



Making the most of an extension

Uncertain job security, children staying longer in the family home, coupled with a 23% drop in planning permission being granted for new homes, has meant that architects are seeing more demand for extensions. *But aside from adding more space, can extensions improve the environmental credentials of a house? When architect Sam Tisdall was approached to remodel a 1920's suburban house in Chiswick, it presented an excellent opportunity for environmental enhancements. Here, he outlines how it was achieved...*

With the housing market tottering on the edge of an uncertain future, many home owners are choosing to improve and extend their homes rather than move. Not only is investing in a new home risky, and finding the right home difficult in a stagnating market, it is also costly. Stamp duty and estate agent's fees take a considerable chunk out of a budget that could otherwise be invested in improving the existing property.

Extending or re-configuring a property almost always provides the opportunity for environmental improvements. Even adding a standard extension to the rear of an un-insulated Victorian house is an improvement, but a lot more can be achieved, given the chance.

Here is an example of a project we designed for visionary clients who presented us with a fantastic opportunity to develop an overall environmental strategy for their house and to integrate this into the architecture. The clients' role cannot be underestimated: from the start they were committed to a sustainable agenda. The most successful and interesting ideas have, we hope, added to the richness of the finished building.

Solar collector and heat recovery

One of the reasons the clients wanted to stay in their house was the lovely garden and the views of mature trees in Chiswick House Park beyond, which create a billowing vista of foliage to the rear. To take advantage of this we proposed a frameless glass box at first-floor level linking the existing house to the new master bedroom. A simple connector between old and new, it looks out over a green roof and also acts as a greenhouse, producing hot air. Potentially this causes overheating, but by using a heat-recovery system this hot air can be captured and distributed to the rest of the house.

The heat-recovery system also provides extraction to bathrooms and fresh air to habitable rooms, which means that trickle ventilation is not required. This helps to give clean lines to windows and doors and allows the building's envelope to be sealed. The existing open fire was the only remaining route for escaping hot air, and this was sealed with a double-sided high-efficiency gas fire which was inserted through a hole broken through the central wall of the house to provide a focus for the 'old' dining room on one side and the 'new' living room on the other.

Re-using materials

Although the clients wanted a bold and contemporary extension at the rear of the house, which we clad with panels of glass-reinforced concrete, they also wanted to retain some of the charm of the existing 1920s house which they had lived in for over 20 years. This fitted well with a strategy to re-use materials, including retaining the existing Baltic pine parquet flooring in the living room and the well-loved and worn quarry tiles in the kitchen, which now form the floor to the utility room and downstairs WC. The existing door joinery and architraves were kept and matched where old parts of the house were adjusted, and the solid banisters of the stairs were stripped to reveal the original 20's rectangular spindles.

During demolition we retained what we could, including a substantial brick wall, which forms the side of the extension, and also some of the old timber joists and sarking boards. The timber was used to construct a new garden shed, faced with polished stainless steel, which camouflages it by reflecting the surrounding greenery.

Water recycling

With the garden such an important focus for the house, the clients were concerned to reduce their reliance on mains water to maintain the lawn and garden. As part of the work, a new underground wine cellar was constructed under the kitchen floor, which meant that the old cellar was made redundant. This provided a perfect opportunity to install a rainwater tank without costly excavation. The tank collects water from over half of the building's roof area and in addition an unused soak-away discovered on site acts as an overflow from the system, so that most of the water discharges into the garden rather than relying on the overloaded sewer system.

Alongside these three elements, we also installed photovoltaic panels connected to the national grid, and solar water panels that provide hot water for under-floor heating in the living room. The extension was timber framed and insulated to a very high standard using a mix of traditional and multilayer foil insulation. This allowed us to reach a U-value for the walls of 0.15 without substantially increasing their thickness. The existing house was upgraded where

possible, including double-glazed timber windows to match the originals, and a new roof with a breather membrane and insulation at rafter level. Inevitably some of the existing solid walls of the house have been left un-insulated, the alternative considered too costly and liable to erase the character of the original house.

The clients have received their first payment for the electricity generated by the photovoltaic panels and the building has dealt very well with this year's hot spells and is expected to do the same in the cooler winter months. We are interested to discover the effect of the improvements on the overall energy use of the house and are looking forward to hearing feedback from our clients after their first full year living in their newly improved home.

Sam Tisdall is a London-based architectural practice with a track record of completed projects since 2004. Clients include individuals, families, businesses and schools. www.samtisdall.co.uk