UP TO

€155

per year for space & water heating
(estimate, see 'In Detail' for more

Building: Scheme of 12 x 85 sqm social houses
Location: Dún Laoghaire, Dublin
Completed: 2018
Budget: €2.57m (ex VAT)
Standard: Nearly zero energy buildings (NZEBs)

SOCIAL SKILLS

THE A1 RAPID BUILD COUNCIL HOMES THAT ARE SUSTAINABILITY ALL-ROUNDERS

In the midst of a national housing crisis, this new development in Dún Laoghaire sets a hopeful and inspiring example: high quality, high density, rapid build social housing that needs almost no energy to heat and is within walking distance of shops, services and the seafront. No wonder it was one of the first projects to be certified to a rigorous new sustainability standard.

Words by John Hearne

Dún Laoghaire-Rathdown County Council's recent development of twelve social housing units at George's Place in Dún Laoghaire is just around the corner from the waterfront. It also lies at the intersection of a long list of diverse objectives, some of which give every appearance of being contradictory.

The houses are rapid build yet sufficiently well-built to have achieved an A1 BER. They are high-density yet each retains its own front door and avoids overlooking its neighbour. The site itself is a brownfield site and came with a list of conditions that had to be carefully negotiated before the first sod was turned. The design and build team, led by Dún Laoghaire-Rathdown's architects department, manoeuvred their way through a maze of restrictions and criteria to deliver exemplar houses in record time.

Susan Corcoran and her two sons moved into their new home in George's Place in June, just twenty-one months after the planning phase began. "We had a cottage in Dalkey that was over a hundred years old," says Corcoran. "You walked in the front door and you were in the main living areas. It was cold and it was drafty."

"What I love about our new home is that as well as being warm, there are no drafts." She also loves the fact that despite the fact that it is a relatively compact two-bedroom unit, her house feels bigger. "The windows are huge," she says, "we get brilliant light."

The best thing about her house, however, is the location. Everything is a walk away.

Bob Hannan, senior architect with Dún Laoghaire-Rathdown County Council explains that a variety of factors led to the designation of the George's Place site for social housing.

"One of the high-level themes of the Dún Laoghaire-Rathdown urban framework plan centres on connecting the town centre to the waterfront. Dún Laoghaire has that dichotomy between a main street which has underperformed and a waterfront which is buzzing with people. One of our strategies is to create as many links as possible between the two."

A second 'high-level theme' in the plan promotes the idea that increasing the residential population of the town is the best way to boost its vitality and economic performance.

With these themes guiding developments in the area since 2004, individual site strategies were drawn up to unlock their potential, while remaining within the parameters of the framework plan.

The next challenge was to find a way to deliver own-door, high-density urban dwellings in keeping with the character of the area. Bob Hannan puts it like this: "If you're going to create family housing, how are you going to do it in the most efficient way possible using precious urban land?"

The shallow, railed-front gardens so prevalent in the area offered a neat example

> If you're going to create family housing, how are you going to do it in the most efficient way possible using precious urban land?

WANT TO KNOW MORE?

The digital version of this magazine includes access to exclusive galleries of architectural drawings.

The digital magazine is available to subscribers on www.passive.ie

> Schools, healthcare, parks, shops, amenities and public transport are all close at hand.

of how to limit each house's external footprint, as did the small courtyard back garden. Splayed windows at the first floor also minimise direct overlooking of neighbours.

Surprisingly, each house even manages to get its own car-parking space, and there are what the architects describe as 'home zones' – informal play and amenity areas – which are passively overlooked by the houses themselves.

Hannan says that while the houses were still in the planning stage, the local authority received an invitation from the government to submit developments to its rapid delivery programme. George's Place became the council's response to that call.

Planning permission for the twelve houses was submitted to the local authority's internal planning process in September 2016. The project went out to tender the following February and contracts were signed in October 2017. Susan Corcoran and her family, along with all of the other tenants, moved in last June.

"We wanted to unravel the idea that rapid build is lower quality," says Hannan, explaining that the decision was taken to move large elements of the construction offsite not alone to speed things up but also to ensure higher standards.

"With a traditional build, you'd have a guy on a wet November night trying to cut

Photography: Marie-Louise Halpenny

insulation. It's dark and raining, and he's freezing. It's very hard to keep high quality in something like that.

Manufacturing in factory conditions, by contrast, ticks two boxes – speed and quality. To further facilitate offsite construction, the designs of the two types of houses deployed were kept simple. Both are two-bedroom; one narrow fronted with double aspect front and back, the other a wide-fronted shallow unit. To the same end, the design team restricted itself to a small palette of good quality, robust and easily maintained construction materials.

Though rapid build methods may be comparatively new to the construction industry, at George's Place they were

The Home Performance Index: measuring sustainability in Irish housing

Words by Pat Barry

Why do we need new a sustainability rating system with the advent, across Europe, of the new nearly zero energy building (NZEB) standard? NZEB for dwellings requires an improvement from an A3 to an A2 BER rating. This represents an overall carbon saving of about 300kg per annum for a sensibly-sized 80 square metre house, or half a tonne for a bigger three-bed home. This is a start but needs to be seen in the context of the total carbon emissions associated with how we design and where we place our homes.

Ireland's per capita carbon emissions are way out of line with the rest of Europe at nearly 13 tonnes per capita versus just over eight tonnes for the European average. It's not just down to seven million belching cattle, but to the massive resource consumption associated with our legacy of laissez faire planning. The Home Performance Index sets out to capture and reduce these impacts for new home development.

What does it measure?

The Home Performance Index was designed to be easy to apply and fully integrated with Irish building regulations. It is divided into five categories: environment, health and wellbeing, economic, quality assurance and sustainable location, each containing a set of indicators.

It starts with the site. Inefficient land use for home construction leads directly to habitat degradation and fragmentation, pollution, and soil sealing, which increases the risk of flooding and negates the ability of soil to sequester carbon. A typical one-off home on a quarter hectare is a missed opportunity to sequester, through forestry, 800kg of carbon per annum, or improve to biodiversity.

The HPI measures a site's accessibility to a range of transport options: walking, cycling, public transport and carsharing. We can't fix bad sites with electrical vehicles, but we'll make much faster progress if we only build homes where citizens can live free of the need to own cars altogether.

Mandatory requirements are also set in the most important areas, such as water efficiency, ventilation, thermal bridging, and enhanced airtightness. For example, we set a maximum air infiltration level of 3 m^3hr/sqm/50pa, as opposed to 7 in the current building regulations. But we also insist that a properly designed and commissioned ventilation system is installed too. The HPI also sets a maximum annual heat demand, encouraging builders to provide the most efficient building fabric-first, rather than achieving a higher rating through renewables.

Water efficiency is now a key part of achieving NZEB with data from SEAI showing that hot water accounts for over 70% of regulated energy in NZEB apartments. The HPI links into existing databases and calculators for water efficiency provided by the European Water Label to help designers design for efficiency.

Embodied carbon

The HPI encourages compact home design and measurement of the embodied carbon of a build. An NZEB home has operational regulated emissions of about 8kg per square metre per annum, but we lack good figures for Ireland for embodied carbon. Figures from other countries suggest between 600kg and 900kg per square metre of floor area. So excess home size can send carbon emissions through the roof.

Figures for 2016 showed that the average new build detached house in Ireland had an average floor area of a whopping 241 square meters, an increase of 60% since 2000, thus wiping out the 60% improvement in energy efficiency in the same period. Common sense could achieve greater carbon savings than technology.

To support the HPI, the IGBC is developing the infrastructure for measuring the embodied carbon of buildings, establishing an environmental product declaration programme (www.EPDIreland.org) to provide the data for calculation. This has been very successful, Irish manufacturers have reacted quickly, and we have already verified 16 EPDs covering over 40 products for Quinn Building Products, Kore, Ecocem, Medite SmartPly, and Munster Joinery. We have also provided training in life cycle assessment and embodied carbon to seed knowledge into the industry.

This year will now see many large developments certified by the HPI including the Cherrywood development of 1,269 homes in south Dublin by Hines, plus at least 12 social housing schemes. The HPI is also now specified as standard in tenders by Dublin City Council.

Green mortgages

A key purpose of the HPI is to define for banks, investors, pension funds, developers and government a robust way of defining what type of development can be considered sustainable, and therefore what should be financed.

IGBC has been working with the World GBC and the European Mortgage Federation on the development of energy efficient mortgages, which are now being piloted by 40 banks across Europe. IGBC is also starting a new initiative with 16 other international partners later this year, which aims to further develop green mortgage programmes and expand them beyond just simplistic energy efficiency. Denmark Technical University will carry out detailed research on the total monthly costs of homes, providing real data that support banks in offering discounted interests on mortgages for greener homes, based on their lower default risk.

For more information on HPI certification, and the full technical manual, see **www.homeperformanceindex.ie**. More on the Irish Green Building Council at **www.igbc.ie**.

delivered by Sisk Living, a new division of John Sisk & Son – one the oldest and most trusted builders in Ireland.

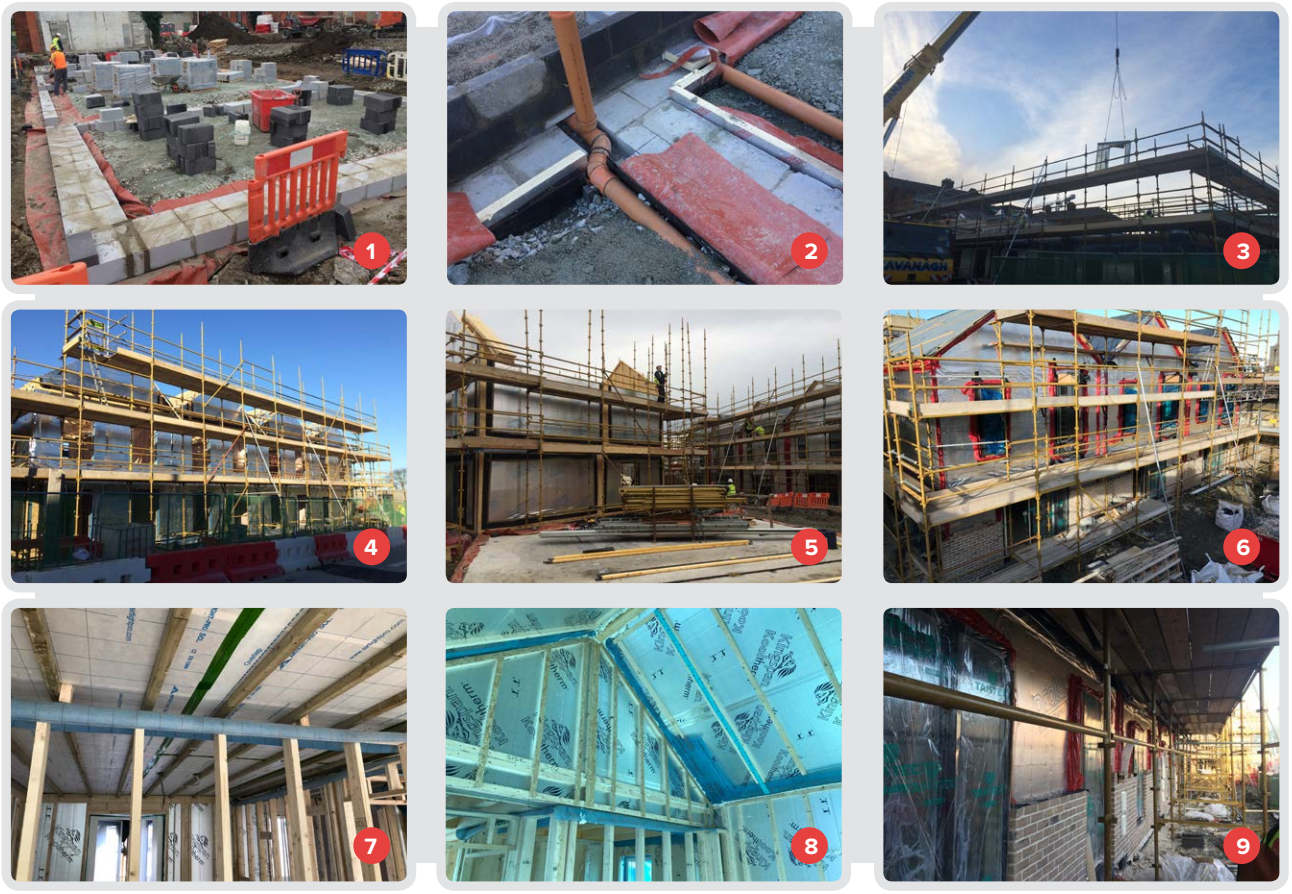
John Sisk & Son CEO Stephen Bowcott spoke to Passive House Plus about the company's motivation: "For generations Sisk have been at the centre of house building in Ireland and particularly at times of social need. With the onset of the housing crisis and in support of Rebuilding Ireland, we set up Sisk Living as a specialist residential building division with a clear vision: to become the premier house building contractor in Ireland in terms of size, speed and quality with the lowest possible cost to the end user. George's Place was one of our earliest projects and we are very proud of our achievement in delivering it."

According to Sisk Living director of housing, Norman Higgins, the project was a perfect fit for them. "With near Zero Energy Building (NZEB) soon becoming mandatory for all new housing stock, we wanted to test ourselves to deliver this standard as early as possible. George's Place was a very attractive proposition for us, not only because of the NZEB factor, but also because it was an extremely fast build on a technically challenging city centre site which allowed us to bring our expertise to bear."

It may sound contradictory but while this was a busy city centre location, it was also, a quiet and thriving residential area. Poor relationships can develop quite quickly between a very busy contractor and neighbours in a location such as this. Managing this aspect of construction was about the smaller things like

> Increasing the residential population of the town is the best way to boost its vitality.

CONSTRUCTION IN PROGRESS



1 xxxx; **2** xxxx; **3** xxxx; **4** xxxx; **5** xxxxx; **6** xxxx;x **7** xxxx; **8** xxxxx; .

keeping neighbours informed of what was happening and reacting to any query promptly and respectfully.

One significant sustainability initiative that Sisk Living brought to the project was to register it with the Irish Green Building Council's (IGBC), Home Performance Index (HPI). Sisk Living then made continuous submissions to HPI through construction and last May, George's Place was awarded a silver certification under the exacting scheme. The HPI label was developed by the IGBC to encourage excellence in the development of new homes. In addition to the sustainability of a dwelling, HPI assesses its impacts on wellbeing and the costs associated with living in these homes. Drilling down through the HPI documentation, you uncover some interesting results. For example: George's Place received the highest ever score for 'walkability'. Schools, healthcare, parks, shops, amenities and public transport are all close at hand, reducing car dependency and boosting the health and financial wellbeing of those who live there.

Dún Laoghaire-Rathdown County Council architects appointed A2 Architects as 'enabling architects' to undertake the detailed tender package after planning had been approved and to manage the project during the construction phase.

Peter Carroll of A2 says that the site itself was very challenging.

"You wouldn't think that it would lend itself to rapid delivery construction," he says. "We had difficulties with Japanese knotweed, there were more than a dozen boundary conditions, and we had to deal with existing buildings onsite that had to be remediated to hold onto their integrity."

The build team also had to take into account the fact that they were surrounded by busy roads, and that the site lay at the centre of a thriving residential area.

"We had to ensure that our tender drawings and detailed design were as accurate as possible, and as specific as possible. This was a government contract that didn't allow any slack."

Everything, from the pressings of the sills to the ridge details, railings and hard landscaping were closely specified by A2 in collaboration with Dún Laoghaire-Rathdown architects well in advance. Having said that, Carroll notes that a number of tolerances were built into the tender to allow participating parties to suggest rapid delivery systems. Sisk Living selected the Kingspan Century Homes rapid build

> What I love about our new home is that as well as being warm, there are no drafts.

timber frame system, which takes between three and four days to erect once it arrives onsite.

It was originally envisaged that the houses would be certified passive, and while they don't quite meet certification thresholds, passive principles are embedded in the design.

As Bob Hannan asserts, Dún Laoghaire-Rathdown is one of the most progressive local authorities in the country when it comes to energy standards.

"It may not be certified but it does have fabric-first principles – very high levels of insulation and airtightness, combined with mechanical heat recovery ventilation. The development is an exemplar in terms of pushing high performance building to its limit, and that is driven by the council itself, and our department in particular."

For the record, air permeability tests report values of between 1.24 and 3.2 m^3/hr/m^2 at 50 Pa, with all bar two units clocking scores of under 2.0 – while U-values are within passive house ranges, as are thermal bridging details. The units also blitzes Ireland's new nearly zero energy building standard (NZEB), which only came into force at the start of this year.

Peter Carroll says that during the tendering process, the passive house strategy was retained in order to attract like-minded contractors who would not be intimated by exacting standards. And that explains how the development secured such a high score in the Irish Green Building Council's HPI scheme.

The fact that these houses were built for €249,000 (incl. VAT) each also gives the lie to the idea that a fabric-first, low energy build is an expensive build. And because each house carries an A1 BER, running costs for the tenants should not exceed €200 per year.

Susan Corcoran points out that because

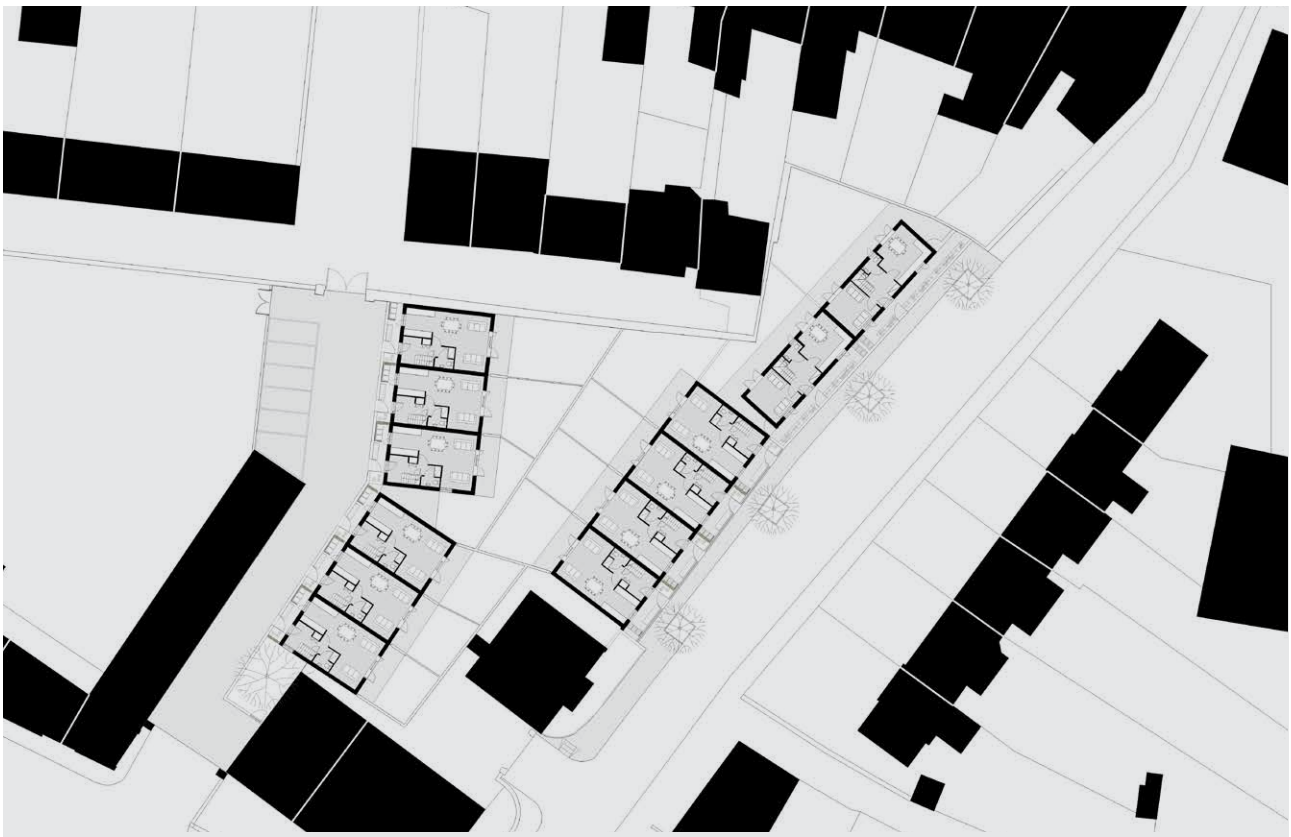
we've had such a mild winter – so far at least – her house has not been seriously tested by the elements. Indoor air temperature over the last eight months has remained steady, warm and comfortable. She likes the fact that she has constant hot water, that yearly maintenance of the system is built into her rent and that the controls for the Nilan Compact P combined heat pump and ventilation system are so easy to use.

"It's a touch screen with an up and a down arrow," she says. "Couldn't be easier."

SELECTED PROJECT DETAILS

Design architect: Dún Laoghaire-Rathdown County Council architects department
Enabling architect: A2 Architects
Contractor's architect: O'Mahony Pike
Project management: A2 Architects
Main contractor: Sisk Living
Timber frame: Kingspan Century
Client's M&E engineer: Delap & Waller
Contractor's M&E engineer: Johnson Reid & Associates
Client's civil / structural engineer: Punch Consulting
Contractor's civil / structural engineer: DBFL
Contractor's energy consultant: Johnson Reid & Associates
Electrical subcontractor: Drysdale Mechanical & Electrical Services
Mechanical subcontractor: Gaffney Mechanical
Client's quantity surveyor: Nolan Construction Consultants
Airtightness tester: Energy First Services
Windows: Velfac, via Novus Windows
Solar PV: PV Green
Insulation contractor: Baker & Co
Airtightness products: Dupont Tyvek / Airtight Pro / Ecological Building Systems
Zinc roofing: Copeland Coppersmiths Ltd
GGBS: Ecocem
Flooring: Forbo
Wall board: Gyproc
Floor insulation: Xtratherm
Mineral wool insulation: Knauf
Fire breaks: Rockwool
Thermal blocks: Quinn Building Products
Radon barrier: Radon Ireland
Breather membrane: Protect
Flooring particleboard: Norbord
Zinc roof: Rheinzink
Attenuation tank: Microstrain
Bricks: Ibstock
Render & white mortars: Kilsaran

Read more about this project in detail



IN DETAIL

Building type: 12 x 85 square metre timber frame town houses

Location: Dún Laoghaire, Co Dublin

Completion date: May 2018

Budget: €2.57m + VAT @13.5%

Passive house certification:
Not assessed in PHPP

Primary energy demand (DEAP):
18 to 23 kWh/m²/yr (range of all 12 units)

Heat loss form factor (DEAP): 2.77 to 2.90

Energy performance coefficient (EPC):
0.123 to 0.137 (range of all 12 units)

Carbon performance coefficient (CPC):
0.117 to 0.132 (range of all 12 units)

BER: A1 rated (all units, as per DEAP primary energy demand above)

Environmental assessment method: IGBC Home Performance Index Silver Certified

Measured energy consumption: N/A

Airtightness (at 50Pa): 1.24 to 3.2 m³/hr/m² (range of all 12 units; note all but two units scored under 2.0 m³/hr/m²)

Thermal bridging: Kingspan Ultima wall system designed to minimise thermal bridging. Two courses of Quinn Lite AAC blocks used in subfloors at perimeters and party walls. Y-values of between 0.0119 and 0.0307.

Energy bills (estimated): €15.36 annually for space heating & €125.45 for hot water for dwelling type one; €30.36 for space heating & €124.66 for hot water for dwelling type two. Figures calculated based on DEAP energy consumption projections for HPI assessment.

Ground floor: 225mm insitu concrete floor slab followed below by 1000-gauge polythene separating layer, 150mm XT Xtratherm insulation, radon control membrane, 50mm sand binding, compacted hardcore. U-value: 0.12 W/m²K

Walls: Outer leaf – ten units with Ivanhoe Cream Dark End brick, two units with 20mm Kilsaran GP Render externally followed inside by 100mm blockwork external leaf – 50mm cavity, Kingspan Ultima 185 timber frame consisting of breather membrane, 9mm OSB, 89mm studs with PIR insulation, airtightness/vapour control membrane, 50mm PIR insulation, 35mm timber battens to create service cavity, 12.5mm plasterboard and skim finish.
U-value: 0.12 W/m²K

Roof: Zinc roof externally, followed beneath by 7mm double standing roof seam, on vapour-permeable separating layer/ underlay, on 18/22mm marine ply deck fixed to timber roof joists. Min 50mm proprietary eaves ventilation try. Roof insulated at ceiling level with 150mm Knauf Earthwool insulation above and between joists, followed beneath by airtightness/vapour control membrane, 30mm Kingspan PIR insulation, 30mm service void and 12.5mm plasterboard/skim finish to all ceilings.
U-value: 0.12 W/m²K

Windows: Velfac V200 Energy triple glazed, argon-filled timber aluclad windows. Overall U-value: 0.82 W/m²K

Heating & ventilation: Nilan Compact P combined heat recovery ventilation / exhaust air heat pump system providing balanced whole-house heat recovery along with all space heating & domestic hot water requirements.

Electricity: 4 x 290W solar photovoltaic panels per dwelling.

Green materials: Many specified construction products had high sustainability ratings quantified in Environmental Product Declarations (EPDs) including Forbo marmoleum flooring, Ecocem GGBS, Dulux Vinyl Matt paint & Gyproc wallboard.

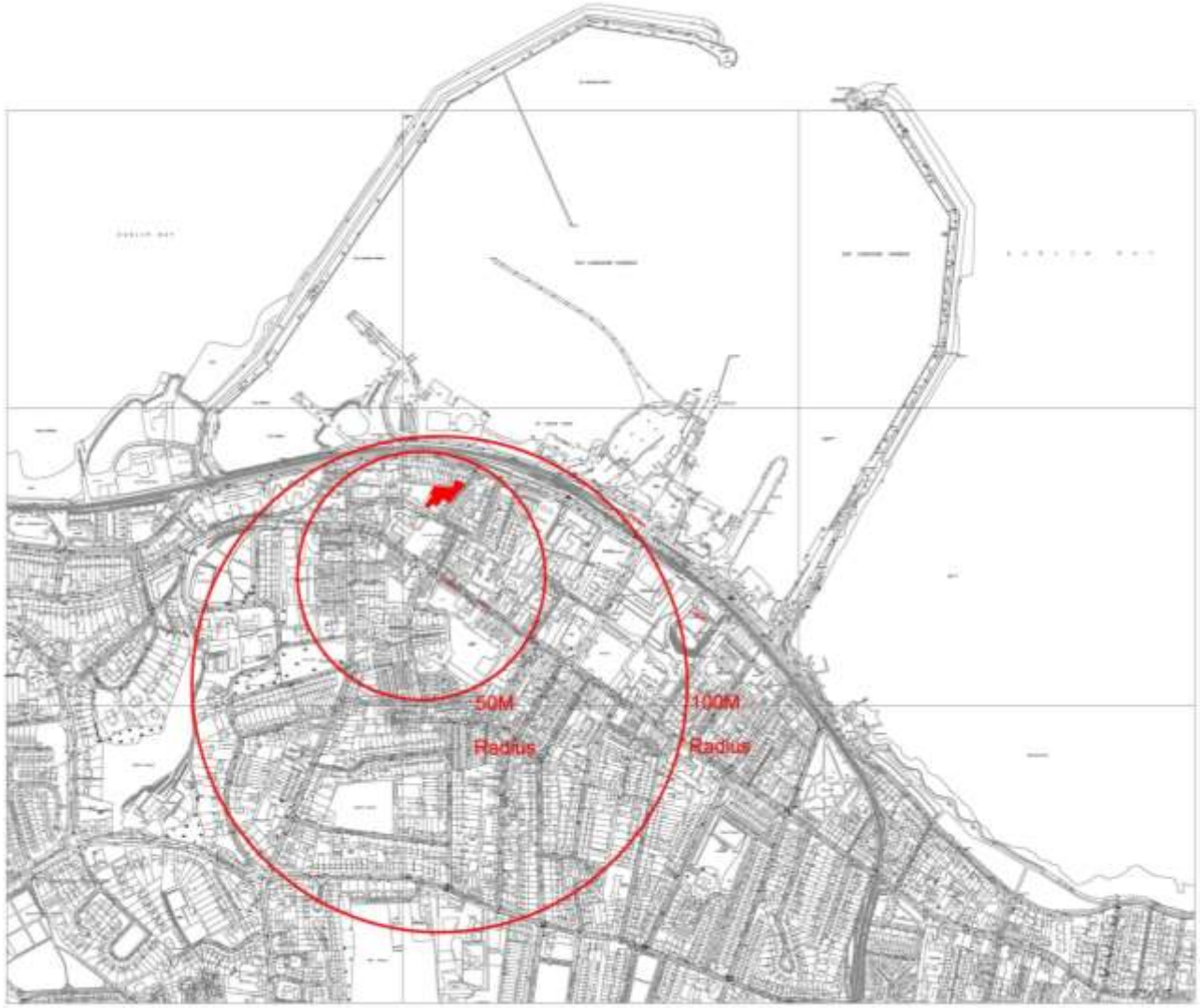
Key Challenges Facing Local Authorities in Meeting the Rapid Delivery Challenge

12 Rapid Delivery Houses, George's Place, Dún Laoghaire

Andrée Dargan

County Architect, Dún Laoghaire-Rathdown County Council

22 June 2018



SITE LOCATION

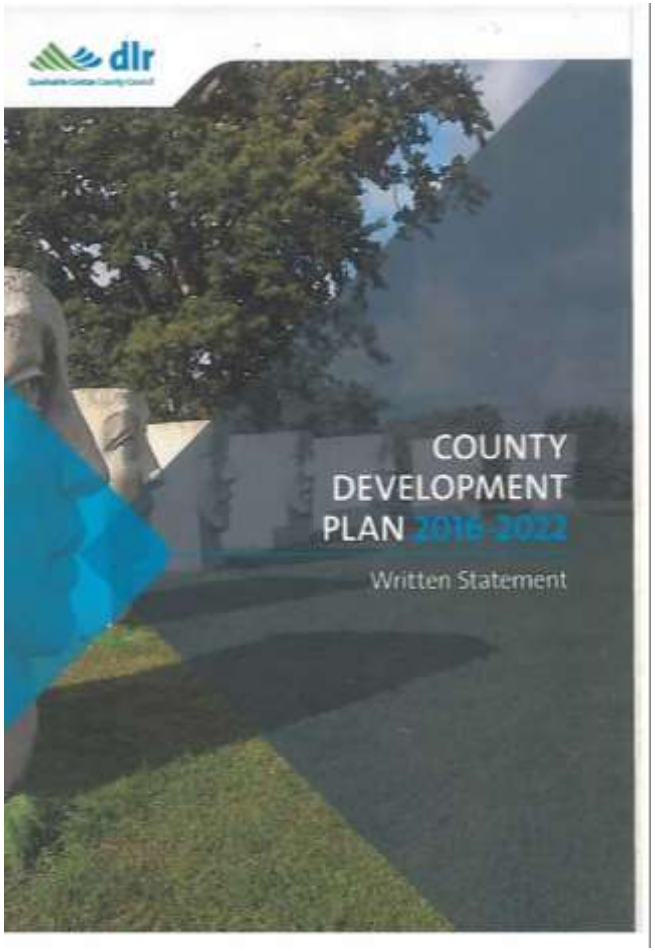
SITE LOCATION

This brown field site is located within easy walking distance of many amenities including the Main Street, DART & Waterfront.

There is a mixture of building typologies within the vicinity including 2 & 3 storey houses and multi-storey apartment blocks.

Generally the character of the area is residential with pockets of commercial.

The site was formerly used as a council yard and has three existing protected structures along its boundaries.



Appendix 12: Dún Laoghaire Urban Framework Plan

Dún Laoghaire Urban Framework Plan

Three Themes:

Reconnecting the Town Centre to the Waterfront

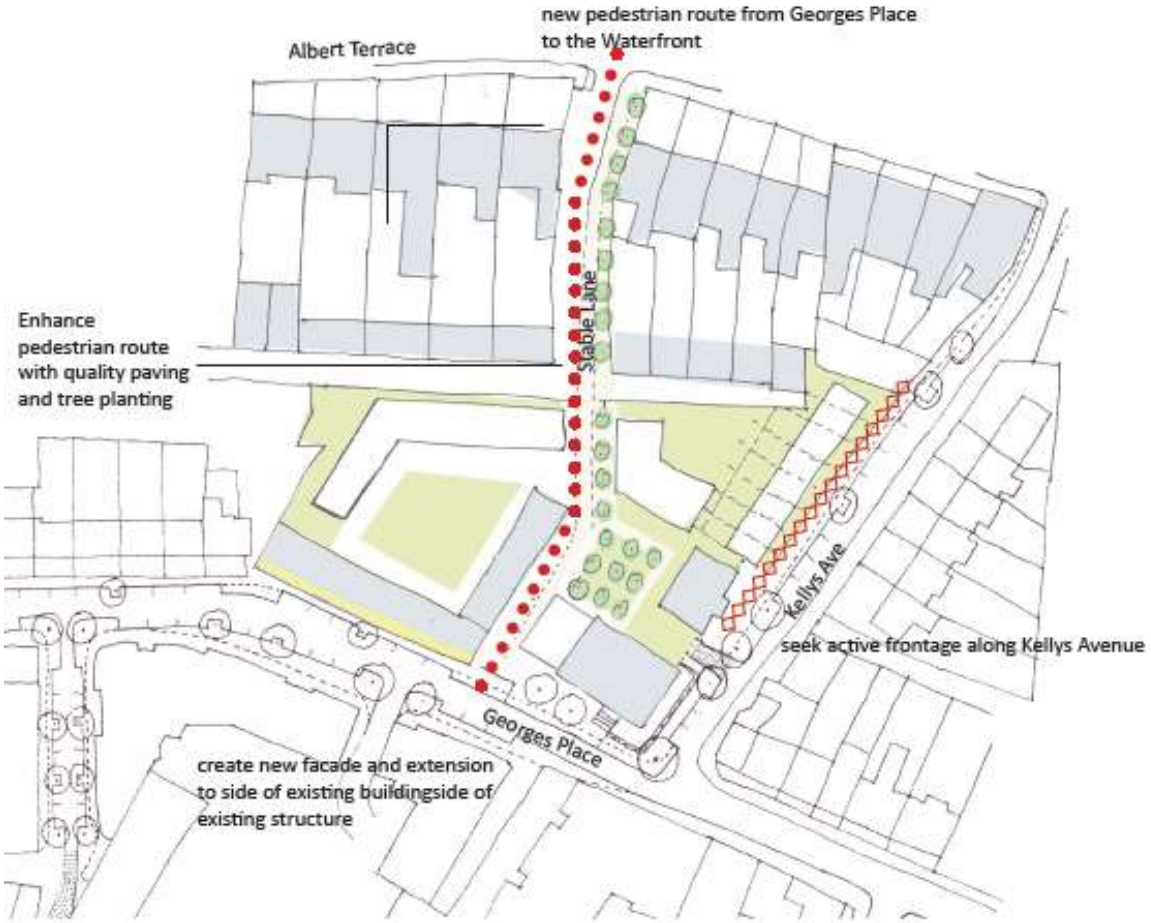
Creating Vitality

Strengthening Links with Adjoining Areas

PLANNING CONTEXT - BACKGROUND

Theme 1 –

Reconnecting the Town Centre to the Waterfront



URBAN FRAMEWORK PLAN

Ideas for George's Place:

Route from George's Place to the Waterfront with enhanced paving and tree planting

Active frontage along Kelly's Avenue

SITE CONTEXT

12 no. 2 storey two bedroom houses,
developed as part of DLRCC's commitment to Rapid Delivery Programme.

The layout includes a terrace of 4 houses and a pair of semi-d's fronting onto Kelly's Avenue and a further 6 houses in 2 terraces of 3 fronting onto a new shared surface home-zone area accessed of George's Place.

It is a dense development that still provides small but usable private open space. The terrace refers to the typologies found in city centre locations.

Parking bays are provided along Kelly's Avenue and in the home-zone.

The scheme is designed using materials that compliment the character of the area. Brick and plaster finishes respond to the sensitive context of the adjoining protected structures.

The scheme explores how family housing can be provided in an urban area in a way that maximises the use of valuable land.

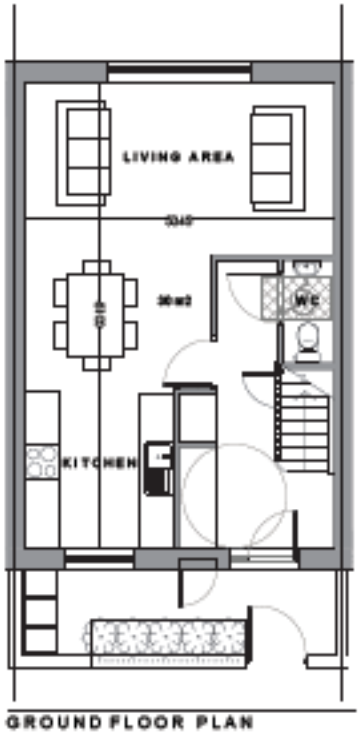
ELEVATION ALONG KELLY'S

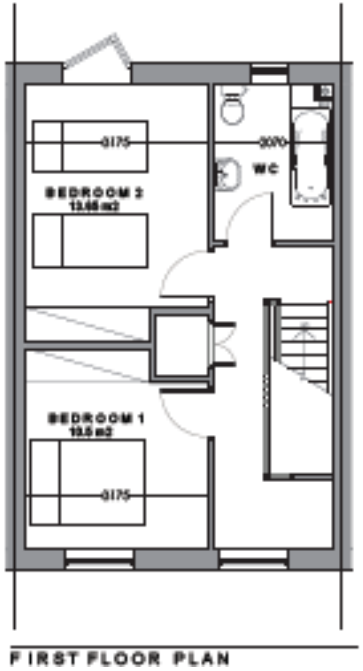
ELEVATION THROUGH THE FROM GEORGES PL. TO STABLE LANE

Narrow Frontage

2 bed house

10 no.

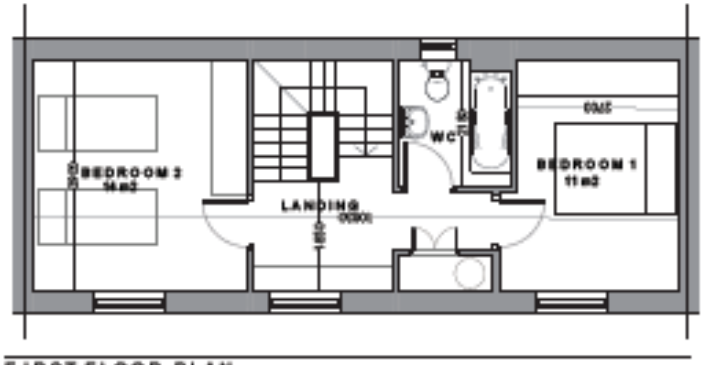


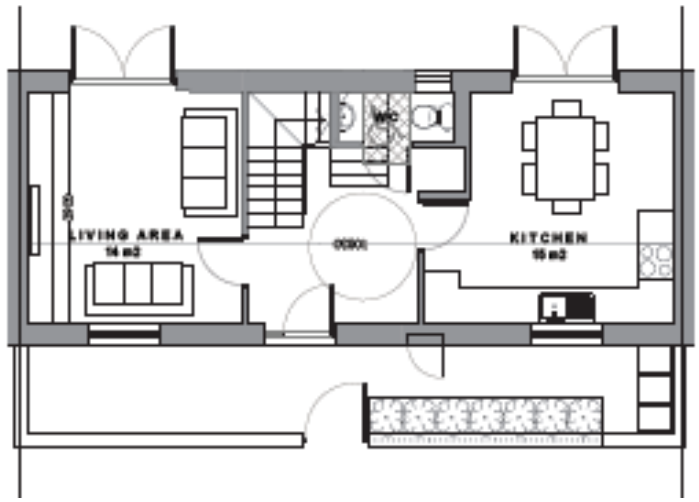


Wide Frontage

2 bed house

2 no.





PROCESS OF PROJECT DELIVERY

DLRCC ARCHITECTS DEPARTMENT DESIGN THE PROJECT

SEPT 2016
PART 8 ADOPTED

Decision to deliver the project as part of a Rapid Programme

DLRCC CONSULTANTS FRAMEWORKS

OCT 2016

DESIGN TEAM PROCURED

ARCHITECT
- Employer's Rep
- PSDP
- Assigned Certifier

C&S ENGINEER

M&E ENGINEER

QUANTITY SURVEYOR

Prepare tender for new OGP Framework

DLRCC CONTRACTOR FRAMEWORK

DEC 2016

TENDER DOCUMENTS COMPLETE

Vol A: Works Requirements
Employer's Requirements
Architects/Engineers Drawings
Performance Specifications

Volume B:
Tender & Schedule

Volume C:
Pricing Document

Instructions to Tenderer
Information Pack:
The Agreement PW-CF2
Programme
Model Forms
Site Survey Information
Site Services Information
Preliminary H&S
Planning Decision
BCAR Documentation

Example of General Arrangement Tender Drawing

PROCUREMENT TO OGP'S RAPID DELIVERY FRAMEWORK

JAN 2017

OFFICE OF GOVERNMENT PROCUREMENT
Establish the Contractors Framework for Rapid Delivery Housing.

Tender to the OGP Framework

FEBRUARY 2017

DLRCC's Design Team tender to the Framework for 12 Houses at George's Place.

MARCH 2017

Tenders returned end of March.
Tender period extended from 4-7 weeks.

APRIL 2017

Letter of Intent Issued.
Delays in issuing the Letter of Acceptance due to under-bidder queries.

JULY 2017

Letter of Acceptance issued and contract signed.

PROJECT STRUCTURE

EMPLOYER

Employer's Design Team

Architect - ER, AC
C&S Engineer
M&E Engineer
QS

The Employer's Design Team's role is to provide oversight of the project to ensure it complies with the Works Requirements

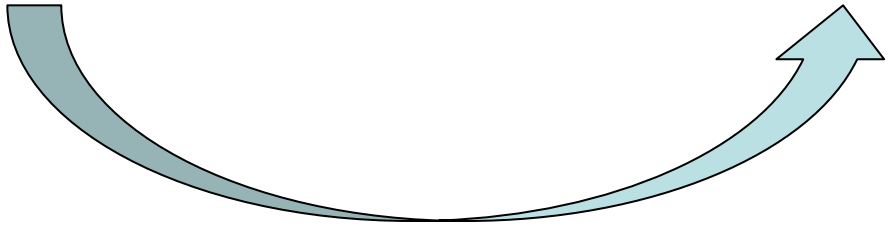
DESIGN & BUILD CONTRACT PW-CF 2

CONTRACTOR

Contractor's Design Team

Architect - Design Certifier
C&S Engineer - Ancillary Certifier
M&E Engineer - Ancillary Certifier
Timber Frame Co. - Ancillary Certifier

The Contractor's Design Team are responsible for the Design and Certification of the Project



Remember:

Be clear about what you what and put into your works requirements - DB is different

Be brave and don't lower your standards - the market can deliver, but won't if you don't ask

Be conscious of parameters that allow options and so should result in more competitive tenders

Allow the contractor to bring his expertise - there can be more than one right way

Choose MEAT criteria appropriately

Our Requirements:

High quality materials and detailing of external skin

High quality private open space and public realm

A1 BER

Approval of compliance sample before proceeding

MEAT criteria: Quality / Price

Quality - Programme / Design Approach / D+B Team / Durability

PROJECT TEAMS

EMPLOYER - DLRCC

Design Architect, CoW - **dlr architects**
(Bob Hannan, Jillian Quinn, Sarah Clifford, Niall Lawless)

Enabling Architect - ER, AC, PSDP -
A2 Architects (Peter Carroll, Luis Pedro)

C&S Engineer - **Punch Consulting Engineers**
M&E Engineer - **Delap & Waller**
QS - **Nolan Construction Consultants**

CONTRACTOR - John Sisk & Son

First Social Housing since 2009

Contractor - **'Sisk Living' (Norman Higgins, Denis Maloney, Niall O'Boyle, Sean Fay)**
Architect - **O'Mahony Pike Architects**
C&S Engineer - **DBFL Consulting Engineers**
M&E Engineer - **Johnston Reid & Associates**
Timber Frame Co. - **Kingspan**

The Employer's Design Team's role is to provide oversight of the project to ensure it complies with the Works Requirements

DESIGN & BUILD CONTRACT PW-CF 2

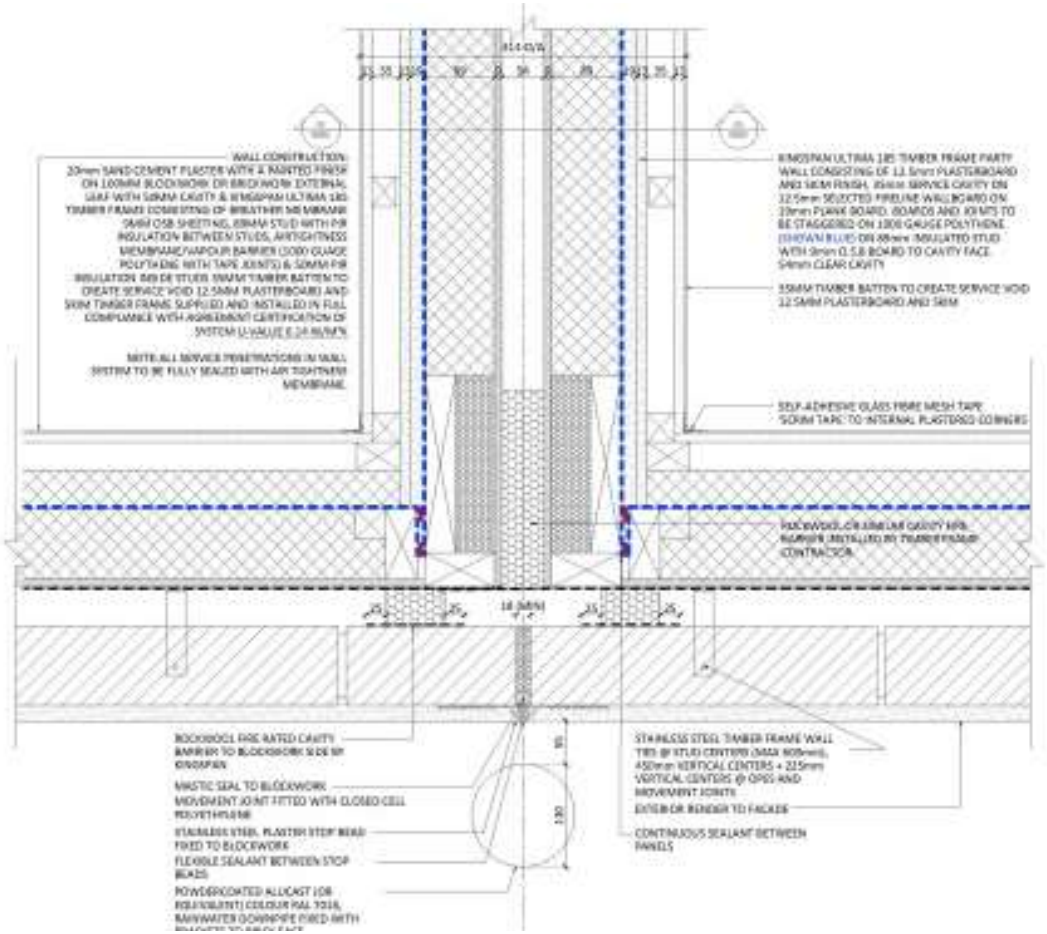
The Contractor's Design Team are responsible for the Design and Certification of the Project

PROJECT PHASING

PHASE 1

Contractor Proposals

Example of Contractor's detailed drawing at party wall



PROJECT PHASING

PHASE 1

Construction of Compliance Sample - built on site

dlr
Comhairle Contae County Council

PROJECT PHASING

PHASE 2

Construction on Site

PROJECT PHASING

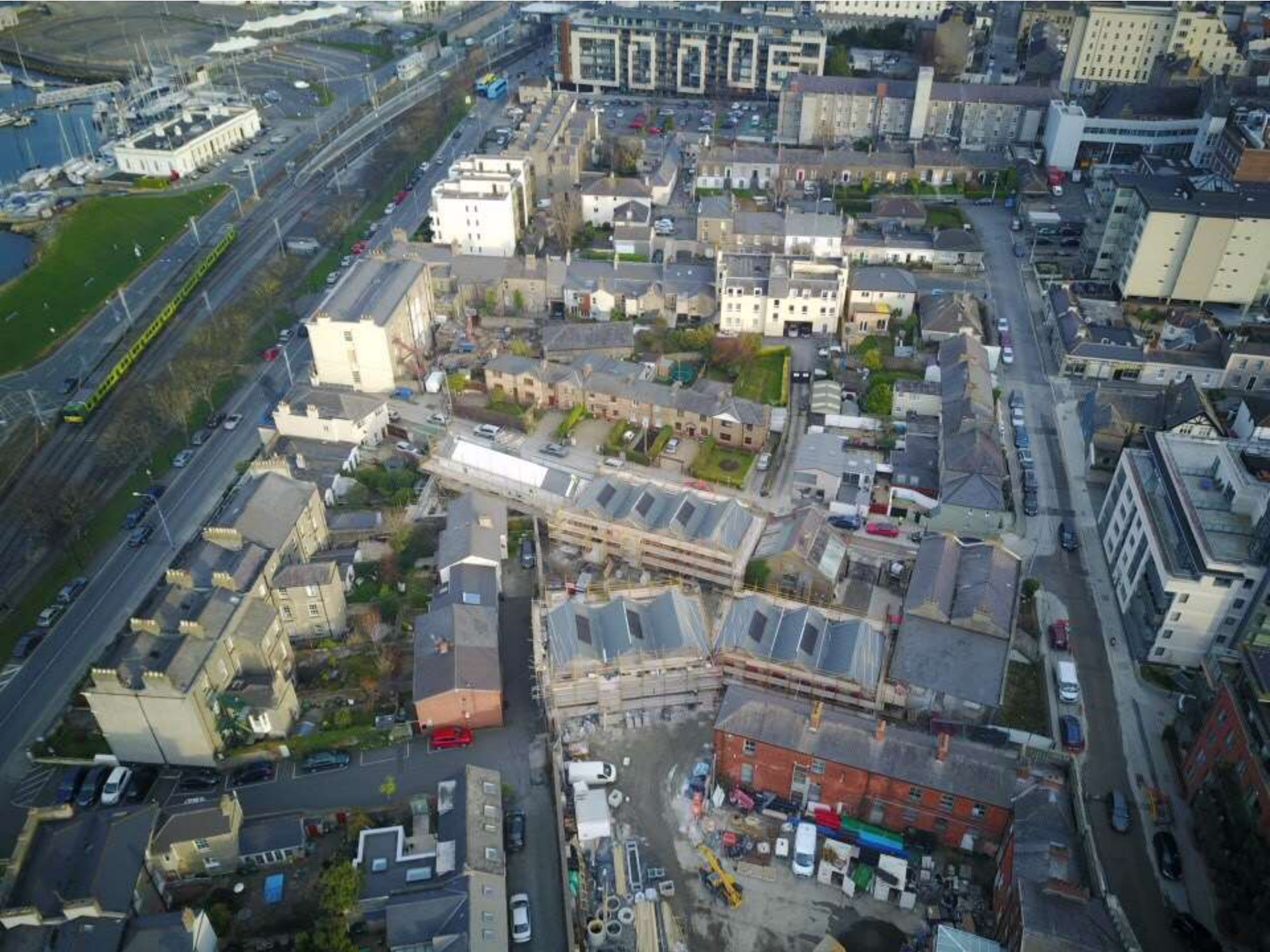
PHASE 2

Construction on Site


SCANIA
124L
420


KAVANAGH
CRANE HIRE LTD


ADT
Fire and
Security



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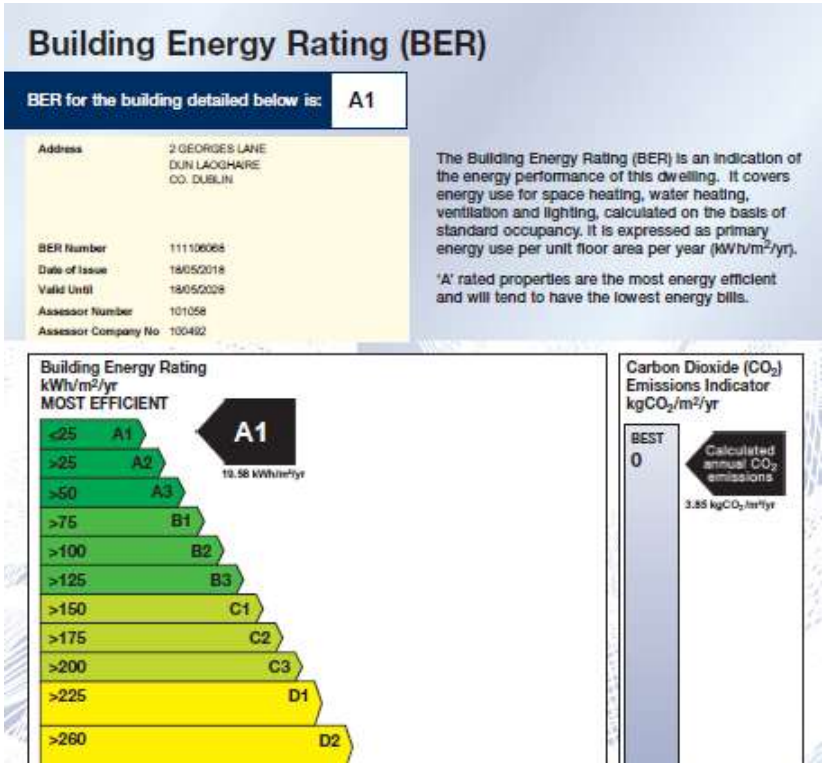

Building Energy Rating (BER)

BER for the building detailed below is: A1

Address: 2 GEORGES LANE, DUN LAOGHAIRE, CO. DUBLIN

BER Number: 111106068
Date of Issue: 18/05/2018
Valid Until: 18/05/2028
Assessor Number: 101058
Assessor Company No: 100492

The Building Energy Rating (BER) is an indication of the energy performance of this dwelling. It covers energy use for space heating, water heating, ventilation and lighting, calculated on the basis of standard occupancy. It is expressed as primary energy use per unit floor area per year (kWh/m²/yr).

'A' rated properties are the most energy efficient and will tend to have the lowest energy bills.

Building Energy Rating kWh/m²/yr
MOST EFFICIENT

<25 A1
>25 A2
>50 A3
>75 B1
>100 B2
>125 B3
>150 C1
>175 C2
>200 C3
>225 D1
>260 D2

A1
19.58 kWh/m²/yr

Carbon Dioxide (CO_2) Emissions Indicator $kgCO_2/m^2/yr$

BEST
0

Calculated annual CO_2 emissions
3.85 $kgCO_2/m^2/yr$

Part L Specification

12/06/2018

SUMMARY FOR PART L CONFORMANCE (Applies to TGD L 2008/2011 for new dwellings only)			
BER Number	111106068	Building Regulations	2011 TGD L
BER Result	A1	Energy Value kWh/m²/yr	19.58
CO2 emissions [kg/m²/yr]	3.85	Total compliance with Part L in DEAP?	Pass
EPC	0.132	EPC Pass/Fail	Pass
CPC	0.127	CPC Pass/Fail	Pass

Features:

Brick clad facades

Zinc roofing and flashings

Triple glazed Velfac windows

Projecting aluclad angled windows

Low maintenance

Homezone area

Granite kerbing

THE HOME PERFORMANCE INDEX (HPI)©
Know that your house is a home.

Silver Certification - highest score so far for multi unit development

Energy Performance:

A1 BER - Passive House design principles

Nilan, space and water heating system, ventilation and heat recovery

Automatic temperature controls

PV panels

High level of airtightness

Thermal modelling to avoid cold bridging

IGBC's HPI Certification considers quality under 3 categories:

Costs, Wellbeing, Our Planet

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Special Features:

Space and Water Heating System (Modular Heat Pump System)

Space and water heating system for each dwelling is provided by a standalone heat pump with integrated balanced whole-house ventilation system. The packaged heat pump system comprises an air to air heat exchanger (space heating), an air to water heat exchanger (water heating), an integrated MVHR unit with distribution air ducts (mechanical ventilation with heat recovery), an integrated hot water storage tank (180 litre), and associated controls.

Micro-Generation Photovoltaic System - Solar Panels

Each dwelling is fitted with a Photovoltaic micro-generation system. Electricity generated on-site will be used to supplement the electrical supply in each home. The standalone PV system consists of solar collectors, a power diverter, a hot water optimiser, and associated controls. The PV modules are installed on southerly facing roofs to maximize performance. Each PV system has an automatic immersion heater switching device which will ensure that surplus electricity is directed to the hot water storage tank.

Contributions to Successful Outcome:

Good Client team, good Contractor team, dedicated to same goal

Compliance sample teased out issues

Timber frame allows units to be air/water tight within a week, with start of internal trades and brick layers quickly

Internal and external programme ran concurrent with civil programme

Quicker at site stage - helpful with limiting disruption locally

Important Issues for RD projects:

Site selection - accessible, without baggage, sufficient size to achieve numbers

Design considerations - repetition, simple details, long term quality environment

DB influences design from outset - consider impacts of construction techniques early as may affect Part 8

Build up expertise - big learning curve on first project - Large number of parties involved, can't take shortcuts

Alignment of all parties to achieve tight schedules - no scope for surprises on site

Balance innovation with client concerns - durability, maintenance, ease of use

LAs want Delivery but not at the cost of Quality - it takes a lot of work to make it look this simple!

From Concept to Completion:

Part 8 adopted Sept 2016 - Contract signed July 2017 - Handover June 2018

Comhairle Contae County Council

Thank You

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