



ZEDHOMES



Copse Farm

Sustainability Statement

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Introduction

Zedhomes aims to demonstrate how developments can cost effectively become environmentally more sustainable and **reduce carbon emissions**. This is set in the context of UK policy which is attempting to achieve 60% overall carbon emission reductions well within the life of the buildings.

The sections that follow describe the specific sustainability technologies that will be implemented in each of the buildings relevant to the planning application. The final section describes and explains the types of technologies proposed.

We have applied all our knowledge to influence the design of the new and refurbished buildings at Copse Farm in order to make this development sustainable, and environmentally friendly. Most importantly, we want to create a development which blends in with the local environment, and, is by design, a unique example of innovation and energy conservation.

We also demonstrate how buildings from 1886 can be upgraded to exceed the BREEAM standard.

Detailed specifications of House No. 1, 2 & 3

These new build homes will be designed to conserve as much energy as possible and will include:

- 300mm super insulation to the walls and roof area.
- Triple glazing (to the north elevation) and double glazing to the remaining elevations, to increase the air tightness of the building envelope and reduce the amount of air that can leak out of the building.
- Hot water and heating will be supplied by Biomass Boilers or Ground Source Heat Pumps System.
- If the ground source heat pump proves to be a more economical solution we may consider using this method to collect “free” heat from the ground, as well as recycling surplus heat energy generated above ground level to replenish the ground heat “pool” and provide cool air in the summer.
- Rainwater collection and storage. This will allow us to collect rain water from gutters and hold the water in storage tanks. When required, this water can be used for gardens in the summer, and for washing cars, windows etc.
- Hot water booster system on the roof to supply additional energy for hot water and the internal heating system on sunny days.
- Future proofing the buildings for installation of photovoltaic panels. These will be prepared in advance, and when the prices for photovoltaic panels significantly reduce it is a relatively easy function to add the panels.

- Installing water-efficient Grade “A” appliances such as washing machines and dishwashers, and using lower-volume baths, and, fitting taps with water-saving flow restrictors. Installing 'dual flush' toilets (this alone could save an estimated 55,500 litres of water per room per year).
- We start our recycling in our homes. Our kitchens are fully integrated with recycling bins so waste is separated at source before moving to the main refuse disposal bins situated on site. This offers all residents a unique opportunity to actively be involved with recycling with minimal thought and effort. We make recycling an easy option for the home occupier.
- These buildings will be stylish, finished with natural materials (allergy and formaldehyde free) and easy to maintain and clean. Buildings that are warm in the winter and cool in the summer and provide for all the amenities of modern living.
- Insulated flooring.

Detailed specifications of House No 4 & 5

These are currently old stables built from 1 skin bricks and our intention is to leave a majority of the buildings as they are, however, we will introduce some of the energy saving devices to make them more environmentally sustainable.

These will be upgraded to include:-

- 300mm super insulation to the walls and to the roof areas.
- Triple glazing (to the north elevation) and double glazing to the remaining elevations, to increase the air tightness of the building envelope and reduce the amount of air that can leak out of the building.
- Kitchens will be fully integrated with recycling bins so waste is separated at source before moving to the main refuse disposal bins situated on site.
- Water-efficient Grade “A” appliances such as washing machines and dishwashers will be fitted, and lower-volume baths and fitted taps with water-saving flow restrictors 'Dual flush' toilets will also be installed.
- Hot water and heating, the buildings will be connected to one of the systems that we will provide Ground Source Heating Pump System, or Biomass Boilers.
- Connection to the rainwater storage system will also be done, and a booster on the roof for hot water and the heating system will be included to boost the system on a sunny day.

- Future proofing for the installation of photovoltaic panels as and when required in the future.
- Interiors will be finished with natural materials, and will be allergy and formaldehyde free.
- Insulated flooring

Detailed specification of House Nos. 6, 7, 8, 9, & 10

House numbers **6 & 7** will be new build and will incorporate

- 300mm super insulation to the walls and roof area.
- Triple glazing (to the north elevation) and double glazing to the remaining elevations, to increase the air tightness of the building envelope and reduce the amount of air that can leak out of the building.
- Hot water and heating. The buildings will be connected to one of the systems that we will provide Ground Source Heating Pump System, or Biomass Boilers.
- Rainwater collection and storage. This will allow us to collect rain water from gutters and hold the water in storage tanks. When required, this water can be used for gardens in the summer, and for washing cars, windows etc.
- Hot water booster system on the roof to supply additional energy for hot water and the internal heating system on sunny days.
- Future proofing the buildings for installation of photovoltaic panels. These will be prepared in advance, and when the prices for photovoltaic panels significantly reduce it is a relatively easy function to add the panels.
- Installing water-efficient Grade “A” appliances such as washing machines and dishwashers, and using lower-volume baths and fitting taps with water-saving flow restrictors. Installing 'dual flush' toilets (this alone could save an estimated 55,500 litres of water per room per year).
- Kitchens will be fully integrated with recycling bins so waste is separated at source before moving to the main refuse disposal bins situated on site. This offers all residents a unique opportunity to actively be involved with recycling with minimal thought and effort. We make recycling an easy option for a ZED home occupier.
- These buildings will be stylish, finished with natural materials (allergy and formaldehyde free) and easy to maintain and clean. Buildings that are warm in the winter and cool in the summer and provide for all the amenities of modern living.
- Insulated flooring

House Nos. 8, 9 & 10

These buildings will be partly refurbished and partly new build. The refurbished properties will be upgraded to the same specification as house nos. 4 & 5.

Detailed specifications of House Nos 11, 12, 13, & 14

These will all be new build. In addition to all the technologies stated above, in buildings 1,2&3 we will include the following:

- These houses will be designed to blend in with the natural landscape which forms part of Copse Farm so that when they are viewed from any vantage point, they appear to form part of the landscape. This will be achieved through the use of sedum roofing which will offer considerable biodiversity and provides improved air quality by absorption of CO₂. The sedum roof will also absorb rainwater, reducing peak flow and surface run-off and serve as additional roof insulation.
- South facing sun space enabling residents to maximise the benefits of the sun.
- Installation of wind cowls to aid natural ventilation.

Existing Farm Cottage, Dairy Cottage, Copse House

These buildings are not part of our planning application, but, as these buildings are part of Copse Farm, we feel compelled to invest in these, and bring them up to date and make them more energy efficient.

We will connect these buildings to the Biomass boiler or to the Ground Source Heat Pumps System. Hot water and heating to these buildings will be supplied by this source.

As these buildings are built around 1886 they are not well insulated. We would propose to inject insulating material into the existing hollow cavity between the bricks and internal blocks which will result in increasing the air tightness of the buildings thereby reducing air leakage.

Although we will modernise these buildings inside and out, we will retain their original character. By doing so we demonstrate how buildings built in 1886 can be upgraded to exceed the BREEAM standard.

The Barn

This locally listed building adds character to the farm and with this in mind, we intend to preserve as many of its original features as possible.

Our intention is to convert this into working space, upgrading it with:-

300mm insulation to the walls and roof area. Insulated floor, “A” rated electrical appliances, rainwater collection, integrated recycling bins, low energy light bulbs; air tightness achieved through use of double and triple glazing. Like all the other buildings at Copse Farm, the barn will also be connected to the Biomass Boiler or Ground Heat System.

Whilst retaining the existing structure, we will explore other measures to enable us to insulate the external walls with materials to retain the external character of this barn.

Environmentally Friendly Technologies

Water Technology

These technologies include:

Sedum Roofing – This involves the installation of a particular species of sedum usually on roofs or flat elevations, sometimes known as ‘Green Roofing’. The sedum



absorbs the rain water and has the effect of reducing surface runoff across the site, which in turn has the effect of reducing peak run off in the river systems.



Sedum roofing has the added benefit of acting will also act as an added insulator. Also of particular relevance for the Copse Farm project is the fact that the sedum when applied to the roof elevations will blend the development into the natural landscape of Copse Farm.

Other Water Technologies - Low water use shower and bath fittings are now in use throughout the industry and can substantially reduce water use.



Heating & Power Technologies

Biomass Boilers – This involves the burning of either wood chip or wood pellets to create heat for a building. The system can supply both hot water and provide for central heating needs. The boilers can be integrated into traditional wet systems (radiators and pipe work). Depending on the size of the development or the heat requirements of individual buildings the bio mass storage areas will usually need to be replenished bi-annually.



Delivery of Biomass Materials



Biomass pellets

Biomass boilers can either be large individual units or smaller units which can be installed in series to ensure adequate supply regardless of peak demand or allow for over capacity to mitigate against maintenance down time and or unforeseen malfunctions.



Smaller units (in series)



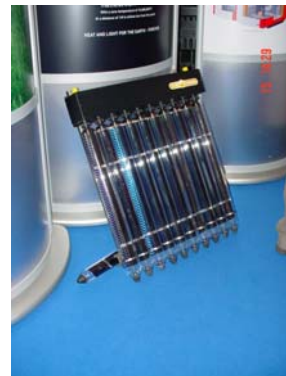
Larger Biomass Units

Hot Water and Heating booster system

The roof tubes help to boost the Hot Water system and the cooling system on sunny days. This system integrates with the two systems, namely, Biomass and Ground Heating.



Photovoltaic roof panels



Tubes heating system

Underground Heat Pump Technology – This involves the burying of special plastic pipe work into the ground. The pipes are either laid to a depth of around 1.2m spread in a horizontal mat, or are buried vertically to a much greater depth. Water is then pumped through the pipes and is heated naturally by the ground.



Super Insulation

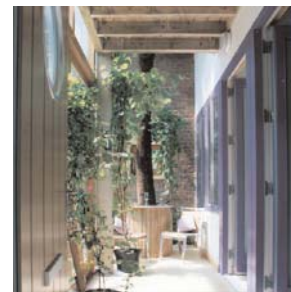
As described previously, where appropriate the development will incorporate 300 mm super insulation. The incorporation of super insulation and improved air tightness in buildings ensures that new Part L building regulations are exceeded and that smaller plant (in terms of KWH rating) is required to heat buildings. The end user benefits in the long term from lower utility bills.



Super Insulation in situ.

Sun Terraces and Orientation of New Buildings

Buildings are orientated to take maximum advantage of natural daylight and solar gain. Wherever appropriate sun terraces are incorporated to give users external spaces that can be screened for private use.



Solar Terrace

Recycling

As expressed in earlier parts of this document we believe recycling starts in the home. Therefore, we incorporate four compartment bins (above right) within the kitchen area to encourage end users to recycle at source.



4 Compartment Bin

Natural Materials

Our units will be furnished with natural materials (allergy and formaldehyde free) and easy to maintain and clean.



For further information on our technologies please refer to our website
www.zedhomes.com