Pollutant Release and Transfer Register*, [Online], Available: prtr.defra.gov.uk.

³ Defra (2024) *Local Air Quality Management (LAQM) Support Website*, [Online], Available: <http://laqm.defra.gov.uk/>.

⁴ Defra (2020) *2020 NO2 projections data (2018 reference year)*, Available: <https://uk-air.defra.gov.uk/library/no2ten/2020-no2-pm-projections-from-2018-data>.

⁵ Defra (2024) *UK Ambient Air Quality Interactive Map*, Available: <https://uk-air.defra.gov.uk/data/gis-mapping>

Future Baseline Conditions

- 8.5 Future baseline concentrations have been predicted using the ADMS-Roads dispersion model for the earliest year of occupation (2028). Whilst the earliest occupation year (as detailed in **ES Volume 1, Chapter 5: Demolition and Construction**) is 2029, the assessment has been undertaken using 2028 to ensure a worst-case assessment. Where assumptions have been made, a realistic worst-case approach has been adopted.

Evolution of the Baseline

- 8.6 If the Proposed Development was not to come forward, it is expected that the site would remain in its current state. Air quality is generally expected to improve with time, due for example to more stringent emissions standards for motor vehicles and the uptake of cleaner vehicles. The likely evolution of the baseline conditions if the Proposed Development did not come forward has been considered in this assessment.

Assessment Criteria

- 8.7 The UK Government has established a set of air quality standards and objectives to protect human health. The 'standards' are set as concentrations below which effects are unlikely even in sensitive population groups, or below which risks to public health would be exceedingly small. They are based purely upon the scientific and medical evidence of the effects of an individual pollutant. The 'objectives' set out the extent to which the Government expects the standards to be achieved by a certain date. They take account of economic efficiency, practicability, technical feasibility, and timescale. The objectives for use by local authorities are prescribed within the Air Quality (England) Regulations 2000⁶ and the Air Quality (England) (Amendment) Regulations 2002⁷.
- 8.8 The UK-wide objectives for NO₂ and PM₁₀ were to have been achieved by 2005 and 2004 respectively and continue to apply in all future years thereafter. The PM_{2.5} objective was to be achieved by 2020. Measurements across the UK have shown that the 1-hour NO₂ objective is unlikely to be exceeded at roadside locations where the annual mean concentration is below 60 µg/m³⁸. Where relevant, this value has been used as an indication of the likelihood of the 1-hour mean NO₂ objective to be exceeded in the study area. Measurements have also shown that the 24-hour PM₁₀ objective could be exceeded at roadside locations where the annual mean concentration is above 32 µg/m³. The predicted annual mean PM₁₀ concentrations are thus used as a proxy to determine the likelihood of an exceedance of the 24-hour mean PM₁₀ objective. Where predicted annual mean concentrations are below 32 µg/m³ it is unlikely that the 24-hour mean objective will be exceeded.
- 8.9 The objectives apply at locations where members of the public are likely to be regularly present and are likely to be exposed over the averaging period of the objective. The Greater London Authority (GLA) explains where these objectives will apply in London⁹. The annual mean objectives for NO₂ and PM₁₀ are considered to apply at the façades and gardens of residential properties, schools, hospitals, and care homes etc. The 24-hour mean objective for PM₁₀ is considered to apply at the same locations as the annual mean objective, as well as at hotels. The 1-hour mean objective for NO₂ applies wherever members of the public might regularly spend 1 hour or more, including outdoor eating locations and pavements of busy shopping streets.
- 8.10 For PM_{2.5}, the objective set by Defra for local authorities is to work toward reducing concentrations without setting any specific numerical value. In the absence of a numerical objective, it is conventional to assess local

air quality impacts against the limit value (see paragraph 8.17), originally set at 25 µg/m³ and currently set at 20 µg/m³.

- 8.11 Defra has also recently set two new targets, and two new interim targets, for PM_{2.5} concentrations in England. One set of targets focuses on absolute concentrations. The long-term target is to achieve an annual mean PM_{2.5} concentration of 10 µg/m³ by the end of 2040, with the interim target being a value of 12 µg/m³ by the start of 2028¹⁰. The second set of targets relate to reducing overall population exposure to PM_{2.5}. By the end of 2040, overall population exposure to PM_{2.5} should be reduced by 35% compared with 2018 levels, with the interim target being a reduction of 22% by the start of 2028.
- 8.12 Defra will assess compliance with the population exposure targets by averaging concentrations measured at its own background monitoring stations. This will not consider small changes over time to precisely where people are exposed (such as would relate to exposure introduced by a new development). Furthermore, as explained in **ES Volume 3, Appendix: Air Quality – Annex 2**, all four new targets provide metrics against which central Government can assess its own progress. While local authorities have an important role delivering the required improvements, the actions required of local authorities, which will be clarified within a future Air Quality Strategy, relate to controlling emissions and not to directly assessing PM_{2.5} concentrations against the targets.
- 8.13 In March 2023, the Department for Levelling Up, Housing and Communities¹¹ (DLUHC, 2023) explained that the new PM_{2.5} targets will:
- “need to be integrated into the planning system, and in setting out planning guidance for local authorities and businesses, we will consider the specific characteristics of PM2.5. The guidance will be forthcoming in due course, until then we expect local authorities to continue to assess local air quality impacts in accordance with existing guidance.”*
- 8.14 Defra has also provided advice¹² which explains that there is no current requirement to consider the new PM_{2.5} targets in planning decisions and that guidance to local planning authorities will be forthcoming before this position changes. In the future, when planning decisions do need to consider the new targets, the expectation is that this will focus on reducing emissions from new development rather than there being a direct requirement for planning-related air quality assessments to predict PM_{2.5} concentrations.
- 8.15 For the time being, therefore, no assessment is required, and indeed no robust assessment is possible, in relation to the new PM_{2.5} targets and they are not considered further.
- 8.16 However, as explained in **ES Volume 3, Appendix: Air Quality – Annex 2**, the GLA has set a target to achieve an annual mean PM_{2.5} concentration of 10 µg/m³ by 2030. This target was derived from an air quality guideline set by the World Health Organisation (WHO) in 2005. In 2021, WHO updated its guidelines, but the London Environment Strategy¹³ considers the 2005 guideline of 10 µg/m³. While there is no explicit requirement to assess against the GLA target of 10 µg/m³, it has nevertheless been included within this assessment.
- 8.17 EU Directive 2008/50/EC¹⁴ sets limit values for NO₂, PM₁₀ and PM_{2.5}, and is implemented in UK law through the Air Quality Standards Regulations (2010)^{15,16}. The limit values for NO₂, PM₁₀ and PM_{2.5} are the same numerical concentrations as the UK objectives, but achievement of the limit values is a national obligation rather than a local one and concentrations are reported to the nearest whole number. In the UK, only monitoring and modelling carried out by UK Central Government meets the specification required to assess compliance with the limit values. Central Government does not normally recognise local authority monitoring or local

⁶ The Air Quality (England) Regulations, 2000, Statutory Instrument 928 (2000), HMSO, Available:

<http://www.legislation.gov.uk/ukSI/2000/928/contents/made>.

⁷ The Air Quality (England) (Amendment) Regulations, 2002, Statutory Instrument 3043 (2002), HMSO, Available:

<https://www.legislation.gov.uk/ukSI/2002/3043/contents/made>.

⁸ Defra (2022) Review & Assessment: Technical Guidance LAQM.TG22 August 2022 Version, Defra, Available: <https://laqm.defra.gov.uk/wp-content/uploads/2022/08/LAQM-TG22-August-22-v1.0.pdf>.

⁹ GLA (2019) London Local Air Quality Management Technical Guidance 2019, Available:

https://www.london.gov.uk/sites/default/files/llaqm_technical_guidance_2019.pdf

¹⁰ Meaning that it will be assessed using measurements from 2027. The 2040 target will be assessed using measurements from 2040. National targets are assessed against concentrations expressed to the nearest whole number, for example a concentration of 10.4 mg/m³ would not exceed the 10 mg/m³ target.

¹¹ DLUHC (2023) Planning Newsletter, Available:

https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/1140170/03_Chief_Planners_Newsletter_March_2023.pdf

¹² Defra (2023) Integrating the Environment Act air quality targets into the planning system.

¹³ GLA (2018) London Environment Strategy

¹⁴ The European Parliament and the Council of the European Union (2008) Directive 2008/50/EC of the European Parliament and of the Council, Available: <http://eur-lex.europa.eu/legal-content/EN/TXT/?uri=celex%3A32008L0050>.

¹⁵ The Air Quality Standards Regulations 2010 Statutory Instrument 1001 (2010), HMSO, Available:

http://www.legislation.gov.uk/ukSI/2010/1001/pdfs/ukSI_20101001_en.pdf.

¹⁶ As amended through The Air Quality Standards (Amendment) Regulations 2016 and The Environment (Miscellaneous Amendments) (EU Exit) Regulations 2020.

modelling studies when determining the likelihood of the limit values being exceeded, unless such studies have been audited and approved by Defra and Department for Transport's (DfT) Joint Air Quality Unit (JAQU).

8.18 The relevant air quality criteria for this assessment are provided in 8.18.

Table 8.1 Air Quality Criteria for NO₂, PM₁₀ and PM_{2.5}

Pollutant	Time Period	Objective
NO ₂	1-hour mean	200 µg/m ³ not to be exceeded more than 18 times a year
	Annual mean	40 µg/m ³ ^a
PM ₁₀	24-hour mean	50 µg/m ³ not to be exceeded more than 35 times a year
	Annual mean	40 µg/m ³ ^b
PM _{2.5}	Annual mean	20 µg/m ³ ^c
	Annual Mean	10 µg/m ³ by 2030

^a A proxy value of 60 µg/m³ as an annual mean can be used to assess the likelihood of the 1-hour mean NO₂ objective being exceeded. Measurements have shown that, above this concentration, exceedances of the 1-hour mean NO₂ objective are possible^a.

^b A proxy value of 32 µg/m³ as an annual mean is used in this assessment to assess the likelihood of the 24-hour mean PM₁₀ objective being exceeded. Measurements have shown that, above this concentration, exceedances of the 24-hour mean PM₁₀ objective are possible^b.

^c There is no numerical PM_{2.5} objective for local authorities (see paragraph 8.10). Convention is to assess against the UK limit value which is currently 20 µg/m³.

Screening Criteria

Demolition and Construction Dust

8.19 There are no formal assessment criteria for dust. In the absence of formal criteria, the approach developed by the IAQM¹⁷ has been used (the GLA's Supplementary Planning Guidance (SPG)¹⁸ recommends that the assessment be based on the latest version of the IAQM guidance). Full details of this approach are provided in **ES Volume 3, Appendix: Air Quality – Annex 3**.

Road Traffic Assessments

8.20 Environmental Protection UK (EPUK) and the Institute of Air Quality Management (IAQM)¹⁹ recommend a two-stage screening approach to determine whether emissions from road traffic generated by a development have the potential for significant air quality impacts. The approach, as described in **ES Volume 3, Appendix Air Quality – Annex 4**, first considers the size and parking provision of a development; if the development is residential and is for fewer than ten homes or covers less than 0.5ha, or is non-residential and will provide less than 1,000m² of floor space or cover a site area of less than 1ha, and will provide ten or fewer parking spaces, then there is no need to progress to a detailed assessment.

8.21 The second stage then compares the changes in vehicle flows on local roads that a development will lead to against specified screening criteria. The screening thresholds (described in full in **ES Volume 3, Appendix Air Quality – Annex 4**) inside an AQMA are a change in Annual Average Daily Traffic (AADT) flows of more than 25 heavy duty vehicles (HDVs) or 100 light duty vehicles (LDVs) per day. Where these criteria are exceeded, a detailed assessment is required, although the guidance advises that “the criteria provided are precautionary and should be treated as indicative”, and “it may be appropriate to amend them on the basis of professional judgement”.

8.22 While these screening criteria are specifically intended to act as a trigger for a detailed assessment, they can also be used to identify the extent of the road network that requires assessment. Where the change in traffic

on a given road link is less than the relevant screening threshold, it is unlikely that a significant impact would occur, and these links can be disregarded unless there are additional sources affecting the link (e.g. emissions from a point source).

Impact Assessment Methodology

Demolition and Construction

8.23 **ES Volume 1, Chapter 5: Demolition and Construction** outlines the proposed demolition and construction works. The assessment of demolition and construction works in relation to air quality within this ES chapter considers:

- Demolition and construction dust and particulate matter emissions; and
- Demolition and construction traffic emissions.

On-Site Exhaust Emissions

8.24 Demolition and construction plant emissions have not been explicitly modelled or assessed, as the relevant guidance from the IAQM²¹ states that “experience from assessing the exhaust emissions from on-site plant (also known as non-road mobile machinery or NRMM) [...] suggests that they are unlikely to make a significant impact on local air quality and in the vast majority of cases they will not need to be quantitatively assessed”. However, suitable mitigation measures for site plant are presented as part of the mitigation measures based on advice presented in the IAQM²¹ and GLA²⁰ guidance documents.

8.25 The use of a Demolition and Construction Environmental Management Plan (DCEMP) will ensure emissions generated by NRMM are controlled. Based on mitigation measures to be included within the DCEMP, it is judged that there will be no risk of significant effects at existing receptors as a result of on-site machinery emissions. An outline DCEMP is submitted in support of the planning application, a detailed DCEMP will be secured by the LBS by way of an appropriately worded planning condition.

8.26 Additionally, all NRMM will be required to meet Stage IV of the Directive as a minimum under London's Low Emission Zone for Non-Road Mobile Machinery from January 2025 onwards. From January 2030 the stage V standard will apply. From January 2040 only zero emission machinery will be allowed.

Demolition and Construction Dust

8.27 LBS's Technical Guidance for Enabling Works and Construction¹ states that “All major developments in Southwark are considered ‘high risk’. The highest level of dust control, including continuous monitoring of dust deposition, will be required to be employed at all times.” Consequently, the mitigation measures set out in the GLA's SPG on The Control of Dust and Emissions During Construction and Demolition²⁰ for a high-risk site will be implemented during the demolition and construction works of the Proposed Development. Guidance from IAQM²¹ is that, with appropriate mitigation in place, the effects of construction dust will be ‘not significant’, thus, further assessment of the risk of construction dust emissions is not required. Regardless, a construction dust risk assessment has been completed to ensure that relevant receptors are identified and to enable mitigation measures to be suitably deployed.

8.28 The demolition and construction dust assessment considers the potential for impacts up to 250m from the site boundary²²; or within 50m of roads used by construction vehicles. The assessment methodology follows the GLA's SPG on the Control of Dust and Emissions During Construction and Demolition²⁰, which is based on that provided by IAQM¹⁷. This follows a sequence of steps. Step 1 is a basic screening stage, to determine

¹⁷ IAQM (2024) Guidance on the Assessment of Dust from Enabling works and Construction v2.2, Available: <http://iaqm.co.uk/guidance/>.

¹⁸ GLA (2014) The Control of Dust and Emissions from Construction and Enabling works SPG.

¹⁹ Moorcroft and Barrowcliffe et al (2017) Land-Use Planning & Development Control: Planning For Air Quality v1.2, IAQM, London, Available: <http://iaqm.co.uk/guidance/>.

²⁰ GLA (2014) The Control of Dust and Emissions from Construction and Demolition SPG, Available: <https://www.london.gov.uk/what-we-do/planning/implementing-london-plan/supplementary-planning-guidance/control-dust-and->

²¹ IAQM (2024) Guidance on the Assessment of Dust from Enabling works and Construction v2.2, Available: <http://iaqm.co.uk/guidance/>.

²² The assessment considers different distance buffers, with the smallest distance being 20 m from the Site boundary. If there are a large number of highly sensitive uses within the lowest boundary, only these distances need be considered.

whether the more detailed assessment provided in Step 2 is required. Step 2a determines the potential for dust to be raised from on-site works and by vehicles leaving the site. Step 2b defines the sensitivity of the area to any dust that may be raised. Step 2c combines the information from Steps 2a and 2b to determine the risk of dust impacts without appropriate mitigation. Step 3 uses this information to determine the appropriate level of mitigation required to ensure that there should be no significant effects. **ES Volume 3, Appendix: Air Quality – Annex 3** explains the approach in more detail.

Demolition and Construction Traffic

- 8.29** EPUK & IAQM¹⁹ consider that a detailed assessment is required where a development leads to an increase in HDVs of more than 25 AADT within an AQMA. The demolition and construction works will generate a peak of 43 vehicles per day (86 two-way vehicle movements per day). Whilst approximately 70% of the vehicles would be HDVs, the assessment has assumed that all vehicles would be HDVs to ensure a worst-case assessment. The vehicle numbers would exceed 25 AADT along Peckham High Street, Hanover Park and Clayton Road. A quantitative assessment of construction vehicle emissions has therefore been carried out to determine the impacts that construction traffic will have on existing and introduced sensitive receptors located along the affected routes. The assessment, however, has been based on the anticipated first year of occupation of any of the residential blocks within the Proposed Development, that being 2028²³, as air quality conditions are expected to be worse than 2031, and thus considered a more robust assessment. The main air pollutants of concern related to traffic emissions are NO₂, PM₁₀ and PM_{2.5}.
- 8.30** The impact of construction traffic emissions on local concentrations of NO₂, PM₁₀ and PM_{2.5} at existing sensitive receptors has been predicted following the methodology presented below. In addition, the impacts on the proposed sensitive receptors within the Proposed Development have also been considered qualitatively within the assessment.

Modelling Methodology

- 8.31** Concentrations have been predicted using the ADMS-Roads dispersion model, with vehicle emissions derived using Defra's latest Emission Factor Toolkit (EFT) (v12.0). Details of the model inputs, assumptions and the verification are provided in **ES Volume 3, Appendix: Air Quality – Annex 6**, together with the method used to derive base and future year background concentrations. Where assumptions have been made, a realistic worst-case approach has been adopted.

Assessment Scenarios

- 8.32** NO₂, PM₁₀ and PM_{2.5} concentrations have been predicted for a base year of 2022 (to align with available air quality monitoring data) and an assessment year of 2028 (earliest year of occupation²³) for both the operational and construction traffic-related impacts. In reality, the peak year of construction vehicles is anticipated to be 2031; however, as vehicle emissions and background pollutant concentrations will be higher in 2028, that year has been used to provide a robust assessment. For 2028, predictions have been made both 'With Construction Traffic' and 'Without Construction Traffic' on the road network.

Traffic Data

- 8.33** Traffic data for the assessment have been provided by Arup, the appointed Transport Consultants for the Proposed Development. Further details of the traffic data used in this assessment are provided in **ES Volume 3, Appendix: Air Quality – Annex 6**.
- 8.34** As discussed in **ES Volume 1, Chapter 7: Traffic and Transport**, the identified cumulative schemes (**ES Volume 1, Chapter 2: EIA Methodology – Annex 1**) would have a negligible impact on the traffic flows. As

such, predictions of future pollutant concentrations presented in this chapter are representative of both the proposed and cumulative scenarios.

Uncertainty

- 8.35** There are many components that contribute to the uncertainty of modelling predictions. The road traffic emissions dispersion model used in this assessment is dependent upon the traffic data that have been input, which will have inherent uncertainties associated with them. There are then additional uncertainties, as models are required to simplify real-world conditions into a series of algorithms.
- 8.36** An important stage in the process is model verification, which involves comparing the model output with measured concentrations (see **ES Volume 3, Appendix: Air Quality – Annex 6**). Because the model has been verified and adjusted, there can be reasonable confidence in the prediction of base year (2022) concentrations.
- 8.37** Predicting pollutant concentrations in a future year will always be subject to greater uncertainty. For obvious reasons, the model cannot be verified in the future, and it is necessary to rely on a series of projections provided by DfT and Defra as to what will happen to traffic volumes, background pollutant concentrations and vehicle emissions. Historically, Defra's EFT had a tendency to over-state emissions reductions into the future. However, analysis of the more recent versions of Defra's EFT carried out by AQC^{24, 25} suggest that, on balance, these versions are unlikely to over-state the rate at which NOx emissions decline in the future at an 'average' site in the UK. In practice, the balance of evidence suggests that NOx concentrations are most likely to decline more quickly in the future, on average, than predicted by the EFT, especially against a base year of 2016 or later. Whilst such an analysis has not been undertaken by AQC for EFT v12.0, it is considered that using EFT v12.0 for future-year forecasts in this report provides a robust assessment, given that the model has been verified against measurements made in 2022.
- 8.38** Changes were made to the Low Emission Zone (LEZ) and Ultra Low Emission Zone (ULEZ) in 2021, and the ULEZ was further expanded in 2023. The changes are described in detail in **ES Volume 3, Appendix: Air Quality – Annex 2**, and can be expected to significantly reduce NOx emissions in London. Defra's latest EFT is representative of London-Specific policies, now accounting for the LEZ and ULEZ changes in 2021 and 2023.
- 8.39** This assessment has also considered the GLA target for PM_{2.5}. Whilst the overall approach is essentially unchanged from an assessment against the objectives, it must be recognised that there is increased uncertainty as the criteria are numerically reduced. By way of example a 0.5% increase in a PM₁₀ concentration with regard to the objective is 0.2 µg/m³, whereas a 0.5% increase in a PM_{2.5} concentration with regard to the GLA target is just 0.05 µg/m³. While such increases can be predicted (as the model will generate outputs to many decimal places), such small increases must be treated with increased caution.

Phasing

- 8.40** As described in **ES Volume 1, Chapter 5: Demolition and Construction**, on-site demolition and construction works are planned to be carried out in three phases over a period of approximately nine years. Phase 1 (Buildings N, M, L, P, Q and the replacement supermarket) will commence in Q2 2026 and complete in Q2 2030. Phase 2 (Buildings C, B, A, E, D, G, K, J, H and F) is planned to commence in Q2 2030 and complete in Q4 2034. The peak year of combined construction and operational traffic is expected to be 2031 (construction of Phases 2 and partial operation of the Proposed Development).
- 8.41** To determine the potential impact of construction traffic emissions on existing, and proposed, receptors along the affected routes, concentrations of NO₂, PM₁₀ and PM_{2.5} have been predicted for the year 2028²³, which is the first year of potential occupation of the buildings constructed during Phase 1, assuming peak construction

²³ Whilst the earliest occupation year, as described in **ES Volume 1, Chapter 5: Demolition and Construction** is 2029, it has been assumed to be 2028, to ensure a worst-case assessment.

²⁴ AQC (2020) Performance of Defra's Emission Factor Toolkit 2013-2019, Available: <https://www.aqcconsultants.co.uk/CMSPages/GetFile.aspx?guid=7fba769d-f1df-49c4-a2e7-f3dd6f316ec1>.

²⁵ AQC (2020) Comparison of EFT v10 with EFT v9, Available: <https://www.aqcconsultants.co.uk/CMSPages/GetFile.aspx?guid=9d6b50e1-3897-46cf-90f1-3669c6814f1d>.

traffic (which will occur in 2031). This represents a worst-case scenario, as emissions factors and background concentrations are predicted to progressively improve in future years.

Completed Development

8.42 The operational air quality assessment within this ES chapter considers:

- The impact of road traffic emissions associated with the complete and operational Proposed Development upon existing sensitive receptors;
- The impact of emissions from the life-safety generators within the Proposed Development upon existing sensitive receptors;
- The impacts of existing and proposed emission sources of NO₂, PM₁₀ and PM_{2.5} on future residents and users of the Proposed Development in terms of site suitability;
- Whether the Proposed Development is 'air quality neutral'; and
- The measures the Proposed Development includes to maximise benefits to local air quality and reduce exposure (Air Quality Positive Statement).

8.43 Once operational, the Proposed Development will lead to a decrease in traffic along the local roads (**ES Volume 1, Chapter 7: Traffic and Transport**). Emissions associated with road traffic on local roads may therefore have a beneficial impact on air quality for existing off-site residential receptors and future users and occupants of the Proposed Development itself. These impacts are considered in the Site Suitability assessment in described in paragraph 8.47. The main air pollutants of concern related to traffic emissions are NO₂ and fine particulate matter (PM₁₀ and PM_{2.5}).

8.44 Emissions associated with the proposed emergency diesel generators and sprinkler pumps (hereafter referred to as the 'plant') could also impact on air quality at existing properties as well as upon future users of the Proposed Development. The main air pollutants of concern related to diesel generators are NO₂, PM₁₀ and PM_{2.5}. A qualitative assessment of the operational impacts that the Proposed Development will have on concentrations of these pollutants has been carried out.

Completed Development Traffic

8.45 The first step in considering the road traffic impacts of the Proposed Development has been to screen the development and its traffic generation against the criteria set out in the EPUK/IAQM guidance¹⁹, and detailed further in **ES Volume 3, Appendix: Air Quality – Annex 4**.

8.46 Where impacts can be screened out there is no need to progress to a more detailed assessment, as has been the case in this assessment.

Site Suitability

8.47 Site suitability has been determined qualitatively, taking into consideration local monitoring undertaken by LBS, the results from an on-site NO₂ monitoring survey undertaken in 2022 and the distance of the proposed dwellings to the nearest road (Hanover Park) and Peckham Bus Station. As the assessment has been undertaken qualitatively, no specific receptor locations have been identified. However, the qualitative assessment has referred to specific blocks and façades of the Proposed Development as relevant.

Energy Plant Impacts

8.48 The Proposed Development will be provided with heat and hot water by an all-electric system comprising ASHPs and WSHPs, supplemented by PVs; therefore, there will be no centralised energy plant and thus no significant point sources of emissions within the Proposed Development.

8.49 The Proposed Development will, however, include two life-safety generators, as well as two diesel sprinkler pumps, to be used only during emergencies. The plant is anticipated to require testing for approximately five minutes per month, amounting to one hour of annual testing. The exhaust flues will terminate on the tallest parts of their respective buildings; Building Q will house the flues for one of the generators and the replacement supermarket sprinkler pump, Building M will house the commercial sprinkler pump, and Block G will house the second emergency generator. The exhaust flues will exhaust unimpeded, at locations with the best possible pollutant dispersion environments.

8.50 Considering the limited testing regime, and locations of the flues, it is judged that any impacts from the plant's emissions will be negligible and the effects 'not significant' and is therefore not assessed further.

'Air Quality Neutral'

8.51 The GLA's London Plan Guidance (Air Quality Neutral)²⁶ sets out guidance on how an 'air quality neutral' assessment should be undertaken. It also provides a methodology for calculating an offsetting payment if a development is not 'air quality neutral' and it is not possible to identify or agree appropriate and adequate mitigation.

'Air Quality Positive'

8.52 The London Plan²⁷ details expectations regarding 'Air Quality Positive'. The full text is quoted in **ES Volume 3, Appendix: Air Quality – Annex 2**, but the expectations can be summarised as follows:

- Air quality should be considered at an early stage in the project design;
- Existing good practice measures should be drawn together in a holistic fashion to identify which options deliver the greatest improvement to air quality, both in terms of on-site exposure and off-site impacts;
- A statement should be developed setting out how air quality can be improved across the proposed area of the development;
- These measures should be incorporated into the design; and
- Delivery of an air quality positive approach is project specific and relies on the opportunities on Site or in the surrounding area to improve air quality.

8.53 AQC has been involved early in the design process for the Proposed Development, carried out on-site air quality monitoring to determine baseline concentrations and produced a Preliminary Air Quality Assessment to help inform the design of the scheme (see **ES Volume 3, Appendix: Air Quality – Annex 9**). The measures recommended were considered in the design and an air quality positive statement has been prepared (**ES Volume 3, Appendix: Air Quality – Annex 7**), detailing which measures have been implemented and their benefits in terms of air quality, and how the Proposed Development has been designed to reduce emissions to air and reduce exposure to air pollution on-site.

8.54 The GLA has published guidance²⁸ on how the requirements for Air Quality Positive development should be met, which has been followed when preparing this ES chapter.

²⁶ GLA (2023) London Plan Guidance – Air Quality Neutral.

²⁷ GLA (2021) The London Plan: The Spatial Development Strategy for London, Available: https://www.london.gov.uk/sites/default/files/the_london_plan_2021.pdf.

²⁸ GLA (2023) London Plan Guidance – Air Quality Positive.

Assumptions and Limitations

- 8.55** The following key assumptions have been made in the air quality assessment set out in this ES chapter to facilitate a reasonable worst-case assessment of likely significant effects:
- While the peak year of construction is anticipated to be 2031 (based on the **ES Volume 1, Chapter 5: Demolition and Construction**), for the purposes of this assessment, the peak construction traffic has been assessed in 2028, due to vehicle emissions and background pollutant concentrations being higher in that year. This will have overestimated the traffic emissions and hence the 2028 “With Construction” concentrations;
 - The London City Airport meteorological monitoring station appropriately represents conditions in the study area (this is discussed further in **ES Volume 3, Appendix Air Quality – Annex 6**); and
 - That a number of roads within the study area are located within street canyons (this is discussed further in **ES Volume 3, Appendix: Air Quality – Annex 6**).

Embedded Mitigation

- 8.56** The assessment assumes the following mitigation is embedded in the design of the Proposed Development:
- No provision of residential car parking, with the exception of 11 spaces for Blue Badge holders only. Subject to further discussions with LBS one Blue Badge space at ground level may be provided as a car club space;
 - Provision of active electric vehicle charging points at 20% of the replacement supermarket parking spaces;
 - Provision of PV panels on the roof of the Proposed Development; and
 - Use of ASHPs and WSHPs for the provision of heat and hot water to the Proposed Development, to avoid the need for on-site combustion.

Methodology for Defining Effects

Receptors and Receptor Sensitivity

Demolition and Construction Dust

- 8.57** The IAQM, in their guidance on construction dust¹⁷, provides criteria to define receptor sensitivity to dust soiling or health effects of PM₁₀ (See Table A3.2 in **ES Volume 3, Appendix: Air Quality – Annex 3**). Residential properties are considered as high sensitivity receptors to both dust soiling and health effects of PM₁₀, while places of work are defined as medium sensitivity receptors.

Demolition and Construction Traffic

- 8.58** The sensitivity of receptors to construction traffic emissions is the same as presented in the ‘*Completed Development*’ section below.

Completed Development

- 8.59** The 2007 Air Quality Strategy²⁹ explains that air quality standards and objectives were determined based on expert recommendations and represent “*levels at which no significant health effects would be expected in the population as a whole*”. As described in paragraph 8.9, the objectives apply at locations where members of the public are likely to be regularly present and are likely to be exposed over the averaging period of the objective. The GLA explains where these objectives will apply in its Technical Guidance⁹.

- 8.60** In terms of the Proposed Development, the residential properties represent relevant exposure to both the annual mean and short-term objectives; the retail and public realm spaces within the Proposed Development are considered to represent relevant exposure to the 1-hour mean NO₂ objective; offices and places of work do not represent relevant exposure to the national air quality objectives.

- 8.61** Within this ES chapter, all receptors where the air quality objectives apply are considered to be of high sensitivity. Locations where the objectives do not apply must be considered not to be sensitive, therefore there are no medium or low sensitivity receptors within the context of this assessment.

Magnitude of Impact

Demolition and Construction Dust

- 8.62** There are no formal assessment criteria for dust. In the absence of formal criteria, the approach developed by the IAQM has been used (the GLA’s SPG¹⁸ recommends that the assessment be based on the latest version of the IAQM guidance). The magnitude of impact associated with dust generated from the demolition construction activities is determined during Step 2 of the method, as described in paragraph 8.28.
- 8.63** Full details of this approach are provided in **ES Volume 3, Appendix: Air Quality – Annex 3**.

Demolition and Construction Traffic

- 8.64** There is no official guidance in the UK in relation to development control on how to describe air quality impacts and effects, nor how to assess their significance. The approach developed jointly by EPUK and the IAQM¹⁹ has therefore been used. This includes defining descriptors of the impacts at individual receptors, which take account of the percentage change in concentrations relative to the relevant air quality objective, rounded to the nearest whole number, and the absolute concentration relative to the objective.
- 8.65** Table 8.2 sets out how impact descriptors have been determined within this assessment, being an adapted version of the table presented in **ES Volume 3, Appendix: Air Quality – Annex 4**. For the assessment criterion the term Air Quality Assessment Level (AQAL) has been adopted, as it 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. Note that impacts may be adverse or beneficial, depending on whether the change in concentration is positive or negative.

Table 8.2 Air Quality Impact Scale Descriptors for Individual Receptors for All Pollutants^a

Long-Term Average Concentration at Receptor in Assessment Year ^{b, c}				Change in Concentration Relative to AQAL ^{c, d}				
% of AQAL	Annual Mean NO ₂ (µg/m ³)	Annual Mean PM ₁₀ (µg/m ³)	Annual Mean PM _{2.5} (µg/m ³)	0%	1%	2-5%	6-10%	>10%
75% or less of AQAL	Less than 30.2	Less than 30.2	Less than 15.2 (objective) or Less than 7.5 (GLA target)	Negligible	Negligible	Negligible	Minor	Moderate
76-94% of AQAL	30.2 – 37.8	30.2 – 37.8	15.2 – 18.9 (objective) or 7.5 – 9.5 (GLA target)	Negligible	Negligible	Minor	Moderate	Moderate
95-102% of AQAL	37.8 – 41.0	37.8 – 41.0	18.9 – 20.5 (objective) or	Negligible	Minor	Moderate	Moderate	Major

²⁹ Defra (2007) *The Air Quality Strategy for England, Scotland, Wales and Northern Ireland*.

Long-Term Average Concentration at Receptor in Assessment Year ^{b, c}				Change in Concentration Relative to AQAL ^{c, d}				
% of AQAL	Annual Mean NO ₂ (µg/m ³)	Annual Mean PM ₁₀ (µg/m ³)	Annual Mean PM _{2.5} (µg/m ³) ^e	0%	1%	2-5%	6-10%	>10%
			9.5 – 10.2 (GLA target)					
103-109% of AQAL	41.0 – 43.8	41.0 – 43.8	20.5 – 21.9 (objective) or 10.2 – 10.9 (GLA target)	Negligible	Moderate	Moderate	Major	Major
110% or more of AQAL	More than 43.8	More than 43.8	More than 21.9 (objective) or More than 10.9 (GLA target)	Negligible	Moderate	Major	Major	Major
^a Values are rounded to the nearest whole number. ^b This is the 'without scheme' concentration where there is a decrease in pollutant concentration and the 'with scheme' concentration where there is an increase. ^c AQAL = Air Quality Assessment Level, which may be an air quality objective, limit or target value, or an Environment Agency 'Environmental Assessment Level (EAL)'. ^d Minor and Major are used as standard EIA terminology and correspond to Slight and Substantial respectively in relevant guidance ¹⁹ . ^e For annual mean PM _{2.5} concentrations, these have been assessed against both the air quality objective (20 µg/m ³) and GLA target value (10 µg/m ³).								

Completed Development

8.66 As described in paragraph 8.43, the Proposed Development will have a beneficial impact on air quality, as a result of reductions in traffic flows on local roads. These impacts have not been quantified but the scale of the change has been evaluated with reference to Table 8.2.

Defining the Effect

Effect Scale and Nature

- 8.67 It is important to differentiate between the terms impact and effect with respect to the assessment of air quality. The term impact is used to describe a change in pollutant concentration at a specific location. The term effect is used to describe an environmental response resulting from an impact, or series of impacts.
- 8.68 Within this ES chapter, the air quality assessment has used published guidance and criteria to determine the likely air quality impacts (see Table 8.2) at a number of sensitive locations. The overall significance of the air quality effects is then determined using professional judgement, with consideration given to various factors including the magnitude of the predicted impacts and the presence of any objective exceedances; full details of the EPUK/IAQM approach are provided in **ES Volume 3, Appendix: Air Quality – Annex 4**. The experience of the consultants who have prepared this chapter is set out in **ES Volume 3, Appendix: Air Quality – Annex 5**.

Geographic Extent of Effects

8.69 The extent of effects arising from the Proposed Development will occur at a 'local' level due to emissions associated with changes in vehicle flows on local roads.

Effect Duration

- 8.70 Emissions of pollutants from road traffic associated with demolition and construction of the Proposed Development have the potential to cause temporary medium-term effects.
- 8.71 Emissions of pollutants from road traffic associated with operation of the Proposed Development have the potential to cause permanent long-term effects.

Direct and Indirect Effects

8.72 Emissions of pollutants from road traffic associated with both the construction and operation of the Proposed Development have the potential to cause direct effects.

Categorising Likely Significant Effects

- 8.73 The screening approach developed jointly by EPUK/IAQM¹⁹ has been used to determine the significance of effects due to construction traffic.
- 8.74 Guidance from the IAQM²¹ is that, with appropriate mitigation in place, the effects of construction dust will be 'not significant'. The assessment thus focuses on determining the appropriate level of mitigation so as to ensure that effects will normally be 'not significant'.
- 8.75 There is no official guidance in the UK in relation to development control on how to assess the significance of operational effects. The approach developed jointly by EPUK and the IAQM¹⁹ has therefore been used.
- 8.76 The impact assessment matrix shown in Table 8.2 has been used to define the impacts at individual receptors and the overall significance of the air quality effects is then determined using professional judgement, giving consideration to various factors including the frequency, duration and magnitude of the predicted impacts, their relationship to appropriate air quality objectives and the high sensitivity of the receptors; full details of the EPUK/IAQM approach are provided in **ES Volume 3, Appendix: Air Quality – Annex 4**. The experience of the consultants who have prepared this chapter is set out in **ES Volume 3, Appendix: Air Quality – Annex 5**.
- 8.77 In terms of the site suitability assessment, where the predicted concentrations are below the relevant objectives, the effect of air quality on future occupiers is judged to be 'not significant'.

BASELINE CONDITIONS

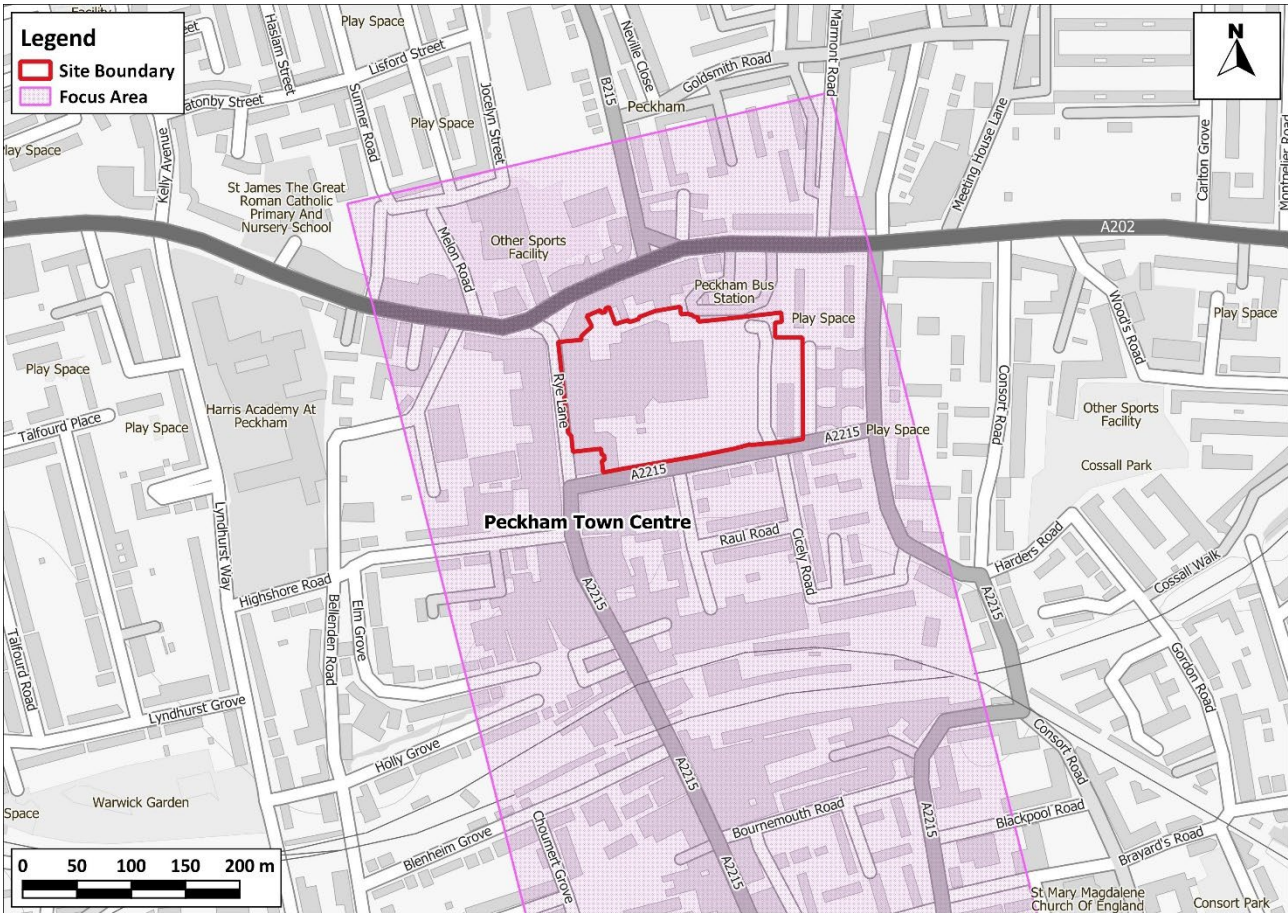
- 8.78 The site is currently occupied by the existing Aylesham Shopping Centre, a Morrisons and its associated petrol station and car park. It is located in a mixed residential and commercial area and is bounded by Peckham Bus Station, commercial properties and residential apartments to the north, Mckerrell Road to the east, Hanover Park to the south and Rye Lane and commercial units to the west. There are further residential properties on the opposite sides of Mckerrell Road and Hanover Park.
- 8.79 The Proposed Development is located within a borough-wide AQMA declared by LBS for exceedances of the annual mean NO₂ and 24-hour mean PM₁₀ objectives. The Proposed Development is also located within one of the GLA's Air Quality Focus Areas (*Peckham Town Centre*), as shown in as shown in Figure 8.1; these are locations with high levels of human exposure where the annual mean limit value for NO₂ is exceeded.

Industrial Sources

8.80 A search of the UK Pollutant Release and Transfer Register³⁰ website has not identified any significant industrial or waste management sources that are likely to affect the Proposed Development, in terms of air quality or dust.

³⁰ Defra (2024) UK Pollutant Release and Transfer Register. Available at: <http://prtr.defra.gov.uk/map-search>

Figure 8.1 Proposed Development and Air Quality Focus Area



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Local Air Quality Monitoring

- 8.81 LBS operates six automatic monitoring stations within its administrative area, with monitoring stations ‘SWK5’ and ‘SWKB’ being the closest to the site, located approximately 1km to north-east and 1.3km to the west, respectively. The LBS also operates a number of NO₂ monitoring sites using diffusion tubes prepared and analysed by Gradko International Ltd (using the 20% TEA in water method), with 13 diffusion tube monitoring sites also located within 1.5km of the Proposed Development.
- 8.82 Annual mean and 1-hour mean NO₂ results for the years 2016 to 2022 are summarised in Table 8.3. Exceedances of the objectives are shown in bold. The monitoring locations are shown in 8.86. The monitoring data for each year have been taken from LBS’s Annual Status Reports (ASRs) for 2016³¹, 2017³², 2018³³, 2019³⁴, 2020³⁵, 2021³⁶ and 2022³⁷.

³¹ LBS (2017) Air Quality Annual Status Report 2016
³² LBS (2018) Air Quality Annual Status Report 2017
³³ LBS (2019) Air Quality Annual Status Report 2018
³⁴ LBS (2020) Air Quality Annual Status Report 2019

Table 8.3 Summary of LBS NO₂ Monitoring (2016-2022)^a

Site ID	Site Type	Location	2016	2017	2018	2019	2020	2021	2022
Automatic Monitor – Annual Mean (µg/m³)									
SWKB	Roadside	Vicarage Road	-	-	-	-	-	40	32
SWK5	Roadside	Old Kent Road	53.0	42.0	41.0	35.0	25.0	29.0	26.0
Objective			40						
Automatic Monitor – No. of Hours > 200 µg/m³									
SWKB	Roadside	Vicarage Road	-	-	-	-	-	0	0
SWK5	Roadside	Old Kent Road	1	0	0	0	0	0	0
Objective			18						
Diffusion Tubes – Annual Mean (µg/m³)									
SDT6	Kerbside	Adjacent to 168 Queens Road	66.6	64.6	55.2	53.6	35.0	37.0 ^b	35.1
SDT7	Kerbside	Adjacent to 167A Rye Lane	49.9	47.4	38.2	32.3	20.7	21.0	26.8
SDT54	Kerbside	Camberwell Grove	39.7	30.4	29.8	28.9	19.1	23.4	21.5
SDT55	Kerbside	Lamppost 11A St Georges Way South	40.6	39.0	37.9	32.9	19.8	22.7	19.5
SDT93	Roadside	Lamppost 9 adjacent to 14 Hanover Park	-	72.2	64.2	43.4	30.7	33.1	36.4
SDT105	Kerbside	Lamppost adjacent to Oliver Goldsmith School entrance Southampton Way	-	47.0 ^b	42.0	37.9	24.7	29.9	27.3
SDT114	Kerbside	Lamppost 1 Goose Green / East Dulwich Road	-	38.1 ^b	33.9	33.7	22.6	25.2	25.0
SDT132	Kerbside	Lamppost 2732/01 adjacent to 117-125 Rye Lane	-	-	-	33.8	21.5	23.9	28.6
SDT136	Kerbside	Lamppost 2160/12 adjacent to Dog Kennel Hill School	-	-	-	34.6	20.2	23.9	22.3
SDT138	Kerbside	Lamppost 2127/11 Pytchley Road	-	-	-	31.8	24.7	27.4	25.9
SDT139	Kerbside	Lamppost 2139 29 Grove Lane	-	-	-	33.9	24.1	27.5	23.8
SDT140	Kerbside	Post near Dog Kennel Hill School entrance Dog Kennel Hill	-	-	-	32.0	22.9	24.7	24.2
SDT161	Kerbside	Lamppost 2120/02 adjacent to 8 East Dulwich Grove	-	-	-	-	-	-	29.2
Objective			40						
^a Exceedances of the objectives are shown in bold . Exceedances of 60 µg/m3, indicating a possible exceedance of the 1-hour mean objective are shown in <u>bold and underlined</u> .									
^b Data capture for the monitoring period was less than 75%, and as such the results were annualised by LBS in accordance with LLAQM Technical Guidance.									

³⁵ LBS (2021) Air Quality Annual Status Report 2020
³⁶ LBS (2022) Air Quality Annual Status Report 2021
³⁷ LBS (2023) Air Quality Annual Status Report 2022

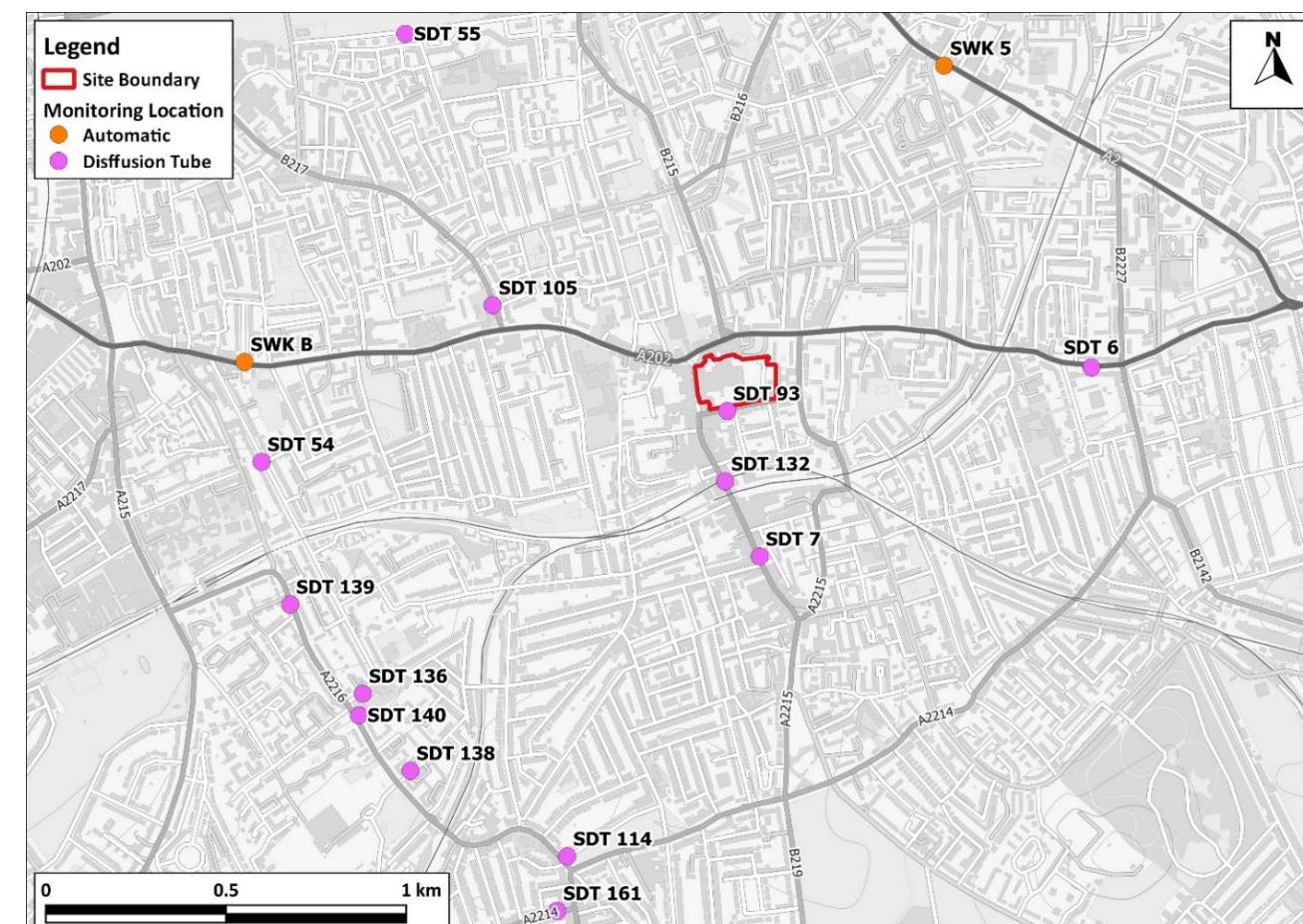
- 8.83 The results presented in Table 8.3 show exceedances of the annual mean NO₂ objective between 2016 and 2019 at a number of monitoring sites; concentrations at all sites, however, remained below the objective in 2022. There has been an overall downward trend in NO₂ concentrations between 2016 and 2022.
- 8.84 Regarding the 1-hour mean NO₂ objective, only diffusion tube monitoring sites SDT6 and SDT93 measured an exceedance of the 60 µg/m³, in 2016/2017 and 2017/2018 respectively, indicating a potential exceedance of the 1-hour mean objective. However, the 1-hour mean objective was not exceeded in more recent years either at sites SDT6 and SDT93 or at the automatic monitoring stations.
- 8.85 LBS also measures PM₁₀ concentrations at the SWK5 and SWKB automatic stations, and PM_{2.5} concentrations at the SWKB monitoring station. Measured concentrations for the years 2016 to 2022 are summarised in Table 8.4.

Table 8.4 Summary of LBS PM10 and PM2.5 Monitoring (2016-2022)

Site ID	Site Type	Location	2016	2017	2018	2019	2020	2021	2022
PM ₁₀ Annual Mean (µg/m ³)									
SWKB	Roadside	Vicarage Road	-	-	-	-	-	16	17
SWK5	Roadside	Old Kent Road	24	22	22	24	22	21	21
Objective			40						
PM ₁₀ – No. of Days > 50 µg/m ³									
SWKB	Roadside	Vicarage Road	-	-	-	-	-	2	6
SWK5	Roadside	Old Kent Road	18	19	8	2	11	8	7
Objective			35						
PM _{2.5} Annual Mean (µg/m ³)									
SWKB	Roadside	Vicarage Road	-	-	-	-	-	10	10
Objective/GLA target			20/10 ^a						
^a The 20 µg/m ³ PM _{2.5} objective, which was to be met by 2020, is not in Regulations and there is no requirement for local authorities to meet it. 10 µg/m ³ is the GLA target; again, there is no requirement for local authorities to meet this until 2030.									

- 8.86 As shown in Table 8.4, the measured annual mean and 24-hour mean PM₁₀ concentrations were well below their respective objectives between 2016 and 2020. In addition, PM_{2.5} concentrations were below the objective in all years presented and did not exceed the GLA target.
- 8.87 While 2020 and 2021 results have been presented in this section for completeness, they are not relied upon in any way as they will not be representative of 'typical' air quality conditions due to the impact of the Covid-19 pandemic on traffic volumes, and thus pollutant concentrations.

Figure 8.2 Monitoring Locations and the Site Boundary



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On-Site NO₂ Monitoring

- 8.88 In addition to the LBS monitoring data presented in the previous section, NO₂ monitoring was undertaken at six locations in the vicinity of the Proposed Development, with one monitoring site ('DT5') co-located with the 'SDT93' diffusion tube monitoring site. Monitoring was carried out using passive diffusion tubes prepared and analysed by Gradko, using 20% TEA in water method. The monitoring was undertaken over three periods of approximately one month each, from 22nd August 2022 to 30th November 2022.
- 8.89 A description of the diffusion tube locations is provided in Table 8.5 and the locations of the tubes are shown in 8.90. Locations DT2, DT3 and DT4 were selected to address the potential impacts of emissions from Peckham Bus Station as agreed with the LBS Environmental Health Officer.

Table 8.5 Description of Diffusion Tube Monitoring Locations

Site ID	Location	Distance from Kerb (m)	Height (m) ^a
DT1	Pipe on the corner of the Aylesham Centre, east of Rye Lane	5.0	2.7
DT2	Camera pole adjacent Peckham Bus Station (Stop H)	3.5	2.7
DT3	Lamppost west of Peckham Bus Station (Stop E)	4.5	3.2
DT4	No entry sign east of Conduit Road	4.5	3.0
DT5	Lamppost at 14 Hanover Park	0.5	2.3
DT6	20 mph sign at 44 Hanover Park	0.5	2.9

^a Each tube was installed at its respective location, at a height where air flow would not be disturbed or blocked by any existing signage or street furniture. In addition, tube DT5 was installed at the same height as the Council's tube (SDT93).

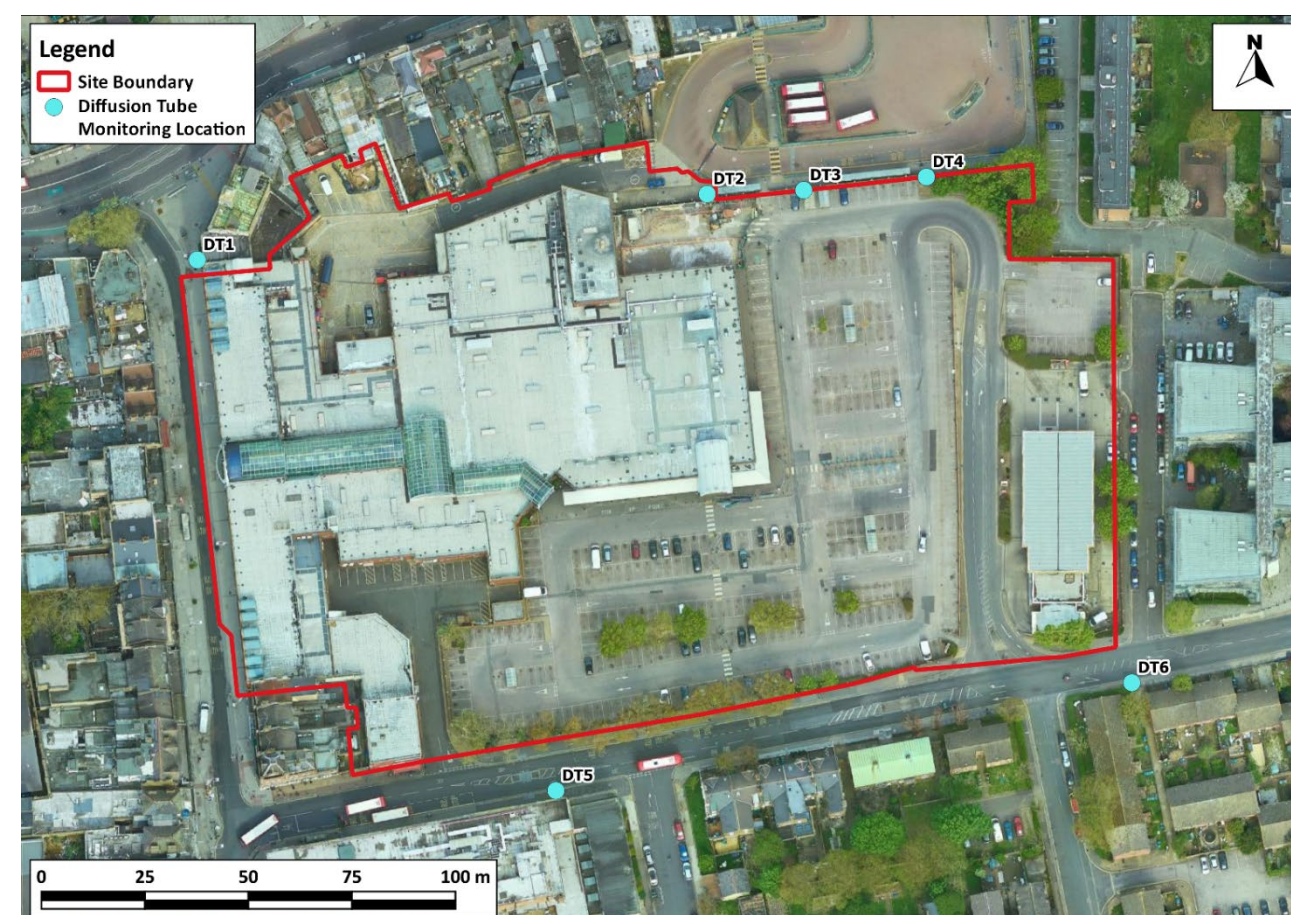
8.90 The laboratory bias³⁸ adjusted 2022 annual mean equivalent NO₂ concentrations measured at the six sites in the vicinity of the Proposed Development are shown in Table 8.6.

Table 8.6 Measured On-Site NO₂ Concentrations (2022 equivalent)

Site ID	Location	Annual Mean NO ₂ Concentration (µg/m ³)
DT1	Pipe on the corner of the Aylesham Centre, east of Rye Lane	25.5
DT2	Camera pole adjacent Peckham Bus Station (Stop H)	26.2
DT3	Lamppost west of Peckham Bus Station (Stop E)	28.7
DT4	No entry sign east of Conduit Road	29.0
DT5	Lamppost at 14 Hanover Park	37.6
DT6	20 mph sign at 44 Hanover Park	34.6

8.91 As shown in Table 8.6, no exceedances of the annual mean NO₂ objective were measured at any of the diffusion tube monitoring sites deployed. Sites DT5 and DT6 are both located within 0.5 m of the kerbside of the busy Hanover Park, and as such concentrations are expected to be higher, compared to the other four sites.

Figure 8.3 Diffusion Tube Monitoring Locations



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8.92 As mentioned in paragraph 8.88, diffusion tube monitoring site DT5 was co-located with LBS's diffusion tube SDT93. In 2022, SDT93 measured a concentration of 36.4 µg/m³, compared to site DT5 which measured a concentration of 37.6 µg/m³.

³⁸ Diffusion tubes are known to show systematic bias in relation to automatic (reference) monitors, and it is necessary to carry out a correction known as 'bias adjustment'.

8.93 Diffusion tube monitoring sites DT2, DT3 and DT4 are all located within 4.5m of Peckham Bus Station; concentrations at these sites were all below the air quality objective.

8.94 It should be noted that these results differ from those presented in the Preliminary Air Quality Assessment (**ES Volume 3, Appendix: Air Quality – Annex 11**). This is because the annualisation process has been updated to use data measured at site SDT93, from the 2022 ASR³⁷, which were not available at the time that the preliminary assessment was undertaken. As such, the revised annualisation factor has led to different annual mean results.

Exceedances of Limit Value

8.95 There are several AURN monitoring sites within the Greater London Urban Area that have measured exceedances of the annual mean NO₂ limit value³⁹. Furthermore, Defra's roadside annual mean NO₂ concentrations⁵, which are used to identify and report exceedances of the limit value, identify exceedances of this limit value in 2022 along many roads in London, but not for the roads close to the Proposed Development. As such, there is considered to be no risk of a limit value exceedance in the vicinity of the Proposed Development by the time that it is operational.

8.96 Defra's Air Quality Plan requires the GLA to prepare an action plan that will "deliver compliance in the shortest time possible", and the 2015 Plan assumed that a Clean Air Zone (CAZ) was required. The GLA has already implemented a Low Emission Zone (LEZ) and an Ultra-Low Emission Zone (ULEZ); thus, the authority has effectively already implemented the required CAZ. These have been implemented as part of a package of measures including 12 Low Emission Bus Zones, Low Emission Neighbourhoods, the phasing out of diesel buses and taxis and other measures within the Mayor's Transport Strategy⁴⁰.

Background Concentrations

8.97 In addition to the locally measured concentrations, estimated background concentrations in the study area have been determined for the baseline year 2022 and the first year of potential occupation (2028²³) using Defra's 2018-based background maps. The background concentrations are set out in Table 8.7 and have been derived as described in **ES Volume 3, Appendix: Air Quality – Annex 6**. A range of values is presented as the study area covers multiple 1x1 km grid squares. The background concentrations are all well below the objectives; however, the PM_{2.5} concentrations are above the GLA target of 10 µg/m³. This is judged to be conservative, however, as measured PM_{2.5} concentrations, including at a roadside location, met the GLA target in 2022 (Table 8.4).

Table 8.7 Estimated Annual Mean Background Pollutant Concentrations in 2022 and 2028 (µg/m³)

Year	NO ₂	PM ₁₀	PM _{2.5} ^a
2022	18.4	18.5	12.1
2028	16.1	17.8	11.7
Objective/GLA target	40	40	20/10 ^a

^a The PM_{2.5} objective, which was to be met by 2020, is not in Regulations and there is no requirement for local authorities to meet it. 10 µg/m³ is the GLA target; again, there is no requirement for local authorities to meet this.

Baseline Dispersion Model Results

8.98 Baseline concentrations of NO₂, PM₁₀ and PM_{2.5} have been modelled at ten existing receptor locations (see Table 8.10 and Figure 8.4). The results, which cover the existing (2022) and future year (2028) baseline (Without Construction), are set out in Table 8.8 and Table 8.9. The modelled road components of NO₂ have been increased from those predicted by the model based on a comparison with local measurements (see **ES Volume 3, Appendix: Air Quality – Annex 6** for the verification methodology).

³⁹ Defra (2024) Defra AURN Archive, Available: <https://uk-air.defra.gov.uk/interactive-map?network=aurn>.

⁴⁰ Mayor of London (2022) <https://tfl.gov.uk/corporate/about-tfl/the-mayors-transport-strategy#on-this-page-5>

Table 8.8 Modelled Annual Mean Baseline Concentrations of NO₂ at the Existing Receptors (µg/m³)
a, b

Receptor	2022	2028 Without Construction
E1	26.4	19.8
E2	29.2	20.0
E3	41.5	24.7
E4	36.2	22.5
E5	41.4	25.1
E6	44.3	26.0
E7	41.8	25.5
E8	41.1	25.3
E9	<u>67.5</u>	37.5
E10	52.0	29.8
Objective	40	
^a Exceedances of the objectives are shown in bold .		
^b Exceedances of the 60 µg/m ³ proxy are shown in <u>bold and underlined</u> .		

Table 8.9 Modelled Annual Mean Baseline Concentrations of PM₁₀ and PM_{2.5} at Existing Receptors (µg/m³)

Receptor	PM ₁₀		PM _{2.5}	
	2022	2028 Without Construction	2022	2028 Without Construction
E1	18.9	18.3	12.3	11.9
E2	19.1	18.3	12.4	11.9
E3	19.7	18.8	12.7	12.1
E4	19.4	18.5	12.6	12.0
E5	19.7	18.8	12.7	12.2
E6	19.9	19.0	12.8	12.2
E7	19.7	18.9	12.7	12.2
E8	19.7	18.9	12.7	12.2
E9	21.6	20.6	13.7	13.1
E10	20.4	19.5	13.1	12.5
Objective / GLA target	32 ^a		20/10 ^b	
^a While the annual mean PM ₁₀ objective is 40 µg/m ³ , 32 µg/m ³ is the annual mean concentration above which an exceedance of the 24-hour mean PM ₁₀ objective is possible, as outlined in LAQM.TG22 ⁸ . A value of 32 µg/m ³ is thus used as a proxy to determine the likelihood of exceedance of the 24-hour mean PM ₁₀ objective, as recommended in EPUK and the IAQM guidance19.				
^b The 20 µg/m ³ PM _{2.5} objective, which was to be met by 2020, is not in Regulations and there is no requirement for local authorities to meet it. 10 µg/m ³ is the GLA target for annual mean PM _{2.5} ; again, there is no requirement for local authorities to meet this.				

- 8.99** The predicted annual mean concentrations of NO₂ in 2022 are above the objective at the majority of the receptors. The annual mean NO₂ concentration is above 60 µg/m³ at one receptor (E9). The predicted concentrations at receptors E7 to E10 are significantly higher than the measured concentrations at the SWKB automatic monitoring station and at the SDT6 diffusion tube monitoring site, even though all are located on Peckham High Street. The measured concentrations at the two latter sites are below the annual mean NO₂ objective in 2022, whereas the predicted concentrations for receptors E7 to E10 are above, and for E9 also above 60 µg/m³. The predominant reason for this difference in concentrations is that the section of Peckham High Street where receptors E7 to E10 are located is more congested, with reduced speeds, as well as having canyon-like features due to the existing buildings, allowing for less dispersion of the pollutants. In addition, emissions from Peckham Bus Station also contribute to the increased predicted concentrations at this location.

It is expected that concentrations along Clayton Road, relevant for receptors E5 to E7, have also been overestimated due to the influence of bus emissions on the verification sites; however, no monitoring sites are available on Clayton Road to confirm this.

- 8.100** The predicted annual mean concentrations of PM₁₀ and PM_{2.5} in 2022 are below the objective at all receptors. The annual mean PM₁₀ concentrations are also below 32 µg/m³ and it is, therefore, unlikely that the 24-hour mean PM₁₀ objective will be exceeded.
- 8.101** The annual mean concentrations of PM_{2.5}, however, exceed the GLA target even though measured PM_{2.5} concentrations, including at a roadside location, met the GLA target in 2022 (Table 8.4). Exceedances of the guideline are common, and their nationwide achievement is very unlikely to be possible before 2030, especially in London.

RECEPTORS AND RECEPTOR SENSITIVITY

Existing

Demolition and Construction Works

- 8.102** The guidance followed when carrying out the demolition and construction dust assessment requires the number of receptors within certain distance bands to be established in order to determine the sensitivity of the surrounding area, rather than focussing on impacts at individual receptors.
- 8.103** It is, therefore, not necessary to set out specific receptors for the assessment of impacts during the demolition, construction and retrofit.

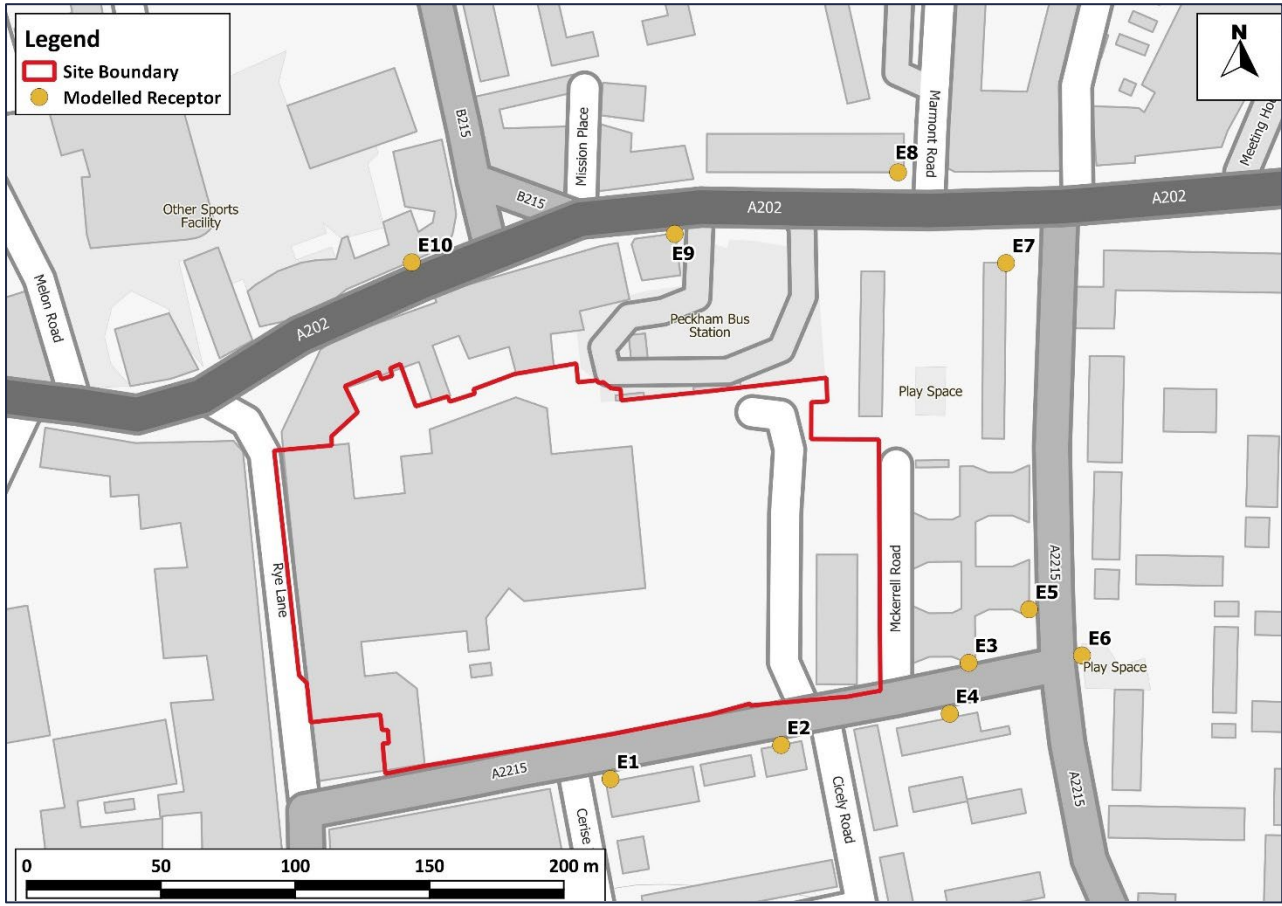
Demolition and Construction Traffic

- 8.104** Concentrations of NO₂, PM₁₀ and PM_{2.5} have been predicted at ten locations in close proximity to the Proposed Development. The receptors have been identified to represent worst-case exposure, being located on the façades of a sensitive properties closest to the roads where the increases in traffic during the construction phase of the Proposed Development exceed the screening criteria. Any introduced receptors present during the demolition and construction phase are located further from the affected roads and thus impacts will be smaller than at these worst-case receptors. The receptor locations were modelled at the lowest height with relevant exposure.
- 8.105** Selected receptor locations are presented in Table 8.10 and are shown in Figure 8.4.

Table 8.10 Description of Existing Receptor Locations

Receptor	Type	Description	Modelled Height ^a
E1	Residential	20 Hanover Park	1.5
E2	Residential	40 Hanover Park	1.5
E3	Residential	81 Hanover Park	1.5
E4	Residential	48 Hanover Park	1.5
E5	Residential	Clayton Road	1.5
E6	Playground	Martock Court Playground	1.5
E7	Residential	Flamborough House, Clayton Road	1.5
E8	Residential	Dunstable House, Peckham High Street	4.5
E9	Residential	122 Peckham High Street	4.5
E10	Residential	95 Peckham High Street	4.5
^a The modelled height of 1.5m represents exposure at ground floor level and a height of 4.5 m represents exposure at first floor level.			

Figure 8.4 Existing Receptor Locations



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Introduced

- 8.106 Any introduced receptors present during the demolition and construction phase (such as those within Phase 1 whilst Phase 2 is under construction) are located further from the affected roads than receptors identified in Table 8.10 and thus impacts will be smaller than at these worst-case receptors. As a result, no specific receptors have been identified for assessment of the air quality impacts of demolition and construction phase traffic.
- 8.107 The Proposed Development will introduce new residential receptors across the site. As the site suitability assessment has been undertaken qualitatively, no specific receptor locations have been identified. However, the qualitative assessment has referred to specific blocks and façades of the Proposed Development as relevant.

POTENTIAL EFFECTS

Demolition and Construction

Demolition and Construction Dust

- 8.108 The construction works will give rise to a risk of dust impacts during demolition, earthworks and construction, as well as from trackout of dust and dirt by vehicles onto the public highway.

- 8.109 Step 1 of the assessment procedure is to screen the need for a detailed assessment. There are receptors within the distances set out in the guidance (see ES Volume 3, Appendix: Air Quality – Annex 3), thus a detailed assessment is required. The following section sets out Step 2 of the assessment procedure.

Potential Dust Emission Magnitude

Demolition

- 8.110 There will be a requirement to demolish the existing buildings, with an approximate total volume of more than 75,000m³. Based on the example definitions set out in Table A3.1 in ES Volume 3, Appendix: Air Quality – Annex 3, the dust emission class for demolition is considered to be *large*.

Earthworks

- 8.111 The characteristics of the soil at the site have been defined using the British Geological Survey's UK Soil Observatory website⁴¹, as set out in Table 8.11. Overall, it is considered that, when dry, this soil has the potential to be moderately dusty.

Table 8.11 Summary of Soil Characteristics

Category	Record
Soil Layer Thickness	Deep
Soil Parent Material Grain Size	Argillic ^a
European Soil Bureau Description	Glaciolacustrine
Soil Group	Medium to Light (Silty) to Heavy
Soil Texture	Clayey Loam ^b to Silty Loam
^a grain size <0.06 mm.	
^b a loam is composed mostly of sand and silt	

- 8.112 The site covers approximately 27,000m² and most of this will be subject to earthworks, involving removal of the foundations of the demolished buildings and breaking up of a paved area. Dust will arise mainly from the handling of dusty materials (such as dry soil).
- 8.113 Based on the example definitions set out in Table A3.1 in ES Volume 3, Appendix: Air Quality – Annex 3, the dust emission class for earthworks is considered to be *medium*.

Construction

- 8.114 Construction will involve the erection of 15 blocks as well as a replacement supermarket, with a total building volume of more than 75,000m³. Dust will arise from the handling and storage of dusty materials.
- 8.115 Based on the example definitions set out in Table A3.1 in ES Volume 3, Appendix: Air Quality – Annex 3, the dust emission class for construction is considered to be *large*.

Trackout

- 8.116 The number of vehicles accessing the site, which may track out dust and dirt, will vary throughout the construction period. It is anticipated that the peak number of construction vehicles daily will be approximately 45 outward heavy vehicle movements per day. Access will be from Hanover Park, where the construction vehicles will access the site from the two existing site entrances and will egress from Hanover Park towards Clayton Road and Peckham High Street.
- 8.117 Based on the example definitions set out in Table A3.1 in ES Volume 3, Appendix: Air Quality – Annex 3, the dust emission class for trackout is considered to be *medium*.

⁴¹ British Geological Survey (2022) UK Soil Observatory Map Viewer, [Online], Available: <http://mapapps2.bgs.ac.uk/ukso/home.html>.

8.118 Table 8.12 summarises the anticipated dust emission magnitude for the Proposed Development.

Table 8.12 Summary of Dust Emission Magnitude

Source	Dust Emission Magnitude
Demolition	Large
Earthworks	Medium
Construction	Large
Trackout	Medium

Sensitivity of the Area

- 8.119 This assessment step combines the sensitivity of individual receptors to dust effects with the number of receptors in the area and their proximity to the site. It also considers additional site-specific factors such as topography and screening, and in the case of sensitivity to human health effects, baseline PM₁₀ concentrations.
- 8.120 The IAQM guidance, upon which the GLA’s guidance is based, explains that residential properties are ‘high’ sensitivity receptors to dust soiling, while places of work are ‘medium’ sensitivity receptors (Table A3.2 in **ES Volume 3, Appendix: Air Quality – Annex 3**).
- 8.121 There are more than ten residential dwellings and several places of work within 20m of the site boundary (see Figure 8.5).
- 8.122 Table 8.12 shows that the dust emission magnitude for trackout is medium and Table A3.3 in **ES Volume 3, Appendix: Air Quality – Annex 3** thus explains that there is a risk of material being tracked 250m from the site exit. Vehicles will enter/egress the site along Hanover Park.
- 8.123 There are more than ten residential properties within 20m of roads which material could be tracked, and several places of work (see Figure 8.6). In addition, taking account of the phasing of the Proposed Development (see Paragraph 8.40), there will be a number of introduced residential properties within the Proposed Development, that have the potential to be affected by on-site generated dust.

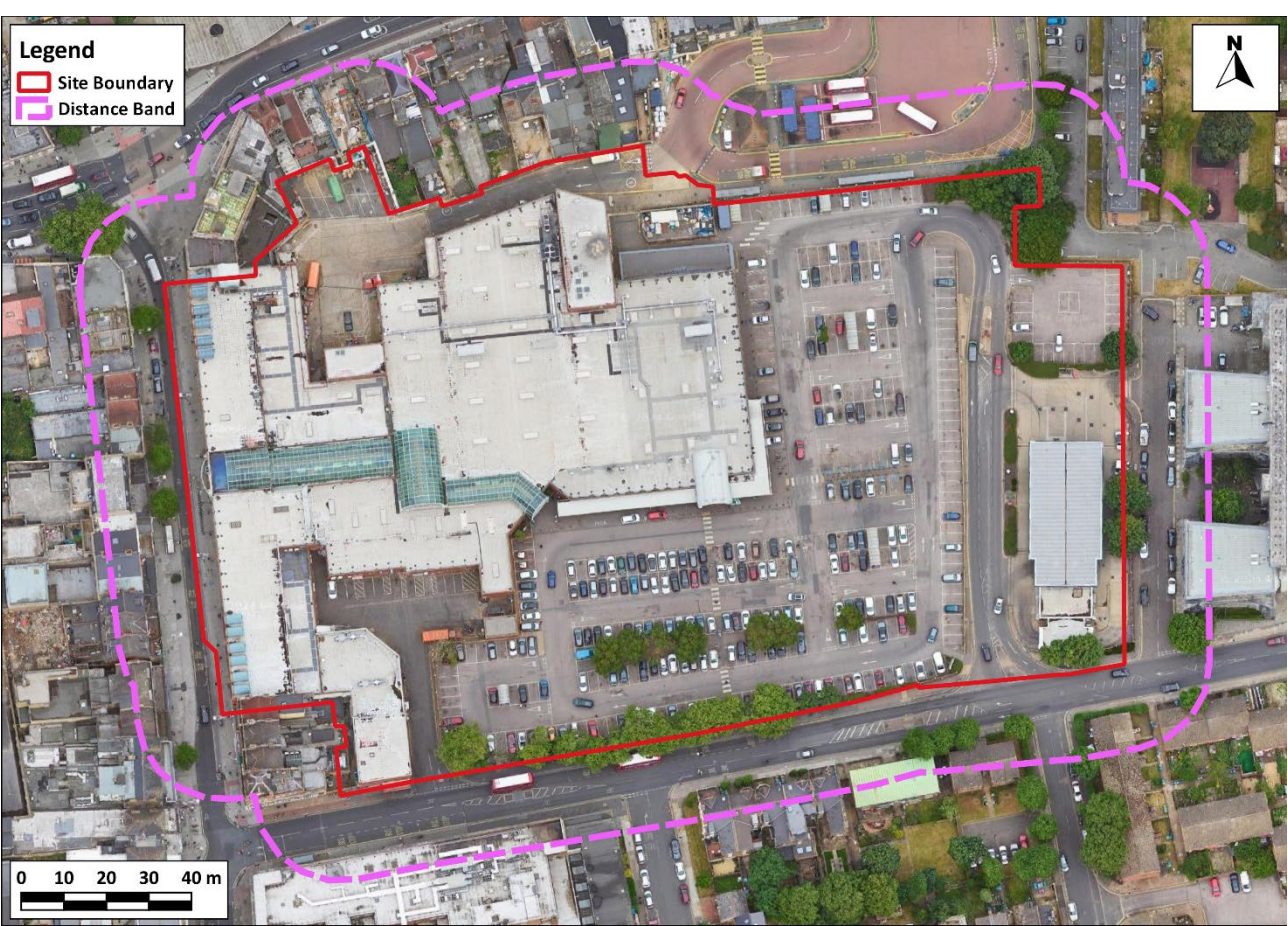
Sensitivity of the Area to Effects from Dust Soiling

- 8.124 Using the information set out in Paragraph 8.121 and Figure 8.5 alongside the matrix set out in Table A3.3 in, **ES Volume 3, Appendix: Air Quality – Annex 3**, the area surrounding the on-site works is of ‘high’ sensitivity to dust soiling. Using the information set out in Paragraph 8.123 and Figure 8.6 alongside the same matrix, the area is also of ‘high’ sensitivity to dust soiling due to trackout.

Sensitivity of the Area to any Human Health Effects

- 8.125 Residential properties are also classified as being of ‘high’ sensitivity to human health effects, while places of work are classified as being of ‘medium’ sensitivity. The matrix in Table A3.4 in **ES Volume 3, Appendix: Air Quality – Annex 3** requires information on the baseline annual mean PM₁₀ concentration in the area. Receptors E1 and E2 in Figure 8.4 are both located adjacent to the site. The predicted baseline PM₁₀ concentration at this receptor in 2022 is 18.3 µg/m³ (see Table 8.9), and this value has been used.
- 8.126 Based on the baseline annual mean PM₁₀ concentration being below 24 µg/m³, and using the information set out in Paragraph 8.121 and Figure 8.5, alongside the matrix in Table A3.4 in **ES Volume 3, Appendix: Air Quality – Annex 3**, the area surrounding the on-site works is of ‘low’ sensitivity to human health effects. Based on the baseline annual mean PM₁₀ concentration being below 24 µg/m³, and using the information set out in Paragraph 8.123 and Figure 8.6 alongside the same matrix the area surrounding roads along which material may be tracked from the site is of ‘low’ sensitivity.

Figure 8.5 20m Distance Bands around On-Site Works



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Sensitivity of the Area to any Ecological Effects

- 8.127 The guidance only considers designated ecological sites within 50m to have the potential to be impacted by the construction works. There are no designated ecological sites within 50 m of the site boundary or those roads along which material may be tracked, thus ecological impacts will not be considered further.

Summary of Area Sensitivity

- 8.128 Table 8.13 summarises the sensitivity of the area around the proposed construction works.

Table 8.13 Summary of the Area Sensitivity

Effects associated with:	Sensitivity of the Surrounding Area	
	On-Site works	Trackout
Dust Soiling	High	High
Human Health	Low	Low

Risk and Significance

- 8.129 The dust emission magnitudes in Table 8.12 have been combined with the sensitivities of the area in Table 8.13 using the matrix in Table A3.6 in **ES Volume 3, Appendix: Air Quality – Annex 3**, in order to assign a risk category to each activity. The resulting risk categories for the four construction activities, without mitigation, are set out in Table 8.14. Regardless of the identified risk categories, to ensure consistency with LBS Technical

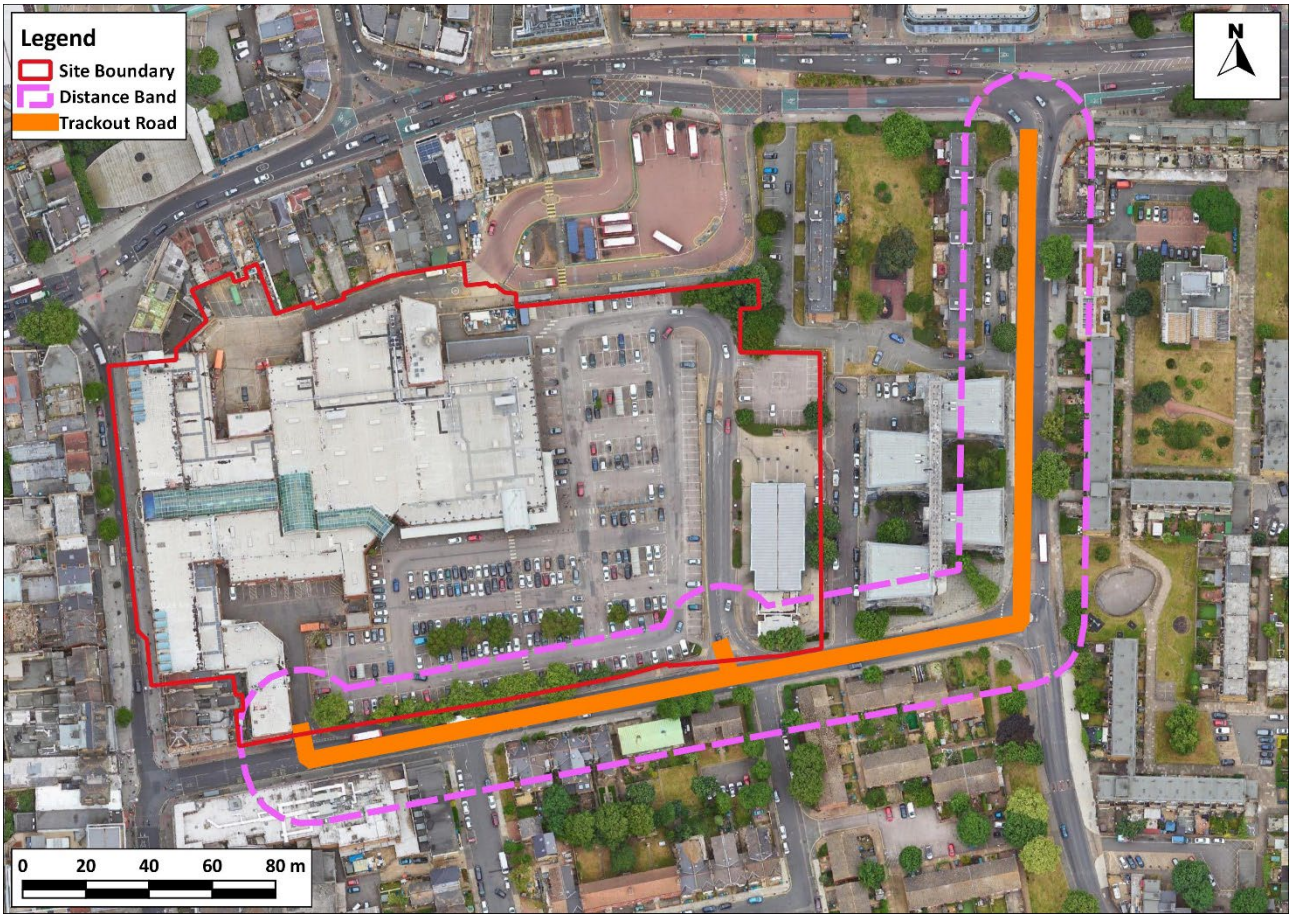
Guidance for Enabling Works and Construction¹ these risk categories have been assumed to ‘High Risk’ at all stages to determine the appropriate level of mitigation as set out in **ES Volume 3, Appendix: Air Quality – Annex 8** (Step 3 of the assessment procedure).

Table 8.14 Summary of Risk of Impacts without Mitigation

Source	Dust Soiling	Human Health
Demolition	High Risk	Medium Risk
Earthworks	Medium Risk	Low Risk
Construction	High Risk	Low Risk
Trackout	Medium Risk	Low Risk

8.130 The IAQM guidance does not provide a method for assessing the significance of effects before mitigation and advises that pre-mitigation significance should not be determined. With appropriate mitigation in place (see **ES Volume 3, Appendix: Air Quality – Annex 8**), the IAQM guidance¹⁷ is clear that the residual effect will be ‘not significant’.

Figure 8.6 20m Distance Bands around Roads Used by Construction Traffic Within 250m of the Site Exit



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Demolition and Construction Traffic

8.131 The trip generation during the peak construction phase (as provided by the project transport consultants, Arup) has initially been compared to the screening criteria set out in the EPUK/IAQM guidance (see **ES Volume 3, Appendix Air Quality – Annex 3**). AADT flows will increase by more than 25 HDVs along Hanover Park, Clayton Road and Peckham High Street, thus a detailed assessment of construction traffic impacts at existing

receptors has been undertaken. On all other roads the change in traffic flows is below the screening criteria and therefore based on the EPUK/IAQM guidance the impacts can be screened out.

8.132 Predicted annual mean concentrations of NO₂, PM₁₀ and PM_{2.5} in 2028 are set out in Table 8.15 to Table 8.18 for both the “Without Construction Traffic” and “With Construction Traffic” scenarios and take account of emissions from the adjacent road network. These tables also describe the impacts at the receptors using the impact descriptors given in Table 8.2.

NO₂

8.133 As shown in Table 8.15 the annual mean NO₂ concentrations are well below the objective at all receptors, with and without construction traffic. Furthermore, as the annual mean NO₂ concentrations are below 60 µg/m³, it is unlikely that the 1-hour mean NO₂ objective will be exceeded.

8.134 The percentage change in concentrations, relative to the air quality objective (when rounded), is predicted to be zero at all receptors. Using the matrix in Table 8.2, this impact is described as Negligible and therefore, the effects are temporary, direct, medium-term ‘not significant’ at the local level.

Table 8.15 Predicted Impacts on Annual Mean NO₂ Concentrations during Construction (µg/m³)

Receptor	Without Construction Traffic	With Construction Traffic	% Change ^a	Impact Descriptor
E1	19.8	19.8	0	Negligible
E2	20.0	20.1	0	Negligible
E3	24.7	24.8	0	Negligible
E4	22.5	22.6	0	Negligible
E5	25.1	25.2	0	Negligible
E6	26.0	26.1	0	Negligible
E7	25.5	25.6	0	Negligible
E8	25.3	25.4	0	Negligible
E9	37.5	37.6	0	Negligible
E10	29.8	29.9	0	Negligible
Objective	40		-	-

^a % changes are relative to the objective and have been rounded to the nearest whole number.

PM₁₀ and PM_{2.5}

8.135 Table 8.16 and Table 8.17 show the annual mean PM₁₀ and PM_{2.5} concentrations are well below the relevant criteria at all receptors, with or without construction traffic. Furthermore, as the annual mean PM₁₀ concentrations are below 32µg/m³, it is unlikely that the 24-hour mean PM₁₀ objective will be exceeded.

8.136 The impacts elsewhere, including at introduced receptors, will be similar to or smaller than identified at these modelled worst-case receptors and thus impacts will be smaller.

8.137 The percentage changes in both PM₁₀ and PM_{2.5} concentrations, relative to the applied annual mean criteria (when rounded), are predicted to be zero. Using the matrix in Table 8.2, these impacts are described as Negligible and therefore the effects are temporary, direct, medium-term ‘not significant’ at the local level.

Table 8.16 Predicted Impacts on Annual Mean PM₁₀ Concentrations during Construction (µg/m³)

Receptor	Without Construction Traffic	With Construction Traffic	% Change ^a	Impact Descriptor
E1	18.3	18.3	0	Negligible
E2	18.3	18.3	0	Negligible
E3	18.8	18.8	0	Negligible
E4	18.5	18.5	0	Negligible
E5	18.8	18.9	0	Negligible
E6	19.0	19.0	0	Negligible
E7	18.9	18.9	0	Negligible
E8	18.9	18.9	0	Negligible
E9	20.6	20.6	0	Negligible
E10	19.5	19.5	0	Negligible
Objective	32 ^b		-	-

^a % changes are relative to the objective and have been rounded to the nearest whole number.

^b While the annual mean PM₁₀ objective is 40 µg/m³, 32 µg/m³ is the annual mean concentration above which an exceedance of the 24-hour mean PM₁₀ objective is possible, as outlined in LAQM.TG22. A value of 32 µg/m³ is thus used as a proxy to determine the likelihood of exceedance of the 24-hour mean PM₁₀ objective, as recommended in EPUK & IAQM guidance¹⁹.

Table 8.17 Predicted Impacts on Annual Mean PM_{2.5} Concentrations during Construction (µg/m³)

Receptor	Without Construction Traffic	With Construction Traffic	% Change ^a	Impact Descriptor
E1	11.9	11.9	0	Negligible
E2	11.9	11.9	0	Negligible
E3	12.1	12.1	0	Negligible
E4	12.0	12.0	0	Negligible
E5	12.2	12.2	0	Negligible
E6	12.2	12.3	0	Negligible
E7	12.2	12.2	0	Negligible
E8	12.2	12.2	0	Negligible
E9	13.1	13.1	0	Negligible
E10	12.5	12.5	0	Negligible
Objective / GLA target	20 ^b		-	-

^a % changes are relative to the objective and have been rounded to the nearest whole number.

^b The 20 µg/m³ PM_{2.5} objective, which is to be met by 2020, is not in Regulations and there is no requirement for local authorities to meet it.

GLA Target for PM_{2.5}

8.138 Table 8.18 presents the same PM_{2.5} concentrations as Table 8.17 but assesses the impacts against the GLA target for this pollutant.

Table 8.18 Assessment of Annual Mean PM_{2.5} Concentrations against the GLA Target (µg/m³)

Receptor	Without Construction Traffic	With Construction Traffic	% Change ^a	Impact Descriptor
E1	11.9	11.9	0	Negligible
E2	11.9	11.9	0	Negligible
E3	12.1	12.1	0	Negligible
E4	12.0	12.0	0	Negligible
E5	12.2	12.2	0	Negligible
E6	12.2	12.3	0	Negligible
E7	12.2	12.2	0	Negligible
E8	12.2	12.2	0	Negligible
E9	13.1	13.1	0	Negligible
E10	12.5	12.5	0	Negligible
Objective / Guideline	10 ^b		-	-

^a % changes are relative to the objective and have been rounded to the nearest whole number.

^b 10 µg/m³ is the GLA target for annual mean PM_{2.5}.

8.139 The modelled annual mean concentrations of PM_{2.5} exceed the GLA target with and without construction traffic. As discussed in Paragraph 8.16, the GLA aims to achieve the GLA target for PM_{2.5} of 10 µg/m³ by 2030. Exceedances of the target are common, and their nationwide achievement is very unlikely to be possible before 2030²⁶. As such, it is unsurprising that there are exceedances for both 'With Construction Traffic' and 'Without Construction Traffic' scenarios. These modelled concentrations are based on the estimated background concentrations presented in Table 8.7, which as noted in paragraph 8.98 is a conservative approach. Notwithstanding, using the matrix in Table 8.2, the impacts are described as Negligible, and therefore the effects are temporary, direct, medium-term 'not significant' at the local level.

Summary of Significance of Air Quality Effects during Demolition and Construction

8.140 The air quality effects during construction are judged to be 'not significant'. This professional judgement is made in accordance with the methodology set out in **ES Volume 3, Appendix Air Quality: Annex 6** and takes account of the assessment that pollutant concentrations at all of the selected worst-case existing receptors along the local road network will be below the air quality objectives, and all of the impacts are predicted to be Negligible.

Completed Development

Completed Development Traffic

8.141 The trip generation of the Proposed Development on local roads (as provided by the project transport consultants, Arup) has initially been compared to the screening criteria set out in the EPUK/IAQM guidance (see **ES Volume 3, Appendix: Air Quality – Annex 4**). The Proposed Development will lead to a substantial decrease in the operational traffic generated, with roads experiencing a decrease of up to approximately 6,000 vehicle movements, as an AADT flow. The only existing road that will experience an increase in HDVs is a section of Hanover Park, between Cerise Road and Cicely Road; the remainder of Hanover Park will experience increases in traffic below the screening criteria, and as such no further assessment is required.

8.142 As previously shown in Table 8.15 to Table 8.17, the predicted concentrations at receptor E2, which is located along that small section of Hanover Park, show that the construction traffic would lead to an increase in annual mean NO₂, PM₁₀ and PM_{2.5} concentrations of less than 0.1 µg/m³. When rounded, these changes represent a 0% increase in concentrations (relative to the annual mean NO₂ and PM₁₀ objectives, and the GLA PM_{2.5} target), and the impacts are considered to be Negligible. As such, it is considered highly unlikely that any of the existing

sensitive receptors along Hanover Park will lead to any exceedances of the objectives and emissions will result to a different impact other than Negligible.

8.143 In addition, one of the new roads within the Proposed Development is anticipated to experience a traffic flow of 2,965 daily vehicle movements. However, this road will lead to an underground car park, to service the replacement supermarket, at a location where no sensitive receptors are expected to be present.

8.144 Using the matrix in Table 8.2, these impacts are described as Negligible and therefore the effects are permanent, direct, long-term 'not significant' at the local level.

Summary of Significance of Air Quality Effects during Operation

8.145 The air quality effects during operation are judged to be '**not significant**'. This professional judgement is made in accordance with the methodology set out in **ES Volume 3, Appendix Air Quality: Annex 6** and takes account of the assessment that pollutant concentrations at all of the selected worst-case existing receptors along the local road network will be below the air quality objectives, and all of the impacts are predicted to be Negligible.

Air Quality Neutral

8.146 The purpose of the London Plan's requirement that development proposals be 'air quality neutral' is to prevent the gradual deterioration of air quality throughout Greater London. The 'air quality neutrality' of a proposed development, as assessed in this section, does not directly indicate the potential of the Proposed Development to have significant effects on human health (this has been assessed separately in the previous section).

8.147 The air quality assessment has been undertaken using the latest GLA's London Plan Guidance (Air Quality Neutral)²⁶.

Building Emissions

8.148 The Proposed Development will be provided with heat and hot water via ASHPs and WSHPs, supplemented with PVs. As such, there will be no associated pollutant emissions and no direct building emissions. It will also include a life-safety generator, however the GLA's Air Quality Neutral guidance states that "*backup plant installed for emergency and life safety power supply, such as diesel generators, may be excluded from the calculation of predicted building emissions.*"

8.149 The Proposed Development is, therefore, better than air quality neutral in terms of building emissions.

Transport Emissions

8.150 The Proposed Development will lead to a significant reduction in on-site car parking spaces, from 353 spaces currently to 152 spaces, 140 of which will be provided for the replacement supermarket and 12 will be provided for the residential element of the scheme. This reduction in car parking spaces will subsequently lead to a substantial reduction in operational traffic, compared to the existing site. The GLA's Air Quality Neutral guidance states that "*Developments, including major developments, that do not include additional emissions sources are assumed to be Air Quality Neutral and to meet the Air Quality Neutral benchmarks. This would include...developments that have no additional motor vehicle parking, do not lead to an increase in motor vehicle movements...*".

8.151 The Proposed Development is, therefore, better than air quality neutral in terms of transport emissions.

Summary

8.152 The Proposed Development will be better than air quality in terms of building and transport emissions.

Air Quality Positive Statement

8.153 AQC has been involved since early in the design process for the Proposed Development and issued Preliminary air quality (**ES Volume 3, Appendix: Air Quality – Annex 9**) advice to inform the design. Air quality constraints, and measures to maximise the benefits to air quality, have been discussed throughout the design period with the Project Team. This has resulted in the current design which is the focus of this assessment. The design measures included within the Proposed Development, and their benefits in terms of air quality and exposure to air pollution, are summarised in the Air Quality Positive Statement, which is provided in **ES Volume 3, Appendix: Air Quality – Annex 7**. A summary of these measures is as follows:

- The energy strategy for the Proposed Development will comprise an all-electric system consisting of ASHPs, WSHPs and PVs. High energy efficiency building fabric will be utilised to reduce carbon emissions and energy demand; and
- Cycle access and parking will be provided that meets the requirements of Policy T5 of the London Plan;
- The Proposed Development will be 'car-free' when considering the residential aspect of the development, to discourage the use of private vehicles to access the site and to encourage the use of local public transport;
- The site achieves a Public Transport Accessibility (PTAL) score of 6b, with excellent access to public transport, aiding to reduce reliance on private transport modes; and
- The site will incorporate electric vehicle (EV) charging infrastructure, to be compliant with the London Plan Policy T6 which requires a minimum of 20% of all spaces allocated having provision for active charging, with all remaining spaces having passive provision.

MITIGATION, MONITORING AND RESIDUAL EFFECTS

Demolition and Construction Mitigation

8.154 Measures to mitigate dust emissions will be required during the demolition and construction works of the Proposed Development in order to minimise effects upon nearby sensitive receptors.

8.155 As discussed in Paragraph 8.27, the Council's Technical Guidance for Enabling works and Construction¹ requires all major developments to implement mitigation measures commensurate with a high risk site. The GLA's SPG on The Control of Dust and Emissions During Construction and Enabling works describes measures that should be employed, as appropriate, to reduce the impacts, along with guidance on what monitoring should be undertaken during the construction phase. This reflects best practice experience and has been used to draw up a set of measures that should be incorporated into the specification for the works. These measures are described in **ES Volume 3, Appendix: Air Quality – Annex 9** and detailed within **ES Volume 1, Chapter 17: Environmental Management, Mitigation and Monitoring Schedule**.

8.156 The mitigation measures will be included in a dust management plan (DMP). The DMP is likely to be integrated into a Code of Construction Practice and/or the CEMP, require monitoring, and be secured by a suitably worded planning condition / planning obligation.

8.157 Where mitigation measures rely on water, it is expected that only sufficient water will be applied to damp down the material. There will not be any excessive use of water.

8.158 Assuming that the mitigation measures outlined within the guidance are implemented, the overall effect of construction dust is considered to be '**not significant**'.

8.159 Additionally, the assessment has demonstrated that the overall effect of emissions from the demolition and construction vehicles generated by the Proposed Development will be 'not significant'. It is, therefore, not considered necessary to propose further mitigation measures with regards to the demolition and construction traffic emissions.

Completed Development Mitigation

- 8.160** The assessment has demonstrated that the Proposed Development will not cause any exceedances of the air quality objectives and that the overall air quality effect of the Proposed Development will be ‘not significant’. As such, there is no requirement for mitigation beyond the best practice design measures highlighted in the Air Quality Positive statement.
- 8.161** Measures to reduce pollutant emissions from road traffic are principally being delivered in the longer term by the introduction of more stringent emissions standards, largely via European legislation (which is written into UK law), and through encouragement to accelerate the take up of low emission vehicles, for example through the ULEZ.

Residual Effects

- 8.162** All of the residual effects resulting from the Proposed Development are presented in Table 8.19, identifying whether the effect is significant or not.

Table 8.19 Residual Effects

Receptor	Description of the Residual Effect	Scale and Nature	Significant / Not Significant	Geo	D I	P T	St Mt Lt
Demolition and Construction							
Existing Receptors	Demolition and Construction Dust	Negligible	Not Significant	L	D	T	Mt
	Road traffic emissions	Negligible	Not Significant	L	D	T	Mt
Proposed Receptors	Road traffic emissions	Negligible	Not Significant	L	D	T	Mt
Completed Development							
Existing Receptors	Road traffic and plant emissions	Negligible	Not Significant	L	D	P	Lt
Proposed Receptors	Road traffic and plant emissions	Negligible	Not Significant	L	D	P	Lt
Notes: Residual Effect - Scale = Negligible / Minor / Moderate / Major - Nature = Beneficial or Adverse Geo (Geographic Extent) = Local (L), Borough (B), Regional I, National (N) D = Direct / I = Indirect P = Permanent / T = Temporary St = Short Term / Mt = Medium Term / Lt = Long Term N/A = not applicable / not assessed							

SITE SUITABILITY

- 8.163** The site is bounded by Peckham Bus Station, commercial and residential properties to the north, Mckerell Road and residential properties to the east, Hanover Park, commercial and residential properties to the south and Rye Lane and commercial units to the west.
- 8.164** The residential units within the Proposed Development represent locations of relevant exposure to the annual mean and 24-hour mean air quality objectives, whereas the retail and public realm spaces are considered to represent relevant exposure to the 1-hour mean NO₂ objective. Offices and places of work do not represent relevant exposure to the national air quality objectives.
- 8.165** As shown in Table 8.3, measured annual mean NO₂ concentrations at roadside monitoring site SDT93, located on the opposite side of Hanover Park to the Proposed Development, have remained below the relevant

objective since 2019. In addition, concentrations measured at all the diffusion tube monitoring sites included in the three-month monitoring survey undertaken in 2022 were below the objective. Sites DT5 and DT6 were located within 0.5 m of the kerbside of Hanover Park, whereas the closest proposed façade (in Block H) to Hanover Park is approximately 8.5m away, with ground-floor level of relevant exposure; as such, it can be expected that concentrations at the buildings’ façades will be much lower than those measured at the monitoring sites by the time that the buildings are occupied.

- 8.166** The closest building façade (in Building L) of the Proposed Development to the Peckham Bus Station is approximately 7.5m away, compared to the monitoring sites DT2, DT3 and DT4 that are located 4.5m away. The ground floor and first floor levels of the north side of Building L, facing the bus station, are occupied by office floorspace, which is not a relevant sensitive receptor to the air quality objectives, and the residential units are located at second floor level and above. Taking into consideration that the three monitoring sites measured concentrations below the annual mean NO₂ objective, it is considered highly unlikely that there will be any exceedances of the objectives at the façades of the Proposed Development buildings overlooking Peckham Bus Station.
- 8.167** Furthermore, as shown in Table 8.15 to Table 8.17, the predicted concentrations, from the construction traffic emissions, for NO₂, PM₁₀ and PM_{2.5} for the existing receptors along Hanover Park (E1 to E4) are all well below the objectives, with impacts considered as Negligible. As the proposed façades of the buildings within the Proposed Development, facing Hanover Park, are at similar distances to the road as the existing receptors, it can be anticipated that the construction traffic concentrations for the future residents and users of the Proposed Development will also be below the relevant objectives, and the impacts anticipated to also be Negligible.
- 8.168** Measures to reduce pollutant emissions from road traffic are principally being delivered in the longer term by the introduction of more stringent emissions standards, largely via European legislation (which is written into UK law), as well as the implementation of the Low Emission Zone (LEZ) and Ultra Low Emission Zone (ULEZ), and the implementation of the London Environment Strategy⁴². Air quality is expected to continue to improve into the future and concentrations at the Proposed Development site are expected to be below the objectives by the anticipated opening year.

ASSESSMENT OF THE FUTURE ENVIRONMENT

Evolution of the Baseline Scenario

- 8.169** If the Proposed Development were not to come forward, it is expected that the site would remain in its current state. Air quality is generally expected to improve with time, particularly through the introduction of more stringent vehicle emissions standards. Air quality conditions at the site would therefore be expected to improve.

Cumulative Effects Assessment

- 8.170** Cumulative schemes have been outlined in **ES Volume 1, Chapter 2: EIA Methodology**.

Demolition and Construction

- 8.171** The IAQM guidance²¹ (upon which the GLA’s guidance²⁰ is based) is clear that, with appropriate mitigation measures in place, any residual dust effects from an individual site will be ‘not significant’. The guidance also suggests that cumulative construction dust impacts are only likely where sites are within 250m of each other. Work would also have to be taking place in areas of both sites that are close to a receptor in order for cumulative effects to occur.
- 8.172** In accordance with the mitigation measures set out in **ES Volume 3, Appendix: Air Quality – Annex 8**, if there is concurrent construction work on sites within 250m of each other, the construction contractors should “hold

⁴² GLA (2018) London Environment Strategy. Available at: <https://www.london.gov.uk/programmes-and-strategies/environment-and-climate-change/london-environment-strategy>

regular liaison meetings with other high risk construction sites within 250 m of the site boundary, to ensure plans are co-ordinated and dust and particulate matter emissions are minimised”.

8.173 Of the cumulative schemes identified within **ES Volume 3, Appendix: EIA Methodology – Annex 1**, one is located within 250m of the site. Notwithstanding, it is anticipated that all construction sites will adopt appropriate mitigation measures to limit emissions of dust, will hold the liaison meetings recommended above and will ensure that plans are co-ordinated to minimise impacts upon the most sensitive receptors. With these measures in place, the cumulative effect of construction activities, based on professional opinion, is likely to be not significant.

Completed Development

8.174 As discussed in **ES Volume 1, Chapter 7: Traffic and Transport**, the identified cumulative schemes (**ES Volume 1, Chapter 2: EIA Methodology – Annex 1**) would have a negligible impact on the traffic flows. As such, predictions of future pollutant concentrations presented in this chapter are representative of both the proposed and cumulative scenarios.

8.175 As stated in Paragraphs 8.141 to 8.144, the traffic generated by the Proposed Development is below published screening criteria set out in the EPUK/IAQM guidance¹⁹, with a substantial reduction in vehicle trips along the majority of the affected road network, with the exception of a small section along Hanover Park. Taking into consideration the reduction in traffic flows, it is judged that the cumulative effects of the development-generated road traffic emissions will be ‘**not significant**’.

LIKELY SIGNIFICANT EFFECTS

8.176 The demolition and construction works have the potential to create dust. During these works it will therefore be necessary to apply a package of mitigation measures to minimise dust emissions. Appropriate measures have been identified and recommended in **ES Volume 3, Appendix: Air Quality – Annex 8**; with these measures in place, it is expected that any residual effects will be ‘not significant’.

8.177 The assessment has also shown that the effects of emissions from construction vehicles on local air quality will be ‘not significant’.

8.178 The operation of the Proposed Development is not predicted to result in any significant effects at existing receptors considered within this assessment in relation to air quality in terms of NO₂, PM₁₀ and PM_{2.5} (when assessed against national air quality objectives and the GLA target for PM_{2.5}). In addition, the assessment has demonstrated that air quality for future users of the Proposed Development will also be acceptable.

8.179 Significant cumulative air quality effects are also not likely.