

# Energy Statement Revision B

To be read in conjunction with the Sustainable Development Statement, Drawing No's 24/SCOURS/01, 02, 03, 04, 05, 06, 07, 08, 09, and 10.

Change of use from commercial (with ancillary residential) to C3 residential use. Demolition of existing bungalow and erection of a 4 bed detached house and associated works and retrospective siting of 2 bed mobile home. 'Riverview Manor', Scours Lane, Tilehurst, Reading, Berkshire, RG30 6AX on behalf of Mr M. Coffey.

## **Reading Borough Sustainable Design and Construction Supplementary Planning Document (SPD) Adopted December 2019 states:**

*3.1 Applicants need to demonstrate how they will comply with the relevant policies in the Local Plan. This section outlines what information is required to be submitted at the pre-application stage, at application stage, and what aspects might be considered later by condition.*

*3.2 To comply with the relevant policies and standards on energy, a combination of measures including those for energy efficiency, energy conservation and inclusion of renewable or low carbon sources should be considered and factored in from the design stage onwards.*

### **Comment:**

Table 3.1 Required level of sustainability standard for a new-build residential dwelling is classed as Minor (fewer than 10 dwellings) with a required standard of 19% improvement in the dwelling emission rate over the target emission rate, as defined in the 2003 Building Regulations.

However, the intention is to comply with the current 2010 Building Regulation Conservation of Fuel and Power L1A.

This Energy Statement sets out the most suitable and cost-effective solutions to reduce carbon emissions and integrate Low or Zero Carbon (LZC) renewable energy technologies. To clarify how the development, will achieve a reduction in energy usage or CO2 emissions that complies with the minimum standards set out by the local planning authority and which go beyond UK Building Regulations. Thus demonstrating a commitment to achieving a sustainable development.

This Energy Statement is a forward-looking document specific to the planning stage of this development. It details:

- The projected energy consumption of the building.
- The anticipated carbon emissions associated with that energy use.
- Strategies to improve energy efficiency and reduce the building's environmental impact.
- The potential for integrating renewable energy sources.

With stringent building regulations in place to reduce carbon emissions and promote energy efficiency, this Energy Statement serves as evidence that a project complies with national standards such as the 2010 Building Regulations Part LA Conservation

of Fuel and Power in the UK. It details how the development will meet or exceed these regulatory requirements.

This Energy Statements provides a framework for integrating sustainable design principles from the outset. They outline strategies for reducing carbon footprints, utilising renewable energy sources, and minimising environmental impact, aligning the project with broader sustainability objectives. It can play a crucial role in achieving certifications under green building standards such as BREEAM (Building Research Establishment Environmental Assessment Method) or LEED (Leadership in Energy and Environmental Design). These certifications are increasingly sought after for their ability to enhance a building's marketability, value, and appeal to environmentally conscious tenants or buyers.

The main content includes:

1. **Energy Use Analysis:** An assessment of the projected energy consumption of the building or development. It involves calculating the anticipated demand for heating, cooling, lighting, and other operational energy uses based on the building's design and intended use.
2. **Carbon Emissions:** Quantifies the expected carbon emissions associated with the building's energy consumption. Includes both direct emissions (from on-site energy generation) and indirect emissions (from off-site energy production sources).
3. **Renewable Energy Potential:** An assessment of the site's capacity for integrating renewable energy sources, such as solar panels, wind turbines, or biomass heating systems, is provided. This includes a feasibility study considering the site's geographical and environmental characteristics.
4. **Energy Efficiency Measures:** Specific strategies and technologies to reduce energy consumption and enhance the building's overall energy performance. Recommendations might include high-efficiency HVAC systems, enhanced insulation, energy-efficient lighting, and smart building controls.
5. **Sustainability and Low-Carbon Technologies:** Beyond conventional energy-saving measures, this part explores the potential application of innovative low-carbon technologies and sustainable building practices. This could encompass water recycling systems, green roofs, and the use of sustainable materials.
6. **Lifecycle Analysis:** Lifecycle carbon analysis, evaluating the environmental impact of the building from construction through to demolition, highlighting areas for potential reduction in carbon footprint over the building's lifespan.

### **Energy/CO<sup>2</sup>.**

The applicant seeks a low impact development. A fabric first approach has been taken which involves maximising the thermal performance of the components and materials that make up the building fabric to reduce heat loss and reduces carbon emissions. The external fabric of the proposed dwelling will reduce heat loss by:

- **Dwelling Emission Rate** – The Applicant will limit CO<sup>2</sup> emissions arising from the operation of the dwellings and their services by ensuring we meet as a minimum Energy Performance Certification SAP rating Band 'B'.

- Construct an Energy Efficient Building – The Applicant is committed to future proofing the energy efficiency of dwelling over their whole life by limiting heat losses across the building envelope. It is believed that the best way of achieving this fabric 1st approach is to meet the minimum requirements as set out within the Building Regulations Approved document L1A.
- Installing a 'Samsung EHS Mono HT' R32 14Kw Quiet Heat Pump heating system powered by innovative noise reducing technologies, the EHS Mono HT Quiet (Quiet Mark Certified) operates at noise levels as low as 35 d(BA), using a 4-step Quiet mode. The heat pump's outdoor unit features a double-layered, sound insulation system fitted with a patented Groove Grid Felt design, which effectively blocks and absorbs noise produced by compression parts and vibrations. System to have zero emissions. Together with 'fastwarm underfloor heating' or similar approved system.
- Installing Energy Saving White Goods , where possible, the Applicant will install white goods that will achieve a minimum 'A' rating.
- Installing internal LED (energy saving) fittings.
- Installing external LED (energy saving) fittings with appropriate control systems, as shown on Drawing No. 24/SCOURS/05, and Item 4.6viii.
- Installing Renewable technology by way of 'Marley SolarTile® roof-integrated solar panel roof tile solution, enhancing roof system specification with design flexibility, sleek aesthetics, industry leading wind and fire performance, to the west and south facing areas of the proposed roof. A battery will be provided to save unused energy
- Controlling the efficient form factor by managing the surface area of the building results in reduced heat loss and therefore less energy consumption for space heating. This is known as the 'form factor'. The lower the form factor the more energy efficient the building is.
- Maximising airtightness, accredited details will be utilised throughout the build to maximise air tightness with a target air change per hour (ACH) of a maximum of  $5\text{m}^3/\text{hr}/\text{m}^3$  . This is well below the Building Regulations maximum requirement of  $10\text{m}^3/\text{hr}/\text{m}^3$ .
- Reducing thermal bridging, accredited details will be utilised throughout the build to reduce thermal bridging at all junctions including floor to wall, wall to wall, wall to roof and at windows, doors and internal partitions.
- Including high levels of insulation, above standard insulation will be specified throughout. The walls have been drawn at 400mm thick which is 100mm thicker than a traditionally constructed masonry wall. This is to allow for substantially increased amounts of insulation. 'U' values will surpass building regulations minimum requirements.
- Including High performance glazing, all windows and doors will be thermally broken units with double glazed, low E glazing to achieve an overall unit U-value of  $1\text{W}/\text{m}^2\text{K}$  or lower.
- Installing 'Velux' or similar approved rooflights and sun tunnels.
- Controlling solar gains and losses through windows, shading and ventilation: The position and size of windows greatly affects both heat loss and heat gain in buildings. The proposal seeks a balance where beneficial heat gains can

enter the space in winter but are shaded in summer where overheating is a concern. To achieve this, the south elevation contains a high proportion of glass that includes shading afforded by the overhang over the glazed gable. In addition, it is envisaged that purge ventilation and internal blinds will play a key role in avoiding overheating. The rooflights and high thermal mass of the building will help to cool the building by allowing cooler air to reduce the temperature of the thermally massive walls and floor at night.

- Installing Mechanical Ventilation with Heat Recovery, MVHR units provide background ventilation by extracting moist warm air from kitchens and bathrooms, exchanging the heat (and thereby saving energy) to incoming cold fresh air, and then supplying the air to the other rooms in the home.

In addition to energy in use, the proposed scheme has been designed to incorporate sustainable materials which are low in embodied carbon including natural insulation materials. The project aims to meet the RIBA 2030 Challenge which sets targets for both Operational Energy and embodied 'whole life' carbon.

Non-fabric of the building approach:

- The development includes the installation of a Sustainable Drainage System (SuDS) consisting of a low carbon footprint 'Advanced Aeration Bio-Bubble' packaged treatment plant to treat all sewage and foul drainage from the dwellings, and a new 'Kingspan Klargestor Envireau Direct' Rainwater Harvester System which will provide the dwelling with grey water to flush toilets, irrigation and landscape watering, garden watering, vehicle washing, and domestic laundry, thereby reducing water consumption by up to 50%. The system achieves the credits that are required for compliance with the Code for Sustainable Homes, and also reduced Private mains water use fulfils Part G 2009 Building Regulations.

The Energy Statement Revision A is prepared and submitted by:  
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