London Borough of Camden

Bacton Low Rise Redevelopment, London
Sustainability Statement
29.09.2016 Revision 01

SUSTAINABILITY

Audit sheet

Rev.	Date	Description	Prepared	Verified
01	29.09.2016	For Submission	W. Chan	R. Harper

Contents

1. Executive Summary

This sustainability statement has been prepared on behalf of London Borough of Camden (the Applicant), in support of a minor material amendment (MMA) application for Bacton Low Rise Redevelopment, hereafter referred to as the Proposed Development. The Proposed Development is sited within the London Borough of Camden (LBC).

Environmental Assessment

The original application was conditioned to achieve a Code for Sustainable Homes (CfSH) level 4 rating in line with national and local policy at the time of the application. The MMA seeks to continue to target a CfSH Level 4 rating and a pre-assessment has been included in this sustainability strategy to demonstrate a potential route to achieve the required rating.

There is a potential risk to the Level 4 rating as the credits within Ene1 are reliant on the development connecting to the Royal Free District Heat Network and the assumed carbon factor that has been set out in the Energy Strategy submitted with the MMA application.

If the connection to the Royal Free heat network is not available at the point of completion of the development, the credit will be assessed with gas fired boilers as the heat source and is unlikely to achieve any of the available credits. This would result in the CfSH assessment not conforming to the mandatory minimum standards of a Level 4 rating.

Inclusive Design

All dwellings at the Proposed Development will be Lifetime Homes compliant, 10% (by habitable room) of which would be wheelchair accessible or easily adaptable for wheelchair users to ensure that the design is fully inclusive, and that the Proposed Development is accessible and useable for all.

The principles of Secured by Design would be adopted at the Proposed Development to ensure the safety and security of all users.

Energy & CO_2 Emission Reduction Strategy

The Proposed Development will reduce energy demand through passive design and energy efficiency measures such as best practice levels of insulation, and low fabric air permeability. Through these measures, the Proposed Development is anticipated to achieve a 4.5% reduction in regulated CO_2 emissions beyond the requirements of the Building Regulations Part L 2013 ‘baseline’.

In order to further reduce CO_2 emissions, the Proposed Development will be provided with a connection to the Royal Free district heat network to meet the whole demand for heating and hot water. High efficiency gas fired boilers will also be provided for the development.

The measures set out above will reduce regulated CO_2 emissions from the Proposed Development by 32.4% beyond the requirements of the Building Regulations Part L 2013 ‘baseline’. A summary of the anticipated CO2 emissions and reduction at each step of the energy hierarchy for the Proposed Development achieves an overall 37% reduction in CO2 emissions.

The Proposed Development has been designed in accordance with the cooling hierarchy to minimise cooling demand and limit the likelihood of high internal temperatures. All dwellings will achieve compliance with the Building Regulations Criterion Three and will not be supplied with cooling.

A CIBSE Overheating analysis has also been undertaken for the dwellings based on a typical floor. The dwellings have been assessed against CIBSE Guide A and CIBSE TM52 overheating criteria using Design Summer Year 2005 and CIBSE TM49 Design Summer Year for London Heathrow 1989 weather files.

Please refer to the energy strategy for a full suite of results and a comparison between the actual building and a ‘notional baseline’ model. The proposed design and servicing strategy of Bacton Low Rise enables the development to reduce the risk of overheating compared with the notional model against the CIBSE criteria of Guide A and TM52.

Water

Dwellings at the Proposed Development will be fitted with water efficient fixtures and fittings. These will be selected to ensure that water consumption is limited to 105 litres per person per day, in accordance with the requirements of CfSH issue Wat 01 (Indoor Water Use) and the most recent update to the Building Regulations Part G.

The fit-out of the commercial (use Class A1//B1) space would be the responsibility of the future tenants. However, tenants would be encouraged to select water efficient fixtures and fittings and would be required to adhere to the requirements of the Building Regulations Part G at the time of construction.

Materials

Building elements will be selected in accordance with the BRE Green Guide to Specification, with the aim of selecting elements in the range A+ to C to minimise environmental impact.

A Site Waste Management Plan (SWMP) will be produced that will outline how recycling of construction, demolition and excavation material can be maximised and reused on sight.

Insulation will be specified to minimise Global Warming Potential (GWP) to five or less.

All timber used at the Proposed Development will be FSC certified and where possible and practicable materials will be locally sourced.

Waste

The contractor will be required to produce and adhere to a SWMP which clearly sets out requirements to maximise diversion of demolition and construction waste from landfill.

An operational waste strategy has been prepared for the Proposed Development. Dwellings will be provided with sufficient internal bin storage to accommodate non-recyclable and segregated recyclable waste, within the demise of each dwelling in a fixed location. Communal waste stores will be provided for residents to deposit waste for collection by the local waste authority.

Commercial uses (i.e. B1 office) will each be provided with access to a segregated waste stores (away from residents' waste store) to prevent mixing of waste streams. Sufficient bin storage will be provided to enable sorting of recyclable wastes.

Transport

The Proposed Development has been assessed to have a Public Transport Accessibility Level (PTAL) of 3, equivalent to 'moderate'.

Secure cycle storage will be provided at the Proposed Development for residents to maximise the potential for sustainable transport to the Site.

A total of 17 car parking bays are proposed – 15 are disabled parking bays (5 for phase one and 10 for phase two and three), 1 car club bay and 1 electric vehicle parking bay.

Biodiversity

It is expected that the construction of the Proposed Development will lead a net gain of ecology on the Site. The Proposed Development will benefit from improvements to green infrastructure via new public realm. It is intended that these areas will improve the ecology and biodiversity of the Site, and provide a highly attractive environment.

Pollution

The connection to the Royal Free district heat network will not result in any emissions from the site. The high efficiency gas fired boilers will be selected to meet the emissions criteria outline in the Sustainable Design and Construction Supplementary Planning Guidance (SPG).

Additionally, luminaires will be selected with suitable output to direct lighting appropriately to minimise light pollution and loss of light to the sky.

The main contractor will operate to minimise the risk of pollution from the Proposed Development and will be required to register with the Considerate Constructors Scheme.

2. Introduction

2.1 The Application

This strategy has been prepared on behalf of the London Borough of Camden (the Applicant), in support of a minor material amendment (MMA) application for Bacton Low Rise redevelopment, hereafter referred to as the Proposed Development. The Proposed Development is sited within the London Borough of Camden.

Development Description

Variation of conditions 3 (detailed drawings), 7 (refuse & recycling), 9 (cycle storage), 10 (car parking), 11 (Electric vehicle charging points), 12 (car club bay), 13 (motorcycle parking), 23 (Wheelchair units), 25 (contaminated land measures), 26 (biodiverse roofs), 27 (bird and bat details), 28 (lighting strategy), 29 (landscaping details), 32 (building foundations), 34 (drainage details), 36 (CCTV strategy), 37 (car club parking), 40 (re-appraisal of financial viability), 43 (energy efficiency), 44 (code for sustainable homes), 45 (car free), 47 (construction management plan) and 58 and 59 (approved plans) of planning permission 2012/6338/P dated 25/04/2013 (as amended by planning permissions 2014/3633/P and 2015/1189/P) (for the redevelopment of Bacton Low Rise Estate, Gospel Oak District Housing Office and Vicar's Road workshops following the demolition of all existing buildings, to provide a total of 294 residential units and associated works), namely to; provide 20 additional Class C3 residential units (19 market and 1 intermediate units), alter the housing mix, reconfigure the employment floorspace, deliver the outstanding parts of the development as a single phase, various external alterations and reconfigurations, revise the on-site car parking provision and the amount of cycle storage, and associated works.

Site Context

The site is located in north London, within the London Borough of Camden and within the Gospel Oak ward. The site is bound to the north by the mainline railway line which runs between Kentish Town and West Hampstead, to the east by Vicars Road and Wellesley Road, to the south by Wellesley Road and to the west by Haverstock Road.

Aim

The aim of this strategy is to detail a robust energy demand reduction and supply strategy to enable the Proposed Development to meet the targets set out in the Proposed Development Plan.

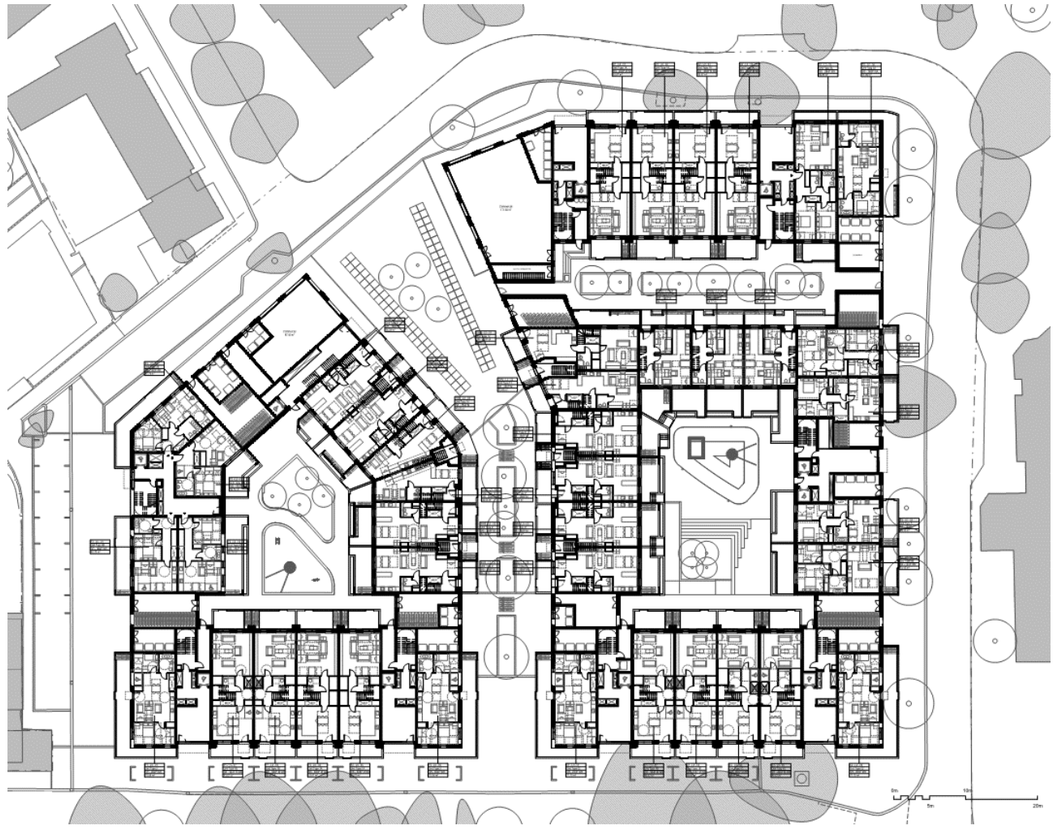

Figure 2.1: Ground Floor Plan

2.2 Policies and Drivers

2.2.1 Current Policy Framework

The policies considered when preparing this strategy are contained in the London Plan (GLA, 2016) and the Local Development Framework (LDF) documents of the London Borough of Camden (LBC).

The Proposed Development constitutes a 'major development' (>10 dwellings and/or >1,000m^2 of commercial floor space) and is therefore subject to the policies of the GLA, contained within the London Plan. It is also referable to the Mayor as a development of 'potential strategic importance' due to the height and floor area being greater than the set criteria for referable applications

These policies and applicable Building Regulations are detailed in Appendix A.

The London Plan – Consolidated with Alterations since 2011 (March 2015)

On the 10th March 2015, Further Alterations to the London Plan was issued. The updated London Plan document is now a material consideration for planning applications. Key alterations to the document are as follows:

- A new policy is in place relating to electricity and gas supply.
- Policy guidance changes relating to increased provision of waste capacity.
- Funding to create cycle friendly 'mini Hollands' for up to four outer London Borough town centres.
- Further guidance is given, which highlights the importance of demand side energy management and minimum standards for cycle parking.

Final Versions of the 'Minor Alterations to the London Plan' (MALPs 2016)

Final versions of the 'Minor Alterations to the London Plan' (MALPs 2016) were published and adopted in April 2016 and are current for any Stage 1 submissions to the GLA. The MALPs address parking and housing standards.

Recent alterations also include amendments to the 'Housing Supplementary Planning Guidance' (SPG) and 'Energy Planning' guidance, clarifying the CO_2 emissions reduction targets that currently apply and the changes that will be introduced from 1st October 2016.

The target reduction in CO_2 emissions for 'Residential Buildings' will remain at 35% until 1st October 2016 when this will be uplifted to 'Zero Carbon' for Stage 1 applications. It should be noted that GLA has not offered a definition of 'Zero Carbon', however, in this context it is assumed to be a 100% reduction in regulated CO_2 emissions. The policy suggests that at least 35% should be achieved on-site, with the remainder achieved by a combination of off-site measures and a cash in lieu payment (currently set at £1,800 per tonne of CO_2 of remaining emissions to achieve a total reduction of 100%).

The target reduction in CO_2 emissions for 'Non-Domestic Buildings' will remain at 35% and will not be uplifted in the near future, despite the consultation document indicating that this would be set at 50%. The GLA comment that the 35% target will provide a smooth trajectory towards the upcoming requirement for 'Nearly Zero Energy Buildings' by 2020. It should be noted that the UK Government has yet to ratify the EU requirement for 'Nearly Zero Energy Buildings' and this may not occur should the UK vote to leave the EU.

Building Regulations Part L 2013

The assessment of the Proposed Development against policy targets has been carried out using Part L 2013.

Criterion one of the Building Regulations Part L 2013 requires that the building as designed is not anticipated to generate CO2 emissions in excess of that set by a Target Emission Rate (TER) calculated in accordance with the approved Standard Assessment Procedure (SAP) v9.92 2012 for dwellings and the National Calculation Methodology (NCM) 2013 for non-dwellings.

On aggregate, Part L 2013 requires the following CO_2 emissions reductions:

- 6% beyond the requirements of Part L 2010 for dwellings
- 9% beyond the requirements of Part L 2010 for non-domestic buildings

Criterion two places upper limits on the efficiency of controlled fittings and services for example, an upper limit to an external wall U-value of 0.30W/m^2.K (dwellings).

Part L 2013 requires the following performance targets to be met

- Target Fabric Energy Efficiency (TFEE). The TFEE is calculated independently for each dwelling, based upon an elemental recipe of efficiency parameters, applied to the geometry of the dwelling in question. This will generate a notional value which will then be relaxed by 15% to generate the TFEE.

Criterion three requires that dwellings are not at 'high' risk of overheating in summer months (June, July & August) and that zones in commercial buildings are not subject to excessive solar gains. This is demonstrated using the procedure given in SAP 2012 Appendix P for dwellings and the National Calculation Methodology (NCM) 2013 for non-dwellings.

Code for Sustainable Homes

As this application relates to a previous permission that included the requirement to assess the development against the CfSH assessment criteria. As a result this strategy continues to demonstrate the performance of the development against this assessment methodology.

A CfSH pre-assessment is provided in Appendix C of this statement to demonstrate the sustainable design aspects that would likely be included in the Proposed Development.

3. Sustainability Statement

The following statement is written in reference to the applicable 'priorities' and 'best practice' as outlined in the Mayor or London's Supplementary Planning Guidance on Sustainable Design and Construction (2014), as required by Policy 5.3 of the London Plan (2016). Reference is also made to the local polices of LBC.

GLA Sustainable Design & Construction SPG		Policy References		Proposed Development Response
Priority	Best Practice	London Plan	LBC	
3.1 Resource Management				
Land				
Optimising the Use of Land Through both their Local Plans and planning decisions, boroughs should aim for 100% of development to be delivered on previously developed land.	-	1.1, 3.3		Optimising the Use of Land The Proposed Development will be on previously developed land. The Site is brownfield land consisting of an existing four-storey building which will be demolished.
Optimising the Use of Land Developers should optimise the scale and density of their development, considering the local context, to make efficient use of London's limited land.	-	3.4, 4.3, 7.6		Optimising the Use of Land The Site's density will be increased through the introduction of the Proposed Development. Phase 2 of the Proposed Development is approximately 26,116m^2 Gross Internal Area (GIA). The useful floor space is split (in GIA) by use as follows: ▸ Private Residential (C3) – 25,857m^2 ▸ Office (B1) – 259m^2
Basement and Lightwells When planning a basement development, developers should consider the geological and hydrological conditions of the Site and surrounding area, proportionate to the local conditions, the size of the basement and lightwell and the sensitivity of adjoining buildings and uses, including green infrastructure.	-	5.12, 5.13, 7.13, 7.19		Basement and Lightwells The structural engineers have considered all applicable geological and hydrological conditions in accordance with relevant design guidance and standards. Wherever possible, basement will be constructed to avoid any adverse impact on existing tree roots.
Basement and Lightwells	-	5.3, 5.18, 6.3, 7.14, 7.15		Basement and Lightwells

GLA Sustainable Design & Construction SPG		Policy References		Proposed Development Response
Priority	Best Practice	London Plan	LBC	
When planning and constructing a basement development, developers should consider the amenity of neighbours.				No basements or lightwells are proposed for dwellings. The basement plan room is located away from other dwellings and therefore will not impact on the amenity of neighbours.
Local Food Growing To protect existing established food growing spaces.	-	2.18, 3.2, 5.3, 5.10, 5.11, 7.18, 7.22.		Local Food Growing The Site does not contain any existing established spaces for growing food.
-	Local Food Growing To provide space for individual or communal food growing, where possible and appropriate.	2.18, 3.2, 5.3, 5.10, 5.11, 5.21, 7.18, 7.22.		Local Food Growing Dwellings at the Proposed Development will be provided with balconies, which will enable residents to plant a variety of species to grow their own food, should this be desired.
-	Local Food Growing To take advantage of existing spaces to grow food, including adapting temporary spaces for food growing.	2.18, 3.2, 5.3, 5.10, 5.11, 5.21, 7.18, 7.22.		
Site Layout and Building Design				
-	Site Layout & Building Design Any existing buildings that can be practically refurbished, retrofitted, altered, or extended should be retained and reused.	5.3, 5.4	DP24	Site Layout & Building Design The existing building is of low quality and low density and therefore is not suitable for refurbishment. The new buildings will be of high quality design.
-	Site Layout & Building Design A mix of uses, where suitable should be included to provide a range of services commensurate to the public transport accessibility.	4.3, 6.1	CS11, DP16, DP17	Site Layout & Building Design The Proposed Development will contain a combination of residential dwellings (use class C3) and office (B1). Considering the Site has a Public Transport Accessibility Level (PTAL) of 3, equivalent to ‘Moderate’ it is not considered necessary to provide further amenities as residents are able to access a wide range of amenities via available public transport and in the vicinity of the development.
Site Layout & Building Design The design of the Site and building layout, footprint, scale and height of buildings as well as the location of land users should consider:	-	2.18, 5.2, 5.3, 5.4, 5.6, 5.7, 5.9, 5.10, 5.11, 5.12, 5.13, 5.16, 5.18, 5.21, 6.1, 6.7, 6.9, 6.10, 6.11. 6.13, 7.1,	CS11, CS13, CS15, DP16, DP17, DP18, DP22, DP24, DP25, DP31	Site Layout & Building Design The Proposed Development will built on brownfield, therefore make use of previously developed land. The scale and height of the building has been developed to complement existing and proposed developments near to the Site and would therefore not be considered ‘out of place’ within the local vicinity.
Existing Features				Existing Features

GLA Sustainable Design & Construction SPG		Policy References		Proposed Development Response
Priority	Best Practice	London Plan	LBC	
▸ The possible retention and reuse of existing buildings and structures; ▸ The retention of existing green infrastructure, including trees and other ecological features, and potential for its improvement and extension; and ▸ Access routes to public transport and other facilities that minimise the use of public transport.		7.6, 7.14, 7.15, 7.18, 7.19, 7.21, 7.22		The existing building on-site is of low quality and will be demolished. There is also no existing green infrastructure located on Site. The waste that arises from the demolition of existing buildings will be targeted to be used as aggregate for the Proposed Development where possible.
New Design of Development ▸ The existing landform ▸ The potential to take advantage of natural systems such as wind, sun and shading; ▸ The principles set out London Plan policies 7.1 and 7.6; ▸ The potential for adaption and reuse in the future; ▸ Potential for incorporating green infrastructure, including enhancing biodiversity; ▸ Potential for incorporating open space, recreation space and child play space; ▸ Energy demands and the ability to take advantage of natural systems and low and zero carbon energy sources; ▸ Site wide infrastructure; ▸ Access to low carbon transport modes; ▸ The promotion of low carbon transport modes, including walking and cycling; ▸ Potential to address any local air quality, noise disturbance, flooding and land contamination issues; and ▸ The potential effect on the micro-climate.				New Design of Development The Proposed Development has been designed to benefit from access to wind for natural ventilation and sun for light and warmth in winter. Regarding LP Policy 7.1, it is considered that the Proposed Development will: ▸ Improve access to green infrastructure by providing an external landscaped areas for use by building occupants as well as roof terraces and private balconies ▸ Enable people to live healthy and active lifestyles due to the provision of suitable cycle parking to encourage commuting by bike which is a low-carbon mode; ▸ Enable residents to feel safe, as the design team has liaised with the local Architectural Liaison Officer ▸ Allow residents and visitors of all ages and stages of life to enjoy the surroundings by ensuring suitable access provisions. The Proposed Development is comprised of residential dwellings and office space use. The Proposed Development is therefore considered flexible for a number of uses. Regarding LP Policy 7.6, it is considered that the Proposed Development is of the highest architectural quality and is of a proportion, composition, scale and orientation that enhances, activates and defines the public realm. The Proposed Development will comprise details and materials that complement the local character, and will incorporate best practice in terms of resource management and climate change adaptation. The following measures will be targeted for the Proposed Development: ▸ 10% (by habitable room) of all residential units will be wheelchair accessible or easily adaptable for wheelchair users to ensure that the design is fully inclusive, and that the development is accessible and useable for all users; ▸ Secured by design principles will be incorporated; and

GLA Sustainable Design & Construction SPG		Policy References		Proposed Development Response
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				▸ The building will contribute to the adaption and mitigation of the effects of climate change, designed to maximise natural daylighting and sunlight access, and to minimise overshadowing and adverse wind conditions.
3.2 Energy and Carbon Dioxide Emissions				
Energy and CO_2 Emissions The overall carbon dioxide emissions from a development should be minimised through the implementation of the energy hierarchy set out in London Plan Policy 5.2.	-	5.2, 5.3	CS13, SPD Sustainability	Energy and CO_2 Emissions The Proposed Development has been assessed in accordance with the requirements of LP Policy 5.2, and the guidance within the GLA document on preparing energy strategies (2016). The target CO_2 emissions reduction applicable to the Proposed Development is 35% beyond the requirements of the Building Regulations Part L 2013, in line with GLA and LBC planning policy. Please refer to the Energy Strategy submitted in support of the application for further details. An anticipated CO_2 emissions reduction of **37.0%** beyond the requirements of the Building Regulations Part L 2013 will be achieved through a combination of passive design, energy efficiency and the provision of connection to the Royal Free District Heat Network.
-	Energy and CO_2 Emissions Developments should contribute to ensuring resilient energy infrastructure and a reliable energy supply, including from local low and zero carbon sources.	5.1, 5.4A, 5.5, 5.6, 5.7, 5.8, 5.17	CS13, SPD Sustainability	Energy and CO_2 Emissions The Proposed Development will be provided with a connection to the Royal Free district heat network to provide heat for space heating and hot water. With this approach, it is anticipated that a **32.4%** reduction in CO_2 emissions could be achieved beyond the Building Regulations Part L 2013 'baseline'. It is considered that these measures work in tandem to provide resilient energy infrastructure.
-	Energy and CO_2 Emissions Developers are encouraged to include innovative low and zero carbon technologies to minimise carbon dioxide emissions within developments and keep up to date with rapidly improving technologies.	5.2, 5.17	CS13, SPD Sustainability	Energy and CO_2 Emissions District Heat Networks are well placed to upgrade technologies on a rolling basis to ensure system efficiency.

<table>
<tr><th colspan="2">GLA Sustainable Design & Construction SPG</th><th colspan="2">Policy References</th><th rowspan="2">Proposed Development Response</th></tr>
<tr><th>Priority</th><th>Best Practice</th><th>London Plan</th><th>LBC</th></tr>
<tr><td>Energy Demand Assessment
Development applications are to be accompanied by an energy demand assessment</td><td>-</td><td>5.2</td><td>CS13, SPD Sustainability</td><td>
Energy Demand Assessment
An energy demand assessment has been carried out for the Proposed Development. Please refer to the Energy Strategy submitted in support of the application for further details.

Through a variety of passive design and energy efficiency measures, summarised in the following table the Proposed Development will reduce CO_2 emissions by 4.5% beyond the requirements of Part L 2013.
<table>
<tr><th colspan="2">Parameter</th><th>Dwellings</th><th>Non-Dwellings</th></tr>
<tr><td rowspan="7">Passive Design</td><td>Glazing g-value</td><td>0.35</td><td>0.40</td></tr>
<tr><td>Roof U-value
(W/m^2.K)</td><td>0.10
0.15 on terraces</td><td>-</td></tr>
<tr><td>External Wall U-value
(W/m^2.K)</td><td>0.13</td><td>0.35</td></tr>
<tr><td>Floor U-value
(W/m^2.K)</td><td>0.10</td><td>0.10</td></tr>
<tr><td>Party Wall U-value
(W/m^2.K)</td><td>0.0 Fully Filled Cavity</td><td>-</td></tr>
<tr><td>Sheltered Wall U-value
(W/m^2.K)</td><td>0.20 (assumption)</td><td>-</td></tr>
<tr><td>Thermal Mass
(kJ/m^2.K)</td><td>Low</td><td>-</td></tr>
<tr><td>Fabric Air Permeability
((m^3/m^2.h) at 50 Pa)</td><td>3.00</td><td>5.00</td></tr>
</table>
The Proposed Development is designed to minimise the requirement for mechanical ventilation, heating and cooling.

The dwellings are not being supplied with cooling and there are minimal cooling requirements required by the non-dwellings areas of the proposed development.
</td></tr>
</table>

<table>
<tr><th colspan="2">GLA Sustainable Design & Construction SPG</th><th colspan="2">Policy References</th><th rowspan="2">Proposed Development Response</th></tr>
<tr><th>Priority</th><th>Best Practice</th><th>London Plan</th><th>LBC</th></tr>
<tr><td></td><td></td><td></td><td></td><td>Heating requirements at the Proposed Development are minimised through provision of best practice levels of insulation and limiting of fabric air permeability. For example, a fabric air permeability of 3m^3/(m^2.h) at 50Pa is targeted for the dwellings, a 70% improvement beyond the requirements of the Building Regulations Part L1A 2013.

Mechanical Ventilation with Heat Recovery (MVHR) will be provided to all dwellings as another means of minimising energy requirement for heating. Considering the low fabric air permeability, it is also important to include MVHR to ensure that indoor air quality is maintained.

Non-dwellings will achieve compliance with the Building Regulations Part L2A requirement to limit the effects of heat gains in summer months. This will also limit the need for cooling. Tenants will be encouraged to install high-efficiency lighting with low heat emission. This will have the joint benefits of reducing energy requirement for space lighting, and space cooling.</td></tr>
<tr><td>Use Less Energy
The design of developments should prioritise passive measures.</td><td>Use Less Energy
Developers should aim to achieve Part L 2013 Building Regulations requirements through design and energy efficiency alone, as far as is practical.</td><td>5.2, 5.3, 5.9</td><td>CS13, DP22, SPD Sustainability</td><td>Use Less Energy
The first step to reduce energy demand and CO_2 emissions has been to incorporate passive design and energy efficiency measures.

Passive design measures are summarised in the previous response. Energy efficiency measures are summarised in the following table.
<table>
<tr><th rowspan="5">Energy Efficiency</th><th>Parameter</th><th>Dwellings</th><th>Non-Dwellings</th></tr>
<tr><td>Space Heating</td><td>Connection to Royal Free district heat network and high-efficiency condensing gas boilers (>90% efficiency) with Heat Interface Units (HIU) per dwelling coupled to hot water systems and radiators</td><td>By Tenant during fit-out. Connection to landlords LTHW network will be available.</td></tr>
<tr><td>Hot Water</td><td>Water efficient fixtures and fittings to minimise water demand. Low heat loss HIU / water cylinder.</td><td>By Tenant during fit-out. Connection to landlords LTHW network will be available.</td></tr>
<tr><td>Space Cooling</td><td>No cooling.</td><td>By Tenant during fit-out. Connection to landlords CHW network will be available.</td></tr>
<tr><td>Lighting</td><td>High efficiency lighting with efficacy >45 lamp lumens per circuit Watt. Daylight and presence detection in common areas / roof terraces.</td><td>To be provided in accordance with the requirements of the Building Regulations.</td></tr>
</table></td></tr>
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<tr><td></td><td></td><td></td><td></td><td>
<table>
<tr><td></td><td>Ventilation</td><td>High efficiency MVHR with specific fan power of 0.40-0.93/l/s and HR of 90%-94%.</td><td>By Tenant during fit-out.</td></tr>
<tr><td></td><td>Metering & Controls</td><td>Zonal, programmable thermostatic controls for heating. Separate programmable control for hot water.

Electricity meter and heat meter with potential link to energy display device.</td><td>To be provided in accordance with the requirements of the Building Regulations.</td></tr>
<tr><td></td><td>Pipework & Ductwork Insulation</td><td>To be provided in accordance with the requirements of the Building Regulations.</td><td>To be provided in accordance with the requirements of the Building Regulations</td></tr>
<tr><td></td><td>Variable Speed Pumping</td><td>To be provided.</td><td>To be provided.</td></tr>
<tr><td></td><td>O&M Manuals</td><td>Systems overview and detailed descriptions in plain and clear English.</td><td>In accordance with Building Regulations.</td></tr>
</table>

The design team has selected high efficiency targets to all items of building services, for example all lighting will be energy efficient, a mechanical ventilation heat recovery 90-94% and provision of best practice metering and controls which will allow users to monitor usage.

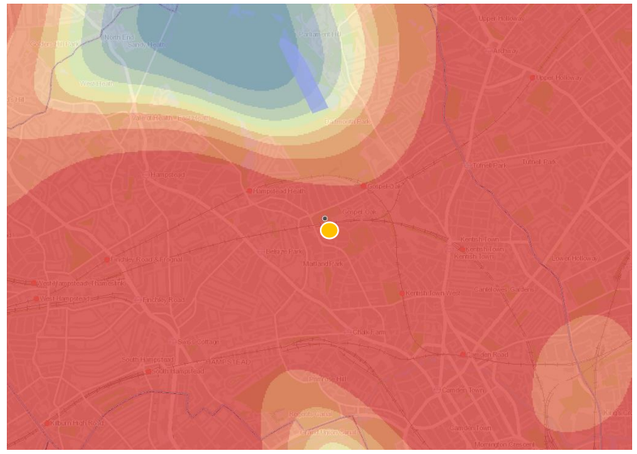
The Proposed Development will be provided with zonal programmable thermostatic controls for the heating systems which will allow users to accurately control their systems. Hot water will have separate programmable thermostatic controls.

By combination of passive design and energy efficiency measures, it is demonstrated that the Proposed Development is anticipated to exceed the requirements of the Building Regulations Part L 2013 and achieve a reduction in CO_2 emissions of 4.5%.

Please refer to the Energy Strategy submitted in support of the application for further details.</td></tr>
<tr><td>Energy Efficient Supply
Developers should assess the potential for their developments to:

▸ Connect to an existing district heating or cooling network;</td><td>-</td><td>5.5, 5.6</td><td>CS13, SPD Sustainability</td><td>Energy Efficient Supply
By reference to the London Heat Map (http://www.londonheatmap.org.uk/Mapping) it is demonstrates in the Energy Strategy that the Site is within an area of high heat density

As such, the Proposed Development will be provided with a means to connect to and will connect to the Royal Free district heat network.</td></tr>
</table>

GLA Sustainable Design & Construction SPG		Policy References		Proposed Development Response
Priority	Best Practice	London Plan	LBC	
▸ Expand an existing district heating or cooling network, and connect to it; or ▸ Establish a Site wide network, and enable the connection of existing buildings in the vicinity of the developers.				 As outlined in the energy strategy, correspondence with Royal Free has been undertaken regarding the status of the network. Extracts of the correspondence with the network operator is outlined in the appendices of the energy strategy.
Renewable Energy Major developments should incorporate renewable energy technologies to minimise overall carbon dioxide emissions, where feasible.	-	5.7	CS13, SPD Sustainability	Renewable Energy A review of potential renewable energy technologies has been undertaken. Please refer to the Energy Strategy for further detail. Due to the significant regulated CO_2 emissions reduction that can be achieved through ‘be lean’ and ‘be clean’ measures and the very low potential output from PV, it is not intended that a PV array is implemented at the Proposed Development.
Carbon Dioxide Offsetting				
Carbon Offsetting Where developments do not achieve the Mayor’s carbon dioxide reduction targets set out in London Plan Policy 5.2, the developer should make a contribution to the local borough carbon dioxide off-setting fund.	-	5.2, 5.4		Carbon Offsetting It is anticipated that the Proposed Development will reduce CO_2 emissions by 37**%** beyond the requirements of the Building Regulations Part L 2013.

GLA Sustainable Design & Construction SPG		Policy References		Proposed Development Response
Priority	Best Practice	London Plan	LBC	
Retrofitting				
Retrofitting Where works to existing developments are proposed developers should retrofit carbon dioxide and water saving measures.	-	5.4, 5.15	DP24, SPD Sustainability	Retrofitting The Proposed Development does not contain any refurbishment works / works to existing developments therefore retrofitting is not applicable in this instance.
Monitoring Energy Use				
-	Monitoring Energy Use Developers are encouraged to incorporate monitoring equipment, and systems where appropriate to enable occupiers to monitor and reduce their energy use.	5.2, 5.3	CS13	Monitoring Energy Use The Proposed Development will possibly include 'energy display devices' which will allow residents to monitor and record energy use within their homes. Similarly, systems used with the commercial spaces could be connected to a Building Management System (BMS) that will record energy use.
Supporting a Resilient Energy Supply				
-	Monitoring Energy Use Developers are encouraged to incorporate equipment that would enable their schemes to participate in demand side response opportunities.	5.2, 5.3	CS13	Monitoring Energy Use During the detailed design stages, consideration will be given to the installation of 'smart meters' which could enable demand side response opportunities in the future.
3.3 Water Efficiency				
Water Efficiency Developers should maximise the opportunities for water saving measures and appliances in all developments, including the reuse and using alternative sources of water.	-	5.3, 5.13, 5.15	CS13, DP22, DP23	Water Efficiency The Proposed Development will be provided with water efficient fixtures, fittings and appliances as outlined in the following responses.
Water Efficiency Developers should design residential schemes to meet a water consumption rate of 105 litres per person per day.	-	5.3, 5.15	CS13, DP22, DP23	Water Efficiency Dwellings at the Proposed Development will be furnished with water efficient fixtures, fittings and appliances to achieve a water consumption rate of no greater than 105 litres per person per day in line with the current Building Regulations Part G requirements. As an example, it is anticipated that dual-flush low-volume WCs will be installed throughout.

GLA Sustainable Design & Construction SPG		Policy References		Proposed Development Response
Priority	Best Practice	London Plan	LBC	
Water Efficiency New non-residential developments, including refurbishments, should aim to achieve the 'best practice' level of the AECB (Association of Environment Conscious Building) water standards.	-	5.3, 5.15	CS13, DP22, DP23	Water Efficiency Water efficient fixtures and fittings will also be installed to the office and other non-residential spaces. As a minimum, Tenants will be encouraged to fit-out their spaces appropriately to meet the requirements of the Building Regulations Part G (2013).
Water Efficiency Where a building is to be retained, water efficiency measures should be retrofitted.	-	5.3, 5.4, 5.15	CS13, DP23	Water Efficiency The Proposed Development does not contain any refurbishment works / works to existing developments therefore retrofitting is not applicable in this instance.
Water Efficiency All developments should be design to incorporate rainwater harvesting.	-	5.3, 5.13, 5.15	CS13, DP22, DP23	Water Efficiency Rainwater and surface water runoff at the Proposed Development will be collected and attenuated (in tanks) prior to being released to the municipal sewer system. During detailed design stages, consideration will be given as to whether this water could be utilised for irrigation of the landscaping.
-	Water Efficiency All residential units, including individual flats / apartments and commercial units, and where practical, individual leases in large commercial properties should be metered.	5.15	DP22, DP23	Water Efficiency All uses at the Proposed Development will be provided with water meters. During detailed design, consideration will be given to the provision of digital meters with connectivity to a central building management / billing system, rather than standard analogue meters.
3.4 Materials and Waste				
Design Phase The design of development should prioritise materials that:	-	5.3, 5.17, 5.20, 7.6, 7.14	DP22, SPD Sustainability	Design Phase 100% of the timber used at the Proposed Development will be FSC certified.

GLA Sustainable Design & Construction SPG		Policy References		Proposed Development Response
Priority	Best Practice	London Plan	LBC	

• Have a low embodied energy, including those that can be re-used intact or recycled;
  ◦ At least three of the key elements of the building envelope (external walls, windows roof, upper floor slabs, internal walls, floor finishes / coverings) are to achieve a rating of A+ to D in the BRE's The Green Guide of specification;
• Can be sustainably sourced;
  ◦ At least 50% of timber and timber products should be sourced from accredited Forest Stewardship Council (FSC) or Programme for the Endorsement of forestry Certification (PEFC) source;
• Are durable to cater for their level of use and exposure; and
• Will not release toxins into the internal and external environment, including those that deplete stratospheric ozone.
				Wherever feasible, selected materials will be in the range of A+ to D as confirmed by the BRE Green Guide to Specification.
				
				Where specified by the developer (e.g low VOC paint), finishes and other materials will not contain or emit toxic substances.

	Design Phase The design of developments should maximise the potential to use pre-fabrication elements.	5.3, 7.6		Design Phase During detailed design stages, consideration will be given to the use of pre-fabricated materials. Where practical and suitable, it is intended that these could be used to improve construction time and reduce on-site waste.
Construction Phase Developers should maximise the use of existing resources and materials and minimise waste generated during the demolition and construction process through the implementation of the waste hierarchy.	-	5.3, 5.17, 5.20		Construction Phase The main contractor will be required to produce a Site Waste Management Plan prior to commencement of any demolition or construction works on-site. One of the aims of the document will be to investigate how recycling of construction, demolition and excavation material can be maximised, and to highlight means to divert specific waste streams from landfill.
Occupation Phase Developers should provide sufficient internal space for the storage of recyclable and	-	5.3, 5.17	CS18	Occupation Phase

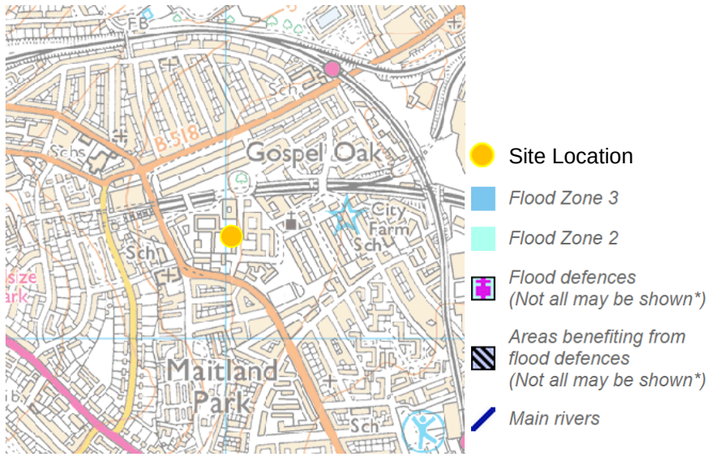
GLA Sustainable Design & Construction SPG		Policy References		Proposed Development Response
Priority	Best Practice	London Plan	LBC	
compostable materials and waste in their schemes.				All spaces at the Proposed Development will be provided with suitable internal and communal waste storage facilities for the segregation of recyclable materials, designed to meet the requirements of BS5096 (Waste Management in Buildings), and the 'Code for Sustainable Homes'. Please refer to ground floor level plans, indicating the central refuse storage facilities proposed.
Occupation Phase The design of development should meet borough requirements for the size and location of recycling, composting and refuse storage, and its removal.	-	5.3, 5.17	CS18	
3.5 Nature Conservation and Biodiversity				
Nature & Biodiversity There is no net loss in the quality and quantity of biodiversity.	-	5.3, 7.19	CS15	Nature & Biodiversity The Site currently contains a number of trees along Wellesley and Haverstock Road. The Proposed Development will replace any loss of landscaping elements of soft landscaping at ground level around the building, with the aim of improving the number of species per hectare. As a minimum, it is anticipated that there will be a gain of ecology on-site post development through the provision of sedum roofs and other soft landscaping.
Nature & Biodiversity Developers make a contribution to biodiversity on their development Site.	-	5.3, 7.19		

GLA Sustainable Design & Construction SPG		Policy References		Proposed Development Response
Priority	Best Practice	London Plan	LBC	
3.6 Climate Change Adaption				
Tackling Increased Temperature and Drought				
Overheating Developers should include measures, in the design of their schemes, in line with the cooling hierarchy set out in London Plan Policy 5.9 to prevent overheating over the scheme's lifetime.	-	5.3, 5.9		Overheating The Proposed Development has been designed in accordance with the cooling hierarchy as set out in LP Policy 5.9. The Proposed Development has been designed in accordance with the cooling hierarchy to minimise cooling demand and has been designed without cooling to the dwellings and to limit the likelihood of high internal temperatures. Mitigation measures such as an appropriate glazing ratio and g-value, light coloured internal blinds, high levels of insulation and minimisation of thermal heat gains are targeted. Through these measures, the relevant areas of the Proposed Development will achieve compliance with Criterion Three of the Building Regulations Part L (2013). The cooling requirement at the Proposed Development at the non-dwellings has been minimised, representing approximately 1% of the overall energy requirement. In addition to the Criterion 3 compliance calculations outlined above, an overheating risk assessment has been carried out for the dwellings. The risk assessments have been undertaken using the CIBSE Design Summer Year 2005 weather file and the London Heathrow Weather file (LHR) 1989 weather file, in accordance with requirements outlined in CIBSE TM49 'Design Summer Years for London'. The results for the overheating assessment are outlined in Appendix D. CIBSE Guide A presents results of tests of a number of occupied hours during the summer months that the dwellings exceed 26^{o}C. CIBSE TM52 follows the 'adaptive thermal comfort model' which works on the basis that in free running buildings (i.e. not mechanically ventilated or cooled), people will accept higher internal temperatures during parts of the year that are also hot outside. Using mechanical ventilation alone the building exceeds the criteria of CIBSE Guide A in all dwelling areas, but CIBSE TM52 criteria is able to be met in 90% of the dwelling areas that have been assessed. When natural ventilation is used (opening windows) 65% of the dwellings assessed meet the criteria of CIBSE Guide A and 95% meet the criteria of CIBSE TM52. In this scenario the dwellings are using opening windows with an opening of 20degrees to represent tilt and turn windows that would allow for the dwellings to remain secure whilst being ventilated. The windows are modelled to be open at all times. Where dwellings on the site are able to make use of opening windows without disturbance from external noise they are more likely to meet the criteria of CIBSE guide A and TM52.

GLA Sustainable Design & Construction SPG		Policy References		Proposed Development Response
Priority	Best Practice	London Plan	LBC	
				When using mechanical ventilation and natural ventilation the windows are modelled to be open during the day to provide ventilation whilst the occupants are out or when the sensitivity to noise is reduced. During the night when the sensitivity to noise is likely to be greater, the windows are modelled as closed and the mechanical ventilation is used. In this scenario 90% of the dwellings do not meet the CIBSE Guide A criteria. However, 90% of spaces do meet the criteria of CIBSE TM52 in this scenario. Also presented in appendix D are the results for the 'notional baseline' model. This assumes internal gains (and profiles), occupancy schedules and building fabric of the notional building (as given by Part L1A of the building regulations and the National Calculation Methodology), results in the 'notional baseline' building significantly exceed the criteria of the various CIBSE guides, i.e. Guide A and TM52. The results of the tests with the notional building parameters shows that none of the spaces achieve CIBSE Guide A criteria. This is the same as the actual building result. However, in the actual building results 7 spaces were only marginal fails (less than 6% of occupied hours exceeding 26ºC) compared to only 2 marginal fails with notional parameters. With notional parameters for CIBSE TM52 criteria only 6 spaces in the assessed dwellings achieve the criteria. In the actual building this was significantly higher at 25 spaces. This represents and improvement of approximately 70% over the notional building performance. This comparison of notional and actual building results are using mechanical ventilation. Where it is possible for dwellings to make use of natural ventilation or mechanical and natural ventilation the results of the actual building are significantly better than the notional building. Therefore, the anticipated design and servicing strategy of the Proposed Development is a significant improvement over the 'notional baseline' model and reflects the attention given to mitigate overheating risk for the building occupants. CIBSE Guide A 2015 and CIBSE TM52 / DSY 2005 / LHR 1989 Guide A / TM52 / Guide A / TM52 Notional Building: 0/28 Meet Criteria / 6/28 Meet criteria / 0/28 Meet criteria / 4/28 Meet criteria 1. Mechanical Ventilation only: 0/28 Meet criteria / 25/28 Meet Criteria / 0/28 Meet criteria / 10/28 Meet Criteria 2. Natural Vent. only: 18/28 Meet criteria / 27/28 Meet Criteria / 18/28 meet criteria / 27/28 Meet Criteria 3. Mechanical Ventilation and Natural Vent.: 1/28 Meet criteria / 25/28 Meet Criteria / 0/28 Meet criteria / 25/28 Meet Criteria Table 4.12: Summary of Results. In order to mitigate overheating at the proposed development the design has incorporated tilt and turn windows to allow for occupants to leave windows open during the day without concerns for security to allow natural ventilation of the dwellings when they are unoccupied or less sensitive to disturbance from external

GLA Sustainable Design & Construction SPG		Policy References		Proposed Development Response
Priority	Best Practice	London Plan	LBC	
				noise. These windows allow the occupants to fully open them to maximise the ventilation rate when appropriate and will likely result in further mitigation of overheating risk. Light coloured blinds have been specified for all of the dwellings to allow occupants to reduce solar gain during the day. External shading is also provided by the inset glazing on balconies. Glazing is specified with a low g-value of 0.35 to reduce solar gain.
-	Heat and Drought Resistant Planting The design of developments should prioritise landscape planting that is drought resistant and has a low water demand for supplementary watering.	5.3, 5.15		Heat and Drought Resistant Planting During detailed design stages, consideration will be given to the planting strategy. The selection of heat and drought resistant species, will be prioritised.
-	Resilient Foundations Developers should consider any long term potential for extreme weather events to affect a building's foundations and to ensure they are robust.	5.3, 7.6		Resilient Foundations The Structural Engineers have considered all applicable geological and hydrological conditions in accordance with relevant design guidance and standards.
Increased Green Cover				
Urban Greening Developers should integrate green infrastructure into development schemes, including by creating links with wider green infrastructure network.	-	2.18, 5.3, 5.10, 5.11	CS15, DP22, DP25, DP31	Urban Greening The Proposed Development will be providing soft landscaping within the courtyards of the blocks. Sedum roofs are also proposed on the flat roofs above the maisonettes. The Proposed Development will also provide private balconies for each dwelling and roof terraces for the top floor dwellings. There is limited green infrastructure in the vicinity of the Proposed Development, other than semi-mature trees along Wellesley and Haverstock Road. A number of new trees will be planted within the central pedestrian area between the blocks.
Urban Greening Major developments in the Central London Activity Area (CAZ) should be designed to contribute to the Mayor's target to increase green cover by 5% in this zone by 2030.	-	5.10	CS15	Urban Greening The Proposed Development is not within the CAZ therefore this target is not applicable in this instance.

GLA Sustainable Design & Construction SPG		Policy References		Proposed Development Response
Priority	Best Practice	London Plan	LBC	
3.7 Trees				
Trees Developments should contribute to the Mayor's target to increase tree cover across London by 5% by 2025.	-	-		Trees Where possible the Proposed Development will seek to replace trees removed as a result of construction elsewhere on the Site and include trees as part of the soft landscaping.
Trees Any loss of a trees resulting from development should be replaced with an appropriate tree or group of trees for the location, with the aim of providing the same canopy cover as that provided by the original trees.	-	-		Trees Where possible the Proposed Development will seek to replace trees removed as a result of construction elsewhere on site and include trees as part of the soft landscaping.
Flooding Surface Water / Sustainable Drainage Developers should maximise all opportunities to achieve greenfield runoff rates in their developments.	-	5.12, 5.13	CS13, DP23	Surface Water / Sustainable Drainage Neither the volume nor rate of surface water runoff will increase beyond pre-development conditions. Attenuation will be provided to achieve a 70% reduction in peak surface water runoff for the 1 in 1 year storm event and a 90% reduction for the 1 in 100 year event. Greenfield run off rate will not be achieved.
Surface Water / Sustainable Drainage When designing their schemes developers should follow the drainage hierarchy set out in London Plan Policy 5.13.	-	5.13	CS13, DP23	The Sedum roofs will provide attenuation for a limited amount of rainfall whilst also helping to increase biodiversity.
Surface Water / Sustainable Drainage Developers should design Sustainable Drainage Systems (SuDS) into their schemes that incorporate attenuation for surface water runoff as well as habitat, water quality and amenity benefits.	-	5.3, 5.13, 5.14	CS13, DP23	
Flood Resilience Development in areas at risk from any form of flooding should include flood resistance and	-	5.3, 5.12, 5,13	CS13, DP22, DP23	Flood Resilience

GLA Sustainable Design & Construction SPG		Policy References		Proposed Development Response
Priority	Best Practice	London Plan	LBC	
resilience measures in line with industry best practice.				By reference to the Environment Agency Flood Risk Map, it is understood that the Proposed Development is not at risk of flooding from rivers or the sea, as shown in the image below: 
Flood Risk Management Developments incorporate the recommendation of the TE2100 plan for the future tidal flood risk management in the Thames estuary.	-	5.3, 5.12	CS13	
Flood Risk Management Where development is permitted in a flood risk zone, appropriate residual risk management measures are to be incorporated into the design to ensure resilience and the safety of occupiers.	-	5.3, 5.12	-	
Other Flooding All sources of flooding need to be considered when designing and constructing developments.	-	5.3, 5.12, 5.13	CS13, DP22, DP23	
3.8 Pollution Management				
Land Contamination				
Land Contamination Developers should set out how existing land contamination will be addressed prior to the commencement of their development.	-	3.2, 5.3, 5.21		Land Contamination The Proposed Development is not proposing to include uses that would lead to land contamination.
Land Containment Potentially polluting uses are to incorporate suitable mitigation measures.	-	3.2, 5.3, 5.21		
Air Quality				
Air Quality	-	7.14		Air Quality

GLA Sustainable Design & Construction SPG		Policy References		Proposed Development Response
Priority	Best Practice	London Plan	LBC	
Developers are to design their schemes so that they are at least 'air quality neutral'.				Systems at the Proposed Development will be selected to minimise emissions of Nitrous Oxide (NOx) and other pollutants which can lead to adverse air quality impacts.
Air Quality Developments should be designed to minimise the generation of air pollution.	-	5.3, 7.14		
Air Quality Developments should be designed to minimise and mitigate against increased exposure to poor air quality.	-	3.2, 5.3, 7.14		Air Quality Dwellings at the Proposed Development will be furnished with Mechanical Ventilation with Heat Recovery (MVHR) and the fabric of dwellings will be constructed to be very air tight, targeting a permeability of less than $3m^2/(m^2.h)$ at 50Pa. As such, air pollution will not be permitted to enter the dwellings through the fabric, and ventilation controlled by the MVHR will be filtered to remove airborne pollutants. Similarly, non-residential uses will be provided with mechanical ventilation with suitable filtration to manage indoor air quality.
Air Quality Developers should select plant that meets the standards for emissions from combined heat and power and biomass plants set out in Appendix 7.	-	7.14		Air Quality It is not proposed that a biomass plant or CHP engine is installed on the site.
Air Quality Developers and contractors should follow the guidance set out in the emerging The Control of Dust and Emissions during Construction and Demolition SPG when constructing their development.	-	5.3, 7.14		Air Quality It is intended that contractors will comply with The Control of Dust and Emissions during Construction and Demolition SPG. Contractors will be required to identify potential sources of dust and other air pollution and appropriate dust control measures will be implemented. It is also intended that the main contractor shall register under the Considerate Constructors Scheme and achieve a best practice score.
Noise				
Noise	-	3.2, 7.15		Noise The Site does not include areas identified as having positive sound features or as being tranquil.

GLA Sustainable Design & Construction SPG		Policy References		Proposed Development Response
Priority	Best Practice	London Plan	LBC	
Areas identified as having positive sound features or as being tranquil should be protected from noise.				
Noise Noise should be reduced at source, and then designed out of a scheme to reduce the need for mitigation measures.	-	3.2, 5.3, 7.6, 7.15		Noise It is intended that external and internal wall and floor specifications will ensure comfortable noise levels for residents. Sound insulation will be provided to limit impact sound and airborne sound beyond the requirements of the Building Regulations Part E. Noise attenuation measures will be incorporated on-site where required, to ensure that any noise generated by equipment or services will not generate a source of noise pollution or negatively impact the surrounding area. The Site is located in an area with a high level of background noise. High efficiency mechanical ventilation will be used to provide air to the spaces in lieu of natural ventilation. This will aid noise attenuation as occupants will not be reliant on opening windows to maintain good indoor air quality and control internal temperatures.
Light Pollution				
Light Pollution Developments and lighting schemes should be designed to minimise light pollution.	-	5.2, 5.3, 6.7		Light Pollution All external lighting provided as part of the Proposed Development will be energy efficient. It is anticipated that suitable controls such as daylight detection and time-switches will be provided to minimise inappropriate use. Luminaires will be selected with suitable light output ratio and polar curve to ensure light is distributed appropriately. This will minimise light lost to the light sky.
Water Pollution				
Surface Water Runoff In their aim to achieve a greenfield runoff rate developers should incorporate sustainable urban drainage systems (SuDS) into their schemes which also provide benefits for water quality.	-	5.3, 5.13, 5.14	CS13, DP23	Surface Water Runoff Neither the volume nor rate of surface water runoff will increase beyond pre-development conditions. Attenuation will be provided to achieve a 70% reduction in peak surface water runoff for the 1 in 1 year storm event and a 90% reduction for the 1 in 100 year event. Greenfield run off rate will not be achieved.
-	Surface Water Runoff	5.3, 5.13, 5.14	CS13, DP23	Surface Water Runoff

GLA Sustainable Design & Construction SPG		Policy References		Proposed Development Response
Priority	Best Practice	London Plan	LBC	
	Encourage good environmental practice to help reduce the risk from business activities on the London water environment.			It is intended that commercial tenants and occupants will be advised of good environmental practice to reduce risk on the London water environment.
-	Surface Water Runoff Encourage those working on demolition and construction –Sites to prevent pollution by incorporating prevention measures and following best practice.	5.3, 5.14	CS13, DP23	Surface Water Runoff It is intended that the main contractor will be required to operate in an environmentally conscious manner to prevent pollution. It is also intended that the main contractor shall register under the Considerate Constructors Scheme and achieve a best practice score.
Wastewater Treatment				
Wastewater Treatment Commercial developments discharging trade effluent should connect to the public foul sewer or combined sewer network where it is reasonable to do so subject to a trade effluent consent from the relevant sewerage undertaker.	-	5.3, 5.14	CS13, DP23	Wastewater Treatment All spaces at the Proposed Development will be provided with suitable connections to the public foul sewer or combined sewer network, as appropriate.
Wastewater Treatment Developments should be properly connected and post construction checks should be made by developers to ensure that misconnections do not occur.	-	5.3, 5.14		

4. Conclusions

This statement demonstrates that high standards of environmental sustainability would be achieved for the Development. This is demonstrated by the commitment to energy efficiency, water efficiency, waste management and cyclist facilities.

The development is targeting a Code for Sustainable Homes assessment rating of Level 4 with minimum scores in the Energy, Water and Materials categories of 50%. The connection to the Royal Free district heat network will determine the overall rating and percentage of credits achieved in the relevant sections.

The strategy highlights how the Development achieves the sustainability objectives. The features of the Development include:

a. The energy strategy is designed to achieve regulated CO_2 emissions reductions, with the Proposed Development targeting a reduction of **36%** beyond the requirements of the Building Regulations Part L 2013. This will be achieved through passive design and energy efficiency measures and a connection to the Royal Free District heat network.
b. Water efficient devices would be installed to target a reduced water consumption. Each dwelling is aiming for a target of 105 litres per person per day. As a minimum, Tenants will be encouraged to fit out their spaces appropriately to meet the requirements of the Building Regulations Part G (2013).
c. Rainwater run-off attenuation would be provided by attenuation tanks and permeable surfaces.
d. Sustainably sourced, recycled or re-used building materials would be specified where possible and practicable.

e. A Site Waste Management Plan would be produced to monitor, sort and recycle construction waste on-site.
f. Recyclable waste storage would be provided for the occupants to manage their operational waste.
g. Secure cycle storage would be installed to encourage the use of bicycles amongst residents.
h. Contractors would sign up to the Considerate Constructors Scheme (CCS) and target a beyond best practice score (35).

It is also anticipated that all occupied spaces of the Proposed Development will achieve compliance with the Building Regulations Part L 2013 Criterion Three requirements.

Additionally, in line with policy requirements, a CIBSE overheating analysis has been undertaken. As outlined in the energy strategy, the dwellings have been compared to a 'notional baseline'. It is deemed that the anticipated design and servicing strategy of the Proposed Development and improvement over the 'notional baseline' reflects the attention given by the design team to mitigate overheating risk for the building occupants. Please refer to the energy strategy for further details.

5. Appendix B: Policy Context

5.1 National Policy

5.1.1 Current Policy Framework

The policies considered when preparing this strategy are contained in the London Plan (GLA, 2015) and the Local Development Framework (LDF) documents of LBC.

The Proposed Development constitutes a 'major development' (>10 dwellings and/or >1,000m^2 of commercial floor space) and is therefore subject to the policies of the GLA, contained within the London Plan.

5.1.2 Building Regulations Part L 2013

The assessment of the Proposed Development against policy targets has been carried out using Part L 2013.

Criterion One of the Building Regulations Part L (2013) requires that the building as designed is not anticipated to generate CO_2 emissions in excess of that set by a Target Emission Rate (TER) calculated in accordance with the approved National Calculation Methodology (NCM) for non-dwellings.

On aggregate. Part L 2013 requires the following CO_2 emissions reductions:

- 6% beyond the requirements of Part L 2010 for dwellings
- 9% beyond the requirements of Part L 2010 for non-domestic buildings.

Criterion Two places upper limits on the efficiency of controlled fittings and services for example, an upper limit to an external wall U-value of 0.35W/m^2 K (new non-domestic buildings).

Criterion Three requires that non-dwellings are not subject to excessive solar gains. This is demonstrated using the procedure given in the National Calculation Methodology for non-dwellings.

5.1.3 Code for Sustainable Homes

It is acknowledged that following the Ministerial Statement (March, 2015) the Code for Sustainable Homes (CfSH) assessment has been revoked by government and is no longer required as a means of demonstrating sustainable development. However, the original application was targeting a CfSH Level 4 rating and this will still be the target for the CfSH assessment.

A CfSH pre-assessment is provided in Appendix C of this statement to demonstrate the sustainable design aspects that would likely be included in the Proposed Development.

5.2 GLA Planning Policy

5.2.1 London Plan - Consolidated with Alterations since 2011 (March 2015)

On the 10th March 2015, Further Alterations to the London Plan was issued. The updated London Plan document is now a material consideration for planning applications. Key alterations to the document are as follows:

- A new policy is in place relating to electricity and gas supply.
- Policy guidance changes relating to increased provision of waste capacity.
- Funding to create cycle friendly 'mini Hollands' for up to four outer London Borough town centres.
- Further guidance is given which highlights the importance of demand side energy management and minimum standards for cycle parking.

5.2.2 Final Versions of the 'Minor Alterations to the London Plan' (MALPs 2016)

Final versions of the 'Minor Alterations to the London Plan (MALPs 2016) were published and adopted in April 2016 and are current for any Stage 1 submissions to the GLA. The MALPs address parking and housing standards.

Recent alterations also include amendments to the 'Housing Supplementary Planning Guidance' (SPG) and 'Energy Planning' guidance, clarifying the CO_2 emissions reduction targets that currently apply and the changes that will be introduced from 1st October 2016 which are summarised in the table below

Use Type	CO_2 Reduction Target (beyond Part L 2013)	
	2013 – 2016	2016 – 2019 (1st October 2016)
Residential Buildings	35%	**'Zero Carbon'**
Non-Domestic Buildings	35%	35%

The target reduction in CO_2 emissions for 'Residential Buildings' will remain at 35% until 1st October 2016 when this will be uplifted to 'Zero Carbon' for Stage 1 applications. It should be noted that GLA has not offered a definition of 'Zero Carbon', however, in this context it is assumed to be a 100% reduction in regulated CO_2 emissions. The policy suggests that at least 35% should be achieved on site, with the remainder achieved by a combination of off-site measures and a cash in lieu payment (currently set at £1,800 per tonne of CO_2 of remaining emissions to achieve a total reduction of 100%).

The target reduction in CO_2 emissions for 'Non Domestic Buildings' will remain at 35% and will not be uplifted in the near future, despite the consultation document indicating that this would be set at 50%. The GLA comment that the 35% target will provide a smooth trajectory towards the upcoming requirement for 'Nearly Zero Energy Buildings' by 2020. It should be noted that the UK Government has yet to ratify the EU requirement for 'Nearly Zero Energy Buildings' and this may not occur should the UK vote to leave the EU.

The GLA have produced a 'Domestic Overheating Checklist' (Appendix 5 of the 'Energy Planning' guidance) for use early in the design process to identify potential overheating risks and to trigger the incorporation of passive measures within the building envelope. The 'Energy Planning' guidance document also includes an update to the guidance on compliance with overheating policy that design teams should be aware of when undertaking risk analysis and thermal comfort modelling for dwellings.

It is the GLA's expectation that dynamic thermal modelling should be undertaken to determine overheating risk and demonstrate compliance with London Plan Policy 5.9. This should be in addition to the Building Regulations 'Criterion 3' assessment of heat gains in summer months.

The GLA has set out that dynamic modelling should be carried out in accordance with the guidance and data sets in CIBSE TM49 'Design Summer Years' for London (2014) using the three design weather years as follows:

- 1976: a year with a prolonged period of sustained warmth.
- 1989: a moderately warm summer (current design year for London).
- 2003: a year with a very intense single warm spell.

For developments in high density urban areas (e.g. Canary Wharf) and the 'Central Activity Zone' the 'London Weather Centre' data set should be used. In lower density urban and suburban areas the 'London Heathrow' dataset should be used. These data sets have been adjusted to account for future climate effects.

The modelling should also consider the additional guidance contained in CIBSE TM52 'The Limits of Thermal Comfort: Avoiding Overheating in European Buildings'.

5.2.2.1 London Plan Policy

Development within LBC is subject to the policy requirements of the London Plan 2016. The following policies of the London Plan (2016) have informed this strategy.

Policy 5.2: Minimising CO_2 Emissions

Policy 5.2 requires new-build domestic and non-domestic development to reduce CO_2 emissions by 35% beyond the Building Regulations Part L (2013) Target Emission Rate (TER).

Policy 5.6: Decentralised Energy in Development Proposals

Policy 5.6 requires development proposals to evaluate the feasibility of Combined Heat & Power (CHP) systems and where a new CHP system is appropriate, examine opportunities to extend the system beyond the Site boundary. Developments should select energy systems on the following hierarchy:

i. connection to existing heating or cooling networks
j. site wide CHP network
k. communal heating and cooling

Where future network opportunities are identified, proposals should be designed to connect to these networks.

Policy 5.7: Renewable Energy

Policy 5.7 requires that developments should provide a reduction in expected CO_2 emissions through the use of on-site renewable energy generation, where feasible.

Policy 5.9: Overheating and Cooling

Policy 5.9 requires that development proposals reduce potential overheating & reliance on air conditioning systems, demonstrated in consideration of the following cooling hierarchy:

a. minimisation of internal heat generation through efficient design
b. reduction of external heat gains through consideration of orientation, shading, albedo, fenestration, insulation, and green roofs & walls
c. management of internal heat gains through exposed thermal mass
d. passive ventilation
e. mechanical ventilation
f. active cooling

Development proposals should demonstrate how the design, materials, construction and operation of the development would minimise overheating and also meet its cooling needs.

6. Appendix C – Code for Sustainable Homes Assessment

The ‘Code for Sustainable Homes’ (CfSH) was formerly a recognised environmental assessment methodology adopted by the Government and managed by the ‘Building Research Establishment’ (BRE). It has since been abolished but still represents a useful quantifiable demonstrator of the implementation of sustainable technologies in a development.

For this reason, the development of Bacton Low Rise aims to meet the criteria for the following:

- To achieve CfSH ‘Level 4’;
- Achieve 50% of the credits in the Energy, Water and Materials categories.

The current estimated score of 75.92 is equivalent to a ‘Level 4’ rating. The scores in the following sections are:

- Energy 67%
- Water 50%
- Materials 50%

It is recommended that at least a 5 point margin is targeted above the minimum required for ‘Level 4’ (68), to ensure that the required rating is achieved at the design and construction phases.

If the connection to the Royal Free Network is not realised before the completion of the development then the number of Ene 1 credits that are likely to be achieved is zero. This would also affect the Ene 7 credit for which two credits are currently achieved.

The resulting impact on the score in the Energy section is a reduction to 42% of the Energy credits and a reduction in the overall score from 75.92 to 66.53 and as a result the development would not achieve a ‘Level 4’ rating.

Figure C1 outlines the current pre-assessment score, and potential score.

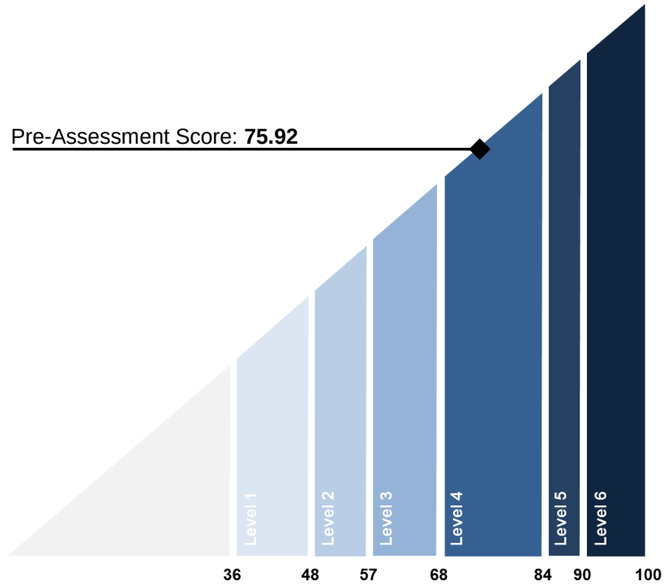


Figure C1: CfSH pre-assessment score

Category	Issue	Responsible Party	Credits	
			Available	Targeted
Energy and CO_2 Emissions	Ene 1: Dwelling Emission Rate **(M)**	KCA / HL	10	6
	Ene 2: Fabric Energy Efficiency **(M)**	KCA/ HL	9	5
	Ene 3: Display Energy Devices	HL	2	2
	Ene 4: Drying Space	KCA/ HL	1	1
	Ene 5: Energy-labelled White Good	LBC	2	1
	Ene 6: External Lighting	HL	2	2
	Ene 7: Low and Zero Carbon Technologies	HL	2	2
	Ene 8: Cycle Storage	KCA	2	1
	Ene 9: Home Office	KCA / HL / GVA	1	1
Water	Wat 1: Indoor Water Use **(M)**	KCA / HL	5	3
	Wat 2: External Water Use	KCA / HL	1	-
Materials	Mat 1: Environmental Impact of Materials **(M)**	KCA	15	7
	Mat 2: Responsible Sourcing of Materials (Building Elements)	KCA	6	3
	Mat 3: Responsible Sourcing of Materials (Finishing Elements)	KCA	3	2
Surface Water Run-off	Sur 1: Management of Surface Water Runoff **(M)**	TBC	2	1
	Sur 2: Flood Risk	TBC	2	2
Waste	Was 1: Storage of Non-Recyclable Waste and Recyclable Waste **(M)**	KCA	4	4
	Was 2: Construction Site Waste Management	Contractor	3	3
	Was 3: Composting	KCA / HL	1	1
Pollution	Pol 1: Global Warming Potential (GWP) of Insulants	KCA / HL	1	1
	Pol 2: NO_x Emissions	HL	3	3
Health & Wellbeing	Hea 1: Daylighting	KCA / GVA	3	2
	Hea 2: Sound Insulation	KCA / HL	4	3
	Hea 3: Private Space	KCA	1	1
	Hea 4: Lifetime Homes **(M)**	KCA	4	4
Management	Man 1: Home User Guide	LBC	3	3
	Man 2: Considerate Constructors Scheme	Contractor	2	2
	Man 3: Construction Site Impacts	Contractor	2	2
	Man 4: Security	KCA	2	2
Ecology	Eco 1: Ecological Value of the Site	Ecologist	1	1
	Eco 2: Ecological Enhancement	Ecologist	1	1
	Eco 3: Protection of Ecological Features	Ecologist	1	1
	Eco 4: Change in Ecological Value of the Site	Ecologist	4	3
	Eco 5: Building Footprint	KCA	2	2
			Weighted Score: **CfSH Pre-Assessment Rating:**	75.92 **'Level 4'**

Table C2: CfSH Pre-Assessment Summary

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