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Fairview Ventures Limited

Centric Close, Camden

Air Quality Assessment

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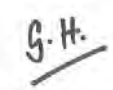

Project Revision Sheet

Revision No	Date	Status	Changes	Author	Checked
0	13 December 2016	Draft	-	S. Hashemi	G. Hodgkiss

Contents **Page**

Figures

Appendices

Executive Summary

MLM Consulting Engineers Ltd was commissioned by Fairview Ventures Limited ('the Client') to undertake an Air Quality Assessment for the proposed construction of a new residential led mixed-use development in Centric Close, Camden.

The Local Authority responsible for determining the planning application is London Borough of Camden. This report is to support the planning application for the proposed demolition of existing buildings and the erection of 76 residential units and 1,219 sqm of commercial floor space (Use Class B1) over four, five, six and seven storeys providing a mix of one, two and three bed apartments. The development includes a landscaped courtyard and communal amenity areas.

The redevelopment of the site will make a positive enhancement to the visual appearance of the area, providing much needed homes for the local area, including commercial floor space to reflect the Council's aspirations for the area.

The proposed scope of this assessment was forwarded to the Air Quality Team at London Borough of Camden in November 2016 for review and appraisal of the proposed scope and methodology, however no specific comments were received.

The assessment, using the ADMS Roads Extra dispersion model, determined the impact of the emissions from the local traffic on the proposed development, as well as the impact of the operation of the development on local air quality and nearby sensitive receptors. The latter involves the modelling of the emissions from the proposed combined heat and power (CHP) plant and central boilers, plus the impact of worst-case additional traffic flows on local roads.

The modelling results were compared against the objectives set out in the Air Quality (England) Regulations of 2000. The latest guidance from the Institute of Air Quality Management (IAQM) and Environmental Protection UK (EPUK) document 'Land-Use Planning & Development Control: Planning for Air Quality (May 2015 v1.1)' was also used in the assessment. This document was produced as a guide for both consultants and local planners to assist with the use of air quality assessment in the local development control process.

The performance of the ADMS-Roads Extra model has been verified using the ratified monitoring data from the diffusion tube located on Camden Road and Kentish Town Road. An appropriate adjustment factor was applied to the predicted modelling results.

The results of the assessment are as below:

- The objective for the annual mean NO_2 concentration is 40 µg/m³. This objective is forecast to be met at all receptors representative of the proposed development
- The annual mean objective is forecast to be exceeded at six existing receptors in all future scenarios (with and without scheme), due to existing poor air quality
- The short-term hourly objective for NO_2 is expected to be met at all locations. The PM_{10} and $PM_{2.5}$ concentrations are forecast to meet their respective long and short term objectives by a considerable margin
- In the 2019 'with development' scenario, no new exceedances are created at existing receptors
- The largest impact descriptors ('Slight Adverse') are seen on various floors of the adjacent building but the overall NO_2 concentrations are still below the annual mean objective at these receptors. Impact descriptors at all other existing receptors are negligible

Given the above, it is concluded that the setting of the new mixed-use development is suitable for its proposed purpose in terms of air quality.

A qualitative assessment on the construction phase activities has also been carried out. The risk of the different activities towards dust soiling ranges from **'Low to Medium'**, and that for human health impact ranges from **'Negligible to Low'**. Following implementation of the appropriate mitigation measures as outlined in the report, the impact of emissions during construction of the proposed development would be **'not significant'**.

An Air Quality Neutral Assessment was compiled to support the planning application for the proposed development. The assessment indicates that the total NO_x and PM_{10} emissions from both the road traffic vehicles meet the Air Quality Neutral Benchmark for the residential element of the development, but not the commercial element. Current guidance recommends that in circumstances where the benchmark is exceeded, mitigation measures to reduce emissions may be applied on-site or off-site. Where this is not practical or desirable, some form of pollutant offsetting could be applied. The emissions for the proposed heating plant meet the Air Quality Neutral benchmark and therefore no further action is required with respect to emissions from energy plant.

According to the London Councils Air Quality and Planning Guidance, the Air Pollution Exposure Criteria (APEC) for the proposed new development is **APEC-A**. Current Guidance published by the London Councils suggests that there should be "No air quality grounds for refusal; however mitigation of any emissions should be considered", reinforcing the conclusions from the Air Quality Neutral Assessment.

However, a further range of mitigation measures will be required to offset the exceedance of the Air Quality Neutral Benchmark for the Energy Centre Emissions, should the future capacity of the Energy Centre be expanded to include three or four CHP units. These include a package of sustainable transport initiatives to encourage higher levels of walking, cycling and public transport use will be supported by the submission of a bespoke Travel Plan. The wider campus provides three electric vehicle charging points to encourage uptake of low emission vehicles levels, and a total of 113 cycle parking spaces to encourage modal shift; 24 cycle parking spaces will be located adjacent to the development.

In order to mitigate potential operational phase air quality impacts, a Travel Plan will be submitted to encourage future residents to use alternative transport modes rather than private vehicles, with an aim to further reduce the number of traffic to be generated by the proposed development. Cycle parking will also be provided on site, comprising dedicated, secure storage areas. The scheme will provide a total of 138 long-stay and five short-stay cycle parking spaces, of which 124 long-stay and two short-stay spaces will be provided for residential use.

To minimise the need for future households to own a vehicle and reduce demand for on-site parking, the client will provide support towards existing car clubs within the vicinity of the site (final details to be agreed). It is anticipated that the car free nature of the residential aspect of the development would be secured via Section 106 planning obligation preventing future residents form purchasing parking permits within the surrounding Car Parking Zones.

Air quality constitutes a material consideration in the determination of planning applications. However, with the effective implementation of appropriate mitigation measures listed in this report, it is considered that air quality should not present a constraint to the granting of planning permission for the proposed development on this occasion.

Limitations and Exceptions

1 This report and its findings should be considered in relation to the terms and conditions proposed and scope of works agreed between MLM Consulting Engineers Ltd and the client.

2 The Executive Summary, Conclusions and Recommendations sections of the report provide an overview and guidance only and should not be specifically relied upon until considered in the context of the whole report.

3 This report provides available factual data for the site and the surrounding area at the time of the study and as obtained by the means described in the text. The data is related to the site on the basis of the site location information provided by the Client.

4 It should be appreciated that the information that has been made available to date, is not necessarily exhaustive and that further information relevant to the proposed site usage may be provided which could change the overall findings.

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6 The content of websites visited during the internet searches has not been validated and is accepted de facto and without prejudice. Anyone relying upon the information obtained from such sources does so at their own risk. Notwithstanding, MLM takes all reasonable care in assessing information only from reputable and professional sources. No responsibility can be accepted by MLM for inaccuracies within the data supplied.

7 This report is prepared and written in the context of the proposals stated in the introduction to this report and should not be used in a differing context. Furthermore, new information, improved practices and legislation may necessitate an alteration to the report in whole or in part after its submission. Therefore, with any change in circumstances or after the expiry of one year from the date of the report, the report should be referred to us for re-assessment and, if necessary, re-appraisal.

1 Introduction

1.1 General

MLM Consulting Engineers Ltd was commissioned by Fairview Ventures Limited ('the Client') to undertake an Air Quality Assessment for the proposed construction of a new residential led mixed-use development in Centric Close, Camden NW1 7EP.

The Local Authority responsible for determining the planning application is London Borough of Camden (LBC). This report is to support the planning application for the proposed demolition of existing buildings and the construction of a residential led mixed-use development.

The redevelopment of the site will make a positive enhancement to the visual appearance of the area, providing much needed homes for the local area, including commercial floor space to reflect the Council's aspirations for the area.

The proposed scope of this assessment was forwarded to the Air Quality Team at LBC Council in November 2016 for review and appraisal of the proposed scope and methodology, however no specific comments were received.

1.2 Report Structure

The structure of the report is summarised below:

- A brief description of the site and proposed development
- A brief description of the legislation governing air quality in England
- Details of the method and the input data used for the assessment
- Results of the assessment
- Construction Dust Risk assessment
- Air Quality Neutral assessment
- Mitigation measures
- Conclusions

1.3 Objective

The objective of this assessment is to use the Gaussian-based ADMS-Roads Extra software developed by Cambridge Environmental Research Consultants (CERC) to predict the impact of the local air quality on the proposed development, as well as the impact of the operation of the development (including the Energy Centre emissions) on the existing Air Quality Management Area (AQMA) and nearby sensitive receptors. The assessment is based upon Local Authority and historical monitoring data available via the public domain. The scope of the assessment is limited to the pollutants nitrogen dioxide (NO_2) and Particulate Matter (PM_{10} and $PM_{2.5}$, i.e. particles with an aerodynamic diameter less than 10 µm and 2.5 µm in diameter respectively).

2 The Site

2.1 Location and Description

The site is located at Centric Close, Camden, and offers good access to Central London via the Euston Road (A501), west to the A40 (Westway) or east to The City.

The site, which is currently occupied by a number of commercial buildings, is situated to the west of Oval Road, opposite the junction with Gloucester Crescent. The western perimeter of the site is formed by the West Coast Main Line, whilst a mixture of residential and commercial properties borders the site to the north and south.

Figure 1 shows the red line application site boundary and the location of the proposed development.

The redevelopment of the site will make a positive enhancement to the visual appearance of the area, providing much needed homes for the local area, including commercial floor space to reflect the Council's aspirations for the area.

2.2 Proposed Development

The proposed development comprises the demolition of existing buildings and the erection of 76 residential units and 1,219 sqm of commercial floor space (Use Class B1) over four, five, six and seven storeys providing a mix of one, two and three bed apartments. The development includes a landscaped courtyard and communal amenity areas.

The latest parking provision is for a total of 14 spaces, with the following breakdown:

- Eight disabled residential parking bays
- One disabled commercial parking bay
- Four commercial parking bays
- One servicing/delivery bay

It is anticipated that the car free nature of the residential aspect of the development would be secured via Section 106 planning obligation, preventing future residents form purchasing parking permits within the surrounding Car Parking Zones.

The proposed scheme includes provision for an on-site CHP and boiler plant. These will be located within the plant room within Block A, with the flue stack exiting 1m above the roof level, which is the highest point of the development.

Figure 2 shows the proposed ground floor layout.

3 Legislation and Policy

3.1 International Legislation and Policy

The European Directive (2008/50/EC)[1] sets legally binding limits for concentrations of outdoor air of major air pollutants that impact public health such as particulate matter (PM_{10} and $PM_{2.5}$) and nitrogen dioxide (NO_2). The European Directive is implemented in the UK under the Air Quality Standards Regulations 2010[2]. The obligations under the Air Quality Standards Regulations 2010 are separate from those of the 2000 and 2002 UK Regulations[3, 4] because local authorities in the UK will only have powers to manage some of the pollutants in the Air Quality Standards Regulations 2010; most of the source pollutants will be managed by the Environment Agency under the IPPC Regime. Therefore the obligation to meet the Air Quality Standards Regulations 2010 rests with the Secretary of State for Environment.

3.2 National Legislation and Policy

3.2.1 Local Air Quality Management

Part IV of the Environment Act 1995[5], requires the UK Government to publish an Air Quality Strategy and local authorities to review, assess and manage air quality within their areas. This is known as Local Air Quality Management (LAQM). The 2007 Air Quality Strategy[6] establishes the policy for ambient air quality in the UK. It includes the National Air Quality Objectives (NAQOs) for the protection of human health and vegetation for 11 pollutants. Those NAQOs included as part of LAQM are prescribed in the Air Quality (England) Regulations 2000 and the Air Quality (Amendment) (England) Regulations 2002.

Table 3.1 presents the NAQOs for the key pollutants of concern in relation to vehicle emissions: NO_2, PM_{10} and $PM_{2.5}$.

Table 3.1 Relevant Objectives Set Out in the Air Quality Strategy

Pollutant	Concentrations	Measured As	Date to be Achieved by
Nitrogen Dioxide (NO_2)	200 µg/m^3 not to be exceeded more than 18 times per year	1 hour mean	31 December 2005
	40 µg/m^3	Annual mean	31 December 2005
Particulate Matter (PM_{10})	50 µg/m^3 not to be exceeded more than 35 times per year	24 hour mean	31 December 2004
	40 µg/m^3	Annual mean	31 December 2004
Particulate Matter ($PM_{2.5}$)	25 µg/m^3	Annual Mean	2020

The Air Quality Strategy also introduced a new policy framework for tackling fine particles ($PM_{2.5}$) including an exposure reduction target. However, although EU Directive 2008/50/EC includes a new regulatory framework for $PM_{2.5}$ this pollutant is not included within LAQM, therefore there is no requirement to assess this pollutant unless as part of an Environmental Impact Assessment (EIA).

The NAQOs apply to external air where there is relevant exposure to the public over the associated averaging periods within each objective. Guidance is provided within the recently published London Local Air Quality Management Technical Guidance 2016 (LLAQM.TG (16)) [7] issued by the Greater London Authority (GLA) to support London boroughs in carrying out their duties under the Environment Act 1995 and connected regulations. Information on where the NAQOs apply is provided in Table 3.2. The objectives do not apply in workplace locations, to internal air or where people are unlikely to be regularly exposed (i.e. centre of roadways).

Table 3.2 Locations Where Air Quality Objectives Apply

Averaging Period	Objectives Should Apply at:	Objectives Should Generally Not Apply at:
Annual mean	All locations where members of the public might be regularly exposed. Building façades of residential properties, schools, hospitals, care homes etc.	Building façades of offices or other places of work where members of the public do not have regular access. Hotels, unless people live there as their permanent residence. Gardens of residential properties. Kerbside sites (as opposed to locations at the building façade), or any other location where public exposure is expected to be short term.
24-hour mean and 8-hour mean	All locations where the annual mean objective would apply, together with hotels. Gardens of residential properties. [a]	Kerbside sites (as opposed to locations at the building façade), or any other location where public exposure is expected to be short term.
1-hour mean	All locations where the annual mean and: 24 and 8-hour mean objectives apply. Kerbside sites (for example, pavements of busy shopping streets). Those parts of car parks, bus stations and railway stations etc. which are not fully enclosed, where members of the public might reasonably be expected to spend one hour or more. Any outdoor locations where members of the public might reasonably expected to spend one hour or longer.	Kerbside sites where the public would not be expected to have regular access.
15-min mean	All locations where members of the public might reasonably be exposed for a period of 15 minutes.	

a – Such locations should represent parts of the garden where relevant public exposure to pollutants is likely, for example where there is seating or play areas. It is unlikely that relevant public exposure to pollutants would occur at the extremities of the garden boundary, or in front gardens, although local judgement should always be applied.

3.2.2 National Planning Policy Framework

Published on 27 March 2012, the National Planning Policy Framework (NPPF)[8] sets out the Government's planning policies for England and how these are expected to be applied. It replaces Planning Policy Statement 23: Planning and Pollution Control[9] which provided planning guidance for local authorities with regards to air quality.

At the heart of the NPPF is a presumption in favour of sustainable development. It requires Local Plans to be consistent with the principles and policies set out in the Framework with the objective of contributing to the achievement of sustainable development.

Current planning law requires that application for planning permissions must be determined in accordance with the relevant development plan (i.e. Local Plan or Neighbourhood Plan). The NPPF should be taken into account in the preparation of development plans and therefore the policies set out within the Framework are a material consideration in planning decisions.

The NPPF identifies 12 core planning principles that should underpin both plan-making and decision-taking, including a requirement for planning to *'contribute to conserving and enhancing the natural environment and reducing pollution'*.

Under Policy 11: Conserving and Enhancing the Natural Environment the Framework requires the planning system to *'prevent both new and existing developments from contributing to or being put at unacceptable risk or being adversely affected by unacceptable levels of air pollution'*.

In dealing specifically with air quality the Framework 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'*.

3.2.3 Control of Dust and Particulates Associated with Construction

Section 79 of the Environmental Protection Act (1990)[10] states that where a statutory nuisance is shown to exist, the local authority must serve an abatement notice. Statutory nuisance is defined as:

- *'Any dust or other effluvia arising on industrial, trade or business premises and being prejudicial to health or a nuisance'*
- *'Any accumulation or deposit which is prejudicial to health or a nuisance'*

Failure to comply with an abatement notice is an offence and if necessary, the local authority may abate the nuisance and recover expenses.

In the context of the proposed development, the main potential for nuisance of this nature will arise during the construction phase: potential sources being the clearance, earthworks, construction and landscaping processes.

There are no statutory limit values for dust deposition above which 'nuisance' is deemed to exist: 'nuisance' is a subjective concept and its perception is highly dependent upon the existing conditions and the change which has occurred.

However, research has been undertaken by a number of parties to determine community responses to such impacts and correlate these to dust deposition rates. However, impacts remain subjective and statutory limits have yet to be derived.

3.3 Regional and Local Planning Policy

3.3.1 Cleaning the Air – The Mayor's Air Quality Strategy, 2010

The Mayor of London's Air Quality Strategy[11] sets out a series of policies and proposals for implementation of the UK AQS and for the achievement of the air quality standards and objectives within Greater London. With regards new developments the following policies are of relevance:

- Policy 1 – Encouraging smarter choices and sustainable travel: The mayor will support a shift to public transport, by only supporting developments that generate high levels of trips in locations with good public transport accessibility, by supporting car free developments and encouraging the inclusion of infrastructure to support sustainable travel, such as cycling, electric vehicle charging points and car clubs

- Policy '6 - Reducing emissions from construction and demolition sites': The London Council's Best Practice guidance will be reviewed and updated, and more vigorously implemented

- Policy '7 - Using the planning process to improve air quality - new developments in London as a minimum shall be 'air quality neutral': The Mayor will encourage boroughs to require emissions assessments to be carried out alongside conventional air quality assessments. Where air quality impacts are predicted to arise from developments these will have to be offset by developer contributions and mitigation measures secured through planning conditions, section 106 agreements or the Community Infrastructure Levy

- Policy '8 - Maximising the air quality benefits of low to zero carbon energy supply': The Mayor will apply emission limits for both PM and NO_x for new biomass boilers and NO_x emission limits for Combined Heat and Power Plant (CHPP). Air quality assessments will be required for all developments proposing biomass boilers or CHPPs and operators will be required to provide evidence yearly to demonstrate compliance with the emission limits

- Policy '9 - Energy efficient buildings': The Mayor will set CO_2 reduction targets for new developments which will be achieved using the Mayor's Energy Hierarchy. These measures will result in reductions of NO_x emissions

- Policy '10 - Improved air quality in the public realm': The Mayor will encourage the improvement of air quality in the public realm by planting vegetation to trap particulate matter. Through the planning system the Mayor will increase the number of green roofs and living walls across London. Additionally, he will encourage the planting of trees in areas of poor air quality

3.3.2 The London Plan 2016

The London Plan 2016[12] was published in March and consolidated the London Plan 2011 with the Revised Early Minor Alterations to the London Plan[13] and the Further Alterations to the London Plan also published in March 2015[14] along with minor alterations in March 2016. The Plan is the overall strategic plan for London setting out an integrated economic, environmental, transport and social framework for the development of London over the next 20-25 years. It specifically addresses how development can help support the implementation of the Mayor's Air Quality Strategy and achieve a reduction in pollutant emissions and public exposure to pollution.

Policy 5.7 deals with renewable energy and states that 'all renewable energy systems should be located and designed to avoid any adverse impacts on air quality'.

'Policy 7.14 - Improving Air Quality' requires all development proposals to:

- Minimise increased exposure to existing poor air quality, make provision to address local problems of air quality (particularly within AQMAs) and promote greater use of sustainable transport modes through travel plans

- Promote sustainable design and construction to reduce emissions from demolition and construction of buildings including following current best practice guidance

- Be at least 'air quality neutral' and therefore not leading to further deterioration of existing poor air quality

- Look, in the first instance, to implement measures on-site to reduce emissions from a development. If inappropriate or impractical, other measures should be considered and where found to provide equivalent air quality benefits, planning obligations or planning conditions should be used to ensure their implementation

The policy also states that 'permission will only be granted where a detailed assessment of biomass boilers shows no adverse impact from emissions'.

3.3.3 Air Quality Neutral

All major developments in London, defined in The London Plan as residential use with over ten dwellings and other use with floor space ≥1,000 m^2, need to be assessed against emissions benchmarks for buildings and transport. Developments with emissions of NO_x and PM_{10} below these benchmarks are considered to avoid increasing concentrations across London as a whole, and hence referred to as 'air quality neutral'.

Developments that are not 'air quality neutral' and cannot reduce emissions further through on-site mitigation will be required to work with local planning authorities to off-set emissions through off-site measures, either provided directly by the developer, or as part of an existing scheme to improve air quality. The local planning authority will secure these measures through conditions or Section 106 agreements.

3.3.4 Local Planning Policy

LBC Council's Draft Local Plan[15] includes an air quality chapter. Within this, Policy CC4 states that:

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

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

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

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

Until the new Local Plan is adopted the Council's Local Development Framework from 2010 remains the relevant set of planning policy documents. A number of policies relating to improving air quality are contained within LBC Council's Core Strategy[16]. In particular policy CS16 (Improving Camden's health and wellbeing) recognises the impact of poor air quality on public health, which states that:

"The Council will seek to improve health and well-being in Camden. We will… recognise the impact of poor air quality on health and implement Camden's Air Quality Action Plan which aims to reduce air pollution levels".

The Core Strategy is supported by the Camden Development Policies document[17]. Policy DP32 sets out how LBC Council will expect developments to reduce their impact on air quality:

"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".

LBC Council has also prepared a Supplementary Planning Document - Camden Planning Guidance (CPG) 6 Amenity[18], which provides further guidance on air quality. It includes information on when an air quality assessment will be required, what an air quality assessment should cover and what measures can reduce air quality emissions and protect public exposure. LBC Council's overarching aim is for new development to be 'air quality neutral' and not lead to further deterioration of existing poor air quality. Mitigation and offsetting measures to deal with any negative air quality impacts associated with the development proposals may be required. The development should be designed to minimise exposure of occupants to existing poor air quality. It states that the Council requires assessments 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 NO_x and PM_{10} emissions.

3.3.5 Air Quality Action Plan

Camden Council has declared an AQMA for NO_2 and PM_{10} that covers the whole Borough, and has developed an Air Quality Action Plan. Camden's Clean Air Action Plan[19] outlines the Councils commitment to improving air quality in the Borough.

The key objectives of the plan are to reduce PM_{10} and NO_2 concentrations by:

- Encouraging reductions in fossil fuel use, the adoption of clean fuels and low emission technology and promote energy efficiency

- Raising awareness about air quality in Camden and promote lifestyle changes which can help reduce levels of air pollution and minimise exposure to air pollution

- Improving the health and well-being of the local population, including those that work and visit Camden

- Working in partnership with national and regional bodies, and with local public and private organisations, to foster and drive improvements in air quality

- Leading by example and reduce NO_2 and PM_{10} emissions associated with the Council's own buildings and transport services

- Ensuring actions which serve to reduce NO_2 and PM_{10} emissions complement actions to mitigate CO_2 emissions

4 Local Baseline Air Quality

The Council declared the whole borough as an Air Quality Management Area (AQMA) in 2002, for both nitrogen dioxide (NO_2) and fine particles (as PM_{10}), as modelled predictions confirmed that the annual mean NO_2 and 24-hour PM_{10} objectives were exceeded.

LBC Council's most recent Annual Progress Report within the public domain was published in 2015 and contains monitoring data from the 2014 calendar year.

LBC Council currently operates five automatic monitoring stations within its area but none of these are close to the proposed development site, all being over 2km away.

Fourteen diffusion tubes were deployed by LBC Council to monitor air quality at mainly roadside, kerbside and urban background locations in 2014.

The closest diffusion tube monitor which measures roadside NO_2 concentrations is CA23 located on Camden Road, approximately 700m to the east of the site and CA16 on Kentish Town Road, approximately 1.2km to the north east of the site (Figure 3).

The captured monitoring data from 2010 to 2014 for these diffusion tubes is summarised in Table 4.1 below.

Table 4.1 Selected NO_2 Diffusion Tubes data for 2012-2015 in RBK

Site	Eastings	Northings	Type	Measured NO_2 Concentration $\mu g/m^3$				
				2010	2011	2012	2013	2014
CA 16	529013	185102	Roadside	74.0	57.2	59.0	65.3	57.8
CA 23	529173	184129	Roadside	84.0	72.2	67.4	77.9	72.2

These locations show a consistent exceedance of the annual objective over the years, with some fluctuation of the measured values between 2010 and 2014.

5 Input for ADMS-Roads Dispersion Modelling

5.1 General

Atmospheric dispersion modelling has been undertaken using the ADMS-Roads Extra software suite (version 4.0.1.0) developed by Cambridge Environmental Research Consultants (CERC). The model uses a number of input parameters to simulate the dispersion of emissions and predictions of pollutant concentration at specified receptors are made across the area of interest. The details of the input parameters are described in the next section.

The following parameters are required to determine the air pollution concentration using the ADMS-Roads model:

- The assessment years
- Receptor(s) location(s) details
- Background concentration
- The road network details (including traffic volume and associated emissions)
- Meteorological data
- Traffic data

The details of the parameters used in the analysis for the site are presented below.

5.2 The Assessment Years

The selected assessment years are 2014 and 2019. 2014 was chosen as the base year to verify the modelling, 2019 was selected as the future year when the new development will be operating. The impact of local air quality on the operational development, as well as the operation of the site heating plant on nearby sensitive receptors, were assessed.

5.3 Receptors Locations

Various points along the façades of the new building have been chosen to assess the impact of local air quality on the proposed development. Also, sensitive receptors along the access roads near the site and the main junction to the south east of the site were chosen to evaluate the impact of emissions from operational traffic increases and the proposed Energy Centre.

Receptors at the proposed development have been selected to represent each floor of the building, assuming the following heights above ground:

- Ground floor (GF) – 1.5 m
- 1st Floor (1) – 5.1 m
- 2nd Floor (2) – 8.5 m
- 3rd Floor (3) – 10.3 m
- 4th Floor (4) – 14.3 m
- 5th Floor (5) – 17.5 m
- 6th Floor (6) – 20.8 m

The diffusion tubes CA16 and CA23 were included as receptors within the model for performance verification purposes. Interrogation of Google Street view images from November 2015 indicated that the diffusion tubes were mounted on a lamp post near the road, and the receptor coordinates were modified to reflect the current status. Table 5.1 and Figure 4 summarise and show the locations of the selected receptors points respectively.

Table 5.1 Receptor Locations

Rec. No	Receptor Name / Description	Easting	Northing	Height (m)
R1	Oval Rd	528553.2	183892.2	1.5
R2	Oval Rd	528589.8	183798.7	1.5
R3	Jamestown Rd	528588.4	183965.4	1.5
R4	Jamestown Rd-FLAT	528785.6	184046.3	4.5
R5	Camden-N-flat	528833.5	183977.6	4.5
R6	Parkway	528780.3	183769.1	1.5
R7	Parkway-flat	528780.3	183769.1	4.5
R8	Camden -S-flat	528954.4	183814.9	4.5
R9	Camden -S -flat	528974.2	183728.8	4.5
R10	Camden Rd- E	528989.3	183934.7	1.5
R11	Camden Rd -E	529037.6	183979.9	1.5
R12	Adjacent Building -8F	528485.6	183924.7	28.0
R13	Adjacent Building -5F	528485.6	183924.7	18.1
R14	Adjacent Building -1F	528485.6	183924.7	5.2
R15	Adjacent Building -GF	528485.6	183924.7	1.5
PR1	North Building-FRONT-GF	528508.1	183912.0	1.5
PR2	North Building-FRONT-6F	528508.1	183912.0	20.8
PR3	North Building-BACK-6F	528489.9	183898.9	20.8
PR4	North Building-Middle-Front	528519.0	183895.3	1.5
PR5	North Building-Middle-Front	528519.0	183895.3	17.6
PR6	North Building-Middle-Back	528500.0	183890.0	17.6
PR7	South Building- Middle-Front	528530.4	183875.5	1.5
PR8	South Building- Middle-Front	528530.4	183875.5	14.3
PR9	South Building- Middle-Back	528512.6	183873.2	14.3
PR10	South Building- Middle-Front	528539.6	183859.8	1.5
PR11	South Building- Middle-Front	528539.6	183859.8	11.1
PR12	South Building- Middle-Back	528525.3	183857.4	11.1

5.4 The Road Network

The following roads were selected for the assessment, for the reasons provided:

- A308 Kingston Hill/Kingston Vale (Main access road to the proposed development, and one of the main sources of air pollution in the area)

- A3 Kingston Bypass/ Roehampton Vale (One of the main sources of air pollution in the area)
  Campus access Road (Access route for all traffic accessing the Kingston Hill campus)

  Camden High Street-north junction
  Camden High Street-south junction
  Camden Road - east junction
  Parkway- west junction
  Oval Road
  Jamestown Road

  A503- Camden Road - for verification of diffusion tube CA21
  A400- Kentish Town Road - for verification of diffusion tube CA16

5.5 Traffic Data

Traffic data for roads around the proposed development in terms of Annual Average Daily Traffic (AADT) were obtained from two sources:

- London Atmospheric Emissions Inventory (2013)
- Via the Transport Consultant (TC) for this project

Traffic flows from 2013 were factored to 2014 and 2019 by applying correction factors of 1.0141 and 1.0927 respectively, generated using the Department for Transport's TEMPRO software (NTEM 7.0).

2014 traffic flows were used in the verification of the dispersion model.

For the 2019 'without development' scenario, the 2013 baseline traffic data were used and projected to 2019 by applying the TEMPRO factor.

The TC provided an estimation of vehicle trips associated with the development; this equated to 42 daily trips from the residential component and 52 associated with the commercial element, making a total of 94 trips in total. These flows were conservatively applied to all road links incorporated into the model for the 2019 'with development' scenario.

Traffic data used in the ADMS model for the 2014 verification, and for all future scenarios in 2019, are presented in Table 5.2.

Table 5.2 AADT Data for Baseline and Future Scenarios for Proposed Development at Centric Close

Road	Baseline (2014)		Future without Development (2019)		Future with Development (2019)	
	AADT	HGV%	AADT	HGV%	AADT	HGV%
A503	27933	9.9	-	-	-	-
A400	20914	18.6	-	-	-	-
Camden High Street-north junction	-	-	10568	19.6	10662	19.4
Camden High Street-south junction	-	-	13335	20.2	13429	20.1
Camden Road - east junction	-	-	16013	13.1	16107	13.1
Parkway- west junction	-	-	15404	6.2	15498	6.2
Oval Road	-	-	56	0.0	150	0.0
Jamestown Road	-	-	56	0.0	150	0.0

Road dimensions were determined from the interrogation of ordnance survey (OS) mapping sets and digital satellite images. A typical national diurnal profile provided by DfT has been incorporated into the models. The diurnal profile used is presented in Appendix A.

5.6 Emissions from Road Traffic

Roads are the main source of pollution in this area. The road source emissions are calculated from traffic flow data using the latest Defra Emission Factor Toolkit (EFT v 7.0, July 2016). The toolkit calculates emission rate for selected pollutants for each modelled road for input in to the atmospheric dispersion modelling.

The most detailed input option along with a vehicle fleet composition year of 2019 was used to derive emission rates for all future scenarios.

5.7 Background Air Pollution

Defra provides estimated background air quality data in the form of background maps. Background concentrations of NO_2, NO_x, PM_{10} and $PM_{2.5}$ are provided for each 1x1 km grid for each local authority area. The latest data, which is based on 2013 monitoring results across the UK, is summarised in Table 5.3 below.

Table 5.3 Background Concentrations for Site and Diffusion Tube Locations from Defra Background Map for 2014

Pollutant	Estimated NO_2 Annual Mean Value ($\mu g/m^3$)		
	Site (520500, 171500)	Tube CA23 (529500, 184500)	Tube CA16 (529500, 185500)
NO_2	34.4	35.5	32.3
PM_{10}	22.9	23.7	22.8
$PM_{2.5}$	14.9	15.3	

As recommended by guidance provided in the publication 'Local Air Quality Management Technical Guidance LAQM. TG (16)[20] published by Department for Environment, Food and Rural affairs (Defra), since there is no local measurement of PM_{10} and $PM_{2.5}$ background concentrations, the predicted values provided by Defra were used instead.

For model verification, the background data for 2014 were used. For the future year 2019, when the development will become operational, background data for 2014 were used again. The reason for this is that in theory the background concentrations should decrease over the years. This is due to the advancement of technologies for emissions control, leading to lower emissions especially from road vehicles. However, latest air quality monitoring in the borough shows that the downward trend is not as obvious as previously predicted. Therefore as a worst case scenario, it is assumed that the background concentration will not decrease, but remain the same as the base year used for model verification.

5.8 Emissions from Gas Fired Heaters (Point Sources)

For the proposed development, it is understood that there will be one CHP unit and one central boiler provided for heating and power generation purposes. The stacks for the flue gas will run up from the plant room to 1m above the roof of Block A, which is the highest point of the development. Since all the units will be gas-fired, nitrogen oxides (NOx) will be the main pollutant within its flue gas emission. The client's M&E consultant has provided the following details (Table 5.4) which were included in the ADMS model to consider the impact of the NOx emissions from the plant. It is understood that the CHP and boilers will run throughout the year, with the CHP averaging a daily run-time of 15 hours, while the boilers will be available 24 hours a day. All operating parameters are included in the dispersion model as appropriate.

Table 5.4 CHP Details and Emissions Data

Parameter	Boilers	CHP	Units
Stack diameter	350	150	mm
Emission rate of NOx	0.015	0.004	g/s
Exhaust NOx emissions @ 0% O2	40	16.8	mg/m3
Stack height above building (assumed)	1.0	1.0	m
Stack gas temperature	70	120	^oC
Stack velocity	4	15	m/s
Flue Stack Location	528496.8, 183901.0	528498.7, 183901.8	m

Table 5.4 CHP Details and Emissions Data (continued)

Parameter	Boilers	CHP	Units
Annual Natural Gas Consumption	69,771	267,692	kWh
Operating regime (i.e. days of the week and operating hours	24 availability	15	hours

It is understood that the exact units to be installed may differ from those currently proposed, as it will be up to the contractor to choose the exact make and model at subsequent stage of the development.

In accordance to guidance provided by the Environment Agency Air Quality Modelling and Assessment Unit, it is assumed that 70% of the total NO_x emissions will be converted into NO_2.

5.9 The Effect of Buildings on Dispersion

Buildings have an effect on the dispersion of pollutants and can alter the predicted ground level pollutant concentration. This is by entraining pollutants in the cavity region on the leeward side of the buildings containing the sources and bringing the pollution levels down to ground level. Consequently, concentrations near the buildings could be increased but further away they are decreased (CERC 2013). ADMS Roads Extra has algorithms that model the effect of the buildings on the dispersion of pollutants specifically from point sources.

The details entered into the ADMS Roads Extra are shown in Table 5.5 below. They represent the massing of the buildings which may affect the dispersion of the pollutants from the point sources as realistically as possible.

Table 5.5 Details for the Buildings Entered into ADMS Roads Extra

No	Building	Centre Point Coordinates	Height (m)	Length (m)	Width (m)	Angle (^{0})
1	North Tower	528497.7, 183909.2	22.5	23.6	21.5	340
2	North-Middle	528510.7, 183889.4	19.3	23.2	19.5	340
3	South-Middle	528522.6, 183871.3	16.1	19.6	17.4	340
4	South Building	528533.2, 183856.4	12.8	16.0	14.3	340
5	Adjacent Building	528494.0, 183961.8	29.2	64.0	64.0	340

5.10 Meteorological Data

ADMS Roads utilises sequential meteorological data to calculate atmospheric dispersion. The minimum metrological data that must be entered are: wind speed and direction, and cloud cover. The wind, cloud, temperature, rainfall and humidity data were taken from the London City Airport weather station.

London City Airport is the closest meteorological station with suitable data capture for the assessment years. The London City Airport meteorological station is approximately 14km east of the proposed site and the dominant prevailing wind direction is from the south west.

2014 met data has been used for the road source dispersion modelling. According to the EPUK CHP and Air Quality Guidance 2012 [21], at least three years of met data should be used for dispersion modelling for CHP. As a result, London City Airport met data from 2010 to 2014 were used for the point-source dispersion modelling. Maximum concentration at each receptor points from the five years of modelling scenario was chosen to represent the worst-case scenario.

The wind rose illustrating the data is presented in Appendix B.

5.11 Street Canyon

No street canyons have been identified along the modelled roads and therefore no street canyons have been included in the model.

5.12 Other Model Parameters

The dispersion site surface roughness was set to 1.5m (Large, urban areas) and the Minimum Monin-Obukhov Length (MMOL) was set to 100m (Large conurbations > one million).

The meteorological measurement site surface roughness was set to 0.5m (Parkland, open suburbia) and the MMOL was set to 75m (CERC Guidance).

6 Model Output and Results Discussions

6.1 General

The modelling predicted total oxides of nitrogen (NO_X) at the chosen locations. The base year of 2014 was chosen to predict the NO_X levels at the selected diffusion tube and automatic monitoring station and these values were compared with monitored NO_X and NO_2 result to verify the model predictions. An adjustment factor was determined for the modelling and the factor was applied to predicted values for the opening year in Year 2019. The details of the process are presented below.

6.2 Baseline Conditions

6.2.1 Method

The model adjustment was undertaken using the methodology given in LAQM. TG (16), which requires the determination of the ratio between the measured and modelled road contributed NO_x at each comparison site. The ratio between them, referred to as the adjustment factor, is applied to the modelled road contributed NO_x. The modelled NO_2 is then determined using the Defra NO_x/NO_2 calculator.

6.2.2 Model Verification

The modelled and monitored road contributed NO_x values at the diffusion tube with the ratio between them are given in Table 6.1. The monitored road contributed NO_x was calculated using the Defra NO_x/NO_2 calculator.

Table 6.1 Adjustment Factor, Monitored and Modelled Road Contributed NO_x, 2014

Diffusion Tube	Modelled Road Contributed NOx (excluding background) (µg/m³)	Monitored Road Contributed NOx (excluding background) (µg/m³)	Adjustment Factor
CA23	48.0	104.7	1.970
CA16	39.5	65.6	

The modelled road contributed NO_x is adjusted by the factor 1.970 and then converted to total NO_2 using the NO_x-NO_2 calculator as provided by Defra.

The results, in comparison with the measured total NO_2, together with the ratio between them, are shown in Table 6.2.

Table 6.2 Ratio of the Measured and Modelled total NO_2 for Year 2014

Diffusion Tube	Modelled total NO_2 (µg/m³)	Measured total NO_2 (µg/m³)	Adjustment Factor
CA23	69.7	72.7	0.9996
CA16	61.8	57.8	

The final adjusted total NO_2 concentration predicted at the two diffusion tubes is within ±25% of the measured values, and is therefore considered satisfactory.

Based on the above verification process, the road source NO_x contribution determined by the model was adjusted using the factor of 1.970, then the modelled total NO_2 results were further adjusted by a factor of 0.9996.

In accordance with Defra guidance, the road contributed NO_x adjustment factor was also applied to the road contributed PM concentration. The total PM_{10} and $PM_{2.5}$ concentrations are derived by adding the adjusted road contribution value to the Defra background concentrations as described in Section 5.

6.3 Modelled Results

The predicted NO_2, PM_{10}, and $PM_{2.5}$ values for all future scenarios in 2019 are presented in Table 6.3.

Table 6.3 Modelled NO_2, PM_{10} and $PM_{2.5}$ Concentrations in 2019 (without development, with development)

ID	Receptor	Year 2019 (without development)				Year 2019 (with development)			
		Annual Mean (µg/m³)			No. of Exceedances of 24-Hour Mean PM_{10}	Annual Mean (µg/m³)			No. of Exceedances of 24-Hour Mean PM_{10}
		NO_2	PM_{10}	$PM_{2.5}$		NO_2	PM_{10}	$PM_{2.5}$	
R1	Oval Rd	36.1	20.8	14.9	4	36.5	20.8	14.9	4
R2	Oval Rd	36.2	20.8	14.9	4	36.3	20.8	14.9	4
R3	Jamestown Rd	36.1	20.8	14.9	4	36.4	20.8	14.9	4
R4	Jamestown Rd-FLAT	38.2	21.2	15.1	5	38.3	21.2	15.1	5
R5	Camden-N-flat	39.5	21.4	15.3	5	39.6	21.4	15.3	5
R6	Parkway	**42.0**	22.1	15.7	7	**42.1**	22.1	15.7	7
R7	Parkway-flat	**40.2**	21.7	15.4	6	**40.3**	21.7	15.4	6
R8	Camden -S-flat	**45.3**	21.9	15.6	6	**45.3**	21.9	15.6	6
R9	Camden -S -flat	**40.3**	21.5	15.3	6	**40.3**	21.5	15.3	6
R10	Camden Rd- E	**44.5**	22.2	15.7	7	**44.6**	22.2	15.7	7
R11	Camden Rd -E	**42.4**	22.0	15.6	6	**42.5**	22.0	15.6	6
R12	Adjacent Building -8F	36.0	20.8	14.9	4	36.8	20.8	14.9	4
R13	Adjacent Building -5F	36.0	20.8	14.9	4	36.7	20.8	14.9	4
R14	Adjacent Building -1F	36.0	20.8	14.9	4	36.7	20.8	14.9	4
R15	Adjacent Building -GF	36.0	20.8	14.9	4	36.7	20.8	14.9	4
PR1	North Building-FRONT-GF	36.0	20.8	14.9	4	36.1	20.8	14.9	4
PR2	North Building-FRONT-6F	36.0	20.8	14.9	4	36.0	20.8	14.9	4
PR3	North Building-BACK-6F	36.0	20.8	14.9	4	37.1	20.8	14.9	4
PR4	North Building-Middle-Front	36.1	20.8	14.9	4	36.9	20.8	14.9	4

Table 6.3 Modelled NO_2, PM_{10} and $PM_{2.5}$ Concentrations in 2019 (without development, with development)

ID	Receptor	Year 2019 (without development)				Year 2019 (with development)			
		Annual Mean ($\mu g/m^3$)			No. of Exceedances of 24-Hour Mean PM_{10}	Annual Mean ($\mu g/m^3$)			No. of Exceedances of 24-Hour Mean PM_{10}
		NO_2	PM_{10}	$PM_{2.5}$		NO_2	PM_{10}	$PM_{2.5}$	
PR5	North Building-Middle-Front	36.0	20.8	14.9	4	36.9	20.8	14.9	4
PR6	North Building-Middle-Back	36.0	20.8	14.9	4	37.0	20.8	14.9	4
PR7	South Building- Middle-Front	36.1	20.8	14.9	4	36.5	20.8	14.9	4
PR8	South Building- Middle-Front	36.1	20.8	14.9	4	36.5	20.8	14.9	4
PR9	South Building- Middle-Back	36.0	20.8	14.9	4	36.5	20.8	14.9	4
PR10	South Building- Middle-Front	36.1	20.8	14.9	4	36.3	20.8	14.9	4
PR11	South Building- Middle-Front	36.1	20.8	14.9	4	36.3	20.8	14.9	4
PR12	South Building- Middle-Back	36.1	20.8	14.9	4	36.3	20.8	14.9	4

Exceedances of annual mean objective highlighted in Bold.

7 Discussion of Results

Comparison with the National Air Quality Objectives and with the Operation of the Proposed Development in 2019:

- The objective for the annual mean NO_2 concentration is 40 µg/m³. This objective is forecast to be met at receptors PR1 to PR12, which are representative of the proposed development
- The annual mean objective is forecast to be exceeded at six existing receptors in all future scenarios (with and without scheme), due to existing poor air quality
- According to LLAQM.TG (16) guidance, exceedance of the 1-hour NO_2 mean objective is generally unlikely to occur where annual mean concentrations do not exceed 60 µg/m³. Since the annual mean NO_2 concentration at all the receptors are lower than 60 µg/m³, it is unlikely the 1-hour mean will be exceeded at any of the above locations
- The objective for the annual mean PM_{10} concentration is 40 µg/m³. The forecast suggested that this objective will be met at all of the selected sensitive receptors
- LAQM.TG (16) guidance provides guidance on calculating the number of exceedances, as a 24-hour mean PM_{10} concentration, of 50 µg/m³. In all scenarios, the number of exceedance is considerably below the limit of 35.
- The objective for the annual mean $PM_{2.5}$ concentration is 25 µg/m³. The forecast suggested that this objective will be met at all of the selected sensitive receptors
- In the 2019 'with development' scenario, no new exceedances are created at existing receptors

7.1 Significance of Impact

EPUK and IAQM published guidance in May 2015 to ensure that air quality is adequately considered in the land-use planning and development control processes[22]. This guidance is for assessing the significance of air quality impacts at selected 'receptors' by using the changes in concentrations relative to the AQAL and the long term average concentration at each receptor. AQAL could be an air quality objective, EU limit or target value, or an Environment Agency 'Environmental Assessment Level' (EAL).

The impact descriptors used in this assessment are summarised in Table 7.1.

Table 7.1 Impact Descriptors for Individual Receptors

Long Term Average Concentration at Receptor in Assessment Year	% Change in Concentration Relative to Air Quality Assessment Level (AQAL)			
	1	2-5	6-10	>10
75% or less of AQAL	Negligible	Negligible	Slight	Moderate
76-94% of AQAL	Negligible	Slight	Moderate	Moderate
95-102% of AQAL	Slight	Moderate	Moderate	Substantial
103-109% of AQAL	Moderate	Moderate	Substantial	Substantial
110% or more of AQAL	Moderate	Substantial	Substantial	Substantial

*Changes are rounded up to the nearest whole percentage. Changes of less than 0.5% of the AQAL are considered imperceptible.

Table 7.2 shows that there is a slight increase in NO_2 concentrations at all of the modelled existing receptors in the 2019 with development future scenario, with 2-5% the largest percentage change in NO_2 concentrations relative to the AQAL.

The largest impact descriptors ('Slight Adverse') are seen on various floors of the adjacent building but the overall NO_2 concentrations are still below the annual mean objective at these receptors. Impact descriptors at all other existing receptors are negligible.

Tables 7.2 to 7.4 show that although there is a very slight increase in NO_2, PM_{10} and $PM_{2.5}$ concentrations at all of the modelled existing receptors in the 2019 with development future scenario, the percentage change in concentrations relative to the AQAL is below 1% and therefore considered to be '**Negligible**'.

Table 7.2 NO_2 Annual Mean Concentration Changes and Associated Impact at Existing Sensitive Receptors in 2019 (without development, with development)

	Receptor Name	Predicted Annual Mean NO_2 Concentration 2019 ($\mu g/m^3$)	Long Term Average Concentration at Receptor in Assessment Year 2019	Pollutant Concentration Change 2019 ($\mu g/m^3$)	% Change Relative to AQAL in 2019	2019 Impact Descriptor
R1	Oval Rd	36.5	76-94% of AQAL	0.4	1%	Negligible
R2	Oval Rd	36.3	76-94% of AQAL	0.1	0%	Negligible
R3	Jamestown Rd	36.4	76-94% of AQAL	0.2	1%	Negligible
R4	Jamestown Rd-FLAT	38.3	95-102% of AQAL	0.1	0%	Negligible
R5	Camden-N-flat	39.6	95-102% of AQAL	0.0	0%	Negligible
R6	Parkway	**42.1**	103-109% of AQAL	0.1	0%	Negligible
R7	Parkway-flat	**40.3**	95-102% of AQAL	0.1	0%	Negligible
R8	Camden -S-flat	**45.3**	110% or more of AQAL	0.0	0%	Negligible
R9	Camden -S -flat	**40.3**	95-102% of AQAL	0.0	0%	Negligible
R10	Camden Rd- E	**44.6**	110% or more of AQAL	0.0	0%	Negligible
R11	Camden Rd -E	**42.5**	103-109% of AQAL	0.0	0%	Negligible
R12	Adjacent Building -8F	36.8	76-94% of AQAL	0.9	2-5%	Slight Adverse
R13	Adjacent Building -5F	36.7	76-94% of AQAL	0.7	2-5%	Slight Adverse
R14	Adjacent Building -1F	36.7	76-94% of AQAL	0.7	2-5%	Slight Adverse
R15	Adjacent Building -GF	36.7	76-94% of AQAL	0.7	2-5%	Slight Adverse

Table 7.3 PM_{10} Annual Mean Concentration Changes and Associated Impact at Existing Sensitive Receptors in 2019

	Receptor Name	Predicted Annual Mean PM_{10} Concentration 2019 ($\mu g/m^3$)	Long Term Average Concentration at Receptor in Assessment Year 2019	Pollutant Concentration Change 2019 ($\mu g/m^3$)	% Change Relative to AQAL in 2019	2019 Impact Descriptor
R1	Oval Rd	20.8	75% or less of AQAL	0.0	0%	Negligible
R2	Oval Rd	20.8	75% or less of AQAL	0.0	0%	Negligible
R3	Jamestown Rd	20.8	75% or less of AQAL	0.0	0%	Negligible
R4	Jamestown Rd-FLAT	21.2	75% or less of AQAL	0.0	0%	Negligible
R5	Camden-N-flat	21.4	75% or less of AQAL	0.0	0%	Negligible
R6	Parkway	22.1	75% or less of AQAL	0.0	0%	Negligible
R7	Parkway-flat	21.7	75% or less of AQAL	0.0	0%	Negligible
R8	Camden -S-flat	21.9	75% or less of AQAL	0.0	0%	Negligible
R9	Camden -S -flat	21.5	75% or less of AQAL	0.0	0%	Negligible
R10	Camden Rd- E	22.2	75% or less of AQAL	0.0	0%	Negligible
R11	Camden Rd -E	22.0	75% or less of AQAL	0.0	0%	Negligible
R12	Adjacent Building -8F	20.8	75% or less of AQAL	0.0	0%	Negligible
R13	Adjacent Building -5F	20.8	75% or less of AQAL	0.0	0%	Negligible
R14	Adjacent Building -1F	20.8	75% or less of AQAL	0.0	0%	Negligible
R15	Adjacent Building -GF	20.8	75% or less of AQAL	0.0	0%	Negligible

Table 7.4 $PM_{2.5}$ Annual Mean Concentration Changes and Associated Impact at Existing Sensitive Receptors in 2019

	Receptor Name	Predicted Annual Mean $PM_{2.5}$ Concentration 2019 ($\mu g/m^3$)	Long Term Average Concentration at Receptor in Assessment Year 2019	Pollutant Concentration Change 2019 ($\mu g/m^3$)	% Change Relative to AQAL in 2019	2019 Impact Descriptor
R1	Oval Rd	14.9	75% or less of AQAL	0.0	0%	Negligible
R2	Oval Rd	14.9	75% or less of AQAL	0.0	0%	Negligible
R3	Jamestown Rd	14.9	75% or less of AQAL	0.0	0%	Negligible
R4	Jamestown Rd-FLAT	15.1	75% or less of AQAL	0.0	0%	Negligible
R5	Camden-N-flat	15.3	75% or less of AQAL	0.0	0%	Negligible
R6	Parkway	15.7	75% or less of AQAL	0.0	0%	Negligible
R7	Parkway-flat	15.4	75% or less of AQAL	0.0	0%	Negligible
R8	Camden -S-flat	15.6	75% or less of AQAL	0.0	0%	Negligible
R9	Camden -S -flat	15.3	75% or less of AQAL	0.0	0%	Negligible
R10	Camden Rd- E	15.7	75% or less of AQAL	0.0	0%	Negligible
R11	Camden Rd -E	15.6	75% or less of AQAL	0.0	0%	Negligible
R12	Adjacent Building -8F	14.9	75% or less of AQAL	0.0	0%	Negligible
R13	Adjacent Building -5F	14.9	75% or less of AQAL	0.0	0%	Negligible
R14	Adjacent Building -1F	14.9	75% or less of AQAL	0.0	0%	Negligible
R15	Adjacent Building -GF	14.9	75% or less of AQAL	0.0	0%	Negligible

8 Construction Impacts

8.1 Site and Surrounding Area

As stated in Section 2.2, the proposed development comprises the demolition of existing buildings as well as the erection of 76 residential units and 1,219 sqm of commercial floor space (Use Class B1) over four, five, six and seven storeys, providing a mix of one, two and three bed apartments. The development includes a landscaped courtyard and communal amenity areas.

The surrounding area mainly consists of residential areas with some local shops and Camden Market approximately 250 meters to the north of the site. Primrose School is located 200 m to the northwest of the site and North Bridge House Preparatory School is 200m to the south of the site.

Impacts associated with the demolition and construction activities have been considered within this assessment, which is based on the recommended approach by the Institute of Air Quality Management (2014)[23].

The precise behaviour of the dust, its residence time in the atmosphere, and the distance it may travel before being deposited would depend upon a number of factors. These include wind direction and strength, local topography and the presence of intervening structures (buildings, etc.) that may intercept dust before it reaches sensitive locations. Furthermore, dust would be naturally suppressed by rainfall.

8.2 Risk Assessment of Dust Impacts

8.2.1 Potential Dust Emission Magnitude

The dust emission magnitude is based on the scale of anticipated works at the site and has been classified as small, medium or large for each of the four activities; demolition, earthworks, construction and trackout. A summary of the dust emission magnitude for each activity is set out in Table 8.1.

Demolition

It is understood that demolition activities are anticipated to take place between June and September 2017. The approximated total volume of buildings to be demolished has been estimated as approximately 16,000 m³ and demolition activities will be carried out less than 10 m above ground level.

As the total building volume to be demolished is less than 20,000m^3, it is considered that the dust emission magnitude for demolition activities would be 'Small'.

Earthworks

Earthworks are those activities involved in preparing the site for construction such as excavation of material, haulage, tipping, stockpiling and levelling.

It is understood that earthworks activities are planned to take place between October and November 2017.

The total ground floor area of the site is approximately ~3600m^2. No information is currently available on the soil type, heavy earth moving vehicles, or total materials to be moved in terms of tonnage. Based on the floor area of the site it is considered that the potential dust emission magnitude for earthwork activities would be 'Medium'.

Construction

It is understood that construction activities will last for about two years, taking place between December 2017 and November 2019.

There are a number of factors that can have an impact on the magnitude of dust emission during construction activities, which include the size of the building, materials used for construction, the method of construction and the duration of the build.

The proposed development volume is estimated to be > 100, 000m^3. Construction activities will involve substructure, superstructure and fit out. Based on these factors, it is considered that the dust emission magnitude for construction activities would be 'large'.

Trackout

The risk of impacts occurring during trackout is predominantly dependent on the number of vehicles accessing the site on a daily basis. However, vehicle size and speed, the duration of activities and local geology are also factors which are used to determine the emission class of the site as a result of trackout.

It is expected that there will be about three-four movements per day during demolition activities, and between one or two movements per day during earthworks activities.

However, during construction, it is understood that there will be over ten movements per day, therefore, movement of vehicles will be over surfaces with moderate potential for dust release. Given these factors, it is considered that the dust emission magnitude for trackout activities would be 'medium'.

Table 8.1 Summary of Dust Emission magnitude for Each Activity

Source	Magnitude
Demolition	Small
Earthworks	Medium
Construction	Large
Trackout	Medium

8.2.2 Sensitivity of the area

The sensitivity of the surrounding area takes into account the following factors:

- The specific sensitivities of receptors in the area
- The proximity and number of those receptors
- Local background concentrations in the case of PM_{10}
- Site-specific factors i.e. whether there are natural shelters such as trees, to reduce the risk of wind-blown dust

The IAQM distance screening bands for the identification of sensitive receptors are shown in Figure 6.

Based on the IAQM guidance, residential dwellings are considered as 'High' sensitivity receptors in relation to both dust soiling and health effects of PM_{10}. There are more than ten residential units within 20 m of the site, on Oval Road as well as to the north of the proposed development.

IAQM guidance also states that 'in the case of high sensitive receptors with high occupancy (such as schools or hospitals), approximate the number of people likely to be present. Schools are considered to be 'high' sensitivity receptors with regard to dust soiling and human health impacts. There is likely to be >100 students located in Primrose School within a 200 m radius, which makes the sensitivity be 'low'. It should be noted that in cases such as these, only the highest level of area sensitivity needs to be considered further.

According to the Defra mapped PM_{10} background data presented in Table 5.2, the PM_{10} concentration is predicted to be less than 24 $\mu g/m^3$ at the site.

Given the above, the sensitivity of the area is considered to be 'high' with regards to dust soiling for demolition, earthworks and construction. Trackout may occur from roads up to 200 m, and there are between 1 and 10 receptors within 20 m of the road used by construction traffic, therefore the sensitivity has been estimate to be 'medium'. Regarding human health impacts, the sensitivity would be 'low' with respect to demolition, construction, earthworks and trackout activities.

Assessment of relevant ecological sites in accordance with the IAQM guidance revealed that there are no sensitive ecological habitats within 20 m of the site.

Therefore, the sensitivity of the area is considered to be 'negligible' with respect to ecological impacts for demolition, construction, earthworks and trackout activities.

Table 8.2 Summary of Sensitivity of Surrounding Area

Potential Impact	Sensitivity of Surrounding Area			
	Demolition	Earthworks	Construction	Trackout
Dust Soiling	High	High	High	Medium
Human Health	Low	Low	Low	Low
Ecological	N/A	N/A	N/A	N/A

8.2.3 Defining the Risk of Impacts

The dust emission magnitude as set out in Table 8.1 is combined with the sensitivity of the area (Table 8.2) to determine the risk of both dust soiling and human health impacts, assuming no mitigation measures applied at site. The risk of impacts associated with each activity is provided in Table 8.3 below and has been used to identify site-specific mitigation measures, which are set out in Section 10.

Table 8.3 Summary of Risk Effects to Define Site Specific Mitigation

Potential Impact	Risk			
	Demolition	Earthworks	Construction	Trackout
Dust Soiling	Medium Risk	Medium Risk	High Risk	Low Risk
Human Health	Negligible	Low Risk	Low Risk	Low Risk
Ecological	N/A	N/A	N/A	N/A

9 Air Quality Neutral Assessment

9.1 General

Policy within the London Plan requires development to be 'air quality neutral', the aim of which is to bring forward development that are air quality neutral or better and that do not degrade air quality in areas where air quality objectives are not currently being achieved. The proposed development is located in London Borough of Camden, which is categorised as an 'Inner' London Borough, and as such the appropriate figures for Inner London were used.

Guidance for undertaking AQNA are given in the following two documents:

- The Air Quality Neutral Planning Support Update 2014 [24]
- Mayor of London Sustainable Design and Construction Supplementary Planning Guidance 2014 [25]

9.2 Method of Assessment

GLA 80371 guidance recommends that the Air Quality Neutral Assessment should focus on the NO_x and PM_{10} emissions and to consider the emissions from the energy sources used within the building and emissions from transport vehicles associated with buildings use.

9.3 Transport Emissions

9.3.1 General

The air quality neutral assessment for the road traffic emissions compares the road traffic emissions from the proposed development with benchmark values based on land usage.

9.3.2 Assessment

The project's Transport Consultant (TC) has provided estimated trip rates for the proposed development; these equate to 46 residential trips and 52 commercial trips per day.

GLA 80371, provides emission factors in terms of g/vehicle-km. Based on these rates, the worst-case annual vehicle emissions associated with the additional vehicle trips are presented in Table 9.1.

Table 9.1 Calculated Emissions for Proposed Traffic

Land use	Annual Traffic Flow (veh/annum)	Emission Rate (g/veh/km)		Average Distance Travelled by Vehicle Per Trip (km)	All Vehicle (Annual Emissions (kg/yr)	
		NO_x	PM_{10}	(C3)/(B1)	NO_x	PM_{10}
Residential (C3)	16790	0.37	0.0665	3.7	23.0	4.1
Commercial (B1)	18980	0.37	0.0665	7.7	54.1	9.7

The benchmark emissions were calculated using the GLA 80371 guidance for the each development type. The emissions are calculated based on the number of dwellings for residential units and the site area for commercial units as presented in Table 9.2 and Table 9.3 respectively.

Table 9.2 Benchmark Emissions for Proposed Development (Residential)

Land use	Number of Dwellings	Benchmark Emission Rate (g/dwelling/annum)		All Vehicle (Annual Emissions (kg/yr)	
		NO_x	PM_{10}	NO_x	PM_{10}
Residential (C3)	76	558	100	42.4	7.6

Table 9.3 Benchmark Emissions for Proposed Development (Commercial)

Land use	Site Area m^2	Benchmark Emission Rate (g/ m^2/annum)		All Vehicle (Annual Emissions (kg/yr)	
		NO_x	PM_{10}	NO_x	PM_{10}
Commercial (B1)	1219	11.4	2.05	13.9	2.5

The transport emissions easily meet the benchmark emissions for the residential component of the proposed development, however emissions from the commercial element of the development exceed the Air Quality Neutral benchmark. GLA 80371 guidance recommends that in circumstances where the benchmark is exceeded, mitigation measures to reduce emissions may be applied on-site or off-site. Where this is not practical or desirable, some form of pollutant offsetting could be applied. Mitigation measures are further considered in Section 10 of this report.

9.4 Operational Energy Plant Emissions

9.4.1 General

The residential units of the proposed development will have gas powered CHP and boilers providing heat, electricity and hot water. The details of the energy requirements and hence the design of the CHP and boilers have not been finalised. The following assessments are based on typical worst-case parameters provided by the mechanical and electrical (M&E) consultant for the scheme.

9.4.2 Assessment

The worst case emission factors and the total amounts of natural gas to be used by each plant were calculated using information provided by the Clients M&E Consultant. However, the final consumption will dependent on good controls commissioning and how the operator uses the building and related services. The emission from the proposed development are presented in Table 9.4.

Table 9.4 Emissions from Proposed Plant

	Annual Gas Consumption (kwh)*1	Emission Factor (mg/kwh)		Annual Emissions (kg/yr)	
		NO_x	PM_{10}	NO_x	PM_{10}*1
CHP	267,692	14.4	-	3.9	-
Gas Boiler	69,771	34.3	-	2.4	-

***1-** The PM_{10} emissions from modern plant are negligible and the manufacturers do not supply factors for it.

The benchmark emissions were calculated using the residential development area and factors contained within GLA 80371 and are presented in Table 9.5.

Table 9.5 Benchmark Emissions for Proposed Development

Land Use	Residential Area (m^2)	Emission Factor (g/m^2)		Annual Emissions (kg/yr)	
		NO_x	PM_{10} *1	NO_x	PM_{10} *1
Residential-(C3)	504	26.2	-	13.2	-

***1-** The PM $_{10}$ emissions from modern plant are negligible and the manufacturers do not supply factors for it.

The emissions for the proposed heating plant meet the Air Quality Neutral benchmark and therefore no further action is required.

10 Mitigation Measures

10.1 Construction Phase

Particle generation from construction and demolition activities can be substantially reduced through carefully selected mitigation techniques and effective management. The most effective technique is to control at source, as once particles are airborne, it is difficult to prevent them from dispersing into the surrounding area. However, once airborne, water sprays are probably the most effective method for suppression.

Pre-project planning, implementation and on-site management issues are an essential requirement for effective dust control. This includes, for example environmental risk assessments, method statements, training and satisfying planning requirements. Before the start of a project, it is also important to identify which construction activities are likely to generate dust and to draw up action plans to minimise emissions to the atmosphere. Dust emissions from construction sites will mainly be the sum of a large number of small activities. Therefore, attention to detail is a critical feature of effective management of the total site emissions.

The Control of Dust and Emissions during Construction and Demolition Supplementary Planning Guidance (SPG)[26] provides extensive coverage on the possible dust and emissions control measures. Stakeholder engagement is important, such that local sensitive receptors are notified and consulted properly before any work commence. Site layout should be carefully planned, ensuring dust generating activities and the associated machineries are located away from receptors as far as possible. Green infrastructure is also recommended to control the dispersion of dust, and at the same time improve the local environment.

In terms of mobile vehicles associated with the demolition and construction activities, initial pre-application discussions were held to investigate the possibility of reducing vehicle emissions during the construction phase by considering water-borne delivery of construction materials. However, the tidal nature of Deptford Creek meant that this option could not be integrated into the development proposals. Therefore, any vehicle accessing the site during the construction phase should comply with the Low Emission Zone standards as a minimum requirement. Engine idling should be avoided through careful site vehicles management. Construction Logistics Plans (CLPs) / Construction Traffic Management Plans should be considered, especially for larger development.

As part of the planning application, the Client will prepare a Construction Management Plan (CMP) and agree this with Highways Officers at LBC Council. This will ensure that the construction phase will cause minimal disruption to the surrounding area and neighbours.

Site specific mitigation measures should be set up based on the risk effects as outlined in Table 8.3. Examples of these measures are provided in the IAQM guidance document. In addition to the 'desirable' measures, the IAQM guidance also sets out a number of 'highly recommended' measures which should also be considered for inclusion within the CMP. Specific attention should be paid to the demolition, construction and earthworks activities, as the risk for dust soiling is considered to be 'medium'. These are set out in Appendix C.

Following implementation of the measures recommended for inclusion within the CMP the impact of emissions during construction of the proposed development would be 'not significant'.

10.2 Operational Phase

According to the London Councils Air Quality and Planning Guidance, the Air Pollution Exposure Criteria (APEC) for the proposed development on Centric Close is APEC-A. This guidance suggests that there should be "No air quality grounds for refusal; however mitigation of any emissions should be considered."

Mitigation measures are presented below.

10.2.1 CHP and boilers

The Air Quality Neutral Assessment has indicated that without appropriate abatement, NOx emissions from the energy centre will exceed the benchmark by a considerable level, even with only one CHP unit being operational. With deployment of catalytic converters to reduce NOx emissions to below 40mg/m^3, annual NOx emissions will be greatly reduced. This will minimise pollution impacts on users of the campus, local residents and ecological receptors. Although the Air Quality neutral Benchmark will not be exceeded with the installation and operation of one CHP unit, the benchmark may be exceeded once three or four CHP units are installed into the Energy Centre. It is therefore essential that NOx abatement is incorporated into the final design proposals and that further mitigation is also considered to reduce levels to as low as is practically possible.

It is important that the CHP units will be regularly maintained according to the manufacturer's specification, such that the emission levels will remain at an acceptable level throughout their operational lifetime.

10.2.2 Reducing Vehicle Emissions

A supporting Travel Plan (TP) Statement is being submitted to encourage future residents to use alternative transport modes rather than private vehicles, with an aim to further reduce traffic levels generated by the proposed development. The TP provides a long-term strategy aimed at encouraging future end-users (i.e. residents, employees and visitors) to reduce their dependency on travelling by single occupancy vehicles (SOVs) in favour of the more sustainable modes such as car sharing, public transport, walking and cycling. To accomplish this aim, the TP sets out measures and initiatives, appropriate to future occupiers, thereby ensuring a targeted approach is applied.

The general aims of the plan are as follows:

- Raise awareness of sustainable travel modes available to residents
- Promote healthy lifestyles and sustainable, vibrant local communities
- Encourage good urban design principles that maximise the permeability of the development for walking and cycling
- Improve existing infrastructure and ensure connectivity and assimilation both within the development and between the existing wider community
- Avoid reliance on car usage, especially single occupancy vehicles

Promoting cycling as a mode of sustainable travel is key to encouraging a modal shift away from the use of private cars. The scheme will provide a total of 138 long-stay and five short-stay cycle parking spaces, of which 124 long-stay and two short-stay spaces will be provided for residential use. This is in accordance with relevant London Plan cycle parking standards contained within the London Plan (2016). 4.7 Local cycling routes and information on safe cycling will be provided to all residents as part of their welcome pack.

To minimise the need for future households to own a vehicle and reduce demand for on-site parking, the client is expecting to provide support towards existing car clubs within the vicinity of the site (final details to be agreed).

In addition, all residents and employees will be made aware of the benefits of membership to the car club through various marketing and promotional material including Travel Information Packs. These will contain up-to-date details of public transport services, the location of bus stops and underground stations, and will also contain details of available sustainable modes of transport including car sharing and car club schemes. The Pack will also provide promotional material highlighting the health benefits of walking and cycling. In addition, it will include details of essential contact addresses, telephone numbers and websites administered by the local authority, transport providers and any other organisations related to sustainable modes of transport.

11 Conclusions

Fairview New Homes (the Client) are proposing a new mixed use residential led development in Centric Close, Camden. This air quality assessment is to support the planning application for the proposed redevelopment. The performance of the ADMS-Roads Extra model has been verified using the ratified monitoring data from diffusion tubes located on Camden Road and Kentish Town Road. An appropriate adjustment factor was applied to the predicted modelling results.

The results of the assessment are as below:

- The objective for the annual mean NO_2 concentration is 40 µg/m³. This objective is forecast to be met at all receptors representative of the proposed development
- The annual mean objective is forecast to be exceeded at six existing receptors in all future scenarios (with and without scheme), due to existing poor air quality
- The short-term hourly objective for NO_2 is expected to be met at all locations. The PM_{10} and $PM_{2.5}$ concentrations are forecast to meet their respective long and short term objectives by a considerable margin
- In the 2019 'with development' scenario, no new exceedances are created at existing receptors
- The largest impact descriptors ('Slight Adverse') are seen on various floors of the adjacent building but the overall NO_2 concentrations are still below the annual mean objective at these receptors. Impact descriptors at all other existing receptors are negligible

A qualitative assessment on the construction phase activities has also been carried out. The risk of the different activities towards dust soiling ranges from **'Low to Medium'**, and that for human health impact ranges from **'Negligible to Low'**. Following implementation of the appropriate mitigation measures as outlined in the report, the impact of emissions during construction of the proposed development would be **'not significant'**.

An Air Quality Neutral Assessment was compiled to support the planning application for the proposed development. The assessment indicates that the total NO_x and PM_{10} emissions from both the road traffic vehicles meet the Air Quality Neutral Benchmark for the residential element of the development, but not the commercial element. Current guidance recommends that in circumstances where the benchmark is exceeded, mitigation measures to reduce emissions may be applied on-site or off-site. Where this is not practical or desirable, some form of pollutant offsetting could be applied. The emissions for the proposed heating plant meet the Air Quality Neutral benchmark and therefore no further action is required with respect to emissions from energy plant.

In order to mitigate potential operational phase air quality impacts, a Travel Plan will be submitted to encourage future residents to use alternative transport modes rather than private vehicles, with an aim to further reduce the number of traffic to be generated by the proposed development. Cycle parking will also be provided on site, comprising dedicated, secure storage areas. The scheme will provide a total of 138 long-stay and five short-stay cycle parking spaces, of which 124 long-stay and two short-stay spaces will be provided for residential use.

To minimise the need for future households to own a vehicle and reduce demand for on-site parking, the client will provide support towards existing car clubs within the vicinity of the site (final details to be agreed). It is anticipated that the car free nature of the residential aspect of the development would be secured via Section 106 planning obligation preventing future residents form purchasing parking permits within the surrounding Car Parking Zones.

Air quality constitutes a material consideration in the determination of planning applications. However, with the effective implementation of appropriate mitigation measures outlined above, it is considered that air quality should not present a constraint to the granting of planning permission for the proposed development on this occasion.

12 References

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5 Environment Act 1995

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7 London Local Air Quality Management Technical Guidance LAQM.TG (16). Greater London Authority.

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9 Planning Policy Statement 23 (PPS 23): Planning and Pollution Control (ODPM).

10 Environmental Protection Act (1990)

11 The Mayor's Air Quality Strategy. December 2010. Greater London Authority

12 Greater London Authority (March 2015) The London Plan: Spatial Development Strategy for Greater London

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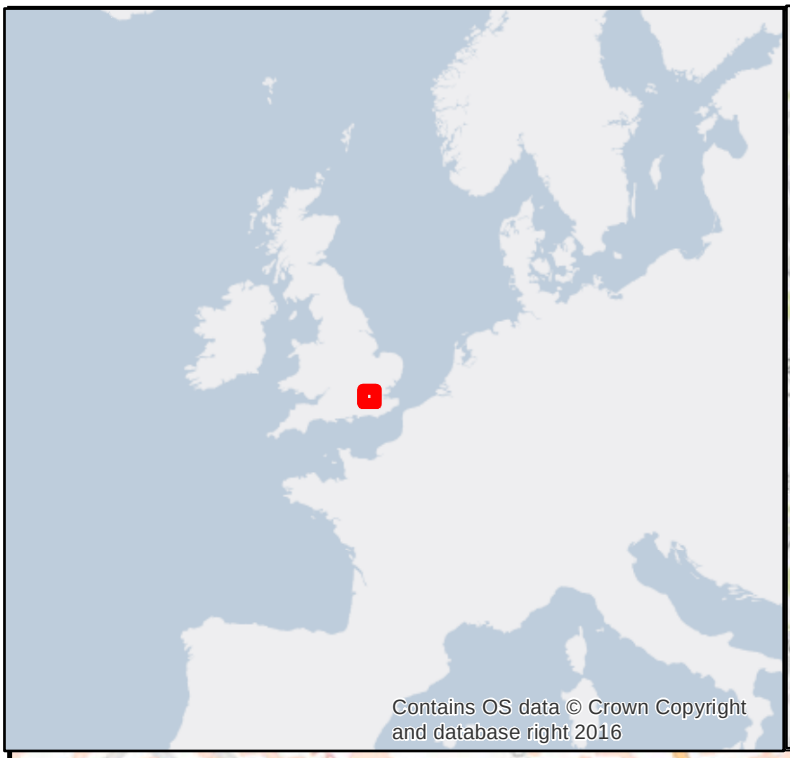
23 Guidance on the Assessment of Dust from Demolition and Construction. February 2014. Institute of Air Quality Management

24 The Air Quality Neutral Planning Support Update: GLA 80371 compiled by Air Quality Consultants and published April 2014

25 Mayor of London Sustainable Design and Construction Supplementary Planning Guidance, published April 2014

26 The Control of Dust and Emissions during Construction and Demolition Supplementary Planning Guidance. July 2014. Greater London Authority

Figures



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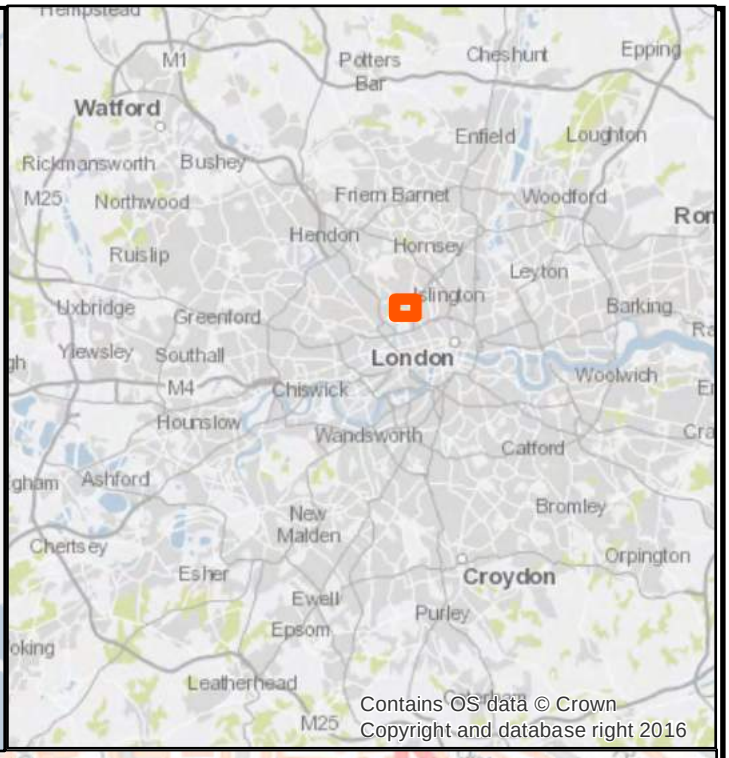

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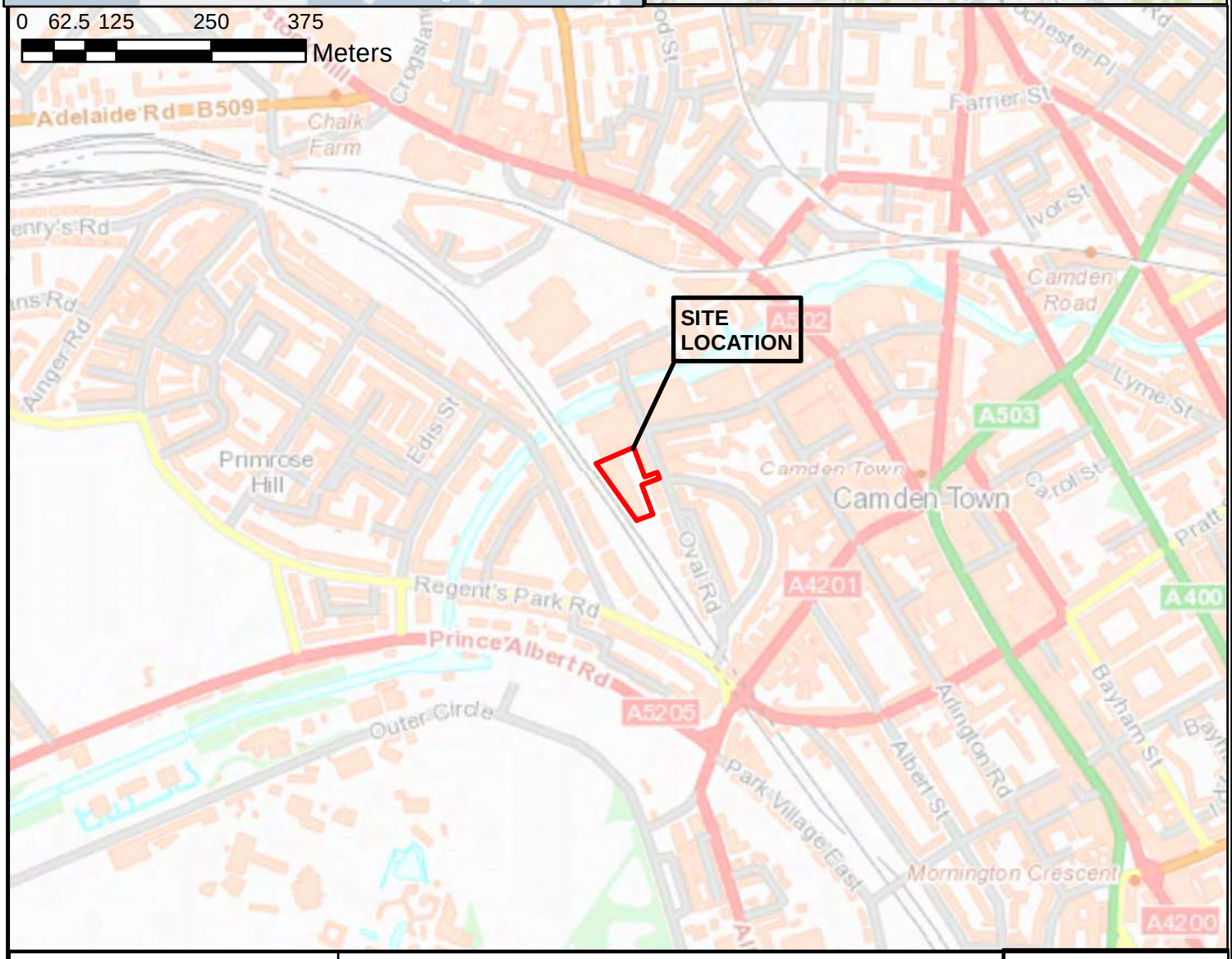

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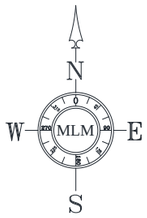
PROJECT

FAIRVIEW VENTURES LTD
CENTRIC CLOSE

SITE LOCATION

Job No.
774547

Figure No.
1



528283

528533

183977

183727

LEGEND

GROUND FLOOR LAYOUT

0 20 40 80 Meters

Coordinate System: British National Grid
Units: Meter
Scale: 1:1,500

Rev	Date	Description	Made	Ckd

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Drawing Status: FINAL ISSUE

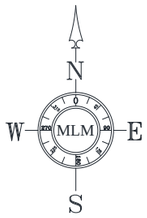
Client: FAIRVIEW VENTURES LTD

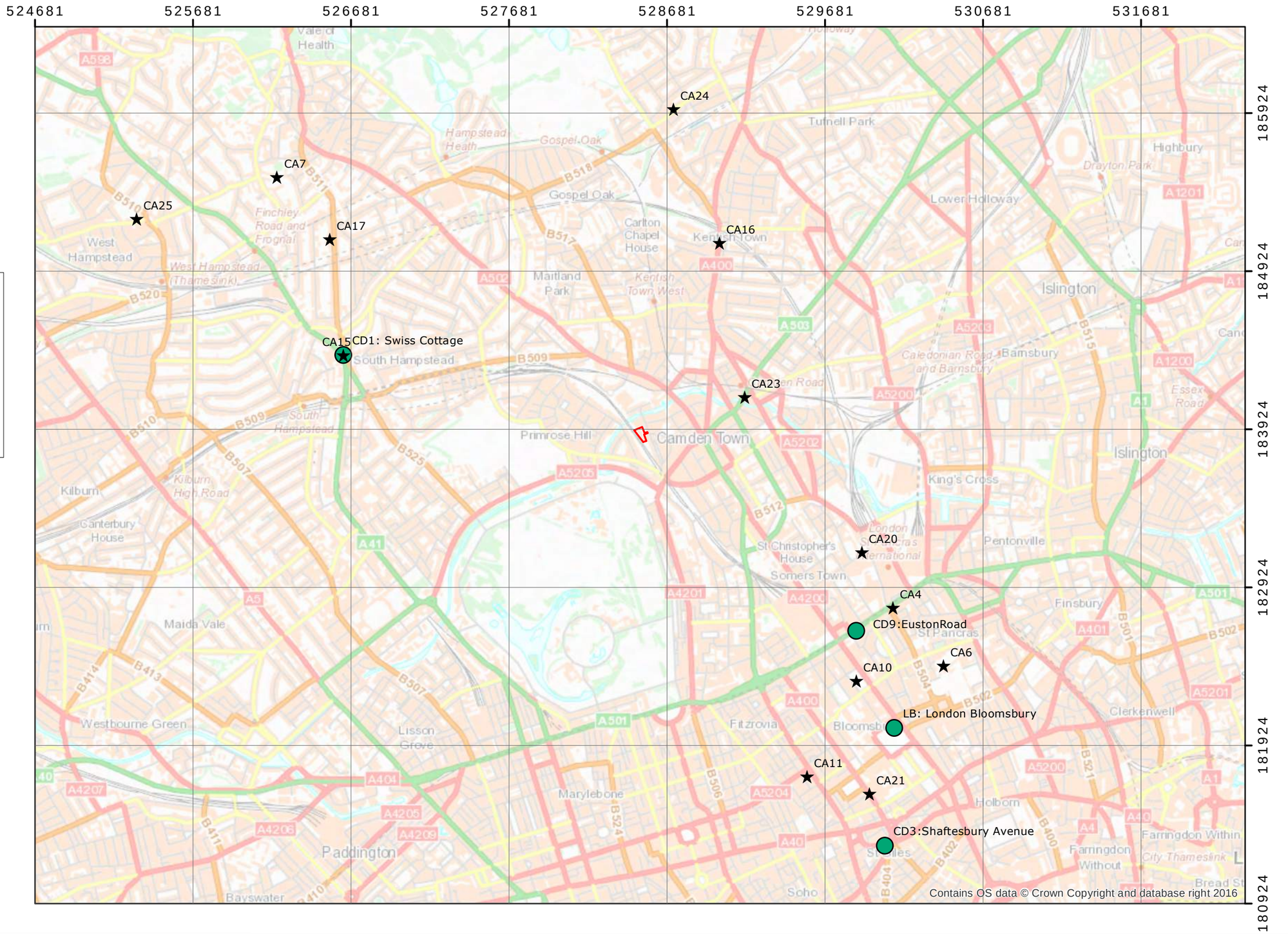
Project: CENTRIC CLOSE CAMDEN

Drawing Title: SITE LAYOUT PLAN

Drawn/Design	SJ	Date	DEC 2016	Scales	NTS @A1
Checked	GH	Approved	GH		1;2,500 @A3

Drawing No.: 774547-DWG-ENV-FIG-2





LEGEND

- SITE BOUNDARY
- ★ DIFUSSION TUBES
- ● AIR QUALITY MONITORING STATION

0 405 810 1,620 Meters

Coordinate System: British National Grid
Units: Meter
Scale: 1:25,000

Rev	Date	Description	Made	Ckd

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Drawing Status: FINAL ISSUE

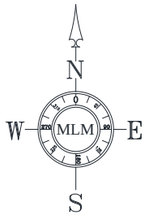
Client: FAIRVIEW VENTURES LTD

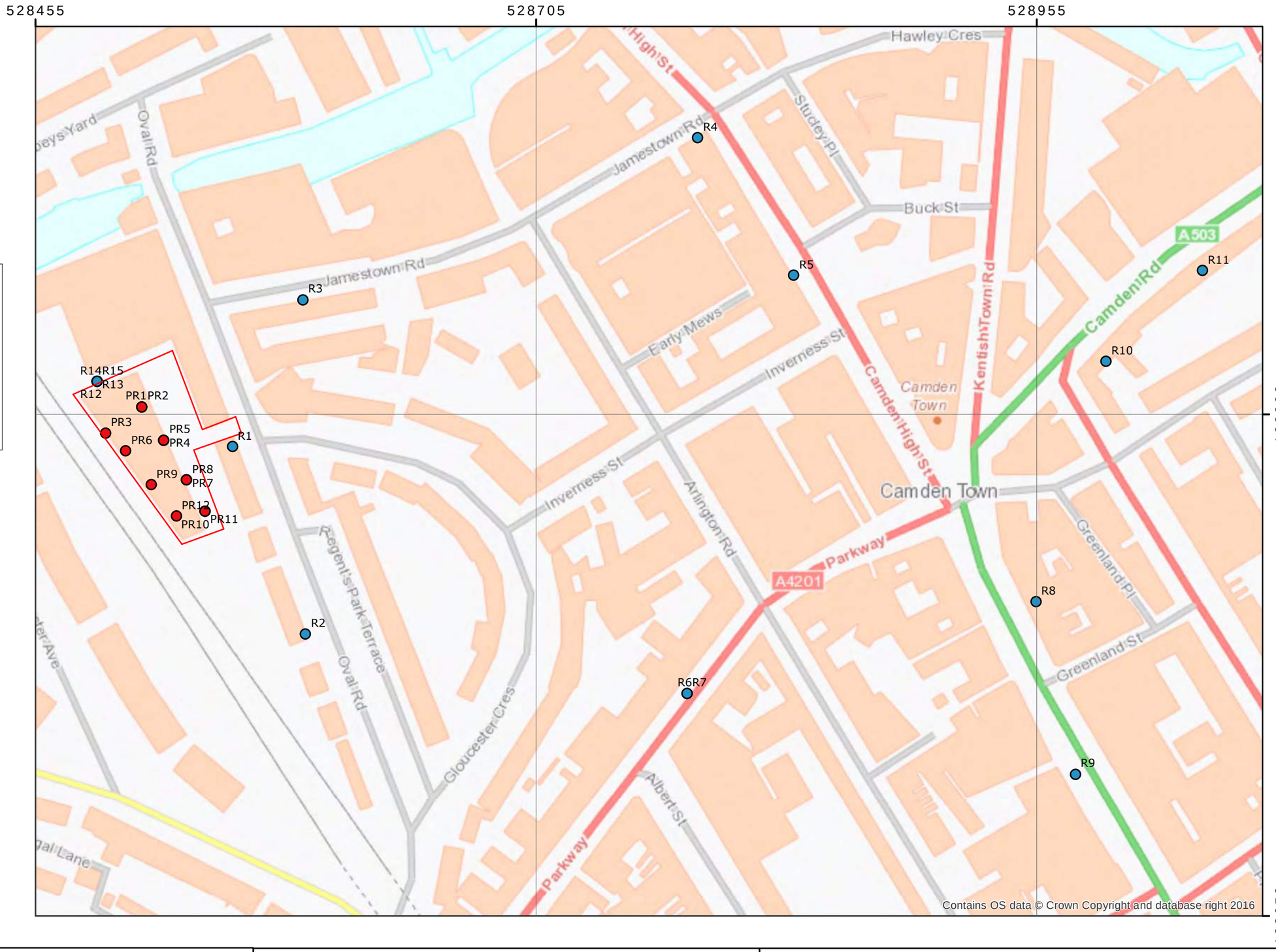
Project: CENTRIC CLOSE CAMDEN

Drawing Title: SITE IN RELATION TO MONITORING LOCATIONS

Drawn/Design	ER	Date	DEC 2016	Scales	NTS @A1
Checked	GH	Approved	GH		1;25,000 @A3

Drawing No. 774547-DWG-ENV-FIG 3





LEGEND

- PROPOSED RECEPTORS
- EXISTING RECEPTORS
- SITE BOUNDARY

0 30 60 120 Meters

Coordinate System: British National Grid
Units: Meter
Scale: 1:2,000

Rev	Date	Description	Made	Ckd

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Drawing Status: FINAL ISSUE

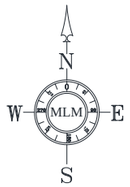
Client: FAIRVIEW VENTURES LTD

Project: CENTRIC CLOSE CAMDEN

Drawing Title: RECEPTORS LOCATION PLAN

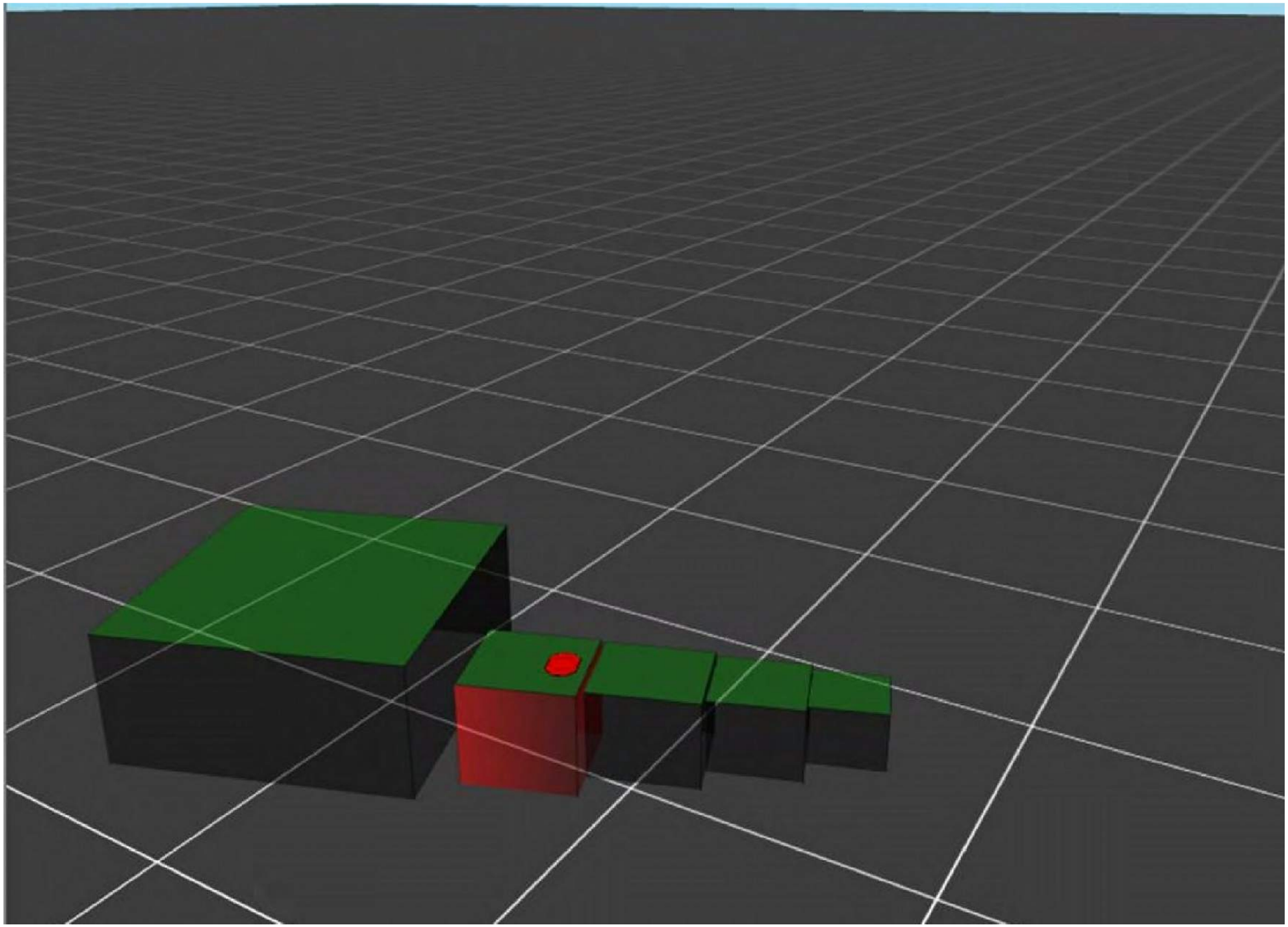
Drawn/Design	ER	Date	DEC 2016	Scales	NTS @A1
Checked	GH	Approved	GH		1;2,500 @A3

Drawing No.: 774547-DWG-ENV-FIG 4



LEGEND

- MAIN BUILDING
- BUILDINGS MODELLED
- STACKS



Rev	Date	Description	Made	Ckd

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Drawing Status: FINAL ISSUE

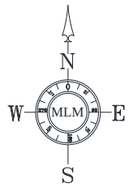
Client: FAIRVIEW VENTURES LTD

Project: CENTRIC CLOSE, OVAL ROAD, CAMDEN

Drawing Title: BUILDING LAYOUT USED IN MODEL

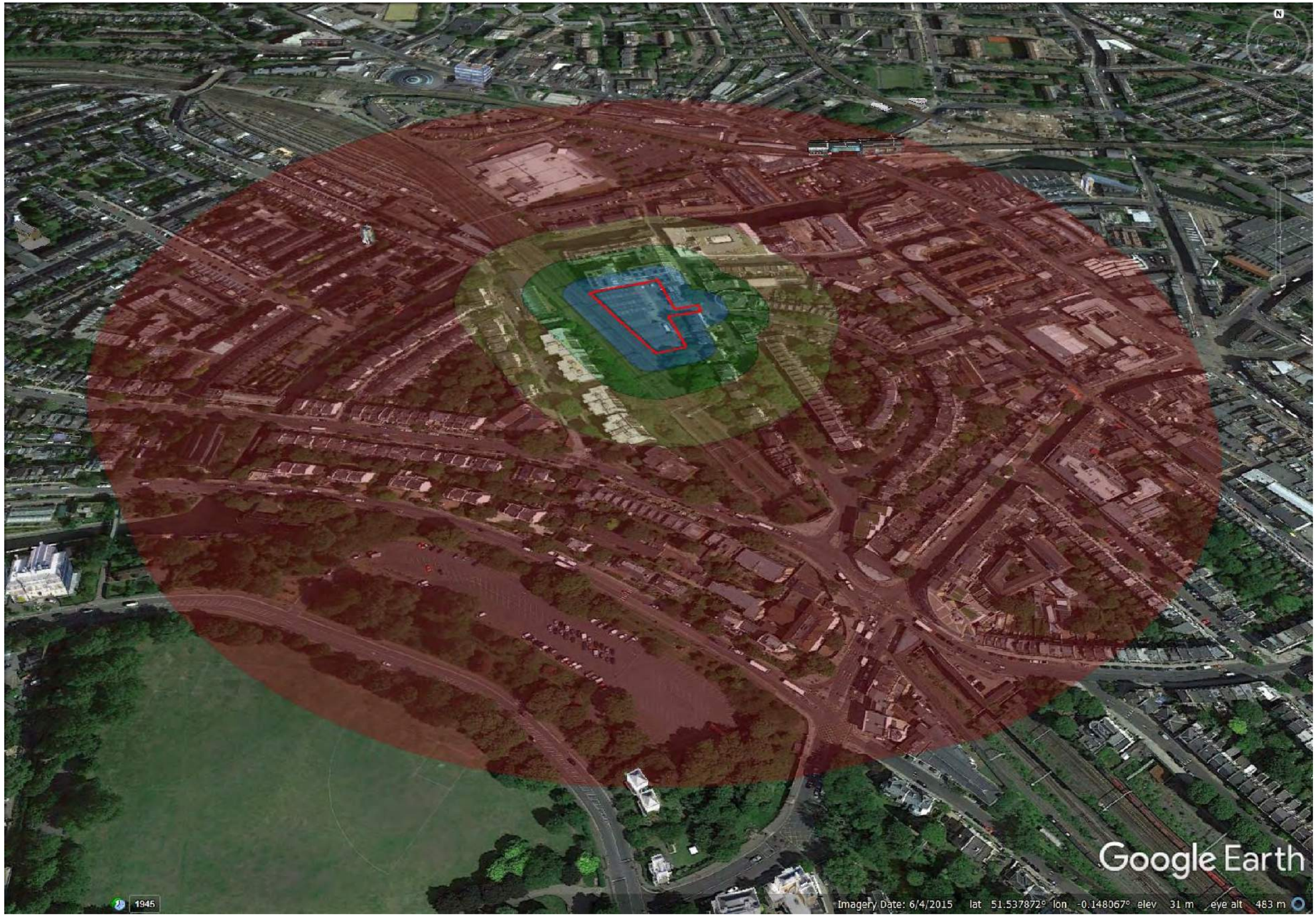
Drawn/Design	ER	Date	DEC 2016	Scales	NTS @A1
Checked	GH	Approved	JM		NTS @A3

Drawing No. 774547-DWG-ENV-FIG 5



LEGEND

- SITE BOUNDARY
- 20 m BUFFER
- 50 m BUFFER
- 100 m BUFFER
- 350 m BUFFER



Rev	Date	Description	Made	Ckd

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Client: FAIRVIEW VENTURES LTD

Project: CENTRIC CLOSE, OVAL ROAD, CAMDEN

Drawing Title: CONSTRUCTION DUST RISK ASSESMENT BUFFER ZONES

Drawn/Design	ER	Date	NOV 2016	Scales	NTS @A1
Checked	GH	Approved	JM		NTS @A3

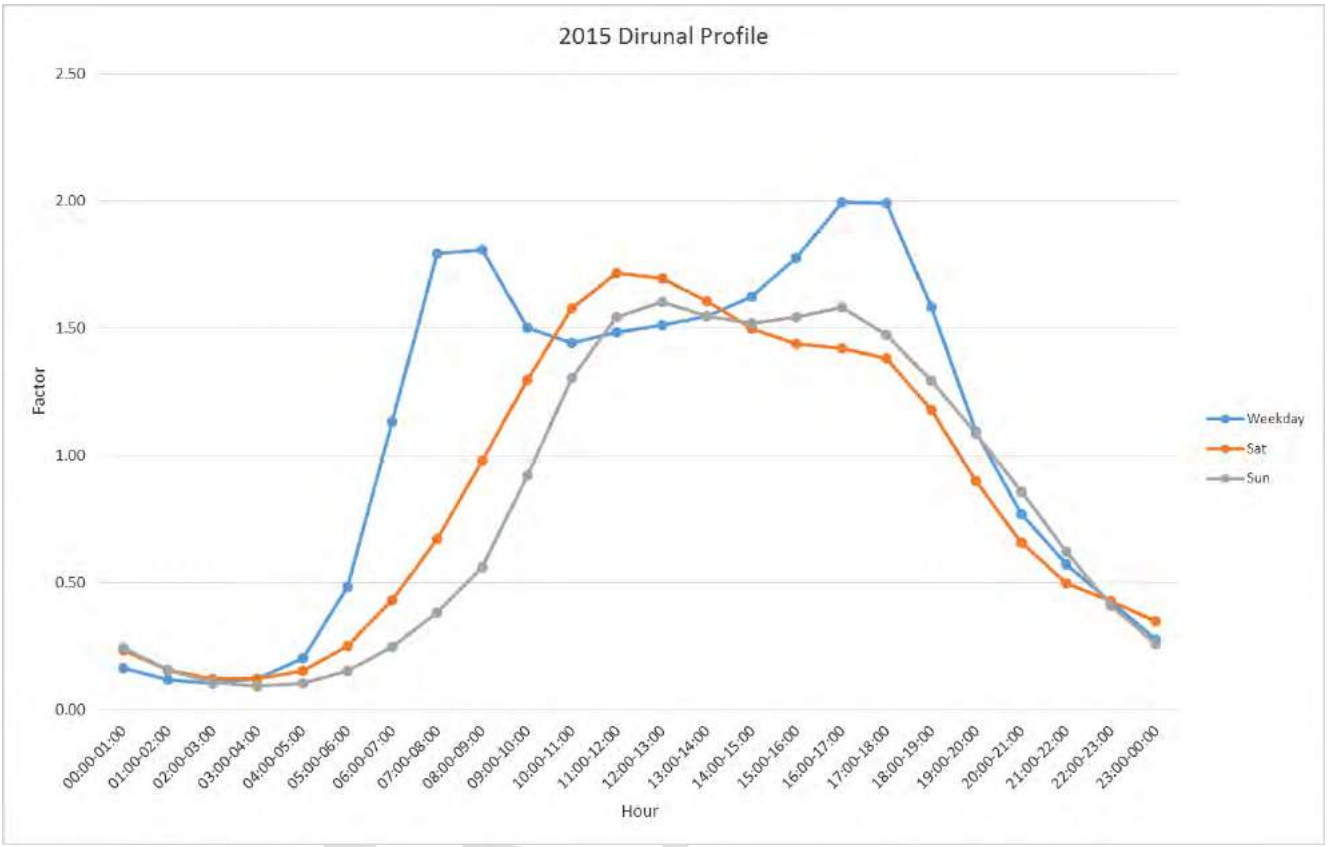
Drawing No. 774547-DWG-ENV-FIG 6

Appendices

Appendix A: Diurnal Profile
Appendix B: Wind Rose from London City Airport 2010-2014
Appendix C: Examples of 'highly recommended' mitigation measures for demolition and construction activities, and specific to demolition, earthworks and construction

Appendix A

Diurnal Profile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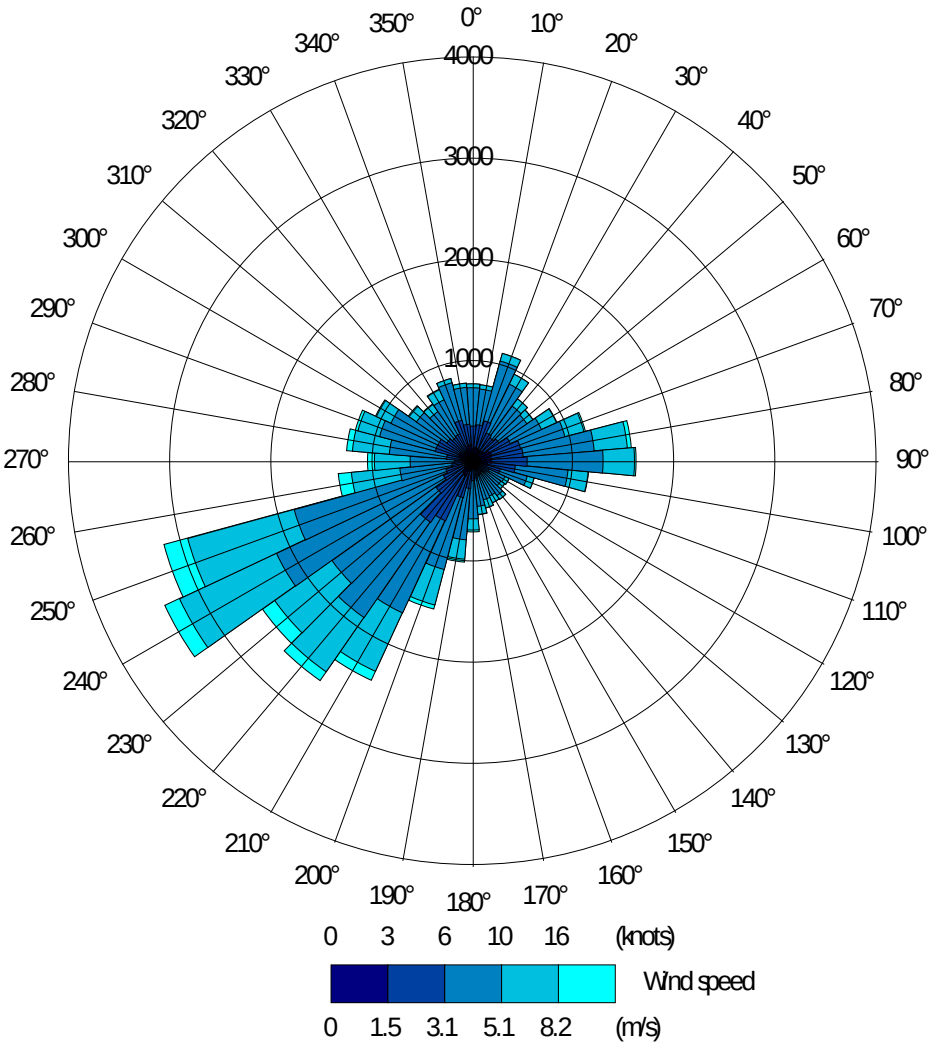
Appendix B

Wind Rose from London City Airport Met Station 2010 to 2014

Wind Rose for London City Met Station 2010 to 2014



Appendix C

Examples of 'highly recommended' mitigation measures for demolition and construction activities, and specific to demolition, earthworks and construction

It is suggested that the 'highly recommended' measures as set out in the IAQM 'Guidance on the assessment of dust from demolition and construction 1.1', are incorporated into the CMP by the appointed contractor and are approved by LBL prior to commencement of any work on site. Examples of the measures are shown below:

General Mitigation Measures

- Develop and implement a stakeholder communications plan that includes community engagement before work commences on site
- Display the name and contact details of the person accountable for air quality and dust issues on the site boundary (i.e. the environment manager/engineer or site manager)
- Display the head or regional office contact information on the site boundary
- Record all dust and air quality complaints, identify cause, 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
- Carry out regular site inspections to monitor compliance with the CMP, record inspection results and make inspection log available to LBC Council when asked
- Increase frequency of site inspection 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 periods of dry or windy conditions
- Plan site layout so that machinery and dust causing activities are located away from receptors, as far as is possible
- Erect solid screens or barriers around dusty activities or the site boundary that are at least as high as any stockpiles
- Fully enclose site or specific operations where there is a high potential for dust production and the activities are being undertaken 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. If being re-used on site, cover as detailed below
- Cover, seed or fence stockpiles to prevent wind whipping
- Ensure all on-road vehicles comply with the requirements of the London Low Emissions Zone and the London NRMM standards, where applicable
- 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

- Produce a Construction Logistics Plan to manage the sustainable delivery of goods and materials

- Only use cutting, grinding or sawing equipment fitted or in conjunction with suitable dust suppression techniques such as water sprays or local extraction e.g. suitable local exhaust ventilation systems

- Ensure an adequate water supply on 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 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

- Avoid bonfires and burning of waste materials

- 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 dust particles to the ground

- Avoid explosive blasting, using appropriate manual and mechanical alternatives

- Bag and remove any biological debris or damp down such material before demolition.

Measures Specific to Demolition

- 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

Measures Specific to Earthworks

- Re-vegetate earthworks and exposed areas/soil stockpiles to stabilise surfaces as soon as practicable

- Use Hessian, mulches or trackifiers where it is not possible to re-vegetate or cover with topsoil, as soon as practicable

- Only remove the cover in small areas during work and not all at once

Measures Specific to Construction

- 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

Site Safety Plus

Awarded to

Michael Nevins

On

12/10/2012

On the successful completion of

The Site Management Safety Training Scheme for the Construction and Civil Engineering Industries

Signed on behalf of Cskills Awards

A.B

Head of Cskills Awards

4099607
Registration number

31/10/2017
Expiry date

Cskills Awards provides qualifications, assessment and training support and is a brand of CITB-ConstructionSkills

CITB constructionskills

cskills awards

Important information about planning proposals in your area.

18th July 2017

Dear Resident,

Re: Invitation to Fairview's Construction Management Residents' Meeting regarding Centric Close, Camden

As you may be aware, Fairview New Homes recently obtained planning permission for their site at Centric Close off Oval Road in Camden.

As works are set to commence shortly, Fairview is keen to update local residents on their construction plans over the coming months, and would therefore like to invite you to attend their forthcoming Construction Management Residents' Meeting. The meeting will provide you with an opportunity to speak to members of the project team regarding the construction period.

The full details of the meeting are:

Where:	**Arlington Conference Centre, Camden NW1 7HE**
When:	**Wednesday 26th July; 6.30pm-7.30pm**

We recommend that prior to attending the meeting, residents review Fairview's Construction Management Plan on their consultation website; www.fairviewcentricclose.co.uk. If you would like to be sent a hard copy of the Construction Management Plan, please do feel free to contact me on 0207 399 2286 or elizabetht@curtinandco.com.

Please note that this is a meeting regarding construction on-site at Centric Close. For all other enquiries, or for further information, please contact me on the details provided above.

Yours sincerely,

Elizabeth Tomlin
Account Manager, Curtin&Co

	Application No: 2016/6891/P **1-6 Centric Close** **London** **NW1 7EP**	**Scale:** **1:1250** **Date:** **5-Jun-17**	**N**

CONTACT REPORT – CONSTRUCTION MANAGEMENT MEETING

FAIRVIEW HOMES

CENTRIC CLOSE | CAMDEN

26TH JULY 2017

curtin&co

LOCATION	Arlington Conference Centre
TIME	6.30-7.30pm
DATE	26th July 2017
THOSE PRESENT	Anthony Richardson (AR), 31 Oval Road Alex Proud (AP), 31 Oval Road Mark Knight (MK), 42-43 Gloucester Crescent David Sasha (DS), 15 Regents Park Terrace 6 additional residents/business owners David Chalmers (DC), Fairview Homes Mark Jackson (MJ), Fairview Homes Michael Nevins (MN), Fairview Homes Steve Carey (SC), Curtin&Co Lizzy Tomlin (LT), Curtin&Co

ANALYSIS

Overall, 10 residents and business owners attended the meeting regarding the construction management proposals for Centric Close. Although Fairview representatives stressed that the document was in draft form, there was some frustration expressed by residents that final decisions were not yet made.

Despite this, it was a largely positive meeting with residents simply wanting clarification on timescales regarding demolition and construction, in addition to noise, dust and vibration mitigation. LT noted down all attendees' contact details and Fairview has agreed that, once these details are finalised, contact will be made with everyone regarding the updated Construction Management Plan and any other outstanding queries.

Fairview understands that this is a sensitive area, as the site is located close to existing residents' homes. Despite this, the company is committed to over-communication with residents to ensure they are aware of the upcoming noise periods and any times of particular disruption.

ACTIONS

- Come back to AP on depth of concrete foundation
- Understand what noise mitigation methods will be used on-site
- Fairview to find out whether party wall surveys need to be undertaken
- Create a consultation programme going forward

CONVERSATION

SC introduced the meeting, emphasising it would discuss the construction management of Centric Close. He emphasised that he is impartial, not having been involved in the project until now, before introducing the rest of the team who would be presenting.

DC then gave a brief overview of the recent planning permission subject to a S106 agreement, granted by Camden Council on 15th June 2017. He then emphasised that the Construction Management Document provided to the residents was in draft form and had not yet been formally submitted to the Council. A resident then asked who Fairview was, to which DC explained they are a residential developer who buy, build and sell 'under one hat'. He then introduced MN who will be the Site Manager on-site.

MN begun by outlining the build time, explaining that since the document was in draft, the build had probably been moved back by 1 month, so will now start in January 2019. He then detailed that the first action will be a soft strip, within the next 2 weeks, which will be carried out by contractors, Erith. The main demolition works will likely take place at the end of August, which will involve removing roofs following by the building bricks. AP interjected to ask if this will be the loudest part of the build process to which MN agreed, adding that the main demolition will be noisy and cause vibrations.

AP then asked how deep the concrete foundations were onsite, adding that he had inspected it and it looked very deep to him. MN did not have these figures to hand, but said he would happily get back to AP on this subject, agreeing that it does look deep. AP asked how long that phase of the demolition would take, to which MN said he will also get back to him on this issue.

AR then asked whether Fairview will survey the party wall foundations. At a meeting he had with Mr Wood at Fairview, he said that this surveying will need to take place. MN said that Fairview is aware of surveys that need to be done, and will be done if necessary. AR added that Fairview can't start construction until this issue is resolved otherwise he would have to serve an injunction.

MN moved on by explaining vehicles will be entering the site by reversing, which would mean beeping. He added that a turning circle may also be put on-site for vehicles.

AP then moved the conversation back to demolition, asking what will be the worst period. MN replied that demolition will take place within a three month period all in. AP then asked what the dust, noise and vibration impact will be before then asking who will be the main point of contact during demolition, Erith or Fairview. MN replied that he will be the point of contact throughout the build.

AR then referred to Paragraph B of Section 4 saying that it does not include information about noise buffers or screens. MN said that he would get back to Erith on this question and then liaise with AR. MJ then interjected to say emphasis that the document is not yet final and Fairview plans to take feedback away from this session and build into the document. MJ said that only after S106 is agreed can demolition begin.

AR then referenced the document again where it states the site is called 'low risk', which he disagreed with.

AP then asked about working hours and why work had taken place on a Sunday. DC replied that the work undertaken on a Sunday was not by Fairview but by British Power. MJ added that Fairview commissions works for utility companies to undertaken, but is unable to determine when they will work. They are a statutory body who are authorised to work on a Sunday.

AP then moved on to dust suppression and means of mitigating it. MN said that water spray will be used. AP then conferred with AR and they agreed this was the best course of action. AP then asked whether the best practice will be used for noise dampening, to which MN agreed it would.

AR then said that the document states the Lock House is a commercial building, yet has 171 flats within it. MJ once again reiterated that it is a draft document and will take these comments on board.

AP asked whether another meeting will take place, adding that he would ideally like one prior to demolition works, to review the final document. DC said that this would be arranged and SC suggested there could be allotted times for residents to speak with MN on-site in his office.

AP asked whether Fairview is part of the Considerate Constructors Scheme, to which MN agreed they were. AP expressed concerns that female staff in his office will be targeted by contractors. MN said that he will be the first to hear if that happens and will not accept that kind of behaviour. AP accepted this, but said that he also expects a meeting once a month with Fairview. AP then left the meeting early.

AR said that Fairview needs to review the boundary behind Oval Road properties as the images on documents do not relate to the existing boundary. MN agreed and said that this is something he has looked into.

MK, business owner in the Rotunda building, said that his building manager JLL have put brackets in the cracks in the wall since the construction of the Lock House adjacent to Centric Close. He added that since heavy vehicles have driven past and work has been done, the cracks in the walls have become noticeably bigger. MJ asked whether Fairview could speak with JLL regarding this, and LT gave him a business card for him to forward the details of their building manager.

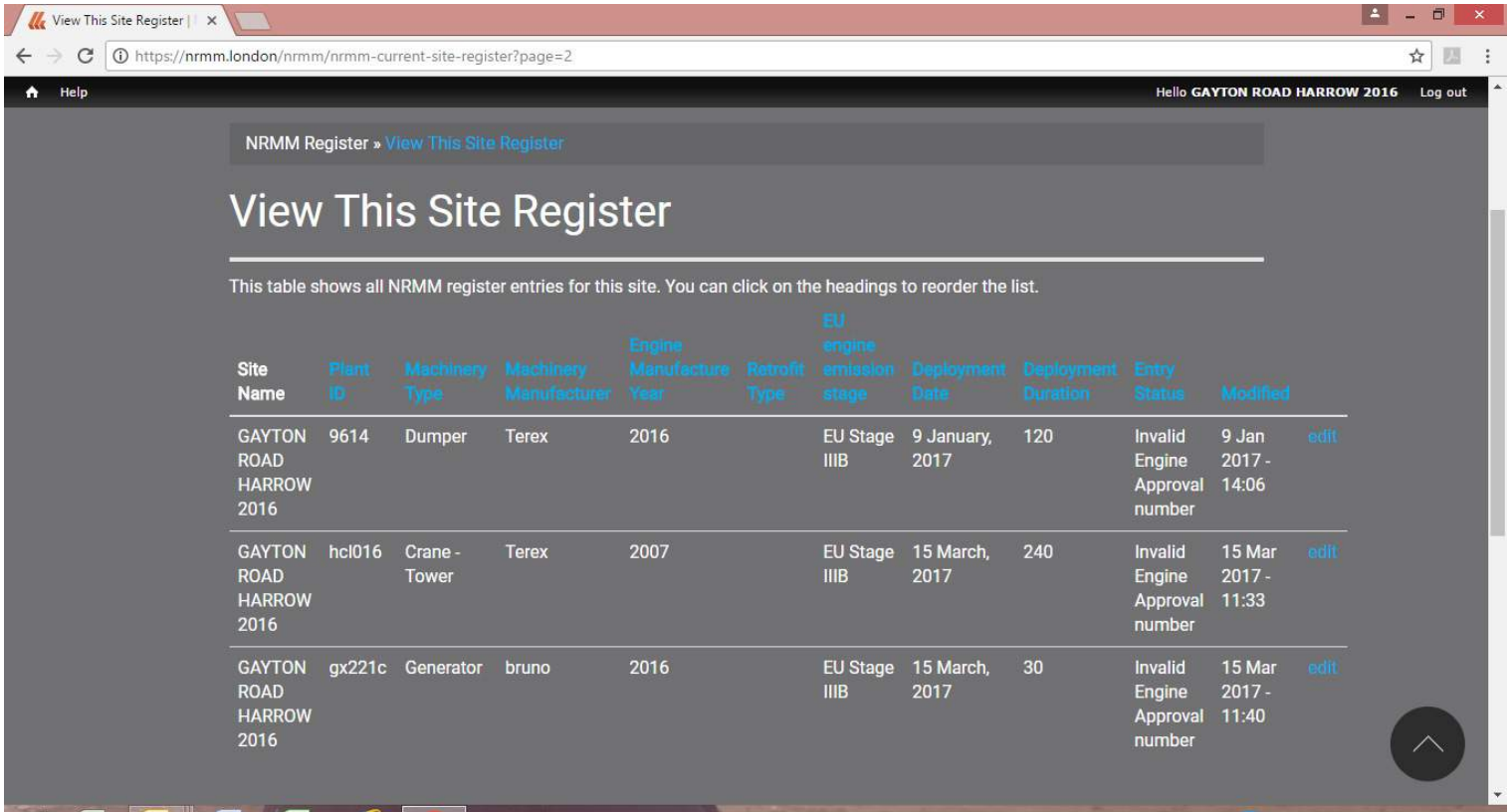
DS then stated that he was representing the Regents Park Terrace Residents' Association and had several questions on their behalf. He asked about the consent, how many units were in the plans and which of these were affordable rent. He then asked how much business space will be included in the scheme. After DC replied with details of the scheme, DS then asked about parking numbers, to which DC replied that the development was car free apart from 8 disabled spaces. DS appeared to welcome this.

SC asked whether residents had any other questions, to which they did not and the meeting came to an end.

TONE OF CONVERSATION

Constructive and reasonable.

Appendix 16 – Example NRMM Register



4. Services

Prior to demolition work commencing, any disconnections and/or diversions will have been carried out by the Client or its agents.
The term 'Service' means all pipes, cables and other equipment associated with electric, gas, water and telecommunications industries.

Before commencing works ECL will ensure that all the services have been tested, isolated, removed and re-routed (where applicable). All services will be assumed to be LIVE until a Certificate of Isolation for disconnections has been provided to ECL from the service providers or client. Copies of these certificates will be kept on site and can be viewed at any time upon request made to the Site Manager.

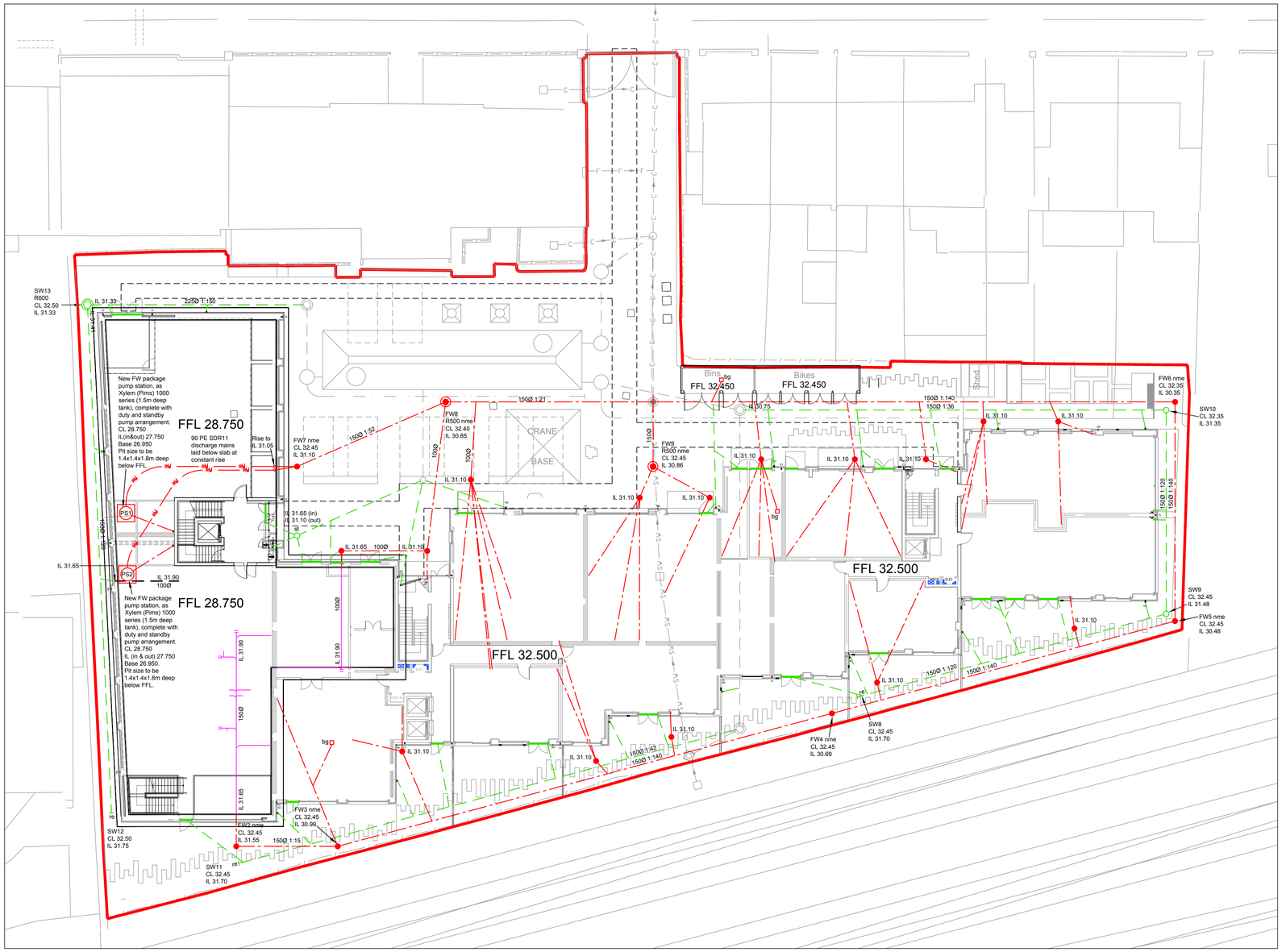
Any services which are to remain LIVE throughout the site for any period of our works are to be clearly marked prior to demolition commencing. This will be achieved by using appropriate tape and/or spray paint in accordance with National Joint Utilities Group 'Guidelines on the positioning and colour coding of underground utilities', as well as any additional protection as required. In addition, any services that have been identified to remain LIVE throughout our works will be raised by the Site Manager in the daily morning Pre-Job Brief so that all operatives are made aware of the location of the services.

If LIVE services are still present within the site, the following control protocols will be implemented prior to breaking ground in any location:

- Service drawings *will be referenced for the presence of known services*
- *Excavation area to be fully CAT / GENNY scanned for the presence of services (even if drawing indicates no services present)*
- *If any services are identified in the excavation zone these will be marked above ground by a timber peg line – no excavation works will be allowed within 1 metre of this location*
  NOTE: *Where the presence of services affect the progress of work, the client will be informed so they can arrange for services disconnections to be completed before further works commence*
- *Only once the above has been completed will a permit to dig be issued – the permit will clearly state any services present*
- *The daily permit to dig MUST be held by the relevant machine operator*.

If water supplies are disconnected prior to site possession, our requirements for dust suppression during demolition will be gained from a metered hydrant.

Foul and surface water drains will be identified on site and protected or permanently sealed where required.



Key

- Enabling Works FW Drainage Installation
- Enabling Works SW Drainage Installation
- Enalbing Works perforated pipe Installation
- CP — Enabling Works Catchpit Installation
- ST — Enabling Works Silt trap Installation
- R500 / R600 — Enabling Works Chamber Installations
- re — Enabling Works Rodding eye Installation
- Private below-ground foul water drainage
- Private below-groundsurface water drainage
- RM — Foul water discharge main
- High-level, foul water drainage unslung from podium soffitt
- High-level, SW drainage unslung from podium soffitt
- Polypropylene universal inspection chambers 1200 deep max, 450 dia, 100 inlet / outlet connections (6 no. max) or 150 inlet/outlet connections (4 no max) as detailed on FNH425/13.3/series construction details.
- nme — Polypropylene 'non-entry' inspection chambers 3000 deep max, 450 dia (with 300 dia. or square cover) 100 inlet / outlet connections (6 no. max), or 150 inlet/outlet connections (4 no max) as detailed on FNH425/13.3/series construction details.
- R500 / R600 — Denotes 500/600 dia ppic, 6000mm deep max with 4 no. max inlets / outlets up to 150mm dia, as detailed on FNH425/13.3/series construction details. Where >1200mm deep, use reduced size access cover. Wavin Range 500/600 or similar.
- ST — Denotes 450 dia polypropylene silt trap with 300mm nominal sump, as messrs Polypipe Basic Silt Trap or similar.
- re — Rodding eye same dia. as downstream drain
- bg — 110mm dia bottle gully with 100 outlet to FW drainage system.
- CP — PCC surface water catchpit as detailed on FNH366/13.3/series construction details
- Denotes OSMA Threshold drain, with connection to new SW drainage system. Refer to Architect's threshold details.

Foul Water Chamber Schedule

NO.	Cover Level	Invert Level	Chamber Type	Easting	Northing	Remarks
FW2	32.45	31.05	450 IC	tbc	tbc	Non-entry cover
FW3	32.45	30.99	450 IC	tbc	tbc	Non-entry cover
FW4	32.45	30.69	450 IC	tbc	tbc	Non-entry cover
FW5	32.45	30.48	450 IC	tbc	tbc	Non-entry cover
FW6	32.35	30.35	450 IC	tbc	tbc	Non-entry cover
FW7	32.45	31.10	450 IC	tbc	tbc	Non-entry cover
FW8	32.40	30.85	Range 500 IC	tbc	tbc	Non-entry cover
FW9	32.45	30.86	Range 500 IC	tbc	tbc	Non-entry cover

Surface Water Chamber Schedule

NO.	Cover Level	Invert Level	Chamber Type	Easting	Northing	Remarks
SW8	32.45	31.70	Rodding Eye	tbc	tbc	
SW9	32.45	31.48	450 IC	tbc	tbc	
SW10	32.35	31.35	450 IC	tbc	tbc	
SW11	32.45	31.70	Rodding Eye	tbc	tbc	
SW12	32.50	31.75	Rodding Eye	tbc	tbc	
SW13	32.50	31.33	Range 600 IC	tbc	tbc	

IMPORTANT CDM NOTES:

HAZARD: Working within proximity of potentially LIVE underground services.
ACTION: Service locations to be ascertained by tracing prior to commencing any groundworks in a specific area. Do not reduce ground levels in areas where residual live services exist. Providing warning signs where appropriate to advise caution.

HAZARD: Trench excavation up to 3.5m deep for drainage. Possible trench collapse and working in confined spaces.
ACTION: Ensure satisfactory Method Statement in place, including shoring, and ensure adequate method of egress from trench exists

HAZARD: Works to live foul sewer at connections to existing
ACTION: Check sub-contractors method statement, and ensure existing manholes are adequately ventilated and workmen wear suitable protective equipment. No access to manholes unless operatives fully trained in working within confined spaces.

HAZARD: Stacking of drainage pipes (particularly clay or concrete). Danger of crushing torso or limbs from rolling or falling pipes. Particularly as site has steep falls on it
ACTION: All pipes to be stacked safely, considering the size and slope of the site storage compound and the proximity of the construction works. Use timber / brick chocks to prevent rolling.

HAZARD: Site in vicinity of existing residential development
ACTION: Ensure adequate fencing to secure the site, and signage to warn residents and through traffic of danger.

HAZARD: Other potentially unaffiliated workers within vicinity of site, carrying out operations which may prove hazardous or conflict with works being carried out by developer
ACTION: Ensure consultation takes place with service companies and other third parties, on working methods and times.

HAZARD: New works within existing road in forming sewer connection
ACTION: Ensure satisfactory fencing, lighting, signage and protection to warn workers, residents and their visitors of danger. Hi vis clothing to be worn by workers at all times. Consider working off-peak during times of reduced traffic flow.

HAZARD: Working in proximity to railway lines / Network Rail property
ACTION: Ensure all safeguards are in place to prevent workers straying on or close to the railway lines. Recommend establishing a Network Rail contact prior to commencement of works. Thereafter, Network Rail to be informed of all procedures and method statements for works close to the railway lines and given reasonable time to comment / make recommendations. Ensure cranes and other large plant cannot swing over or fall onto the railway lines at any time during construction.

PRELIM ISSUE

NOTES

1. This drawing is to be read in conjunction with the private and drainage construction details.
2. All private drainage works to be carried out in accordance with the provisions laid down in BS EN 752 & The Building Regulations, Part H.
3. Levels shown in buildings are Finished Floor Level.
4. Drainage under adopted roads to be either:-
   a) Vitrified Clayware to BSEN295.
   b) Concrete to BS 5911, Class M. Laterals to be formed of either vitrified clay or "Extra Strength", concrete "Class M",
5. Before commencing any Sewer or drainage works, the Developer's Groundworker must satisfy themselves, the developer and the Local Authority of actual levels and conditions of existing sewers.
6. Buried concrete to satisfy the requirements of BRE Special Digest 1 as predetermined by the site's Geotechnical Report
7. All abandoned, buried obstructions encountered during the construction of Highway & Drainage Works are to be broken out to bed level of drains and sewers, and to the formation of carparks and drives etc., and to sufficient depth to allow for laying service company's mains and services.
8. Depth and Location of existing services to be traced prior to any excavation.
9. All private drainage to be laid to levels shown using flexibly jointed pipes, either uPVC to BS 4660 and BS 5481 or vitrified clayware to BS EN 295.
10. Generally pipes to have granular Bed & Surround in accordance with manufacturers recommendations, ensuring adequate protection with respect to depth and location. Where bedding material is placed at depths susceptible to ground water ingress, it is to be wrapped in a geotextile (Terram 700 or better).
11. Private precast concrete manholes and catchpits to be constructed using conc. box sections or circular rings to BS 5911-200, with 150mm conc. surround, size and construction to comply with Table 12 of Approved Document, Part H.
12. Rodding eyes, etc are to be laid to manufacturers minimum cover and depth to allow adequate fall from adjoining unit.
13. Access panels are to be provided to all rainwater pipes, a max. 600 above finished ground level.
14. All manholes / inspection chambers in block paved areas, to have recessed covers. These are to be orientated such as to minimise cut blocks.
15. All pipework to be 100mmØ (150Ø from road gullies) unless otherwise stated.
16. All levels in metres (m) unless specified otherwise.
17. All drain runs from Svp's, stub stacks or FW gullies to be laid at 1:40 gradient unless otherwise stated.
18. Svp's, stub stacks & RWP's are shown indicative only. Refer to FNH412/12 series drawings for accurate locations
19. House/Flat drainage to be laid prior to erection of scaffold.
20. All cover and invert levels shown are in metres. All pipe diameters are in millimetres U.N.O.
21. All chambers located in trafficked areas to have concrete surround as detailed on FNH425/13 series construction details
22. IMPORTANT NOTE:
    At depths where groundwater ingress is encountered, consider the use of a sump / pump arrangement. Additional reference should be made to the Interpretative Geotechnical Report for supplementary measures in such instances
    Where excavations are >1m deep, consider the use of full perimeter trench support.
23. IMPORTANT NOTE:
    The new sewer connections are be successfully made prior to commencing any upstream drainage works.

REV	AMENDMENTS		DATE
2	Prelim Issue	IDL	28.07.17
1	QA Issue	IDL	08.06.17

Fairview® NEW HOMES Ltd.

Technical Department
50 Lancaster Road
Enfield, Middlesex EN2 0BY
Telephone No. 020-8366-1271
Facsimile No. 020-8342-3861
Web Site: www.fairview.co.uk
E-mail: technical@fnhltd.co.uk

Drawn :	IDL	Date :	June 2017
Scale :	1:200 @ A1	Section :	Infra
Checked :	DC	Approved :	PT

Title :

Drainage Layout

Job :

Centric Close, Camden

Drg. No : FNH425/13.3/1

Rev : 2

Dwg file name:
I:\Drawings\818 Centric Close, Camden\07 Drainage\13-3-1.dwg

Fairview Estates (Housing) Ltd.

50 Lancaster Road, Enfield, Middx, EN2 0BY - Tel: 020 8366 1271 - Fax: 020 8366 0189

Correspondence to:
50 Lancaster Road
Enfield EN2 0BY
Telephone: 0208-366-1271
Facsimile: 0208-366-0189

SC ORDER No: HS-42501/00003
Order Date: 11/09/17

TOTAL FIXED PRICE LUMP SUM AGREED ORDER VALUE: £ **2,370.00**

Sub Contract Order

This order is placed subject to the Sub-Contractor complying with our standard conditions of contract as detailed below. The Sub-contractor must also comply with the requirements of our site programme. No work is to be undertaken and no material is to be supplied outside the scope of this order without an offical order in writing from the above address and we shall not be liable for payment for any such work or materials unless an official order in writing has been given. The subletting of any part of this work without written consent from this company is prohibited.

To: **CCS Jeweltone Ltd**
Bath Place Wharf
Downs Road
Maldon
Essex
CM9 5HG
Tel: 01621 841 222 Fax: 01621 850 691

Ref: **42501 Centric Close, Oval Road, Camd**

Cost Head 33280A	Pest Control Survey, Control and Monitoring Works	2,370.00

We place herewith our order for you to provide all necessary labour, plant, materials and supervision to carry out the complete monitoring and control works in relation to vermin at the above mentioned development throughout all stages of demolition. All in accordance with our letter of enquiry dated Wednesday 6th September 2017 and subsequent correspondence Contract Documents contained therein, Fairview Estates (Housing) Ltd's Sub-Contract Terms and Conditions dated November 2015 and notes as follows.

BRIEF SCOPE OF WORKS:- The following is a list of additional /clarified items and is by no means exhaustive. The complete scope of works is as detailed in the documentation listed above.

The provision pre-demolition report, identifying site specific risks in terms of vermin disturbance during the demolition works and suitable pest control methodologies for the same.

Provision to supply and install 30nr fully baited and labelled rat bait stations to site.

A post demolition site survey proposing measures for vermin control during the construction process.

Supply and installation of 10-15 stations to the site compound for protection of offices, canteen and toilet facilities.

Supply and installation of 15nr rat bait stations to the site perimeter hoarding to monitor vermin ingress to site.

Supply and installation of 6nr fully baited & labelled mouse bait stations internally to the site canteen kitchen for protection of food stuff and hygiene.

Monthly inspections to monitor and maintain all stations and give a written report upon each visit to be placed in the supplied pest control file. 12 months initially - to be extended as and when required to suit site programme and requirements.

Notes:

1. The Area Construction Manager responsible for this project is Chris Pollard who can be contacted on telephone numbers (Head Office - 020 8366 1271).
2. All works are to be carried out to suit the site programme and to the satisfaction of our site management who can be contacted on telephone number 02083661271 with regards to the programming of your works, .

The subcontractor shall carry out the subcontract works to suit Fairview Estates (Housing) Ltd's programme and conform with all responsible requests and directives given by Fairview Estates (Housing) Ltd.

Any matters, which may affect or are likely to affect the progress of the site must be notified to the Site Agent as soon as possible in order that appropriate action is taken.

3. This order is fixed price, lump sum / non-remeasureable and all risk for the duration of your contract.
4. Permitted site working hours are as follows:-
   Monday to Friday: 08:00 to 18:00 hours
   Saturdays: 08:00 to 13:00 hours
   and at no times at all on Sundays or Bank Holidays.

   You will be expected to work these hours unless agreed otherwise by our
   Area Construction Manager.
5. No additional monies will be paid for any omissions or errors on the part of the Subcontractor for failure to understand the contract documents.
6. All works must conform strictly in accordance with the contract documentation and clauses disclosed within our letter of enquiry and accompanying documentation together with the requirements of the NHBC, Local Authority and our Site Management.
7. Any works found not to be in accordance with the contract documents will be treated as a breach of contract and to this end the Company reserves the right to request that works are remedied to our complete satisfaction at no cost to the Company. Any related costs incurred to the development as a result of any remedial works and delays may, at the discretion of this Company, be off-set against the defaulting Subcontractor's account.
8. Any sub-standard work is to be brought immediately to the attention of our Site Management to enable remedial works to take place at the earliest possible stage. Failure to do so prior to the commencement of your works will be deemed as acceptance of surfaces and conditions and as such no claims for additional monies will be accepted.
9. The Subcontractor will produce a finish to the complete satisfaction of the Company. The Company will not provide finishing staff of any kind to carry out works deemed to be the Subcontractor's responsibility.
10. In compliance with the Construction Industry Scheme no payments shall be made by the Contractor to the Subcontractor on or after the 1st August 1999 unless the Subcontractor holds and produces to the Contractor one or more of the following:-
    A) Tax Certificate CIS5, or B) Tax Certificate CIS6, or C) Registration Card CIS4.
11. You are to co-ordinate your works in relation to all other trades as applicable.
12. You will be responsible for providing your own temporary power and task lighting.
13. You will supply a competentmSite Foreman for the duration of your subcontract works.
14. You will be responsible for unloading your materials upon initial deliveries, and any subsequent loading out / double handling of your materials to your place of work.
15. You are deemed to have made provision for detailed setting out and levelling applicable to your trade in accordance with all relevant bodies and drawings issued by Fairview Estates (Housing) Ltd. It is your responsibility to ensure that all works carried out by other trades is satisfactory in relation to your own work prior to commencement.
16. You are deemed to have made provision for cleaning up as the work proceeds. Debris arising from your operation is to be placed in skips provided by FE(H)L or stockpiled as instructed by our Site Management.
17. You have allowed for sufficient visits to complete your subcontract works.
18. This order includes for working over Easter, Christmas and any other Bank Holidays, if required providing our Site Manager gives your Company two weeks prior notice.
19. Proformas will be issued upon receipt of your UNAMENDED signed copy of this order which should be returned to our address: 50 Lancaster Road, Enfield, Middlesex, EN2 0BY for the attention of Becky Mears

    Please retain for your records the top copy of this Subcontract Order, and as requested, duly sign and return the other copy.
20. Self-Billing Agreement

    Fairview Estates (Housing) Ltd agrees:

    1. To issue self-billed invoices for all supplies made to them by the Self-billee (the supplier) for the duration of this contract.

2. To complete self-billed invoices showing the subcontractor's name, address and VAT registration number, together with all the other details which constitute a full VAT invoice.

The self-billee agrees:

1. To accept invoices raised by the self-biller on their behalf for the duration of this contract.

2. Not to raise sales invoices for the transactions covered by this agreement.

3. To notify the customer immediately if they change their VAT registration number, cease to be VAT registered; or sell their business, or part of their business.

21. Section 60 - Control of Noise on Construction Sites:-

The working hours for this development are 08:00 - 18:00 hours Monday to Friday, 08:00 - 13:00 hours on Saturdays and at no times at all on Sundays or Bank Holidays.

Contravention of these working hours could lead to the Company being fined.

Any such fine received by the Company shall be passed on directly, with any other associated costs, to the Sub-Contractor or Sub-Contractors responsible for the breach.

22. This order includes for the Inland Revenue regulations with regards to employers national insurance contributions only applicable from 6th April 1997.

23. Security of Plant and Materials appropriate to your trade is deemed your responsibility.

24. It is confirmed that CCS Jeweltone Ltd have visited the site to assess all conditions relating to access on and off site, the execution of the works, appropriate sizes of transport vehicles, and cranes have been included in the calculation of the contract sum. No additional claims for payment due to the lack of knowledge will be entertained.
If CCS Jeweltone Ltd are unable / elect not to visit site, then the same conditions above will apply with respect to any assumptions made within their price.

25. Fairview Estates (Housing) Ltd's subcontract terms and conditions dated November 2015 shall form the agreement between CCS Jeweltone Ltd and Fairview Estates (Housing) Ltd.

26. No works are to commence on site until you have received, in writing, full approval of your Method Statement and Risk Assessment for this Development.

27. This order includes for the Subcontractor to comply with Site Safety Rules 50, 50A, 50B & 50C as issued with our tender enquiry.

Authorised in respect of 3 page(s) by:

for FAIRVIEW (ESTATES) HOUSING LTD

Please sign where indicated and return to Head Office immediately.

Do not forget to notify Head Office of:
1. Your VAT registration No.
2. Your tax exemption certificate No. where applicable.
3. Your certificate of incorporation where applicable
4. Details of your Public and Employers Liability Insurance.

Accepted in respect of 3 page(s) by:

for Sub-Contractor

One copy to be returned to Head Office

CCS Jeweltone Ltd
Bath Place Wharf
Downs Road
Maldon
Essex
CM9 5HG
Telephone:- (01621) 841222
VAT No. 810 4457 58

Quote

Date: 11/09/2017
Valid for: 30 day(s)

Darren Smith
(P) Fairview New Homes Ltd
50 Lancaster Road
Enfield
Middlesex
EN2 0BY

Site Details:
Becky Mears
Centric Close
Camden
London

Our Reference: 13220

Enquiry Specification	**Cost**
To supply and install 30 No fully baited and labelled rat bait stations to site, proposing to install 10-15 stations to the site offices and welfare compound for protection of offices, canteen and toilet facilities. To install 15 No rat bait stations to the site perimeter hoarding, to monitor vermin ingres: to site. To supply and install 6 No fully baited and labelled mouse bait stations internally to the site canteen kitchen for protection of food stuff and hygiene. To carry out monthly visits to monitor and maintain all stations, and give a written report upon each visit, to be placed in a pest control file supplied. Where safe and unrestricted access allows. Please note, parking on site required foc please. Lost or damaged bait stations will be charged at £35.00 per unit. Cost for initial set up and 12 visits at monthly intervals will be £2370.00 + VAT, and	£2,370.00

- A Full Method Statement and Risk Assessment will be supplied on receipt of your order.
- All invoices are to be paid in full within thirty days of CCS Jeweltone Ltd's invoice date
- The enclosed quotation/costs are not inclusive of Retention, CITB or any other kind of deductions
- If the enclosed quotation is to your complete satisfaction please send an official order quoting Ref Number and cost. Your order quoting our Ref Number will be understood by CCS Jeweltone Ltd that you fully understand and accept our Terms & Conditions.

Company Reg. No. 4636470

All Prices Exclude V.A.T

Certification No. 186666

Sustaining Member

ID:009160

thereafter £1400.00 + VAT. These costs are subject to a full site survey, and prices may increase or decrease.

Total: £2,370.00

- A Full Method Statement and Risk Assessment will be supplied on receipt of your order.
- All invoices are to be paid in full within thirty days of CCS Jeweltone Ltd's invoice date
- The enclosed quotation/costs are not inclusive of Retention, CITB or any other kind of deductions
- If the enclosed quotation is to your complete satisfaction please send an official order quoting Ref Number and cost. Your order quoting our Ref Number will be understood by CCS Jeweltone Ltd that you fully understand and accept our Terms & Conditions.

RSPH
ROYAL SOCIETY FOR PUBLIC HEALTH
VISION, VOICE AND PRACTICE

This is to certify that

Kevin Gilson

Has been awarded the

Level 2 Award in the Safe Use of Rodenticides

601/6344/6

PASS

Date of Award
28 September 2016

the pelsis academy

Richard Burton
Head of Qualifications

Ofqual

Cymwysterau Cymru Qualifications Wales
Recognised awarding body

519998 280916 1112821

0ABF035C-86A1-4D19
9518-D72B8592A15D
AuthentiQual.com

RSPH

Certificate No ***2582***

BPCA
British Pest Control Association

This is to certify that

Kevin Gilson

of

CCS Jeweltone Pest Control Ltd

is hereby awarded

Certificate in Bird Management

having passed examinations in theoretical knowledge to the standard set by the Certification Board

Exam Date 29 October 2014 Signed

Possession of this certificate does not constitute membership of the British Pest Control Association

bpca.org.uk