234 – 240 Grafton Road

Energy and Sustainability Statement

Version 1.0

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JAWSustainability

Contents

Executive Summary

This energy strategy has been prepared for the development at 234 – 240 Grafton Road. The proposed development comprises of a traditional mansard roof extension to provide two additional units, along the development of a new house dwelling in the rear garden of the site.

This report demonstrates how the proposed development addresses local planning policies for the London Borough of Camden and the London Plan relating to energy and sustainability.

Following the energy hierarchy, passive design measures and energy efficient equipment the residential development has been demonstrated to be capable of achieving an improvement of 64% CO_2 emissions over the Part L 2021 baseline.

The design team have made all reasonable endeavours to achieve the maximum carbon savings. The fabric performs significantly better than building regulations minimum standards.

1 Introduction

This energy strategy has been prepared for 234 – 240 Grafton Road. The proposed development comprises of a traditional mansard roof extension to provide two additional units, along the development of a new house dwelling in the rear garden of the site.

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

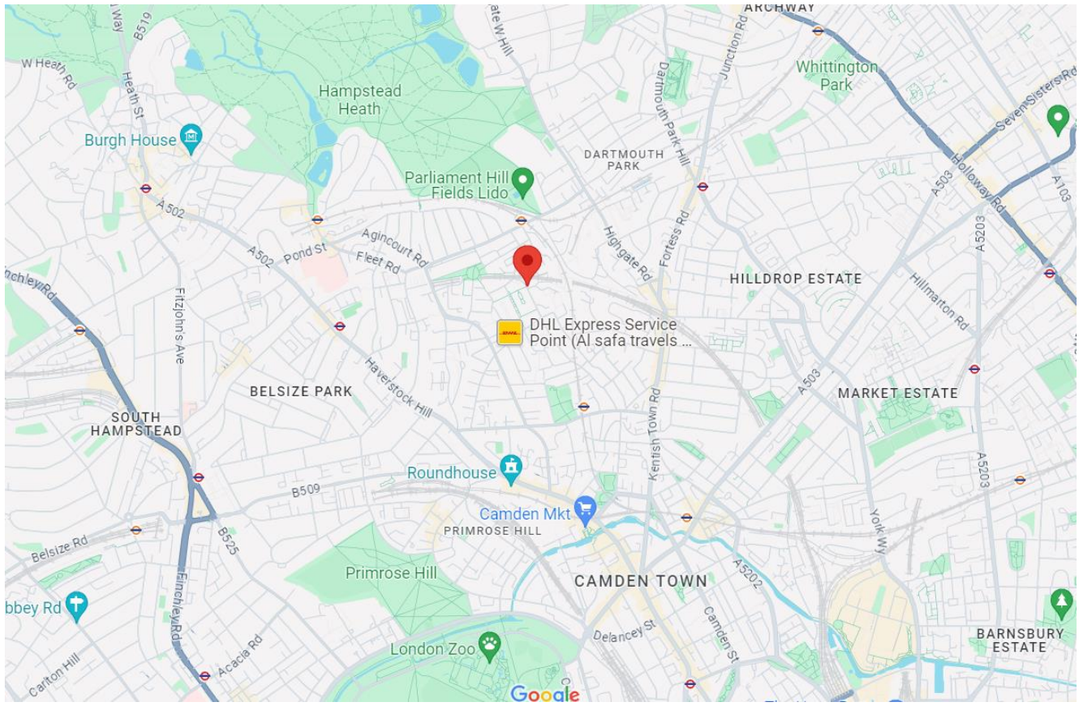

Figure 1-01 – Location of the Proposed Development

2 Policy

2.1 London Borough of Camden Local Plan

As a 3-unit residential development, 234-240 Grafton Road is not a major development and therefore policies relating to major developments do not apply.

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.

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 development of 500 sqm of floorspace or above to achieve “excellent” in BREEAM assessments and encouraging zero carbon in new development from 2019.

3 Energy Strategy

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

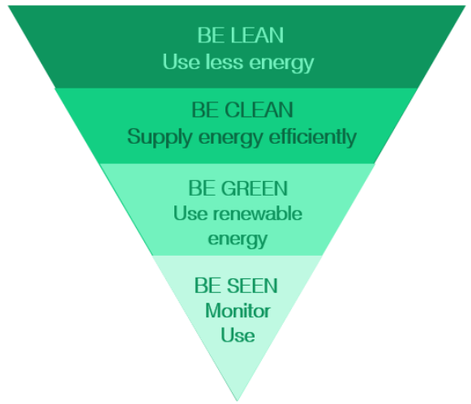

Figure 3-01 The Energy Hierarchy

The residential energy consumption and carbon emission figures within this report have been calculated using the approved Standard Assessment Procedure for the Energy Rating of Dwellings (SAP10.2), in order to assess the impact on energy demand and CO_2 emissions of improvements through the hierarchy and demonstrate the most appropriate solution for the development to meet the relevant planning requirements.

3.1 Be Lean

As part of the Be Lean approach, passive design measures have been considered throughout the pre-planning stage to reduce initial energy demand.

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, during 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. Glazing will incorporate low emissivity coatings to limit overheating without compromising light transmittance.

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 3-01 below.

Fabric Component	Proposed Residential Specification
External Walls	0.13 W/m²K
Stairwell/Corridor Wall	0.13 W/m²K Corridors & stairwells presumed as unheated
Party Walls	Fully filled cavity with edge sealing
Flat roof	0.11 W/m²K
Mansard roof	0.11 W/m²K
Ground Floor	0.12 W/m²K
Windows/Glazed Doors	Triple Glazing U Value 0.90 W/m²K G-value 0.40 Frame Factor 0.80
External Doors	1 W/m²K
Air Tightness	4 m³/m²/h
Thermal Bridging	See Psi values outlined in table 3-02

Table 3-01 Proposed Be Lean passive design measures

Party walls should be fully filled cavities with edge sealing for compliance.

Initial Psi values have been specified for the thermal bridges. At the detailed design stage, the Psi values should be calculated from the construction details to ensure the targets are met for thermal bridging, and to demonstrate an improvement over the Target Fabric Energy Efficiency.

Thermal Bridge	Residential Psi Value
Other lintels (including other steel lintels)	0.3
Sill	0.04
Jamb	0.04
Party floor between dwellings	0.07
Flat roof with parapet	0.56
Corner (normal)	0.09
Corner (inverted)	-0.09
Party wall between dwellings	0.06

Table 3-02 Proposed Psi Values for the residential dwellings

Building Services

Initial systems have been identified to maximise efficiency therefore reducing energy used to deliver services. Table 3-03 shows the proposed services strategy and energy efficiency measures for the development at the Be Lean stage. These are provisional system proposals and may change as the design evolves.

Services Component	Proposed Residential Specification
Heating Controls	Time and Temperature Zone Control
Lighting & Controls	>75 lm/W

Table 3-03 Proposed energy efficient design measures

3.2 Be Clean

As part of the Be Clean approach, the use of energy efficient equipment, heat networks and community heating have been considered.

There is a heat network within 500m of the site, as shown in Figure 3-02. Due to the nature and scale of the development, a roof extension of 3-units, it is not feasible to connect to the heat network. The infrastructure involved with connecting to the network is not feasible for a development of this size therefore other low carbon technologies have been specified.

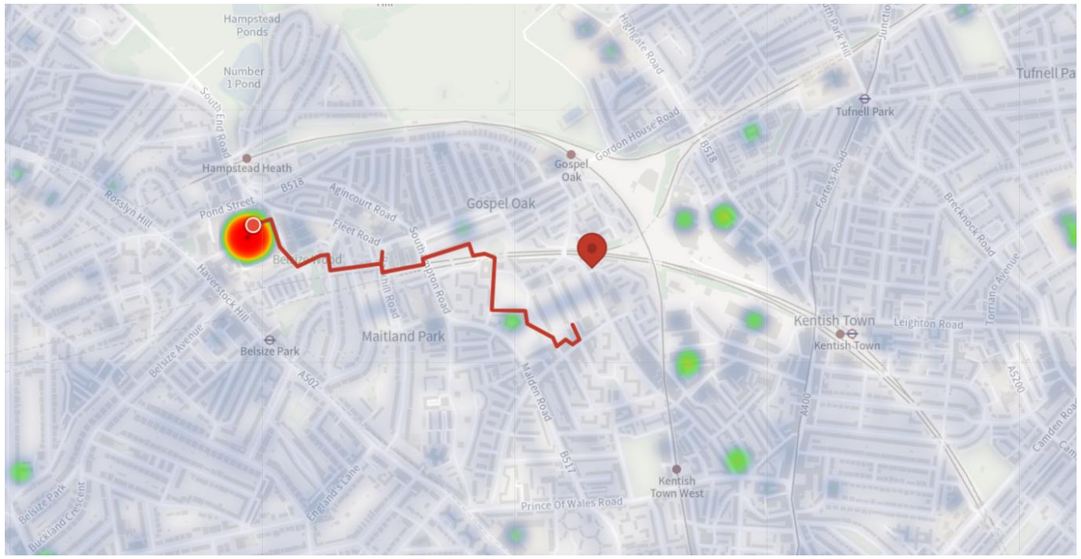

Figure 3-02 234-240 Grafton Road, London Heat Map

As there are no additional savings to be made at the Be Clean stage, no further data is given in this section.

3.3 Be Green

Renewable and low carbon systems

Individual air source heat pumps have been identified as the most appropriate technology for the development. The development consists of three dwellings, two flats and one house, therefore individual ASHPs have been specified. The proposed systems for the development are outlined in Table 3-04.

Services Component	Proposed Residential Specification
Space and Water Combined	Individual Air Source Heat Pumps (ASHP) 6.0 kW SCOP 3.30

Table 3-04 Proposed Be Green systems

Individual ASHPs

An initial design for individual ASHPs has been produced. This will be developed in more detail as the design progresses. This is an estimate of the required capacity and unit required based on the floor area of the assessed units and should not be taken as a specification. However, pending professional assessment a comparable unit, in terms of features and efficiency will be specified within the development.

The specified heat pump will need to be extracted from the SAP appendix Q database to allow the correct efficiencies to be applied. For the purposes of this preliminary assessment, we have specified the Mitsubishi Ecodan 6.0 kW heat pump (PUZ-WN60VAA).

Carbon Savings

Table 3-05 demonstrates the percentage improvement over the baseline for the proposed development with Be Green measures incorporated.

The development has been designed to minimise energy use with a very airtight highly insulated fabric. The strategy represents the best possible solution and maximum carbon savings possible.

	Residential		
	CO_2 Emissions (tonnes /annum)	CO_2 Savings (tonnes /annum)	% Saving
Building Regulations 2021 Baseline	3.2		
Proposed Building		2.1	64%

Table 3-05 Be Green improvements over the baseline emissions-Residential

The SAP calculations also confirm that the proposed development performs above the Fabric Energy Efficiency (TFEE) and Primary Energy Rate (TPER) targets. This is outlined in Table 3-06.

Dwelling Fabric Energy Efficiency Improvement Over the TFEE	Dwelling Primary Energy Rate over the TPER
9%	28.47%

Table 3-06 performance of the proposed development over the TFEE, TPER and TER

4 Sustainable Design & Construction Measures

Sustainable design and construction has been integral to the design of the proposed residential development. The below section outlines the sustainable design elements that have been proposed for the development.

4.1 Water efficiency

Water fittings will be specified with the following or similar flow rates to meet the target water consumption of 110L/Person/Day in line with London plan and London Borough of Camden water efficiency requirements:

- 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

The development seeks to mitigate water inefficiency at source by incorporating low-use fittings. Water meters will also be specified to encourage residents to limit their water usage.

4.2 Materials

All timber used on site during the construction phase and within the building will be from legal sources, 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.

4.3 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 95% of waste that does arise will be recycled using an external waste contractor and the Civil Engineer's Demolition Protocol. This will encourage materials to be re-used on site or where this is not possible, salvage appropriate materials to enable use off-site.

4.4 Nature Conservation and Biodiversity

During construction, care will be taken during construction to avoid damage to any existing trees. Measures will be taken during construction to minimise impact on ecology by timing works appropriately and following best practice guidance.

4.5 Climate Change Adaptation

Tackling Increased Temperature and Drought

Windows will incorporate low emissivity coatings to reduce solar gain.

Flooding

The site is in flood zone 1 and therefore, has a low risk of flooding.

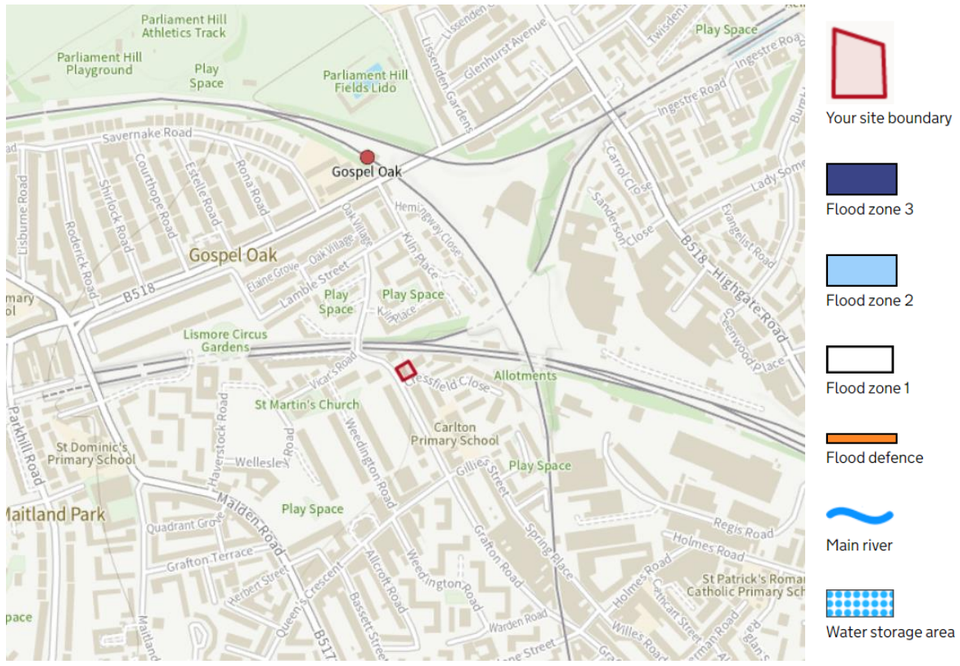

Figure 3-03 234-240 Grafton Road Flood Risk Map

4.6 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.

Noise

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

Light Pollution

All external lighting will be adequately controlled to ensure that spaces are only lit out of daylight hours and when the area is occupied. There will be no illuminated signage or up lighting incorporated. The proposed development is in an urbanised location, and therefore will not significantly contribute to increasing the effects of light pollution.

5 Conclusion

This energy and sustainability strategy has been prepared for the proposed development at 234-240 Grafton Road, in order to meet the sustainability requirements of the London Plan and the London Borough of Camden.

As required by the London Plan, the development follows the energy hierarchy, incorporating passive design measures, energy efficient equipment and renewable energy. Carbon emissions have been calculated over a baseline scenario. The baseline is based on the 2021 building regulations notional building. The development achieves a 64% improvement over the baseline.

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.