22 MERLIN ROAD, OXFORD, OX4 6EP

ERECTION OF TWO STOREY SIDE EXTENSION TO CREATE 1 X 2-BED DWELLINGHOUSE (USE CLASS C3). PROVISION OF NEW VEHICLE ACCESS WITH CAR PARKING, PRIVATE AMENITY SPACE , BIN AND CYCLE STORE. ERECTION OF A PART SINGLE, PART TWO STOREY REAR EXTENSION TO EXISTING DWELLING.

ENERGY STATEMENT

JAN 2024

Introduction

This is a temporary document which is being provided on the basis that a full "calculation-based report" is being prepared and will be provided to the case offcier as soon as it is complete.

The proposal has been designed to meet current Building Regulations in terms of thermal insulation, providing good natural lighting and natural ventilation. By the adoption of these principles, heating demand and consequently the size of the heat source will be minimised.

Indicative locaiton for ASHP & Photovoltaic panels have been shown on **Proposed Plan_003**

Where possible, sustainably sourced materials will be employed for the construction of new works. Energy consumption will be minimised by employing measures that include: high performance glazing; high levels of insulation to floors, walls and roofs, and energy efficient

Limiting U-values for new fabric elements and air permeability in new dwellings:

Element type	Maximum U-value W/(m²·K)
All roof types	0.16
Wall	0.26
Floor	0.18
Party wall	0.20
Swimming pool basin	0.25
Window	1.6
Rooflight	2.2
Doors (including glazed doors)	1.6
Air permeability	8.0m³/(h·m²) @ 50Pa 1.57m³/(h·m²) @ 4Pa

Thermal Bridging:

Improving the thermal bridge constructive details can have a great impact on the heat loss of the development, in some cases using enhanced details can make as much as a 27% improvement on fabric alone.

Additional improvements to thermal performance can be achieved by ensuring good practice airtightness targets are achieved. Simple measures like sealing around services (e.g. water, gas and cables), using proprietary seals and collars, ensuring blockwork is sealed and parging layer/plaster finish is applied to external walls before erecting studwork for internal partitions will all improve air tightness results.

Energy hierarchy through design

The proposal will be executed according to this methodology (as recommended by CIBSE). It has three stages of priority, seeking to reduce energy use through the cleanest possible solutions.

- Be Lean - Reducing energy needs through improved design and construction.
- Be Clean - Supply energy efficiently through the use of decentralised energy where feasible.
- Be Green - Further reduce CO2 emissions through the use of on-site renewable sources, where practical.

As this hierarchy demonstrates, designing out energy use is weighted more than the generation of low-carbon or renewable energy to offset unnecessary demand. Applied to the development of new housing, this approach is referred to as 'fabric first' and concentrates finance and efforts on improving U-values, reducing thermal bridging, improving airtightness and installing energy efficient ventilation and heating services.

This approach has been widely supported by industry and government for some time, with previous reports from Zero Carbon Hub [1] and Energy Saving Trust [2] having both stressed the importance of prioritising energy demand as a key factor in delivering resilient, low energy homes.

Minimal ongoing maintenance / replacement costs

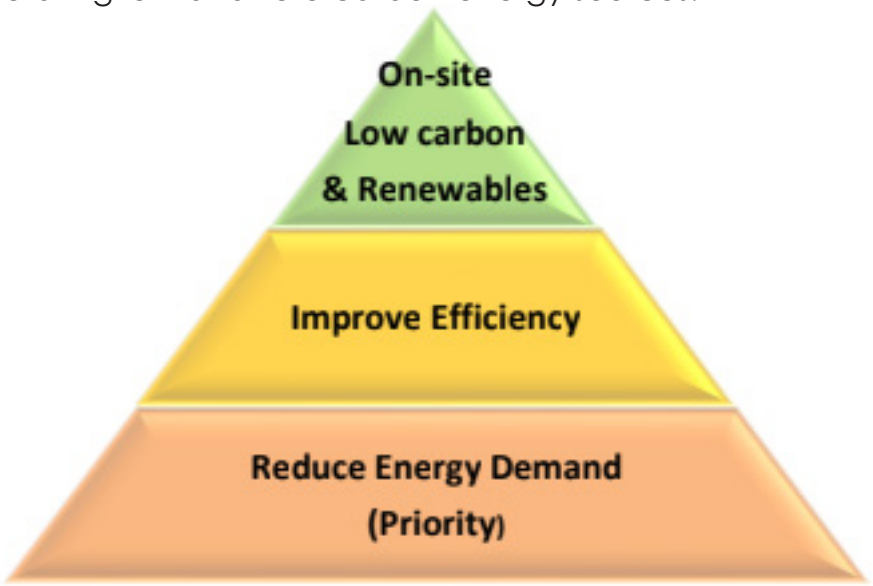
Further to the above methodology, we have also looked at other steps towards achieving a low carbon solution, including:

- The incorporation of passive design solutions by considering the dwellings orientation and layout solutions;

- The incorporation of energy efficiency measures through the design of services and improved fabric performance;

- Calculation of the predicted design energy consumption rates and associated annual CO2 emissions in comparison with a 'baseline' building (using Part L Regulations compliance standards) to include both regulated and un-regulated energy use;

- Assessment of the viability of incorporating low and zero carbon energy sources.



Active design measures

High efficacy & low energy lighting
Where artificial lighting will be needed it will low energy lighting without compensating for luminance, and will accommodate LED.

Water Proposals for new residential development are to meet the higher water efficiency standard within Building Regulations Part G2 of water consumption target of 110 litres per person per day. The Building Regulations regulation requirement, 110 litres/ person is recommended for a new development within the Oxford area. This can be achieved by applying various water efficiency and reclamation / recycling measures. Appendix G of this report shows a model water calculation has been provided as a guide on how this dwelling should achieve this standard.

Water Efficiency Measures

The following measures can be used to reduce the quantity of water demand to satisfy end users:

Dual or low flush WCs
Spray or aerating taps
Water efficient appliances
Low flow showers
Smaller size bath
Water Reclamation / Recycling Measures

Rainwater collection

Water collected from roofs or hard surfaces such as car parks can be harvested for storage and use for non-potable uses such as watering gardens and WC flushing.

Controls and Monitoring Advanced lighting and space conditioning controls will be incorporated, specifically:

For areas of infrequent use, occupant sensors will be fitted for lighting, whereas day lit areas will incorporate daylight sensors where appropriate;

Heating and cooling systems controls will comprise time and temperature controls, both centrally for the whole building, and locally for each space;

Smart metering to be installed on all new dwellings for adequate monitoring;