



# PAUL LEECH: GAIA ECOTECHTURE

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## # **Island House**

by Paul Leech BE BArch MIEI RIBA(r'd)

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'*Sine Sole Sileo*' is a sundial motto (I am silent until in sunshine). This design follows the whole day's activities, from waking to then sleeping again, illuminated by the sun's path, between first light and dusk.

The house presents one and a half storeys, lower level nestled into the slope of the site, screened: The upper ground floor level is a complete living suite, with universal access. Cut into the friable slope, everything below upper ground level is masonry; a plinth to receive a timber frame. Timber is only exposed externally on the roof fascia boards in larch, charred, for preservation. Valentia slate roof is reprised as a durable finish to clad the walls at the upper levels.

# The tripartite plan is a cruciform three by three set of nine squares, revelling in diagonal modulated *enfilades*, of flowing space and light: In its landscape yet a volume, a *villa*, cubic on three levels and, therefore, compact to *use less of everything, much more efficiently*:

On an beautiful elevated slope, but built on loose fill, a old bungalow had serious structural problems. Underground drains had been damaged by subsidence. Existing low quality construction made it necessary to start over again: So, demolition and rebuild a new low-energy home was appropriate:

The replacement house garden level has a masonry plinth, with retaining wall. Above this, a *piano nobile* enjoys views out over open landscape towards 'The Paps' of Co. Kerry to the South from open plan reception spaces around a central soapstone



## ECOTECHTURE ©

stove, *kackelofen*. The house presents just this level and the roof, while the lower level nestles into the slope of the site, all screened and inconspicuous: There is only a 'key hole' view from the road through the existing gateway in tall, dense established hedge. Rather than facing the road, the house is oriented due-south in order that the passive and active solar design works efficiently. These radically reducing the carbon footprint and use of fossil fuel for heating etc.

Living spaces are arranged to optimise the usability of the relatively small site and it's amenity including a structural glass deck on galvanised steel frame. These benefit from the distant views of landscape, high levels of daylight as well as the warmth of the solar gain, stored in the high thermal mass of the floor. Windows to the North are very modest in size with an entrance porch as a buffer space.

The clients had many specialised requirements which developed during design and, even, the construction phase. The geometry has an inherent simple logic and practical 'build-ability'. Future-proof, the form is flexible and able to adapt.

Ecological architecture features integrated, including:

Rural location convenient to both a large village and a small town, near Mainline rail services.

Extensive landscaping including Flowform water feature, Liscannor slate paving, native plant selection and wind-sheltering garden features

Fully serviced by rainwater harvesting, solar thermal & LPG heating (& cooking), underfloor heating, low energy light fittings and appliances, broadband internet access, satellite TV etc. for home-office facility.

New build of 2.5 storey dwelling with NSAI/ Agrément certified fabric:

Trench foundations 50% Ecocem, low-carbon concrete

Locally-manufactured PCC structure

Fabric acoustically insulated and Fire-rated

Timber frame locally-fabricated in Co Cork, breathing wall construction with cellulose insulation

Render finishes, in earth-tones, rainscreen cladding

Natural slate roof and wall cladding quarried in Co. Kerry

Galvanised steel gutters and RWPs

High-specification glazing; Aluclad engineered timber external joinery, Irish-manufactured

Rooflights also triple-glazed, with trickle-venting and actuators

Demand-controlled Ventilation system; humidity-sensitive, with low-velocity extract fans.

Preheated fresh air (not ducted). Additional manual trickle venting in each room to prevent overheating

Internal finishes low VOCs; parquet timber, stone & Marmoleum flooring and clay paints, in beautiful colours.



GAÏA

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Pressure-tested air-tightness:  $n_{50} = 0.66$  Air Changes per hour (1/h)  
 $q_{50} = 0.98$  cu.m/(h.sqm) surface area  
BER-rating A3 conforms with the max. permitted (primary) energy consumption  
and carbon (emissions) performance coefficients  
Future-proof design, accessible to people with disabilities.  
Many discretionary extras, most locally-sourced including bespoke interior joinery.