

Energy & Sustainability Statement

7 Brantwood Road, London, N17 0DT

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Executive Summary

This energy statement has been prepared in order to assess the improvement in energy performance as a result of the proposed development at 7 Brantwood Road. The site of the development is located within the London Borough of Haringey.

The development consists of the demolition of existing structures, and the erection of a 3 storey residential building. The building contains 4 single storey flats and 1 duplex unit, refuse and recycling storage and cycle parking.

An energy assessment has been carried out based on design information to identify the most appropriate way to reduce CO₂ emissions and energy demand.

Following the thermal and M&E equipment upgrades described, the energy strategy for the proposed building has been demonstrated to be capable of achieving an improvement of 61% CO₂ emissions.

1 Introduction

This sustainability statement has been prepared for the development at 7 Brantwood Road, in the London Borough of Haringey. The development consists of the demolition of existing structures, and the erection of a 3 storey residential building. The building contains 4 single storey flats and 1 duplex unit, refuse and recycling storage and cycle parking.

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

1.1 Assessment approach

This report summarises the work undertaken to support the development of an energy strategy for the new development, following the energy hierarchy 'Be Lean, Be Clean, Be Green, Be Seen'.

Standard Assessment Procedure for the Energy Rating of Dwellings (SAP) calculations have been carried out for the residential units. These are used to assess the impact on energy demand and CO₂ emissions of improvements through the hierarchy and demonstrate the most appropriate solution for the development to meet the relevant planning requirements.

2 Policy

This development consists of 5 units and does not surpass the requirement for a major development, therefore the London plan and Haringey policies referring to major developments are not relevant.

2.1 London Borough of Haringey

Policy SP4 Working towards a low carbon Haringey

Over the life time of the Local Plan, reducing energy use in buildings and working towards a low carbon borough will be one of the key challenges facing Haringey. The Council will promote the measures outlined below to reduce carbon emissions from new and existing buildings.

1. In line with London Plan policy, the Council will promote and require all new developments to take measures to reduce energy use and carbon emissions during design, construction and occupation, by incorporating the following measures:
 - a. From 2011 onwards, all new residential development will achieve a minimum 25% reduction in total (regulated) CO₂ emissions in line with Code for Sustainable Homes Level 4 energy standards, and should aim to achieve Level 6. All new residential development shall be zero carbon from 2016 onwards; and
 - b. From 2011 onwards all new non-residential development shall be built to at least BREEAM "very good" standard and should aim to achieve BREEAM "excellent" or the current nationally agreed standard. All new non-residential development shall be zero carbon from 2019.
2. The Council will promote low- and zero-carbon energy generation through the following measures:
 - a. Requiring all developments to assess, identify and implement, where viable, site-wide and area-wide decentralised energy facilities including the potential to link into a wider network;

- b. Establishing local networks of decentralised heat and energy facilities by requiring developers to prioritise connection to existing or planned networks where feasible;
- c. Working with neighbouring boroughs and other partners to explore ways of implementing sub-regional decentralised energy networks including the potential in the Upper Lee Valley Opportunity Area; and
- d. All new developments are required, where viable, to achieve a reduction in predicted carbon dioxide emissions of 20% from onsite renewable energy regeneration, which can include connections to local sources of decentralised renewable energy.

2.2 The London Plan Policies on Energy

Policy SI 2 Minimising greenhouse gas emissions

A Major development should be net zero-carbon. This means reducing greenhouse gas emissions in operation and minimising both annual and peak energy demand in accordance with the following energy hierarchy:

- 1) be lean: use less energy and manage demand during operation
- 2) be clean: exploit local energy resources (such as secondary heat) and supply energy efficiently and cleanly
- 3) be green: maximise opportunities for renewable energy by producing, storing and using renewable energy on-site
- 4) be seen: monitor, verify and report on energy performance.

This is not a major development, but will follow the energy hierarchy in line with Haringey's requirements. The other London Plan policies do not apply.

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.

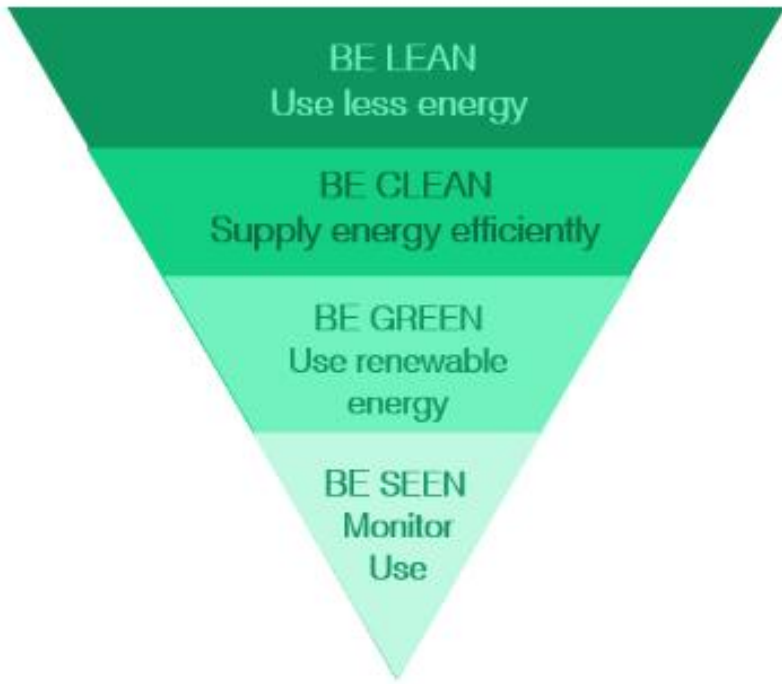


Figure 3.1 The Energy Hierarchy

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).

3.1 Energy Targets

Table 3.1 below details the energy and carbon breakdown of the Part L target emission rate. These have been calculated using the SAP10 carbon factors.

Energy (kWh/yr)						Electricity CO ₂ (kg/yr)	Total Energy (kWh/yr)	Total CO ₂ (kg/yr)
Space Heating	Hot Water	Pumps & Fans	Lighting	PV	Total			
11,102	12,934	430	739	-5,101	-3,932	-495	20,104	4,552

Table 3.1 Target regulated energy demand and carbon emissions per energy source

3.2 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, 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 in order to maximise daylight while controlling excessive solar gains. 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 3.2.

Fabric Component	Residential Specification
External Walls	0.15 W/m²K
Roof	0.12 W/m²K
Ground/ Exposed Floor	0.13 W/m²K
Party Walls	Fully filled cavity with edge sealing
Windows	Triple glazing, 0.8 W/m²K, G=0.4
External Doors	1 W/m²K
Air Tightness	4m³/m²/h
Thermal Bridging	Maximum Psi values are outlined in table 3.3 Requires further calculation at detailed design

Table 3.2 Proposed Be Lean passive design measures

Thermal Bridge	Psi Value
Other lintels (including other steel lintels)	0.30
Sill	0.04
Jamb	0.04
Ground floor	0.16
Intermediate floor within a dwelling	0.07
Party floor between dwellings	0.07
Eaves (insulation at ceiling level)	0.06
Gable (insulation at ceiling level)	0.20
Corner (normal)	0.09
Corner (inverted)	-0.09
Party wall between dwellings	0.06
Balcony	0.020

Table 3.3 Preliminary thermal bridge Psi values used in the model

With regards to party walls, to reach the required standards, these must be fully filled. Partially filled cavities will not comply.

Building Services

Services have been specified to maximise efficiency therefore reducing energy used. Table 3.4 shows the proposed services strategy and energy efficiency measures for the development.

Services Component	Residential Specification
Heating distribution & water storage	Radiators & Underfloor Heating 210L hot water cylinder Measured Loss: 2kwh\day
Cooling	-
Heating Controls	Time and temperature zone control
Ventilation	Balanced Mechanical Ventilation with Heat Recovery SFP 0.6 89% Efficiency
Lighting & Controls	100% Low energy lighting

Table 3.4 Proposed energy efficient design measure

3.3 Be Green

Renewable systems

Individual Air Source Heat Pumps (ASHP) have been identified as the most appropriate technology for the development.

System	Residential Specification
ASHP	Individual Air Source Heat Pump (ASHP) system providing 100% of heat and hot water 11.2kW Space Heating Efficiency 283% Water Heating Efficiency 172%

Table 3.5 Proposed LZC specifications

ASHP System

The specified heat pump will need to be taken from the SAP appendix Q database to allow the correct efficiencies to be applied. For the purposes of this preliminary assessment, we have used the Mitsubishi Ecodan 11.2kW heat pump.

3.4 Energy and Carbon Savings

Energy Use

The breakdown of carbon and energy use has been identified for the site. Table 3.6 shows the breakdown of carbon and energy use for regulated energy uses once the strategies proposed in this report are incorporated.

Electricity (kWh/yr)				Total	Electricity CO ₂ (kg/yr)
Space Heating	Hot Water	Pumps & Fans	Lighting		
3,079	7,516	722	997	12,313	1,784

Table 3.6 Estimated regulated energy demand and carbon emissions per energy source

Carbon Savings

Table 3.7 demonstrates the percentage improvement in emission reduction over the notional baseline levels for the development considering only regulated energy use and associated emissions.

	CO ₂ Emissions (T/yr)	CO ₂ Savings (T/yr)	% Saving
Building Regulations 2021 Baseline	4.55		
Proposed Building	1.78	2.77	60.82%

Table 3.7 Regulated emissions improvements over Part L

The SAP calculations also confirm that the proposed development performs above the Fabric Energy Efficiency (TFEE), Primary Energy Rate (TPER) and Emission Rate (TER) targets. This is outlined in Table 3.8.

Dwelling Fabric Energy Efficiency Improvement Over the TFEE	Dwelling Primary Energy Rate over the TPER	Dwelling Emission Rate over the TER
4.08%	21.41%	60.82%

Table 3.8 performance of the proposed development over the TFEE, TPER and TER

3.5 Water efficiency

Water fittings will be specified with the following or similar flow rates to meet the target water consumption of 105L/Person/Day in line with London plan and London Borough of Haringey 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

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

3.6 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.

Taking into account embodied carbon, where possible, low life cycle cost items will be selected. However, other factors, such as site restriction, cost and aesthetic preferences are considered when making design choices.

3.7 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 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.

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

3.8 Nature Conservation and Biodiversity

The site is occupied by an existing building and minimal vegetation and is considered to be of low suitability for nesting birds and bats. Care will be taken during construction to avoid damage to existing trees. Measures will be taken during construction to minimise impact on ecology by timing works appropriately and following best practice guidance. Landscaping and native planting will be incorporated into the scheme. Urban greening opportunities will be maximised where possible to the rear and front of the proposed development.

3.9 Climate Change Adaptation

Tackling Increased Temperature and Drought

Windows will incorporate low emissivity coatings to reduce solar gain. Other than mandatory ventilation to meet AD Part F, the development utilises a mechanical ventilation system.

Flooding

Surface water drainage strategies will ensure that the peak and volume of surface water run-off rates will not be increased due to the development, as the site is already occupied by an existing building. The site is in flood zone 1 so the building is not at risk of flooding.

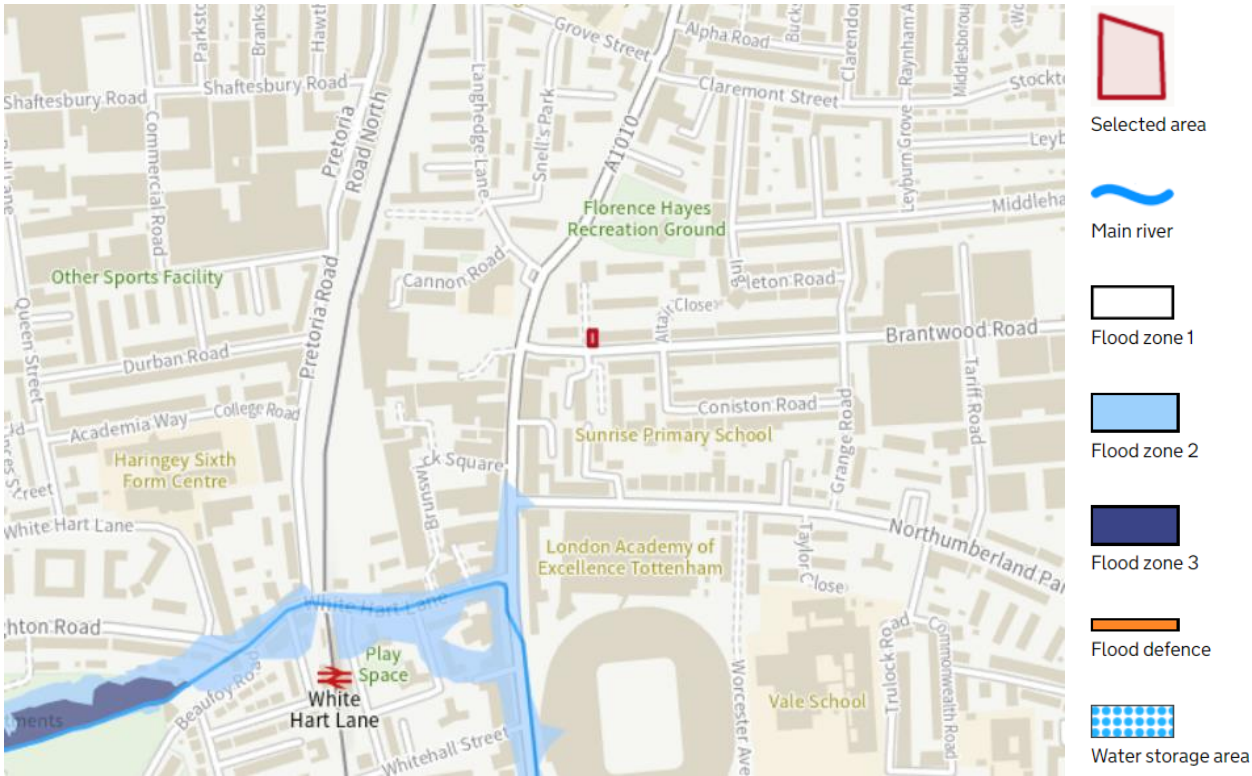


Figure 3.1 7 Brantwood Road Flood Risk Map

3.10 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 dwellings will comply with Building Regulations Part E providing a good level of sound insulation. All windows are to be specified as high efficiency triple 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. As the proposed building use is residential; there will be no illuminated signage or up lighting 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

This sustainability statement has been prepared for the development at 7 Brantwood Road. The development consists of the demolition of existing structures, and the erection of a 3 storey residential building. The building contains 4 single storey flats and 1 duplex unit, refuse and recycling storage and cycle parking.

The development follows the energy hierarchy, incorporating passive design measures and energy efficient equipment. The development employs an efficient building fabric and highly efficient glazing and efficient electric ASHPs to maximise carbon savings for the site, resulting in a 61% saving over the Target Emissions Rate. Measures are also incorporated to minimise pollution and reduce water use. The development complies with sustainability policy of the London Borough of Haringey 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.