

Measuring the Sustainability of our new Housing

by Pat Barry

As architects, we need to take responsibility to build sustainability into the next phase of residential development in Ireland.

Sustainability assessment systems LEED and BREEAM are beginning to cater for the commercial sector, but there was nothing to drive sustainability for the residential sector in Ireland, where the space beyond operational energy efficiency is largely ignored.

IGBC developed the Home Performance Index (HPI) to provide architects and developers with a scientific means to assess and communicate to home buyers the sustainability and quality of their developments. It considers sustainability under three categories, Health and Wellbeing, Economic and Environment. Over the past two years we have engaged experts in every specialist field to set criteria and achievable benchmarks.

HPI uses over 30 indicators, to assess quality across the categories but is designed to mesh with the Building Control system which sets the baseline where relevant and uses the same documentation to show improvement, thus minimising the need to double up work.

The set of resources provided as part of the HPI system include the technical manuals and tools to help architects design more sustainable dwellings. This pulls together a lot of things in one place. For example, we have also worked with the Centre of Excellence for Universal Design to develop a simple check list for

Universal design, we have worked with the European water label to measure water efficiency, and with the Environmental Protection Agency to develop the Environmental Product Declaration database.

In a compliant 2011 part L dwelling, water can be the single greatest consumer of energy and the biggest single driver of operational carbon emissions. Our experience on the first assessments is that design teams give little thought to water efficiency. Many think about rainwater harvesting without first implementing cost effective basics such as water efficient fittings – a bit like putting a PV system on the roof of an uninsulated house. The European Water Label and calculator provides an easy way to specify and measure water efficiency and future proof against inevitable water charges.

The HPI includes a location index to assess the economic, social, and environmental sustainability of the location and should help planners assess the quality of the location. There is a lot of talk about embodied carbon, but in reality, it is something nobody is actually measuring it. This can account for more than 50% of the whole life cycle carbon impact of a dwelling. To facilitate calculation in HPI, IGBC has started building out the infrastructure to make this easier for ordinary practitioners. The first step in 2017 will see the establishment of an Environmental Product Declaration (EPD) database, followed hopefully within a year by a full national construction products database and a simple online calculator tool.



above. Damien English TD - Minister of State for housing and urban renewal, Shane Waring - Project Architect Dublin City Council, Simon Coveney TD - Minister for Housing - Catherine Byrne TD - Minister of state for communities and the national drugs strategy - Pat Barry - CEO Irish Green Building Council, Neoma Lira - Irish Green Building Council - Photography - Shane O'Neill

The leading developers are already on board and seeking certification under HPI as they realise, that following the climate agreement in Paris in 2015, the finance of future development will increasingly rely on sustainability assessment. They also know that while house buyers have to take what they can get now, this will very quickly change.

We were delighted to award the first Home Performance Index certificate to Dublin City Council for the social housing scheme at Rathmines Crescent featured in this issue. The scheme exemplifies what sustainable low carbon living is all about car free, energy efficient living, catering for the wellbeing of the occupants, in beautiful well-designed, light filled and well ventilated homes. You could hear the pride and delight in the voices of the residents as they showed off their new homes. Doesn't every homebuyer deserve this?

The roll out of the Home Performance index is being supported by the Environmental Protection Agency's Green Enterprise Programme. IGBC is currently offering an RIAI certified lunchtime CPD to architects engaged in residential development. We are also providing intensive support free of charge to the design teams of early adopters. We will also be training the first assessors in 2017 and are currently receiving expressions of interest from interested parties.

The technical manual and the assessment spreadsheet can be downloaded at homeperformanceindex.ie

RATHMINES CRESCENT

Dublin City Council, City Architects Division

- > *right from top.*
1. Front elevation
 2. Setback and cantilever over create a sense of privacy from the street.
 3. Each home has its own-door access
 4. The limestone-paved entrances create an active frontage along Upper Rathmines Road

As part of a 'part V' planning contribution, Dublin City Council received this site complete with planning permission by Douglas Wallace Architects for 9 homes on Upper Rathmines Road, Dublin 6. The site of a former fuel station, the site was successfully decontaminated through the removal of the hydrocarbon contaminated soil prior to the main build.

The City Architects Division of Dublin City Council reviewed the design and planning permission and oversaw the detailed design, tender and construction to a high standard by Dunwoody & Dobson contractors. This €1.8m development comprises 9 two-bedroom units (3 ground floor apartments with 6 duplexes over) ranging in size from 80m² to 96m² and was completed in May 2016.

There is no onsite parking provision – all of the dwellings apply for onstreet resident and visitor parking permits. The tight space is instead used to create a sense of entry to a landscaped courtyard guided by architectural lighting which includes timber seating

positioned to catch the sun, a bank of communal letterboxes, bicycle parking plus a small structure containing a bin store and meter rooms.

Each home has own-door access. The limestone-paved entrances to the ground floor apartments create an active frontage along Upper Rathmines Road, whilst the setback and cantilever over creates a sense of transition and privacy from the public street. The 6 duplexes are accessed via 3 sets of external stairs in the courtyard.

The use of passive surveillance and a sense of 'ownership' are incredibly important aspects of good social housing and so the design places an emphasis on creating links – such as full visibility of the courtyard from all 9 dwellings and also Maxwell Road; 'gossip walls' between roof terraces, shared entrance terraces, courtyard seating (laid out to both catch the sun and to facilitate group gatherings such as barbecues), and a shared bank of letterboxes rather than individual ones (improves airtightness and encourages natural encounters between neighbours).

Client | Dublin City Council, Housing Department
Architects | Dublin City Council, City Architects Division
Main Contractor | Dunwoody & Dobson
Quantity Surveyor | Dublin City Council, Quantity Surveyors Division
Structure | Fearon O'Neill Rooney Engineers
Services | Hayes Higgins Partnership
Landscaping | Stephen Diamond Associates and SAP Group
Mechanical | Niall Gaffney Plumbing & Heating Ltd.
Electrical | H. Shiels

Location | Rathmines, Dublin

Overall Floor Area | 768m²

Project Duration | 14 Months

Photography | Ros Kavanagh

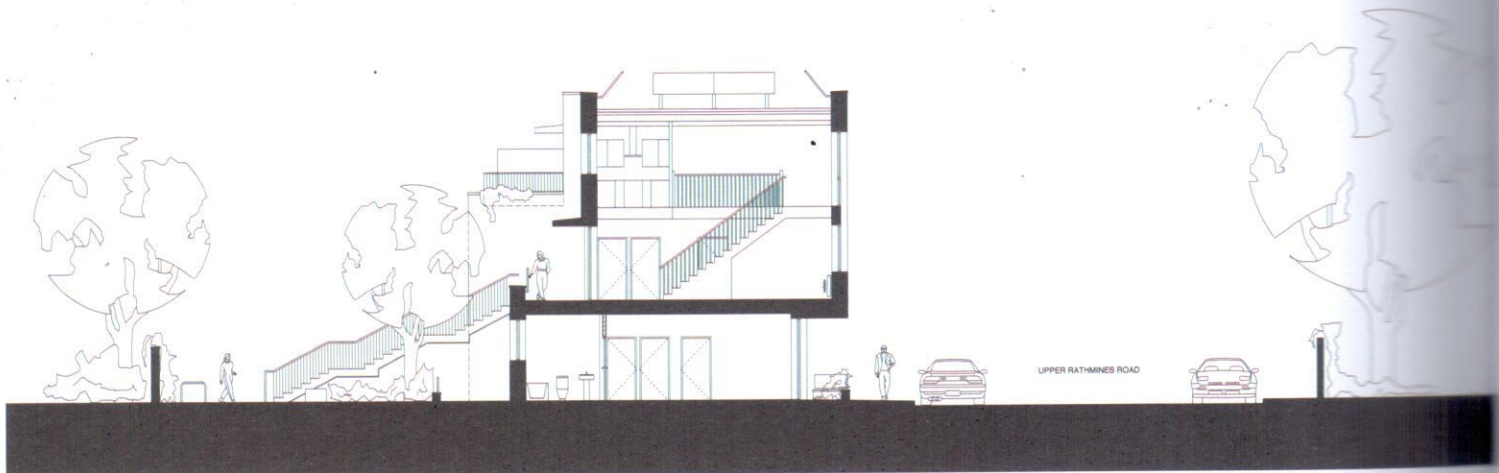
The ground floor apartments score A3 and the duplexes score A2 in their Building Energy Ratings. All of the units are either dual or triple-aspect and 50/54 of the rooms (other than storerooms) benefit from natural lighting. This factor combined with the 2.7m-3.0m high ceilings, large windows and upsidedown layout of the duplexes means that the dwellings benefit from a sense of spaciousness, better views and sunny roof terraces.

The main roof is entirely covered with an array of photovoltaic panels, and an active ventilation system combined with the triple-glazed, alu-clad windows ensures well-ventilated, quiet homes and low heat loss. The development also incorporates sedum roofs, permeable site landscaping and the onsite attenuation of storm water.

This project sets a new bar for the standard of social housing provision in Ireland. It is the first project in Ireland to achieve the exacting Home Performance Index (HPI) label demonstrating that sustainability is about skills, choices and design and not about additional cost.

The HPI label was developed by the Irish Green Building Council (IGBC) after extensive research and consultation with the industry found that existing environmental systems for residential construction were complex to apply. It enables housing providers and private developers to highlight the quality and sustainability of their homes to occupants, investors and home buyers.

More information on HPI can be found at www.igbc.ie/certification/hpi/



Cross Section