

Proposed Dwelling, Parr Hill, Whitefield

Energy Use and Sustainability

Introduction

This statement has been prepared to support a planning application for the erection of a single dwelling, on a site at the junction of Parr Hill, and Higher Lane , Whitefield

Energy Efficiency and Carbon Reduction

Passive design principles include a high level of insulation and low air permeability to deliver a Part L1A 2021 Building Regulations compliant building in the absence of renewable technologies.

This will achieve a 2.0% reduction in carbon emissions over the statutory baseline values. Photovoltaic panels are proposed and will deliver a further reduction in regulated carbon emissions over Part L1A baseline.

Principle

Global warming is a serious environmental issue affecting the planet. It is primarily, but not wholly, caused by the emission of carbon dioxide into the atmosphere, substantially by the human race.

Substantial legislation has been introduced by Governments to reduce production of greenhouse gases. Developments are required and should contribute to minimising harmful emissions, in accordance with the energy hierarchy:-

1. Be Lean.

Use less energy and manage demand.

2. Be Clean.

Exploit local energy sources and supply energy efficiently and cleanly.

3. Be Green.

Maximise opportunities for renewable energy by producing, storing and using renewable energy on site.

1. Be Lean

The proposals will address these parameters by ensuring that the envelope is better in terms of heat loss than the statutory requirements.

Thermal performance

	Statutory Requirement Design	Adopted Performance
Walls	0.30 W/m ² k	0.1 W/m ² k
Roof	0.20 W/m ² k	0.08 W/m ² k
Floor	0.25 W/m ² k	0.10 W/m ² k
Openings	1.4 W/m ² k	0.8 W/m ² k

Heat demand will be managed by sophisticated control systems.

2. Be Clean

The use of gas has been discounted. We conclude that CO₂ emissions from gas will be substantially higher, contribution to global warming, than the use of clean electricity. Cooking will use clean electricity.

3. Be Green

Photovoltaic solar panels will be included within the construction, with energy storage if this is deemed financially viable.

Typical 'SAP' calculations for this dwelling, based on the preceding information appended to this section of the report.

These include inclusion of photovoltaic panels, and envelope design based upon reduced 'thermal transmittance' values:

They indicate CO₂ emissions 50% better than the statutory requirements.

Water Usage

Sustainability of a development needs to include systems to limit the use of potable water.

The design minimises the use of water and protects the water environment.

It is recognised that an upper limit of 120 litres / person / day is a sustainable target for new developments. This has been obtained by the use of suitable fittings; taps, low volume flush to toilets and showers.

A draft water consumption calculation has been completed, indicating consumption of less than 70 litres / person / day, with appropriate hardware.