



3 GREEN PARK, ORWELL ROAD, DUBLIN 14

Careful planning and system specification has turned this simple refurb job into a highly efficient, B1 energy rated house

Like other houses of its period, this 1930s Kenny-built family home on Orwell Road, Dublin 14 features a large amount of glazing, a large garden site both front and back and a larger internal area. The brief to Niall D. Brennan Associates was to bring the house up-to-date whilst retaining and enhancing its existing features.

Although structurally sound, some deterioration of roofing, rainwater goods, cills and glazing in the original structure had allowed some water ingress, particularly around windows and doors. The architects worked closely with the M & E Engineers & Energy Consultants from the outset to ensure any works proposed would respect the era and character of the house, while bringing it up to today's standards in terms of design, comfort and energy efficiency. The house lacked any insulation and areas that needed refurbishment included the

roof, the external walls, windows and doors and drainage goods. A specification was drawn up for these with a view to preserving the style of the period. Heating and plumbing systems also required replacement so this design was carried out at the beginning in tandem with the overall design.

Using the Dwelling Energy Assessment Procedure (DEAP) the house as it stood had a "G" Building Energy Rating (BER). While it was proposed to retain as much of the fabric as possible, it was agreed that energy efficient technologies and techniques should be used to achieve a much improved BER. It was also decided that by including some renewable technologies with a high-efficiency boiler, new insulation and new elements to the envelope including glazing, roofing and external insulated render, the works would bring the house into a "B" BER rating category.

A high-efficiency glazing system was chosen to replace existing single-glazed windows in a painted hardwood finish (by Rationel Vindeur, with a U Value of 1.30W/m²K to 1.50W/m²K). An external insulated render system by Weber Systems meant the house was "wrapped" in a new insulating coat. According to Niall D. Brennan Associates, this system is considered highly efficient in refurbishment and renovation projects as it allows the thermal mass efficiency of the solid concrete construction to be maintained. It also allows all the internal floor area of an existing dwelling to be retained by insulating its envelope externally rather than using internal space by dry-lining. This system meant that internal decorative plasterwork and reveals could be retained inside the rooms.

The internal layout of rooms was also considered to ensure the maximum passive solar gain would be achieved within the main living



spaces, the kitchen, dining room, living room and sun room and these were located to the rear of the ground floor to benefit from this south-west orientation.

Services were designed to be concealed into the refurbishment, with a new high-efficiency boiler (a Viessmann Vitodens 200 gas boiler, with 90 % efficiency) and a whole house mechanical heat recovery system (efficiency of 92%) included for heating. Zoned controls to living and bedroom areas make sure the dwelling operates at maximum energy efficiency at various periods through the day and night. The existing timber suspended ground floor was replaced with an insulated concrete floor incorporating underfloor heating. Flat plate solar panels fixed to the rear south-westerly roof provide supplementary hot water to the house (Viessmann Vitosol flat plate, 7 sq. m area). These works all resulted in the reduction of the elemental U-Values, with the new values throughout the refurbished building fabric all below the 2008 Building Regulations TGD Part L maximum permissible U-Values. The specified new systems and refurbished building fabric have resulted in a big difference in running costs; an estimated €3,500.00 less in heating and electricity costs per annum. In addition, for a house of this scale (350 sq. m) and proportions, the character of the dwelling hasn't been compromised.

3 Green Park, Orwell Road is an excellent example of how refurbishment projects can achieve high efficiency in energy usage, combined with an enhancement of the existing character.

Architects: Niall D. Brennan Associates

Mechanical & Electrical Engineers & Energy Consulting: Johnston Reid & Associates

Main Contractor: South Dublin Construction Ltd.

Windows: Rationel Vindeur

Fabric Insulation: Weber Systems
Heating & Ventilation Systems & Solar Panels: Precision Heating

