

**Clock House Farm, Stonehouse Lane,
Cowfold, West Sussex, RH13 8DL**



Energy & Sustainability Statement

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1.0 Introduction

- 1.1 Blewburton Limited has been commissioned to prepare an Energy & Sustainability Statement to support the application for planning permission for the redevelopment of buildings to form a number of residential dwellings and a pair of commercial units.
- 1.2 As licensed BREEAM, Home Quality Mark, Code for Sustainable Homes and energy assessors of several years standing, Blewburton Limited has considerable expertise in all issues of sustainability.
- 1.3 The proposed scheme at Clock House Farm, Stonehouse Lane, Cowfold, West Sussex, RH13 8DL, will see the existing historic stable block restored and converted to become five residential units, with associated landscaping and parking provision. Other parts of the site will see the existing metal clad agricultural buildings replaced in favour of two new commercial units.
- 1.4 The site is located in a rural location to the west of the village of Cowfold and north of the village of Littleworth. It covers an area of circa 0.7 hectares and consists of a regular shaped plot dominated by buildings with areas of associated hardstanding.
- 1.5 The site location is shown in the aerial photo in Figure 1 below, with the proposed site location shown in Figure 2 and the proposed site layout plan shown in Figure 3.

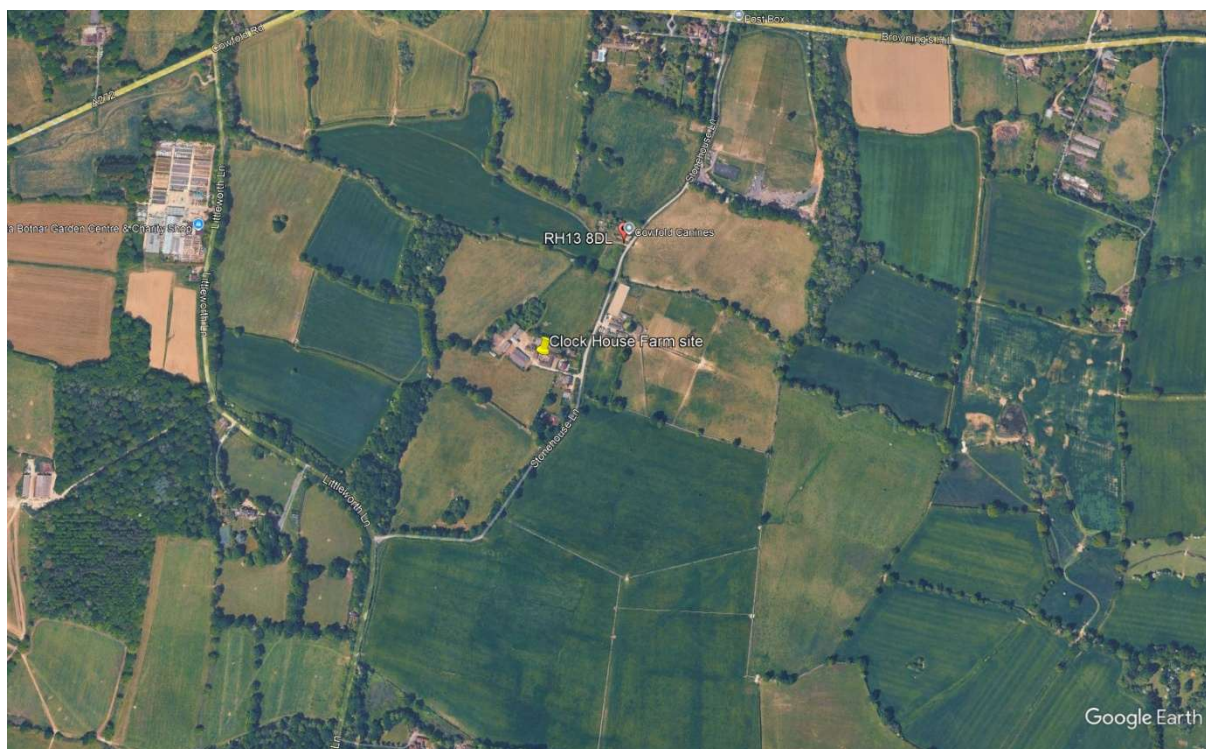


Figure 1: Aerial photo of site location and area



Figure 2: Site location plan



Figure 3: Proposed site layout

2.0 Proposed Approach to Sustainability

2.1 This statement sets out the approach that the applicant is proposing to adopt to ensure that the proposal meets high standards of sustainability. The report includes a discussion of the full range of sustainability issues as shown below:

- Energy & carbon emissions;
- Water conservation;
- Flood risk & surface water management;
- Ecology & biodiversity;
- Waste & pollution;
- Materials selection and sustainable construction methods;
- Future needs.

3.0 Energy Conservation and Carbon Emissions

- 3.1 It is recognised that the generation of energy to heat, light and cool buildings is responsible for approximately half of the total CO₂ emissions of the UK. Part L of the Building Regulations requires a minimum standard of energy efficiency in new development and refurbishments, however, it is the intention with this development to go beyond this.
- 3.2 As a first step in dealing with carbon emissions arising from energy use within buildings it is important to consider designing in energy efficiency measures as part of the construction of the buildings as these will be difficult to retrofit in the future and this will also reduce the amount of energy required by a building. This is known as being 'lean' in the energy hierarchy.
- 3.3 Reduction of heat loss is a key element of this and it is proposed that insulation within floors, roofs and walls will exceed the minimum standards required under Part L1 (Conservation of Fuel and Power) of the Building Regulations, as will the U-values for glazing and doors.
- 3.4 U-values attained for similar projects suggest the following is realistic for this proposed development –
- Ground floors – 0.11 (Part L compliance is 0.25)
 - External walls – 0.24 (Part L compliance is 0.30)
 - Roofs – pitched 0.15 and to joists 0.10 (Part L compliance is 0.16)
 - Windows/glazed doors and part glazed doors – 1.40/1.40 and 1.20 double glazed (Part L compliance is 1.40)
- 3.5 An airtight building will also play a major part in the reduction of heat loss via the external envelope. Therefore, attention will be paid to sealing potential air gaps and the designing out of non-repeat thermal bridges as far as is possible for a conversion project. It is increasingly recognised that as standards of insulation improve, this issue, plays a vital role in the energy efficiency of a building and getting both right at design stage and ensuring they are then implemented during construction is considered to be important for this development.
- 3.6 The heating and hot water requirement for the proposed dwellings will be supplied by an Air Source Heat Pump (ASHP) to underfloor heating with full time and temperature zone controls, meaning energy is only used as and where required. This technology is a recognised low and zero carbon option and will become increasingly more carbon efficient as the UK electricity grid becomes 'greener'.
- 3.7 The use of passive solar design has been considered and where possible good levels of glazing have been designed into the proposal to allow for natural light penetration. Where artificial light is required, the focus will be on the provision of the energy efficient lighting systems as appropriate to locational requirements.

- 3.8 The option to utilise solar energy technologies has also been considered – thermal for water heating and photovoltaics (PV) for electricity generation (see images below) – with the conclusion that PV is the most logical technology to install as it will provide the larger carbon offset and the utilisation of this technology will be fully explored when/if planning permission is granted.



Figures 4 & 5: Solar thermal and solar PV installations on roofs

- 3.9 When modelled on Elmhurst SAP software, the specification outlined above sees the dwellings exceed minimum Part L1 of the Building Regulations requirements for conversion projects by between 47.42% and 52.77%, depending on the plot. This is a significant uplift and reflects well on the proactive approach to this issue proposed.
- 3.10 Not all energy use is controlled by the Building Regulations and with this in mind, all 'White Goods' supplied – fridge-freezer, washing machine and dishwasher – will be rated as minimum 'A' under the EU Energy Labelling Scheme and attention will be paid to the energy specification of all electrical equipment to be installed within the dwellings.
- 3.11 Finally, an OWL "Standalone" Electricity Monitor will be installed to allow the householders to monitor and understand their electricity consumption – see image, right. The monitor shows consumption or cost per hour (or kwh if preferred) and has a CO₂ equivalent reading too. Because the monitor is wireless and portable, the householder can easily walk around the house and observe, by switching on and off, how much energy particular devices are using. They can also see the overall consumption by day / week / month and compare periods to see if savings have been made.



Figure 6: Image of OWL monitor

4.0 Water Resource Management

- 4.1 The UK has a poor record in being profligate with its abundant water resource and the South-East of England is recognised as suffering from water stress, therefore, on this site only water efficient products will be specified.
- 4.2 The actual specifications of the water using products are yet to be established, however, the following specification is considered realistic for this type of development and an assessment of the efficiency of the building's domestic water-consuming components has been undertaken using the Building Research Establishment's water calculator.
- 4.3 The water consumption (L/person/day) for the proposed dwellings shows a figure of 100.6l/p/d with the following proposed specification (which is below the 125.00l/p/d required by Part G of the Building Regulations):
- Dual 6.0/3.0 litre flush WCs;
 - Shower average flow rates of 8.0L/min;
 - Basin average tap flow rates of 3.0L/min;
 - Kitchen tap average flow rates of 6.0L/min;
 - Bath average overflow capacity of 165 litres;
 - Water efficient washing machine (5.50L per kg dry load) and dishwasher (0.9L per place setting).
- 4.4 Should a more generous specification for internal water using products be decided upon, then thought will be given to the installation of grey-water harvesting systems, such as the EcoPlay unit, pictured below, however, rainwater harvesting will not be utilised for internal water use as the carbon footprint arising from the pumps involved with such a system is heavy and it is more efficient to specify the low flush WCs detailed above in 4.3.



Figures 7 & 8: External rainwater harvesting butt & EcoPlay unit above WC

- 4.5 Externally, a rainwater harvesting butt will be provided along with an external tap for use in the garden and for car washing to each property.
- 4.6 The provision of water meters is also recognised as an important tool in reducing water usage and in a domestic context they can encourage people to monitor and reduce their water consumption by an average of 10% to 15%. Therefore, the dwellings will have an easily accessible water meter installed as part of its specification.

5.0 Flood Risk & Surface Water Management

- 5.1 The Environment Agency's Flood Mapping for the area shows the site is not located within an area considered to be at risk from flooding – see <https://check-long-term-flood-risk.service.gov.uk/surface-water> and <https://check-long-term-flood-risk.service.gov.uk/rivers-and-sea>.
- 5.2 A surface water-runoff strategy has been developed for the scheme by CGS Civils, in compliance with Building Regulations, thereby minimising any risk and impact of localised flooding on and off-site, watercourse pollution and other environmental damage. The solution implemented will ensure there is less or equal runoff from the developed site when compared to the existing site and will also lead to an improvement in the quality of the rainwater discharged from the site.
- 5.3 The proposal is for surface water runoff to be captured into a positive drainage network prior to discharging into the pond at site QBAR which is 5.4l/s. The proposed drainage network will make use of a geocellular attenuation tank in addition to an above ground attenuation swale in order to cater for the 1 in 100-year +45% storm + 10% urban creep.
- 5.4 All hard paved areas within the dwellings curtilage are to be constructed from permeable surface to allow runoff to freely drain to ground via infiltration, such as that shown below in Figure 9.



Figure 9: Typical permeable paving solution

6.0 Ecology & Biodiversity

- 6.1 A Preliminary Ecological Appraisal (PEA) has been undertaken for the site by Lizard Landscape Design and Ecology and this work informs the approach required with regards ecology and biodiversity for this site.
- 6.2 The PEA states that the site is predominantly covered by buildings with areas of associated hardstanding land. The boundary habitats of the site consist of a hedgerow to the south and north of the site, which separates the site from arable land to their respective aspects. To the west of the site, a line of trees exists (beyond the site boundaries), which also lead onto further arable land. To the east of the site, several residential dwellings are present with associated garden areas. Images of the site are shown below in Figures 10, 11 & 12.



Figure 10: Stables to be converted and associated courtyard

- 6.3 The PEA states that the development will not result in any adverse impacts on any designated sites of international, national or local importance and will not adversely impact any habitats of principal importance (HPI) or irreplaceable habitats including ancient woodland.
- 6.4 The following mitigation measures will be incorporated to avoid, mitigate and compensate the identified impacts to ecologically important habitats:
- Three further bat emergence surveys are required to clarify the potential, if any, impact on bats at the site. These will be carried out but suitable

professionals and any requirements/recommendations arising will be implemented in full.

- During the construction phase, a pre-commencement check for badgers will be undertaken and trenches or excavations to be covered overnight or have a broad and shallow ramp installed to prevent badgers and other fauna becoming trapped.
- Any habitat suitable to support nesting birds scheduled for removal, i.e. buildings and scrub, will be cleared outside of the main bird nesting season (March – August inclusive) or first be subject to a bird nesting check prior to removal, to be conducted by suitably qualified ecologist or arborist.
- Building integrated bird boxes for a range of species, such as swifts, as well as sparrows and starlings will be installed to the north-facing aspect of the new dwellings, avoiding areas above windows and doors.
- All new closed board fencing or walls will include a 13x13cm access gap to the base to allow the free movement of hedgehogs around the site.
- The hedgerows on site will be protected and retained throughout the development through the use of tree protection barriers. However, should any require removal, further survey work may be required, depending on the level of habitat removal and an ecologist will be fully consulted on this issue.



Figure 11: Main courtyard area of hardstanding and associated buildings

6.5 The proposed development does not currently meet the threshold for mandatory Biodiversity Net Gain requirements under the Environment Act 2021. Proposals currently result in a deficit of 0.86 habitat units. Trading rules for medium

distinctiveness habitats are met, but low distinctiveness habitats are not currently met due to the deficit in units. Accordingly, the purchase of units from a private habitat provider, such as Nature Impact, shall be sought to allow the shortfall in units to be addressed. Purchased units shall include a minimum of 0.86 units of a low distinctiveness habitat type to ensure that all trading rules are met. This approach is in accordance with Government guidelines, with the completion of a full metric with inclusion of off-site habitats provided pre-commencement as part of the standard Biodiversity Gain Condition.

6.6 With regards to enhancements, it is proposed to undertake the following measures on site:

- Buffer zones planted with native trees, shrubs and suitable wildflower grassland to create a gradual ecotone between hedgerows and the development.
- The use of seed and fruit bearing species of tree such as cherry, rowan, birch, hawthorn and crab apple to provide a foraging resource for birds and insects.
- The use of log and compost piles in habitat creation areas to provide refugia for reptiles and amphibians.
- Creation of a small bare earth 'bee bank' to provide habitat for mining bees.
- Installation of 'bug hotels', bird and bat boxes to mature trees.
- Installation of invertebrate boxes in both sunny and sheltered locations.
- Planting of new native species-rich hedging to the boundaries of the site.
- Creation of areas of wildflower meadow to the northern section of the site to provide connectivity between the site and suitable reptile habitat adjacent to the site boundary.



Figure 12: Southern boundary of the site

7.0 Waste & Pollution

- 7.1 Waste arising from the construction process has been an area of focus for some years now, with the industry making good strides in re-use and reduction of materials, which not only helps the environment, it also engenders significant cost savings to developers.
- 7.2 With this in mind, the appointed contractor for the scheme will be encouraged to develop a site waste management plan (SWMP) prior to the start of construction, reflecting the recognition that reduction of waste begins in the design and ordering stage of a project and carries on through to the sign-off of the building. This SWMP will set targets and procedures for the sorting, reusing and recycling of construction waste into defined waste groups, either on site or through a licensed contractor.
- 7.3 The generation of waste does not stop at the end of the construction process and adequate provision will be supplied to the proposed dwellings, both internally and externally, to allow for the sorting of general waste from recyclable materials.
- 7.4 Provision for composting of food waste arising from the kitchen will also be supplied in the form of a compost cone to the exterior of the dwellings, along with information on how to successfully compost, to further reduce waste streams arising from the new dwelling.
- 7.5 Pollution can occur in various guises and attempts will be made to design out or mitigate against a number of issues identified below.
- 7.6 At the construction stage there can potentially be noise nuisance for neighbouring properties and all contractors will be made aware of and expected to comply with policies to prevent this issue. They will also be expected to have and operate policies to facilitate against air and water pollution from their activities and to have procedures in place should an accident occur.
- 7.7 Light pollution will be countered by the use of external lighting which only involves energy efficient fittings, daylight detectors and angling/capping to prevent unnecessary glare.

8.0 Materials Selection and Sustainable Construction Methods

- 8.1 This precise material specification for this project is yet to be confirmed, however, as the majority of the proposed work is refurbishment/conversion, only limited new materials will be required, which is a sustainable solution where existing buildings are concerned.
- 8.2 Where new materials are to be specified there is a commitment to ensure they score as highly as possible in the Building Research Establishment's Green Guide to specification – see Figure 13 below.
- 8.2 In addition, wherever possible, all building and finishing materials will be sought from local suppliers and manufacturers registered to an environmental management scheme such as FSC, BES6001, ISO14001 or EMAS. This will ensure that the materials have been sourced from suppliers certified as ethical and responsible as far into the supply chain as possible.
- 8.3 All insulation materials selected for the building will have a Global Warming Potential of below 5 and where possible be made from natural products.

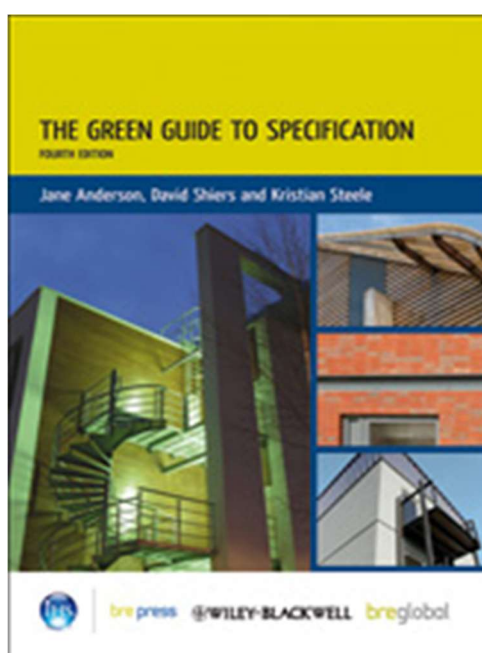


Figure 13: BRE Green Guide to Specification

- 8.4 Finally, attention will also be paid to materials specified for the internal environment, with a focus on materials/finishes containing low/no volatile organic compounds (VOCs) in an effort to improve the internal environment for occupants as internal air pollution is increasingly recognised as having negative impacts on health.

9.0 Future Needs

- 9.1 All buildings will have a lifetime of several decades, if not centuries, so more than ever it is important that they are flexible in use and adaptable to future occupier needs.
- 9.2 The proposed dwelling designs for this project maximise the useable space within the homes, through functional layout, and provides scope to adapt and modify the buildings to meet future requirements.
- 9.3 The commercial units are to be supplied in shell format only, which allows for end users to modify and fit out as required and this will be required to be easily de-constructible should future tenants have different usage needs.
- 9.4 The residential scheme has also been developed to meet the majority of the Lifetime Homes standards, which ensures a flexible blueprint for accessible and adaptable housing in any setting.
- 9.4 The dwellings will be fully fitted with the latest broadband access technology and fittings will be installed to facilitate home working.
- 9.5 An electric vehicle charging point for each property will be installed, should future occupants have an electric vehicle requirement.

10.0 Summary

- 10.1 In summary, this development incorporates many sustainable features that are consistent with achieving a high level of overall sustainability and once/if planning permission is granted, the developer will consider further options for enhancement, as appropriate.
- 10.2 Areas of strong approach involve the plans for energy and water efficiency (both of which go significantly beyond standard Building Regulations requirements) and the approach to materials and future proofing.

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