Sustainability Statement

153-163 Broadhurst Gardens

For Kilburn & District Houses Ltd

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XCO2 energy

w: www.xco2energy.com :: e: mail@xco2energy.com
t: +44 (0) 20 7700 1000 :: f: +44 (0) 20 7183 6620
17-18 Hayward's Place :: Clerkenwell :: London :: EC1R 0EQ

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About us:
XCO2 Energy are a low-carbon consultancy working in the built environment. We are a multi-disciplinary company consisting of both architects and engineers, with specialists including CIBSE low carbon consultants, Code for Sustainable Homes, EcoHomes and BREEAM assessors and LEED accredited professionals.

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Executive Summary

This report outlines the sustainability strategy for the proposed development at 153-163 Broadhurst Gardens, in line with the requirements set out by the London Plan and by the London Borough of Camden. This sustainability statement is divided into two parts:

- Policy and Sustainability Standards
- Proposed Sustainability Measures

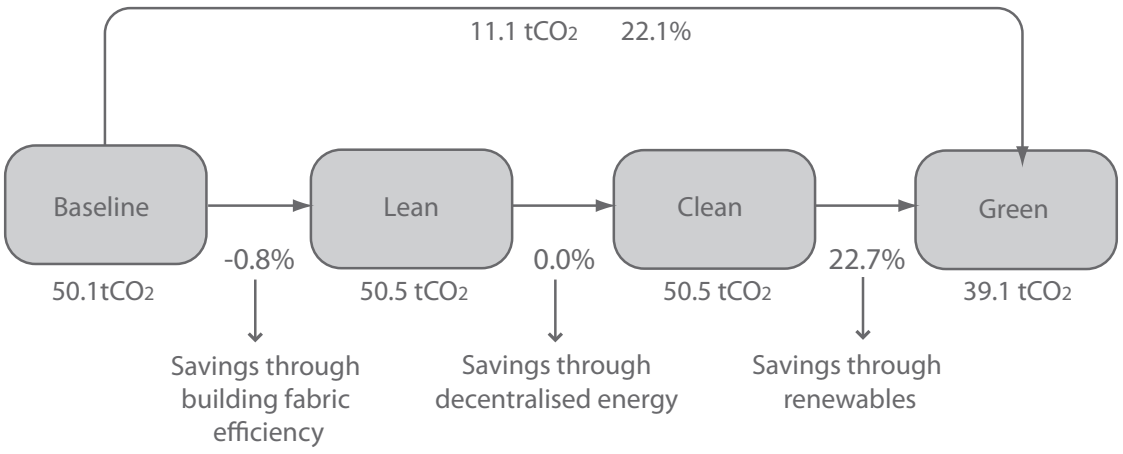
The first part provides an overview of the site and planning policies applicable to this development in accordance with the Camden Council Local Plan and the London Plan. The report then demonstrates how the policies have been met.

Due to the small scale of the commercial element (approximately 406m^2) a full BREEAM assessment would be unsuitable for the proposed development. The same applies in terms of BREEAM Domestic Refurbishment for the small retained property at the south-western corner of the site. However, sustainability measures such as highly insulated building fabric and reduction in CO_2 emissions, will also be implemented for the commercial component.

In summary, the proposed development addresses the sustainability recommendations set out by Camden Council.

The diagram below provides a summary of the CO_2 savings achieved over Part L Building Regulations (2013) for the development. The 22.1% reduction in CO_2 emissions reflects regulated energy use only, in accordance with Part L Building Regulations. Unregulated energy use is also not taken into account.

Total savings over Part L 2013 Building Regulations
(savings is based on regulated energy only in accordance with Part L)

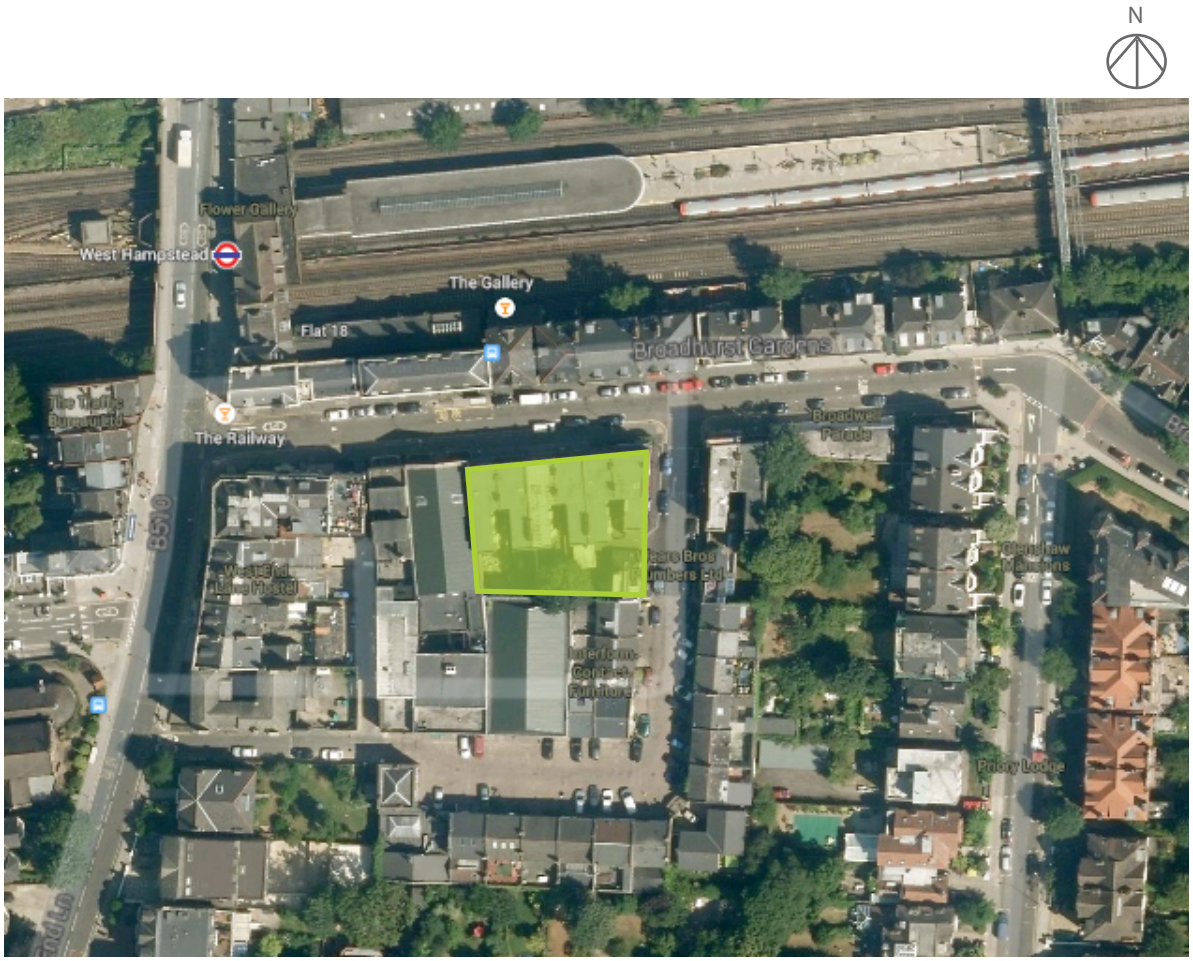


Site

The proposed development of 153-163 Broadhurst Gardens is located at the junction of Broadhurst Gardens and West Hampstead Mews, about 100m southeast from West Hampstead station within the London Borough of Camden.

The development includes 30 no. 1 to 3 bedroom apartments distributed over five above ground storeys and an additional lower ground storey. It will also include approximately 406m^2 of commercial A1/A3 retail spaces at lower ground and ground floor levels.

The approximate site location and boundary is shown in the figure below.



Approximate site location of the proposed development at 153-163 Broadhurst Gardens.

Planning Policies

The development has been designed in line with the requirements set out by the London Borough of Camden as well as the London Plan 2015.

The relevant planning policies for sustainability detailed in the current section are:

- Camden Core Strategy (2010)
- Camden Development Policies (DPD) (2010)
- Camden Plannning Guidance (CPG3) (2015)
- The London Plan

Camden Core Strategy 2010

The Camden Core Strategy sets out the Council's key planning policies and is a central part of their Local Development Framework (LDF). The recommendations for the sustainability policy is inserted below:

CS13 – Tackling climate change through promoting higher environmental standards

Reducing the effects of and adapting to climate change

The Council will require all development to take measures to minimise the effects of, and adapt to, climate change and encourage all developments to meet the highest feasible environmental standards that are financially viable during construction and occupation by:

a) Ensuring patterns of land use that minimise the need to travel by car and help support local energy networks;

b) Promoting the efficient use of land and buildings;

c) Minimising carbon emissions from the redevelopment, construction and occupation of buildings by implementing, in order, all of the elements of the following energy hierarchy:

1. *Ensuring developments use less energy,*
2. *Making use of energy from efficient sources, such as the King's Cross, Gower Street, Bloomsbury and proposed Euston Road decentralised energy networks;*
3. *Generating renewable energy on-site; and*

d) Ensuring buildings and spaces are designed to cope with, and minimise the effects of, climate change.

The Council will have regard to the cost of installing measures to tackle climate change as well as the cumulative future costs of delaying reductions in carbon dioxide emissions

Local energy generation

The Council will promote local energy generation and networks by:

e) Working with our partners and developers to implement local energy networks in the parts of Camden most likely to support them, i.e. in the vicinity of:

- *housing estates with community heating or the potential for community heating and other uses with large heating loads;*
- *the growth areas of King's Cross; Euston; Tottenham Court Road; West Hampstead Interchange and Holborn;*
- *schools to be redeveloped as part of Building Schools for the Future programme;*
- *existing or approved combined heat and power/ local energy networks;*

and other locations where land ownership would facilitate their implementation.

f) protecting existing local energy networks where possible (e.g. at Gower Street and Bloomsbury) and safeguarding potential network routes (e.g. Euston Road);

Water and surface water flooding

We will make Camden a water efficient borough and minimise the potential for surface water flooding by:

g) protecting our existing drinking water and foul water infrastructure, including Barrow Hill Reservoir, Hampstead Heath Reservoir, Highgate Reservoir and Kidderpore Reservoir;

h) making sure development incorporates efficient water and foul water infrastructure;

i) requiring development to avoid harm to the water environment, water quality or drainage systems and prevents or mitigates local surface water and downstream flooding, especially in areas up-hill from, and in, areas known to be at risk from surface water flooding such as South and West Hampstead, Gospel Oak and King's Cross.

Camden Development Policies 2010

In addition to the Core Strategy Document the Camden Development Policies also forms part of the LDF. The policy relating to sustainability is listed below:

DP22 – Promoting sustainable design and construction

The Council will require development to incorporate sustainable design and construction measures. Schemes must:

a) demonstrate how sustainable development principles have been incorporated into the design and proposed implementation; and

b) incorporate green or brown roofs and green walls wherever suitable.

The Council will promote and measure sustainable design and construction by:

c) expecting new build housing to meet Code for Sustainable Homes Level 3 by 2010 and Code Level 4 by 2013 and encouraging Code Level 6 (zero carbon) by 2016.;

d) expecting developments (except new build) of 500 sq m of residential floorspace or above or 5 or more dwellings to achieve "very good" in EcoHomes assessments prior to 2013 and encouraging "excellent" from 2013;

e) expecting non-domestic developments of 500sqm of floorspace or above to achieve "very good" in BREEAM assessments and "excellent" from 2016 and encouraging zero carbon from 2019.

The Council will require development to be resilient to climate change by ensuring schemes include appropriate climate change adaptation measures, such as:
f) summer shading and planting;
g) limiting run-off;
h) reducing water consumption;
i) reducing air pollution; and
j) not locating vulnerable uses in basements in flood prone areas.

DP6 – Lifetime homes

Lifetime homes standards will be applied to all developments of self-contained housing, including conversions, re-configurations and changes of use.

Camden Planning Guidance - Sustainability CPG3 - 2015

The Camden Planning Guidance support the policies set out in the Local Development Framework (LDF). While the Camden LDF contains policies relating to sustainability in their Core Strategy and Development Policies documents, the Council also has a separate planning guidance specific to sustainability.

The sections that will be covered by a combination of the Sustainability Statement and accompanying Energy Statement are listed below:

The energy hierarchy

All new developments are to be designed to minimise carbon dioxide emissions by being as energy efficient as is feasible and viable.

Energy efficiency: new buildings

• All buildings, whether being updated or refurbished, are expected to reduce their carbon emissions by making improvements to the existing building. Work involving a change of use or an extension to an existing property is included. As a guide, at least 10% of the project cost should be spent on the improvements.

• Development involving a change of use or a conversion of 5 or more dwellings or 500sq m of any floorspace, will be expected to achieve 60% of the un-weighted credits in the Energy category in their EcoHomes or BREEAM assessment, whichever is applicable. (See the section on Sustainability assessment tools for more details).

• Special consideration will be given to buildings that are protected e.g. listed buildings to ensure that their historic and architectural features are preserved.

Decentralised energy networks and combined heat and power

Development should follow the Energy Hierarchy
1. use less energy
2. supply energy efficiently
3. use renewable energy

Renewable Energy

All developments are to target at least a 20% reduction in carbon dioxide emissions through the installation of on-site renewable energy technologies. Special consideration will be given to heritage buildings and features to ensure that their historic and architectural features are preserved.

Water Efficiency

The Council expects all developments to be designed to be water efficient by minimising water use and maximising the re-use of water. This includes new and existing buildings.

Sustainable use of materials

Major developments are anticipated to be able to achieve 15-20% of the total value of materials used to be derived from recycled and reused sources.

Sustainability assessment tools

Developments are anticipated to be able to achieve BREEAM 'Excellent' from 2013 onwards and at least 60% of Energy and Water credits and 40% of Materials credits.

Brown roofs, green roofs and green walls

The Council will expect all developments to incorporate brown roofs, green roofs and green walls unless it is demonstrated this is not possible or appropriate. This includes new and existing buildings. Special consideration will be given to historic buildings to ensure historic and architectural features are preserved.

Flooding

Developments must not increase the risk of flooding, and are required to put in place mitigation measures where there is known to be a risk of flooding.

Adapting to climate change

All development is expected to consider the impact of climate change and be designed to cope with the anticipated conditions.

The London Plan

The London Plan[1] is the overall strategic plan for London, setting out an integrated economic, environmental, transport and social framework for the development of London over the next 20–25 years.

The overarching policy setting out the principles of sustainable design and construction to be incorporated in major proposals is Policy 5.3:

Policy 5.3 Sustainable Design and Construction (extract)

Planning decisions
[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.

[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:

- *minimising carbon dioxide emissions across the site, including the building and services (such as heating and cooling systems)*
- *avoiding internal overheating and contributing to the urban heat island effect*
- *efficient use of natural resources (including water), including making the most of natural systems both within and around buildings*
- *minimising pollution (including noise, air and urban runoff)*
- *minimising the generation of waste and maximising reuse or recycling*
- *avoiding impacts from natural hazards (including flooding)*
- *ensuring developments are comfortable and secure for users, including avoiding the creation of adverse local climatic conditions*
- *securing sustainable procurement of materials, using local supplies where feasible, and*
- *promoting and protecting biodiversity and green infrastructure.*

Complementary to, and expanding upon Policy 5.3 are the following London Plan policies:

- Policy 5.2 Minimising Carbon Dioxide Emissions
- Policy 5.5 Decentralised Energy Networks
- Policy 5.6 Decentralised Energy in Development proposals
- Policy 5.7 Renewable Energy
- Policy 5.9 Overheating and Cooling
- Policy 5.11 Green Roofs and Development site Environs
- Policy 5.12 Flood Risk Management
- Policy 5.13 Sustainable Drainage
- Policy 5.15 Water use and Supplies
- Policy 5.18 Construction, Excavation and Demolition Waste.

Specific requirements on the use of energy and water resources, applicable to all major proposals, are:

- (Policy 5.2): the reduction of regulated carbon emissions by 35% compared to Part L 2013 Building Regulations Target Emission Rates;
- (Policy 5.15): setting an upper limit of daily domestic water consumption to 105 litres/head for residential developments (excluding a maximum allowance of 5 litres/head/day for external water consumption).

[1] The London Plan, Further Alterations To The London Plan (March 2015) and Housing Standards Minor Alterations To The London Plan (March 2016), herein referred to as The London Plan

Sustainable Design and Construction SPG (2014)

The Sustainable Design and Construction SPG (April 2014) provides additional information to support the implementation of the Mayor's London Plan. The SPG does not set new policy, but explains how policies in the London Plan should be carried through into action.

It is applicable to all major developments and building uses. It covers the following areas:

- Resource Management
- Adapting to Climate Change and Greening the City
- Pollution Management.

Housing SPG (2016)

This document provides guidance on the implementation of housing policies in the London Plan and it replaces the 2012 Housing SPG.

Part 2 covers housing quality and updates London housing standards to reflect the implementation of the government's new national technical standards through the Minor Alterations to the London Plan (2015-2016).

As design affects the quality of life, health & well-being, safety and security of users and neighbours, this guidance is integral to sustainable development and will be cross-referenced as relevant in the subsequent sections.

Sustainability Assessment Tools

Domestic - Housing Standards Review

The government announced the conclusion to the Housing Standards Review on 27 March 2015. The review aimed to simplify government regulations and standards into one key set, driven by building regulations.

As an outcome from the Deregulation Bill (2015) the written ministerial statement withdrew the Code for Sustainable Homes (in England) so Local Authorities will no longer require it as a planning condition for new approvals, nor will local authorities be able to enforce it. Where there are existing contractual arrangements, for example with Registered Social Landlords under the Affordable Funding Programme 2015-2018, it is possible to continue to register and certify against the Code.

One outcome from the review is dual level Building Regulations (Access and Water), which will give local authorities some choice to require developers to build to different standards than the minimum requirements. Furthermore, with appropriate evidence, local authorities can also use the new space standards which make up the new national technical standards. There is also a new mandatory Building Regulation for security. The Building Regulations has come into play as of October 2015.

The new dual level Building Regulations have been introduced because of clauses within the Deregulation Act. The Act also brings in a Clause which amends the Planning and Energy Act 2008 to prevent local authorities from requiring higher levels of energy efficiency than building regulations. This second clause has yet to be commenced, and the written ministerial statement sets out how this will be implemented in 2016.

As a result of the changes in Government Policy, the new build dwellings within the proposed development at Broadhurst Gardens will not be assessed under Code for Sustainable Homes. However, the dwellings have been designed in line with Code for Sustainable Homes principles to ensure wellbeing of occupants, and that impacts to the environment are minimised where possible.

The two storey house at the southwestern corner of the site will be retained as part of the scheme, with a new two storey extension proposed to the rear of the property. Due to the size of this property (less than 500m^2), a full Ecohomes/BREEAM Domestic Refurbishment assessment would not be required.

Non-Domestic

Due to the small scale of the commercial element of the development (less than 500m^2), a full BREEAM assessment would not be required.

Nonetheless, the design team will incorporate environmental principles into the scheme to maximise its sustainability credentials. Suitable sustainability measures incorporated for the site include reduced building fabric (U-values and air-tightness), Low-carbon technologies, Surface water drainage, Flood risk management, Waste and recycling and improvement in biodiversity.

A SBEM calculation has been carried out to determine energy and CO_2 savings achievable by the commercial component, the results of which are included in the accompanying Energy Statement.

Details of all sustainability measures that would be implemented for both the residential and commercial components of the proposed development are presented in the following sections.

Proposed Sustainability Measures

The following subsections detail the sustainability measures that will be incorporated into the design of the proposed dwellings.

Energy

Building Energy Efficiency

The methodology set out by the Department of Energy and Climate Change (DECC) for assessing the energy use of dwellings is the Standard Assessment Procedure (SAP). The current version is SAP 2012.

A preliminary SAP calculation was carried out to assess the potential CO_2 savings achieved through,

- energy efficiency measures
- the efficient supply of energy
- renewable systems

Preliminary calculations showed an improvement in CO emissions over Part L Building Regulations 2013, amounting to 22.1% across the entire development.

The energy demand of the dwellings will be reduced significantly through the adoption of high levels of insulation and good levels of air tightness to improve the buildings fabric efficiency. SAP calculations were based on a building fabric with low U-values and an air permeability rate of $3m^3/m^2$ at 50 Pa.

Drying Space

The proposed dwellings will include provisions for internal or external clothes drying where appropriate, thereby reducing the amount of electricity consumed through the use of tumble dryers.

Energy Labelled White Goods

The dwellings will be supplied with an EU Energy Efficiency Labelling Scheme Leaflet to help the tenants choose energy efficient white goods.

External Lighting

Energy efficient external light fittings will be installed throughout the development where appropriate. In addition, external lights will be fitted with controls to reduce the energy consumption of the building during periods of infrequent use:

- external space lighting will include energy efficient fittings
- security lighting will include daylight cut-off devices, with a maximum wattage of 150W and PIR

Low or Zero Carbon Technologies

Photovoltaic panels will be installed on the roof of the development to provide a renewable and low carbon energy source for the residential portion of the scheme.

Cycle Storage

Cycle spaces will be provided within the development to reduce the frequency of short car journeys. The cycle storage will be adequately sized, secure and accessible to all occupants.

Water

The development aims to reduce water consumption in the dwellings to below 105 litres per person per day, in line with the lower criteria within Part G of the Building Regulations proposed for October 2015 and also to meet London Plan policy, through the use of water efficient fittings, and these are listed below.

Recommended specification for sanitary fittings

Fitting	Consumption per Use
WC (full flush)	6 litres per flush
WC (half flush)	3 litres per flush
Kitchen sink tap	6 litres per min
Wash basin tap	3 litres per min
Bath	180 litres to overflow
Shower	8 litres to overflow
Washing machine	8.17 litres/kilogram
Dishwasher	1.25 litres/place setting

Materials

Embodied energy is the energy that is used in the manufacture, processing and the transportation of the materials to site.

The construction build-ups for each of the main building elements are rated from A+ to E. Each element to be used in the building has been rated according to the BRE Green Guide to Specification whereby:

- A+ rated elements are least likely to affect the environment
- E rated elements are most likely to affect the environment

It is assumed that most of the main building elements within this development will achieve between an A+ to C rating where possible.

Aggregates from the demolition of any existing hard surfacing/landscaping on site will be crushed and used as substrate material for the building base and road surfaces where possible. All timber used during site preparation and construction to be FSC certified, and all non-timber materials to be certified with Environmental Management Systems (ISO 14001 OR BES 6001) where possible.

Surface Water Run-off

The Environment Agency flood map shows the proposed development to be located within an area at low risk of flooding.

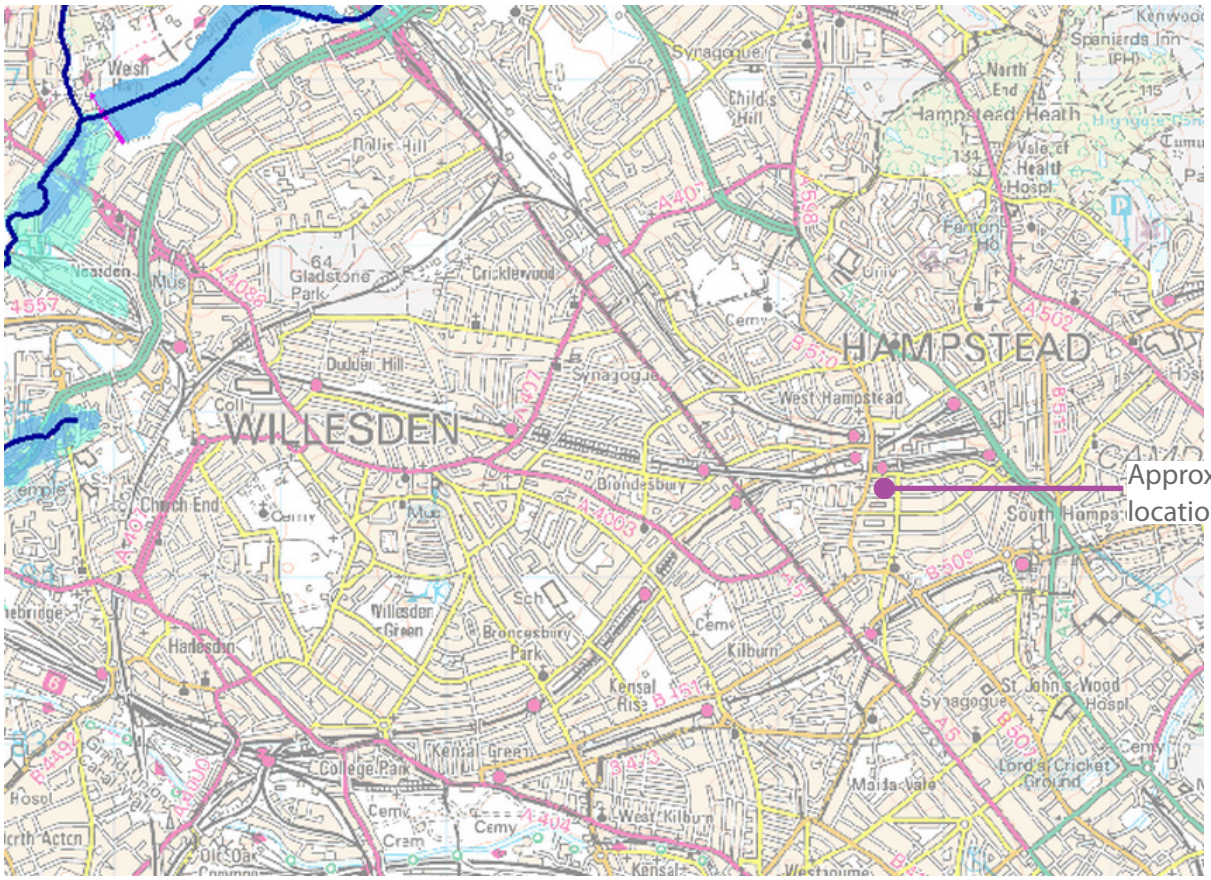
Landscaped areas have been maximised to reduce the amount of surface water run off from the site. There will be no increase in impermeable areas as a result of the development, as such, the development will not introduce addition risk of flooding to the local area.

Key

Flooding from rivers or sea without defences

Extent of Extreme flood

Areas benefiting from flood defences



Environment Agency flood map indicating the risk of flooding.
(Source: EA flood map - http://maps.environment-agency.gov.uk)

Waste

Household Waste

Dedicated external waste storage for the dwellings will be provided to meet the Local Authority requirements.

Adequate internal and external storage for recyclable waste will be provided to all dwellings in a dedicated position. The Local Authority provides recyclable household waste collection and sorting.

Pollution

Global Warming Potential (GWP) of Insulants

Global warming potential (GWP) is a measure of how effective a gas is at preventing the passage of infrared radiation. Blowing agents, used in the production of insulation, are a common source of gases with high GWPs.

The development will specify insulation materials that have a low Global Warming Potential (GWP).

NOx Emissions

Space heating and hot water requirements of the dwellings will be met through high efficiency gas boilers with low NOx emissions.

Internal waste storage and separation

Health and Wellbeing

Daylighting

The dwellings have been designed with daylight in mind and measures have been taken to increase it where possible. Large windows have been included to maximise the amount of daylight entering the apartments.

Sound Insulation

The development proposes that airborne sound insulation between dwellings will comply or exceed current Building Regulations Part E standards.

Private Space

Private amenity spaces have been provided for some dwellings in this development, with the aim of improving the quality of life of the occupants.

Lifetime Homes

All dwellings will be Lifetime Homes compliant, ensuring the dwellings are easily adaptable for future use.

Management

Construction Site Impacts

To minimise the construction impacts of the site, contractors will be required to monitor, report and set targets for:

- The production of CO_2 arising from site activities
- Water consumption from site activities

In addition, contractors will be required to adopt best practice policies for air (dust) and water (ground and surface) pollution occurring on site.

Ecology

Ecological Enhancement

The proposed scheme will include planting of native species to maintain or improve biodiversity at the site.

Building Footprint

The density of development on site has been maximised within the local context.