1 MVHR & NOx Filters

- The MVHR system provides 100% of the supply air to the dwellings.
  All supply ducting to the 22no units are filtered with 1no NOx filters per unit.

- Vent Axia Pure Air Filter- (Pollutant Gases, NO2, SO2, O3, VOC)
  - A specially formulated activated carbon and chemical mix acts upon pollutant concentrations common in dirty city air, reducing them to below guidelines set by current legislation. Gas and particulate filters are removable from either side of the unit.

1.1 Maintenance

Please see below for planned maintenance to the MVHR units/ mechanical ventilation ductwork. A full maintenance plan for all mechanical plant will be issued to all Tenants and Building Owner at Handover.

- Filter Check
  - An LED on the control panel illuminates at 6 month intervals to remind users to check and clean the filter

- Quick Change Filter
  - As many systems are placed within cupboards unique filter design folds as you remove easy access in restricted spaces

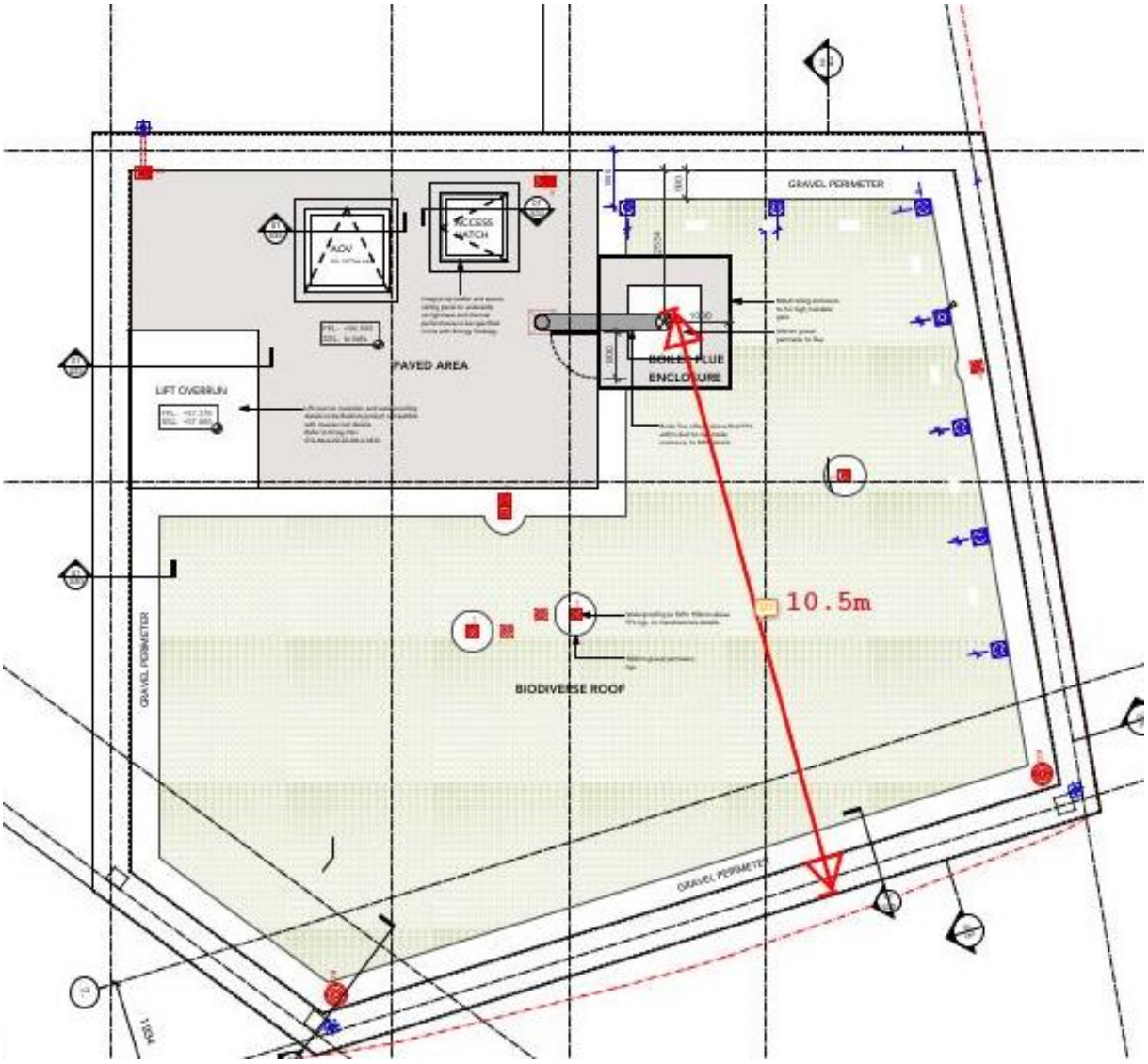
Type of equipment (Manufacturer)	Location	QTY	Maintenance Activity	Maintenance Frequency	Type of engineer	Comments
MVHR Unit Vent Axia (Sentinel Kinetic)	Utility Cupboard	1	Check filters and condensates	Every 6 months	Ventilation technician for any product faults	Arrange a ventilation service by filling the form or calling Vent Axia on 01293 842987
Pure Air (NOx Filter) Vent Axia	Cupboard / Hall	1	Check filters	Every 6 months	Ventilation technician for any product faults	Arrange a ventilation service by filling the form or calling Vent Axia on 01293 842987

2 Boiler Flue

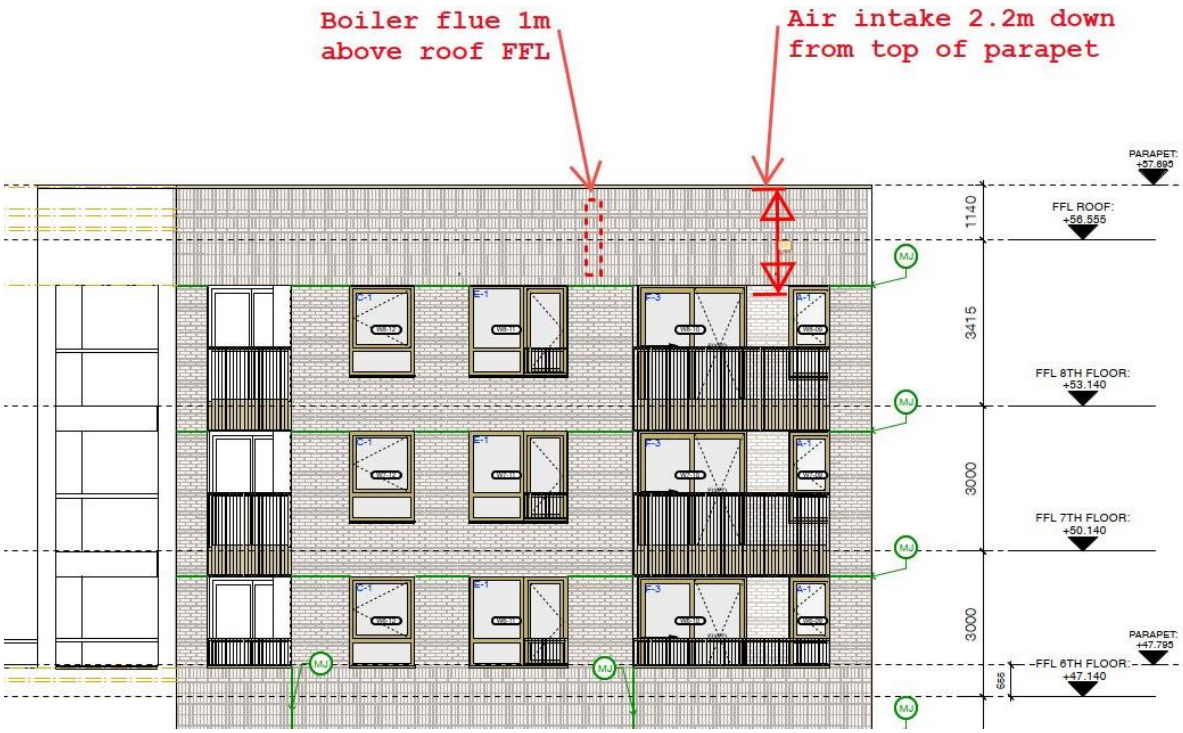
The boiler flue runs vertically from the plant room within the mechanical riser and terminates at roof level in an area only accessible by maintenance personnel only. The flue terminates 1m above the roof finish level.

The nearest air intakes are situated at 8th floor terminating on the south elevation as reference image below. The boiler flue is approximately 10.5m from the south elevation the air vents are approximately 2.2m down from the parapet.

Roof Plan:


GRAVEL PERIMETER
ACCESS HATCH
AOV
PAVED AREA
LIFT OVERRUN
BOILER FLUE ENCLOSURE
10.5m
BIODIVERSE ROOF
GRAVEL PERIMETER
GRAVEL PERIMETER

South Elevation (Level 6-9):



3 Reference Documents

Air Quality Assessments

- Appendix 1:

1 Triton Square & St Anne's, Air Quality Assessment Addendum, December 2016, Arup

- Appendix 2:

1 Triton Square & St Anne's, Air Quality Assessment, October 2016, Arup

APPENDIX 1

British Land Property Management Limited

1 Triton Square & St Anne's

Air Quality Assessment Addendum

Final | 9 December 2016

Job number 246868-31

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Manchester
M1 3BN United Kingdom
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ARUP

Document Verification

ARUP

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1 Introduction

1.1 Context

Ove Arup and Partners Ltd (Arup) has been commissioned by British Land Property Limited (British Land) to prepare an addendum to the air quality assessment which accompanied a planning application for the Proposed Development at 1 Triton Square in the London Borough of Camden (LBC).

LBC requested dispersion modelling be carried out to assess the air quality to which new residential users of the proposed development will be exposed and required mitigation be proposed. It was also requested that the residual risk level to construction impacts, after the application of mitigation, be specified.

2 Assessment Methodology

2.1 Operational Assessment Method

2.1.1 Road traffic

The screening of traffic data in the air quality assessment showed that the additional traffic generated by the proposed development fell below the threshold given in the 2015 Land-Use Planning & Development Control guidance document[1] produced by Environmental Protection UK (EPUK) and the Institute of Air Quality Management (IAQM).

The new residential receptors lie at the corner of Longford Street and Laxton Place, which are roads with low volumes of traffic. They are located 150m from Osnaburgh Street (A4201), 170m from Euston Road (A501) and 220m from Hampstead Road (A400). As such, the local impact of those major roads will be negligible, however, the impact of the major and minor roads is well represented by the Defra background concentrations which are in line with monitored urban background concentrations.

2.1.2 Combustion Plant

Heating and hot water for the new development will be supplied by five 750kW thermal output boilers with the exit flue 4.1m above level of the plant maintenance and 1m above the local roof.

The plant to be used are likely to be Hoval UltraGas 900D boilers and data from these plant have been used in the modelling. It has been assumed as a very conservative (pessimistic) assumption that all the boilers operate at 100% load, continuously, all year.

2.1.3 Dispersion Modelling Procedure for Combustion and Fume Cupboard Emissions

Emissions from the boilers were modelled using an industry standard atmospheric dispersion model, ADMS 5 (version 5.1.2.0), to calculate resulting concentrations of NO_2. As the boilers are proposed to be gas-fired, emissions of particulate matter would be negligible and therefore this pollutant has been scoped out of the assessment.

The modelling procedure was as follows:

- Information on stack dimensions and position, and boiler operating conditions, were obtained for the Proposed Development;
- Appropriate data to describe meteorological conditions in the vicinity of the Site was obtained, as discussed in section 2.1.7 for the year 2015;

[1] EPUK/IAQM (2015) Land-Use Planning & Development Control: Planning for Air Quality

- A receptor grid of potentially sensitive locations was identified in the vicinity of the installation;
- Information on buildings surrounding the development was obtained;
- The above information was used as input to the dispersion model;
- The dispersion model was run to determine pollutant concentrations in the vicinity of the Site. The interpretation of the results was based on the modelled concentrations at potential receptor locations; and
- The study results were compared with the relevant assessment criteria.

The model calculates NO_x concentrations which comprise nitric oxide (NO) and nitrogen dioxide (NO_2). NO_x is emitted from combustion processes, primarily as NO with a small percentage of NO_2. The emitted NO reacts with oxidants in the air (mainly ozone) to form NO_2. NO_2 is associated with effects on human health and therefore the air quality standards for the protection of human health are based on NO_2 rather than total NO_x or NO. A suitable NO_x to NO_2 conversion has been applied to the modelled NO_x concentrations in order to determine the impact of the NO_x emissions on ambient concentrations of NO_2. This assessment followed the methodology set out by the EA which states it should be assumed as a worst case scenario that 70% of long-term and 35% of short-term NO_x concentrations will convert to NO_2[2].

2.1.4 Boiler Emissions

The efflux and emissions data for each boiler are given in Table 1. Five identical boilers located at the same point have been modelled.

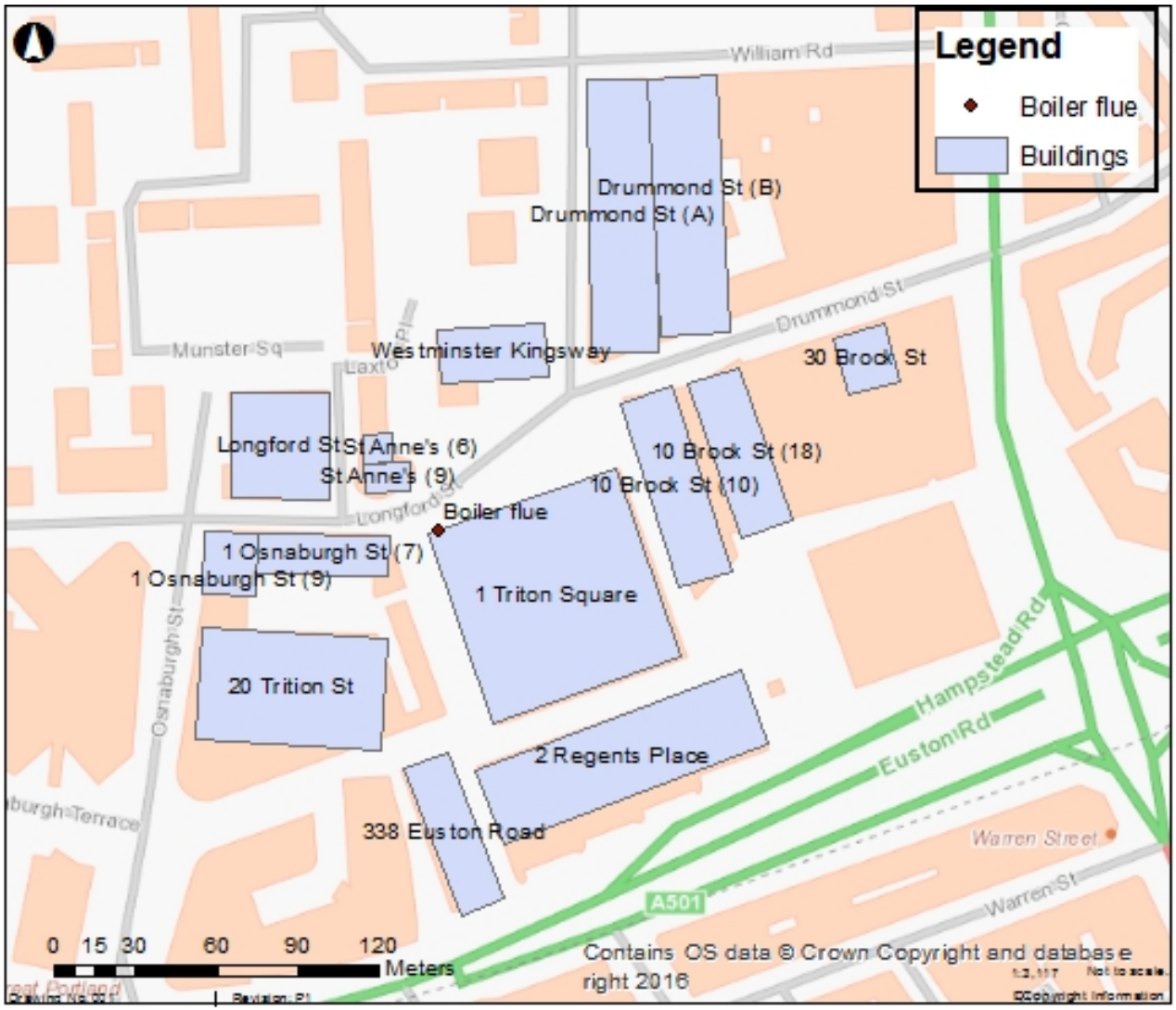
The location of the proposed boiler flue and the surrounding buildings are shown in Figure 1.

Table 1: Boiler efflux and emissions data for each boiler

Parameter	Units	Boiler parameters
Height	m	42.45
Flue diameter	m	0.2
Flue gas efflux velocity	m/s	11.7
Temperature	˚C	71
NO_X emission rate	g/s	0.0088

[2] Environment Agency; *Air Quality Modelling and Assessment Unit, Conversion ratios for NO_x and NO_2*

Figure 1: Modelled stacks and buildings



2.1.5 Sensitive Receptors

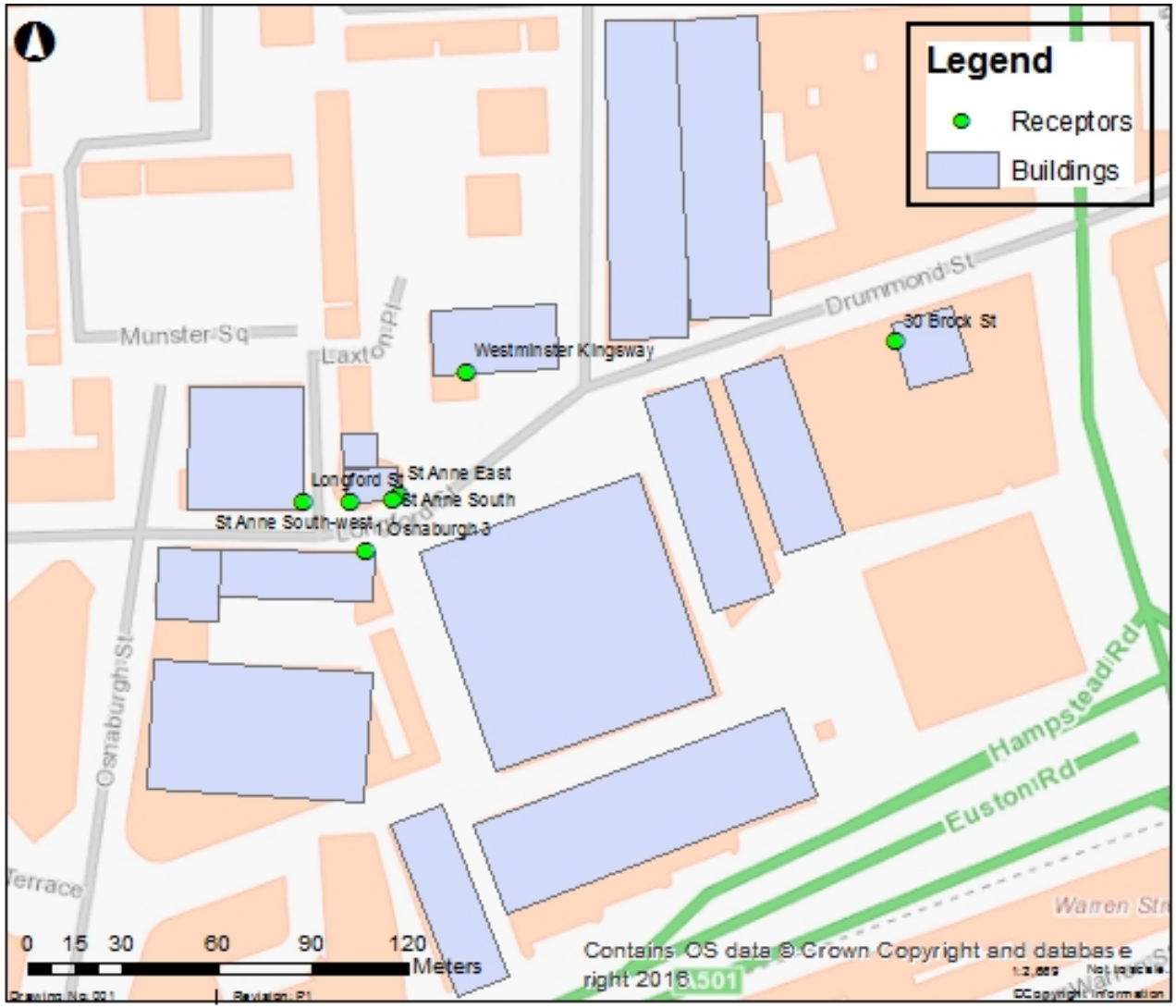
Sensitive receptors have been selected at worst case locations in the area surrounding the Site and are shown in Figure 2. Their details are presented in Table 2.

Receptors R1 to R9 represent the new residential receptors on the site of the St Anne's church and church centre. R10 to R15 represent existing residential receptors. Receptors have been modelled at a range of heights to represent the roof terrace and sixth floor terrace. The development also has (open) balconies facing the streets. A height of 1.5m was used to represent human inhalation height above any floor level.

Table 2: Sensitive receptors

Receptor name	Receptor ID	OS Grid Ref.		Height (m)	Existing or Future
		X	Y		
St Anne East 1	R1	529006	182397	28.5	Future
St Anne East 2	R2	529006	182397	19.5	Future
St Anne East 3	R3	529006	182397	1.5	Future
St Anne South 1	R4	529004	182395	28.5	Future
St Anne South 2	R5	529004	182395	19.5	Future
St Anne South 3	R6	529004	182395	1.5	Future
St Anne South-west 1	R7	528991	182395	28.5	Future
St Anne South-west 2	R8	528991	182395	19.5	Future
St Anne South-west 3	R9	528991	182395	1.5	Future
1 Osnaburgh 1	R10	528995	182380	26.5	Existing
1 Osnaburgh 2	R11	528995	182380	14.0	Existing
1 Osnaburgh 3	R12	528995	182380	1.5	Existing
30 Brock St	R13	529163	182445	42.3	Existing
Longford St	R14	528976	182395	17.0	Existing

Figure 2: Sensitive receptors



2.1.6 Buildings

The presence of buildings can affect dispersion, but complex building arrays are not well-represented by models such as ADMS, while dispersion under a range of meteorological conditions is not well modelled by the computational fluid dynamics models which can represent the details of geometry well. A sensitivity analysis was carried out to test which buildings should be modelled.

Table 3 gives the parameters of the buildings close to the boiler flue at 1 Triton Square and the buildings are shown in Figure 1. All of these buildings were included in the model as rectangles rather than their actual more complex shapes, as ADMS 5 can only accept input buildings that are rectangular or circular in cross-section.

ADMS models buildings by making one effective building from the buildings input to the model, subject to certain criteria. When the model was run with all the buildings, and 1 Triton Square as the "main" building, the effective building was up to 177m by 150m, and enclosed the receptors at St. Anne's. For this reason the model results reported here are those with just 1 Triton Square modelled, which is likely to capture the impact of the 1 Triton Square boiler on new receptors at St. Anne's appropriately.

Table 3: Buildings parameters

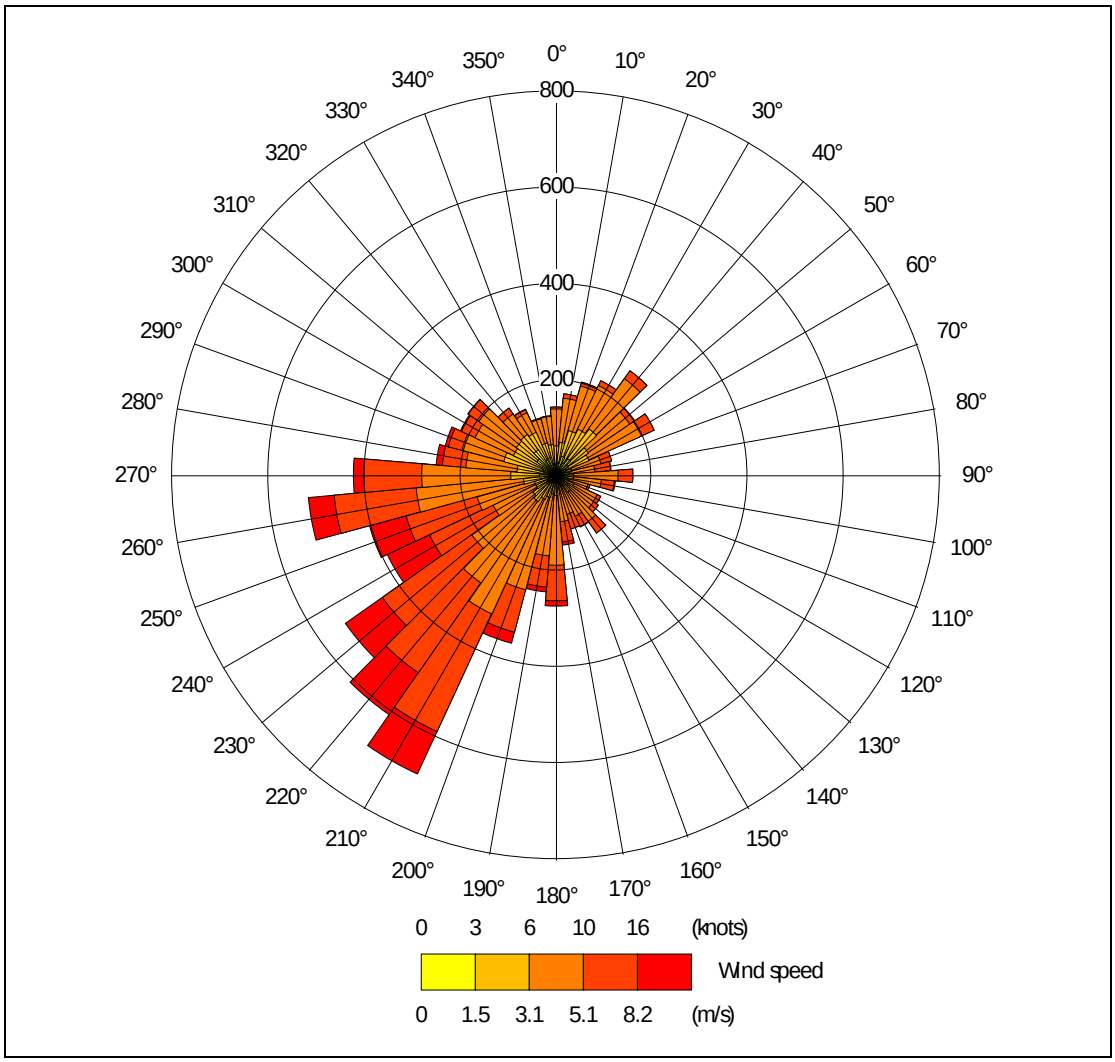
Building name	OS Grid Ref. X	OS Grid Ref. Y	Height (m)	Length (m)	Width (m)	Angle of building (degrees)
1 Triton Square	529059	182357	42.3	73.8	73.6	71
2 Regents Place	529084	182297	32.0	104.9	29.7	69
10 Brock St (10)	529104	182397	47.0	20.2	71.3	72
10 Brock St (18)	529127	182410	66.0	20.1	59.8	71
30 Brock St	529174	182444	112.0	21.7	19.9	164
St Annes (9)	528997	182401	10.0	10.4	17.0	176
St Annes (6)	528994	182411	10.0	10.7	11.1	178
Westminster Kingsway	529036	182446	17.0	39.8	20.2	87
20 Trition St	528962	182323	42.0	69.1	41.0	93
1 Osnaburgh St (7)	528974	182372	25.0	15.3	48.7	181
1 Osnaburgh St (9)	528939	182369	60.0	23.1	19.6	182
Longford St	528958	182412	18.0	39.0	36.4	181
338 Euston Road	529022	182269	80.0	17.0	58.0	69
Drummond St (A)	529084	182497	17.0	101.0	24.9	179
Drummond St (B)	529109	182501	17.0	94.7	25.7	177

2.1.7 Meteorological Data

Meteorological data used in this assessment was measured at Heathrow Airport meteorological station over the period 1st January 2015 to 31st December 2015 (inclusive). Heathrow Airport is located approximately 20km south-west of the

proposed development. This meteorological site is considered the most suitable for this assessment. Figure 3 shows the wind rose for the 2015 data. It can be seen that the predominant wind direction is south-westerly.

Figure 3: Heathrow Airport wind-rose, 2015



Defra's LAQM.TG16 guidance recommends that the meteorological data file is tested within a dispersion model and the relevant output log file checked to confirm the number of missing hours and calm hours that cannot be used by the dispersion model. This is important when considering predictions of high percentiles and the number of exceedences. The guidance recommends that meteorological data should only be used if the percentage of usable hours is greater than 75% and preferably 90%.

The 2015 meteorological data from Heathrow Airport includes more than 99% of usable data. This is above the 90% threshold and this data therefore meets the requirement of the Defra guidance.

2.1.8 Other Model Parameters

The extent of mechanical turbulence (and hence, mixing) in the atmosphere is affected by the roughness of the surface/ground over which the air is passing. Typical

surface roughness values range from 1.5m (for cities, forests and industrial areas) to 0.0001m (for water or sandy deserts).

In this assessment, the general land-use in the area around the Site can be described as 'large urban areas' with a corresponding surface roughness of 1.5m. In addition, the minimum Monin-Obukhov length was set to 'large conurbations > 1 million' with a corresponding value of 100m.

2.1.9 Background Concentrations

Background concentrations refer to the existing levels of pollution in the atmosphere, produced by a variety of sources, such as roads and industrial processes. The Defra website provides estimated background air pollution data for each 1x1km OS grid square for each local authority area. Background maps are available for the base year of 2013 and have been projected to estimate concentrations for each year from 2013 to 2030. The background concentration data is described in section 3.1.

3 Baseline

3.1 Background Concentrations

The Defra website includes estimated background air pollution data for each 1km by 1km OS grid square in the UK. Background concentrations for the current year of 2015 and the first year of opening of the proposed development, 2019, have been taken from the latest Defra maps[3] and are presented in Table 4 and Table 5 respectively for the grid square in which the Proposed Development is located.

In 2015, background concentrations are estimated to be above the air quality objective for annual mean NO_2 but below the air quality objective for PM_{10}. In 2019 the NO_2 concentration is predicted to be below the air quality objective value of 40µg/m^3. In both years Defra estimate that the impact of the most local major roads contributes approximately 16%-19% to the total NO_X concentration.

Table 4: Estimated background pollutant concentrations for 2016

OS grid square		Annual mean concentration (µg/m^3)			
X	**Y**	**NO_x**	**NO_2**	**PM_{10}**	**$PM_{2.5}$**
529500	182500	79.3*	43.6	22.2	15.8

Note:*Major local roads contribute 15.2µg/m^3

Table 5: Estimated background pollutant concentrations for 2019

OS grid square		Annual mean concentration (µg/m^3)			
X	**Y**	**NO_x**	**NO_2**	**PM_{10}**	**$PM_{2.5}$**
529500	182500	67.9*	38.7	21.5	15.1

Note:*Major local roads contribute 10.7µg/m^3

[3] Defra, http://laqm.defra.gov.uk/review-and-assessment/tools/background-maps.html, Accessed September 2016

4 Operational Assessment

4.1.1 Predicted NO_2 Concentration Results

Predicted annual mean NO_2 concentrations at the sensitive receptors are shown in Table 6. The results show the maximum contribution of the boilers to NO_2 concentrations is 0.16µg/m^3 and that is predicted at the existing residential receptors at 30 Brock Street. 30 Brock Street lies in the predominantly downwind direction from the flue. The maximum predicted concentration at the new residential receptors is 0.13 µg/m^3, which is less than 0.5% of the air quality objective.

Assuming 2015 background levels of NO_2 persist, the concentration at the St Anne's receptors would exceed the concentrations at all receptors would be above the NO_2 annual mean air quality objective of 40µg/m^3, reaching 43.7µg/m^3 at St Anne's. If background concentrations decrease as predicted by Defra, the objective would not be exceeded at any residential receptor. The maximum predicted concentration at St Anne's would be 38.8µg/m^3.

Table 6: Predicted annual mean NO_2 concentrations (µg/m^3)

Receptor name	Receptor ID	Height (m)	Predicted process contribution (µg/m^3)	Total concentration (2015 background) (µg/m^3)	Total concentration (2019 background) (µg/m^3)
St Anne East 1	R1	28.5	0.13	43.7	38.8
St Anne East 2	R2	19.5	0.13	43.7	38.8
St Anne East 3	R3	1.5	0.13	43.7	38.8
St Anne South 1	R4	28.5	0.12	43.7	38.8
St Anne South 2	R5	19.5	0.12	43.7	38.8
St Anne South 3	R6	1.5	0.12	43.7	38.8
St Anne South-west 1	R7	28.5	0.09	43.7	38.8
St Anne South-west 2	R8	19.5	0.09	43.7	38.8
St Anne South-west 3	R9	1.5	0.09	43.7	38.8
1 Osnaburgh 1	R10	26.5	0.12	43.7	38.8
1 Osnaburgh 2	R11	14.0	0.12	43.7	38.8
1 Osnaburgh 3	R12	1.5	0.12	43.7	38.8
30 Brock St	R13	42.3	0.16	43.8	38.9
Longford St	R14	17.0	0.08	43.7	38.8

5 Mitigation

5.1 Construction

The dust emitting activities were assessed in the air quality assessment to be high risk. The mitigation proposed were the site specific mitigation measures for *high risk* sites according to the IAQM guidance. High risk mitigation measures were included as a precautionary measure. For the activity-specific measures, the relevant highly recommended and desirable mitigation has been recommended to ensure best practice is followed for all on site activities. The measures proposed in the air quality assessment are included as part of the Construction Management Plan for the site which has been submitted with this application.

After application of these measures the impact of the construction dust and PM_{10} would be reduced to negligible and not significant.

5.2 Operation

The predicted impact of the boiler emissions is negligible. Whether new residential receptors are exposed to concentrations greater than the air quality objective depends on the extent to which background concentrations reduce. It is proposed that all the new dwellings have mechanical ventilation, filtering the air intake to remove particulates and using a carbon filter to reduce NO_2 concentration. It is proposed that the balconies be left open.

6 Conclusion

This report forms an addendum to the air quality assessment which accompanied the planning application for the Proposed Development at 1 Triton Square & St Anne's in the London Borough of Camden (LBC). LBC requested dispersion modelling be carried out to assess the air quality to which new residential users of the proposed development will be exposed and required mitigation be proposed. It was also requested that the residual risk level to construction impacts, after the application of mitigation, be specified.

The dust emitting activities were assessed in the air quality assessment to be high risk. After application of the mitigation measures specified in the report the impact of the construction dust and PM_{10} would be reduced to negligible and not significant.

The predicted impact of the boiler emissions is negligible. Whether new residential receptors are exposed to concentrations greater than the air quality objective depends on the extent to which background concentrations reduce. It is proposed that all the new dwellings have mechanical ventilation, filtering the air intake to remove particulates and using a carbon filter to reduce NO_2 concentration. It is proposed that the balconies be left open.

APPENDIX 2

1 Triton Square & St Anne's

Air Quality Assessment

October 2016

1 TRITON SQUARE & ST ANNE'S PLANNING DOCUMENTS

EXISTING & PROPOSED DRAWINGS VOL. 1 (1 TSQ)
EXISTING & PROPOSED DRAWINGS VOL. 2 (ST ANNE'S)
DESIGN & ACCESS STATEMENT VOL. 1 (1 TSQ)
DESIGN & ACCESS STATEMENT VOL. 2 (ST ANNE'S)
HOUSING STUDY
TOWNSCAPE & VISUAL IMPACT ASSESSMENT
HERITAGE STATEMENT
LANDSCAPE MASTERPLAN
PLANNING STATEMENT
STATEMENT OF COMMUNITY INVOLVEMENT
TRANSPORT ASSESSMENT
ENERGY STATEMENT
SUSTAINABILITY STATEMENT
DAYLIGHT AND SUNLIGHT STUDY
OVERSHADOWING STUDY
INTERNAL DAYLIGHT STUDY

AIR QUALITY ASSESSMENT

SURFACE WATER DRAINAGE PROFORMA
CONSTRUCTION MANAGEMENT PLAN
SOCIO-ECONOMIC ASSESSMENT
ARBORICULTURAL ASSESSMENT

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01 INTRODUCTION

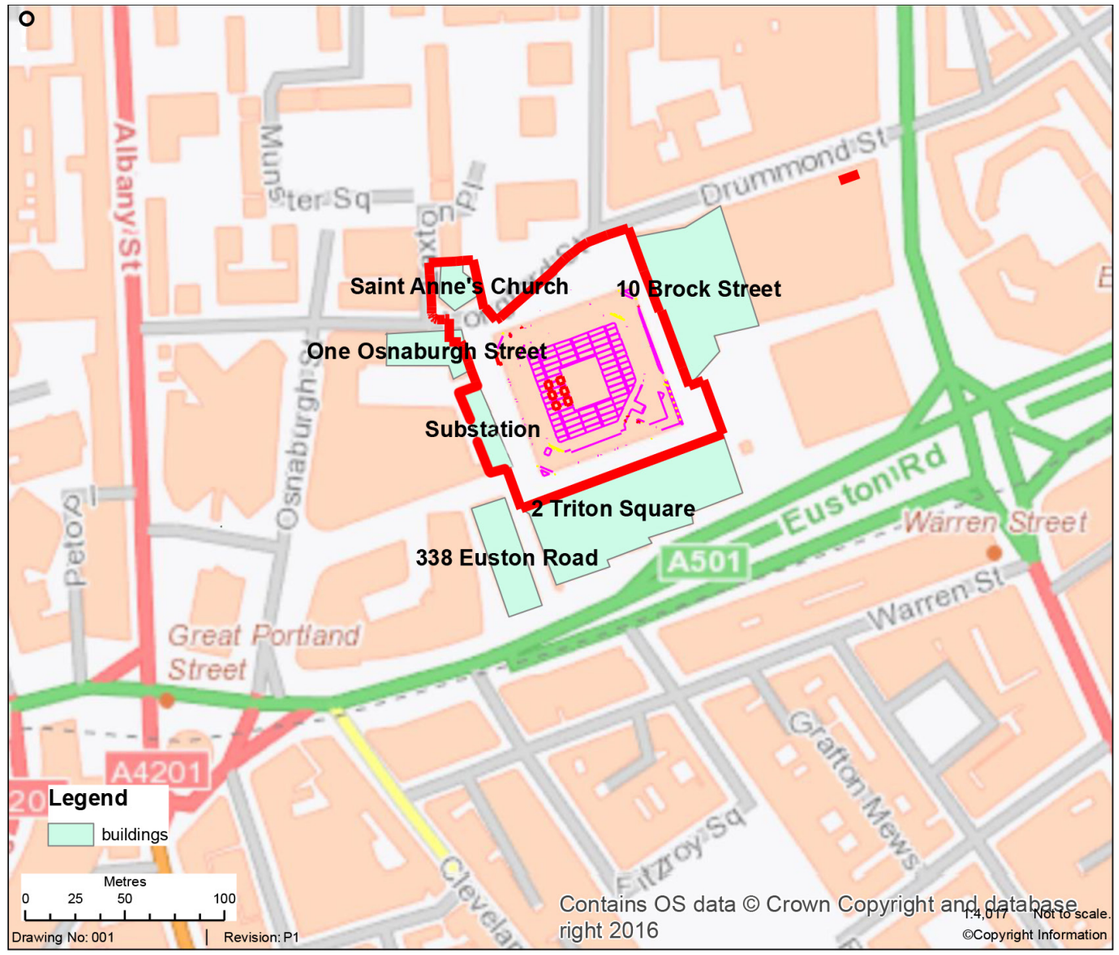

Figure No.1.1: Site location and surrounding buildings
Note: Red line indicates the boundary of the Proposed Development

1.1 CONTEXT

Ove Arup and Partners Ltd (Arup) has been commissioned by British Land Property Limited (British Land) to prepare an air quality assessment to accompany a planning application for the Proposed Development at 1 Triton Square in the London Borough of Camden (LBC). The Proposed Development is an extension of the existing 1 Triton Square office building by three storeys for office use (B1), introduction of retail (A1,A3 A4) and affordable workspace (B1), re-provision of gym space (D2); demolition of Saint Anne's Church and its replacement with a residential building of part 6, part 9 storeys; remodelling of the electricity substation; hard and soft landscaping; reconfigured vehicle and pedestrian accesses and works to the public highway; and all necessary ancillary and enabling works, plant and equipment.

This report reviews the existing air quality conditions in the vicinity of the Proposed Development site and the likely significant air quality impacts resulting from the Proposed Development. The effects have been assessed in the context of relevant national, regional and local air quality policies.
The Proposed Development has the potential to cause air quality impacts at sensitive locations during the construction and operational phases. These may include fugitive dust emissions from construction works, the proposed boiler plant and road vehicle exhaust emissions associated with traffic generated by the construction and operation of the Proposed Development. These potential air quality impacts will be assessed following the relevant guidance.

It is proposed that modelling of the combustion plant be undertaken as a condition once the plant to be installed have been finalised. The modelling would be undertaken in accordance with Defra's Technical Guidance Note (TG16). The Air Quality and Planning Guidance, London Councils (2007) as well as EPUK/IAQM, (2015) Land-Use Planning & Development Control: Planning for Air Quality, to assess the significance of any effects.

1.2 SITE DESCRIPTION

The site is currently occupied by a 5 storey plus basement office building, with some leisure, community and retail use at ground level and the existing St Anne's Church which is a 2/3 storey building.

1 Triton Square is surrounded on all sides by buildings of a similar height to the Proposed Development, with the exception of 33 Euston Road which is about 25m higher and lies to the south-west of the Proposed Development. The space around the Proposed Development is mostly traffic-free, with the exception of a vehicle ramp immediately to the west, a taxi drop-off immediately to the east, and traffic on Longford Street to the north.

To the west of the development lies an electricity substation, theatre and a residential block (One Osnaburgh Street) on the corner of Longford Street. To the south lies 2 Triton Square, an office block, and to the east, 10 Brock Street containing an arts centre and retail space below offices. Beyond Longford Street to the north lies Westminster Kingsway College, an educational establishment and to the north-west, Saint Anne's, which is part of the Proposed Development site.

Saint Anne's is bounded to the west by Laxton Place, which does not allow vehicular through traffic, Longford Street to the south and Westminster Kingsway College to the east. To the north lie some residential units.

The site location and surrounding land uses are illustrated in Figure 1.

1.3 DESCRIPTION OF DEVELOPMENT

The existing building at 1 Triton Square will be extended by three storeys for office use (B1), introduction of retail (A1, A3, A4) and affordable workspace (B1) and re-provision of gym space (D2). St Anne's will be demolished and replaced with a residential building of part six and part nine storeys. Vehicle accesses from the public highway will be reconfigured. Heating and hot water will be supplied by five 750kW thermal output boilers.

02 AIR QUALITY STANDARDS AND GUIDELINES

POLLUTANT	AVERAGING PERIOD	LIMIT VALUE/OBJECTIVE	DATE FOR COMPLIANCE	BASIS
Nitrogen dioxide (NO2)	1 hour mean	200 µg/m3, not to be exceeded more than 18 times a year (99.8th percentile)	31 Dec 2005	UK
			1 Jan 2010	EU
	Annual mean	40 µg/m3	31 Dec 2005	UK
			1 Jan 2010	EU
Fine particulates (PM10)	Daily mean	50 µg/m3, not to be exceeded more than 35 times a year (90.4th percentile)	31 Dec 2004	UK
			None specified	EU
	Annual mean	40 µg/m3	31 Dec 2004	UK
			None specified	EU
Very fine particulates (PM2.5)	Annual mean	25 µg/m3	2020	UK
			1 Jan 2015	EU

Figure No.2. 1: Table 1: UK and EU Air quality standards and guidelines

2.1 EUROPEAN AIR QUALITY MANAGEMENT

In 1996 the European Commission published the Air Quality Framework Directive on ambient air quality assessment and management (96/62/EC)[1]. This Directive defined the policy framework for 12 air pollutants, including NO2, known to have harmful effects on human health and the environment. Limit values (pollutant concentrations not to be exceeded by a certain date) for each specified pollutant were set through a series of Daughter Directives, including Directive 1999/30/EC (the 1st Daughter Directive)[2] which sets limit values for nitrogen dioxide (NO2) and particulate matter (amongst other pollutants) in ambient air.

In May 2008 the Directive 2008/50/EC[3] on ambient air quality and cleaner air for Europe came into force. This Directive consolidates the above (apart from the 4th Daughter Directive) and makes provision for extended compliance deadlines for NO2 and PM10. The Directive has been transposed into national legislation in England by the Air Quality Standards Regulations 2010[4]. The Secretary of State for the Environment, Food and Rural Affairs has the duty of ensuring compliance with the air quality limit values.

2.2 ENVIRONMENT ACT 1995

Part IV of the Environment Act 1995[5] places a duty on the Secretary of State for the Environment, Food and Rural Affairs to develop, implement and maintain an air quality strategy with the aim of reducing atmospheric emissions and improving air quality. The national air quality strategy (NAQS) for England, Scotland, Wales and Northern Ireland provides the framework for ensuring compliance with air quality limit values based on a combination of international, national and local measures to reduce emissions and improve air quality. This includes the statutory duty, also under Part IV of the Environment Act 1995, for local authorities to undergo a process of local air quality management and declare Air Quality Management Areas (AQMAs) where necessary.

2.3 AIR QUALITY OBJECTIVES AND LIMIT VALUES

Air quality limit values and objectives are quality standards for clean air. Some pollutants have standards expressed as annual average concentrations due to the chronic way in which they affect health or the natural environment (i.e. effects occur (long-term) after a prolonged period of exposure to elevated concentrations) and others have standards expressed as 24-hour, 1-hour or 15-minute average concentrations (short-term) due to the acute way in which they affect health or the natural environment (i.e. after a relatively short period of exposure). Some pollutants have standards expressed in terms of both long-term and short-term concentrations. Table 1 sets out these EU air quality limit values and national air quality objectives for the pollutants relevant to this study (NO2, PM10 and PM2.5).

In the majority of cases the air quality limit values and air quality objectives have the same pollutant concentration threshold and date for compliance. The key difference is that the Secretary of State for the Environment, Food and Rural Affairs is required under European Law to ensure compliance with the air quality limit values whereas local authorities are only obliged under national legislation to undertake best efforts to comply with the air quality objectives. To assist local authorities in demonstrating best efforts, the Environment Act 1995 requires that when carrying out their local air quality management functions, local authorities shall have regard to guidance issued by the Secretary of State for the Environment, Food and Rural Affairs.

2.3.1 DUST NUISANCE

Dust is the generic term which the British Standard document BS 6069 (Part Two) used to describe particulate matter in the size range 1 – 75µm (micrometres) in diameter. Dust nuisance is the result of the perception of the soiling of surfaces by excessive rates of dust deposition. Under provisions in the Environmental Protection Act 1990, dust nuisance is defined as a statutory nuisance.

There are currently no standards or guidelines for dust nuisance in the UK, nor are formal dust deposition standards specified. This reflects the uncertainties in dust monitoring technology, and the highly subjective relationship between deposition events, surface soiling and the perception of such events as a nuisance. In law, complaints about excessive dust deposition would have to be investigated by the local authority and any complaint upheld for a statutory nuisance to occur. However, dust deposition is generally managed by suitable on-site practices and mitigation rather than by the determination of statutory nuisance and/or prosecution or enforcement notice(s). An informal criterion for dust deposition of 200-250 mg/m2/day (as a 30 day mean) is however often applied in the UK as an indicator of potential nuisance.

[1] Directive 96/62/EC of 27 September 1996 on ambient air quality assessment and management
[2] Directive 1999/30/EC of 22 April 1999 relating to limit values for sulphur dioxide, nitrogen dioxide and oxides of nitrogen, particulate matter and lead in ambient air
[3] Directive 2008/50/EC of the European Parliament and of the Council of 21 May 2008 on ambient air quality and cleaner air for Europe
[4] The Air Quality Standards Regulations 2010, SI 2010/1001
[5] Environment Act 1995, Chapter 25, Part IV Air Quality

03 POLICY AND GUIDANCE

3.1 NATIONAL POLICY AND GUIDANCE

The land-use planning process is a key means of improving air quality, particularly in the long term, through the strategic location and design of new developments. Any air quality consideration that relates to land-use and its development can be a material planning consideration in the determination of planning applications, dependent on the details of the Proposed Development.

3.1.1 NATIONAL PLANNING POLICY FRAMEWORK (2012)

The National Planning Policy Framework[6] (NPPF) was published in March 2012 with the purpose of planning to achieve sustainable development. Paragraph 124 of the NPPF on air quality states that:

"Planning policies should sustain compliance with and contribute towards EU limit values or national objectives for pollutants, taking into account the presence of Air Quality Management Areas and the cumulative impacts on air quality from individual sites in local areas. Planning decisions should ensure that any new development in Air Quality Management Areas is consistent with the local air quality action plan."

In addition, paragraph 120 states that:

"To prevent unacceptable risks from pollution and land instability, planning policies and decisions should ensure that new development is appropriate for its location. The effects (including cumulative effects) of pollution on health, the natural environment or general amenity, and the potential sensitivity of the area of Proposed Development to adverse effects from pollution, should be taken into account."

3.1.2 PLANNING PRACTICE GUIDANCE (2014)

As part of the NPPF, planning practice guidance on various topics was recently published[7]. In relation to air quality, the guidance refers to the significance of air quality assessments to determine the impacts of Proposed Developments in the area and describes the role of local and neighbourhood plans with regard to air quality. It also provides a flowchart method to assist local authorities to determine how considerations of air quality fit into the development management process.

3.2 REGIONAL POLICY AND GUIDANCE

3.2.1 LONDON PLAN

The London Plan, consolidated with alterations in 2016[8] forms part of the development strategy for the Greater London area until 2031 and integrates all economic, environmental, transport and social frameworks. This has been amended to be consistent with the NPPF. Specifically, for new development proposals, the London Plan, consolidated with alterations, 2016, looks at air quality by proposing the following measures:

- minimise increased exposure to existing poor air quality and make provision to address local problems of air quality such as by design solutions, buffer zones or steps to promote greater use of sustainable transport modes through travel plans;
- 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';
- be at least 'air quality neutral' and not lead to further deterioration of existing poor air quality (such as areas designated as Air Quality Management Areas);
- ensure that where provision needs to be made to reduce emissions from a development, this is usually made on-site; and
- where the development requires a detailed air quality assessment and biomass boilers are included, the assessment should forecast pollutant concentrations. These policies have been considered throughout the completion of this Air Quality Assessment.

3.2.2 SUSTAINABLE DESIGN AND CONSTRUCTION, SUPPLEMENTARY PLANNING GUIDANCE

Supplementary Planning Guidance (SPG) for Sustainable Design and Construction[9] was published in April 2014 by the Greater London Authority (GLA). Section 4.3 of the SPG focuses on air pollution and provides guidance on when assessments should be undertaken and how intelligent design can help minimise the effect of a development on local air quality. The primary way in which the guidance aims to minimise air quality impacts is by setting an air quality neutral policy for buildings and transport, as well as emissions standards for combustion plant. The air quality neutral policy sets benchmarks against which the annual emissions of NOx and PM10 from traffic and combustion plant of a Proposed Development should be assessed.

3.2.3 THE CONTROL OF DUST AND EMISSIONS DURING CONSTRUCTION AND DEMOLITION, SUPPLEMENTARY PLANNING GUIDANCE

Supplementary Planning Guidance (SPG) for The Control of Dust and Emissions during Construction and Demolition[10] was published in July 2014 by the Greater London Authority (GLA). It seeks to reduce emissions of dust, PM10 and PM2.5 from construction and demolition activities in London. It also aims to manage emissions of nitrogen oxides (NOx) from construction and demolition machinery by means of a new non-road mobile machinery (NRMM) ultra-low emissions zone (ULEZ).

[6] Department for Communities and Local Government (2012) National Planning Policy Framework
[7] Department for Communities and Local Government (2014) Planning Practice Guidance: Air Quality
[8] Greater London Authority (2016) The London Plan: The Spatial Development Strategy for London Consolidated With Alterations Since 2011
[9] Greater London Authority, Sustainable Design and Construction Supplementary Planning Guidance, April 2014
[10] Greater London Authority, The Control of Dust and Emissions during Construction and Demolition, Supplementary Planning Guidance, July 2014
[11] Camden Council (2010) Camden Development Policies
[12] Camden Council (2010) Camden Local Development Framework and Core Strategy
[13] Camden Council (2015) Camden Planning Guidance: Sustainability (CPG3)
[14] Camden Council (2015) Camden Planning Guidance: Amenity (CPG6)
[15] Defra (2016) Local Air Quality Management Policy Guidance. PG(16)
[16] Defra (2016) Local Air Quality Management Technical Guidance.TG16
[17] IAQM (2014) Guidance on the Assessment of Dust from Demolition and Construction
[18] EPUK/IAQM, (2015) Land-Use Planning & Development Control: Planning for Air Quality

3.3 LOCAL POLICY

3.3.1 CAMDEN DEVELOPMENT POLICIES

Camden Council (CC) has produced Development Policies[11] as part of their Core Strategy[12], which was adopted in November 2010. Policy DP32 (Air Quality and Camden's Clear Zone) of the document relates to air quality and states that:

"It is recognised that parts of Camden have some of the poorest air quality
levels in London and consequently the whole of the borough has been declared an Air Quality Management Area. The Council has produced an Air Quality Action Plan that identifies actions and mitigating measures necessary to improve air quality in the borough.

The Council will require air quality assessments where development could potentially cause significant harm to air quality. Mitigation measures will be expected in developments that are located in areas of poor air quality.

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

The Council will take into account impact on air quality when assessing development proposals. Regard will be paid to Camden's Air Quality Action Plan and to Cleaning London's Air: The Mayor's Air Quality Strategy. Where development could potentially cause significant harm to air quality, we require an air quality assessment. Where the assessment shows that a development would cause significant harm to air quality, planning permission will be refused unless mitigation measures are adopted to reduce the impact to acceptable levels."

3.3.2 CAMDEN PLANNING GUIDANCE

Camden Council has produced Planning Guidance to support their Core Strategy. The Sustainability (CPG3)[13] Planning Guidance relates to biomass boilers and CHPs and states:
"All biomass boilers and CHP will require an air quality assessment, including location and height of flues, details of emissions and how the emissions can be mitigated

Biomass boilers and CHP are required to be designed, operated and maintained in accordance with best practise measures to minimise emissions to air."

The Council has also produced Amenity Planning Guidance (CPG6)[14] which It provides guidance on when an Air Quality Assessment is required and what should be included. It states:

"All of Camden is a designated Air Quality Management Area due to the high concentrations of nitrogen dioxide (NO2) and particulate matter (PM10).

All developments are to limit their impact on local air quality.

The Council's overarching aim is for new development is to be 'air quality neutral' and not lead to further deterioration of existing poor air quality.

You will be required to include mitigation and offsetting measures to deal with any negative air quality impacts associated with your development proposals. At the same time your development should be designed to minimise exposure of occupants to existing poor air quality.

To manage and prevent further deterioration of air quality in Camden, we will require an air quality assessment with planning applications for development that could have a significant negative impact in air quality.

This impact can arise during both the construction and operational stages of a development as a result of increased NOx and PM10 emissions."

3.4 OTHER POLICY AND GUIDANCE

3.4.1 LOCAL AIR QUALITY MANAGEMENT POLICY GUIDANCE AND TECHNICAL GUIDANCE

The 2016 policy guidance note from Defra, LAQM (PG16)[15] , provides additional guidance on the links between transport and air quality. LAQM (PG16) describes how road transport contributes to local air pollution and how transport measures may bring improvements in air quality. Key transport-related Government initiatives are set out, including regulatory measures and standards to reduce vehicle emissions and improve fuels, tax-based measures and the development of an integrated transport strategy.

LAQM (PG16) also provides guidance on the links between air quality and the land-use planning system. The guidance advises that air quality considerations should be integrated within the planning process at the earliest stage and is intended to aid local authorities in developing action plans to deal with specific air quality problems and create strategies to improve air quality. It summarises the main ways in which the land use planning system can help deliver compliance with the air quality objectives.

Technical Guidance (TG16)[16] is designed to support local authorities in carrying out their duties to review and assess air quality in their area.

3.4.2 INSTITUTE OF AIR QUALITY MANAGEMENT DUST GUIDANCE

The 2014 Institute of Air Quality Management (IAQM)1[7] guidance provides guidance to development consultants and environmental health officers on how to assess air quality impacts from construction. The IAQM guidance provides a method for classifying the significance of effect from construction activities based on the 'dust magnitude' (high, medium or low) and proximity of the site to the closest receptors. The guidance recommends that once the significance of effect from construction is identified, the appropriate mitigation measures are implemented. Experience has shown that once the appropriate mitigation measures are applied in most cases the resulting dust impacts can be reduced to negligible levels.

3.4.3 EPUK/IAQM LAND-USE PLANNING & DEVELOPMENT CONTROL

The 2015 Land-Use Planning & Development Control guidance document[18] produced by Environmental Protection UK (EPUK) and the IAQM provides a framework for professionals operating within the planning system to provide a means of reaching sound decisions, having regard to the air quality implications of development proposals.

The document provides guidance on when air quality assessments are required by providing screening criteria regarding the size of a development, changes to traffic flows/composition energy facilities or combustion processes associated with the development.

04 ASSESSMENT METHODOLOGY

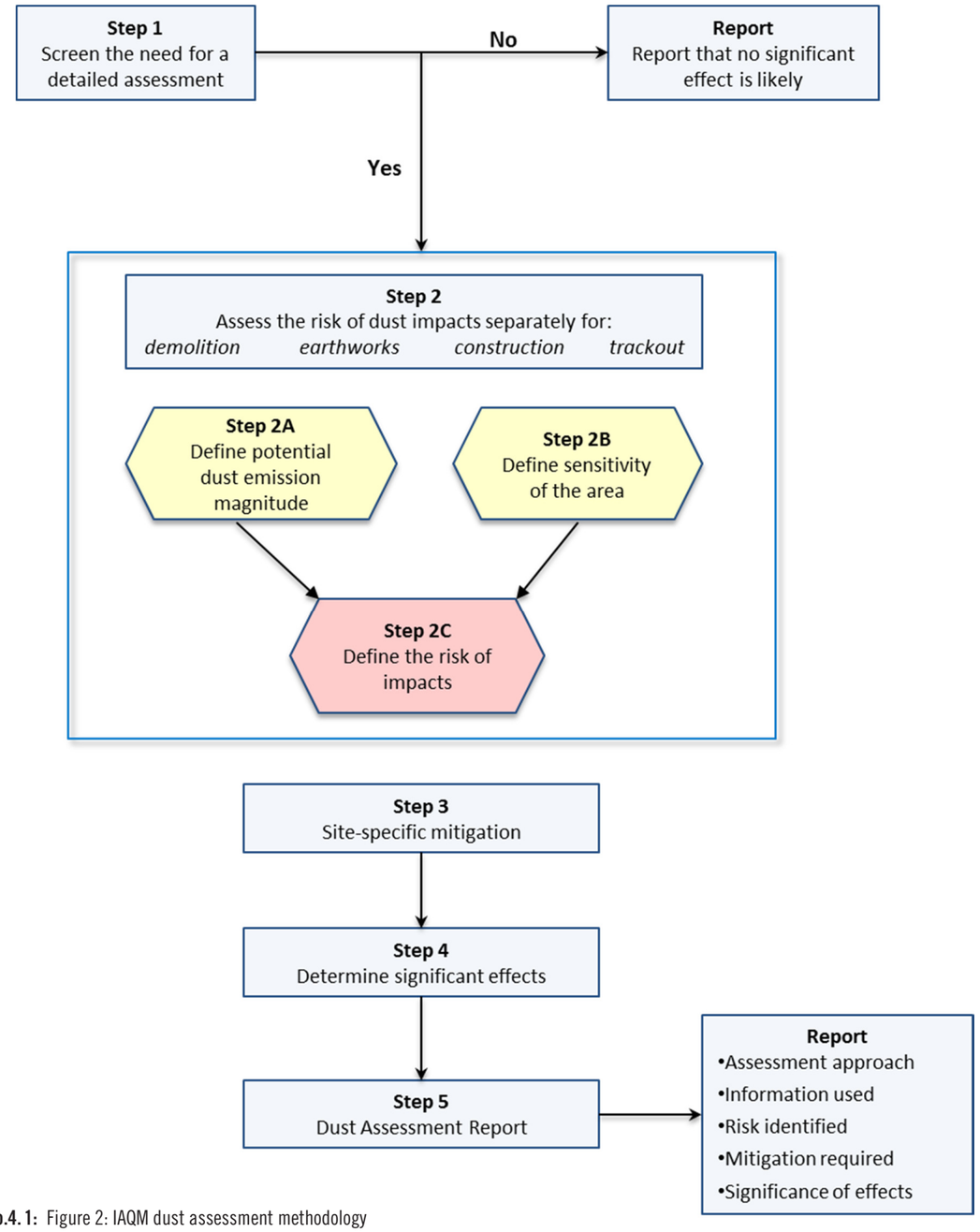

Figure No.4.1: Figure 2: IAQM dust assessment methodology

4.1 ASSESSMENT APPROACH

The overall approach to the air quality assessment comprises:

- A review of the existing air quality conditions at, and in the vicinity of, the development site;
- An assessment of the potential changes in air quality arising from the construction and operation of the Proposed Development; and
- Formulation of mitigation measures, where appropriate, to ensure any adverse effects on air quality are minimised.

4.2 METHOD OF BASELINE ASSESSMENT

Existing or baseline ambient air quality refers to the concentration of relevant substances that are already present in the environment. These are present from various sources, such as industrial processes, commercial and domestic activities, traffic and natural sources.

A desk-based review of the following data sources has been undertaken to determine baseline conditions of air quality in this assessment:

- Local authority review and assessment reports;
- LondonAir website[19] ;
- The Environment Agency website[20] ; and
- The UK Air Information Resource website[21] .

[19] King's College London, accessed September 2016, www.londonair.org.uk
[20] Environment Agency website; http://maps.environment-agency.gov.uk/wiyby/dataSearchController?topic=pollution&lang=_e; Accessed: April2016
[21] Defra, http://uk-air.defra.gov.uk, Accessed July 2016

DUST EMISSION MAGNITUDE		
SMALL	**MEDIUM**	**LARGE**
Demolition		
total building volume <20,000m3 • construction material with low potential for dust release (e.g. metal cladding or timber) • demolition activities <10m above ground • demolition during wetter months	• total building volume 20,000 50,000m3 • potentially dusty construction material • demolition activities 10 20m above ground level	• total building volume >50,000m3 • potentially dusty construction material (e.g. concrete) • on-site crushing and screening • demolition activities >20m above ground level
Earthworks		
• total site area <2,500m2 • soil type with large grain size (e.g. sand) • <5 heavy earth moving vehicles active at any one time • formation of bunds <4m in height • total material moved <10,000 tonnes • earthworks during wetter months	• total site area 2,500m2 10,000m2 • moderately dusty soil type (e.g. silt) • 5 – 10 heavy earth moving vehicles active at any one time • formation of bunds 4 8m in height • total material moved 20,000 100,000 tonnes	• total site area >10,000m2 • potentially dusty soil type (e.g. clay, which will be prone to suspension when dry due to small particle size) • >10 heavy earth moving vehicles active at any one time • formation of bunds >8m in height • total material moved >100,000 tonnes
Construction		
• total building volume <25,000 m3 • construction material with low potential for dust release (e.g. metal cladding or timber)	• total building volume 25,000 100,000m3 • potentially dusty construction material (e.g. concrete) • on-site concrete batching	• total building volume >100,000m3 • on-site concrete batching • sandblasting
Trackout		
• <10 HDV (>3.5t) outward movements in any one day • surface material with low potential for dust release • unpaved road length <50m	• 10 – 50 HDV (>3.5t) outward movements in any one day • moderately dusty surface material (e.g. high clay content) • unpaved road length 50 – 100m;	• >50 HDV (>3.5t) outward movements in any one day • potentially dusty surface material (e.g. high clay content) • unpaved road length >100m

Figure No.4. 3: Table 2: Categorisation of dust emission magnitude

RECEPTOR SENSITIVITY	NUMBER OF RECEPTORS	DISTANCE FROM THE SOURCE (M)			
		<20	<50	<100	<350
High	> 100	High	High	Medium	Low
	10 – 100	High	Medium	Low	Low
	<10	Medium	Low	Low	Low
Medium	> 1	Medium	Low	Low	Low
Low	> 1	Low	Low	Low	Low

Figure No.4. 2: Table 3: Sensitivity of the area to dust soiling effects on people and property

RECEPTOR SENSITIVITY	NUMBER OF RECEPTORS	DISTANCE FROM THE SOURCE (M)				
		<20	<50	<100	<200	<350
High receptor sensitivity						
> 32µg/m3	> 100	High	High	High	Medium	Low
	10 – 100			Medium	Low	
	<10		Medium	Low		
28 - 32µg/m3	> 100	High	High	Medium	Low	Low
	10 – 100		Medium	Low		
	<10					
24 - 28µg/m3	> 100	High	Medium	Low	Low	Low
	10 – 100					
	<10	Medium	Low			
< 24µg/m3	> 100	Medium	Low	Low	Low	Low
	10 – 100	Low				
	<10					
Medium receptor sensitivity						
-	> 10	High	Medium	Low	Low	Low
	< 10	Medium	Low			
Low receptor sensitivity						
–	> 1	Low	Low	Low	Low	Low

Figure No.4. 4: Table 4: Sensitivity of the area to human health impacts

4.3 CONSTRUCTION ASSESSMENT METHOD

Construction dust effects are assessed using the qualitative approach described in the latest IAQM guidance17. The guidance applies to the assessment of dust from construction/demolition activities. Additionally, construction traffic impacts have been assessed using dispersion modelling which is described in the road traffic emissions methodology section below.

An 'impact' is described as a change in pollutant concentrations or dust deposition, while an 'effect' is described as the consequence of an impact. The main impacts that may arise during construction of the Proposed Development are:

- dust deposition, resulting in the soiling of surfaces;
- visible dust plumes;
- elevated PM10 concentrations as a result of dust generating activities on-site; and,
- an increase in NO2 and PM10 concentrations due to exhaust emissions from non-road mobile machinery (NRMM) and vehicles accessing the site.

The IAQM guidance considers the potential for dust emissions from dust-generating activities, such as demolition of existing structures, earthworks, construction of new structures and trackout. Earthworks refer to the processes of soil stripping, ground levelling, excavation and land capping, while trackout is the transport of dust and dirt from the site onto the public road network where it may be deposited and then re-suspended by vehicles using the network. This arises when vehicles leave the site with dust materials, which may then spill onto the road, or when they travel over muddy ground on-site and then transfer dust and dirt onto the road network.

For each of these dust-generating activities, the guidance considers three separate effects: annoyance due to dust soiling; harm to ecological receptors; and the risk of health effects due to a significant increase in PM10 exposure. The receptors can be human or ecological and are chosen based on their sensitivity to dust soiling and PM10 exposure.
The methodology takes into account the scale to which the above effects are likely to be generated (classed as small, medium or large), along with the levels of background PM10 concentrations and the distance to the closest receptor, in order to determine the sensitivity of the area. This is then taken into consideration when deriving the overall risk for the Development site. Suitable mitigation measures, where required, are also proposed to reduce the risk of the development site.

There are five steps in the assessment process described in the IAQM guidance. Further description is provided in the following sections.

STEP 1: NEED FOR ASSESSMENT
The first step is the initial screening of the need for a detailed assessment. According to the IAQM guidance, an assessment is required where there are sensitive receptors within 350m of the site boundary (for ecological receptors that is 50m) and/or within 50m of the route(s) used by the construction vehicles on the public highway (for ecological receptors that is 20m) and up to 500m from the site entrance(s). In this instance, no sensitive ecological receptors have been identified within 50m of the Proposed Development or within 20m of routes to be used by construction traffic, therefore the impact of the Proposed Development upon ecological receptors has not been considered further. Therefore, only dust soiling effects and human health impacts are considered and assessed.

STEP 2: ASSESS RISK OF DUST IMPACTS
This second step is split into three sections as follows:

- Define the potential dust emission magnitude (2A);
- Define the sensitivity of the area (2B); and
- Define the risk of impacts (2C).
-

Each dust-generating activity is given a dust emission magnitude depending on the scale and nature of the works (step 2A) based on the criteria shown in Table 2.

The sensitivity of the surrounding area is then determined (step 2B) for each dust effect from the above dust-generating activities, based on the proximity and number of receptors, their sensitivity to dust, the local PM10 background concentrations and any other site-specific factors. Table 3 and Table 4 show the criteria for defining the sensitivity of the area to different dust effects.

STEP 3: DETERMINE THE SITE-SPECIFIC MITIGATION
Once each of the dust generating activities is assigned a risk rating, appropriate mitigation measures are identified. Where the risk is negligible, no mitigation measures beyond those required by legislation are necessary.

STEP 4: DETERMINE ANY SIGNIFICANT RESIDUAL EFFECTS
Once the risk of dust impacts has been determined and the appropriate dust mitigation measures identified, the final step is to determine whether there are any residual significant effects. Experience indicates that once mitigation measures are applied, in most cases the dust effects will be reduced to negligible levels.

STEP 5: PREPARE A DUST ASSESSMENT REPORT
The last step of the assessment is the preparation of a Dust Assessment Report which is covered within this chapter.

The overall risk of the impacts for each activity is then determined (step 2C) prior to the application of any mitigation measures (Table 5) and an overall risk for the site derived

SENSITIVITY OF AREA	DUST EMISSION MAGNITUDE		
	LARGE	MEDIUM	SMALL
DEMOLITION			
High	High risk site	Medium risk site	Medium risk site
Medium	High risk site	Medium risk site	Low risk site
Low	Medium risk site	Low risk site	Negligible
EARTHWORKS			
High	High risk site	Medium risk site	Low risk site
Medium	Medium risk site	Medium risk site	Low risk site
Low	Low risk site	Low risk site	Negligible
CONSTRUCTION			
High	High risk site	Medium risk site	Low risk site
Medium	Medium risk site	Medium risk site	Low risk site
Low	Low risk site	Low risk site	Negligible
TRACKOUT			
High	High risk site	Medium risk site	Low risk site
Medium	Medium risk site	Low risk site	Negligible
Low	Low risk site	Low risk site	Negligible

Figure No.4. 5: Table 5: Risk of dust impacts

4.4 OPERATIONAL ASSESSMENT METHOD

4.4.1 ROAD TRAFFIC

The development has the potential to impact existing air quality as a result of road traffic exhaust emissions, such as NO2 and particulate matter (PM10 and PM2.5), associated with vehicles travelling to and from the site during the operational phase. A screening assessment will be undertaken using the criteria contained in the EPUK/IAQM land-use guidance document[22] to determine the potential local air quality effects associated with the trip generation from the Proposed Development.

As the Proposed Development lies in an AQMA, the following criteria which apply to developments in an AQMA, will be used to help establish when a detailed air quality assessment is likely to be considered necessary:

- A change of Light Duty Vehicle flows of more than 100 Annual Average Daily Traffic (AADT) movements; and
- A change of Heavy Duty Vehicle flows of more than 25 AADT movements;

Should screening of the traffic data indicate that either of the above criteria are met, then potential impacts at sensitive receptor locations can be assessed using a more detailed assessment, by calculating the predicted 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 EPUK/IAQM guidance.

4.4.2 COMBUSTION PLANT

Heating and hot water for the new development will be supplied by five 750kW thermal output boilers with the exit flue 3m above roof height at about 45m above local ground level. The plant to be used have not yet been determined but will be required to meet an emission limit of 40mg/kWh. The boilers will replace the current 2MW plant, installed in the mid-1990s that exhaust at 26m. The new plant therefore represent clear plant located further from receptors with improved dispersion and probably an improvement in local air quality.

As the plant are not yet finalised it is proposed that detailed air quality modelling be submitted once the plant are known, in accordance with the requirement of the Camden Planning Guidance (section 3.3.2).

4.5 AIR QUALITY NEUTRAL ASSESSMENT METHOD

In this report the emissions of nitrogen oxides (NOx) and particulate matter (PM10) from transport and combustion arising from the Proposed Development have been quantified and compared with the GLA's benchmark values. The benchmark values, given in Appendix 5 (buildings) and Appendix 6 (transport) of the GLA Supplementary Planning Guidance for Sustainable Design and Construction[23] consider the planning class of the Proposed Development and its location: the Central Activity Zone (CAZ), Inner London or Outer London. The 1 Triton Square site is in the part of the Borough of Camden which falls within the CAZ.

Major developments in London are required to meet the benchmarks for emissions from buildings (from the heat and energy generation plant) and from transport. If the development exceeds the benchmarks, mitigation must be applied. If the residual emissions following mitigation exceed the benchmarks, the local council may require a contribution to offset the excess emissions.

[22] Moorcroft and Barrowcliffe. et al. (2015) Land-use Planning & Development Control: Planning for Air Quality. Institute of Air Quality Management, London

[23] Greater London Authority (2014) Sustainable Design and Construction Supplementary Planning Guidance, April 2014 https://www.london.gov.uk/what-we-do/planning/implementing-london-plan/supplementary-planning-guidance/sustainable-design-and

05 BASELINE

INDUSTRIAL SITE	TYPE	X, Y	DISTANCE FROM DEVELOPMENT (KM)	POLLUTANT
Arbuckle	Waste Treatment	529599, 183580	1.3 (NW)	NOx
St Pancras Metals	Waste Treatment	529926, 183292	1.2 (NW)	NOx

MONITORING SITE	GRID REF		TYPE OF SITE	DISTANCE FROM SITE (KM)	DIRECTION FROM SITE
	x	y			
LB: London Bloomsbury	530120	182034	Urban Background	1.1	E
CD3: Shaftesbury Avenue	530060	181290	Roadside	1.4	SE
CD9: Euston Road	529878	182648	Roadside	0.8	E

Figure No.5.4: Table 6: Local automatic monitoring within 1.5km of Proposed Development

MONITORING SITE	NO2 ANNUAL MEAN CONCENTRATION (MG/M3)				PM10 ANNUAL MEAN CONCENTRATION (MG/M3)			
	2012	2013	**2014**	**2015**	**2012**	**2013**	**2014**	**2015**
LB: London Bloomsbury	55	44	45	48	19	18	20	-*
CD3: Shaftesbury Avenue	71	74	69	-*	29	29	25	22
CD9: Euston Road	106	106	98	54	-*	-*	29	-*
Air quality objective	40	40				40		

Figure No.5.1: Table 7: Local automatic monitoring recorded concentrations

Notes: *Not operational in this year. Exceedences of the annual mean objective are highlighted as bold.

MONITORING SITE	GRID REF		TYPE OF SITE	DISTANCE FROM SITE (KM)	DIRECTION FROM SITE
	x	y			
CA4: Euston Road	530110	182795	Roadside	1.1	NE
CA6: Wakefield Gardens	530430	182430	Urban background	1.3	E
CA10: Tavistock Gardens	529880	182334	Urban background	0.8	E
CA11: Tottenham Court Road	529568	181728	Kerbside	0.8	SE
CA20: Brill Place	529914	183147	Roadside	1.1	NE
CA21: Bloomsbury Street	529962	181620	Roadside	1.1	SE

Figure No.5.2: Table 8: Local diffusion tubes within 1.5km of Proposed Development

MONITORING SITE	NO2 ANNUAL MEAN CONCENTRATION (MG/M3)			
	2011	2012	**2013**	**2014**
CA4: Euston Road	93.1	82.1	107.8	89.7
CA6: Wakefield Gardens	45.6	39.3	40.3	36.4
CA10: Tavistock Gardens	47.6	40.1	49.4	46.5
CA11: Tottenham Court Road	91.7	83.3	88.1	86.8
CA20: Brill Place	50.8	50.0	49.4	52.3
CA21: Bloomsbury Street	76.7	71.7	76.1	80.8
Air quality objective	40			

Figure No.5.3: Table 9: Local diffusion tubes recorded concentrations
Notes: *Not operational in this year. Exceedences of the annual mean objective are highlighted as bold.

The baseline assessment has been undertaken to determine existing air quality in the area of the Proposed Development site.

5.1 SOURCES OF AIR POLLUTION

5.1.1 INDUSTRIAL PROCESSES

Industrial air pollution sources are regulated through a system of operating permits or authorisations, requiring stringent emission limits to be met and ensuring that any releases to the environment are minimised or rendered harmless. Regulated (or prescribed) industrial processes are classified as Part A or Part B processes, and are regulated through the Pollution Prevention and Control (PPC) system ,[24] [25]. The larger more polluting processes are regulated by the Environment Agency (EA), and the smaller less polluting ones by the local authorities. Local authorities tend also to regulate only for emissions to air, whereas the EA regulates emissions to air, water and land.

There are two Part A processes with releases to air listed on the EA website within 1.5km of the development site. Any emissions from these sources have been assumed to be included in the existing background concentration at the Proposed Development.

5.1.2 ROAD TRAFFIC

In recent decades, transport-related atmospheric emissions on a national basis have grown to match or exceed other sources in respect of many pollutants, particularly in urban areas. Vehicle emissions are another source of air pollutants in the vicinity of the Proposed Development site, however the roads nearest to the site are not heavily trafficked and the site is 45m north of Euston Road and 150m east of Albany Street. Local traffic will therefore have a limited impact on concentrations at the site and the wider impact of road traffic emissions is taken into account through the background pollutant concentrations.

5.2 LOCAL AIR QUALITY

A review of the Defra[26] website showed that the Proposed Development is located within the Camden AQMA, declared in 2002 due to exceedences of the annual NO2 objective and the daily PM10 objective. The AQMA is described as “The whole borough”. The development has the potential to have an impact on the AQMA.

5.3 LOCAL MONITORING

A review of the 2015 Updating and Screening Assessment (USA)[27] and the London Air website[28] showed that the closest automatic monitoring site to the Proposed Development is the Euston Road (CD9) site, which is located approximately 830m to the east of the development. The other automatic monitors are located over 1km away from the development. The monitoring results from 2012 to 2015 for the monitoring sites are shown in Table 6 and the monitoring sites are shown in Figure 3.

The nearest automatic monitoring sites in Westminster Council are both kerbside sites, located 1-1.5m from the kerb, and they are a similar distance from the site as the LBC monitors: Marylebone Road (approximately 1km) and Oxford Street (approximately 1.5km). They have not been included in this assessment, as they would not add information about likely concentrations at the site.

The measurements show that the NO2 annual mean air quality objective was exceeded at all the monitoring sites in the period from 2012 to 2015 (for the years recorded), and the exceedences at the roadside sites were greater than at London Bloomsbury, which is an urban background location. Annual mean concentrations of PM10 have been below the air quality objective at all three sites over the 2012 to 2015 period.

The Council USA report[27] shows that there are six diffusion tube monitoring sites located within 1.5km of the Proposed Development. Details of the diffusion tube locations and recent monitoring results are given in Table 8 and Table 9 respectively and the monitoring sites are shown in Figure 3. At the time of writing, 2015 diffusion tube monitoring data was not yet available.

There have been no diffusion tubes measuring NO2 concentrations in the neighbouring Westminster Council.

As shown in Table 9, the NO2 annual mean air quality objective was exceeded at all of the monitoring sites over the period from 2011 to 2014, with the exception of the Wakefield Gardens (CA6) urban background monitoring site which did not exceed the air quality objective in 2012 and 2014.

[24] Directive 2010/75/EU of the European Parliament and of the Council of 24 November 2010 on industrial emissions (integrated pollution prevention and control).
[25] The Environmental Permitting (England and Wales) (Amendment) Regulations 2013, SI 2013/390.
[26] Defra (2016) Air quality management areas http://uk-air.defra.gov.uk/aqma/list
[27] Camden Council (2015) Updating and Screening Assessment for London Borough of Camden
[28] King’s College London (2016) London Air http://www.londonair.org.uk/

OS GRID SQUARE		ANNUAL MEAN CONCENTRATION (Μg/M3)			
X	Y	NOx	NO2	PM10	PM2.5
529500	182500	79.3	43.6	22.2	15.8

Figure No.5.5: Table 10: Estimated background pollutant concentrations for 2016

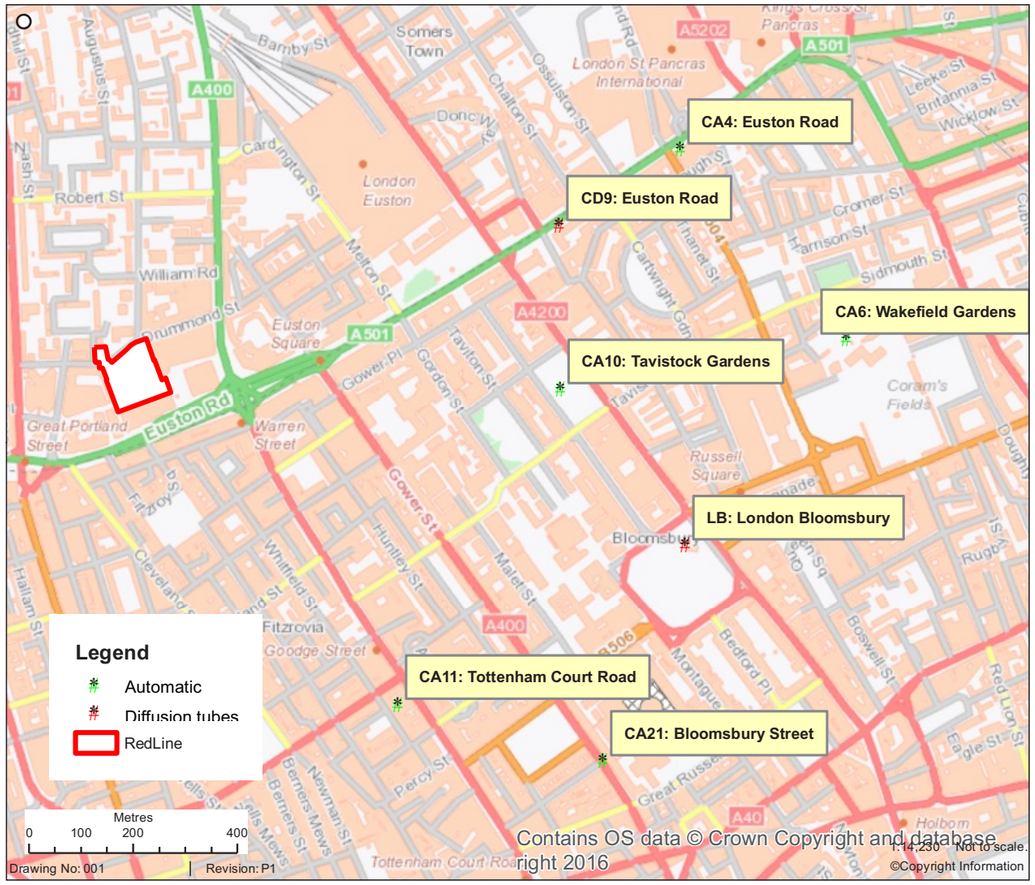

Figure No.5.6: Figure 3: Monitoring locations within 1.5km of the site

5.4 BACKGROUND CONCENTRATIONS

The Defra website includes estimated background air pollution data for each 1km by 1km OS grid square in the UK. Background concentrations for the current year of 2016 have been taken from the latest Defra maps[29] and are presented in Table 10 for the grid square in which the Proposed Development is located.

Background concentrations are estimated to be above the air quality objective for annual mean NO2 but below the air quality objective for PM10.

[29] Defra, http://laqm.defra.gov.uk/review-and-assessment/tools/background-maps.html, Accessed September 2016

06 CONSTRUCTION ASSESSMENT

The site of the Proposed Development covers an area of currently occupied land and therefore demolition is required in order for the development to proceed.

6.1 SENSITIVE RECEPTORS

Sensitive receptors are defined as those dwellings/schools/hospitals that are likely to experience a change in pollutant concentrations and/or dust nuisance due to the construction of the Proposed Development. There are sensitive receptors located within 350m of the site boundary (see Figure 4); these are a mixture of office space and residential dwellings. As such, their sensitivity to dust soiling and PM10 exposure has been classified as high according to the IAQM guidance[17].

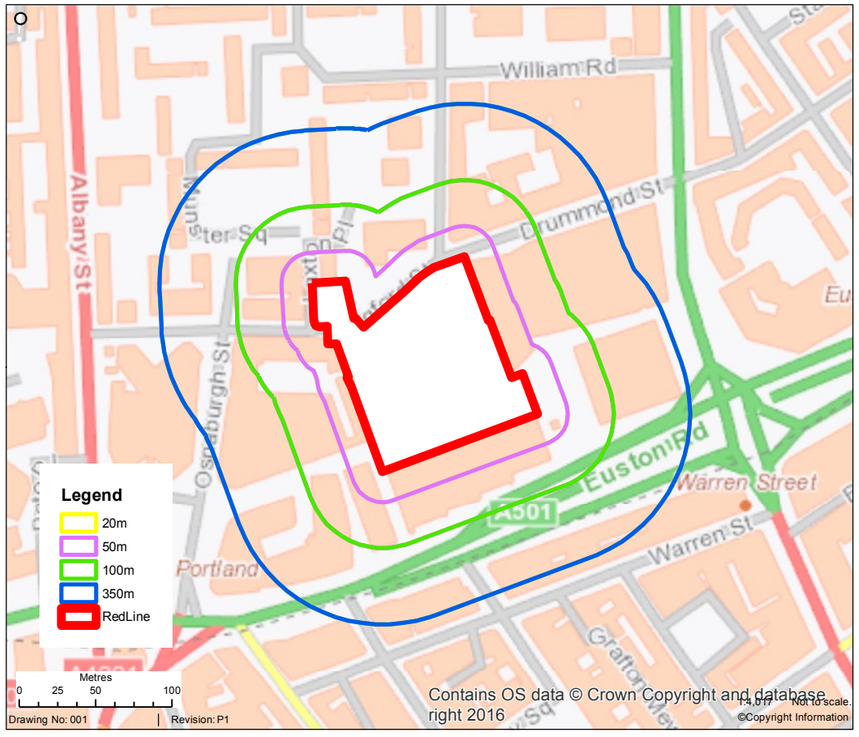

Figure No.6. 1: Figure 4: Buffers to define sensitive receptors in the vicinity of the Proposed Development

ACTIVITY	DUST EMISSION MAGNITUDE	REASONING
Demolition	Medium	• Total volume to be demolished <1,500m3 • Demolition of concrete (dusty construction material) • Onsite crushing and screening will be present • Activities >20m above ground level
Earthworks	Medium	• Removal of portion of existing basement slab and earth to accommodate new pile caps (1.5m) and raft slab. • London clay soil (dusty soil type) • <5 heavy earth moving vehicles at any one time • No bunds required •T otal material moved <2,500 tonnes
Construction	Large	• Total building volume >100,000m3 • Concrete used (dusty construction material) • No on-site concrete batching
Trackout	Medium	• 10-50 HDV (>3.5t) outward movements in any one day • London clay, however contained in basement, therefore low potential for dust release • unpaved road length <50m

Figure No.6.2: Table 11: Dust emission magnitude for construction activities

ACTIVITY	DUST SOILING	HUMAN HEALTH
Demolition	Medium Risk	Medium Risk
Earthworks	Medium Risk	Medium Risk
Construction	High Risk	Medium Risk
Trackout	Medium Risk	Low Risk

Figure No.6.3: Table 12: Summary dust risk table prior to mitigation

6.2 DUST EMISSION MAGNITUDE

Following the methodology outlined in Section 4.3, each dust-generating activity has been assigned a dust emission magnitude as shown in Table 11. For trackout, it has been assumed that construction vehicles will use Longford Street to access the site.

6.3 SENSITIVITY OF THE AREA

The sensitivity of the area to dust soiling has been assigned as high, due to the presence of 10-100 sensitive receptors within 20m from the boundary of the site (“One Osnaburgh Street”). The sensitivity of the area to human health impacts has been assigned as medium, despite the low background PM10 concentrations in the area (<24µg/m3) a worst case approach has been taken to ensure appropriate mitigation is incorporated.

6.4 RISK OF IMPACTS

Taking into consideration the dust emission magnitude for each of the activities on site, and the sensitivity of the area to dust soiling and human health, the site has been classified as generally at medium risk with one instance of high risk, as outlined in Table 12.

To ensure mitigation is sufficient to control all potential impact, the “highly recommended” and “desirable” IAQM and Mayor of London measures for the relevant risks have been recommended for all activities. Specific mitigation is described in Section 8.

07 OPERATIONAL ASSESSMENT

Traffic data has been provided by Arup transport consultants for the 2016 baseline and the expected operational flows for the Proposed Development. The traffic flows in central London are predicted to be stagnant in future years and therefore 2016 has been used for the future baseline (Do Minimum) scenario. The future operational (Do Something) scenario includes the operational flows for the Proposed Development.

Following the EPUK/IAQM guidance, a screening assessment has been carried out looking at the increase in vehicle numbers from the future do-minimum (DM) scenario to the do-something (DS) scenario for the roads surrounding the Proposed Development site.

A total of 27 LDV and 9 HDV daily traffic trips are predicted to be generated from the Proposed Development. These traffic flows are expected to be distributed evenly between Longford Street and Drummond Street, which provide access to the site.

The traffic data is shown in Table 13 for the roads which will be impacted by the Proposed Development. The table shows the predicted change in HDV or LDV numbers for comparison with the EPUK/IAQM screening criteria (described in section 4.4.1) of 25 HDVs and 100 LDVs.

Comparison with the screening criteria has shown that predicted changes in HDV and LDV flows are less than 25 AADT and 100 AADT respectively on all roads surrounding the Proposed Development site. This indicates that no significant effects would be anticipated from vehicle emissions during operation of the Proposed Development and a detailed assessment for road traffic emissions is not required. No further assessment of the traffic impacts (other than air quality neutral, section 8.2) has been carried out.

ROAD NAME	DO-MINIMUM		DO-SOMETHING		CHANGE IN NUMBER OF LDVS	CHANGE IN NUMBER OF HGVS
	AADT	%HGVs	AADT	%HGVs		
1 – Longford Street	35	25%	52	25%	13	5
2 – Drummond Street	35	25%	52	25%	13	5
EPUK/IAQM guidance screening criteria (within an AQMA)					100	25

Figure No.7.1: Table 13: Traffic data for local roads around the Proposed Development

08 AIR QUALITY NEUTRAL ASSESSMENT

LAND-USE	NOx (G/M2)	PROPOSED GFA (M2)
Class A1, A3, A4	22.6	314
Class B1	30.8	44,233
Class C3	26.2	2,786
Class D1(b)	75.0	1,041
Class D2(e)	284.0	1,956

Figure No.8. 1: Table 14: Building benchmark emission rates (g/m2) and GFA (m2)

	NOx (KG/ANNUM)	PM10(KG/ANNUM)
BEB	2,076	n/a

Figure No.8. 2: Table 15: The calculated Building Emissions Benchmark (BEB)

BOILER NOx EMISSION RATE (MG/KWH)	TOTAL THERMAL INPUT (KW)	TBE (KG NOx/ANNUM)
<40	3,750	<1,314

Figure No.8. 3: Table 16: Calculation of the Total Building Emissions (TBE)

POLLUTANT	BEB (KG/ANNUM)	TBE (KG/ANNUM)	DIFFERENCE (BEB – TBE) (KG/ ANNUM)	OUTCOME
NOx	2,076	1,314	762	Within benchmark

Figure No.8. 4: Table 17: Comparison of the benchmark (BEB) and the proposed emissions (TBE) (kg/annum)

LAND-USE	NOx (G/M2/ANNUM)	PM10 (G/M2/ANNUM)
Class A1, A3, A4	169	29.3
Class B1	1.27	0.22
Class C3	234	40.7
Benchmark trip rate (trips/m2/annum)		
Class D1	0.07	
Class D2	5	

Figure No.8. 5: Table 18: Transport benchmark emission rates (g/m2/annum) and GFA (m2)

	NOx (KG/ANNUM)	PM10 (KG/ANNUM)
TEB	573	103

Figure No.8. 6: Table 19: The calculated Transport Emissions Benchmark (TEB)

LAND-USE	DAILY TRIPS (TRIPS/DAY)	ANNUAL TRIP GENERATION RATE (TRIPS/M2/ANNUM)
All land-uses	300	1.55

Figure No.8. 7: Table 20: Daily and annual trip generation rates for the proposed development

POLLUTANT	TTE (KG/ANNUM)	TEB (KG/ANNUM)	DIFFERENCE (TTE – TEB) (KG/ ANNUM)	OUTCOME
NOx	196	573	377	Within benchmark
PM10	35	103	68	Within benchmark

Figure No.8. 8: Table 21: Comparison of the proposed emissions (TTE) and the benchmark (TEB) (kg/annum)

The following sections describe the calculation of the benchmarks mentioned in the air quality neutral assessment method in section 4.5. The calculation of emissions in from the Proposed Development, also described, are then compared to these benchmark values

8.1 BUILDING EMISSIONS

The SPG provides emission rates of NOx and PM10 for each land-use class. These have been combined with the proposed gross floor area (GFA), provided by Arup (Table 13) to determine the benchmark emission rate as shown in Table 14. The Buildings Emissions Benchmark (BEB) is independent of whether the development is in the CAZ, inner or outer London.

The following assumption has been used:

- The gross external area (GEA) has been used as the gross floor area (GFA).

Emissions from the Proposed Development will be those from boilers totalling 3,750kWthi gas-fired boilers. The combustion plant that will be installed have not been identified at this stage, but the plant must emit < 40mg NOx/kWh. There will be no PM10 emissions from the boilers and the document supporting Appendix 6 of the SPG[30] states that "…it is not necessary for a developer to demonstrate compliance with the PM10 benchmark where gas is the only fuel used on site."

The calculation of the Building Emissions Benchmark (BEB) is shown in Table 13 and Table 14; the Total Building Emissions (TBE) is given in Table 15. Table 16 compares the TBE with the BEB, and shows that for both NOx and PM10 the Proposed Development is well under the benchmarks.

8.2 TRANSPORT EMISSIONS

The Transport Emissions Benchmark (TEB) depends on the location of the site. Table 17 shows the emission rates for each land-use for sites in the CAZ and Table 18 shows the calculated TEB. For land-use class D2 there are no benchmark emission values, but a benchmark trip rate is given in the document supporting Appendix 6 of the SPG30.

The number of daily trips that would be generated for the building as a whole was predicted by Arup to be 36 trips per day. This was based on traffic assessment. Table 19 gives the trip generation per m2, per annum, based on the assumption of 36 trips, 7 days per week. The trips have been assumed to be evenly attributed to all classes of land-use (proportional to the m2).

The Total Transport Emissions (TTE) for the Proposed Development have been calculated using the annual trip generation rate in Table 19, and the average trip length and emission factors supplied by the SPG30. The calculated TTE is given in Table 20 which compares the TTE with the TEB. For both NOx and PM10 the Proposed Development emissions are below the benchmarks.

Both the building emissions and transport emissions benchmarks are met by the Proposed Development which therefore complies with the air quality neutral policy

8.3 SUMMARY OF AIR QUALITY NEUTRAL ASSESSMENT

The Air Quality Neutral benchmarks for the extension at 1 Triton Square have been calculated and compared with the planned emissions from the proposed extension.

Table 16 and Table 20 compare the building emissions and transport emissions benchmarks (BEB, TEB) with the calculated total building and transport emissions for the Proposed Development (TBE, TTE). The total emissions for both buildings and transport, for nitrogen oxides (NOx) and particulate matter (PM10), are below the benchmarks. The Proposed Development therefore complies with the air quality neutral policy.

[30] Air Quality Consultants Ltd. (2014) Air Quality Neutral Planning Support Update: GLA 80371, April 2014

09 MITIGATION

9.1 CONSTRUCTION

The dust emitting activities assessed in section 6 can be greatly reduced or eliminated by applying the site specific mitigation measures for high risk sites according to the IAQM guidance. High risk mitigation measures are included as a precautionary measure. For the activity specific measures, the relevant highly recommended and desirable mitigation has been recommended to ensure best practice is followed for all on site activities. The following measures from the guidance are relevant. A draft Construction Management Plan for the site is being submitted with this application.

9.1.1 CONSTRUCTION DUST

GENERAL

- Develop and implement a stakeholder communications plan that includes community engagement before work commences on site.
- Display the name and contact details of person(s) accountable for air quality and dust issues on the site boundary. This may be the environment manager/ engineer or the site manager.
- Display the head or regional office contact information.
- Develop and implement a Dust Management Plan, which will include measures to control other emissions, approved by the local authority, including additional measures in the Mayor of London's guidance[31].

SITE MANAGEMENT

- Record all dust and air quality complaints, identify cause(s), take appropriate measures to reduce emissions in a timely manner and record the measures taken.
- Make the complaints log available to the local authority when asked.
- Record any exceptional incidents that cause dust and/ or air emissions, either on- or off-site and the action taken to resolve the situation in the log book.
- Hold regular liaison meetings with other high risk construction sites within 500 m of the site boundary, to ensure plans are co-ordinated and dust and particulate matter emissions are minimised. It is important to understand the interactions of the off-site transport/ deliveries which might be using the same strategic road network routes.

MONITORING

- Undertake daily on-site and off-site inspection, where receptors (including roads) are nearby, to monitor dust, record inspection results, and make the log available to the local authority when asked. This should include regular dust soiling checks of surfaces such as street furniture, cars and window sills within 100m of site boundary, with cleaning to be provided if necessary.
- Carry out regular site inspections to monitor compliance with the Dust Management Plan, record inspection results and make an inspection log available to the local authority, when asked.
- Increase the frequency of site inspections by the person accountable for air quality and dust issues on site when activities with a high potential to produce dust are being carried out and during prolonged dry or windy conditions.
- Agree dust deposition, dust flux, or real-time PM10 continuous monitoring locations with the Local Authority. Where possible commence baseline monitoring at least three months before work commences on site or, if it is a large site, before work on a phase commences. Further guidance is provided by IAQM on monitoring during demolition, earthworks and construction.

SITE MAINTENANCE

- Plan site layout so that machinery and dust causing activities are located away from receptors, as far as possible.
- 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 the site is 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 on site.
- Cover, seed or fence stockpiles to prevent wind whipping.
- Ensure sand and other aggregates are stored in bunded areas and are not allowed to dry out.

OPERATING VEHICLE/MACHINERY AND SUSTAINABLE TRAVEL

- Ensure all on-road vehicles comply with the requirements of the London Low Emission Zone and the London NRMM 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.
- Impose and signpost a maximum speed limit of 15mph on surfaced and 10mph on un-surfaced haul roads and work areas.
- Produce a Construction Logistics Plan to manage the sustainable delivery of goods and materials.
- Implement a Travel Plan than supports and encourages sustainable travel (public transport, cycling, walking and car-sharing).
- Ensure vehicles entering and leaving the site are covered to prevent escape of materials during transport.

[31] Mayor of London (2014) The control of dust and emissions during construction and demolition SPG

OPERATIONS

- Only use cutting, grinding or sawing equipment fitted or in conjunction with suitable dust suppression techniques, such as water sprays or local extraction.
- Ensure an adequate water supply on the site for effective dust/particulate matter suppression/ mitigation, using non-potable water where possible and appropriate.
- Use enclosed chutes and conveyors and covered skips.
- Minimise drop heights from conveyors, loading shovels, hoppers and other loading or handling equipment and use the fine water sprays on such equipment wherever appropriate.
- Ensure equipment is readily available on site to clean any dry spillages, and clean up spillages as soon as reasonably practicable after the event using wet cleaning methods.

WASTE MANAGEMENT

- Reuse and recycle waste to reduce dust from waste materials.
- Avoid bonfires and burning of waste materials.

9.1.2 SPECIFIC MEASURES

DEMOLITION

- Soft strip inside buildings before demolition (retaining walls and windows in the rest of the building where possible, to provide a screen against dust).
- Ensure effective water suppression is used during demolition operations. Hand held sprays are more effective than hoses attached to equipment as the water can be directed to where it is needed. In addition high volume water suppression systems, manually controlled, can produce fine water droplets that effectively bring the dust particles to the ground.
- Avoid explosive blasting, using appropriate manual or mechanical alternatives.
- Bag and remove any biological debris or damp down such material before demolition.

EARTHWORKS

The following is “desirable” but not “highly recommended” following IAQM and Mayor of London guidance:

- Re-vegetate earthworks and exposed areas/soil stockpiles to stabilise surfaces.
- Use Hessian, mulches or trackifiers where it is not possible to re-vegetate or cover with topsoil.
- Only remove secure covers in small areas during work and not all at once.

CONSTRUCTION

- Avoid scabbling 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.
- Ensure bulk cement and other fine powder materials are delivered in enclosed tankers and stored in silos with suitable emission control systems to prevent escape of material and overfilling during delivery.

The following is a “desirable” measure:

- For smaller supplies of fine power materials ensure bags are sealed after use and stored appropriately to prevent dust.

TRACKOUT

- Regularly use water-assisted dust sweeper(s) on the access and local roads, to remove, as soon as practicable any material tracked out of the site.
- Avoid dry sweeping of large areas.
- Ensure vehicles entering and leaving the site are covered to prevent escape of materials during transport.
- Inspect haul routes for integrity and instigate necessary repairs to the surface as soon as reasonably practicable.
- Record all inspections of haul routes and any subsequent action in a site log book.
- Install hard surfaced haul routes, which are regularly damped down with fixed or mobile sprinkler systems, or mobile water bowsers and regularly cleaned.
- Implement a wheel washing system (with rumble grids to dislodge accumulated dust and mud prior to leaving the site where reasonably practicable).
- Ensure there is an adequate area of hard surfaced road between the wheel wash facility and the site exit, wherever site size and layout permits.
- Access gates to be located at least 10 m from receptors where possible.

The following is a “desirable” measure:

- Apply dust suppressants to locations where a large volume of vehicles enter and exit the construction site.

9.2 OPERATION

The building will be equipped with mechanical ventilation which will improve indoor air quality by filtering particulate matter.

Since no significant effects are anticipated from traffic emissions from the operation of the Proposed Development, no mitigation measures are proposed. Furthermore, no mitigation is required as the Proposed Development complies with the air quality neutral policy.

10 CONCLUSION

An air quality assessment has been prepared to accompany a planning application for the Proposed Development of 1 Triton Square & Saint Anne's in the LBC by British Land. The proposal is an office-led development. The current five storey plus basement office building at 1 Triton Square will be extended by three storeys for office use (B1), introduction of retail (A1, A3, A4) and affordable workspace (B1), re-provision of gym space (D2). Saint Anne's Church will be demolished and replaced with a residential building of part six and part nine storeys. Heating and hot water will be supplied by five 750kW thermal output boilers.

The report reviewed the existing air quality conditions in the vicinity of the site and the likely significant air quality impacts resulting from the Proposed Development. The effects have been assessed in the context of relevant national, regional and local air quality policies.

The site of the Proposed Development is located in the LBC AQMA which is defined to cover the whole borough for annual mean NO2 and daily average PM10 concentrations. In the vicinity of the site monitored NO2 concentrations exceed the annual mean objective even at background locations. Monitored PM10 concentrations do not exceed the annual mean or daily mean objectives.

A screening assessment of the traffic found the predicted changes caused by the development are negligible with regards to the impact on air quality to local receptors.

The construction effects have been assessed using the qualitative approach described in the latest IAQM guidance and it was concluded that with the appropriate best practice mitigation measures for a medium/high risk site in place, there is likely to be a negligible effect from the dust-generating activities on site.

Heating and hot water for the new development will be supplied by five 750kW thermal output boilers with the exit flue 3m above roof height at about 45m above local ground level. The 3,750kW thermal output plant that will be used to provide heating and hot water have not yet been determined but will be required to meet an emission limit of 40mg/kWh. They will replace the current 2MW plant, installed in the mid-1990s that exhaust at 26m. The new plans therefore represent clear plant located further from receptors with improved dispersion and probably an improvement in local air quality. As the plans are not yet finalised it is proposed that detailed air quality modelling be submitted once the plans are known, in accordance with the requirement of the Camden Planning Guidance (section 3.3.2).

The development complies with the GLA's air quality neutral policy for both building and transport emissions, therefore, no operational mitigation is required.

It is proposed that modelling of the combustion plant be undertaken as a condition once the plant to be installed have been finalised. The modelling would be undertaken in accordance with Defra's Technical Guidance Note (TG16). The Air Quality and Planning Guidance, London Councils (2007) as well as EPUK/IAQM, (2015) Land-Use Planning & Development Control: Planning for Air Quality, to assess the significance of any effects.

APPENDIX

Camden

Air Quality Planning Checklist

This document is to be completed for all developments that are subject to an Air Quality Assessment (AQA).

Travel and Transport

1) If there will be parking in the development, will electric vehicle charging points be included?

   Y/N Yes. Three spaces are provided within the basement of Regent's Place

   If yes – please state how many, if no, please state why have they not been included.

2) Will secure cycle storage be provided for users of the building?

   Y/N Yes. Long stay spaces are located inside the building at ground floor level 532

   If yes – please state how many, if no, please state why have they not been included.

Energy

3) If a CHP is to be included, did you ensure that this technology is suitable for the energy requirements of the building? Please see Camden's Boiler Guidance Manual B for more information.

   Y/N CHP will not be provided

   If yes, please briefly summarise why CHP was selected for this site.

4) If CHP is to be included, was this included within the air quality modelling in the AQA?

   Y/N – if no, please state why.

   Please note that if CHP modelling was not included due to the fact that the final CHP specification has not been decided, this will need to be clearly stated in the draft AQA, and the potential impact of the CHP will still need to be considered when assessing the exposure of occupants and/or locations of any ventilation inlets, if applicable. If full details of the CHP have not been included at Planning Application stage, Camden will impose a stringent Planning Condition for the CHP, which will include a requirement for modelling of the impact at all sensitive receptors. Please note that the report will also need to evidence that the CHP will conform to the latest (stringent) emissions limits outlined in the GLA's Draft Sustainable Design and Construction SPG.

5) If CHP will be included and the final technology agreed, have you ensured that it is the best in class in terms of NOx emissions?

   Y/N Not Applicable

   Please note that in addition to adhering to the Emission Limits outlined in the GLA Draft Sustainable Design and Construction SPG, Camden's aim is that all new CHPs will have a "Negligible" impact at all identified receptors, as defined by the EPUK Best Practice Guidance. In your AQA, please outline how you have adhered to this.

Exposure

6) If located in an area of poor air quality and/or next to a busy road or diesel railway line, does the AQA include details of the way in which the building has been designed to reduce the exposure of occupants (e.g. through orientation, greening, placement of residential properties, or, only for developments in areas of very poor air quality, mechanical ventilation?)

   Y/N The building has filtered mechanical ventilation. Please see AQA for further information

   If not, the AQA must be revised to include this information.

Construction Dust

7) Does the project have a Construction Management Plan written in accordance with the recommendations in the Control of Dust and Emissions during Construction and Demolition Supplementary Planning Guidance, including an assessment of the risk? And, if the risk is High, a real time monitoring proposal?

   Y/N Yes. Please see Construction Management Plan.

   If not, this must be provided.

Please return this form with your AQA with your Planning Application

Camden Planning Checklist November 2013

ARUP ASSOCIATES

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