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UK18-24230

KINGS CROSS METHODIST CHURCH
AIR QUALITY ASSESSMENT

RAMBOLL ENVIRON

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EXECUTIVE SUMMARY

Ramboll Environ UK Ltd ('Ramboll Environ') was commissioned by the West London Mission ('the applicant') to carry out an air quality assessment as part of the planning application submission for a proposed re-development at King Cross Methodist Church ('the site'), at Crestfield Street, in the London Borough of Camden (LBC). It is understood that the development proposals includes the re-development of the existing buildings to provide chapel space and meeting rooms at ground floor level with a number of residential apartments and bedrooms above.

The development is located within the London Borough of Camden (LBC). The whole of the borough has been declared an Air Quality Management Area due to potential exceedances of both nitrogen dioxide (NO_2) and fine particulate matter (PM_{10}) National Air Quality Objectives (NAQO). It will therefore be necessary to demonstrate that the development would not have an adverse impact on air quality and that suitable mitigation is included within the development to protect future occupants from exposure to existing pollutant concentrations.

To provide heating and hot water the development will include low NOx boilers and a Combined Heat and Power unit (CHP). The CHP would be fitted with a catalyst to significantly reduce emissions of NOx to levels that would comfortably meet the emission limits included within the Mayor of London's Sustainable Design and Construction Supplementary Planning Guidance. A screening assessment has indicated that emissions from the CHP will have a negligible impact on air quality.

Additional mitigation measures have been built into the design of the development to further reduce the exposure of future residents to poor air quality. In particular each residential unit will be provided with a mechanical ventilation system fitted with pollution filters which will provide future occupants with a clean supply of ventilation air.

The emissions from the proposed development have also be compared with the emission benchmarks for transport and buildings set out in the Mayor of London's Air Quality Neutral guidance. This indicates that the proposals comfortably meet the relevant benchmarks and can be considered to be Air Quality Neutral.

1. INTRODUCTION

1.1 Overview

Ramboll Environ UK Ltd ('Ramboll Environ') was commissioned by the West London Mission ('the applicant') to carry out an air quality assessment as part of the planning application submission for a proposed re-development at King Cross Methodist Church ('the site'), at Crestfield Street, in the London Borough of Camden (LBC). It is understood that the development proposals includes the re-development of the existing buildings to provide chapel space and meeting rooms at ground floor level with a number of residential apartments and bedrooms above.

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1.2 Scope and Objectives

The proposed development will be car free with no car parking spaces provided for the residential occupants, thus the impact on pollutant emissions from road traffic is considered to be negligible.

However the development will introduce residential receptors into a location where air quality is currently exceeding the annual mean NO_2 air quality objective. Whilst the objectives relate to external air, external concentrations will impact internal air quality. Information is therefore provided on the mitigation measures that have been included within the design of the development to reduce the exposure of residents to high concentrations of external pollutants.

It is proposed that heating and hot water requirements would be provided through a combination of low NO_x boilers and a combined heat and power (CHP) plant unit. CHP plant can emit high levels of oxides of nitrogen, and thus impact local air quality, particularly where emissions arise from short stacks. Potential impacts arising from the CHP have been assessed using the screening tool produced by Environmental Protection UK (EPUK) and Bureau Veritas[1].

The scope of the assessment was agreed with Adam Webber, Senior Sustainabilty Officer (Air Quality) for LBC (see Appendix 4) and is as follows;

- Characterise existing air quality through a review of existing monitoring data and the predicted maps provided by the LAEI;
- Provide details of the proposed energy plant and carry out a screening assessment of emissions from the CHP to demonstrate that the stack has been located correctly to not adversely impact air quality;
- Provide details of the mitigation measures which would be included within the development to protect future residents from poor air quality; and
- Carry out an air quality neutral assessment to demonstrate that the proposals meet with the relevant air quality neutral benchmarks.

[1] http://laqm.defra.gov.uk/documents/biomass_calculator_tool6.xls

2. SITE DESCRIPTION

2.1 Site Location

The application site is located at 58a Birkenhead Street to the east and 6 Crestfield Street to the west, as a single operating unit, at OS grid reference TQ303828. As shown in Figure 2.1

Figure 2.1: Site Location

2.2 Site Description

The site currently comprises a church with social work facilities and the Methodist Chaplaincy House (MCH) spread over four floors, basement through to second floor level. The site is located in a densely urbanised part of inner London. The site is bound on its north east and south west frontage by small residential roads (Birkenhead Street and Crestfield Street respectively), with either private residential or hotel uses adjacent on either side of the application site with the only exception being a self-storage site on the opposite side of Crestfield Road. The arterial A501 Euston Road is located approximately 40m to the north and north west of the site. Kings Cross and St Pancras stations are located across Euston Road approximately 80 m to the north and north west of the site. The site surrounds is shown in detail in Figure 2.2.

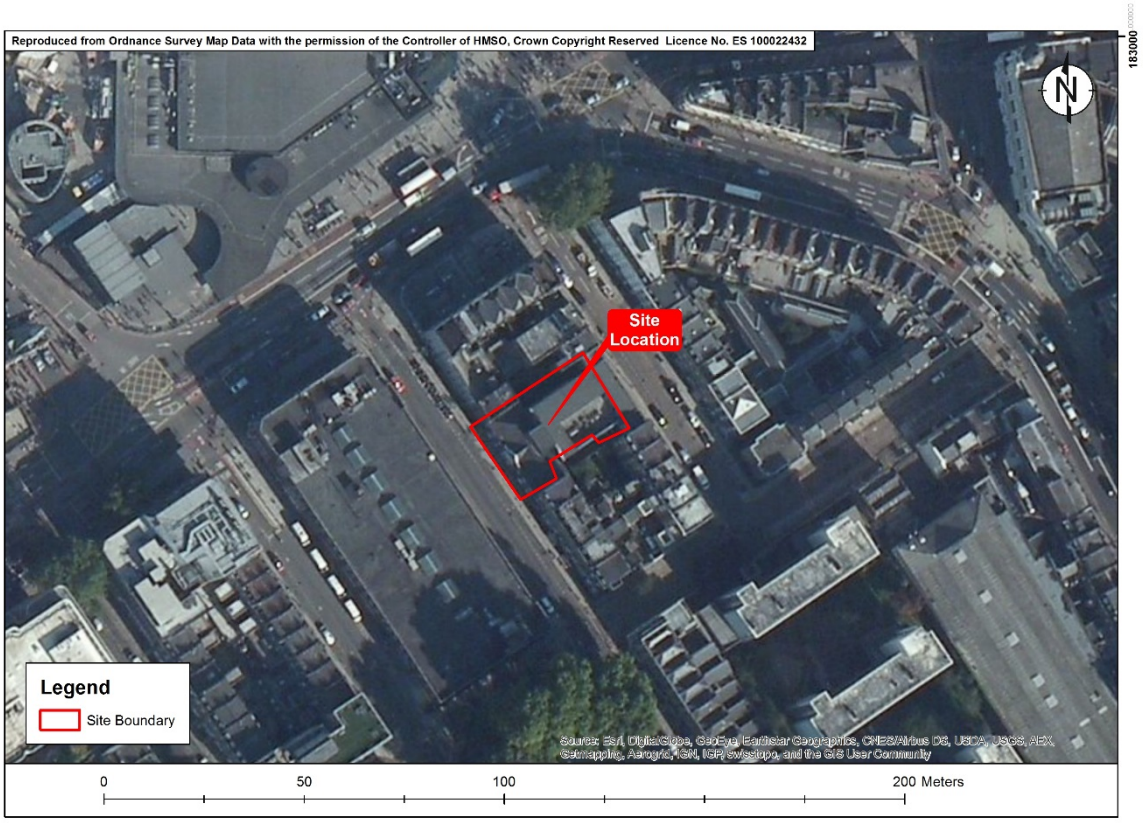

Figure 2.2: Site Detail

2.3 Proposed Development

The proposed development is understood to be a redevelopment and enhancement of the site, providing chapel space and meeting rooms at ground floor level, with eleven residential apartments above and the re-provision of the existing bedrooms of the MCH. The development will comprise five storeys plus a basement. The proposed first floor layout is shown in Figure 2.3, with all proposed floor plans included in Appendix 1.

The proposed development is to be car free, with no parking provision. Cycle storage will be provided in the basement level, along with locker and washing facilities.

The development will use an ultra-low oxides of nitrogen (NO_x) Combined Heat and Power (CHP) unit using natural gas to meet the development's base load domestic hot water and space heating demand, with three ultra-low NOx natural gas boilers to provide additional heat for peak demand. Up to two boilers will be in operation at any one time in conjunction with the CHP, with the third providing a standby capacity in the event of breakdown.

The development description is as follows:

"Demolition and redevelopment to provide replacement church facilities (Use Class D1); Community Facilities (Use Class Sui Generis); replacement on-site Methodist Chaplaincy House (Sui generis) and No. 11 residential apartments (Use Class C3) including the installation of the necessary plant, ventilation and extraction, cycle storage and refuse and waste facilities."

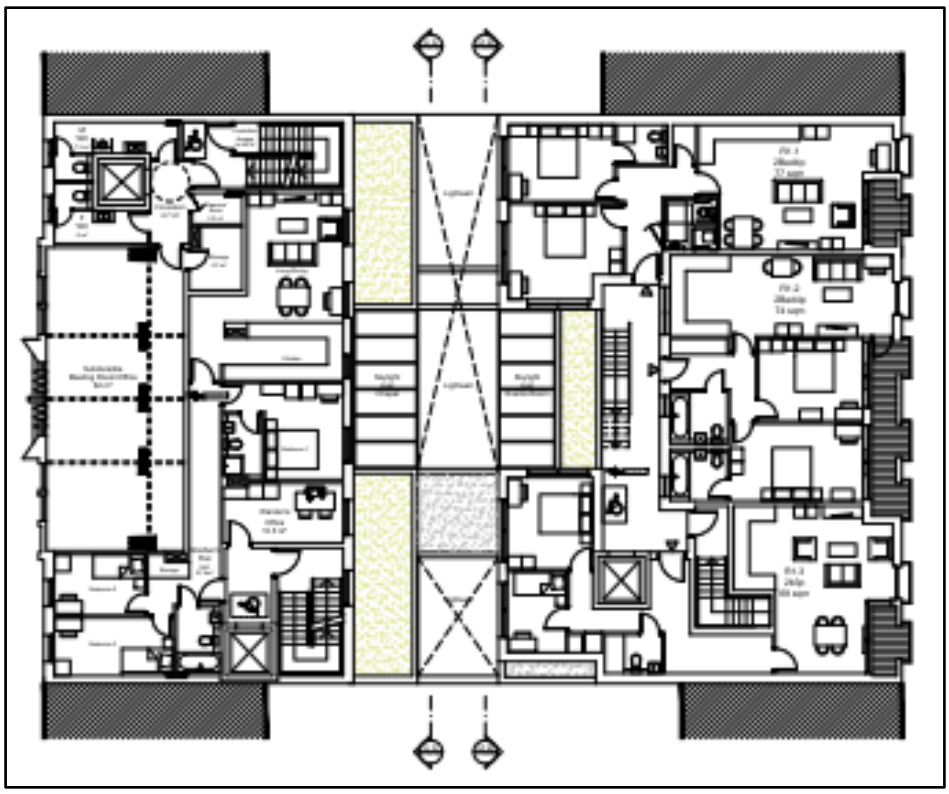

Figure 2.3: Proposed First Floor Layout

3. LEGISLATION AND POLICY FRAMEWORK

3.1 International Legislation and Policy

EU Directive 2008/50/EC[2] on ambient air quality and cleaner air for Europe (the CAFE directive) sets out the ambient air quality standards for nitrogen dioxide (NO_2) and particulate matter with a particle size of less than 10 micrometres (PM_{10}), to be achieved by 1st January 2010 and 2005 respectively. The Air Quality Standards Regulations 2010[3] implements the requirements of the Directive into UK legislation.

The Directive contains a series of limit values for the protection of human health and critical levels for the protection of vegetation.

Compliance with the EU Limit Values is mandatory. However, Member States can apply for a time extension for compliance, subject to approval of an action plan by the European Commission. The UK Government applied in autumn 2011 for a time extension for compliance with the NO_2 limit values until 2015 for a number of areas throughout England. However, the UK Government has withdrawn its application for those zones where compliance is not expected until after 2015, which includes central London.

In December 2015, the Department for Environment Food and Rural Affairs (Defra) on behalf of the UK Government produced plans to improve air quality in the UK in order to meet the EU targets in the shortest possible time. An overview document has been produced[4], together with detailed plans for 31 zones where air quality is not predicted to meet the objective in 2013. The plan for the Greater London urban area[5] sets out a range of measures to reduce NO_2 concentrations and indicates that with these measures air quality in the area will be compliant by 2025. The adequacy of these plans to bring about the necessary improvements in air quality to meet the relevant objectives within the shortest time possible has recently been successfully challenged within the High Court. As a result Defra is currently preparing more stringent plans which should be released for consultation in April 2017.

3.2 Local Air Quality Management

3.2.1 National Legislation

Part IV of the Environment Act 1995[6], 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[7] 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[8] and the Air Quality (Amendment) (England) Regulations 2002[9]. Table 3.1 presents the NAQOs for NO_2 and PM_{10}, which are the two key pollutants emitted from traffic.

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[2] Directive 2008/50/EC of the European Parliament and of the Council of 21 May 2008 on ambient air quality and cleaner air for Europe (2008), OJ I. 1521.
[3] The Air Quality Standards Regulations, 2010. SI 2010 No. 1001.
[4] Defra, December 2015, Improving air quality in the UK, Tackling nitrogen dioxide in our towns and cities, UK overview document. Defra.
[5] Defra, December 2015, Air Quality Plan for the achievement of EU air quality limit value for nitrogen dioxide (NO_2) in Greater London urban area (UK0001). Defra.
[6] Secretary of State, 1995. The Environment Act part IV Air Quality, HMSO.
[7] Department for Environment, Food and Rural Affairs, 2007. Air Quality Strategy for England, Scotland, Wales and Northern Ireland.
[8] The Air Quality (England) Regulations (2000), SI 2000 No. 928.
[9] The Air Quality (England) (Amendment) Regulations (2002), SI 2002 No. 3043.

The Air Quality Strategy also introduced a new policy framework for tackling fine particles ($PM_{2.5}$) including an exposure reduction target. This pollutant is not included within LAQM, and therefore has not been considered further in this assessment.

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 Local Air Quality Management Technical Guidance 2009 (LAQM.TG (09))[10] issued by Department of Environment, Food and Rural Affairs (Defra) for Local Authorities, on where the NAQOs apply, as detailed 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 3.1: Objectives Included in Air Quality Regulations (England) 2000 for Purpose of Local Air Quality Management

Pollutant	Air Quality Objective Concentration	Measured As	Date to be Achieved By
NO_2	200 micrograms per meter cubed ($\mu g/m^3$) not to be exceeded more than 18 times per year	1 hour	31 December 2005
	40 $\mu g/m^3$	Annual mean	
PM_{10}	50 $\mu g/m^3$ not to be exceeded more than 35 times per year	24 hour mean	31 December 2004
	40 $\mu g/m^3$	Annual mean	

Table 3.2: Locations Where National 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, libraries etc. Gardens of residential properties. Kerbside sites (as opposed to locations at the building façade), or any other location where public exposure is expected to be short term.
24 Hour Mean	All locations where the annual mean objective would apply. Gardens of residential properties.	Kerbside sites (as opposed to locations at the building façade), or any other location where public exposure is expected to be short term
1 Hour Mean	All locations where the annual mean and 24 hour mean objectives apply.	Kerbside sites where the public would not be expected to have regular access.

[10] Department for Environment, Food and Rural Affairs, 2009. Local Air Quality Management Technical Guidance LAQM.TG(09).

Averaging Period	Objectives Should Apply At:	Objectives Should Generally Not Apply At:
	Kerbside Sites (e.g. pavements of busy shopping streets). Those parts of car parks, bus stations and railway stations etc. which are not fully enclosed, where the public might reasonably be expected to spend 1-hour or more. Any outdoor locations where the public might reasonably be expected to spend 1-hour or longer.	

It should be noted that the EU Limit Values are numerically the same as the NAQO values but differ in terms of compliance dates, locations where they apply and legal responsibility. The compliance date for the NO2 Limit Values is 1st January 2010, which is five years later than the date for the NAQO.
The Limit Values are mandatory whereas the NAQOs are policy objectives. Local authorities are not required to achieve them, but have to work towards their achievement. In addition, the Limit Values apply in all locations except: where members of the public do not have access and there is no fixed habitation; on factory premises or at industrial installations; and on the carriageway/central reservation of roads except where there is normally pedestrian access.

3.2.2 Local Air Quality Management in LBC

Where a local authority's review and assessment of its air quality identifies that air quality is likely to exceed the NAQOs, it must designate these areas as Air Quality Management Areas (AQMA) and draw up an Air Quality Action Plan (AQAP) setting out measures to reduce pollutant concentrations with the aim of meeting the NAQOs.

The LBC has declared an AQMA across the entire borough for exceedances of the annual mean NO_2 objective and 24 hour PM_{10} objective, with the main source considered road traffic.

The LBC latest AQAP for 2016 to 2018[11] has the following aims:

- Continue to monitor and effectively disseminate monitoring data;
- Reduce emissions from buildings and new developments;
- Reduce emissions from transport;
- Raising awareness of the issue; and
- Lobbying and partnerships.

The plan includes the following key objectives to:

- Residential and business fuel efficiencies;
- Evaluate options in reducing emergency backup generator emissions;
- Improve dust mitigation measures;
- Enforce CHP and biomass policies; and
- Encourage improved active transport option uptake and green transport.

[11] London Borough of Camden, 2016. Camden's Clean Air Action Plan 2016 – 2018. LBC.

3.3 Planning Policy

3.3.1 National Planning Policy Framework, 2012

The National Planning Policy Framework (NPPF)[12] published in March 2012 sets out the Government's planning policies for England. Planning policy requires that applications for planning permission must be determined in accordance with the development plan, unless material considerations indicate otherwise.

The NPPF is a material consideration in planning decisions. It states that the purpose of the planning system is to contribute to the achievement of sustainable development; and that planning decisions on individual applications must reflect relevant EU obligations and statutory requirements. Specifically, in terms of air quality, it requires the planning system to prevent development from contributing to, or being put at unacceptable risk from unacceptable levels of air pollution.

Planning policies should promote compliance with or contribute towards achievement of EU limit values and NAQOs, taking into account the presence of AQMAs and the cumulative impacts on air quality from individual sites in local areas.

Planning decisions should ensure that new development within an AQMA is consistent with the Local AQAP.

The NPPF is supported by a series of Planning Practice Guidance. The guidance[13] in relation to air quality provides guiding principles on how planning can take account of the impact of new development on air quality.

3.4 Local Policy

3.4.1 Camden Core Strategy 2010 - 2025

The Camden Core Strategy[14] provides the central guidance for development within LBC. Policies relating to air quality include:

CS16 – Improving Camden's health and well-being

This policy recognises the impact of poor air quality on health and implement Camden's Air Quality Action Plan which aims to reduce air pollution levels.

3.4.2 London Borough of Camden Local Development Framework

There are three development policies contained within LBC Local Development Framework[15] which are relevant to air quality:

- Policy DP22 - Promoting sustainable design and construction, requires development to incorporate sustainable design and construction measures to be resilient to climate change and to reduce air pollution.
- Policy DP26 - Managing the impact of development on occupiers and neighbours states that planning permission will only be granted for development that does not cause harm to amenity. Factors that would be considered as potentially impacting amenity include emissions of odour, fumes and dust.

[12] Department for Communities and Local Government, March 2012, National Planning Policy Framework
[13] http://planningguidance.planningportal.gov.uk/blog/guidance/air-quality/
[14] London Borough of Camden, 2010. Camden Core Strategy 2010 – 2025. LBC.
[15] London Borough of Camden, 2010, Local Development Framework

- Policy DP32 - Air quality and Camden's Clear Zone, states that the council will require an air quality assessment for all development which could potentially cause significant harm to air quality, and that mitigation measures will be expected in developments that are located in areas of poor air quality.

3.4.3 Camden Draft Local Plan, 2016

The draft local plan for Camden[16] contains the following policies relating to air quality:

- Policy A1 – Managing the impact of development, seeks to protect the quality of life of borough residents by preventing developments that cause unacceptable harm to amenity. Factors considered will include *"k. odour, fumes and dust",* and the council will require mitigation if necessary.
- Policy D1 – Design, seeks to promote high quality design in development, and considers the impact of a development on health effects, including that caused by air pollution.
- Policy CC1 – Climate change mitigation, seeks to encourage all development to meet high environmental standards, including those regarding the use of CHP and demolition requirements.
- Policy CC4 - Air Quality, seeks to ensure air quality is fully assessed in development, and mitigated where necessary. It requires assessment of exposure of residents to sources of air pollution and any development's contribution to it. Development must take into account the AQAP, and developments that introduce sensitive receptors into areas of poor air quality will not be permitted without mitigation.

3.4.4 Camden's Environmental Sustainability Plan (2011 – 2020)

Actions in Camden's Environmental Sustainability Plan[17] to improve air quality include:

- Delivering the Clean Air Action Plan;
- Improve infrastructure for low emission vehicles; and
- Assess all major planning applications from an air quality perspective.

3.4.5 The London Plan, Spatial Development Strategy for London Consolidated with Alterations since 2011, 2016[18]

Policies within the London Plan relating to air quality include:

Policy 1.1 Delivering the strategic vision and objectives for London

> *B Growth will be supported and managed across all parts of London to ensure it takes place within the current boundaries of Greater London without:*
>
> *a encroaching on the Green Belt, or on London's protected open spaces*
>
> *b having unacceptable Impacts on the environment*

Policy 5.3 Sustainable Design and Construction

> *B Development proposals should demonstrate that sustainable design standards are integral to the proposal, including its construction and operation, and ensure that they are considered at the beginning of the design process.*

[16] London Borough of Camden, 2016. Camden Local Plan Proposed submission. LBC.
[17] London Borough of Camden, 2017. Green Action for Change (2011 – 2020). LBC.
[18] Greater London Authority, 2016. The London Plan Spatial Development Strategy for Greater London consolidated with alterations since 2011. London. GLA.

C Major development proposals should meet the minimum standards outlined in the Mayor's supplementary planning guidance and this should be clearly demonstrated within a design and access statement. The standards include measures to achieve other policies in this Plan and the following sustainable design principles:

d minimising pollution (including noise, air and urban runoff)

Policy 7.14 Improving Air Quality

A The Mayor recognises the importance of tackling air pollution and improving air quality to London's development and the health and well-being of its people. He will work with strategic partners to ensure that the spatial, climate change, transport and design policies of this plan support implementation of his Air Quality and Transport strategies to achieve reductions in pollutant emissions and minimize public exposure to pollution.

B Development proposals should:

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

b promote sustainable design and construction to reduce emissions from the demolition and construction of buildings following the best practice guidance in the GLA and London Councils' 'The control of dust and emissions from construction and demolition'

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

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

e where the development requires a detailed air quality assessment and biomass boilers are included, the assessment should forecast pollutant concentrations. Permission should only be granted if no adverse air quality impacts from the biomass boiler are identified

3.4.6 Clearing the Air - The Mayor's Air Quality Strategy, 2010

The Mayor of London has set out a detailed air quality strategy[19] for Greater London in order to deliver the required reductions in PM_{10} and NO_2 concentrations to meet the EU limits. The policies and measures within the strategy are divided into transport and non-transport measures. With regard to the proposed development the key policies are as follows:

[19] Greater London Authority, 2010. Clearing the Air - The Mayors London Air Quality Strategy. London. GLA

Policy '6 - Reducing emissions from construction and demolition sites' which states that the Mayor will work with the London Council to review and update the Best Practice guidance for construction and demolition sites and create SPG to assist implementation;

Policy '7 - Using the planning process to improve air quality' which states that new developments in London shall as a minimum be 'Air Quality Neutral' and that 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' which states that the Mayor will apply emission limits for both PM and oxides of Nitrogen (NOx) for new biomass boilers and NOx emission limits for Combined Heat and Power plant (CHP). Air quality assessments will be required for all developments proposing biomass boilers or CHPs and operators will be required to provide evidence yearly to demonstrate compliance with the emission limits; and

Policy '9 - Energy efficient buildings' which states that the Mayor will set CO2 reduction targets for new developments which will be achieved using the Mayor's Energy Hierarchy. These measures will result in reductions of NOx emissions.

3.4.7 Sustainable Design and Construction Supplementary Planning Guidance, 2014

The Sustainable Design and Construction SPG was published 2014[20]. The following guidance on air quality is provided in Section 4:

- Developers should design schemes to be Air Quality Neutral;
- Developments should be designed to minimise the generation of air pollutants;
- Developments should be designed to minimise exposure to poor air quality;
- Energy plant, including boilers and CHP plant should meet the relevant emission limits; and
- Developers and contractors should follow the relevant guidance on minimising impacts from construction and demolition.

The SPG states that where developers are unable to meet the 'Air Quality Neutral' benchmark, consideration should be given to off-site NOx and PM10 abatement measures.

3.5 Additional Guidance

3.5.1 Land-Use Planning and Development Control: Planning for Air Quality Guidance, 2015

Environmental Protection UK (EPUK), together with the IAQM produced guidance in 2015[21] on how air quality impacts should be assessed within the land-use planning and development control process. This guidance provides clear criteria to determine when a detailed air quality assessment is required and a methodology for assessing the significance of air quality effects.

[20] Greater London Authority, 2014. Sustainable Design and Construction Draft Supplementary Planning Guidance. London. GLA.
[21] Institute of Air Quality Management (IAQM) and Environmental Protection UK, 2015. Land-Use Planning & Development Control: Planning for Air Quality.

4. EXISTING AIR QUALITY

4.1 Air Quality Monitoring

LBC conducts air quality monitoring throughout its jurisdiction using both automated continuous monitors and passive diffusion tubes. In addition, the London Borough of Islington conducts monitoring is close proximity to the site. Monitoring locations of relevance to this assessment are detailed in Table 4.1. Monitoring results for NO_2, PM_{10} and $PM_{2.5}$ are shown in Tables 4.2, 4.3 and 4.4. The location of the monitoring stations is shown in Figure 4.1.

Table 4.1: Monitoring Station details

Site ID	Site Name	Authority	Monitor Type	Location	Pollutant Monitored	Distance and Direction from Site
CD9	Euston Road	Camden	Automatic	Roadside	NO_2, PM_{10}, $PM_{2.5}$	510 m south west
BL0	Bloomsbury	Camden	Automatic	Urban Background	NO_2, PM_{10}, $PM_{2.5}$	870 m south
CA4	Euston Road	Camden	Diffusion Tube	Roadside	NO_2	230 m south east
CA6	Wakefield Gardens	Camden	Diffusion Tube	Urban Background	NO_2	460 m south
CA10	Tavistock Gardens	Camden	Diffusion Tube	Urban Background	NO_2	710 m south west
CA20	Brill Place	Camden	Diffusion Tube	Roadside	NO_2	470 m north west
BIS005/04	Percy Circus	Islington	Diffusion Tube	Urban Background	NO_2	540 m east

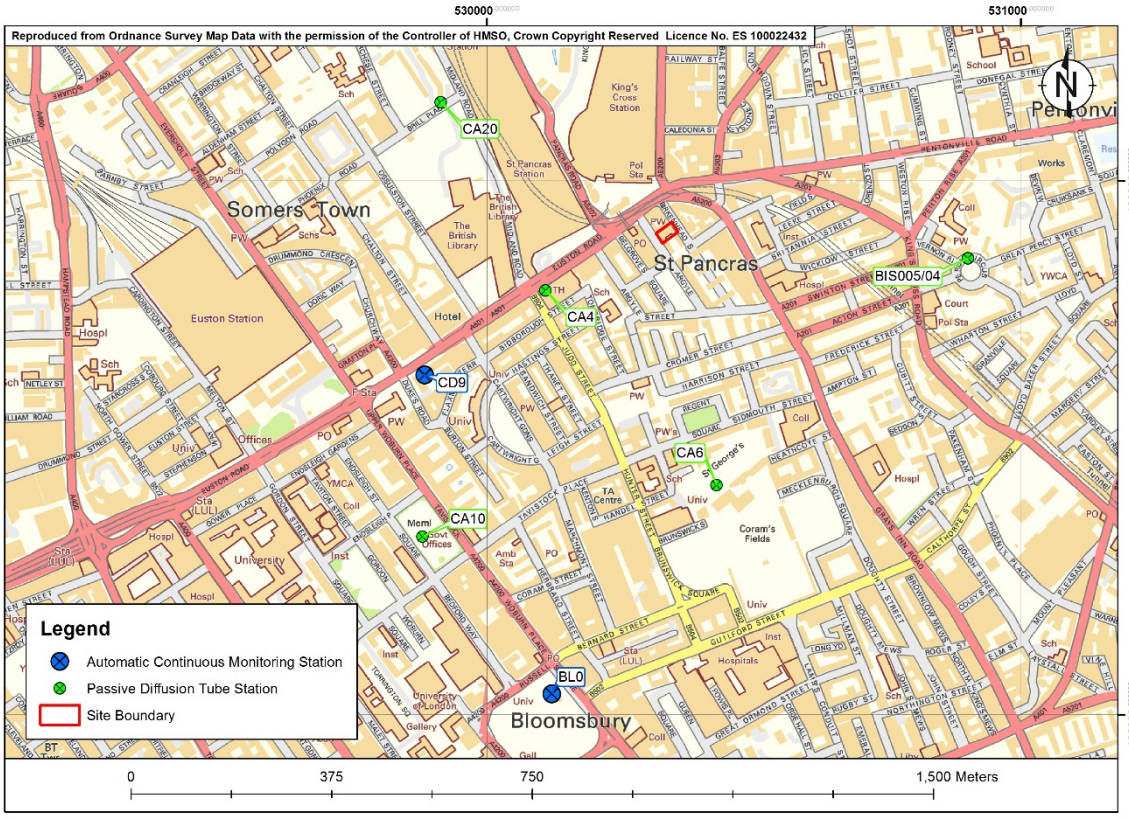


Figure 4.1: Monitoring in Proximity to the Site

Table 4.2: NO_2 Concentrations at Local Monitoring Stations

Site	Year				
	2011	**2012**	**2013**	**2014**	**2015**
Objective	**Annual Mean Concentration (40 µg/m³)**				
CD9	**122**	**106**	**106**	**98**	**91**
BL0	**50**	**55**	**44**	**45**	**48**
CA4	**93**	**82**	**108**	**90**	**87**
CA6	**46**	39	**40**	36	36
CA10	**48**	**40**	**49**	**47**	**45**
CA20	**51**	**50**	**49**	**52**	**49**
BIS005/04	**42**	**40**	38	**40**	**45**
Objective	**Number of Exceedances of Hourly Mean (200 µg/m³, 18 exceedances permitted)**				
CD9	**726**	**295**	**296**	**170**	**54**
BL0	0	1	0	0	0

Note:

Exceedances highlighted in **bold**

Exceedances in **bold** and underlined are in excess of 60 µg/m³ and indicates a likely exceedance of hourly mean objective at diffusion tube location

Table 4.3: PM_{10} Concentrations at Local Monitoring Stations

Site	Year				
	2011	**2012**	**2013**	**2014**	**2015**
Objective	**Annual Mean Concentration (40 µg/m³)**				
CD9	-	-	-	29[1]	28
BL0	22	19	18	20	19
Objective	**Number of Exceedances of 24 hour Mean (50 µg/m³, 35 exceedances permitted)**				
CD9	-	-	-	12 (40.8)	18
BL0	17	10	4	11	6

Notes:
Exceedance of objectives are shown in **bold**
[1]data capture less than 50%
If data capture less than 90%, 90th percentile of 24 hour means shown in brackets ()

4.2 Assessment of Monitoring Data

Monitoring data from locations in proximity to the site consistently indicate exceedances of the annual mean NO_2 objective, at both roadside and urban background sites. The closest monitoring stations to the site, CD9 and CA4, are located on Euston Road, an arterial road link which passes in close proximity to the site. Concentrations recorded at these sites are heavily influenced by the high traffic flows and associated congestion of this road, and record highly elevated concentrations of NO_2 for all years, exceeding both annual and hourly mean objectives. The smaller side roads in this area can also be expected to have high roadside concentrations in excess of the annual objective as recorded by CA20.

Urban background sites at BL0, CA10 and BIS005/04, which are set back from main roads, also indicate concentrations in excess of annual mean NO_2 objective. Diffusion tube CA6 is an urban background location set further away from local roads, and indicates the concentration of NO_2 at locations removed from local road traffic drops away and comes close to compliance, or complies with, the annual NO_2 objective.

PM_{10} concentrations at the roadside Euston Road automatic site are available since 2014 and indicates that concentrations meet both the annual and daily objectives. Background concentrations recorded at BL0 comfortably comply with the annual and daily PM_{10} objectives.

4.3 London Atmospheric Emission Inventory

Additional information on local air quality can be extracted from modelling carried out for the Greater London Authority as part of the London Atmospheric Emissions Inventory (LAEI) 2013. This indicates that NO_2 concentrations at the proposed development location would be in the range of 55 to 58 µg/m³ across the majority of the site, closest to Euston Road, reducing to 43 – 55 µg/m³ across the south eastern edge of the site, shown in Figure 4.2. These predicted concentrations reflect the fall off in concentrations away from the roadside.

The LAEI data indicates that daily mean PM_{10} concentrations are predicted to meet the relevant objective in 2013, as shown in Figure 4.3.

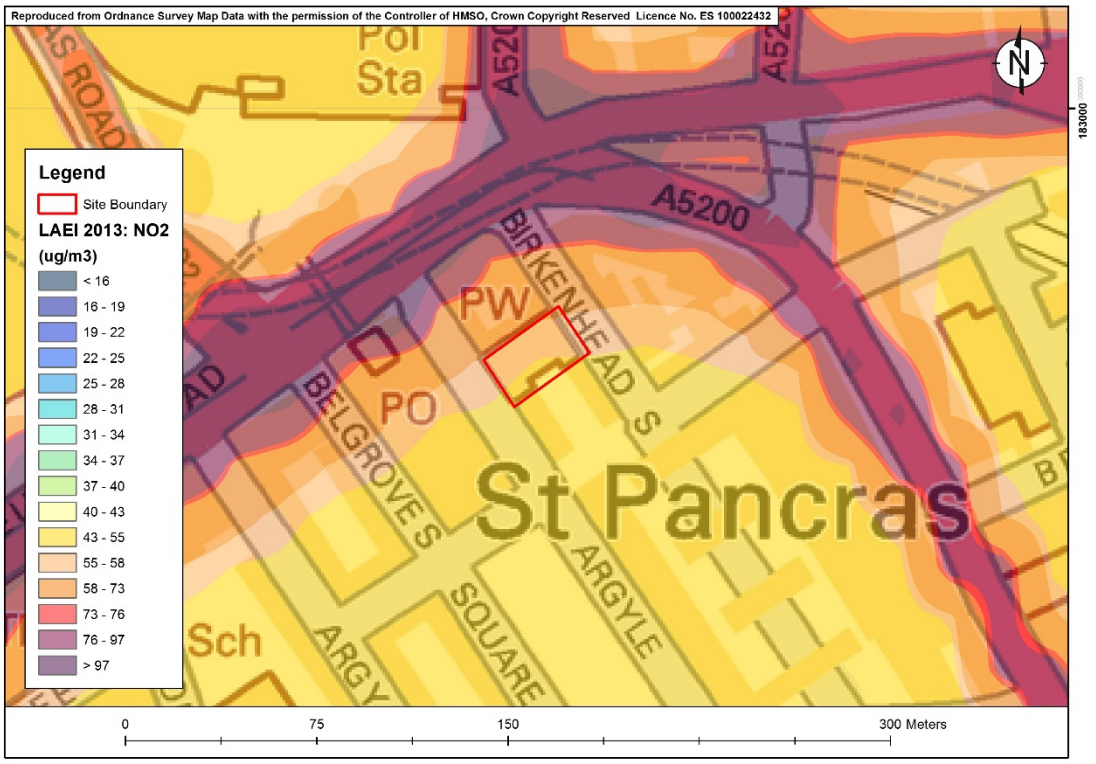


Figure 4.2: LAEI Modelling for 2013: NO_2

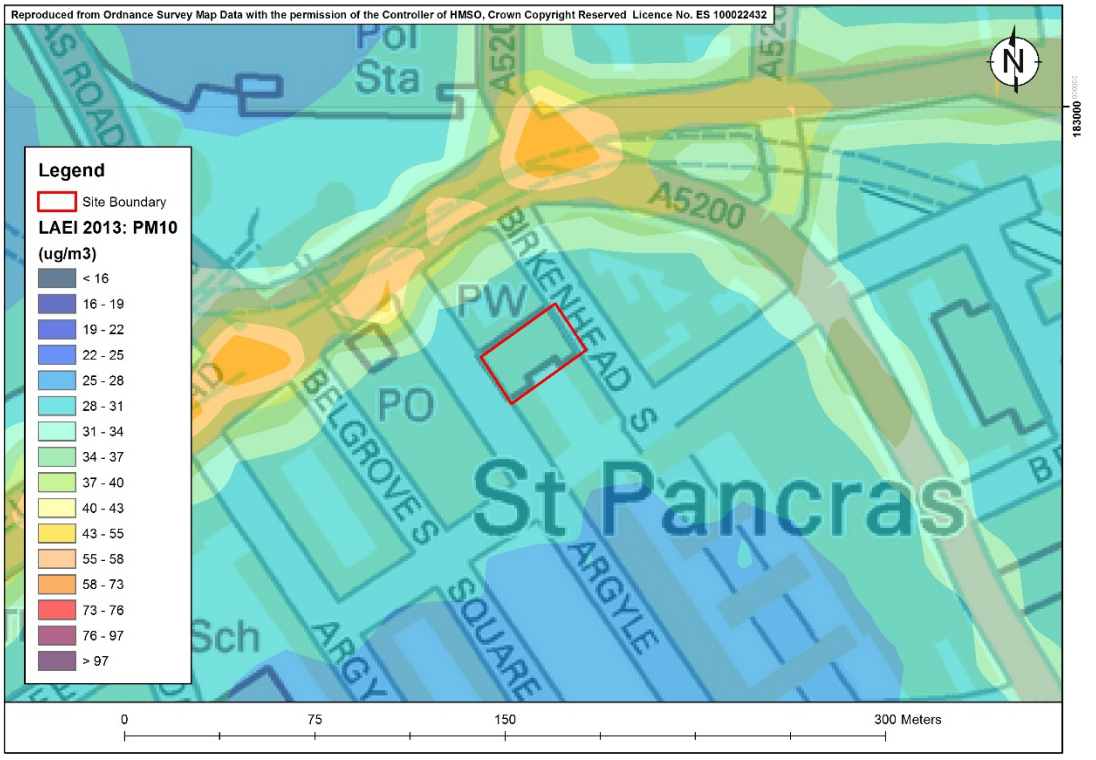


Figure 4.3: LAEI Modelling for 2013: PM_{10}

4.4 Air Quality at the Proposed Development

Air quality at the proposed development would be expected to exceed the annual mean NO_2 objective at ground floor locations across the whole site. Whilst traffic sourced pollution concentrations decline rapidly away from the roadside edge, due to the elevated levels of NO_2

recorded at roadside along Euston Road, concentrations across the site would be expected to remain in exceedance of the annual mean NO_2 objective despite being set away from Euston Road. This pattern of pollution is shown by both the local monitoring and LAEI modelling.

5. AIR QUALITY NEUTRAL ASSESSMENT

5.1 Introduction

The Sustainable Design and Construction SPG issued by the Mayor of London, indicates that for all new major development an assessment should be undertaken to demonstrate whether the proposed development would meet the relevant air quality neutral emission benchmarks and thus can be considered air quality neutral. Where a development cannot meet the emission benchmarks, additional mitigation may be required either on or off-site to reduce the air quality impacts.

5.2 Building Emissions

The guidance has been used to calculate the relevant Buildings Emission Benchmarks based on the proposed floor areas as detailed in Table 5.1. As no benchmark is directly comparable for the Church use, the D1 (b) Crèche, Day Centre land use has been used as a substitute. Domestic hot water and space heating requirements, along with some of the developments electrical needs, will be met through the use of an ultra-low NOx CHP plant. To ensure the efficient operation of the CHP plant without frequent start-stop cycles a heat storage unit will be used to smooth demand. Any additional peak heating and hot water demand will be met through the use of three low NOx boilers, with two in operation at any one time and an additional unit on standby to provide breakdown resilience. All combustion units will use natural gas as the fuel, ensuring negligible particulate emissions. The Air Quality Neutral Assessment, comprising of the difference between the estimated annual NOx emissions and the building emissions benchmarks, is set out in Table 5.1.

Table 5.1: Air Quality Neutral Assessment - Buildings Emissions

Class	Description	Maximum GIA (m^2)	NOx Benchmark (g/m^2)	Estimated Development NO_x Emission (kg/annum)
Class C2	Residential Institutions	844	68.5	58
Class C3	Residential Dwellings	685	26.2	18
D1 (b)	Creche, Day Centres etc.	1,263	75.0	95
Total building emissions benchmark (BEB)				170
Annual emission from CHP assuming 24/7 operation at 100% per year				4
Annual emission from boilers assuming 2 boilers operate 24/7 at 100% per year				37
Total predicted development building emission (kg/annum)				41
Difference between predicted development building emission and BEB				-130

5.3 Transport Emissions

The proposed development is to be car free with no on-site parking provision and taking advantage of its excellent position in regard to services and public transport. In addition, cycle storage and washing amenities will be provided at basement level. Thus the additional residences of the proposal would not be expected to generate transport emissions.

On this basis it is concluded that the proposed development can be considered to be air quality neutral with regard to transport emissions.

5.4 Conclusion

The assessment demonstrates that the on-site emissions from energy plant from the proposed development would be significantly lower than the calculated emission benchmarks. In addition, the development will be operationally car free. It is therefore considered that the proposed development would be Air Quality Neutral.

6. OPERATIONAL IMPACTS

6.1 Transport

The development would be car-free, with no on-site parking provided. Disabled parking would be available on-street, with applications for a permit to LBC. Cycle storage would be provided at basement level, with associated washing and changing facilities. As the development would not generate significant additional road traffic, the potential for emissions to impact existing air quality is considered to be negligible.

6.2 Combined Heat and Power

Calculations have been carried out using energy benchmark data to determine the daily, monthly and annual energy profiles for the development. From this data, the appropriate size of CHP plant and matched thermal storage has been established.

The Mechanical and Electrical (M&E) Engineers for the project have estimated that the proposed development would require a CHP with a maximum 20 kWe electrical output and 48.5 kWth thermal output CHP unit to act as the lead heat source to serve all areas of the building. This system would then be supplemented by high efficiency, low NOx, gas fired condensing boilers to provide additional heat and hot water, with mains electricity to provide the additional electrical requirement.

Analysis has been carried out to maximise the size of CHP plant that can feasibly be installed within the correct operating parameters of the equipment. An oversized CHP unit or one which is not provided with adequate thermal storage will frequently turn on and off, thus diminishing the performance and reliability of the equipment and potentially resulting in higher emissions of pollutants.

To enable the CHP plant to run continuously when it is operating, thermal storage vessels will be used so that excess CHP capacity can be used to generate hot water for use at a later time, when there is a demand for heat in the building.

6.3 Impact Assessment

It is proposed to install a Smith AO Totem T10 CHP plant. This unit is provided with a catalytic converter on the flue exhaust to provide a significant reduction in NO_X emissions. As a result it is able to meet a NOx emission rate of less than 10 mg/Nm^3, and will comfortably comply with the emission limits set out in the Sustainable Design and Construction SPG (Band B – Baseline NO_2 concentrations between 5% below or above national objective)

Due to the preliminary stage of the M&E design, for the assessment the CHP stack is assumed to be located on the highest point of the roof and be of at least 1.5 m in height above roof level, following the requirements of BS 6644:2011. These assumptions should be used to inform the final design.

The screening tool, produced by EPUK , to assist local authorities in assessing whether impacts from CHPs are likely to give rise to significant air quality impacts, has been used to provide an initial assessment to determine whether the air quality impacts from a CHP would be acceptable at the nearest point of exposure. For the proposed development this is considered to be the windows located on the fourth floor.

The tool has indicated that at a worst case the operation of the CHP may give rise to an increase in annual mean NO_2 of 0.16 µg/m^3 (see Appendix 2). Using the EPUK/IAQM methodology for assessing the significance of air quality impacts, an increase of this magnitude is considered to be 'imperceptible' and result in a negligible impact to air quality. It should be noted that this is a

worst case screening assessment, assuming continual operation of the CHP on a 24/7 basis and total conversion of NO_x to NO_2. Actual concentrations would therefore be expected to be lower.

6.4 CHP Operation and Maintenance

Regular planned preventative maintenance by a trained engineer will be carried out at regular service intervals, as recommended by the CHP manufacturer, to ensure the continued correct and efficient operation of the unit.

6.5 Gas CHP Information Request Form

LBC require additional information to be supplied regarding the choice and operation of the CHP to be supplied as part of the planning application, which should be submitted on the Gas CHP information request form as included in Appendix 3. Whilst the majority of the information requested by the form is included within this report, as the precise location of the flue is yet to be finalised it is not possible to supply all of the required information at this time. It is therefore recommended that the provision of this information and the completion of the form are secured by an appropriately worded planning condition.

7. MITIGATION

7.1 Mitigation Measures

A number of measures have been incorporated within the design of the development to reduce the exposure of future residents to poor air quality including:

- residential units are not proposed at ground floor level;
- the development will be car free, and will encourage the use of sustainable transport modes through providing secure bicycle storage;
- exhaust gas emissions from the CHP and boilers will be emitted from combined flues some 1.5 m above the final roof height i.e. above the fourth floor to ensure adequate dispersion of flue gases and to avoid entrainment into the air intake;
- all apartments and bedrooms would be fitted with a mechanical ventilation system fitted with heat recovery to allow residents access to a clean source of air in the event of high pollution concentrations;
- the air intakes for the ventilation system would be placed at roof level, ideally as far as possible from Euston Road and from the lesser streets of Birkenhead Street and Crestfield Road;
- pollution filters would be fitted to the air intakes to remove both NO_x and particles from the incoming air.

8. SUMMARY AND CONCLUSIONS

The proposed development will introduce residential receptors into a location where air quality is likely to exceed the air quality objective for annual mean NO_2 at external locations.

To provide heating and hot water the development will include low NOx boilers and a Combined Heat and Power unit (CHP). The CHP would be fitted with a catalyst to significantly reduce emissions of NOx to levels that would comfortably meet the emission limits included within the Mayor of London's Sustainable Design and Construction SPG. A screening assessment has indicated that emissions from the CHP will have a negligible impact on air quality.

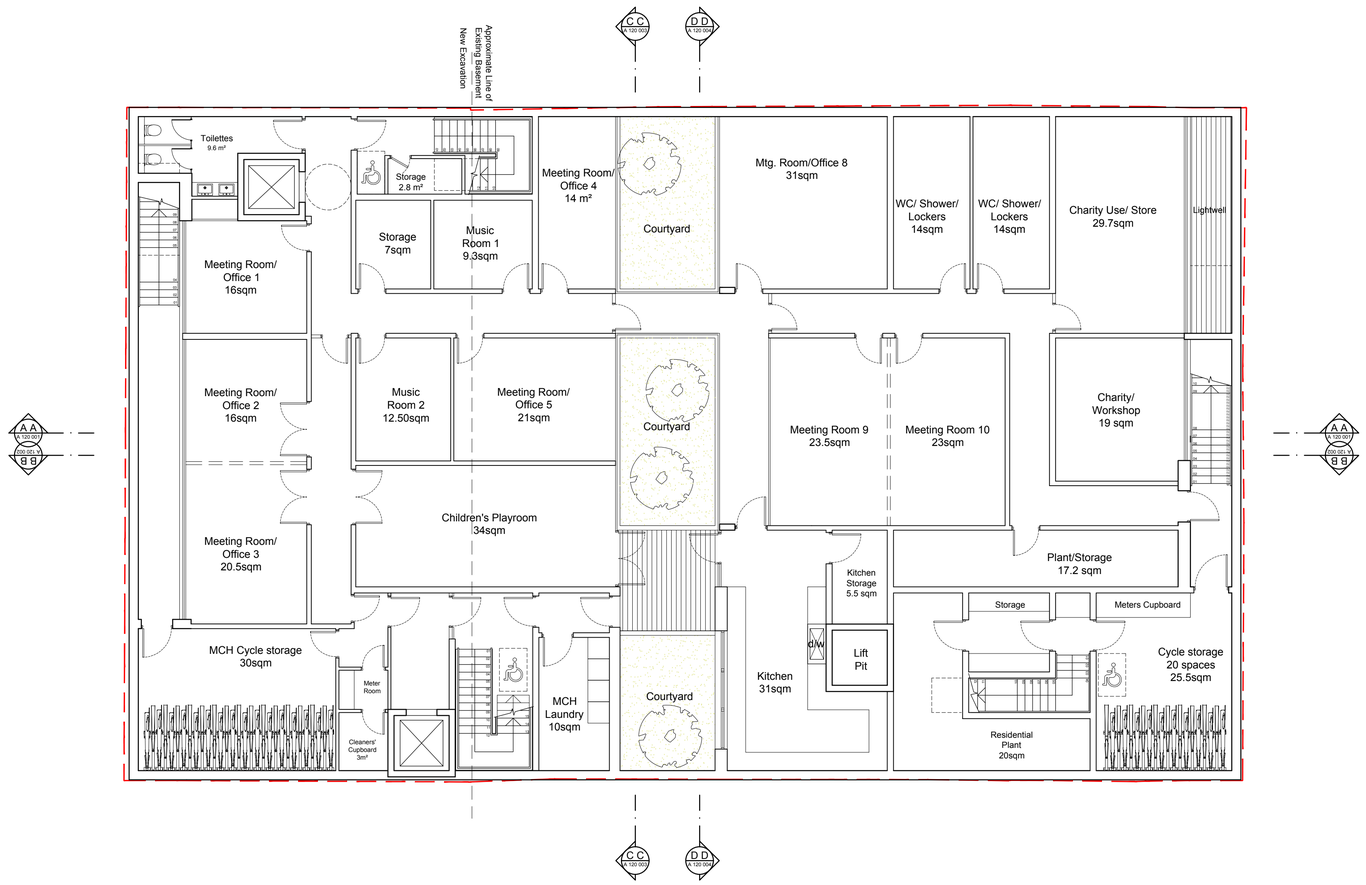
Additional mitigation measures have been built into the design of the development to further reduce the exposure of future residents to poor air quality. In particular each residential unit will be provided with a mechanical ventilation system fitted with pollution filters which will provide future occupants with a clean source of ventilation.

The emissions from the proposed development have been compared with the emission benchmarks for transport and buildings set out in the Mayor of London's Air Quality Neutral guidance. This indicates that the proposals comfortably meet the relevant benchmarks and can be considered to be Air Quality Neutral.

APPENDIX 1
PLANS

NOTES

Boundary Line



Proposed Basement

Scale 1:200 @A3
1:100 @A1

0 1 5 10

rev	amendments	date	by
P0	Issued for planning	11.11.15	JB

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client
West London Mission Circuit
of the Methodist Church (WLM)

drawing title
Proposed Basement
GA Layout

drawing status
Planning

scale	date	drawn by	checked by
1:100 @ A1 1:200 @ A3	11.11.15	JB	HL

job no.	drawing no.	revision
0948	A-100-001	P0

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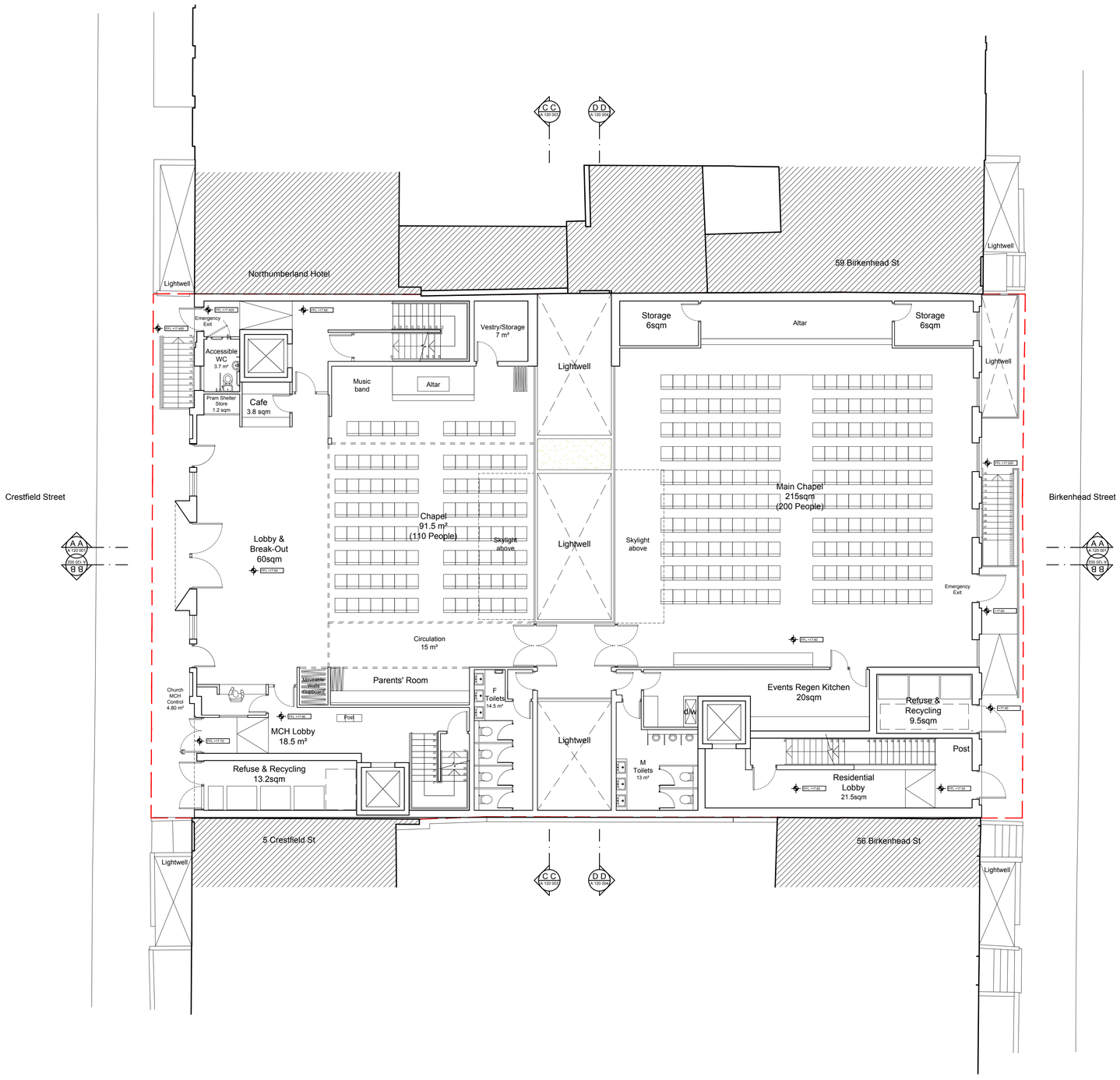
Boundary Line



Proposed Ground Floor

Scale 1:200 @A3
1:100 @A1

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rev	amendments	date	by
P1	General revision	06.09.18	JB
P0	Issued for planning	11.11.15	JB

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Proposed Ground Floor
GA Layout

drawing status
Planning

scale	date	drawn by	checked by
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job no.	drawing no.	revision
0948	A-100-002	P1

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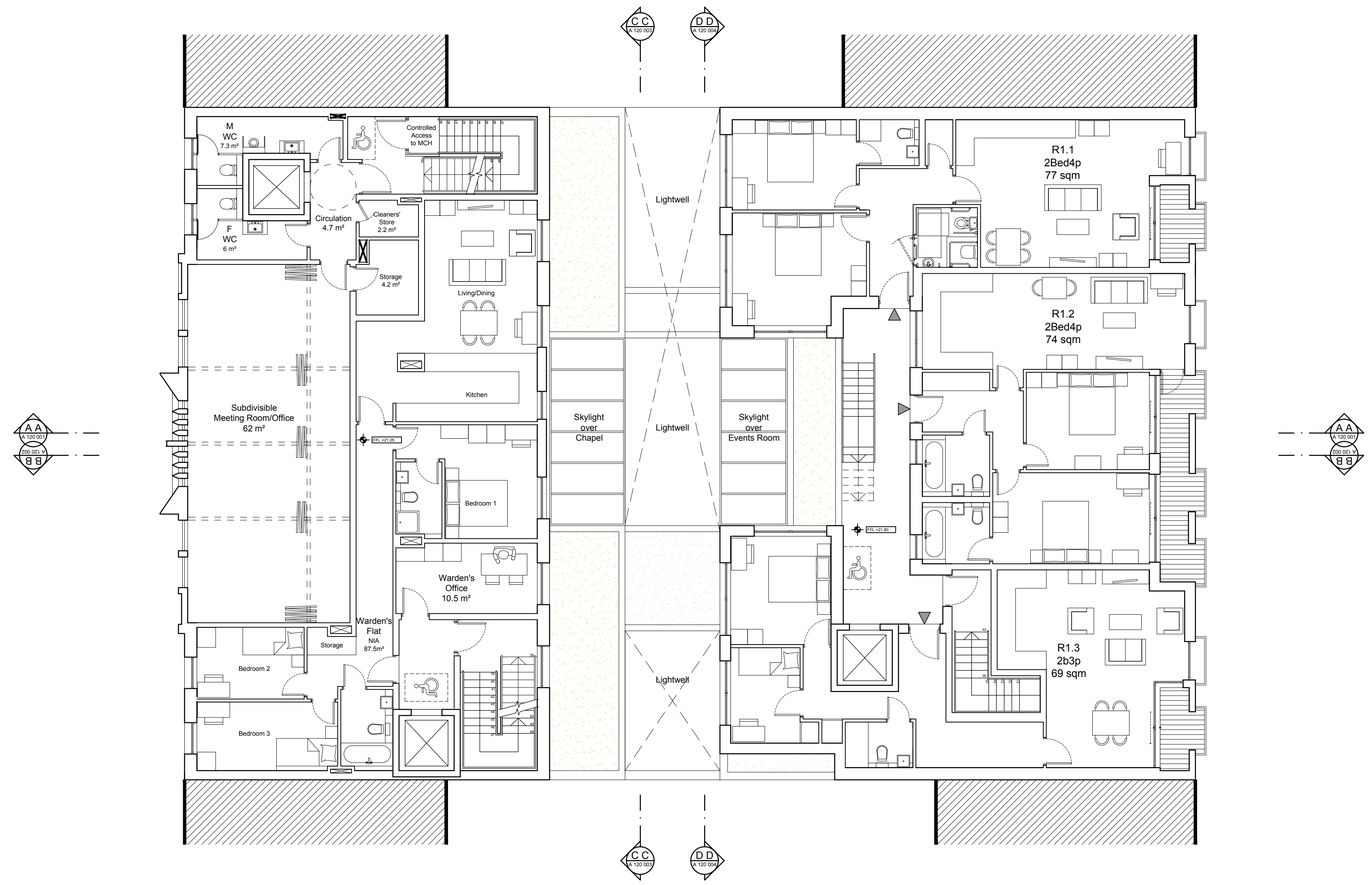

Proposed First Floor

Scale 1:200 @A3
1:100 @A1

0 1 5 10

rev	amendments	date	by
P1	General revison including ADF amendments	01.11.18	JB
P0	Issued for planning	11.11.15	JB

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GA Layout

drawing status
Planning

scale	date	drawn by	checked by
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job no.	drawing no.	revision
0948	A-100-003	P1

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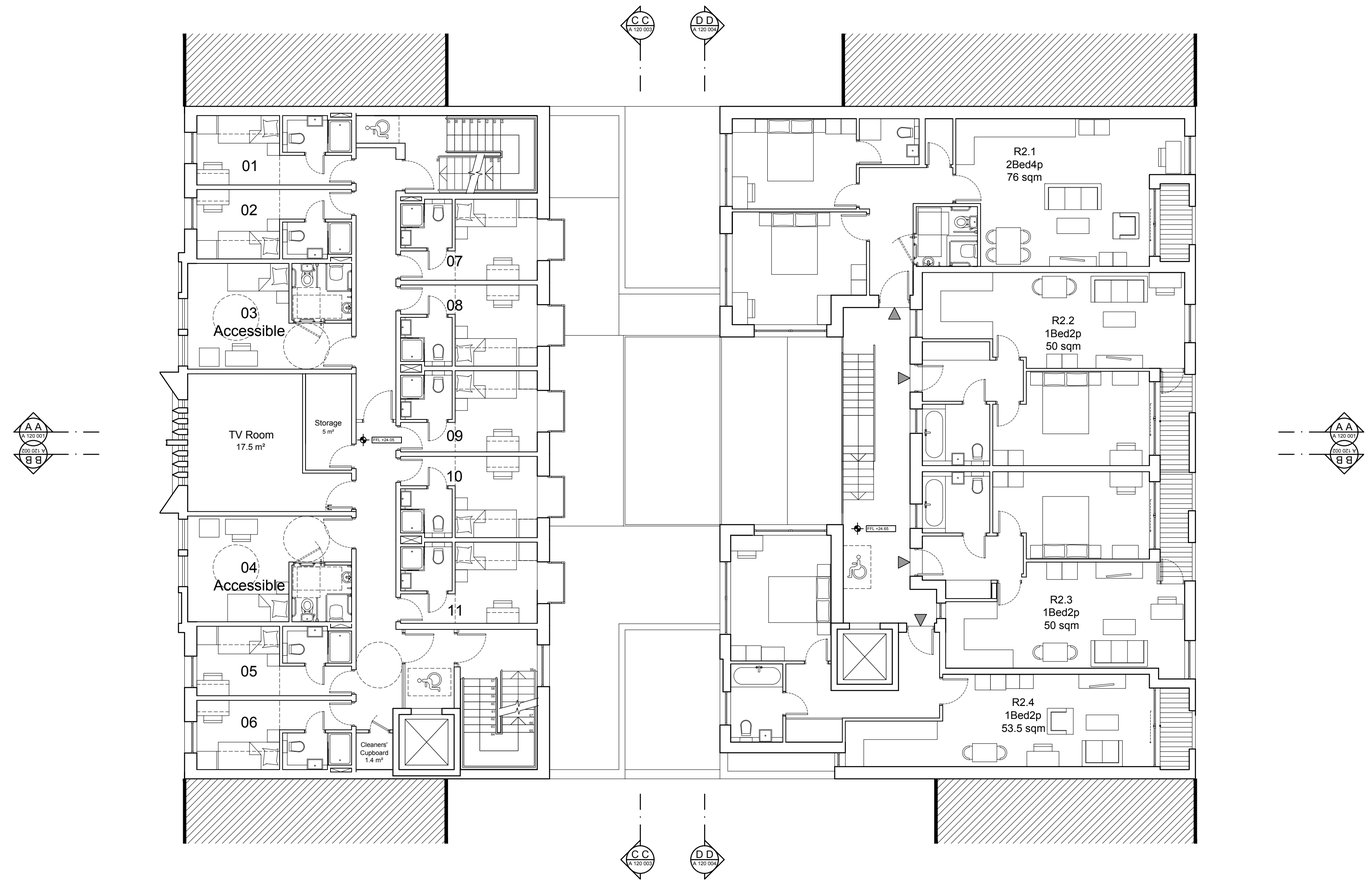

Proposed Second Floor

Scale 1:200 @A3
1:100 @A1

0 1 5 10

rev	amendments	date	by
P1	General revision including ADF amendments	18.10.18	JB
P0	Issued for planning	11.11.15	JB

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Proposed Second Floor
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drawing status
Planning

scale	date	drawn by	checked by
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job no.	drawing no.	revision
0948	A-100-004	P1

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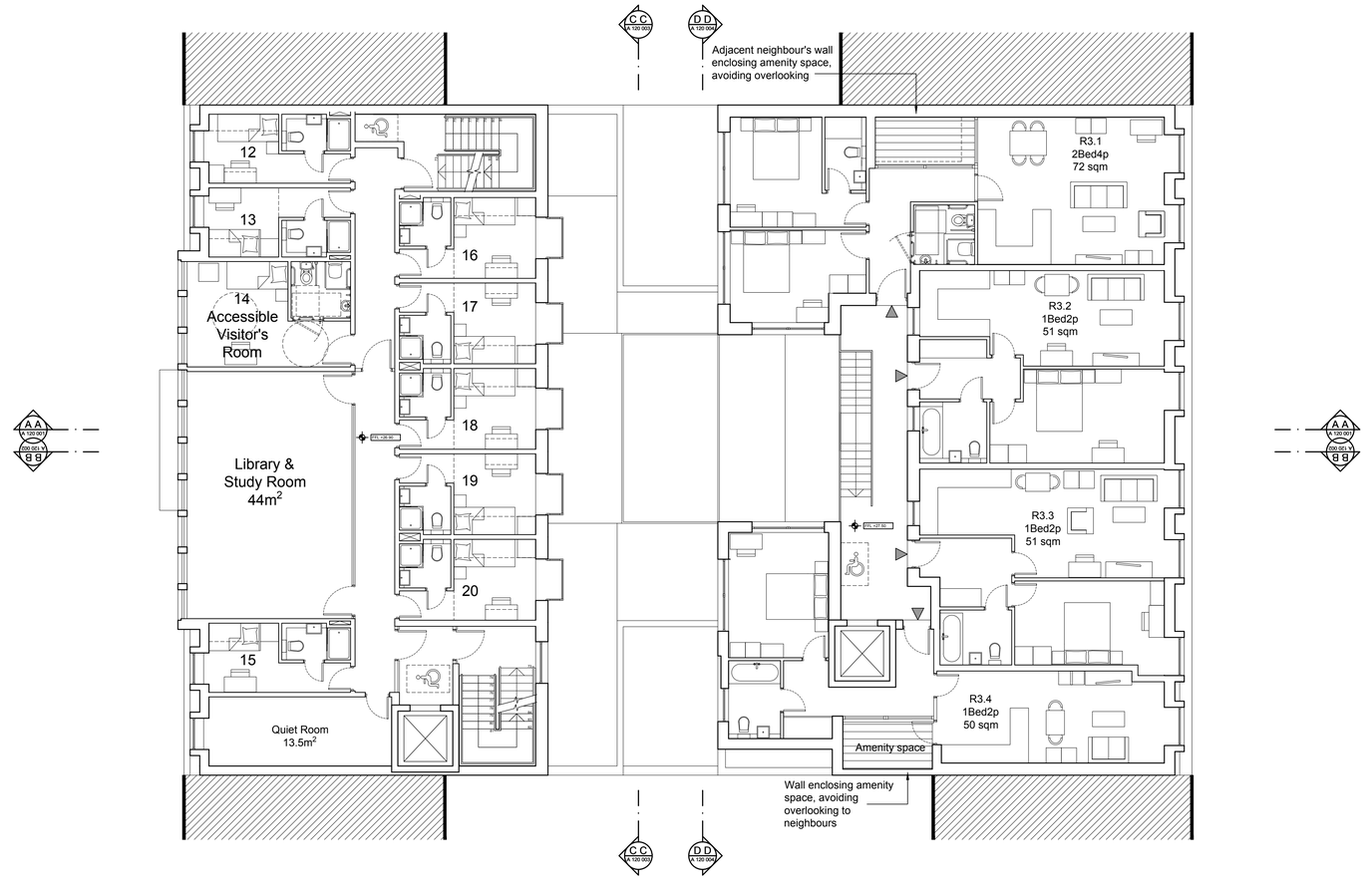

Proposed Third Floor

Scale 1:200 @A3
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0 1 5 10

rev	amendments	date	by
P2	General revision including ADF amendments	06.09.18	JB
P1	Residential lightwells walls specified	03.02.16	JB
P0	Issued for planning	11.11.15	JB

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drawing title
Proposed Third Floor
GA Layout

drawing status
Planning

scale	date	drawn by	checked by
1:100 @ A1 1:200 @ A3	11.11.15	JB	HL

job no.	drawing no.	revision
0948	A-100-005	P2

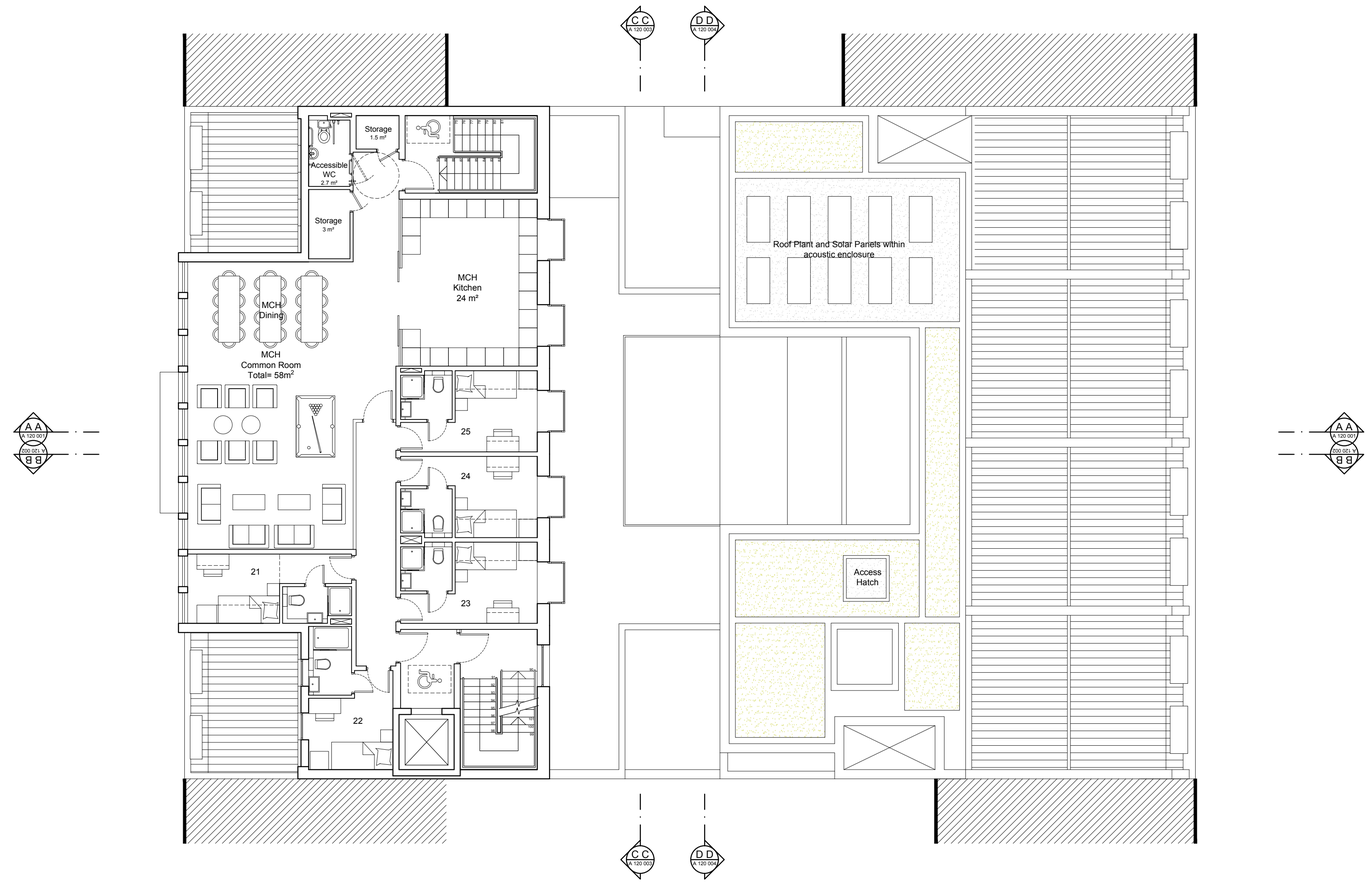
Only the original drawing should be relied upon. Contractors, sub-contractors and suppliers must verify all dimensions on site before commencing any work or making any shop drawings.

All shop drawings to be submitted to the architect / interior designer for comment prior to fabrication.

This drawing is to be read in conjunction with the architect's / interior designer's specification, bills of quantities / schedules, structural, mechanical & electrical drawings and all discrepancies are to be reported to the architect / interior designer.

Do not scale from this drawing. Dimensions are in millimetres unless otherwise stated.

NOTES



Proposed Fourth Floor

Scale 1:200 @A3
1:100 @A1

0 1 5 10

rev	amendments	date	by
P1	General revision	06.09.18	JB
P0	Issued for planning	11.11.15	JB

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drawing title
Proposed Fourth Floor
GA Layout

drawing status
Planning

scale	date	drawn by	checked by
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job no.	drawing no.	revision
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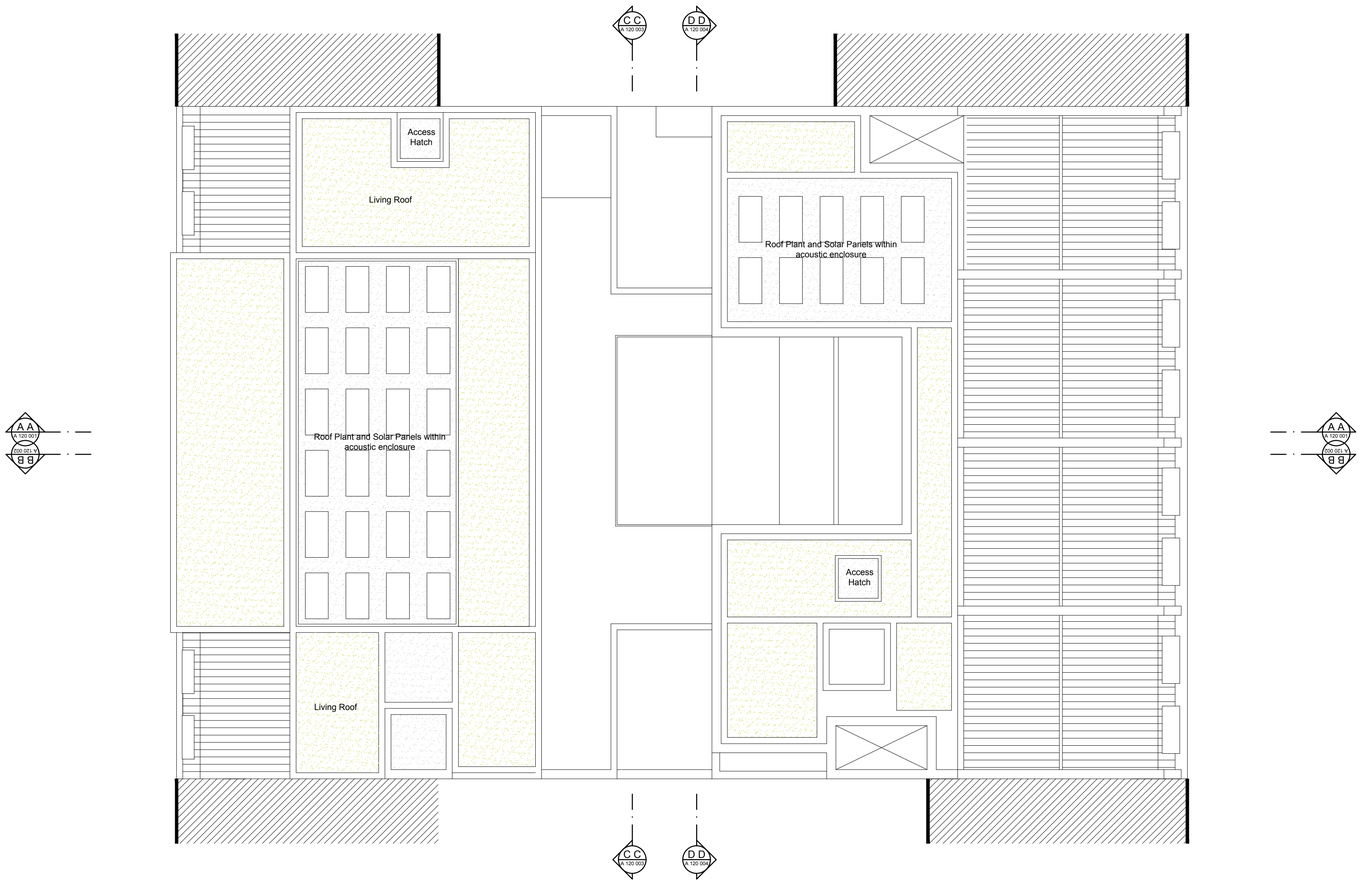

Proposed Roof Plan

Scale 1:200 @A3
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rev	amendments	date	by
P1	General revision	06.09.18	JB
P0	Issued for planning	11.11.15	JB

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drawing title
Proposed Roof Plan
GA Layout

drawing status
Planning

scale	date	drawn by	checked by
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job no.	drawing no.	revision
0948	A-100-007	P1

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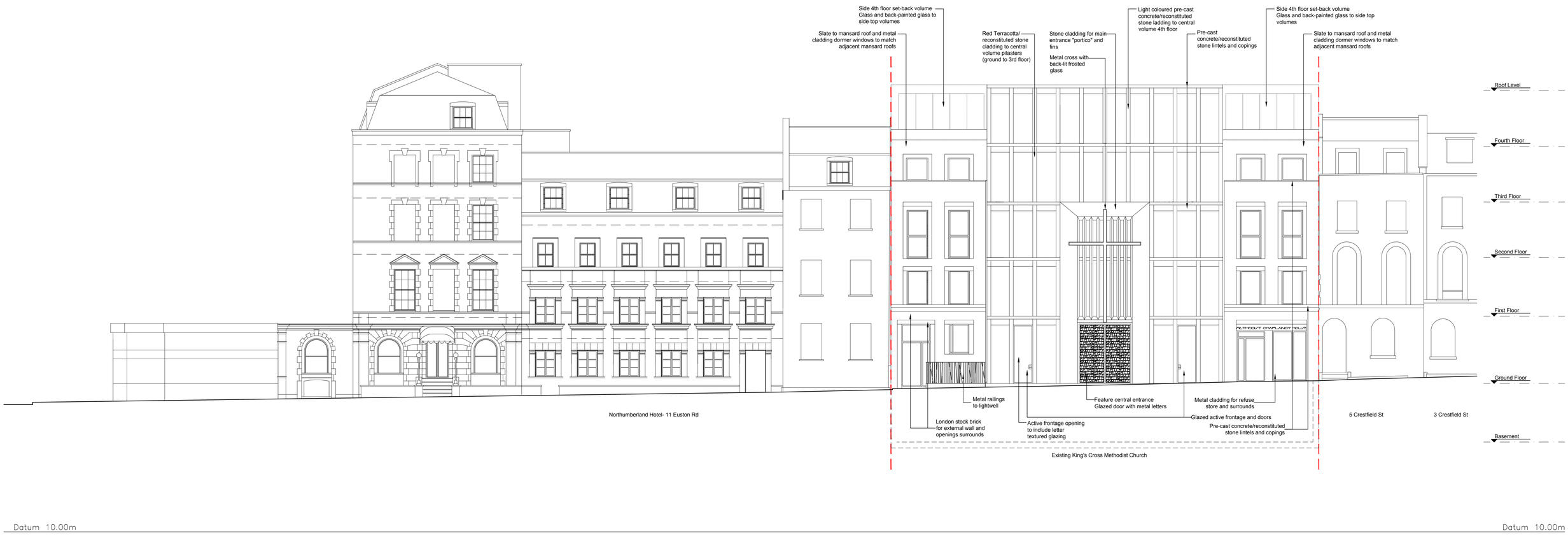

Crestfield Street Proposed Elevation

Scale 1:200 @A3
1:100 @A1

0 1 5 10

rev	amendments	date	by
P1	General revision	06.09.18	JB
P0	Issued for planning	11.11.15	JB

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drawing title
Crestfield St
Proposed Elevation

drawing status
Planning

scale	date	drawn by	checked by
1:100 @ A1 1:200 @ A3	11.11.15	JB	HL

job no.	drawing no.	revision
0948	A-110-001	P1

NOTES

Birkenhead Street Proposed Elevation

Scale 1:200 @A3
1:100 @A1

0 1 5 10

rev	amendments	date	by
P1	General revision including ADF amendments	18.10.18	JB
P0	Issued for planning	11.11.15	JB

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client
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drawing title
Birkenhead St
Proposed Elevation

drawing status
Planning

scale	date	drawn by	checked by
1:100 @ A1 1:200 @ A3	11.11.15	JB	HL

job no.	drawing no.	revision
0948	A-110-002	P1

APPENDIX 2
CHP SCREENING TOOL

CHP TOOL

You can record details of your CHP Here:	**Totem T20 CHP**
Additional comments:	

CHP AQ Tool v1.3

This tool is in 4 Sections. Please complete each section as required by entering information in the yellow cells.
Yellow cells will appear as you make your selections.
If you wish to change your selections part way through, it is recommended you clear the contents from yellow cells manually as only yellow cells are used in the calculations.
You can also click the Clear AQ Tool Button on the right (you must have macros enabled - see Info on Macros)

Info on Macros:
This tool used Macros to clear cells but they are not required for calculations. Macros may have been automatically disabled and will need to be enabled to use the Clear buttons. Please contact your IT deparment or use the Help functions.

Your Notes:

Section 1

		Help Column
Select CHP Technology	Gas Engine	Select Type of CHP from Drop Down Menu. Gas Engine is same as Internal Combustion Engine
Select Engine Type	Spark Ignition	
Select Fuel Type	Natural Gas	
Select to specify ELV or use assumptions based on Power Output Range of Gas Engine CHP (kWe)	Using installation specific data or have an ELV	Select from Drop down list. If compliance with an ELV can be guaranteed, inputting the ELV will ensure the most reliable result. If no ELV is available, impact will be estimated based on the review of UK CHP emissions
	Please go to Section 2	

Section 2

For users wishing to input installation specific information on Exhaust flow-rate and/or NOx in-stack concentrations.

Please complete the yellow cells as they appear based on your choices.

Enter the Power Output of your CHP (kWe)	10	Enter a number from 1 to 20000 kWe (20MWe)
Please select which data you wish to provide	ELV (Actual or Ref conditions)	Select from Drop Down List. Choose emission factor , tonnes/year, or Emission Limit Value
How is the concentration expressed?	Concentration (mg/Nm3) @ Ref Conditions - Dry	Ref conditions assumed as 273K, 101.3KPa, 11% O2, Dry
Enter Concentration at Ref (Nmg/m3)	10	
How is the flow rate expressed? You can use tool defaults if you don't know the flow rate.	Flow rate unknown - use default assumptions	Ref conditions assumed as STP (273K, 101.3KPa), 11% O2, Dry Gas
	0.5	
This default exhaust flow-rate (as a function of KWe) is estimated from a review of the prevalent Internal	**0.0**	This parameter is needed to calculate the installation-specific NOx emisson rate, if you have installation-specific
	77.0	
	101.3	
	0.0	
	11.0	

Summary of Installation Specific Flow Rate and Concentration:

Flow Rate (m3/sec)	0.01
NOx Emission Concentration (mg/m3)	6.9

Section 3: Determination of Emissions factors and Emissions based on Section 1 or 2

CHP TOOL

CHP AQ Tool v1.3

You can record details of your CHP Here:	**Totem T20 CHP**
Additional comments:	

Based on sections 1 or 2, the following are calculated for the CHP

NOx Emission Factor (grams/kWh)	Installation specific data selected	
NOx Emission Rate (grams/second/kWe Output)	Installation specific data selected	
NOx Emission Rate (g/sec)	0.00	Based on the installation specific information provided in Section 2.
Annual Emissions NOx (tonnes/year)	0.00	Based on the intallation specific information provided in Section 2.
	Please go to Section 4 Air Quality Impacts Calculator.	

Section 4: Air Quality Impacts Calculator

This calculator is based on LAQM.TG(09) Industrial Nomograms for NO_2. The CHP screening tool calculates only with the annual mean NO_2 impact, and is based on the relevant nomograms for industrial sources in LAQM.TG(09) – Figures 5.2 and 5.3 - which in turn are based on ADMS2 dispersion modelling runs for both tall stacks and near-ground level releases (i.e. when a nearby building renders the effective stack height as less than 10 m). The result of the Excel-based spreadsheet is the maximum, annual mean ground level NO_2 concentration; therefore, re-iterative runs of the tool would be necessary to derive a minimum permissible stack height to achieve a given ground level NO_2 concentration.

Please complete the yellow cells as they appear based on your choices.

If you wish to change your selections part way through, it is recommended you clear the contents from yellow cells manually as only yellow cells are used in the calculations. You can also click the Clear Impacts tool on the right . (you must have macros enabled - see Note: Info on Macros)

Enter Stack Height (m)	17.1	If your stack height is more than 10m you may enter building information below. If your stack height is =<10m (i.e.Ground Level/Fugitive) then building height is not applicable.
Enter Building Height (m). This the height of the dominant large building near the stack. It can be the building on which the stack sits.	15.6	Enter height of the tallest building within 5 stack heights of the stack. If no building then leave blank or enter 0.
Enter Stack Diameter (m)	0.5	Enter Stack Diameter between 0.5m and 11.9m. Leaving blank assumes a short stack/fugitve source.
Calculated Effective Stack Height (m). This method for calculating the effective stack height is consistent with that as set out in LAQM.TG(09)	2.49	
	A short stack/ground level source will be assumed by impacts calculator.	
The effective stack height is less than 10m, a low stack height will be assumed. Therefore you need to enter the distance to the nearest receptor (m)	3	Enter the distance to nearest receptor between 1 and 200m

Results

CHP Tonnes NOx per Annum (based on Sections 1,2 or 3)	0.00	The tool includes all the assumptions/limitations inherent in LAQM.TG(09) i.e. a 10 – 25 m/s efflux velocity
Estimated Maximum Annual Mean NO_2 Contribution from CHP (ug/m^3), or Contribution from CHP at nearest receptor (ug/m3) for short stacks	**0.16**	The CHP screening tool does not take account of background NO_2 level; it calculates only the contribution of the stack to the maximum NO_2 annual mean concentration at the worst-case location. This locations will be different for varying stack heights and diameters.

The result from this tool is conservative, and errs on the side of caution. Only ground level impacts are considered. It is likely that the application of a detailed dispersion model using installation-specific values for exit velocity, volumetric flow-rate and flue gas temperature, and local meteorological data, would give a lower result.

Your Notes:

APPENDIX 3
GAS CHP INFORMATION REQUEST FORM

Gas CHP Information Request Form

The whole of the Borough of Camden has been declared an Air Quality Management Area, as a result of widespread breaches of the national air quality objectives for PM_{10} and NO_2. The London Borough of Camden has been designed a Smoke Control Area under the Clean Air Act 1993.

Gas CHP are a source of nitrogen oxides (NOx) emissions. These pollutant emissions can have an impact on local air quality and effect human health. It is essential that any new CHP installed in the London Borough of Camden meets certain emission control requirements in order to protect local air quality.

The information below must be supplied to the local authority prior to, or as part of, the planning application in order for the local authority to approve the CHP.

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1 Development Details

i. Planning Application Reference…….

ii. Name of Site…….

iii. Address where boiler(s)/combustion plant will be located…….

iv. Person completing form……

v. Date…….

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2 Particulars of the CHP

i. Description of CHP including make, model, manufacturer, thermal capacity (KW, MW)

ii. Maximum rate of fuel consumption in kg/hr or m^3/hr

iii. Identify efficiency of the CHP

iv. Describe the CHP combustion system

v. Describe how combustion will be optimised and controlled in order to minimise pollutant emissions

vi. Provide details of the abatement equipment in place for controlling NOx emissions.

vii. Description of boilers associated with the CHP including make, model, manufacturer, thermal capacity (KW, MW)

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3 CHP Operation and Maintenance

i. Who will be responsible for operating and maintaining the CHP

ii. Provide details of the maintenance schedule associated with the CHP and stack. This should include the frequency of boiler inspection and servicing by a trained engineer.

iii. Describe how incidences of CHP system failure will be identified & mitigated.

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4 CHP Stack Details

i. Identify the height of the CHP exhaust stack above ground. The LAQM.TG(09) industrial screening nomographs can be used to estimate the nominal stack height to employ in the detailed dispersion model.

ii. The stack height should be modelled using dispersion modelling software such as ADMS 4 or AERMOD. Evidence shall be presented to demonstrate that predicted ambient pollutant concentrations at sensitive receptor locations will not have a significant impact on the air quality objectives for NO_2.

iii. Air quality modelling shall be carried out in accordance with the procedures outlined in EPUK Air Quality and Planning Guidance, London Councils (2006) and Defra Technical Guidance Note LAQM.TG(09), and with due regard to the Mayors Air Quality Strategy for London.

iv. The modelling work shall take into account variable emissions rates associated with the combustion plant operating on full and partial load, and start-up/shut-down cycles.

v. A report shall be submitted containing details of the following:

- Details of the modelling software chosen;
- Stack internal diameter (m);
- Does the stack terminate vertically and is the stack insulated;
- Present maximum nitrogen oxides emission rates (mg/m^3 or g/hr) at standard reference conditions (6% oxygen, 273K, 101.3kPa). Provide emissions test data as evidence of emissions rates from the boiler. This shall reference the test method used to determine emission concentrations;
- Identify the exhaust gas efflux velocity (m/s) and temperature (^oC);

- Is the CHP exhaust stack fitted with draft fans with adjustable speed control?
- Grid reference of CHP exhaust stack.
- Release and stack parameters used in the modelling exercise e.g. volumetric flow-rate (V), pollutant emission rates (g/s);
- Nearby buildings details;
- Meteorological data;
- Terrain and surface roughness;
- Background levels of pollutants;
- Methods used to combine background and source-contributed pollutant concentrations.

vi The predicted results of ambient pollutant concentrations at specific receptors should be tabulated. This should include location of the receptor and distance from the stack. The location and OS grid reference for locations of maximum impact should also be identified.

vii A full discussion of any potential breaches of air quality objectives should be provided. This should also include a discussion of model sensitivity to key input parameters.

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5 Building Details

i. Distance of adjacent buildings from CHP exhaust stack

ii. Height of adjacent buildings

iii. Dimensions of building to which the CHP exhaust stack is attached

iv. Indicate the distance from the CHP exhaust stack to the nearest fan assisted intakes, air vents, roofs with access/terraces, balconies and openable windows.

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6 Plans

i. Provide a site plan showing the location of the boiler/plant room, fuel storage area and the access and exit route for fuel delivery vehicles

ii. Provide a site plan showing the position of the exhaust stack, fan assisted intakes, air vents, roofs with access/terraces, balconies and nearest openable windows.

APPENDIX 4
SCOPE AGREEMENT CORRESPONDENCE WITH LONDON BOROUGH OF CAMDEN

From:	Webber, Adam
To:	Lesley Vining; Lopez, Ana
Subject:	RE: Kings Cross Methodist Church - Scope of Air Quality Assessment
Date:	08 March 2017 16:24:41
Attachments:	image002.png image003.png image004.png image006.png

Hi Lesley,

Good to hear from you – hope all is well down in the south west.

Having had a quick look this all looks fine – I've copied in my colleague Ana who is normally main point of contact for applicants on AQ and other sustainability issues; she may have some additional comments.

Also worth noting from the location of the site that we're almost certainly looking at bringing new receptors into an area comfortably exceeding the annual mean objective, so subsequently there will be the need for some sort of design mitigation.

Ana – if you have any additional comments / steer please liaise directly with Lesley.

Best wishes
Adam

Adam Webber
Senior Sustainability Officer (Air Quality)

Telephone: 020 7974 3901

From: Lesley Vining [mailto:LVining@ramboll.com]
Sent: 08 March 2017 12:36
To: Webber, Adam
Subject: Kings Cross Methodist Church - Scope of Air Quality Assessment

Adam

Hope you are well and not too busy.

We have been asked by the Kings Cross Methodist Church to carry out an air quality assessment of its refurbishment work to provide chapel space and meeting rooms at ground floor level with 12 residential apartments and 26 bedroom spaces above on the first to fourth floor levels. The site location is provided within the attached figure.

No car parking would be provided as part of the development, and it is proposed to include a micro 20 kWe CHP and 3 x 70 kW boilers, therefore the combined total would be less than 300 kW. As such we consider that the proposed development would not have a significant impact on

air quality and the need to provide a quantitative assessment of traffic or energy plant emissions can be scoped out. However, the development would introduce new residential exposure and therefore we would propose the following scope of assessment.

Characterise existing air quality through a review of existing monitoring data and the predicted maps provided by the LAEI;
Provide details of the proposed energy plant and carry out a screening assessment of emissions from the CHP to demonstrate that the stack has been located correctly to not adversely impact air quality;
Provide details of the mitigation measures which would be included within the development to protect future residents from poor air quality; and
Carry out an air quality neutral assessment to demonstrate that the proposals meet with the relevant air quality neutral benchmarks.

Please could you confirm that you are happy with this approach and scope.

Many thanks

Lesley

Lesley Vining

Senior Manager - Air Quality

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