

BakerBrown

Sustainability Statement

Project

Full restoration and conversion of a Grade II listed former stable outbuilding and attached cart-shed into new dwelling accommodation.

Site Location

Brook Farm,
Brook Street,
Cuckfield,
West Sussex,
RH17 5JJ

Date

May 2025

Revision

-



Contents

pg3	Sustainability Strategy Introduction
pg4	Embodied Carbon Reduction
pg5	Operation Carbon Reduction-Passive House Principles
pg6	Sustainability Strategy

Sustainability Strategy Introduction

Introduction

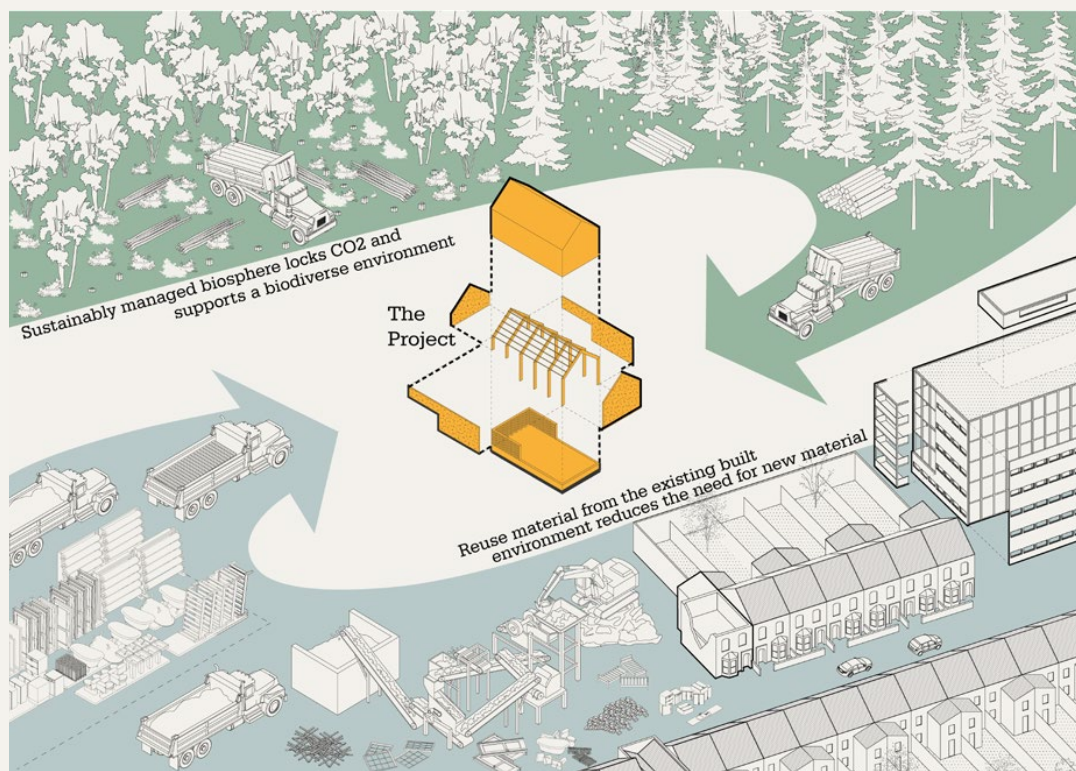
BakerBrown is a practice of architects that have been committed to responding to the Climate & Ecological Emergency since they were founded in Lewes in 1993. They have practiced, taught, and researched around issues of sustainable low carbon design and associated closed loop systems for over 25 years delivering many award-winning projects including a new country house in Hadlow Down, The Greenwich Millennium Village, and The Brighton Waste House.

The practice studies projects at design, construction, operation and demolition stages, considering the whole life of a building. We utilise a hierarchy of retention, reuse, recycling then if any virgin materials need to be used we will focus on organic materials. This enables us to minimise both the embodied carbon and operational carbon impacts of a building.

Principles applied to the Brook Farm

The proposal for the Brook Farm is in line with BakerBrown's ethos of encouraging reuse and breathing new life into existing buildings before considering deconstruction. The proposals intends to follow and exceed local and national benchmark sustainability standards, taking into consideration standards such as PassivHaus for principles such as optimization of operational energy and well insulated buildings.

This report outlines BB's typical approach to design and to this specific project. The practice and the client will strive to ensure the strategies noted in this document are realised if the project is approved.



Embodied Carbon Reduction

We have listed below some core guiding principles for our approach to each project. The careful assessment and reuse of existing stock (which makes up the majority of what we will be inhabiting in 30 years) is a vital part of this process, essentially helping turn the linear approach into the circular approach.

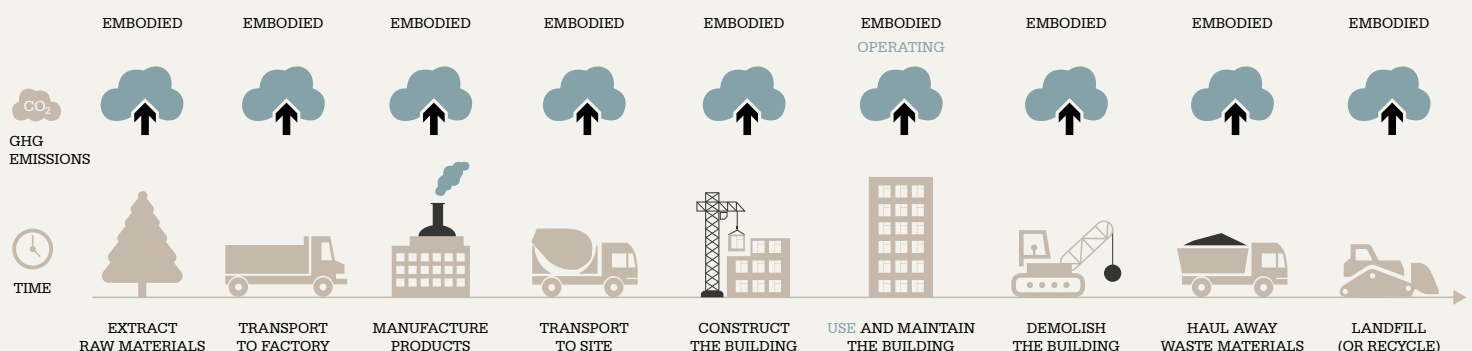
The strategy is:

- Ensure that where possible we are 'Mining the Anthropocene' (existing human-made products and materials) and protecting natural resources by using reused materials, materials with high recycled content.
- Ensure that the supply chain of materials and components have Environmental Product Declarations (EPD's), where possible, and are locally supplied from sustainable, ethical, non-toxic sources.
- Limit use of materials with high embodied carbon (Concrete, Bricks)
- Specify that high embodied carbon materials are easily removed, when and if the dwellings are demolished, so that these can be reused
- Use low carbon, organic and carbon sequestering materials such as timber, cork, earth.
- Maximise structural efficiency to reduce the quantity of materials used.

- Undertake a Resource Mapping exercise in order to ascertain the local availability of second-hand or new material, components, technologies, services, labour, etc.
- Ensure the buildings uses/supports other Closed-Loop Systems such a rainwater harvesting, renewable energy, locally-grown zero waste food production.
- Put into action strategies to Design Out Waste to minimise waste on site and throughout the supply chain.
- Ensure that the Circular Economy principles are adhered to throughout the Design, Construction, Occupation, Maintenance, Adaption and ultimate De-Construction of the Project, i.e RIBA Stages 1-8.

Why is embodied carbon so important?

A building's carbon impact is divided into embodied and operational carbon. Embodied carbon relates to the energy before and after a building is in use. Operational carbon relates to the energy required to operate the building. Embodied carbon is not yet covered in the building regulations, even if it constitutes a very large part of a building's footprint. BakerBrown considers embodied carbon as standard practice, and limits projects' impact by carefully selecting materials and construction methods.



Operational Carbon Reduction

Passive House Principles

When considering Operational Carbon, we are applying 'PassivHaus' low energy benchmarks which propose a 'fabric first' approach to reducing energy use.

The heating and cooling of rooms and water are the primary reasons for high energy use. The strategies here aim to reduce this while providing comfortable internal spaces.

CO₂ Emissions of the dwellings in use will be controlled by installing adequate and high performance, well insulating materials, fixings and heating systems. The strategy will not only reduce operational emissions, but also cut costs and minimise heating and cooling requirements and increasing wellbeing.

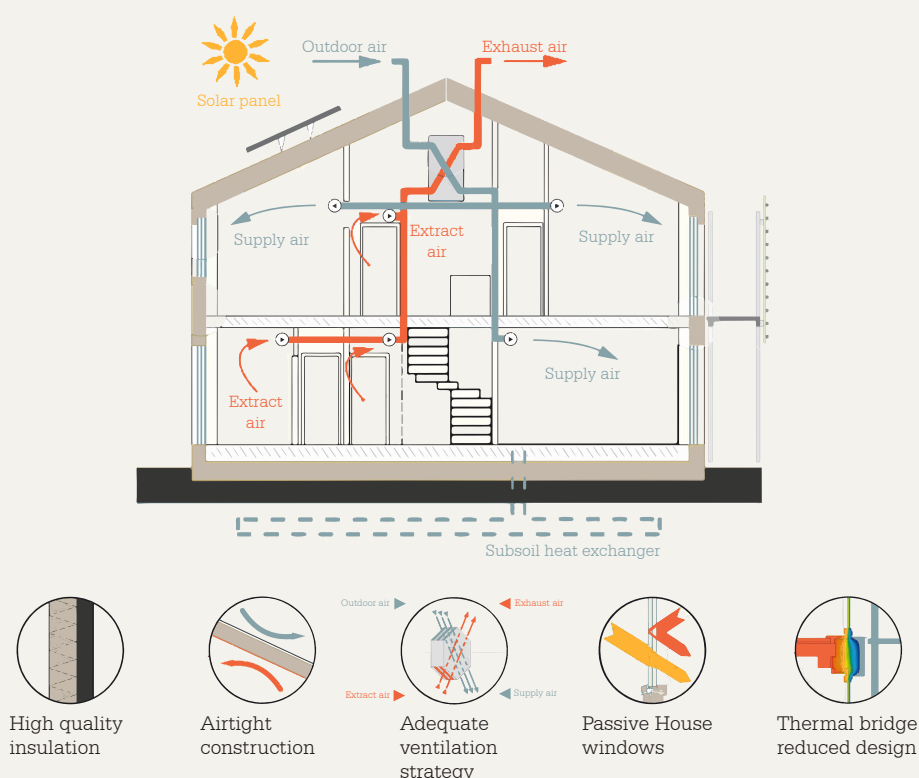
Below is a diagram of a PassivHaus system, from which the practice takes principles. Many of these are simple solutions for long term wellbeing.

As a norm we (BB) design buildings to the low energy (in use) standards demanded by 'Passivhaus' principles with regards to airtightness, energy for heating demand, and thermal efficiency.

The five key Passive House principles are:

- Thermal insulation
- Passive House windows
- Adequate ventilation strategy
- Airtightness
- Thermal bridge reduced design

The exact specification will be determined when preparing for the Building Regulations Application. However, we have determined our energy benchmarks specific to the project in the following pages.



Sustainability Strategy

We have set out primary sustainability strategies for the proposals below:

Building Retention

As discussed earlier in the document, Baker Browns initial ambition is always to retain building in-situ and focus on retrofit. This is the single most effective way to reduce the projects carbon impact. This is the strategy for this building both in terms of reducing embodied carbon but is also a requirement due to the buildings listed building status.

Materials

As defined in the previous pages, the project aims to use local, natural and reclaimed materials.

- Roof tiles - The aim is to reuse as many of the existing tiles as it is possible to salvage. These will then be mixed with a mix of new tiles to match.
- Structure - The timber structure will be reused as much as possible as detailed in the Structural Engineers pack. Where there is the option of replacing with new timber, or strengthening the existing, the latter approach has been preferred.
- Timber cladding - A British Larch cladding has been proposed.
- Wood fibre insulation has been used as an eco-friendly choice to save energy, reduce carbon and improve indoor comfort. This also enables breathability

Performance

Adding a new wrap of insulation around the whole building creating and insulated fabric with notional u-values, aiming for:

Walls	0.25
Floors	0.30
Roofs	0.25
Windows (triple glazed composite)	1.6*
Doors	1.6

*Units: W/(m²K) Average

Thermal Insulation

While internal insulation is sometimes appropriate, in this instance external insulation is preferable due to:

- The internal fabric has more architectural merit than the external fabric.
- Internal insulation performs much worse thermally due to the thermal breaks created by internal structure, walls and features.
- External insulation can be wrapped around the existing frame then replacement cladding and tiles added, keeping the same form and aesthetic.

Improved Glazing

Due to the listing status of the building, high performance triple glazing cannot be used, however a narrow profile double glazed system has been proposed to reduce heat loss.

Thermal Bridging & Airtightness

For both of these elements the key is for continuity around the building. With this in mind and in tandem with structural requirements we have suggested a plywood sheathing wrap around the outside of the existing frame. This enables an much easier continuous airtight layer to be installed and the insulation layer to wrap outside of this for both the walls and roof.

Sustainability Strategy

Sustainability strategy continued...

Ecology and Biodiversity

A Biodiversity Enhancement Strategy has been supplied as part of the application.

Energy

In most projects we will design and specify heat pumps appropriate to the scale and use. However, due to the smaller scale of the house, the fact it is listed and the lack of available internal plant room space it has been decided to use a modern combi boiler. The heat systems will however be installed in a way that an Air Source Heat Pump could be installed in the future if required.

Water

Rainwater will be managed in the same way as in the existing situation.

Water Consumption

Internal potable consumption will be limited to no more than 110 l per person per day. All internal taps will be equipped with aerators, and toilets equipped with low water consuming units, flushing using 4.5 litres per day instead of 6 litres per full flush. Calculations will be provided at later stage.

Waste

Waste will be connected to the existing connection for the main house.

Household Waste

The scheme will include dedicated areas and bins for recycling and food composting. These will be stored near to the site entrance.

Contact

**Cooksbridge Station House
Cooksbridge
East Sussex
BN8 4SW**

**info@bakerbrown.studio
01273 400 319**