

UK PASSIVHAUS AWARDS 2014

CRAWFORDSBURN

PAUL McALISTER ARCHITECTS LTD



REAR SOUTH FACING ELEVATION

Project description, key construction approach & innovations

The design of a new sustainable family home in a rural context. The client requested that the dwelling be certified by the Passive House Institute in Germany. The project was achieved within a limited budget with low energy space heating and hot water systems achieving a SAP 'A' rating. The completed house and its commissioned systems are being monitored and early steady-state tests have shown that the house is performing as designed. Ventilation is achieved using mechanical ventilation with heat recovery and this allows the heat produced within the building to be 'recovered' and reused 'Passively' heating the dwelling. Thermal mass also plays a part in reducing heat load, with large south facing windows capturing the heat of the sun adding considerably to the dwellings heating efficiency.



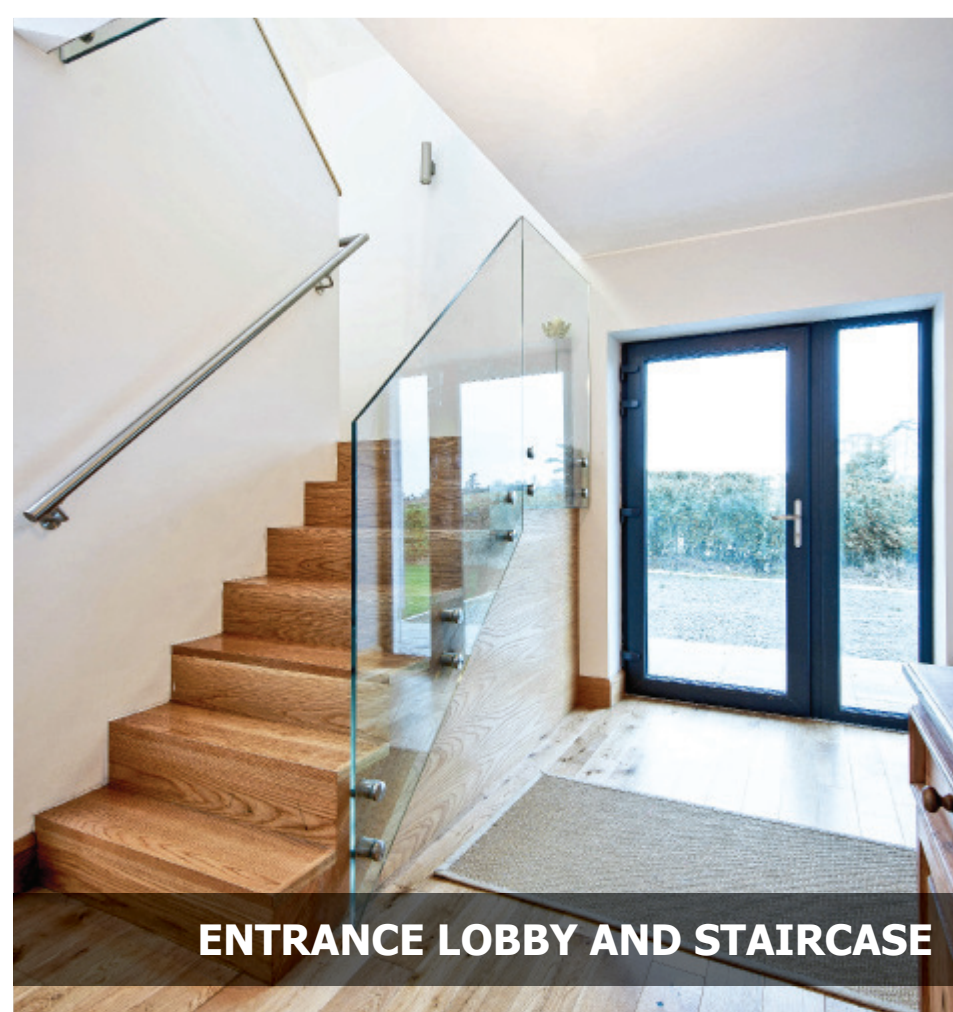
3D SECTION CUT-AWAY



APPROACH ELEVATION (NORTH FACING)



FIRST FLOOR GALLERY



ENTRANCE LOBBY AND STAIRCASE

Project Overview

Name: Crawfordsburn House
Location: Bangor, Northern Ireland
Building Type: Single family house
Construction type: Timber frame - SIP Panels
Construction period: 40 weeks
Completed in: March 2013
Occupancy status: Occupied since March 2013
Construction Cost: £1099/m²
TFA: 185.05m²

Sustainability features

Primary Energy Demand: 30kWh/m².a.
Heating Demand: 14kWh/m².a
Heating & Cooling Load: 11W/m²
Air pressure result: 0.6ach @50Pa
Ventilation strategy: MVHR
Heating strategy: Heat pump - Towel radiators
Shading strategy: Natural site shading
U values: Wall - 0.115W/m²k, Roof - 0.123W/m²k, Floor - 0.144W/m²k, Door - 0.78W/m²k, Window - 0.78W/m²k

Cost Innovations

The cost of the Crawfordsburn passive house dwelling is 8.3% more expensive than the 'typically constructed' dwelling. With careful planning we believe that this could be further reduced as passive homes become more popular.

We have carried out exact calculations to compare the running costs of the Passivhaus with those of a conventional home. In the first year of occupation the running costs of the Passivhaus will be £414.62, considerably less than £1391.95 for a conventional dwelling. Taking into consideration the inevitable price increases the costs of running the Passivhaus are actually a minimum of 70% lower.

Lessons learnt:

We would ensure builder has a better understanding of passive house construction prior to commencing on site. It was difficult for the builder to achieve the standard for this first project as it is only the second Passivhaus constructed in Northern Ireland and experience in building to this standard is still rare.



Quote:

Its amazing to finally be living in our beautiful, energy efficient home! We could NOT have done this without Paul and his team!

Helen McGlinchey, Owner

TEAM CREDITS

Client: Mr & Mrs P. McGlinchey
Architect: Paul McAlister, Paul McAlister Architects Ltd
Contractor: Kevin Mulligan, Baylands Construction Ltd
PH Certifier: Bob Ryan, MosArt Ltd
Photography: Simon Mills

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