



SUSTAINABLE  
HOMES

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## **Case Studies of Successful Code for Sustainable Homes Projects**

Sustainable Homes publish the Sustainable Homes Index For Tomorrow (SHIFT) and are a leading trainers of Code for Sustainable Homes assessors. These case studies are provided by members of SHIFT.

## Case Study 1: Holt Road & Swans Close – Norfolk – Code Level 4



### Developer – Hastoe Housing Association

A mixed development of 7, 2-3 bedroom houses and flats. This development was planned to Code Level 4 even before it was mandatory for housing associations to achieve this.

### Sustainable Design Features

- Ground source heat pump
- Passive solar design
- Low flow sanitary ware
- Rainwater recycling for garden
- Low energy lighting
- Internal recycling bins
- Positive enhancement of the site ecology

## **Technical Performance**

**External Fabric** – Timber Frame with Facing Brickwork and Cavity fully insulated U-value 0.25W/m<sup>2</sup>K

**Roof** – Timber Frame with mineral wool insulation laid between & over ceiling joists U-value 0.11W/m<sup>2</sup>K

**Floor** – Proprietary Concrete Beam & Block with insulation & screed above. U value 0.16W/m<sup>2</sup>K

**Doors & Windows** – Double glazed, low-emissivity windows U-value of 1.8W/m<sup>2</sup>K and doors with a U-value of 1.20 W/m<sup>2</sup>K

**Air Permeability** – at [5.16m<sup>3</sup>/@50pa](#)

## **Cost and Value**

Additional costs were incurred in three specific areas:

- Landowner & Local Authority design requirements
- Features to achieve Code for Sustainable Homes Level 4 (absence of gas)
- Specific rural scheme requirements

The total cost per sq metre excluding land and landowner's contribution to services was £1,619.86.

## **Lessons Learnt**

- As the first Code scheme for the design team, and the main contractor, some steep learning curves had to be accommodated
- Ensuring sub-contractors understood the requirements for Code Level 4 proved difficult especially when most were set in their ways
- Significant problems were encountered in obtaining responsibly sourced materials due to lack of interest from the supply chain to make it a high priority
- Surface water disposal proposals had to be continually re-examined to achieve compliance

## Case Study 2: Mid Street – Surrey – Code Level 5



### Developer – Raven Housing Trust

2 Two bedroom flats located in South Nutfield. The first publicly funded social housing development in the UK to achieve Code Level 5

### Sustainable Design Features

- Passive solar design
- Rainwater harvesting
- Environmentally friendly materials
- High levels of insulation
- low levels of air-permeability
- Low energy lighting
- Triple glazed windows
- MVHR
- Biomass pellet boiler
- Energy rated white goods

## **Technical Performance**

**External Fabric** – Insulated panel system with 50mm external insulation – value 0.14W/m<sup>2</sup>K

**Roof** – Timber roof concrete tiles with 400mm mineral wool insulation U-value 0.13W/m<sup>2</sup>K

**Floor** – 75mm insulation U-value 0.14W/m<sup>2</sup>K

**Doors and windows** – U value 0.80W/m<sup>2</sup>K. Doors U-value of 1.2W/m<sup>2</sup>K

**Air Permeability** – [4.9m<sup>3</sup>/h@50pa](#)

## **Cost and Value**

Build cost excluding land costs and fees was c. £1,850 per sq metre. This was estimated to be an uplift of 20% over standard build costs. The biomass boiler presented the biggest source of problems requiring servicing every 1-2 weeks significantly adding to maintenance costs.

The sales value of the homes was estimated to be c. £2,857 per sq metre, equal to or above sale values for equivalent properties in the area.

## **Lessons Learnt**

- It was important to involve an experienced code assessor before drafting initial designs
- Construction details need to be produced early in the design process
- Shared heating systems can be a practical and cost effective solution
- MVHR can significantly reduce energy requirements if correctly specified and installed
- A good relationship and understanding with the site manager is necessary for a design to be realised

### **Case Study 3: Jarvie Close - Hunstanton – Code Level 4**



#### **Developer – Hastoe Housing Association**

A development of 10 1-4 bedroom houses and flats

#### **Sustainable Design Features**

- Ground source heat pumps
- Low energy light fittings
- Rainwater butts for garden
- Super insulation
- Passive solar design
- Low flow rated sanitary ware
- Recycling

## **Technical Performance**

**External Fabric** – Cavity wall construction with facing brickwork, U- value 0.26W/m<sup>2</sup>k or 0.22W/m<sup>2</sup>k in areas finished with flint.

**Roof** – mineral wool insulation laid between and over ceiling joists U- value 0.13W/m<sup>2</sup>k

**Floor** – proprietary concrete beam & block with insulation & screed above -U-value 0.15W/m<sup>2</sup>K

**Doors & Windows** – Double glazed, low-emissivity windows U-value 1.8W/m<sup>2</sup>K and doors U-value of 1.20 W/m<sup>2</sup>K

**Air Permeability** – [3.59m<sup>3</sup>/@50pa](#)

## **Cost and Value**

Due to this scheme being classed as a ‘Rural Exception Site’ there were specific design requirements that brought about additional costs.

To achieve Code for Sustainable Homes Level 4 Ground Source Heat Pumps & Velfac glazed screens & windows for passive solar gain contributed £106,115 to the overall cost.

The total cost per sq metre excluding land and landowner’s contribution to services was £1,514.63.

## **Lessons Leant**

- Early consideration of Code issues enabled the design to be delivered that accommodated all of the Code requirements with relative ease
- An experienced contractor with a good understanding and previous experience of Code requirements further enabled easy delivery of a level 4 scheme
- Using a Code Assessor and working with them from the start helped to iron out problems during construction