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ENERGY STATEMENT

Development at Warren Creek, The Warren, Caversham, Reading RG4 7TQ.

On behalf of Mr R Arnold

October 2024



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Introduction

The Energy Statement provides a clear assessment of the proposed development's overall energy requirements and subsequent CO2 emissions. The proposed development at Warren Creek is for the demolition of an existing dwelling and outbuildings, and erection of one 4-bed detached dwelling and Garage.

Options for the building fabric, services and renewable energy systems have been considered considering the future direction of national Building Regulation standards, best practice, and Government Climate Change targets. As a result, it is proposed that the development will be constructed to outperform the current Part L building regulation standards and the proposal is to be carbon negative.

Energy Strategy

The energy hierarchy sets out the key elements that should form an energy strategy for any new building, in order of their priority. Reducing energy demand is at the top of the hierarchy. Followed by supplying energy efficiently, finally supplying energy from renewable energy sources. In line with best practice, the energy strategy for the proposed development has been set out in accordance with the structure of the energy hierarchy. The Energy hierarchy has three priorities, seeking to reduce energy use before meeting remaining demand by the leanest means:

1. Be Lean – Use less energy: Optimise the building fabric, glazing and structure to minimise energy consumption in the first instance by using low U-values and good air tightness plus ensure that active systems run as energy efficiently as possible.
2. Be Clean – Supply energy efficiency: Further reduce carbon emissions through the use of decentralised energy where feasible, such as combined heat and power (CHP).
3. Be Green – Use renewable energy: When the above design elements have been reasonably exhausted, supply energy through renewable sources where practical.

BE LEAN:

Minimising the requirement for energy is the first step that should be considered. The rate at which energy is lost from a building greatly influences the annual heat load, and therefore the CO2 emissions



and energy requirements of that building. Energy requirements for hot water applications are essentially independent of improvements to the building's fabric efficiency as these are functions of occupancy and usage rather than rate of heat loss. The main areas where the efficiency of the proposed building is improved are detailed below.

Building Element	Proposed Development	Part L Limiting Parameters
Wall	0.14 W/m ² K	0.18 W/m ² K
Roof	0.11 W/m ² K	0.11 W/m ² K
Floors	0.13 W/m ² K	0.13 W/m ² K
Windows	0.8 W/m ² K	1.2 W/m ² K

Thermal Bridging - Accredited Construction Details provide the continuity of insulation and therefore apply a significant improvement factor on the energy performance of a dwelling

Air tightness – Designed air permeability of 4.0 m³/hm² (@50Pa)

BE CLEAN:

The building has been designed to minimise environmental impact where possible with a palette of low maintenance materials eliminating the need for harmful stains and varnishes. The water consumption of the property will be reduced through low-flow fixtures.

BE GREEN:

Heating and Controls – Air Source Heat Pump will be used as a highly efficient heating system in conjunction with underfloor heating systems and radiators. Energy monitoring and management systems can be used to track usage and identify opportunities for optimisation.

Solar Panels: 8kWh photovoltaic system is proposed to be installed on the roof with battery storage to retain excess electricity, this will reduce the properties dependency on fossil fuels, minimise its carbon footprint and achieve a zero carbon home.

SUMMARY OF OUTLINE PERFORMANCE

Unit	DER	TER	% Improvement
Detached Dwelling	0.53 kgCO ₂ /year/m ²	8.38 kgCO ₂ /year/m ²	93.68%