

Renewable Energies and Insulation Report

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for

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Dundrum, Dublin

Architect / Builders Report

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Ground Floor

On top of subfloor install 1000g polythene. Then install 125mm foil backed polyurethane (Kingspan or equivalent). Normally 2 layers of Kingspan (75mm + 50mm) or equivalent – stagger all joints.

With first fix plumbing pipes 3 layers, 50mm Kingspan under first fix pipes, 50mm around first fix pipes, 25mm Kingpsan over first fix pipes. Separate first fix pipes with 75mm insulation. Stagger joints where possible.

See drawing

First Floor – Slabs

50mm KS insulation. 75mm concrete screed.

Screed for UFH

35N concrete 100mm deep laid as a wet mix with a brush finish. Include a plasticiser.

Use a laser level to set 25mm Kingspan insulation around all the walls as the guide for concrete level. Install a second layer of polythene under the UFH pipes. This should be 500 gauge.

A sub contractor who has done concrete screeds successfully:-

Noel Corey, 077 7569 7633

Foil backed polyurethane insulation boards are available as Kingspan, Quinntherm, Xtratherm and Celotex – buy on price.

Wall Structure 200mm cavity

The wall structure is 100mm outer block, 200mm cavity, 100mm block inner skin. Use 150mm strips of 75mm thick Kingspan as cavity closure at the side of the window and door frames. Use one row of Quinnlite B5 blocks opposite the floor insulation and floor screed on the ground floor. The Quinnlites are required on the inner skin of the cavity wall and on all new internal walls.

Teplo Wall Ties

Teplo type 2, 6mm diameter, 325mm long for a 200mm cavity.

Cavity Closure at top of walls

Fibre cement board.

Insulation of Cavities

Grey beads with glue.

Warm Flat Roof

Install 100mm Kingspan or equivalent on top of the joists. Install 150mm Foamlok spray-in foam between the rafters. Use plasterboard with a foil backing as a vapour barrier.

Possible Installer Lyons Insulation, Greystones.

Warm Sloping Roof

100mm Kingspan type insulation over rafters. Spray 125mm of Foamlok between the rafters.

Pantry / Larder

Insulate the walls with 60mm Kingspan and line with Fermacell Wallboard. Ventilate with an extractor fan linked to the light switch. The air supply to the pantry should be via 110mm supply from outside fed under the subfloor. Ensure no underfloor heating pipes or first fix pipes run through or under the pantry. The pantry door should have draftproof sealing.

Airtightness

No silicone sealers to be used. Use only Polymer sealers (CT1, Tex7, Stixall, Fix All).

Airtightness – Plumber & Electrician

Conduits which go through the airtight envelope should be closed to prevent air flows. The plumber needs to know to seal any penetration of the airtightness system. Sealing is achieved with approved airtightness tapes or polymer sealer such as CT1 / Tex7.

Airtightness under slabs on external walls

Spray the wall between the metal studding and the bottom of the slab with Foamlok.

Airtightness around Windows and Doors

Completely fill the space between the opening and the frame with expanding foam from the DPC at the outside to the inside. Seal the foam with polymer sealer (CT1, Tex7). Multisolve (a C-Tec product) helps get a good finish.

Airtightness behind Cladding

Plaster before attaching cladding.

Airtightness Target for this house 1m³/hr/m²

Recessed Lights

Cover downlighters which are close to insulation with Thermahoods.

Heat Delivery Systems

100mm space between the pipes in areas with lots of glass, bathroom, en-suite, vaulted areas, hallway and all high demand areas.

150mm space between the pipes in all other normal heat demand areas.

UFH pipes should be 16-17mm diameter.

Pipe layout should be laid in “spiral” layout and not in “snake” pattern.

The maximum length of one UFH loop should be 120m.

Low Temperature radiators on first floor.

Dataterm

One Dataterm thermostat / controller on ground floor and one on first floor.

Mechanical Ventilation Heat Recovery

Two possible suppliers / installers -

Beam [www.beamcentralsystems.com](http://www.beamcentralsystems.com) (028 7963 2424)

Homecare Villavent [www.homecaresystems.biz](http://www.homecaresystems.biz) (028 8776 9111)

Ventilation Openings

The heat recovery ventilation system requires a fresh air in-duct and a stale air out-duct.

The only other ventilation openings are for the kitchen extractor fan and the larder extractor fan.

Passive Sills

www.passivesills.com

Glass / Windows

Triple glazed. No trickle vents.

Primary Heating System

ASHP

Stove

Balance flue gas stove.

I do not take commissions from any company or individual. When I suggest or recommend a company I do so because I have found their service or equipment fully satisfactory in the past. This report is copyright Eric Davidson. The advice and recommendations are specifically for this project and this set of circumstances.

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