CRESTWOOD ENVIRONMENTAL LTD

www.crestwoodenvironmental.co.uk
Tel: 01902 229 563

Air Quality Assessment

Clapham Common South Side, London

Report Reference: CE-LR-2340-RP02 V1

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Produced by Crestwood Environmental Ltd.

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Final v1	26/07/23	Emily Macey **Senior Air Quality Consultant** BSc MSc MIEnvSc MIAQM	Kate Brady **Principal Consultant**

Crestwood Environmental Limited

Registered Office:
Science, Technology and Prototyping Centre, UoWSP, Glaisher Drive, Wolverhampton, WV10 9RU, UK

Company Reg. no. 06544898
(Registered in England & Wales)

Tel: +44 (0)1902 229 563

Email: info@crestwoodenvironmental.co.uk

Web: www.crestwoodenvironmental.co.uk

CONTENTS

LIST OF TABLES:

LIST OF DRAWINGS:

1 INTRODUCTION

1.1 BACKGROUND AND INSTRUCTION

1.1.1 Crestwood Environmental was commissioned by Portakabin Limited to undertake an Air Quality Assessment in support of a planning application for the installation of two three-storey portacabin buildings at London Realty Lambeth College, 45 Clapham Common South Side, London (**the Site**).

1.1.2 The development may lead to the exposure of future occupants to elevated pollutant levels, as well as adverse impacts at sensitive locations. As such, an Air Quality Assessment was undertaken in order to determine baseline conditions and assess potential effects as a result of the scheme.

1.2 SITE LOCATION AND CONTEXT

1.2.1 The Site is located at London Realty Lambeth College, 45 Clapham Common South Side, London, SW4 9BL, at approximate National Grid Reference (NGR): 529297, 174882. Reference should be made to Figure 1 for a map of the site and surrounding area.

1.2.2 The proposals comprise the construction of two temporary three-storey portacabin buildings, alongside associated infrastructure.

1.2.3 An Air Quality Management Area (AQMA) has been declared by the London Borough of Lambeth (LBoL) due to exceedences of the Air Quality Objectives (AQOs) for nitrogen dioxide (NO_2) and particulate matter with an aerodynamic diameter of less than 10µg/m^3 (PM_{10}). The development is located within the AQMA. As such, there is the potential for exposure of future occupants to elevated pollutant levels. An Air Quality Assessment was therefore undertaken in order to determine baseline conditions, consider site suitability for the proposed end-use and define any requirement for mitigation. Potential impacts associated with the construction and operation of the scheme have also been assessed using standard screening methodologies. This is detailed in the following report.

2 LEGISLATION AND POLICY

2.1 LEGISLATION

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

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

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

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

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

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

Table 1 Air Quality Objectives/Interim Target

Pollutant	Air Quality Objective/Interim Target	
	Concentration (µg/m³)	**Averaging Period**
NO_2	40	Annual mean
	200	1-hour mean not to be exceeded on more than 18 occasions per annum

[1] The AQS for England, Scotland, Wales and Northern Ireland, DEFRA, 2023.
[2] The Environmental Improvement Plan 2023, DEFRA, 2023.

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

Note: (a) Interim Target to be achieved by end of January 2028.

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

Table 2 Examples of Where the Air Quality Objectives Apply

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

2.2 LOCAL AIR QUALITY MANAGEMENT

2.2.1 Local Authorities (LAs) are required to periodically review and assess air quality within their area of jurisdiction under the system of Local Air Quality Management (LAQM).

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

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 Local Authority is required to declare an AQMA. For each AQMA the LA is required to produce an Air Quality Action Plan, the objective of which is to reduce pollutant concentrations in pursuit of the AQOs.

2.3 DUST LEGISLATION

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

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

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

2.4 NATIONAL PLANNING POLICY

2.4.1 The revised National Planning Policy Framework[4] (NPPF) was published in July 2021 and sets out the Government's planning policies for England and how these are expected to be applied.

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

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

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

"Planning policies and decisions should contribute to and enhance the natural and local environment by:

[...]

e) preventing new and existing development from contributing to, being put at

[4] NPPF, Ministry of Housing, Communities and Local Government, 2021.

unacceptable risk from, or being adversely affected by, unacceptable levels of soil, air, water or noise pollution or land instability. Development should, wherever possible, help to improve local environmental conditions such as air and water quality [...]"

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

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

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

2.5 NATIONAL PLANNING GUIDANCE

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

1. What air quality considerations does planning need to address?
2. What is the role of plan-making with regard to air quality?
3. Are air quality concerns relevant to neighbourhood planning?
4. What information is available about air quality?
5. When could air quality considerations be relevant to the development management process?
6. What specific issues may need to be considered when assessing air quality impacts?
7. How detailed does an air quality assessment need to be?
8. How can an impact on air quality be mitigated?

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

2.6 LOCAL PLANNING POLICY

The London Plan

2.6.1 The London Plan 2021[5] is the Spatial Development Strategy for Greater London. It sets out a framework for how London will develop over the next 20-25 years and the Mayor's vision for Good Growth. Review of this document indicated the following of relevance to this report:

"Policy SI 1 - Improving Air Quality

A. Development plans, through relevant strategic, site specific and area-based policies should seek opportunities to identify and deliver further improvements to air quality and should not reduce air quality benefits that result from the Mayor's or boroughs' activities to improve air quality.

B. To tackle poor air quality, protect health and meet legal obligations the following criteria should be addressed.

1. Development proposals should not:

a) lead to further deterioration of existing poor air quality

b) create any new areas that exceed air quality limits, or delay the date at which compliance will be achieved in areas that are currently in exceedence of legal limits

c) create unacceptable risk of high levels of exposure to poor air quality.

2. In order to meet the requirements of Part 1, as a minimum:

a) development proposals must be at least Air Quality Neutral

b) development proposals should use design solutions to prevent or minimise increased exposure to existing air pollution and make provision to address local problems of air quality in preference to post-design or retro-fitted mitigation measures.

c) major development proposals must be submitted with an Air Quality Assessment. Air quality assessments should show how the development will meet the requirements of B1

d) development proposals in Air Quality Focus Areas or that are likely to be used by large numbers of people particularly vulnerable to poor air quality, such as children or older people, should demonstrate that design measures have been used to minimise exposure.

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

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

a) How proposals have considered ways to maximise benefits to local air quality, and

b) What measures or design features will be put in place to reduce exposure to pollution, and how they will achieve this.

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

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

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

Local Planning Policy

2.6.2 The Lambeth Local Plan 2020-2035[6] was adopted by LBoL in September 2021. A review of the document indicated the following policy of relevance to the assessment:

"Policy EN4: Sustainable design and construction

A. Lambeth will follow the approach set out in London Plan policies SI1 Improving air quality, SI2 Minimising greenhouse gas emissions, SI4 Managing heat risk, SI5 C and E Water infrastructure.

B. All development, including construction of the public realm, highways and other physical infrastructure, will be required to meet high standards of sustainable design and construction feasible, relating to the scale, nature and form of the proposal."

2.6.3 The above policy was considered throughout the assessment as necessary.

[6] Lambeth Local Plan 2020-2035, LBoL, 2023.

3 METHODOLOGY

3.1 INTRODUCTION

3.1.1 The development may lead to the exposure of future occupants to elevated pollutant levels, as well as adverse impacts at sensitive locations. These issues have been assessed in accordance with the following methodology.

3.2 CONSTRUCTION PHASE

3.2.1 There is the potential for fugitive dust emissions to occur as a result of construction phase activities. These have been assessed in accordance with the methodology outlined within the Mayor of London's 'The Control of Dust and Emissions during Construction and Demolition Supplementary Planning Guidance'[7].

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

- Earthworks;
- Construction; and,
- Trackout.

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

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

Step 1

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

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

Step 2

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

- The scale and nature of the works, which determines the magnitude of dust

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

arising as: small, medium or large (Step 2A); and,

- The sensitivity of the area to dust impacts, which can be defined as low, medium or high sensitivity (Step 2B).

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

3.2.8 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	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	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	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)

Magnitude	Activity	Criteria
	Trackout	Less than 10 HDV trips per day Surface material with low potential for dust release Unpaved road length less than 50m

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

Table 4 Construction Dust - Factors Defining Sensitivity of an Area

Receptor Sensitivity	Examples	
	Human Receptors	**Ecological Receptors**
High	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	Internationally or nationally designated site e.g. Special Area of Conservation
Medium	Users would expect to enjoy a reasonable level of amenity Aesthetics or value of their property could be diminished by soiling People or property wouldn't reasonably be expected to be present here continuously or regularly for extended periods as part of the normal pattern of use of the land e.g. parks and places of work	Nationally designated site e.g. Sites of Special Scientific Interest
Low	Enjoyment of amenity would not reasonably be expected Property would not be expected to be diminished in appearance Transient exposure, where people would only be expected to be present for limited periods. e.g. public footpaths, playing fields, shopping streets, farmland, short term car parks and roads	Locally designated site e.g. Local Nature Reserve

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

- Any history of dust generating activities in the area;
- The likelihood of concurrent dust generating activity on nearby sites;
- Any pre-existing screening between the source and receptors;
- Any conclusions drawn from analysing local meteorological data which accurately represent the area; and if relevant the season during which works will take place;

- Any conclusions drawn from local topography;
- Duration of the potential impact, as a receptor may become more sensitive over time; and,
- Any known specific receptor sensitivities which go beyond the classifications given in the document.

3.2.11 These factors were considered during the undertaking of the assessment.

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

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

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

3.2.13 The criteria used to determine the sensitivity of the area to human health impacts is summarised in Table 6.

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

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

Receptor Sensitivity	Background Annual Mean PM_{10} Concentration	Number of Receptors	Distance from the source (m)				
			Less than 20	Less than 50	Less than 100	Less than 200	Less than 350
		10 - 100	High	Mediu	Low	Low	Low
		1 - 10	Mediu	Low	Low	Low	Low
	Less than	More than	Mediu	Low	Low	Low	Low
		10 - 100	Low	Low	Low	Low	Low
		1 - 10	Low	Low	Low	Low	Low
Medium	-	More than	High	Mediu	Low	Low	Low
		1 - 10	Mediu	Low	Low	Low	Low
Low	-	More than 1	Low	Low	Low	Low	Low

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

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

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

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

3.2.16 Table 8 outlines the risk category from earthworks and construction activities.

Table 8 Construction Dust - Dust Risk Category from Earthworks and Construction Activities

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

3.2.17 Table 9 outlines the risk category from trackout activities.

Table 9 Construction Dust - Dust Risk Category from Trackout Activities

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

Step 3

3.2.18 Step 3 requires the identification of site specific mitigation measures within the Mayor of London's guidance[8] to reduce potential dust impacts based upon the relevant risk categories identified in Step 2. For sites with **negligible** risk, mitigation measures beyond those required by legislation are not required. However, additional controls may be applied as part of good practice.

Step 4

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

3.3 OPERATIONAL PHASE ASSESSMENT

Potential Future Exposure

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

3.3.2 The results of the assessment were compared against the Air Pollution Exposure Criteria (APEC) contained within the London Councils Air Quality and Planning Guidance[9]. These are outlined in Table 11 and allow determination of the significance of predicted pollution levels and associated exposure.

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

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

Table 10 Future Exposure Assessment Criteria

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

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

Potential Development Impacts

3.3.4 The development has the potential to increase concentrations of NO_2, PM_{10} and $PM_{2.5}$ as a result of road traffic exhaust emissions associated with vehicles travelling to and from the site during the operational phase. A screening assessment was therefore undertaken using the criteria contained within the Institute of Air Quality Management (IAQM) 'Land-Use Planning & Development Control: Planning for Air Quality'[10] guidance to determine the potential for trips generated by the development to affect local air quality.

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

A. If any of the following apply:

[10] Land-Use Planning & Development Control: Planning for Air Quality, IAQM, 2017.

- 10 or more residential units or a site area of more than 0.5ha; or,
- more than 1,000m^2 of floor space for all other uses or a site area greater than 1ha.

B. Coupled with any of the following:

- the development has more than 10 parking spaces; or,
- the development will have a centralised energy facility or other centralised combustion process.

3.3.6 Should these criteria not be met, then the IAQM guidance[11] considers air quality impacts associated with a scheme to be **not significant** and no further assessment is required.

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

4 BASELINE

4.1 INTRODUCTION

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

4.2 LOCAL AIR QUALITY MANAGEMENT

4.2.1 As required by the Environment Act (1995), as amended by the Environment Act (2021), LBoL has undertaken Review and Assessment of air quality within their area of jurisdiction. This process has indicated that annual and 1-hour mean concentrations of NO_2 and annual and 24-hour mean concentrations of PM_{10} are above the AQOs within the borough. As such, one AQMA has been declared. This is described as follows:

"Whole borough"

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

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

4.3 AIR QUALITY MONITORING

4.3.1 Monitoring of pollutant concentrations is undertaken by LBoL throughout their area of jurisdiction. Recent NO_2 results recorded in the vicinity of the development are shown in Table 11.

Table 11 Monitoring Results - NO_2

Monitoring Site		Monitored NO_2 Concentration (µg/m³)		
		2019	2020	2021
DT16	Clapham Common tube station, outside Joe Public Café	37.3	31.3	33.6

4.3.2 As shown in Table 11, annual mean NO_2 concentrations were below the AQO of 40µg/m³ at the DT16 monitor in recent years. Reference should be made to Figure 2 for a map of the survey position.

4.3.3 Pollutant concentrations during 2020 and 2021 were lower than previous years due to a reduction in traffic and associated emissions caused by the COVID-19 pandemic. The results should therefore be viewed with caution.

4.3.4 LBoL does not undertake monitoring of PM_{10} or $PM_{2.5}$ concentrations within the vicinity of the site.

4.4 BACKGROUND POLLUTANT CONCENTRATIONS

4.4.1 Predictions of background pollutant concentrations on a 1km by 1km grid basis have been produced by DEFRA for the entire of the UK to assist LAs in their Review and Assessment of air quality. The site is located in grid square NGR: 529500, 174500. Data for this location was downloaded from the DEFRA website[12] for the purpose of this assessment and is summarised in Table 12.

Table 12 Background Pollutant Concentrations

Pollutant	Predicted Annual Mean Background Concentration (µg/m³)		
	2019	2023	2025
NO_2	24.55	20.84	19.54
PM_{10}	18.71	17.60	17.19
$PM_{2.5}$	12.36	11.64	11.35

4.4.2 As shown in Table 12, predicted background NO_2 and PM_{10} concentrations are below the relevant AQOs at the site. Predicted background $PM_{2.5}$ concentrations are above the Interim Target during 2019, though levels drop below in 2023 and 2025.

4.5 SENSITIVE RECEPTORS

4.5.1 A sensitive receptor is defined as any location which may be affected by changes in air quality as a result of a development. Receptors sensitive to potential dust impacts during 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 13.

Table 13 Earthworks and Construction Dust Sensitive Receptors

Distance from Site Boundary (m)	Approximate Number of Human Receptors	Approximate Number of Ecological Receptors
Up to 20	More than 100	0
Up to 50	More than 100	0
Up to 100	More than 100	-
Up to 350	More than 100	-

4.5.3 Receptors sensitive to potential dust impacts from trackout were identified from a desk-top study of the area up to 50m from the road network within 500m of the site access. These are summarised in Table 14.

Table 14 Trackout Dust Sensitive Receptors

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

12 http://uk-air.defra.gov.uk/data/laqm-background-maps?year=2018.

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

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

4.5.3 A number of additional factors have been considered when determining the sensitivity of the surrounding area. These are summarised in Table 15.

Table 15 Additional Area Sensitivity Factors to Potential Dust Impacts

Guidance	Comment
Whether there is any history of dust generating activities in the area	A review of Google Maps imagery indicated a development has recently been completed adjacent to the site. As such, it is possible that there has been a history of dust generation in the area.
The likelihood of concurrent dust generating activity on nearby sites	A number of developments within the vicinity of the site have been granted planning permission. It is therefore possible that these schemes will result in concurrent dust generation should the construction phases overlap with the proposals
Pre-existing screening between the source and the receptors	There is no significant screening around the site boundary
Conclusions drawn from analysing local meteorological data which accurately represent the area: and if relevant the season during which works will take place	As shown in Figure 3, the predominant wind bearing at the site is from the south-west. As such, receptors to the north-east of the boundary are most likely to be affected by dust releases
Conclusions drawn from local topography	There are no significant topographical constraints to dust dispersion
Duration of the potential impact, as a receptor may become more sensitive over time	Currently it is unclear as to the duration of the construction phase. However, it is unlikely that it will extend over one year. It is considered unlikely that the sensitivity of receptors will change over this time
Any known specific receptor sensitivities which go beyond the classifications given in the document	No specific receptor sensitivities identified during the baseline assessment

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

4.5.5 The sensitivity of the receiving environment to specific potential dust impacts, based on the criteria shown in Section 3.2, is shown in Table 16.

Table 16 Sensitivity of the Surrounding Area to Potential Dust Impacts

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

5 ASSESSMENT

5.1 INTRODUCTION

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

5.2 CONSTRUCTION PHASE ASSESSMENT

Step 1

5.2.1 The undertaking of activities such as excavation, ground works, cutting, construction 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 roads and highway surfaces.

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

5.2.3 Receptors sensitive to potential dust impacts during earthworks and construction were identified from a desk-top study of the area up to 350m from the development boundary. As such, a detailed assessment of potential construction phase dust impacts was required.

Step 2

Earthworks

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

5.2.5 Table 16 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 earthworks.

5.2.6 Table 16 indicates the sensitivity of the area to human health impacts is **medium**. In accordance with the criteria outlined in Table 8, the development is considered to be a **medium** risk site for human health impacts as a result of earthworks.

Construction

5.2.7 The total construction volume was estimated 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**.

5.2.8 Table 16 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 **low** risk site for dust soiling as a result of construction activities.

5.2.9 Table 16 indicates the sensitivity of the area to human health impacts is **medium**. In accordance with the criteria outlined in Table 8, the development is considered to be a **low** risk site for human health impacts as a result of construction activities.

Trackout

5.2.10 Based on the site area and existing hard standing provision, 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**.

5.2.11 Table 16 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 trackout activities.

5.2.12 Table 16 indicates the sensitivity of the area to human health impacts is **medium**. In accordance with the criteria outlined in Table 9, the development is considered to be a **negligible** risk site for human health impacts as a result of trackout activities.

Summary of the Risk of Dust Effects

5.2.13 A summary of the risk from each dust generating activity is provided in Table 17.

Table 17 Summary of Potential Unmitigated Dust Risks

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

5.2.14 As indicated in Table 17, the potential risk of dust soiling is **medium** from earthworks and **low** from construction and trackout. The potential risk of human health impacts is **medium** from earthworks, **low** from construction and **negligible** from trackout.

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

Step 3

5.2.16 The Mayor of London's guidance[13] provides potential mitigation measures to reduce impacts as a result of fugitive dust emissions during the construction phase. These have been adapted for the development site as summarised in Table 18. These may be

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

reviewed prior to the commencement of construction works and incorporated into a Construction Environmental Management Plan or similar if required by the LA.

Table 18 Fugitive Dust Emission Mitigation Measures

Issue	Control Measure
Site management	Develop and implement a stakeholder communications plan that includes community engagement before work commences on site Develop a Dust Management Plan (DMP) Display the name and contact details of person(s) accountable for air quality and dust issues on the site boundary Display the head or regional office contact information Record and respond to all dust and air quality pollutant emissions complaints Make the complaints log available to the LA when asked Carry out regular site inspections, record inspection results, and make an inspection log available to the LA upon request Increase the frequency of site inspections by those accountable for dust and air quality pollutant emissions issues when activities with a high potential to produce dust are being carried out, and during prolonged dry or windy conditions Record any exceptional incidents that cause dust and/or air emissions, either on- or offsite, and the action taken to resolve the situation in the log book
Preparing and maintaining the site.	Plan site layout so that machinery and dust causing activities are located away from receptors Erect solid screens or barriers around dusty activities or the site boundary that are at least as high as any stockpiles on site Fully enclose site or specific operations where there is a high potential for dust production and they are active for an extensive period Avoid site runoff of water or mud 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, unless being re-used 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 Ensure all Non-Road Mobile Machinery comply with the relevant standards Ensure all vehicles switch off engines when stationary - no idling vehicles Avoid the use of diesel or petrol powered generators and use mains electricity or battery powered equipment where practicable
Operations	Only use cutting, grinding or sawing equipment fitted or in conjunction with suitable dust suppression techniques Ensure an adequate water supply on the site for effective dust/particulate matter mitigation (using recycled water where possible) Use enclosed chutes and conveyors and covered skips Minimise drop heights and use fine water sprays wherever appropriate Ensure equipment is readily available on site to clean any dry spillages, and clean up spillages as soon as reasonably practicable using wet cleaning methods

Issue	Control Measure
Waste management	Reuse and recycle waste to reduce dust from waste materials Avoid bonfires or burning of waste materials
Construction	Avoid scabbling (roughening of concrete surfaces) if possible Ensure sand and other aggregates are stored in bunded areas and are not allowed to dry out, unless this is required for a particular process, in which case ensure that appropriate additional control measures are in place
Trackout	Use water-assisted dust sweeper(s) on the access and local roads, if required Avoid dry sweeping of large areas Ensure vehicles entering and leaving site are covered to prevent escape of materials Implement a wheel washing system, if required Access gates to be located at least 10m from receptors where possible

Step 4

5.2.17 Assuming the mitigation measures outlined in Table 18 are implemented, the residual impact from all dust generating activities is predicted to be **not significant**, in accordance with the Mayor of London's guidance[14].

5.3 OPERATIONAL PHASE ASSESSMENT

Potential Future Exposure

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

5.3.2 Predicted concentrations above 5% of the annual mean AQO are shown in blue on the contour plots. These relate to areas defined as APEC - C within the London Councils Air Quality and Planning Guidance[15] . Predicted concentrations between 5% below and 5% above the AQO are shown in green. These relate to areas defined as APEC - B within the guidance. Predicted concentrations below 5% of the annual mean AQO are shown in white on the contour plots. These relate to areas defined as APEC - A within the guidance[16].

5.3.3 As shown in Figure 4, annual mean NO_2 concentrations were predicted to be below the AQO of 40µg/m^3 across the development. The maximum level was 22.21µg/m^3, which is classified as APEC - A in accordance London Councils Air Quality and Planning Guidance[17].

5.3.4 As shown in Figure 5, annual mean PM_{10} concentrations were predicted to be below the AQO of 40µg/m^3 across the development. The maximum level was 17.74µg/m^3, which

14 The Control of Dust and Emissions During Construction and Demolition Supplementary Planning Guidance, The Mayor of London, 2014.
15 London Councils Air Quality and Planning Guidance, London Councils, 2007.
16 London Councils Air Quality and Planning Guidance, London Councils, 2007.
17 London Councils Air Quality and Planning Guidance, London Councils, 2007.

is classified as APEC - A in accordance with the London Councils Air Quality and Planning Guidance[18].

5.3.5 As show in Figure 6, the number of days with PM_{10} concentrations greater than 50µg/m^3 was predicted to be below the permitted number of 35 across the development. Levels are classified as APEC - A in accordance with the London Councils Air Quality and Planning Guidance[19].

5.3.6 As shown in Figure 7, annual mean $PM_{2.5}$ concentrations were predicted to be below the Interim Target of 12µg/m^3 across the development. The maximum level was 11.68µg/m^3.

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

Potential Development Impacts

5.3.8 Any vehicle movements associated with the development will generate exhaust emissions on the local and regional road networks. The proposals do not include any car parking spaces. As such, potential air quality impacts associated with operational phase road vehicle exhaust emissions are predicted to be **not significant**, in accordance with the IAQM screening criteria[20] shown in Section 3.3.

18 London Councils Air Quality and Planning Guidance, London Councils, 2007.
19 London Councils Air Quality and Planning Guidance, London Councils, 2007.
20 Land-Use Planning & Development Control: Planning for Air Quality, IAQM, 2017.

6 AIR QUALITY NEUTRAL

6.1 INTRODUCTION

6.1.1 The London Plan[21] requires that all developments are 'air quality neutral' to ensure proposals do not lead to further deterioration of existing poor air quality. In order to support the policy, guidance[22] has been produced by the GLA. The document provides a methodology for determining potential emissions from a development and benchmark values for comparison purposes. Where the benchmark is exceeded then action is required, either locally or by way of off-setting.

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

6.2 BUILDING EMISSIONS

6.2.1 The heating and hot water strategy for the development had not been finalised at the time of assessment. However, the final proposals will comprise zero emission technologies and will not produce releases to atmosphere. This can be secured by planning condition if required by LBoL. As such, the proposals are considered are quality neutral from a building emissions perspective.

6.3 TRANSPORT EMISSIONS

6.3.1 The proposals are classified as 'car-free'. As such, the development is air quality neutral from a transport emissions perspective.

6.4 SUMMARY

6.4.1 Potential emissions from the development were assessed in order to determine compliance with the air quality neutral requirements of the London Plan. The building energy strategy will comprise zero emission technologies which do not produce releases to atmosphere. Additionally, the scheme is classified as 'car-free'. As such, the proposals are considered air quality neutral.

21 The London Plan - The Spatial Development Strategy for Greater London, GLA, 2021.
22 London Plan Guidance - Air Quality Neutral, GLA, 2023.

7 CONCLUSION

7.1.1 Crestwood Environmental was commissioned by Portakabin Limited to undertake an Air Quality Assessment in support of a planning application for the installation of two three-storey portacabin buildings and internal alterations to an existing building at London Realty Lambeth College, 45 Clapham Common South Side, London.

7.1.2 The proposals have the potential to cause air quality impacts as a result of fugitive dust emissions during construction and road traffic exhaust emissions associated with vehicles travelling to and from the site during operation. As such, an Air Quality Assessment was undertaken in order to determine baseline conditions and assess potential effects as a result of the scheme.

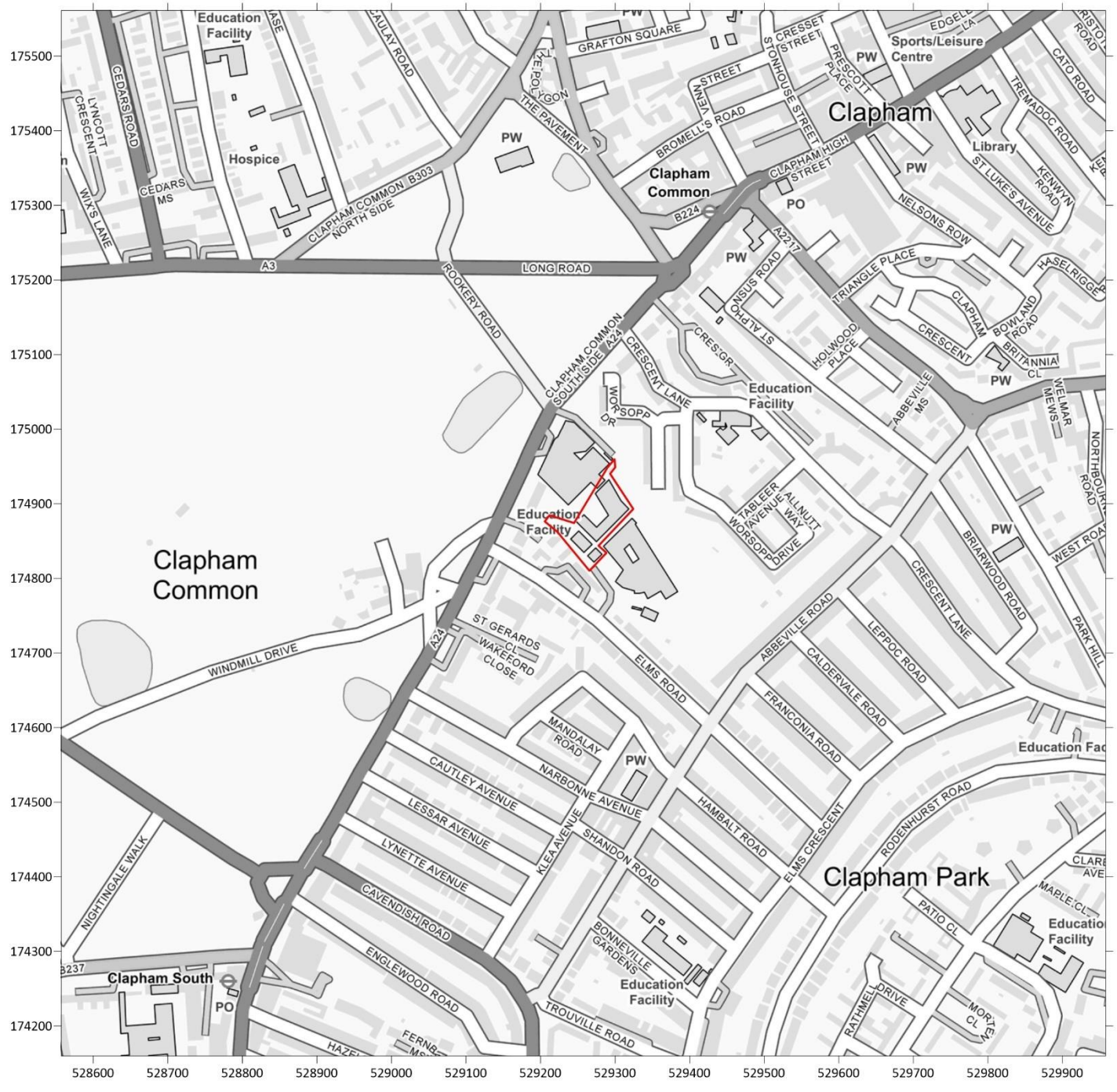
7.1.3 During the construction phase of the development there is the potential for air quality impacts as a result of fugitive dust emissions from the site. These were assessed in accordance with the Mayor of London's methodology. Assuming good practice dust control measures are implemented, the residual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

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

7.1.5 The results of the dispersion modelling assessment indicated that predicted annual mean NO2, PM10 and PM2.5 were below the relevant AQOs and Interim Target at all locations across the site. Pollutant levels were categorised as APEC - A in accordance with the London Councils Air Quality and Planning Guidance. As such, the site is considered suitable for the proposed end-use from an air quality perspective.

7.1.6 Potential emissions from the development were assessed in order to determine compliance with the air quality neutral requirements of the London Plan. The building energy strategy will comprise zero emission technologies which do not produce releases to atmosphere. Additionally, the scheme is classified as 'car-free'. As such, the development was considered to be air quality neutral.

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



Legend

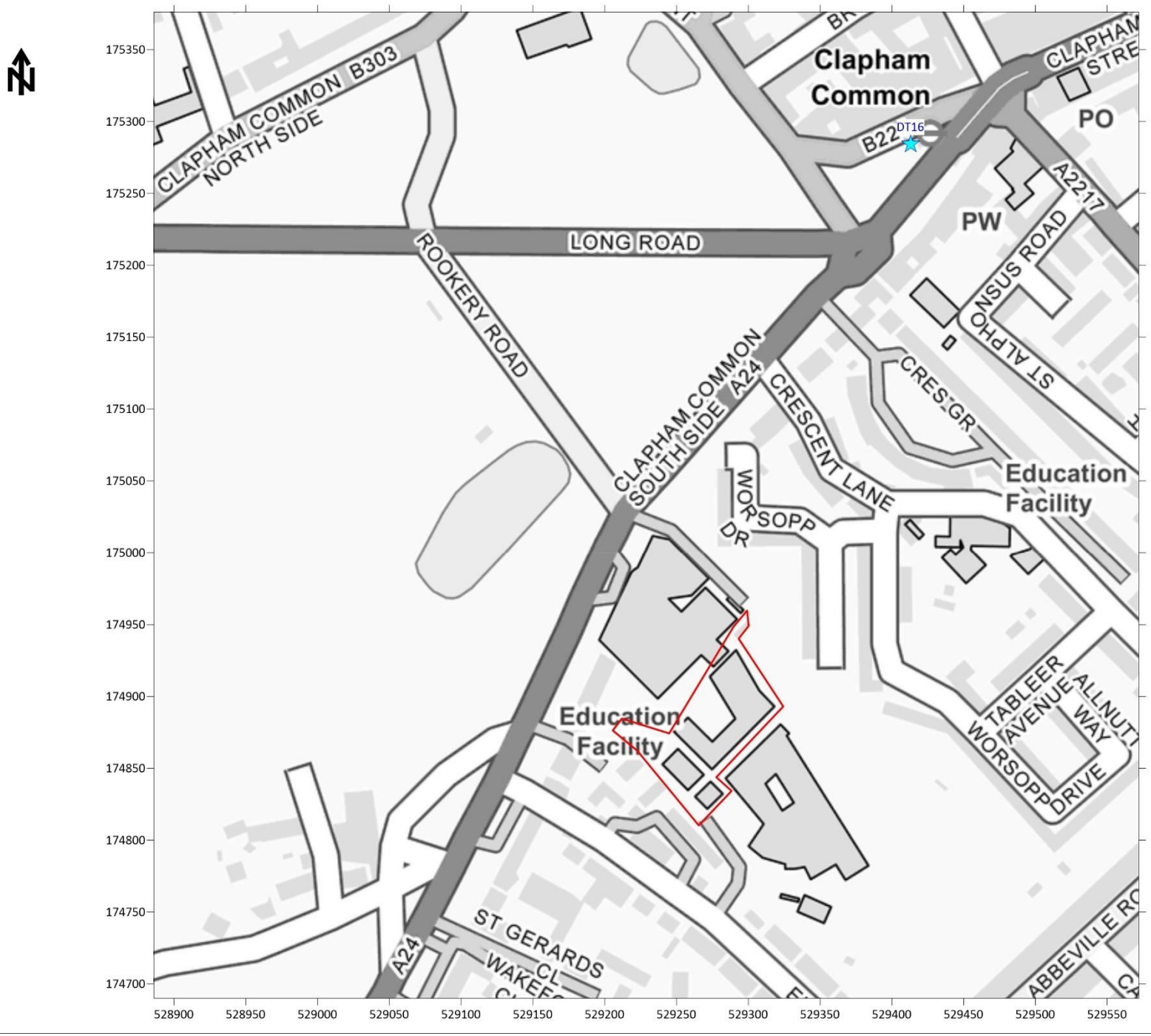
Site Boundary

Title

Figure 1 - Site Location Plan

Project

Air Quality Assessment
Clapham Common South Side, London



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Site Boundary

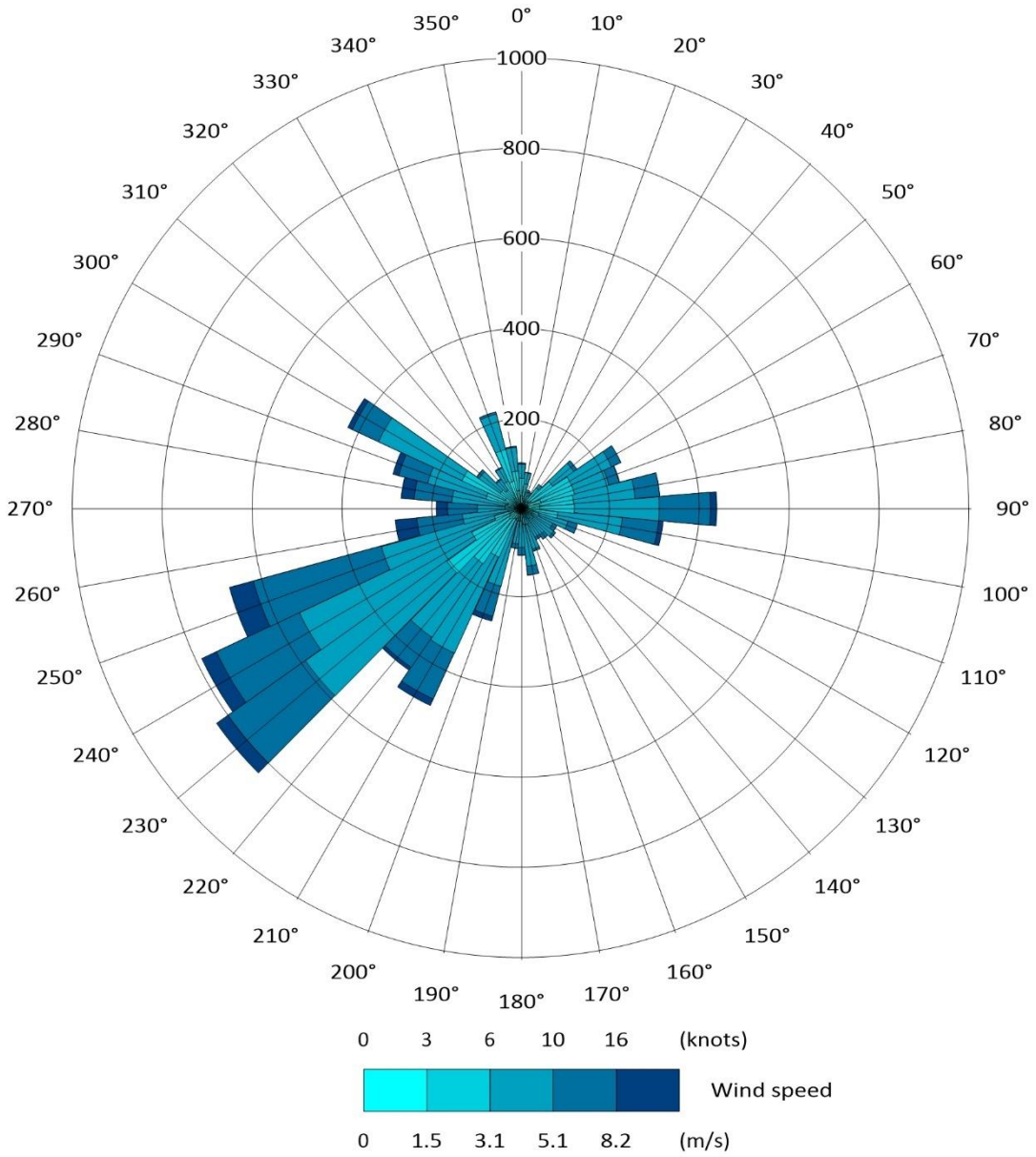
Monitor

Title

Figure 2 - Monitoring Location

Project

Air Quality Assessment
Clapham Common South Side, London



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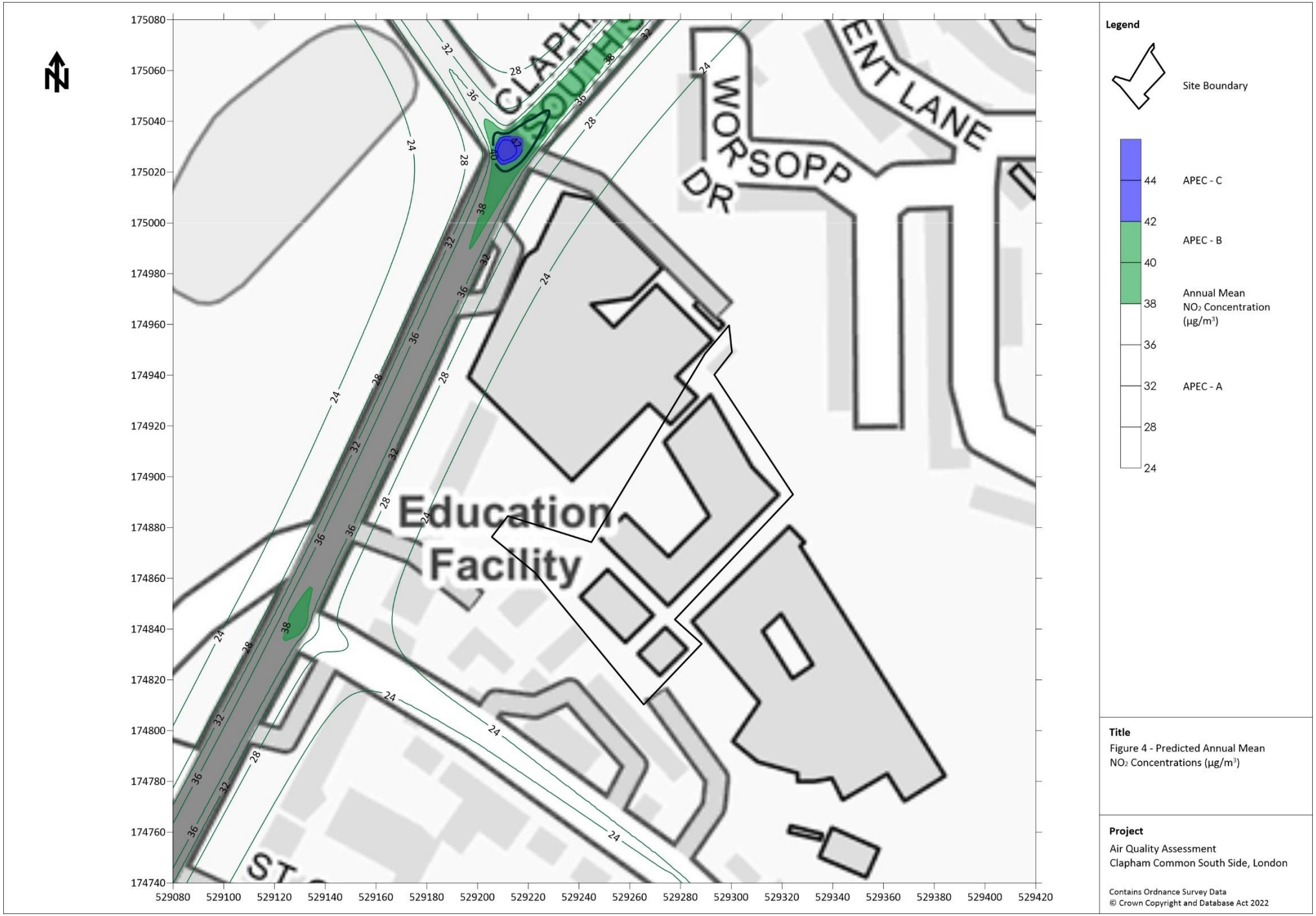
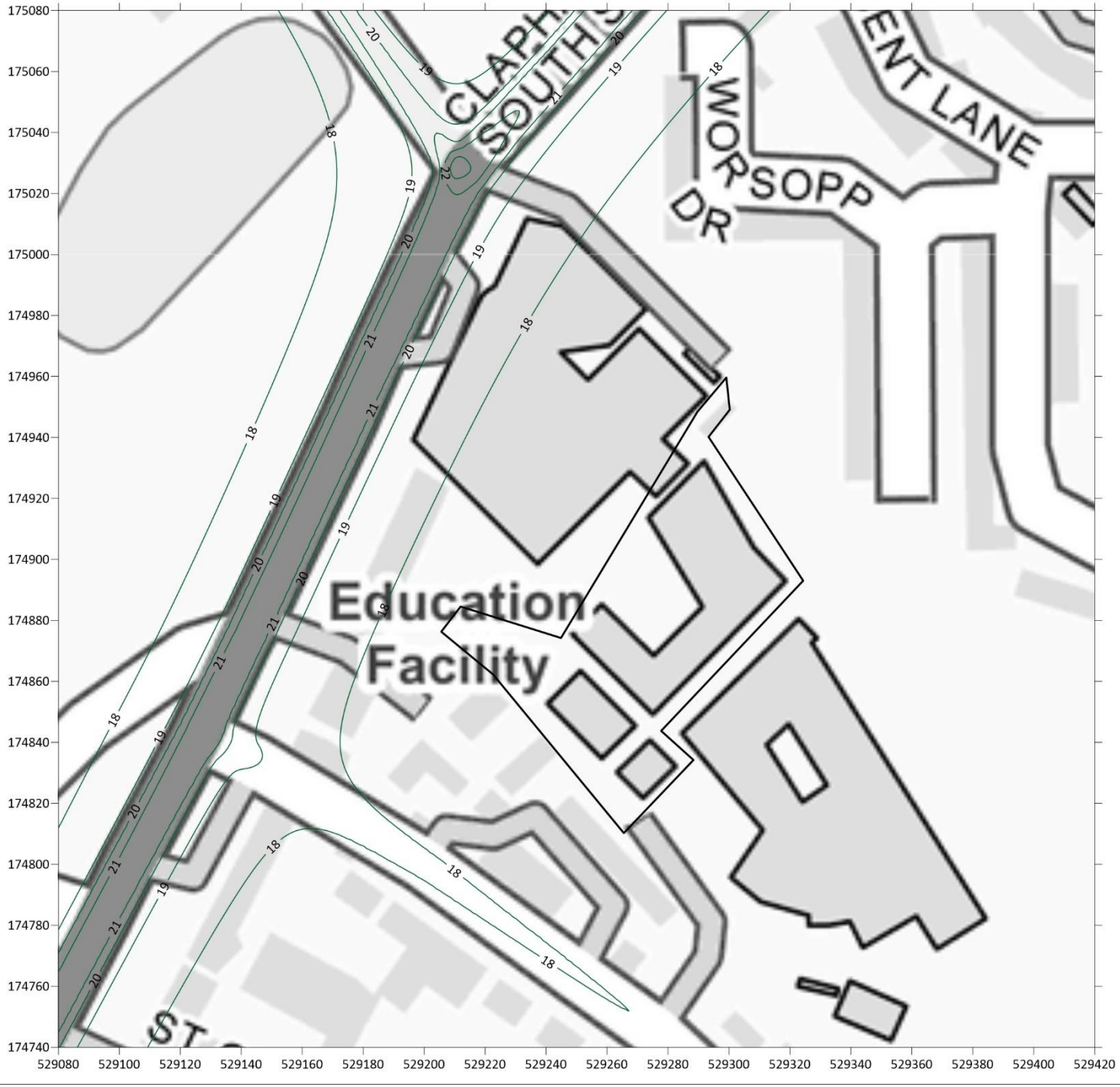
Title

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

Project

Air Quality Assessment
Clapham Common South Side, London


Education Facility
WORSOPP DR
ENT LANE
Legend
Site Boundary
44
APEC - C
42
APEC - B
40
38
Annual Mean
NO2 Concentration
(µg/m3)
36
32
APEC - A
28
24
Title
Figure 4 - Predicted Annual Mean
NO2 Concentrations (µg/m3)
Project
Air Quality Assessment
Clapham Common South Side, London
Contains Ordnance Survey Data
© Crown Copyright and Database Act 2022



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Site Boundary

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

23
22
21
20
19
18

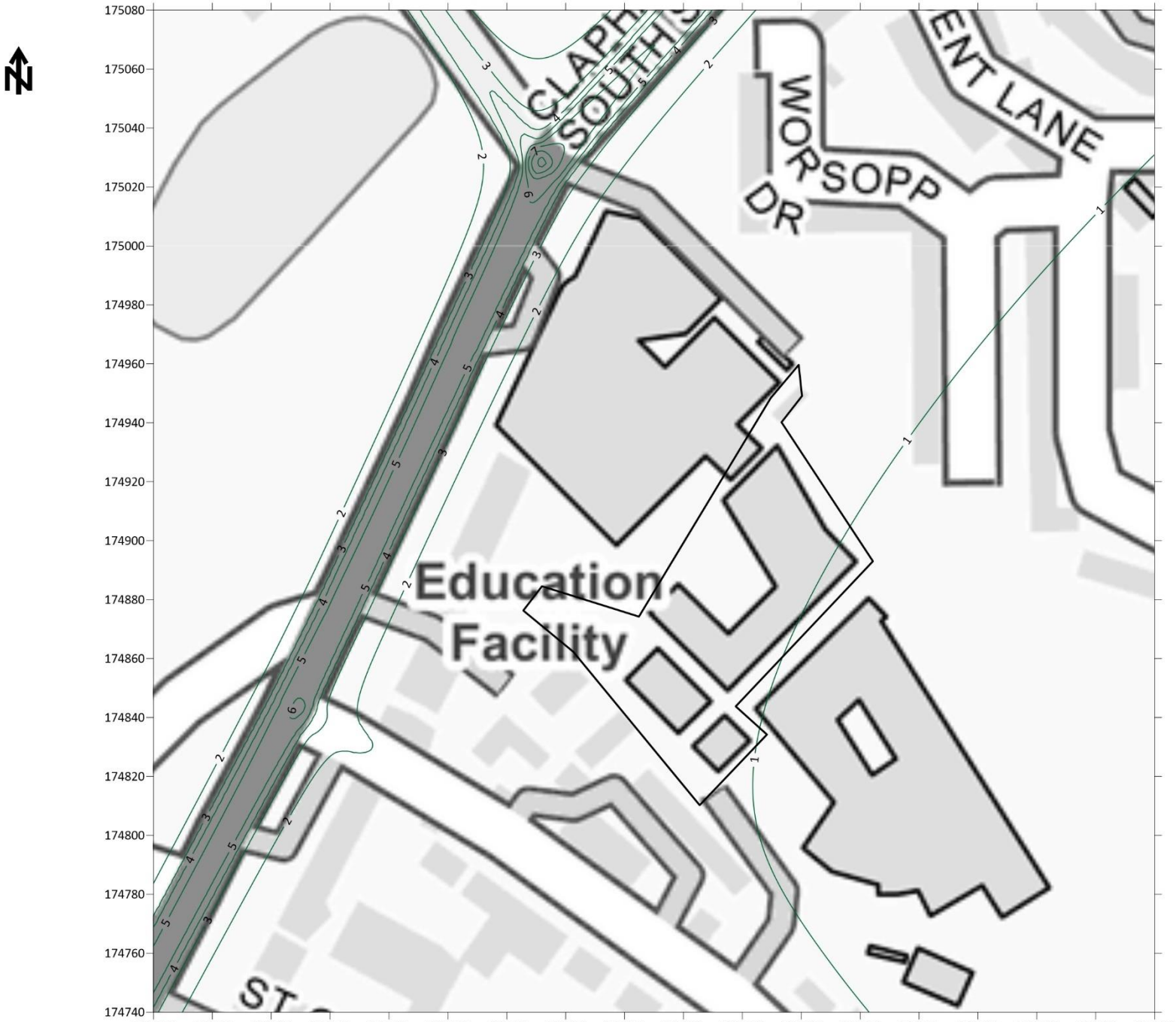
APEC - A

Title

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

Project

Air Quality Assessment
Clapham Common South Side, London



Legend

Site Boundary

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

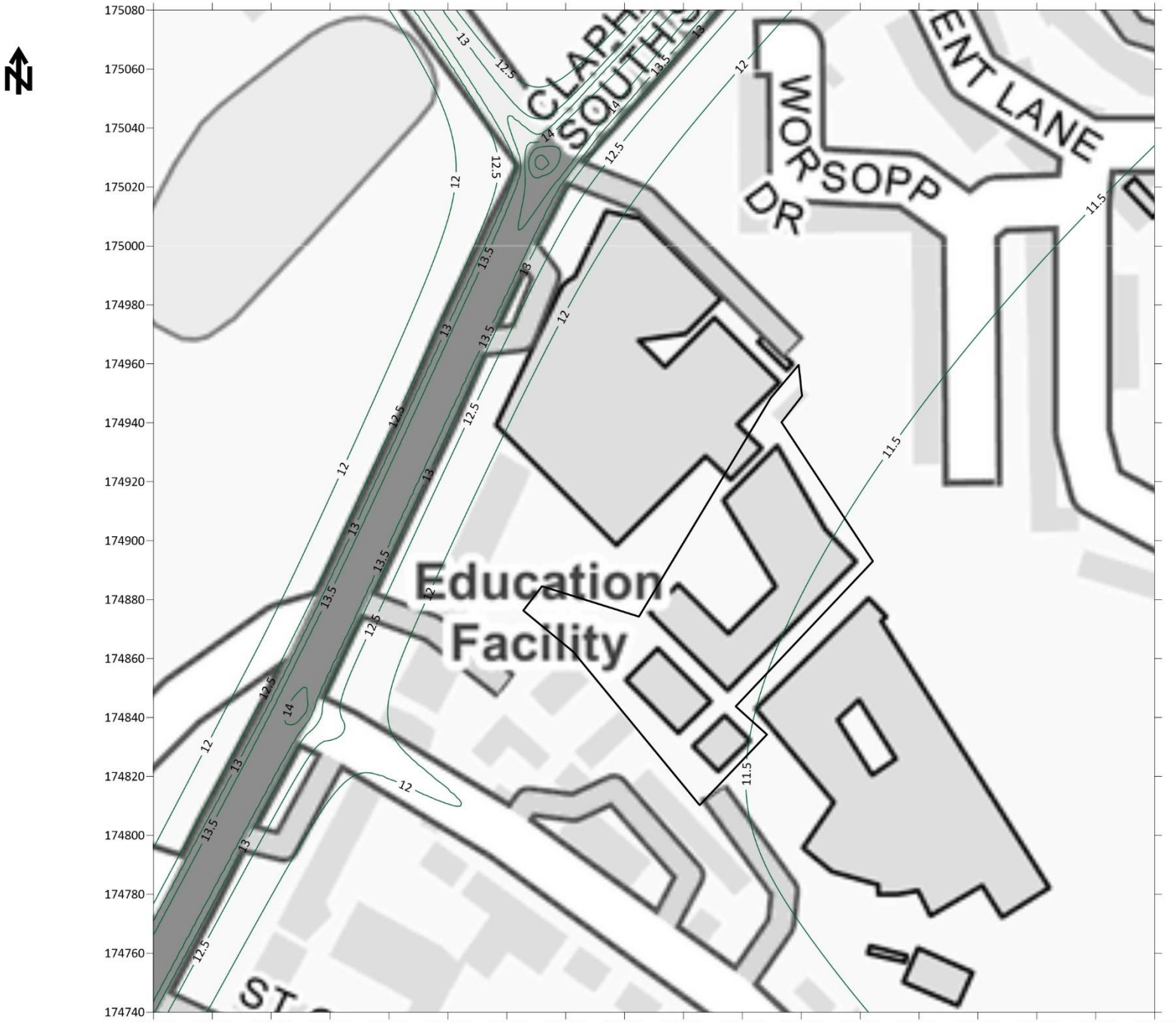
APEC - A

Title

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

Project

Air Quality Assessment
Clapham Common South Side, London



Legend

Site Boundary

Annual Mean $PM_{2.5}$ Concentration ($\mu g/m^3$)

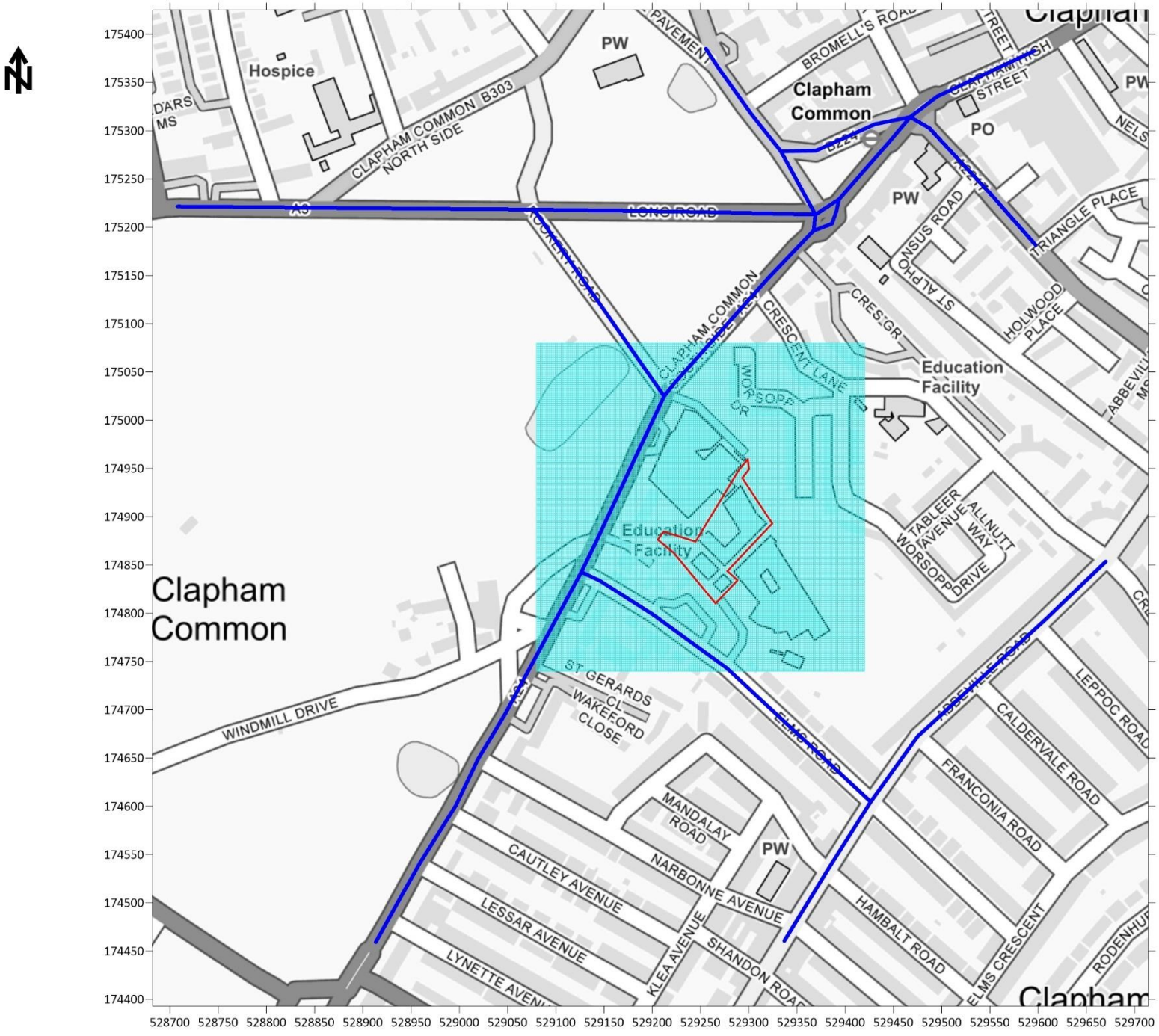
15
14.5
14
13.5
13
12.5
12
11.5

Title

Figure 7 - Predicted Annual Mean $PM_{2.5}$ Concentrations ($\mu g/m^3$)

Project

Air Quality Assessment
Clapham Common South Side, London



Legend

Site Boundary

Road Link

Output Grid

Title

Figure 8 - ADMS-Roads Inputs

Project

Air Quality Assessment
Clapham Common South Side, London

APPENDIX 1 - ASSESSMENT INPUT DATA

INTRODUCTION

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

Modelling was undertaken for 2019 to allow verification against recent monitoring results and 2025 to represent likely conditions in the opening year of the scheme.

DISPERSION MODEL

Dispersion modelling was undertaken using the ADMS-Roads dispersion model (version 5.0.1.3). ADMS-Roads is developed by Cambridge Environmental Research Consultants (CERC) and is routinely used throughout the world for the prediction of pollutant dispersion from road sources. Modelling predictions from this software package are accepted within the UK by the Environment Agency and DEFRA.

The model requires input data that details the following parameters:

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

These are detailed in the following Sections.

ASSESSMENT AREA

Ambient concentrations were predicted over the area NGR: 529080, 174740 to 529420, 175080. One Cartesian grid was used within the model to produce data suitable for contour plotting using the Surfer software package.

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

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

TRAFFIC FLOW DATA

Baseline traffic data for use in the assessment was obtained from the London Atmospheric Emissions Inventory (LAEI). The LAEI was produced by the GLA and provides traffic flows throughout London for a number of scenarios. It should be noted that the LAEI is referenced in GLA guidance[23] as being a suitable source of data for air quality assessments and is therefore considered to provide a reasonable estimate of traffic flows in the vicinity of the site.

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

Road widths and vehicle speeds were estimated from aerial photography and UK highway design standards. A summary of the traffic data is provided in Table 19.

Table 19 Traffic Data

Link		24-hour AADT Flow		Road Width (m)	Avg. Vehicle Speed (km/h)
		2019	2025		
L1	A24 Clapham Common South Side	28,892	30,548	13.6	45
L2	A24 Clapham Common South Side Slow Phase (SP)	28,892	30,548	16.5	20
L3	A24 Clapham High Street south of Long Road northbound SP	34,191	36,150	14.0	20
L4	A24 Clapham High Street south of southbound Long Road SP	32,655	34,526	6.5	20
L5	A24 Clapham High Street SP	34,222	36,183	13.6	20
L6	B224 The Pavement approach to A24 Clapham Common South Side SP	6,326	6,688	9.1	20
L7	B224 The Pavement approach to A24 Clapham High Street SP	8,644	9,139	7.3	20
L8	B224 The Pavement	14,584	15,420	8.2	45
L9	A3 Long Road SP	16,596	17,547	9.9	20
L10	A3 Long Road west of Rookery Road	20,186	21,343	9.9	45
L11	Rookery Road	7,961	8,417	7.6	20
L12	A2217 Acre Lane SP	18,486	19,545	8.0	20
L13	A2217 Acre Lane	18,486	19,545	8.0	45
L14	Elms Road	4,555	4,816	8.7	20
L15	Abbeville Road	4,555	4,816	9.7	35

Fleet composition data as a proportion of total flows on each link for cars, taxis, Light Goods Vehicles (LGV), Heavy Goods Vehicles (HGV), buses and coaches and motorcycles are summarised in Table 20.

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

Table 20 Fleet Composition Data

Link	Proportion of Fleet (%)						
	Car	**Taxi**	**LGV**	**Rigid HGV**	**Artic HGV**	**Bus and Coach**	**Motorcycle**
L1	74.4	1.2	13.6	3.0	0.6	3.4	3.7
L2	74.4	1.2	13.6	3.0	0.6	3.4	3.7
L3	69.6	1.3	13.9	3.6	0.8	7.1	3.8
L4	71.1	1.3	14.2	3.7	0.8	5.0	3.8
L5	69.5	1.3	13.9	3.6	0.8	7.2	3.8
L6	73.3	2.4	11.6	3.6	0.2	5.9	3.0
L7	71.0	4.0	14.1	3.1	0.1	4.8	3.0
L8	72.9	3.4	13.2	3.4	0.1	4.1	3.0
L9	70.6	1.5	10.7	3.7	0.8	8.8	3.8
L10	75.4	0.9	9.4	3.0	0.6	6.8	3.7
L11	86.7	2.2	5.0	0.7	0.1	1.6	3.8
L12	71.8	2.0	10.5	3.9	0.8	7.2	3.7
L13	71.8	2.0	10.5	3.9	0.8	7.2	3.7
L14	78.7	1.9	14.6	0.8	0.1	0.1	3.8
L15	78.7	1.9	14.6	0.8	0.1	0.1	3.8

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

EMISSION FACTORS

Emission factors for each link were calculated using the relevant traffic flows and the Emissions Factor Toolkit (version 11.0). This has been produced by DEFRA and incorporates updated COPERT5 vehicle emission factors and fleet information.

There is current uncertainty over NO_2 concentrations within the UK, with the implementation of new vehicle emission standards not resulting in the previously expected reduction in roadside levels. Therefore, 2019 emission factors were utilised in preference to 2025 in order to provide robust concentration predictions. As predictions for 2019 were verified, it is considered the results are an indication of worst case concentrations during the operation of the proposals.

METEOROLOGICAL DATA

Meteorological data used in the assessment was taken from London City Airport meteorological station over the period 1st January 2019 to 31st December 2019 (inclusive). London City Airport is located at NGR: 542739, 180487, which is approximately 14.6km north-east of the site. It is anticipated that conditions would be reasonably similar over a distance of this magnitude. The data was therefore considered suitable for an assessment of this nature.

All meteorological records used in the assessment were provided by Atmospheric

Dispersion Modelling (ADM) Ltd, which is an established distributor of data within the UK. Reference should be made to Figure 3 for a wind rose of utilised meteorological data.

ROUGHNESS LENGTH

The z_0 is a modelling parameter applied to allow consideration of surface height roughness elements. A z_0 of 1m was used to describe the modelling extents. This value 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 is considered appropriate for the morphology of the area due to the large expanse of surrounding flat land use, such as runways, grassland and open water, and is suggested within ADMS-Roads as being suitable for 'root crops'.

MONIN-OBUKHOV LENGTH

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

BACKGROUND CONCENTRATIONS

Background NO_2, PM_{10} and $PM_{2.5}$ concentrations for use in the assessment were obtained from the DEFRA mapping study for the grid square containing the development site, as shown in Table 12.

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

Similarly to emission factors, background concentrations from 2019 were utilised in preference to 2025. This provided a robust assessment and is likely to overestimate pollutant concentrations during the operation of the proposal.

NO_X TO NO_2 CONVERSION

Predicted annual mean NO_x concentrations were converted to NO_2 concentrations using the spreadsheet (version 8.1) provided by DEFRA, which is the method detailed within DEFRA guidance[24] and GLA guidance[25].

VERIFICATION

The results from a dispersion model may differ from measured concentrations for a large

[24] Local Air Quality Management Technical Guidance (TG22), DEFRA, 2022.
[25] London Local Air Quality Management (LLAQM), Technical Guidance 2019 (LLAQM.TG (19)), GLA, 2019.

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 the assessment, model verification was undertaken for 2019 using traffic data, meteorological data and monitoring results from this year. The choice of 2019 as the verification year aligns with the IAQM position statement 'Use of 2020 and 2021 Monitoring Datasets'[26], which states:

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

Monitoring of NO_2 concentrations was undertaken at one location in the vicinity of roads included within the model during 2019. The result was obtained and the road contribution to total NO_x concentration calculated following the methodology contained within the DEFRA guidance[27]. The monitored annual mean NO_2 concentration and calculated road NO_x concentration is summarised in Table 21.

Table 21 NO_x Verification - Monitoring Result

Monitoring Location		**Monitored NO_2 Concentration (µg/m³)**	**Calculated Road NO_x Concentration (µg/m³)**
DT16	Clapham Common tube station, outside Joe Public Café	37.30	28.06

The annual mean road NO_x concentration predicted from the dispersion model and the road NO_x concentration calculated from the 2019 monitoring result are summarised in Table 22.

Table 22 NO_x Verification - Modelling Result

Monitoring Location		**Calculated Road NO_x Concentration (µg/m³)**	**Modelled Road NO_x Concentration (µg/m³)**
DT16	Clapham Common tube station, outside Joe Public Café	28.06	26.21

The monitored and modelled road NO_x concentrations were compared to calculate the associated ratio. This indicated a verification factor of 1.0707 was required to be applied to

[26] Use of 2020 and 2021 Monitoring Datasets, IAQM, 2021.
[27] Local Air Quality Management Technical Guidance (TG22), DEFRA, 2022.

all modelling results.

Monitoring of PM_{10} and $PM_{2.5}$ is not undertaken within the assessment extents. The NO_x verification factor was therefore used to adjust model predictions of these species in lieu of more accurate data in accordance with GLA guidance[28].

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