Air Quality Assessment

18-23 Hand Court
High Holborn Estate
SRG Holborn Ltd.

26th September 2018

SYNTEGRA CONSULTING

Air Quality Assessment

Hand Court, Camden, WC1V 6JF

September 2018

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Revision	-
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1. Introduction

Background

This report has been prepared to support the planning application for the redevelopment of Hand Court, Camden, to provide a mixed-use scheme.

The proposals may cause air quality impacts during the construction and operational phases. As such, an Air Quality Assessment was required in order to determine conditions at the site and assess potential air quality effects as a result of the scheme.

Site Location and Context

The site is located on land currently occupied by Hand Court, Camden, WC1V 6JF, at approximate National Grid Reference (NGR): 530840, 181647. Reference should be made to Figure 1 for a map of the site and surrounding area.

The proposals comprise the redevelopment of 18-21 Hand Court and 22-23 Hand Court to provide a mix of office (2,492m^2) and retail (907m^2) land uses including associated amenities and cycle parking.

The development has the potential to cause impacts at sensitive locations. These may include fugitive dust emissions during construction and road traffic exhaust emissions from vehicles travelling to and from the site during operation. An Air Quality Assessment was therefore undertaken in order to determine baseline conditions and consider potential effects as a result of the scheme. This is detailed in the following report.

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 1999/30/EC - the First Air Quality "Daughter" Directive - sets ambient AQLVs for nitrogen dioxide (NO_2), oxides of nitrogen (NO_x), sulphur dioxide, lead and particulate matter with an aerodynamic diameter of less than 10µm (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 Air Quality Objectives (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.

[1] The AQS for England, Scotland, Wales and Northern Ireland, DEFRA, 2007.

Table 1 Air Quality Objectives

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

Table 2 summarises the advice provided in Greater London Authority (GLA) guidance[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 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	Kerbside sites where the public would not be expected to have regular access

2 London Local Air Quality Management (TG16), Technical Guidance 2016 (LLAQM.TG (2016)), GLA, 2016.

Averaging Period	Objective Should Apply At	Objective Should Not Apply At
	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	

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 Air Quality Management Area (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.

Dust

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, is that provided in Section 79 of Part III of the Environmental Protection Act (1990). The Act defines nuisance as:

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

Enforcement of the Act, in regard to nuisance, is currently under the jurisdiction of the local Environmental Health Department, whose officers are deemed to provide an independent evaluation of nuisance. If the LA is satisfied that a statutory nuisance exists, or is likely to occur or happen again, it must serve an Abatement Notice under Part III of the Environmental Protection Act (1990). Enforcement can insist that there be no dust beyond the boundary of the works. The only defence is to show that the process to which the nuisance has been attributed and its operation are being controlled according to best practicable means.

National Planning Policy

The revised National Planning Policy Framework[3] (NPPF) was published in July 2018 and sets out the Government's planning policies for England and how these are expected to be applied.

A core principle relating to air quality effects from development is that planning should:

> *"contribute to conserving and enhancing the natural environment and reduce pollution"*

[3] NPPF, Ministry of Housing, Communities and Local Government, 2018.

In achieving this, it states that:

> *"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 […]"*

With regard to assessing cumulative effects the NPPF states:

> *"Planning policies and decisions should also ensure that new development is appropriate for its location taking into account the likely effects (including cumulative effects) of pollution on health, living conditions and the natural environment, as well as the potential sensitivity of the site or the wider area to impacts that could arise from the development"*

The NPPF 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."*

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?

[4] http://planningguidance.planningportal.gov.uk.

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

The London Plan March 2016[5] was published by the 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*

[5] The London Plan March 2016, GLA, 2016.

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:

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 the Air Quality Assessment.

Local Planning Policy

The Camden Local Plan[6] was adopted by the London Borough of Camden (LBoC) on 3rd July 2017 and sets out the Council's approach to planning between 2016 to 2031.

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

6 The Camden Local Plan, LBoC, 2017

"Policy CC4: Air Quality

The Council will ensure that the impact of development on air quality is mitigated and ensure that exposure to poor air quality is reduced in the borough.

The Council will take into account the impact of air quality when assessing development proposals, through the consideration of both the exposure of occupants to air pollution and the effect of the development on air quality. Consideration must be taken to the actions identified in the Council's Air Quality Action Plan.

Air Quality Assessments (AQAs) are required where development is likely to expose residents to high levels of air pollution. Where the AQA shows that a development would cause harm to air quality, the Council will not grant planning permission unless measures are adopted to mitigate the impact. Similarly, developments that introduce sensitive receptors (i.e. housing, schools) in locations of poor air quality will not be acceptable unless designed to mitigate the impact.

Development that involves significant demolition, construction or earthworks will also be required to assess the risk of dust and emissions impacts in an AQA and include appropriate mitigation measures to be secured in a Construction Management Plan."

The above policy was taken into consideration throughout the undertaking of the assessment.

3. Baseline

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

Local Air Quality Management

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

"The whole borough."

The proposals are located within the AQMA. As such, there is the potential for vehicles travelling to and from the site to increase pollution levels in this sensitive area. This has been considered throughout the assessment.

LBoC 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 LBoC throughout their area of jurisdiction. Recent results recorded in the vicinity of the development are shown in Table 3. Exceedences of the AQO are shown in **bold**.

Table 3 Monitoring Results - NO_2

Monitoring Site		Monitored NO_2 Concentration (µg/m^3)		
		2015	2016	2017
CA21	Bloomsbury Street	**71.43**	**72.20**	**80.67**

As shown in Table 3, annual mean NO_2 concentrations were above the AQO at the CA21 - Bloomsbury Street diffusion tube in recent years. As this site is positioned at a roadside location within an AQMA, exceedences would be expected. Reference should be made to Figure 2 for a map of the survey position.

LBoC does not undertake PM_{10} monitoring within the vicinity of the 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: 530500, 181500. Data for this location was

downloaded from the DEFRA website[7] for the purpose of this assessment and is summarised in Table 4. Exceedences of the AQO are shown in **bold**.

Table 4 Background Pollutant Concentrations

Pollutant	Predicted Background Concentration (µg/m^3)		
	2017	2018	2021
NO_2	**47.97**	**44.97**	36.18
PM_{10}	20.99	20.68	19.96

As shown in Table 4, predicted background NO_2 concentrations are above the relevant AQO during the current and baseline years. PM_{10} concentrations are below the relevant AQO at the development site.

7 http://uk-air.defra.gov.uk/data/laqm-background-maps?year=2015.

4. Methodology

The proposed development has the potential to cause adverse impacts as a result of construction phase dust emissions and exhaust emissions from vehicles travelling to and from the site during the operational phase. These issues were assessed in accordance with the following methodology.

Construction Phase Fugitive Dust Emissions

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

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

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

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

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

The assessment steps are detailed below.

Step 1

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.

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

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

Step 2

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

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

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

Step 2A defines the potential magnitude of dust emission through the construction phase. The relevant criteria are summarised in Table 5.

Table 5 Construction Dust - Magnitude of Emission

Magnitude	Activity	Criteria
Large	Demolition	Total volume of building to be demolished greater than 50,000m^3 Potentially dusty material (e.g. concrete) On-site crushing and screening Demolition activities more than 20m above ground level
	Earthworks	Total site area greater than 10,000m^2 Potentially dusty soil type (e.g. clay, which will be prone to suspension when dry due to small particle size) More than 10 heavy earth moving vehicles active at any one time Formation of bunds greater than 8m in height More than 100,000 tonnes of material moved
	Construction	Total building volume greater than 100,000m^3 On site concrete batching Sandblasting
	Trackout	More than 50 Heavy Duty Vehicle (HDV) trips per day Potentially dusty surface material (e.g. high clay content) Unpaved road length greater than 100m
Medium	Demolition	Total volume of building to be demolished between 20,000m^3 and 50,000m^3 Potentially dusty construction material Demolition activities 10m to 20m above ground level

Magnitude	Activity	Criteria
	Earthworks	Total site area 2,500m^2 to 10,000m^2 Moderately dusty soil type (e.g. silt) 5 to 10 heavy earth moving vehicles active at any one time Formation of bunds 4m to 8m in height Total material moved 20,000 tonnes to 100,000 tonnes
	Construction	Total building volume 25,000m^3 to 100,000m^3 Potentially dusty construction material (e.g. concrete) On site concrete batching
	Trackout	10 to 50 HDV trips per day Moderately dusty surface material (e.g. high clay content) Unpaved road length 50m to 100m
Small	Demolition	Total volume of building to be demolished less than 20,000m^3 Construction material with low potential for dust release (e.g. metal cladding or timber) Demolition activities less than 10m above ground and during wetter months
	Earthworks	Total site area less than 2,500m^2 Soil type with large grain size (e.g. sand) Less than 5 heavy earth moving vehicles active at any one time Formation of bunds less than 4m in height Total material moved less than 20,000 tonnes Earthworks during wetter months
	Construction	Total building volume less than 25,000m^3 Construction material with low potential for dust release (e.g. metal cladding or timber)
	Trackout	Less than 10 HDV trips per day Surface material with low potential for dust release Unpaved road length less than 50m

Step 2B defines the sensitivity of the area around the development to potential dust impacts. The influencing factors are shown in Table 6.

Table 6 Construction Dust - Examples of 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

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.

These factors were considered during the undertaking of the assessment.

The criteria for determining the sensitivity of the area to dust soiling effects on people and property is summarised in Table 7.

Table 7 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

Table 8 outlines the criteria for determining the sensitivity of the area to human health impacts.

Table 8 Construction Dust - Sensitivity of the Area to Human Health Impacts

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

Receptor Sensitivity	Annual Mean PM_{10} Concentration	Number of Receptors	Distance from the Source (m)				
			Less than 20	Less than 50	Less than 100	Less than 200	Less than 350
		1 - 10	Medium	Low	Low	Low	Low
Low	-	1 or more	Low	Low	Low	Low	Low

Table 9 outlines the criteria for determining the sensitivity of the area to ecological impacts.

Table 9 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

Step 2C combines the dust emission magnitude with the sensitivity of the area to determine the risk of unmitigated impacts. Table 10 outlines the risk category from demolition activities.

Table 10 Construction Dust - Dusk Risk Category from Demolition Activities

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

Table 11 outlines the risk category from earthworks and construction activities.

Table 11 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

Table 12 outlines the risk category from trackout activities.

Table 12 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

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

Step 4

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**.

Operational Phase Road Traffic Emissions

Potential Development Impacts

The development has the potential to impact on existing air quality as a result of road traffic exhaust emissions associated with vehicles travelling to and from the site during operation. A screening assessment was therefore undertaken using the criteria contained within the Highways Agency 'Design Manual for Roads and Bridges' (DMRB)[10] and IAQM 'Land-Use Planning & Development Control: Planning for Air Quality'[11] guidance documents to determine the potential for trips generated by the development to affect local air quality.

The DMRB[12] provides the following criteria for determination of road links potentially affected by changes in traffic flow:

- Annual Average Daily Traffic (AADT) flows change by 1,000 or more;
- Daily HDV AADT flows change by 200 or more;

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

10 DMRB Volume 11, Section 3, Part 1, HA207/07, Highways Agency, 2007.

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

12 DMRB Volume 11, Section 3, Part 1, HA207/07, Highways Agency, 2007.

- Daily average speed changes by 10km/hr or more; or,
- Peak hour speed changes by 20km/hr or more.

The IAQM 'Land-Use Planning & Development Control: Planning for Air Quality' guidance[13] document provides the following criteria to help establish when an assessment of potential impacts on the local area is likely to be considered necessary:

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

Should these criteria not be met, then the DMRB[14] and IAQM guidance[15] documents consider air quality impacts associated with a scheme to be **negligible** and no further assessment is required.

Should screening of the relevant data indicate that any of the above criteria are met, then potential impacts at sensitive receptor locations can be assessed by calculating the change in pollutant concentrations as a result of the proposed development. The significance of predicted impacts can then be determined in accordance with the methodology outlined in the IAQM guidance[16].

13 Land-Use planning & Development Control: Planning for Air Quality, IAQM, 2017.
14 DMRB Volume 11, Section 3, Part 1, HA207/07, Highways Agency, 2007.
15 Land-Use planning & Development Control: Planning for Air Quality, IAQM, 2017.
16 Land-Use planning & Development Control: Planning for Air Quality, IAQM, 2017.

5. Assessment

Construction Phase Fugitive Dust Emissions

Step 1

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

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

Receptors sensitive to potential dust impacts during demolition, earthworks and construction were identified from a desk-top study of the area up to 350m from the development boundary. These are summarised in Table 13.

Table 13 Demolition, Earthworks and Construction Dust Sensitive Receptors

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

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 Access Route (m)	Approximate Number of Human Receptors	Approximate Number of Ecological Receptors
Less than 20	More than 100	0
Less than 50	More than 100	0

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

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

Table 15 Additional Area Sensitivity Factors

Guidance	Comment
Whether there is any history of dust generating activities in the area	The desk top study did not indicate any dust generating activities in the local area
The likelihood of concurrent dust generating activity on nearby sites	A review of the planning portal indicated that the following application has been granted consent within the vicinity of the site: • Planning reference: 2017/1827/P - Erection of a nine-storey building comprising retail space (Classes A1-A3), offices (Class B1) and 10 residential units, approximately 50m south of the site. It is therefore possible that there will be concurrent dust generation in the area should the construction phases of the above development and the proposals overlap
Pre-existing screening between the source and the receptors	There is no pre-existing screening between the site and surrounding receptors
Conclusions drawn from analysing local meteorological data which accurately represent the area: and if relevant the season during which works will take place	As shown in Figure 3, the predominant wind bearing at the site is from the south-west. As such, receptors to the north-east are most likely to be affected by dust releases
Conclusions drawn from local topography	There are no significant topographical constraints to dust dispersion
Duration of the potential impact, as a receptor may become more sensitive over time	Currently it is unclear as to the duration of the construction phase. However, it is possible that it will extend over one year
Any known specific receptor sensitivities which go beyond the classifications given in the document	No specific receptor sensitivities identified during the baseline assessment

Based on the criteria shown in Table 6, the sensitivity of the receiving environment to potential dust impacts was determined as **high**. This was because the identified receptors included residential properties. As such, users would expect to enjoy a reasonable level of amenity, aesthetics or value of their property could be diminished by soiling and people would be expected to be present for extended periods of time.

The sensitivity of the receiving environment to specific potential dust impacts, based on the criteria shown in Section 4, is shown in Table 16.

Table 16 Sensitivity of the Surrounding Area to Specific Dust Impacts

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

The potential risk of dust impacts at the identified receptors is considered in the following Sections.

Step 2

Demolition

Demolition will be undertaken at the start of the construction phase and will involve clearance of the existing building on site. It is estimated that the total building volume to be demolished is less than 20,000m^3. In accordance with the criteria outlined in Table 5, the magnitude of potential dust emissions from demolition is therefore **small**.

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 10, the development is considered to be a **medium** risk site for dust soiling as a result of demolition activities.

Table 16 indicates the sensitivity of the area to human health impacts is **low**. In accordance with the criteria outlined in Table 10, the development is considered to be a **negligible** risk site for human health impacts as a result of demolition activities.

Earthworks

Earthworks will primarily involve excavating material, haulage, tipping and stockpiling, as well as site levelling and landscaping. The proposed development site is estimated to cover an area of less than 2,500m^2. In accordance with the criteria outlined in Table 5, the magnitude of potential dust emissions from earthworks is therefore **small**.

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 11, the development is considered to be a **low** risk site for dust soiling as a result of earthworks.

Table 16 indicates the sensitivity of the area to human health impacts is **low**. In accordance with the criteria outlined in Table 11, the development is considered to be a **negligible** risk site for human health impacts as a result of earthworks.

Construction

Due to the size of the development the total building volume is likely to be less than 25,000m^3. In accordance with the criteria outlined in Table 5, the magnitude of potential dust emissions from construction is therefore **small**.

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 11, the development is considered to be a **low** risk site for dust soiling as a result of construction activities.

Table 16 indicates the sensitivity of the area to human health impacts is **low**. In accordance with the criteria outlined in Table 11, the development is considered to be a **negligible** risk site for human health impacts as a result of construction activities.

Trackout

Based on the site area and location, it is anticipated that the unpaved road length is likely to be less than 50m. In accordance with the criteria outlined in Table 5, the magnitude of potential dust emissions from trackout is therefore **small**.

Table 16 indicates the sensitivity of the area to dust soiling effects to people and property is **high**. In accordance with the criteria outlined in Table 12, the development is considered to be a **low** risk site for dust soiling as a result of trackout activities.

Table 16 indicates the sensitivity of the area to human health impacts is **medium**. In accordance with the criteria outlined in Table 12, the development is considered to be a **negligible** risk site for human health impacts as a result of trackout activities.

Summary of Potential Unmitigated Dust Risks

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

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

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

The Mayor of London's guidance[17] 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 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 a Dust Management Plan Display the name and contact details of person(s) accountable for air quality and dust issues on the site boundary Display the head or regional office contact information Record and respond to all dust and air quality pollutant emissions complaints Make the complaints log available to the LA upon request Carry out regular site inspections to monitor compliance with air quality and dust control procedures, record inspection results, and make an inspection log available to the LA when asked 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 and emissions and dust are being carried out, and during prolonged dry or windy conditions Record any exceptional incidents that cause dust and air quality pollutant emissions, either on or off the site, and the action taken to resolve the situation is recorded in the log book
Preparing and maintaining the site	Plan site layout: machinery and dust causing activities should be located away from receptors Erect solid screens or barriers around dust 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 the site is active for an extensive period Keep site fencing, barriers and scaffolding clean using wet methods Avoid site runoff of water or mud
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

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

Issue	Control Measure
	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
Waste management	Reuse and recycle waste to reduce dust from waste materials Avoid bonfires and burning of waste materials
Demolition	Ensure water suppression is used during demolition operations Avoid explosive blasting, using appropriate manual or mechanical alternatives
Construction	Ensure sand and other aggregates are stored in bunded areas and are not allowed to dry out
Trackout	Use water-assisted dust sweeper on access and local roads, if required Avoid dry sweeping of large areas Ensure vehicles entering and leaving site are covered to prevent escape of materials Record all inspections of haul routes and any subsequent action in a site log book Inspect haul routes for integrity and instigate necessary repairs to the surface as soon as reasonably practical Implement a wheel washing system, if required Access gates to be located at least 10m from receptors where possible

Step 4

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

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

Operational Phase Road Traffic Emissions

Potential Development Impacts

Any additional vehicle movements associated with the development will generate exhaust emissions on the local and regional road networks. Predicted trip generation was provided by the applicant. This indicated that the development is likely to produce a negligible number of movements as the proposals do not include any car parking spaces. As such, it is considered unlikely that the development will result in significant traffic generation on the local road network.

Based on the above information, the development is not anticipated to result in a change in AADT flows of more than 1,000, produce over 200 HDV movements per day or significantly affect average speeds on the local road network. Additionally, the development is not anticipated to result in a change of LDV flows of more than 100 AADT, the proposals do not include road realignment or the introduction of a junction and there will not be a requirement for more than 25 HDV deliveries per day. Further to this, the proposed land use is predicted to generate fewer vehicle movements than the existing business centre. As such, potential air quality impacts associated with operational phase road vehicle exhaust emissions are predicted to be **negligible**, in accordance with the DMRB[19] and IAQM[20] screening criteria shown previously.

19 DMRB Volume 11, Section 3, Part 1, HA207/07, Highways Agency, 2007.

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

6. Air Quality Neutral Assessment

Introduction

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 this policy, guidance[22] has been produced on behalf of the GLA. The document provides a methodology for determining potential emissions from a development and benchmark values for comparison purposes. Where the benchmark is exceeded then action is required, either locally or by way of off-setting.

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

Building Emissions

The Building Emission Benchmark (BEB) has been calculated based on the proposed floor areas. This is shown in Table 19. It should be noted that natural gas will be the only fuel used on site. As such, a BEB for PM_{10} has not been calculated.

Table 19 Building Emission Benchmark

Land Use	Area (m^2)	Emission Benchmark (g/m^2/annum)	Annual NO_x Emission (g/annum)
Retail (A1)	907	22.6	20,498
Office (B1)	2,492	30.8	76,754
Total			**97,252**

As shown in Table 19, the NO_x BEB for the development is 97,252g/annum or 97.3kg/annum.

Building emissions from the development were calculated from the anticipated energy usage provided by the applicant. These are summarised in Table 20.

Table 20 Building Emissions

Land Use	Energy Use (kWh/m^2/annum)	Emission Rate ($kgNO_x$/kWh)	Annual NO_x Emission (g/annum)
Retail (A1)	19	0.000194	3,364
Office (B1)	73	0.000194	35,374
Total			**38,738**

21 The London Plan, Greater London Authority, 2011.

22 Air Quality Neutral Planning Support Update: GLA 80371, Air Quality Consultants and Environ, 2014.

As shown in Table 20, an annual NO_x emission of 38,738g/annum or 38.7kg/annum is predicted from the development. This is lower than the BEB of 97.3kg/annum. As such, further reduction techniques are not required.

Transport Emissions

As discussed previously, the proposed development does not include the provision of car parking spaces and the number of trips generated through delivery and servicing activities are predicted to be negligible. Therefore, it is unlikely that the development will result in significant traffic generation on the local road network. As such, the development is considered air quality neutral from a transport emissions perspective.

Summary

Potential emissions from the development were assessed in order to determine compliance with the air quality neutral requirements of the London Plan. The results indicated an acceptable level of building emissions from the scheme. Additionally, the proposal is not predicted to cause significant increases in pollutant levels as a result of road vehicle exhaust emissions at any sensitive location in the vicinity of the site. As such, the development is considered to be air quality neutral.

7. Conclusion

This report has been prepared to support the planning application for the redevelopment of Hand Court, Camden, to provide a mixed-use scheme.

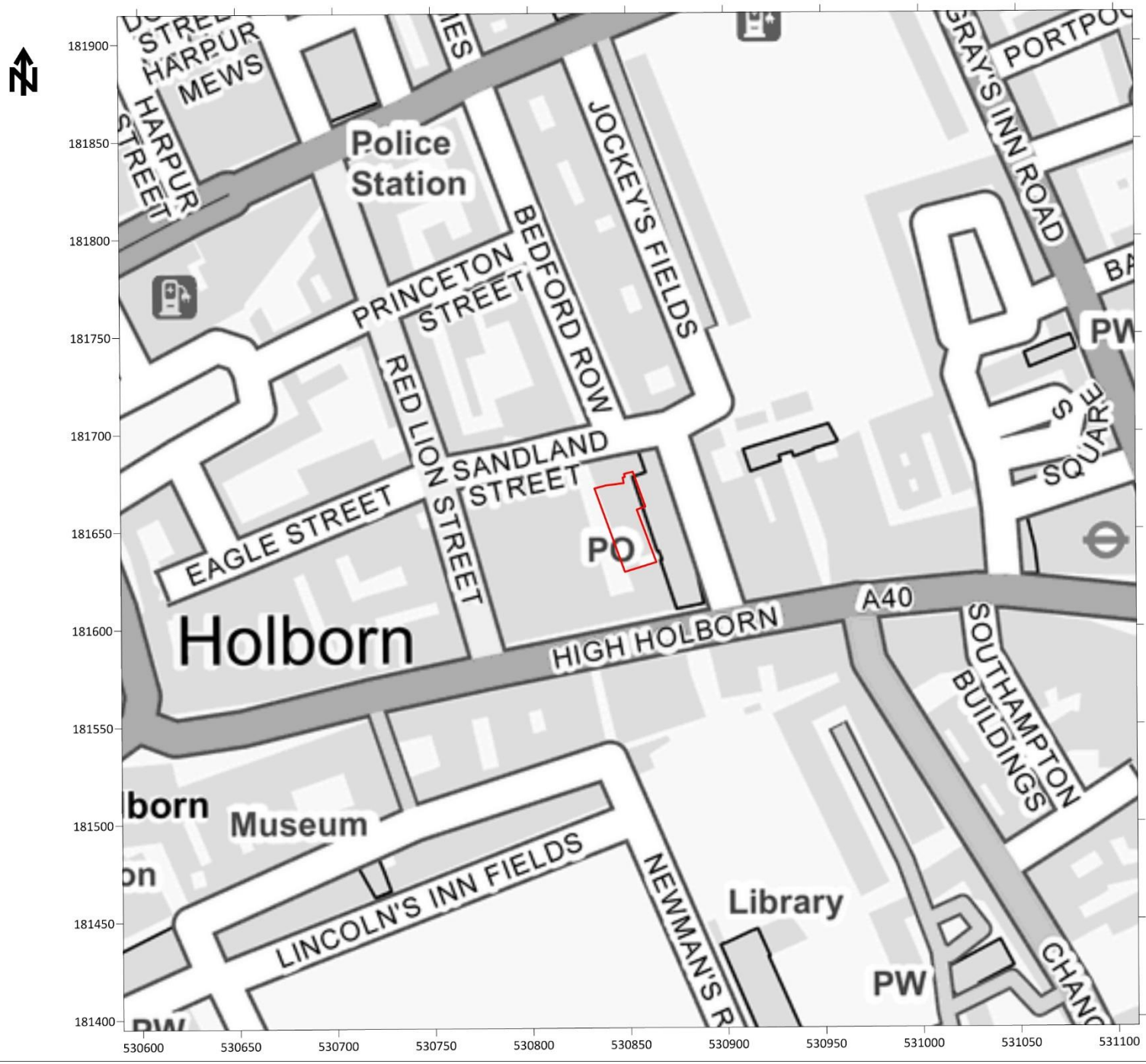
The proposals have the potential to cause air quality impacts as a result of fugitive dust emissions during construction and road traffic exhaust emissions associated with vehicles travelling to and from the site during operation. As such, an Air Quality Assessment was required in order to determine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

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

During the operational phase of the development there is the potential for air quality impacts as a result of traffic exhaust emissions associated with vehicles travelling to and from the site. These were assessed against the screening criteria provided within the DMRB and IAQM guidance documents. Due to the low number of trips anticipated to be produced by a scheme of this scale, **negligible** impacts were predicted.

Potential emissions from the development were assessed in order to determine compliance with the air quality neutral requirements of the London Plan. The results indicated an acceptable level of building emissions from a scheme of this nature. Additionally, as the proposals do not include any car parking, the development is considered air quality neutral in terms of transport emissions.

Based on the assessment results, air quality issues are not considered a constraint to planning consent for the development, subject to the inclusion of specified mitigation.



Legend

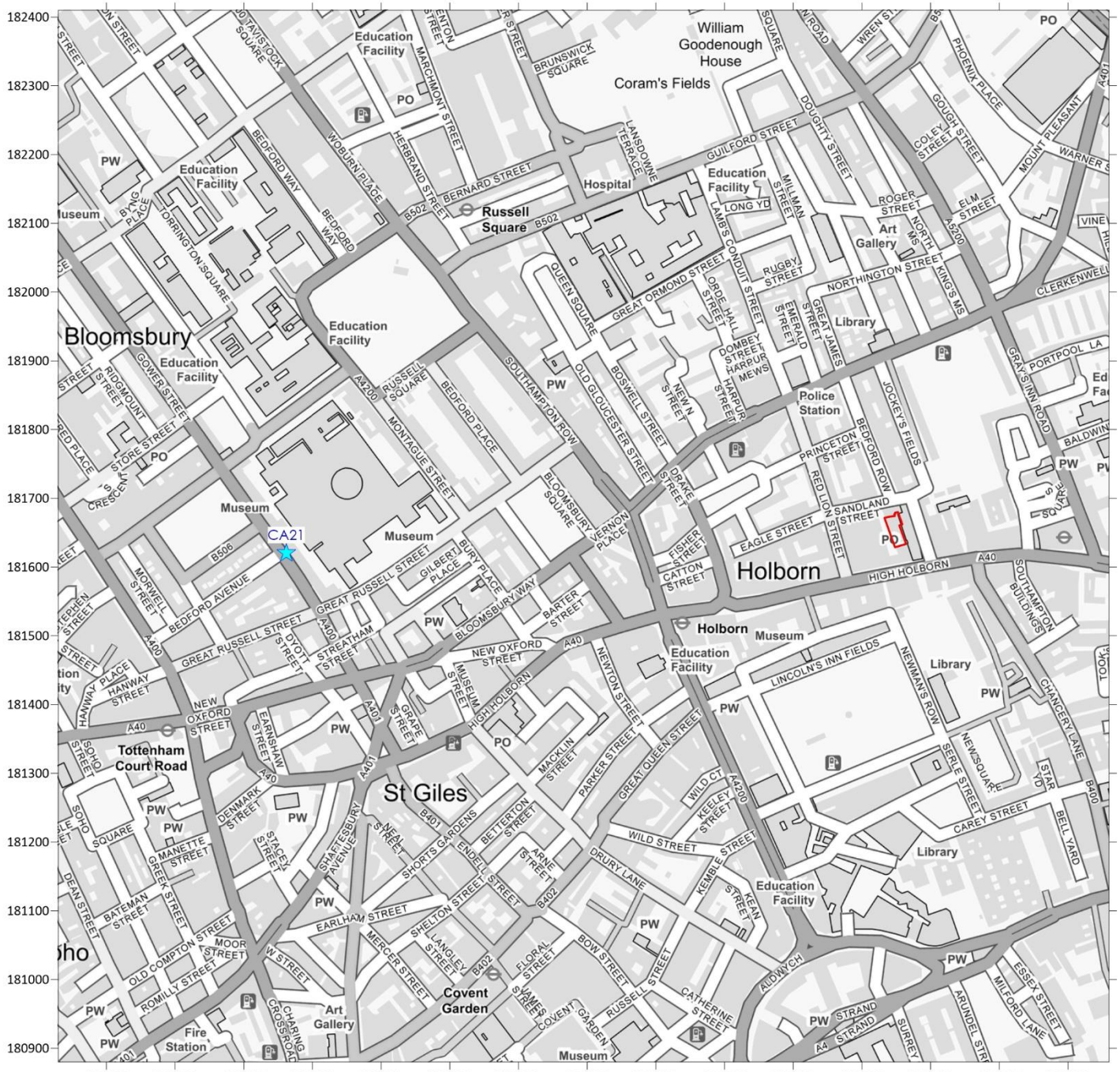
Site Boundary

Title

Figure 1 - Site Location Plan

Project

Air Quality Assessment
Hand Court, Camden



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Site Boundary

Monitor

Title

Figure 2 - Monitoring Locations

Project

Air Quality Assessment
Hand Court, Camden

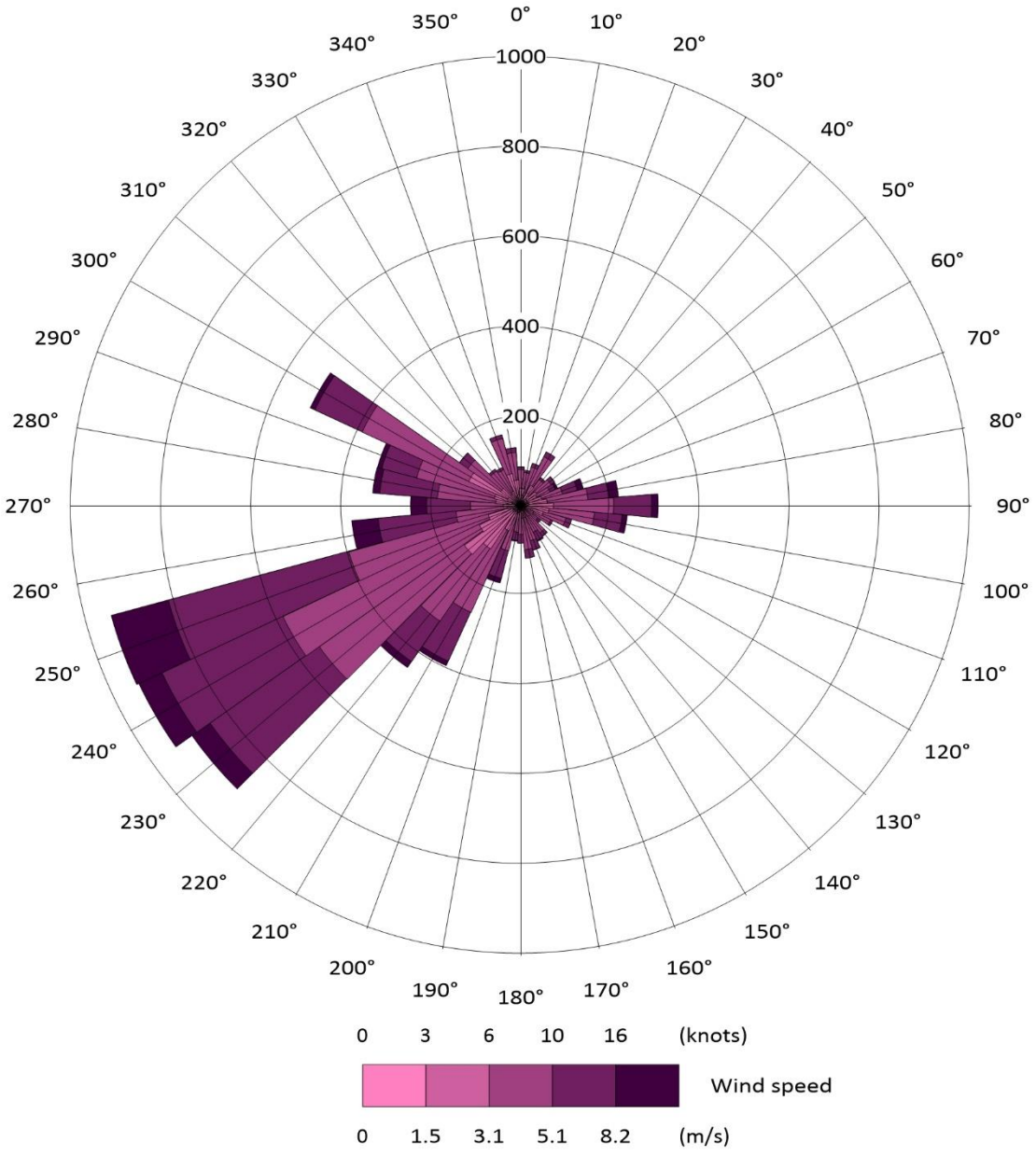

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Figure 3 - Wind Rose of 2017 London City Airport Meteorological Data

Project

Air Quality Assessment
Hand Court, Camden