Gas Networks Ireland

Irish Home Builders Association

Housebuilding Summit 25th March 2021

Gas Networks Ireland

705,000+ connections
and growing

30%
share of Ireland's primary energy mix

€2.7bn
Public utility asset

€124m
capital expenditure

50%+
of Ireland's electricity needs powered by natural gas

Future Proofed
No capacity restrictions on the gas network

Flexible
A secure, instantly available energy source which has made renewable deployment possible

14,521km
of gas pipeline could wrap around Ireland's coastline 4 times

Resilient Network
Proven ability to meet demand in harshest weather conditions, ensuring security of supply

Diversity
Supplying energy for residential, commercial, industrial, powergen, and transport

Case Study – Bridgefield and Pappan Grove

Bridgefield and Pappan Grove achieve NZEB standards using natural gas.

Introduction

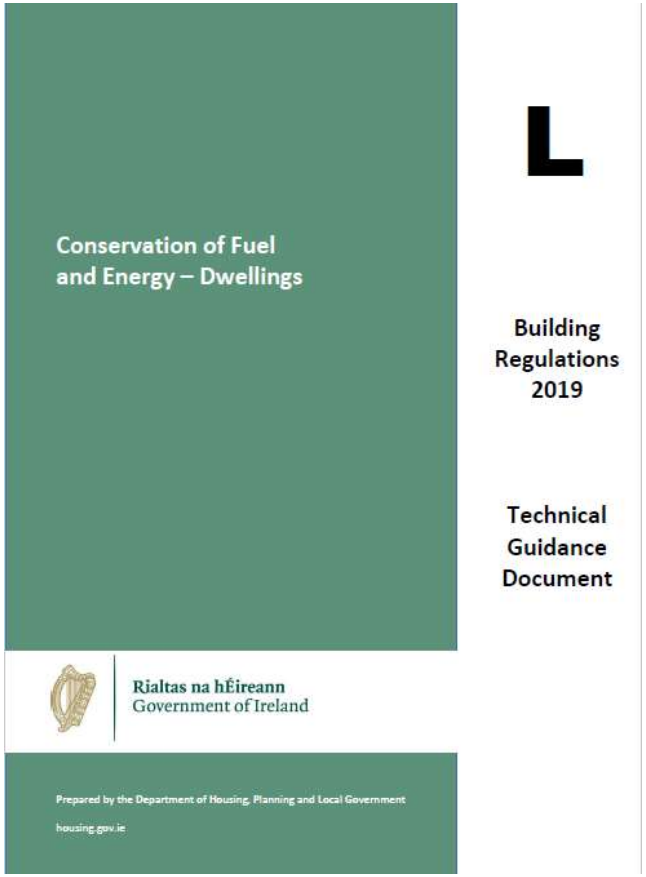
- Bridgefield and Pappan Grove are located in the centre of Northwood, Santry, Dublin 9.
- The development is comprised of three six-storey buildings and one five-storey building incorporating 250 apartments, which are built over a basement car park.
- Cosgrave Property Group, established in 1979, has a reputation for excellence & quality for both their residential and commercial developments throughout Ireland.
- Their projects are particularly noted for attention to detail regarding standards of design, construction, finishes and landscaping (as is obvious in this case).
- Other key stakeholders in this development are McElligott Consulting Engineers, M&P Mechanical and Glenergy.

Domestic Part L 2019 of the Building Regulations

- Main Reasons for Part L (conservation of fuel and energy)
  1. Minimise Carbon Emissions
  2. Reduce Heat Loss
  3. Production of Renewable Thermal or Renewable Electrical Energy

- A new home must have at least an A2 Building Energy Rating.

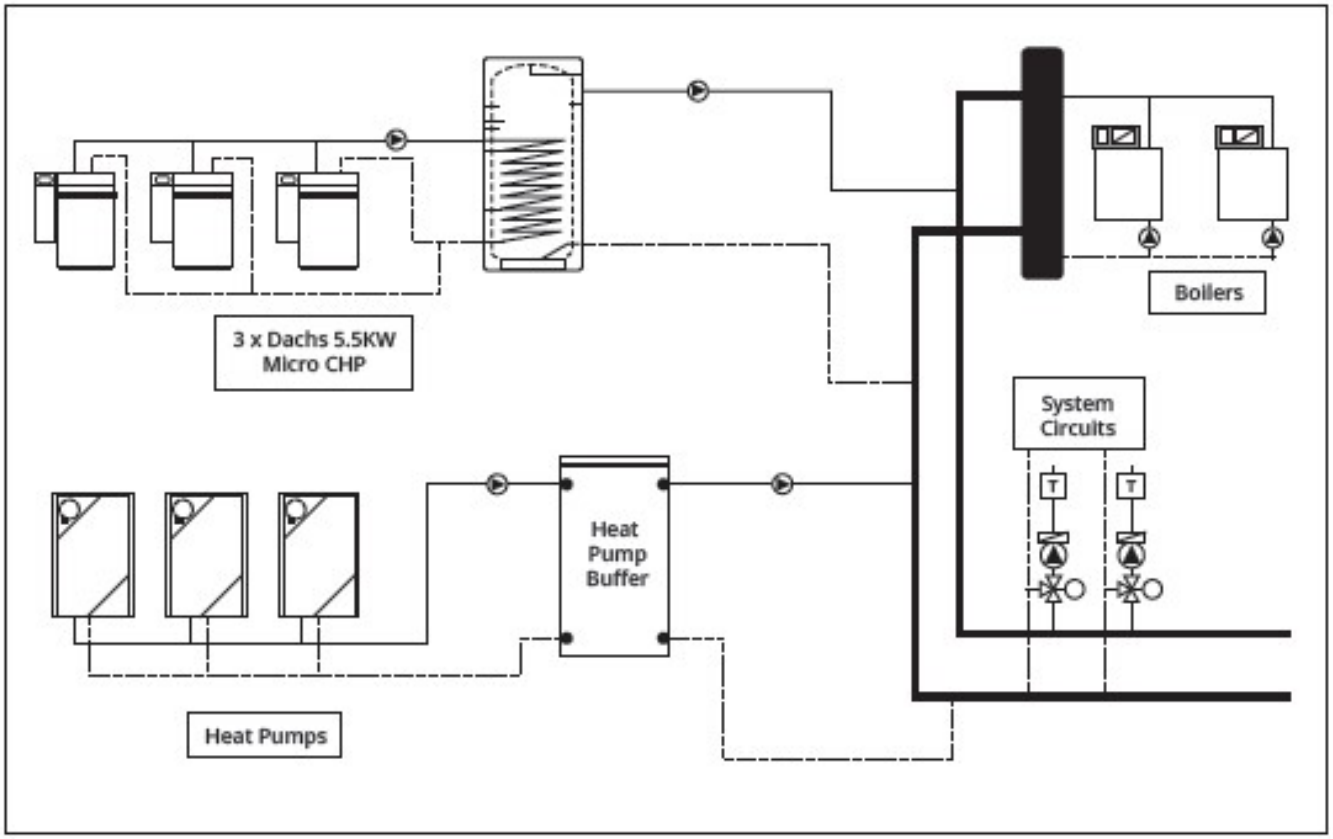
- Part L 2019 now commonly referred to a nearly zero energy building or NZEB.



The solution

- A district (communal) heating system (central plant) comprising of gas boilers, gas-fuelled Combined Heat Power (CHP) units and commercial electric heat pumps.
- This solution provides space heating and hot water for the entire development.
- The apartments have a BER rating of A2.
- The heat pumps act as the primary source of fuel for space heating and hot water. They also create a continuous demand for electricity from the CHP's, all backed up by the certainty of the gas boilers.
- The renewable energy contribution from this solution is the equivalent to over 20% of the buildings primary energy demand, as required under the building regulations.

Development features



- Three 5.5kW Dachs micro CHP units, each with 14.7kW thermal outputs.
- Three 16kW output commercial electric heat pumps.
- Two 94% efficient Buderus GE 402 gas boilers.
- Heat metering control systems from Prepago allow residents to control and monitor the heating & hot water in their apartments from the convenience of their phone.

Hybrid system

- This district heating system is a hybrid system. The renewable output from the heat pumps is injected into the coldest part of the heating cycle.
- The heat from the heat pumps is the primary contributor followed by the CHP engines and, at periods of peak demand, the natural gas boilers are switched on to supplement heating demand.
- The electricity generated from the CHP units drive the heat pumps and the heat is captured and reused. All of the elements of this system work together to help this development achieve NZEB standards.
- The next generation Prepago heating control systems allows residents to control and monitor their apartment's heating system remotely. Hot water is heated centrally and is available to all residents on tap. As a result there is a constant supply of hot water. Residents only pay for what they use.

Other building elements and results

Building Fabric (W/m2.K)	Actual	Part L 2019 (NZEB) requirement
Floor	0.14	0.18
Walls	0.16	0.18
Roof	0.16	0.16 (0.20 for flat roof)
Window	1.40	1.40
Thermal Bridging Factor	0.08	0.15
Ventilation/Air Permeability (m^3/(h. m^2) at 50pa)	3	5
Carbon Performance Coefficient (CPC)	0.25	<0.35
Energy Performance Coefficient (EPC)	0.25	<0.30
Primary Energy Value (kWh/m^2/yr)	35kWh/m^2/yr	</= 50kWh/m^2/yr

Note: The Heat Recovery Ventilation (HRV) system is designed to remove stale air from homes and provide a constant supply of clean, filtered air. It operates by gently ventilating the property, removing the stale air from the kitchen, bathrooms and toilets and extracting it to the outside.

A new way to live

- City living in a parkland development, complete with business parks, motorways, parklands, a university and Dublin Airport just minutes away.

- Adjacent to a retail park, 20mins to Dublin city centre, over 328 car parking & 216 bicycle spaces, a management suite and a gym.

The apartments

- Superbly finished, comprising of 1, 2 and 3 bedroom units.
- Up to 113m^2 of comfortable, spacious and light-filled living spaces.
- A2 Energy rated with renewable energy being generated on site.
- Beautifully landscaped areas and a playground.

The Future - Decarbonising our network and sectors

Gas Networks Ireland

Sectors

Electricity

Industry

Home Heating

Transport

Agriculture

Key Technologies

Renewable gas (Biomethane)

Hydrogen

CNG & renewable gas for transport

Gas technologies

Gas Networks Ireland

Renewable Gas

Renewable gas is carbon neutral, extremely versatile and fully compatible with existing gas network infrastructure. It is produced by anaerobic digestion from sustainable sources such as animal waste, grass, crop residues and food waste. Some companies are powering their operations with gas made from their own waste.

Hydrogen

Hydrogen is a carbon free gas that can be blended with natural gas or used in its pure form. It is very flexible and can be used in heat, power generation & transport.

Compressed Natural Gas

CNG is natural gas compressed for use in transport. It is a cleaner, affordable and proven alternative to diesel, delivering immediate emission reductions, air quality improvement and noise reduction. There are over 28m CNG vehicles worldwide.

Contact details

Lar Burke | Residential Connections Manager

Gas Networks Ireland
Networks Service Centre, St. Margarets Road, Finglas,
Dublin 11

M: +353 86 0080408
T: +353 1 8926397
E: Lar.Burke@gasnetworks.ie

Progress is natural, which is why we're moving Ireland towards a cleaner energy future.

Website: www.gasnetworks.ie | **Twitter:** @GasNetIRL

End