Air Quality Assessment

At

101 Camley Street, London, NW1 0PF

For

Gateway Evolution Limited

25 June 2014

Ove Arup & Partners Ltd
13 Fitzroy Street
London
W1T 4BQ

ARUP

Gateway Evolution Ltd

101 Camley Street

Air Quality Assessment

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Ove Arup & Partners Ltd
13 Fitzroy Street
London
W1T 4BQ
United Kingdom
www.arup.com

ARUP

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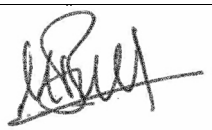
		Signature			
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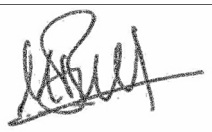
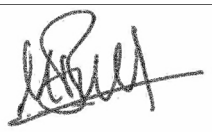
		Signature			
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Contents

Appendices

1 Executive summary

This report presents the air quality assessment for a proposed mixed use development at 101 Camley Street, Camden. A review of the current legislation and planning policy has been undertaken, along with a baseline assessment describing the current air quality conditions in the vicinity of the proposed development and an assessment of air quality impacts associated with traffic generated by the scheme. The following table summarises the effects of each aspect:

Air Quality consideration	Resulting effect
Site classification	Low risk
Construction	Medium (negligible with mitigation)
Mitigation measures for construction	IAQM guidance in construction management plan
Operation (traffic)	Negligible
CHP dispersion modelling	Negligible

The site of the proposed development is located within the London Borough of Camden AQMA, designated due to exceedences in the relevant air quality standard for annual means NO_2 concentrations and the 24-hour PM_{10} concentrations.

The construction effects have been assessed using the qualitative approach described in the latest IAQM guidance and it was concluded that with appropriate mitigation measures there is likely to be a medium risk from the dust-generating activities on site. Appropriate mitigation measures have been recommended to reduce any impact to a negligible level.

An assessment of potential traffic impacts was undertaken using the DMRB and EPUK screening criteria to determine the potential for trips generated by the development to affect local air quality. This indicated that impacts are likely to be negligible throughout the operational phase.

The results of the dispersion modelling assessment indicated that emissions associated with the operation of CHP unit and gas boilers for development heating were medium to insignificant. As such, the operation of the proposed development is expected to have an overall negligible impact to the surrounding area and air quality is considered of minor significance in the planning process.

The assessment against air quality neutral guidance indicated the choice of boiler selected for the site did meet the criteria for the proposed development.

2 Introduction

Ove Arup & Partners Limited (Arup) has been commissioned by Gateway Evolution Ltd to undertake an air quality assessment to accompany a planning application for a proposed mixed use development at 101 Camley Street, Camden.

Air quality studies are concerned with the presence of airborne pollutants in the atmosphere. This report outlines relevant air quality management policy and legislation, describes the existing air quality conditions in the vicinity of the site and outlines the nature of the development and the air quality issues associated with its construction and operation. Mitigation measures are also proposed which would be implemented to reduce the effect of the proposed development on air quality, as far as practicable.

Description of the development

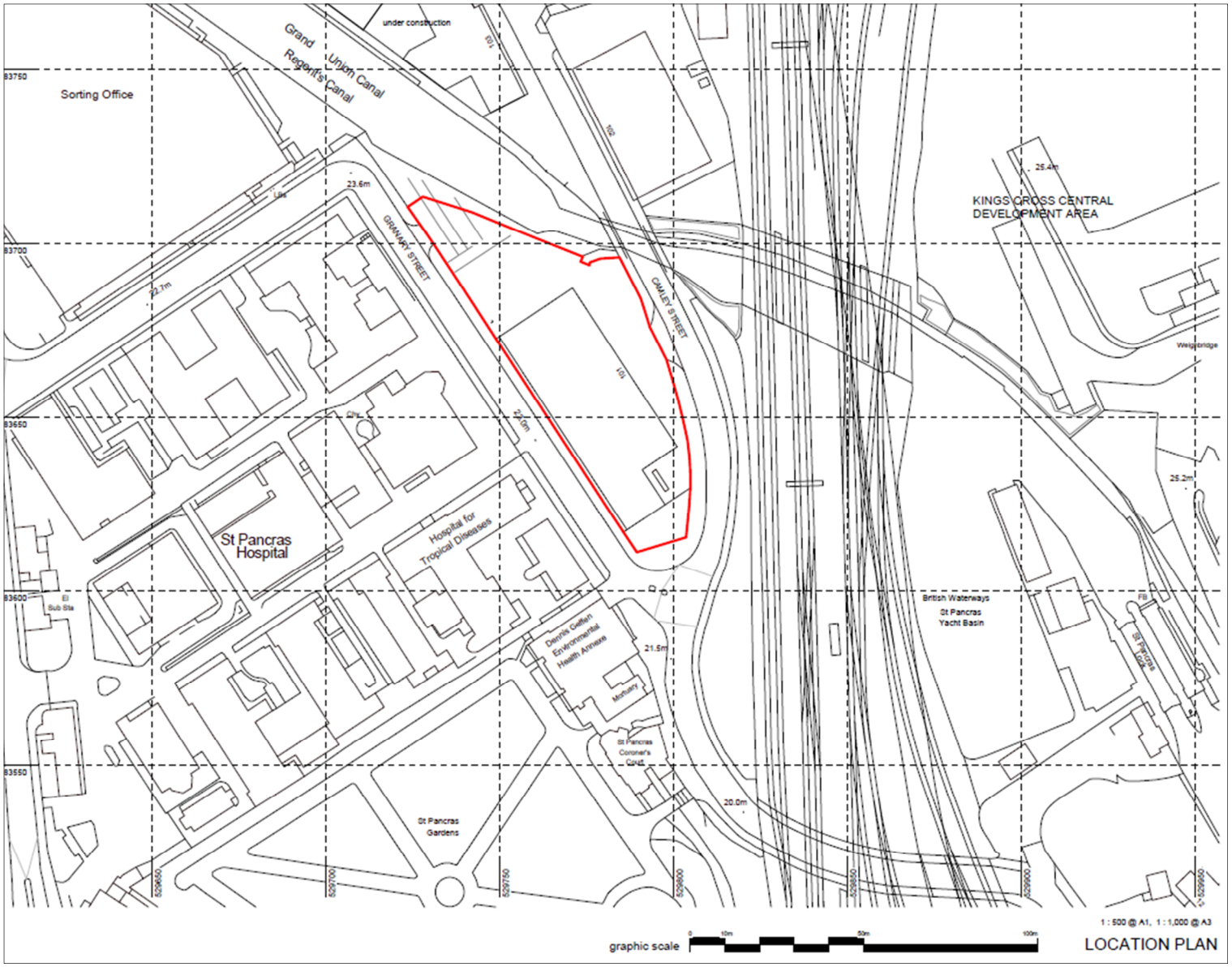
The proposed mixed use development comprises commercial units on the ground floor and 121 residential units over the first to eleventh floors. The proposals also include an energy centre to provide low-carbon energy to the scheme. The site is located within the London Borough of Camden (LBoC). The location of the proposed development is shown in Figure 1. The site is located between Camley Street and Granary Street. Camley Street is a minor residential road and Granary Street is a minor road which mainly serves the St Pancras Hospital. The north of the development will be adjacent to the Grand Union Canal.

This study assesses the likely air quality impacts from the construction and operation of the proposed development, focusing on emissions of nitrogen dioxide (NO2) and particulate matter (PM10). Emissions of these pollutants are associated with construction activities on site, as well as emissions generated by the energy centre.

Consultation

The scope and methodology of this assessment has been agreed with the Senior Sustainability Officer (Air Quality) at LBoC, on the 4th June 2014 via phone and email.

Figure 1 Site Location Plan



3 Air Quality Legislation

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). This Directive defined the policy framework for 12 air pollutants 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) which sets limit values for sulphur dioxide (SO_2), nitrogen dioxide (NO_2) and oxides of nitrogen (NO_X), particulate matter (PM_{10}) and lead in ambient air.

In May 2008 the Directive 2008/50/EC on ambient air quality and cleaner air for Europe came into force. This Directive consolidates the above (apart from the 4th Daughter Directive, which will be brought within the new Directive at a later date), provides a new regulatory framework for $PM_{2.5}$ and makes provision for extended compliance deadlines for NO_2 and PM_{10}.

The Directives were transposed into national legislation in England by the Air Quality Standards Regulations 2010. The Secretary of State for the Environment has the duty of ensuring the air quality limit values are complied with.

Environment Act 1995

Part IV of the Environment Act 1995 places a duty on the Secretary of State for the Environment to develop, implement and maintain an Air Quality Strategy with the aim of reducing atmospheric emissions and improving air quality. The Air Quality Strategy for England, Scotland, Wales and Northern Ireland provides the framework for ensuring the air quality limit values are complied with 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 (AQMA) where necessary.

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 after a prolonged period of exposure to elevated concentrations) and others have standards expressed as 24-hour, 1-hour or 15-minute average concentrations 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 (NO_2 and PM_{10}).

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 is required under European Law to ensure the air quality limit values are complied with 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.

Table 1 Air Quality Standards

Pollutant	Averaging period	Limit value / Objective	Date for compliance
Nitrogen Dioxide (NO_2)	Annual mean	40µg/m^3	UK[(a)] 11 June 2010 EU[(b)] 01 Jan 2010
	1-hour mean	200µg/m^3 not to be exceeded more than 18 times a year (99.8th percentile)	UK[(a)] 11 June 2010 EU[(b)] 01 Jan 2010
Particulate Matter (PM_{10})	Annual mean	40µg/m^3	UK[(a)] 11 June 2010 EU[(b)] 01 Jan 2005
	24-hour mean	50µg/m^3 not to be exceeded more than 35 times a year (90.4th percentile)	UK[(a)] 11 June 2010 EU[(b)] 01 Jan 2005
Fine Particulate Matter ($PM_{2.5}$)	Annual mean	25µg/m^3	UK[(a)]/EU[(b)] 01 Jan 2015
		20µg/m^3	EU 01 Jan 2020

(a) The Air Quality Standards Regulations 2010, SI2010/1001
(b) 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

Dust Nuisance

Dust is the generic term used in the British Standard document BS 6069 (Part Two) to describe particulate matter in the size range 1–75µm 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[1], 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).

[1]Environmental Protection Act 1990, Chapter 43, Part III Statutory Nuisances and Clean Air

4 Planning Policy and Guidance

4.1 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 upon the details of the proposed development.

National Planning Policy Framework (2012)

The National Planning Policy Framework[2] (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."*

Planning Practice Guidance (2014)

As part of the NPPF, planning practice guidance on various topics was recently published[3]. 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. This is shown in Appendix A.

Local Air Quality Management Policy Guidance (2009)

Policy guidance note LAQM.PG(09)[4] provides additional guidance on the links between transport and air quality. LAQM.PG(09) 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.PG(09) 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

[2] Department for communities and local government (2012) National Planning Policy Framework
[3] Department for communities and local government (2014) Planning Practice Guidance: Air Quality
[4] Defra (2009) Local Air Quality Management Policy Guidance PG(09)

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.

4.2 Local Policy and Guidance

London Plan

The London Plan[5] was approved in 2011 and sets out a fully integrated economic, environmental, transport and social framework for the development of the capital until 2031. London boroughs' local plans need to be in general conformity with the London Plan, and its policies guide decisions on planning applications by councils and the Mayor.

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

> *"Policy 5.3 - Sustainable design and construction*
>
> ***Strategic***
>
> *• The highest standards of sustainable design and construction should be achieved in London to improve the environmental performance of new developments and to adapt to the effects of climate change over their lifetime.*
>
> ***Planning decisions***
>
> *• Development proposals should demonstrate that sustainable design standards are integral to the proposal, including its construction and operation, and ensure that they are considered at the beginning of the design process.*
>
> *• Major development proposals should meet the minimum standards outlined in the Mayor's supplementary planning guidance and this should be clearly demonstrated within a design and access statement. The standards include measures to achieve other policies in this Plan and the following sustainable design principles:*
>
> *• Minimising pollution (including noise, air and urban run-off)"*
>
> *"Policy 7.14 - Improving air quality*
>
> ***Strategic***
>
> *• The Mayor recognises the importance of tackling air pollution and improving air quality to London's development and the health and well-being of its people. He will work with strategic partners to ensure that the spatial, climate change, transport and design policies of this plan support implementation of his Air Quality and Transport strategies to achieve reductions in pollutant emissions and minimise public exposure to pollution.*

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

Planning decisions

Development proposals should:

• Minimise increased exposure to existing poor air quality and make provision to address local problems of air quality (particularly within Air Quality Management Areas (AQMAs) and where development is likely to be used by large numbers of those particularly vulnerable to poor air quality, such as children or older people) such as by design solutions, buffer zones or steps to promote greater use of sustainable transport modes through travel plans (see Policy 6.3).

• Promote sustainable design and construction to reduce emissions from the demolition and construction of buildings following the best practice guidance in the GLA and London Council's 'The control of dust and emissions from construction and demolition'.

• Be at least 'air quality neutral' and not lead to further deterioration of existing poor air quality (such as areas designated as Air Quality Management Areas (AQMAs).

• Ensure that where provision needs to be made to reduce emissions from a development, this is usually made on-site. Where it can be demonstrated that onsite provision is impractical or inappropriate, and that it is possible to put in place measures having clearly demonstrated equivalent air quality benefits, planning obligations or planning conditions should be used as appropriate to ensure this, whether on a scheme by scheme basis or through joint area-based approaches."

These policies have been considered throughout the completion of this air quality assessment.

Sustainable Design and Construction SPG (2014)

The Sustainable Design and Construction Supplementary Planning Guidance[6] (SPG) was published in April 2014 from Greater London Authority. Section 4.3 of the guidance 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[7], as well as emissions standards for combustion plant[8]. The air quality neutral policy sets benchmarks against which the annual emissions of NO_x and PM_{10} from traffic and boilers of a proposed development should be assessed.

[6] Greater London Authority (2014) *Sustainable Design and Construction: Supplementary Planning Guidance*
[7] Air Quality Consultants (2013) *Air Quality Neutral Planning Support*
[8] AMEC (2013) *Greater London Authority Air Quality Support: Biomass and CHP Emission Standards*

London Borough of Camden

LBoC's Local Development Framework (LDF) was adopted in November 2010 and consists of a portfolio of documents, of which the Core Strategy is the principal overarching part. The LBoC Development Policies[9] contribute towards delivering the Core Strategy by setting out detailed planning criteria that are used to determine applications for planning permission in the borough.

The Development Policies were reviewed and the following policies in relation to air quality identified:

> *"Policy DP22 - Promoting sustainable design and construction*
>
> *The Council will require development to be resilient to climate change by ensuring schemes include appropriate climate change adaptation measures, such as:*
>
> *i) reducing air pollution"*

And*:*

> *"Policy DP32 - Air quality and Camden's Clear Zone*
>
> *The Council will require air quality assessments where development could potentially cause significant harm to air quality. Mitigation measures will be expected in developments that are located in areas of poor air quality."*

These polices have been considered as necessary throughout the assessment.

4.3 Other Relevant Policy and Guidance

Institute of Air Quality Management Guidance (2014)

The latest Institute of Air Quality Management (IAQM) guidance[10] was produced in consultation with industry specialists and the Greater London Authority (GLA) and gives 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.

It is noted the GLA has produced a draft supplementary planning guidance (SPG) document on the control of dust and emissions during construction[11]. This document will be cross referenced to ensure all potential mitigation measures are included in the recommendations.

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[9] Camden Local Development Framework, Camden Development Policies, London Borough of Camden, 2010.
[10] IAQM (2014) *Guidance on the Assessment of Dust from Demolition and Construction*
[11] Greater London Authority (September 2013) *The Control of Dust and Emissions During Construction and Demolition – Draft Supplementary Planning Guidance*

Environmental Protection UK Guidance (2010)

The 2010 Environmental Protection UK (EPUK) guidance note Development Control: Planning for Air Quality[12] responds to the need for closer integration between air quality and development control. It provides a framework for air quality considerations within local development control processes, promoting a consistent approach to the treatment of air quality issues within development control decisions.

This document updates the guidance originally published by EPUK (formerly known as the National Society for Clean Air and Environmental Protection) in November 2004 (and subsequently revised in September 2006). The guidance has been widely used by local authorities, air quality consultants and developers.

The guidance includes a method for assessing the significance of the impacts of development proposals in terms of air quality and how to make recommendations relevant to the development control process in light of this assessment. The need for early and effective dialogue between the developer and local authority is identified to allow air quality concerns to be addressed as early in the development control process as possible. The guidance also provides some clarification as to when air quality constitutes a material consideration in the planning decision process.

[12] Environmental Protection UK (2010) *Development Control: Planning for Air Quality*

5 Methodology

The overall approach to the air quality assessment comprises:

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

5.1 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:

- LBoC review and assessment reports and local air quality monitoring data;
- The UK Air Information Resource website[13]; and
- The Environment Agency (EA) website[14].

5.2 Method of Construction Assessment

The construction effects have been assessed using the qualitative approach described in the latest IAQM guidance[10]. The guidance applies to the assessment of dust from construction/demolition activities.

An 'impact' is described as a change in pollutants 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 PM_{10} concentrations as a result of dust generating activities on site; and
- An increase in NO_2 and PM_{10} 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

[13] Defra, http://uk-air.defra.gov.uk, Accessed April 2014
[14] Environment Agency, http://www.environment-agency.gov.uk, Accessed April 2014

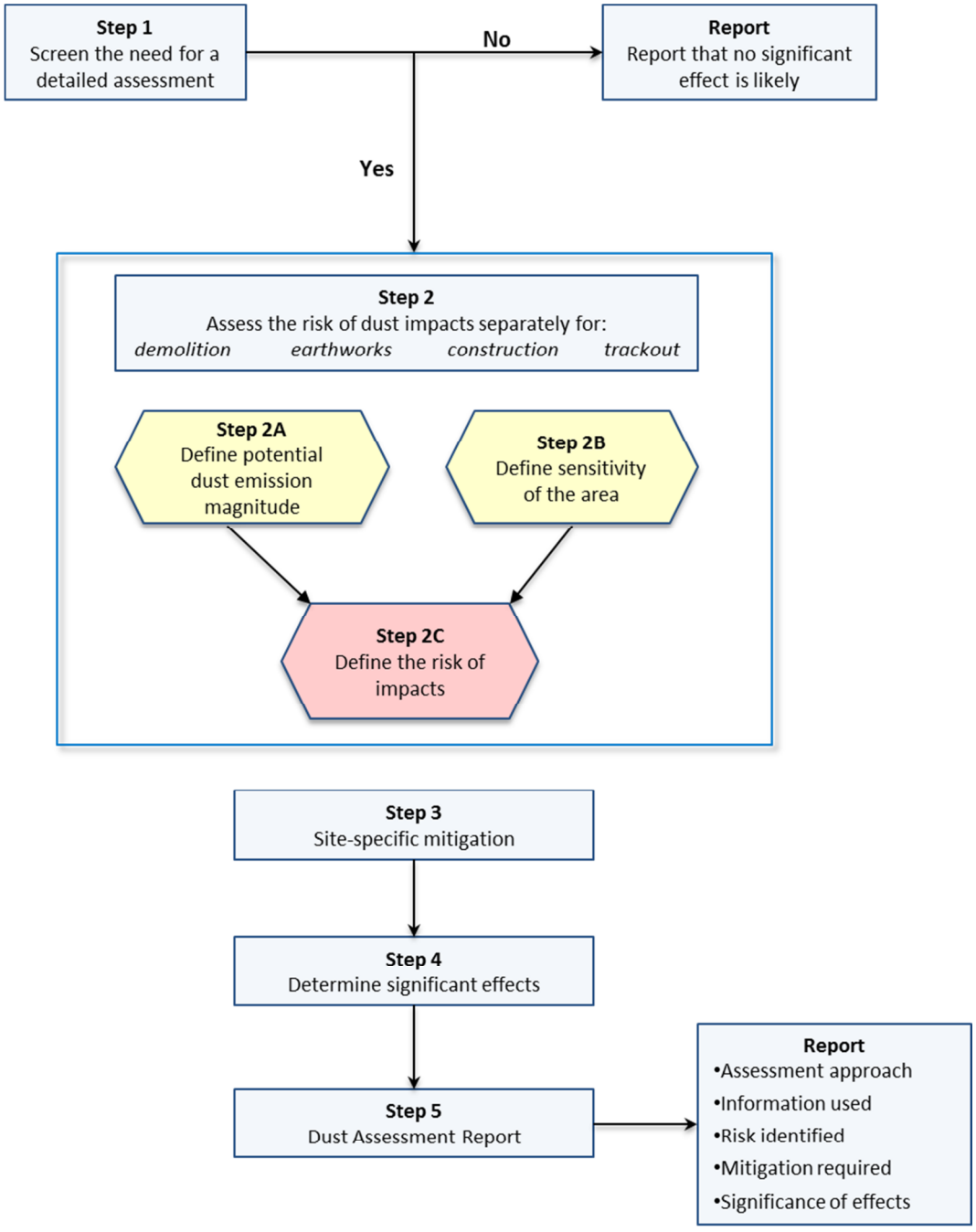
transport of dust and dirt from the site onto the public road network where it may be deposited and then re-suspended by vehicles using the network. This arises when vehicles leave the site with dusty materials, which may then spill onto the road, or when they travel over muddy ground on site and then 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 PM_{10} exposure. The receptors can be human or ecological and are chosen based on their sensitivity to dust soiling and PM_{10} 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 PM_{10} 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 site. Suitable mitigation measures are also proposed to reduce the risk of the site.

There are five steps in the assessment process described in the IAQM guidance. These are summarised in Figure 2 and a further description is provided in the following sections.

Figure 2 IAQM dust assessment methodology



Step 1: Need for assessment

The first step is the initial screening for 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 and up to 500m from the site entrance(s).

Step 2: Assess risk of dust impacts

This step is split into three sections as follows:

2A. Define the potential dust emission magnitude;

2B. Define the sensitivity of the area; and

2C. Define the risk of impacts.

Each of the dust-generating activities is given a dust emission magnitude depending on the scale and nature of the works (step 2A) based on the criteria shown in Table A1 (0).

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 PM_{10} background concentrations and any other site-specific factors. Table A1 to Table A4 (Appendix B) show the criteria for defining the sensitivity of the area to different dust effects.

The overall risk of the impacts for each activity is then determined (step 2C) prior to the application of any mitigation measures (Table A3, Appendix B) and an overall risk for the site derived.

Step 3: Determine the site-specific mitigation

Once each of the 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 report.

5.3 Method of Operational Assessment

Road Traffic Emissions

The development has the potential to impact on existing air quality as a result of road traffic exhaust emissions, such as NO_2 and PM_{10}, associated with vehicles travelling to and from the site during the operational phase. A screening assessment was therefore undertaken using the criteria contained within the Design Manual for Roads and Bridges (DMRB) and Environmental Protection UK (EPUK) Development Control: Planning for Air Quality (2010 update) guidance documents to determine the potential for trips generated by the development to affect local air quality.

The (Design Manual for Roads and Bridges) DMRB provides the following criteria for determination of road links potentially affected by changes in traffic flow:

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

The EPUK Development Control: Planning for Air Quality (2010 update) guidance document states the following criteria to help establish when an air quality assessment is likely to be considered necessary:

- Proposals that will generate or increase traffic congestion, where 'congestion' manifests itself as an increase in periods with stop start driving;
- Proposals that will give rise to a significant change in either traffic volumes, typically a change in AADT or peak traffic flows of greater than ±5% or ±10%, depending on local circumstances (a change of ±5% will be appropriate for traffic flows within an AQMA), or in vehicle speed (typically of more than ±10km/hr), or both, usually on a road with more than 10,000 AADT (5,000 if 'narrow and congested');
- Proposals that would significantly alter the traffic composition on local roads, for instance, increase the number of HDVs by 200 movements or more per day; or,
- Proposals that include significant new car parking, which may be taken to be more than 100 spaces outside and AQMA or 50 spaces inside an AQMA.

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

Should screening of the traffic data indicate that any of the above criteria are met, then potential impacts at sensitive receptor locations can be assessed by calculating the predicted change in NO_2 and PM_{10} concentrations as a result of the proposed development. The significance of predicted impacts can then be determined in accordance with the methodology outlined in the EPUK guidance.

Energy Centre Emissions

Emissions associated with the energy centre have the potential to cause increases in pollutant concentrations in the vicinity of the site. These have been quantified through dispersion modelling in accordance with the methodology outlined in the following sections.

An industry standard atmospheric dispersion model, ADMS 5, was used to calculate resulting concentrations of NO_2. The modelling procedure was as follows:

- Information on stack dimensions and position, as well as boiler operating conditions, were obtained from Arup, Buildings London;
- Appropriate data to describe meteorological conditions in the vicinity of the site was obtained from Atmospheric Dispersion Modelling (ADM) Ltd;
- A receptor grid of potentially sensitive locations was identified in the vicinity of the installation using digital mapping;
- The above information was entered into the dispersion model;
- The dispersion model was run to determine pollutant concentrations in the vicinity of the site. The results interpretation was based on the highest modelled concentration at any specified sensitive receptor locations; and
- The study results were compared with the relevant assessment criteria.

Dispersion Model

The ADMS 5 dispersion model (Version 5.0) has been used for this study, which is the most up-to-date version of the model at the time of this study[15].

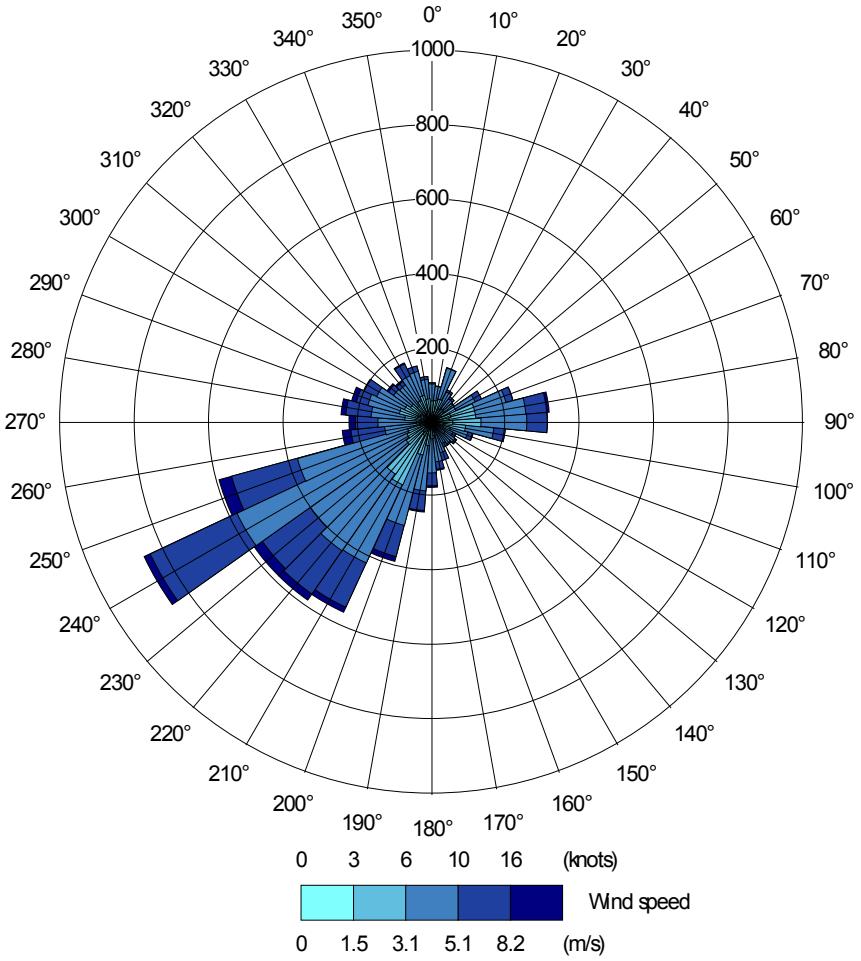
The ADMS model has been widely validated for industrial point sources, and is accepted as being 'fit-for-purpose' for environmental impact assessments of stack releases. It is regularly tested against other dispersion models by the Environment Agency's (EA) Air Quality Modelling and Assessment Unit (AQMAU), and is recognised as being suitable for environmental impact assessments. The model incorporates the latest understanding of boundary layer meteorology and dispersion.

[15] ADMS5 Atmospheric Dispersion Modelling System, User Guide, CERC, June 2012

Meteorological Data

Meteorological data used in this assessment was taken from London City Airport meteorological station over the period 1st January 2012 to 31st December 2012 (inclusive). London City Airport is located at NGR: 542250, 180350, which is approximately 13.5km west of the proposed development. DEFRA guidance LAQM.TG(09) [16] recommends meteorological stations within 30km of an assessment area as being suitable for detailed modelling. Figure 3 shows the wind rose for London City Airport.

Figure 3 Wind Rose for London City Airport 2012 Meteorological Data



Building Effects

Buildings can have a significant effect on the dispersion of pollutants, particularly if they are at least 30-40% of the height of the stack. If tall buildings are close to a stack, the plume can be entrained in the cavity zone downwind of the building. This can lead to higher ground concentrations near the stack than would be expected in the absence of buildings and can affect the dispersion of pollutants in the atmosphere. The downwash effects can be taken into account by the ADMS 5 dispersion model.

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

Analysis of the site layout indicated that structures, at 102 and 103 Camley Street, in the vicinity of the development should be included within the model in order to take account of effects on pollutant dispersion. A mixed use development is currently under construction at 103 Camley Street, and it is understood that an application of the redevelopment of 102 Camley Street is coming forward within the same timescales as 101 Camley Street. Therefore these cumulative air quality impacts have been considered within this report. Building input geometries are shown in Table 2.

Table 2 Building Geometries

Building	NGR (m)		Height (m)	Length (m)	Width (m)	Angle (°)
	X	Y				
101 Camley Street	529774	183660	43	30	80	63
102 Camley Street	529806	183734	37.5	18	39	71
102 Camley Street north	529790	183757	43.5	35	14	71
103 Camley Street	529723	183780	28.5	32	89	71

It should be noted that ADMS 5 only allows input of cuboid structures. As such, some simplification of the site was required.

Assessment Extents

A desk-top study was undertaken in order to identify sensitive receptor locations in the vicinity of the site that required specific consideration during the assessment. These are summarised in Table 3.

Where the proposed high rise developments are located, near to 101 Camley Street the impacts at height have been included within the modelling results.

Table 3 Sensitive Receptors

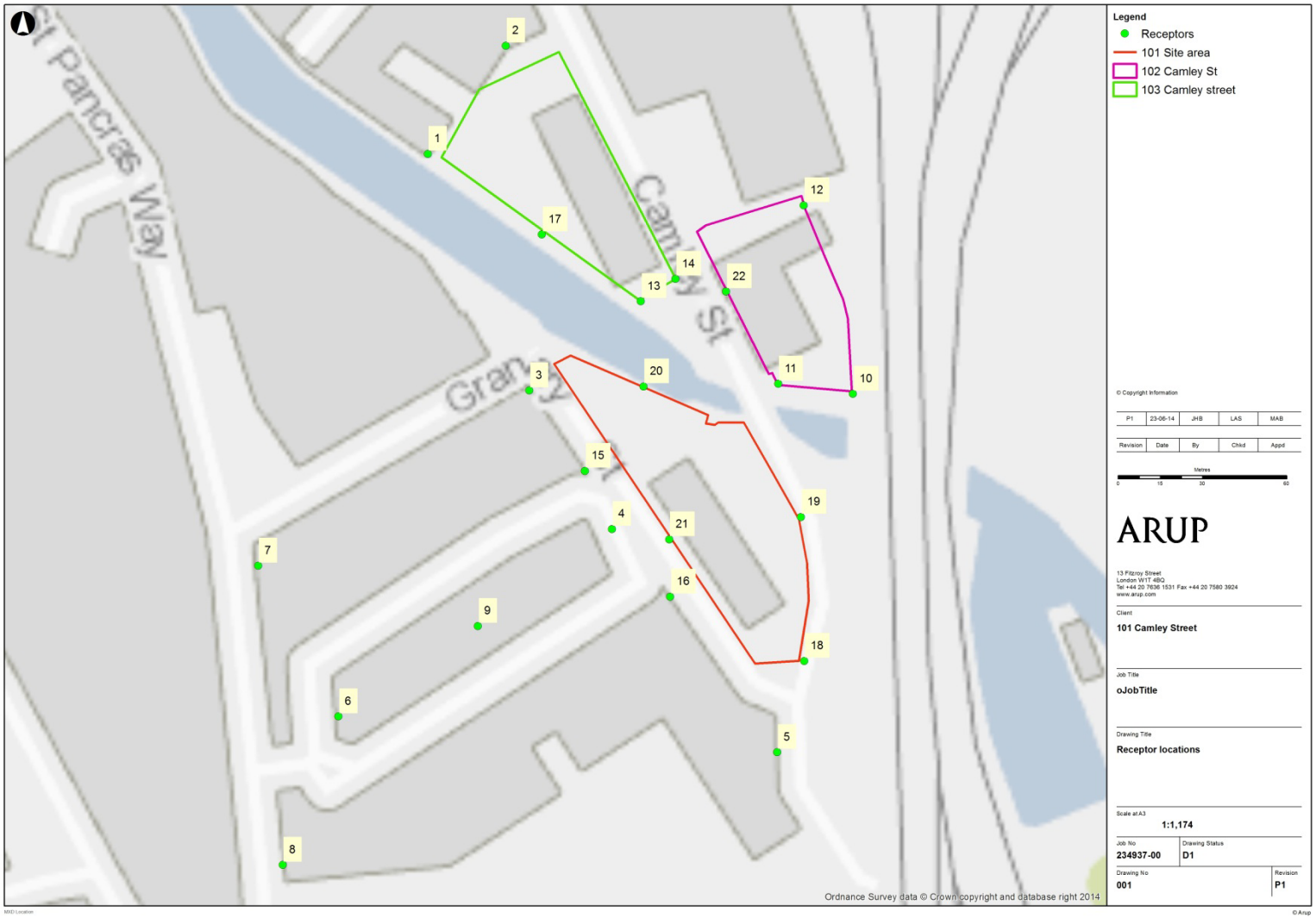
Receptor	Id	X	Y	Height
Crofters Way 1	1	529672	183790	1.5
Crofters Way 2	2	529699	183829	1.5
Hospital 1	3	529708	183706	1.5
Hospital 2	4	529737	183657	1.5
Hospital 3	5	529796	183578	1.5
Hospital 4	6	529640	183590	1.5
Hospital 5	7	529611	183644	1.5
Hospital 6	8	529620	183538	1.5
Hospital Centre	9	529689	183623	1.5

Receptor	Id	X	Y	Height
102 Camley St 1	10	529823	183705	1.5
102 Camley St 1 - a	10	529823	183705	20.0
102 Camley St 1 -b	10	529823	183705	40.0
102 Camley St 2	11	529796	183709	1.5
102 Camley St 2 - a	11	529796	183709	20.0
102 Camley St 2 - b	11	529796	183709	40.0
102 Camley St 3	12	529805	183772	1.5
102 Camley St 3 - a	12	529805	183772	20.0
102 Camley St 3 - b	12	529805	183772	40.0
103 Camley St 1	13	529747	183738	1.5
103 Camley St 1 - a	13	529747	183738	20.0
103 Camley St 2	14	529760	183746	1.5
103 Camley St 2 - a	14	529760	183746	20.0
Hospital 7	15	529727	183678	1.5
Hospital 8	16	529758	183633	1.5
103 Camley St 3	17	529712	183762	1.5
103 Camley St 3 - a	17	529712	183762	20.0
101 Camley St 1	18	529805	183610	1.5
101 Camley St 2	19	529804	183661	1.5
101 Camley St 3	20	529748	183708	1.5
101 Camley St 4	21	529757	183653	1.5
102 Camley St 4	22	529778	183742	1.5
102 Camley St 4 - a	22	529778	183742	20.0
102 Camley St 4 - b	22	529778	183742	40.0

Reference should be made to Figure 4 for a graphical representation of sensitive receptor locations.

Figure 4 Receptor Locations

A3



Process Conditions

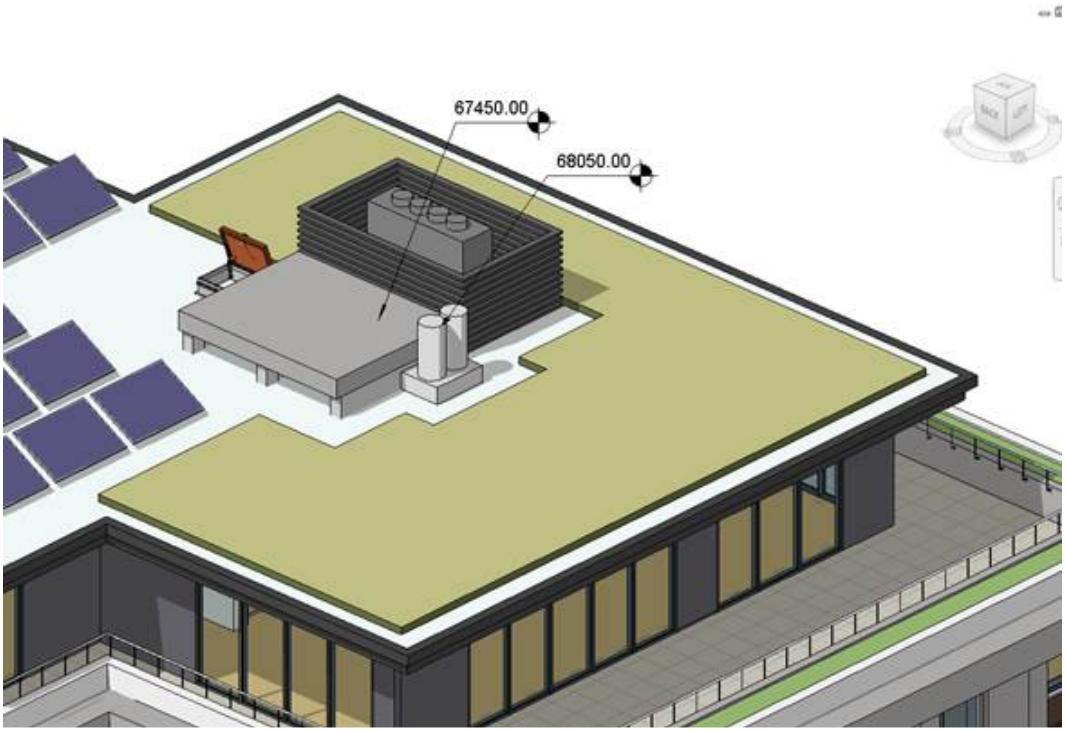
The current design of the development proposes the installation of one 110kW natural gas CHP unit and two Ultramax 268kW gas boilers. The location of the stack is shown in Figure 5.

Stack and emission parameters for the CHP unit anticipated to be installed at the development have been obtained from manufacturer's technical datasheets[17][18]. Parameters used within the model are presented in Table 4.

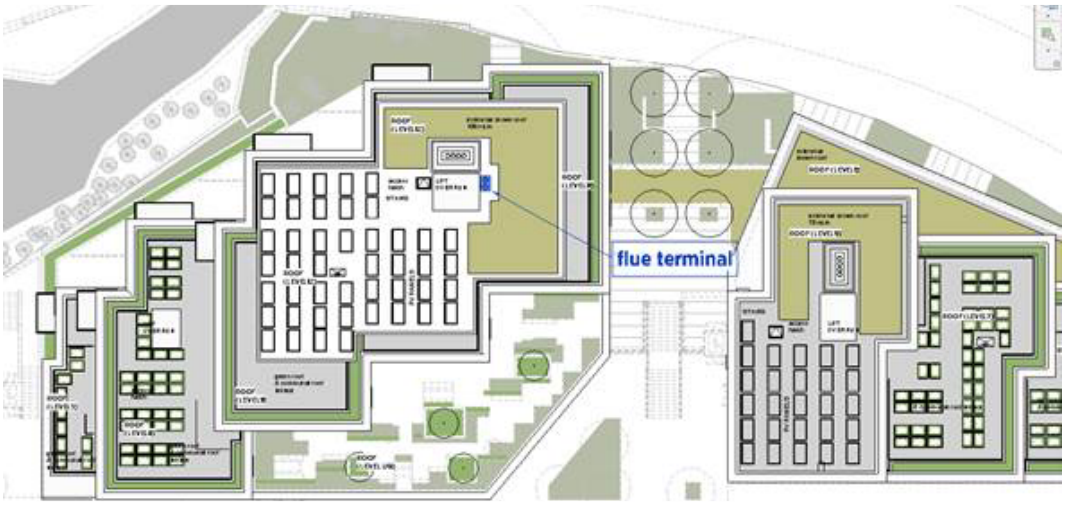
Table 4 Process Conditions

Parameter	Unit	CHP Boiler	Gas Boiler 1	Gas Boiler 2
Boiler capacity	kW	110	268	268
Stack location	NGR	529771, 183671	529771, 183671	529771, 183671
Stack diameter	m	0.12	0.12	0.12
Flue gas efflux velocity	m/s	11.7	10	10
Temperature	˚C	80	90	90
Stack height	m	45	45	45
NOx	g/s	0.014	0.0017	0.0017

Figure 5 Stack location



[17] Energator Small scale combined heat and power units, CHP Unit, MHS Boilers 2013.
[18] Ultramax R600 Gas Boiler, MHS Boilers 2013.



NO_x to NO_2

The model predicts 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, 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: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 has followed the methodology set out by the Environment Agency[19] 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.

5.4 Assessment of Significance

EPUK Guidance

The EPUK Guidance provides an approach to determining the significance of impacts resulting from a proposed development on local air quality for individual receptors. It incorporates the latest position of the IAQM on impact significance.

Impact on Individual Receptors

The 2010 EPUK guidance note Development Control: Planning for Air Quality responds to the need for closer integration between air quality and development control. It provides a framework for air quality considerations within local development control processes, promoting a consistent approach to the treatment of air quality issues within development control decisions.

This document updates the guidance originally published by EPUK (formerly known as the National Society for Clean Air and Environmental Protection) in November 2004 (and subsequently revised in September 2006). The guidance has been widely used by local authorities, air quality consultants and developers.

[19] Environment Agency, Air Quality Modelling and Assessment Unit, Conversion ratios for NOx and NO_2

The EPUK Guidance provides an approach to determining the significance of impacts resulting from a proposed development on local air quality for individual receptors. The EPUK Guidance incorporates the latest position of the IAQM on impact significance. Firstly descriptors of change are determined as follows:

- Predict the absolute change (in $\mu g/m^3$) in the annual mean concentrations of NO_2.
- Determine the magnitude of change resulting from the proposed development using the criteria set out in Table 5.
- Use the magnitude to determine the impact descriptor. The impact descriptor depends on the magnitude of change in the predicted concentrations in relation to the relevant objective/limit value.

The impact descriptor is then used in the assessment of significance.

Table 5 Definition of Impact Magnitude for Changes in Pollutant Concentrations

Magnitude of Change	Change in NO_2 Annual Mean Concentrations (µg/m3)
Large	> 4.0
Medium	2.0 – 4.0
Small	0.4 – 2.0
Imperceptible	< 0.4

Factors to Judge Significance

The EPUK Guidance provides a set of factors, shown in Table 6, that determine the significance of effects arising from a proposed development in terms of air quality. It states that these factors (allowing for professional judgement to be made) should be given weighting equal to a flowchart determination method, described further below and shown overleaf in Table 6. These factors should be considered before a suitably qualified professional can determine, with sufficient justification, whether the overall significance of a potential development should be termed '*insignificant'*, '*minor'*, '*moderate'* or '*major'*.

This method is less prescriptive than the flow chart determination method shown in Table 6 and allows for professional judgement to be made on a case by case basis. The use of professional judgement is important as rigorous application of a numerical or prescriptive approach can lead to anomalous assessment conclusions.

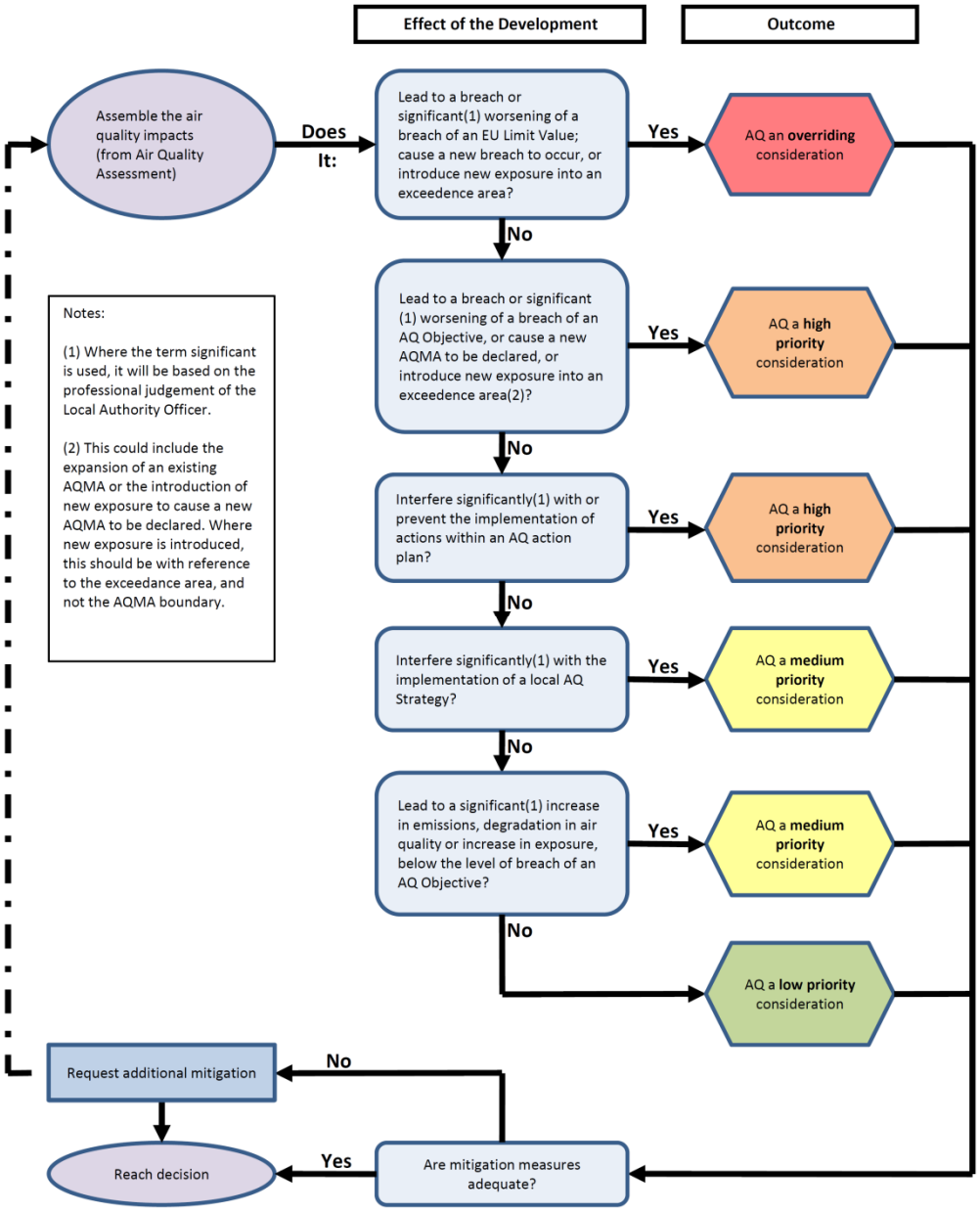
Table 6 EPUK Factors to Judge Significance

- Number of people affected by *slight*, *moderate* or *major* air quality impacts and a judgement on the overall balance.
- Where new exposure is being introduced into an existing area of poor air quality, then the number of people exposed to levels above the objective or limit value will be relevant.
- The magnitudes of the changes and the descriptions of the impacts at the receptors.
- Whether or not an exceedance of an objective or limit value is predicted to arise in the study area where none existed before or an exceedance area is substantially increased.
- Whether or not the study area exceeds an objective or limit value and this exceedance is removed or the exceedance area is reduced.
- Uncertainty, including the extent to which worst case assumptions have been made.
- The extent to which an objective or limit value is exceeded, e.g. an annual mean NO_2 of $41\mu g/m^3$ should attract less significance than an annual mean of $51\mu g/m^3$.

Flowchart to Determine the Priority of Air Quality in the Planning Process

A second approach is also detailed in the EPUK Guidance that provides guidance on the priority that air quality issues should be given in the planning process. This approach is based around a flowchart (Figure 6) which assumes that air quality impacts have been assessed and quantified. The priority that air quality issues should be afforded in the planning process is then determined through a series of questions with closed (yes and no) answers. Each question is addressed in descending order until the arrow points to one of the outcomes in the right hand column.

Figure 6 EPUK Flowchart to Determine Priority of Air Quality in the Planning Process



Assessment against the air quality neutral benchmarks

As discussed in section 5.3, the SPG on sustainable design and construction sets an 'air quality neutral' policy for buildings and transport, through the use of emissions benchmarks. As stated in the SPG, "developments that do not exceed these benchmarks will be considered to avoid any increase in NO_x and PM emissions across London as a whole and therefore be air quality neutral".

The guidance states that where the emissions of the previous site are known these can be used to compare against the emissions from the proposed site. Otherwise benchmarks can be applied.

As the transport use of the existing site is known, a qualitative assessment against the change in emissions can be made rather than using the air quality neutral benchmarks.

Building Emission Benchmarks (BEBs) have been set for NO_x according to the land-use classes of the development. These are presented in Table 7. Only NO_x is included as the gas boilers used do not require assessment against PM_{10} output.

In order to calculate the emissions from the Development and apply the BEBs, the following information is required:

- Gross floor area (m^2) (for land-use classes A2 and B1, C3);
- Fossil fuel energy density (kWh/m^2) for different land-use classes;
- Local gas consumption data;
- NO_x emission factors for gas; and
- Annual NO_x emission rates from the Development.

NO_x emissions (kg/annum) for each land-use class in the Development need to be calculated and summed to give the total building emissions. The BEBs for the Development are then calculated using the values in Table 7 and subtracted from the total building emissions for the development. Should the outcome be negative, then the building emissions from the Development are within the benchmark, thus no mitigation or offsetting would be required.

Table 7 Air quality neutral emissions benchmarks for building emissions

Land-use class	Central Area Zone & Camden
NOx (g/m^2/annum)	
Business (B1)	30.8
Residential (C3)	26.2

6 Baseline Assessment

Sources of Air Pollution

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, regulated through the Pollution Prevention and Control (PPC) system[20,21]. 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 no Part A processes with releases to air within 2km of the development site listed on the EA website.

Local Air Quality

As mentioned in Section 4, the Environment Act 1995 requires local authorities to review and assess air quality with respect to the objectives for seven pollutants specified in the National Air Quality Strategy. Local authorities are required to carry out an Updating and Screening Assessment (USA) of their area every three years. If the USA identifies potential hotspot areas likely to exceed air quality objectives, then a Detailed Assessment of those areas is required. Where objectives are not predicted to be met, local authorities must declare the area as an AQMA. In addition, local authorities are required to produce an Air Quality Action Plan (AQAP) which includes measures to improve air quality within the AQMA.

As part of the review and assessment process, LBoC has declared an AQMA within their area of jurisdiction declared due to exceedences of NO_2 annual mean objective and the PM_{10} 24-hour mean. The AQMA area covers the whole borough.

Local Monitoring

LBoC undertake both continuous and passive monitoring within the borough. A review of the most recent LAQM report[22] indicated that there are two continuous monitors south of the proposed development. Recent monitoring results are shown in Table 8.

[20] Directive 2010/75/EU of the European Parliament and of the Council of 24 November 2010 on industrial emissions (integrated pollution prevention and control)
[21] The Environmental Permitting (England and Wales) (Amendment) Regulations 2013, SI 2013/390
[22] 2013 Air Quality Progress Report for the London Borough of Camden, LBoC, 2013.

Table 8 Automatic monitoring sites within 2km of proposed development

Site		OS grid reference		NO_2 concentrations (µg/m^3)		
		X	Y	2010	2011	2012
LB	London Bloomsbury	530120	182034	**55**	**50**	**55**
CD9	Euston Road	529870	182640	-	**123**	**106**

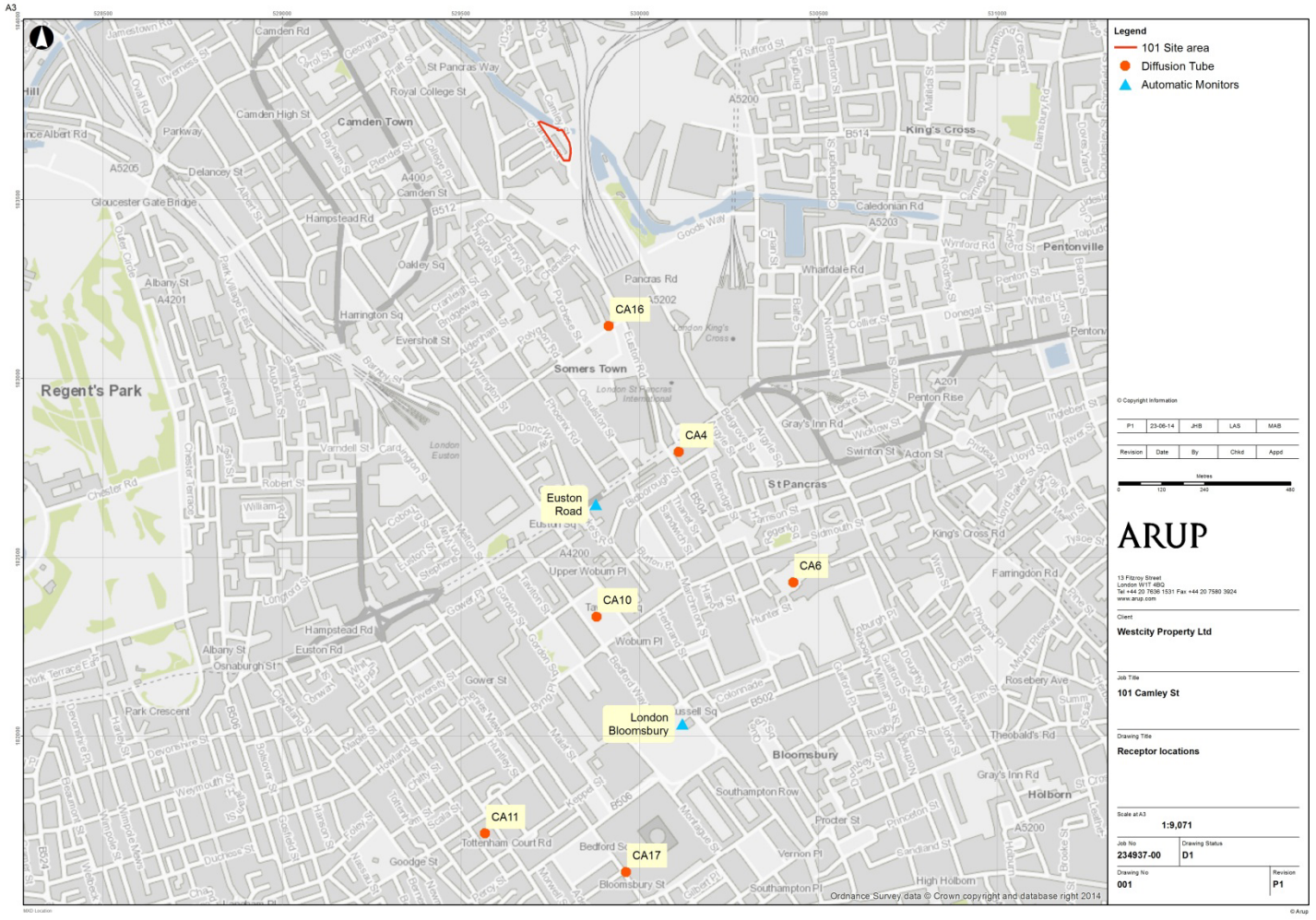
There are six diffusion tubes located within a few kilometres of the proposed development site. Location details and monitoring results for 2010 to 2012 at these sites are presented in Table 9 and their locations shown in Figure 7. Exceedences of the annual mean NO_2 objective (40µg/m^3) are displayed in bold.

Table 9 Diffusion tubes within 2km of proposed development

Monitoring Site		Location Type	NO_2 concentrations (µg/m^3)		
			2010	2011	2012
CA4	Euston Road	Roadside	**82.0**	**93.1**	**82.1**
CA6	Wakefield Gardens	Urban background	**34.0**	**45.6**	39.3
CA10	Tavistock Gardens	Urban background	**52.0**	**47.6**	**40.1**
CA11	Tottenham Court Road	Kerbside	**92.0**	**91.7**	**83.3**
CA16	Brill Place	Roadside	**54.0**	**50.8**	**50.0**
CA17	Bloomsbury Street	Roadside	**41.0**	**76.7**	**71.7**

It can be observed that measured NO_2 concentrations at all monitoring sites have exceeded the annual mean NO_2 objective at some point in the last few years.

Figure 7 Monitoring Site Locations



Background concentrations

The DEFRA website[23] includes estimated background air pollution data for a baseline year of 2013 for NO_x, NO_2 and PM_{10} for each 1km by 1km OS grid square. Estimated pollutant concentrations in the OS grid square in which the site lies for 2013 are shown in Table 10. The annual mean NO_2 background concentrations are currently close to the air quality objective level (40µg/m^3) and are predicted to remain high in the future. Annual mean particulate matter concentrations are within the air quality objective (40µg/m^3).

Table 10 Baseline (2013) background pollutant concentrations (µg/m^3)

OS grid square		2013		
X	Y	NO_x	NO_2	PM_{10}
529500	183500	73.9	39.6	21.9

There were no major highway links, such as Motorways or A-roads, within the assessment extents. As such, the background concentrations provided by DEFRA are considered a reasonable estimation of existing levels in the vicinity of the site.

Additionally these modelled concentrations link closely to the monitored urban background results at tubes CA6 and CA10. As such the DEFRA modelled concentrations have been used in this assessment.

[23] http://laqm.defra.gov.uk/review-and-assessment/tools/background-maps.html

7 Construction Assessment

The site is currently occupied by a storage distribution warehouse. As such, demolition will be required to enable the development, the effects of which are considered in the following section. A photo of the existing building is included in Appendix C.

Sensitive Receptors

Sensitive receptors are defined as those properties/schools/hospitals that are likely to experience a change in pollutant concentrations and/or dust nuisance due to the construction and operation of the proposed development. There are sensitive receptors located within 350m of the site boundary (Figure 8); there are numerous residential dwellings in this area. As such, their sensitivity to dust soiling and PM_{10} exposure has been classified as *high* according to the IAQM guidance.

Need for assessment

An assessment is required due to the presence of sensitive receptors within 350m of the proposed development site and within 50m of the trackout routes as mentioned in Section 5.2. Camley Street Natural Park is located approximately 200m south of the development however, there are no ecological designated sites sensitive to dust within 50m of the site and so this element of the assessment is not considered further.

Dust Emission Magnitude

Following the methodology outlined in Section 5.2 and the criteria presented in Table A1 (see Appendix B), each dust-generating activity has been assigned a dust emission magnitude as shown in Table 11. For earthworks, it has been assumed that these will occur in the whole site area as a worst case. For trackout, it has been assumed that construction vehicles will use Camley Street from the south to access the site.

Table 11 Dust emission magnitude for construction activities

Activity	Dust emission magnitude	Reasoning
Demolition	Small	Total building volume <20,00m^3 Majority of demolition activities <10m above ground
Earthworks	Medium	Earthworks area 2,700m^2
Construction	Medium	Estimated total building volume 25,000 - 100,000m^3 Potentially dusty construction material
Trackout	Medium	Estimated number of daily HDV trips between 10 and 50 Surface material with low potential for dust release

Sensitivity of the Area

The sensitivity of the area to dust soiling has been assigned as *medium*, as there are >10 sensitive receptors within 50m from any dust generating activity. The lower threshold for PM_{10} in the IAQM guidance is 24µg/m^3. As the background concentrations in the 1km by 1km grid square where the site is located is close to this threshold (21.9µg/m^3) a conservative approach has been taken to assume a background concentration of 24µg/m^3. As there are between 10 and 100 receptors within 50m of the site the sensitivity of the area to human health impacts has been assigned as *low*. The overall sensitivity has been summarised as shown in Table 12.

Table 12 Sensitivity of the surrounding area

Potential Impact	Sensitivity of the surrounding area			
	Demolition	Earthworks	Construction	Trackout
Dust Soiling	Medium	Medium	Medium	Medium
Human Health	Low	Low	Low	Low

Using the criteria set out in the risk of dust impacts table in the appendix the impacts on the area without mitigation are defined. Appropriate mitigation measures will be included within the construction plans.

Risk of Impacts

Taking into consideration the dust emission magnitude and the sensitivity of the area, the site has been classified as *medium risk* for all activities at worst (Table 13). Specific mitigation is described in Section 0.

Table 13 Summary dust risk table prior to mitigation

Activity	Dust risk prior to mitigation
Demolition	Low
Earthworks	Medium
Construction	Medium
Trackout	Low

Cumulative Construction Dust

There are plans for further residential developments approximately 30m north-east and 20m east of the development. Although the schedule of these proposals is not known at this stage, there is the potential for cumulative dust emissions if the construction programmes run in parallel. Mitigation measures such as those outlined in Section 0 should therefore be implemented throughout the construction of these developments. At present it is anticipated construction of 101 Camley Street will commence after 103 has been completed.

Figure 8 Sensitive Receptor Locations 350m from Site Boundary

8 Operational Assessment

Road Traffic Emissions

Any additional vehicle movements associated with the operation of the proposed development will generate exhaust emissions, such as NO_2 and PM_{10}, on the local and regional road networks. The development will be car free except for 13 disabled spaces in the basement.

A transport assessment (TA) has been prepared for the site by TTP Consulting, this assessment indicated the number of vehicles on the local roads is likely to significantly reduce as a result of the development. The existing site generates 192 movements per day, many of which are HGVs. The proposed development will reduce this number to 86 per day.

Based on the above information, the proposed development is not anticipated to result in a change in AADT flows of more than 1,000, produce over 200 HDV movements per day or significantly affect average speeds on the local road network. Additionally, it is unlikely that the proposed development will generate or increase traffic congestion, give rise to a significant change in AADT or peak traffic flows or in vehicle speed, significantly alter the traffic composition on local roads or include significant new car parking. As such, potential air quality impacts associated with operational phase road vehicle exhaust emissions are predicted to be negligible, in accordance with the DMRB and EPUK screening criteria shown in Section 5.3.

As a result of this decrease in traffic from the original site use, it is likely the air pollution as a result of development related vehicles will improve. The total emissions as a result of the development will be very minimal due to the small number of allocated vehicle spaces and anticipated vehicle movements. As such road traffic emissions will not be significant.

Energy Centre Emissions

Dispersion modelling was undertaken with the inputs described in Section 5.3.

Nitrogen Dioxide

Predicted annual mean NO_2 concentrations at the identified receptor locations at the minimum and maximum exposure heights are summarised in Table 14.

Table 14 Predicted NO_2 Concentrations

Receptor	Id	Process Contribution Annual Mean NO_2	Magnitude of change Annual Mean NO_2
Crofters Way 1	1	0.02	Imperceptible
Crofters Way 2	2	0.03	Imperceptible
Hospital 1	3	0.12	Imperceptible
Hospital 2	4	0.43	Small
Hospital 3	5	0.07	Imperceptible
Hospital 4	6	0.04	Imperceptible
Hospital 5	7	0.07	Imperceptible
Hospital 6	8	0.03	Imperceptible
Hospital Centre	9	0.21	Imperceptible
102 Camley St 1	10	0.75	Small
102 Camley St 1 - a	10	0.75	Small
102 Camley St 1 -b	10	0.75	Small
102 Camley St 2	11	0.77	Small
102 Camley St 2 - a	11	0.76	Small
102 Camley St 2 - b	11	0.75	Small
102 Camley St 3	12	0.09	Imperceptible
102 Camley St 3 - a	12	0.1	Imperceptible
102 Camley St 3 - b	12	0.14	Imperceptible
103 Camley St 1	13	0.07	Imperceptible
103 Camley St 1 - a	13	0.06	Imperceptible
103 Camley St 2	14	0.09	Imperceptible
103 Camley St 2 - a	14	0.07	Imperceptible
Hospital 7	15	0.3	Imperceptible
Hospital 8	16	0.54	Small
103 Camley St 3	17	0.01	Imperceptible
103 Camley St 3 - a	17	0.03	Imperceptible
101 Camley St 1	18	0.21	Imperceptible
101 Camley St 2	19	0.99	Small
101 Camley St 3	20	0.3	Imperceptible
101 Camley St 4	21	0.67	Small
102 Camley St 4	22	0.18	Imperceptible
102 Camley St 4 - a	22	0.18	Imperceptible
102 Camley St 4 - b	22	0.26	Imperceptible

As indicated in Table 14, the largest increase in annual mean NO_2 concentrations is R19 located on the east of the development façade with an increase of 0.99µg/m^3. All other receptors experience lesser increases in annual mean NO_2 concentrations. The predicted magnitude of change of annual mean NO2 concentrations is predicted to be *small to imperceptible* for all receptors.

The hourly mean NO_2 objective is predicted to be met at the site location, therefore total pollutant concentrations are likely to remain below the objective once the process contribution from the energy centre has been added. Therefore, the significance of the energy centre will be *negligible* for hourly mean NO_2 concentrations at all assessed receptors.

Assessment against air quality neutral

The input data for the air quality neutral assessment of the proposed development are presented in Table 15.

Table 15 Input data to air quality neutral assessment

Land use	GFA (m^2)	Building NOx emissions (g/s)
Class B1	2219	0.0175
Class C3	17975	

The building emission benchmarks have been calculated using the gross floor area for each land use type and the relevant benchmarks from the guidance as presented in Table 7. The overall BEB for the development is then the sum of these emissions.

Table 16 Building emission benchmarks for the proposed development

Land-use	NOx (kg/annum)
Class B1	68.3
Class C3	470.9
	539.2

Table 17 Comparison of the TBE and BEB (kg/annum)

Pollutant	TBE	BEB	Difference
NOx	390	539	-149

Table 17 shows the comparison of the TBE and BEB for the development. The NO_x emissions for the proposed development do meet the benchmark for this development.

9 Mitigation

Construction

The dust emitting activities assessed in section 5 can be greatly reduced or eliminated by applying the site specific mitigation measures for *medium risk* sites according to the IAQM guidance. The following measures from the guidance are relevant and should be included in the Construction Management Plan for the site.

General

- 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.

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.

Monitoring

- 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 PM_{10} 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 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.
- 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.

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.
- Avoid scabbling (roughening of concrete surfaces) if possible.

Waste management

- Avoid bonfires and burning of waste materials.

Operation

The operational assessment indicated no mitigation was required with regards to the impact of the development on human health. Therefore no mitigations measures are required.

The CHP and boiler used meets the benchmarks from the air quality neutral guidance so no mitigation is required.

10 Summary

This report presents the air quality assessment for a proposed mixed use development at 101 Camley Street, Camden. A review of the current legislation and planning policy has been undertaken, along with a baseline assessment describing the current air quality conditions in the vicinity of the proposed development and an assessment of air quality impacts associated with traffic generated by the scheme.

The site of the proposed development is located within the LBoC AQMA, designated due to exceedences in the relevant air quality standard for annual means NO_2 concentrations and the 24-hour PM_{10} concentrations.

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

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

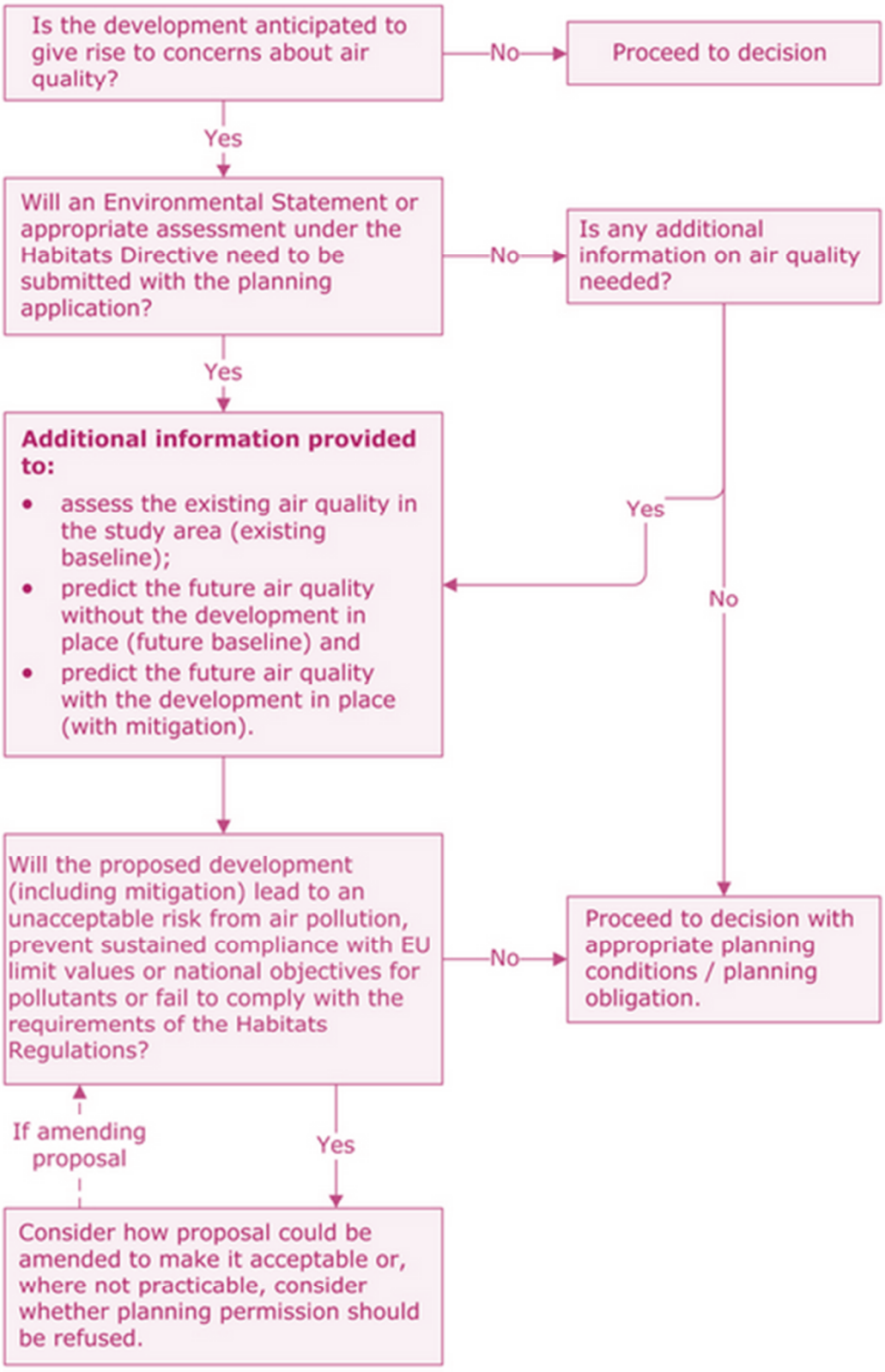
The results of the dispersion modelling assessment indicated that emissions associated with the operation of CHP unit and gas boilers for development heating were *small to insignificant*. As such, the operation of the proposed development is expected to have an overall *negligible* impact to the surrounding area and air quality is considered of *minor significance* in the planning process.

The assessment against air quality neutral guidance indicated the choice of boiler selected for the site did meet the criteria for the proposed development.

Appendix A

Air Quality – PPG Flowchart

A1 PPG Flowchart



Appendix B

Construction Dust Assessment

B1 Construction Dust Assessment

Table A1 Categorisation of dust emission magnitude

Dust Emission Magnitude		
Small	**Medium**	**Large**
Demolition		
• total building volume <20,000m^3 • 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 - 50,000m^3 • potentially dusty construction material • demolition activities 10 - 20m above ground level	• total building volume >50,000m^3 • potentially dusty construction material (e.g. concrete) • on-site crushing and screening • demolition activities >20m above ground level
Earthworks		
• total site area <2,500m^2 • 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 2,500m^2 - 10,000m^2 • 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 >10,000m^2 • 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 m^3 • construction material with low potential for dust release (e.g. metal cladding or timber)	• total building volume 25,000 - 100,000m^3 • potentially dusty construction material (e.g. concrete) • on-site concrete batching	• total building volume >100,000m^3 • 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

Table A2 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	< 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

Table A3 Sensitivity of the area to human health impacts

Background PM_{10} concentrations (annual mean)	Number of receptors	Distance from the source (m)				
		< 20	< 50	< 100	< 200	< 350
High receptor sensitivity						
> 32µg/m^3	> 100	High	High	High	Medium	Low
	10 – 100			Medium	Low	
	< 10		Medium	Low		
28 – 32µg/m^3	> 100	High	High	Medium	Low	Low
	10 – 100		Medium	Low		
	< 10					
24 – 28µg/m^3	> 100	High	Medium	Low	Low	Low
	10 – 100					
	< 10	Medium	Low			
< 24µg/m^3	> 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

Table A4 Sensitivity of the area to ecological impacts

Receptor sensitivity	Distance from the source (m)	
	< 20	< 50
High	High	Medium
Medium	Medium	Low
Low	Low	Low

Table A5 Risk of dust impacts

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

Appendix C

Existing Building