87-89 Camden Mews
Energy & Sustainability Statement

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Version 2

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JAWSustainability

Contents

1 Introduction

The proposed development at 87-89 Camden Mews comprises a 4 new build 3 storey terrace houses.

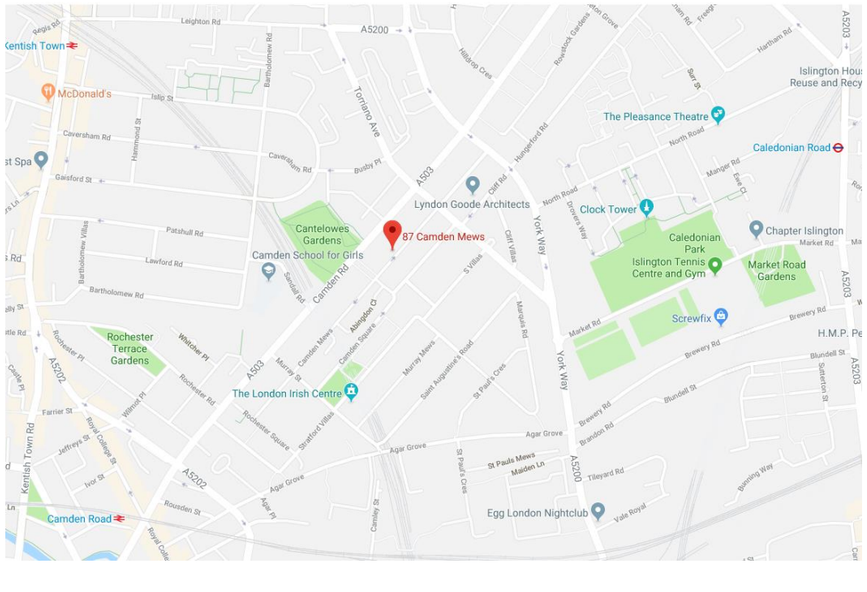

Figure 1-1 Camden Mews © Google Maps

This report summarises the sustainable design and construction measures that have been incorporated into development in order to meet the sustainability requirements of the London Borough of Camden and the London Plan.

2 Policy

2.1 The London Plan Policies on Energy

Policy 5.2: Minimising Carbon Dioxide Emissions

Development proposals should make the fullest contribution to minimising carbon dioxide emissions in accordance with the following energy hierarchy:

1. Be Lean: use less energy
2. Be Clean: supply energy efficiently
3. Be Green: use renewable energy

The proposal incorporates 4 residential units. With regards to energy requirements for each use type, this do not meet the threshold for major development standards, with respect to the London Plan further requirements of Policy 5.2 do not apply.

Policy 5.3 Sustainable Design and Construction Strategic

The highest standards of sustainable design and construction should be achieved in London to improve the environmental performance of new developments and to adapt to the effects of climate change over their lifetime.

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

Major development proposals should meet the minimum standards outlined in the Mayor's supplementary planning guidance and this should be clearly demonstrated within a design and access statement.

The standards include measures to achieve other policies in this Plan and the following sustainable design principles:

- minimising 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

2.2 London Borough of Camden

Policy CC1 Climate Change Mitigation

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

We will:

A. promote zero carbon development and require all development to reduce carbon dioxide emissions through following the steps in the energy hierarchy;
B. require all major development to demonstrate how London Plan targets for carbon dioxide emissions have been met;

C. ensure that the location of development and mix of land uses minimise the need to travel by car and help to support decentralised energy networks;
D. support and encourage sensitive energy efficiency improvements to existing buildings;
E. require all proposals that involve substantial demolition to demonstrate that it is not possible to retain and improve the existing building; and
F. expect all developments to optimise resource efficiency.

For decentralised energy networks, we will promote decentralised energy by:

G. working with local organisations and developers to implement decentralised energy networks in the parts of Camden most likely to support them;
H. protecting existing decentralised energy networks (e.g. at Gower Street, Bloomsbury, King's Cross, Gospel Oak and Somers Town) and safeguarding potential network routes; and
I. requiring all major developments to assess the feasibility of connecting to an existing decentralised energy network, or where this is not possible establishing a new network. To ensure that the Council can monitor the effectiveness of renewable and low carbon technologies, major developments will be required to install appropriate monitoring equipment.

Policy CC2 Adapting to Climate Change

The Council will require development to be resilient to climate change.

All development should adopt appropriate climate change adaptation measures such as:

A. the protection of existing green spaces and promoting new appropriate green infrastructure;
B. not increasing, and wherever possible reducing, surface water runoff through increasing permeable surfaces and use of Sustainable Drainage Systems;
C. incorporating bio-diverse roofs, combination green and blue roofs and green walls where appropriate; and
D. measures to reduce the impact of urban and dwelling overheating, including application of the cooling hierarchy.

Any development involving 5 or more residential units or 500 sqm or more of any additional floorspace is required to demonstrate the above in a Sustainability Statement.

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

E. ensuring development schemes demonstrate how adaptation measures and sustainable development principles have been incorporated into the design and proposed implementation;
F. encourage new build residential development to use the Home Quality Mark and Passivhaus design standards;
G. encouraging conversions and extensions of 500 sqm of residential floorspace or above or five or more dwellings to achieve "excellent" in BREEAM domestic refurbishment; and
H. expecting non-domestic developments of 500 sqm of floorspace or above to achieve "excellent" in BREEAM assessments and encouraging zero carbon in new development from 2019.

Policy CC3 Water and Flooding

The Council will seek to ensure that development does not increase flood risk and reduces the risk of flooding where possible.

We will require development to:

A. incorporate water efficiency measures;
B. avoid harm to the water environment and improve water quality;
C. consider the impact of development in areas at risk of flooding (including drainage);
D. incorporate flood resilient measures in areas prone to flooding;
E. utilise Sustainable Drainage Systems (SuDS) in line with the drainage hierarchy to achieve a greenfield run-off rate where feasible; and
F. not locate vulnerable development in flood-prone areas. Where an assessment of flood risk is required, developments should consider surface water flooding in detail and groundwater flooding where applicable. The Council will protect the borough's existing drinking water and foul water infrastructure, including the reservoirs at Barrow Hill, Hampstead Heath, Highgate and Kidderpore.

3 Sustainability Strategy

3.1 Energy Performance

An energy strategy has been developed following the energy hierarchy 'Be Lean, Be Clean, Be Green'. Energy calculations using Building Regulations approved and accredited software have been undertaken at each stage to calculate the savings associated with the measures incorporated.

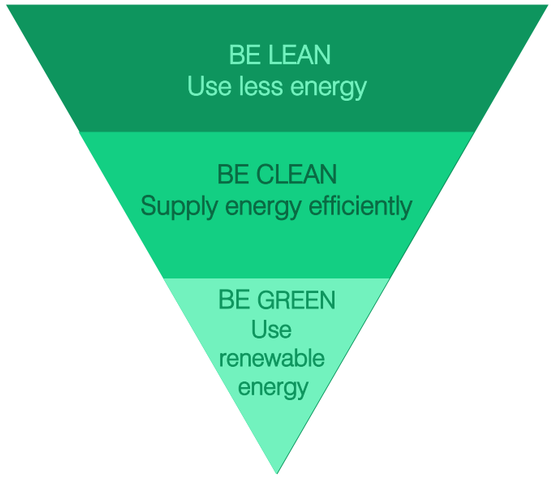

Figure 3-1 The Energy Hierarchy

The energy consumption and carbon emission figures within this report have been calculated using the approved Standard Assessment Procedure for the Energy Rating of Dwellings (SAP). This report has been reviewed by Jessica James who is an On Construction Domestic Energy Assessor (OCDEA).

Solar Gain Control and Daylight

Solar gains are a passive form of heating from the sun's radiation and are beneficial to a building during winter months as they provide an effective source of heat and reduce internal heating requirements. However, summer months they must be controlled in order to mitigate the risk of overheating. They can be controlled through glazing and shading design in order to allow low level winter sun to enter the building and to limit access to high level summer sun.

The glazing strategy design has carefully considered orientation and window size to maximise daylight while controlling excessive solar gains. Glazing will incorporate low emissivity coatings to limit overheating without compromising light transmittance.

Overheating

The impact of solar gains has been analysed as part of the SAP calculations, taking into account the ventilation strategies and the risk of solar overheating has been concluded to be slight, when measured against the Part L1A criteria.

Building Fabric

Designing an efficient thermal envelope will greatly reduce the need for space heating and cooling as heat transmittance through the thermal elements is reduced.

Low air permeability rates will also reduce heating and cooling energy demand by reducing the volume of air that can penetrate the building.

As part of a 'fabric first' approach, the building fabric has been carefully considered and specified to meet or exceed current Building Regulations minimum requirements, as detailed in table 3-1 below.

Fabric Component	Residential Specification Proposed
External Walls	0.13 W/m^{2}K
Green Roof	0.1 W/m^{2}K
Terrace Roof	0.15 W/m^{2}K
Ground floor	0.14 W/m^{2}K
Windows (including glazed wall)	1.4 W/m^{2}K
Roof Lights	1.6 W/m^{2}K
Air Tightness	5m3/m2/hr
Party walls	Fully filled cavity with edge sealing
Thermal Bridging	Default

Table 3-1 Proposed Be Lean passive design measures

Building Services

Individual systems have been identified as being the most appropriate for the site. These have been specified to maximise efficiency therefore reducing energy used to deliver services.

Table 3-2 shows the proposed services strategy and energy efficiency measures for the development.

Services Component	Residential Specification
Space Heating & hot water	Gas boilers 91% efficient, UF/H & Rads Delayed start stat, boiler interlock 210l cylinder
Heating Controls	Time and temperature zone control
Ventilation	Natural Ventilation
Lighting & Controls	100% low energy lighting

Table 3-2 Proposed energy efficient design measures

Renewable Energy

In order to further reduce carbon emissions, solar PV as the most appropriate technology for the site. The following system is proposed:

- Peak Power – 3.9 kWp (approx. 12 panels – 3 per unit)
- Orientation – SE/SW
- Angle of elevation – 30°

Energy and Carbon Savings

Energy Use

The breakdown of carbon and energy use has been identified for the site. Table 3-4 shows the breakdown of carbon and energy use once the strategies proposed in this report are incorporated.

Gas (kWh/yr)			Gas CO2 (kg/yr)	Electricity (kWh/yr)				Electricity CO2 (kg/yr)
Space Heating	Hot Water	Total		Pumps & Fans	Lighting	PV	Total	
21,932	10,067	31,999	6,912	300	1,893	-3,204	-1,011	-525

Total Energy	Total CO2
30,988	**6,387**

Table 3-4 Estimated regulated energy demand and carbon emissions per energy source

Carbon Savings

Table 3-5 and Figure 3-5 demonstrate the percentage improvement over part L for the site.

	Residential		
	CO_2 Emissions (tonnes /annum)	CO_2 Savings (tonnes /annum)	% Saving
Building Regulations 2013 Baseline	7.40		
Actual Building	6.39	1.66	13.65%

Table 3-5 improvements over Part L

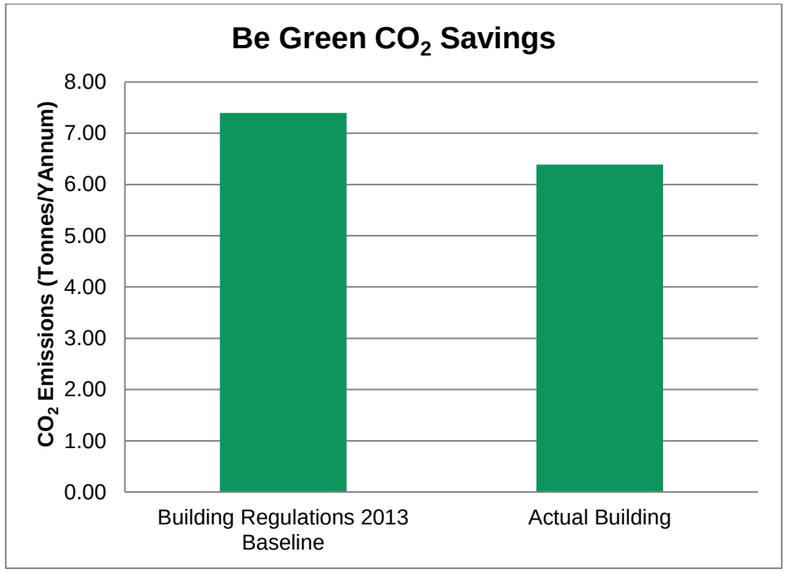

Figure 3-5 Savings over Building Regulations Part L 2013

3.2 Water efficiency

Water fittings will be specified with the following or similar flow rates to meet the target water consumption of 105 l/p/day:

- Wash basin taps – 6.5 l/min
- Showers – 7.5 l/min
- Bath – 120l to overflow
- Dishwasher - 1.2 l/place setting
- Washing machine - 9 l/kg load
- WC – 6/4 litre dual flush
- Kitchen taps – 6.5 l/min

Water meters will be installed to encourage residents to limit their consumption.

3.3 Materials

Insulating materials will be specified to maximise thermal performance whilst still paying attention to the environmental impact of the materials used. The use low embodied energy products will be further investigated.

Responsible sourcing will also be pursued. All timber used on site during the construction phase and within the building will be from legal sources. Where possible, FSC or equivalent timber will be used. Sourcing of other materials will include products where the manufacturer employs an environmental management system such as ISO 14001 or BES 6001. Where possible, materials will be sourced locally.

Non-toxic materials will be used wherever possible, including the specification of products with low VOC content in line with European testing standards.

All the building elements will achieve high ratings on the BRE Green Guide to Specification. Materials will be specified to have a low embodied energy, taking into account whole life cycle analysis.

3.4 Waste Management and Construction

Construction site waste will be managed in such a way to reduce the amount of waste produced as much as possible, and the waste hierarchy will be followed. In addition, at least 85% of waste that does arise will be recycled using an external waste contractor.

Household waste will be recycled through the local authority collection scheme. Internal recycling bins in a kitchen cupboard will be provided to facilitate this.

3.5 Nature Conservation and Biodiversity

The site is occupied by existing buildings and is considered to be of negligible ecological value. Measures will be taken during construction to minimise impact on ecology by timing works appropriately and following best practice guidance.

A green roof has been incorporated on all units and native species will be used where possible.

3.6 Climate Change Adaptation

Tackling Increased Temperature and Drought

The impact of solar gain has been incorporated into the SAP analysis for compliance with Part L and the risk of solar overheating has been concluded to be low for the development. Windows will incorporate low emissivity coatings to reduce solar gain.

Flooding

The peak and volume of surface water run-off rates will not be significantly increased due to the small size of the development. The site is in flood zone 1 so the building is not at risk of flooding.

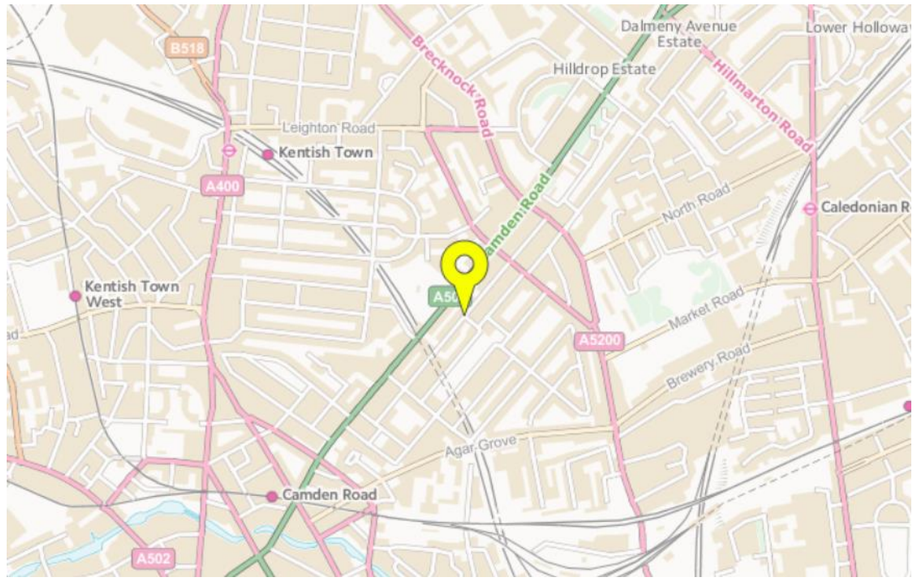

Figure 3-1 Camden Mews Flood Risk Map

3.7 Pollution Management

Air Quality
The construction site will be managed in such a way that the environmental impact is minimised. This includes following best practice policies for dust pollution by using dust sheets, covering skips and damping down where appropriate.

Plant and machinery
All plant and equipment installed in the development will be appropriately sized and selected for efficiency in order to reduce greenhouse gas emissions.

New gas boilers will be installed, which will be specified to have a low NO_x emission value.

All equipment will be frequently maintained to ensure it continues to run efficiently and cleanly.

Insulating materials and heating systems will be specified to keep pollutants to a minimum. Insulation will have a low Global Warming Potential (GWP).

Noise
The dwellings will comply with Building Regulations Part E, providing a good level of sound insulation. All windows are to be specified as high efficiency double glazing to minimise the transmission of noise between the property and surrounding area.

Light Pollution
100% of the proposed lighting will be provided by low energy light fittings specified to have a luminous efficacy greater than 40 lm/W. All external lighting will be adequately controlled to ensure that spaces are only lit out of daylight hours and when the area is occupied. As the proposed building use is residential; there will be no illuminated signage or uplighting incorporated. The proposed dwelling is in a highly urbanised location, and therefore will not significantly contribute to increasing the effects of light pollution.

4 Conclusion

The proposal incorporates 4 new build 3 storey terrace houses. With regards to energy requirements for each use type, these do not meet the threshold for major development standards, with respect to the London Plan. The requirement is to follow the energy hierarchy and incorporate sustainable design and construction measures.

The development follows the energy hierarchy, incorporating passive design measures and energy efficient equipment. The development employs an efficient building fabric, including new insulation and highly efficient glazing, efficient gas heating and heat recovery ventilation to maximise carbon savings for the site, resulting in 13.65% savings for the development. Measures are also incorporated to minimise pollution and reduce water use. The development complies with sustainability policy of the London Borough of Camden and the London Plan, for minor developments.

The figures within this report are based on preliminary analysis only and further detailed studies will be required at the detailed design stage before specifying any of the proposed systems.