

Flagship Home



location on map (image from Wikipedia: <http://en.wikipedia.org/wiki/Knightsbridge>)



Front entrance

- location:** City of Westminster, UK
- dates:** 2005
- type:** Renovation of a five storey Victorian terraced house from the 19th century.
- use:** Residential
- size:** 36
- people:** The Royal Borough of Kensington and Chelsea Council, City of Westminster Council, Eaga Partnership Ltd, ECD Architects, EDF Energy, Energy Saving Trust (EST), English Heritage, S E Land and Estates plc, Beechwood Property Renovations Ltd
- actors:**
- goals:**
 - “The aim of the project is to show that this type of house can make a positive contribution to a low carbon economy while maintaining the traditional character of the building and adhering to planning constraints.”
 - maximise energy efficiency and reduce emissions of CO₂

energy use		KWh/m ²	construction	amenities
total energy demand, goal			▪	
total energy demand, achieved				
systems			special project features	site ecology
district heating			▪ Renovation and preservation	
combined heat & power			▪ Information, education and inspiration through active involvement of different actors and a web-site explaining the project	
solar panels		x		
solar cells				
biomass and refuse				
wind power				
natural ventilation				
forced vent.w/heat recovery		x		
non-renewable energy		x		
individual metering		x		

process and history

The Flagship Home in 36 Beaufort Gardens, Knightsbridge, was a five storey Victorian terrace house comprising of bedsits and one self-contained flat. It is classified as a House in Multiple Occupation so the Council looks after its regulations. By this refurbishment the Council wanted to provide an example to other landlords in the Borough - to encourage greater awareness and take-up of energy efficiency.

As an old building structure, it is a typical representative of a large proportion of the housing stock in the Royal Borough, Westminster and other British cities. It is in a conservation area but is not a listed building.



Front elevation



Two communal 26kW condensing boilers provide heating to the whole building

process and history

The Flagship Home is owned by SE Land and Estates plc, which owns residential and commercial property across the UK.

The objectives of the project were:

- To demonstrate and promote practicable, cost effective, energy efficiency measures to private landlords.
- To target older, solid walled properties in conservation areas that have been ignored by national and regional campaigns.
- To demonstrate how older properties can make a positive contribution to a low carbon economy through the use of innovative methods used in conjunction with traditional sustainable green materials.
- To encourage a close working relationship and a better understanding between statutory bodies and building preservation organisations.
- To tackle issues such as fuel poverty that may be alleviated through more energy efficient housing.
- To provide Royal Borough of Kensington and Chelsea and Westminster City Council with the opportunity to explore new innovative measures, identify new ways of working and promote sustainable housing.
- To use the property as an exhibition home to promote innovative energy solutions to our target audience.

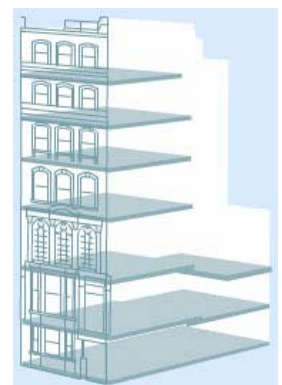
description of special project features

Energy improvements involve:

Throughout the Flagship Home, light fittings have been installed which will only take energy efficient lightbulbs. As the Flagship Home was constructed in the 1800s, some of its units have very high ceilings, requiring the landlord to send out maintenance staff simply to replace lightbulbs. The use of energy efficient lighting – which has a much longer lifetime – means that the costs of maintenance are significantly reduced.

The existing building had no fixed heating appliances. Typically the landlord would install an electric heater where needed. These were expensive to run and emitted a lot of carbon dioxide. As part of the feasibility study a number of options were reviewed and the conclusion was made that a central gas fired heating system was the most cost effective solution.

Two communal condensing gas boilers were installed supplying radiators in each bedsit and two hot water cylinders. Each bedsit has a programmable thermostat so the occupant can set the temperature and operating times. This is an important feature particularly to those working long hours or shift workers.



The hot water cylinders are powered by a combination of solar power and gas. On hot days in the summer the solar power can provide all the building's hot water requirements.

Because the building was located in a conservation area a planning permission to add external wall insulation, for example stone cladding, to the front was not possible to get. There were also difficulties with the rear elevation so the only viable option was to use insulated drylining (this involves adding a layer of plaster board with insulation attached to it to the inside of an external wall).

All of the external walls were dry-lined with a 35mm thick insulated dry-lining achieving a U-value of 0.6W/m²K (space limitations restricted the thickness that could be applied). This insulation will reduce heat losses through the walls by up to 65 per cent. In addition, to reduce thermal bridging or cold spots, the insulated dry-lining was continued along the party walls for one metre.

To ensure that the building is free from problems caused by condensation and mould growth a new ventilation system was introduced. This provides a constant supply of pre-warmed, dry air and extracts stale, moist air which results from washing, cooking and such like. The ventilation system allows for efficient heat recovery – this means the warm air that is being extracted from the building partly heats up the incoming cold air.

The building's windows were in a poor state of repair. But as the property was located in a conservation area it was not possible to get planning permission to replace the front windows with double-glazed ones. However, the rear windows were replaced. The front windows were refurbished and secondary glazing was added to prevent heat loss. The rear windows were replaced with new wooden double glazed ones, the glazing includes a low emissivity coating and the gap between the double-glazing is filled with argon rather than air to help reduce heat losses. The new windows meet the requirements of Part L of the UK Building Regulations.

The Royal Borough's standards require that all bedsits have a small refrigerator, all refrigerators in the Flagship Home will be 'A' rated. The toilets have a "low-flush" option - flushing uses either two or four litres of water (a typical toilet uses six litres).

With 36 residents living in small, well-insulated individual units, the building has a high demand for hot water compared to its demand for space heating. As the back of the building faces south-west, it provided an ideal location for solar panels which are used to help heat the building's water. A solar water heating system has been installed which will provide on average 60 per cent of the tenants' hot water needs. The system includes two 500 litre hot water cylinders. Solar panels were incorporated into the new roof design to ensure they would not be visible from the street.

funding

The landlord paid most of the project costs. The additional capital costs of the energy efficiency measures were supported by funding from the Royal Borough of Kensington and Chelsea, the Energy Saving Trust and London Energy. The Royal Borough of Kensington and Chelsea has contributed £140,000 to the Flagship Home project, while the Westminster City Council has contributed £1,500.

The Energy Saving Trust's Innovation programme provided a grant of £90,000 towards a feasibility study and project management and marketing costs.

London Energy has contributed to the costs of insulation and white goods through its Energy Efficiency Commitment programme.

The improvement done on this house can be measured by "NHER" stands for National Home Energy Rating, which is a UK wide scheme that provides a reliable method for measuring the energy performance of a home. It runs from one to ten, ten being the most efficient. As a result of this project, the Flagship Home will leap from three to nine!

results

- Energy costs have fallen by 67 per cent from approximately £3,400 to £1,100.
- CO₂ emissions have been cut by 63 per cent from a level of 25.74 tonnes per year to 9.58 tonnes

Lessons learned:

The breadth of the partnership involved in the Flagship Home project necessitated clear communication between all the partners.

Local authorities and other housing providers are particularly interested in solutions for 'hard-to-treat' properties, where common energy efficiency measures cannot be installed.

Having successfully demonstrated how the installation of energy saving measures can significantly improve performance in an older building, the project team believes others can benefit from the adoption of some, if not all, of the measures in their own projects.

It is difficult to engage private landlords on energy efficiency. The immediate benefits of improvements (increased comfort, reduced fuel bills) accrue to the tenant, so there is often no obvious incentive to the landlord. However, the response to the project, particularly at London Landlords Day, has been promising and a database of interested landlords has been established for future marketing activities.

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sources:

- Most information was attained from the projects web-page
<http://www.rbkc.gov.uk/flagshiphome/general/default.asp>
- Making private rented housing energy efficient – the Flagship Home, case study, CE192 © Energy Saving Trust January 2006. E&OE All technical information for the brochure was produced by BRE on behalf of the Energy Saving Trust

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