

SUSTAINABILITY & SERVICES REPORT

FOR

RED ROCK GLENAGEARY LTD

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1. INTRODUCTION

This report seeks to assess the overall sustainability and service quality at the proposed development, a large-scale residential development located at junction of Sallynoggin Road and Glenageary Avenue, Glenageary, Co. Dublin. The following main assessment methods were used in the review; Building regulations review, Climate impact assessment and Building energy review.

Red Rock Glenageary Ltd., intend to apply to Dún Laoghaire Rathdown County Council for a Large-Scale Residential Development on a site of 0.74 ha at Junction of Sallynoggin Road and Glenageary Avenue, and Glenageary Roundabout, Glenageary, Co. Dublin.

The proposed development will consist of a new neighbourhood centre to include apartments, commercial and retail units, public plaza, childcare facility and all associated residential amenity spaces.

The proposed development includes:

- a) Construction of 138 no. residential apartment units (37 no. 1-bedroom units, 68 no. 2-bedroom (4 person units), 6 no. 2-bedroom (3 person units) and 27 no. 3-bedroom units) in 2 no. interlinked blocks at third to fifth floor level (ranging in height from four to seven storeys over basement level) consisting of:
 - i. Block A (5-6 storeys) comprising 41 no. apartments (8 no. 1-bedroom units, 17 no. 2-bedroom (4 person) units, 2 no. 2-bedroom (3 person) units and 14 no. 3-bedroom units).
 - ii. Block B (4-7 storeys) containing 97 no. apartments (29 no. 1-bedroom units, 51 no. 2-bedroom (4 person) units, 4 no. 2-bedroom (3 person) units and 13 no. 3-bedroom units).

Each residential unit has associated private open space in the form of a balcony/terrace.

- b) Residential amenity areas of approx. 342 sqm are proposed in the form of resident support services, concierge services, co-working space, social/activity spaces and gym at the ground floor level of Blocks A and B.
- c) Open Space (approx. 2,806.6 sqm) is proposed in the form of (a) public open space (c. 1,848.4 sqm) in the form of a public plaza accommodating outdoor seating, planting, pedestrian footpaths and cyclist links and (b) residential/communal open space (approx. 958.2 sqm) including c. 750.6 sqm at surface level (incl. playground), roof terrace at fifth floor level of link between Blocks A and Block B (c. 151 sqm) and roof terrace (c. 56.6 sqm) at fifth floor level of Block B. 1.8 m opaque screens are proposed around both roof gardens.
- d) Commercial and retail uses at ground floor level of Blocks A and B (c. 996 sqm) to include (a) 2 no. restaurants (c. 267 sqm and 295 sqm) in Block A, (b) a retail – clothing unit (c. 142 sqm), (c) retail - florist unit (c. 66 sqm), (d) retail - pharmacy unit (c. 126 sqm) and (e) hairdresser unit (c. 100 sqm) all in Block B.
- e) Childcare facility (c. 263 sqm) with dedicated open space and children's play area (c. 39.5 sqm) at ground floor level of Block B.

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- f) Basement areas (total approx. 3,411 sqm) are proposed on one level and include car and bicycle parking areas, waste management and plant areas. An ESB substation (approx. 31.7 sqm) is proposed at surface level at the top of the basement ramp accessed off Glenageary Avenue. Commercial bin stores (c. 47.9 sqm) are proposed to be located at ground floor level of both Blocks A and B.
 - g) A total of 80 no. car parking spaces at basement level are proposed to include 3 no. accessible parking spaces, 2 no. GoCar spaces and 17 no. EV charging spaces. 5 no. motorcycle parking spaces are also proposed at basement level.
 - h) A set down area/loading bay is proposed at surface level at Sallynoggin Road and 2 no. set down areas/loading bays including 1 no. accessible car parking space are proposed at surface level at Glenageary Avenue.
 - i) A total of 310 no. bicycle parking spaces to include 254 no. bicycle parking spaces at basement level including 10 no. cargo bicycle spaces and 56 no. bicycle parking spaces including 16 no. cargo bicycle spaces at surface level.
 - j) The development shall be served via a new vehicular access point to the basement level from Glenageary Avenue. New pedestrian and cyclist access points will be provided onto Sallynoggin Road and Glenageary Avenue from the site.
 - k) Removal of existing cycle path and footpath and dropped kerb pedestrian crossing at Glenageary Avenue to be reinstated by soft landscaping and replaced by a new shared cyclist and pedestrian raised table crossing point located on Glenageary Avenue linking to the existing signalised crossing on the R118. Existing 1.2 m pedestrian crossing on Glenageary Avenue to be widened to 2 m.
 - l) Emergency services/servicing access is proposed from Sallynoggin Road and Glenageary Avenue.
 - m) All associated site and infrastructural works include provision for water services; foul and surface water drainage and connections; attenuation proposal; permeable paving; all landscaping works; green roofs; roof plant room and general plant areas; photovoltaic panels; landscaped boundary treatment; footpaths; public lighting; and electrical services.

2. EXECUTIVE SUMMARY

The proposed development, by reason of its location on a greenfield site, together with its density and layout, will promote the efficient use of land and of energy. Its location in relation to public transport and cycling routes will also reduce greenhouse gas emissions by limiting residents' reliance on cars and by fostering an atmosphere conducive to carpooling.

The development shall be constructed to achieve a high level of thermal efficiency with highly insulated building fabric and optimising passive solar gains. Our design employs that all apartments will have a very high energy performance, A2 & A3 BER, and the amount of energy required will be covered to a very significant extent by energy from renewable sources.

Our in-depth analysis and design modelling of the development shows that the most suitable system to be compatible with possible connection to central heating system are high efficiency heat pumps working together with modulating gas boilers in cascade arrangement providing heat and hot water for each apartment via heat interface units in each apartment. This used in conjunction with mechanical heat recovery ventilation units, will provide an efficient, reliable, modern system for heating, hot water and ventilation, that exceeds current building regulations standards.

3. BUILDING REGULATIONS

PART L & NEARLY ZERO-ENERGY BUILDING

In drafting this report, regard was had to all relevant legislation, in particular, the Building Regulations 1997 (as amended). The Government commenced Part L of the Second Schedule of the Regulations ("Part L") in 2022 and amended its effect in 2021.

The Part L 2022 building regulation sets the standard for the energy performance and carbon emissions of new and existing buildings. Part L - Dwelling 2022 set building fabric and energy performance to achieve Nearly Zero-Energy Building. Nearly Zero-Energy Building (NZEB) means a building that has a very high energy performance as determined in accordance with Annex I of the EU Energy Performance of Buildings Directive Recast (EPBD Recast). 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. This is discussed in further detail later on in this report.

EPC & CPC

In order to achieve the acceptable primary energy consumption rate for a nearly zero energy dwelling, the calculated energy performance coefficient (EPC) of the dwelling being assessed should be no greater than the Maximum Permitted Energy Performance Coefficient (MPEPC). The MPEPC for a nearly zero energy dwelling is 0.30.

To demonstrate that an acceptable CO₂ emission rate has been achieved for a nearly zero energy dwelling, the calculated carbon performance coefficient (CPC) of the dwelling being assessed should be no greater than the Maximum Permitted Carbon Performance Coefficient (MPCPC). The MPCPC for a nearly zero energy dwelling is 0.35.

RENEWABLE ENERGY RATIO

The Part L 2022 building regulation introduces a new aspect for defining the renewable energy contribution to the buildings energy usage called the Renewable Energy Ratio (RER). This is defined as the ratio of the primary energy, from renewable energy sources, to total primary energy as defined and calculated in the Dwelling Energy Assessment Procedure (DEAP). Minimum RER is 0.2 and this index is replacing Part L 2011 Renewable contribution.

RENEWABLE ENERGY RATIO FOR COMMON AREAS

Where there are both common areas and individual dwellings in a building, reasonable provision would be to show that the average contribution of renewable technologies to all areas meets the minimum level of renewable provision to the individual dwellings and common areas combined. In case of apartment block, a proportion of the renewables should be provided to each area and individual dwelling in the building. This proportion shall be qualified by design value of RER to be 0.2 where the excess RER would satisfy this requirement. This proportion shall be covered by an array of PV panels.

4. SUSTAINABILITY STATEMENT

To reduce energy demand of the dwellings the apartments will be constructed with high standard of insulation & air tightness. Additional energy demand reduction will be achieved by using heat recovery ventilation system and applying passive design techniques. The design of the fabric and plant will satisfy the requirements of new Part L Building Regulations and NZEB.

The specification of individual building elements, building services and items linked to energy efficiency was reviewed in detail for the typical apartment types occurring throughout the development to ensure compliance with the building regulations and requirements of the local council. The building shall be designed in such a way so that central core risers are all collectable & link to plantroom areas.

Key Sustainable Design Elements:

- High performance glazing in the windows.
- High levels of insulation.
- A+ Low energy LED lighting throughout the development.
- High levels of airtightness of the apartments.
- Mechanical Heat Recovery ventilation for each apartment.
- High efficiency centralised plant serving heating & hot water requirements.
- CHP system supplying electricity to common areas.

WINDOWS AND BUILDING FABRIC

All windows shall be double glazed windows with a combined thermal transmittance not greater than 1.2W/m²K. All windows shall comply with BS EN ISO 10077-1: 2006 - 'Thermal performance of windows, doors and shutters. Calculation of thermal transmittance'. Building fabric will include insulation levels sufficient to meet the Part L 2022 U-values.

Table 1. Building Elements U-values

Building Fabric Element	Target U values	Part L 2022 Target Elemental U-value
Exposed & Ground floor	0.18 W/m ² K	0.18 W/m ² K
External Wall	0.18 W/m ² K	0.18 W/m ² K
Flat Roof	0.2 W/m ² K	0.2 W/m ² K
External Windows & Doors	1.2 W/m ² K	1.4 W/m ² K

AIR PERMEABILITY

Part L (2022) specify 5 m³/m²/hr @ 50Pa as upper limit for air permeability. To reduce heat loss by infiltration the target air permeability will be 3.0 m³/m²/hr @ 50Pa. Air permeability shall be measured by means of pressure testing of a building prior to completion in accordance with BS EN ISO 9972:2015 'Thermal performance of buildings. Determination of air permeability of buildings. Fan pressurization method'.

ENERGY SAVING LIGHTING

The new DEAP requires a detailed design of lighting for each dwelling. For this project the calculation of lighting use shall be based on the installed fixed lighting, and on the contribution of daylight. The calculation will include low-energy lighting provided by fixed outlets based on lighting design details (e.g. lamp power and efficacy), lamp type, and number of lamps.

MECHANICAL HEAT RECOVERY VENTILATION

Part F of the Building Regulations 2010 provides guidance on building ventilation, including building air quality and preventing condensation in domestic or non-domestic buildings. Part F requires adequate and effective means of ventilation for people in buildings. This shall be achieved by:

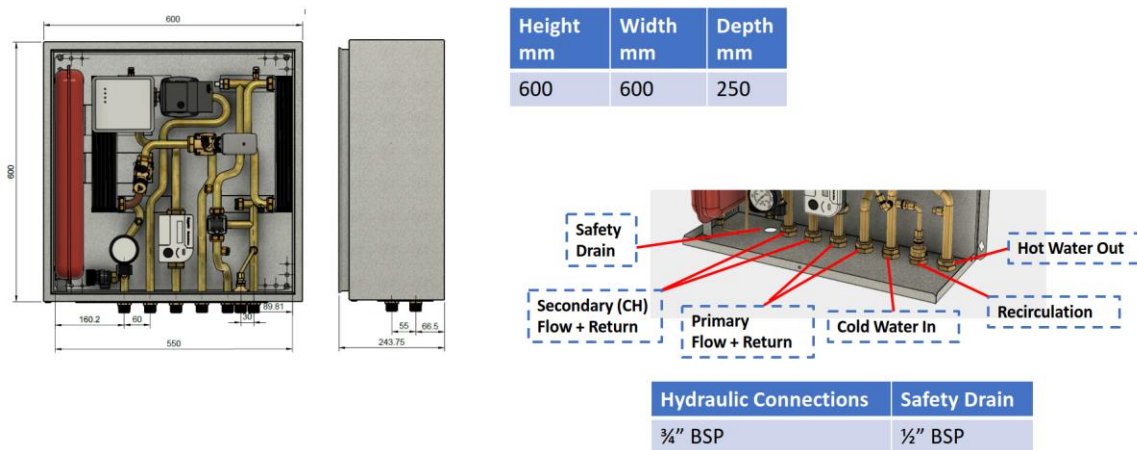
- (a) limiting the moisture content of the air within the building so that it does not contribute to condensation and mould growth, and
- (b) limiting the concentration of harmful pollutants in the air within the building.

It is proposed that Mechanical Heat Recovery Ventilation (MHRV) system will serve each apartment to satisfy Part F and to reduce energy demand for heating.

The design of systems shall provide required design flow rates of fresh air supply to each of the supply air grilles. Systems should be installed, balanced and commissioned by competent installers e.g., those with an official accreditation. Systems when commissioned and balanced should then be validated to ensure that they achieve the design flow rates by an independent competent person e.g., NSAI certified or equivalent.

HEAT INTERFACE UNIT

Each apartment will be fitted with a Heat Interface Unit (HIU) which shall be wall mounted and designed to provide indirect space heating and Instantaneous Domestic Hot Water (DHW). The HIU has compact dimensions and greatly reduces the area required for plant within the apartments. Each unit contains an ultrasonic heat meter to fitted with MBUS communications which will be linked back to plantroom and provide a record of heat and hot water used by the occupier for purpose of billing.



[Diagram 2: Heat Interface Unit (HIU)]

CENTRALISED PLANT

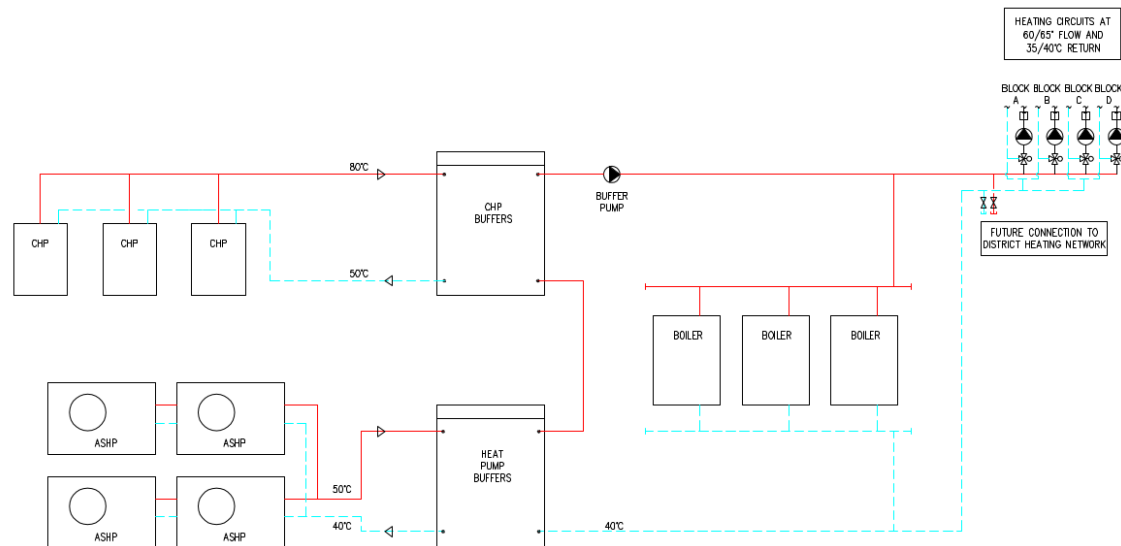
Part L renewable energy compliance shall be achieved by implementing of high efficiency centralised heating system. The Part L renewable contribution shall be covered by the combination of heat pumps and a Combined Heat and Power (CHP) unit. High efficiency gas boilers will be incorporated into the system. A space allowance analysis has been carried out to ensure adequate plant space is provided to facilitate Plant & Equipment and sufficiently sized services risers are provided.

Use of low carbon technology includes High Efficiency Air Source Heat Pumps and CHP system. Design of CHP will be in accordance with CIBSE Manual AM 12 Combined Heat and Power in

Buildings. Section 4.4 of CIBSE Manual AM 12 details an operating model for CHP sizing and recommends the use of an hour-by-hour model over a whole year with heat and electricity demand profiles representing an average year.

The design of the CHP system will take account of the output rating of the appliance and the design thermal profile for the development to ensure the system is suitable for the building application (simultaneous electrical and thermal profile requirements) and not oversized.

All pumps serving the plant to be A rated energy efficiency. Advanced Building Energy Management system will control the plant to ensure its operation to maximum efficiency.



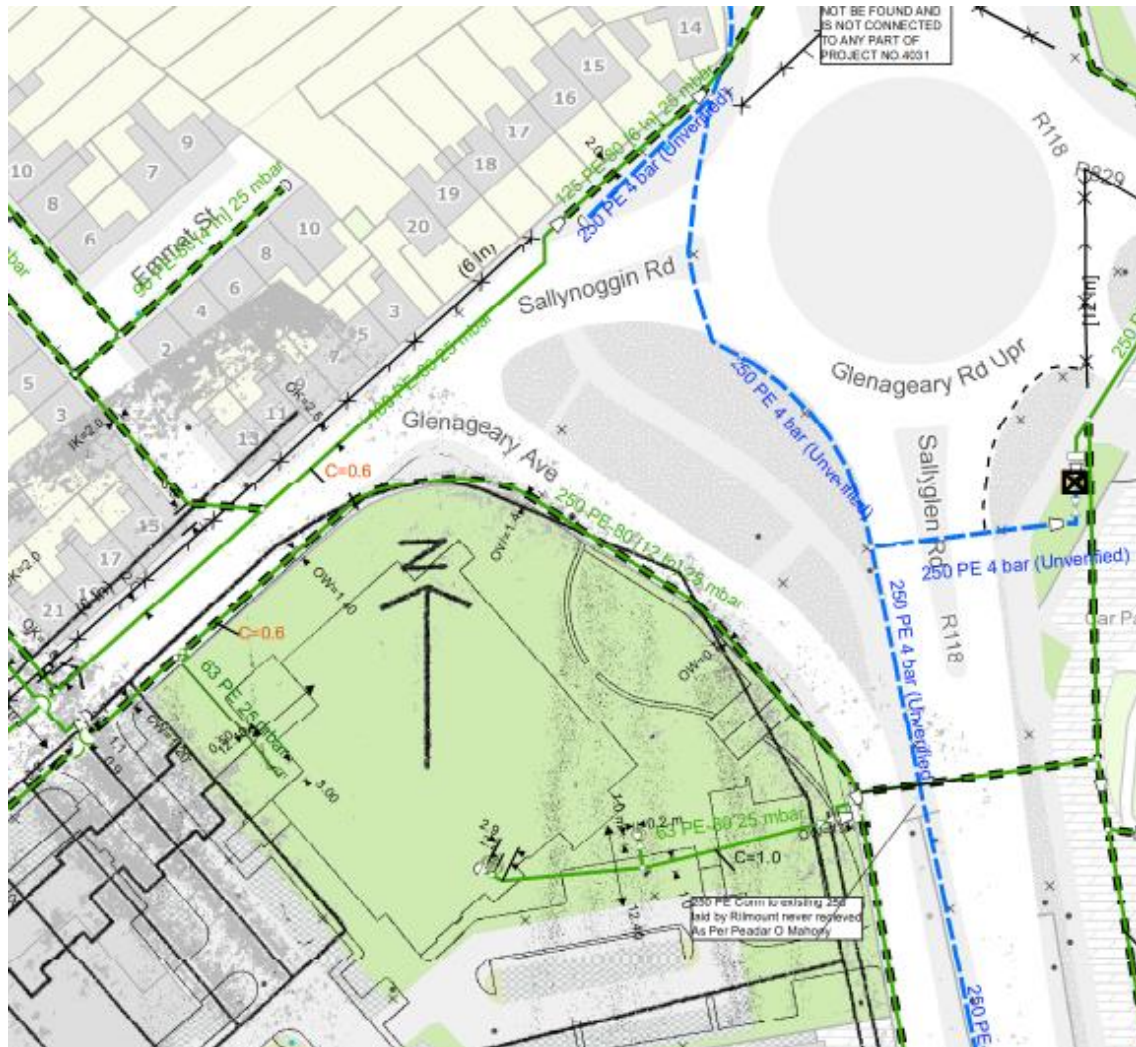
[Diagram 3: Schematic of plant serving the development]

We have liaised with Gas Networks representative, and they have confirmed there is 125 PE 4 BAR Gas Main available adjacent to the site.

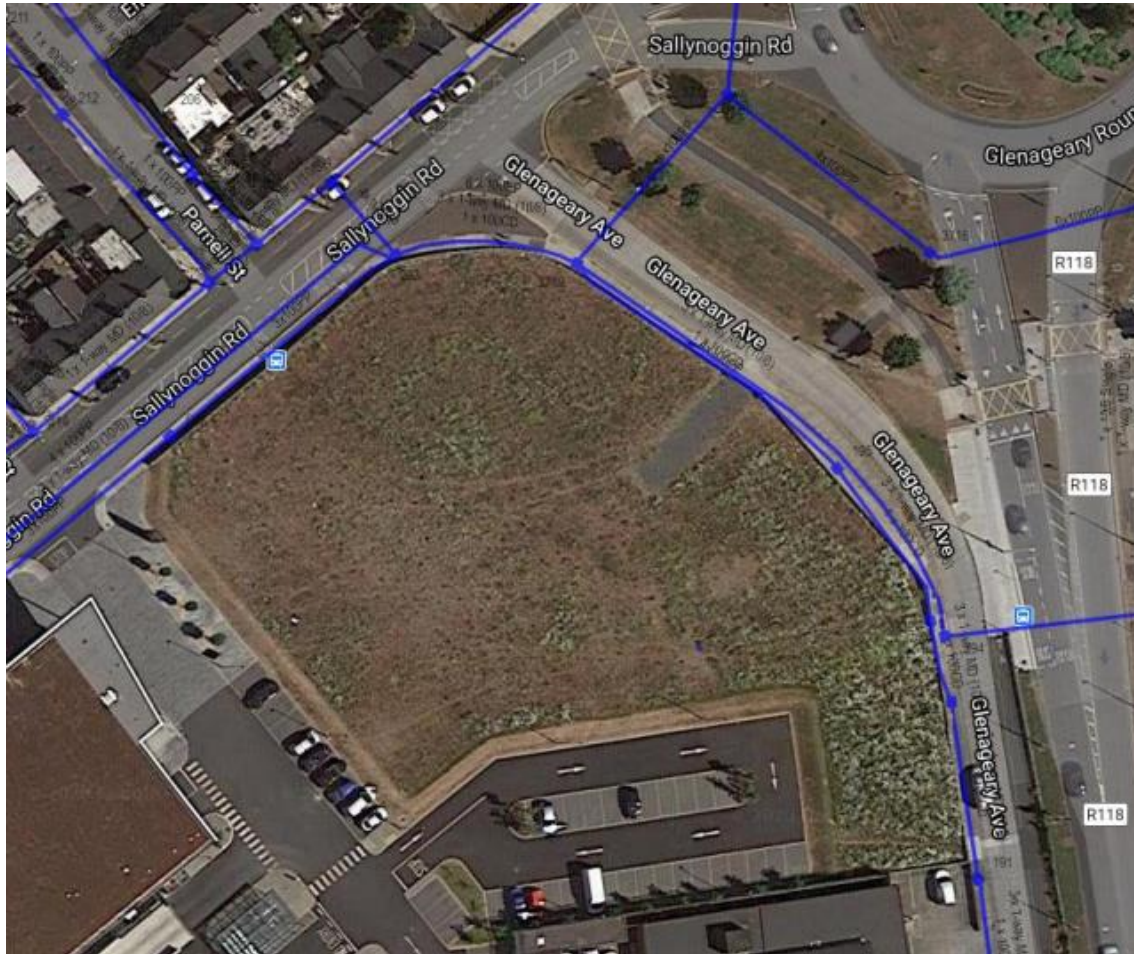
5. INFRASTRUCTURE

The proposed site location is very well serviced by all major utilities. Major spine services for Gas, Electricity Water and Communications have local network sufficient to meet the needs of the new development. Based on the number of dwellings it is envisaged that 4 no. ESB substation shall serve the development.

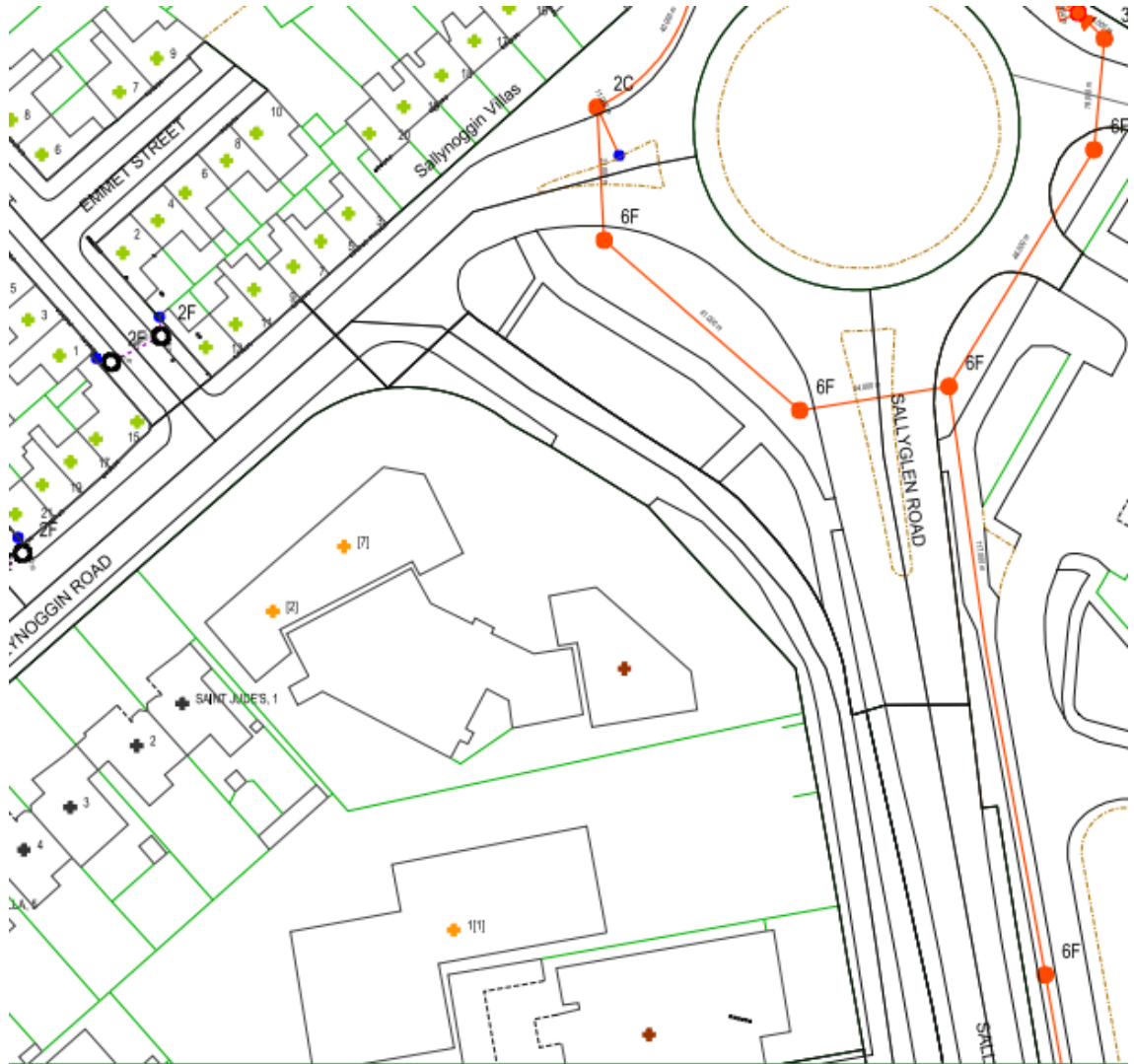
We have explored utilities which are in immediate proximity to the site & reviewed specific service diversions, service routes and capacities to the site.



[Map 2: Existing Gas Networks Infrastructure]



[Map 3: Existing EIR Infrastructure]



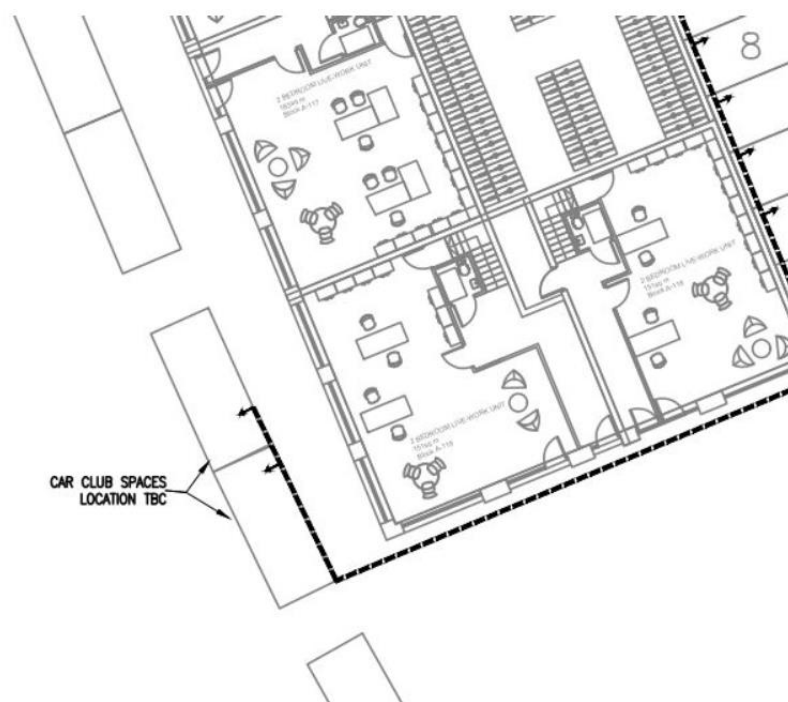
[Map 4: Existing Virgin Media Infrastructure]



All the parking spaces shall have ducting provision to allow for car charging point at any point in the future. There also be provision for a number of cars charging points for the on-street parking places.



[Diagram 4: Typical car charging ducting provision in the car park]



[Diagram 5: Typical car charging ducting provision for on car club/public charger]

Telecommunication Channels Infrastructure

We have engaged with microwave telecoms links provider in the area to ensure the retention of existing telecommunication channels. Where the proposed development will be in a way of such links provision will be made for diversion of these.