

Sustainable Design and Construction Statement

Proposal: Application for a New House

Location: Land Adjacent to Upper Lingah Barn, Baxter Wood, Glusburn, BD20 8BD

Prepared by: Planet Architecture Ltd, Mill Cottage, Ickornshaw, Cowling, BD22 0DB

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This Sustainable Design and Construction report has been prepared to summarise how the proposed development at Upper Lingah Barn will minimise resource and energy consumption compared to the minimum under the current building regulations and how it is located and designed to withstand the longer term impacts of climate change in response to Policy Env3 of the Craven Local Plan 2019.

The project is a three-storey house, therefore, improvements upon the level of the current building regulations are difficult to economically achieve due to the recent increases in building regulations requirements. Beyond the introduction of renewables there is limited scope to improve upon the fabric losses of the proposed building. However, this report summarises the intent to deliver a development that meets the policy aims of the Local Plan as far as is possible with the type of building.

As the building is less than 1000m² formal assessment to BRE should not be required, and therefore no condition requiring a BREEAM Assessment to be certified should be applied.

PLANNING POLICY

The Craven Local Plan was adopted on 12th November 2019. This document sets out the application response to Policy ENV3 Good Design, Specifically section 't' Sustainable design and Construction.

The development seeks to promote sustainable development in terms of the criteria which apply: Daylighting, ventilation, heating, materials, water use, waste, pollution and energy, and reduce the impact of its associated carbon emissions whilst working within the constraints of the Policy summarised below:

Sustainable Design and Construction

t) Sustainability should be designed in, so that development takes all reasonable opportunities to reduce energy use, water use and carbon emissions and to minimise waste, ensure future resilience to a changing climate and wherever possible to generate power through solar or other means, in accordance with Building Regulations. This should include residential, industrial and commercial developments.

SUMMARY OF SUSTAINABILITY AND CLIMATE CHANGE MITIGATION MEASURES

HEATING/ INSULATION

The whole envelope of the proposed house will be insulated to the current building regulations standard for a heated, domestic building.

The new glazing will be of a very high quality and triple glazed where economically justified, and so there will be a net improvement in the overall thermal performance of the building when converted as compared to the current building regulations.

As an addition the heating system will be an Air-Source Heat-Pump connected to an insulated pressurised hot water cylinder supplying the underfloor heating and the domestic hot water.

The electrical demand will be met by the greatest efficiency solar PV available - nominally 4.5kW and stored in a Tesla battery wall for use at night-time.

The heating will be made more efficient by the addition of a Mechanical Ventilation Heat Recovery System which minimises heat loss through ventilation and optimises the pre-heating of fresh air ventilation - further reducing heat losses.

In all the house should be as efficient as possible and may be Passivhaus standard depending upon a pre-completion air test.

DRAINAGE AND FLOOD RISK

The site is outside the flood risk zone. However, it is proposed to use a rainwater harvesting tank if practicable. The tank will act as a rain-water attenuation tank releasing water to a soak-away/ drainage field more slowly in times of high rainfall - regardless of the house being outside a flood risk area.

SUSTAINABLE SOURCING OF MATERIALS

The construction will be random natural stone to match existing, timber cladding and zinc panels, and will be locally sourced to minimise transportation impacts. Materials will be responsibly sourced by the Main Contractor, and will be specified to have as low an embodied impact as is possible/ available. Materials with a low embodied impact as defined within the BRE Green Guide to Specification will be selected for use in the building design and construction. The BRE Green Guide to Specification assesses each building element (such as walls, floors, roof and windows) and assigns an Environmental Impact Rating (from A+ to E). The following Green Guide Ratings should be targeted to ensure the development has a low embodied impact:

Roof A+

External walls A+

Internal walls A

Ground and upper floors A

The construction industry is a major consumer of resources and has a large impact on the sustainability of the UK and the wider world. BRE Global has developed a framework standard for Responsible Sourcing (BES 6001) along with an associated independent third-party certification scheme. This standard and certification scheme will help organisations manage and reduce the impacts throughout the supply chain.

WATER CONSERVATION

The development will minimise water usage of the toilets, bath and basins by limiting projected water usage: achieving a reduction of 25% in the annual water consumption when compared to the minimum level required by the water supply (water fittings) regulations. This will be achieved by following the below example sanitary-ware specification

W/C Dual flush -6 litres (full)/ 4 litres (part)

Taps (excluding kitchen) 7.5 litres per minute

A rain-water harvesting tank will be used for two purposes:

1. The rain water will be used for watering the garden, flushing toilets, washing machine and washing cars, etc.
2. The tank will act as a rain-water attenuation tank releasing water to a soak-away/ drainage field more slowly in times of high rainfall.

CONCLUSION

Due to the relatively small scale the development has limited scope for climate change mitigation measures beyond introducing increased insulation in the building floor, walls and roof and by utilising a sustainable source of heating and electricity. However, these small measures should drastically reduce the carbon footprint of this house - particularly when compared to the minimum requirements of the new building regulations.

Beyond the introduction of renewable energy sources and increased insulation levels, climate change measures are restricted to the procurement of low-embodied energy materials, transportation, local labour and sustainable drainage. As such the Main Contractor will procure materials using the recognised sustainable sourcing of materials schemes and selecting products certified to BES6001 and ISO14001 as well as registering with the Considerate Constructors scheme.

Due to the restrictive nature and scale of the building type it is not a requirement to achieve the BREEAM 'Very Good' rating despite the applicable elements scoring highly and therefore this restriction should not apply. Notwithstanding the development can be shown to have taken every opportunity to minimise energy use, water use, waste production and carbon emissions and therefore accords with Policy Env3 of the Craven Local Plan 2019.