

Dlr Energy Improvement and High Performance Buildings

Andrée Dargan

County Architect, Dún Laoghaire-Rathdown County Council

Dublin Climate Action Week

15 September 2021

- **Dlr Energy Improvement**
 - Public Sector Role
 - Future Proofing the County
 - Driving Innovation
- **High Performance Housing**
 - Completed Projects
 - Future Projects
- **Conclusions**



SUSTAINABLE DEVELOPMENT GOALS
17 GOALS TO TRANSFORM OUR WORLD



TARGET 7-3



DOUBLE THE IMPROVEMENT IN ENERGY EFFICIENCY

- The 2030 Agenda for Sustainable Development (“*Transforming our World*”), was adopted by world leaders at the UN in 2015 - framework for sustainable development globally - 193 Countries

- 17 Sustainable Development Goals (SDGs) & 169 Targets
- Ireland is currently ranked 13th (SDG Index + dashboard)
- Ireland scores in the bottom third of EU15 - Affordable and Clean Energy (SDG7)

TARGET 7-1



UNIVERSAL ACCESS TO MODERN ENERGY

TARGET 7-2



INCREASE GLOBAL PERCENTAGE OF RENEWABLE ENERGY

Public Sector and LA Role

Climate Change Mitigation is driven by EU targets

Public Sector is a key factor in achieving Energy Efficiency targets within NEEAP (Nat En Eff Action Plan)

The public sector will improve its energy efficiency by 33% and will be seen to lead by example – showing all sectors what is possible through strong, committed action.

National Legislation SI 426 of 2014 - Public Sector Exemplary Role
(previously SI 542 of 2009)

Public Sector and LA Role

- 33% by 2020 (now 50% by 2030) (from 2009 baseline)
- Buildings A3 BER – Purchase or Lease
- Energy Audits
- DEC's (Display Energy Certs)
- 2018 - nZEB (non-Res New Builds or Upgrading > 25%)
- 1 Nov 2019 – nZEB Residential
- 30% by 2030, 40% Cov of Mayors, absolute 50% CO₂ by 2030 (from 2016-2018 baseline)
- Supporting the Community/LCDC



Public Sector Energy Efficiency Strategy

Department of Communications,
Climate Action & Environment
January 2017



All public sector bodies must designate an
Energy Performance Officer (EPO)
from the Senior Management Team

Develop an Energy Management Plan

Drive implementation of projects

Set annual energy saving targets

ENERGY MONITORING & MANAGEMENT



PROJECT MANAGEMENT



Future Proofing the County

Dún Laoghaire-Rathdown County Council's Energy Team is committed to building a more sustainable and energy-efficient County, through a range of innovative energy projects.



ENERGY PROJECT INVESTMENTS

ENERGY POLICY & PLANNING



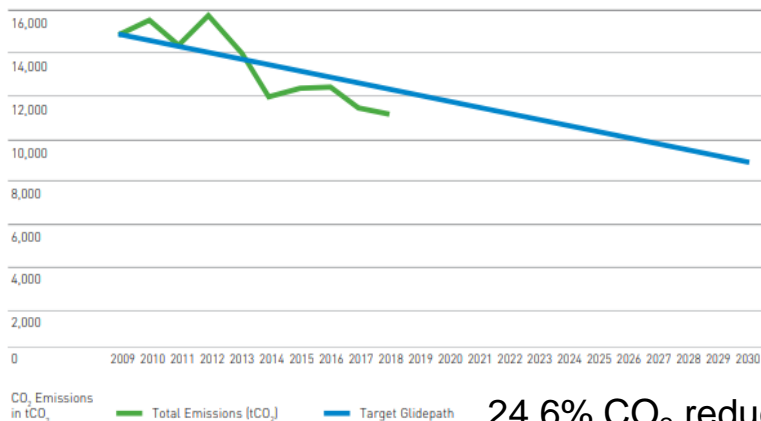
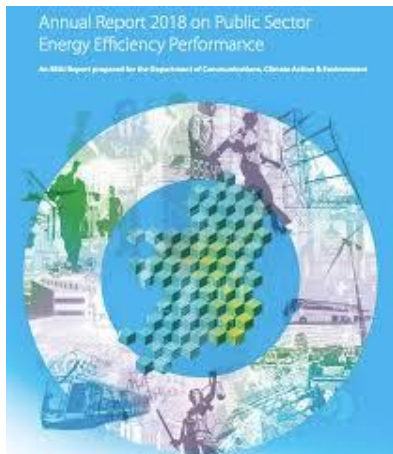
ENERGY AWARENESS



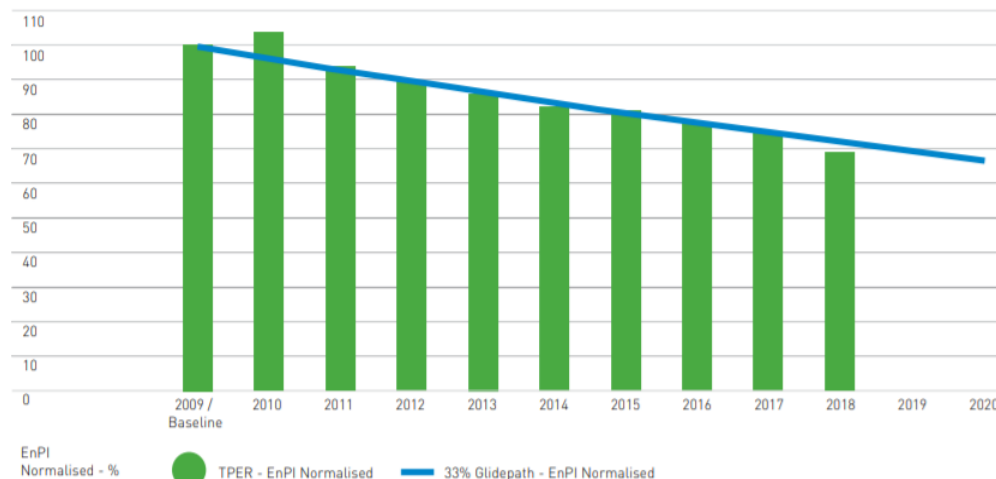
Annual data for SEAI Public Sector Energy Performance Monitoring & Reporting System

33% target improvement in energy efficiency by 2020

By 2018 – dlr had achieved 32.4% energy improvement



24.6% CO₂ reduction since the baseline



DLRCC Progress: Baseline - 2018



IMPROVED ENERGY PERFORMANCE BY 32.4%



3,636 TONNES OF CO₂ SAVED



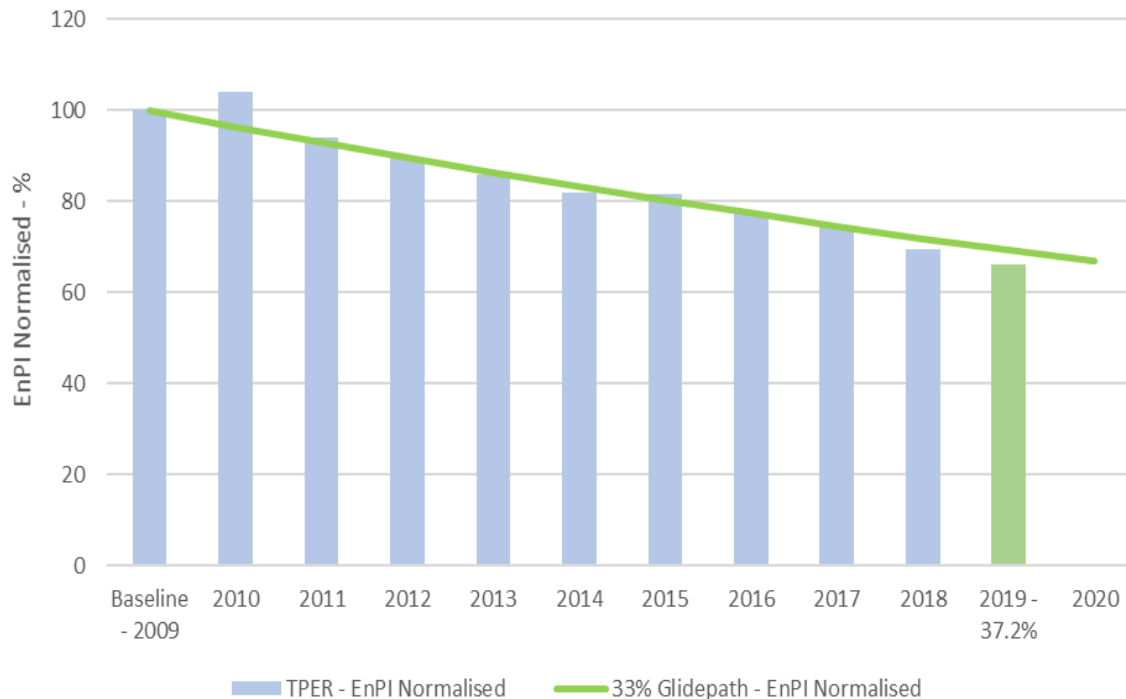
0.6% IMPROVEMENT REQUIRED TO MEET THE 33% PUBLIC SECTOR TARGET

Annual data for SEAI Public Sector Energy Performance Monitoring & Reporting System

33% is the target improvement in energy efficiency by 2020

By 2019 – dlr had achieved 37.2% energy improvement

DLR Annual Energy Performance Compared to 33% Glidepath



Our 2020 SEAI report has shown that dlr has improved by 51% v 33% target.

2030 public sector target of 50% improvement – based on Gov 2019 Climate Action Plan

Dún Laoghaire-Rathdown Baseline Emissions Report 2016 (Codema)

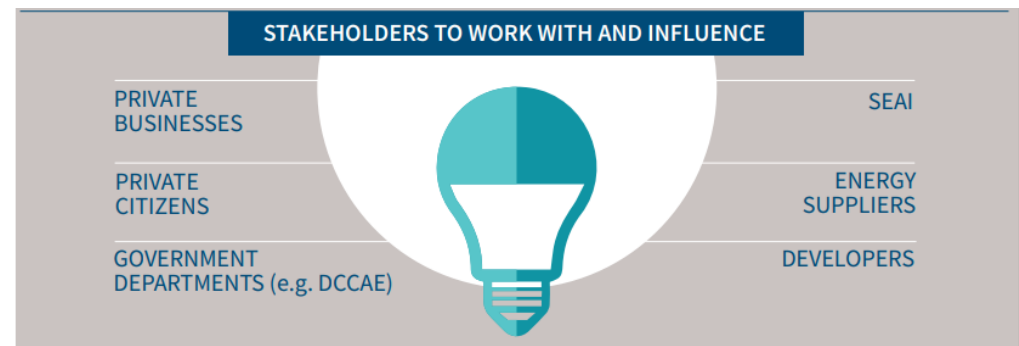
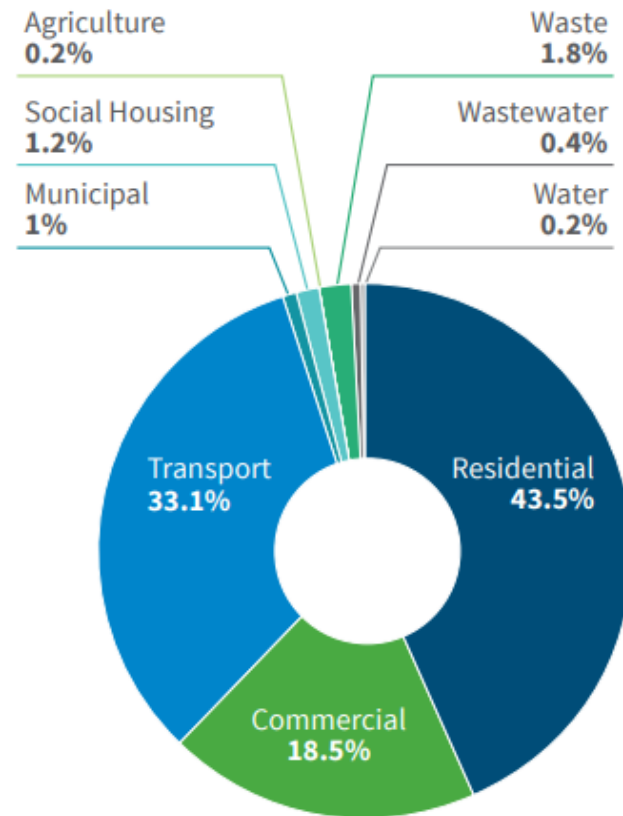
64% Total carbon emissions (GHG) in the county related to **Buildings**

43.5% Private residential
18.5% Commercial buildings

1.2% ***dlr Social Housing***
1% ***dlr Council Buildings***

Need collaboration and action from stakeholders

Setting a high standard for low carbon building



We promote **RENEWABLES** and planning of future **ENERGY NETWORKS** in line with our **COUNTY DEVELOPMENT PLAN 2016-2022**



Our **ENERGY MANAGEMENT SYSTEM** is compliant with **ISO 50001** to continuously improve our energy performance, achieve 2030 targets and comply with energy legislation

We support **GREEN BUSINESS DEVELOPMENT** and Smart Dublin's **SMART CITY PROJECTS**



Future Proofing the County

Dún Laoghaire-Rathdown County Council's Energy Team is committed to building a more sustainable and energy-efficient County, through a range of innovative energy projects.

We promote **IS399:2014 ENERGY EFFICIENT DESIGN** and new builds which meet **nZEB** and **PH** standard



We have a detailed **ENERGY POLICY** which covers all of our corporate energy usage - see our 'Energy' page on dlrcoco.ie for details



We are pursuing **ENERGY PERFORMANCE CONTRACTS (EPCs)** to guarantee energy savings and reduce bills in Council buildings

We are a member of the **COVENANT OF MAYORS FOR CLIMATE & ENERGY** which commits the Council to produce a **SUSTAINABLE ENERGY & CLIMATE ACTION PLAN** and to reduce CO₂ by 40% by 2030



We actively **ENGAGE WITH STAKEHOLDERS** like Government Departments, SEAI, Businesses and Communities, for energy improvement



www.dlrcoco.ie



energyteam@dlrcoco.ie



Comhairle Contae County Council

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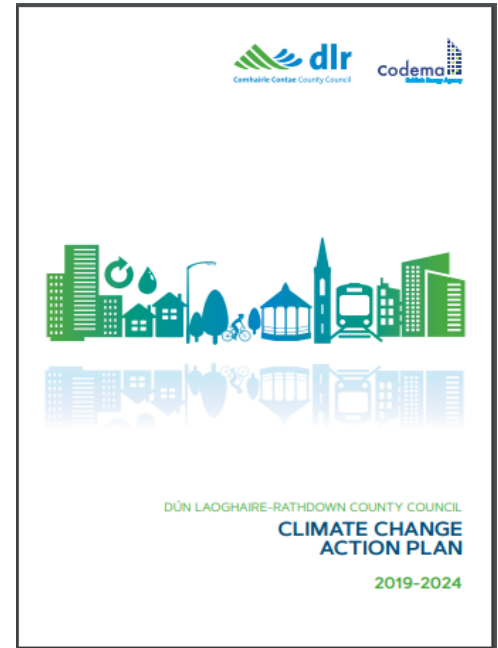




Future Proofing the County

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June 2020 - Irish Government committed to 7% annual reduction GHG 2021-2030

Energy efficiency = lower CO₂ emissions plus:

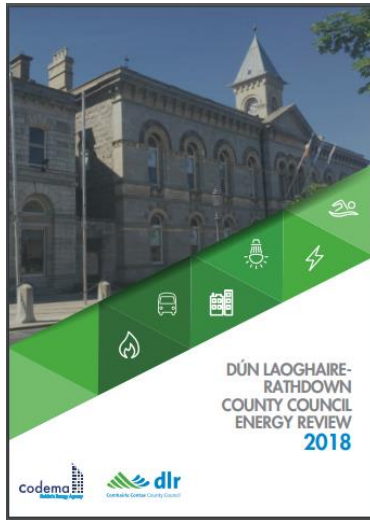
- supports economic growth
- enhances social development
- reduces fossil fuel dependency
- protected from future grid worries
- helps build prosperity

Future Proofing the County

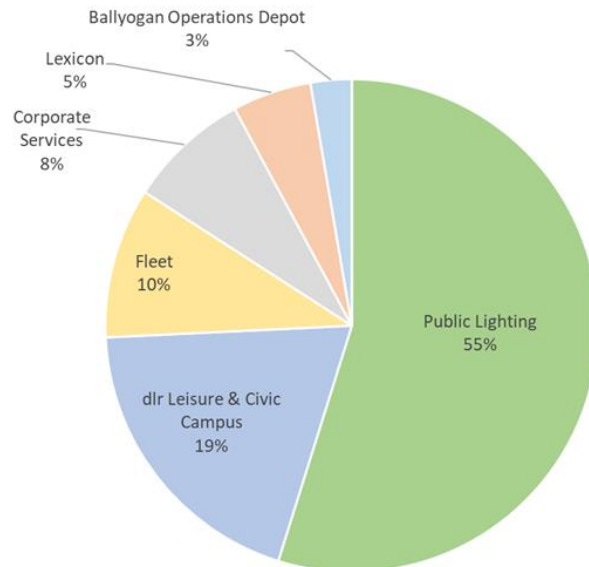
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DLR 2019 Significant Energy Users

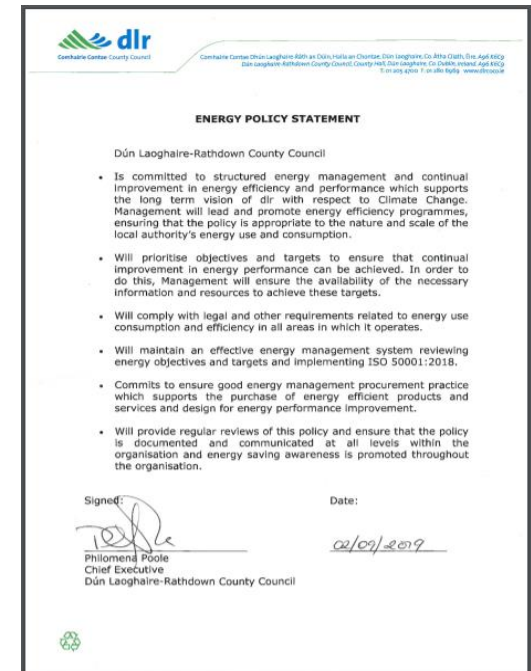


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Sept 2021 – 74% LEDs



Our **ENERGY MANAGEMENT SYSTEM** is compliant with **ISO 50001** to continuously improve our energy performance, achieve 2030 targets and comply with energy legislation

Future Proofing the County

Dún Laoghaire-Rathdown County Council's Energy Team is committed to building a more sustainable and energy-efficient County, through a range of innovative energy projects.

DLR demonstrates compliance with Public Sector obligations through implementation of a formal Energy Management System which complies with International Standard ISO50001



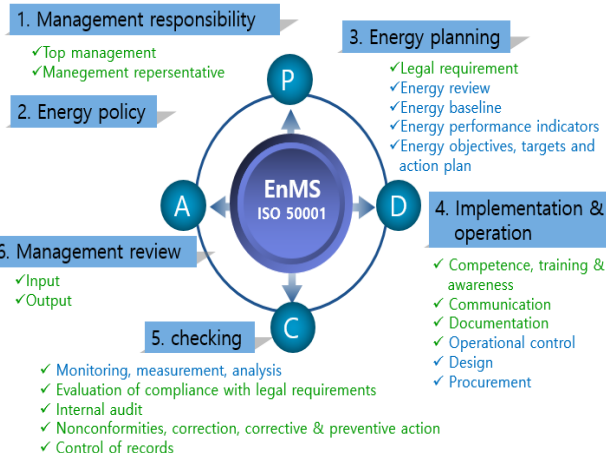
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ISO 50001 : Energy Management Standard



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Dún Laoghaire, Ireland,
November 13th – 14th 2019
Climate Action through nearly zero energy buildings

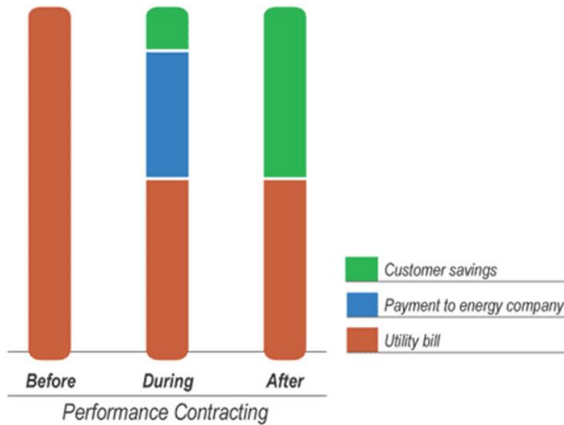


Future Proofing the County

Dún Laoghaire-Rathdown County Council's Energy Team is committed to building a more sustainable and energy-efficient County, through a range of innovative energy projects.



We are pursuing **ENERGY PERFORMANCE CONTRACTS (EPCs)** to guarantee energy savings and reduce bills in Council buildings



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- Energy Performance Contracting is **contractually guaranteed** energy savings
- It enables aging facilities to upgrade their equipment, using the generated savings (future energy costs and operating costs) to pay for the project.

- Select an **ESCo** via public procurement based on who offers the **most guaranteed savings** (not on capital cost of projects)
- Works begin (3 months). ESCo is paid a **fixed sum** in instalments. ESCo contributes remaining project capital from own resources
- Once works are complete the **Service** phase begins (e.g. 8 years). ESCo is paid **monthly payments dependent on performance**. These payments compensate the ESCo for: Capital costs, maintenance costs and profit

We support **GREEN BUSINESS
DEVELOPMENT** and Smart
Dublin's **SMART CITY
PROJECTS**



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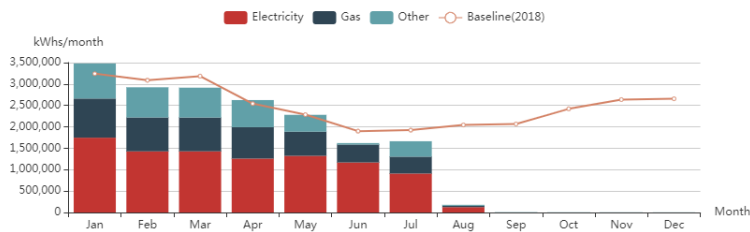


Future Proofing the County

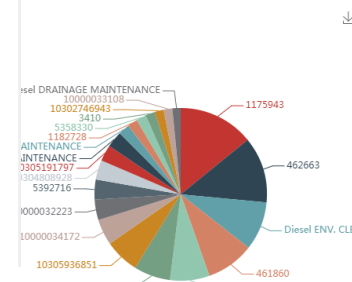
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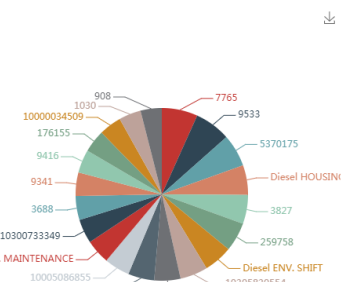
Monthly Primary Energy Consumption



Top 20 Meter Points (52%)



Meter Points 21 to 40 (11%)



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planning of future **ENERGY**
NETWORKS in line with our
COUNTY DEVELOPMENT
PLAN 2016-2022



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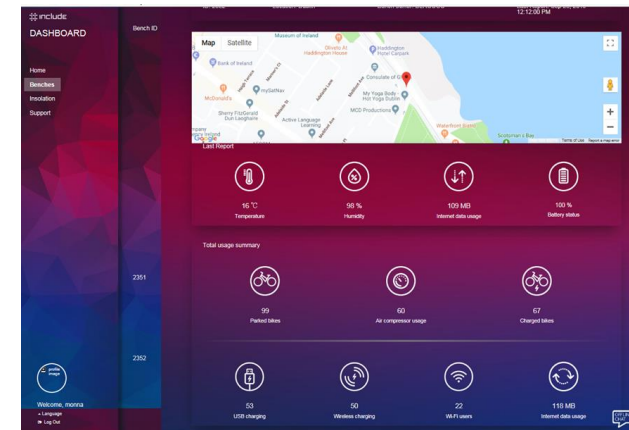
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Funding Applications -
DeliveREE
ProBONO

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Upgrade your home and make your energy work better for you

- 35% SEAI Grant*
- Eco Loan APR 6.1%
- Additional SSE Airtricity Discounts

CHOOSE FROM

- Solar heating
- Attic insulation
- Cavity Insulation
- Windows
- Boiler upgrade
- External Insulation

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1850 81 81 70 | brcenquiries@sseairtricity.com

Future Proofing the County

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seai SUSTAINABLE ENERGY AUTHORITY OF IRELAND

Deep Retrofit Grant



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dlr Energy Events

FOR HOME OWNERS

Free Home Energy Improvements Seminar
dlr Lexicon



Sunday 13 October 2019

www.openhousedublin.com

FOR BUILDING PROFESSIONALS

nZEB Conference and Workshops
with International Speakers



Dún Laoghaire, Ireland
November 13th - 14th 2019
Don't Miss Being at the nZEB Forum

13-14 November 2019

www.worldnzebforum2019.com

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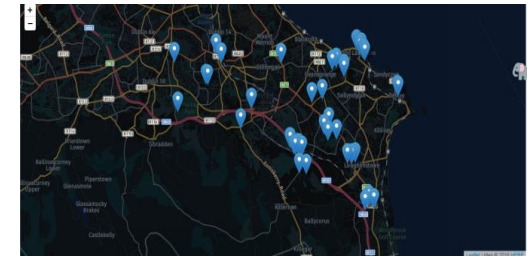
- Solar heating
- Attic insulation
- Cavity insulation
- Windows
- Boiler upgrade
- External insulation

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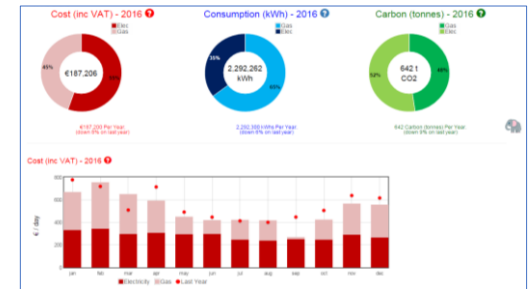
For a free no obligation survey call us or email us:
☎ 1850 81 81 70 | ✉ info@blackravenenergy.com

*Offer subject to availability of the SEAI Energy Grant. SEAI Grants are subject to a number of conditions. For more information on the SEAI Grant, please visit www.seai.ie. The SEAI Grant is a contribution towards the cost of the energy efficiency measures. The SEAI Grant is not a loan and does not need to be repaid. The SEAI Grant is a contribution towards the cost of the energy efficiency measures. The SEAI Grant is not a loan and does not need to be repaid.

seai | SSE Airtricity | Energy Services



EuroPHit



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www.worldnzebforum2019.com



SEAI Award Leadership in the Public Sector 2019

3 dlr architects projects - 3 RIAI Sustainability Awards

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2018



The Mews

Rochestown House, Phase 2



2017

**(with A2 Architects)
George's Place, Dún Laoghaire**

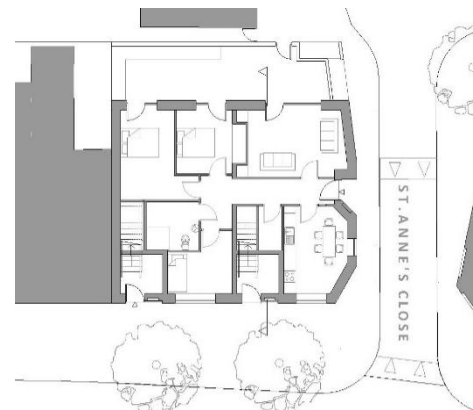
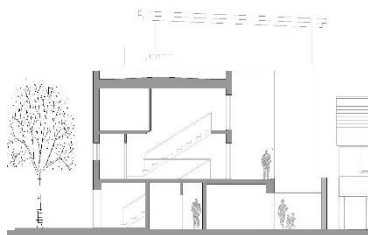


2019

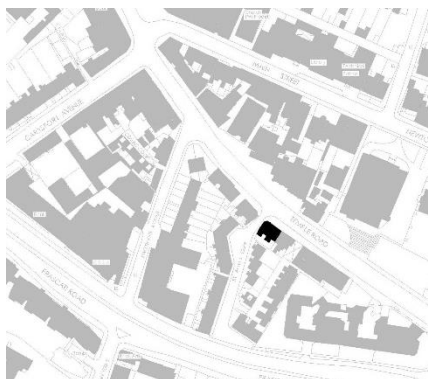
Dlr High Performance Buildings

Completed Projects

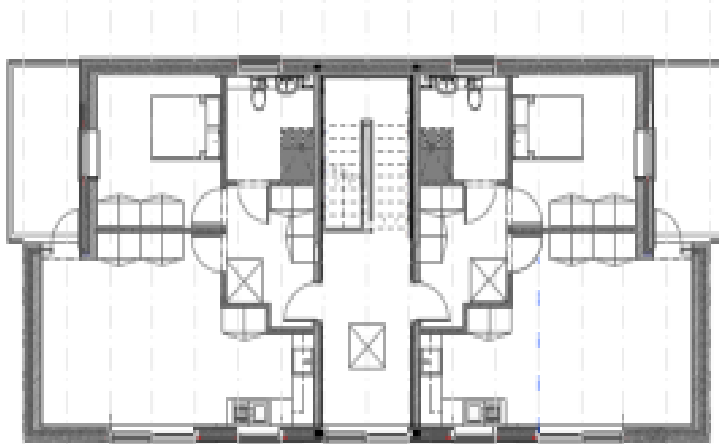
Temple Road



The site,
measures
170m², and
accommodates
two x 2 bedroom
duplexes above
a 3 bedroom
accessible
ground floor unit.



The Mews



4 x 1 bed apts

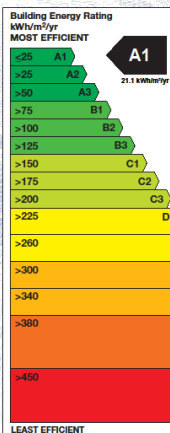
Building Energy Rating (BER)

BER for the building detailed below is: **A1**

Address
3 THE MEWS
SALLYNOGIN PARK
SALLYNOGIN
CO. DUBLIN

BER Number
110555497
Date of issue
12/12/2017
Valid until
12/12/2027
Assessor Number
105338
Assessor Company No
105338

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.



Carbon Dioxide (CO₂)
Emissions Indicator
kgCO₂/m²/yr

BEST
0

Calculated annual CO₂ emissions
4.15 kgCO₂/m²/yr

The less CO₂ produced, the less the dwelling contributes to global warming.

IMPORTANT: This BER is calculated on the basis of data provided to and by the BER Assessor, and using the version of the assessment software quoted below. A future BER assigned to this dwelling may be different, as a result of changes to the dwelling or to the assessment software.

DEAP Version: 3.2.1



2018 RIAI Sustainability Award

SUMMARY FOR PART L CONFORMANCE (Applies to TGD L 2008/2011 for new dwellings only)

BER Number	110555497	Building Regulations	2011 TGD L
BER Result	A1	Energy Value kWh/m ² /yr	21.10
CO2 emissions [kg/m ² /yr]	4.15	Total compliance with Part L in DEAP?	Pass
EPC	0.109	EPC Pass/Fail	Pass
CPC	0.105	CPC Pass/Fail	Pass

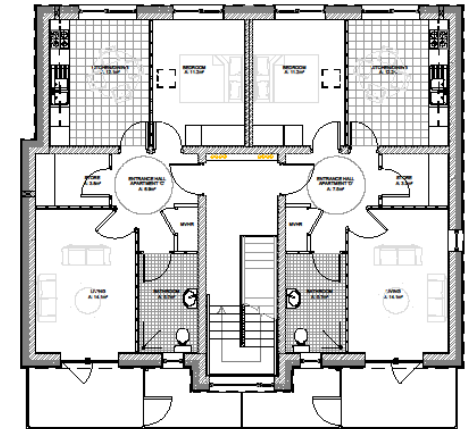


Photos: dlr and Donal Murphy

Pottery Road

4 x 1 bed apts

EPC: 0.052
CPC: 0.051
BER Result: A1



Building Energy Rating (BER)

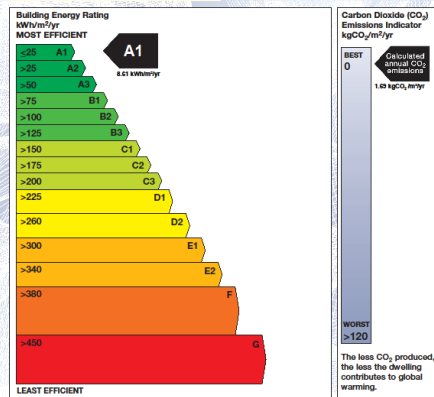
BER for the building detailed below is: **A1**

Address: 132 POTTERY ROAD
APT C
DUN LAOGHAIRE
CO. DUBLIN

BER Number: 11 1302170
Date of Issue: 23/08/2018
Valid Until: 23/08/2028
Assessor Number: 105944
Assessor Company No: 105923

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



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DEAP Version: 3.2.1

Construction: External Insulation on 215mm concrete block
Heating: Electric Panels
Ventilation: Mechanical Heat Recovery (86% Efficiency)
Renewables: 4no. 270W Photovoltaic Panels
Air Tightness: Less than 1 air change per hour @ 50 Pa

23/08/2018

Part L Specification

Page 4 of 4

SUMMARY FOR PART L CONFORMANCE (Applies to TGD L 2008/2011 for new dwellings only)			
BER Number		Building Regulations	2011 TGD L
BER Result	A1	Energy Value kWh/m ² /yr	8.61
CO2 emissions [kg/m ² /yr]	1.69	Total compliance with Part L in DEAP?	Pass
EPC	0.052	EPC Pass/Fail	Pass
CPC	0.051	CPC Pass/Fail	Pass

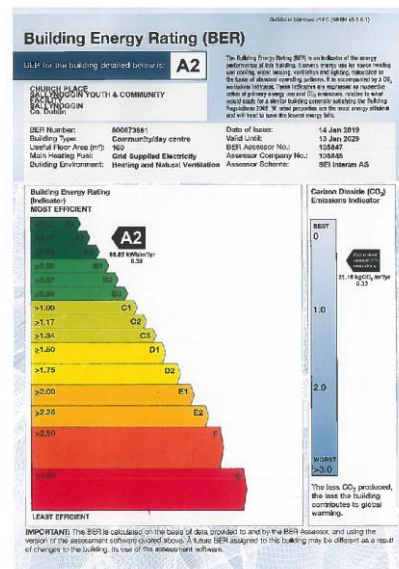
Sallynoggin Community and Senior Centre

Sallynoggin Senior Centre is a new building linked to the existing Youth Centre to create a combined Community Centre facility for use by all. With A2 Architects.

A2 rated and NZEB compliant



Facilities include:
large multifunction hall
entrance hall
disabled WC
kitchen
office
storage space
external relaxation area.



Daleview

2019 - Pilot for maisonette house type



The "Good" room unit 50

'live' site

4 x 2 bed apts

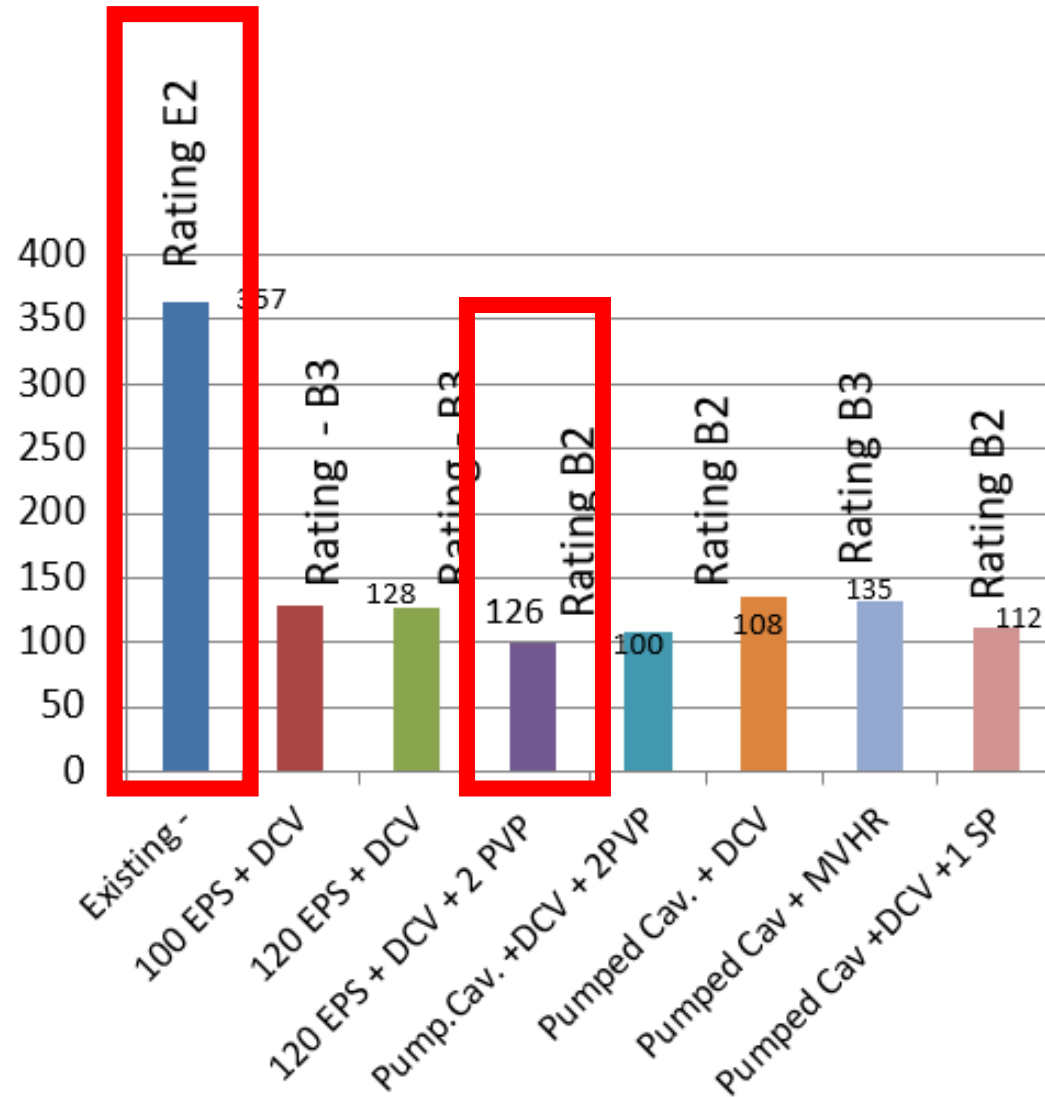


Cramped like Kitchen conditions with no extract and serious condensation formed during cooking (62 yr old kitchen)

Considerations:

- Specification
- Programme
- Health and Safety
- Site Logistics
- Communication with Tenants
- Procurement

Energy Consumption (kWh/M²/yr)



Option Appraisal

Costs -
c.€32k/unit

Measures taken

Roof - photo-voltaic cells

Walls - external insulation

Ventilation - Demand control units

Junctions - airtightness tape

Doors - high thermal performance doors

Heating - efficient boilers upgrade

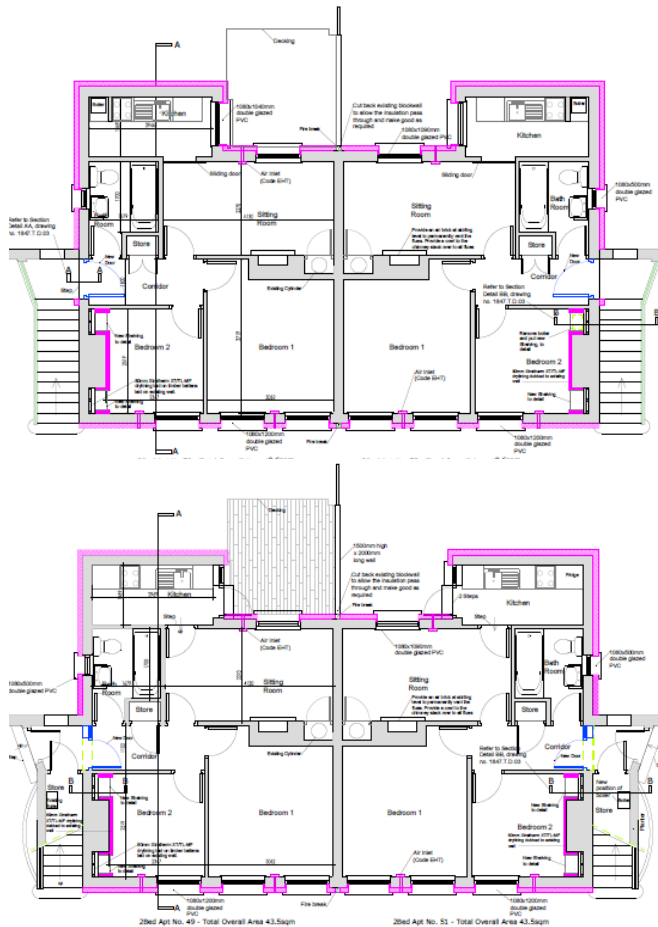
Controls - heating controls upgrade

Attic Insulation	€400
External Wall Insul	€2750
Heating Controls	€700
Building Energy Rating	€50

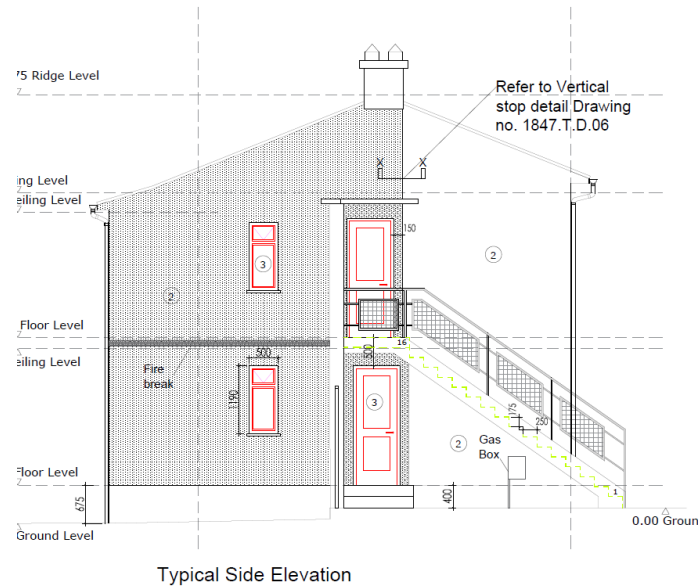
Better Energy Homes Grant

€3700 x 4 = €14,800





External and internal insulation



Solution at difficult gable



Ballyogan Court / Ave

Ballyogan Court / Ave

6 terraced 1980's houses -
3 vacant, 3 occupied

Energy Upgrade Works

Brought houses from E to A1
Average cost c.€60k/house
50% SEAI deep retrofit grant

- External wall insulation with brick slips
- Attic insulation
- New triple glazed windows/doors
- Basic airtightness works
- Air source heat pump wall mounted
- Low temp rads
- Ventilation to kitchen/bathroom
- PV panels for water heating



Post Retrofit Occupant Analysis for 3 occupied dwellings

- Dramatic drop in energy bills
- High occupant satisfaction
- Increased comfort levels
- A1 BERs but actually A2, A3 ,B2

Technical build issues

Connectivity issues

Challenges using controls



Measured:

- Temperature
- Carbon dioxide
- Relative humidity



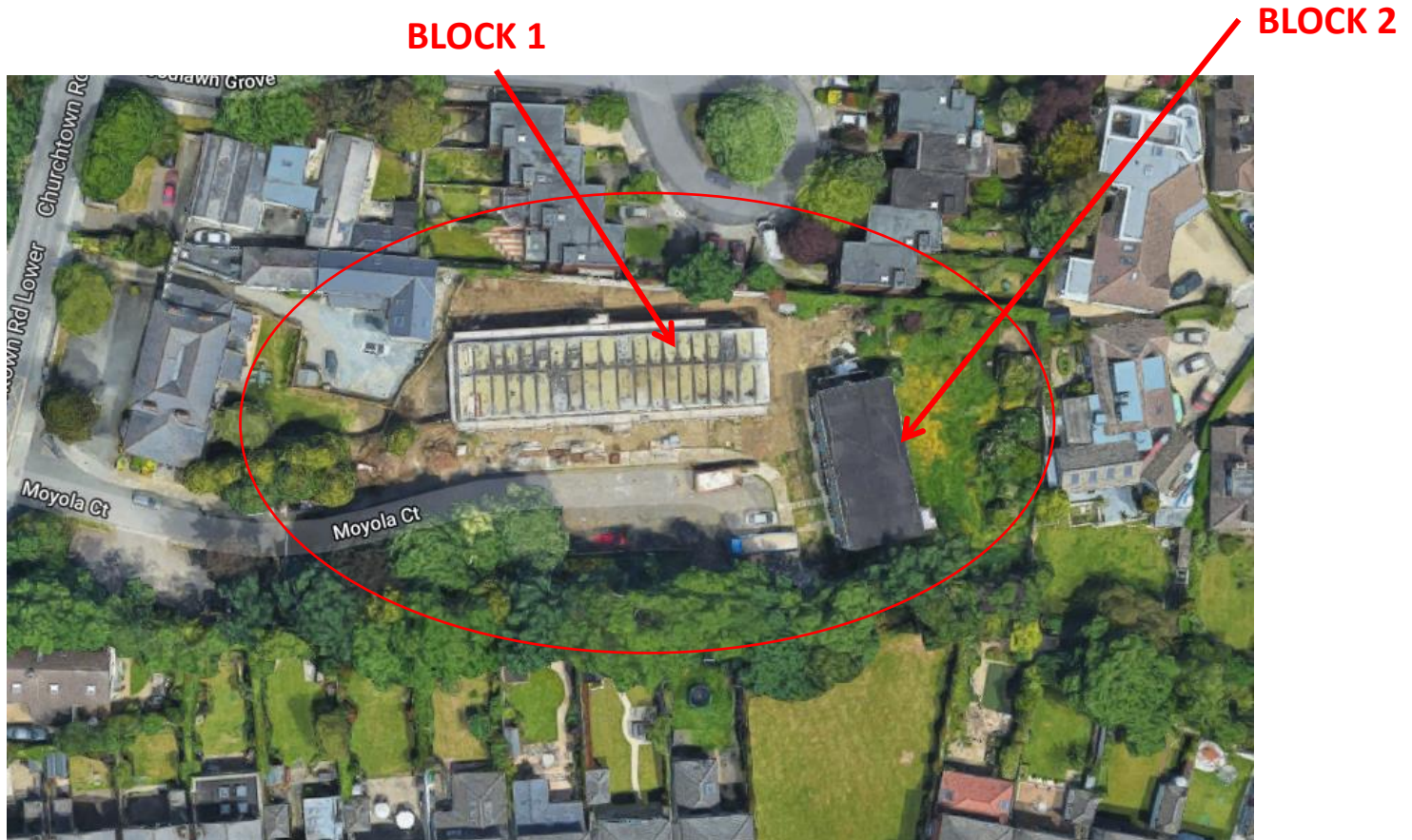
Moyola Court

Moyola Court - 12 terraced houses built in 1970's,
with poor BER ratings from E to G

The Site was upgraded in two phases:

Phase 1 - Block 1 comprising 8 houses

Phase 2 - Block 2 comprising 4 houses and siteworks



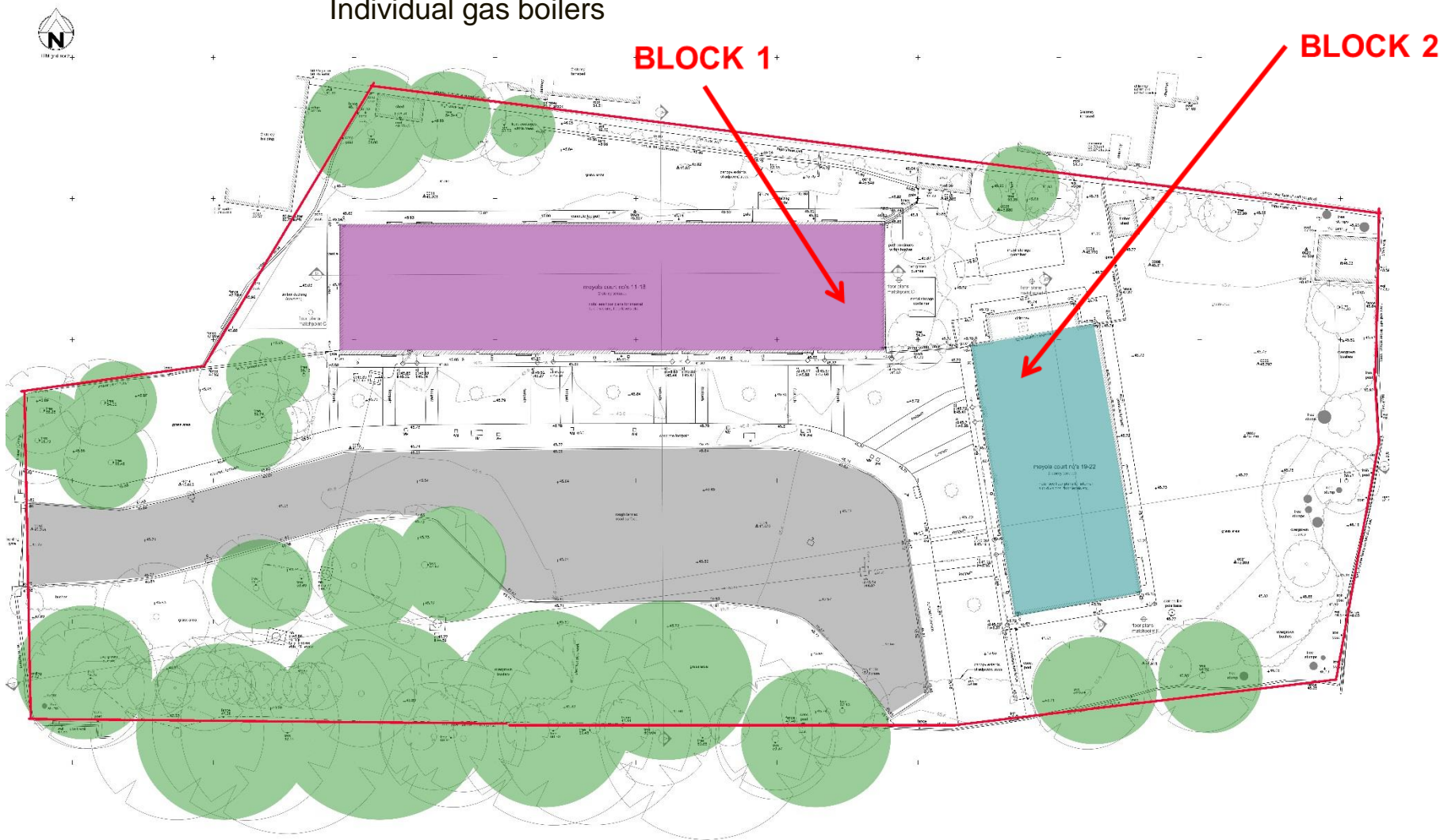
Ground Floor: poured concrete slab with no insulation

First Floor: precast hollow core slab

Roof: precast slabs with mineral wool insulation

External Walls: uninsulated concrete block cavity walls with brick facing to front

Individual gas boilers



Energy Upgrade Works

- Brought houses to A2 and A3
- Designed to EnerPHit standard
- External wall insulation
- Roof insulation
- New triple glazed windows and doors
- Airtightness

SEAI Deep Retrofit Pilot Programme (50% funding)

significant upgrade of a building toward nearly zero energy requirements where it is practically feasible and achievable.

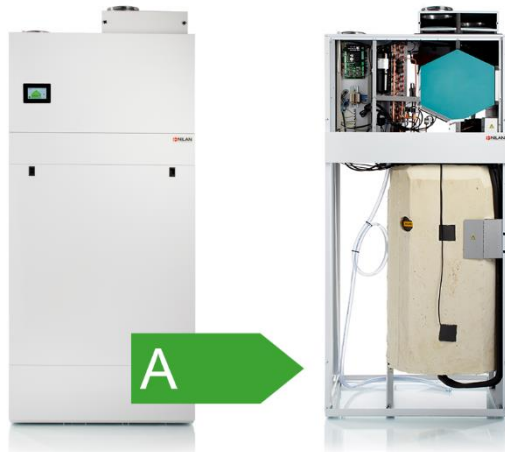
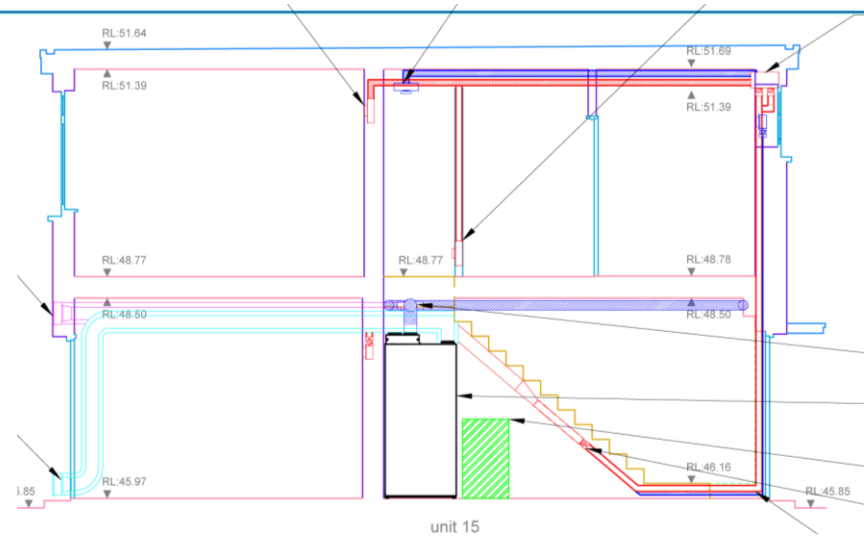
minimum BER A3 and a minimum Building Energy Rating (BER) uplift of 150 kWh/m²/yr.



Before upgrade



Finished project after upgrade



Combined Heating/Hot Water and Ventilation

Nilan Compact P (CP) exhaust air heat pump (Indoor unit) providing, ventilation, heat recovery, space heating through ventilation system and domestic hot water.

Supplementary electric heaters are used as a secondary heat source.



Photovoltaic solar panels battery with smart inverter
carbon electric paint heat panels and (JouleTherm CeP)
hot water cylinder with heat recovery



Electric Heating and Hot Water powered by PV Solar Panels and Heat recovery and with Battery Storage

The JouleThermH2O cylinder uses 70% less energy than traditional electric immersion heaters.

The air handling capability of the JouleThermH2O is used to extract air from the bathroom and kitchen, through humidity sensor control. The unit will then extract heat from this air, using it to heat the domestic hot water, before venting it externally.

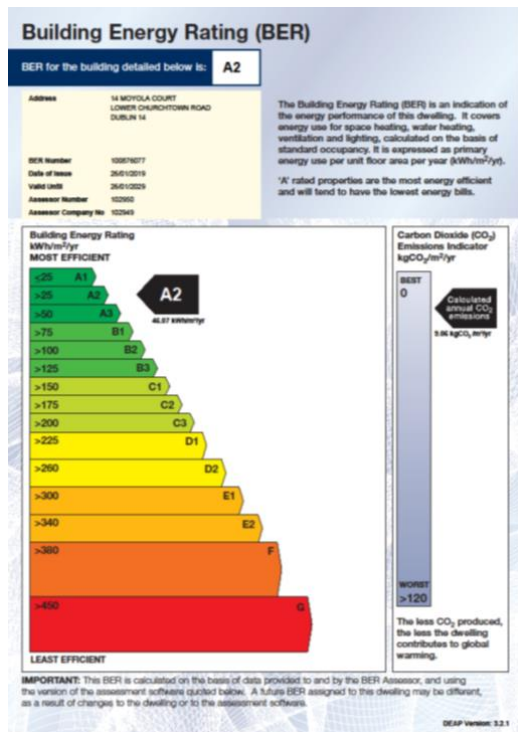


The **space heating** requirement is met by the JouleTherm **Carbon Electric Paint (CeP)** system. JouleThermCeP uses carbon graphene paint screenprinted on to insulated plasterboard, heated by 24V low voltage technology, to turn walls into radiators. JouleThermCeP, which was developed in Ireland, is invisible in use, safe, low maintenance, and extremely efficient.

The combined occupancy / temperature / CO₂ room sensors will provide control over heating, by allowing heating to be switched on by the temperature sensor, only if the room is occupied, therefore allowing for a much more efficient system.

Units
achieved
A2/A3

Mid terrace
meets
NZEB
Standard



SUMMARY FOR PART L CONFORMANCE

BER Number	100876077
BER Result	A2
CO2 emissions [kg/m ² /yr]	9.06
EPC	0.309
CPC	0.299

Costs - c.€63k per house (50% Grant from SEAI)

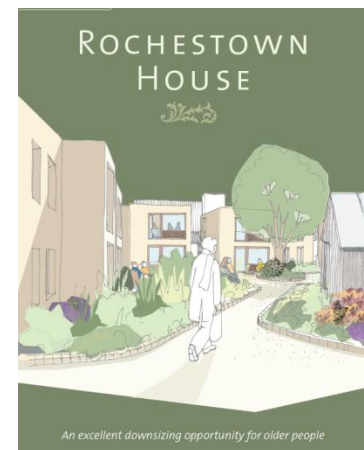
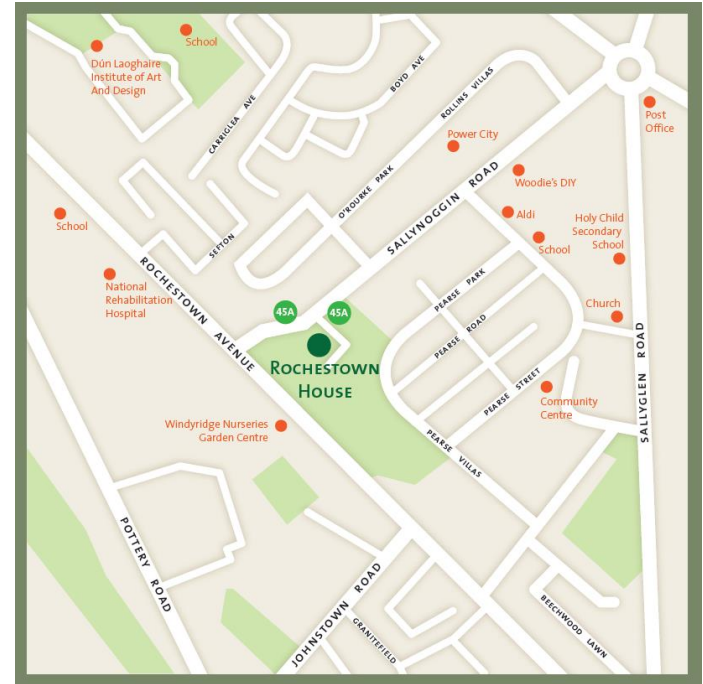
Grant Challenges - application process, programme, contractor skills

Won SEAI Award for SSE Airtricity



Rochestown House

- Located within the former walled garden of an estate house near local shops and amenities in Sallynoggin
- Existing small Bedsits were too small and difficult to rent - dark, cold, damp
- Creating a new community of smart and accessible buildings
- Long term living - range of unit types to suit evolving needs
- Part of DLR downsizing project
- Multi Stakeholder - DLR, Local Community, DHPCLG, SEAI, EuroPHit



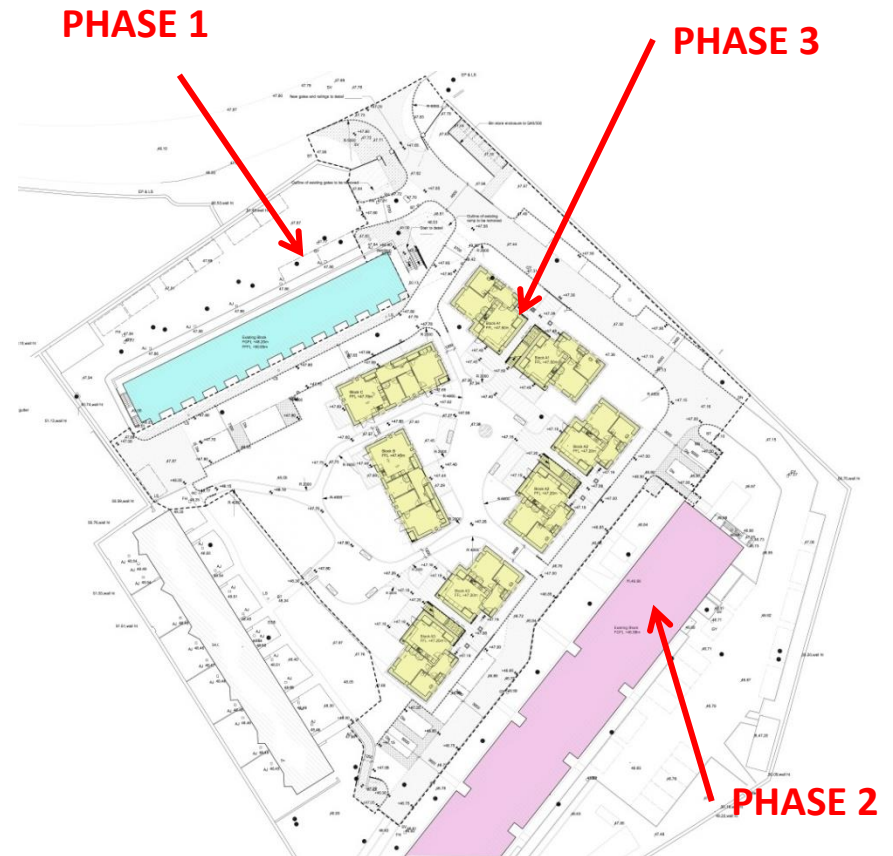


Co-funded by the Intelligent Energy Europe
Programme of the European Union

EuroPHit



- The Site has been upgraded in three phases

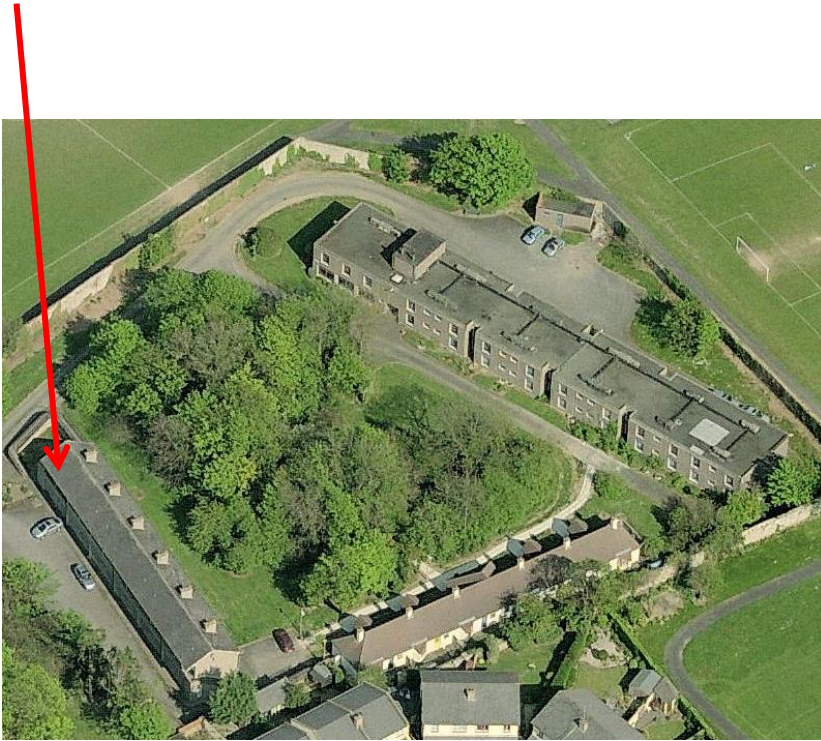


Rochestown Terrace

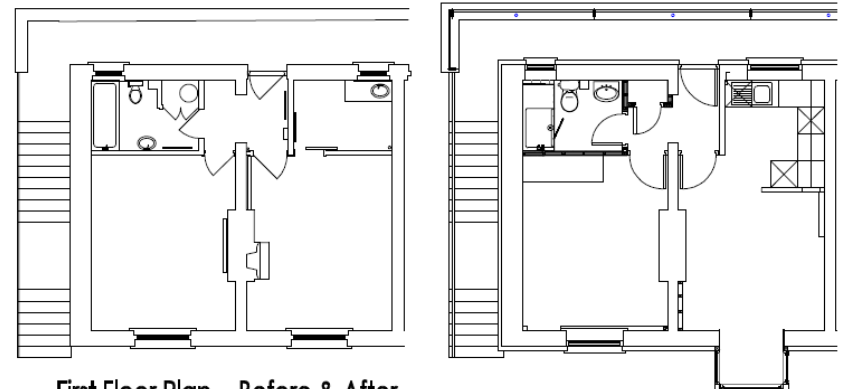
Phase 1

PHASE 1

Phase 1 – 12 bedsits + 6 one beds upgraded to 12 one bed apts



Re orientation of access
Bay windows added
New electrics & plumbing
Level access showers



First Floor Plan - Before & After

- Deep retrofit
- Cavity and external insulation
- Double glazed windows
- Demand control ventilation
- Upgrade of district heating from oil to gas
- From F/G BER to B2/C1 BER



Before upgrade



After upgrade



Before upgrade



After upgrade

Rochestown House

Phase 2

PHASE 2



PHASE 2

Rochestown House, Phase 2 – EuroPHit EU Pilot Project
a Passive House upgrade of existing Housing for the Elderly

Dramatically Improving the Energy Performance and
Comfort of Existing Buildings with Step-by-Step
Refurbishment and Integration of Renewable Energy Systems (EUROPHIT)



Rochestown House, Phase 2 – EuroPHit EU Pilot Project,
a Passive House upgrade of existing Housing for the Elderly

Dramatically Improving the Energy Performance and
Comfort of Existing Buildings with Step-by-Step
Refurbishment and Integration of Renewable Energy Systems (EUROPHIT)



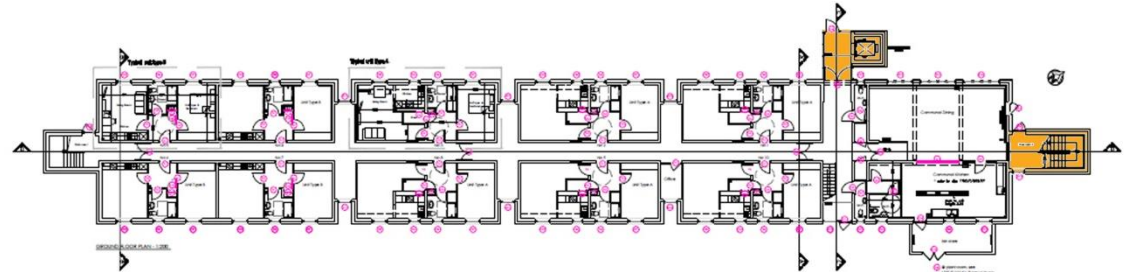
Training for design team
Training for tendering contractors
Further training for successful contractor
Supervision on site
Education on site – study trips
Monitoring and Verification
Post Project Analysis

Supported by DHPCLG & SEAI through BEC 2014

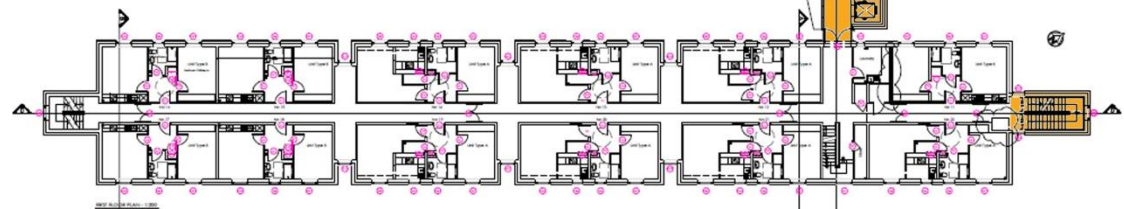
- Additional lift and stair core
- New floor added on top of existing
- New communal areas and facilities
- Whole building externally insulated



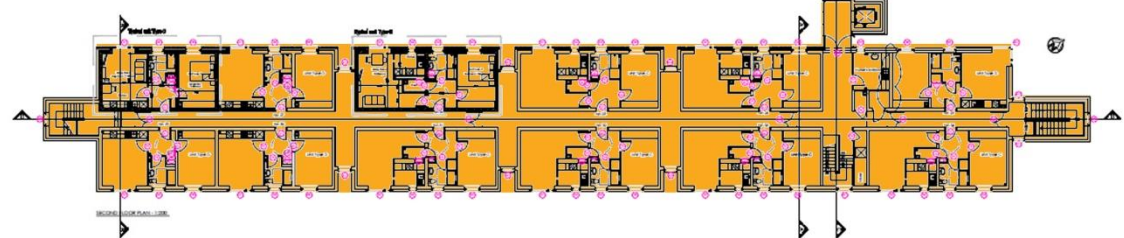
Cross Section



Ground Floor Plan



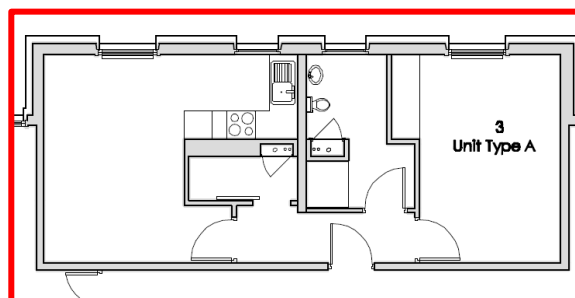
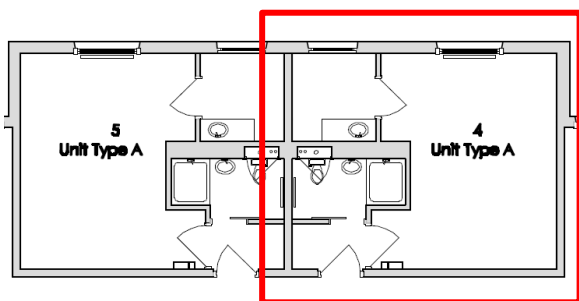
First Floor Plan



Second Floor Plan

Phase 2 – 26 bedsits and 8 one bed apartments upgraded to 34 one bed units

- Accessible/Ambulant with lift added
- Facilities - office, nurse's station, laundry, commercial kitchen, communal room
- Project cost c.€3.5m
- Energy efficiency elements c.€890k



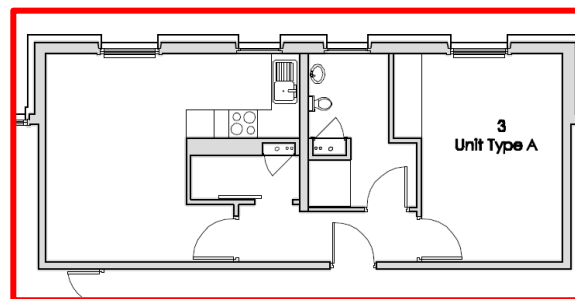
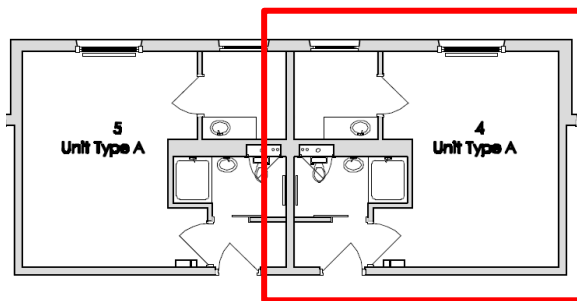
Unit size before upgrade - 24m²

Unit size after upgrade - 48m²

Before upgrade

Phase 2

- EnerPHit - PH refurbishment standard
- Upgrade of district heating from oil to gas micro CHP serving Phases 2 and 3
- Airtightness below 1 air change per hour
- Heat recovery
- From F/G BER to A3/B3 BER



Unit size before upgrade - 24m²

Unit size after upgrade - 48m²

Before upgrade



Phase 2 Construction Commenced November
2014

Completion Date August 2016



User controls



Micro CHP



Heat Recovery Ventilation
(Communal room unit)



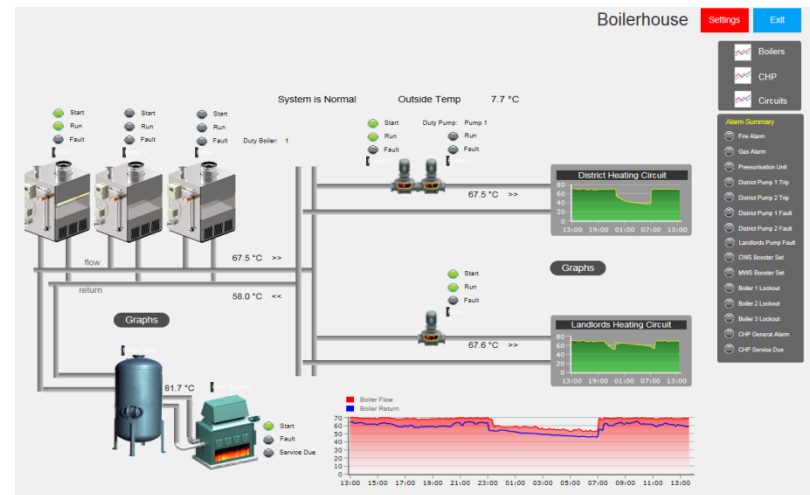
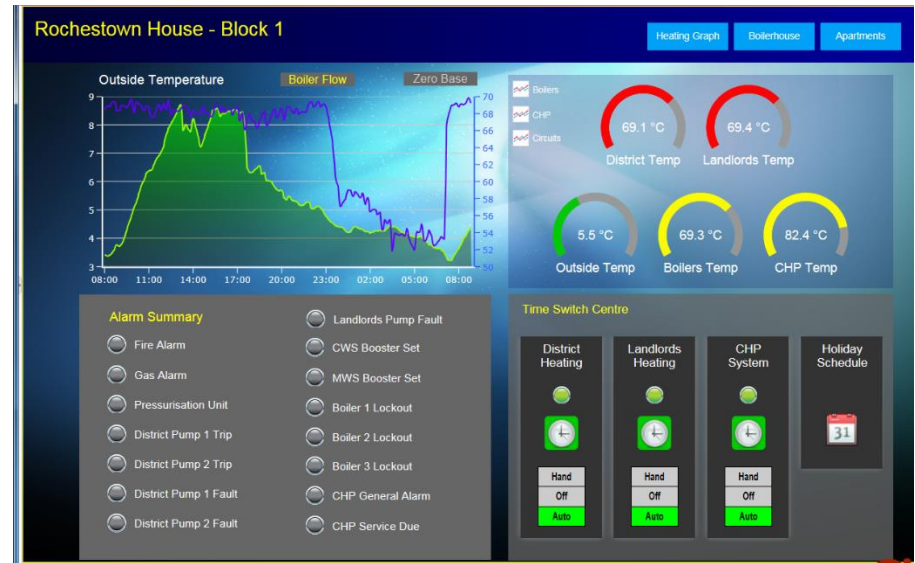
Gas Boilers



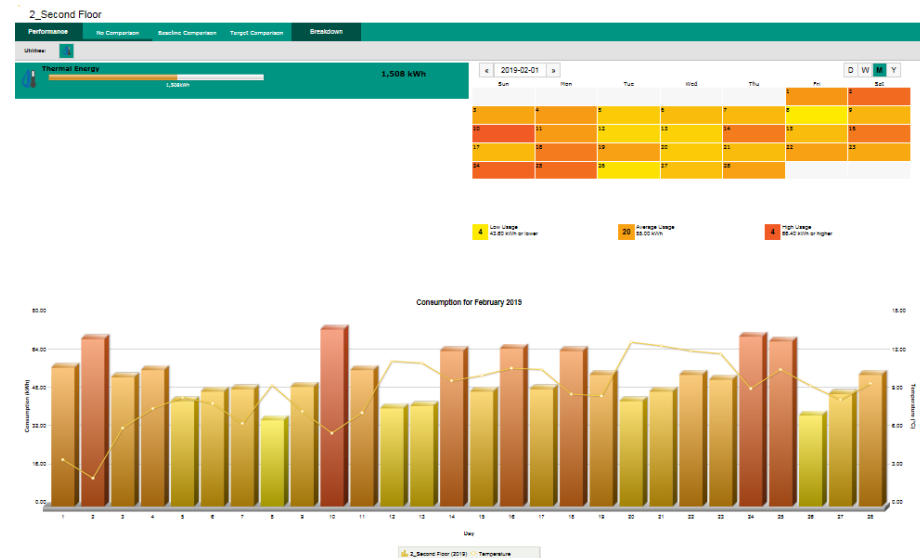
First Floor Plant

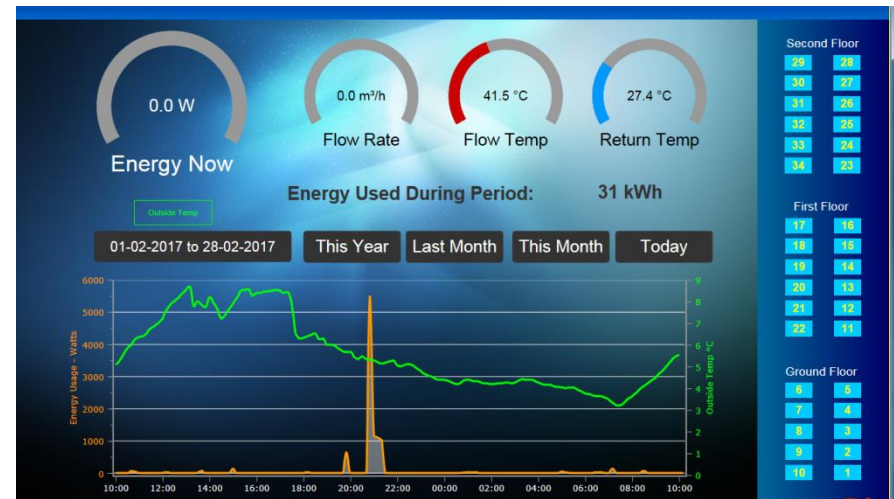
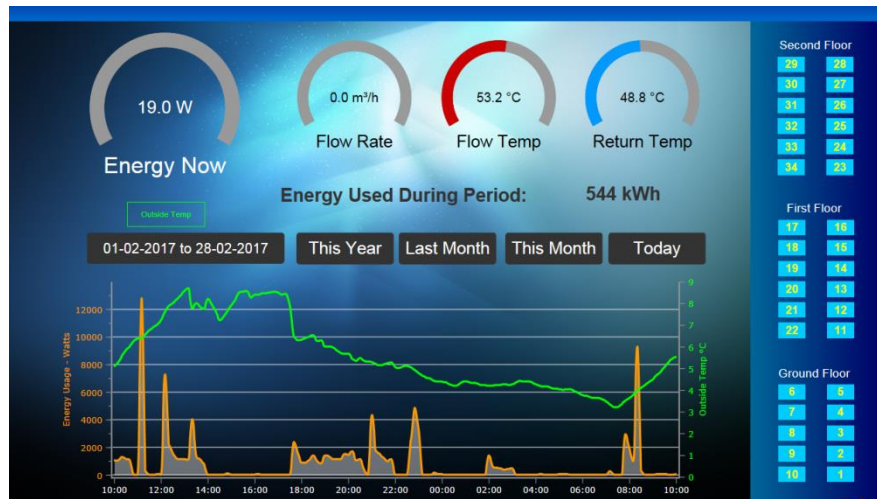
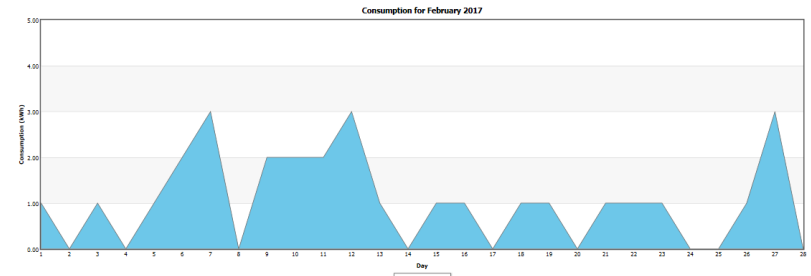
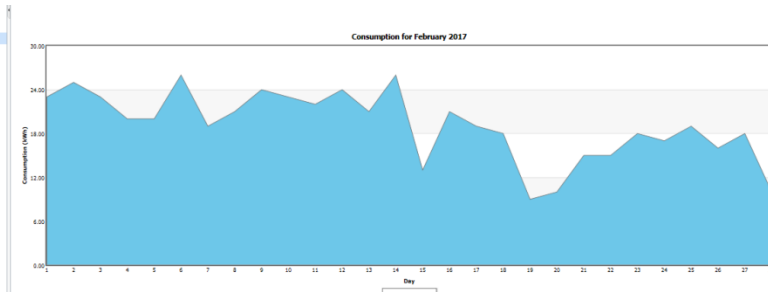


BCMS System with remote access



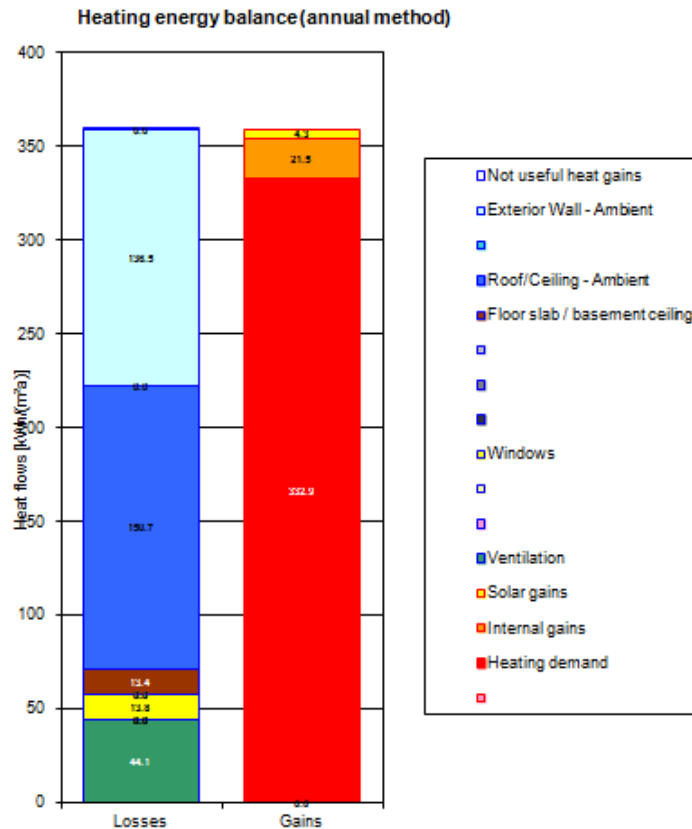
Energy Consumption per Floor for one month





Before Retrofit

Annual heating demand 410 kWh (m²a)



After Retrofit

Annual heating demand 25 kWh (m²a)













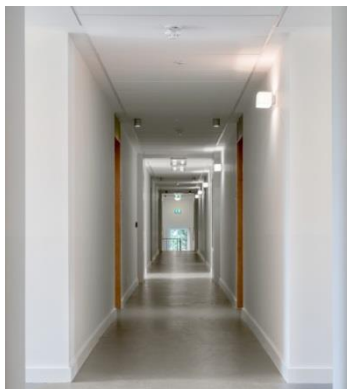
Apartment Type A



Apartment Type B



Hair Dressers



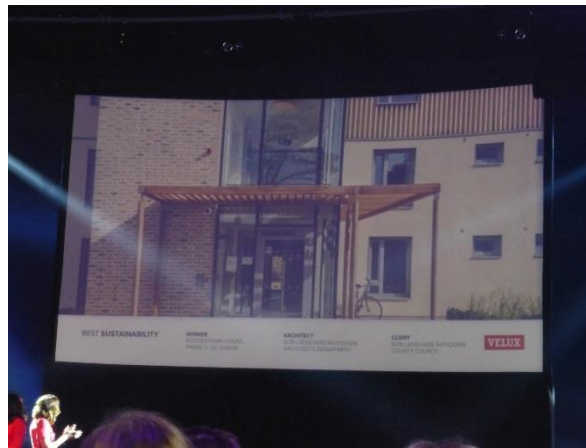
Corridor



Main Stairs



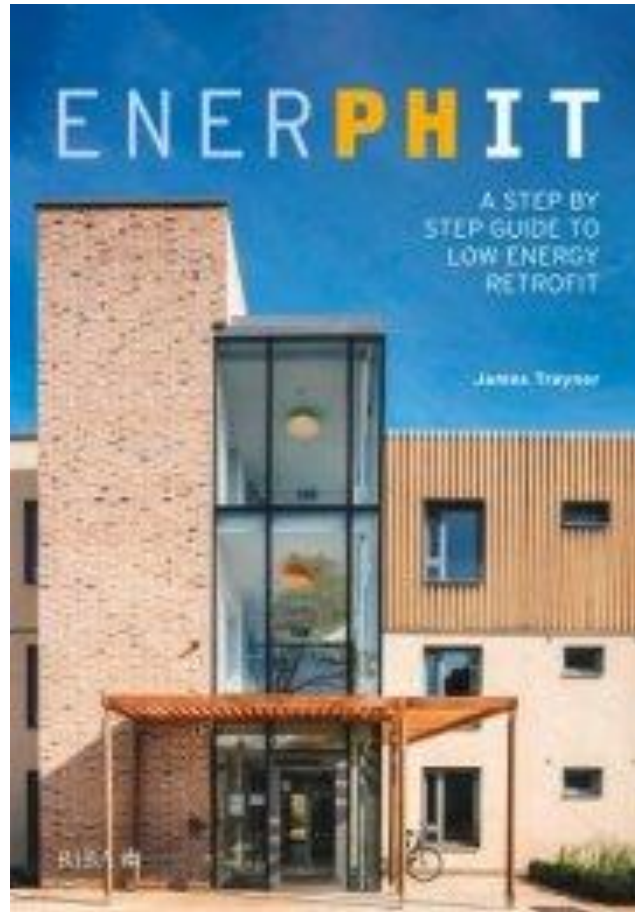
Communal Laundry



SEAI Award Finalist

2017 RIAI
Sustainability Award
Winner

RIBA London
Dec 2019



*20 Architectural
Projects Against
Climate Change book*

ACE Workshop

European Parliament
Exhibition

Rochestown House

Phase 3

PHASE 3

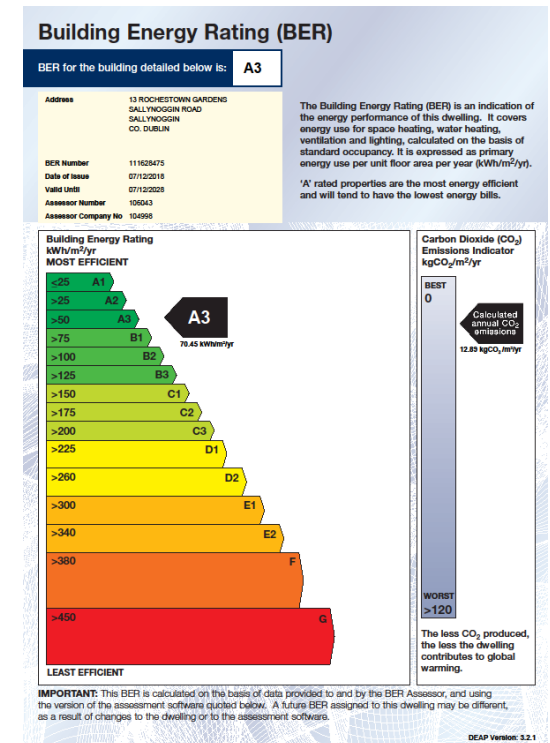


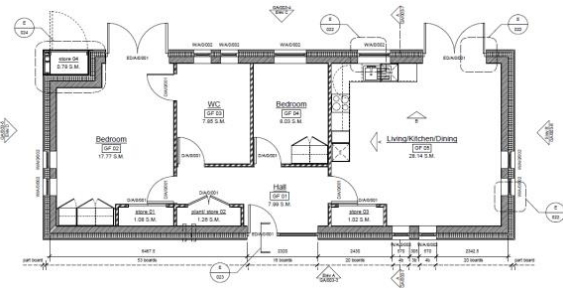
Phase 3 - 14 new units

12 x 1 bed apartments (58m²) and 2 x 2 bed bungalows (75m²)

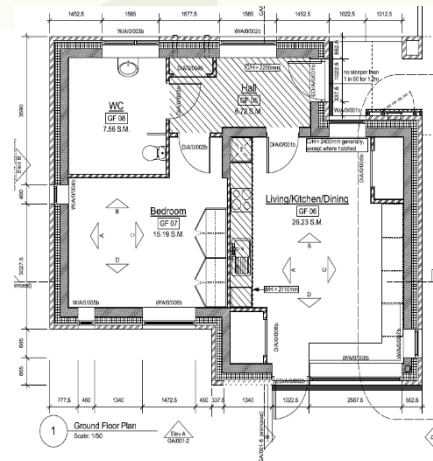
8 are wheelchair accessible, 6 are ambulant accessible

- Built to Passive House standard - BER A3
- Apts are cavity wall (block/insulation/brick)
- Bungalows are block/insulation/timber cladding
- Zinc roofs
- Triple glazed windows and doors
- Heat recovery, mechanical ventilation system
- Use of district heating from gas micro CHP in Phase 2
- Airtightness target 0.6 air change per hour
- Monitored onsite or remotely via BCMS





Single storey units

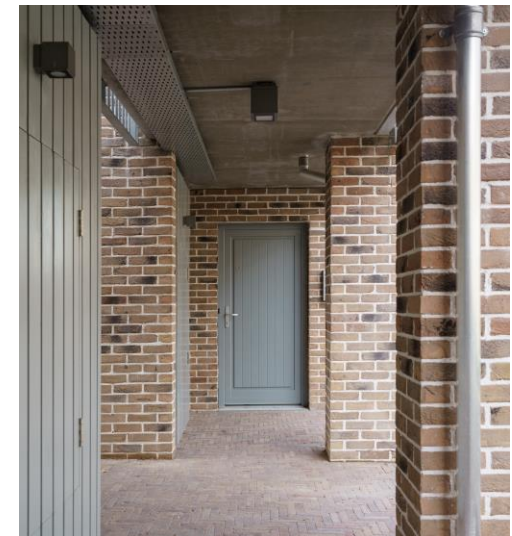


Two storey blocks

RIAI Award 2020/1
Accessibility finalist
(current)



ICE Construction
Excellence Awards
shortlisted 2020



Photos: Donal Murphy

George's Place

Dún Laoghaire Urban Framework Plan

Three Themes:

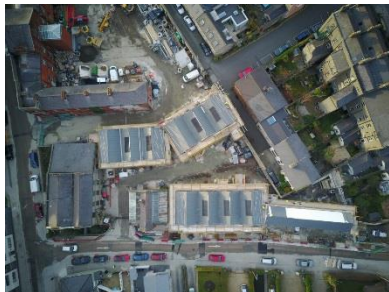
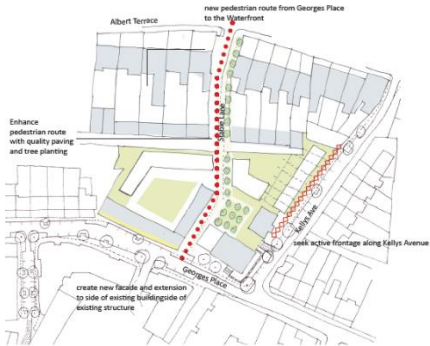
Reconnecting the
Town Centre to the
Waterfront

Creating Vitality

Strengthening Links
with Adjoining Areas

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

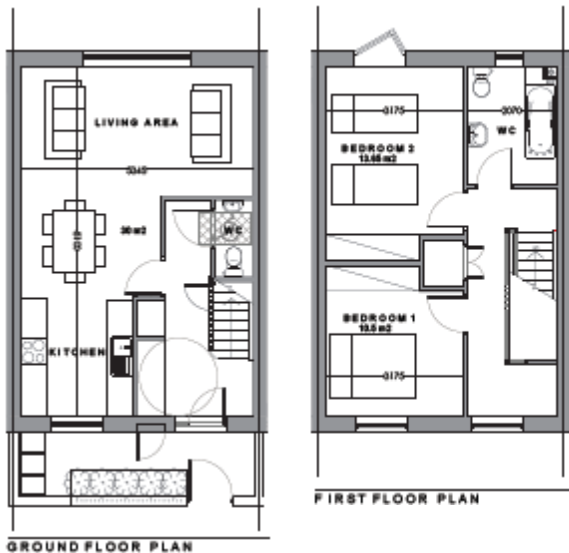
Enabling Architects - **A2 Architects**
Contractor – **Sisk Living (OMP Architects)**



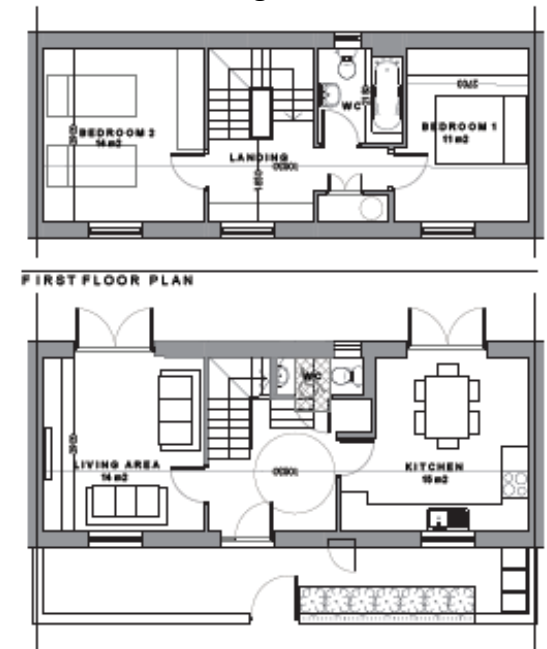
- Timber frame
- Solar Photovoltaic panels
- Triple glazed windows and doors
- Mechanical heat recovery ventilation with heat pump.
- External wall completion - Brick & Block/Render



Narrow Frontage – 10 no. 2 bed house



Wide Frontage - 2 no. 2 bed house



For DB projects:

Be clear about what you want 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

MEAT criteria: Quality / Price

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

Aims:

show how we can regenerate under utilized urban sites into much needed sustainable neighbourhoods

produce high quality, low energy housing while moving to a rapid delivery programme

disprove the idea that rapid build necessarily means lower quality as it is vital that in the current drive to increase numbers that we don't allow quality to drop

demonstrates what can be achieved cost effectively, to a rapid delivery programme, on a difficult site

**RIAI Award 2019
(Housing)**

**RIAI Award 2019
(Sustainability)**

**ICE Construction
Excellence Award
Winner 2019**

**ICSH Award Winner
2019 (Housing)**



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

**Silver Certification - highest
score so far for multi unit
development**



Building Energy Rating (BER)

BER for the building detailed below is: **A1**

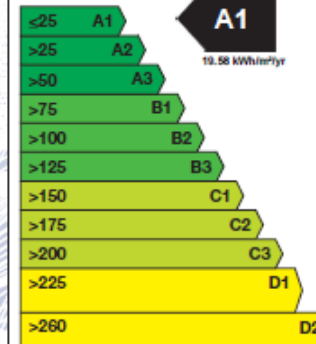
Address 2 GEORGES LANE
DUN LAOGHAIRE
CO. DUBLIN

BER Number 111106068
Date of Issue 18/05/2018
Valid Until 18/05/2028
Assessor Number 101058
Assessor Company No 100482

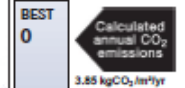
The Building Energy Rating (BER) is an indication of the energy performance of this dwelling. It covers energy use for space heating, water heating, ventilation and lighting, calculated on the basis of standard occupancy. It is expressed as primary energy use per unit floor area per year (kWh/m²/yr).

'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



Carbon Dioxide (CO₂)
Emissions Indicator
kgCO₂/m²/yr



12/06/2018

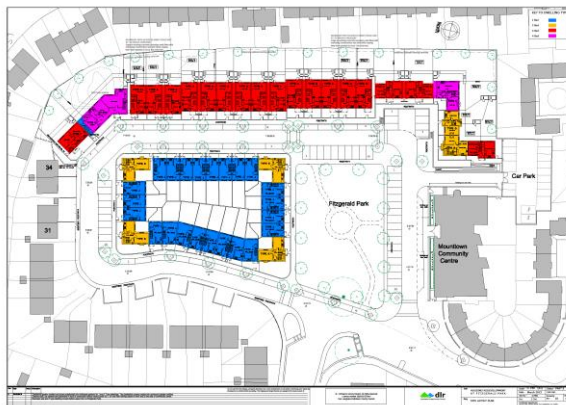
Part L Specification

Page 4 of 4

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/m ² /yr	19.58
CO2 emissions [kg/m ² /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

Fitzgerald Park



50 homes

Building Energy Rating (BER)

BER for the building detailed below is: **A3**

Address: 67 FITZGERALD PARK, MOUNTOWN, DUN LAOGHAIRE, CO. DUBLIN
BER Number: 112470018
Date of issue: 30/07/2019
Valid until: 30/07/2025
Assessor Number: 106087
Assessor Company No: 105917

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

>300 E1

>340 E2

>380 F

>450 G

LEAST EFFICIENT

68.47 kWh/m²/yr

A3

Carbon Dioxide (CO₂) Emissions Indicator

kgCO₂/m²/yr

BEST 0

Calculated annual CO₂ emissions

10.97 kgCO₂/m²/yr

WORST >120

The less CO₂ produced, the less the dwelling contributes to global warming.

IMPORTANT: This BER is calculated on the basis of data provided to and by the BER Assessor, and using the version of the assessment software quoted below. A future BER assigned to this dwelling may be different, as a result of changes to the dwelling or to the assessment software.

DEAP Version: 5.2.1



12/11/2019

Part L Specification

Page 4 of 4

SUMMARY FOR PART L CONFORMANCE (Applies to TGD L 2008/2011 for new dwellings only)			
BER Number	112470018	Building Regulations	2008 TGD L
BER Result	A3	Energy Value kWh/m ² /yr	60.47
CO ₂ emissions [kg/m ² /yr]	10.97	Total compliance with Part L in DEAP?	Pass
EPC	0.372	EPC Pass/Fail	Pass
CPC	0.332	CPC Pass/Fail	Pass

Rosemount Court

<https://openhousedublin.com/locations/site-specific-rosemount-court/>



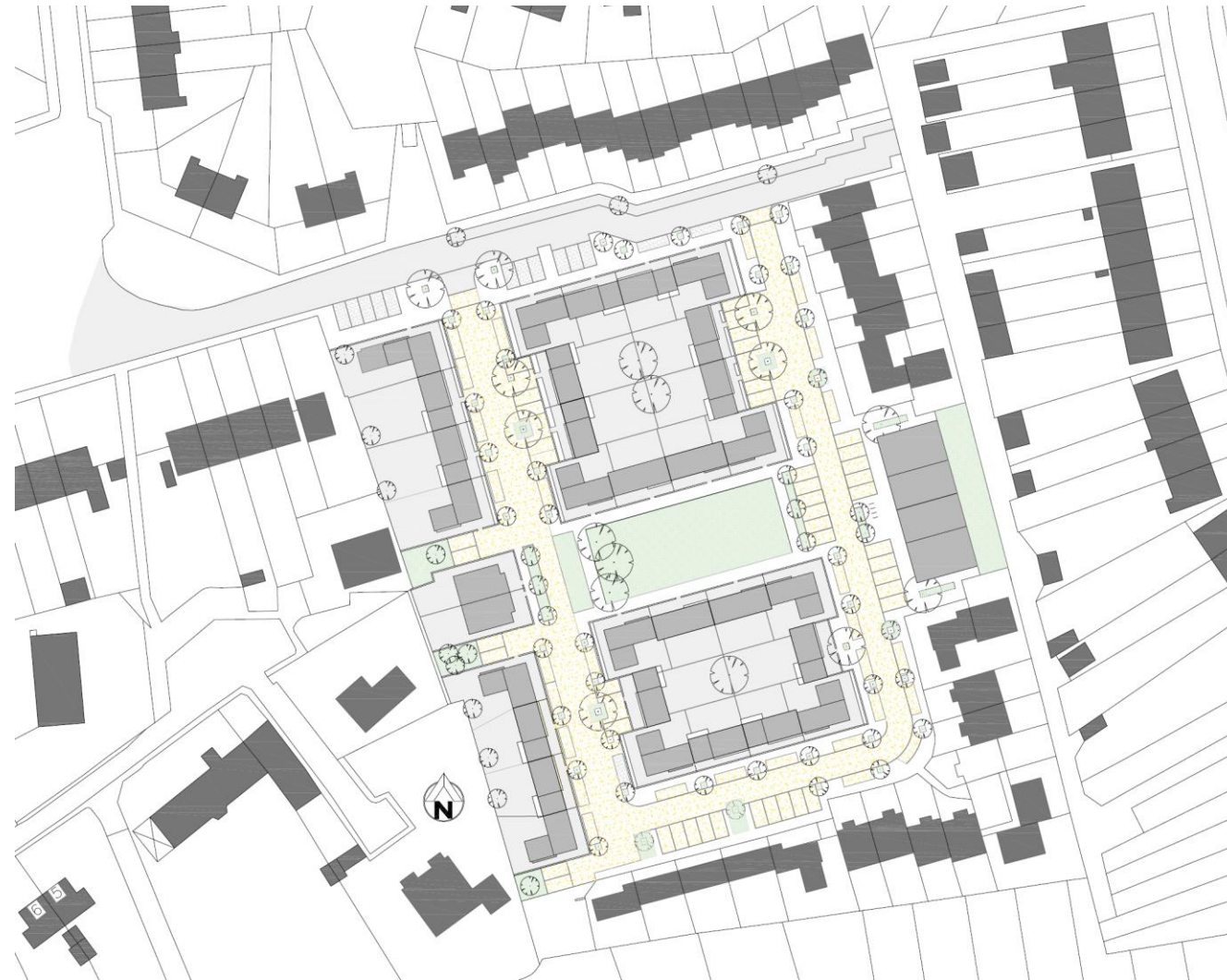


Site Location Plan



Original Rosemount Flats
- 84 Units / 5 Storeys



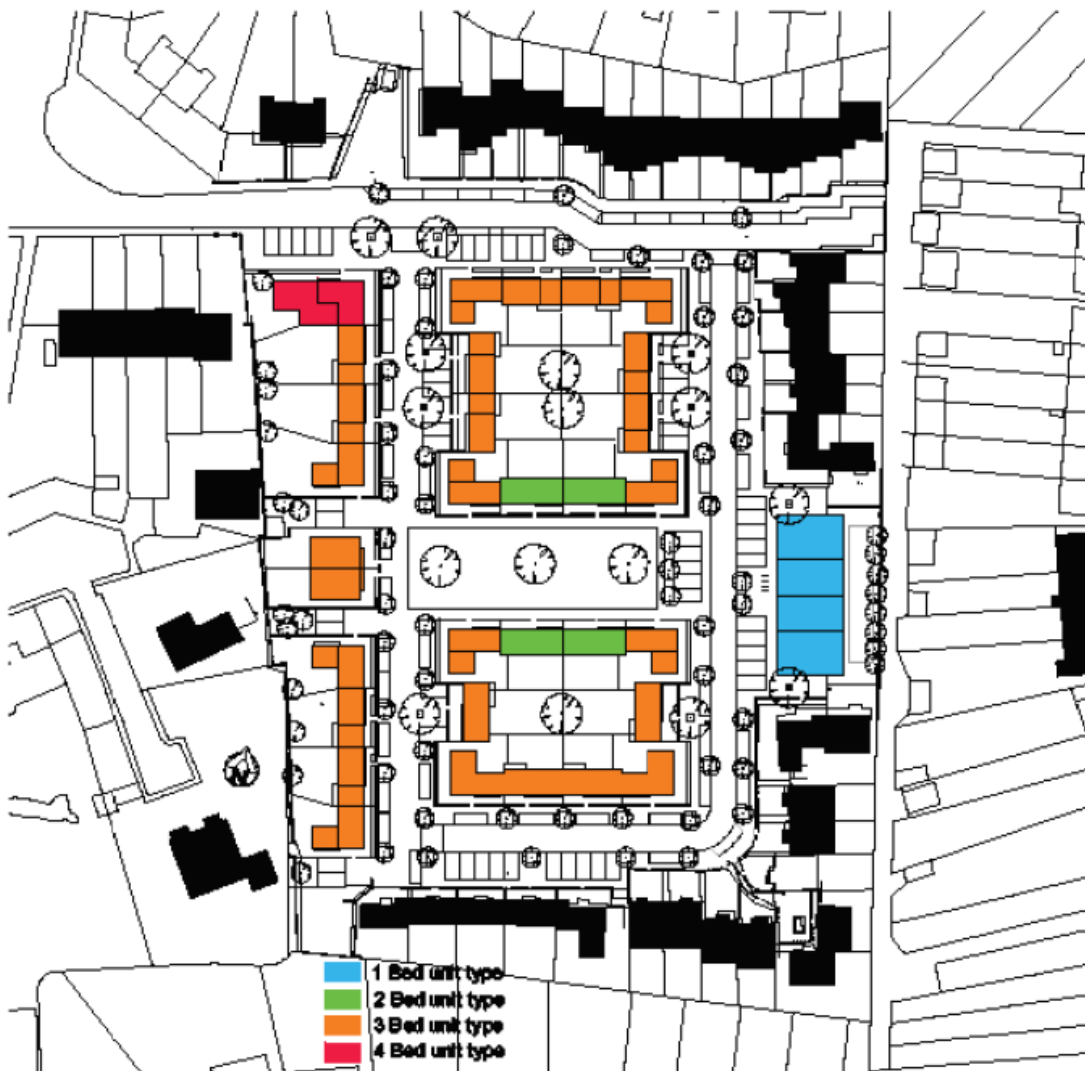


Carefully designed housing layout set around a green and two homezones

Maximum height of three storeys

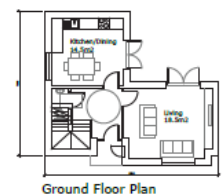
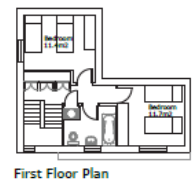
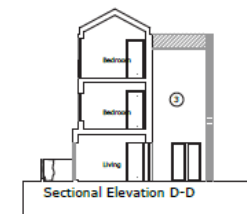
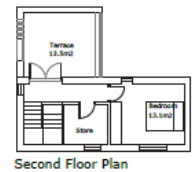
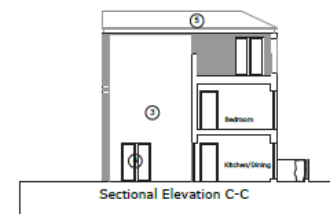
Designed in such away as to minimise impact on the existing residents and integrate the new scheme into the community

Site Plan



- 1 x 4 bed adapted unit
- 27 x 3 bed units
- 4 x 2 bed units
- 12 x 1 bed units

Unit Mix



TYPE A 3BED UNIT
115 m²

Sketch Perspective





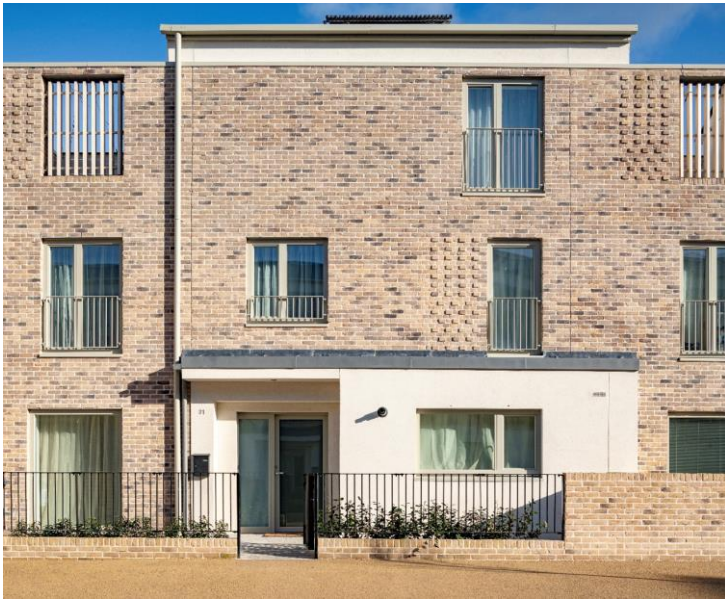
West Facing Elevation



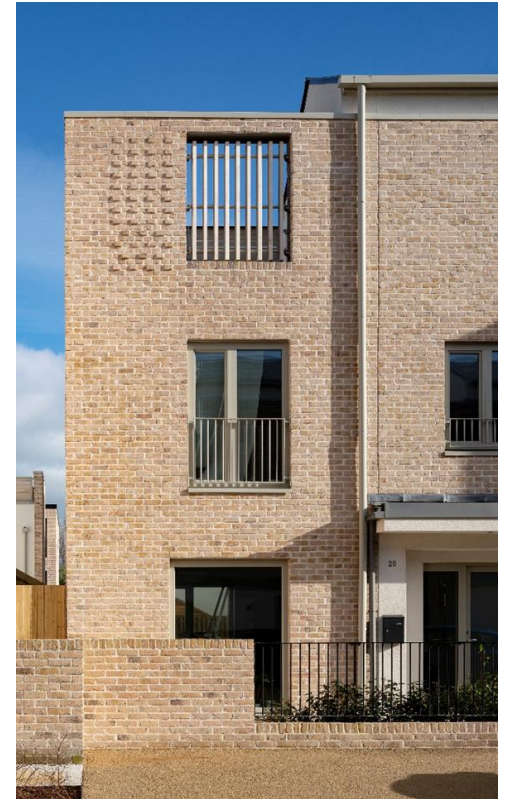
South Facing Elevation

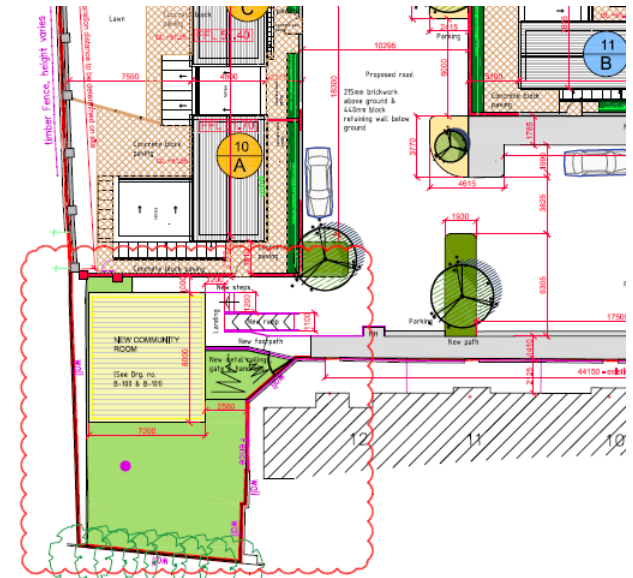
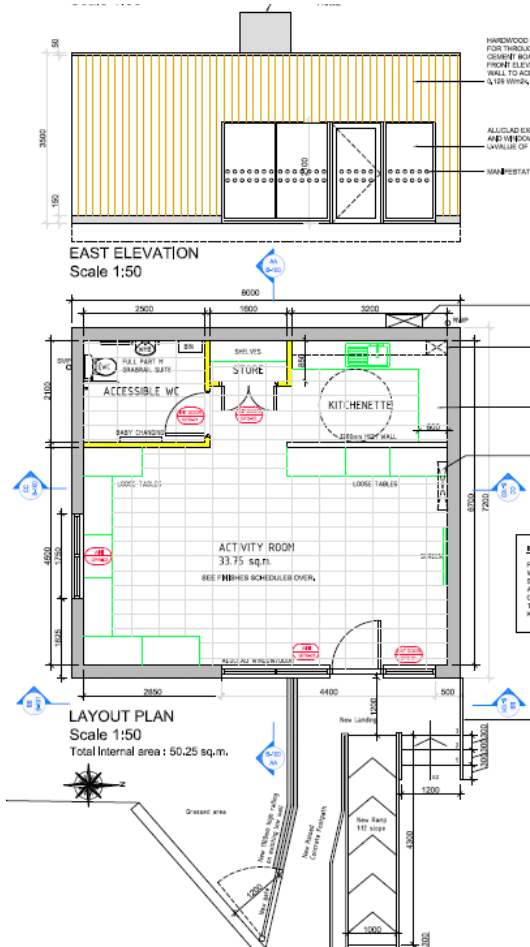


East Facing Elevation



In The Detail





Community Centre

RIAI 2020 (Housing)
Highly Commended
Highest award given
in Category

**Shortlisted ICSH
Awards 2021
(current)**
(Irish Council Social
Housing)

Enabling Architect: Walsh Associates



General

Resemond Court has an area of 0.9 hectares and formally accommodated 54 dwelling units in three five-storey apartment blocks. The apartment blocks were in a poor state of repair and in 2010, when the site was vacant, the ground was covered with a mixture of grassed areas and hard standing. The site is bounded to the west by a perimeter wall and to the north, east and south by the existing buildings. The site also enjoys excellent local connections to public transport including C&C and uses routes and is also convenient for local facilities, including a school. The site is provided with House Canner Road and House Canner Road.

Design

The design concept is to provide 44 high-quality dwellings, a mix of one- and two-bedroom units and two "home zones". The architectural form of the development will promote a high degree of overlooking and passive surveillance to public areas and will give the inhabitants a secure sense of place and community. The visual impact of vehicular parking has been minimised by integrating it into building setbacks with screen planting while the use of "home zones" will provide informal play and amenity space.

Access to the building is generally provided by three fronted stairs, a ramp and a small front lobby apartment. Units are accessed from the eastern boundary. Units generally have a front door access and have carefully delineated private space to both the front and back. Units are generally single aspect above the ground floor to reduce the impact of overlooking. In addition particular care has been taken with the design to minimise overlooking where it interfaces with existing neighbouring properties.



Unit Sched

The scheme allows for a mix of dwelling types, including three storey houses, two storey houses, and apartments. Overall, the scheme contains 44 dwellings at a density of 50 dwellings per hectare.

Unit Type A + B:

Unit Type C:
3 bed Wide Frontage, 2 storeys - 1,430sq

Unit Type D1
3 bed narrow frontage, 3 storey : 20

Unit Type B):
2 bed main frontage, 3 storey - 4th fl.

Unit Type F)
1 bed side frontage, 2 story - 146.

Unit Type G:
1 bed Apartment, 2 storey - 12No.

CATEGORY: LIVING ENTRY ID 20191688

LEGEND

1. **correct** **value**
2. **correct** **value**
3. **correct** **value**
4. **correct** **value**
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Dlr High Performance Buildings

On the Drawing Board

Rockville Green

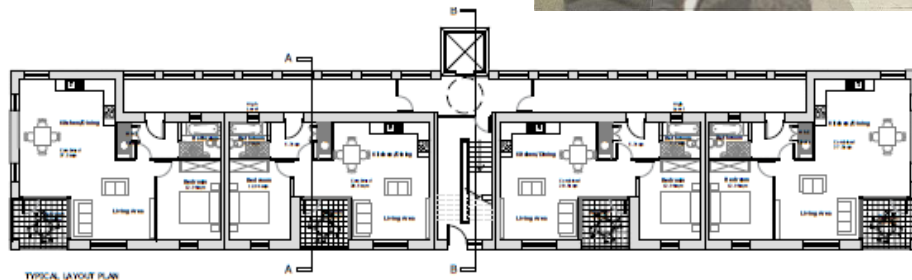
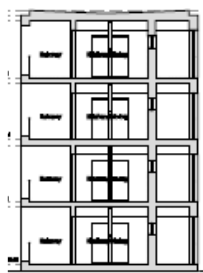
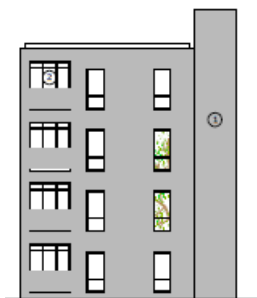
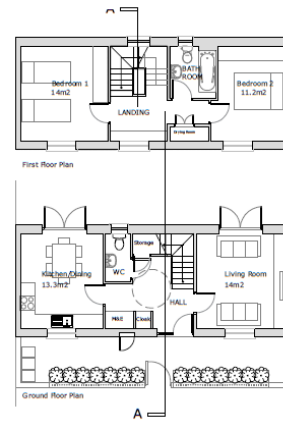
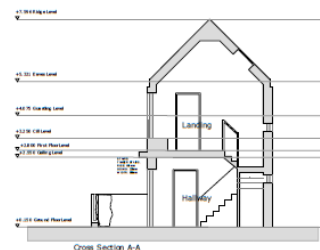
13 Houses Rapid Delivery - On Site 2021

Timber frame
Solar Photovoltaic panels
Triple glazed windows and doors
Mechanical heat recovery ventilation with heat pump
External wall completion - Brick & Block/Render



Enabling Architects - **Van Dijk Architects**
Contractor – **Forme Construction (JNP Architects)**

Ballyogan Square / Rise



67 houses Rapid Delivery - On Site 2021

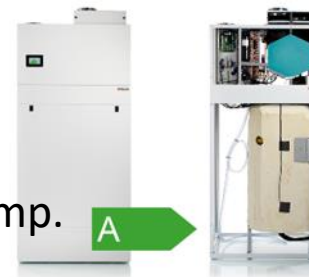
Metal frame

Solar Photovoltaic panels

Triple glazed windows and doors

Mechanical heat recovery ventilation with heat pump.

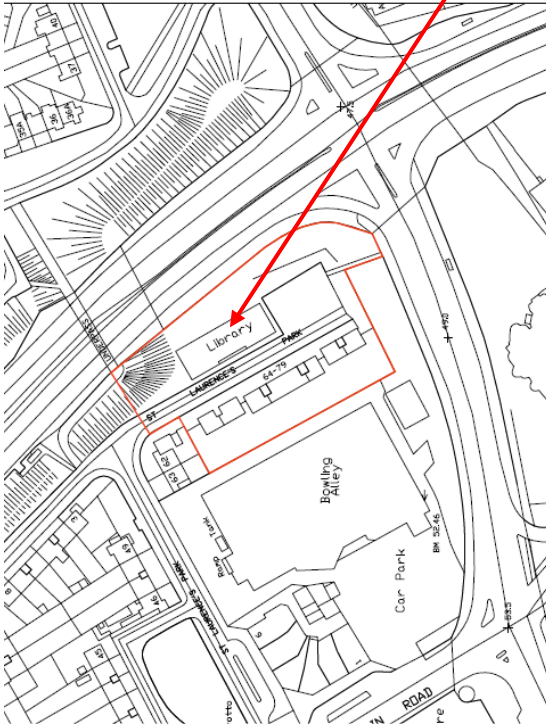
External wall completion - Brick & Block/Render



Enabling Architects – **Van Dijk Architects**
Contractor – **Sisk Living (JNP Architects)**

St. Laurence's, Stillorgan

Existing Stillorgan Library



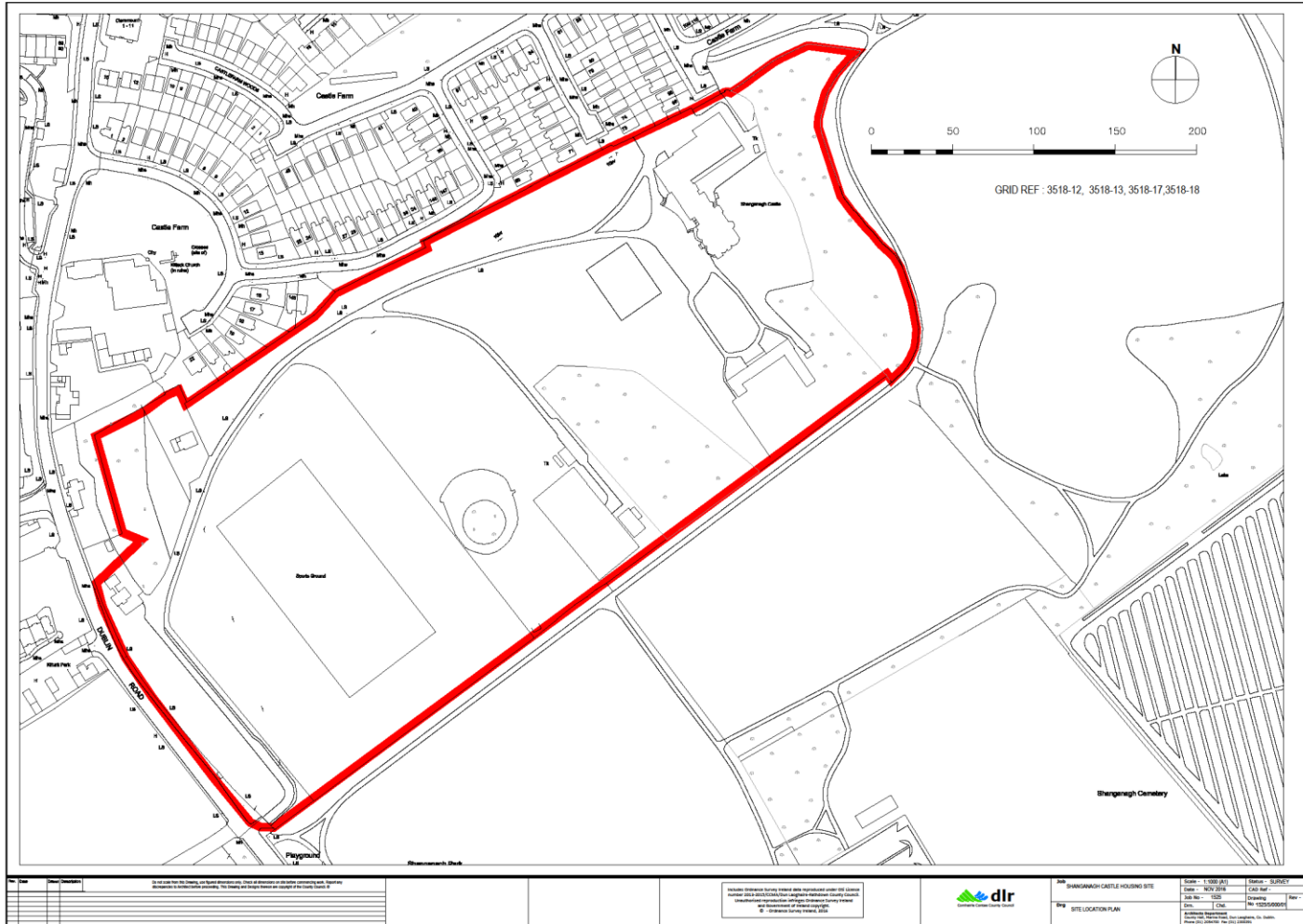
Former Leisureplex Site



Design Team led by ABK Architects



Shanganagh Castle





Conclusions

Project Learnings from Site

- Projects illustrate how existing stock can be reused even if in poor condition
- Greater awareness of the importance of Energy by Client and Tenants
- nZEB & EnerPHit - high standards with emphasis on on-site care and quality assurance required to ensure effective on-site attention to detail
- Many versions of nzeb – varying levels of comfort and indoor air quality
- nZEB isn't end of journey, only step along the way
- National up-skilling of the design and construction sectors is needed for either build
- Positive but big learning experience for both Contractors and Design teams
- Learnings as project develops - Theory v Practice - be alert to impact on project costs
- Knowledge dissemination

General Comments

- Sustainability - Social, Economic, Environmental
- Energy upgrade projects have enabled Council's desired downsizing policy to be kick-started, other projects now underway
- Benefits to be achieved by designing energy efficient but also smart buildings have a huge impact
- Buildings should be smart (back of house) but must be user friendly (front of house)
- Need post occupancy reviews to ensure expected outcomes have been achieved
- 90% of existing building stock will still be in use in 2050, Government's Housing Action Plan puts emphasis on making best use of existing stock
- Policy does affect change but you need a led vision
- Benefit of pilot projects
- New learning and standards
- Construction employment opportunities
- Funding implications for deep retrofit

Thank you
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15 September 2021