



NEW FOUR BEDROOM HOUSE– BARN COTTAGE, ANSTY RH17 5AG
SUSTAINABILITY STATEMENT PA058-S1-R1

PLACES
architects



Fig.1 Aerial View
Barn Cottage/
The Ancient Farm

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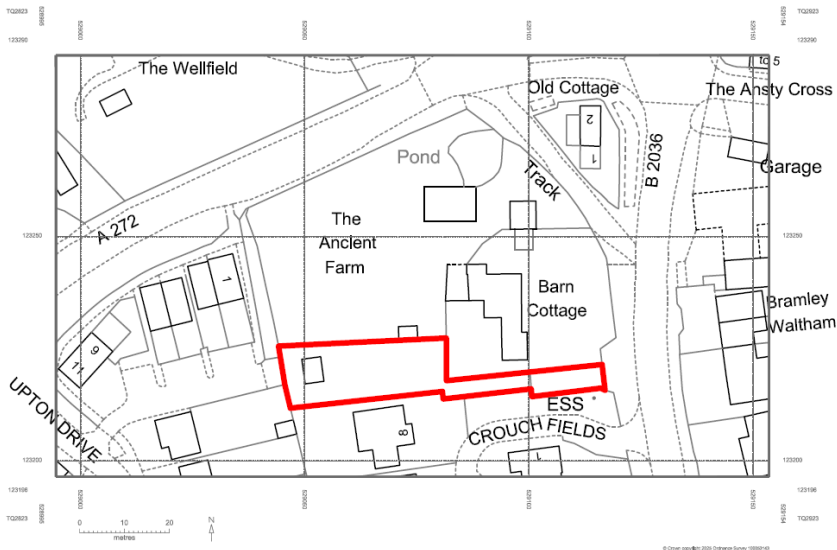


Fig.2 Location Plan
Barn Cottage

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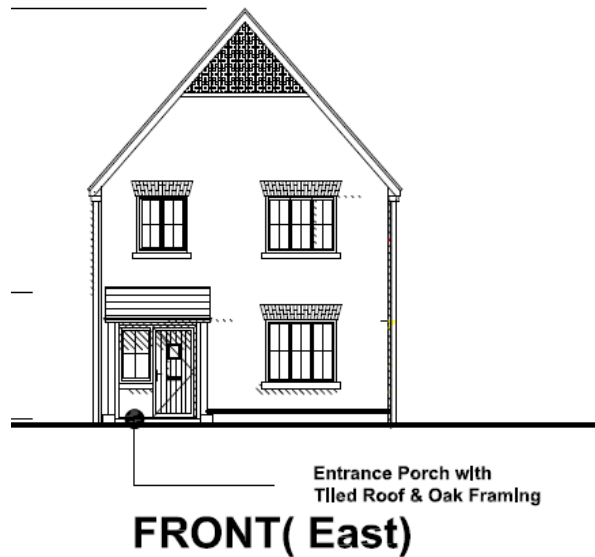


Fig.3 Proposed
Front view
of House to
Harvest Hill

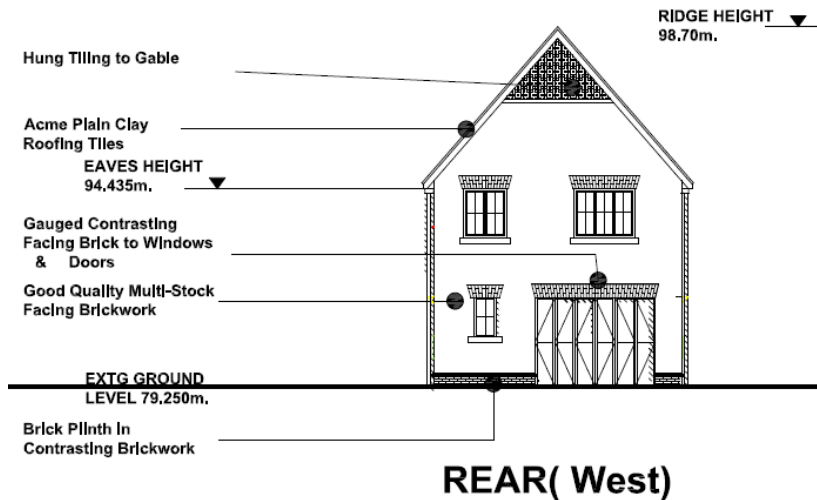


Fig.4 Proposed
Rear view
of House

INTRODUCTION/CONSULTATIONS

Places Architects have been engaged to prepare a planning application for a single two-storey four bedroom detached house on land adjacent to Barn Cottage on B2036 Harvest Hill, RH17 5AG.

The aim is to create a modern, contemporary house design, designed to have minimal impact on the existing Barn Cottage and the new houses on the adjacent Crouch Field Estate adjacent.

The new house is located to take up the building lines, front and back, of the adjacent 8 Crouch Fields and will be equally spaced from the boundary between the units as 8 Crouch Fields is located to the building site boundary.

The existing site is largely laid out as garden with a greenhouse and small timber outbuildings of no architectural quality. The site is in separate ownership to both Barn Cottage and The Ancient Farm adjacent.

The proposals include a new bound gravel access road from the gated shared entrance to Barn Cottage and extensive landscaping to the site itself.

There are existing mature trees providing screening to the site long the north boundary which will be maintained as part of this application.

INTRODUCTION/CONSULTATION PROCESS

DP39: Sustainable Design and Construction

Strategic Objectives: 1) To promote development that makes the best use of resources and increases the sustainability of communities within Mid Sussex, and its ability to adapt to climate change.
Evidence Base: Gatwick Sub Region Water Cycle Study; West Sussex Sustainable Energy Study, Mid Sussex Sustainable Energy Study.

All development proposals must seek to improve the sustainability of development and should where appropriate and feasible according to the type and size of development and location, incorporate the following measures:

- Minimise energy use through the design and layout of the scheme including through the use of natural lighting and ventilation;
- Explore opportunities for efficient energy supply through the use of communal heating networks where viable and feasible;
- Use renewable sources of energy;
- Maximise efficient use of resources, including minimising waste and maximising recycling/re-use of materials through both construction and occupation;
- Limit water use to 110 litres/person/day in accordance with Policy DP42: Water Infrastructure and the Water Environment;
- Demonstrate how the risks associated with future climate change have been planned for as part of the layout of the scheme and design of its buildings to ensure its longer term resilience

SUSTAINABILITY REQUIREMENTS

The key points regarding sustainable construction Are listed under Section DP37 & DP39 of the Adopted Mid-Sussex District Plan.

We have referred to these in the design and layout of the new building at Barn Cottage.

The installations and sustainable solutions are described further on the following pages.

6.2 Sustainable Buildings

Figure 6A: Sustainable construction principles

Principle DG37: Deliver high quality buildings that minimise their environmental impact

The construction industry makes a significant contribution to CO2 emissions utilising substantial volumes of non-renewable resources and generating pollution and waste. The need for sustainable approaches to building design is therefore fundamental if the challenges associated with climate change, resource depletion and pollution are to be addressed, and will be necessary to achieve the Government's Future Homes Standard.

The Council welcomes innovative and inventive designs that respond to the sustainability agenda by minimising the use of resources and energy both through building construction and after completion.

Applicants must demonstrate how this has informed their design and should consider in particular:

- Orientation and design of buildings and roofs to maximise daylight / sunlight penetration and solar gain, whilst also avoiding overheating;
- The use of green roofs or walls to reduce storm water run-off, increase sound-proofing and biodiversity;

- The use of materials with low embodied energy (for example, renewably-sourced timber and recycled materials);
- The use of sustainable materials that are locally sourced wherever possible;
- Incorporating high levels of insulation (in combination with air tightness and temperature control systems) including the use of materials with a high thermal mass, such as stone or brick, which store heat and release it slowly;
- Incorporating renewable energy including photovoltaics, solar thermal water heating, ground and air source heat pumps;
- The use of low flow technology in water fittings, rainwater harvesting systems and grey water recycling systems to reduce water consumption to 110 litres/person/day (maximum); and
- Laying out development to support identified opportunities for decentralised renewable or low carbon energy systems.

Further guidance is provided by District Plan policy DP39: Sustainable Design and Construction

Figs. 5 & 6
Extracts from Mid-Sussex
District Plan
Sustainability Requirements

SUSTAINABLE DESIGN SOLUTIONS

The National Planning Policy Framework (NPPF) published in 2012 requires the following;

- Plan for new development in locations and ways which reduce greenhouse gas emissions;
- Actively support energy efficient improvements to existing buildings;
- When setting any local requirements for a building's sustainability, do so in a way consistent with the Government's zero carbon buildings policy and adopt nationally described standards.
- Bio-Diversity Net Gain requirements have been adhered to and the plan adjacent indicates how habitats for wild-life will be incorporated. The proposed scheme records a +21% biodiversity rating.

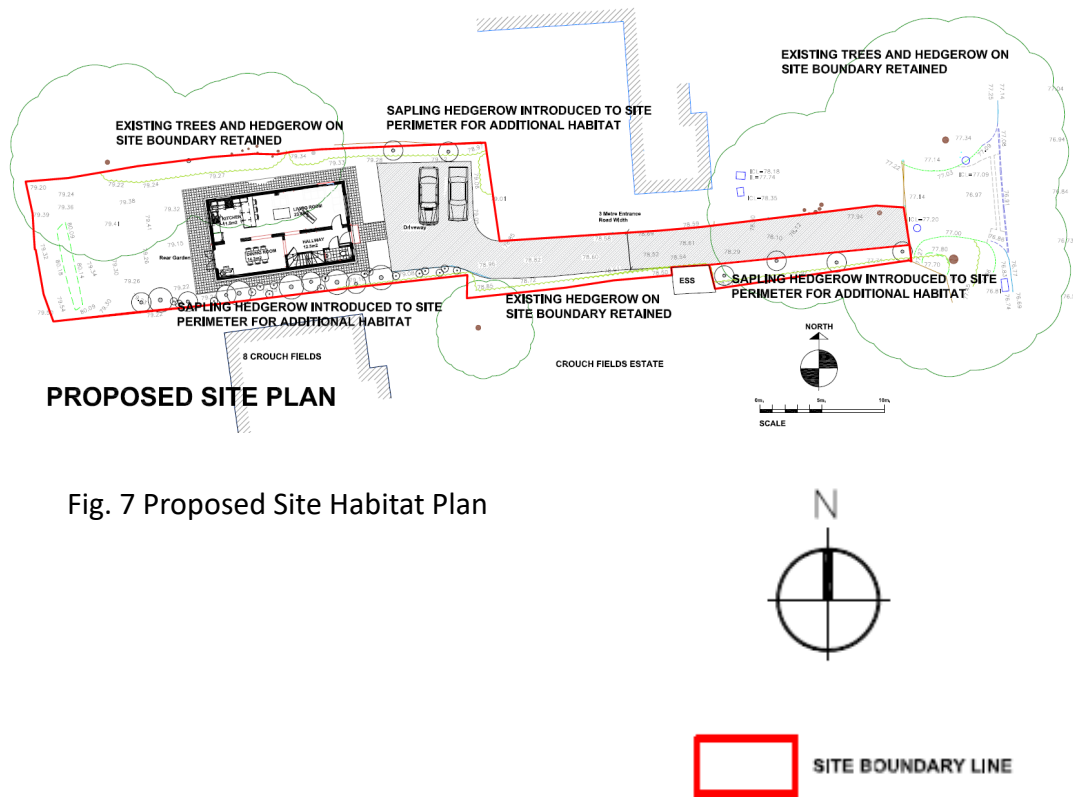
INSULATION

Insulation will be installed in the floors and walls over and above the requirements of the Building Regulations Part L to achieve maximum thermal resistance.

WASTE REDUCTION & RECYCLING

The selected contractor will employ a waste recycling company to deal with all waste materials on site and ensure recycling.

Recycling bin enclosures are provided to the new development as agreed with the Mid-Sussex Refuse & Recycling Department.



PROPOSED SITE PLAN

Fig. 7 Proposed Site Habitat Plan

SUSTAINABLE DESIGN SOLUTIONS - CONT'D

REDUCTION OF DOMESTIC WATER USAGE

All showers, toilets and baths are designed to minimise water wastage.

Taps have restrictive flow devices to reduce water usage.

LOW ENERGY LIGHTING

All light fittings will be energy efficient with high luminous efficacies in excess of 75 lumens/circuit Watt.

Furthermore, the layouts are designed to maximise daylight into the apartments and reduce need for artificial light.

HEATING INSTALLATION

The proposed house will employ Air Source Heat Pumps installed in accordance with Building Regulations Part L1 and installed in accordance with current legislation.

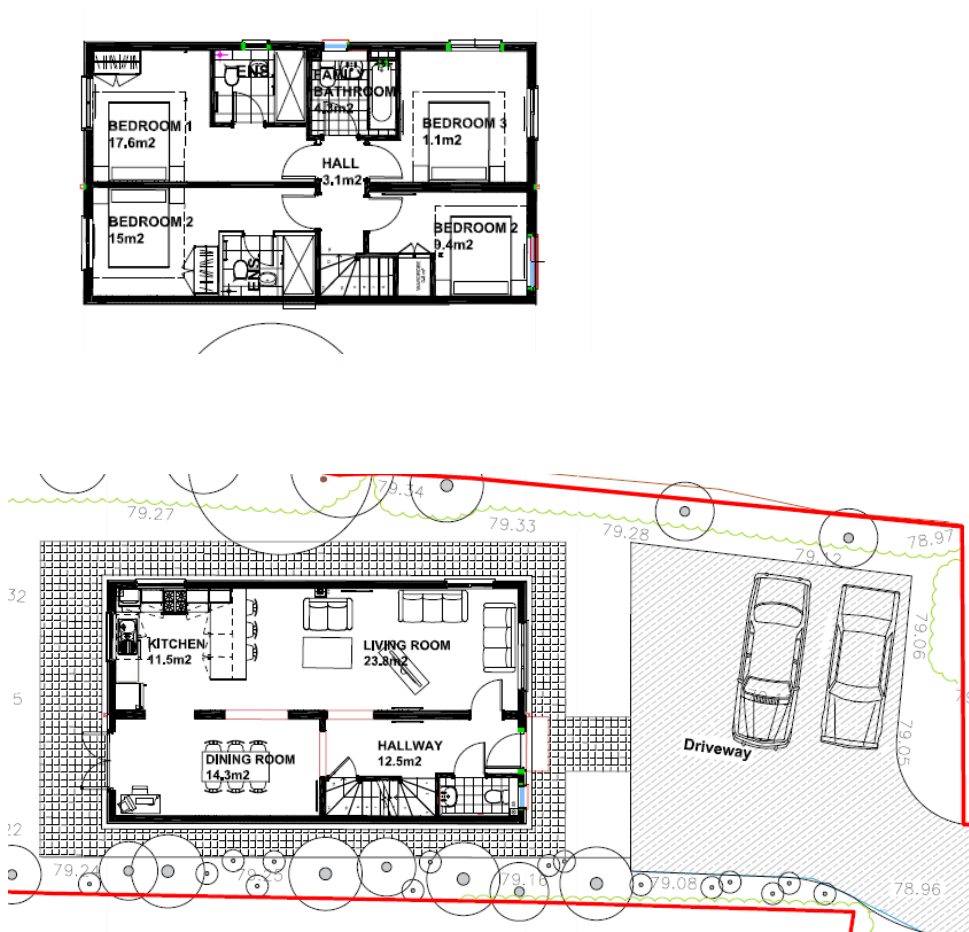


Fig 8. Proposed Floor Plans

SUSTAINABILITY STATEMENT



Fig.9 White goods efficiency ratings

SUSTAINABLE DESIGN SOLUTIONS - CONT'D.

WHITE GOODS EFFICIENT ENERGY RATINGS

All installed white goods to the apartments will achieve A+ energy efficiency rating as the diagram adjacent.

WATER COLLECTION AND RECYCLING

Water butts are provided to harvest rainwater and reduce wastage.

(refer drainage plan Fig. 10 below)

Fig.10 Water butts installed as part of sustainable drainage strategy

SUSTAINABILITY STATEMENT

Detail	Design
Ground floor average U-value	n/a
External wall average U-value	0.18W/m ² K
Roof average U-value	0.13W/m ² K
Window U-value (including frame)	1.40W/m ² K
Frame Factor	90%
Glazing total solar transmission	63%
Y-value	0.04 (Enhanced Bridges Throughout)
Air permeability @ 50 Pascals	3.0m ³ /hr/m ²

Fig 11. Building Fabric Performance

Detail	Be Lean
Heating type	Individual Regular Boilers
Heating fuel	Natural gas
Gross boiler seasonal efficiency	93.0%
Heating Emitters	Radiators + Underfloor
Boiler Compensator	Weather
Controls	No controls
Ventilation	MVHR 89% Efficiency
Extract SFP (W/L/s)	0.74
Ductwork	Semi-rigid
Hot water pipework insulated	Yes
Cooling SEER	3.5
Low energy light fittings	100%
Hot water daily usage	< 125 l/p/day
Hot Water System	Instantaneous Combi

Fig 12. Fixed building services

SUSTAINABILITY STATEMENT

SUSTAINABLE DESIGN SOLUTIONS -CONT'D.

HEATING AND COOLING INSTALLATIONS

All equipment and plant to exceed minimum standards on commercial HVAC Guide.

CONTROLS

Heating systems to be appropriately zoned, allowing fast local response to change in loads. Lighting controls, including timers, occupancy controls and dimming shall be included.

ENERGY METERING

Metering of energy uses within the new apartments will allow building users to identify potential energy savings, hence reducing CO2 emissions. All electrical and heat supplies via smart meters.

ENERGY CONSUMPTION

In accordance with NPPF and Mid-Sussex District Council requirements an initial study suggests the apartments will give weighted improvements of about 12.7% over the original.

SUSTAINABLE DESIGN SOLUTIONS - CONT'D

PROPOSED ENERGY STRATEGY

Using the National Calculation Methodology (NCM) the apartments will be well insulated with improved fabric U-Values making the development air tightness of a good standard. Energy efficient lighting and metering will ensure occupants are informed on the development performance.

The heating and hot water provision will be provided by instantaneous combination boilers.

Overall the aim is to produce an energy efficient building which will minimise CO2 emissions in accordance with the requirements of NPPF and Mid Sussex District Council, and provide a healthy and comfortable environment for the occupants of the new apartments.

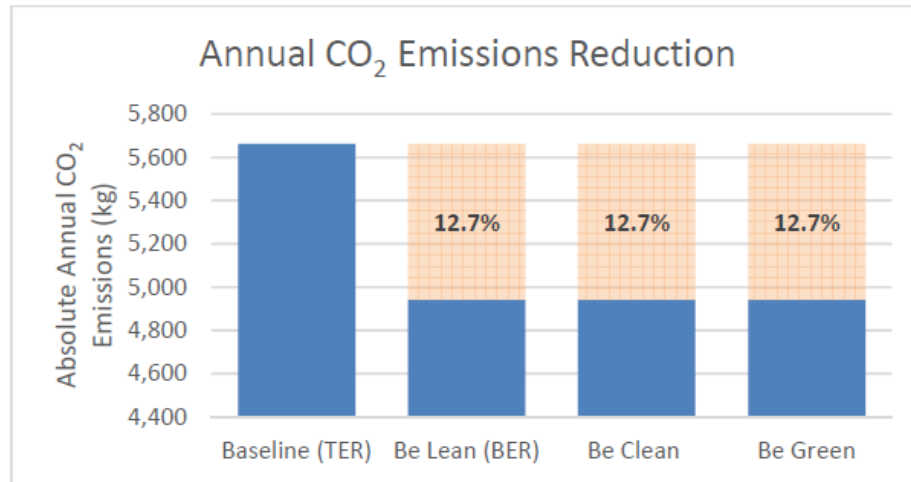


Figure 17 Estimated CO₂ Emission Savings

Area Weighted				
	Absolute	kgCO ₂ /m ²	Reduction	
Baseline (TER)	9346	16		0
Be Lean (BER)	8155	14	1190	12.7%
Be Clean	8155	14	1190	12.7%
Be Green	8155	14	1190	12.7%

Fig 13. Estimated CO2 emission savings

SUMMARY/CONCLUSIONS

The aim in developing the new four-bedroom house at Barn Cottage is to create a much-required new housing unit on an existing brownfield site within an urban conurbation.

The scheme will incorporate all current recommended methodology regarding sustainable energy and incorporate air source heat pumps for energy, water recycling in terms of water butts and sustainable drainage solutions, employing responsibly sourced materials and construction techniques and employing local labour wherever possible.

The intention is to fully comply with Mid Sussex District Council's Sustainability Requirements and the Building Regulations Part L1.

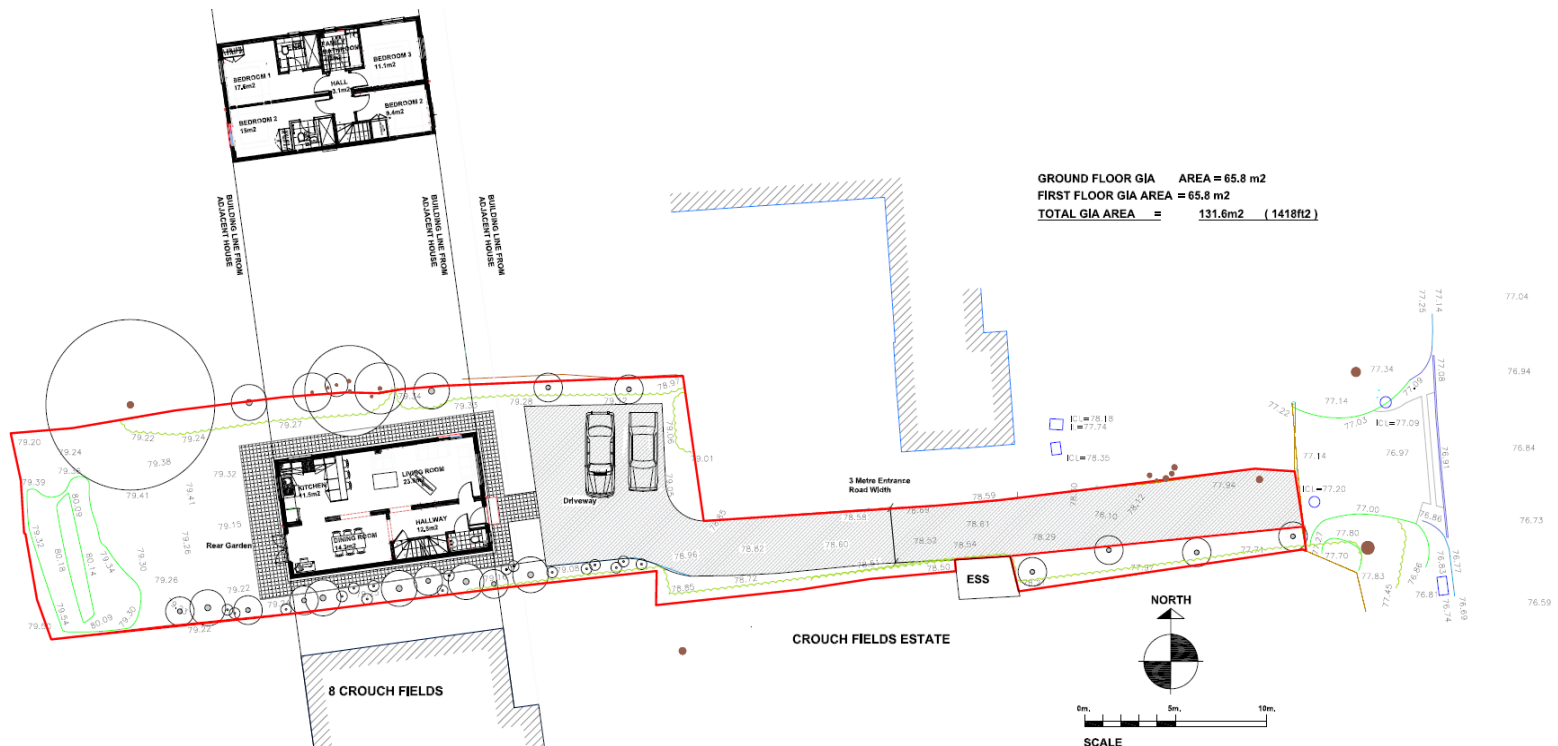


Fig 14. Proposed Building General Arrangement
SUSTAINABILITY STATEMENT