Resource & Environmental Consultants Ltd

National Consultancy, Locally Delivered

Air Quality Assessment
317 Finchley Road, London

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Report Prepared For: 317 Finchley Road Ltd

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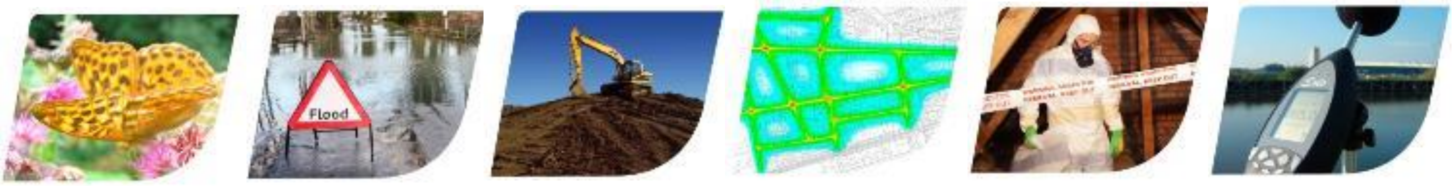

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EXECUTIVE SUMMARY

Resource and Environmental Consultants Ltd was commissioned by 317 Finchley Road Ltd to undertake an Air Quality Assessment to accompany a planning application for a mixed use development at 317 Finchley Road, London.

The proposals comprise the redevelopment of the site to provide commercial space and circa 22 residential flats, commercial space and associated infrastructure.

The site is located within an area identified by the London Borough of Camden as experiencing elevated pollutant concentrations. Developments within this area have the potential to introduce future users to poor air quality. Additionally, the development has the potential to cause impacts during construction and operation. As such, an Air Quality Assessment was required to quantify pollution levels across the site, consider its suitability for the proposed use and assess potential impacts as a result of the development.

Potential construction phase air quality impacts were assessed as a result of fugitive dust emissions from 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.

Potential impacts during the operational phase of the development may occur due to road traffic exhaust emissions associated with vehicles travelling to and from the site. A screening assessment was therefore undertaken to determine the potential for trips generated by the development to affect local air quality. This indicated that impacts were not anticipated to be significant.

Dispersion modelling was undertaken in order to quantify pollutant concentrations at the site and assess the potential for future site users to be exposed to poor air quality. The results indicated high pollutant concentrations at the ground, first and second floor of the development.

In order to reduce future exposure of residents to poor air quality, suitable mitigation for inclusion within the development was identified. This included a mechanical ventilation system to supply clean air to specified areas. This should be implemented for all residential units from the lower ground floor to the second floor within the development. Mitigation of this type is considered suitable for a development of this size and nature.

Based on the assessment results the site is considered suitable for the proposed end use subject to the inclusion of relevant mitigation measures, and complies with the London Plan, the London Borough of Camden’s Local Plan and relevant legislation.

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APPENDICES

1.0 INTRODUCTION

1.1 Background

Resource and Environmental Consultants (REC) Ltd was commissioned by 317 Finchley Road Ltd to undertake an Air Quality Assessment to accompany a planning application for a proposed mixed use development at 317 Finchley Road, London.

The site is located in an area identified by the London Borough of Camden (LBoC) as experiencing elevated pollutant concentrations. Developments within this area have the potential to introduce future users to poor air quality. Additionally, the development has the potential to cause air quality impacts at sensitive locations. As such, an Air Quality Assessment was required to quantify baseline conditions, assess suitability for the proposed end-use and consider potential effects in the vicinity of the site.

1.2 Site Location and Context

The site is located at 317 Finchley Road, London at approximate National Grid Reference (NGR): 526050, 185060. Reference should be made to Figure 1 for a location plan and Figure 2 for a site layout.

The proposals comprise the redevelopment of the site to provide commercial space and circa 22 residential flats, commercial space and associated infrastructure.

The development is located within an Air Quality Management Area (AQMA), declared by LBoC due to exceedences of the annual mean Air Quality Objective (AQO) for nitrogen dioxide (NO_2) and the 24-hour AQO for particulate matter with an aerodynamic diameter of less than 10µm (PM_{10}). As such, there are concerns that the proposals could expose future site users to elevated pollution concentrations. Additionally, the development has the potential to cause air quality impacts at sensitive receptor locations as a result of emissions associated with the construction and operational phases. An Air Quality Assessment was therefore required to determine baseline conditions, consider location suitability for residential use and provide consideration of potential effects as a result of the proposals. This is detailed in the following report.

1.3 Limitations

This report has been produced in accordance with REC's standard terms of engagement. REC has prepared this report solely for the use of the Client and those parties with whom a warranty agreement has been executed, or with whom an assignment has been agreed. Should any third party wish to use or rely upon the contents of the report, written approval must be sought from REC; a charge may be levied against such approval.

2.0 LEGISLATION AND POLICY

2.1 European Legislation

European Union (EU) air quality legislation is provided within Directive 2008/50/EC, which came into force on 11th June 2008. This Directive consolidated previous legislation which was designed to deal with specific pollutants in a consistent manner and provided new air quality objectives for particulate matter with an aerodynamic diameter of less than 2.5µm ($PM_{2.5}$). The consolidated Directives include:

- Directive 99/30/EC - the First Air Quality "Daughter" Directive - sets ambient Air Quality Limit Values (AQLVs) for NO_2, oxides of nitrogen (NO_x), sulphur dioxide, lead and PM_{10};
- Directive 2000/69/EC - the Second Air Quality "Daughter" Directive - sets ambient AQLVs for benzene and carbon monoxide; and,
- Directive 2002/3/EC - the Third Air Quality "Daughter" Directive - seeks to establish long-term objectives, target values, an alert threshold and an information threshold for concentrations of ozone in ambient air.

The fourth daughter Directive was not included within the consolidation and is described as:

- Directive 2004/107/EC - sets health-based limits on polycyclic aromatic hydrocarbons, cadmium, arsenic, nickel and mercury, for which there is a requirement to reduce exposure to as low as reasonably achievable.

2.2 UK Legislation

The Air Quality Standards Regulations (2010) came into force on 11th June 2010 and transpose the EU Directive 2008/50/EC into UK law. AQLVs were published in these regulations for 7 pollutants, as well as Target Values for an additional 5 pollutants.

Part IV of the Environment Act (1995) requires UK government to produce a national Air Quality Strategy (AQS) which contains standards, objectives and measures for improving ambient air quality. The most recent AQS was produced by the Department for Environment, Food and Rural Affairs (DEFRA) and published in July 2007[1]. The AQS sets out AQOs that 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 compliance vary slightly.

Table 1 presents the AQOs for pollutants considered within this assessment.

[1] The Air Quality Strategy for England, Scotland, Wales and Northern Ireland, DEFRA, 2007.

Table 1 Air Quality Objectives

Pollutant	Air Quality Objective	
	Concentration (μg/m^3)	Averaging Period
NO_2	40	Annual mean
	200	1-hour mean; not to be exceeded more than 18 times a year
PM_{10}	40	Annual mean
	50	24-hour mean; not to be exceeded more than 35 times a year

Table 2 summarises the advice provided in DEFRA guidance LAQM.(TG16)[2] on where the AQOs for pollutants considered within this report apply.

Table 2 Examples of Where the Air Quality Objectives Apply

Averaging Period	Objectives Should Apply At	Objectives Should Not Apply At
Annual mean	All locations where members of the public might be regularly exposed Building façades of residential properties, schools, hospitals, care homes 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
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-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 Local Air Quality Management Technical Guidance LAQM.(TG16), DEFRA, 2016.

2.3 Local Air Quality Management

Under Section 82 of the Environment Act (1995) (Part IV) 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 considering present and likely future air quality against the AQOs. If it is predicted that levels at sensitive locations where members of the public are regularly present for the relevant averaging period 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 (AQAP), the objective of which is to reduce pollutant concentrations in pursuit of the AQOs.

2.4 Dust

The main requirements with respect to dust control from industrial or trade premises not regulated under the Environmental Permitting (England and Wales) Regulations (2010) 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."

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). Enforcement can insist that there be no dust beyond the boundary of the works. 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 practice measures.

2.5 National Planning Policy

2.5.1 National Planning Policy Framework

The National Planning Policy Framework[3] (NPPF) was published on 27th March 2012 and sets out the Government's core policies and principles with respect to land use planning, including air quality. The document includes the following considerations which are relevant to this assessment:

> "The planning system should contribute to and enhance the natural and local environment by: [...]
>
> Preventing both new and existing development from contributing to or being put at unacceptable risk from, or being adversely affected by unacceptable levels of soil, air, water or noise pollution or land instability"
>
> "Planning policies should sustain compliance with and contribute towards EU limit values or national objectives for pollutants, taking into account the presence of Air Quality

3 National Planning Policy Framework, Department for Communities and Local Government, 2012.

> Management Areas and the cumulative impacts on air quality from individual sites in local areas. Planning decisions should ensure that any new development in Air Quality Management Areas is consistent with the local air quality action plan."

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

2.5.2 National Planning Practice Guidance

The National Planning Practice Guidance[4] (NPPG) web-based resource was launched by the Department for Communities and Local Government on 6th March 2014 to support the NPPF and make it more accessible. The air quality pages are summarised under the following headings:

1. Why should planning be concerned about air quality?
2. What is the role of Local Plans 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 be relevant to a planning decision?
6. Where to start if bringing forward a proposal where air quality could be a concern?
7. How detailed does an air quality assessment need to be?
8. How can an impact on air quality be mitigated?
9. How do considerations about air quality fit into the development management process?

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

2.6 Local Planning Policy

2.6.1 The London Plan

The Further Alterations To The London Plan[5] was published in March 2015 and sets out a fully integrated economic, environmental, transport and social framework for the development of the capital until 2031. London boroughs' local plans need to be in general conformity with the London Plan, and its policies guide decisions on planning applications by councils and the Mayor.

The London Plan policies relating to air quality are outlined below:

> "Policy 5.3 - Sustainable design and construction
>
> **Strategic**
>
> - The highest standards of sustainable design and construction should be achieved in London to improve the environmental performance of new developments and to adapt to the effects of climate change over their lifetime.

4 http://planningguidance.planningportal.gov.uk/.
5 The London Plan, Further Alterations To The London, Greater London Authority, 2015.

Planning decisions

- Development proposals should demonstrate that sustainable design standards are integral to the proposal, including its construction and operation, and ensure that they are considered at the beginning of the design process.
- Major development proposals should meet the minimum standards outlined in the Mayor's supplementary planning guidance and this should be clearly demonstrated within a design and access statement. The standards include measures to achieve other policies in this Plan and the following sustainable design principles:
- […]
- Minimising pollution (including noise, air and urban run-off)
- […]"

"Policy 7.14 - Improving air quality

Strategic

- The Mayor recognises the importance of tackling air pollution and improving air quality to London's development and the health and well-being of its people. He will work with strategic partners to ensure that the spatial, climate change, transport and design policies of this plan support implementation of his Air Quality and Transport strategies to achieve reductions in pollutant emissions and minimise public exposure to pollution.

Planning decisions

Development proposals should:

- Minimise increased exposure to existing poor air quality and make provision to address local problems of air quality (particularly within Air Quality Management Areas (AQMAs) and where development is likely to be used by large numbers of those particularly vulnerable to poor air quality, such as children or older people) such as by design solutions, buffer zones or steps to promote greater use of sustainable transport modes through travel plans (see Policy 6.3).
- Promote sustainable design and construction to reduce emissions from the demolition and construction of buildings following the best practice guidance in the GLA and London Council's 'The control of dust and emissions from construction and demolition'.
- Be at least 'air quality neutral' and not lead to further deterioration of existing poor air quality (such as areas designated as Air Quality Management Areas (AQMAs).
- Ensure that where provision needs to be made to reduce emissions from a development, this is usually made on-site. Where it can be demonstrated that on-site provision is impractical or inappropriate, and that it is possible to put in place measures having clearly demonstrated equivalent air quality benefits, planning obligations or planning conditions should be used as appropriate to ensure this, whether on a scheme by scheme basis or through joint area-based approaches."

These policies have been considered throughout the completion of this Air Quality Assessment.

2.6.2 London Borough of Camden Local Plan

LBoC's Local Plan consists of a portfolio of documents, including the Core Strategy[6] and the Camden Development Policies[7].

The Core Strategy was formally adopted in 2010 and sets out the spatial vision, objectives, development strategy and a series of key policies that will guide the scale, location and type of development in the borough until 2025. As such, the policies contained within the Core Strategy provide the current basis for the determination of planning applications within LBoC's area of jurisdiction.

A review of the Core Strategy indicated the following policy in relation to air quality that is relevant to this assessment:

> "CS16 - Improving Camden's health and well-being
>
> The Council will seek to improve health and well-being in Camden. We will:
>
> […]
>
> e) recognise the impact of poor air quality on health and implement Camden's Air Quality Action Plan which aims to reduce air pollution levels."

The Camden Development Policies were also adopted in 2010 and describe the planning policies to be implemented by LBoC in order to achieve the goals set out by the Core Strategy.

A review of the Development Policies indicated the following policies in relation to air quality that are relevant to this assessment:

> "DP22 - Promoting sustainable design and construction
>
> [...]
>
> The Council will require development to be resilient to climate change by ensuring schemes include appropriate climate change adaptation measures, such as:
>
> […]
>
> i) reducing air pollution."
>
> "DP32 - Air Quality and Camden’s Clear Zone
>
> The Council will require air quality assessments where development could potentially cause significant harm to air quality. Mitigation measures will be expected in developments that are located in areas of poor air quality. "

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6 Camden Core Strategy, London Borough of Camden, 2010.
7 Camden Development Policies, London Borough of Camden, 2010.

Reference has been made to these policies during the undertaking of this Air Quality Assessment by assessing pollutant concentrations across the development site and determining potential air quality impacts as a result of the proposals.

3.0 METHODOLOGY

The proposed development has the potential to cause air quality impacts during the construction and operational phases in addition to exposing future site users to elevated pollution levels. These issues have been assessed in accordance with the following methodology.

3.1 Construction Phase Assessment

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 Greater London Authority (GLA) Supplementary Planning Guidance document 'The Control of Dust and Emissions During Construction and Demolition'[8].

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.

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}.

The assessment steps are detailed below.

3.1.1 Step 1

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

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

[8] The Control of Dust and Emissions during Construction and Demolition Supplementary Planning Guidance, Greater London Authority, 2014.

3.1.2 Step 2

Step 2 assesses the risk of potential dust impacts. A site is allocated to 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 defined as low, medium or high sensitivity (Step 2B).

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

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 building volume greater than 50,000m^3 • Potentially dusty construction material (e.g. concrete) • On-site crushing and screening • Demolition activities greater than 20m above ground level
	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 building volume 20,000m^3 to 50,000m^3 • Potentially dusty construction material • Demolition activities 10m to 20m above ground level

Magnitude	Activity	Criteria
	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 building volume under 20,000m^3 • Construction material with low potential for dust release (e.g. metal cladding or timber) • Demolition activities less than 10m above ground level • Demolition during wetter months
	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

Step 2B defines the sensitivity of the area around the development site for demolition, construction, earthworks and trackout. The factors influencing the sensitivity of the area are shown in Table 4.

Table 4 Examples of Factors Defining Sensitivity of an Area

<table>
<tr><th rowspan="2">Sensitivity</th><th colspan="2">Examples</th></tr>
<tr><th>Human Receptors</th><th>Ecological Receptors</th></tr>
<tr><td>High</td><td>• Users expect of 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</td><td>• Internationally or nationally designated site e.g. Special Area of Conservation</td></tr>
<tr><td>Medium</td><td>• 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</td><td>• Nationally designated site e.g. Sites of Special Scientific Interest</td></tr>
<tr><td>Low</td><td>• 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, playing fields, farmland, footpaths, short term car park and roads</td><td>• Locally designated site e.g. Local Nature Reserve</td></tr>
</table>

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

- 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 the 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.

These factors were considered in the undertaking of this assessment.

The sensitivity of the area to dust soiling effects on people and property is shown in Table 5.

Table 5 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
	1 - 10	Medium	Low	Low	Low
Medium	More than 1	Medium	Low	Low	Low
Low	More than 1	Low	Low	Low	Low

Table 6 outlines the sensitivity of the area to human health impacts.

Table 6 Sensitivity of the Area to Human Health Impacts

Receptor Sensitivity	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	-	More than 10	High	Medium	Low	Low	Low
	-	1 - 10	Medium	Low	Low	Low	Low
Low	-	More than 1	Low	Low	Low	Low	Low

Table 7 outlines the sensitivity of the area to ecological impacts.

Table 7 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

Step 2C combines the dust emission magnitude with the sensitivity of the area to determine the risk of unmitigated impacts. Table 8 outlines the risk category from demolition activities.

Table 8 Dust Risk Category from Demolition

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

Table 9 outlines the risk category from earthworks and construction activities

Table 9 Dust Risk Category from Earthworks and Construction

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

Table 10 outlines the risk category from trackout.

Table 10 Dust Risk Category from Trackout

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

3.1.3 Step 3

Step 3 requires the identification of site specific mitigation measures within the IAQM guidance 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.

3.1.4 Step 4

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'. This has been described as **negligible** within this report to provide continuity between assessment terminologies.

The determination of significance relies on professional judgement and reasoning should be provided as far as practicable. This has been considered throughout the assessment when defining predicted impacts. The IAQM[9] guidance suggests the provision of details of the assessor's qualifications and experience. These are provided in Appendix III.

3.2 Operational Phase Assessment

3.2.1 Future Exposure

The proposed development includes sensitive land use and is located within an AQMA. As such, the proposals have the potential to introduce new receptors into an area of existing poor air quality. Detailed dispersion modelling was therefore undertaken to quantify NO_2 and PM_{10} concentrations across the site and determine suitability for the proposed use. Reference should be made to Appendix II for details of the assessment inputs.

The results of the dispersion modelling assessment were compared against the Air Pollution Exposure Criteria (APEC) contained within the London Councils Air Quality and Planning Guidance[10] from the London Air Pollution Planning and the Local Environment (APPLE) working group. These are outlined in Table 11.

Table 11 Air Pollution Exposure Criteria

Category	Applicable Range	Recommendation
APEC - A	Below 5% of the annual mean AQO	No air quality grounds for refusal; however mitigation of any emissions should be considered

9 Guidance on the Assessment of Dust from Demolition and Construction, Institute of Air Quality Management, 2014.
10 London Councils Air Quality and Planning Guidance, London Councils, 2007.

Category	Applicable Range	Recommendation
APEC - B	Between 5% below or above the annual mean 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	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

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 users is therefore considered a suitable way to progress sustainable schemes in these locations and has been considered within this assessment.

3.2.2 Road Traffic Exhaust Emission Impacts

The development has the potential to impact on existing air quality as a result of road traffic exhaust emissions, such as NO_2 and PM_{10}, associated with vehicles travelling to and from the site. A screening assessment was therefore undertaken using the criteria contained within the Design Manual for Roads and Bridges (DMRB)[11] and Environmental Protection UK (EPUK) and Institute of Air Quality Management (IAQM) 'Land-Use Planning & Development Control: Planning for Air Quality (2015)'[12] guidance documents to determine the potential for trips generated by the development to affect local air quality.

The DMRB[13] provides the following criteria for determination of road links potentially affected by changes in traffic flow:

- Daily Annual Average Daily Traffic (AADT) flows change by 1,000 or more;
- Daily Heavy Duty Vehicle (HDV) AADT flows change by 200 or more;
- Daily average speed changes by 10km/hr or more; or,
- Peak hour speed changes by 20km/hr or more.

The EPUK and IAQM 'Land-Use Planning & Development Control: Planning for Air Quality (2015)'[14] guidance document states the following criteria to help establish when an air quality assessment is likely to be considered necessary:

11 Design Manual for Roads and Bridges Volume 11, Section 3, Part 1, HA207/07, Highways Agency, 2007.
12 Land-Use Planning & Development Control: Planning for Air Quality, EPUK and IAQM, 2015.
13 Design Manual for Roads and Bridges Volume 11, Section 3, Part 1, HA207/07, Highways Agency, 2007.
14 Land-Use Planning & Development Control: Planning for Air Quality, EPUK and IAQM, 2015.

- Proposals that will cause a change in Light Duty Vehicle (LDV) flows of more than 100 AADT within or adjacent to an AQMA or more than 500 elsewhere;
- Proposals that will cause a change in HDV flows of more than 25 AADT within or adjacent to an AQMA or more than 100 elsewhere;
- Proposals that would realign roads within an AQMA by more than 5m;
- Proposals that will introduce new junctions or remove existing junctions near relevant receptors;
- Proposals that will introduce or change a bus station or change flows of buses by more than 25 AADT within an AQMA or more than 100 AADT elsewhere;
- Proposals which will include an underground car park with extraction system which will be within 20m of a relevant receptor and have more than 100 movements per day;
- Proposals which include either a centralised plant using biofuel, a combustion plant with single or thermal input >300KWh or a standby emergency generator associated with a centralised energy centre; and,
- Proposals which include combustion processes of any size.

Should these criteria not be met, then the DMRB[15] and EPUK and IAQM guidance[16] documents consider air quality impacts associated with a scheme to be **negligible** and no further assessment is required.

Should screening of the traffic data indicate that any of the above criteria are met, then potential impacts at sensitive receptor locations can be assessed by calculating the predicted change in NO_2 and PM_{10} 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 EPUK and IAQM guidance[17].

15 Design Manual for Roads and Bridges Volume 11, Section 3, Part 1, HA207/07, Highways Agency, 2007.
16 Land-Use Planning & Development Control: Planning for Air Quality, EPUK and IAQM, 2015.
17 Land-Use Planning & Development Control: Planning for Air Quality, EPUK and IAQM, 2015.

4.0 BASELINE

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.

4.1 Local Air Quality Management

As required by the Environment Act (1995), LBoC 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 concentrations of PM_{10} are above the AQOs within the borough. As such, an AQMA has been declared, which is described as:

"Camden AQMA - The whole borough."

The development is located within the Camden AQMA. As such, there is the potential for the development to introduce future site users to elevated pollutant concentrations as well as cause adverse impacts to air quality within this area. This has been considered within this report.

LBoC has concluded that concentrations of all other pollutants considered within the AQS are currently below the relevant AQOs and as such no further AQMAs have designated.

4.2 Air Quality Monitoring

LBoC monitors pollutant concentrations using continuous and periodic methods throughout their area of jurisdiction. There are four automatic analysers operated by LBoC, the closest of which is Swiss Cottage, located approximately 0.9km south-east of the site at NGR: 526629, 184391. Monitoring results for NO_2 and PM_{10} from recent years are shown in Table 12 and Table 13 respectively. Exceedences of the relevant AQO are shown in **bold**.

Table 12 Automatic Monitoring Site Results - NO_2

Site ID	Location	Type	NGR (m)		2013 Annual Mean NO_2 Concentration ($\mu g/m^3$)		
			X	Y	2011	2012	2013
CD1	Swiss Cottage	Kerbside	526633	184392	**71**	**70**	**63**

As indicated in Table 12, the annual mean AQO for NO_2 was exceeded the automatic monitoring site in recent years. This is to be expected due to its kerbside location within an AQMA.

Table 13 Automatic Monitoring Site Results - PM_{10}

Site ID	Location	Type	NGR (m)		2013 Annual Mean PM_{10} Concentration ($\mu g/m^3$)		
			X	Y	2011	2012	2013
CD1	Swiss Cottage	Kerbside	526633	184392	27	23	21

As indicated in Table 13, the annual mean AQO for PM_{10} was not exceeded at the automatic analyser in recent years.

LBoC also utilise passive diffusion tubes to monitor NO_2 concentrations throughout the borough. A review of the most recent LAQM Progress Report[18] available indicated that there are three diffusion tubes located within the vicinity of the site. Recent monitoring results from these locations are shown in Table 14. Exceedences of the AQO are shown in **bold**.

Table 14 Diffusion Tube NO_2 Monitoring Results

Site ID	Location	Type	NGR (m)		Annual Mean NO_2 Concentration (μg/m^3)		
			X	Y	2011	2012	2013
CA7	Frognal Way	Background	526213	185519	31.46	28.89	31.95
CA15	Swiss Cottage	Kerbside	526633	184392	**73.17**	**72.66**	**83.08**
CA17	47 Fitzjohn's Avenue	Roadside	526547	185125	**58.39**	**61.20**	**65.24**

As indicated in Table 14, the annual mean AQO for NO_2 was exceeded at two diffusion tube locations in recent years. This is to be expected due to their roadside and kerbside locations within an AQMA. Reference should be made to Figure 3 for a graphical representation of the monitoring locations.

4.3 Background Pollutant Concentrations

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: 526500, 185500. Data for this location was downloaded from the DEFRA website[19] for the purpose of this assessment and is summarised in Table 15.

Table 15 Predicted Background Pollutant Concentrations

Pollutant	Predicted Background Concentration (μg/m^3)	
	2013	2015
NO_x	51.35	48.59
NO_2	31.76	30.29
PM_{10}	22.21	21.50

As shown in Table 15, background concentrations in the vicinity of the site do not exceed the relevant AQOs. Comparison with the monitoring results indicates the significant impact that vehicle exhaust emissions from the highway network have on pollutant concentrations at roadside locations.

18 Progress Report, London Borough of Camden, 2014.
19 http://laqm.defra.gov.uk/review-and-assessment/tools/background-maps.html.

4.4 Sensitive Receptors

A sensitive receptor is defined as any location which may be affected by changes in air quality as a result of a development. These have been defined for dust and road vehicle exhaust emission impacts in the following Sections.

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 16.

Table 16 Demolition, Earthworks and Construction Dust Sensitive Receptors

Distance from Site Boundary (m)	Approximate Number of Residential Receptors	Approximate Number of Ecological Receptors
Less than 20	10 - 100	0
20 - 50	10 - 100	0
50 - 100	More than 100	-
100 - 350	More than 100	-

Reference should be made to Figure 4 for a graphical representation of demolition, earthworks and construction dust buffer zones.

Receptors sensitive to potential dust impacts from trackout were identified from a desk-top study of the area up to 100m from the road network within 500m of the site access. These are summarised in Table 17. The exact construction vehicle access routes were not available for the purpose of this assessment as they will depend on sourcing of materials. This is likely to be decided by the contractor. However, it was assumed traffic would access the site from the north and south of the A41 to ensure the maximum potential trackout distance was considered.

Table 17 Trackout Dust Sensitive Receptors

Distance from Site Boundary (m)	Approximate Number of Residential Receptors	Approximate Number of Ecological Receptors
Less than 20	More than 100	0
20 - 50	More than 100	0
50 - 100	More than 100	-

Reference should be made to Figure 5 for a graphical representation of trackout dust buffer zones.

There are no ecological receptors within 50m of the site or trackout boundary. As such, ecological impacts have not been assessed further within this report.

A number of additional factors have been considered when determining the sensitivity of the surrounding area. These are summarised in Table 18.

Table 18 Additional Area Sensitivity Factors

Guidance	Comment
Whether there is any history of dust generating activities in the area	The site is located in an area which is experiencing regeneration. There is likely to have been a history of dust generating activities due to development in the locality
The likelihood of concurrent dust generating activity on nearby sites	A review of the LBoC planning portal indicated that 2014/7844/P, a large mixed use development (including 128 residential units), has been proposed for 328-338 Finchley Road. As such, there is a likelihood for concurrent dust generation if the construction phases overlap
Pre-existing screening between the source and the receptors	Vegetation is sparse in the vicinity of the development. As such, pre-existing screening to receptors is limited
Conclusions drawn from analysing local meteorological data which accurately represent the area: and if relevant the season during which works will take place	The wind direction is predominantly from the south-west of the development, as shown in Figure 6. As such, properties to the north-east would be most affected by dust emissions
Conclusions drawn from local topography	The topography of the area appears to be predominantly flat. As such, there are no constraints to dust dispersion
Duration of the potential impact, as a receptor may become more sensitive over time	Currently, the construction phase is estimated to last 80 weeks
Any known specific receptor sensitivities which go beyond the classifications given in the document.	No specific receptor sensitivities identified during the baseline

Based on the criteria shown in Table 4, the sensitivity of the receiving environment to potential dust impacts was considered to be **high**. This was because users would expect to enjoy a reasonable level of amenity, aesthetics or value of their property could be diminished by soiling and people would be expected to be present for extended periods of time e.g. residential properties.

The sensitivity of the receiving environment to specific potential dust impacts, based on the criteria shown in Section 3.1.2, is shown in Table 19.

Table 19 Sensitivity of the Surrounding Area

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

There is the potential for air quality impacts as a result of the construction and operation of the proposed development in addition to the exposure of future site users to elevated pollution levels. These are assessed in the following Sections.

5.1 Construction Phase Assessment

5.1.1 Step 1

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

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.

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.

5.1.2 Step 2

Demolition

Demolition will involve the removal of existing buildings on the site. It is anticipated that the volume of buildings to be demolished is likely to be less than 20,000m^3. As such, the magnitude of potential dust emissions from demolition activities is **small**, in accordance with the criteria outlined in Table 3.

Table 19 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.

Table 19 indicates the sensitivity of the area to human health is **low**. In accordance with the criteria outlined in Table 8, the development is considered to be a **negligible** risk site for human health as a result of demolition activities.

Earthworks

Earthworks will primarily involve excavating material, haulage, tipping and stockpiling, as well as site levelling and landscaping. Information on soil type was not available for the purpose of this assessment. As such, the soil type was considered to be potentially dusty in order to provide a worst-case scenario.

The proposed development site is estimated to cover an area less than 2,500m^2. In accordance with the criteria outlined in Table 3, the magnitude of potential dust emissions from earthworks is therefore **small**.

Table 19 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 **low** risk site for dust soiling as a result of earthworks activities.

Table 19 indicates the sensitivity of the area to human health is **low**. In accordance with the criteria outlined in Table 9, the development is considered to be a **negligible** risk site for human health as a result of earthwork activities.

Construction

Due to the size of the development site the total building volume is likely to be less than 25,000m^3. In accordance with the criteria outlined in Table 3, the magnitude of potential dust emissions from construction is therefore **small**.

Table 19 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 **low** risk site for dust soiling as a result of construction activities.

Table 19 indicates the sensitivity of the area to human health is **low**. In accordance with the criteria outlined in Table 9, the development is considered to be a **negligible** risk site for human health as a result of construction activities.

Trackout

Information on the number of HDV trips to be generated during the construction phase of the development was not available at the time of assessment. Similarly, the surface material and unpaved road length was not known at this stage of the project.

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

Table 19 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 **low** risk site for dust soiling as a result of trackout activities.

Table 19 indicates the sensitivity of the area to human health is **medium**. In accordance within the criteria outlined in Table 10, the development is considered to be a **negligible** risk site for human health as a result of trackout activities.

Summary of the Risk of Dust Effects

A summary of the risk from each dust generating activity is provided in Table 20.

Table 20 Summary of Potential Unmitigated Dust Risks

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

As indicated in Table 20, the potential risk of dust soiling is **medium** from demolition activities and **low** from earthworks, construction and trackout activities. The potential risk of human health impacts is **negligible** from demolition, construction and earthworks and trackout activities.

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.

5.1.3 Step 3

The IAQM guidance provides a number of potential mitigation measures to reduce impacts during the construction phase. These measures have been adapted for the development site as summarised in Table 21. A Construction Management Plan (CMP), Dust Management Plan (DMP) and Construction Logistics Plan (CLP) will be implemented during the construction phase. The mitigation measures outlined in Table 21 can be reviewed prior to the commencement of construction works incorporated into the existing the strategies as applicable.

Table 21 Fugitive Dust Mitigation Measures

Issue	Control Measure
Communications	• Develop and implement a Stakeholder Communications Plan that includes community engagement. The Construction Management Plan recommends the distribution of newsletters to inform local residents of the progress of the works • The CMP recommends appropriate signage. This should include displaying display the name and contact details of person(s) accountable for air quality and dust issues on the site boundary and the head or regional office contact information • A Dust Management Plan has been developed to control fugitive dust emissions
Site Management	• Record all dust and air quality complaints • Record any exceptional incidents that cause dust/or air emissions, and the action taken to resolve the situation • Make complaints log available to LA when asked
Monitoring	• Carry out regular site inspections to monitor compliance with the DMP, as stated within the CMP • Increase frequency of site inspections when activities with a high potential to produce dust are being carried out

Issue	Control Measure
Preparing and Maintaining the Site	• Plan site layout so that machinery and dust causing activities are located away from receptors, as stated within the CMP • Fully enclose site or specific operations where there is a high potential for dust production and the site as actives for an extensive period, as stated within the CMP • Avoid site runoff of water or mud • Use water as dust suppressant where applicable • Keep site fencing, barriers and scaffolding clean using wet methods. • Remove materials that have a potential to produce dust from site as soon as possible • Cover, seed or fence stockpiles to prevent wind whipping
Operating Vehicle/ Machinery and Sustainable Travel	• Ensure all on-road vehicles comply with the requirements of the London Low Emission Zone and the NRMM standards, as stated within the CMP • All vehicles to switch off engines - no idling vehicles • Avoid the use of diesel or petrol powered generators where practicable, as stated within the CMP • A Construction Logistics Plan will be implemented to manage sustainable deliveries
Operations	• Cutting equipment to use water as dust suppressant or suitable local extract ventilation, as stated within the CMP • Ensure adequate water supply on site for effective mitigation • Use enclosed chutes and covered skips • Minimise drop heights • Ensure equipment is readily available on site to clean any spillages
Demolition	• Ensure effective water suppression is used during demolition operations, as proposed within the DMP and CLP • Avoid explosive blasting. The Demolition Method Statement states that demolition will be performed by hand until the structure is reduced down to a safe height allowing for mechanical demolition to take place • Remove any biological debris before demolition
Waste Management	• No bonfires, as stated within the CMP
Earthworks and Construction	• Ensure sand and other aggregates are stored and not able to dry out

5.1.4 Step 4

Assuming the relevant mitigation measures outlined in Table 21 are implemented, the residual effect from all dust generating activities is predicted to be **negligible**, in accordance with the GLA guidance.

5.2 Operational Phase Assessment

5.2.1 Future Exposure

The proposed development has the potential to expose future users to elevated pollution levels. This was assessed through dispersion modelling, with the results presented in the following Sections.

Nitrogen Dioxide

Figure 8 to Figure 11 display the contour plots for the predicted annual mean NO_2 concentrations at 1.5m, 4.5m, 7.5m and 10.5m to represent exposure across the ground, first, second and third level of the proposed development. It should be noted that ground floor concentrations were also used to represent that of the basement and lower ground levels.

Predicted annual mean NO_2 concentrations across the development site are summarised in Table 22. Exceedences of the annual mean AQO for NO_2 are highlighted in **bold**.

Table 22 Modelling Results - Annual Mean NO_2

Floor	Predicted 2015 Annual Mean NO_2 Concentration Range (μg/m^3)	APEC Category
Ground (1.5m)	38.31 - **54.25**	B - C
First (4.5m)	37.83 - **46.79**	A - C
Second (7.5m)	36.98 - 39.72	A - B
Third (10.5m)	35.99 - 36.66	A

Table 22 indicates predicted concentrations ranged from APEC - A to APEC - C across the site, in accordance with the London Councils Air Quality and Planning Guidance[20]. Exceedences of the annual mean AQO were predicted at the ground and first floor of the development.

Based on the dispersion modelling results, the site requires the implementation of mitigation measures to protect future residents from poor air quality. These are detailed in Section 6.0.

Predictions of 1-hour NO_2 concentrations were not produced as part of the dispersion modelling assessment. However, as stated in DEFRA Guidance LAQM.(TG16)[21] if annual mean NO_2 concentrations are below 60μg/m^3 then it is unlikely that the 1-hour AQO will be exceeded. Annual mean NO_2 concentrations above 60μg/m^3 were not predicted at any location across the site. As such, exceedences of the 1-hour AQO are unlikely.

It should be noted that Figures showing predicted annual mean NO_2 concentrations at heights above the third floor were not included as concentrations reduce at increased heights and as the relevant AQO was not exceeded at any location across the site at the third floor, the relevant AQO will not be exceeded at other levels.

[20] London Council Air Quality and Planning Guidance, London Councils, 2007.
[21] Local Air Quality Management Technical Guidance LAQM.(TG16), DEFRA, 2016.

Particulate Matter - Annual Mean

Annual mean PM_{10} concentrations were predicted across the development, as shown in Figure 12. This does not indicate any exceedences of the AQO at locations of relevant exposure, with concentrations ranging from 23.00µg/m^3 to 25.23µg/m^3. These are categorised as APEC - A, in accordance with the London Councils' criteria.

Particulate Matter - 24 Hour Mean

The predicted number of days with 24-hour mean PM_{10} concentrations greater than 50µg/m^3 was predicted across the development, as shown in Figure 13. This does not indicate any exceedences of the AQO at locations of relevant exposure, with the number of days exceeding 50µg/m^3 ranging from 8 to 12. This indicated the predicted number of days is below the permitted number of 35 at all locations on the development site.

Based on the results of the dispersion modelling assessment, the site is considered to be suitable for residential use without the implementation of mitigation techniques to protect future users from elevated PM_{10} concentrations.

5.2.2 Road Traffic Exhaust Emissions

Any additional vehicle movements associated with the proposed development will generate exhaust emissions, such as NO_2 and PM_{10}, on the local and regional road networks. Transport Planning Associates, the Transport Consultants for the project, indicated that the proposals are anticipated to produce a maximum of 26 trips on the local network per day.

Based on the information provided by Transport Planning Associates, it is not anticipated the development will result in a change of AADT flows of more than 1,000, produce over 200 HDV movements per day or significantly affect average speeds on the local road network. Additionally, it is unlikely that the proposed development will generate or increase traffic congestion, give rise to a significant change in AADT or peak traffic flows or in vehicle speed, significantly alter the traffic composition on local roads or include significant new car parking. As such, potential air quality impacts associated with operational phase road vehicle exhaust emissions are predicted to be **negligible**, in accordance with the DMRB[22] and EPUK and IAQM[23] screening criteria shown in Section 3.2.2.

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[22] Design Manual for Roads and Bridges Volume 11, Section 3, Part 1, HA207/07, Highways Agency, 2007.
[23] Land-Use Planning & Development Control: Planning for Air Quality, EPUK and IAQM, 2015.

6.0 MITIGATION

There are a number of air quality mitigation options available to reduce potential exposure of future site users to elevated pollutant concentrations. However, all techniques have financial implications and may therefore affect scheme viability. As such, they should only be included if necessary.

The scheme design has taken air quality impacts into account by proposing a winter garden at the Finchley Road frontage and locating the communal garden facility to the rear of the development to maximise distance from Finchley Road. In addition, roof gardens are to be located at the 7^{th} and 10^{th} floor level, where air quality concentrations are predicted to be lower than at reduced elevations.

Detailed dispersion modelling undertaken at heights equivalent to the proposed floor levels indicated that units located on the basement, lower ground, ground, first and second floors may be exposed to concentrations of NO_2 above the relevant AQO. Therefore, in accordance with the London Councils Air Quality and Planning Guidance, the inclusion of appropriate mitigation measures throughout the development is recommended in order to reduce the potential for exposure of future users to elevated pollutant concentrations.

It is proposed to include mechanical ventilation in all habitable rooms located on the basement, lower ground, first and second floors of the development. These units have concentrations within the APEC-B and APEC-C categories and require mitigation. Mechanical ventilation should include a centralised system with the inlet located at the third floor level (10.5m) or higher. This should ensure the supply of clean air for future site users. It should be noted that no proposed residential units will be located on the ground floor of the development, and as such, no mechanical ventilation is required for the ground floor.

The proposals include the provision of windows for all residential units. Therefore, there is the potential for exposure to elevated pollutant concentrations should the windows be open. As such, the development could incorporate a high specification of air tightness so, when these are closed, the apartments will suitably be protected from the pollutants outside. This allows residents access to amenity space and provides freedom of choice over whether natural ventilation is preferable during certain periods. The key to reducing exposure using this method is to ensure occupants are informed over the potential impacts associated with prolonged exposure to elevated pollutant levels. As such, it may also be possible to provide residents with a welcome pack containing air quality information which will allow them to follow appropriate advice on protection against high concentrations during certain periods.

7.0 CONCLUSION

REC Ltd was commissioned by 317 Finchley Road Ltd to undertake an Air Quality Assessment to accompany a planning application for a proposed mixed use development at 317 Finchley Road, London.

The proposals comprise the redevelopment of the site to provide commercial space and circa 22 residential flats, commercial space and associated infrastructure.

The site is located within an AQMA identified by LBoC for exceedences of the annual AQO for NO_2 and PM_{10}. Developments within this area have the potential to introduce future users to poor air quality. Additionally, the development has the potential to cause adverse air quality impacts from fugitive dust emissions during construction works and road traffic emissions from vehicles associated with the development. As such, an Air Quality Assessment was required to quantify pollution levels across the site, consider its suitability for the proposed use and assess potential impacts as a result of the proposals.

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 GLA 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 **negligible**.

Dispersion modelling was undertaken in order to quantify pollutant concentrations at the site and assess potential exposure of future users. Results were subsequently verified using local monitoring results. Exceedences of the annual mean AQO for NO_2 were predicted at the ground and first floor of the development. Predicted concentrations ranged from APEC - A to APEC - C in accordance with the relevant guidance. The annual mean and 24-hour mean AQO for PM_{10} was not exceeded at any location across the site.

In order to protect residents from poor air quality, mechanical ventilation should be included for all habitable rooms on the basement, lower ground, first and second floor levels. The inlet should be located at third floor level (10.5m) or higher. This will provide a supply of clean air to rooms affected by high pollution levels. Mitigation of this type is considered suitable for a development of this size and nature. Mechanical ventilation is not required for the ground floor level as no proposed residential units will be located on this level.

Potential impacts during the operational phase of the development may occur due to road traffic exhaust emissions associated with vehicles travelling to and from the site. An assessment was therefore undertaken using the DMRB[24] and EPUK and IAQM[25] screening criteria to determine the potential for trips generated by the development to affect local air quality. This indicated that impacts are likely to be **negligible** throughout the operational phase.

Based on the assessment results the site is considered suitable for the proposed use in regards air quality, subject to the inclusion of relevant mitigation measures.

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24 Design Manual for Roads and Bridges Volume 11, Section 3, Part 1, HA207/07, Highways Agency, 2007.
25 Land-Use Planning & Development Control: Planning for Air Quality, EPUK and IAQM, 2015.

8.0 ABBREVIATIONS

AADT	Annual Average Daily Traffic
ADM	Atmospheric Dispersion Modelling
AQAP	Air Quality Action Plan
AQLV	Air Quality Limit Value
AQMA	Air Quality Management Area
AQO	Air Quality Objectives
AQS	Air Quality Strategy
CERC	Cambridge Environmental Research Consultants
CLP	Construction Logistics Plan
CMP	Construction Management Plan
DEFRA	Department for Environment, Food and Rural Affairs
DfT	Department for Transport
DM	Do Minimum
DMP	Dust Management Plan
DMRB	Design Manual for Roads and Bridges
DS	Do Something
EPUK	Environmental Protection UK
EU	European Union
HDV	Heavy Duty Vehicle
GLA	Greater London Authority
IAQM	Institute of Air Quality Management
LA	Local Authority
LAQM	Local Air Quality Management
LBoC	London Borough of Camden
NGR	National Grid Reference
NO_2	Nitrogen dioxide
NO_x	Oxides of nitrogen
NPPF	National Planning Policy Framework
NPPG	National Planning Practice Guidance
$PM_{2.5}$	Particulate matter with an aerodynamic diameter of less than 2.5µm
PM_{10}	Particulate matter with an aerodynamic diameter of less than 10µm
REC	Resource and Environmental Consultants
TEMPRO	Trip End Model Presentation Program
z_0	Roughness Length

APPENDIX I FIGURES

Legend

Site Boundary

Title

Figure 1

Site Location

Project

Air Quality Assessment
317 Finchley Road, London

Project Number

AQ100339

Client

317 Finchley Road Ltd

Resource and Environmental Consultants Ltd
Osprey House, Broadway, Manchester M50 2UE

Tel – 0161 868 1300 Fax – 0161 868 1301
www.recltd.co.uk

1 BASEMENT PLAN   2 LOWER GROUND PLAN   3 GROUND FLOOR PLAN

Title

Figure 2

Site Layout for Basement to Ground Floor Level

Project

Air Quality Assessment
317 Finchley Road, London

Project Number

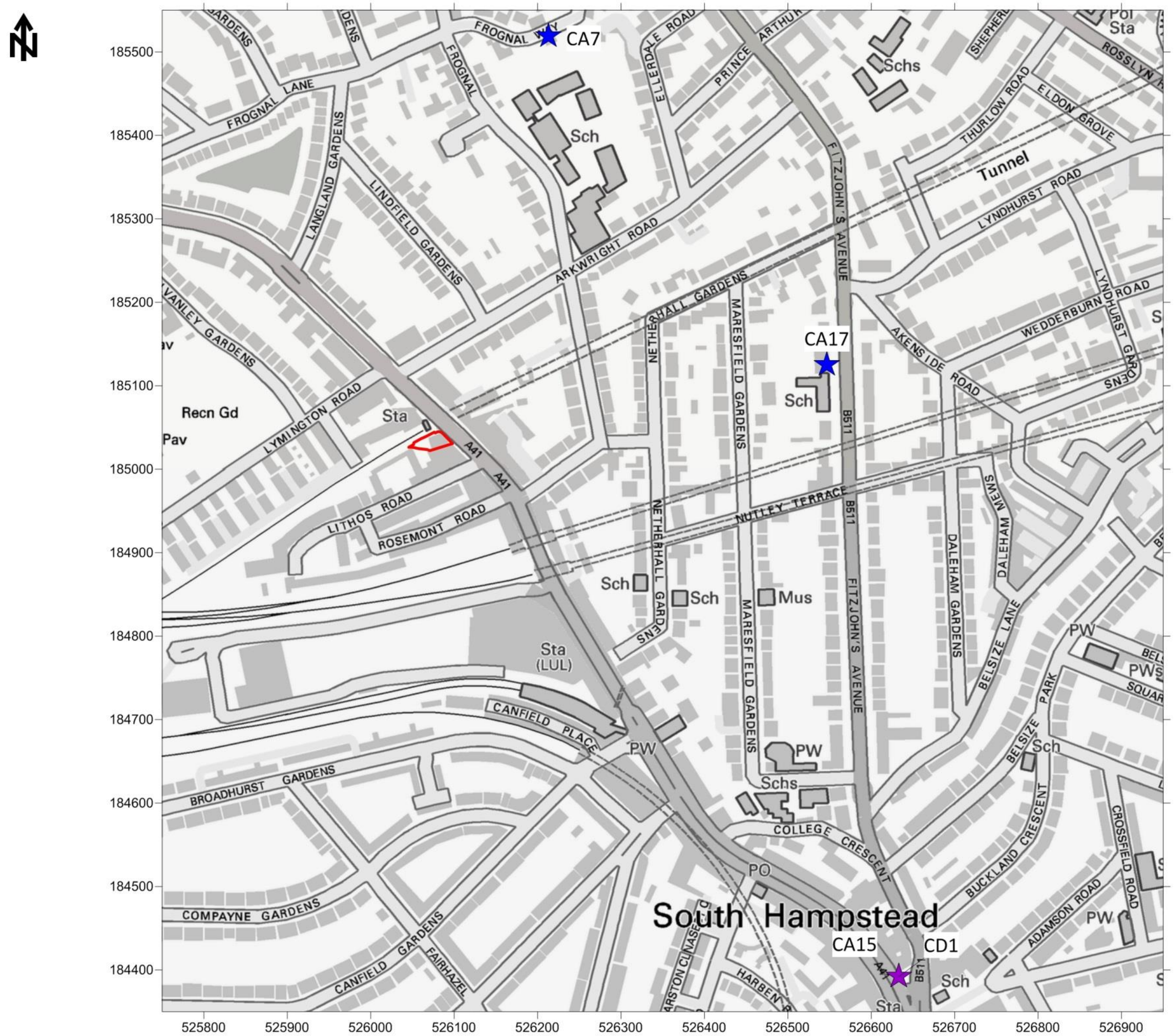
AQ100339

Client

317 Finchley Road Ltd

Resource and Environmental Consultants Ltd
Osprey House, Broadway, Manchester M50 2UE

Tel – 0161 868 1300 Fax – 0161 868 1301
www.recltd.co.uk



Legend

Site Boundary

Diffusion Tube Monitoring Location

Automatic Monitoring Location

Title

Figure 3

Diffusion Tube Monitoring Locations

Project

Air Quality Assessment
317 Finchley Road, London

Project Number

AQ100339

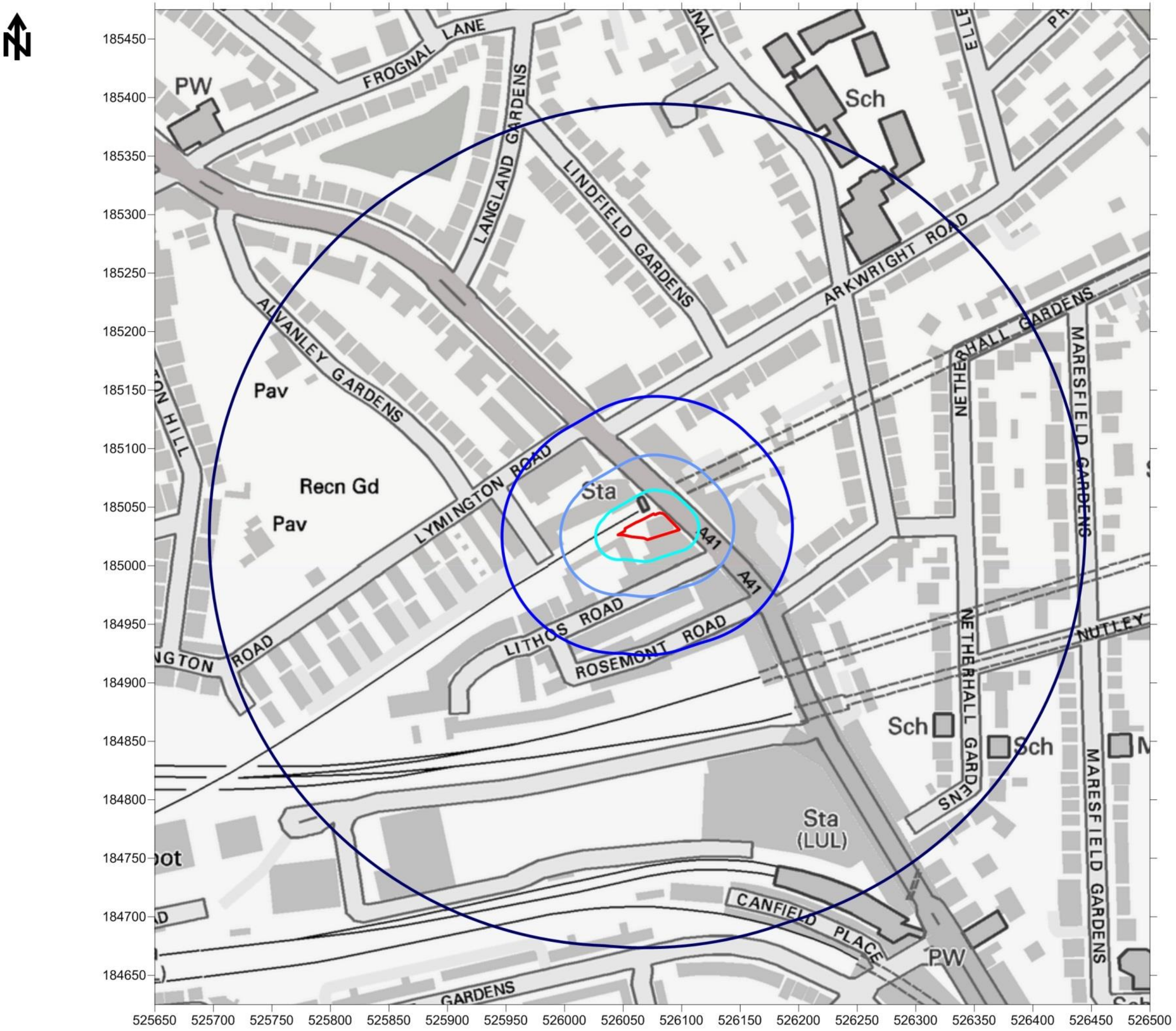
Client

317 Finchley Road Ltd

REC Resource & Environmental Consultants Ltd

Resource and Environmental Consultants Ltd
Osprey House, Broadway, Manchester M50 2UE

Tel – 0161 868 1300 Fax – 0161 868 1301
www.recltd.co.uk



Legend

Site Boundary

20m from Site Boundary

50m from Site Boundary

100m from Site Boundary

350m from Site Boundary

Title

Figure 4

Demolition, Earthworks and Construction Dust Buffer Zones

Project

Air Quality Assessment
317 Finchley Road, London

Project Number

AQ100339

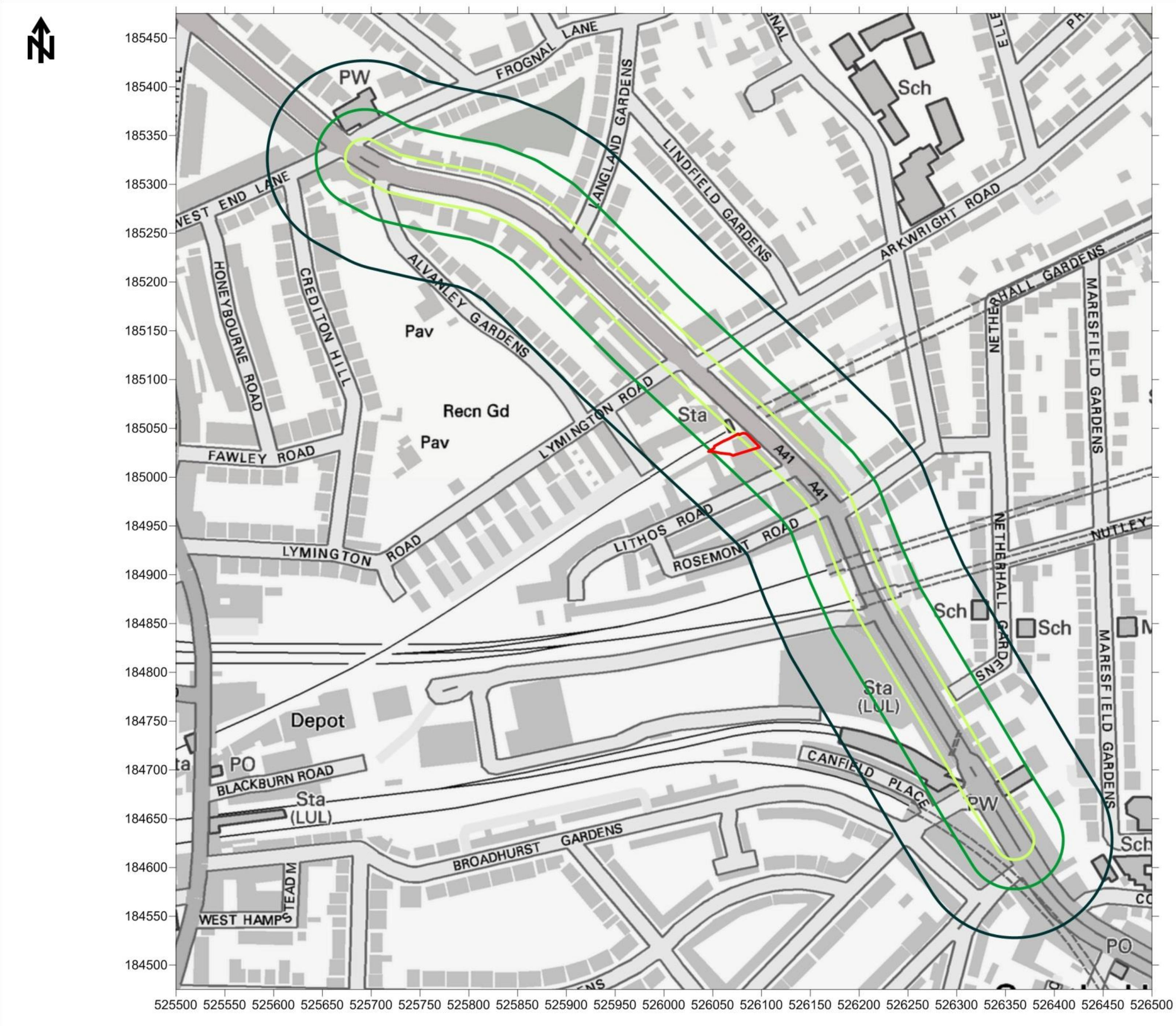
Client

317 Finchley Road Ltd

REC Resource & Environmental Consultants Ltd

Resource and Environmental Consultants Ltd
Osprey House, Broadway, Manchester M50 2UE

Tel – 0161 868 1300 Fax – 0161 868 1301
www.recltd.co.uk



Legend

Site Boundary

20m from Site Access Route

50m from Site Access Route

Title

Figure 5

Trackout Dust Buffer Zones

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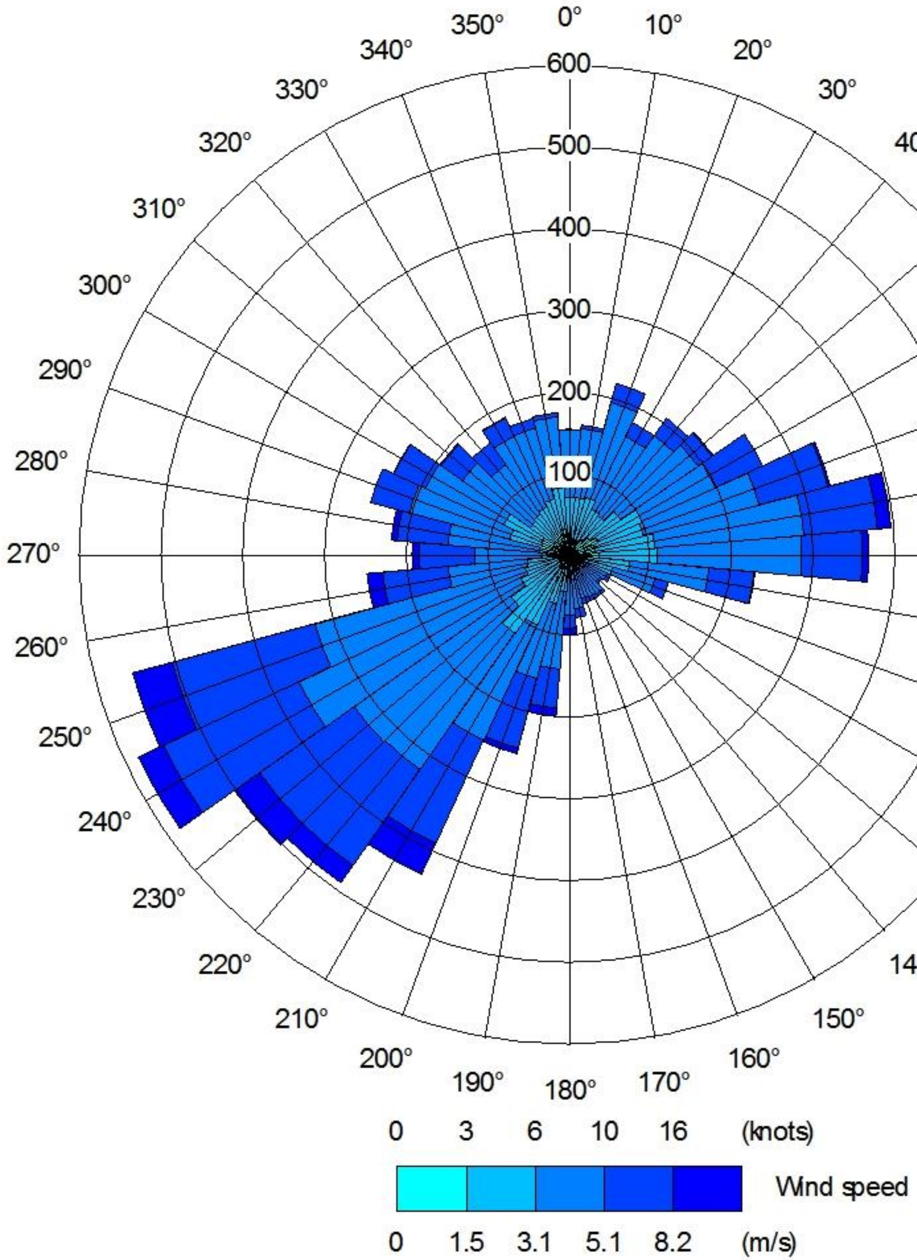

Legend

Title

Figure 6

Wind Rose of 2013 London City Airport Meteorological Data

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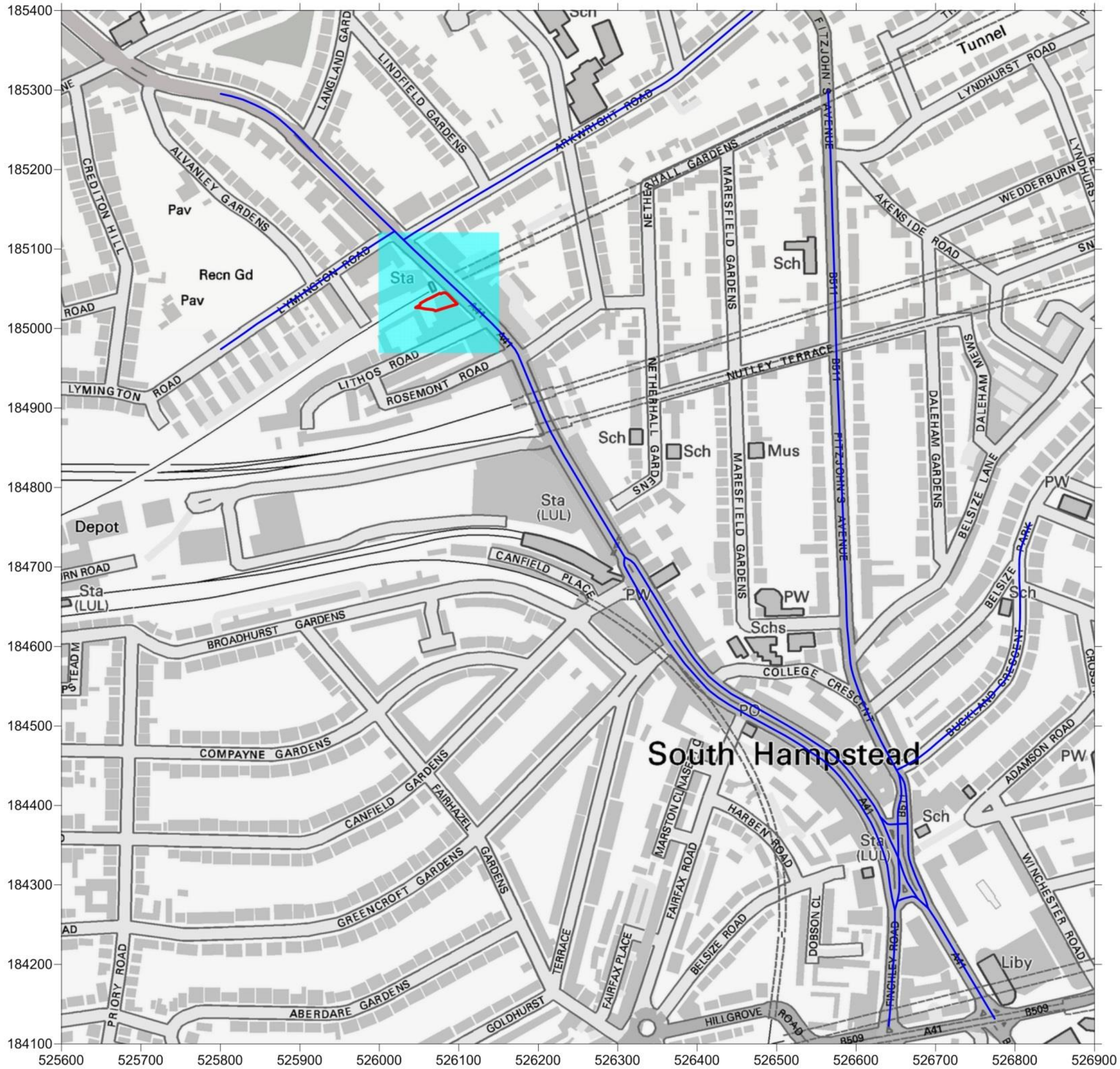

Legend

Site Boundary

Modelled Road Link

Cartesian Grid

Title

Figure 7

ADMS-Roads Input

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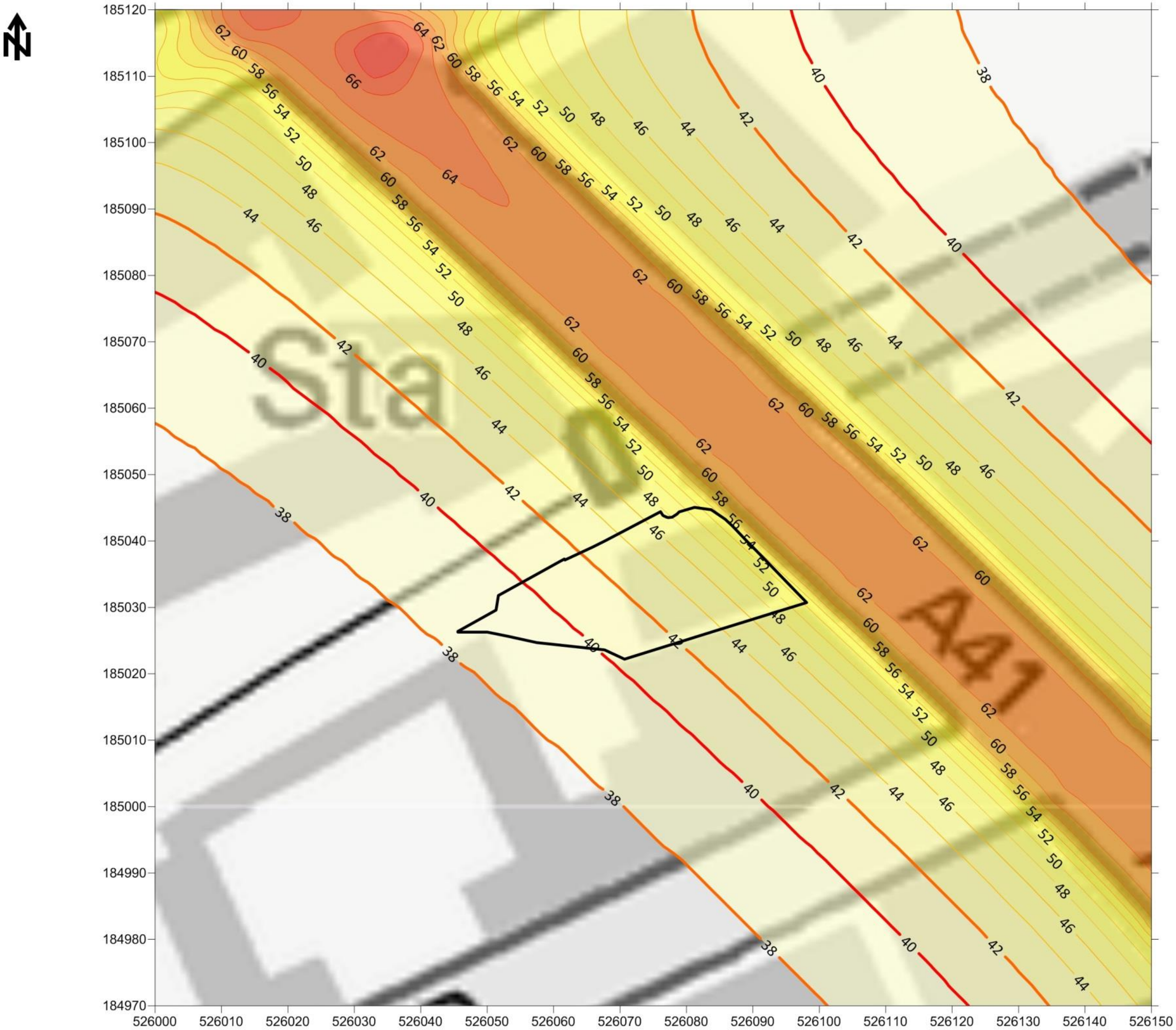

Legend

Site Boundary

70
68
66
64
62
60
58
56
54
52
50
48
46
44
42
40
38

Predicted Annual Mean NO_2 Concentration (µg/m³)

Title

Figure 8

Predicted Annual Mean NO_2 Concentrations (µg/m³) 2017

z = 1.5

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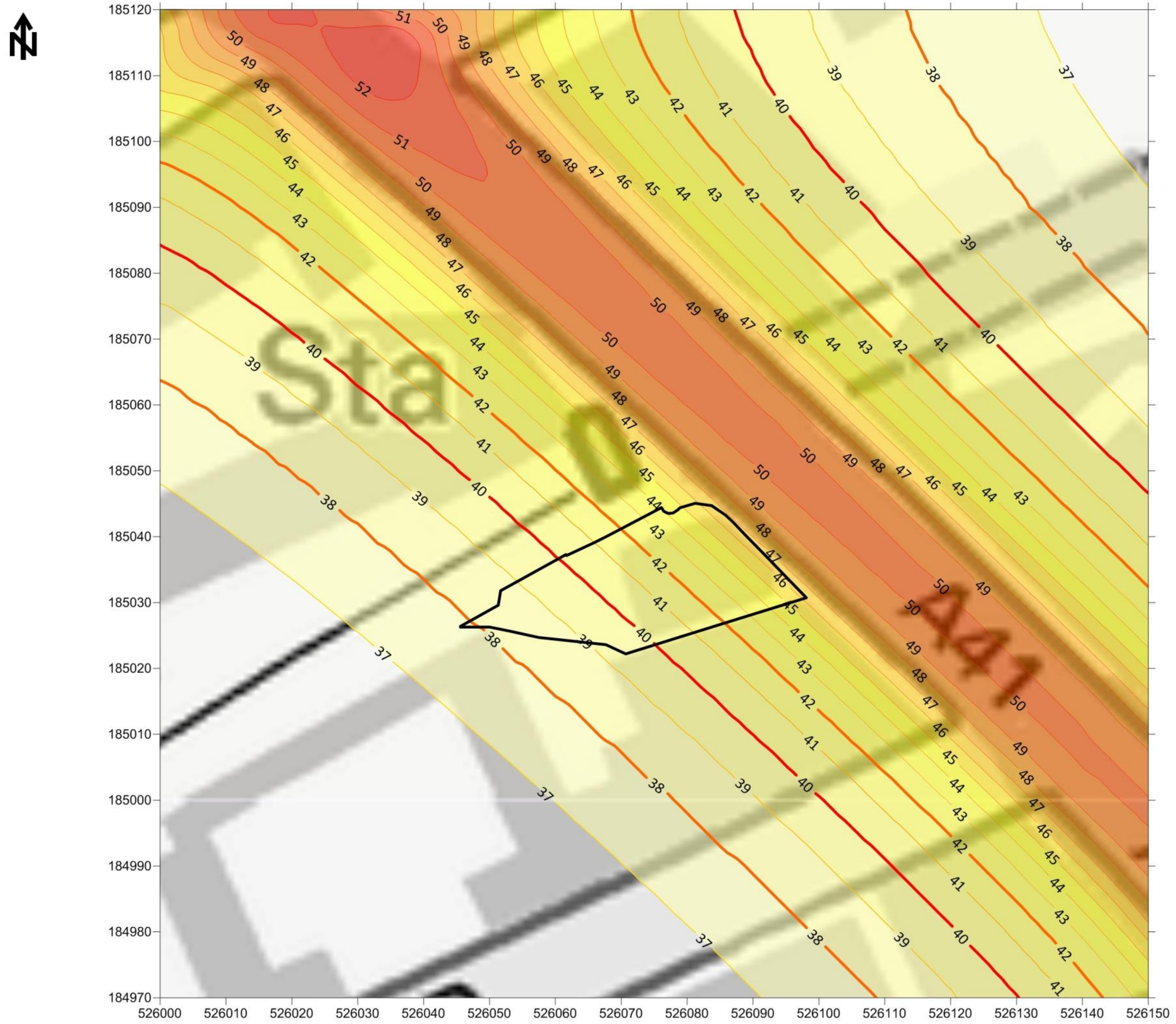

Legend

Site Boundary

53
52
51
50
49
48
47
46
45
44
43
42
41
40
39
38
37

Predicted Annual Mean NO_2 Concentration (µg/m³)

Title

Figure 9

Predicted Annual Mean NO_2 Concentrations (µg/m³) 2017

z = 4.5m

Project

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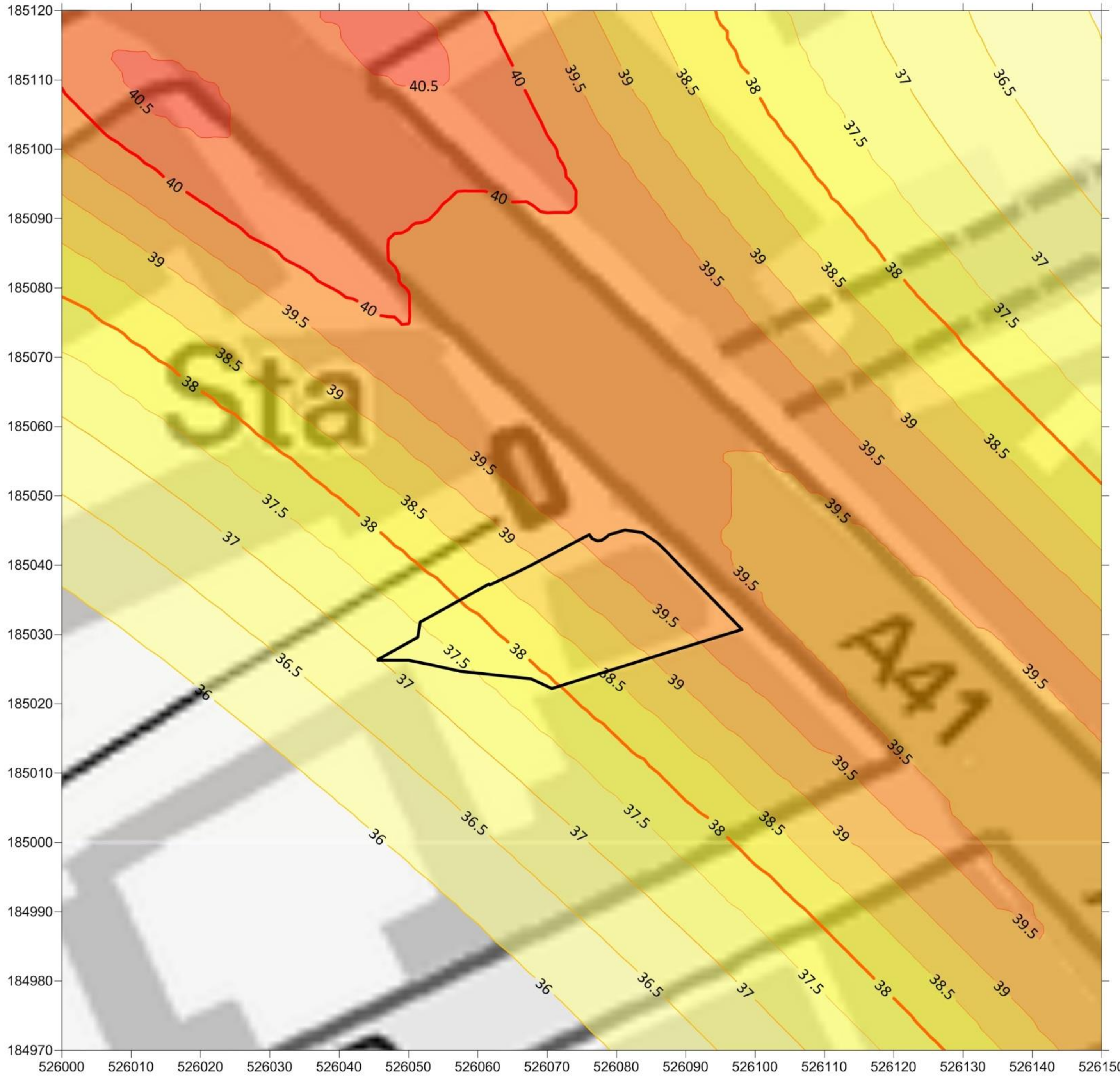
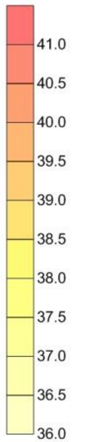


Legend

Site Boundary



Predicted Annual Mean NO_2 Concentration (µg/m³)

Title

Figure 10

Predicted Annual Mean NO_2 Concentrations (µg/m³) 2017

z = 7.5m

Project

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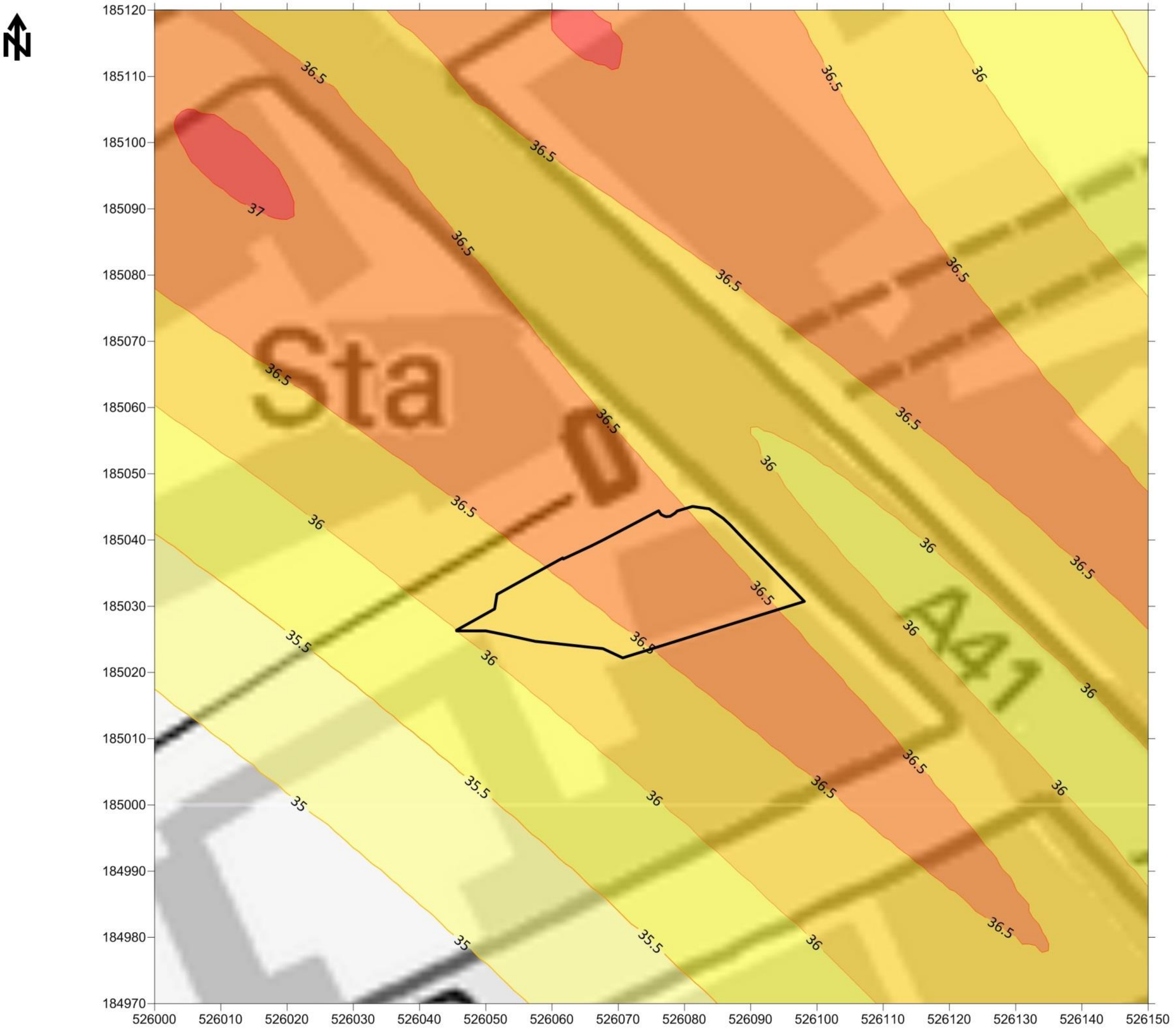

Legend

Site Boundary

Predicted Annual Mean NO_2 Concentration (µg/m³)

38.0
37.5
37.0
36.5
36.0
35.5
35.0

Title

Figure 11

Predicted Annual Mean NO_2 Concentrations (µg/m³) 2017

z = 10.5m

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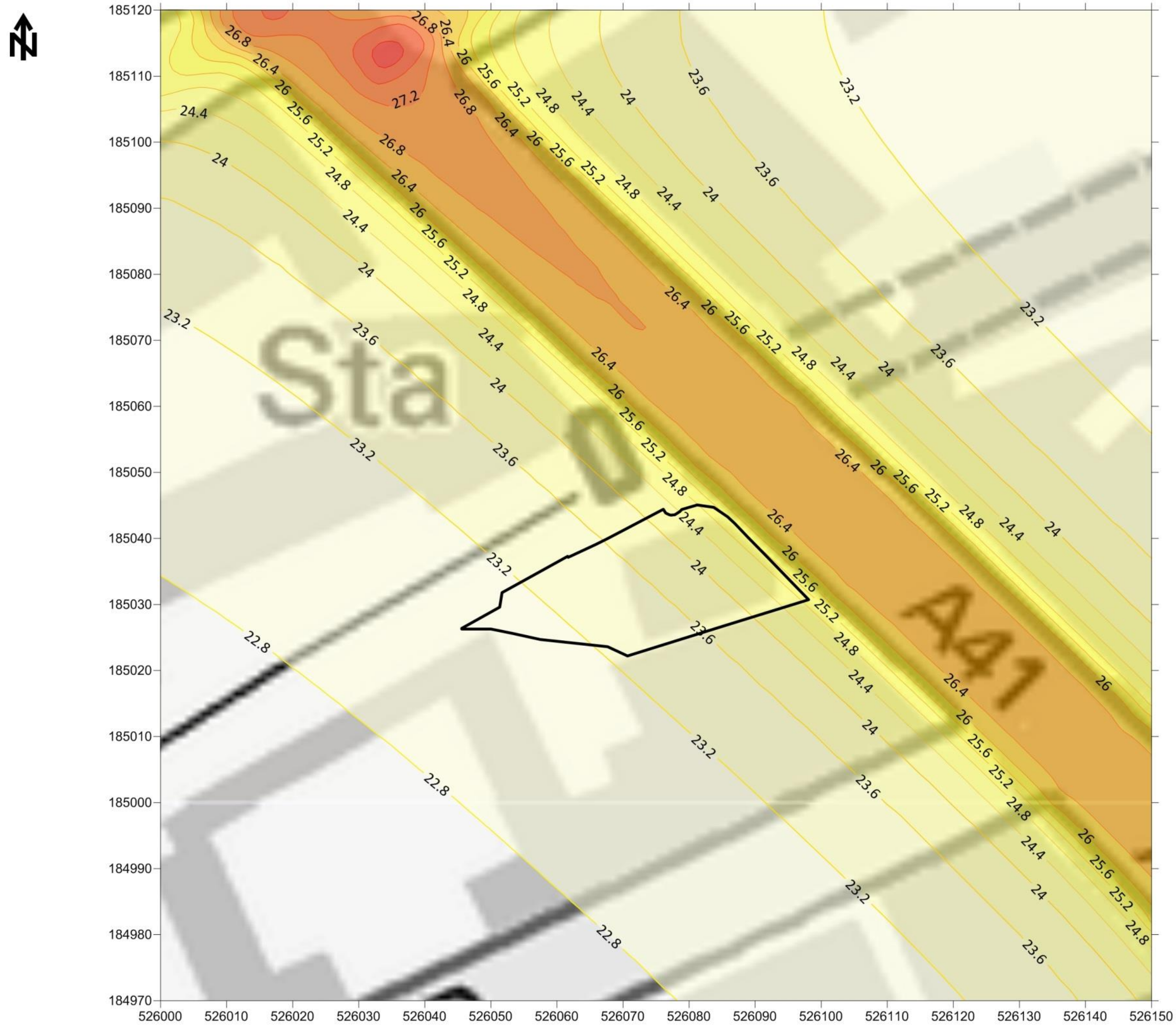

Legend

Site Boundary

Predicted Annual Mean PM_{10} Concentration (µg/m³)
28.0
27.6
27.2
26.8
26.4
26.0
25.6
25.2
24.8
24.4
24.0
23.6
23.2
22.8

Title

Figure 12

Predicted Annual Mean PM_{10} Concentrations (µg/m³) 2017 DM

z = 1.5m

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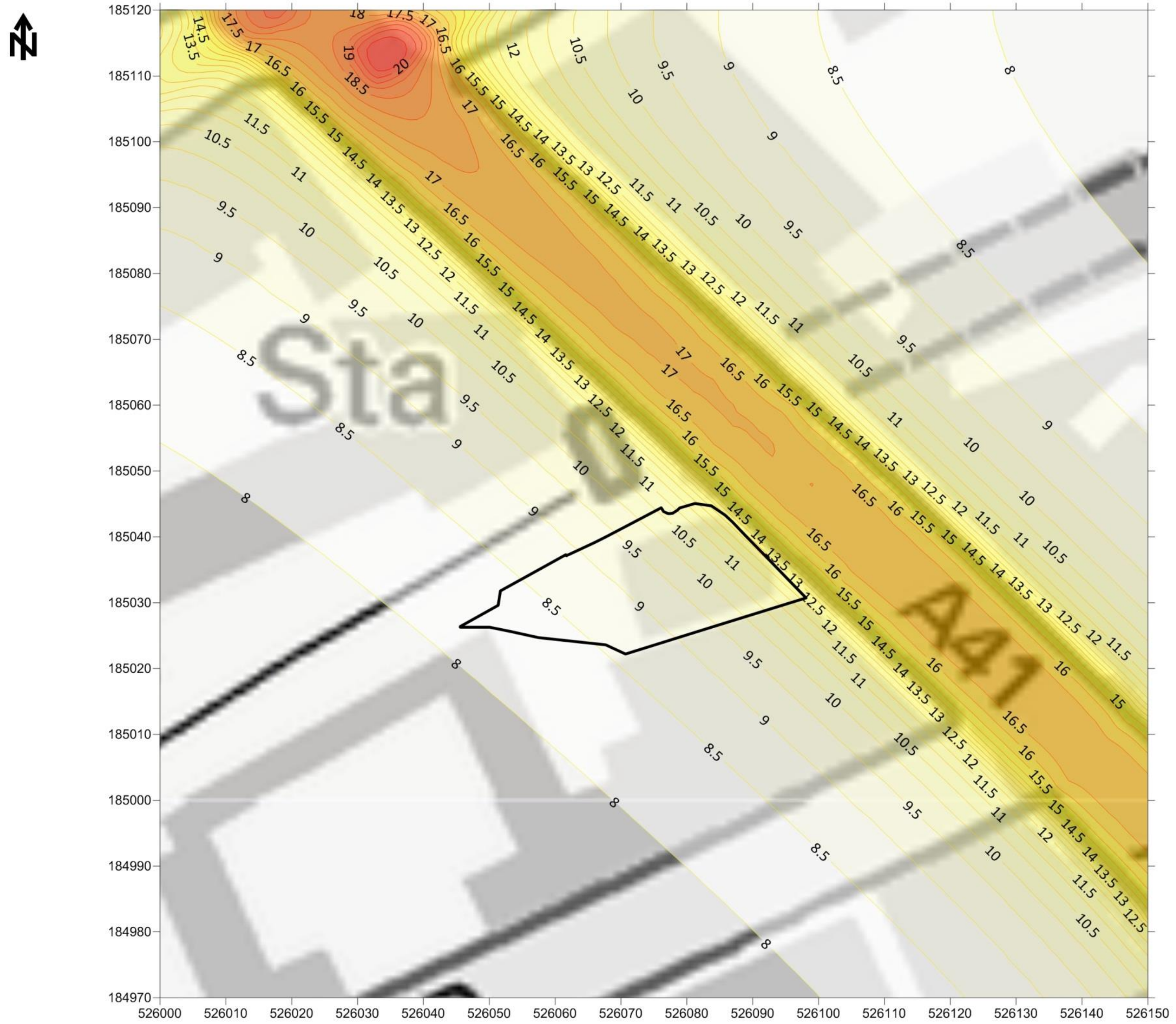

Legend

Site Boundary

21.0
20.5
20.0
19.5
19.0
18.5
18.0
17.5
17.0
16.5
16.0
15.5
15.0
14.5
14.0
13.5
13.0
12.5
12.0
11.5
11.0
10.5
10.0
9.5
9.0
8.5
8.0

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

Title

Figure 13

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

z = 1.5m

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APPENDIX II ASSESSMENT INPUT DATA

ASSESSMENT INPUTS

The proposals are located within an AQMA and therefore there is the potential to expose future users to elevated pollution levels. Dispersion modelling using ADMS Roads was therefore undertaken to predict NO_2 and PM_{10} concentrations at sensitive locations both with and without the development in order to consider potential changes as a result of the proposals.

The dispersion 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; and,
- Monin-Obukhov length.

Assessment inputs are described in the following subsections.

Dispersion Model

Dispersion modelling was undertaken using the ADMS Roads dispersion model (version 3.4). 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.

Assessment Area

Ambient concentrations were predicted over the area NGR: 526000, 184970 to 526150, 185120 at the following heights:

- 1.5m - Ground Floor;
- 4.5m - First Floor;
- 7.5m - Second Floor; and,
- 10.5m - Third Floor.

Results were subsequently used to produce contour plots within the Surfer software package.

Reference should be made to Figure 7 for a graphical representation of the assessment grid extents.

Traffic Flow Data

24-hour Annual Average Daily Traffic (AADT) flows and fleet composition as HDV proportion were obtained from the London Atmospheric Emissions Inventory (LAEI). The LAEI (2010) was released by the GLA in 2013 and provides information on emissions from all sources of air pollutants in the Greater London area.

Growth factors provided by the Trip End Model Presentation Program (TEMPRO) software package were utilised to allow for conversion from the obtained 2012 traffic flow year to 2013, which was used for model verification, and from 2015 to 2017, which was used to represent the development opening year.

Road widths were estimated from aerial photography and UK highway design standards. Reference should be made to Figure 7 for a graphical representation of the road link locations. A summary of the traffic data used in the verification scenarios is provided in Table AII.1.

Table AII.1 2013 Traffic Data

Road Link		Road Width (m)	24-hour AADT Flow	HDV Prop. (%)	Mean Vehicle Speed (km/h)
1A	A41 Finchley Road - North of Canfield Gardens	22.0	47,323	6.58	25
1B	A41 Finchley Road Northbound - South of Canfield Gardens	11.0	23,661	6.58	20
1Bii	A41 Finchley Road Southbound - South of Canfield Gardens (Left side of Junction)	11.0	10,746	10.87	20
1C	A41 Finchley Road Southbound - South of Canfield Gardens	11.0	23,661	6.58	20
1D	A41 Finchley Road Southbound - South of Canfield Gardens (Junction)	11.0	10,746	10.87	10
1E	A41 Finchley Road Southbound - South of Canfield Gardens (Left Turn)	6.3	10,746	10.87	10
2A	B511 Fitzjohn's Avenue	11.8	17,339	7.28	20
3A	Arkwright Road	7.3	10,875	7.08	35
4A	Lymington Road	6.8	6,480	5.86	25
5A	Buckland Crescent	9.1	11,485	7.85	25
6A	B511 College Crescent - North of Buckland Crescent	7.3	17,339	7.28	25
6B	B511 College Crescent Southbound - South of Buckland Crescent	7.3	23,661	6.58	15
6C	B511 College Crescent Northbound - South of Buckland Crescent	7.3	8,669	7.28	10
7A	A41 Finchley Road - South of Junction	18.3	21,491	10.87	25
8A	A41 Avenue Road	18.3	47,323	6.58	25
9A	A41 Finchley Road - South of Junction (Right Turn)	6.3	3,642	4.01	10

The road width and mean vehicle speed shown in Table AII.1 remained the same for 2017. A summary of the 2017 traffic data is shown in Table AII.2.

Table AII.2 2017 Traffic Data

Road Link		Road Width (m)	24-hour AADT Flow	HDV Prop. (%)	Mean Vehicle Speed (km/h)
1A	A41 Finchley Road - North of Canfield Gardens	22.0	48,276	6.58	25
1B	A41 Finchley Road Northbound - South of Canfield Gardens	11.0	24,138	6.58	20
1Bii	A41 Finchley Road Southbound - South of Canfield Gardens (Left side of Junction)	11.0	10,962	10.87	20
1C	A41 Finchley Road Southbound - South of Canfield Gardens	11.0	24,138	6.58	20
1D	A41 Finchley Road Southbound - South of Canfield Gardens (Junction)	11.0	10,962	10.87	10
1E	A41 Finchley Road Southbound - South of Canfield Gardens (Left Turn)	6.3	10,962	10.87	10
2A	B511 Fitzjohn's Avenue	11.8	17,687	7.28	20
3A	Arkwright Road	7.3	11,094	7.08	35
4A	Lymington Road	6.8	6,610	5.86	25
5A	Buckland Crescent	9.1	11,716	7.85	25
6A	B511 College Crescent - North of Buckland Crescent	7.3	17,687	7.28	25
6B	B511 College Crescent Southbound - South of Buckland Crescent	7.3	24,138	6.58	15
6C	B511 College Crescent Northbound - South of Buckland Crescent	7.3	8,844	7.28	10
7A	A41 Finchley Road - South of Junction	18.3	21,924	10.87	25
8A	A41 Avenue Road	18.3	48,276	6.58	25
9A	A41 Finchley Road - South of Junction (Right Turn)	6.3	3,716	4.01	10

Emission Factors

Emission factors for each link were calculated using the relevant traffic flows and the Emissions Factor Toolkit (version 6.0.2) released in November 2014, which incorporates updated COPERT4v10 vehicle emissions factors for NO_x and vehicle fleet information.

There is current uncertainty over NO_2 concentrations within the UK, with roadside levels not reducing as previously expected due to the implementation of new vehicle emission standards. Therefore, 2013 emission factors have been utilised for the prediction of pollution levels for all scenarios in preference to the development opening year in order to provide a robust assessment.

Gradients

The procedure provided within Appendix 2 of the DEFRA Guidance LAQM.(TG16)[26] was utilised in order to calculate an appropriate emission factor along road link 2A, due to the significant gradient in this area. The gradient of the road link was derived from Google Earth.

In accordance with the DEFRA guidance, normal speed related emission factors from the Emissions Factor Toolkit were used for Low Duty Vehicles (LDVs), whereas revised emission factors were calculated for HDVs. Gradients and emission factors for links within the modelling extents with a significant gradient are shown in Table.

Table AII.3 Gradients and NO_x Emission Factors for HDVs

Road Link	Gradient (%)	Speed related Emission Factor (g/km)	Revised Emission Factor (g/km)
2A	5.6	0.1975	1.0093

Meteorological Data

Meteorological data used in this assessment was taken from London City meteorological station over the period 1st January 2013 to 31st December 2013 (inclusive). London City meteorological station is located at approximate NGR: 543005, 180509, which is approximately 4.6km south-east of the proposed development. DEFRA guidance LAQM.(TG16)[27] recommends meteorological stations within 30km of an assessment area as being suitable for detailed modelling.

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 6 for a wind rose of utilised meteorological data.

Roughness Length

A roughness length (z_0) of 1.5m was used in this dispersion modelling study. This value of z_0 is considered appropriate for the morphology of the assessment area and is suggested within ADMS-Roads as being suitable for 'large urban areas'.

A z_0 of 0.3m was utilised to represent the morphology of the meteorological station location and is suggested as being suitable for 'agricultural areas (max)'.

[26] Local Air Quality Management Guidance LAQM.(TG16), DEFRA, 2016.
[27] Local Air Quality Management Technical Guidance LAQM.(TG16), DEFRA, 2016.

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 in this dispersion modelling study. This value is considered appropriate for the nature of the assessment area and meteorological station location and is suggested within ADMS-Roads as being suitable for 'large conurbations > 1 million'.

Background Concentrations

An annual mean NO_2 concentration of 31.76µg/m^3 and PM_{10} concentration of 22.21µg/m^3, as predicted by DEFRA, were used to represent background levels in the vicinity of the site.

Similarly to emission factors, background concentrations for 2013 were utilised in preference to the development opening year. This provided a robust assessment and is likely to overestimate actual pollutant concentrations during the operation of the proposal.

NO_x to NO_2 Conversion

Predicted annual mean NO_x concentrations from the dispersion model were converted to NO_2 concentrations using the spreadsheet provided by DEFRA, which is the method detailed within LAQM.(TG16)[28].

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.

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 this assessment model verification was undertaken for 2013, using traffic data, meteorological data and monitoring results from this year.

LBoC undertakes monitoring of NO_2 concentrations at one roadside location within the assessment extents. The road contribution to total NO_x concentration was calculated from the monitored NO_2 result for use in the verification process. This was undertaken following the methodology contained within DEFRA guidance LAQM.(TG16)[28]. The monitored annual mean NO_2 concentration and calculated road NO_x concentration are summarised in Table AII.4.

[28] Local Air Quality Management Technical Guidance LAQM.(TG16), DEFRA, 2016.

Table AII.4 2013 Monitoring Results

Monitoring Location		Monitored NO_2 Concentration ($\mu g/m^3$)	Calculated Road NO_x Concentration ($\mu g/m^3$)
CA17	47 Fitzjohn's Avenue	65.24	93.08

The dispersion model was run with the traffic input data previously detailed for 2013 to predict the NO_x concentration at the monitoring locations. The results are shown in Table AII.5.

Table AII.5 Verification Results

Monitoring Location		Modelled Road NO_x Concentration ($\mu g/m^3$)
CA17	47 Fitzjohn's Avenue	79.22

The monitored and modelled NO_x road contribution concentrations were graphed and the equation of the trendline based on the linear progression through zero calculated. This indicated a verification factor of **1.1750** was required to be applied to all modelling results.

As PM_{10} monitoring is not undertaken within the assessment extents, a verification factor of **1.1750** was also used to adjust model predictions of this pollutant in accordance with the guidance provided within LAQM.(TG16)[29].

[29] Local Air Quality Management Technical Guidance LAQM.(TG16), DEFRA, 2016.

APPENDIX III ASSESSOR'S CURRICULUM VITAE

GABOR ANTONY

Principal Air Quality Consultant

MSc, MIAQM, MIEnvSc

KEY EXPERIENCE:

Gabor is a Principal Consultant with specialist experience in the air quality and odour sector. His key capabilities include:

- Advanced atmospheric air dispersion modelling of road vehicle and industrial emissions using ADMS-ROADS, ADMS-5, AERMOD-PRIME and BREEZE-ROADS.
- Preparation of factual and interpretative Air Quality Assessment reports and Air Quality Environmental Statement chapters in the vicinity of proposed schemes and developments in accordance with DEFRA, Environment Agency and EPUK methodologies.
- Management and delivery of project work on key, land development and urban regeneration projects.
- Multi-source industrial air emissions and stack emissions assessments using AERMOD-PRIME modelling software for IPPC Permit applications and stand-alone technical reports.
- Co-ordination and management of different emission and immission related measurements, and various monitoring programmes including construction dust; diffusion tube surveys and odour assessments in accordance with DEFRA and Environment Agency guidance.

QUALIFICATIONS:

- Master of Science degree
- Member, Institution of Environmental Sciences (MIEnvSc)
- Member, Institute of Air Quality Management (MIAQM).

SELECT PROJECTS SUMMARY:

Residential Developments

Boorley Green - EIA undertaken for mixed use scheme.
Vauxhall - AQA for mixed use scheme within AQMA in London.
Mapplewell - AQA for residential development.
Catford Stadium - Low Emission Transport Strategy for mixed use development in London
Lambeth Road - AQA for mixed use scheme in AQMA in London.
Thurmaston NEoLSUE - EIA for Suburban extension.
Westferry Print works - EIA for large mixed use development.
Grange Farm, Doncaster - AQA for residential development.
Wadi Al Asla - AQA as part of EIA for proposed urban extension in Saudi Arabia.
Horndean - AQA for residential development adjacent to A3.
Derby - Fire and Smoke assessment for residential development.
Kirkby Muxloe - AQA for residential development adjacent to M1.
Ushaw Moor - AQA for residential development in proximity of AQMA.

Commercial and Retail Developments

Horfield, Bristol - EIA for Mixed- use development in AQMA.
Nottingham - Biomass boiler assessment for retail facility.
South Woodham Ferrers - Biomass boiler and road traffic assessment.
Widnes - AQA for Shopping Centre Extension, adjacent to AQMA.
Lancaster Science Park - AQA for commercial development in proximity of AQMA.
Haymarket - AQA for Bus Station Redevelopment.
Bath Western Riverside East - AQA as part of EIA for mixed use development.
Irvine, North Ayrshire - AQA for Hospital redevelopment
Derby - biomass boiler emission assessment.
Bristol & Bath Science Park - AQA as part of EIA for commercial development.
Sheffield Superstore - AQA in support of new food superstore.
Nuneaton - AQA for mixed use development with biomass boiler.
Thorp Arch, - EIA for Urban extension.
Reading Station - AQA Highway Implementation Scheme.
Ebbsfleet International Railway Station - AQA for mixed use development.
M4 Junction 11 - AQA for Motorway Scheme.
Hook - Biomass Boiler and road transport assessment for proposed food store.

Industrial Developments

University of Birmingham - Environmental Permit Variation Application for existing CHP facility.
Southampton - AQA for Sulphur Plant.
Sedalcol - Environmental Permit Application for Alcohol and Starch production facility.
Cotesbach - AQA for Fully enclosed Waste composting Facility.
Wagg Foods - Environmental Permit application.
Trent Foundry - Environmental Permit Application for Existing foundry in Scunthorpe.
Beddington - AQA for Energy from Waste Plant.
Thakeham - AQA for mushroom production facility.
Partington - EIA for Liquid Natural Gas storage site demolition works in Trafford.
South View Farm - Ammonia dispersion modelling of broiler farm.
Blackwater - AQA for Asphalt plant Permit Application.

JASMINE RHOADES

Air Quality Consultant

BSc (Hons), MSc, AMIEnvSc

KEY EXPERIENCE:

Jasmine is a Environmental Consultant with specialist experience in the air quality sector. Her key capabilities include:

- Production of Air Quality Assessments to the Department for Environment, Food and Rural Affairs (DEFRA), Environment Agency and Environmental Protection UK (EPUK) methodologies for clients from the residential, commercial and commercial sectors.
- Detailed dispersion modelling of road vehicle emissions using ADMS-Roads. Studies have included impact assessment of pollutant concentrations at various floor levels and assessment of suitability of development sites for proposed end-use.
- Assessment of road vehicle exhaust emissions using the Design Manual for Roads and Bridges (DMRB) calculation spreadsheet.
- Assessment of dust impacts from construction sites to the Institute of Air Quality Management (IAQM) methodology.
- Production of air quality mitigation strategies for developments throughout the UK.
- Defining baseline air quality conditions and identification of sensitive areas.

QUALIFICATIONS:

- Bachelor of Science
- Master of Science
- Associate Member of the Institute of Environmental Science (IES)

SELECT PROJECTS SUMMARY:

Residential Development: High Street, Fenstanton

Air Quality Assessment in support of a residential development consisting of eighty one residential units. Construction phase assessment of fugitive dust emissions in accordance with IAQM methodology was undertaken. Additionally, dispersion modelling of road vehicle exhaust emissions was undertaken using ADMS-Roads to quantify pollutant levels across the site and provide consideration of potential impacts of the surrounding area as a result of the proposals. Impacts were not predicted to be significant at any sensitive receptors in the vicinity of the site and no mitigation was required.

Residential Development: Field Close, Southmoor

Air Quality Assessment in support of a proposed development consisting of seventy three residential units. Concerns were raised as the site was located in close proximity to the A420, a significant source of road traffic exhaust emissions with the potential to expose future users to poor air quality. Dispersion modelling of road vehicle exhaust emissions was completed using ADMS-Roads to consider site suitability for the proposed end-use. Pollutant concentrations were predicted to be below the relevant AQO across the site and as such, air quality was not a planning constraint.

Commercial Development: Eridge Road, Tunbridge Wells

Air Quality Constraints Assessment in support of the development of an ALDI foodstore located within an AQMA. Construction phase assessment of fugitive dust emissions in accordance with IAQM methodology was undertaken. In addition, dispersion modelling was also conducted using ADMS-Roads to consider the impact of the proposals on sensitive locations. Impacts were not predicted to be significant at any sensitive receptors in the vicinity of the site and no mitigation was required.

Residential Development: Farrier Close, Uxbridge

Air Quality Assessment in support of a residential development consisting of sixty extra-care apartments. The site was located in an area identified by the London Borough of Hillingdon as experiencing elevated pollutant concentrations and subsequently there were concerns the proposals would introduce future users to poor air quality. Dispersion modelling was undertaken at all floors in order to quantify pollutant concentrations at the site and assess the potential for future exposure. The results of the dispersion modelling indicated that pollutant concentrations were predicted to exceed the relevant air quality criteria for the proposed land-use. As such, mitigation was recommended in the form of mechanical ventilation at first floor level.

Industrial development: Snape Lane, Harworth

Air Quality Assessment in support of an industrial redevelopment of a former glassworks site to provide three manufacturing plants (brick, roof tile and timber frame). The development had the potential to cause air quality impacts at sensitive locations associated with fugitive dust emissions from manufacturing activities. A qualitative fugitive dust assessment was undertaken in accordance with EPUK and IAQM guidance alongside relevant data on dust emissions and dispersion derived from the Mineral Policy Statement 2. In addition, dispersion modelling was undertaken using ADMS-Roads to quantify pollutant concentrations at sensitive locations. Mitigation was recommended in order protect sensitive locations from fugitive dust emissions. The dispersion modelling indicated that pollutant concentrations were predicted to be below the relevant AQOs at all sensitive locations. Air quality was therefore not a planning constraint.