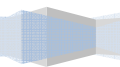


18.1728

**PROPOSED DEVELOPMENT AT ANNACOTTY
ANNACOTTY,
CO. LIMERICK**

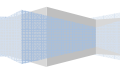
For REGAL PARK DEVELOPMENTS LIMITED

ENERGY STRATEGY REPORT



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4. Design Intent for Houses and Apartments.



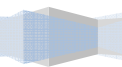
1.0 ESB SERVICES

The local ESB medium voltage infrastructure has the capacity to cater for the proposed development. The medium voltage infrastructure shall be extended via underground ducts to the site direction. This extension of the ESB infrastructure has been agreed in consultation with the developer and ESB Network Engineers.

The development shall be served using ground mounted transformers, mini pillars and micro pillars. The residential units shall be fed from local mini pillars, with public lighting fed from micro pillars. This is a typical arrangement for residential projects.

The ESB Infrastructure including ESB mini pillars shall cater for electric car charging points in car park areas.

With regards to the local ESB services to each dwelling and apartment, provision shall be made to deliver adequate services to each dwelling and apartment to cater for both the electrical needs of the unit in terms of power for heat pumps and electrical car charging facilities.



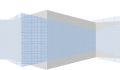
2.0 EIR SERVICES

The existing EIR infrastructure currently runs both along the western and norther boundaries via underground ducts however this system needs to be extended.

The local EIR Services infrastructure has the capacity to cater for the proposed development. From consultation with EIR Services, the existing network shall be extended to the proposed development via new underground ducts.

This service shall provide both voice and broadband communications to the development to cater for resident's needs.

Within the development, the ducting system shall be brought to each dwelling and apartment block.



3.0 NZEB REQUIREMENTS

The Definition: ‘Nearly Zero Energy Buildings’, nZEB means a building that has a very high energy performance where the nearly zero or very low amount of energy required should be covered to a very significant extent by energy from renewable sources including energy from renewable sources produced on-site or nearby“.

In order to achieve this, a target of 20% Renewables Energy Ratio (RER) has been set as the NZEB energy from renewable sources onsite or nearby target. The software tool provided by SEAI will be provided to support the calculation of the RER. It is recognised that in certain confined situations it may not be possible to achieve the full 20% RER.

In addition to the reduced energy usage, all new buildings must generate 20% of their energy from renewable energy sources, although this may be reduced to 10% where the energy performance of the building is more than 10% better than the reference building. This option of further reducing energy use is likely to be selected for most buildings.

As part of the design process, consideration shall be taken in account with regards to the requirements of nZEB to ensure the building meets with its requirements.

The 20% or 10% requirement can be provided by Heat Pumps or Heat pumps / PV's.

The building will be constructed to meet the latest building regulations and U-Values for each element of the envelope:

Building Fabric / Specification

Floor	0.12 W/m ² k
Walls	0.18 W/m ² k
Roof	0.15 W/m ² k
Doors	1.6 W/m ² k
Windows	1.2 W/m ² k
Thermal Bridging Factor	0.08 (ACDs must be adhered to)

Ventilation

Ventilation Method	Demand Controlled Ventilation (DCV)
Ventilation openings	-
Air Permeability Test Result	3ac/h 0.15 adj (assumption)

These target values shall achieve an A2 rating dwelling using a heat pump solution with and without the requirement for some PV panels.

The requirement for PV panels will be calculated on a dwelling by dwelling basis. If PV's are required typically 4 / 6 panels are required.

4.0 DESIGN INTENT FOR DWELLINGS.

Heating Services

Houses & Duplexes

The houses will be heated by means of an air to water heat pump heating systems. It is proposed to utilize a mono-block unit to heat each individual house which uses the latest R32 refrigerant gas. The unit will provide heat energy for heating and hot water generation. Aluminium radiators will be provided in each space complete with thermostatic radiator valves (TRVs) as required. These radiators are specifically designed to work with low temperature heating systems and have quicker heat up periods and transfer rates than standard steel panel radiators.

We estimate the houses will require either 5-8kw units depending on the house type and size.

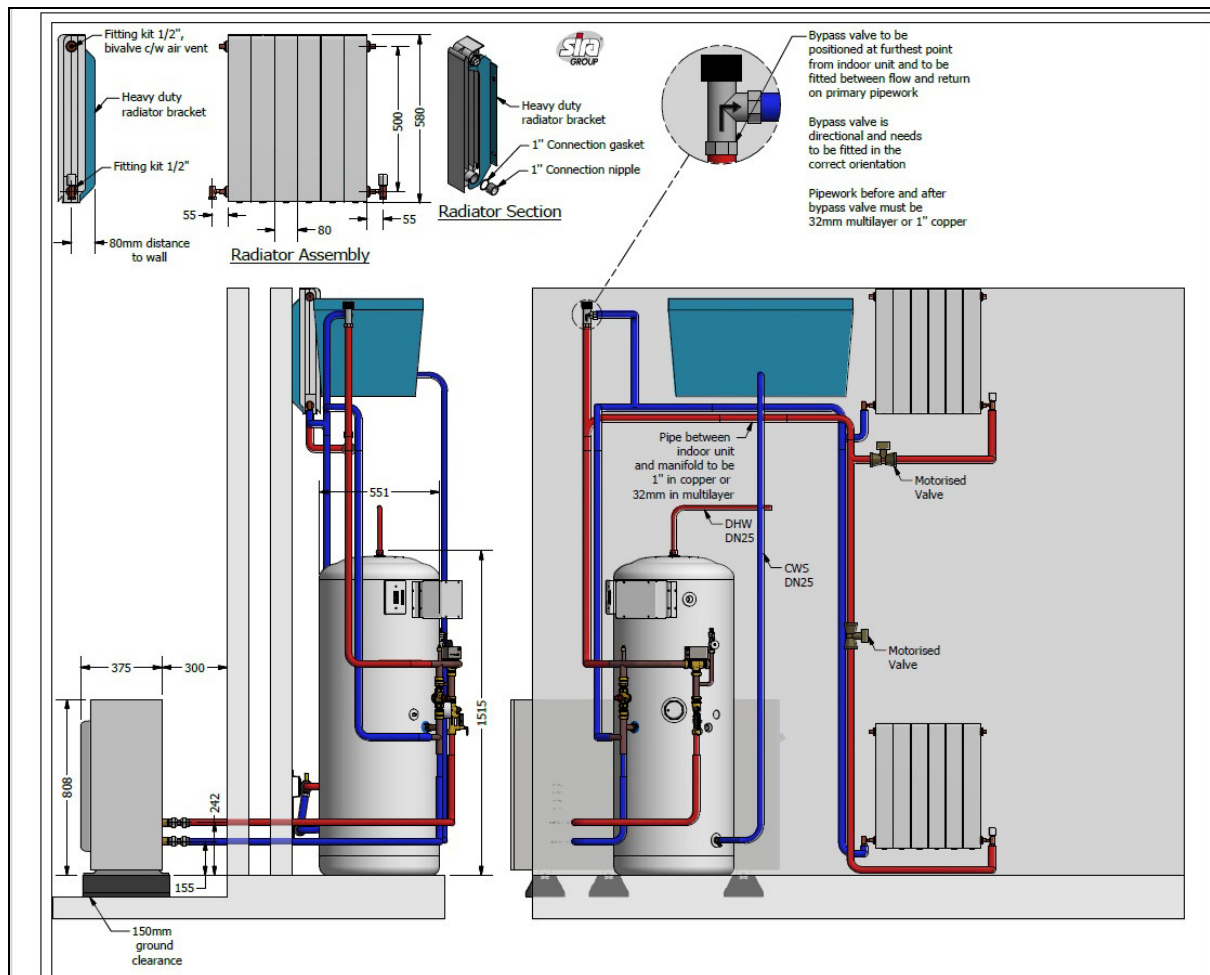


Figure 1: Typical Heating System Schematic

Apartments

The apartments will be heated by means of exhaust air heat pump systems. It is proposed to utilize an exhaust air heat pump. Aluminium radiators will be provided in each space complete with thermostatic radiator valves (TRVs) as required. These radiators are specifically designed to work with low temperature heating systems and have quicker heat up periods and transfer rates than standard steel panel radiators.

The unit is complete with an integral 210 litre hot water calorifier and will provide both domestic heat and hot water generation. We estimate the apartments will require a 3.5kw unit.

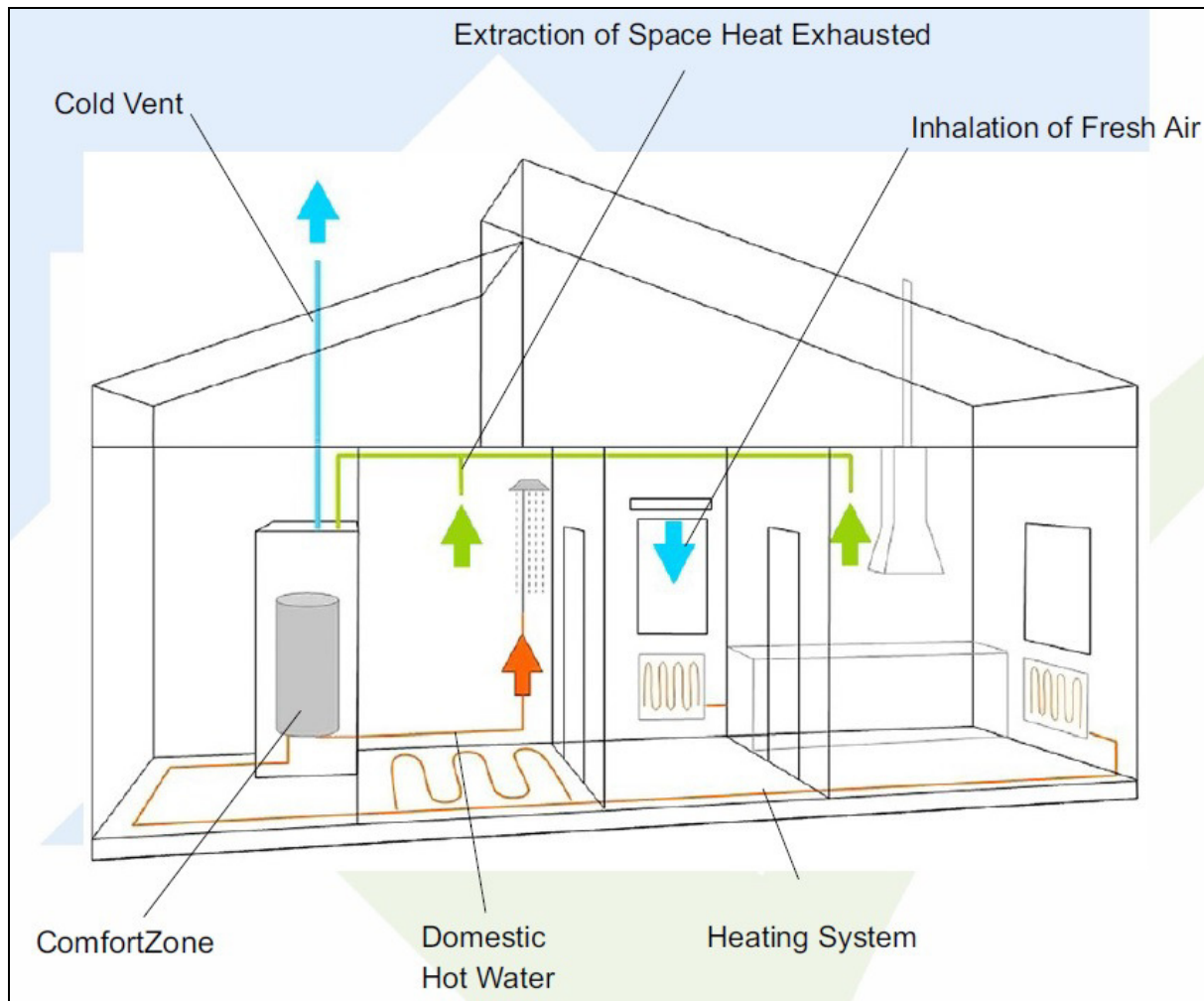


Figure 2: Typical Heating System Schematic

Water Services

Houses & Duplexes

The water services installation in the houses will be gravity pressurized systems. Typically, a Format 30 Cold water storage tank will be installed at high level in the attic space and this will service the cold water outlets and cold feed to the hot water cylinder. Mains, cold and hot water shall be provided as required to all fixtures and fittings.

The hot water storage calorifier will be 210 litres in capacity and will be heated by the air to water heat pump c/w immersion back-up. Thermostatic Mixing Valves (TMVs) will be provided at all hot water outlets to comply with department regulations for the design of social housing.

Apartments

The water services installations in the apartments will be pressurized systems. Domestic water storage tanks complete with integral pressurization pumps will be provided in each apartment. Mains, cold and hot water shall be provided as required to all fixtures and fittings.

Hot Water will be generated by the exhaust air heat pump unit which has a built in 210 litre hot water calorifier.

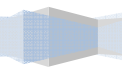
Ventilation Services

Houses & Duplexes

The ventilation requirements for the houses will be met using a low maintenance Aereco demand control ventilation system. This system utilizes a central house extract fan and passive supply vents with mechanical humidity control around the house. Each house will be individually serviced.

Apartments

Ventilation in the apartments will be achieved via the Exhaust air heat pump unit. This unit will extract air from the apartment bathroom and kitchen areas and will draw in fresh air to the unit via wall or window vents.



The electrical site services will include provisions for new EIR, ESB, Public lighting & EV car charging points.

The residential house and apartment units will be provided with a suitable number of internal ceiling rose lighting points, and low energy usage IP rated LED light fittings in the toilet areas.

External wall mounted lighting will be provided with specification to be agreed with architect. All lighting will be controlled via local two way & one way rocker type switches.

The fire alarm system for the houses and Apartments will be a LD2 domestic type consisting of mains fed smoke, heat and carbon monoxide monitors with battery backup

The LV distribution system in each unit will consist of a consumer unit in the hallway fed with a single phase 16KVA supply to each dwelling. The new dwellings will be wired in 3C twin & earth power cable.



Figure 4: Typical 16way LV Consumer Unit to be mounted near front entrance to dwellings

All accessories will be brushed stainless steel unless advised otherwise by architect. These shall include spurs, sockets, data and TV points suitably placed around the unit.

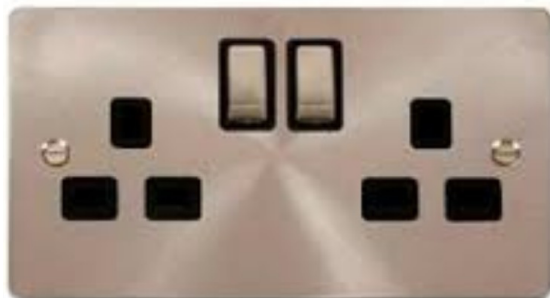


Figure 5: Example of brushed stainless-steel power socket

There shall be 1no. incoming EIR supply to each unit to facilitate telephone and broadband services

