

## Soha Housing sustainable homes, incorporating PV, solar thermal & GSHP – Compton Close, Didcot

**Existing or Proposed Project:**

EXISTING – COMPLETED EARLY 2004



**Location:**

COMPTON CLOSE, DIDCOT, OXFORDSHIRE

**Project Leader:**

Soha Housing Association

**Description:**

Soha's eleven new energy efficient homes embrace the principle that cost-effective, affordable homes can be built using sustainable construction methods. These homes contain different combinations of practical, common-sense 'eco-features' that are easy to use and maintain.



### Background

These eleven homes comprise four 1 bedroom flats and seven 2 bedroom houses and have been built on the site of a former council depot at Didcot. The homes have been designed to reduce energy and water bills by 50% on average and it is hoped they will form a blueprint for future Soha housing developments as they are not only good for the environment, but also give tenants lower running costs.

Philip Cringle, Soha's development manager states, "Affordability is not just about the rent we charge, it is also about the costs of running a home".

The cost of the entire scheme, including land purchase was £1.5 million and the additional eco-features added £150,000 to the project costs of which £615,000 was provided in grant by South Oxfordshire District Council

### **The Technology / Scope of Project**

There are a range of technologies used in these homes and these are listed below. They all contributed to the development achieving an EcoHomes 'Very Good' rating. SAP ratings for the properties average 100.6, ranging from 91 to 110.

Solar PV roofing tiles, provided by Solar Century have been integrated into the building fabric as part of the roof on the dwellings pictured below. These systems, rated at 3.03kWp, are expected to provide up to 50% of the homes' energy needs and will cut electricity bills dramatically. They are specifically designed to work in cloudy and low light conditions, which make them ideal for the UK climate.



Solar thermal systems have been installed on four of the houses (below). These systems, provided by Seacon, should provide around 60% of the tenants' hot water requirements through the course of the year. Fitting these systems is straightforward and significant economies of scale exist for large scale installation. Also, solar thermal systems provide almost 100% of hot water needs through the summer months, meaning boilers can be turned off, thus prolonging their lifespan.



Ground source heat pumps (GSHP) have been installed by locally based ICE Energy into two of the properties and are connected to underfloor heating systems. The two houses where these are installed were perfect for this type of installation due to the large nature of their back gardens (below left) where the underground pipework is located, although boreholes could have been sunk if space had been a problem. Whilst not 100% renewable energy, these systems have exceptionally low running costs and remove the need for radiators and annual boiler checks. Below right is a similar system installed in Norfolk.



Other features of these homes include –

Gas condensing boilers – where boilers are fitted these can potentially convert 98% of the energy from the gas into heat for the home.

Grey water recycling – this takes waste water from bathroom wash basins, showers and baths. After treatment the water is stored for later reuse in low-flushing toilets.

Sun pipes – these 13" diameter pipes reflect daylight into the home. Each pipe provides the equivalent of 100 watts of light on a dull day (see Greenfields, Shortenills and Buckinghamshire family home case studies for more installations).

Additional insulation – cavity wall insulation of 100mm and additional loft insulation have been installed.

Energy efficient lighting – the design has put the necessary circuitry in the light fitting, not the bulb, reducing cost and cutting waste. Soha also installed the relevant bulbs.

Water butts – each house has a water butt to recycle rainwater for use in the garden.

Passive stack ventilation – provides natural background ventilation so that tenants do not need to use additional electric fans

Recycled materials – rubble from the buildings previously located on the site has been recycled and used as hardcore thereby minimizing waste and landfill.

## **Importance to the Thames Valley**

This development demonstrates cutting edge sustainable building techniques and should serve as a stimulus to other social housing providers and volume house builders when it comes to specifying for new homes. All the techniques and technologies are readily replicable within the Thames Valley and should be offered as options to the home buying and renting public. As the public becomes more demanding and understanding of these technologies, housing providers will be under increasing pressure to provide them.

Of equal importance is the fact that these 'affordable' homes are 'affordable' to live in through reduced utility bills for the householder. This key issue is often forgotten when this subject is on the agenda. Affordable homes need to be affordable across their lifespan and not just at the point of construction and sale.

The use of PV roof tiles is innovative and is, as far as we are aware, a first for the Thames Valley region (June 2004). We believe that this particular product has a huge future and as more are installed, prices should fall and installations should become the norm.

## **Project Partners**

Client: Soha

Architects: Bree Day Partnership

Building Contractors: Coopers Construction Limited

Grant funding body: South Oxfordshire District Council