Warren Court

Energy & Sustainability Statement

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Warren Court
Tottenham Court Road
London
NW1 3AA

Sustainability and Energy Statement

For

Warren Court Investments LLP

17/04/2020

Revision 1.1

Project 6725

Executive Summary

This sustainability and energy statement has been prepared on behalf of Warren Court Investments LLP for the proposed development at Warren Court, Tottenham Court Road, London, NW1 3AA.

The proposed scheme is for the replacement of the existing 6th floor to create four residential units, three one-bedroom studio flats and one two-bedroom flat.

This document demonstrates that the current London Plan and Camden Council planning policies relevant to sustainable design and energy will be addressed by the proposed development in a structured and comprehensive manner.

Furthermore, the emerging London Plan, The London Plan – Intend to Publish version December 2019, has been similarly considered and addressed. In particular, the key issues of air quality, climate change and zero-carbon development are addressed by an entirely electric energy strategy derived through the use of low carbon passive design features to minimise heat gains and losses, and active design features such as a high efficiency air source heat pumps for hot water and comfort cooling, and direct electric space heating. Complemented further by renewable energy use being maximised through the incorporation on PV panels on the roof alongside areas of brown / green roof where possible, and hard landscaping materials to minimise contribution the heat island effect.

In accordance with Camden Local Plan policies CC1, CC2, CC3, CC4 , CC5 and Camden Planning Guidance: Energy efficiency and adaptation, an abridged statement demonstrating the overall energy performance and outline design features has been provided due to the small scale of this development.

Section 1.0 of this document presents how the development will implement the sustainable design principles as noted in the Camden policy. In particular, it demonstrates the development is capable of achieving a maximum internal water use of 105 litres per day (plus an additional 5 litres for external water use).

Section 2.0 of this document presents an energy strategy to achieve:

- A 80% improvement over the associated emission rate for Building Regulations Part L 2013 compliance using SAP 10 software
- At least a B rated EPC score for each apartment using SAP 10 software

This document should be read in conjunction with the Design and Access Statement for further description of the existing site and proposed development.

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Revision Table

This report has been checked in accordance with Ferguson Brown's internal quality assurance procedures.

Issue	Rev	Prepared by	Approved by	Description	Issued
1	0	Damian Poyzer	Ken Crawford	Sustainability and Energy Statement	26/03/2020
1	1	Damian Poyzer	-	Sustainability and Energy Statement reissue addressing NJ comments	17/04/20 20

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1.0 Proposed Sustainable Design and Construction

The proposed development seeks to maximise the use of sustainable design and construction principles, including (but not limited to) those outlined in Camden Planning Guidance: Energy efficiency and adaptation, appropriate to the scale and nature of the site.

It meets the objectives of the current London Plan and the emerging London Plan, The London Plan – Intend to Publish version December 2019.

This is achieved through the following measures.

1.1 Management

Commissioning of building services will be carried out in a co-ordinated and comprehensive manner, thus ensuring optimum performance under actual occupancy conditions.

Responsible construction site practices that are environmentally and socially considerate and accountable will be committed to through certification with Considerate Constructors Scheme, and a site monitoring regime.

Home user guides will be provided for residents so that they can understand and operate the homes efficiently.

1.2 Health and Well being

The quality of light available to the apartments has been maximised by insertion of centralised services and utility spaces close to the building's core to allow for bedroom, kitchen and living areas to take full advantage of the remaining floor space while also maximising daylight into the apartments.

The design will comply with statutory requirements, British Standards and Part M of the Building Regulations.

1.3 Energy

Details of the energy strategy are given in section 2 Energy Strategy, it seeks to minimise operational energy demand, consumption and associated carbon dioxide emissions. In particular, the use of low carbon passive design features to minimise heat gains and losses, and active design features such as a high efficiency air source heat pumps for hot water and comfort cooling, and direct electric space heating.

On site renewable energy use is maximised through the incorporation on PV panels for each unit.

The scheme avoids internal overheating and contributing to the urban heat island effect through design features and controls selected to maintain a thermally comfortable and efficient environment for occupants.

Energy sub-metering will be provided to enable monitoring of operational energy consumption and on-going management.

1.4 Climate Change

The Site is located within Flood Zone 1, which benefits from a low probability of flooding.

The development will not increase existing surface water run-off rates, seeking to reduce the surface water run-off rates with planting, rainwater storage for external use, and brown/ green roof areas.

The roof will incorporate areas of brown / green roof where possible, and hard landscaping materials to minimise contribution the heat island effect.

1.5 Water

Each residential unit will be specified with reduced water consumption sanitary fittings to meet the requirement for a maximum internal water use threshold of 105 litres / person / day (plus an additional 5 litres for external water use). The indicative water efficiency sanitary fittings performance specification to achieve this is as follows.

- WC: 4 / 2.6 litre dual flush
- Taps (excluding kitchen and external taps): flow rate 5 litres / minute
- Bath: 200 litre capacity to overflow
- Shower: 8 litres / minute flow rate
- Kitchen sink taps: 5 litres / minute flow rate
- Washing machine: 60 litres / kg
- Dishwasher: 4.5 litres / person / day
- Water softener: non specified

In accordance with the Code for Sustainable Homes and Building Regulations 17.K calculation methodology the above performance specification achieves an overall consumption level of 103.9 litres / person / day.

In addition; any external use fittings will be specified to comply with the maximum external water use threshold of 5 litres / person /day.

A level of sub-metering will be specified to facilitate the monitoring of operational water consumption.

1.6 Transport

The site has excellent connections to public transport, and has the highest available Public Transport Accessibility Level (PTAL) 6b. The development sits directly above Warren Street underground station and in the near vicinity including Euston Square and Euston, providing regular services along the Hammersmith & City, Metropolitan and Circle lines; and London Overground and London Midland lines.

There are benefits from excellent pedestrian links with an established network of footways and footpaths surrounding the site. A large number of facilities are accessible within 15 minutes' walk, including local convenience stores restaurants, health care facilities, sports and leisure facilities and schools.

The site is on the edge of the Central London Congestion Zone for which there is an access charge on week days from 07.00 to18. 00.

The proposal does not provide any on-site car parking facility and will provide necessary legal agreement to secure car-free housing for the residential units.

1.7 Materials

The proposed scheme is an extension to an existing building; it will refurbish a proportion of the existing build elements, with facades cleaned and repaired to achieve visual continuity across all levels.

The new build material will be specified to achieve a BRE A / A+ Green Guide rating, with a purchasing policy priority for responsibly sourced products with low environmental and health impact performance.

1.8 Waste

The project will prioritise the reduction, re-use and recycling of materials. In line with the waste Hierarchy set out in Camden policy CC5 Waste.

Construction site waste will be minimised and quantities monitored.

The residential units will allow for internal storage space for operational domestic recycling volumes in accordance with best practice.

1.9 Pollution

The Environmental Noise Survey Report 15/0688/R1 provided for the proposed development sets suitable noise limits to apply at the nearby premises in accordance with Policy A4 of the London Borough of Camden's Local Plan 2017. Plant and equipment will be specified to meet the set noise limits, with attenuation measures incorporated where necessary.

In accordance with the Air Quality Assessment, April 2020, provided for the proposed development, a package of mitigation measures to minimise dust emissions during construction will be applied, with any residual effects expected to be 'not significant'. The Air Quality Assessment also concludes that the proposed four new flats will experience acceptable levels of air quality due to their elevated position on the 6th floor.

1.10 Biodiversity

The roof will incorporate brown / green areas where possible to encourage habitat creation which, in turn will increase the ecological value of the existing site.

2.0 Energy Statement

The proposed energy strategy has been developed in accordance with the London Plan 2016 and Camden Local Plan 2107 policies CC1, CC2 and CC4, and the associated planning guidance documents. Furthermore, the principles of the emerging London Plan, The London Plan – Intend to Publish version December 2019, have been addressed, in particular those outlined under Policy SI 1 Improving air quality, Policy SI 2 Minimising greenhouse gas emissions, and Policy SI 4 Managing heat risk.

The energy hierarchy of "Be lean, Be clean, Be green and Be seen" has been applied to implement climate change mitigation measures to the scheme's design that are appropriate to the development. As the proposed development is for four residential units with floor area totalling under 500 sqm, an overall emissions reduction figure has been provided rather than calculations at each stage of the hierarchy.

2.1 Regulated Carbon Dioxide Emissions

The overall emissions have been calculated for each dwelling in line with Building Regulations 2013 Part L1a with SAP 10 software by Stroma FSAP 2012 program.

The overall regulated carbon dioxide emissions and savings achieved in relation to Building Regulations Part L1A compliance and the Camden CC1 policy are illustrated below in Tables 1 and 2.

Table 1: Overall Carbon Dioxide Emissions

	Regulated Carbon Dioxide Emissions (Tonnes CO_2 per annum)
Baseline: Building Regulations 2013 Part L1a Compliant	3.56
Final solution (Lean, Clean and Green)	0.73

Table 2: Overall Regulated Carbon Dioxide Emission Savings

	Regulated Carbon Dioxide Emissions Savings	
	Tonnes CO_2 per annum	%
Total Cumulative Savings compared to base case	2.86	80.56

2.1.1 Unregulated Carbon Dioxide Emissions

Emissions associated with unregulated energy use, such as cooking and appliances, are omitted by the Part L calculations. It has been assumed that unregulated emissions remain the same for all stages of the energy hierarchy. However, the provision of a Home User Guide / User Manual for occupants of the development will provide a means of encouraging more energy-efficient behaviour, and the specification of user-friendly controls to the building services will enable this. The effect of these measures will only be determined upon occupation of the building and will depend on occupant behaviour.

2.2 Low Carbon Design

The design parameters and resulting carbon dioxide emission values are demonstrated in Appendix 2: Draft EPCs.

2.2.1 Be Lean – Use Less Energy

The first step in pursuing low carbon design under the energy hierarchy is to minimise the scheme's energy demand. This is achieved both by passive measures and the introduction of more energy efficient services. These measures will help the effectiveness of the measures implemented at the subsequent 'be clean' and 'be green' stages.

Design measures at this stage have been selected with consideration to:

- maximising the potential of the building to satisfy market expectations (balancing of scope of works with value to create the optimal specification);
- achieving acceptable environmental comfort conditions, occupant wellbeing and buildability whilst avoiding unnecessary costs of construction, and;
- Improving building thermal performance.

2.2.2 Lighting

The specification of low energy lighting will be maximised internally and externally and, where appropriate, automatic lighting control systems that provide both occupancy and daylight control will be incorporated.

Within the confines of the existing structure the room layouts and glazing dimensions / type will be designed to optimise the balance between the requirement for a high level of day lighting to reduce dependency on electric lighting and the requirement for a low amount of glazing to reduce heat loss.

2.2.3 Heating, Ventilation and Cooling

The new dwellings will have independent buildings services, and will be entirely separate to the existing gas based site heating network. The proposed electrical heating and cooling systems for each dwelling will provide an highly efficient solution that utilises the modern air source heat pump technology, and the potential for site based renewable energy generation from PV panels.

The direct electrical space heating will be activated based on timer and occupant requirements. The detailed design will determine whether the space heating distribution system will be underfloor and/ or wall mounted emitters.

The development is within the Camden Air Quality Management Area (AQMA), therefore, treated fresh air will be supplied to all living rooms and bedrooms. Kitchen

cooking space will be provided with re-circulating extract canopies with cleanable filter cassettes.

The ventilation systems with will specified with low specific fan powers and heat recovery, in accordance with:

Mechanical Variable fresh air rate according to Part F

Heat recovery	95% eff.
Specific Fan Power	0.96 W / l s

Additionally, purge ventilation will be provided by openable windows.

The design demand for mechanical cooling has been reduced as far as is practical for this scheme through the minimisation of heat gains. Mechanical cooling has been incorporated due to the proximity of the air vents of the below tube station and to ensure comfort levels required for residential units will be satisfactory during operation.

The incorporation of mechanical ventilation and cooling will ensure overheating of areas does not occur. The cooling provision will be provided by high efficiency air source heat pumps, see section 2.1.5 Be Green.

2.2.4 Be Clean - Supply Energy Efficiently

The next step in the Energy Hierarchy is to investigate the opportunity for the efficient supply of energy to the development using decentralised combined heat and power (CHP) technology in line with Policy 5.6 of the London Plan. This is not considered applicable to this development due to its scale and the application of a highly efficient electric based solution.

2.2.5 Be Green

The final stage of the energy hierarchy is the consideration of the green energy technologies feasible. As a result of a site specific analysis of all green energy technologies, the green energy technology considered feasible for the scheme is Photovoltaic Panels (PV) and air source heat pumps for water heating and cooling.

Each dwelling will have an independent PV generated electrical supply averaging approx. 3 kWp.

Two separate pieces of air source heat pump technology will be incorporated into the water heating system, and the comfort cooling units. These have both been selected with high performance efficiencies, with datasheets for each provided in Appendix 3: ASHP Datasheets.

2.2.6 Be Seen

Energy sub-metering will be provided to enable monitoring of operational energy consumption and on-going management.

The provision of a Home User Guide / User Manual for occupants of the development will provide an explanation of user-friendly controls to the building services and encourage more energy-efficient behaviour.

3.0 Conclusion

The proposed development seeks to maximise the use of sustainable design and construction principles appropriate to the size and nature of the site.

Low energy building design has been utilised as a matter of course by integrating passive and low carbon active design measures.

The methodology of the London Plan and Camden Planning Guidance: Energy efficiency and adaptation has been followed with the proposed energy strategy achieving:

- A 80 % improvement over the associated emission rate for Part L1a 2013 compliance using SAP 10 software

This exceeds the minimum requirement of the Camden Local Plan and The London Plan (and the emerging London Plan, The London Plan – Intend to Publish version December 2019) for a 19% and 35% improvement over the associated Part L 2013 compliance emission rate respectively.

Key characteristics of the final building services system solution for the energy strategy are summarised in the table below:

M&E Strategy Summary	
Heating	High efficiency direct electric system Metering with out of range values Central time control Optimum start stop Local temperature control
Cooling	Air Source Heat Pump (high COP) Metering with out of range values Central time control Optimum start stop Local temperature control
Ventilation	Filtrated air supply with heat recovery Openable windows for purge ventilation
DHW	High efficiency air source heat pump
Electricity	Grid Supplied + Solar PV
Lighting	Energy efficient (primarily LED) lighting throughout.

4.0 Appendices

Appendix 2: Draft EPCs

Appendix 3: ASHP Datasheet

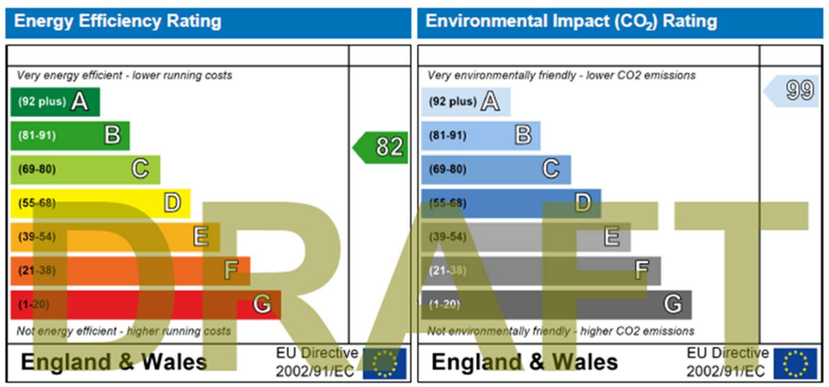
Predicted Energy Assessment

Flat 4
Warren Court
Tottenham Court Road
London
NW1 3AA

Dwelling type: Top floor Flat
Date of assessment: 24 March 2020
Produced by: Stroma Certification
Total floor area: 65 m²

This is a Predicted Energy Assessment for a property which is not yet complete. It includes a predicted energy rating which might not represent the final energy rating of the property on completion. Once the property is completed, an Energy Performance Certificate is required providing information about the energy performance of the completed property.

Energy performance has been assessed using the SAP 2012 methodology and is rated in terms of the energy use per square metre of floor area, energy efficiency based on fuel costs and environmental impact based on carbon dioxide (CO2) emissions.



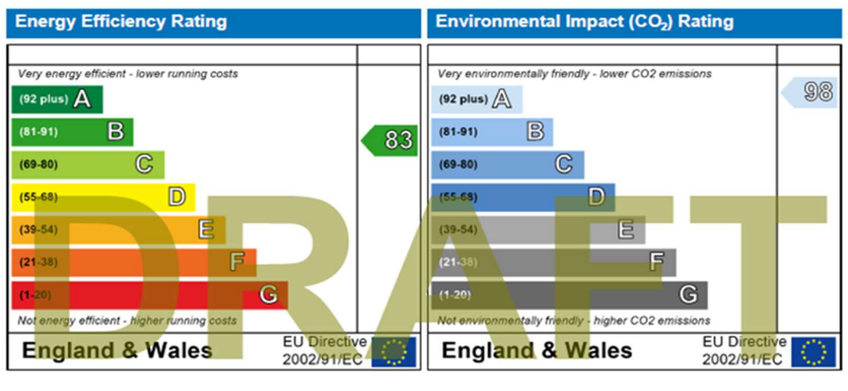
Predicted Energy Assessment

Flat 3
Warren Court
Tottenham Court Road
London
NW1 3AA

Dwelling type: Top floor Flat
Date of assessment: 24 March 2020
Produced by: Stroma Certification
Total floor area: 40 m²

This is a Predicted Energy Assessment for a property which is not yet complete. It includes a predicted energy rating which might not represent the final energy rating of the property on completion. Once the property is completed, an Energy Performance Certificate is required providing information about the energy performance of the completed property.

Energy performance has been assessed using the SAP 2012 methodology and is rated in terms of the energy use per square metre of floor area, energy efficiency based on fuel costs and environmental impact based on carbon dioxide (CO2) emissions.



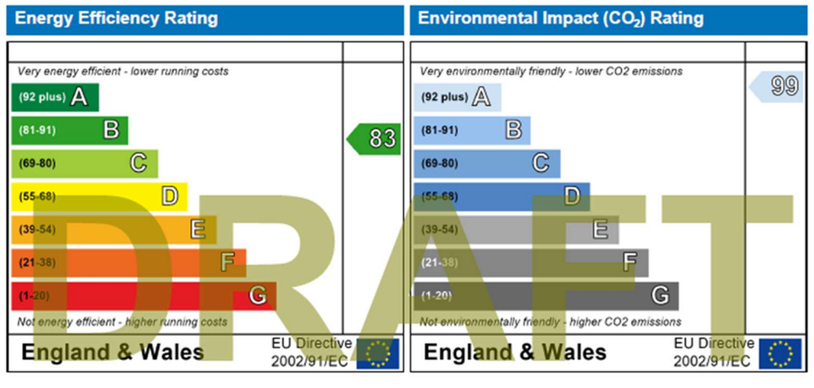
Predicted Energy Assessment

Flat 1
London
Tottenham Court Road
London
NW1 3AA

Dwelling type: Top floor Flat
Date of assessment: 24 March 2020
Produced by: Stroma Certification
Total floor area: 41 m²

This is a Predicted Energy Assessment for a property which is not yet complete. It includes a predicted energy rating which might not represent the final energy rating of the property on completion. Once the property is completed, an Energy Performance Certificate is required providing information about the energy performance of the completed property.

Energy performance has been assessed using the SAP 2012 methodology and is rated in terms of the energy use per square metre of floor area, energy efficiency based on fuel costs and environmental impact based on carbon dioxide (CO2) emissions.



Predicted Energy Assessment

Flat 2
Warren Court
Tottenham Court Road
London
NW1 3AA

Dwelling type: Top floor Flat
Date of assessment: 24 March 2020
Produced by: Stroma Certification
Total floor area: 40 m²

This is a Predicted Energy Assessment for a property which is not yet complete. It includes a predicted energy rating which might not represent the final energy rating of the property on completion. Once the property is completed, an Energy Performance Certificate is required providing information about the energy performance of the completed property.

Energy performance has been assessed using the SAP 2012 methodology and is rated in terms of the energy use per square metre of floor area, energy efficiency based on fuel costs and environmental impact based on carbon dioxide (CO2) emissions.