



BREAKING THE MOULD IN WEST CORK

Architect and designer John Morehead of Wain Morehead Architects Limited recently completed another outstanding job on a spectacular passive house on the edge of a bay in West Cork.

This 281 square metre, two-storey house is certainly an eye catching one. With its breath-taking views and spectacular design, it is a house that would fit right in overlooking the Hollywood Hills or as a home to a film star.

The owners of the property bought a small-holding eight years ago and they held the passive house standard as an ambition from the outset.

Before contacting WMA, the clients had already successfully secured planning permission for a four to five bedroomed house 'of a much more traditional design,' which had been designed by a local architect.

"Our practice would be synonymous with low energy and passive house design. The clients approached us to see if we could bring the design up to the passive house standard. They had spent almost five years waiting for their

planning permission to come through," said John Morehead.

"The clients then asked us if we would give the design a twist. We discussed it with the previous architects and they told us to go for it. The planning process had compromised the various architectural approaches that the original architects had.

"We started on site in March 2014. The project should have taken around one year to complete but we ran into difficulties half way through due to significant quality issues with the original window contractor. Thankfully the Austrian window licensor, Optiwin stepped up to the mark with replacement windows. The problem with the windows extended work on the project until April of 2016," added Mr Morehead.

"The house is fitted with a Mechanically Ventilated Heat Recovery Unit- a Nilan Compact P with a Geo 6 geothermal heat pump. Active heating and cooling is provided (when needed) by the Geo 6 geothermal heat pump which is fed by 600m of horizontal collectors buried on site. Excess energy taken from the exhaust air is used to heat domestic hot water. The unit comes with an integrated 250 litre cylinder for domestic hot water.

"We monitor all of our houses and this house is performing very well. We are very pleased with it. I think the attraction of passive house buildings compared to low energy houses, is that (passive) houses are designed in such

a way that they don't overheat and they don't have thermal issues," enthused John.

"There are three basic wall types used in the construction comprising of cavity wall, timber frame and block on flat externally insulated with a Baumit system, all with various finishes applied," said Mr Morehead.

The structural design of the property made things slightly more difficult in terms of achieving thermal bridge free design with Mr Morehead's design calling for the intergration of the structural components into the overall building envelope.

Achieving this thermal bridge free design required some innovative work by the structural engineer Conor Coburn. Mr Coburn used 'Parallam,' a product which is a form of engineered wood made from clipped veneer strands laid in parallel alignment and bonded with adhesive. This product has a fraction of the thermal conductivity, but similar strength to a steel beam equivalent.

A PV system is installed on the roof of the house comprising of Sharp 250W polycrystalline panels. Power optimisers on each panel increases the output whilst also offering full monitoring of the overall system.

"This was an all gloves off house design where we wanted to try to show that you don't have to build a stereotypical passive house to achieve the passive house standard. In Ireland, we are blessed with very mild (weather)



conditions where you can use far more expansive areas of glass than you can in other countries. This house is built on an incredible site with beautiful views and we were able to integrate these into the design without compromising the energy or comfort performance of the house," John explained.

"The site itself would just blow your mind and it is a place that we had to take advantage of. The connection between inside and outside, both visually and physically was an important feature of the design. When the vegetation grows around the house, it will settle into the landscape much more than it is currently.

"The layout of the house is unusual in that everything circles around the stairs. Circulation areas and corridors have been practically omitted altogether, so as to maximise the available habitable space. As there are no drafts in the house, you don't have to close off rooms to maintain comfort. This allowed for the open layout. It is designed as a family home with teenagers and we wanted people to be able to use the space in the house but also have their own individual spaces as they required them.

"All of the service areas- plant room, the utility room and the pantry are located to the north side of the house. There is also a guest bedroom to the north with lovely views overlooking the bay. A separate study is located off the main hallway. From the centralised stairs you can go straight in to the

kitchen or turn left to the dining room/living area. The dining room/living area overlooks a solar reflecting pond which we would have in a lot of our houses. Up eight steps, you have the sunroom which is facing south," explained Mr Morehead.

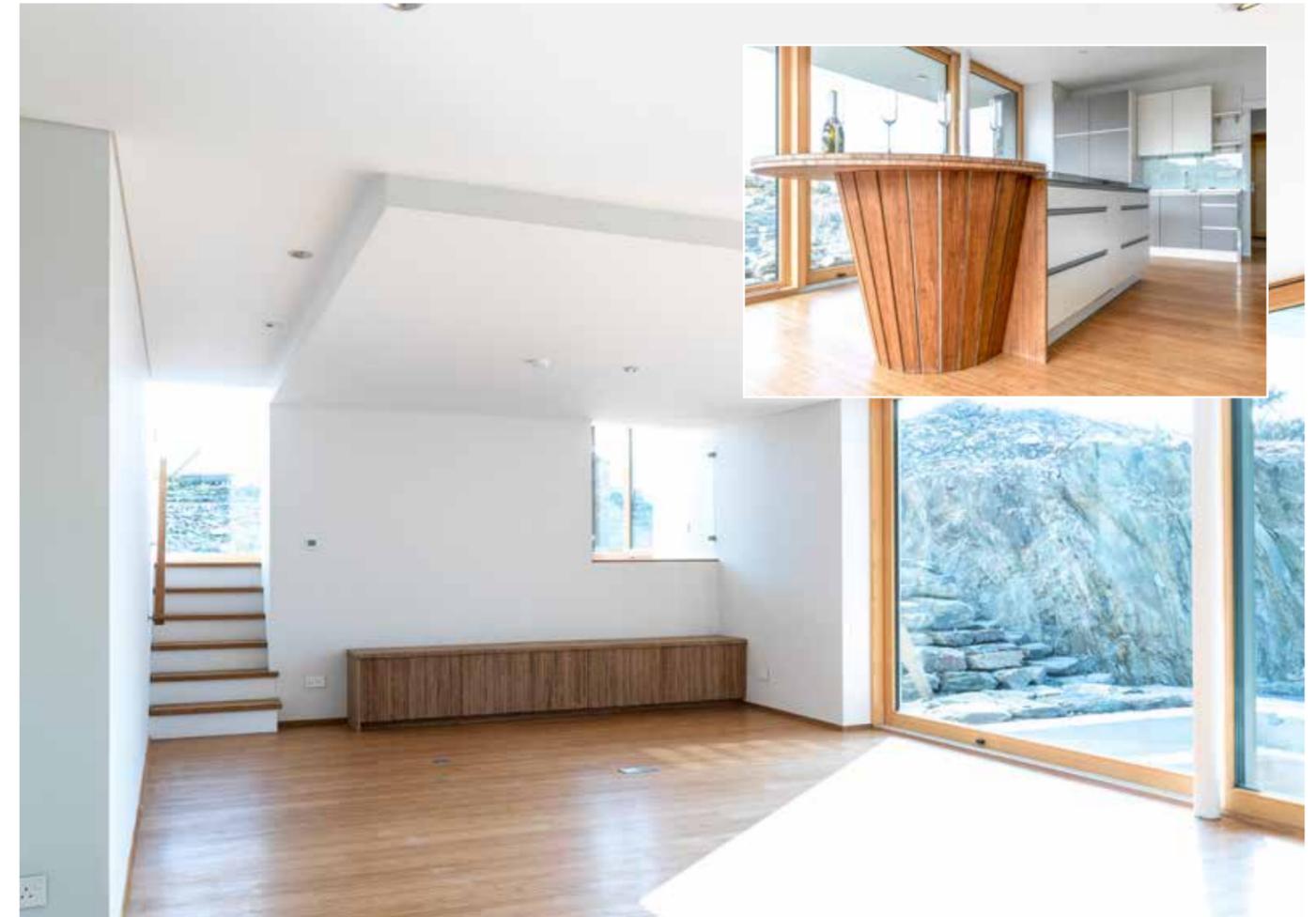
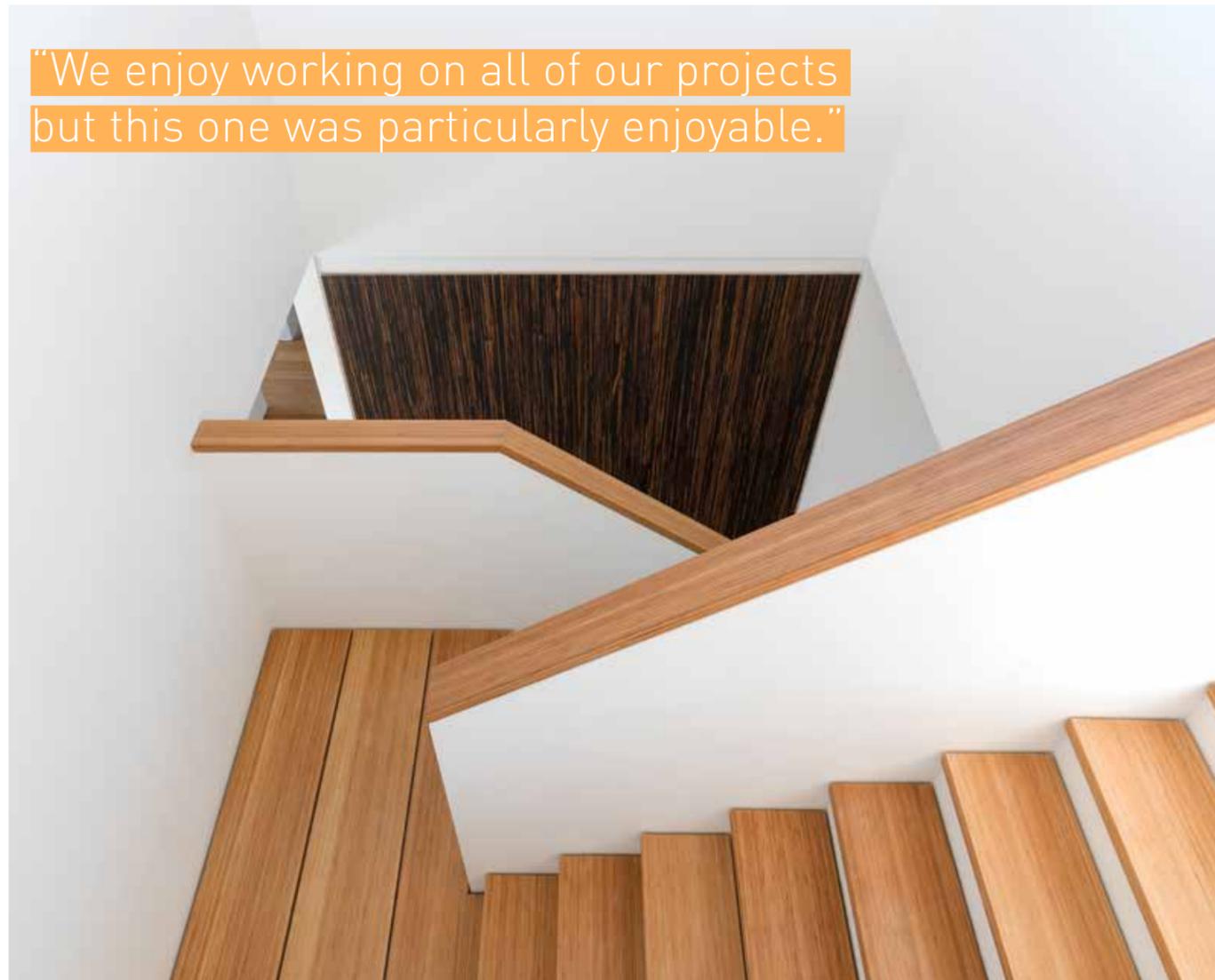
The kitchen features a Neff oven and a SMEG cooker extractor which glides up from an oblong panel in the worktop when it is switched on. This SMEG unit also includes high performance carbon filters which filter the air to a very high standard and means that the filtered air can be recirculated into the room and extracted by the MVHR system.

The kitchen also features a vertical Liebherr 345L frost-free freezer which uses approximately 130kW of electricity per year. A low energy larder fridge by Liebherr was also purchased due to its controlled humidity and Bio Fresh doors. A high efficiency dishwasher and washing machine, both of which are by Bosch have been installed.

The utility room is home to a raised tower to accommodate clothes drying racks. At the top of the tower, there are two vents connected to the MVHR system which draws air through the tower and are aided by two remotely openable clestory windows to assist with the drying of the clothes in summertime.

"The staircase is used for stack ventilation, meaning that the building can be naturally cooled. A north facing window at the top of the stairwell provides the

"We enjoy working on all of our projects but this one was particularly enjoyable."





"The energy load of the property is extremely low at 9.9W/m²."



draw. The hotter the house gets, the greater the temperature difference between inside and out, the more the stack ventilation works."

"Upstairs there are three bedrooms, a bathroom and an enlarged landing which is like a lounge area which then leads on to a first-floor terrace which has excellent views and leads back to the garden area," John added.

There is a lot of bamboo used throughout the house, which from a carbon footprint perspective, really adds value to the whole project and it is a beautiful product to work with.

"This house has achieved a A1 BER rating. It is certified to the Passive House standard with a heating load of 9.9 W/m², a space heating demand of 10 kWh/m²a and it has a primary energy demand of 60.1kWh/m²a, based on PHPP (Passive House Planning Package) results. Last October, the dwelling required just 2.14kWh/m² for the month! Most importantly, it performs at almost half of the nZEB (near zero energy building requirements of 0.302 EPC and 0.305 CPC. This property has an EPC of 0.153 and a CPC of 0.156.

"We enjoy working on all our of projects but this one was particularly enjoyable considering what was thrown at us with the windows. It was a very interesting project not just from an architectural perspective but also a humanity one. It was amazing to see how people pulling together could actually get out of a serious problem, that was presented by the original window installation and that was wonderful to see," revealed John Morehead.

"Any one of us would love to live in this house but it is designed to suit the client's needs entirely. They've got their stamp on the house already. I love the staircase area in the house and how it segregates and defines the individual spaces and I really like the quality of light coming down the stairwell.

"There is northern and southern light coming in-to the same space and it is wonderful to see!"

"I think the client likes the quality, the assurance and the third-party certification that comes with a passive house," he added.

FLOORINGS PANELS VENEERS

bambeau®

www.bambeau.com
info@bambeau.ie
phone 086 306 5414



Bamboo fascination



econudo®
bamboo composites

Bamboo Outdoor Plank Flooring

weatherproof
easy-care
splinter-free

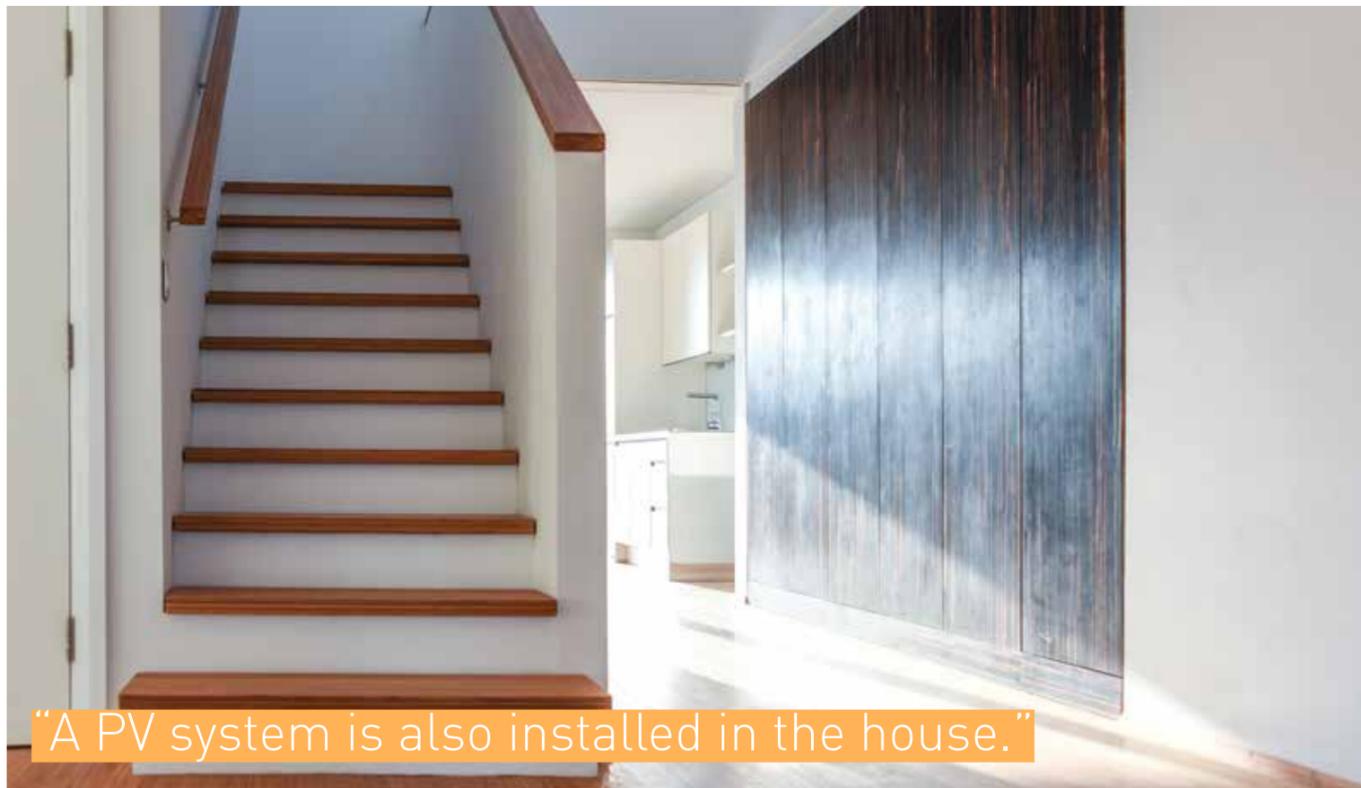
A MODULAR SYSTEM OF SEVERAL SOLUTIONS

COMPACT P BY NILAN



"The complete Solution" Compact P providing ventilation, heat recovery, air heating / summer air cooling, producing domestic hot water from exhausted air, with optional back up system, Air9 (Air-to-Water) or Geo3-6 (Geothermal heat pump). Providing a customised design and installation to meet your building demands by Nilan Ireland.

Nilan Ireland
Tel. +353 (0)66 7135987 · Mobile +353 (0)87 9798361
maurice@nilan.ie · www.nilanireland.ie



"A PV system is also installed in the house."

CONTACT LIST

ARCHITECTURAL SERVICES & PASSIVE HOUSE DESIGN:

Wain Morehead Architects Ltd.,
N.S.C Campus,
Mahon,
Cork T12 X75N
www.wma.ie 021-2307150

STRUCTURAL ENGINEER:

Construct Engineering
www.constructeng.com

MAIN CONTRACTOR:

CHOM Construction Ltd,
Bantry,
County Cork
Kieran Crowley 087-9353527
chomconstruction@gmail.com

QUANTITY SURVEYORS:

Richard Leonard & Associates Ltd,
Galway's Lodge,
Douglas West,
Douglas,
County Cork
021-4895111

MECHANICAL CONSULTANT, HEATING & VENTILATION SUPPLIER:

Nilan Ireland,
Ballylahiff,
Abbeydorney,
County Kerry
www.nilanireland.ie 087-9798361

MECHANICAL & PV SUBCONTRACTOR:

Energywise Ireland,
6 North Point Business Park,
New Mallow Road,
Cork, T23 H227
www.energywiseireland.ie 021-4308185

ELECTRICAL SUBCONTRACTOR:

John O'Sullivan,
Skibbereen,
County Cork
johnsull_79@hotmail.com

AIRTIGHTNESS TESTER:

Collins Energy Consultants,
Newtownshandrum,
Charleville,
County Cork
www.collinsenergy.ie 087-2254886

EWI SYSTEM:

Baumit
www.baumit.com sales@baumit.com +441622
710763

BONDED BEAD INSULATION:

Warmfill,
Unit 5 Redlands,
Coastguard Road,
Larne BT40 1AX,
United Kingdom
www.warmfill.com +442828 270319

MINERAL WOOL INSULATION:

Rockwool
www.rockwool.co.uk

WOOD FIBRE INSULATION:

Ecological Building Systems,
Main Street,
Town Parks,
Athboy,
County Meath
www.ecologicalbuildingsystems.com
046-9432104

THERMALLY BROKEN WALL TIES:

Ancon TeploTie via Longs,
Douglas,
Curraghconway South,
County Cork
021-4520202

AAC BLOCKS:

Quinn Lite,
235 Ballyconnell Road,
Derrylin,
County Fermanagh,
BT92 9GP
www.quinn-buildingproducts.com
1800 322122 info@quinn-buildingproducts.com

PIR INSULATION:

Xtratherm,
Liscarton Industrial Estate,
Kells Road,
Mullaghard, Navan,
County Meath
www.xtratherm.com 046-9066000

EPS & ADDITIONAL PIR INSULATION:

Kingspan,
Dublin Road,
Kingscourt,
County Cavan
A82 XY31
www.kingspan.com 042-9698000

AIRTIGHTNESS PRODUCTS:

Ecological Building System,
Main Street,
Town Parks,
Athboy,
County Meath
www.ecologicalbuildingsystems.com
046-9432104

WINDOWS & DOORS:

Optiwin,
Unit B, rear of Number 8 Auburn Terrace,
Athlone,
County Westmeath
www.optiwin.ie sales@optiwin.ie
094-76581

LIGHTING:

ERCO Lighting Ltd
www.erco.com

LIGHTING CONTROLS:

Legrand,
Great King Street North,
Birmingham,
B19 2LF
United Kingdom
www.legrand.co.uk 0044 (0)370 6089000

EXTERNAL LIGHTING:

Shane O'Byrne
A S Lighting
3 Douglas West,
County Cork
0214898228
info@completelighting.ie

HEATING CONTROLS:

Heatmiser,
Units 8 & 9 Shadsworth Business Park,
Mercer Way,
Blackburn,

Lancashire,
BB1 2QU,
United Kingdom
www.heatmiser.com
sales@heatmiser.com 0044 (0) 1254 669090

Nilan Ireland
Ballylahiff,
Abbeydorney,
Tralee,
County Kerry
087-9798361 info@nilan.ie

SANITARYWARE:

Soaks Bathrooms,
5-7 Apollo Road,
Belfast,
BT12 6HP
United Kingdom
www.soaksbathrooms.com +44 289068 1121

KITCHEN DESIGN & SUPPLY:

Classic Kitchens,
Carrigaline Industrial Park,
Carrigaline,
County Cork
www.classickitchenscork.com 021-4375900

APPLIANCES:

Bosch, Liebherr, Neff & Smeg via Dwyers Electrical,
Forge Hill,
Lehenagh Beg,
County Cork
www.dwyers.ie 021-4965880

BAMBOO FLOORING, DECKING & FURNITURE:

Bambeau
www.bambeau.com
info@bambeau.ie
Nick Bowen
0863065414

ROOFING:

Soprema Ireland,
75 Cookstown Industrial Estate
Tallaght,
County Dublin
www.soprema.ie 01-4625857

DRY LINING BOARD:

Fermacell UK,
7 The Priory,
Old London Road,
Canwell,
Sutton,
Coldfield,
B75 5SH
www.fermacell.co.uk
fermacell-uk@xella.com 0044 (0) 121 3113480

SCREED:

Sika Ireland,
Sika House,
Ballymun Industrial Estate,
County Dublin
D11 DAV2
irl.sika.com 01-8620709

GGBS:

Ecocem, via Keohane's Readymix,
Dromkeen,
Ballygurteen,
County Cork,
023-8838710 www.keohanereadymix.com

BORE DRILLING:

Harte Divining and Boring Ltd