Air Quality Assessment

Battersea Park Road, Wandsworth

Client: Watkin Jones Group

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Executive Summary

Redmore Environmental Ltd was commissioned by Watkin Jones Group to undertake an Air Quality Assessment in support of a mixed-use development at 41-49 and 49-59 Battersea Park Road, Wandsworth.

The proposals comprise an application for Phased Full Planning Permission for: Demolition of existing building and construction of three new buildings, together comprising Residential (Use Class C3) and Student Accommodation (Sui Generis) along with Commercial, Business and Service (Use Class E) and/or Local Community and Learning (Class F) floorspace. Associated works include hard and soft landscaping, car parking and new vehicular access/servicing, and other ancillary works.

The development may lead to the exposure of future occupants to elevated pollutant levels, as well as adverse impacts at sensitive locations. As such, an Air Quality Assessment was undertaken to determine baseline conditions at the site, consider its suitability for the proposed end-use and assess potential effects associated with the scheme.

Potential construction phase air quality impacts from fugitive dust emissions were assessed as a result of demolition, earthworks, construction and trackout activities. It is considered that the use of good practice control measures would provide suitable mitigation for a development of this size and nature and reduce potential impacts to an acceptable level.

During the operational phase of the development there is the potential for the exposure of future occupants to elevated pollution levels. Dispersion modelling was therefore undertaken in order to predict concentrations across the site as a result of emissions from the highway network. Results were subsequently verified using local monitoring data.

The results of the assessment demonstrated that predicted pollutant levels were below the relevant criteria across the development. As such, the site is considered suitable for the proposed end-use from an air quality perspective.

During the operational phase of the development there is the potential for air quality impacts as a result of traffic exhaust emissions associated with vehicles travelling to and from the site. These were assessed using standard screening criteria. This indicated that impacts are not likely to be significant due to the size and nature of the scheme.

Potential emissions from the proposals were assessed in order to determine compliance with the air quality neutral requirements of the London Plan. The plant to be installed as part of the building energy strategy does not produce emissions to atmosphere. Additionally, the scheme is classified as 'car-free'. As such, the development was considered to be air quality neutral.

Based on the assessment results, air quality factors are not considered a constraint to the development.

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1.0 INTRODUCTION

1.1 Background

1.1.1 Redmore Environmental Ltd was commissioned by Watkin Jones Group to undertake an Air Quality Assessment in support of a mixed-use development at 41-49 and 49-59 Battersea Park Road, Wandsworth.

1.1.2 The development may lead to the exposure of future occupants to elevated pollutant levels, as well as adverse impacts at sensitive locations. As such, an Air Quality Assessment was undertaken to determine baseline conditions at the site, consider its suitability for the proposed end-use and assess potential effects associated with the scheme.

1.2 Site Location and Context

1.2.1 The site is occupied by the former Bookers Cash and Carry and former BMW Car Service Garage at 41-49 and 49-59 Battersea Park Road, Wandsworth, at approximate National Grid Reference (NGR): 529305, 177261. Reference should be made to Figure 1 for a site location plan.

1.2.2 The proposals comprise an application for Phased Full Planning Permission for: Demolition of existing building and construction of three new buildings, together comprising Residential (Use Class C3) and Student Accommodation (Sui Generis) along with Commercial, Business and Service (Use Class E) and/or Local Community and Learning (Class F) floorspace. Associated works include hard and soft landscaping, car parking and new vehicular access/servicing, and other ancillary works.

1.2.3 An Air Quality Management Area (AQMA) has been declared by the London Borough of Wandsworth (LBoW) due to exceedences of the Air Quality Objectives (AQOs) for annual mean concentrations of nitrogen dioxide (NO_2) and 24-hour mean concentrations of particulate matter with an aerodynamic diameter of less than 10µm (PM_{10}). The development is located within the AQMA. As such, there is the potential for exposure of future occupants to elevated pollutant levels. An Air Quality Assessment was therefore undertaken in order to determine baseline conditions, consider site suitability for the proposed end-use and define any requirement for mitigation. Potential impacts

associated with the construction and operation of the scheme have also been assessed using standard screening methodologies. This is detailed in the following report.

2.0 LEGISLATION AND POLICY

2.1 Legislation

2.1.1 The Air Quality Standards Regulations (2010) and subsequent amendments include Air Quality Limit Values (AQLVs) for the following pollutants:

- NO_2;
- Sulphur dioxide;
- Lead;
- PM_{10};
- Particulate matter with an aerodynamic diameter of less than 2.5µm ($PM_{2.5}$);
- Benzene; and,
- Carbon monoxide.

2.1.2 Air Quality Target Values have also been provided for several additional pollutants. It should be noted that the AQLV for $PM_{2.5}$ stated in the Air Quality Standards Regulations (2010) was amended in the Environment (Miscellaneous Amendments) (EU Exit) Regulations (2020).

2.1.3 The Air Quality Strategy (AQS) was produced by the Department for Environment, Food and Rural Affairs (DEFRA) and published ON 28TH April 2023[1]. The document contains standards, objectives and measures for improving ambient air quality, including a number of AQOs. These are maximum ambient pollutant concentrations that are not to be exceeded either without exception or with a permitted number of exceedences over a specified timescale. These are generally in line with the AQLVs, although the requirements for the determination of compliance vary.

2.1.4 The Environmental Improvement Plan 2023[2] was published in January 2023, providing long term and Interim Targets in order to reduce population exposure to $PM_{2.5}$. The concentration target for 2040 was subsequently adopted in the Environmental Targets (Fine Particulate Matter) (England) Regulations (2023).

[1] The AQS: Framework for Local Authority Delivery, DEFRA, 2023.

[2] The Environmental Improvement Plan 2023, DEFRA, 2023.

2.1.5 Table 1 presents the AQOs, AQLVs and Interim Target for pollutants considered within this assessment.

Table 1 Air Quality Objective/Air Quality Limit Values/Interim Target

Pollutant	Air Quality Objective/ Interim Target	
	Concentration (µg/m³)	Averaging Period
NO_2	40	Annual mean
	200	1-hour mean, not to be exceeded on more than 18 occasions per annum
PM_{10}	40	Annual mean
	50	24-hour mean, not to be exceeded on more than 35 occasions per annum
$PM_{2.5}$	20(a)	Annual mean
	12(b)	Annual mean

Note: (a) Current AQLV.

(b) Interim Target of 12µg/m³ to be achieved by end of January 2028.

2.1.6 Table 2 summarises the advice provided in the Greater London Authority (GLA) guidance[3] on where the AQOs for pollutants considered within this report apply.

Table 2 Examples of Where the Air Quality Objectives Apply

Averaging Period	Objective Should Apply At	Objective Should Not Apply At
Annual mean	All locations where members of the public might be regularly exposed Building façades of residential properties, schools (including all of playgrounds), hospitals (and their grounds), care homes (and their grounds) etc.	Building façades of offices or other places of work where members of the public do not have regular access Hotels, unless people live there as their permanent residence Gardens of residential properties Kerbside sites (as opposed to locations at the building façade), or any other location where public exposure is expected to be short term

3 London Local Air Quality Management (TG19), Technical Guidance 2019 (LLAQM.TG (2019)), GLA, 2019.

Averaging Period	Objective Should Apply At	Objective Should Not Apply At
24-hour mean	All locations where the annual mean objective would apply, together with hotels Gardens of residential properties	Kerbside sites (as opposed to locations at the building façade), or any other location where public exposure is expected to be short term
1-hour mean	All locations where the annual mean and 24 and 8-hour mean objectives apply. Kerbside sites (for example, pavements of busy shopping streets) Those parts of car parks, bus stations and railway stations etc which are not fully enclosed, where members of the public might reasonably be expected to spend one hour or more Any outdoor locations where members of the public might reasonably be expected to spend one hour or longer	Kerbside sites where the public would not be expected to have regular access

2.2 Local Air Quality Management

2.2.1 Local Authorities (LAs) are required to periodically review and assess air quality within their area of jurisdiction under the system of Local Air Quality Management (LAQM). This review and assessment of air quality involves comparing present and likely future pollutant concentrations against the AQOs. If it is predicted that levels at locations of relevant exposure, as summarised in Table 2, are likely to be exceeded, the LA is required to declare an AQMA. For each AQMA the LA is required to produce an Air Quality Action Plan, the objective of which is to reduce pollutant concentrations in pursuit of the AQOs.

2.3 Dust

2.3.1 The main requirements with respect to dust control from industrial or trade premises not regulated under the Environmental Permitting (England and Wales) Regulations (2016) and subsequent amendments, such as construction sites, is that provided in Section 79 of Part III of the Environmental Protection Act (1990). The Act defines nuisance as:

> "any dust, steam, smell or other effluvia arising on industrial, trade or business premises and being prejudicial to health or a nuisance."

2.3.2 Enforcement of the Act, in regard to nuisance, is currently under the jurisdiction of the local Environmental Health Department, whose officers are deemed to provide an independent evaluation of nuisance. If the LA is satisfied that a statutory nuisance exists, or is likely to occur or happen again, it must serve an Abatement Notice under Part III of the Environmental Protection Act (1990). The only defence is to show that the process to which the nuisance has been attributed and its operation are being controlled according to best practicable means.

2.4 National Planning Policy

2.4.1 The revised National Planning Policy Framework[4] (NPPF) was published in December 2023 and sets out the Government's planning policies for England and how these are expected to be applied.

2.4.2 The purpose of the planning system is to contribute to the achievements of sustainable development. In order to ensure this, the NPPF recognises three overarching objectives including the following of relevance to air quality:

> "c) an environmental objective - to protect and enhance our natural, built and historic environment; including making effective use of land, improving biodiversity, using natural resources prudently, minimising waste and pollution, and mitigating and adapting to climate change, including moving to a low carbon economy."

2.4.3 Chapter 15 of the NPPF details objectives in relation to conserving and enhancing the natural environment. It states that:

> "Planning policies and decisions should contribute to and enhance the natural and local environment by:
>
> […]
>
> preventing new and existing development from contributing to, or being put at unacceptable risk from, or being adversely affected by, unacceptable levels of

[4] NPPF, Ministry of Housing, Communities and Local Government, 2023.

soil, air, water or noise pollution or land instability. Development should, wherever possible, help to improve local environmental conditions such as air and water quality […]."

2.4.4 The NPPF specifically recognises air quality as part of delivering sustainable development and states that:

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

2.4.5 The implications of the NPPF have been considered throughout this assessment.

2.5 National Planning Practice Guidance

2.5.1 The National Planning Practice Guidance[5] (NPPG) web-based resource was launched by the Department for Communities and Local Government on 6th March 2014 and updated on 1st November 2019 to support the NPPF and make it more accessible. The air quality pages are summarised under the following headings:

1. What air quality considerations does planning need to address?
2. What is the role of plan-making with regard to air quality?
3. Are air quality concerns relevant to neighbourhood planning?
4. What information is available about air quality?
5. When could air quality considerations be relevant to the development management process?

[5] https://www.gov.uk/guidance/air-quality--3.

6. What specific issues may need to be considered when assessing air quality impacts?
7. How detailed does an air quality assessment need to be?
8. How can an impact on air quality be mitigated?

2.5.2 These were reviewed and the relevant guidance considered as necessary throughout the undertaking of this assessment.

2.6 Local Planning Policy

The London Plan

2.6.1 The London Plan 2021[6] is the Spatial Development Strategy for Greater London. It sets out a framework for how London will develop over the next 20-25 years and the Mayor's vision for Good Growth. Review of this document indicated the following of relevance to this report:

> "Policy SI 1 - Improving Air Quality
>
> A. Development plans, through relevant strategic, site specific and area-based policies should seek opportunities to identify and deliver further improvements to air quality and should not reduce air quality benefits that result from the Mayor's or boroughs' activities to improve air quality.
>
> B. To tackle poor air quality, protect health and meet legal obligations the following criteria should be addressed.
>
> 1. Development proposals should not:
> a) lead to further deterioration of existing poor air quality
> b) create any new areas that exceed air quality limits, or delay the date at which compliance will be achieved in areas that are currently in exceedence of legal limits
> c) create unacceptable risk of high levels of exposure to poor air quality.
>
> 2. In order to meet the requirements of Part 1, as a minimum:

[6] The London Plan March 2021, GLA, 2021.

a) development proposals must be at least Air Quality Neutral
b) development proposals should use design solutions to prevent or minimise increased exposure to existing air pollution and make provision to address local problems of air quality in preference to post-design or retro-fitted mitigation measures.
c) major development proposals must be submitted with an Air Quality Assessment. Air quality assessments should show how the development will meet the requirements of B1
d) development proposals in Air Quality Focus Areas or that are likely to be used by large numbers of people particularly vulnerable to poor air quality, such as children or older people, should demonstrate that design measures have been used to minimise exposure.

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

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

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

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

equivalent air quality benefits can be demonstrated within the area affected by the development."

2.6.2 The requirements of these policies have been considered throughout this Air Quality Assessment.

Local Plan

2.6.3 The LBoW Local Plan 2023-2038[7] was adopted in July 2023 and sets out the vision, objectives and related strategic policies for the borough. A review of the document indicated the following policy in relation to air quality:

"LP2 General development Principles (Strategic Policy)

[…]

B. development proposals must not adversely impact the amenity of existing and future occupiers or that of neighbouring properties, or prevent the proper operation of the uses proposed or of neighbouring uses. Proposals will be supported where the development:

[…]

5. Would not lead to detrimental effects on the health, safety and the amenity of occupiers/users of nearby properties through unacceptable noise, vibration, traffic congestion, air pollution, light pollution, land contamination, disturbances during construction and demolition, in accordance with Policy LP14.

[…]."

"Policy LP14 - Air Quality, Pollution and Managing Impacts of Development

A. The Council will seek to ensure that the local environmental impacts of all development proposals do not lead to detrimental effects on the health, safety

7 Wandsworth Local Plan 2023-2038, LBoW, 2023.

and amenity of existing and new users or occupiers of the development site, or the surrounding land. These impacts include, but are not limited to, air pollution, noise and vibration, light pollution, odours and fumes, solar glare and solar dazzle, and land contamination.

B. Planning applicants should have regard to any guidance provided by the Council on local environmental impacts and pollution as well as on noise generating and noise sensitive development. Where necessary, the Council will apply planning conditions to ensure that local environmental impacts on adjacent land uses are maintained to acceptable levels.

Air Quality

C. The Council will support developments which incorporate 'air quality positive' design and the use of new technologies. Development proposals must be at least 'Air Quality Neutral', and should not contribute to worsening of air quality during the construction or operation stage, in accordance with Policy SI1 of the London Plan.

D. In order to assess the appropriateness of introducing new developments in areas already subject to poor air quality, the following will be required:

1. An air quality impact assessment, supported by modelled data, where necessary.

2. Mitigation measures which are demonstrated to be effective in reducing the development's impact on air quality, including the type of equipment to be installed, the provision of thermal insulation and ducting abatement technology.

3. Measures and appropriate design solutions which would protect the occupiers and users of new developments, and in particular vulnerable people, including children and the elderly, from existing sources.

4. The provision of demonstrably effective mitigation measures for developments intended to accommodate sensitive receptors or close to sites used by sensitive

receptors such as schools, hospitals, and care homes where these are located in areas of existing poor air quality."

2.6.4 The above policies were considered throughout the assessment as necessary.

3.0 METHODOLOGY

3.1 Introduction

3.1.1 The development may lead to the exposure of future occupants to elevated pollutant levels, as well as adverse impacts at sensitive locations. These issues were assessed in accordance with the following methodology, which was agreed with Maria Vaz, Environmental Protection Officer at LBoW, on 14th February 2022.

3.2 Construction Phase Assessment

3.2.1 There is the potential for fugitive dust emissions to occur as a result of construction phase activities. These have been assessed in accordance with the methodology outlined within the Mayor of London's 'The Control of Dust and Emissions during Construction and Demolition Supplementary Planning Guidance'[8].

3.2.2 Activities on the proposed construction site have been divided into four types to reflect their different potential impacts. These are:

- Demolition;
- Earthworks;
- Construction; and,
- Trackout.

3.2.3 The potential for dust emissions was assessed for each activity that is likely to take place and considered three separate dust effects:

- Annoyance due to dust soiling;
- Harm to ecological receptors; and,
- The risk of health effects due to a significant increase in exposure to PM_{10}.

3.2.4 The assessment steps are detailed below.

[8] The Control of Dust and Emissions During Construction and Demolition Supplementary Planning Guidance, The Mayor of London, 2014.

Step 1

3.2.5 Step 1 screens the requirement for a more detailed assessment. Should human receptors be identified within 350m from the boundary or 50m from the construction vehicle route up to 500m from the site entrance, then the assessment proceeds to Step 2. Additionally, should ecological receptors be identified within 50m of the site or the construction vehicle route up to 500m from the site entrance, then the assessment also proceeds to Step 2.

3.2.6 Should sensitive receptors not be present within the relevant distances then **negligible** impacts would be expected and further assessment is not necessary.

Step 2

3.2.7 Step 2 assesses the risk of potential dust impacts. A site is allocated a risk category based on two factors:

- The scale and nature of the works, which determines the magnitude of dust arising as: small, medium or large (Step 2A); and,
- The sensitivity of the area to dust impacts, which can be defined as low, medium or high sensitivity (Step 2B).

3.2.8 The two factors are combined in Step 2C to determine the risk of dust impacts without mitigation applied.

3.2.9 Step 2A defines the potential magnitude of dust emission through the construction phase. The relevant criteria are summarised in Table 3.

Table 3 Construction Dust - Magnitude of Emission

Magnitude	Activity	Criteria
Large	Demolition	• Total volume of building to be demolished greater than 50,000m^3 • Potentially dusty material (e.g. concrete) • On-site crushing and screening • Demolition activities more than 20m above ground level

Magnitude	Activity	Criteria
	Earthworks	• Total site area greater than 10,000m^2 • Potentially dusty soil type (e.g. clay, which will be prone to suspension when dry due to small particle size) • More than 10 heavy earth moving vehicles active at any one time • Formation of bunds greater than 8m in height • More than 100,000 tonnes of material moved
	Construction	• Total building volume greater than 100,000m^3 • On site concrete batching • Sandblasting
	Trackout	• More than 50 Heavy Duty Vehicle (HDV) trips per day • Potentially dusty surface material (e.g. high clay content) • Unpaved road length greater than 100m
Medium	Demolition	• Total volume of building to be demolished between 20,000m^3 and 50,000m^3 • Potentially dusty construction material • Demolition activities 10m to 20m above ground level
	Earthworks	• Total site area 2,500m^2 to 10,000m^2 • Moderately dusty soil type (e.g. silt) • 5 to 10 heavy earth moving vehicles active at any one time • Formation of bunds 4m to 8m in height • Total material moved 20,000 tonnes to 100,000 tonnes
	Construction	• Total building volume 25,000m^3 to 100,000m^3 • Potentially dusty construction material (e.g. concrete) • On site concrete batching
	Trackout	• 10 to 50 HDV trips per day • Moderately dusty surface material (e.g. high clay content) • Unpaved road length 50m to 100m
Small	Demolition	• Total volume of building to be demolished less than 20,000m^3 • Construction material with low potential for dust release (e.g. metal cladding or timber) • Demolition activities less than 10m above ground and during wetter months

Magnitude	Activity	Criteria
	Earthworks	• Total site area less than 2,500m^2 • Soil type with large grain size (e.g. sand) • Less than 5 heavy earth moving vehicles active at any one time • Formation of bunds less than 4m in height • Total material moved less than 20,000 tonnes • Earthworks during wetter months
	Construction	• Total building volume less than 25,000m^3 • Construction material with low potential for dust release (e.g. metal cladding or timber)
	Trackout	• Less than 10 HDV trips per day • Surface material with low potential for dust release • Unpaved road length less than 50m

3.2.10 Step 2B defines the sensitivity of the area around the development to potential dust impacts. The influencing factors are shown in Table 4.

Table 4 Construction Dust - Examples of Factors Defining Sensitivity of an Area

Receptor Sensitivity	Examples	
	Human Receptors	Ecological Receptors
High	• Users expect high levels of amenity • High aesthetic or value property • People expected to be present continuously for extended periods of time • Locations where members of the public are exposed over a time period relevant to the AQO for PM_{10}. e.g. residential properties, hospitals, schools and residential care homes	• Internationally or nationally designated site e.g. Special Area of Conservation
Medium	• Users would expect to enjoy a reasonable level of amenity • Aesthetics or value of their property could be diminished by soiling • People or property wouldn't reasonably be expected to be present here continuously or regularly for extended periods as part of the normal pattern of use of the land e.g. parks and places of work	• Nationally designated site e.g. Sites of Special Scientific Interest

Receptor Sensitivity	Examples	
	Human Receptors	Ecological Receptors
Low	• Enjoyment of amenity would not reasonably be expected • Property would not be expected to be diminished in appearance • Transient exposure, where people would only be expected to be present for limited periods. e.g. public footpaths, playing fields, shopping streets, farmland, short term car parks and roads	• Locally designated site e.g. Local Nature Reserve

3.2.11 The guidance also provides the following factors to consider when determining the sensitivity of an area to potential dust impacts:

- Any history of dust generating activities in the area;
- The likelihood of concurrent dust generating activity on nearby sites;
- Any pre-existing screening between the source and receptors;
- Any conclusions drawn from analysing local meteorological data which accurately represent the area; and if relevant the season during which works will take place;
- Any conclusions drawn from local topography;
- Duration of the potential impact, as a receptor may become more sensitive over time; and,
- Any known specific receptor sensitivities which go beyond the classifications given in the document.

3.2.12 These factors were considered in the undertaking of this assessment.

3.2.13 The criteria for determining the sensitivity of the area to dust soiling effects on people and property is summarised in Table 5.

Table 5 Construction Dust - Sensitivity of the Area to Dust Soiling Effects on People and Property

Receptor Sensitivity	Number of Receptors	Distance from the Source (m)			
		Less than 20	Less than 50	Less than 100	Less than 350
High	More than 100	High	High	Medium	Low
	10 - 100	High	Medium	Low	Low

Receptor Sensitivity	Number of Receptors	Distance from the Source (m)			
		Less than 20	Less than 50	Less than 100	Less than 350
	1 - 10	Medium	Low	Low	Low
Medium	More than 1	Medium	Low	Low	Low
Low	More than 1	Low	Low	Low	Low

3.2.14 Table 6 outlines the criteria for determining the sensitivity of the area to human health impacts.

Table 6 Construction Dust - Sensitivity of the Area to Human Health Impacts

Receptor Sensitivity	Background Annual Mean PM_{10} Concentration	Number of Receptors	Distance from the Source (m)				
			Less than 20	Less than 50	Less than 100	Less than 200	Less than 350
High	Greater than 32µg/m^3	More than 100	High	High	High	Medium	Low
		10 - 100	High	High	Medium	Low	Low
		1 - 10	High	Medium	Low	Low	Low
	28 - 32µg/m^3	More than 100	High	High	Medium	Low	Low
		10 - 100	High	Medium	Low	Low	Low
		1 - 10	High	Medium	Low	Low	Low
	24 - 28µg/m^3	More than 100	High	Medium	Low	Low	Low
		10 - 100	High	Medium	Low	Low	Low
		1 - 10	Medium	Low	Low	Low	Low
	Less than 24µg/m^3	More than 100	Medium	Low	Low	Low	Low
		10 - 100	Low	Low	Low	Low	Low
		1 - 10	Low	Low	Low	Low	Low
Medium	Greater than 32µg/m^3	More than 10	High	Medium	Low	Low	Low
		1 - 10	Medium	Low	Low	Low	Low

Receptor Sensitivity	Background Annual Mean PM_{10} Concentration	Number of Receptors	Distance from the Source (m)				
			Less than 20	Less than 50	Less than 100	Less than 200	Less than 350
	28 - 32µg/m^3	More than 10	Medium	Low	Low	Low	Low
		1 - 10	Low	Low	Low	Low	Low
	24 - 28µg/m^3	More than 10	Low	Low	Low	Low	Low
		1 -10	Low	Low	Low	Low	Low
	Less than 24µg/m^3	More than 10	Low	Low	Low	Low	Low
		1 - 10	Low	Low	Low	Low	Low
Low	-	1 or more	Low	Low	Low	Low	Low

3.2.15 Table 7 outlines the criteria for determining the sensitivity of the area to ecological impacts.

Table 7 Construction Dust - Sensitivity of the Area to Ecological Impacts

Receptor Sensitivity	Distance from the Source (m)	
	Less than 20	Less than 50
High	High	Medium
Medium	Medium	Low
Low	Low	Low

3.2.16 Step 2C combines the dust emission magnitude with the sensitivity of the area to determine the risk of unmitigated impacts.

3.2.17 Table 8 outlines the risk category from demolition activities.

Table 8 Construction Dust - Dust Risk Category from Demolition Activities

Receptor Sensitivity	Dust Emission Magnitude		
	Large	Medium	Small
High	High	Medium	Medium
Medium	High	Medium	Low
Low	Medium	Low	Negligible

3.2.18 Table 9 outlines the risk category from earthworks and construction activities.

Table 9 Construction Dust - Dust Risk Category from Earthworks and Construction Activities

Receptor Sensitivity	Dust Emission Magnitude		
	Large	Medium	Small
High	High	Medium	Low
Medium	Medium	Medium	Low
Low	Low	Low	Negligible

3.2.19 Table 10 outlines the risk category from trackout activities.

Table 10 Construction Dust - Dust Risk Category from Trackout Activities

Receptor Sensitivity	Dust Emission Magnitude		
	Large	Medium	Small
High	High	Medium	Low
Medium	Medium	Low	Negligible
Low	Low	Low	Negligible

Step 3

3.2.20 Step 3 requires the identification of site specific mitigation measures within the Mayor of London's guidance[9] to reduce potential dust impacts based upon the relevant risk categories identified in Step 2. For sites with **negligible** risk, mitigation measures beyond those required by legislation are not required. However, additional controls may be applied as part of good practice.

Step 4

3.2.21 Once the risk of dust impacts has been determined and the appropriate mitigation measures identified, the final step is to determine the significance of any residual impacts. For almost all construction activity, the aim should be to control effects through the use of effective mitigation. Experience shows that this is normally possible. Hence the residual effect will normally be **not significant**.

3.2.22 The determination of significance relies on professional judgement and reasoning should be provided as far as practicable. The Mayor of London's guidance suggests the provision of details of the assessor's qualifications and experience. These are provided in Appendix 2.

3.3 Operational Phase Assessment

Potential Future Exposure

3.3.1 The proposal has the potential to expose future occupants to elevated pollutant levels. In order to assess NO_2, PM_{10} and $PM_{2.5}$ concentrations across the development site, detailed dispersion modelling was undertaken. Reference should be made to Appendix 1 for a full description of the assessment input data.

3.3.2 The results of the assessment were compared against the Air Pollution Exposure Criteria (APEC) contained within the London Councils Air Quality and Planning Guidance[10]. These

9 The Control of Dust and Emissions During Construction and Demolition Supplementary Planning Guidance, The Mayor of London, 2014.

10 London Councils Air Quality and Planning Guidance, London Councils, 2007.

are outlined in Table 11 and allow determination of the significance of predicted pollution levels and associated exposure.

Table 11 Future Exposure Assessment Criteria

Category	Applicable Range		Recommendation
	Annual Mean NO_2 and PM_{10}	24-hour PM_{10}	
APEC - A	Below 5% of the annual mean AQO	> 1-day less than AQO	No air quality grounds for refusal; however, mitigation of any emissions should be considered
APEC - B	Between 5% below or above the annual mean AQO	Between 1-day above or below AQO	May not be sufficient air quality grounds for refusal, however appropriate mitigation must be considered e.g., Maximise distance from pollutant source, proven ventilation systems, parking considerations, winter gardens, internal layout considered and internal pollutant emissions minimised
APEC - C	Above 5% of the annual mean AQO	> 1-day more than AQO	Refusal on air quality grounds should be anticipated, unless the LA has a specific policy enabling such land use and ensure best endeavours to reduce exposure are incorporated. Worker exposure in commercial/industrial land uses should be considered further. Mitigation measures must be presented with air quality assessment, detailing anticipated outcomes of mitigation measures

3.3.3 It should be noted that a significant area of London would fall under APEC - C due to high NO_2 concentrations throughout the city. As such, a presumption against planning consent in these locations may result in large areas of land becoming undevelopable and prevent urban regeneration. The inclusion of suitable mitigation measures to protect future site users is therefore considered an appropriate way to progress sustainable schemes in these locations and has been considered within this assessment.

Potential Development Impacts

3.3.4 The development has the potential to increase concentrations of NO_2, PM_{10} and $PM_{2.5}$ as a result of road traffic exhaust emissions associated with vehicles travelling to and from the site during the operational phase. A screening assessment was therefore undertaken using the criteria contained within the Institute of Air Quality Management (IAQM) 'Land-

Use Planning & Development Control: Planning for Air Quality'[11] guidance to determine the potential for trips generated by the development to affect local air quality.

3.3.5 The following criteria are provided to help establish when an assessment of potential impacts on the local area is likely to be considered necessary:

- A change of Light Duty Vehicle (LDV) flows of more than 100 Annual Average Daily Traffic (AADT) within or adjacent to an AQMA or more than 500 AADT elsewhere;
- A change of HDV flows of more than 25 AADT within or adjacent to an AQMA or more than 100 AADT elsewhere;
- Realignment of roads where the change is 5m or more and the road is within an AQMA; or,
- Introduction of a new junction or removal of an existing junction near to relevant receptors.

3.3.6 Should these criteria not be met, then the IAQM guidance[12] considers air quality impacts associated with a scheme to be **not significant** and no further assessment is required.

3.3.7 Should screening of the relevant data indicate that any of the above criteria are met, then potential impacts at sensitive receptor locations can be assessed by calculating the change in pollutant concentrations as a result of the proposed development. The significance of predicted impacts can then be determined in accordance with the methodology outlined in the IAQM guidance[13].

11 Land-Use Planning & Development Control: Planning for Air Quality, IAQM, 2017.

12 Land-Use Planning & Development Control: Planning for Air Quality, IAQM, 2017.

13 Land-Use Planning & Development Control: Planning for Air Quality, IAQM, 2017.

4.0 BASELINE

4.1 Introduction

4.1.1 Existing air quality conditions in the vicinity of the proposed development site were identified in order to provide a baseline for assessment. These are detailed in the following Sections.

4.2 Local Air Quality Management

4.2.1 As required by the Environment Act (1995), LBoW has undertaken Review and Assessment of air quality within their area of jurisdiction. This process has indicated that annual mean concentrations of NO_2 and 24-hour mean concentrations of PM_{10} are above the relevant AQOs within the borough. One AQMA has therefore been declared. This is described as follows:

"The whole borough."

4.2.2 The development is located within the AQMA. As such, there is the potential for the exposure of future occupants to poor air quality as well as vehicles travelling to and from the site to increase pollution levels in this sensitive area. This has been considered throughout the assessment.

4.2.3 LBoW has concluded that concentrations of all other pollutants considered within the AQS are currently below the relevant AQOs. As such, no further AQMAs have been designated.

4.3 Air Quality Monitoring

4.3.1 Monitoring of pollutant concentrations is undertaken by LBoW throughout their area of jurisdiction. Recent NO_2 results recorded in the vicinity of the development are shown in Table 12. Exceedences of the relevant AQO are shown in **bold**.

Table 12 Monitoring Results - NO_2

Monitoring Site		Monitored NO_2 Concentration (µg/m³)			
		2019	2020	2021	2022
WAA	Thessaly Road, Battersea	32	27	28	27
NE5	Kirtling Street	39	29	31	26
NE6	Nine Elms Lane	**48**	**40**	**40**	34

4.3.2 As shown in Table 12, annual mean NO_2 concentrations were above the relevant AQO at the NE6 - Nine Elms Lane monitor in recent years. As this is positioned at a roadside location within an AQMA, elevated concentrations would be expected. Annual mean NO_2 concentrations were below the relevant AQO at the remaining sites between 2019 and 2022.

4.3.3 Recent PM_{10} results are shown in Table 13.

Table 13 Monitoring Results - PM_{10}

Monitoring Site		Monitored NO_2 Concentration (µg/m³)			
		2019	2020	2021	2022
WAA	Thessaly Road, Battersea	23	25	23	20

4.3.4 As shown in Table 13, annual mean PM_{10} concentrations were below the relevant AQO at the WAA monitor in recent years.

4.3.5 It should be noted that pollutant concentrations during 2020 and 2021 were affected by changes in road traffic patterns and associated emissions caused by the COVID-19 pandemic. The results should therefore be viewed with caution.

4.3.6 LBoW do not undertake monitoring of $PM_{2.5}$ concentrations within the vicinity of the proposed development site.

4.3.7 Reference should be made to Figure 2 for a map of the survey positions.

4.4 Background Pollutant Concentrations

4.4.1 Predictions of background pollutant concentrations on a 1km by 1km grid basis have been produced by DEFRA for the entire of the UK to assist LAs in their Review and Assessment of air quality. The proposed development site is located in grid square NGR: 529500,177500. Data for this location was downloaded from the DEFRA website[14] for the purpose of this assessment and is summarised in Table 14.

Table 14 Background Pollutant Concentrations

Pollutant	Predicted Background Pollutant Concentration (µg/m³)		
	2019	2024	2026
NO_2	28.91	23.85	22.87
PM_{10}	18.97	17.62	17.41
$PM_{2.5}$	12.21	11.31	11.16

4.4.2 As shown in Table 14, predicted background NO_2 and PM_{10} concentrations are below the relevant AQOs at the development site. Predicted background $PM_{2.5}$ concentrations are above the Interim Target in 2019, though levels drop below in 2024 and 2026.

4.5 Sensitive Receptors

4.5.1 A sensitive receptor is defined as any location which may be affected by changes in air quality as a result of a development. Receptors sensitive to potential dust impacts during demolition, earthworks and construction were identified from a desk-top study of the area up to 350m from the development boundary. These are summarised in Table 15.

Table 15 Demolition, Earthworks and Construction Dust Sensitive Receptors

Distance from Site Boundary (m)	Approximate Number of Human Receptors	Approximate Number of Ecological Receptors
Up to 20	10 - 100	0
Up to 50	10 - 100	0

[14] https://uk-air.defra.gov.uk/data/laqm-background-maps?year=2018.

Distance from Site Boundary (m)	Approximate Number of Human Receptors	Approximate Number of Ecological Receptors
Up to 100	More than 100	-
Up to 350	More than 100	-

4.5.2 Receptors sensitive to potential dust impacts from trackout were identified from a desk-top study of the area up to 50m from the road network within 500m of the site access. These are summarised in Table 16.

Table 16 Trackout Dust Sensitive Receptors

Distance from Site Access Route (m)	Approximate Number of Human Receptors	Approximate Number of Ecological Receptors
Up to 20	More than 100	0
Up to 50	More than 100	0

4.5.3 There are no ecological receptors within 50m of the development boundary or the access route within 500m of the site entrance. As such, ecological impacts have not been assessed further within this report.

4.5.4 A number of additional factors have been considered when determining the sensitivity of the surrounding area. These are summarised in Table 17.

Table 17 Additional Area Sensitivity Factors to Potential Dust Impacts

Guidance	Comment
Whether there is any history of dust generating activities in the area	A review of Google Maps imagery indicated a number of developments within 700m of the site are currently undergoing construction. As such, it is possible that there has been a history of dust generation in the area
The likelihood of concurrent dust generating activity on nearby sites	A review of the planning portal indicated that a number of applications have recently been submitted in the vicinity of the site. It is therefore possible that there will be concurrent dust generation should these be granted permission and the construction phases overlap with the proposed development

Guidance	Comment
Pre-existing screening between the source and the receptors	Trees and shrubs are located sporadically along the southern site boundary. These may act as a barrier between emission sources and receptors should they be retained during construction
Conclusions drawn from analysing local meteorological data which accurately represent the area: and if relevant the season during which works will take place	As shown in Figure 3, the predominant wind bearing at the site is from the south-west. As such, receptors to the north-east are most likely to be affected by dust releases
Conclusions drawn from local topography	There are no significant topographical constraints to dust dispersion
Duration of the potential impact, as a receptor may become more sensitive over time	Currently it is unclear as to the duration of the construction phase. However, it is possible that it will extend over one year
Any known specific receptor sensitivities which go beyond the classifications given in the document	No specific receptor sensitivities identified during the baseline assessment

4.5.5 Based on the criteria shown in Table 4, the sensitivity of the receiving environment to potential dust impacts was determined as **high**. This was because the identified receptors included residential properties.

4.5.6 The sensitivity of the receiving environment to specific potential dust impacts, based on the criteria shown in Section 3.2, is shown in Table 18.

Table 18 Sensitivity of the Surrounding Area to Potential Dust Impacts

Potential Impact	Sensitivity of the Surrounding Area			
	Demolition	Earthworks	Construction	Trackout
Dust Soiling	High	High	High	High
Human Health	Low	Low	Low	Medium

5.0 ASSESSMENT

5.1 Introduction

5.1.1 The proposals have the potential to expose future occupants to elevated pollution levels, as well as cause air quality impacts as a result of the construction and operation of the development. These factors are assessed in the following Sections.

5.2 Construction Phase Assessment

Step 1

5.2.1 The undertaking of activities such as demolition, excavation, ground works, cutting, construction, and storage of materials has the potential to result in fugitive dust emissions throughout the construction phase. Vehicle movements on the local road network also have the potential to result in the re-suspension of dust from highway surfaces.

5.2.2 The potential for impacts at sensitive locations depends significantly on local meteorology during the undertaking of dust generating activities, with the most significant effects likely to occur during dry and windy conditions.

5.2.3 The desk-study undertaken to inform the baseline identified a number of sensitive receptors within 350m of the site boundary. As such, a detailed assessment of potential dust impacts was required.

Step 2

Demolition

5.2.4 Demolition will be undertaken at the start of the construction phase and will involve clearance of all existing structures on site. It is estimated that the total building volume to be demolished is less than 20,000m^3. In accordance with the criteria outlined in Table 3, the magnitude of potential dust emissions from demolition is therefore **small**.

5.2.5 Table 18 indicates the sensitivity of the area to dust soiling effects on people and property is **high**. In accordance with the criteria outlined in Table 8, the development is considered to be a **medium** risk site for dust soiling as a result of demolition activities.

5.2.6 Table 18 indicates the sensitivity of the area to human health impacts is **low**. In accordance with the criteria outlined in Table 8, the development is considered to be a **negligible** risk site for human health impacts as a result of demolition activities.

Earthworks

5.2.7 Earthworks will primarily involve excavating material, haulage, tipping and stockpiling, as well as site levelling and landscaping. The proposed development site covers an area between 2,500m^2 and 10,000m^2. In accordance with the criteria outlined in Table 3, the magnitude of potential dust emissions from earthworks is therefore **medium**.

5.2.8 Table 18 indicates the sensitivity of the area to dust soiling effects on people and property is **high**. In accordance with the criteria outlined in Table 9, the development is considered to be a **medium** risk site for dust soiling as a result of earthworks.

5.2.9 Table 18 indicates the sensitivity of the area to human health impacts is **low**. In accordance with the criteria outlined in Table 9, the development is considered to be a **low** risk site for human health impacts as a result of earthworks.

Construction

5.2.10 The total proposed building volume is estimated to be more than 100,000m^3. In accordance with the criteria outlined in Table 3, the magnitude of potential dust emissions from construction is therefore **large**.

5.2.11 Table 18 indicates the sensitivity of the area to dust soiling effects on people and property is **high**. In accordance with the criteria outlined in Table 9, the development is considered to be a **high** risk site for dust soiling as a result of construction activities.

5.2.12 Table 18 indicates the sensitivity of the area to human health impacts is **low**. In accordance with the criteria outlined in Table 9, the development is considered to be a **low** risk site for human health impacts as a result of construction activities.

Trackout

5.2.13 Based on the total site area, it is anticipated that the unpaved road length is likely to be between 50m and 100m. In accordance with the criteria outlined in Table 3, the magnitude of potential dust emissions from trackout is therefore **medium**.

5.2.14 Table 18 indicates the sensitivity of the area to dust soiling effects to people and property is **high**. In accordance with the criteria outlined in Table 10, the development is considered to be a **medium** risk site for dust soiling as a result of trackout activities.

5.2.15 Table 18 indicates the sensitivity of the area to human health impacts is **medium**. In accordance with the criteria outlined in Table 10, the development is considered to be a **low** risk site for human health impacts as a result of trackout activities.

Summary of the Risk of Dust Effects

5.2.16 A summary of the risk from each dust generating activity is provided in Table 19.

Table 19 Summary of Potential Unmitigated Dust Risks

Potential Impact	Risk			
	Demolition	Earthworks	Construction	Trackout
Dust Soiling	Medium	Medium	High	Medium
Human Health	Negligible	Low	Low	Low

5.2.17 As indicated in Table 19, the potential risk of dust soiling is **high** from construction and **medium** from demolition, earthworks and trackout. The potential risk of human health impacts is **low** from earthworks, construction and trackout and **negligible** from demolition.

5.2.18 It should be noted that the potential for impacts depends significantly on the distance between the dust generating activity and receptor location. Risk was predicted based on a worst-case scenario of works being undertaken at the site boundary closest to each sensitive area. Therefore, actual risk is likely to be lower than that predicted during the majority of the construction phase.

Step 3

5.2.19 The Mayor of London's guidance[15] provides potential mitigation measures to reduce impacts as a result of fugitive dust emissions during the construction phase. These have been adapted for the development site as summarised in Table 20.

Table 20 Fugitive Dust Emission Mitigation Measures

Issue	Control Measure
Site management	• Develop and implement a stakeholder communications plan that includes community engagement before work commences on site • Develop a Dust Management Plan • Display the name and contact details of person(s) accountable for air quality and dust issues on the site boundary. • Display the head or regional office contact information • Record and respond to all dust and air quality pollutant emissions complaints • Make the complaints log available to the LA when asked • Carry out regular site inspections, record inspection results, and make an inspection log available to the LA upon request • Increase the frequency of site inspections by those accountable for dust and air quality pollutant emissions issues when activities with a high potential to produce dust are being carried out, and during prolonged dry or windy conditions • Record any exceptional incidents, either on or off the site, and the action taken to resolve the situation is recorded in the log book
Preparing and maintaining the site	• Plan site layout: machinery and dust causing activities should be located away from receptors • Fully enclose site specific operations where there is a high potential for dust production and the site is active for an extensive period • Erect solid screens or barriers around dusty activities or the site • Avoid site runoff of water or mud • Keep site fencing, barriers and scaffolding clean using wet methods • Remove materials from site as soon as possible • Cover, seed or fence stockpiles to prevent wind whipping

15 The Control of Dust and Emissions During Construction and Demolition Supplementary Planning Guidance, The Mayor of London, 2014.

Issue	Control Measure
Operating vehicle/machinery and sustainable travel	• Ensure all on-road vehicles comply with the requirements of the London Low Emission Zone • Ensure all Non-Road Mobile Machinery comply with the relevant standards • Ensure all vehicles switch off engines when stationary - no idling vehicles • Avoid the use of diesel or petrol powered generators and use mains electricity or battery powered equipment where practicable
Operations	• Only use cutting, grinding or sawing equipment fitted or in conjunction with suitable dust suppression techniques • Ensure an adequate water supply on the site for effective dust/particulate matter mitigation (using recycled water where possible) • Use enclosed chutes and conveyors and covered skips • Minimise drop heights and use fine water sprays wherever appropriate • Ensure equipment is readily available on site to clean any dry spillages, and clean up spillages as soon as reasonably practicable using wet cleaning methods
Waste management	• Reuse and recycle waste to reduce dust from waste materials • Avoid bonfires and burning of waste materials
Demolition	• Ensure water suppression is used during demolition operations • Avoid explosive blasting, using appropriate manual or mechanical alternatives • Bag and remove any biological debris or damp down such material before demolition
Earthworks	• Re-vegetate earthworks and exposed areas/soil stockpiles to stabilise surfaces as soon as practicable • Use Hessian, mulches or trackifiers where it is not possible to re-vegetate or cover with topsoil as soon as practicable • Only remove cover in small areas during work and not all at once
Construction	• Avoid scabbling (roughening of concrete surfaces), if possible • Ensure sand and other aggregates are stored in bunded areas and are not allowed to dry out • Ensure bulk cement and other fine powder materials are delivered in enclosed tankers and stored in silos with suitable emission control systems to prevent escape of material and overfilling during delivery • For smaller supplies of fine power materials ensure bags are sealed after use and stored appropriately to prevent dust

Issue	Control Measure
Trackout	• Use water-assisted dust sweeper on access and local roads, if required • Avoid dry sweeping of large areas • Ensure vehicles entering and leaving site are covered to prevent escape of materials • Implement a wheel washing system, if required

Step 4

5.2.20 Assuming the relevant mitigation measures outlined in Table 20 are implemented, the residual impacts from all dust generating activities are predicted to be **not significant**, in accordance with the Mayor of London's guidance[16].

5.3 Operational Phase Assessment

Potential Future Exposure

5.3.1 The proposed development has the potential to expose future occupants to elevated pollution levels. Dispersion modelling was therefore undertaken with the inputs described in Appendix 1 to quantify air quality conditions at the site. Reference should be made to Figures 4 to 7 for graphical representations of the results.

5.3.2 Predicted concentrations above 5% of the annual mean AQOs are shown in blue on the contour plots. These relate to areas defined as APEC - C within the London Councils Air Quality and Planning Guidance[17]. Predicted concentrations between 5% below and 5% above the AQO are shown in green. These relate to areas defined as APEC - B within the guidance. Predicted concentrations below 5% of the annual mean AQO are shown in white on the contour plots. These relate to areas defined as APEC - A within the guidance.

5.3.3 As shown in Figure 4, annual mean NO_2 concentrations were predicted to be below the AQO of 40µg/m^3 at the development. The maximum level at the building façade fronting

16 The Control of Dust and Emissions During Construction and Demolition Supplementary Planning Guidance, The Mayor of London, 2014.

17 London Councils Air Quality and Planning Guidance, London Councils, 2007.

Battersea Park Road was 34.72µg/m^3, which is classified as APEC - A in accordance London Councils Air Quality and Planning Guidance[18].

5.3.4 As shown in Figure 5, annual mean PM_{10} concentrations were predicted to be below the AQO of 40µg/m^3 at the development. The maximum level at the building façade front Battersea Park Road was 20.25µg/m^3, which is classified as APEC - A in accordance with the London Councils Air Quality and Planning Guidance[19].

5.3.5 As shown in Figure 6, the number of days with PM_{10} concentrations greater than 50µg/m^3 was predicted to be below the permitted number of 35 at the development. The maximum number of days with concentrations above 50µg/m^3 at the building façade fronting Battersea Park Road was 4, which is classified as APEC - A in accordance with the London Councils Air Quality and Planning Guidance[20].

5.3.6 As shown in Figure 7, annual mean $PM_{2.5}$ concentrations were predicted to be below the AQLV of 20µg/m^3 and Interim Target of 12µg/m^3 at the development. The maximum level at the building façade fronting Battersea Park Road was 11.88µg/m^3.

5.3.7 Based on the assessment results, the site is considered suitable for the proposed end-use from an air quality perspective without the inclusion of mitigation.

Potential Development Impacts

5.3.8 Any vehicle movements associated with the proposals will generate exhaust emissions on the local and regional road networks. However, the proposals are classified as 'car-free' in accordance with the definition set out within The London Plan 2021[21]. As such, potential air quality impacts associated with the operational phase road vehicle exhaust emissions are predicted to be **not significant**, in accordance with the IAQM[22] screening criteria shown in Section 3.3.

18 London Councils Air Quality and Planning Guidance, London Councils, 2007.

19 London Councils Air Quality and Planning Guidance, London Councils, 2007.

20 London Councils Air Quality and Planning Guidance, London Councils, 2007.

21 The London Plan, Greater London Authority (GLA), 2021.

22 Land-Use Planning & Development Control: Planning for Air Quality, IAQM, 2017.

6.0 AIR QUALITY NEUTRAL ASSESSMENT

6.1 Introduction

6.1.1 The London Plan[23] requires that all developments are 'air quality neutral' to ensure proposals do not lead to further deterioration of existing poor air quality. In order to support the policy, guidance[24] has been produced on behalf of the GLA. The document provides a methodology for determining potential emissions from a development and benchmark values for comparison purposes. Where the benchmark is exceeded then action is required, either locally or by way of off-setting.

6.1.2 The Air Quality Neutral Assessment for the proposed development is outlined below.

6.2 Building Emissions

6.2.1 Heating and hot water for the development will be provided by either Air Source Heat Pumps (ASHPs) or through connection to the District Heating Network (DHN). These do not produce additional NO_x or PM_{10} emissions to atmosphere. As such, the proposals are considered air quality neutral from a building emissions perspective.

6.3 Transport Emissions

6.3.1 The proposals are considered to be 'car free'. As such, the development is air quality neutral from a transport emissions perspective.

6.4 Summary

6.4.1 Potential emissions from the development were assessed in order to determine compliance with the air quality neutral requirements of the London Plan. The building energy strategy will involve either the inclusion of ASHPs or connection to the local DHN. Neither of these options will not produce additional emissions to atmosphere. Additionally, the scheme is classified as 'car-free'. As such, the proposals are considered air quality neutral.

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23 The London Plan March 2021, GLA, 2021.

24 London Plan Guidance: Air Quality Neutral, GLA, 2023.

7.0 CONCLUSION

7.1.1 Redmore Environmental Ltd was commissioned by Watkin Jones Group to undertake an Air Quality Assessment in support of a mixed-use development at 41-49 and 49-59 Battersea Park Road, Wandsworth.

7.1.2 The development may lead to the exposure of future occupants to elevated pollutant levels, as well as adverse impacts at sensitive locations. As such, an Air Quality Assessment was undertaken in order to determine baseline conditions at the site, consider its suitability for the proposed end-use and assess potential effects associated with the scheme.

7.1.3 During the construction phase of the development there is the potential for air quality impacts as a result of fugitive dust emissions from the site. These were assessed in accordance with the Mayor of London's methodology. Assuming good practice dust control measures are implemented, the residual significance of potential air quality impacts from dust generated by demolition, earthworks, construction and trackout activities was predicted to be **not significant**.

7.1.4 The proposal has the potential to expose future occupants to elevated pollution levels. Dispersion modelling was therefore undertaken using ADMS-Roads in order to predict concentrations as a result of emissions from the local highway network. Results were subsequently verified using local monitoring data.

7.1.5 The results of the dispersion modelling assessment indicated that predicted concentrations of NO_2, PM_{10} and $PM_{2.5}$ were below the relevant AQOs and Interim Target at the development. NO_2 and PM_{10} levels were categorised as APEC - A in accordance with the London Councils Air Quality and Planning Guidance. As such, the site is considered suitable for the proposed end-use from an air quality perspective.

7.1.6 Potential impacts during the operational phase of the proposed development may occur due to road traffic exhaust emissions associated with vehicles travelling to and from the site. These were assessed against the screening criteria provided within the IAQM guidance. Due to the scale and nature of the proposals, impacts were predicted to be **not significant**.

7.1.7 Potential emissions from the proposals were assessed in order to determine compliance with the air quality neutral requirements of the London Plan. The building energy strategy does not produce emissions to atmosphere. Additionally, the scheme is classified as 'car-free'. As such, the development was considered to be air quality neutral.

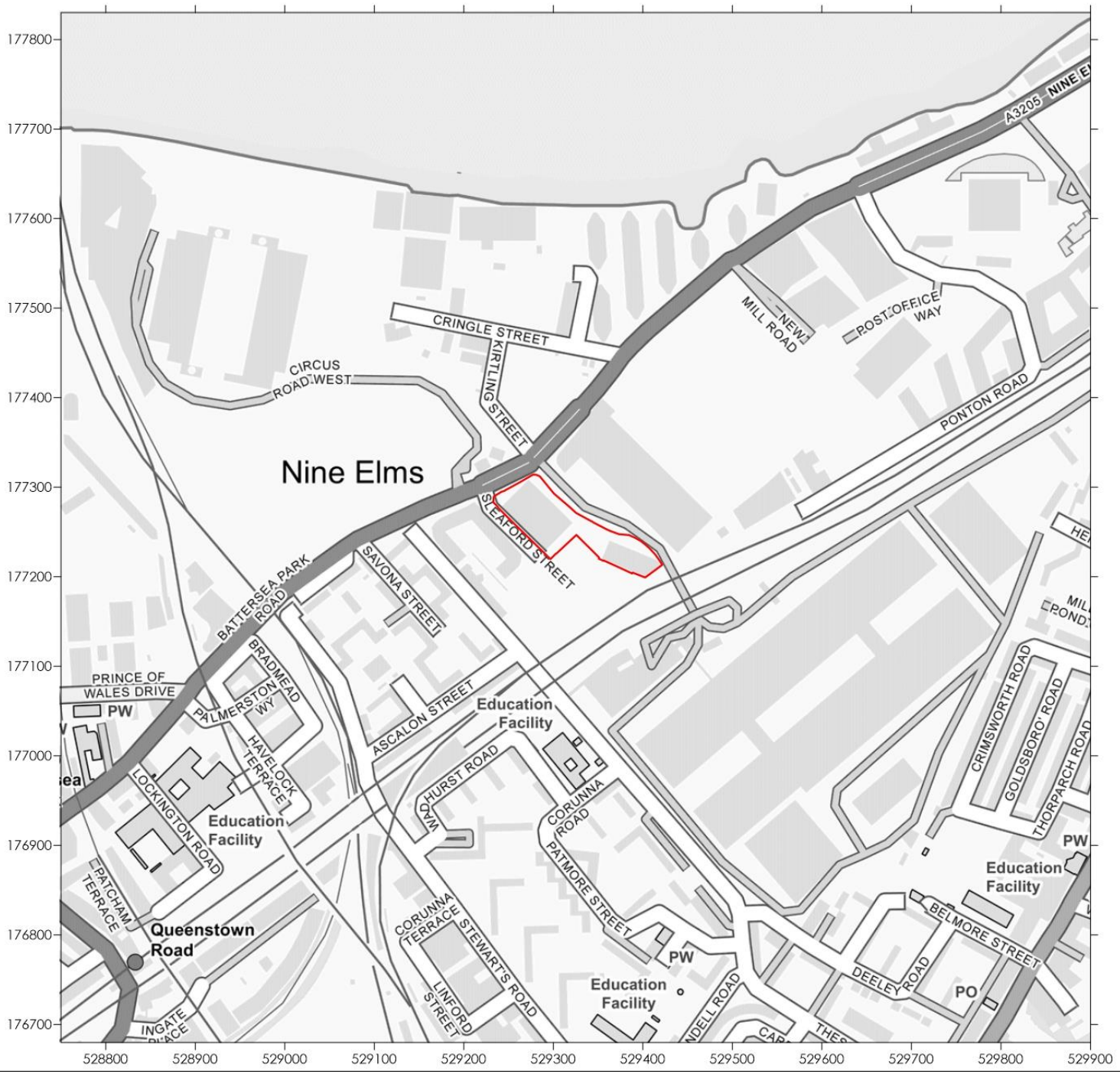
7.1.8 Based on the assessment results, air quality issues are not considered a constraint to planning consent for the proposals.

8.0 ABBREVIATIONS

AADT	Annual Average Daily Traffic
ADM	Atmospheric Dispersion Modelling
APEC	Air Pollution Exposure Criteria
AQAP	Air Quality Action Plan
AQLV	Air Quality Limit Value
AQMA	Air Quality Management Area
AQO	Air Quality Objective
AQS	Air Quality Strategy
ASHP	Air Source Heat Pump
ASR	Annual Status Report
CERC	Cambridge Environmental Research Consultants
DEFRA	Department for Environment, Food and Rural Affairs
DfT	Department for Transport
DHN	District Heating Network
GLA	Greater London Authority
HDV	Heavy Duty Vehicle
HGV	Heavy Goods Vehicle
IAQM	Institute of Air Quality Management
LA	Local Authority
LAEI	London Atmospheric Emissions Inventory
LAQM	Local Air Quality Management
LBoW	London Borough of Wandsworth
LDV	Light Duty Vehicle
LGV	Light Goods Vehicle
NB	Northbound
NGR	National Grid Reference
NO_2	Nitrogen dioxide
NO_x	Oxides of nitrogen
NPPF	National Planning Policy Framework
NPPG	National Planning Practice Guidance
PM_{10}	Particulate matter with an aerodynamic diameter of less than 10µm
$PM_{2.5}$	Particulate matter with an aerodynamic diameter of less than 2.5µm
SP	Slow Phase
SPG	Supplementary Planning Guidance

z_0	Roughness length

Figures



Legend

Site Boundary

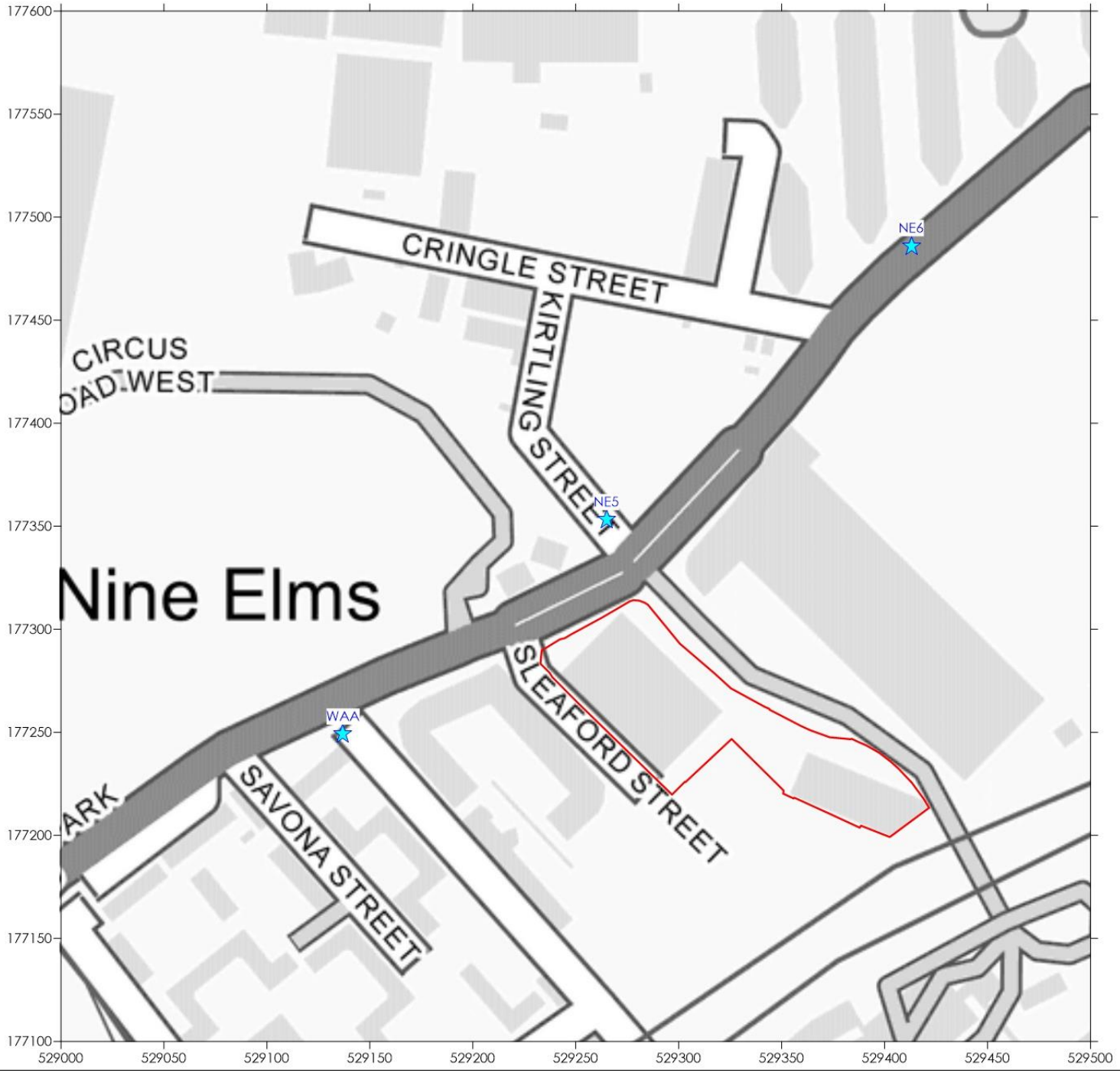
Title
Figure 1 - Site Location Plan

Project
Air Quality Assessment
Battersea Park Road, Wandsworth

Project Reference
5296-1

Client
Watkin Jones Group

Redmore environmental
www.red-env.co.uk | 0161 7060075



Legend

Site Boundary

Monitor

Title
Figure 2 - Monitoring Locations

Project
Air Quality Assessment
Battersea Park Road, Wandsworth

Project Reference
5296-1

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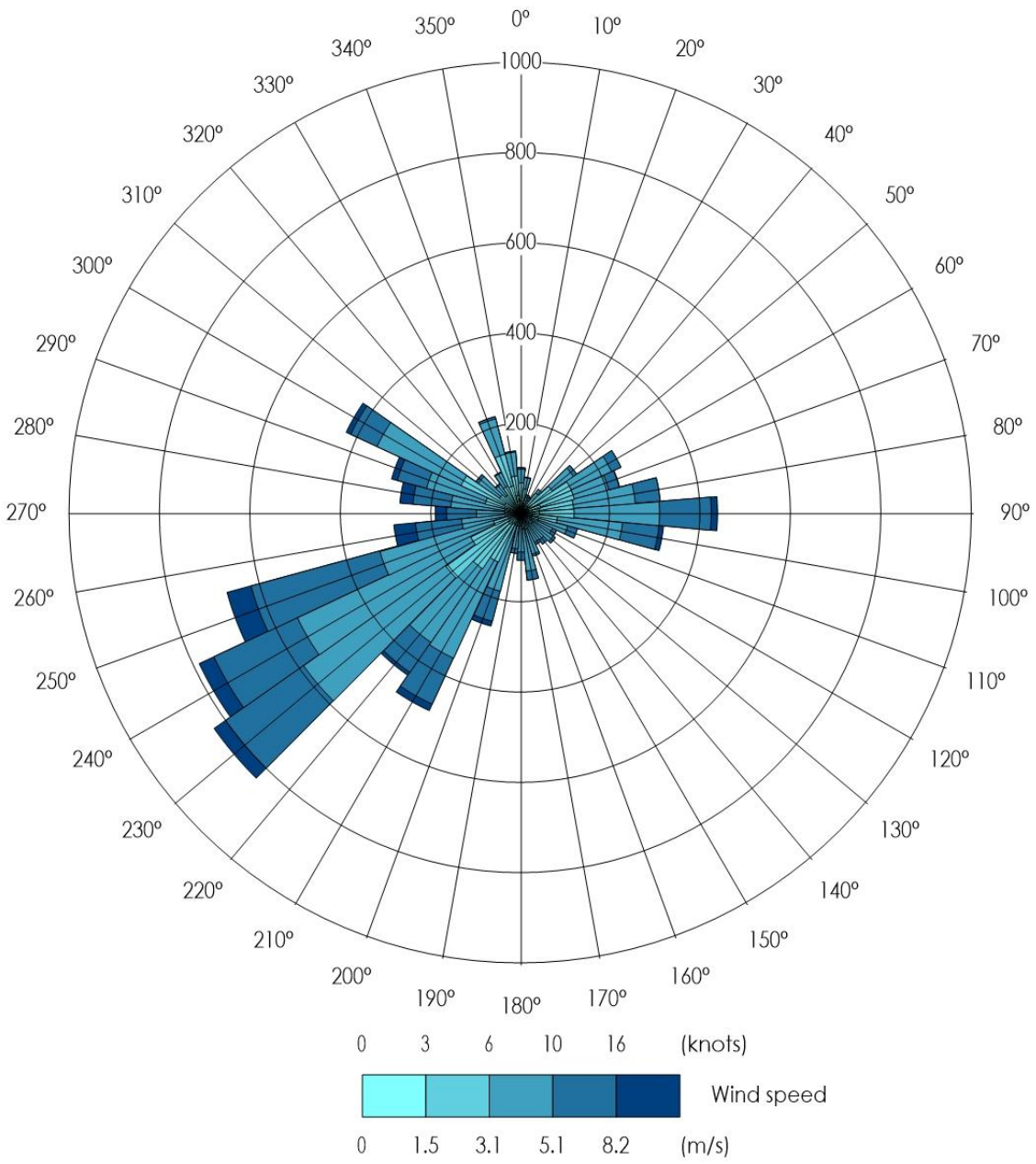

Legend

Title
Figure 3 - Wind Rose of 2019
London City Airport
Meteorological Data

Project
Air Quality Assessment
Battersea Park Road, Wandsworth

Project Reference
5296-1

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Legend

- Site Boundary
- Proposed Buildings
- APEC - C
- APEC - B
- APEC - A
- Annual Mean NO_2 Concentration ($\mu g/m^3$)

Title
Figure 5 - Predicted Annual Mean NO_2 Concentrations ($\mu g/m^3$)

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Legend

Site Boundary

Proposed Buildings

Annual Mean PM_{10} Concentration ($\mu g/m^3$)

26
25
24
23
22
21
20
19

APEC - A

Title

Figure 5 - Predicted Annual Mean PM_{10} Concentrations ($\mu g/m^3$)

Project

Air Quality Assessment
Battersea Park Road, Wandsworth

Project Reference

5296-1

Client

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Legend

Site Boundary

Proposed Buildings

Number of Days with PM_{10} Concentrations Greater than 50 µg/m³ (Days)

16
14
12
10
8
6
4
2

APEC - A

Title

Figure 6 - Predicted Number of Days with PM_{10} Concentrations Greater than 50 µg/m³ (Days)

Project

Air Quality Assessment
Battersea Park Road, Wandsworth

Project Reference

5296-1

Client

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Legend

Site Boundary

Proposed Buildings

Annual Mean $PM_{2.5}$ Concentration (µg/m³)

15
14.5
14
13.5
13
12.5
12
11.5
11

Title

Figure 7 - Predicted Annual Mean $PM_{2.5}$ Concentrations (µg/m³)

Project

Air Quality Assessment
Battersea Park Road, Wandsworth

Project Reference

5296-1

Client

Watkin Jones Group

Redmore environmental

www.red-env.co.uk | 0161 7060075

Legend

Site Boundary

Road Link

Output Grid

Title
Figure 8 - ADMS-Roads Inputs

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Appendix 1 - Assessment Input Data

Introduction

The proposed development has the potential to expose future occupants to elevated pollutant levels. In order to assess NO_2, PM_{10} and $PM_{2.5}$ concentrations across the site, detailed dispersion modelling was therefore undertaken in accordance with the following methodology.

Modelling was undertaken for 2019 to allow verification against recent monitoring results and 2026 to represent likely conditions in the opening year of the scheme.

Dispersion Model

Dispersion modelling was undertaken in order to predict NO_2, PM_{10} and $PM_{2.5}$ concentrations across the site using the ADMS-Roads dispersion model (version 5.0.1.3). ADMS-Roads is developed by Cambridge Environmental Research Consultants (CERC) and is routinely used throughout the world for the prediction of pollutant dispersion from road sources. Modelling predictions from this software package are accepted within the UK by the Environment Agency and DEFRA.

The model requires input data that details the following parameters:

- Assessment area;
- Traffic flow data;
- Vehicle emission factors;
- Spatial co-ordinates of emissions;
- Street width;
- Meteorological data;
- Roughness length (z_0); and,
- Monin-Obukhov length.

The relevant inputs are detailed in the following Sections.

Assessment Area

Ambient concentrations were predicted over the area NGR: 529155, 177115 to 529455, 177415. One Cartesian grid was included within the model to produce data suitable for contour plotting using the Surfer software package.

It should be noted that although the grid only covered the proposed site, road links were extended in order to ensure the impact of all relevant vehicle emissions in the vicinity of the development were considered.

Reference should be made to Figure 8 for a graphical representation of the assessment grid extents.

Traffic Flow Data

Baseline traffic data for use in the assessment was obtained from the London Atmospheric Emissions Inventory (LAEI). The LAEI was produced by the GLA and provides traffic flows throughout London for a number of scenarios. It should be noted that the LAEI is referenced in GLA guidance[25] as being a suitable source of data for air quality assessments and is therefore considered to provide a reasonable estimate of traffic flows in the vicinity of the site.

The baseline traffic data was converted to the opening year of the development utilising a factor obtained from TEMPro (Version 8.0). This software package has been developed by the Department for Transport (DfT) to calculate future traffic growth throughout the UK.

Road widths and vehicle speeds were estimated from aerial photography and UK highway design standards. A summary of the traffic data is provided in Table A1.1.

Table A1.1 Traffic Data

Link		24-hour AADT Flow		Road Width (m)	Average Vehicle Speed (km/h)
		2019	2026		
L1	Battersea Park Road	23,296	24,649	12.4	30
L2	Battersea Park Road (wide)	23,296	24,649	16.5	30
L3	Battersea Park Road - Slow Phase	23,296	24,649	19.1	20
L4	Battersea Park Road, West of Ponton Road	22,806	24,131	13.3	30
L5	Sleaford Street, SP	1,000	1,058	10.2	20
L6	Sleaford Street	1,000	1,058	6.1	30

25 London Local Air Quality Management (LLAQM)), Technical Guidance 2019 (LLAQM.TG (19)), GLA, 2019.

Link		24-hour AADT Flow		Road Width (m)	Average Vehicle Speed (km/h)
		2019	2026		
L7	New Covent Garden Access Road, SP	514	544	20.2	20
L8	New Covent Garden Access Road	514	544	15.4	30

Fleet composition data as a proportion of total flows on each link for cars, taxis, Light Goods Vehicles (LGV), Heavy Goods Vehicles (HGV), buses and coaches and motorcycles are summarised in Table A1.2.

Table A1.2 Fleet Composition Data

Link	Proportion of Fleet (%)						
	Car	Taxi	LGV	Rigid HGV	Artic HGV	Bus and Coach	Motorcycle
L1	67.4	1.0	17.2	4.4	0.9	5.5	3.7
L2	67.4	1.0	17.2	4.4	0.9	5.5	3.7
L3	67.4	1.0	17.2	4.4	0.9	5.5	3.7
L4	65.6	2.0	17.3	4.5	1.0	5.8	3.8
L5	64.4	2.4	18.3	4.8	0.9	5.4	3.8
L6	64.4	2.4	18.3	4.8	0.9	5.4	3.8
L7	64.4	2.4	18.3	4.8	0.9	5.4	3.8
L8	64.4	2.4	18.3	4.8	0.9	5.4	3.8

Reference should be made to Figure 8 for a graphical representation of the road link locations.

Emission Factors

The emission factors were calculated using the relevant traffic flows and the Emissions Factor Toolkit (version 12.0.1). This has been produced by DEFRA and incorporates COPERT 5.6 vehicle emission factors and fleet information.

There is current uncertainty over NO_2 concentrations within the UK, with the implementation of new vehicle emission standards not resulting in the previously expected reduction in roadside

levels. Therefore, 2019 emission factors were utilised in preference to the development opening year in order to provide robust model outputs. As predictions for 2019 were verified, it is considered the results are a robust indication of worst case concentrations for the future year.

Meteorological Data

Meteorological data used in the assessment was taken from London City Airport meteorological station over the period 1st January 2019 to 31st December 2019 (inclusive). London City Airport is located at NGR: 542739, 180487, which is approximately 13.8km north-west of the development. It is anticipated that conditions would be reasonably similar over a distance of this magnitude. The data was therefore considered suitable for an assessment of this nature.

All meteorological records used in the assessment were provided by Atmospheric Dispersion Modelling (ADM) Ltd, which is an established distributor of data within the UK. Reference should be made to Figure 3 for a wind rose of utilised meteorological data.

Roughness Length

The z_0 is a modelling parameter applied to allow consideration of surface height roughness elements. A z_0 of 1m was used to describe the modelling extents. This value is considered appropriate for the morphology of the area and is suggested within ADMS-Roads as being suitable for 'cities, woodlands'.

A z_0 of 0.1m was used to describe the meteorological site. This value is considered appropriate for the morphology of the area due to the large expanse of surrounding flat land use, such as runways, grassland and open water, and is suggested within ADMS-Roads as being suitable for 'root crops'.

Monin-Obukhov Length

The Monin-Obukhov length provides a measure of the stability of the atmosphere. A minimum Monin-Obukhov length of 100m was used to describe the both the modelling extents and the meteorological site. This is considered appropriate for the nature of both areas and is suggested within ADMS-Roads as being suitable for 'large conurbations > 1 million'.

Background Concentrations

Background mean NO_2, PM_{10} and $PM_{2.5}$ concentrations for use in the assessment were obtained from the DEFRA mapping study for the grid square containing the development site, as shown in Table 14.

Similarly to emission factors, annual mean NO_2 and PM_{10} background concentrations from 2019 were utilised in preference to the opening year. This provided a robust assessment and is likely to overestimate pollutant concentrations during the operation of the proposal.

It is noted that the GLA have released background concentration maps with a spatial resolution of 20m for 2013, 2020, 2025 and 2030. However, as the modelling area is considerably greater than 20m, and values were not available for the verification or opening years, this data was not considered appropriate for use in the assessment.

NO_x to NO_2 Conversion

Predicted annual mean NO_x concentrations were converted to NO_2 concentrations using the spreadsheet (version 8.1) provided by DEFRA, which is the method detailed within DEFRA guidance[26] and GLA guidance[27].

Verification

The predicted results from a dispersion model may differ from measured concentrations for a large number of reasons, including:

- Estimates of background concentrations;
- Uncertainties in source activity data such as traffic flows and emission factors;
- Variations in meteorological conditions;
- Overall model limitations; and,
- Uncertainties associated with monitoring data, including locations.

[26] Local Air Quality Management Technical Guidance (TG16), DEFRA, 2021.

[27] London Local Air Quality Management (LLAQM)), Technical Guidance 2019 (LLAQM.TG (19)), GLA, 2019.

Model verification is the process by which these and other uncertainties are investigated and where possible minimised. In reality, the differences between modelled and monitored results are likely to be a combination of all of these aspects.

For the purpose of the assessment, model verification was undertaken for 2019 using traffic data, meteorological data and monitoring results from this year. The choice of 2019 as the verification year aligns with the IAQM position statement 'Use of 2020 and 2021 Monitoring Datasets'[28], which states:

> "If you are carrying out an air quality study that includes validation against monitoring data, use 2019 monitoring data as the last typical year"

LBoW undertook monitoring of NO_2 concentrations at three locations within the vicinity of roads included in the model during 2019. The results were obtained and the road contribution to total NO_x concentration calculated following the methodology contained within GLA guidance[29]. The monitored annual mean NO_2 concentration and calculated road NO_x concentration is summarised in Table A1.3.

Table A1.3 Verification - Monitoring Results

Monitoring Location		Monitored NO_2 Concentration (µg/m^3)	Calculated Road NO_x Concentration (µg/m^3)
WAA	Thessaly Road, Battersea	32	6.56
NE5	Kirtling Street	39	22.37
NE6	Nine Elms Lane	48	44.91

The annual mean road NO_x concentrations predicted from the dispersion model and the road NO_x concentrations calculated from the monitoring results are summarised in Table A1.4.

Table A1.4 Verification - Modelling Results

Monitoring Location		Calculated Road NO_x Concentration (µg/m^3)	Modelled Road NO_x Concentration (µg/m^3)
WAA	Thessaly Road, Battersea	6.56	12.04

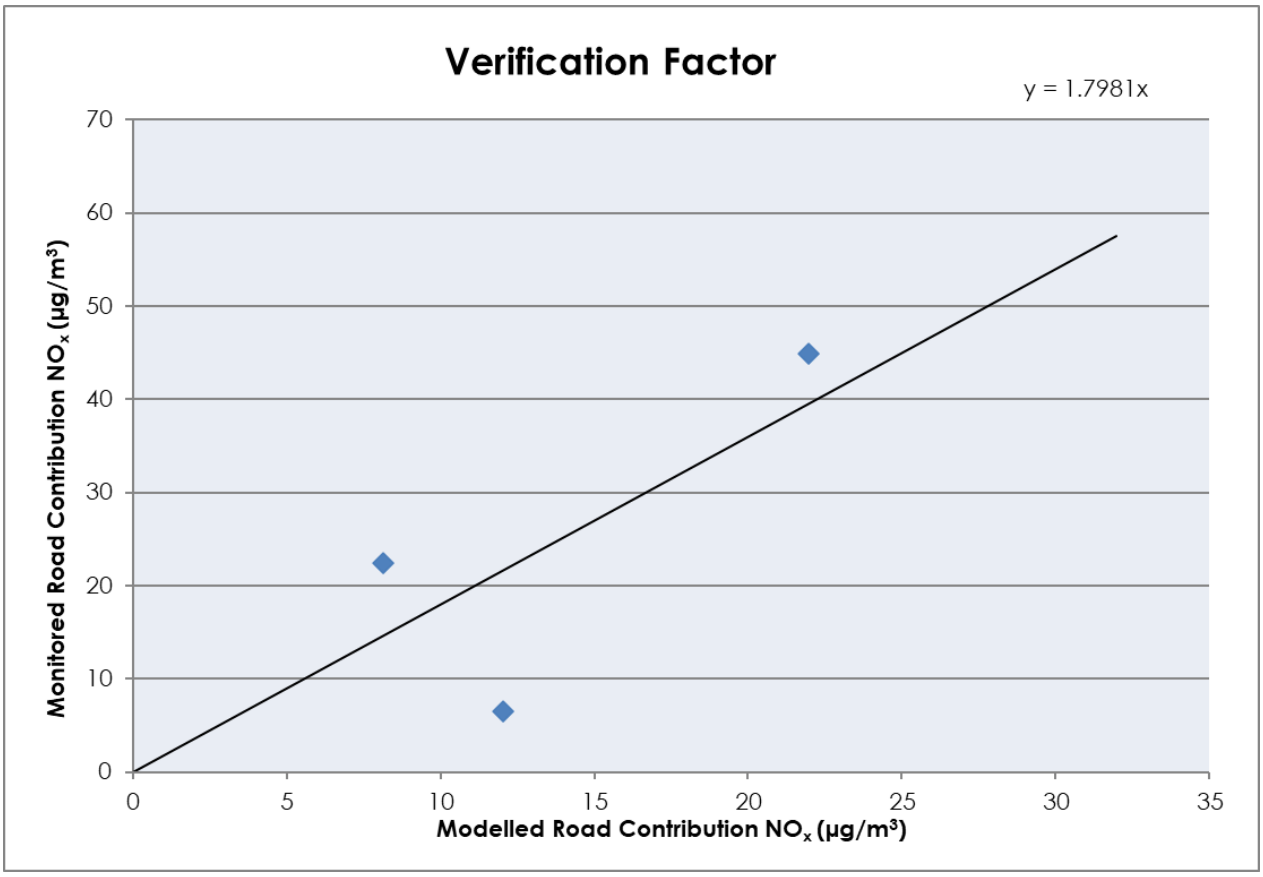
[28] Use of 2020 and 2021 Monitoring Datasets, IAQM, 2021.

[29] London Local Air Quality Management (LLAQM), Technical Guidance 2019 (LLAQM.TG (19)), GLA, 2019.

Monitoring Location		Calculated Road NO_x Concentration (µg/m³)	Modelled Road NO_x Concentration (µg/m³)
NE5	Kirtling Street	22.37	8.13
NE6	Nine Elms Lane	44.91	21.97

The monitored and modelled road NO_x concentrations were graphed and the equation of the trendline based on linear progression through zero calculated. This indicated that a verification factor of 1.7981 was required to be applied to all NO_x modelling results, as shown in Graph 1.

Graph 1 NO_x Verification Factor



Monitoring of PM_{10} concentrations was undertaken at one location within the modelling extents during 2019. The monitored annual mean PM_{10} concentration and modelled PM_{10} concentration is shown in Table A1.4.

Table A1.4 PM_{10} Verification - Monitored and Modelling Result

Monitoring Location		Monitored PM_{10} Concentration ($\mu g/m^3$)	Modelled PM_{10} Concentration ($\mu g/m^3$)
WAA	Thessaly Road, Battersea	23	20.2

The monitored and modelled PM_{10} concentrations were compared to calculate the associated ratio. This indicated a verification factor of 1.1386 was required to be applied to all modelling results.

Monitoring of $PM_{2.5}$ concentrations was not undertaken within the assessment extents. The PM_{10} verification factor was therefore used to adjust model $PM_{2.5}$ concentrations in lieu of more accurate data.

Appendix 2 - Curricula Vitae

JETHRO REDMORE

Director

BEng (Hons), MSc, MIAQM, MIEnvSc, PIEMA, CEnv

KEY EXPERIENCE:

Jethro is a Chartered Environmentalist and Director of Redmore Environmental with specialist experience in the air quality and odour sectors. His key capabilities include:

- Production and management of Air Quality, Dust and Odour Assessments for a wide-range of clients from the retail, residential, infrastructure, commercial and industrial sectors.
- Production and co-ordination of Environmental Permit applications for a variety of industrial sectors.
- Detailed dispersion modelling of road vehicle and industrial emissions using ADMS-Roads, ADMS-5, AERMOD-PRIME and BREEZE-ROADS. Studies have included impact assessment of ground level pollutant and odour concentrations and assessment of suitability of development sites for proposed end-use.
- Project management and co-ordination of Environmental Impact Assessments and scoping reports for developments throughout the UK.
- Provision of expert witness services at Planning Inquiries.
- Design and project management of pollutant monitoring campaigns.
- Co-ordination and management of large-scale multi-disciplinary projects and submissions.

  Provision of expert advice to local government and international environmental bodies, as well as involvement in production of industry guidance.

SELECT PROJECTS SUMMARY:

Industrial and Agricultural

Discovery Park, Sandwich - Air Quality Assessment including dispersion modelling of gas fired steam generating boilers in support of a Medium Combustion Plant (MCP) Environmental Permit Application.

St Thomas House, Ellesmere Port - Air Quality Assessment including dispersion modelling of two biomass boilers firing wood pellets.

Herriard Anaerobic Digester - H1 Screening Assessment in accordance with Environment Agency guidance.

Halls Farm, Bude - Ammonia and Odour Assessments in support of a proposed farm expansion, including the construction of a cattle slurry lagoon and livestock housing

London Luton Airport - Air Quality Assessment including dispersion modelling of gas fired boilers in support of a MCP Environmental Permit Application.

Rectory Farm, Aldborough - Odour Assessment in support of the development of livestock housing.

Ashfields, Tilbury - Dust Assessment in support of the extraction of Pulverised Fuel Ash associated with the former Tilbury Power Station.

Poplar Farm, Bedfield - Dust Assessment and Management Plan for an aggregate processing facility.

Crown Chicken, Kenninghall - Air Quality, Odour and Dust Environmental Impact Assessment (EIA) in support of a farm expansion.

Newport Chalk Pit - Air Quality Assessment in support of a recycling and restoration project.

Residential

Jack Chase Way, Caister - Air Quality EIA in support of a planning application for circa 725 dwellings.

New Road, Tintwistle - Odour Assessment including dispersion modelling of the Tintwistle Sewage Treatment Works in order to determine suitability of adjacent land for residential use

St Nicholas Circle, Leicester - Air Quality Assessment including dispersion modelling of road traffic sources to determine suitability of the site for student accommodation.

Land East and West of A140, Long Stratton - Air Quality EIA for a large scale residential development.

Meadley Square, Knaresborough - Odour Assessment including site surveys and a risk assessment to determine potential for loss of amenity to future occupants due to adverse odours generated by an adjacent takeaway.

Main Street, Port Rush - Kitchen Odour Impact Assessment in support of a proposed restaurant with residential apartments above

Commercial and Retail

Downtown Grantham Designer Outlet - Air Quality EIA in support the development of a retail outlet

North Acton Road, London - Air Quality Assessment in support of the development of a seven storey building to include a café and commercial floor space.

Great Homer Street, Liverpool - Investigative Odour Survey at an existing McDonalds restaurant.

Ashdown Business Park, Kent - Air Quality Assessment in support of a Premier Inn Hotel and Drive-Thru Costa Coffee.

Sandbrook Park, Rochdale - Air Quality Assessment in support of 14 business/industrial units.

OLLY HANLON

Senior Air Quality Consultant

BSc (Hons), AMIEnvSc

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KEY EXPERIENCE:

Olly is a Senior Environmental Consultant with specialist experience in the air quality sector. His key capabilities include:

- Production of Air Quality Assessments in accordance with Department for Environment, Food and Rural Affairs (DEFRA) methodologies for a range of residential, commercial and industrial sectors.
- Detailed dispersion modelling of road vehicle and industrial emissions using ADMS-Roads and ADMS-6. Studies have included impact assessment of ground level pollutant and odour concentrations and assessment of suitability of development sites for proposed end-use.
- Project management and co-ordination of Environmental Impact Assessments (EIAs) and scoping reports for developments throughout the UK.
- Advanced canyon modelling to evaluate the impact of altered urban topography on air quality in built up areas.
- Assessment of fugitive dust impacts from a range of development sizes and mineral extraction sites.
- Production of air quality mitigation strategies specifically tailored to address issues at individual sites.
- Odour surveys to assess amenity and suitability of sites for potential future development for residential use.
- Organisation and delivery of bespoke monitoring programmes for a range of projects.

SELECT PROJECTS SUMMARY:

Medlock Street, Manchester

Air Quality Environmental Impact Assessment in support of the development of 1,014 purpose-built student accommodation units. Detailed dispersion modelling was undertaken in order to assess the potential for exposure of future occupants to any existing issues at the site, as well as air quality impacts associated with vehicles travelling to and from the scheme during operation. Modelling included complex road geometries, as well as advanced canyon inputs. The results indicated air quality conditions did not present an issue to planning consent.

Anstey Lane, Leicester

Odour Assessment in support of a residential-led development on land off Anstey Lane, Leicester. The proposals were located in close proximity to a number of eating and drinking establishments. As such, the Local Authority raised concerns that odour emissions may cause loss of amenity to future residents. A programme of Field Odour Surveys was undertaken to assess odour impacts from said premises. Results indicated odour effects at the site did not represent a constraint to planning consent.

Whitings Road, Barnet

Air Quality Neutral Assessment in support of a residential development comprising 35 units to determine compliance with the London Plan. Detailed consultation was undertaken with the Local Authority to ensure they were satisfied with the proposed measures aimed at reducing road vehicle exhaust emissions associated with the scheme. Following discussions and implementation of the identified strategies, compliance with the London Plan was achieved.

Honeycombe Beach, Bournemouth

Air Quality Assessment to determine air quality conditions within a covered car park serving a residential complex and evaluate the effectiveness of the existing ventilation system. Monitoring of pollutant concentrations over a three-month period at four locations at the site was undertaken. Internal concentrations of pollutants were below the relevant Work Exposure Limits (WELs) at all locations. As such, natural ventilation was considered to provide adequate control of internal air quality.

Brill Place, Camden

Organisation and delivery of a bespoke ambient monitoring programme to address a planning condition. The project included identification of appropriate monitoring equipment, agreement of the technical specifications and sampling positions with the Local Authority, as well as delivery of a text alert system to notify residents of exceedences of the relevant trigger levels and appropriate action to be taken to reduce exposure.

Matching Airport, Abbess Roding

Air Quality Assessment in support of a flexible generation facility. Dispersion modelling was undertaken to determine potential changes in pollution levels as a result of emissions from the installation and consider potential impacts at nearby sensitive receptor locations. Predicted concentrations of NO_2 were below the relevant air quality criteria at all locations of relevant exposure across all meteorological data sets modelled. The overall effects of the development were predicted to be not significant.