SYNTEGRA CONSULTING

Air Quality Assessment Report

42 Caversham Road, Camden, London, NW5 2DS

November 2015

Ref: 14-1172

Quality Standards Control

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Revision	-
Date	20/11/2015
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1. Introduction

Background

This report has been prepared to support the planning application for a proposed residential development at 42 Caversham Road, Camden, London.

The proposed development has the potential to expose future residents to elevated pollution levels. As such, an Air Quality Assessment was required in order to determine baseline conditions at the site and consider its suitability for the proposed end-use.

Following submission of the Air Quality Assessment, the following consultation comment was received from the London Borough of Camden (LBoC):

> *The submitted assessment doesn't consider whether there will be any emissions associated with the railway. An updated assessment including any emissions associated with the railway should be provided to understand whether the future building occupants will be exposed to harmful levels of NO_2 and if so what mitigation measures will be included.*

The following report has therefore been revised to address this comment.

Site Location and Context

The site is located off Caversham Road, Camden, at approximate National Grid Reference (NGR): 529240, 184965. The National Rail Midland Main Line forms the eastern and northern boundary. Reference should be made to Figure 1 for a map of the site and surrounding area.

It is proposed to redevelop the site to provide 18 residential units over six floors, including basement level, as well as cycle storage, green roofs and solar panels.

The LBoC has declared an Air Quality Management Area (AQMA) across their administrative extents due to exceedences of the annual mean Air Quality Objective (AQO) for nitrogen dioxide (NO_2) and 24-hour mean AQO for particulate matter with an aerodynamic diameter of less than 10µm (PM_{10}). The development is located within the AQMA. Subsequently, there are concerns that the proposals will introduce future users to exceedences of the relevant AQOs. As such, concentrations at the site have been assessed in the following report in order to consider location suitability for the proposed end-use and define any requirement for mitigation.

2. Legislation and Policy

European Directives

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 Limit Values (AQLVs) for particulate matter with an aerodynamic diameter of less than 2.5µm. The consolidated Directives include:

- Directive 99/30/EC - the First Air Quality "Daughter" Directive - sets ambient 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.

UK Legislation

The Air Quality Standards Regulations (2010) came into force on 11th June 2010 and transpose 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 the determination of compliance vary.

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

Table 1 Air Quality Objectives

Pollutant	Air Quality Objective	
	Concentration (µg/m^3)	Averaging Period
NO_2	40	Annual mean

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

Pollutant	Air Quality Objective	
	Concentration (µg/m^3)	Averaging Period
	200	1-hour mean, not to be exceeded on more than 18 occasions per annum

Table 2 summarises the advice provided in DEFRA guidance LAQM.TG(09)[2] on where the AQOs for pollutants considered within this report apply.

Table 2 Examples of Where the Air Quality Objectives Apply

Averaging Period	Objective Should Apply At	Objective Should Not Apply At
Annual mean	All locations where members of the public might be regularly exposed	Building façades of 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
1-hour mean	All locations where the annual mean and 24 and 8-hour mean objectives apply. Kerbside sites (for example, pavements of busy shopping streets) Those parts of car parks, bus stations and railway stations etc which are not fully enclosed, where members of the public might reasonably be expected to spend one hour or more Any outdoor locations where members of the public might reasonably be expected to spend one hour or longer	Kerbside sites where the public would not be expected to have regular access

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 comparing present and likely future pollutant concentrations against the AQOs. If it is predicted that levels at locations of relevant exposure, as summarised in Table 2, are likely to be exceeded, the LA is required to declare an AQMA. For each AQMA the LA is required to produce an Air Quality Action Plan, the objective of which is to reduce pollutant concentrations in pursuit of the AQOs.

[2] Local Air Quality Management Technical Guidance LAQM.TG(09), DEFRA, 2009.

National Planning Policy

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 the proposed development:

> *"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 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.

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.

Local Planning Policy

The London Plan

[3] National Planning Policy Framework, Department for Communities and Local Government, 2012.
[4] http://planningguidance.planningportal.gov.uk.

The London Plan[5] was published in 2011 by the Greater London Authority (GLA) and along with the adopted alterations, sets out a fully integrated economic, environmental, transport and social framework for the development of the capital to 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*
>
> *A. 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.*
>
> *Planning decisions*
>
> *B. 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.*
>
> *C. 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:*
>
> *[…]*
>
> *d) minimising pollution (including noise, air and urban run-off)*
>
> *[…]"*
>
> *"Policy 7.14 - Improving air quality*
>
> *Strategic*
>
> *A. 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*
>
> *B. Development proposals should:*

[5] The London Plan, Greater London Authority, 2011.

a) minimise increased exposure to existing poor air quality and make provision to address local problems of air quality (particularly within 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)
b) 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 Councils' 'The control of dust and emissions from construction and demolition'
c) be at least 'air quality neutral' and not lead to further deterioration of existing poor air quality (such as areas designated as AQMAs).
d) 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
e) where the development requires a detailed air quality assessment and biomass boilers are included, the assessment should forecast pollutant concentrations. Permission should only be granted if no adverse air quality impacts from the biomass boiler are identified […]"

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

Camden Planning Policy

The Camden Core Strategy[6] is a central part of the Local Development Framework and provides the key elements of LBoC's vision for the borough. 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."

This policy was considered throughout the assessment as necessary.

LBoC has also produced detailed development policies[7] that set out criteria that are used to determine applications for planning permission in the borough. Review of the policies indicated the following in relation to air quality that are relevant to this assessment:

6 Camden Core Strategy 2010 - 2025, LBoC, 2010.
7 Camden Development Policies 2010 - 2025, LBoC, 2010.

"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:

f) summer shading and planting;
g) limiting run-off;
h) reducing water consumption;
i) reducing air pollution; and
j) not locating vulnerable uses in basements in flood-prone areas."

"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.

The Council will also only grant planning permission for development in the Clear Zone region that significantly increases travel demand where it considers that appropriate measures to minimise the transport impact of development are incorporated. We will use planning conditions and legal agreements to secure Clear Zone measures to avoid, remedy or mitigate the impacts of development schemes in the Central London Area."

These policies were considered throughout the assessment as necessary.

3. 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.

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 mean concentrations of PM_{10} are above the AQOs within the borough. One AQMA has therefore been declared for both pollutants which covers the entire administrative area.

The proposed development is located within the AQMA. As such, there is the potential for the site to be affected by elevated pollutant concentrations. This has been considered throughout the assessment.

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

Air Quality Monitoring

Monitoring of pollutant concentrations is undertaken by LBoG using continuous and periodic methods throughout their area of jurisdiction. Recent results from sites in the vicinity of the development are shown in Table 3.

Table 3 Monitoring Results

Monitoring Site		Monitored 2014 NO_2 Concentration (µg/m^3)		
		2011	2012	2013
CA16	Kentish Town Rd	57.19	58.97	65.32

As shown in Table 3, the annual mean AQO for NO_2 was exceeded at diffusion tube CA16 during recent years. As the monitoring site is positioned at a roadside location and within a street canyon, elevated concentrations would be anticipated. Reference should be made to Figure 2 for a map of the monitoring site.

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: 529500, 184500. Data for this location was downloaded from the DEFRA website[8] for the purpose of this assessment and is summarised in Table 4.

[8] http://uk-air.defra.gov.uk/data/laqm-background-maps?year=2011.

Table 4 Background Pollutant Concentration Predictions

Pollutant	Predicted Background Concentration (µg/m^3)	
	2013	2015
NO_2	36.30	34.69

As shown in Table 4, predicted background pollutant concentrations are below the relevant AQOs at the development site.

Rail Emissions

The development site is bound to the north and east by the National Rail Midland Main Line. This is situated in a cutting, significantly below surface level.

Diesel locomotives are a source of atmospheric emissions and research has shown that NO_2 concentrations can be elevated alongside rail lines with a large number of movements[9]. DEFRA has therefore issued guidance on the assessment of potential impacts for use in the LAQM process. This is a staged approach, which aims to screen out low risk locations from further works.

The National Rail Midland Main Line runs from London St. Pancras to Sheffield, via Luton and Bedford in the east of England, and Kettering, Leicester, Loughborough, East Midlands Parkway, Derby/Nottingham and Chesterfield in the East Midlands. Two train operators utilise the route adjacent to the proposed development, East Midlands Trains and Thameslink.

Thameslink operate Class 319, Class 377 Electrostar and Class 387 Electrostar trains, which are electrically powered. As such, they do not have any associated emissions and have not been considered further in this assessment.

East Midlands Trains operate up to six trains every hour to and from London St. Pancras between 06:19 and 23:38 Monday to Friday. A reduced service is offered at weekends. These mostly utilise Class 222 Meridian trains, though InterCity 125 locomotives are used for the Nottingham fast service as well as the Leeds services. These are both diesel powered and therefore result in atmospheric exhaust emissions.

The first stage in the assessment process is to determine whether the relevant rail line has been identified by DEFRA as having a heavy traffic of diesel trains. Review of the DEFRA website[10] indicated the National Rail Midland Main Line has not been identified as high risk. As such, it is considered locomotive emissions are unlikely to significantly affect air quality conditions at the proposed development site. However, this has been considered further in Section 5 in the context of the assessment results.

[9] http://laqm.defra.gov.uk/laqm-faqs/faq37.html.
[10] http://laqm.defra.gov.uk/laqm-faqs/faq37.html.

4. Methodology

Introduction

The proposed development has the potential to expose future users to poor air quality. In order to assess NO_2 concentrations across the site, detailed dispersion modelling was undertaken in accordance with the following methodology.

Modelling was undertaken for 2013 to allow the most recent complete data sets to be utilised as well as avoiding potential issues with forecasting of future emissions.

Dispersion Model

Dispersion modelling was undertaken using the ADMS-Roads dispersion model (version 3.4.2.0). ADMS-Roads is developed by Cambridge Environmental Research Consultants (CERC) and is routinely used throughout the world for the prediction of pollutant dispersion from road sources. Modelling predictions from this software package are accepted within the UK by the Environment Agency and DEFRA.

The model requires input data that details the following parameters:

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

These are detailed in the following Sections.

Assessment Area

Ambient concentrations were predicted over the area NGR: 529085, 184820 to 529390, 185125. One Cartesian grid was included within the model to produce data suitable for contour plotting using the Surfer software package.

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

Reference should be made to Figure 3 for a graphical representation of the assessment grid extents.

Traffic Flow Data

Traffic data for use in the assessment, including 24-hour Annual Average Daily Traffic (AADT) flows and fleet composition as Heavy Duty Vehicle (HDV) proportion, was obtained from the London Atmospheric Emissions Inventory (LAEI). The LAEI was produced by the GLA and provides traffic flows throughout London for a number of scenarios. It should be noted that the LAEI is referenced in

DEFRA guidance LAQM.TG(09)[11] as a suitable source of data for air quality assessments and is therefore considered to provide a reasonable estimate of traffic flows in the vicinity of the site.

Road widths were estimated from aerial photography and UK highway design standards. A summary of the traffic data used in the assessment is provided in Table 5.

Table 5 Traffic Data

Link		Road Width (m)	24-hour AADT Flow	HDV Proportion of Fleet (%)	Mean Vehicle Speed (km/h)
L1	Kentish Town Road	21.1	18,132	7.08	20
L2	Leighton Road	7.2	7,906	1.77	25
L3	Caversham Road	5.5	7,906	1.77	25

Reference should be made to Figure 3 for a graphical representation of the road link locations.

Traffic data for Caversham Road was not available from the LAEI as it is a minor side road deemed too small to include. As such, flows from Leighton Road were utilised to represent Caversham Road within the model. It is anticipated that this is likely to overestimate actual traffic conditions at the site location and provide a worst-case assessment.

Canyon

Kentish Town Road is flanked by relatively tall buildings on either side. As such, this link was included as a canyon within the model in order to take reduced dispersion potential into consideration.

Emission Factors

Emission factors for each link were calculated using the relevant traffic flows and the Emissions Factor Toolkit (EFT) (version 6.0.2). This has been produced by DEFRA and 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 the implementation of new vehicle emission standards not resulting in the previously expected reduction in roadside levels. Therefore, 2013 emission factors were utilised in preference to the development opening year in order to provide robust concentration predictions. As predictions for 2013 were verified, it is considered results are a robust indication of worst case concentrations for the future year.

Meteorological Data

Meteorological data used in the assessment was taken from London City Airport meteorological station over the period 1st January 2013 to 31st December 2013 (inclusive). London City Airport is located at NGR: 542739, 180487, which is approximately 14.2km south-east of the proposed

[11] Local Air Quality Management Technical Guidance LAQM.TG(09), DEFRA, 2009.

development. DEFRA guidance LAQM.TG(09)[12] 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 4 for a wind rose of utilised meteorological data.

Roughness Length

A roughness length (z_0) of 1m was used to describe the modelling extents. This value of z_0 is considered appropriate for the morphology of the area and is suggested within ADMS-Roads as being suitable for 'cities, woodlands'.

A z_0 of 0.1m was used to describe the meteorological site. This value of z_0 is considered appropriate for the morphology of the area and is suggested within ADMS-Roads as being suitable for 'root crops'. A relatively low z_0 was used to take account of the large area of flat land use, including runways, grassland and open water, in the vicinity of the meteorological site.

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 the dispersion modelling study. This value is considered appropriate for the nature of the modelling extents and meteorological site and is suggested within ADMS-Roads as being suitable for 'large conurbations > 1 million'.

Background Concentrations

The background concentration provided in Table 4 were used in the assessment to represent existing annual mean pollutant levels in the vicinity of the site. In order to avoid ‘double-counting’ of road vehicle exhaust emissions, the 'primary A-road in' and 'minor roads in' proportion of the relevant background concentration were removed in accordance with the methodology outlined in DEFRA guidance LAQM.TG(09) [13]. These sectors were considered to be the most representative of those being modelled within ADMS-Roads. Background concentrations both before and after adjustment are shown in Table 6.

Table 6 Background Pollutant Concentrations

Pollutant	Predicted Background Concentration (µg/m^3)	
	Total Predicted Background	Adjusted Background
NO_2	36.30	31.48

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

12 Local Air Quality Management Technical Guidance LAQM.TG(09), DEFRA, 2009.
13 Local Air Quality Management Technical Guidance LAQM.TG(09), DEFRA, 2009.

NO_x to NO_2 Conversion

Predicted annual mean NO_x concentrations were converted to NO_2 concentrations using the spreadsheet (version 4.1) provided by DEFRA, which is the method detailed within DEFRA guidance LAQM.TG(09)[14].

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 diffusion tube monitoring of NO_2 concentrations at one location within the modelling extents. Results were obtained and the road contribution to total NO_x concentration calculated following the methodology contained within DEFRA guidance LAQM.TG(09)[15]. The monitored annual mean NO_2 concentration and calculated road NO_x concentration is summarised in Table 7.

Table 7 Verification - Monitoring Results

Monitoring Location		Monitored NO_2 Concentration ($\mu g/m^3$)	Calculated Road NO_x Concentration ($\mu g/m^3$)
CA16	Kentish Town Rd	65.32	94.14

The annual mean road NO_x concentration predicted from the dispersion model and the 2013 monitoring result are summarised in Table 8.

Table 8 Verification - Modelling Results

Monitoring Location		Calculated Road NO_x Concentration ($\mu g/m^3$)	Modelled Road NO_x Concentration ($\mu g/m^3$)
CA16	Kentish Town Rd	94.14	51.24

14 Local Air Quality Management Technical Guidance LAQM.TG(09), DEFRA, 2009.
15 Local Air Quality Management Technical Guidance LAQM.TG(09), DEFRA, 2009.

The monitored and modelled road NO_x concentrations were compared to calculate the associated ratio. This indicated a verification factor of 1.8373 was required to be applied to all modelling results.

Determination of Impacts

The proposed development includes residential units and as such has the potential to introduce new receptors into an area of existing poor quality. The results of the dispersion modelling assessment were therefore compared against the Air Pollution Exposure Criteria (APEC) contained within the London Councils Air Quality and Planning Guidance[16]. These are outlined in Table 9 and allow determination of the significance of predicted pollution levels and associated exposure.

Table 9 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
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 residents is therefore considered a suitable way to progress sustainable schemes in these locations and has been considered within this assessment.

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

5. Assessment

Dispersion modelling was undertaken with the inputs described in Section 4.0. Reference should be made to Figure 5 for a graphical representation of the results.

Predicted concentrations above 5% of the annual mean AQO are shown in blue on the relevant contour plot. These relate to areas defined as APEC - C within the London Councils Air Quality and Planning Guidance[17]. Predicted concentrations within 5% of the annual mean AQO are shown in green. These relate to areas defined as APEC - B within the London Councils Air Quality and Planning Guidance.

A summary of the modelling results is provided in Table 10.

Table 10 Predicted Annual Mean NO_2 Concentrations

Floor	Predicted Annual Mean NO_2 Concentration ($\mu g/m^3$)	APEC Category
Ground	37.8 - 33.6	A

As shown in Table 10, annual mean NO_2 concentrations were predicted to be below the AQO of $40\mu g/m^3$ at ground floor level. Levels were classified as APEC - A, in accordance with the London Councils Air Quality and Planning Guidance[18].

Concentrations were not predicted above ground floor as levels reduce with height. As such, values would be lower than those shown in Table 10.

Although not explicitly included within the model, locomotive emissions are not considered likely to significantly affect air quality conditions at the site, as previously outlined in Section 3. Additionally, the area most affected by the train line would be towards the north of the development due to the proximity of the track to the boundary in this location. This is away from local road sources and is shown by the modelling results to benefit from predicted annual mean NO_2 concentrations close to base levels. As such, there is significant headroom to allow for any underestimation of emissions from locomotives. Further, the DEFRA background mapped background concentration data used in the assessment includes a proportion attributable to rail emissions which indirectly represents the contribution from this source. In consideration of these factors, exceedences of the relevant AQO is therefore considered unlikely at any location on the proposed development.

Based on the assessment results, exposure of future site users to exceedences of the AQOs is considered unlikely as a result of the proposed development.

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

6. Conclusion

This report has been prepared to support the planning application for a residential development at 42 Caversham Road, Camden, London.

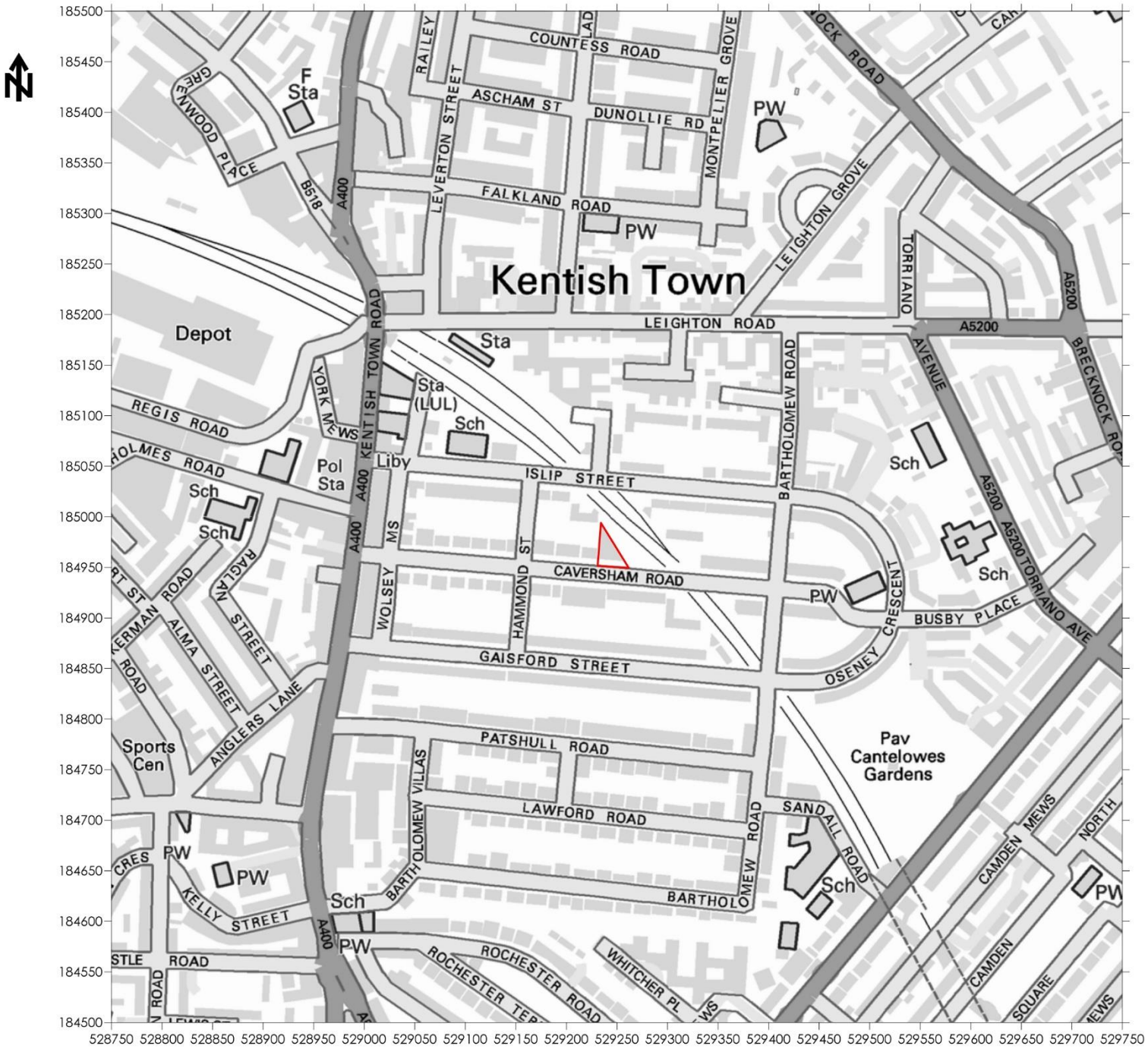
The proposals have the potential to expose future users to elevated pollution levels. As such, an Air Quality Assessment was required in order to determine baseline conditions at the site and consider its suitability for the proposed end-use.

Dispersion modelling was undertaken using ADMS-Roads in order to predict pollutant concentrations associated with emissions from the local highway network at the development location. Results were subsequently verified using monitoring data obtained from LBoC.

The results of the dispersion modelling assessment indicated that predicted annual mean concentrations of NO_2 were below the relevant AQO at the development location. Levels were categorised as APEC - A in accordance with the London Councils Air Quality and Planning Guidance.

The site is located adjacent to the National Rail Midland Main Line. Potential impacts associated with locomotive emissions were therefore considered in accordance with the DEFRA methodology. This indicated that rail emissions are unlikely to cause elevated pollutant concentrations at the development.

Based on the assessment results, exposure of future site users to exceedences of the AQOs is considered unlikely as a result of the development. As such, air quality issues are not considered a constraint to planning consent for the proposals.



Legend

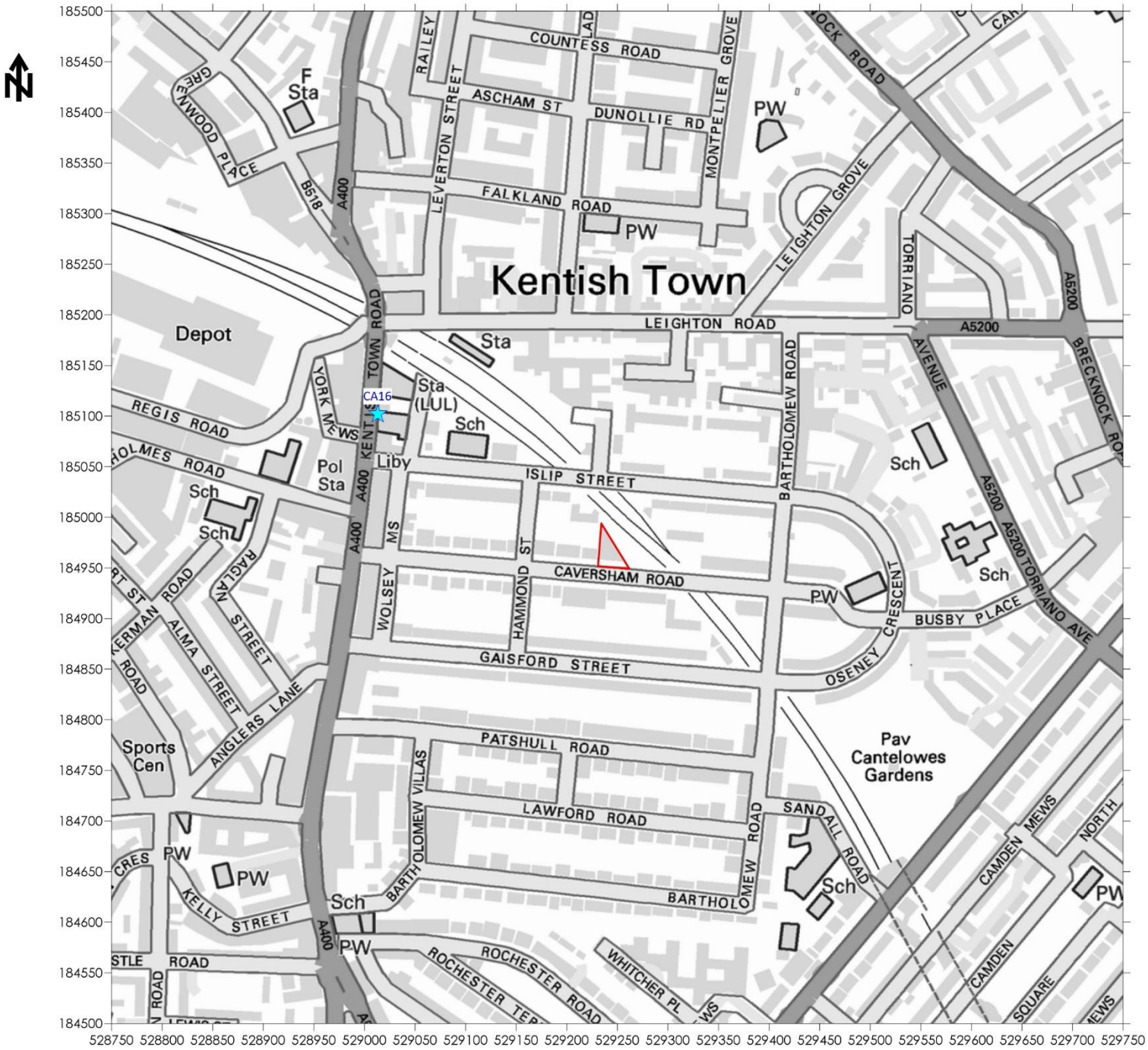
Site Location

Title

Figure 1 - Site Location Plan

Project

42 Caversham Road, London
Air Quality Assessment



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Site Location

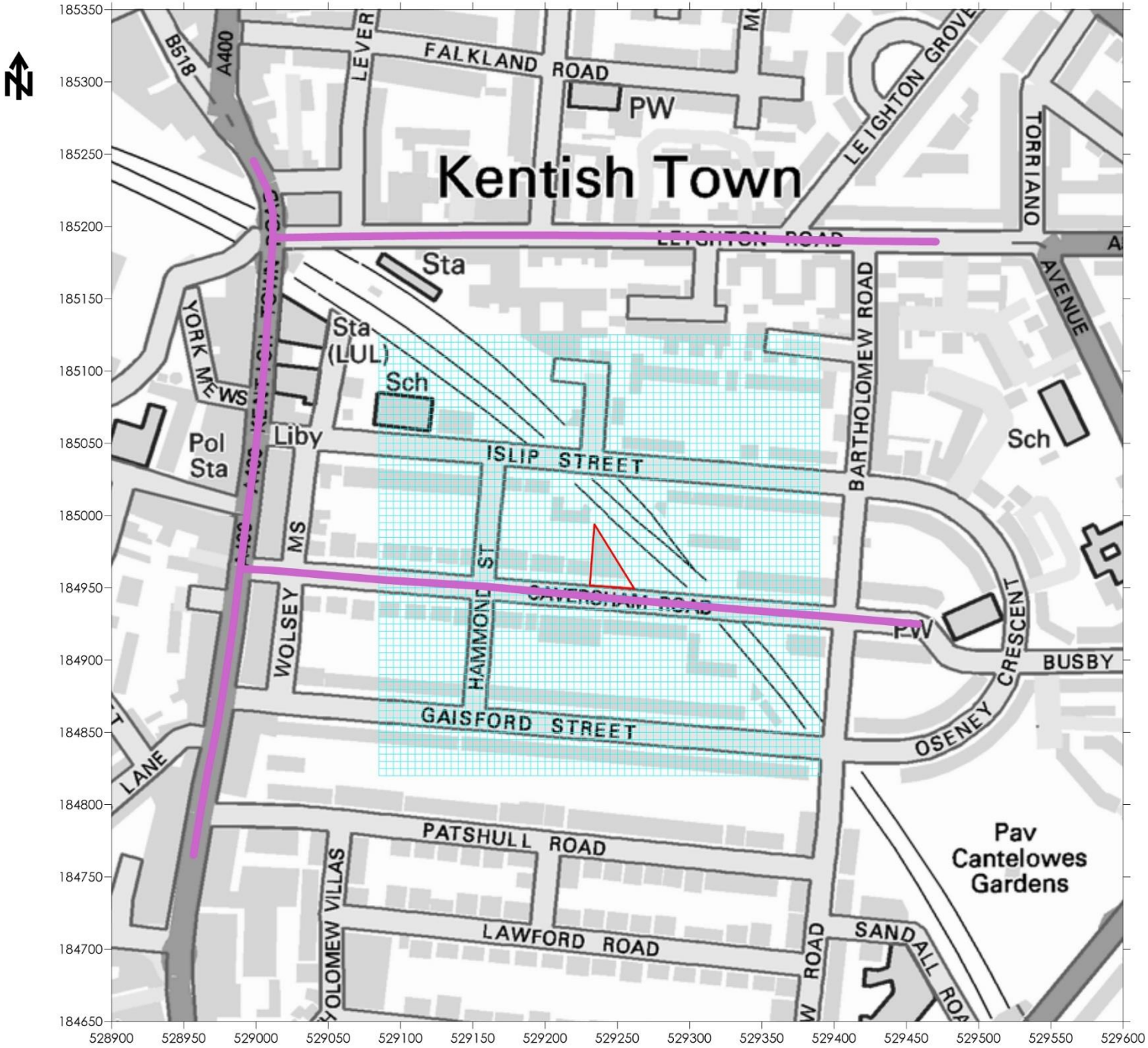
Diffusion Tube Location

Title

Figure 2 - Pollutant Monitoring Locations

Project

42 Caversham Road, London
Air Quality Assessment



Legend

- Site Location
- Road Link
- Output Grid

Title

Figure 3 - ADMS-Roads Inputs

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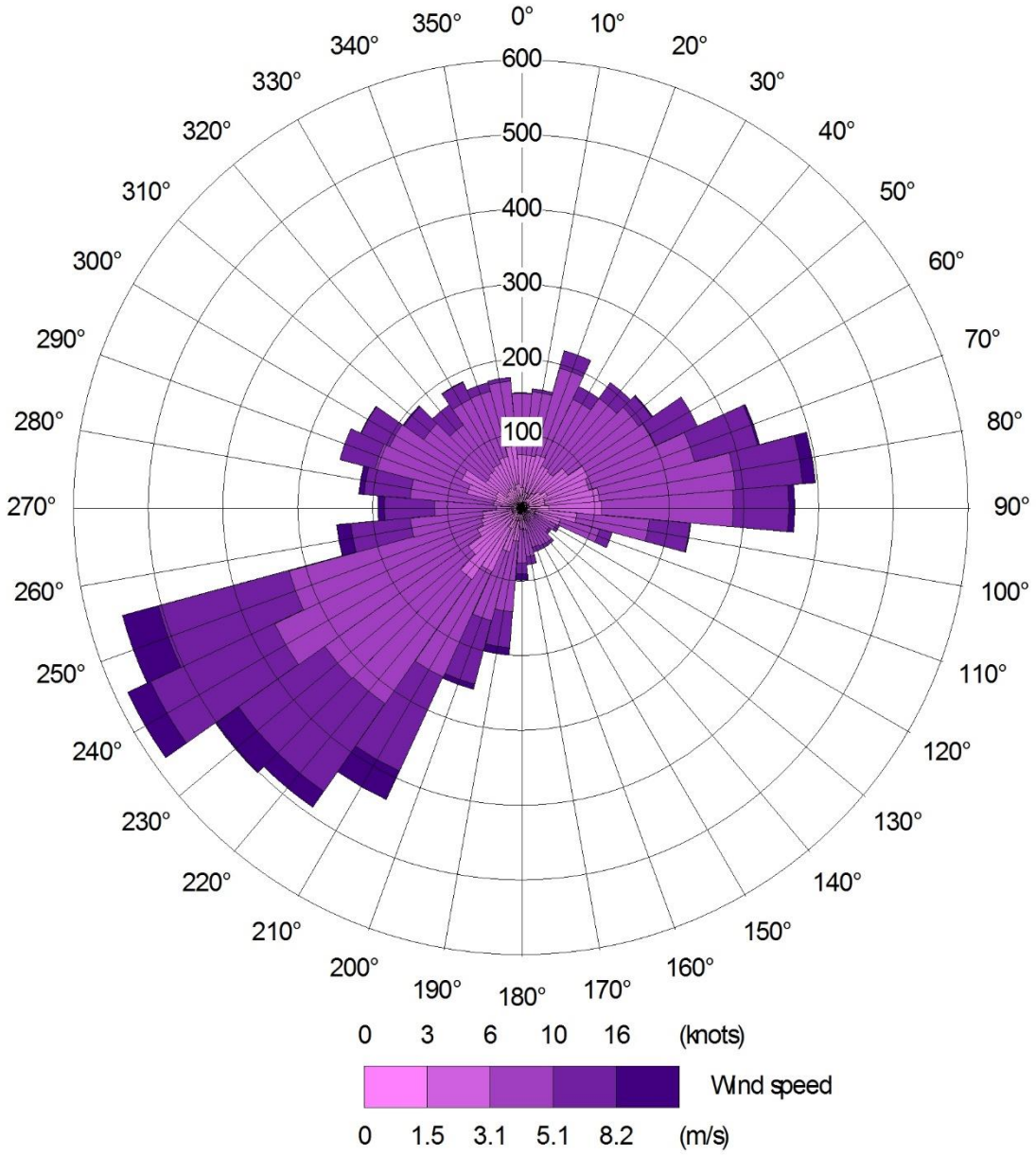
Air Quality Assessment



Legend

Title

Figure 4 - Wind Rose of 2013 London City Airport Meteorological Data

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Legend

Site Location

Predicted Annual Mean NO_2 Concentration ($\mu g/m^3$)

48

44 — APEC - C

42

40 — APEC - B

38

APEC - A

36

Title

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

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