

Client

Kennedy Wilson

Project

1278 - 41-45 Neal Street

Energy and Sustainability Statement

Revision 1.0 - 10/03/2015 - Information

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1.0 Introduction

This statement sets out the proposals for the servicing and energy strategy for 41-45 Neal Street, which involves the refurbishment of existing office spaces, provision of two residential units, and retail accommodation at ground floor.

The site is within the Seven Dials conservation area, and the existing building is not considered of architectural merit and is relatively low in fabric quality. The project aims to improve the building in all aspects and this report sets out the environmental benefits.

2.0 Planning requirements

The refurbishment does not meet the threshold of 5no. dwellings or 500m² at which BREEAM requirements are triggered; however BREEAM targets are achieved by the proposal. A BREEAM assessment has been carried out at design stage; refer to the report.

The relevant parts of Camden Council's core strategy policy CS13 is as follows:

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 development 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:

- ensuring developments use less energy,

- making use of energy from efficient sources, such as the King's Cross, Gower Street,

Bloomsbury and proposed Euston Road decentralised energy networks;

- 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 (see Map 4); 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).

Policy 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, including the relevant measures set out in paragraph 22.5 below, 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.

The London Plan states:

Policy 5.2 minimising Carbon Dioxide Emissions

- *A)* Development proposals should make the fullest contricution 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 mean: Use renewable energy
- B) The Mayor will work with boroughs and developers to ensure that major developments meet the following targets for carbon dioxide emissions reduction in buildings. These targets are expressed as minimum improvements over the Target Emission Rate (TER) outlined in the national Building Regulations leading tozero carbon residential buildings from 2016 and zero carbon non-domestic buildings from 2019.

Residential Buildings

2013-2016 40 per cent

Non-domestic buildings

2013-2016 40 per cent

- C) As a minimum, energy assessments should include the following details:
 - a. calculation of the energy demand and carbon dioxide emissions covered by the Building Regulations and, separately, the energy demand and carbon dioxide emissions from any other part of the development, including plant or equipment, that are not covered by the Building Regulations (see paragraph 5.22) at each stage of the energy hierarchy
 - b. proposals to reduce carbon dioxide emissions through the energy efficient design of the site, buildings and services



- c. proposals to further reduce carbon dioxide emissions through the use of decentralised energy where feasible, such as district heating and cooling and combined heat and power (CHP)
- d. proposals to further reduce carbon dioxide emissions through the use of on-site renewable energy technologies.
- e. The carbon dioxide reduction targets should be met on-site. Where it is clearly demonstrated that the specific targets cannot be fully achieved on-site, any shortfall may
- *f. be provided off-site or through a cash in lieu contribution to the relevant borough to be*
- g. ring fenced to secure delivery of carbon dioxide savings elsewhere.



3.0 The Proposal

3.1 Key Aspects

The key aspects of the proposal are as follows:

Be Lean

The majority of energy savings are proposed in the "be lean" category.

- The building fabric is to be greatly enhanced to reduce heat loss and in turn heating consumption. Where architecturally possible u-values will be improved over part L1B requirements, with an aim to meet Passivhaus standards.
- Significantly improved fabric airtightness.
- Lighting will be energy efficient LED throughout.
- A "whole house" MVHR unit will recover heat from within the flat to further reduce heating demand.
- Daylighting will be maintained or improved where possible

Be Clean

- Heating and cooling will be by air source heat pumps using low circulation temperatures to ensure a high CoP.
- Control zones will be used to ensure spaces are not unnecessarily heated.

Be Green

• Air source heat pumps are proposed.

Aim to achieve BREEAM excellent (Domestic Refurbishment)

3.2 Thermal fabric

Building fabric will be upgraded thermally and acoustically, with an aim to meet PassivHaus standards. Windows will be replaced with triple glazing and the air-tightness improved.

The fabric aims to achieve the following u-values:

Element	U-value (w/m ² k)		
Front façade (replaced)	0.15w/m²k		
Rear façade & party walls	0.35w/m²k		
(facades retained)			
Floor	0.15w/m²k		
Roof	0.12w/m²k		
Glazing (triple glazed)	0.85w/m²k		

3.3 Energy Use

SAP calculations have been carried out on the new dwellings and compared with the existing building. These show an area weighted reduction in emissions rate ($kgCO_2$) of ~70% over the existing condition.

	EER	Improvement %	Primary energy demand, kWh/m ²
Second floor	80	60	134
Penthouse	93	75	97

3.4 Mechanical Services

A whole house mechanical ventilation with hear reclaim installation will be installed to achieve an 85% efficiency with 1W/(l.s) specific fan power.

A low temperature underfloor heating installation will be installed throughout each apartment with unvented electric hot water generation and storage fed by the air source heat pump. The installation will follow the best practice guidance of The Domestic Building Compliance Guide 2010:

- The design, preparation and commissioning of the installation will follow the guidance of Table 13.
- Flow temperature control will be fitted to the heat interface with interlock to ensure circulating pump is off with no demand.
- The apartments will be divided into separate zones to: living area/kitchen and each bedroom with programmable room thermostats.
- Time control space and water heating will be provided with separate time control of heating and hot water.
- The unvented storage cylinder will be designed in accordance with the recommendations of Table 15 of the guide in relation to cylinder insulation and immersion element control.
- Pipework will be insulated in accordance with the recommendations of Table 16 of the guide.

Comfort Cooling

Windows will be openable to allow cross ventilation when possible. However, due to the acoustic limitation of the Neal Street façade, and market expectation, comfort cooling is to be installed to living areas and bedrooms. Glazing specification will be selected to help to reduce cooling load. Cooling equipment will be selected to achieve a minimum Energy Efficiency Rating (EER) of 3.0.

Metering

Systems will be metered in order to monitor energy use.

3.5 Electrical Services

Lighting

100% low energy lighting (LEDs) will be utilised throughout each dwelling and the shared circulation. Shared circulation areas will have photocell control where appropriate along with occupancy control and low level set back when unoccupied.

Metering

Systems will be metered in order to monitor energy use.

3.6 Climate Change

A number of the proposed aspects of the design will help in mitigating adverse effects of climate change.



Green Roof

Part of the roof will be used as a terrace by residents of the uppermost apartment. Besides the terrace the roof will incorporate an eco-friendly green roof, which will provide visual amenity and biodiversity as well as attenuating the water runoff.

The green roof will be a habitat to low growing and drought resistant plants, which need very little maintenance or water. It will help reduce overheating caused by solar gain on the roof.

Natural ventilation

Windows will be openable to allow cross ventilation.

3.7 Renewables

There are no heat networks in the vicinity.

The following technologies have been considered:

Photovoltaics

PVs could be used to provide a small proportion of the building's energy use. However the roof of the building is highly visible from the adjoining streets and the roof important architecturally. For these reasons it has not been possible to integrate PVs.

Solar Thermal Water Heating

Due to the relatively unknown load and the likelihood that a number of separate tenants will use the water, it is not possible to integrate a solar thermal system.

Wind Generation

Due to the built-up area surrounding, the existing structure and the visibility of the roof wind generation is not deemed feasible.

Biomass Heating

Due to the location in central London biomass is not considered a suitable option.

Air source heat pumps

When used with low flow temperatures, air source heat pumps can provide a low carbon heat source. Electricity is used to drive a refrigeration cycle, which extracts low grade heat from the outdoor air and moves it to a higher grade heat internally. CoPs of around 3 are achievable with this method.

This technology is proposed.

Ground Source Heat Pumps

Ground source heat pumps work in a similar way to the air source heat pump; but using the ground as the heat source. Due to the site constraints and the fact that the building is existing in a densely built-up area, GSHP is not feasible.

3.8 BREEAM

Breeam "Excellent" is aimed for, though this is not a requirement of the planning policy. For details on BREEAM refer to separate BREEAM report.



Audit History

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			Ву	Ву	
1.0	10/03/2015	Information	JC		