



## ORGANICS BY ecoTECH SWEDISH HOUSE



### Scheme Summary

Swedish house manufacturer, eco-TECH, has developed a two bedroom modular house with a self-contained one bedroom apartment on the ground floor, in the Innovation Park, called 'ORGANICS by ecoTECH'. The house is fully inclusive of IT infrastructure provided by CISCO Systems, and offers an affordable, low maintenance, low energy, sustainable way of living. The houses are supplied in kit form which includes turnkey solutions; ready equipped with all white goods, wireless solutions for home entertainment including remote monitoring and security. The prefabricated central pod was craned into place containing all building services units and appliances, which drastically reduced costs and on-site construction time.

### Water

The house meets the water requirements for Code levels five and six at 80 litres per person per day, achieved by the use of flow restrictors and greywater recycling. Flow restrictors on sink and wash basins taps limit flow rates to two litres per minute, with showers restricted to six litres per minute. A 46 litre low-capacity Bette bath is also provided. Toilets are flushed using a BRAC w200 greywater recycling system, which enables the house to achieve Code water requirements by recycling waste water from taps, showers, washing machine and dishwasher. The greywater unit has been placed in the cycle storage area under the external staircase. This minimises the risk of leaks or smells affecting the property, and would also ease maintenance issues for social landlords. For more information see: <http://bracsystems.com/home.html>; [http://www.eco-techgroup.com/pdfs/ecoTECH\\_Technical\\_Manual.doc](http://www.eco-techgroup.com/pdfs/ecoTECH_Technical_Manual.doc).

# RATING:

## Code level four

(Code level five/six for Water)

### Design Flexibility And Robust Standards

The structure of the house is designed so that the load is carried by the external walls, which allows maximum flexibility with the layout and enables easy refurbishment of the dwellings.

Non-load-bearing pods are used to provide pre-finished kitchens, bathrooms, cloakrooms and stairs within the house. The non-load-bearing nature of these pods means that they can sit on a standard floor construction and under the ceiling, which enables the use of Robust Standard Details in apartment construction.

### Energy: 50per cent improvement on Part L1A 2006

An air-water heat pump provides space heating using energy from the air and supplies constant fresh air to the building. A heat recovery unit recovers a large portion of the energy in the exhaust air. Energy efficient lighting is also used, which can reduce household electricity costs by up to £7 a year for each energy-saving bulb used. Energy-efficient appliances similarly offer additional financial and energy savings.

### Renewables

Solar hot water (3.17m<sup>2</sup> area): this is one of the most cost effective renewable options available, and can provide over half of the domestic hot water requirements over the year.

### Reduced Demand

The ecoTECH house which is available to buy today, incorporates the following improvements which substantially reduce space heating requirements:

- fabric U-values of 0.06 to 0.13W/m<sup>2</sup>K;
- window average U-value 1.3W/m<sup>2</sup>K;
- thermal bridge-free construction;
- reduce unwanted air leakage to Energy Saving Trust Best Practice levels; and
- whole house mechanical ventilation with heat recovery.

### Lessons Learned

- Energy use must be considered from conception to completion: the design must be signed-off before construction starts, and any subsequent changes must be accounted for.
- Avoid complicated house designs and floor layouts; compact designs work best. Try to make the most of the plot, provide ample daylight and choose a good orientation for the house.
- Make sure that the site manager and contractors understand what 'air tightness' is and also carry out checks to ensure that insulation is correctly installed.
- The insulation should be continuous and thermal bridges should be avoided.
- The main heating system should be as efficient as possible, such as an EST recommended condensing boiler, and ideally also run on the cheapest and least polluting fuel.
- For properties off the gas network heat pumps can be an attractive solution. Decorative fires should be avoided as they are inefficient.

The EST provides free technical guidance and solutions to help UK housing professionals design, build and refurbish to high levels of energy efficiency. These solutions cover all aspects of energy efficiency in domestic new-build and renovation. They are made available through the provision of training seminars, downloadable guides, online tools and a dedicated helpline.

### Further Information

Christine Hynes  
E. [chynes@eco-techgroup.com](mailto:chynes@eco-techgroup.com)  
T. 0118 925 3224  
W. [www.eco-techgroup.com](http://www.eco-techgroup.com)  
EST publications can be obtained free of charge by telephoning the helpline on 0845 120 7799 or by visiting the website at [www.est.org.uk/housingbuildings](http://www.est.org.uk/housingbuildings).