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Sustainability Report:

Woodlawn Garage, 644 Hanworth Road, Whitton TW4 5NP

Contents Page:

1.0 Introduction

This report has been prepared by Darren Evans Assessments on behalf of Kevin J Turner, to complement the reports previously submitted March 2010. This report represents the sustainability measures that will take place at the development Woodlawn Garage, 644 Hanworth Road Whitton TW4 5NP. The report is designed to meet the requirements of reference DC//10/0245/FUL/FUL.

The site will consist of the demolition of existing buildings and the erection of 2, two story blocks compromising retail and residential.

- 1 Retail unit
- 2 Bedsits
- 8 flats

This report will cover the following:

- Sustainability Statement (Section 2 below)
- Predicted Energy Assessment and Brukl report (Section 3 below + Appendix A)
- Heating and Cooling Systems
- Renewable Energy

2.0 Sustainability Statement

2.1 Site Wide

The site at Woodlawn Garage 644 Hanworth Lane. The Retail Unit will be built to BREEAM Excellent rating with all the flats and bedsits to achieve Code for Sustainable Homes level 3.

These properties will be assessed under the Government designed scheme to reduce carbon emissions and create more sustainable homes.

2.2 Code for Sustainable Homes & BREEAM

The Code and BREEAM is the national standard for the sustainable design and construction of respective residential and commercial property. They both aim to reduce carbon emissions and create more sustainable properties.

> *The Code measures the sustainability of a new home against nine categories of sustainable design, rating the 'whole home' as a complete package. The Code uses a one to six star rating system to communicate the overall sustainability performance of a new home. The Code sets minimum standards for energy and water use at each level and, within England, replaces the EcoHomes scheme, developed by the Building Research Establishment (BRE).*
>
> http://www.communities.gov.uk/planningandbuilding/buildingregulations/legislation/codesustainable/

The Hanworth Road development has been designed and will be built to comply with code Level 3 and BREEAM excellent thus meeting all the requited standards set out. The is at both design and post completion stages of the development

CO2 has a direct environmental impact and is a major greenhouse gas, contributing to climate change. This complies with Richmond planning Policies of 20 % renewable. The following Energy Saving Trust standards can give an indication of the standards achieved under certain CSH levels:

- Level 1: Good Practice Standard – 10% improvement of DER over TER
- Level 3: Best Practice Standard – 25% improvement of DER over TER

Current building regulations standards require that all new dwellings achieve a Design Emissions Rate (DER) at least as good as the Target Emissions Rate (TER) for notional dwelling of the same size to 2006 standards.

Properties constructed at 644 Hanworth will achieve Code for Sustainable Homes Level 3 with commercial retail unit achieving excellent standard. The Retail unit and the flats /bedsits will achieve more than 25% reduction DER v TER.

3.0 Energy Assessment:

3.1 Energy & Carbon Dioxide Emissions:

All dwellings will comply with the Code for Sustainable Homes Level 3 requirement of 25% reduction in DER v TER. The Retail unit is designed to achieve more than 35%. This reduction is achieved in the flats across the site through the use of air source heat pump(s) and photovoltaic (PV) cells. The flats will be utilising PV provision, serving the communal areas to achieve the reduction in emissions required.

This renewable technology is complimented by the projects sustainable deign and construction of the properties. The properties across the site have been designed to produce building envelopes which also contribute to the conservation of heat. This is achieved through efficient build forms utilising high levels of insulation and high build standards to achieve high standards of airtightness.

The U Values used throughout the construction are between 20% - 35% better than those required under Part L1A/B of current building regulations across various heat loss construction elements. These U Values have been achieved using high performance insulation which is environmentally friendly.

The site wide target for airtightness is a score as low as 7.0. This score will be achieved following a programme of airtightness testing as the construction phases draw to a close. Achieving this score through airtightness testing highlights that the properties will have been constructed in a robust fashion to conserve heat and power whilst at the same time allowing the units to benefit from natural ventilation rather than require mechanical ventilation systems to be installed.

All external lighting across the scheme will be provided as dedicated low energy ensuring that replacement bulbs will have to comply with the low energy requirements of the code for sustainable homes. All external lighting will also be provided using PIR / daylight sensors to ensure lights are used when required and to minimise energy wastage.

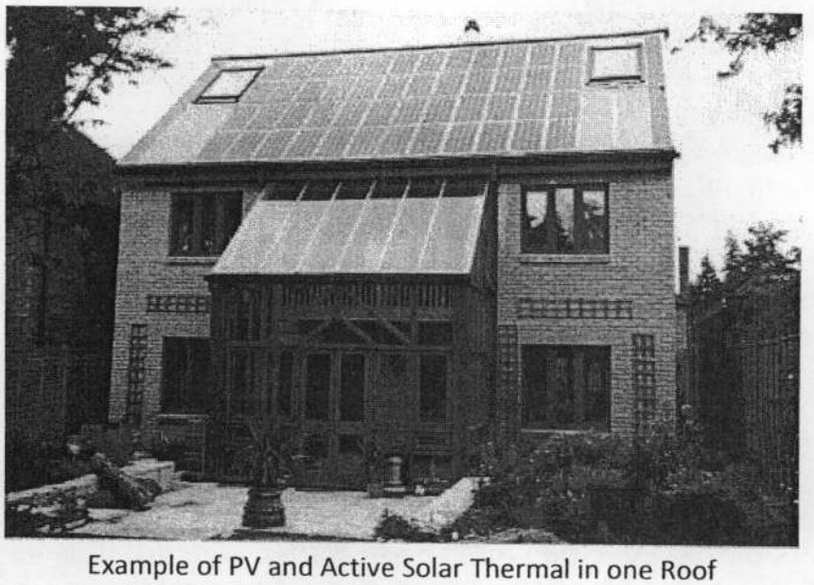
Internal lighting will be provided throughout the scheme to ensure that each plot has at least 75% dedicated low energy lighting. The definition of this provision is as follows:

> *The fitting must be dedicated in that it must be capable of only accepting lamps having a luminous efficacy greater than 40 lumens per circuit Watt. The fixing must be permanently fixed to the ceiling or wall.*
>
> CSH Technical Manual May 2009 P.60

This will ensure that replacement lighting will also be low energy.

Internal drying provision has been made within the flats to provide all occupants with the opportunity to dry clothes naturally rather than using a tumble dryer.

PV cells have been chosen for use to reduce carbon emissions as already stated. Using photovoltaic's in the flats throughout the site will not directly benefit the occupants of the dwellings as the electricity from the PV cells will serve the communal areas of the buildings, however, this will lead to an overall reduction in energy required to maintain an attractive and safe housing environment, site wide.



Example of PV and Active Solar Thermal in one Roof
(This building is not related to 644 Hanworth)

Solar photovoltaic panels are semi-conductor panels that convert light directly into electricity. Put very simply, when light falls on the front of the panels, dc power is generated and flows out of the wires at the back of the panels. This dc power is then normally passed through an inverter which converts it into ac power which can be used to power the normal range of domestic appliances or exported to the local electricity network.

PV panels are available nowadays in a range of different formats. These vary from the traditional aluminium framed modules to products designed specifically for integration into buildings, such as roof tiles, roof mounted systems, atrium/conservatory roof systems using semi-transparent PV panels and façade systems using large area panels.

The key advantages of photovoltaic's are that:

- They can be integrated into buildings so that no extra land area is required
- They can be used in a variety of ways architecturally ranging from the visually unobtrusive to clear expressions of the solar nature of the building
- They are modular in nature so that any size of system can be installed

Cycle storage provision is made across the site making cycling a practical alternative to driving over short distances.

3.2 Internal Potable Water

> *The Government's strategy for Water in the UK, set out in Defra's 'Future Water' publication sets out the Government's aim to reduce water consumption to 130 litres per person per day by 2030 and possibly to 120 litres per person per day depending upon new technological development and innovation.*
>
> CSH Technical Manual May 2009 P.103

The provision of internal water fixtures and fittings across the site ensures that each unit has an internal water consumption figure lower than the Governments 2030 target of 120 litres per person per day. The scheme achieves across all plots an internal water consumption figure of less than 105 litres per person per day through the utilisation of efficient internal fixtures which reduce water wastage.

The scheme could also utilise water butts to collect and use water externally.

3.3 Materials

All construction elements (walls, floors, roofs, windows) have been assessed against the BRE Green guide. This assessment measures the environmental impact of the construction materials used and awards a score from A+ to E, with A+ having the lowest overall environmental impact. The CSH requires that 5 of the construction elements assessed are D rated or above. The development will surpass the requirements of the CSH under this section and uses many construction elements which are B to A+ rated.

The scheme also only uses timber that is PEFC or FSC certified.

3.4 Waste

Significant reductions in construction waste are sought to be made though the use of a site wide Site Waste Management Plan (SWMP). These reductions in waste are sought through management on waste produced throughout the construction process, achieved through good design, improved logistics, better on-site construction practices and re-use / recycling of materials wherever possible.

3.5 Pollution

The scheme is also still utilising insulation materials which have a Global Warming Potential (GWP) less than 5, thus using materials which contribute less to further global warming.

3.6 Health & Wellbeing

Sound testing will be undertaken across the scheme and standards above those currently outlined under Part E building regulations will be achieved as previous outlined in the earlier sustainability report.

All properties have also been designed to maximise natural daylight within the homes and retail unit helping to create an environment which facilitates a home & working environment.

> *In addition to reducing the need for artificial lighting and in some cases contributing to winter heating requirements, research has shown that the main impact of good daylighting design is on human beings. Adequate access to daylight will contribute to the health and wellbeing of dwelling occupants by providing them with a pleasant living environment.*
>
> CSH Technical Manual May 2009 P.200

3.7 Management

Home user guides will be provided for all occupants outlining how people can get the best from their homes and also how to sustainability interact with their local environment and amenities. This scheme will be providing all properties with home user guides, which will highlight to all occupants where the local bus, train, transport facilities, doctor surgeries, schools, local authority recycling centre, police stations etc within the local area. Providing this information conveniently for all occupants provides a real alternative to travelling by car and what facilities available within the area. The home user guides will also enable occupants to be better educated as to how they can more efficiently live within their home and environment, thus reducing resource waste and improving the satisfaction of those that live on site.

The site will be registered under the Considerate Constructors Scheme and is currently on target to achieve a SIGNIFICANTLY BEYOND BEST PRACTICE score at present.
The site also operates construction practices which monitor and report on the activities undertaken as part of the construction process. The site will also be secured by design: Section 2 complaint.

3.8 Ecology

The site will undertake an ecological assessment to ensure that the ecology of the site post development is not affected and that the construction work which will have taken place would have enhanced the diverse ecology of the area. The site is also protecting those features of ecological value during the construction process.

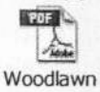
3.9 Code for Sustainable Homes & BREEAM Assessment

The site is operating a 2 stage assessment process. The first stage gathers design stage evidence and commitments to prove justify that the project can and will achieve the required levels outlined if it performs in accordance with the requirements and activities discussed and agreed during this process.
These design stage reports are then submitted to a BRE approved body for Quality Assurance and a design stage assessment certificate is issued for each plot that complies with the requirements.

The second stage of the assessment is completed towards the end of the construction process which seeks to confirm that the commitments given at the design stage have been followed through and that the project achieves the required standards to achieve CSH post construction certificates.

4.0 Appendix

4.1 Appendix A:


Woodlawn Garage_brukl.pdf


Pre assessment Woodlawn CSH


Pre Assessment BREEAM Retail