ARUP

Dublin City Council

St. Anne's Court, Raheny, Dublin 5

Part 8 MEP Engineering Design Report

Reference: STAC-ARUP-ZZ-XX-RP-Z-0002

P03 | 20 December2023

This report takes into account the particular instructions and requirements of our client. It is not intended for and should not be relied upon by any third party and no responsibility is undertaken to any third party.

Job number 288354-00

Ove Arup & Partners Ireland Limited
50 Ringsend Road
Dublin 4
D04 T6X0
Ireland
arup.com

ARUP

Document Verification

Project title	St Anne's Court, Raheny, Dublin 5
Document title	Part 8 MEP Engineering Design Report
Job number	288354-00
Document ref	STAC-ARUP-ZZ-XX-RP-Z-0002
File reference	

Revision	**Date**	**Filename**	STAC-ARUP-ZZ-XX-RP-Stage2b Report		
P01	21 April	**Description**	Suitable for Review and Comment (Status S2)		
			Prepared by	**Checked by**	**Approved by**
P01	21/04/2023	**Name**	Robert Dardis Abhin Jose	Sarah Dillon	Luke Stewart
		Signature			
P02	18/08/2023	**Filename**	STAC-ARUP-ZZ-XX-RP-Stage2b Report		
		Description	Suitable for Review and Comment (Status S2)		
			Prepared by	**Checked by**	**Approved by**
		Name	Robert Dardis Rand Zayed Sujith Surendran Abhin Jose	Sarah Dillion Andrew Davies	Luke Stewart
		Signature			
P03	20/12/2023	**Filename**	STAC-ARUP-ZZ-XX-RP-Part 8 MEP Report		
		Description	Issued for Planning (Status S4)		
			Prepared by	**Checked by**	**Approved by**
		Name	Rand Zayed	Robert Dardis	Luke Stewart
		Signature			

Issue Document Verification with Document ✓

Contents

3.	Building services (MEP)	1
3.1	Introduction	1
3.2	Brief	1
3.3	Energy and Sustainability	2
3.4	MEP Design Criteria	3
3.5	Existing Incoming Utilities	3
3.6	Phasing & Construction Sequencing	3
3.7	Mechanical Services	4
3.8	Public Health Services	4
3.9	Fire Suppression Services	5
3.10	Electrical Services	5
3.11	Electrical Services – Dwellings	8

Appendices

Appendix A	A-1
Mechanical Sketches	A-1
Appendix B	B-1
Electrical Sketches	B-1
Appendix C	C-1
ICT Sketches	C-1
Appendix D	D-1
BER and Part L	D-1
Appendix E	E-1
Utility Maps	E-1

3. Building services (MEP)

3.1 Introduction

This report relates to an application for "Older Persons Housing" project at St. Anne's Court in Raheny, Dublin 5, in support of a Part 8 application to Dublin City Council.

This report outlines the Mechanical, Electrical and Public Health (MEP) engineering design proposals for the new residential development at St Annes Court.

The project is at completion of Part 8, which is intended to analyse the requirements of the brief and present the design proposals.

The purpose of this design report is to explain the holistically integrated engineering solutions for the scheme at Part 8 circulation and to describe the approaches taken in delivering the proposed solution.

In conjunction with other Part 8 project information, this report should be used to:

- Understand and sign off the principles and detail of the Part 8 engineering design (including the design assumptions and briefing requirements adapted).
- Assist the Quantity Surveyor (QS) to develop the Part 8 cost plan for the MEP engineering elements of the project.
- Understand the risks, constraints, and opportunities inherent in the current design.

3.1.1 The Proposed Development

St. Anne's Court comprises five existing two-storey residential blocks built in the 1970s, currently occupied by senior citizens. There are a total of 61 bed-sits and a community room contained within these blocks. St. Anne's Court is located directly opposite All Saints Park to the West, the All-Saints' Church to the North, and St. Anne's Park to the South (Figure 1).

The proposed development will consist of the demolition of the existing buildings and the construction of new high quality senior citizen dwellings. The proposed new development will have circa 102 properties.

Figure 1: Proposed site area (Source: Imagery ©2023 Airbus, CNES / Airbus, Infoterra Ltd & Bluesky, Maxar Technologies, Map data ©2023)

The current architectural proposal includes four new residential buildings, with one block along each side of the site and access paths between each block leading to the central courtyard/landscaped area. Figure 2 shows the proposed building layout and Figure 3 shows the block naming convention.

Figure 2: Proposed building layout (Source: Grafton Architects, received on 26/07/23)

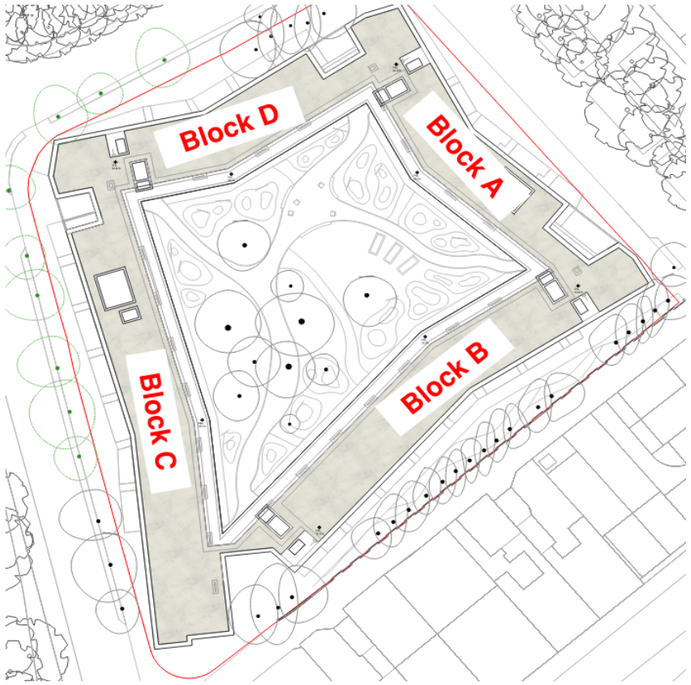


Figure 3: Block naming convention (Source: Grafton Architects, received on 26/07/23)

3.1.2 Next Stages

The following highlights some of the key areas for development and project risk to be considered during the next design stage.

Service distribution routes throughout the blocks to be developed in further detail.

Final location of the substation will need to be resolved during the next stage of the design and agreed with ESB.

Further coordination of above ground drainage will be required with the architect and the structural engineer.

3.2 Brief

3.2.1 Client Briefing Documents

Below is a list of the MEP DCC specifications provided to inform the design.

- DCC Domestic Heat Pump Retrofit Specification – Dated 17/02/21
- DCC Boiler Replacement Programme Specification – Dated 05/01/21
- DCC Performance Specification Guide for Mechanical Consultants MEES – Dated 04/03/21
- DCC General Electrical Specification for Electrical Installations in Residential Dwellings Dated:18/06/21
- DCC Electrical Performance Specification Guide for MEP Consultants – Dated 18/06/21

3.2.2 Design standards

The design will comply with the following codes and standards

- The Safety, Health and Welfare Act, 2005
- All relevant Irish, British and European Standards and Codes of Practice
- I.S. 10101:2020 National Rules for Electrical Installations
- I.S. 3217:2013+A1:2017 Emergency Lighting and Amendment 1
- I.S. 3218:2013+A1:2019 Fire detection and alarm systems for buildings - System design, installation, commissioning, servicing, and maintenance & Amendment 1
- Irish Water IW-CDS-5020-03 (Revision 2 – 2020)
- HPI – Home Performance Index.
- DCC Domestic Heat Pump Retrofit Specification – Dated 17/02/21
- DCC Boiler Replacement Programme Specification – Dated 05/01/21
- DCC Performance Specification Guide for Mechanical Consultants MEES – Dated 04/03/21
- DCC General Electrical Specification for Electrical Installations in Residential Dwellings Dated:18/06/21
- DCC Electrical Performance Specification Guide for MEP Consultants – Dated 18/06/21
- ESB Networks Code of Practice
- Standard Specification for ESB MV/LV Networks Ducting
- ESB Networks Construction Standards for MV Substation Buildings

3.3 Energy and Sustainability

A separate energy feasibility study had been developed during stage 2A based on the most viable MEP solutions. This covered the most cost-optimal solutions, preliminary BER ratings and include capital costs and maintenance of the systems with a recommendation on the optimum solution for the development.

The main aim was to outperform the sustainability and energy targets and overheating risk assessment set by the Irish Building Regulations, Part L – Conservation of Fuel and Energy – Dwellings 2022.

The proposals for the scheme have been developed in accordance with the desire to achieve an energy efficient and sustainable development that is in line with the HPI targets.

The following strategies have been adopted to assist in meeting the legislative requirements:

3.3.1 Passive Solar

Glazing plays an important role in terms of light and heat energy usage. Generally, an increase in glazing reduces the need for artificial lighting. Particularly in dwellings where natural light alone is often sufficient throughout the day. The amount of glazing used is also a primary factor affecting the amount of solar gain a building will experience. Solar gain can be used to reduce space heating loads, as the heat gain from glazing can contribute significantly towards the space heating requirements of a building.

However, it is also important to consider the role solar gain can play in overheating, as well as the extent of heat loss occurring in areas with a large amount of glazing. It is therefore good practice to maximise the use of natural daylight to enhance visual comfort, while also ensuring that thermal performance is not compromised.

To ensure no overheating occurs, an appropriate g-value will be provided, specifying the amount of solar energy transmittance via the glazing. An appropriate U-value will be selected to ensure heat loss via the glazing is kept to an appropriate level.

The development has aimed to provide regularly occupied spaces, including bedrooms, living rooms and kitchens with natural daylight to reduce the energy need for artificial light. Natural lighting has less of an impact on occasionally occupied spaces, such as stores, bathrooms and en-suites. These areas have therefore not been targeted for natural lighting.

3.3.2 Building Fabric

Limitation of heat loss through the fabric of the building is a significant aspect of Part L regulations. Heat loss through the building fabric is minimised by increasing the thermal insulation to a level which is deemed to be acceptable. U-value is the criteria used to measure such heat loss, where U-value is a measurement of the conductivity of building fabric elements.

Given the sustainability aspirations for the scheme it is proposed to better the base Part L compliance values to increase the energy performance of the development. The Proposed values are detailed within the MEP design criteria section.

3.3.3 Thermal Bridging

A thermal bridge also known as a cold bridge is an area of a building construction which has a significantly higher heat transfer than the surrounding materials. This is typically where there is either a break in the insulation, less insulation or the insulation is penetrated by an element with a higher thermal conductivity, e.g., around windows, doors and other wall openings, at junctions between elements and other locations.

Acceptable Construction Details will be adopted for all key junctions where appropriate (i.e., typical/standard junctions). All bespoke key junction details which have been certified by a third-party certification body (such as Agreement or equivalent) will be used or calculated by an NSAI registered thermal modeller.

From an MEP point of view, heat loss due to thermal bridging is expressed as a multiplier of the total exposed surface area in DEAP calculations. The default value of this multiplier is 0.15 W/m2K in DEAP; and the proposed design target for this is 0.05 W/m2K.

3.3.4 Building Envelope Air Permeability

Air permeability should be limited in new buildings to reduce uncontrolled ventilation and associated heat losses. This can be facilitated by adopting standard details to form the appropriate air barrier elements (e.g. plaster, vapour control layer, breather membrane) and a regular on-site inspection regime will have to be in place throughout the construction period to ensure that the air barrier is maintained.

Part L (2022) requires an air permeability level of no greater than $5m^3/m^2/hr$ @ 50Pa for a new dwelling; the design intent for the proposed dwellings will be to have an air permeability target of $3m^3/m^2/hr$ @ 50Pa.

It is advised that a minimum of two tests will be carried out for all typical apartment types. Each unique apartment type must be tested independently. The air permeability test will be carried out by an independent third party (National Standards Authority of Ireland or equivalent certification body).

3.3.5 Heating Controls

Heating systems should be effectively controlled to ensure the efficient use of energy. It is intended that the system will minimise energy requirements by meeting user requirements closely while not exceeding them.

Heating and hot water level of controls will comply with the minimum control requirements stated in Part L 2022. A summary of this level of control is described as follows:

Automatic control of space heating based on room temperature.

Automatic control of heat input to stored hot water based on stored water temperature.

Separate and independent automatic time control of space heating and hot water

Shut down of heat pump or boiler when there is no demand for either space or water heating from that source.

Additional thermostat included in living room space which can over-ride the heat pump integrated thermostat to offer more user control.

3.3.6 Renewable Energy Sources

There is a requirement for the development that a proportion of energy sources used are renewable technologies. The minimum requirements, as set out by the 2022 amendment of Part L are that the minimum Renewable Energy Ratio is equal or above 0.2.

A RER of 0.2 represents 20 % of the primary energy of the building is served from renewable energy technologies to the total primary energy of the building, as defined and calculated in DEAP.

Potential energy sources were considered based on the requirements of Part L and their applicability to this development. The systems assessed include:

Wind Power

Photovoltaics

Solar Water Heating

Air Source Heat Pumps

Combined Heat and Power (CHP)

Independent Exhaust Air Heat Pumps

Biomass Fuel Heating

Heat Recovery Ventilation

Having assessed the context of the site, the nature of the proposed scheme, along with the necessary performance, maintenance, and functional aspects of the options, it is proposed to move forward with a combination of Heat pump technology and heat recovery ventilation. The various options considered are detailed in the following sections.

3.4 MEP Design Criteria

3.4.1 Building Fabric Performance Targets

The key BER ratings required to be achieved with the development are A2 for the apartments and A3 for the community centre.

In order to achieve a BER rating of A2, the below U values are required to be achieved for the apartments.

Apartments		
Element	**U-value W/m2K**	**Result**
Flat roof	0.12	BER A2
Walls	0.15	
Ground Floor	0.12	
External Windows	0.85	
External Doors	1.2	

In order to achieve a BER rating of A2, the below U values are required to be achieved for the community centre. In addition to this, PV panels are required to meet the renewable energy targets. Hence 1 KW PV panels are proposed at the roof to serve the community centre.

Community Centre		
Element	**U-value W/m2K**	**Result**
Flat roof	0.12	BER A2
Walls	0.15	
Ground Floor	0.12	
External Windows	0.85	
External Doors	1.2	

3.4.2 Air Tightness

Each dwelling will be designed to achieve a minimum air tightness testing of below $3m^3/hr/m^2$ @ 50Pa n compliance with the HPI targets.

3.4.3 Mechanical Services Design Criteria

External Ambient Design Criteria:

Season	Temperature
Summer	27ºC db 100% RH
Summer (for heat rejection equipment)	32ºC db 100% RH
Winter	-4ºC db 100% RH

Internal Design temperatures (no humidity control provided):

Area	Winter	Summer
Residential Apartments	22ºC db (+/- 1ºC)	Uncontrolled naturally ventilated
External terrace/ Corridors/Lobbies	Uncontrolled. Naturally ventilated.	
Main entrances	Uncontrolled. Naturally ventilated.	
Stairs	Uncontrolled. Naturally ventilated.	

3.4.4 Electrical Design Criteria

Electrical Loads	
Unit Type	MIC
Dwellings (without a dedicated heat pump)	12kVA
Dwellings (with a dedicated heat pump)	16kVA
Landlord Areas (Apartment blocks)	16kVA
Community space	16kVA

Lighting Levels	
Space	Value
Internal Circulation areas and corridors	100-150 lux
Internal Stairs	100-150 lux
Lift (area in front of doors)	200 lux
Toilet, Shower Rooms, and Bathrooms	150 lux
Kitchen	200 lux

Universal Design (UD) Lighting Levels	
Space	Value
Internal Circulation areas and corridors	150 lux
Internal Stairs	200 lux
Lift (area in front of doors)	200 lux
Toilet, Shower Rooms, and Bathrooms	200-300 lux
Kitchen	300 lux

3.4.5 Plant Resilience

Service	Resilience
Incoming water main	N
Incoming power supply	N
Incoming gas main	N/A – no gas in proposed scheme

3.5 Existing Incoming Utilities

This section describes the utilities serving the existing site.

3.5.1 Electrical

The development is currently served by an ESB Networks' substation located at the southern end of All Saint's Park in the laneway behind the commercial units.

3.5.2 Telecommunications

The existing available telecom broadband service provider around the project are as listed below:

a. Eir

b. Virgin Media

c. SIRO

The telecommunications utility maps have been issued and are included in Appendix E.

3.5.3 Gas

There is an existing GNI gas main which feeds the existing site from North to South with gas meters located in each apartment connected to gas boilers.

3.5.4 Water

There is an existing water main feeding the site.

3.6 Phasing & Construction Sequencing

A single-phase approach has been finalised to deliver the scheme.

3.6.1 Gas

There is an existing GNI gas main which feeds the existing site from North to South with gas meters located in each apartment connected to gas boilers.

Initial discussions have taken place with GNI and there will be a cost to undertake this work.

3.6.2 Water

The site is currently fed from an existing water main which is on the footprint of the new development and will necessitate a diversion. This will be investigated in further detail with Irish Water.

3.6.3 Electrical

It is envisaged that a new ESB Networks' substation will be required to serve the new development.

ESB Networks will advise on any relocation and/or diversion works required.

Relocation and diversion work can consist of trenching, laying of ductwork, installation of cabling and the provision of cable jointing pits and mini pillars. Any diversion works that occur external to the site will form part of this contract.

A formal application for new connections has been made to ESB Networks, a quotation and a diversion strategy has been discussed at high level with ESB and will be developed at the next design stage.

3.6.4 Telecommunications

The civil works which is carried out by the contractor to coordinate with telecommunication utility providers on any relocation and/or diversion works required to maintain telecommunication supplies.

DCC Open access network ducting strategy has been discussed at a high level will be developed in the next stage.

Following traditional telecom routes for fibre design by Eir/Virgin Media for each dwelling, further planning followed by DCC shall be required.

The diversion works will require trenching, laying of ductwork, installation of cabling and the provision of on street cabinets. Any diversion works that occur external to the site will form part of this contract and should get required approvals from the telecom.

Initial enquiries have been made to Eir, Virgin Media and Siro, a diversion strategy has been discussed at high level and will be developed at the next design stage.

3.7 Mechanical Services

3.7.1 General

The Mechanical Services to this development will be designed and specified to meet industry norm standards of resilience and reliability. These systems will conform to the DCC documentation and specifications outlined within section 3.2.1.

3.7.2 Domestic Hot Water & LTHW

The St Annes Court development will primarily use air source heat pump technology to provide space heating and generate hot water to all dwellings.

A heat pump is a sustainable low-carbon system which uses the refrigerant cycle to provide space heating and hot water to homes. Replacing traditional gas-powered boilers as the primary heat source, the heat pumps are able to generate heat with an efficiency of around 3:1 meaning that for each unit of electrical energy input, it can output three times the thermal energy.

In keeping to the DCC specifications, the following criteria applies to DHW and LTHW system.

- Domestic hot water will be generated to sufficiently high temperatures to minimise the risk of legionella bacteria outbreaks in line with guidance from the Health and Safety Executive.
- Thermostatic blending valves/taps will be provided to wash hand basins, baths and showers to allow for blending of hot and cold water.
- The air source heat pump will be provided with suitable acoustic attenuation.

3.7.2.1 Residential Apartments

The residential apartments will be served by a Double Ducted Exhaust Air Heat Pump (DDEAHP) unit in each apartment.

The DDEAHP, located in the utility cupboard of each apartment, will utilise energy recovered from extracted air from bathrooms, kitchens, and wet rooms, to generate heat for space heating and domestic hot water. Space heating is provided via warm air supply to each space, delivered via a network of ductwork above the ceiling, connected to ceiling mounted supply diffusers. There is no wet heating system associated with this unit. The system is also provided with a supplementary heating via two number electric panel heaters which can be utilised to provide a 'boost' functionality to the living space and lobby if required. The domestic hot water is stored with in an inbuilt hot water cylinder.

The DDEAHP system will also provide ventilation to the apartment by default and as such a separate Mechanical Ventilation Heat Recovery Unit (MVHR) is not required.

3.7.2.2 Community Centre

Space heating and cooling is currently envisaged to be via VRF heat pumps with a condenser located externally. The domestic hot water is provided by under sink water heaters. This is to be discussed at the next stage as the fit-out design is developed.

3.7.3 Mechanical Utility Cupboard

It would be proposed that each residential unit will be provided with a mechanical utility cupboard (MUC), where the double ducted exhaust air heat pump (DDEAHP) unit would be located.

The utility cupboard provides a convenient, central location for plant items which will assist in routine maintenance and plant replacement when necessary.

Currently, the access to MUC's has been facilitated from the corridors for ease of access for DCC staff where feasible.

3.7.4 Ventilation

3.7.4.1 Residential Ventilation

The ventilation in residential apartments will be done by the exhaust air heat pump unit. The unit will be designed to extract air from kitchen and bathroom areas, removing the heat from the extract airstream, before exhausting the air to outdoors via a wall mounted weatherproof louvre.

The extract air is passed through a filter to prevent the accumulation of dust in the evaporator coils. Exhaust air ductwork between the heat pump and external wall will be insulated to prevent condensation and heat losses.

Double ducted Exhaust Air Heat pumps supply filtered supply air back into the apartment spaces.

3.7.4.2 Community centre ventilation

Local heat recovery ventilation units will be provided to serve the community centre area.

3.7.4.3 Transformer Room Ventilation

Transformers will be located at grade and naturally ventilated requirements provided. In accordance with ESB requirements.

3.7.5 Façade Connection Requirements

The design of the façade connections for the ventilation ductwork system will be coordinated with the architect at the next design stage.

3.8 Public Health Services

This section of the report covers the provision of the Public Health Engineering Services, which includes:

- Incoming Cold Water Mains
- Domestic Hot and Cold Water Services
- Soil and Waste Drainage
- Fire Suppression Services

3.8.1 Incoming Cold-Water Main

The incoming cold-water main will be utilised to serve the residential blocks within the development.

It is proposed that the community centre would be provided with their own dedicated mains cold water supply.

3.8.2 Potable Boosted Cold Water Services

The potable cold water storage tank has been sized based on a full day period to ensure that the boosted cold-water service will remain operational during the event of a mains failure.

The proposal at this stage is to have a total of two centralised cold water storage tanks and associated booster sets to serve the four residential blocks.

Block C and block D will have a combined cold water storage tank which is to be located at the roof of block C along with associated booster sets.

Similarly, block A and block B will have a combined cold water storage tank and booster sets at the roof of block A.

There will be no water storage in each apartment.

The water tanks will be placed externally, and the booster sets will be installed in an enclosure. All external pipework will be heat traced.

The boosted cold-water service will be extended from the booster pump sets and distributed to each residential block via individual apartment vertical risers from the roof.

Each block will be provided with a dedicated water meter. There is no provision currently to meter the water to each apartment separately.

The community centre spaces will be provided with break tank etc as part of their fit-out installations.

3.8.3 Non-Potable Boosted Cold Water Services

A non-potable cold-water service will be provided to serve the non-potable cold water draw off points from mechanical plant, bin store wash downs and other wash down points.

In accordance with The Water Regulations, providing a separate non-potable cold-water service will ensure that harmful bacteria will not contaminate the potable cold-water system.

The non-potable cold-water service will be provided via local packaged CAT 5 tank and booster pump sets. The locations of the localised CAT 5 plant will be coordinated during the next stage of design once wash down point locations can be confirmed and green roof allocation.

3.8.4 Soils and Wastes

Primary ventilated and stub stack drainage systems will be provided to take foul and wastewater discharge from sanitary fixtures, condensate drains and hot water plant safety valve discharges.

All above ground sanitary drainage systems will directly connect to the external drainage network and be ventilated to atmosphere at roof level.

The soil and waste drainage stacks will be coordinated with the Architect to ensure that there are no offsets are made within the apartments. It is imperative that the drainage stacks align throughout the residential floors to mitigate the risk of blockages and access into the apartments for rodding maintenance.

All soil and waste drainage stacks within the residential properties will be provided with acoustic insulation to prevent noise breakout.

Capped drainage and ventilation pipework connections will be provided within the community centre as required.

3.8.5 Rainwater

Rainwater disposal drainage systems will be by the architect.

3.9 Fire Suppression Services

3.9.1 Dry Risers

Dedicated dry risers will be provided within each residential block core in line with the fire strategy.

The dry risers will be located within the fire stairwells of the residential blocks.

The dry risers will be routed up to roof level and shall be exposed.

Landing valves will be provided at all levels.

A landing valve at roof level will be provided to facilitate testing.

3.10 Electrical Services

3.10.1 Electrical Intake Supply

The Electrical Services will be designed in accordance with I.S. 10101:2020 National Rules for Electrical Installations.

Electrical utilities will be distributed throughout the site via a network of underground ducts.

Apartment blocks will be supplied directly from a new internal MV substation.

The apartment blocks will each receive a dedicated 400/230V three phase supply. Each dwelling within the apartment blocks rated at 80A single phase and will receive a 230V single phase supply. The community centre will also receive a 230V single phase supply.

The electrical utility supplies to the apartment blocks will be metered in a centralised locations serving phase 1 and phase 2 apartments. The main distribution board will house the ESB Networks meters and fuses.

Surge protection will be provided to all incoming supplies.

3.10.2 Electrical Distribution

Incoming supply cables to the apartment blocks will terminate in the main distribution board located in a fire rated enclosure within the LV room/s on the ground floor. ESB access is required from an external door or within 2m of the access door. Unmetered cables will not exceed 2m in length within the buildings.

From the main distribution board, sub-main distribution will generally be in LS0H/SWA/LS0H Dca s2, d2, a2 cables, on galvanised cable tray, via appropriate risers to consumer units in the apartments. For ground floor units with no overhead horizontal route, sub-main distribution will be in LS0H/SWA/LS0H Dca s2, d2, a2 cables, in underground ducts to consumer units in the apartments and the community centre.

The community centre spaces will be provided with their own distribution boards etc as part of their fit-out installations.

The landlord distribution board will be incorporated into the main distribution board. Electrical supplies to mechanical plant, lifts, communal area lighting and small power will be fed directly from the landlord distribution board.

All final circuits will be in single insulated cables in trunking or conduit, or double insulated cables on tray.

3.10.3 Electrical Risers

Each apartment block will have an electrical riser running from the ground floor to roof level. These shall be for Landlord services, apartment supplies and telecommunications.

Opes will be cast into the floor slab for electrical services to pass through and the slab will be fire stopped at each floor level.

A 230V maintenance socket outlet will be provided in the electrical risers at each floor level.

3.10.4 Small Power

Cleaners' socket outlets will be provided in all common areas unless advised otherwise by DCC.

TPN isolators will be provided to all lifts.

The common areas' small power design will be developed further at the next design stage.

3.10.5 Standby Power

Standby power supplies will be provided to the following life safety plant:

- Emergency lighting (integral batteries)
- Fire Alarm Devices (integral batteries)

3.10.6 Lighting

3.10.6.1 General Lighting

The lighting installation will be designed in compliance with the "Code for Interior Lighting" as issued by the Chartered Institute of Building Services Engineers (CIBSE) and "Lighting Guide LG9 – Lighting for Communal Residential Buildings" also issued by CIBSE. Illumination will be provided by means of high-efficiency LED lighting throughout dwellings.

Within common areas, feature lighting will also be provided by means of LED down lighters. Lighting in the common areas will be switched by PIR movement detectors.

The operation of dwelling luminaires will be controlled via manual switching located at the entry door to the associated space.

General lighting will be provided to the community centre, controlling method shall be specified in the next stage.

3.10.6.2 Emergency Lighting

A full addressable Emergency Lighting System will be provided in accordance with I.S. 3217 within all landlord areas.

Emergency lighting will consist of separate dedicated emergency LED light fittings as follows:

- Non-maintained recessed/surface LED downlights
- Maintained exit signs on escape routes
- Non-maintained LED wall mounted lights outside final exits

Emergency lighting in accordance with I.S. 3217:2013+A1:2017 will be provided for the community centre.

3.10.6.3 Public Lighting

A Public Lighting design will need to be confirmed with DCC as the public lighting just outside are boundary might be required to be updated by the council.

If required the design will be carried out in line with the requirements set out in BS 5489-1 Code of Practice for the Design of Road Lighting – Part 1: Lighting of Roads and Public Amenity Areas and DCC's General Specification for Public Lighting Design and Installation in the Dublin City Council Area.

All existing public lighting mounted on existing buildings will be disconnected and removed as part of the enabling works. Temporary or replacement lighting will be provided by the contractor to ensure existing illumination levels are maintained.

New Public Lighting if required will generally consist of column mounted LED luminaires.

Control of the Public Lighting will be achieved by photocells mounted directly on the luminaires.

Provision for the future connection of a Central Management System will be provided.

Public Lighting circuits will be supplied from dedicated unmetered Public Lighting mini-pillars.

Amenity lighting to courtyard areas will be supplied from a metered landlord connection.

Lighting columns located on shared surfaces will need to be provided with protection from vehicular impact.

Lighting columns located in areas inaccessible to maintenance vehicles will be provided with raise/lower hinged columns.

Public lighting provided to roads and footpaths that will be maintained by DCC's Roads Maintenance Department will be taken-in-charge by DCC's Public Lighting Department.

Amenity lighting to courtyard areas is typically maintained by DCCs Housing Department. In the event that DCC's Housing Department request that DCC's Public Lighting Department maintain lighting to courtyard areas, the lighting installation must comply with DCC's General Specification for Public Lighting Design and Installation in the Dublin City Council Area.

3.10.7 Information and Communication Technology (ICT)

The apartment blocks will receive a main incoming telecommunications line from multiple ISP providers. The incoming telecoms services will terminate in a junction box located in the electrical risers.

Each apartment will be provided with an incoming wireway from each telecommunications provider's junction box. A junction box inside each apartment will provide the desired ISP service to the tenant via an in-apartment LAN.

A communal UHF aerial and satellite system will be provided at roof level of the apartment blocks. The system will connect to each dwelling via a coaxial cabling system. The purpose of this system is to allow each dwelling to receive terrestrial and satellite TV/FM as required.

A landlord telecommunication connection will be provided in each apartment block. Services connected to the landlord LAN will include:

- BMS
- Fire Alarm
- CCTV
- Access Control
- Lifts
- Disabled Refuge System

3.10.8 Fire Detection and Alarm System

A complete Fire Alarm and Detection System (FDAS) will be provided throughout the apartment blocks. The fire alarm system will be in accordance with I.S. 3218:2013+A1:2019 and the Fire Safety Certificate.

The landlord areas will be protected by a fully automatic, analogue addressable, open protocol FDAS comprising of:

- a main fire alarm panel in the main entrance lobby
- Smoke detectors, heat detectors, manual call points and sounders and strobes throughout the landlord areas
- Interfaces with other services (lifts, access control system, mechanical services, etc.)
- Combined sounder beacons outside the main entrance to the blocks
- Heat detectors with sounder beacons inside the entrance door to each unit
- Remote indicator units outside each apartment unit
- Sounder/strobes in each apartment unit

Each apartment will be protected by a fire alarm system consisting of smoke/heat/ionisation/optical detectors/sounders.

FDAS cabling will be Enhanced Fire Resistant PH30 with PH120 in areas as required by IS 3218:2013+A1:2019.

If the building is sprinklered, a dual interface unit will be required to be provided for the residential units. One channel of the interface will connect to the sprinkler water flow alarm switch device (provided as part of the sprinkler installation) and the other channel will connect to the residential smoke detection.

3.10.9 Information and Communication Technology (ICT)

3.10.9.1 Telecom Infrastructure for Service Provider

The overall Telecom infrastructure has been planned and designed to accommodate all the multiple service provider to a single demarcation room / Primary Telecom Distribution room within the facility.

Each tenant shall have the option to select the desired high speed broadband services from the available service provider such as Eir, Virgin media, and SIRO (neutral host service provider).

The infrastructure has been designed in line with Dublin City Council (DCC) MDU internal fibre Distribution guidelines April 2023.

Below is the list of telecom room/Riser allocated:

1. Main Comms room (Primary Telecom Service Provider Distribution cabinet)– Located in Ground level – West block.
2. Electrical / Comms Riser (Secondary distribution Fibre Hub) – For each Building block (North, West, South and East

2no. of 42U Cabinet 800x800 will be provided in Main Comms room.

Below is the telecom distribution strategy which has been considered in the design.

1. Incomer fibre cable from telecom broadband service provider will be terminated to defined section for each service provider (Eir, Virgin media and SIRO) of primary telecom distribution rack located on Main Comms room.
2. Multicore single mode OS2 Fiber outdoor rated will be connected from primary distribution cabinet to secondary fibre distribution hub.
3. Each apartment shall have wall mounted fibre dual outlet (located at the TV side of living room) connected to secondary fibre distribution hub via 2 core single mode OS2 outdoor rated fibre cable through micro duct.
4. Cat6A Data outlet shall be provided at the Master bedroom (only) TV side connected back to another Cat6A data outlet at the TV location of Living room. This is to enable the connectivity from ONT device supplied by the telecom service provided.

Current primary telecom distribution room, distribution strategy, Rack arrangement included in Appendix C to be discussed and agreed between DCC and telecom service provider (Eir, Virgin media and as included

Type of Fiber patch panel (LC/APC), Type of fibre cable / core etc indicated on the rack arrangement shall be discussed and agreed with telecom service operator.

All the active equipment such as ONT, GPON device etc shall be provided by telecom service provided for apartment and primary distribution cabinet.

Further workshop meeting to be arranged to agree on telecom distribution strategy with DCC during the design development.

3.10.9.2 ICT system

Currently there is no requirement from DCC to have any data outlet and Wi-Fi for Communal space, and MEP plant equipment space.

It is anticipated that all the MEP equipment system works as standalone.

3.10.10 Satellite TV System

Cabling infrastructure for Satellite TV shall be considered to cater the TV services from provider such as Saorview.

A central dish antenna shall be provided at the roof with fiber to coaxial converter. Splitter / Distribution amplifiers shall be house in the electrical / comms riser feeding to each apartment.

Each apartment shall be provided with wall mounted coaxial outlet for below rooms as list:

1. Living room – TV side
2. Master Bedroom – TV

   Community centre

The equipment and installation shall meet the European standards.

3.10.11 Security Systems

3.10.11.1 CCTV System

IP-PoE based CCTV system shall be provided for the facility to provide the surveillance on all the main entrance and exit leading the building.

It shall comprise of the below minimum requirements:

1. 2MP Indoor Fixed colour recessed dome camera
2. 4MP Outdoor Fixed bullet type cameras
3. Network video recorder
4. Desktop monitor for live / play back

All proposed system and components shall be CE certified with FIPS level and be grade 3 (medium to high risk) in accordance with I.S. EN 50132-1.

All cameras shall have varifocal lens, WDR<120db , built in IR<40m, H265 and ONVIF, IP65 rated (for external cameras).

The camera shall be provided at the below location, subjected to DCC final requirement.

1. Main entrances/exits to each apartment blocks.
2. Entry / Pedestal gates
3. Community centre
4. Ground level Lift Lobbies
5. Central courtyard space

Recording storage for all cameras shall be based on continuous recording, 15fps, minimum of 2MP resolution for 31 days with 25% spare capacity.

All CCTV control equipment will be located in a comms room with secured access on the ground floor.

Rack mountable UPS with 30 minutes backup without exceeding more than 75% of total consumed load shall be considered in the cabinet.

3.10.11.2 Access Control System

Access control system shall be provided to restrict the entry to the facility.

The ACS will comprise of an integrated, scalable, electronic proximity card system with split level access control.

Each reader shall have green/red/ blue color lit to notify if the card access is permitted or restricted. It shall support RFID, Bluetooth LE and NFC. IP66 rated shall be used for all external areas and shall have CE, FC, UKCA certification.

Key fob Mifare type shall be provided based on the number of tenants.

The door controller shall be IP Based built in battery backup of minimum 4 hours on alarm mode and 24 hours standby mode and have interface with Fire alarm and CCTV system.

Contactless exit button with emergency door break glass (green) shall be provided on the secured side of door.

Access control shall be provided for the below listed areas, subjected to DCC final requirement:

a. Main entrances/exits to each apartment blocks.

b. Pedestal / Entry gates

c. Community Centre

The security system will be fully integrated and shall be on open protocol.

Figure 4: Access control exit buttons

3.10.12 Intruder Alarm System

All apartments will be pre-wired with standard security wiring, in accordance with IS 199 to allow for easy installation of future intruder alarm systems (IAS) by occupants.

Wiring will include provision for future window contacts, front door contact, entrance hall PIR, balcony door contact and wall mounted siren.

Wiring will be taken back to an area located adjacent to the entrance door of each apartment. This will be confirmed by DCC during the next stage.

Provision of power supply at high level to be provided for each intruder alarm installation, location to be agreed with DCC.

3.10.13 Intercom

An audio-visual intercom system will be provided to main entrance and at each apartment block. The audio-visual intercom system will comprise of:

- External vandal-resistant, flush-mounted, stainless steel entry panel with camera shall be provided at all Main Entrance leading to the apartment block.
- an internal hands-free audio-visual unit within the lobby of each apartment or Mobile application (Subjected to DCC final requirement)

An access control interface will be provided to allow remote operation of the main entrance doors to the apartment complex.

3.10.14 Disabled Refuge System

A Disabled Refuge System (DRS) will be provided to each apartment block.

The DRS will comprise of:

- a master control panel located in the main entrance lobby.
- call points located within disabled refuge areas.
- DRS cabling will be Enhanced Fire Resistant PH120.

Figure 5: Disabled refuge panel and call point

3.10.15 Nurse Call System

- A nurse call system may be required to each apartment. This will be confirmed by DCC during the next stage.

3.10.16 Earthing and Bonding

A complete earthing and bonding system will be installed in compliance with I.S. 10101 with the of the National Rules for Electrical Installations.

The entire installation will be properly and effectively earthed and bonded, with protective earthing and main and supplementary equipotential bonding provided throughout.

Earthing for the apartments will be derived from a Main Earthing Terminal (MET) provided at the main distribution board.

Within the apartments, the earth provided by the incoming supply will be connected to the earth bar in the consumer unit and will be the main earthing terminal for the dwelling. The outgoing CPC's to the sub-circuits will be connected to the earth bar and the exposed services, pipework etc. will be bonded to the earth bar.

3.10.17 Lightning and Surge Protection

A lightning protection system in accordance with IS EN 62305 will be provided for the protection of the apartment blocks and contents in the event of a lightning strike.

A risk assessment will be undertaken at detailed design stage to determine the classification of lightning protection system required.

3.10.18 Photovoltaic Generation

The development will consider the incorporation of on-site generation in the form of photovoltaic panels. PV CTs for monitoring of the future PV supply, to be added into meter section of the Main Switch Board.

A shunt trip for the PV at the ground floor and the roof to be allowed for in the Main Switch Board. Also to allow for a fireman shunt trip linked to the main board for emergencies.

The requirement for PV generation will be determined by the results of the finalised DEAP analysis.

3.10.19 Vertical Transportation Systems

Residential lifts will be provided to all apartment blocks.

Block B&D will be served with a Part M compliant lift with minimum car dimension of 1100 (W) x 1400 (D)

Block A&B will be served with a UD design complaint lift with minimum car dimension of 2100 (W) x 1600 (D).

The lifts will receive a three-phase power supply from the landlord distribution board.

A Fire Detection and Alarm System interface unit will be provided to each lift.

3.10.20 Electric Vehicle Charging Points

No Provision has been made in Part 8 plan.

3.10.21 Wiring of Mechanical Plant

The cabling and connecting of items of mechanical plant and automatic controls shall be included under the scope of the Electrical Installations.

Automatic controls shall be provided by an established and recognised supplier, capable of maintaining the system on a regular basis.

3.11 Electrical Services – Dwellings

3.11.1 Residential Metering

Metering for the apartments will be provided by a whole current meter located in the main distribution board.

Metering for the houses will be provided by a whole current meter located in an electrical meter cabinet located on the front of the building.

During the next stage of design consideration will be given to how the electricity consumption is indicated within the dwellings: either via a smart meter communicating with the ESB meter or via separate current transformers incorporated in the apartment consumer unit.

This metering will be owned and managed by the ESB and is outside the scope of the landlord.

3.11.2 Electrical Distribution

A consumer unit will be provided in the entrance hall of each dwelling.

Each consumer unit will be fitted with a surge protection device in accordance with I.S. 10101 National Rules for Electrical Installations.

Electrical circuits in dwellings will be protected with AFDD RCBOs in accordance with I.S. 10101 National Rules for Electrical Installations.

3.11.3 Wiring Systems

Wiring will generally be LSZH 3-core flat cables throughout the dwellings. Wiring will, as far as reasonably possible, be concealed. However, in situations where this is not possible, wiring will be surface mounted in PVC conduit.

3.11.4 Lighting

Lighting within the apartments will generally comprise of ceiling mounted pendant, and recessed fitting, and wall mounted fittings, to accept a low wattage or LED bulb.

Kitchens will be fitted with a proprietary ceiling mounted fitting to receive low energy spotlights.

Bathrooms, WCs and wet area lights will be provided with suitable ceiling mounted non-pendant types to receive LED or low wattage bulbs.

Private balconies will be provided with an IP65 Ceiling mounted lights.

Lighting will be controlled via a single rocker type switch appropriately located just inside the entrance to the room (or outside in the case of a bathroom/WC).

3.11.5 General Services

Power will be distributed within each dwelling to general-purpose socket outlets, fused spurs and isolators throughout.

General 230V switched twin socket outlets will be provided at low level and above kitchen counters for appliances to be plugged in.

Socket outlets that are not readily accessible, e.g., behind or under kitchen furniture or stationary appliances, will be provided with double pole isolating switches rated 20A located in accessible positions, e.g., on the wall above the kitchen worktop. These switches will be labelled to indicate the appliance they serve.

The table below indicates the quantity and location of socket outlets to be provided in each room depending on the number of bedrooms in the dwelling.

Dwelling Type	Kitchen Worktop	Kitchen Low Level	Lounge	Dining Room		Double Bedroom	Single Bedroom
1 Bed	4	4	4	2		6	4
2 Bed	6	4	4	4		6	4
3 Bed	6	6	6	4		6	4

In addition to the quantities given in the above table, twin switched socket outlets will be provided.

A dedicated power circuit will be provided to the cooker appliance within each apartment. The kitchen will be provided with a cooker outlet and a double pole isolating switch rated 45A.

3.11.6 Fire detection and Alarm System

Each dwelling will be protected by an LD2 fire alarm system consisting of mains powered combined smoke / heat detectors and sounders complete with battery backup installed in an approved manner as per IS 3218.

A heat detector and sounder connected to the landlord fire alarm system will be installed inside the final exit from each apartment. A remote lamp unit from this detector will be installed outside the final exit door of each apartment.

In order to comply with minimum dBA levels at bed-heads, sounders connected to the landlord fire alarm system will be installed in each bedroom and the living room.

A combined sounder/beacon connected to the landlord fire alarm system will be installed on each apartment's private balcony.

Figure 6: Detectors and sounder

FDAS cabling will be Enhanced Fire Resistant PH30 with PH120 in areas as required by IS 3218.

All fire alarm devices on the LD2 system in a dwelling will be interlinked so as to ensure the activation of one device triggers the operation of all sounders.

Sounders will achieve a minimum of 75db(A) at the bedhead.

3.11.7 Mechanical Power Supplies

13A fused connection units and 20A double pole isolators will be provided in the utility cupboard for connecting the mechanical plant.

3.11.8 Information and Communication Technology

Each dwelling will be provided with a TV/Internet point in the living room.

Each apartment will be provided with a dedicated containment route per telecommunications provider between the electrical riser and a junction box located within the apartment to facilitate future tenant connections.

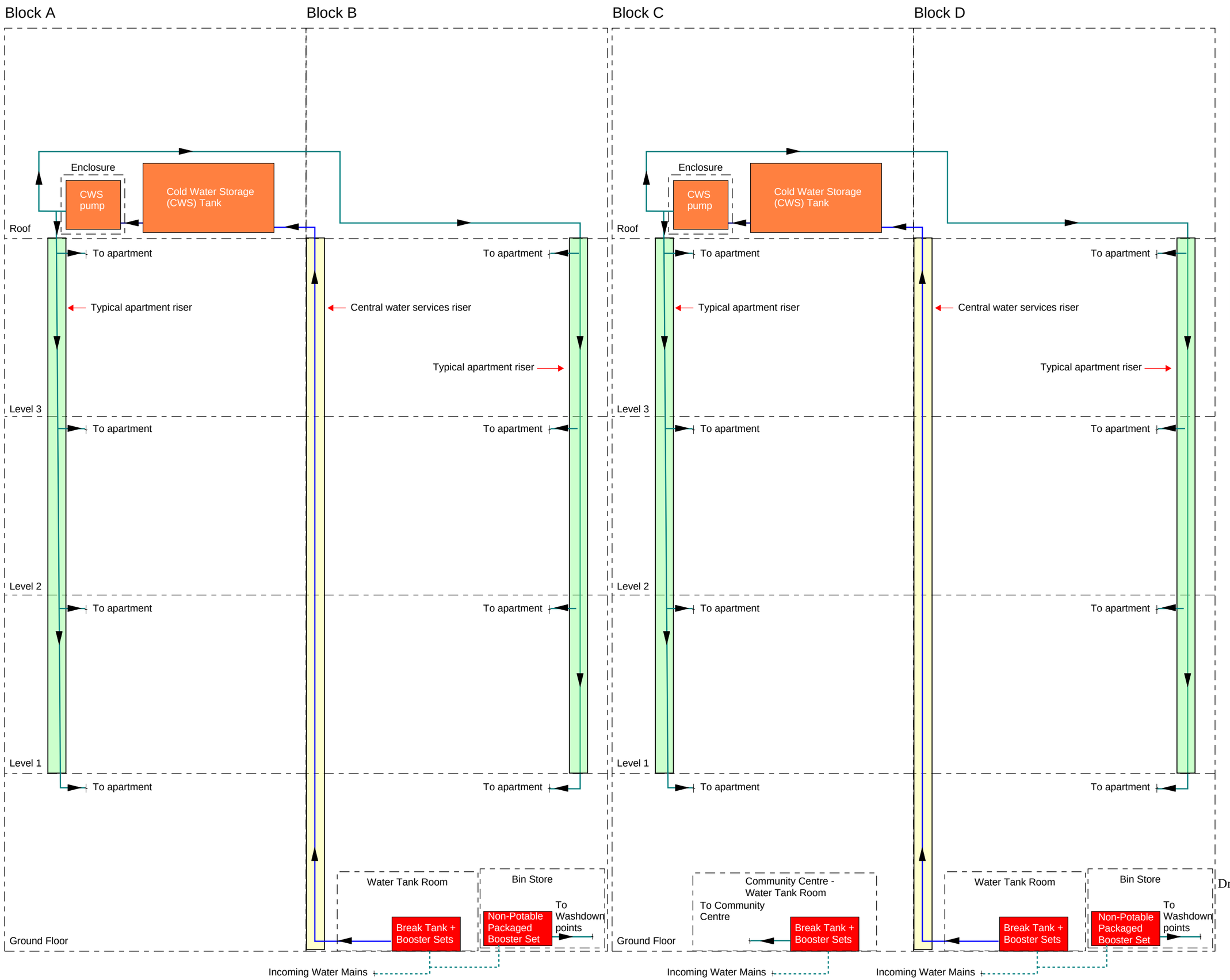
3.11.9 Earthing

Within the apartments, the earth provided by the main distribution board will be connected to the earth bar in the consumer unit and will be the Main Earthing Terminal (MET) for the apartment. The outgoing CPC's to the sub-circuits will be connected to the earth bar and the exposed services, pipework etc. will be bonded to the earth bar.

Within the houses, the earth is provided by an earth electrode driven into the ground in front of the house. The earth electrode is connected to the earth bar in the consumer unit and will be the Main Earthing Terminal (MET) for the house. The outgoing CPC's to the sub-circuits will be connected to the earth bar and the exposed services, pipework etc. will be bonded to the earth ba

Appendix A

Mechanical Sketches



Water Services Strategy

- The strategy is to have the incoming water main connecting to a break tank, from which the mains water is pumped to the cold-water storage tank at roof level.

- The cold-water tanks at roof provide cold-water supply to all apartments to serves wash hand basins, sinks, baths and WC's.

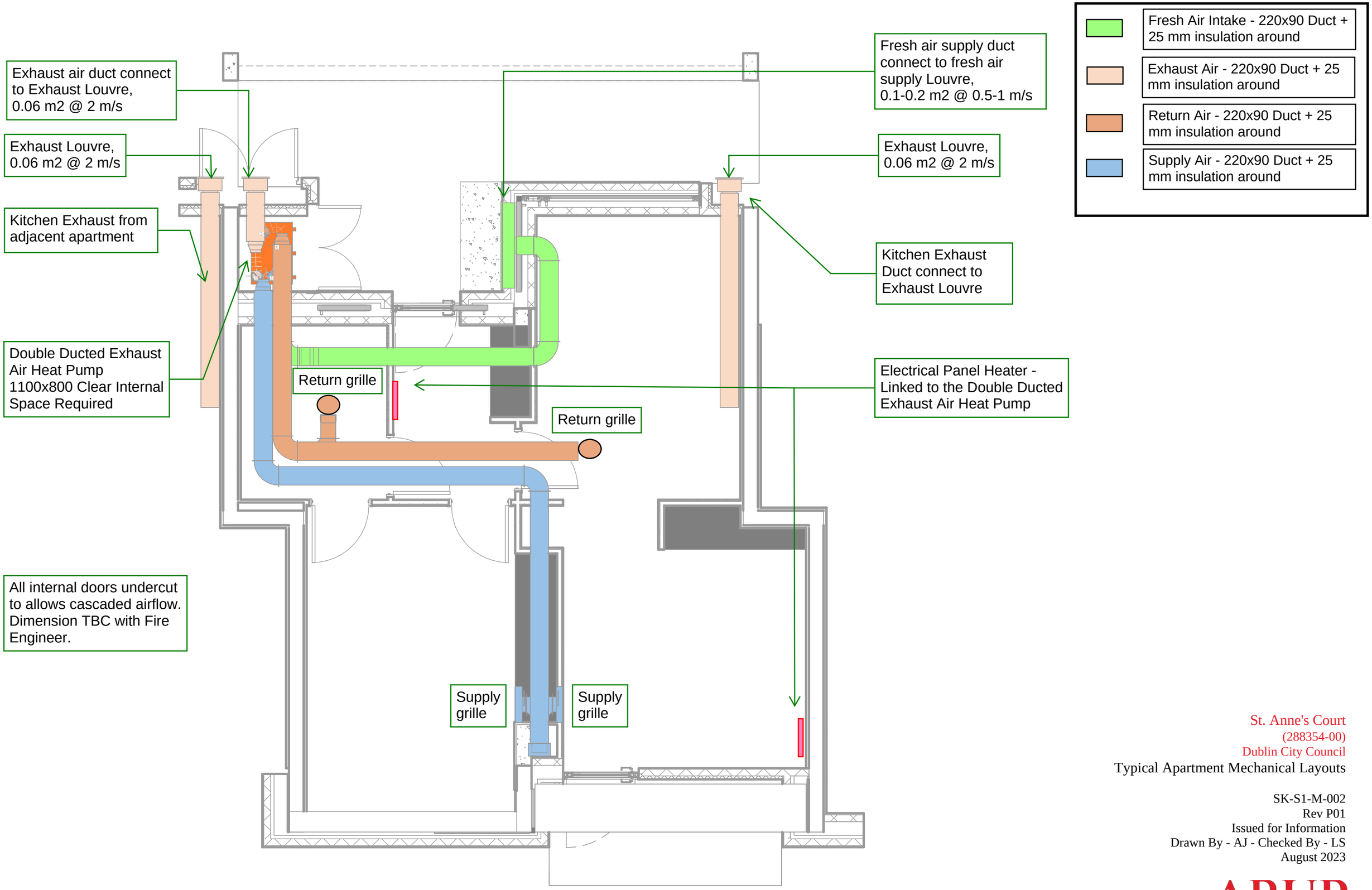
- Water metering is provided at bulk meter only.

- The community centre is served by a separate break tank at the water tank room.

St. Anne's Court
(288354-00)
Dublin City Council
Water Services Schematics

SK-S1-M-001
Rev P01
Issued for Information
Drawn By - AJ - Checked By - LS
August 2023

ARUP

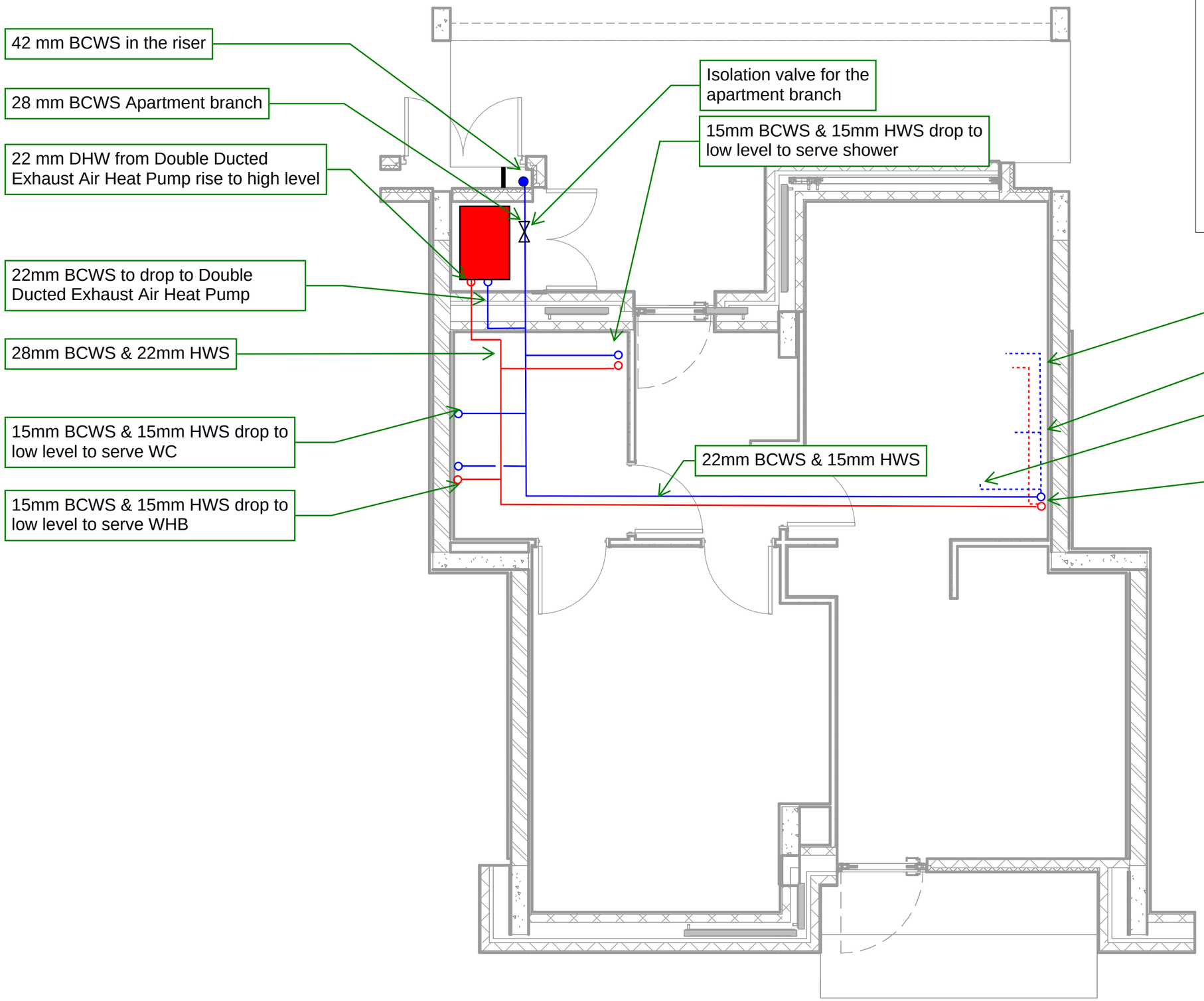


Typical Apartment - Ventilation Layout - Scale 1:50

St. Anne's Court
(288354-00)
Dublin City Council
Typical Apartment Mechanical Layouts

SK-S1-M-002
Rev P01
Issued for Information
Drawn By - AJ - Checked By - LS
August 2023

ARUP



Pipes at high level

Pipes at Low level

BCWS — Boosted Cold water supply

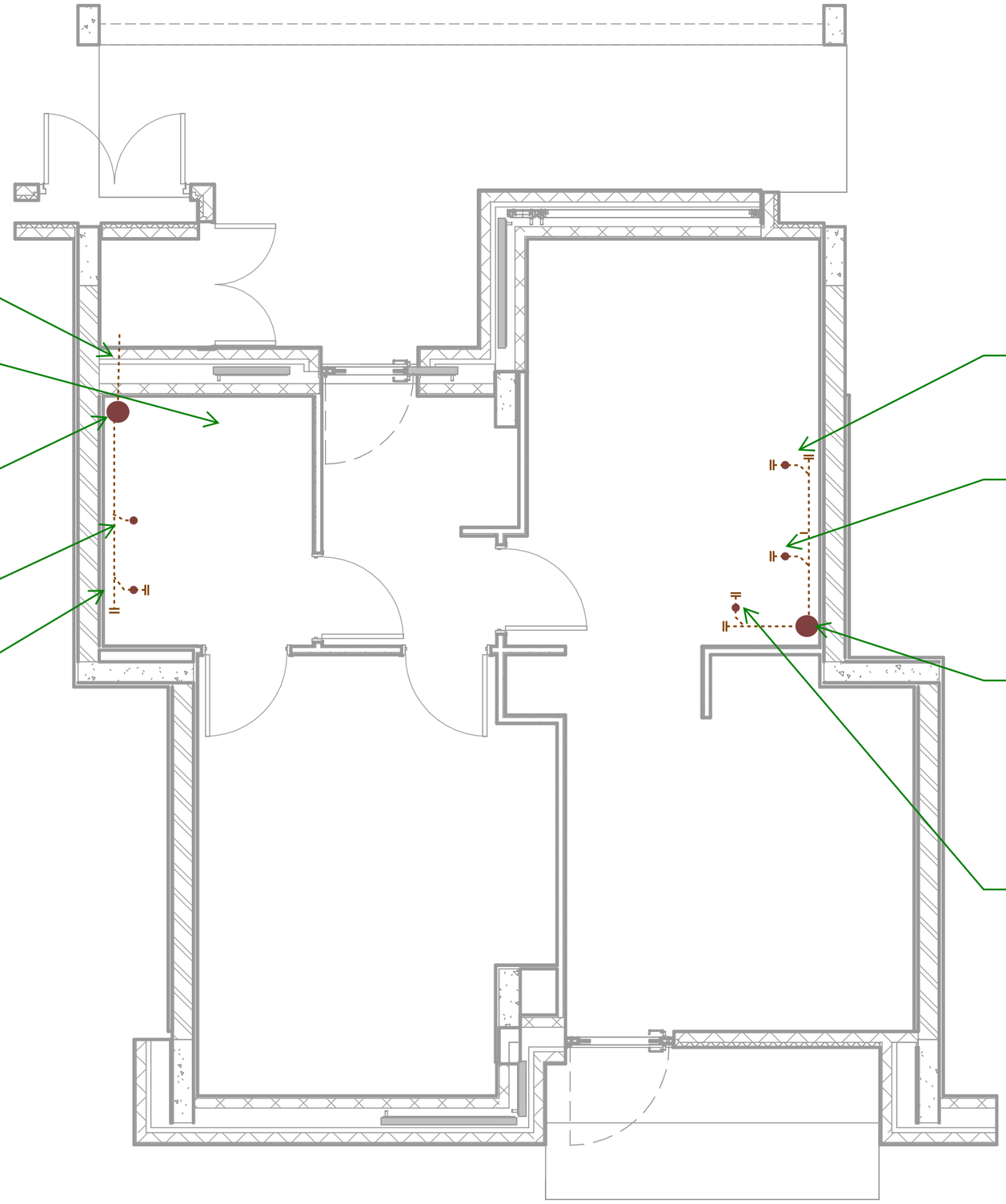
HWS — Hot water supply

St. Anne's Court
(288354-00)
Dublin City Council
Typical Apartment Mechanical Layouts

SK-S1-M-002
Rev P01
Issued for Information
Drawn By - AJ - Checked By - LS
August 2023

ARUP

Typical Apartment - Water Services Layout - Scale 1:50



St. Anne's Court
(288354-00)
Dublin City Council
Typical Apartment Mechanical Layouts

SK-S1-M-002
Rev P01
Issued for Information
Drawn By - AJ - Checked By - LS
August 2023

ARUP

Typical Apartment - Drainage Layout - Scale 1:50

Level 0

St. Anne's Court
(288354-00)
Dublin City Council
Mechanical Plant/Distribution

SK-S1-M-003
Rev P01
Issued for Information
Drawn By - AJ
Checked By - LS
August 2023

ARUP

Typical Level - Level 1-3

67mm Cold water main to roof mounted cold water storage tank through riser

Dedicated Mechanical Central Riser to Roof.
Access to be provided at each level

Refer to detail A for typical apartment set out.

Refer to typical apartment mechanical services layouts for apartment fit out services

Block D

Block A

Block C

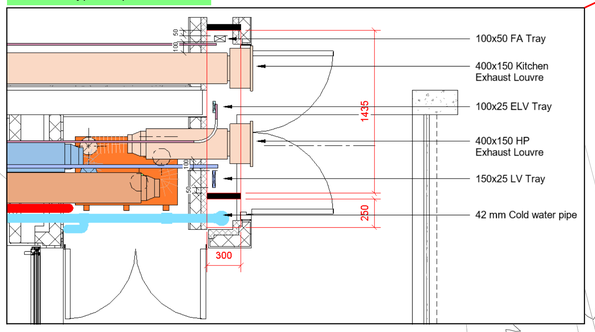
Block B

67mm Cold water main to roof mounted cold water storage tank through riser

Dedicated Mechanical Central Riser to Roof.
Access to be provided at each level

Refrigeration Riser for the community centre

Detail A - Typical Apartment Riser



St. Anne's Court
(288354-00)
Dublin City Council
Mechanical Plant/Distribution

SK-S1-M-003
Rev P01
Issued for Information
Drawn By - AJ
Checked By - LS
August 2023

ARUP

Roof Level

67mm Cold water main to roof mounted cold water storage tank through riser

5mx4mx1m (h) Cold water storage tank - External Rated

Cold water booster set inside an external rated enclosure. Max 1.5 m height

67mm Cold water at roof level to serve apartments

42mm Cold water drop through riser to serve apartments below

All risers should be provided with adequate weathering at roof level

All services at roof level to be provided with sufficient access

67mm Cold water at roof level to serve apartments

Cold water booster set inside an external rated enclosure. Max 1.5 m height

5mx4mx1m (h) Cold water storage tank - External Rated

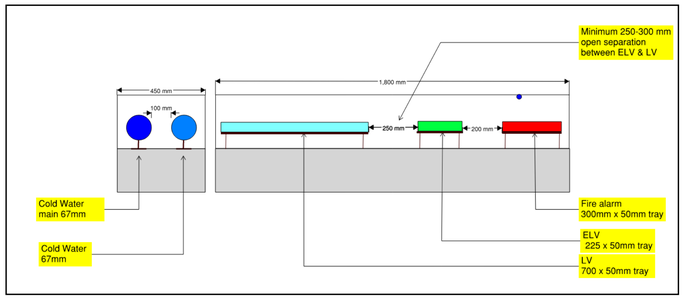
42mm Cold water drop through riser to serve apartments below

67mm Cold water main to roof mounted cold water storage tank through riser

Refrigeration Riser for the community centre

Indicative Location for the DX outdoor units serving community centre and comms room. Dimensions :1100x500x900(h)

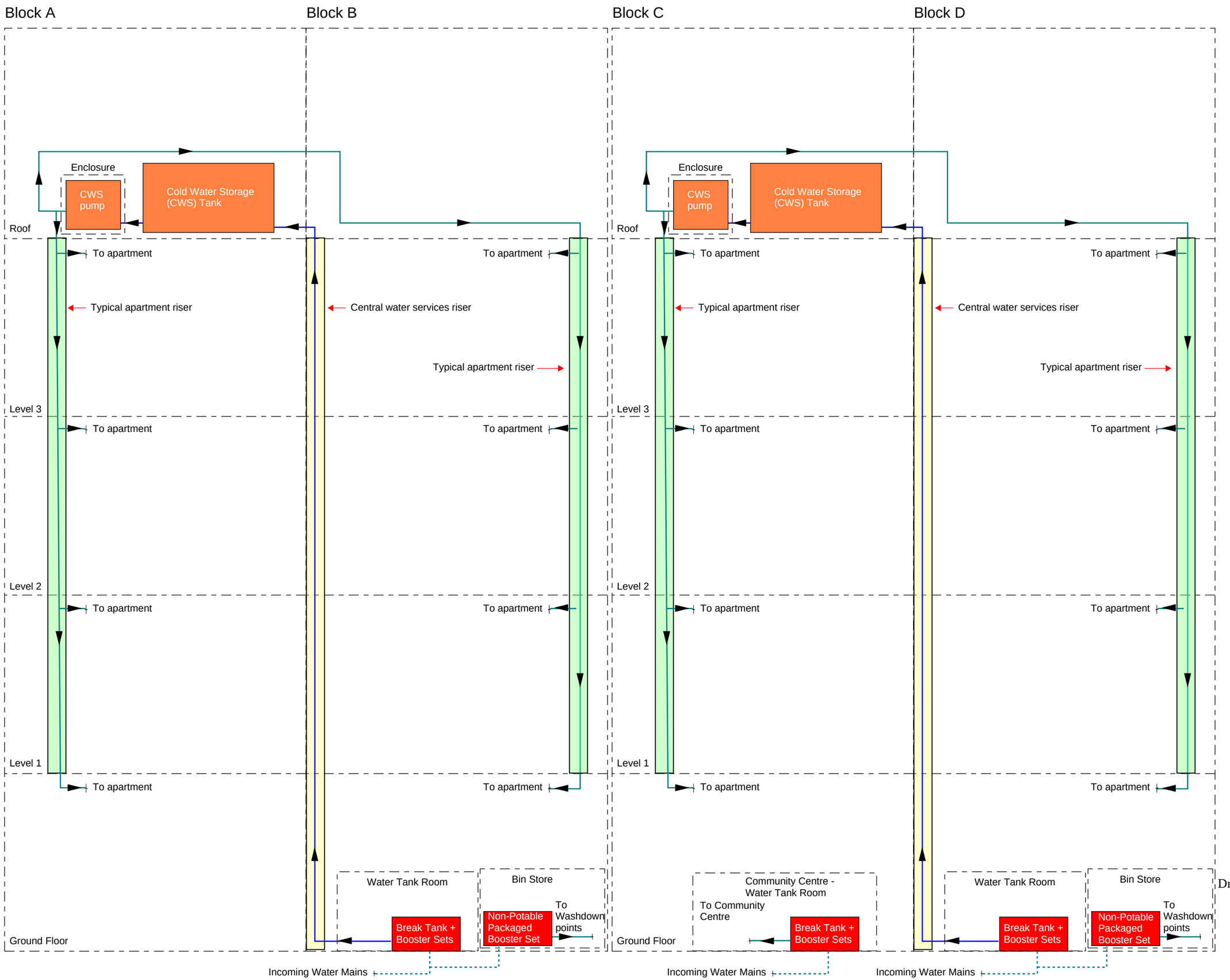
Section AA - Roof M&E Distribution



St. Anne's Court
(288354-00)
Dublin City Council
Mechanical Plant/Distribution

SK-S1-M-003
Rev P01
Issued for Information
Drawn By - AJ
Checked By - LS
August 2023

ARUP



Water Services Strategy

- The strategy is to have the incoming water main connecting to a break tank, from which the mains water is pumped to the cold-water storage tank at roof level.

- The cold-water tanks at roof provide cold-water supply to all apartments to serves wash hand basins, sinks, baths and WC's.

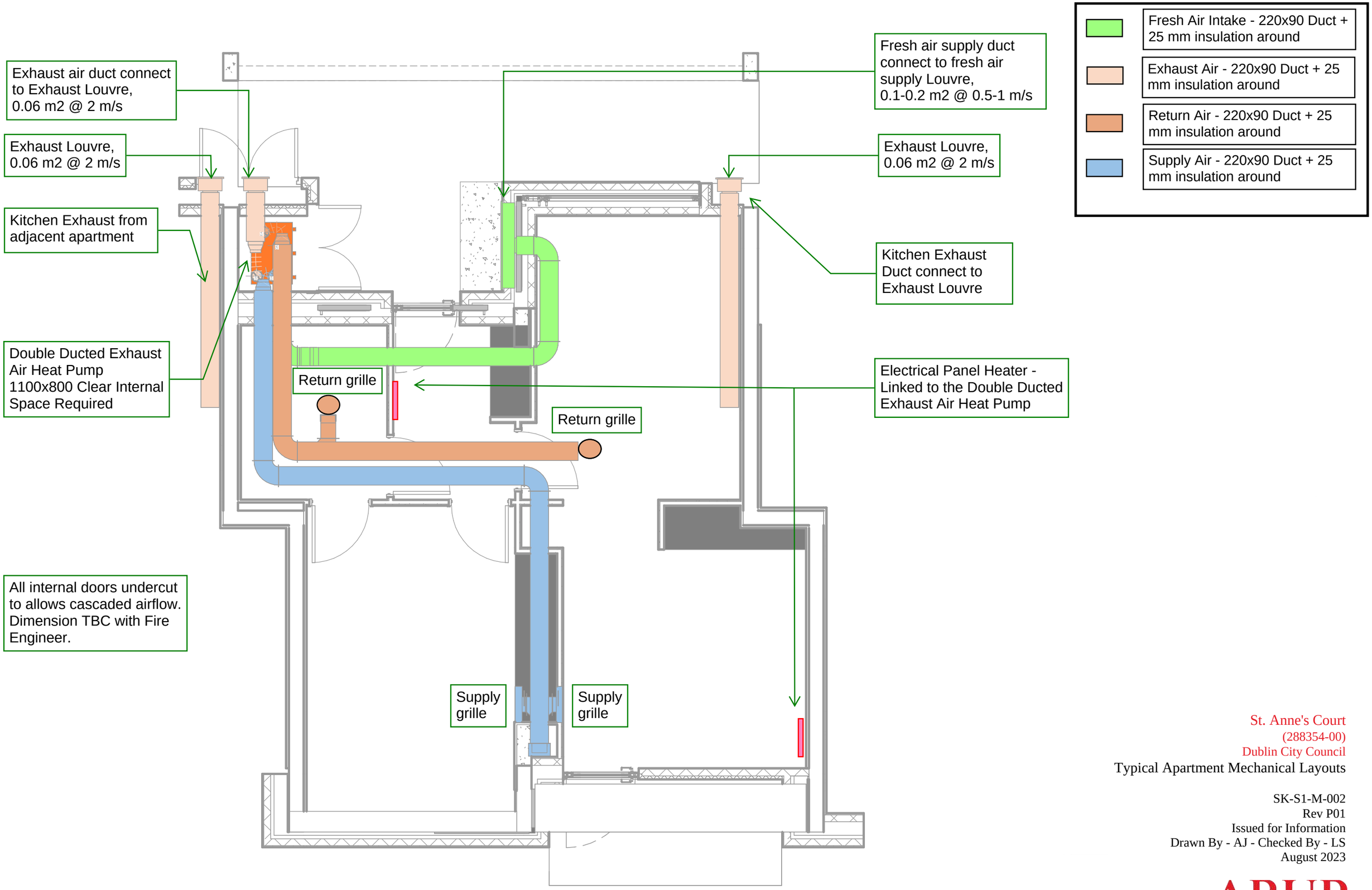
- Water metering is provided at bulk meter only.

- The community centre is served by a separate break tank at the water tank room.

St. Anne's Court
(288354-00)
Dublin City Council
Water Services Schematics

SK-S1-M-001
Rev P01
Issued for Information
Drawn By - AJ - Checked By - LS
August 2023

ARUP

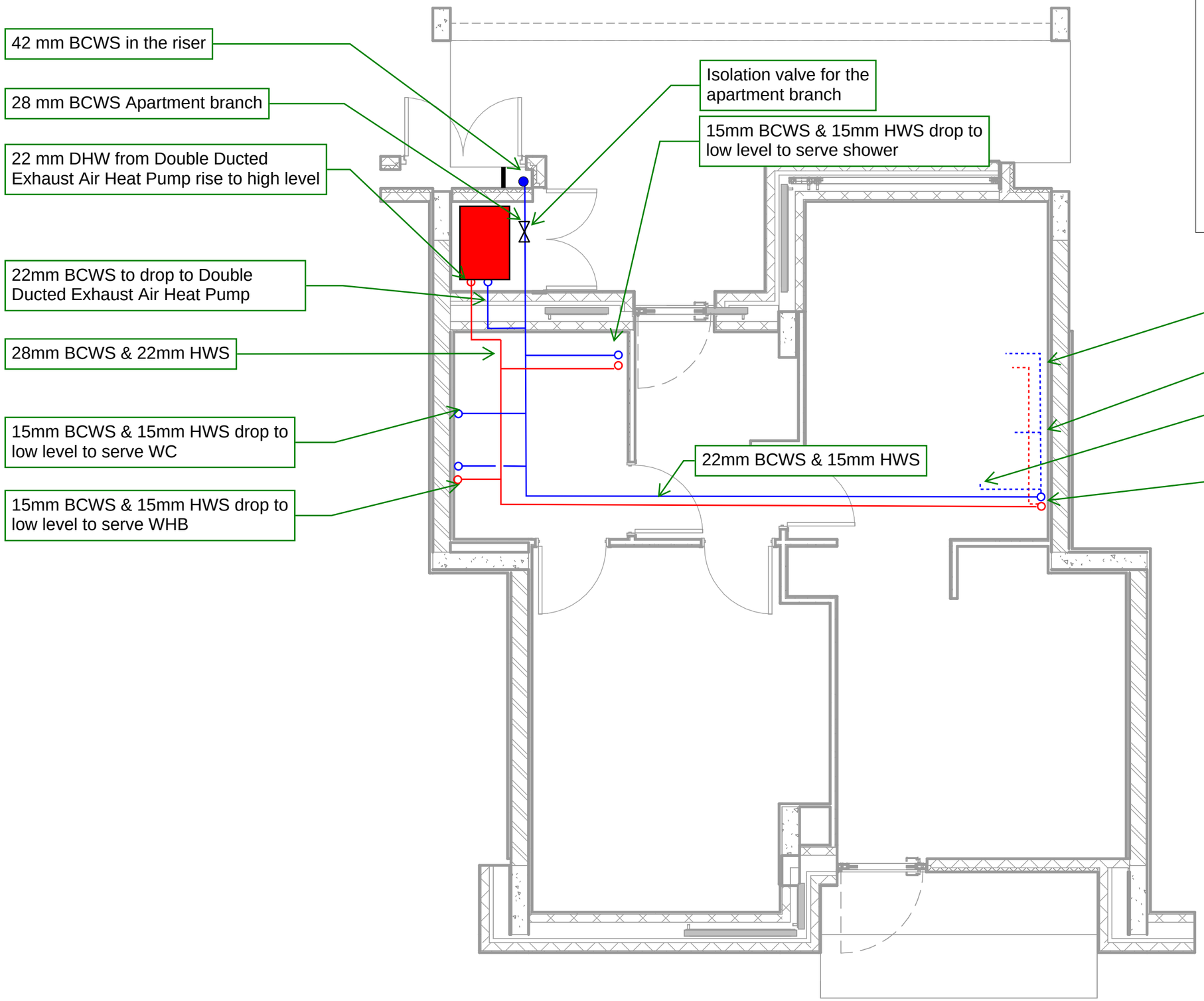


Typical Apartment - Ventilation Layout - Scale 1:50

St. Anne's Court
(288354-00)
Dublin City Council
Typical Apartment Mechanical Layouts

SK-S1-M-002
Rev P01
Issued for Information
Drawn By - AJ - Checked By - LS
August 2023

ARUP



Pipes at high level

Pipes at Low level

BCWS — Boosted Cold water supply

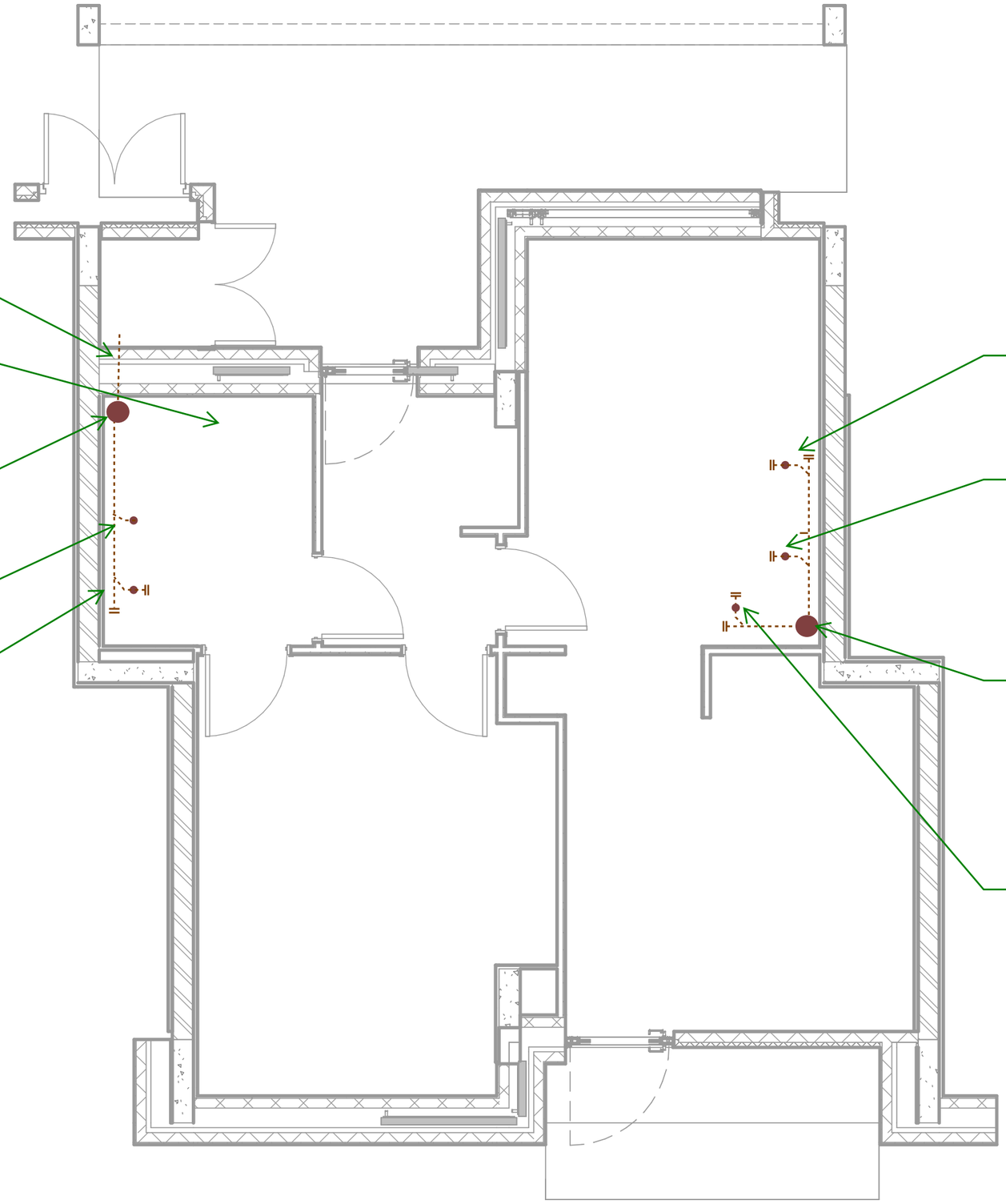
HWS — Hot water supply

St. Anne's Court
(288354-00)
Dublin City Council
Typical Apartment Mechanical Layouts

SK-S1-M-002
Rev P01
Issued for Information
Drawn By - AJ - Checked By - LS
August 2023

ARUP

Typical Apartment - Water Services Layout - Scale 1:50



St. Anne's Court
(288354-00)
Dublin City Council
Typical Apartment Mechanical Layouts

SK-S1-M-002
Rev P01
Issued for Information
Drawn By - AJ - Checked By - LS
August 2023

ARUP

Typical Apartment - Drainage Layout - Scale 1:50

Level 0

St. Anne's Court
(288354-00)
Dublin City Council
Mechanical Plant/Distribution

SK-S1-M-003
Rev P01
Issued for Information
Drawn By - AJ
Checked By - LS
August 2023

ARUP

Typical Level - Level 1-3

67mm Cold water main to roof mounted cold water storage tank through riser

Dedicated Mechanical Central Riser to Roof.
Access to be provided at each level

Refer to detail A for typical apartment set out.

Refer to typical apartment mechanical services layouts for apartment fit out services

Block D

Block A

Block C

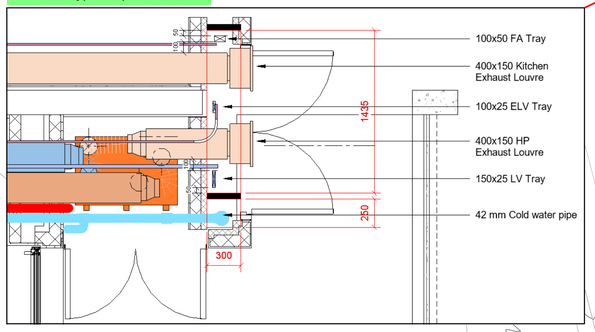
Block B

67mm Cold water main to roof mounted cold water storage tank through riser

Dedicated Mechanical Central Riser to Roof.
Access to be provided at each level

Refrigeration Riser for the community centre

Detail A - Typical Apartment Riser



St. Anne's Court
(288354-00)
Dublin City Council
Mechanical Plant/Distribution

SK-S1-M-003
Rev P01
Issued for Information
Drawn By - AJ
Checked By - LS
August 2023

ARUP

Roof Level

67mm Cold water main to roof mounted cold water storage tank through riser

5mx4mx1m (h) Cold water storage tank - External Rated

Cold water booster set inside an external rated enclosure. Max 1.5 m height

67mm Cold water at roof level to serve apartments

42mm Cold water drop through riser to serve apartments below

All risers should be provided with adequate weathering at roof level

All services at roof level to be provided with sufficient access

67mm Cold water at roof level to serve apartments

Cold water booster set inside an external rated enclosure. Max 1.5 m height

5mx4mx1m (h) Cold water storage tank - External Rated

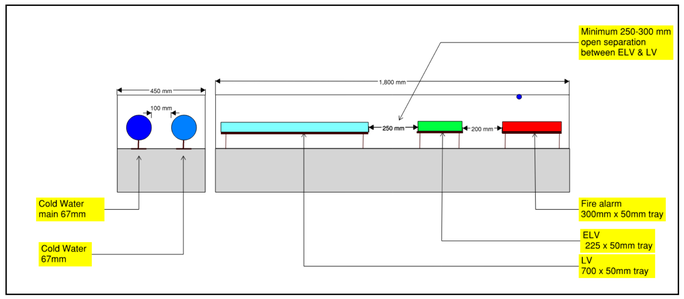
42mm Cold water drop through riser to serve apartments below

67mm Cold water main to roof mounted cold water storage tank through riser

Refrigeration Riser for the community centre

Indicative Location for the DX outdoor units serving community centre and comms room. Dimensions :1100x500x900(h)

Section AA - Roof M&E Distribution



St. Anne's Court
(288354-00)
Dublin City Council
Mechanical Plant/Distribution

SK-S1-M-003
Rev P01
Issued for Information
Drawn By - AJ
Checked By - LS
August 2023

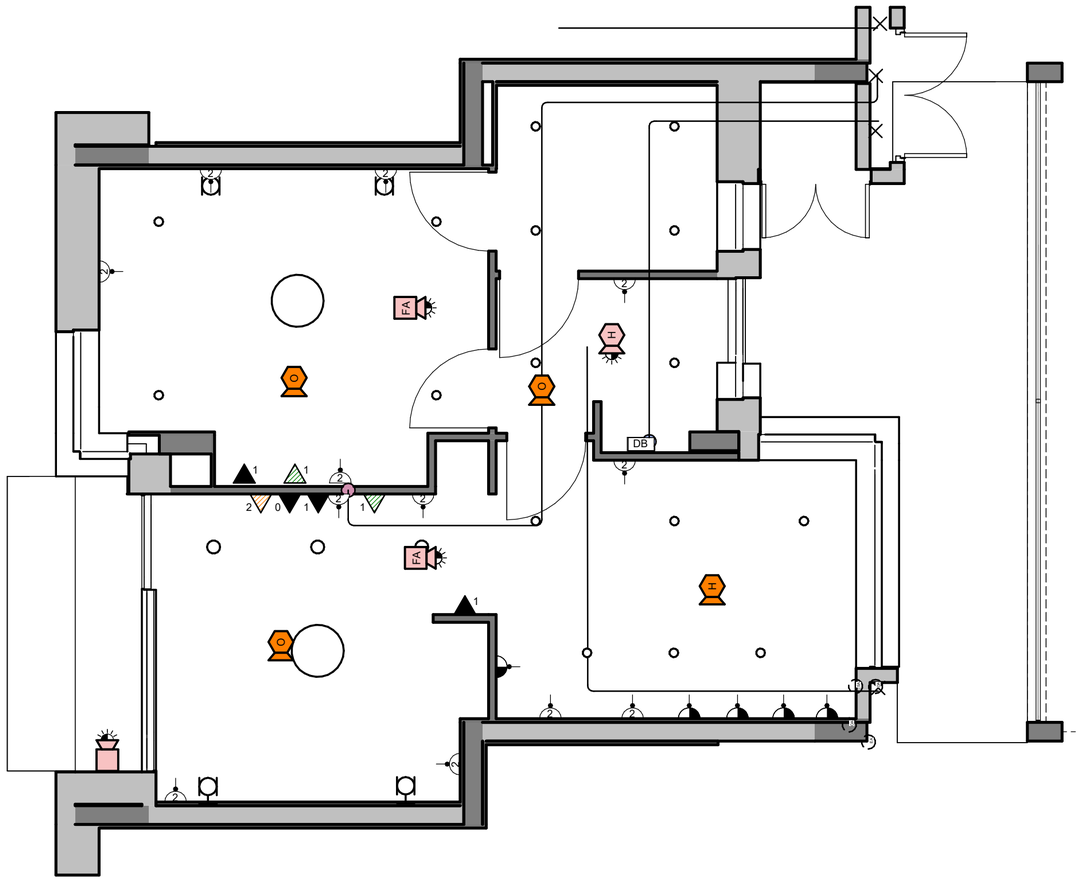
ARUP

Appendix B

Electrical Sketches

A2

03/08/2023 15:06:07



SCALE:1:50

0m 0.5 1 2.5 5

N

ARUP

50 Ringsend Road Dublin 4, D04 T680, Ireland Tel +353 1 2334455
www.arup.com

Issue	Date	August 2023

Client
Dublin City Council

Project Title
St. Anne's Court

Drawing Title
Combined Electrical Services

Scale at A2: 1 : 50

Role: Electrical

Status:

Arup Job No: **288354-00**

Rev: **P00**

ID: **SAC-ARUP-ZZ-ZZ-DR-XX**

Do not scale

© Arup

A2

04/08/2023 10:00:37

Fire Alarm

Tenant Fire Alarm Detector with integral sounder and strobe, 'X' denotes type

Detector types:-
O = Optical
H = Heat
I = Ionisation
D = Dual technology
RT = Rate of rise of Temp
C = Carbon monoxide
M1 = Combined heat / smoke detector
M2 = Multi Criteria Type 2
A = Air Sampling Point
F = Flame

Tenant Fire Alarm Voice Alarm Sounder

Tenant Fire Alarm Voice Alarm Sounder with integral flashing beacon

Landlord Fire Alarm Detector with integral sounder and strobe, 'X' denotes type

Detector types:-
O = Optical
H = Heat
I = Ionisation
D = Dual technology
RT = Rate of rise of Temp
C = Carbon monoxide
M1 = Combined heat / smoke detector
M2 = Multi Criteria Type 2
A = Air Sampling Point
F = Flame

Landlord Fire Alarm Voice Alarm Sounder

Landlord Fire Alarm Voice Alarm Sounder with integral flashing beacon

Communication

Data Outlet, 'N' denotes number of outlets

Coaxial Data Outlet, 'N' denotes number of outlets

Fiber Data Outlet, 'N' denotes number of outlets

Containment Colour Coding

Fire Alarm Tray

Lighting Tray

Small Power Tray

Data Tray

Small Power

Double Unswitched Socket Outlet

Fused Connection Unit Switched

DB Distribution Board

Lighting

Circular luminaire 'X' denotes type/size

Rectangular luminaire, Wall Mounted, 'X' denotes type/size

Circular Pendant Lumianre

SCALE:1:50
0m 0.5 1 2.5 5

N

Issue	Date	August 2023

ARUP

50 Ringsend Road Dublin 4, D04 T680, Ireland Tel +353 1 2334455
www.arup.com

Client
Dublin City Council

Project Title
St. Anne's Court

Drawing Title
Electrical Services
Symbols Legend

Scale at A2 1 : 100

Role Electrical

Status

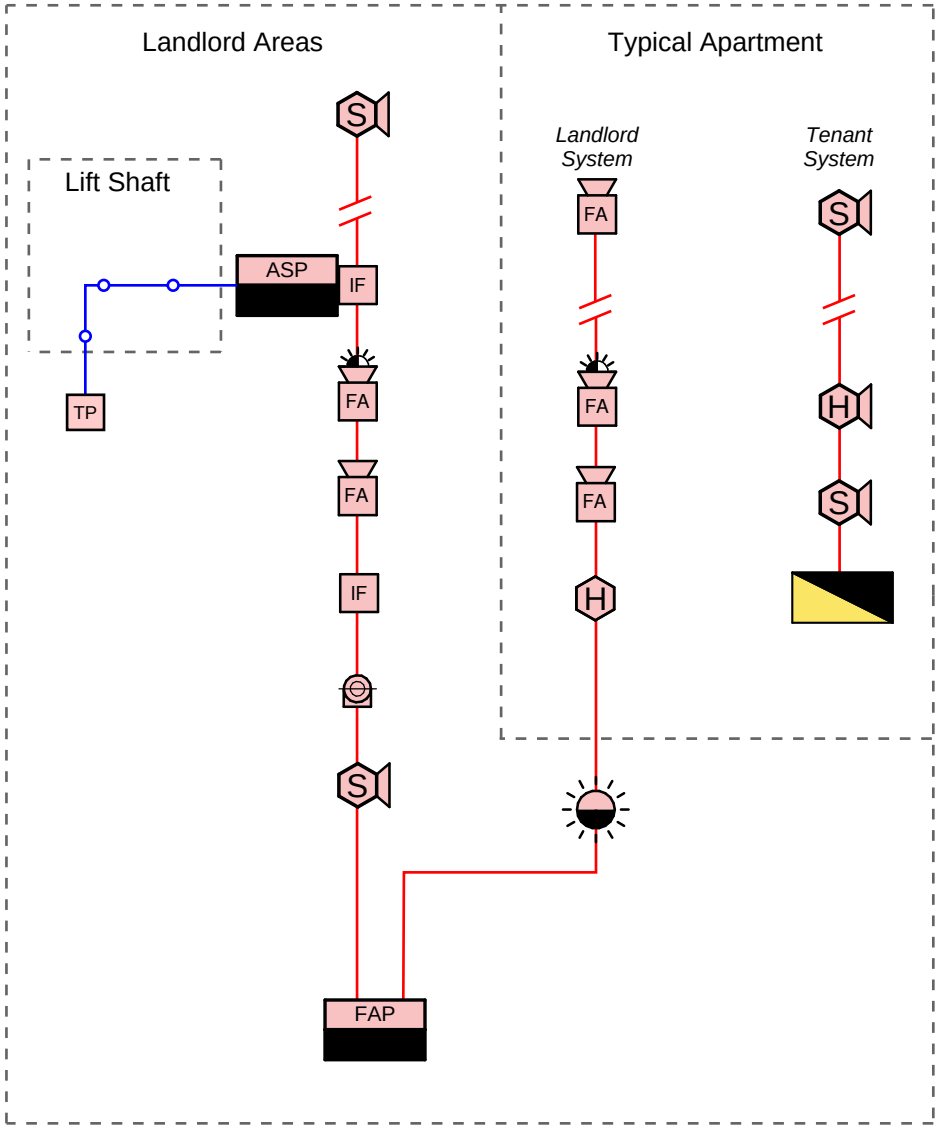
Arup Job No **288354-00**

Rev **P00**

ID **SAC-ARUP-ZZ-ZZ-DR-YY**

Do not scale

© Arup



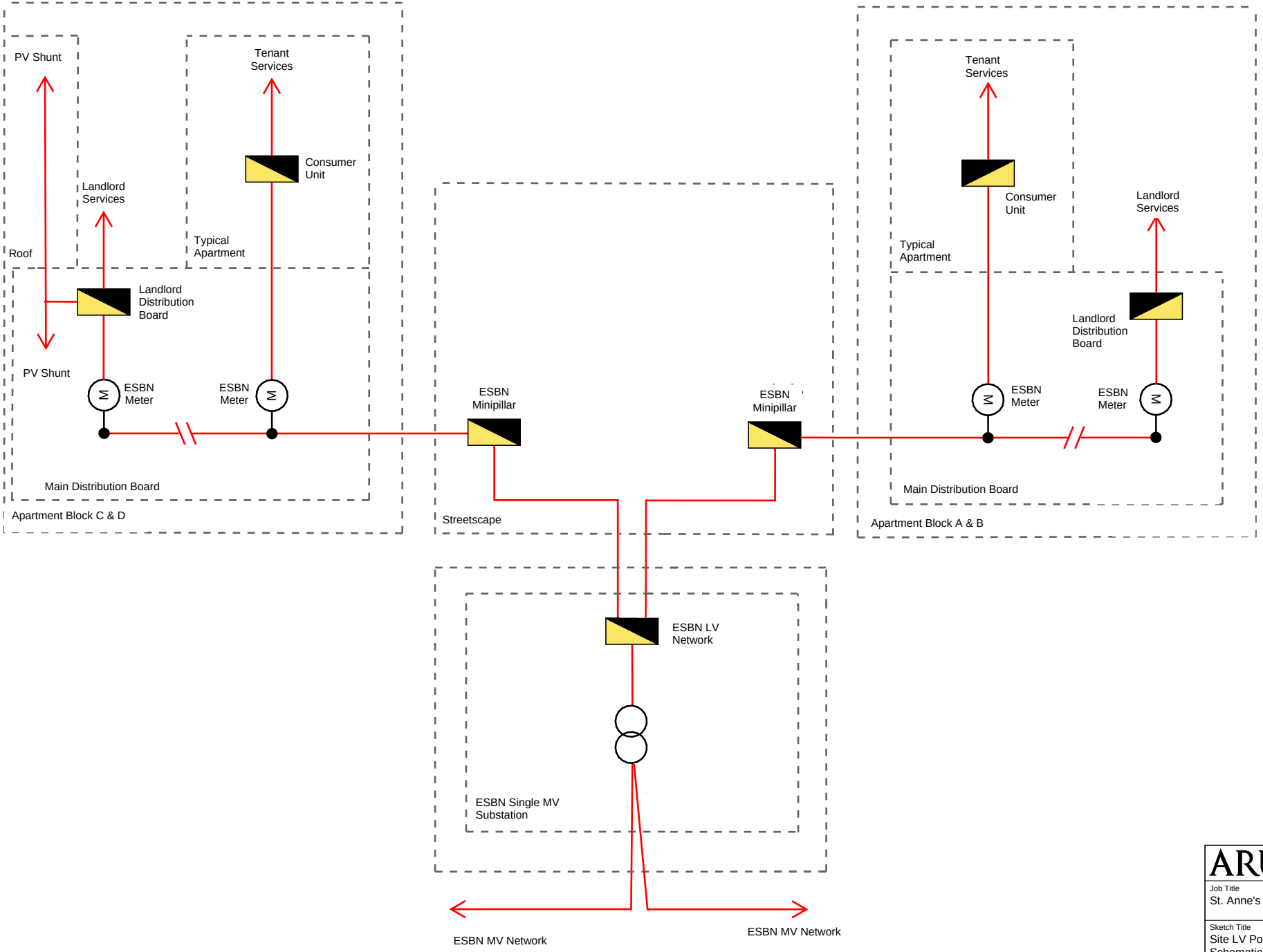
Legend

- Smoke detector c/w sounder base
- Heat detector c/w sounder base
- Heat detector
- Sounder
- Sounder c/w strobe light
- Manual call point
- Interface unit
- ASP test point
- Remote LED indicator
- Aspirating detector pipe
- Fire alarm cable
- Aspirating detector panel
- Fire alarm panel
- Consumer unit

Fire Alarm Schematic
Typical Apartment Block
Stage 2B
St. Anne's Court (288354-00)
August 2023 | For Information | SF

SK-E-003

ARUP



ARUP

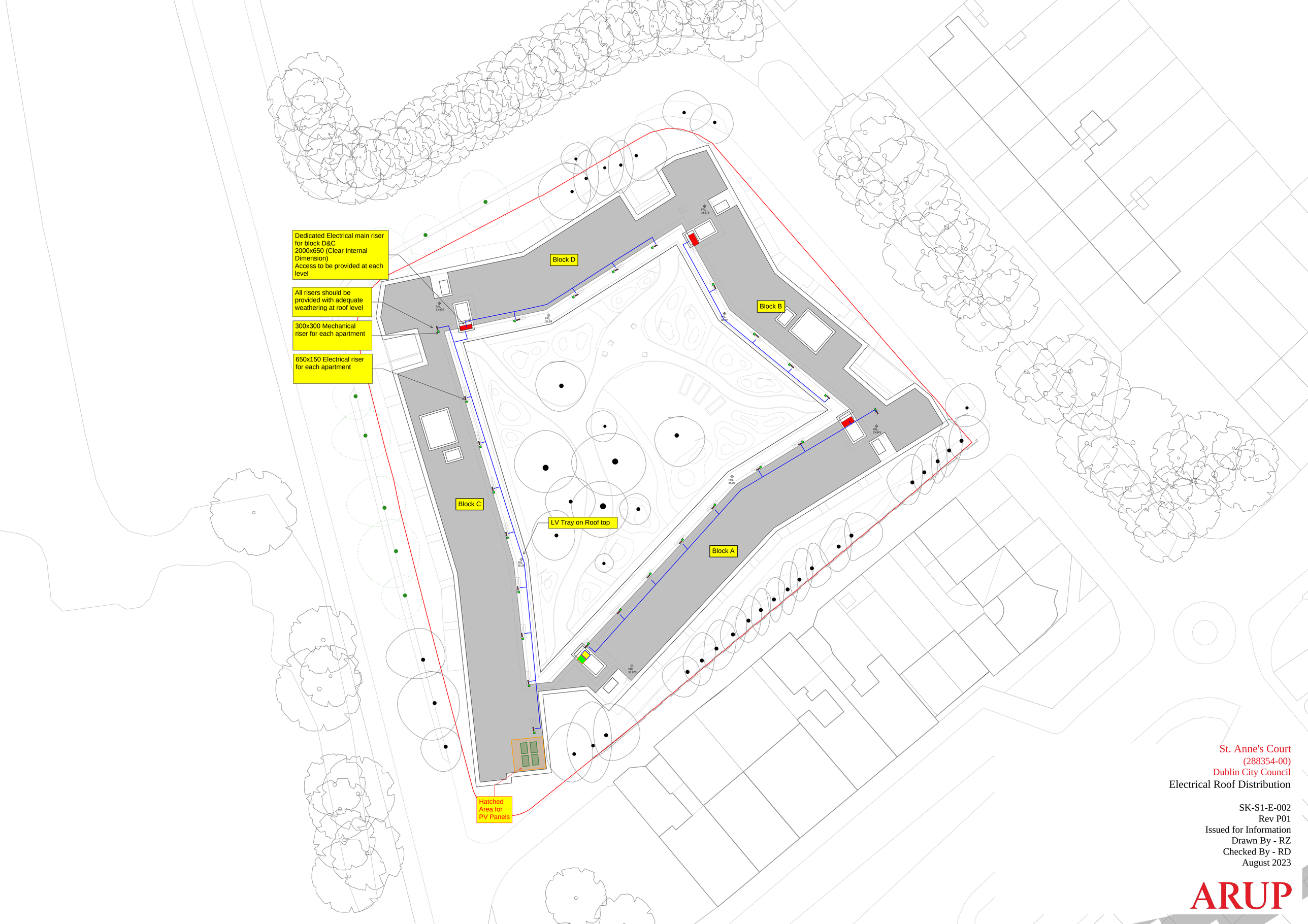
Job Title	Job No.
St. Anne's Court Estate	288354-00
Sketch Title	**Sketch No.**
Site LV Power Distribution Schematic	ESK 003
Purpose of Issue	**Scale**
Stage 2B	NTS

By	Checked	Revision	Date
RZ	RD	0	11.08.23

St. Anne's Court
(288354-00)
Dublin City Council
Electrical Ground Level Distribution

SK-S1-E-001
Rev P01
Issued for Information
Drawn By - RZ
Checked By - RD
August 2023

ARUP



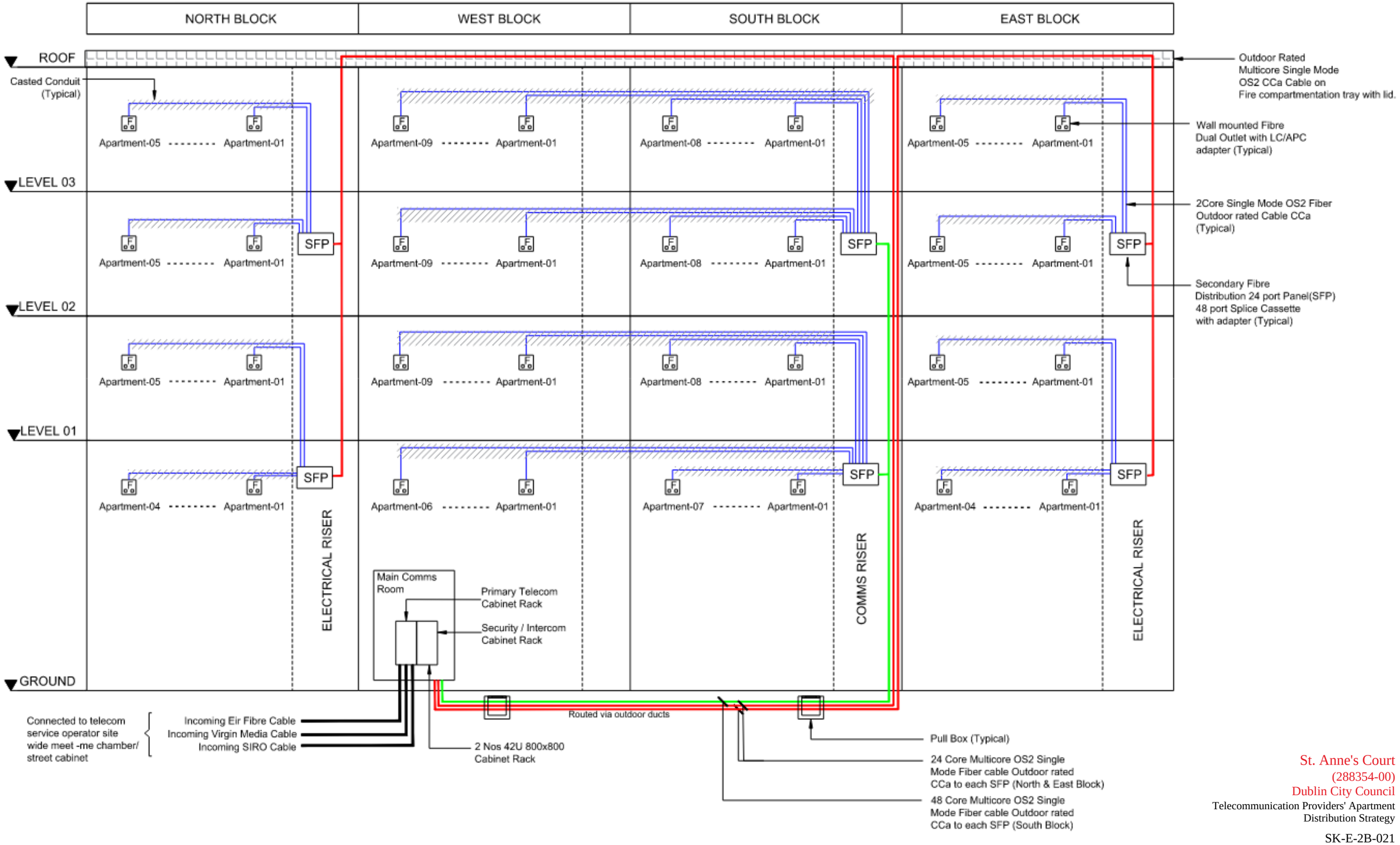
St. Anne's Court
(288354-00)
Dublin City Council
Electrical Roof Distribution

SK-S1-E-002
Rev P01
Issued for Information
Drawn By - RZ
Checked By - RD
August 2023

ARUP

Appendix C

ICT Sketches



St. Anne's Court
(288354-00)
Dublin City Council
Telecommunication Providers' Apartment Distribution Strategy

SK-E-2B-021
Rev P01
Issued for Information
Drawn By - SM - Checked By - SS
August 2023

ARUP

Notes

1. ***This sketch is only for illustrative purpose on the internal fibre distribution strategy for telecom services which is subjected to DCC final review and agreement with Eir and Virgin media.***
2. Telecom providers will provide the incoming fibre cables directly into the ICT/Telecom Primary Distribution closet and terminate into the dedicated space at Primary cabinet for Telecom operator .
3. Contractor to provide the internal multicore fibre backbone cabling from primary distribution cabinet to secondary fibre distribution panels based on the total number of apartments..
4. Contractor to provide 2 core fibre cable to each apartment from secondary fibre distribution panel to the wall mounted fibre dual outlet located at the living room space within the apartment.

Primary Telecom Distribution cabinet

SECTION -A	42	TELECOM OPERATOR 01 /EIR	42	For Incomer Fiber cable
	41	LC/APC 144 Fiber Patch Panel	41	
	40		40	
	39	LC/APC 48 Fiber Patch Panel	39	Patched to Tenant Section (D)
	38	LC/APC 48 Fiber Patch Panel	38	
	37	LC/APC 48 Fiber Patch Panel	37	
	36		36	
SECTION -B	35	TELECOM OPERATOR 02 /Virgin Media	35	
	34	LC/APC 144 Fiber Patch Panel	34	For Incomer Fiber cable
	33		33	
	32	LC/APC 48 Fiber Patch Panel	32	Patched to Tenant Section (D)
	31	LC/APC 48 Fiber Patch Panel	31	
	30	LC/APC 48 Fiber Patch Panel	30	
	29		29	
SECTION -C	28	TELECOM OPERATOR 03 /SIRO	28	
	27	LC/APC 144 Fiber Patch Panel	27	For Incomer Fiber cable
	26		26	
	25	LC/APC 48 Fiber Patch Panel	25	Patched to Tenant Section (D)
	24	LC/APC 48 Fiber Patch Panel	24	
	23	LC/APC 48 Fiber Patch Panel	23	
	22		22	
SECTION -D	21	TENANT CONNECTION	21	
	20		20	Connected to apartment via Secondary fibre distribution panel
	19	LC/APC 24 Fiber Patch Panel	19	
	18		18	
	17	LC/APC 24 Fiber Patch Panel	17	
	16	LC/APC 24 Fiber Patch Panel	16	
	15		15	
	14	LC/APC 24 Fiber Patch Panel	14	
	13	LC/APC 24 Fiber Patch Panel	13	
	12		12	
	11	LC/APC 24 Fiber Patch Panel	11	
	10		10	
	9		9	
	8		8	
	7		7	
	6		6	
	5		5	
	4		4	
	3		3	
	2		2	
	1		1	

Notes

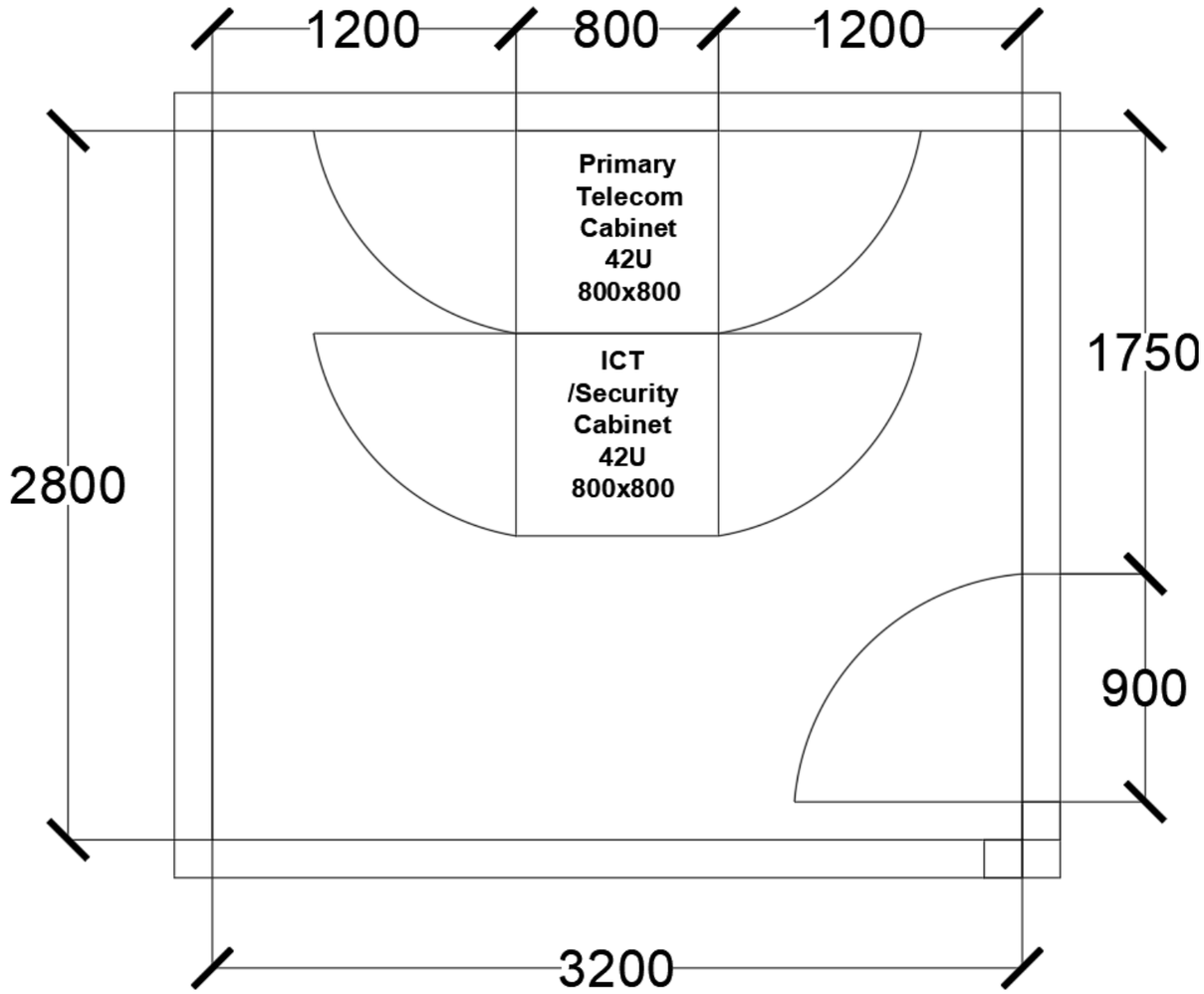
1. This sketch is only for illustrative purpose indicating the internal fibre distribution strategy for telecom services which is subjected to DCC final review and agreement with Eir and Virgin media.
2. Telecom providers will provide the incoming fibre cables directly into the ICT/Telecom Primary Distribution closet and terminate into the dedicated space at Primary cabinet for Telecom operator .
3. Contractor to provide the internal multicore fibre backbone cabling from primary distribution cabinet to secondary fibre distribution panels based on the total number of apartments..
4. Contractor to provide 2 core fibre cable to each apartment from secondary fibre distribution panel to the wall mounted fibre dual outlet located at the living.

St. Anne's Court
(288354-00)
Dublin City Council
Primary Telecom / Comms Rack Arrangement

SK-E-2B-022
Rev P01
Issued for Information
Drawn By - SM - Checked By - SS
August 2023

ARUP

Main Comms / Telecom Room Layout
Located in West Block



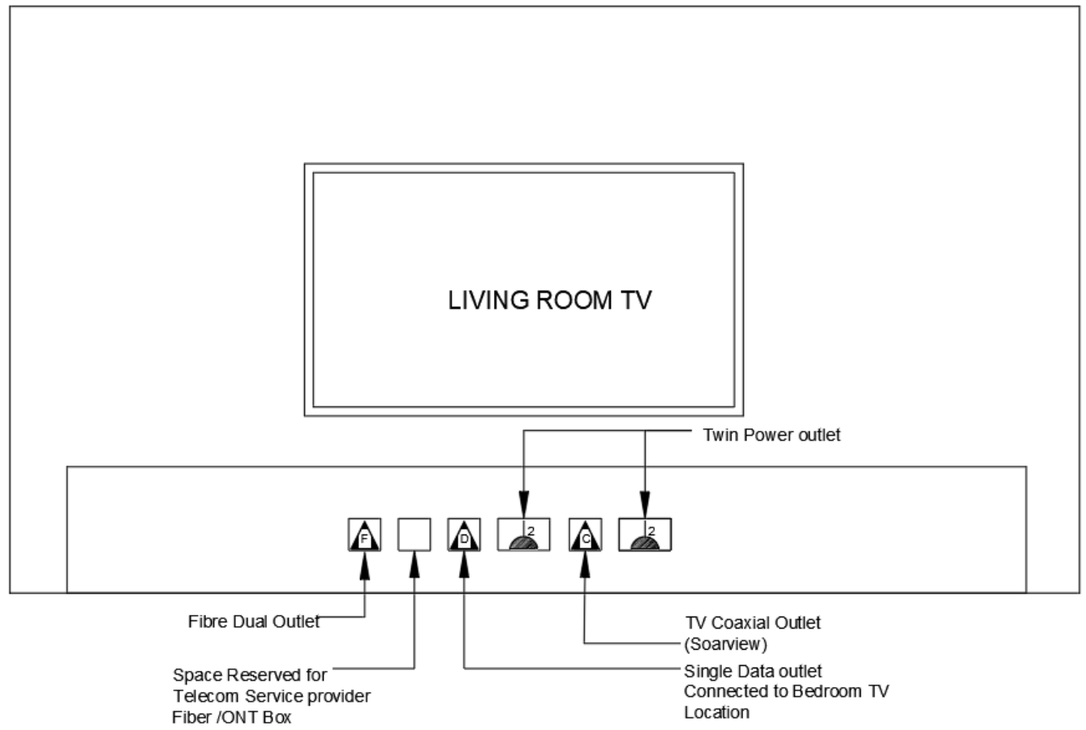
St. Anne's Court
(288354-00)
Dublin City Council
Main Comms / Telecom
Room layout

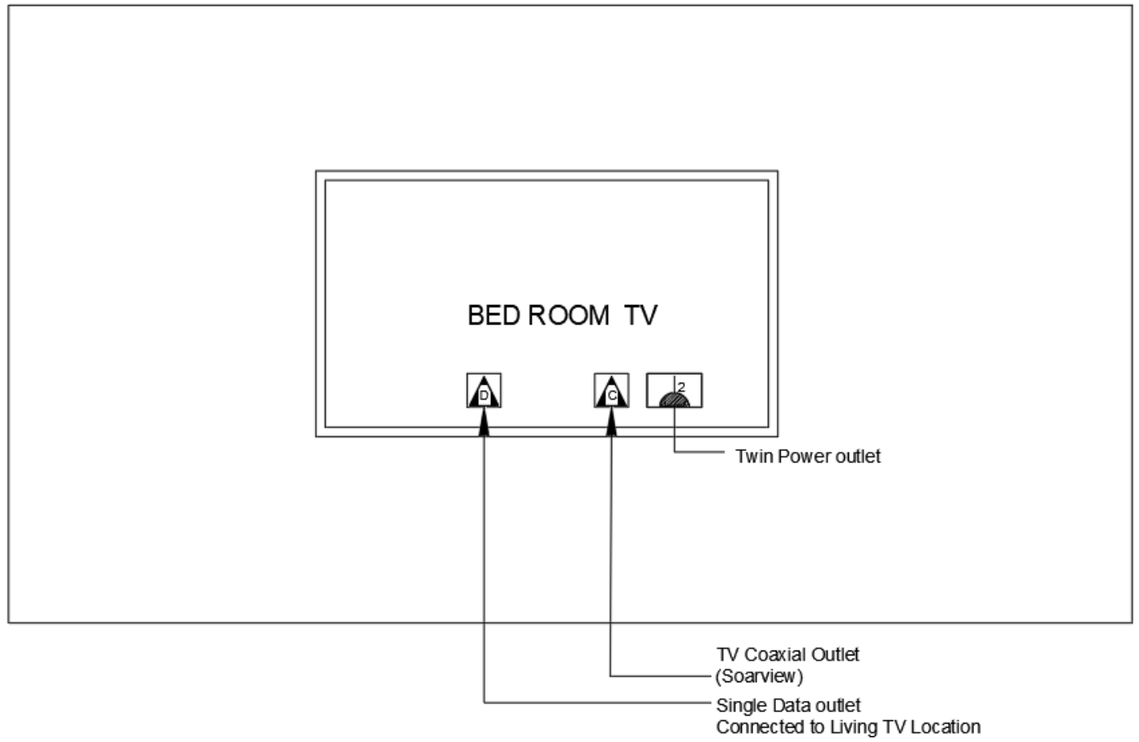
SK-E-2B-023
Rev P01
Issued for Information
Drawn By - SM - Checked By - SS
August 2023

ARUP

Notes

1. This sketch is only for illustrative purpose indicating the internal fibre distribution strategy for telecom services which is subjected to DCC final review and agreement with Eir and Virgin media.
2. Telecom providers will provide the incoming fibre cables directly into the ICT/Telecom Primary Distribution closet and terminate into the dedicated space at Primary cabinet for Telecom operator .
3. Contractor to provide the internal multicore fibre backbone cabling from primary distribution cabinet to secondary fibre distribution panels based on the total number of apartments..
4. Contractor to provide 2 core fibre cable to each apartment from secondary fibre distribution panel to the wall mounted fibre dual outlet located at the living.





Note: Mounting height of Power/Data Outlet
(to be discussed and agreed with Architect)

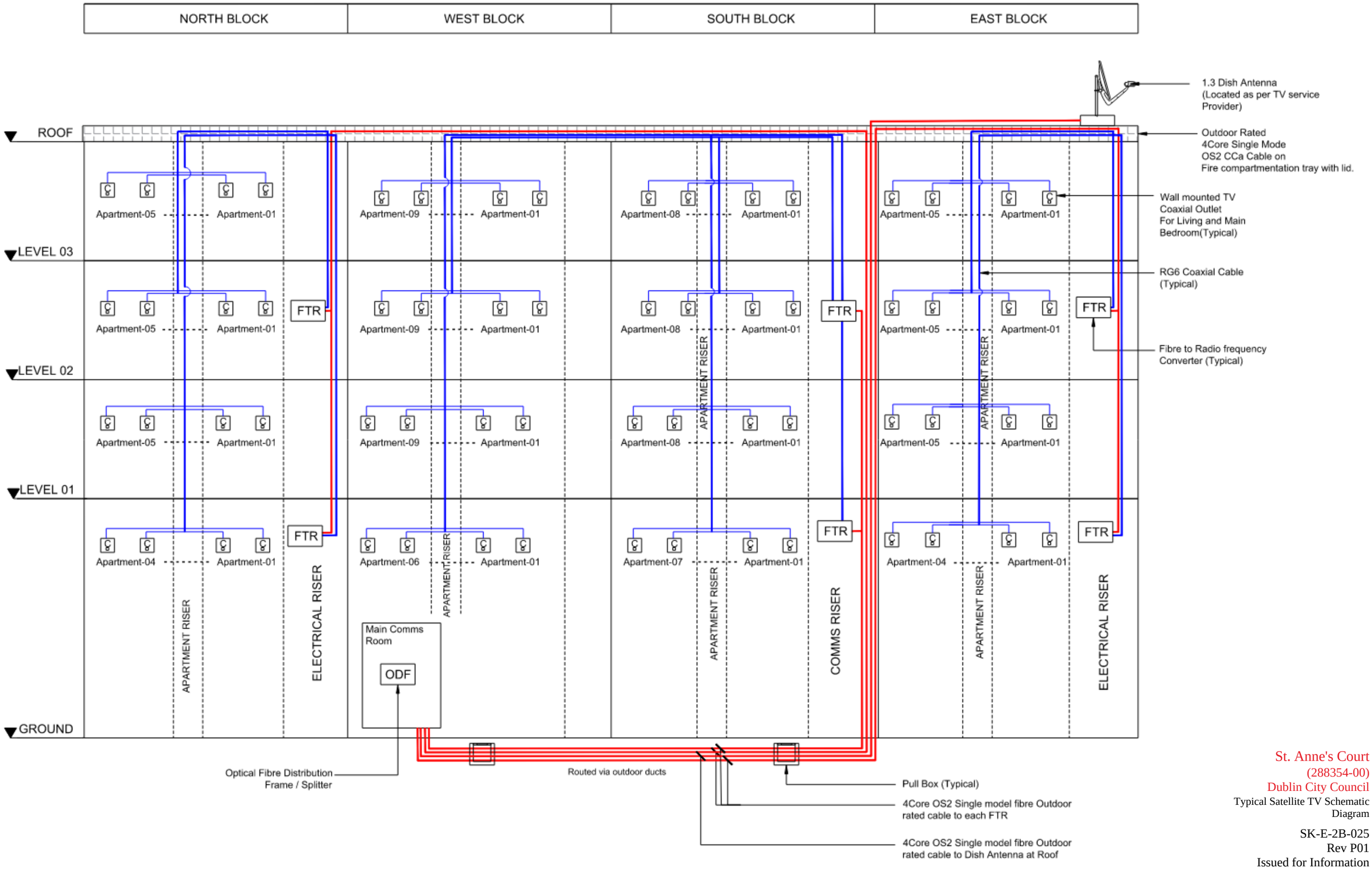
Notes

1. This sketch is only for illustrative purpose indicating the internal fibre distribution strategy for telecom services which is subjected to DCC final review and agreement with Eir and Virgin media.
2. Telecom providers will provide the incoming fibre cables directly into the ICT/Telecom Primary Distribution closet and terminate into the dedicated space at Primary cabinet for Telecom operator .
3. Contractor to provide the internal multicore fibre backbone cabling from primary distribution cabinet to secondary fibre distribution panels based on the total number of apartments..
4. Contractor to provide 2 core fibre cable to each apartment from secondary fibre distribution panel to the wall mounted fibre dual outlet located at the living.

St. Anne's Court
(288354-00)
Dublin City Council
Typical Apartment Telecom / Data
Outlet Arrangement

SK-E-2B-024
Rev P01
Issued for Information
Drawn By - SM - Checked By - SS
August 2023

ARUP



St. Anne's Court
(288354-00)
Dublin City Council
Typical Satellite TV Schematic Diagram

SK-E-2B-025
Rev P01
Issued for Information
Drawn By - SM - Checked By - SS
August 2023

ARUP

St. Anne's Court
(288354-00)
Dublin City Council
Telecom Incomer Tie In connection

SK-E-2B-026
Rev P01
Issued for Information
Drawn By - SM - Checked By - SS
August 2023

ARUP

Note: The tie in location for the fiber incomer Telecom broadband service operators is for illustrative purpose and read in conjunction with Civil and Telecom operator infrastructure drawings. Contractor to ensure any civil works for plot should only proceed after achieving the approval from the telecom operators (Eir, Virgin Media, SIRO)

Appendix D

BER and Part L

1.1 DEAP Calculations

- A preliminary DEAP assessments to ensure that all apartments comply with EPC and CPC limitations and ultimately Part L (2022) has been carried out.
- The assessment was carried out for different options outlining different plant strategies. The options are described below.
- The preliminary DEAP calculations have been carried out for different typical apartments, which were deemed to be worst case scenarios, using SEAI DEAP version 4.2.0 software to demonstrate compliance. Whilst the project must meet the requirements of Part L (2022) the most recent version of DEAP (DEAP v4.2.0) does not reflect Part L (2022). The most recent version of the building regulations addressed in the current version of DEAP is Part L (2019).

1.1.1 DEAP Inputs

- The DEAP assessment was carried out based on the proposed values, which are detailed in Table 1 for the sample apartments.
- Table 1. DEAP Assessment Input Values Apartments

Input Parameter	Input Value
Structural Air Permeability	$3m^3/m^2/hr$ at 50Pa
Ventilation Method	Depends on services option
External Glazing g-value	0.57
Roof U-Value	0.12 W/m^2K
Walls U-Value	0.15 W/m^2K
Ground / Exposed Floors U-Value	0.12 W/m^2K
External Doors U-Value	1.2 W/m^2K
External Glazing U-Value	0.85 W/m^2K
Thermal Bridging	0.05 W/m^2K
Lighting	LED (eff = 66.9 lm/W)
Thermal Massing Category	Medium-high

1.1.2 DEAP Outputs Summary

The results of the DEAP assessment are provided in Table 2 - 14 below. This preliminary assessment does not yet verify that the outlined arrangement for servicing the building is compliant with Part L and is therefore a suitable scheme to use for the development.

The results outlined in Table 2 - 14 below have been extracted from DEAP Part L reports.

To satisfy that a dwelling achieves Part L compliance, it must also be demonstrated that an acceptable carbon performance coefficient (CPC) and energy performance coefficient (EPC) have been met. The calculated CPC of the dwelling being assessed should be no greater than the Maximum Permitted Carbon Performance Coefficient (MPCPC) of 0.35 and the EPC should be no greater than the Maximum Permitted Energy Performance Coefficient (MPEPC) of 0.30.

- Table 2. DEAP Assessment Output Values – Apartment L3-WB-E

Services Option	BER	EPC	CPC	RER	Size (m^2)	Compliance
		< 0.300	< 0.350	>0.2	--	--
~~OPTION 1A~~ Centralised Option - N/a	~~A2~~	~~0.2~~	~~0.131~~	~~0.46~~	~~52.7~~	~~✓~~
~~OPTION 1B~~ Centralised Option - N/a	~~A2~~	~~0.189~~	~~0.123~~	~~0.49~~	~~52.7~~	~~✓~~
OPTION 2A Double Ducted Exhaust Air Heat Pump	A2	0.219	0.143	0.378	52.7	✓

- Table 3. DEAP Assessment Output Values – Apartment L3-WB-I

Services Option	BER	EPC	CPC	RER	Size (m^2)	Compliance
		< 0.300	< 0.350	>0.2	--	--
~~OPTION 1A~~ Centralised Option - N/a	~~A2~~	~~0.216~~	~~0.142~~	~~0.37~~	~~52.7~~	~~✓~~
~~OPTION 1B~~ Centralised Option - N/a	~~A2~~	~~0.209~~	~~0.137~~	~~0.39~~	~~52.7~~	~~✓~~
OPTION 2A Double Ducted Exhaust Air Heat Pump	A2	0.22	0.144	0.372	52.7	✓

- Table 4. DEAP Assessment Output Values – Apartment L3-NEB-I

Services Option	BER	EPC	CPC	RER	Size (m^2)	Compliance
		< 0.300	< 0.350	>0.2	--	--
~~OPTION 1A~~ Centralised Option - N/a	~~A2~~	~~0.215~~	~~0.141~~	~~0.37~~	~~52.7~~	~~✓~~
~~OPTION 1B~~ Centralised Option - N/a	~~A2~~	~~0.206~~	~~0.135~~	~~0.40~~	~~52.7~~	~~✓~~
OPTION 2A Double Ducted Exhaust Air Heat Pump	A2	0.218	0.143	0.371	52.7	✓

- Table 5. DEAP Assessment Output Values – Apartment L3-WNB-E

Services Option	BER	EPC	CPC	RER	Size (m²)	Compliance
		< 0.300	< 0.350	>0.2	--	--
~~OPTION 1A~~ Centralised Option - N/a	~~A2~~	~~0.215~~	~~0.141~~	~~0.37~~	~~52.7~~	~~✓~~
~~OPTION 1B~~ Centralised Option - N/a	~~A2~~	~~0.206~~	~~0.135~~	~~0.40~~	~~52.7~~	~~✓~~
OPTION 2A Double Ducted Exhaust Air Heat Pump	A2	0.219	0.144	0.371	52.7	✓

- Table 6. DEAP Assessment Output Values – Apartment L3-EB-I

Services Option	BER	EPC	CPC	RER	Size (m²)	Compliance
		< 0.300	< 0.350	>0.2	--	--
~~OPTION 1A~~ Centralised Option - N/a	~~A2~~	~~0.215~~	~~0.141~~	~~0.37~~	~~52.7~~	~~✓~~
~~OPTION 1B~~ Centralised Option - N/a	~~A2~~	~~0.21~~	~~0.138~~	~~0.38~~	~~52.7~~	~~✓~~
OPTION 2A Double Ducted Exhaust Air Heat Pump	A2	0.218	0.143	0.371	52.7	✓

- Table 7. DEAP Assessment Output Values – Apartment L1-WB-E

Services Option	BER	EPC	CPC	RER	Size (m²)	Compliance
		< 0.300	< 0.350	>0.2	--	--
~~OPTION 1A~~ Centralised Option - N/a	~~A2~~	~~0.21~~	~~0.136~~	~~0.38~~	~~52.7~~	~~✓~~
~~OPTION 1B~~ Centralised Option - N/a	~~A2~~	~~0.202~~	~~0.131~~	~~0.41~~	~~52.7~~	~~✓~~
OPTION 2A Double Ducted Exhaust Air Heat Pump	A2	0.216	0.141	0.381	52.7	✓

- Table 8. DEAP Assessment Output Values – Apartment L1-WB-I

Services Option	BER	EPC	CPC	RER	Size (m²)	Compliance
		< 0.300	< 0.350	>0.2	--	--
~~OPTION 1A~~ Centralised Option - N/a	~~A2~~	~~0.22~~	~~0.146~~	~~0.35~~	~~52.7~~	~~✓~~
~~OPTION 1B~~ Centralised Option - N/a	~~A2~~	~~0.215~~	~~0.143~~	~~0.37~~	~~52.7~~	~~✓~~
OPTION 2A Double Ducted Exhaust Air Heat Pump	A2	0.219	0.146	0.357	52.7	✓

- Table 9. DEAP Assessment Output Values – Apartment L1-NWB-E

Services Option	BER	EPC	CPC	RER	Size (m²)	Compliance
		< 0.300	< 0.350	>0.2	--	--
~~OPTION 1A~~ Centralised Option - N/a	~~A2~~	~~0.219~~	~~0.145~~	~~0.35~~	~~52.7~~	~~✓~~
~~OPTION 1B~~ Centralised Option - N/a	~~A2~~	~~0.212~~	~~0.141~~	~~0.38~~	~~52.7~~	~~✓~~
OPTION 2A Double Ducted Exhaust Air Heat Pump	A2	0.217	0.145	0.355	52.7	✓

- Table 10. DEAP Assessment Output Values – Apartment L1-EB-I

Services Option	BER	EPC	CPC	RER	Size (m²)	Compliance
		< 0.300	< 0.350	>0.2	--	--
~~OPTION 1A~~ Centralised Option - N/a	~~A2~~	~~0.219~~	~~0.145~~	~~0.35~~	~~52.7~~	~~✓~~
~~OPTION 1B~~ Centralised Option - N/a	~~A2~~	~~0.215~~	~~0.143~~	~~0.36~~	~~52.7~~	~~✓~~
OPTION 2A Double Ducted Exhaust Air Heat Pump	A2	0.217	0.144	0.355	52.7	✓

- Table 11. DEAP Assessment Output Values – Apartment L0-WB-E

Services Option	BER	EPC	CPC	RER	Size (m²)	Compliance
		< 0.300	< 0.350	>0.2	--	--
~~OPTION 1A~~ Centralised Option - N/a	~~A2~~	~~0.208~~	~~0.136~~	~~0.37~~	~~52.7~~	~~✓~~
~~OPTION 1B~~ Centralised Option - N/a	~~A2~~	~~0.202~~	~~0.132~~	~~0.39~~	~~52.7~~	~~✓~~
OPTION 2A Double Ducted Exhaust Air Heat Pump	A2	0.212	0.138	0.3718	52.7	✓

- Table 12. DEAP Assessment Output Values – Apartment L0-NWB-E

Services Option	BER	EPC	CPC	RER	Size (m²)	Compliance
		< 0.300	< 0.350	>0.2	--	--
~~OPTION 1A~~ Centralised Option - N/a	~~A2~~	~~0.198~~	~~0.13~~	~~0.35~~	~~52.7~~	~~✓~~
~~OPTION 1B~~ Centralised Option - N/a	~~A2~~	~~0.192~~	~~0.125~~	~~0.38~~	~~52.7~~	~~✓~~
OPTION 2A Double Ducted Exhaust Air Heat Pump	A2	0.198	0.129	0.36	52.7	✓

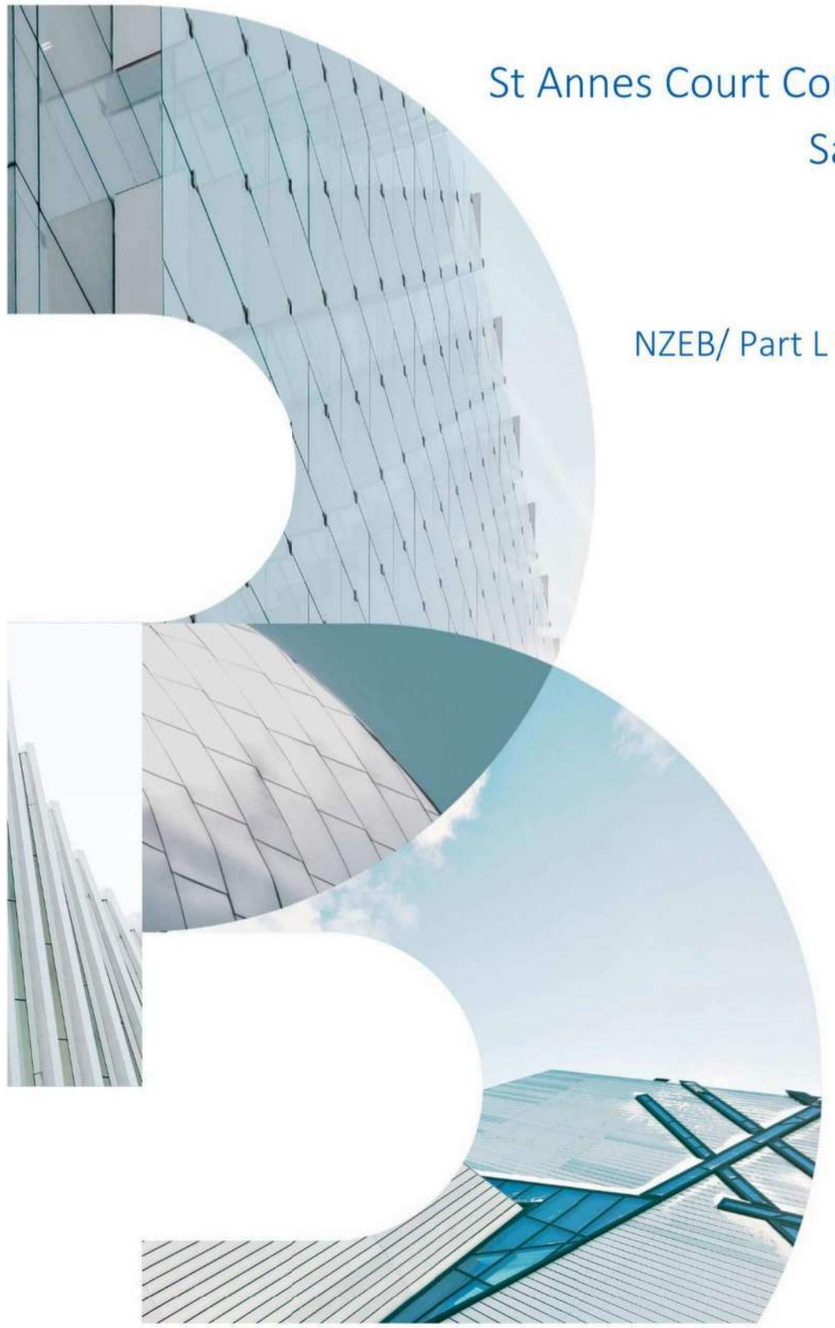
- Table 13. DEAP Assessment Output Values – Apartment L0-EB-I

Services Option	BER	EPC	CPC	RER	Size (m²)	Compliance
		< 0.300	< 0.350	>0.2	--	--
~~OPTION 1A~~ Centralised Option - N/a	~~A2~~	~~0.211~~	~~0.138~~	~~0.37~~	~~52.7~~	~~✓~~
~~OPTION 1B~~ Centralised Option - N/a	~~A2~~	~~0.206~~	~~0.135~~	~~0.39~~	~~52.7~~	~~✓~~
OPTION 2A Double Ducted Exhaust Air Heat Pump	A2	0.214	0.14	0.374	52.7	✓

- Table 14. DEAP Assessment Output Values – Stairs

Services Option	BER	EPC	CPC	RER	Size (m²)	Compliance
		< 1	< 1.15	>0.1	--	--
EB Stairwell	A2	0.49	0.51	0.34	150.22	✓
NEB Stairwell	A2	0.47	0.49	0.33	150.22	✓
NWB Stairwell	A2	0.44	0.46	0.33	150.22	✓
WB Stairwell	A2	0.44	0.46	0.34	150.22	✓

BUILDING PERFORMANCE CONSULTING



St Annes Court Community Centre, All Saints Drive, Dublin 5

NZEB/ Part L Compliance Assessment

Project Ref: 20359

Client: ARUP

Date: 26/07/2023

BPC ENGINEERS

Rev	Description	Date:	Written By	Approved By:
P1-01	Preliminary Analysis: Issue for Comment	14/07/2023	ES	SE
P1-02	Preliminary Analysis: Updated report (PV included)	26/07/2023	ES	SE

© BPC Engineers

Contents

1 Executive Summary 4
1.1 NZEB/Part L Compliance Check 4
2 Introduction 5
2.1 Part L/ NZEB assessment 5
3 Model Geometry 6
4 Model Inputs 7
4.1 Building Envelope 7
4.1.1 U-values 7
4.1.2 Glazing Solar and Light Properties 7
4.1.3 Air permeability 7
4.1.4 Thermal Bridging 7
4.2 Lighting 8
4.2.1 Lighting Power 8
4.2.2 Lighting Controls 8
4.3 Heating, Ventilation and Air Conditioning HVAC 9
4.4 Metering Provision and System Controls 9
4.5 Electric Power Factor Correction 9
4.6 Domestic Hot Water Systems 9
4.7 Renewable Energy Production 10
5 Results 11
5.1 Part L/ NZEB 11
5.1.1 Limiting the Effects of Solar gain in Summer 14
Appendix A – Assigned Construction Details 15
Appendix B – Model Zoning 16
Appendix C - BER Scale & Energy Bands 17

© BPC Engineers

1 Executive Summary

BPC Engineers have been contracted by ARUP to assess the performance of the proposed Community Centre Development at St Annes Court, All Saints Drive, Dublin 5. The building comprises a ground floor community centre bounded to the North and above by residential apartments. This report provides the results of the Part L/ NZEB assessment.

A layout drawing for the space as well as sectional drawings showing typical window heights and floor levels was provided. These sectional drawings did not show the Community Centre and so assumptions had to be made for the openings. A Stage 1 MEP Engineering Design and Energy Sustainability report was provided which contained information on fabric u-values, ventilation and HVAC systems. Some assumptions were required where information was not available and is documented throughout the report. A selection of data sheets for the VRF and MVHR plant were also provided. The current design did not include renewable energy through PV but this system (or similar) will be required to meet the Renewable Energy contribution for the Building Regulations Part L purposes. It has therefore been included in this assessment.

The Part L/ NZEB assessment was completed using Design Builder v6.1.8.021 software which uses the SBEMie 5.5h calculation engine to derive the results.

1.1 NZEB/Part L Compliance Check

Current results from the Part L analysis show the building complying with the three minimum criteria including the EPC, MCPC and RER. The building is designed for high energy efficiency involving the following measures:

- Low u-values either matching or exceeding TGD Part L minimum elemental u-values,
- Air permeability target of $3m^3/hr/m^2$ @ 50Pa.
- Air cooled VRF system providing heating and cooling with an SCOP of 4.7 and SEER of 7.6.
- Mechanical Ventilation Heat Recovery with an efficiency of 80.2%.
- Low specific fan power value of 1.63 W/l/s for the MVHR.
- Local point of use instantaneous hot water heater for DHW,
- LED lighting with a power density of $3\text{-}5W/m^2$ with presence detection control.
- Renewable energy on site production with 1 kW solar panel array.

In the following sections we will outline the results in more detail along with all model inputs and assumptions.

© BPC Engineers

2 Introduction

This report provides information on the NZEB/ Part L compliance analysis undertaken for the proposed Community Centre at St Annes Court, All Saints Drive, Dublin 5.

Figure 1: Community Centre location in scheme

The building comprises a ground floor community centre bounded to the North and above by residential apartments.

2.1 Part L/ NZEB assessment

The Part L compliance assessment must demonstrate that the proposed development satisfies the following criteria:

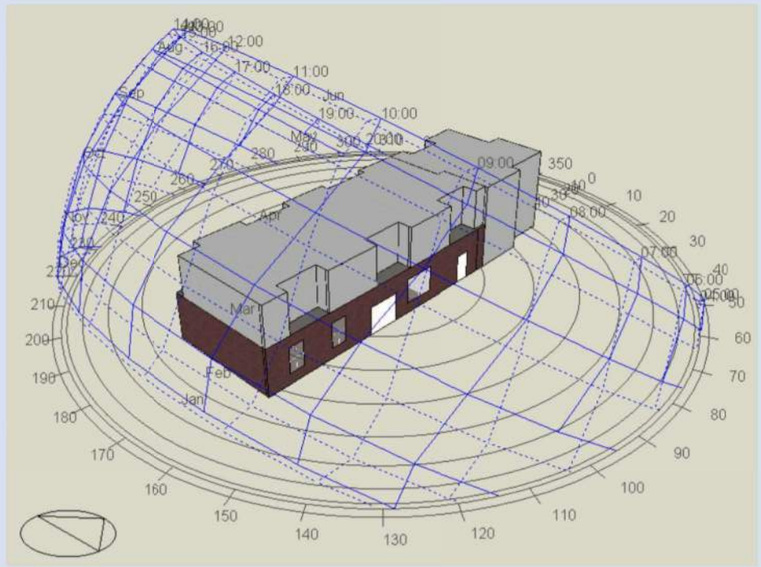
- The Energy Performance Coefficient (EPC) is less than the Maximum Permitted EPC (MPEPC) of 1.0.
- The Carbon Performance Coefficient (CPC) is less than the Maximum Permitted CPC (MPCP) of 1.15.
- The Renewable Energy Ratio should be greater than 10% if the EPC is less than 0.9 or 20% if the EPC is between 0.9 and 1.0.

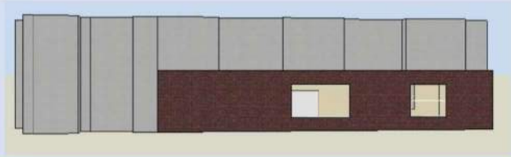
The following sections of this report will outline in detail the model configuration, inputs and assumptions used in the Part L assessment.

© BPC Engineers

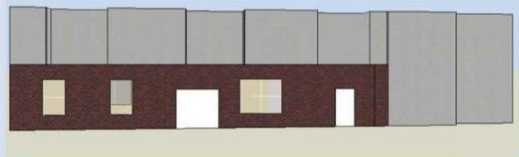
3 Model Geometry

The models have been created using the architectural plans, sections and elevations

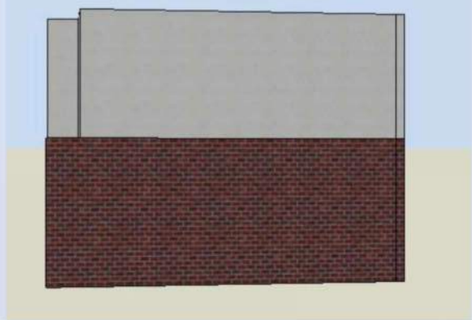




West View



East View



South View

4 Model Inputs

This section outlines the key model inputs used in the Part L assessment.

4.1 Building Envelope

4.1.1 U-values

The building is targeting elemental U-values with better performance characteristics than those given in TGD Part L 2022 Further information on the construction assignment is provided in Appendix A.

Table 1 : Building u-values

Element	U-Value
Flat Roof	0.12
External Walls	0.15
Ground Floor	0.12
External Doors	1.2
External Windows	0.85

4.1.2 Glazing Solar and Light Properties

Table 2: Glazing solar and light properties

Glazing *	T Solar	0.7
	L Solar	0.7
	Frame Factor	10%
	Blinds	Not Included

* Assumption made for Glazing Parameters due to missing information.

4.1.3 Air permeability

The building air permeability is set to the 3 m³/(h.m²) @ 50 pa

Table 3: Building air permeability target

Air Permeability at 50 Pa (m3/hr/m2)	3

4.1.4 Thermal Bridging

The default NEAP thermal bridging coefficients are used.

4.7 Renewable Energy Production

Renewable energy production is provided by the following source.

Table 10: Renewable Energy Production

Renewable Energy Systems:	
System Type :	Photovoltaic Array
Peak Power: (kW)*	1
Orientation	South
Inclination:	30^0
Overshading:	None or very little (20%)
Ventilated Modules:	Moderately ventilated.

* The PV array peak power output selected is that required to meet the RER valve for Building Regulations Part L requirements.

© BPC Engineers

5 Results

5.1 Part L/ NZEB

Preliminary results show the project achieving a primary energy value of 76.94kWh/m2/yr and a BER A2 rating. The building complies with the three minimum criteria including the MPEPC, MPCPC and RER.

Table 11: Part L compliance summary

Compliance	Results	Units
Primary Energy (Actual)	76.94	kWh/m2.yr
Energy Performance Coefficient (EPC)	0.73	-
Maximum Permitted EPC (MPEPC)	1	-
Primary Energy Pass?	Yes	
CO2 Emissions (Actual)	15.13	kg.CO2/m2.yr
Carbon Performance Coefficient (CPC)	0.76	-
Maximum Permitted EPC (MPCPC)	1.15	-
CO2 Pass?	Yes	
Renewable Energy Ratio	0.12	-
Minimum RER	0.1	-
Renewable Energy Pass?	Yes	

Table 12: Building Energy Rating

Building Energy Rating	Results	Units	Band
Stage	New Building - Provisional		
Primary Energy	76.94	kWh/m2.yr	-
BER	0.31		A2
CO2 Emissions	15.13	kg.CO2/m2.yr	
CO2 Emissions Indicator	0.32	-	-

Table 13: Energy end use summary

kWh/m2	Actual	Notional	Reference
Heating	0.8	75.3	42.11
Cooling	7.27	21.8	9.93
Auxiliary	11.83	2.6	9.63
Lighting	16.24	48.39	17.93
Hot Water	5.37	11.92	6.21
Total	41.5	160.01	85.81

Table 14: Energy summary

kWh/m2	Actual	Notional	Reference
Grid Electricity Consumption	41.5	72.79	37.49
Other High Carbon Fuel	0	87.22	48.32
Low Carbon Fuel Consumption	0	0	0
Grid Electricity Displaced by Renewables	3.47	-	-
Solar Hot Water	0	-	-

© BPC Engineers

BRIRL Output Document

Compliance Assessment with the Building Regulations (Ireland) TGD-Part L 2017

This report demonstrates compliance with specific aspects of Part L of the Building Regulations. Compliance with all aspects of Part L is a legal requirement. Demonstration of how compliance with every aspect is achieved may be sought from the Building Control Authority.

St Annes Community Centre

Date: Fri Jul 14 15:19:38 2023

Administrative information

Building Details

Address:

NEAP

Calculation engine: SBEMIE

Calculation engine version: v5.5.h.2

Interface to calculation engine: DesignBuilder SBEM

Interface to calculation engine version: v6.1.8

BRIRL compliance check version: v5.5.h.2

Client Details

Name:

Telephone number:

Address:

Energy Assessor Details

Name: Eoin Sullivan

Telephone number: 00353 86 4409031

Email: eoin.sullivan@bpcengineers.com

Address: BPC Engineers 19-22 Lower Baggot Street, Dublin 2, D02X658

Primary Energy Consumption, CO2 Emissions, and Renewable Energy Ratio

The compliance criteria in the TGD-L have been met.

Calculated CO2 emission rate from Reference building	20 kgCO2/m2.annum
Calculated CO2 emission rate from Actual building	15.1 kgCO2/m2.annum
Carbon Performance Coefficient (CPC)	**0.76**
Maximum Permitted Carbon Performance Coefficient (MPCPC)	**1.15**
Calculated primary energy consumption rate from Reference building	105.1 kWh/m2.annum
Calculated primary energy consumption rate from Actual building	76.9 kWh/m2.annum
Energy Performance Coefficient (EPC)	**0.73**
Maximum Permitted Energy Performance Coefficient (MPEPC)	**1**
Renewable Energy Ratio (RER)	**0.12**
Minimum Renewable Energy Ratio	**0.1**

Heat Transmission through Building Fabric

Element	$U_{a\text{-Limit}}$	$U_{a\text{-Calc}}$	$U_{i\text{-Limit}}$	$U_{i\text{-Calc}}$	Surface with maximum U-value*
Walls**	0.21	0.15	0.6	0.15	Community Centre - WC_W_9
Floors (ground and exposed)	0.21	0.09	0.6	0.1	Community Centre - WC_S_3
Pitched roofs	0.16	-	0.3	-	"No heat loss pitched roofs"
Flat roofs	0.2	0.12	0.3	0.12	Community Centre - WC_R_5
Windows, roof windows, and rooflights	1.6	0.85	3	0.85	Community Centre - Community Centre_G_7
Personnel doors	1.6	1.2	3	1.2	Community Centre - Community Centre_D_8
Vehicle access & similar large doors	1.5	-	3	-	"No ext. vehicle access doors"
High usage entrance doors	3	-	3	-	"No ext. high usage entrance doors"

$U_{a\text{-Limit}}$ = Limiting area-weighted average U-values [W/(m2K)]
$U_{a\text{-Calc}}$ = Calculated area-weighted average U-values [W/(m2K)]
$U_{i\text{-Limit}}$ = Limiting individual element U-values [W/(m2K)]
$U_{i\text{-Calc}}$ = Calculated individual element U-values [W/(m2K)]

* There might be more than one surface with the maximum U-value. ** Automatic U-value check by the tool does not apply to curtain walls whose area-weighted average and individual limiting standards are 1.8 and 3 W/m2K, respectively.

Air Permeability	Upper Limit	This Building's Value
m3/(h.m2) at 50 Pa	5	3

Figure 2: BRIRL report cover page.

DesignBuilder SBEM v6.1.8 (SBEMIE v5.5.h.2)

Provisional Building Energy Rating (BER)

Provisional BER for the building detailed below is: **A2**

The Building Energy Rating (BER) is an indicator of the energy performance of this building. It covers energy use for space heating and cooling, water heating, ventilation and lighting, calculated on the basis of standard operating patterns. It is accompanied by a CO_2 emissions indicator. These indicators are expressed as respective ratios of primary energy use and CO_2 emissions, relative to what would apply for a similar building generally satisfying the Building Regulations 2005. 'A' rated properties are the most energy efficient and will tend to have the lowest energy bills.

BER Number:	voidvoidvoid	**Date of Issue:**	14 Jul 2023
Useful Floor Area (m^2):	187.5	**Valid Until:**	13 Jul 2025
Main Heating Fuel:	Grid Supplied Electricity	**BER Assessor No.:**	108836
Building Environment:	Air Conditioning	**Assessor Company No.:**	107438
		Assessor Scheme:	SEAI
Building Type:	Residential spaces		

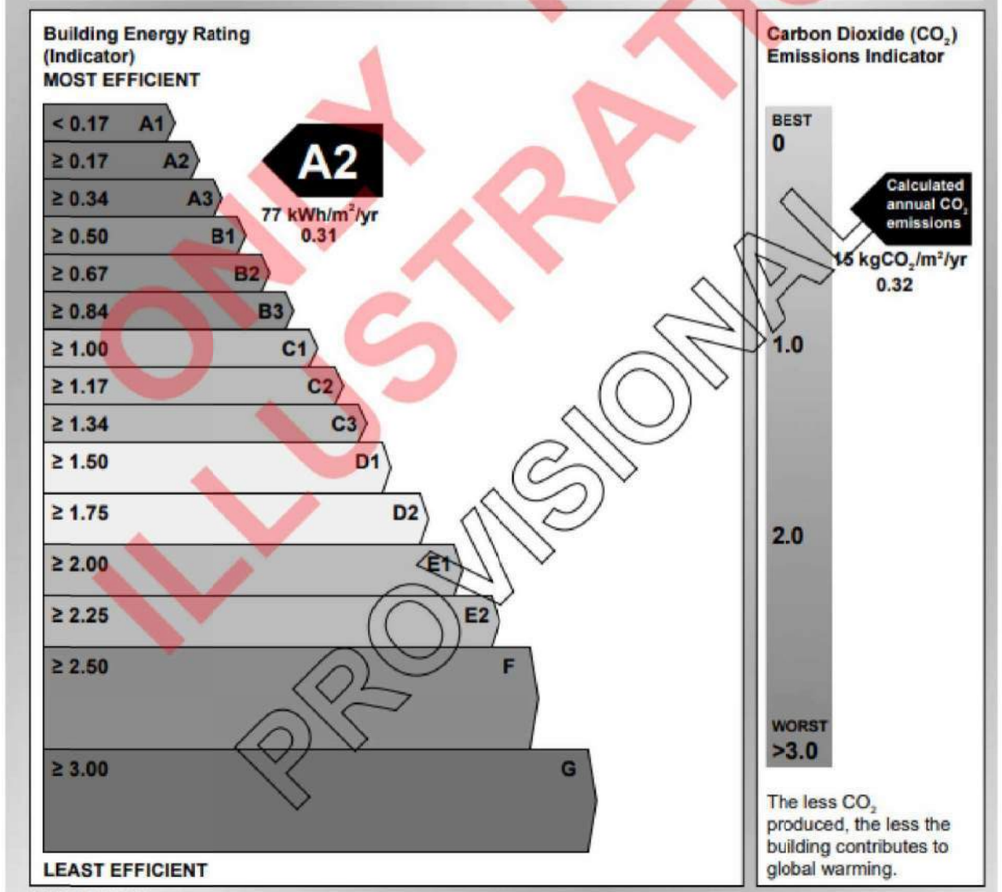


ILLUSTRATION ONLY
PROVISIONAL
FOR

IMPORTANT: This provisional BER is calculated on the basis of pre-construction plans and specifications provided to the BER assessor, and using the version of the assessment software quoted above. The BER assigned to this building on completion may be different, in the event of changes to those plans or specifications, or to the assessment software.

Figure 3: Provisional BER Certificate.

5.1.1 Limiting the Effects of Solar gain in Summer

In accordance with TGD Part L section 1.3.5 Limiting the effects of solar gain in summer, the solar gain limit exceedance must be checked. No issues were identified in the 'Community Centre' space which is the only space containing glazing. Any changes to the building design or glazing specification would require a re-run of the compliance simulations.

Table 15: Solar gain limit results

Solar Gain in Summer

Zone	Solar gain limit exceeded? (%)	Internal blinds used?
Community Centre - WC	N/A	N/A
Community Centre - Community Centre	NO (-45.7%)	NO
Community Centre - Circulation	N/A	N/A
Community Centre - Plant	N/A	N/A
Community Centre - Dis WC	N/A	N/A

© BPC Engineers

Appendix A – Assigned Construction Details

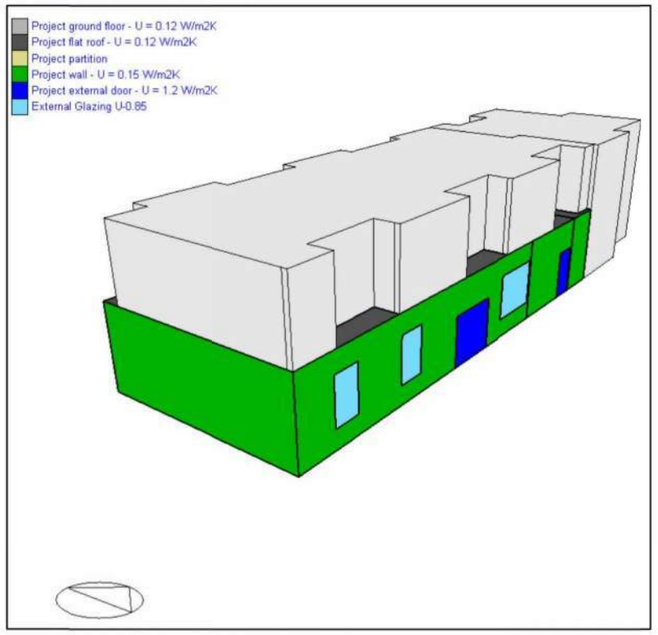


Figure 4: Construction assignment (view from south-east)

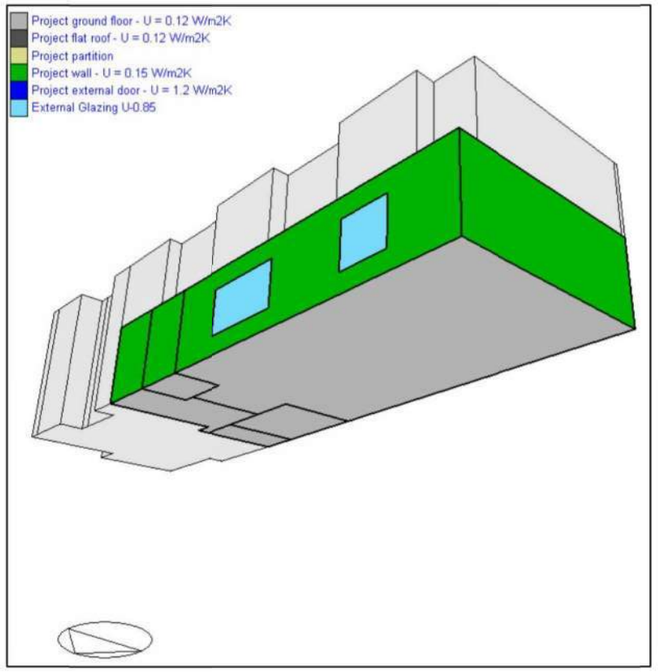


Figure 5: Construction assignment (view from north-east)

© BPC Engineers

Appendix B – Model Zoning

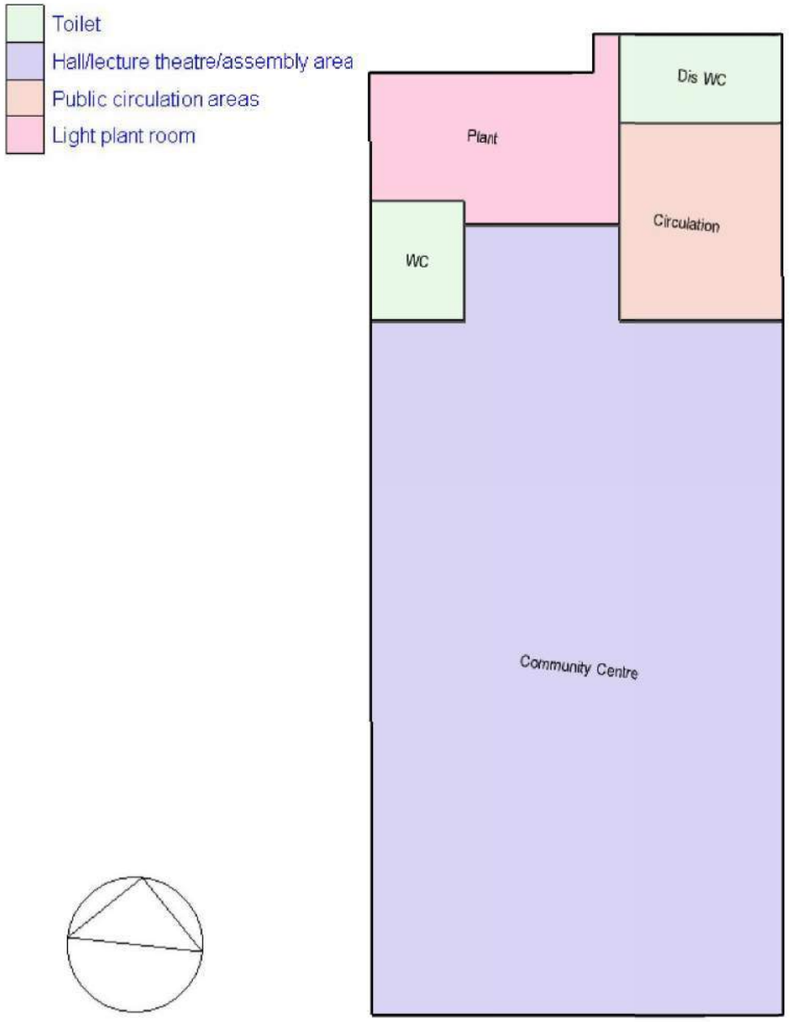


Figure 6: Level -00 Zoning

© BPC Engineers

Appendix C - BER Scale & Energy Bands

Figure 7: BER Scale & Energy Bands

Scale	Band
BER < 0.17	A1
0.17 ≤ BER < 0.34	A2
0.34 ≤ BER < 0.50	A3
0.50 ≤ BER < 0.67	B1
0.67 ≤ BER < 0.84	B2
0.84 ≤ BER < 1.00	B3
1.00 ≤ BER < 1.17	C1
1.17 ≤ BER < 1.34	C2
1.34 ≤ BER < 1.50	C3
1.50 ≤ BER < 1.75	D1
1.75 ≤ BER < 2.00	D2
2.00 ≤ BER < 2.25	E1
2.25 ≤ BER < 2.50	E2
2.50 ≤ BER < 3.00	F
3.00 ≤ BER	G

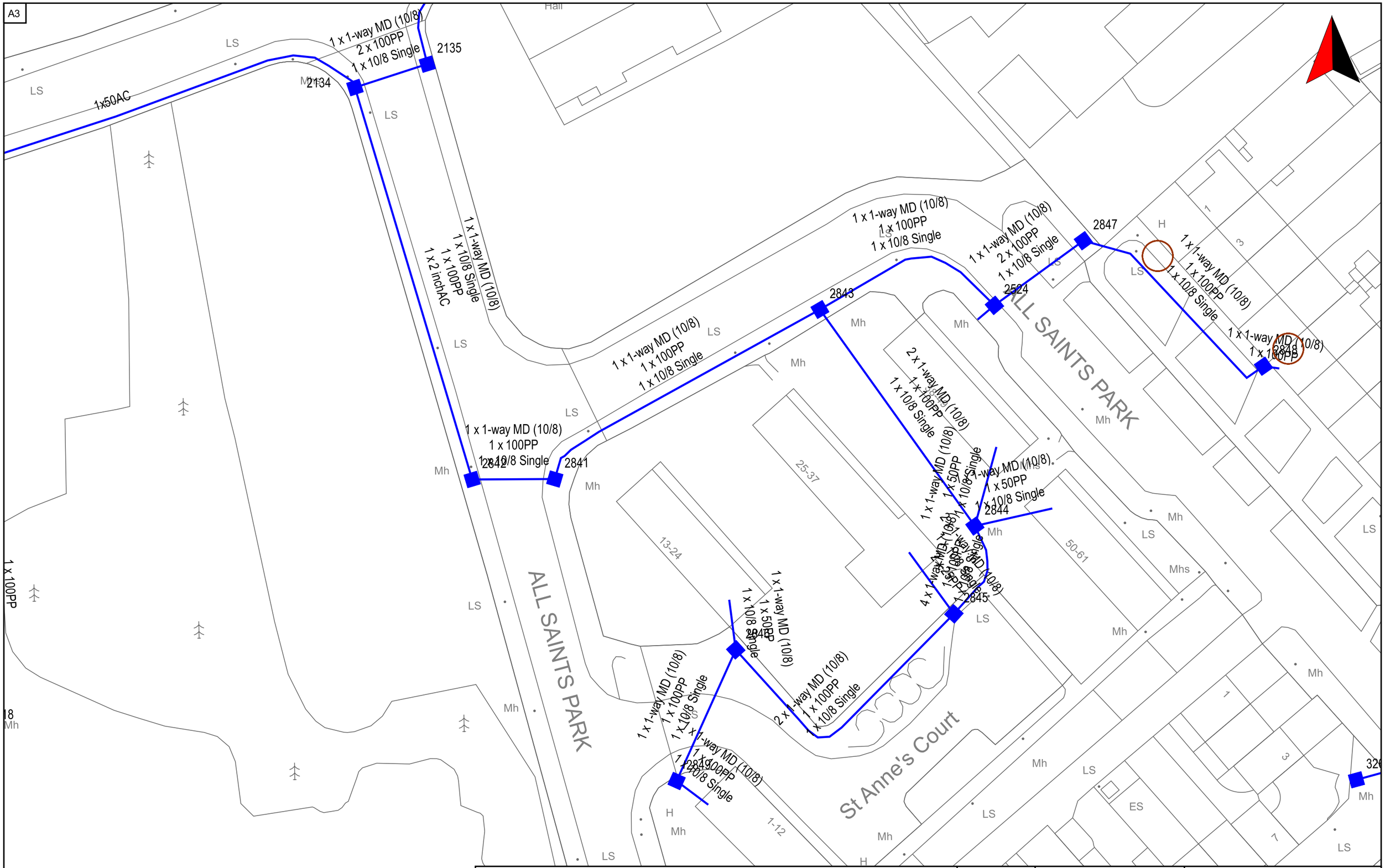
© BPC Engineers

BPC ENGINEERS

BUILDING PERFORMANCE CONSULTING

Appendix E

Utility Maps



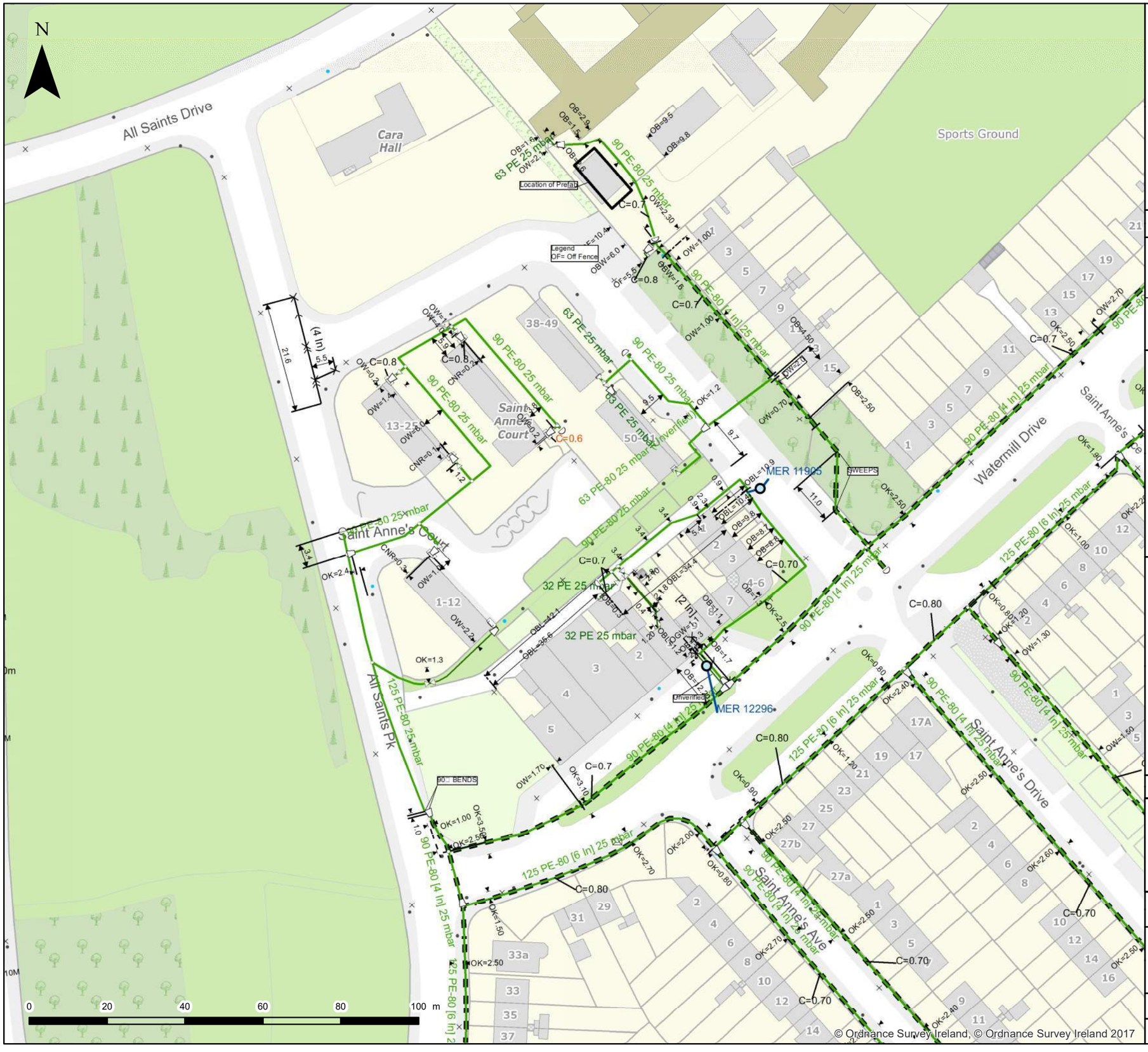
open eir Civil Engineering Infrastructure Service

Scale: 1:500	Irish National Grid Co-Ordinates Centre XY: 321232 m, 237857 m
Date 03/03/2023	Smallworld Powered by GE

THE INFORMATION IN THIS DRAWING IS CONFIDENTIAL AND SHOULD NOT BE DISCLOSED TO ANY THIRD PARTY WITHOUT THE EXPRESS WRITTEN CONSENT OF open eir. THE DRAWING MAY NOT BE PHOTOCOPIED OR REPRODUCED IN ANY WAY.

THE INFORMATION GIVEN IS COMPILED FROM PASSIVE ACCESS RECORDS AND IS BELIEVED TO BE CORRECT. THERE MAY, HOWEVER, BE DEPARTURES FROM THE COURSE[S] AND DEPTH[S] SHOWN OR INDICATED. THERE MAY ALSO BE ITEMS OF open eir INFRASTRUCTURE OF WHICH NO RECORDS IS HELD. THE INFORMATION IS GIVEN WITHOUT PREJUDICE TO THE LEGAL RIGHTS OF open eir TO COMPENSATION SHOULD open eir INFRASTRUCTURE BE DAMAGED.

Ordnance Survey Ireland Licence No EN 0007904
Copyright Ordnance Survey Ireland and Government of Ireland



© Ordnance Survey Ireland, © Ordnance Survey Ireland 2017

Important Safety Notice: Damage to gas pipelines can result in serious injury or death. Gas network information is provided as a general guide. The exact location and depth of medium or low pressure distribution gas pipes must be verified on site by carrying out necessary investigations, including, for example, hand digging trial holes along the route of the pipe. Service pipes are not generally shown but their presence should always be anticipated.

High pressure transmission pipelines are shown in red. If a transmission pipeline is identified within 10m of any intended excavations then work must not proceed before GNI has been consulted. The true location and depth of a transmission pipeline must be verified on site by a representative of GNI. Contact can be made through 1800 427 747.

All work in the vicinity of the gas network must be completed in accordance with the current edition of the Health and Safety Authority publication, 'Code of Practice For Avoiding Danger From Underground Services' which is available from the Health and Safety Authority (0818 289 389) or can be downloaded at www.hsa.ie.

Legal Notice: Gas Networks Ireland (GNI) and its affiliates, accept no responsibility for the accuracy of any information contained in this document including data concerning location and technical designation of the gas distribution and transmission network (the"Information"). The Information should not be relied on for accurate distance or depth of cover measurements.

Any representations and warranties, express or implied, are excluded to the fullest extent permitted by law. No liability shall be accepted for any loss or damage including, without limitation,direct, indirect or consequential loss, arising out of or in connection with the use or re-use of the Information.

Reproduced from the Ordnance Survey by permission of the Government. Licence No. 3-3-34

- Aurora Telecom Duct
- Aurora Telecom Sub Duct
- Aurora Telecom Inserted Gas Pipe

Aurora Telecom Queries - 01-8926166 (Office Hours)
Aurora_Network_Queries@gasnetworks.ie
Aurora Telecom Emergency Only 1800 427399 / 01 2030120

- Transmission Pipe (High Pressure)
- Transmission Pipe (Construction Issue)
- Distribution Pipe (Medium Pressure)
- Distribution Pipe (Low Pressure)
- Service Pipe (Medium Pressure)
- Service Pipe (Low Pressure)
- Strategic Pipe (Medium Pressure)
- Strategic Pipe (Low Pressure)
- Inserted
- Abandoned Pipe

C=?	Cover (depth in metres)		Pressure Monitor
CP	CP Test Point		Protection (Slabbing)
	End Cap		Protection (Sleeve)
	Hot Tap		Reducer
	Installation		Service Terminator
	Valve		Tee
	Mains Verification**		Transition

**** Please contact GNI on 1800-427747 for specific information**

DIAL BEFORE YOU DIG 1800 427 747
In Emergency call 1800 20 50 50 Gas Networks Ireland

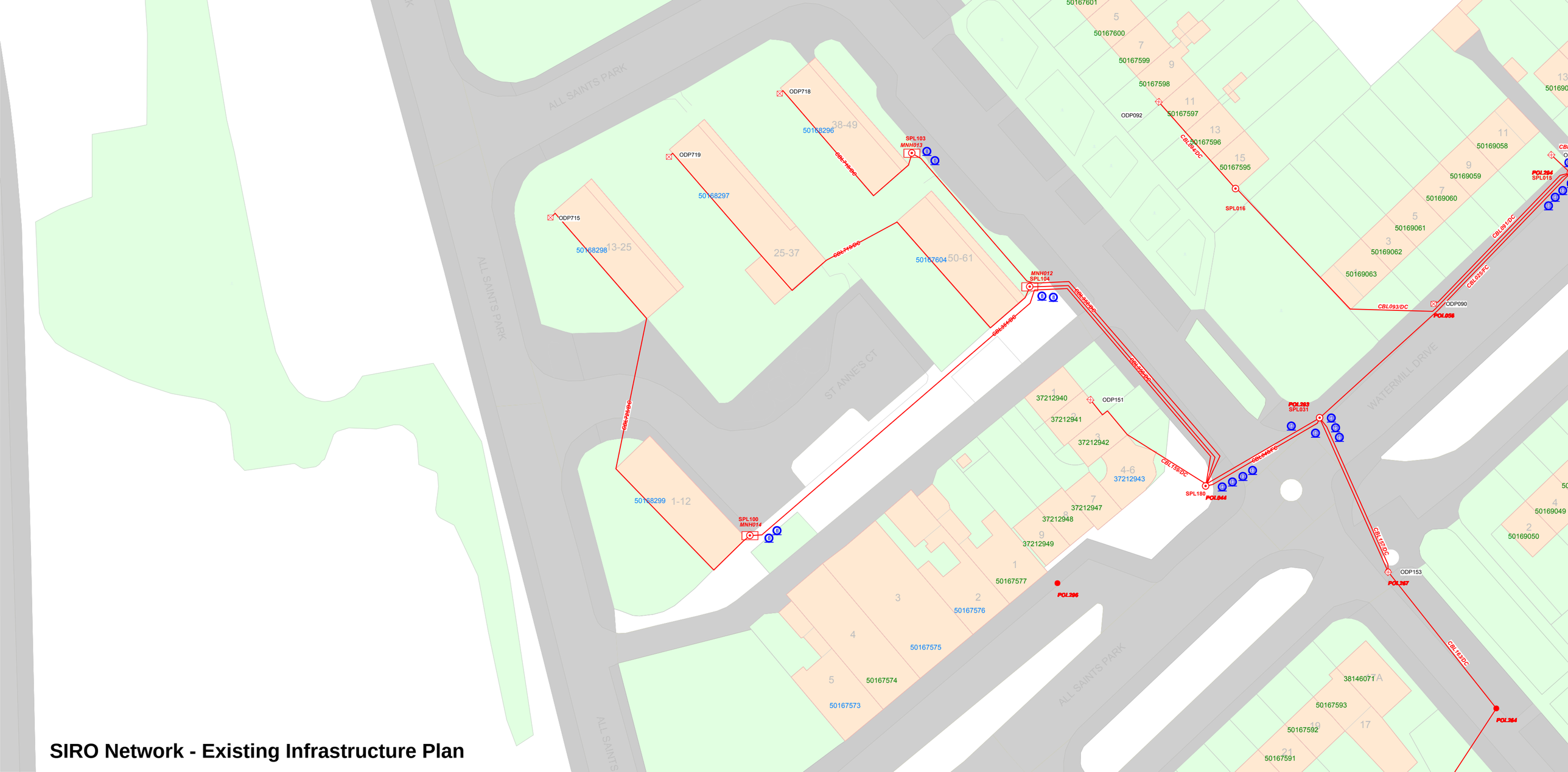
Gas Networks Ireland

GAS NETWORK INFORMATION

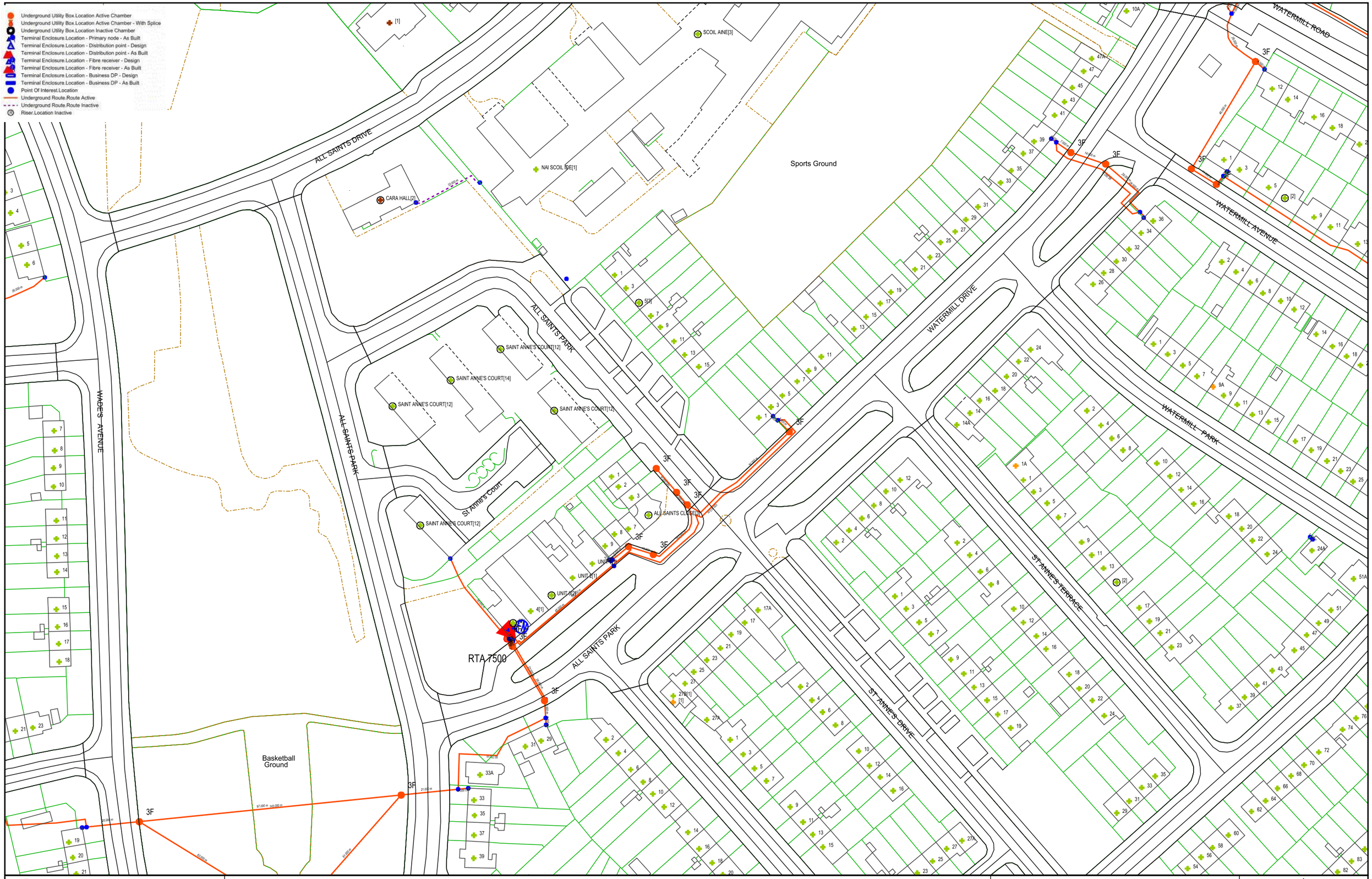
Description:

Location: 721200,737850

Plot Date: 27/07/2022 11:09	Scale: 1000 @ A3
Plotted By: 4959	Ref ID: *4959_27072022110955*



SIRO Network - Existing Infrastructure Plan



Unit 7,
Westgate Business Park,
Ballymount,
Dublin 24.

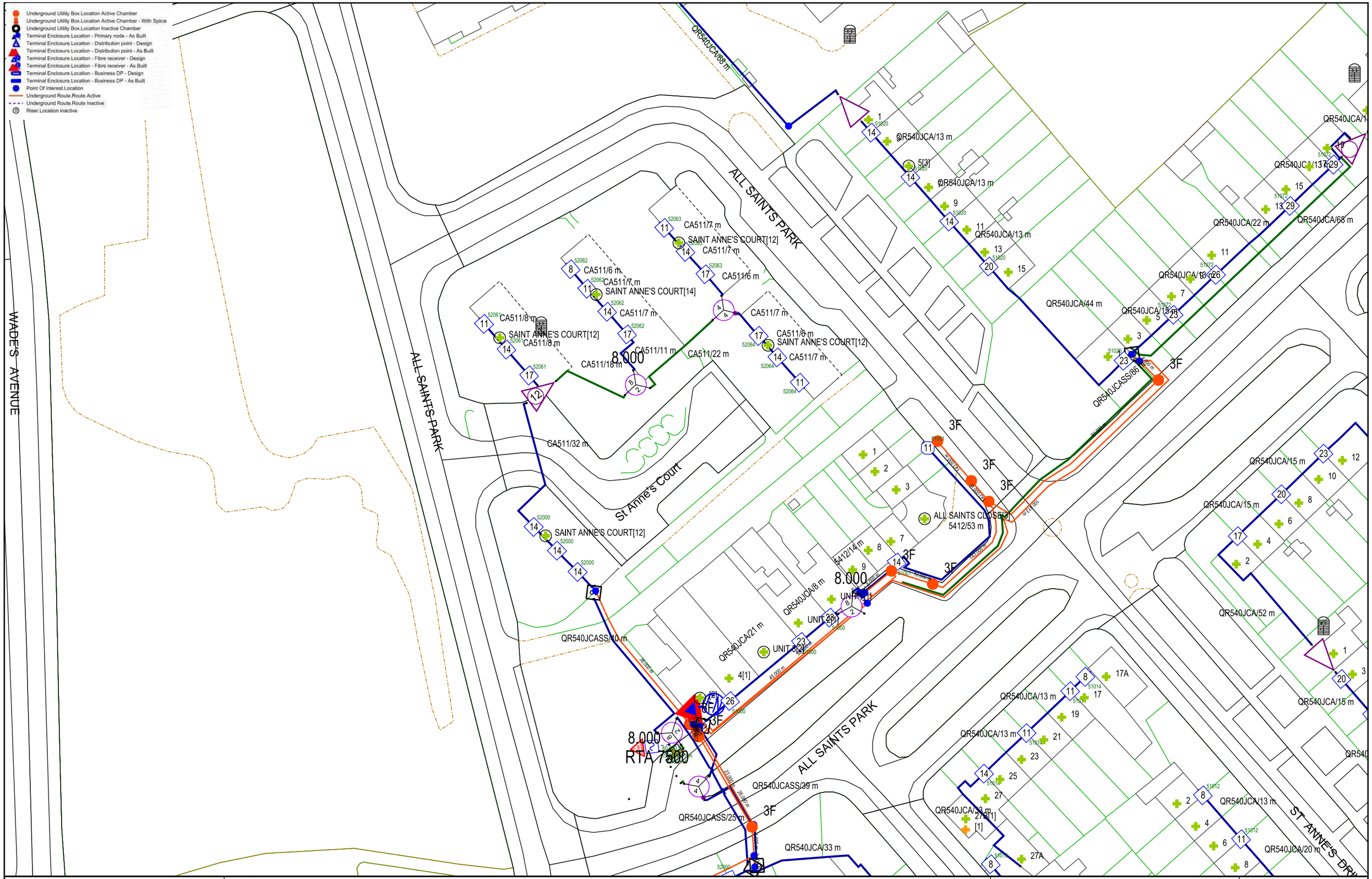
PROJECT NAME Saint Anne' s Court - Underground Services

DESIGNED BY:

Ordnance Survey Ireland Licence No. EN0023805
(c) Ordnance Survey Ireland and Government of Ireland

Produced on: 07/03/2023

@ A3



Unit 7,
Westgate Business Park,
Ballymount,
Dublin 24.

PROJECT NAME St. Anne's Court in Raheny, Dublin 5

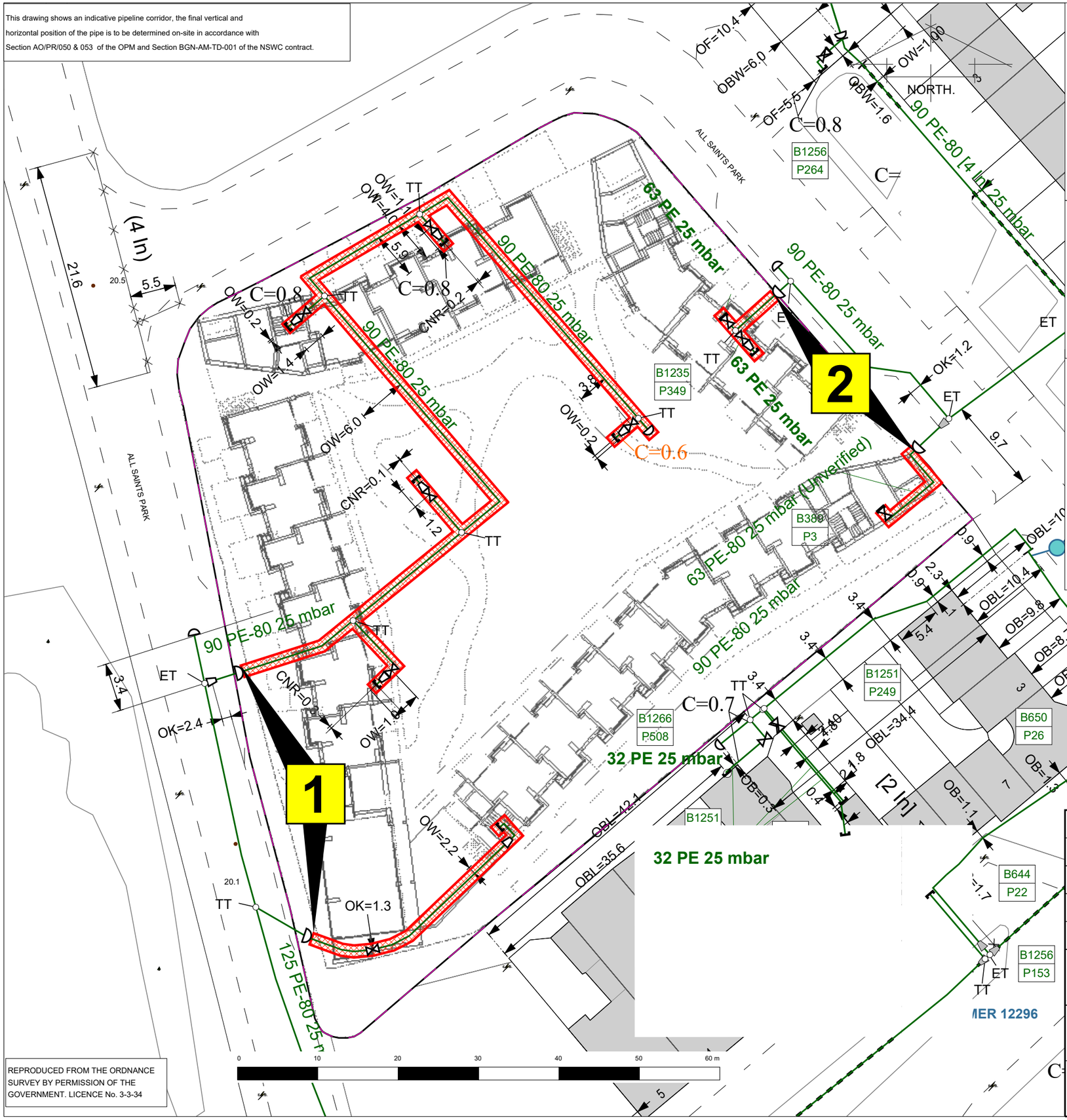
DESIGNED BY:

Ordnance Survey Ireland Licence No. EN0023805
(c) Ordnance Survey Ireland and Government of Ireland

Produced on: 21/03/2023

@ A3

This drawing shows an indicative pipeline corridor, the final vertical and horizontal position of the pipe is to be determined on-site in accordance with Section AO/PR/050 & 053 of the OPM and Section BGN-AM-TD-001 of the NSWC contract.



REPRODUCED FROM THE ORDNANCE SURVEY BY PERMISSION OF THE GOVERNMENT. LICENCE No. 3-3-34

Important Safety Notice:

Damage to gas pipelines can result in serious injury or death. Gas network information is provided as a general guide. The exact location and depth of medium or low pressure distribution gas pipes must be verified on site by carrying out necessary investigations, including, for example, hand digging trial holes along the route of the pipe. Service pipes are not generally shown but their presence should always be anticipated.

High pressure transmission pipelines are shown in red. If a transmission pipeline is identified within 10m of any intended excavations then work must not proceed before GNI has been consulted. The true location and depth of a transmission pipeline must be verified on site by a representative of GNI. Contact can be made through 1800 427 747.

All work in the vicinity of the gas network must be completed in accordance with the current edition of the Health & Safety Authority publication, Code of Practice For Avoiding Danger From Underground Services which is available from the Health and Safety Authority (01 614 7000) or can be downloaded at www.hsa.ie.

Legal Notice:

Gas Networks Ireland (GNI) and its affiliates, accept no responsibility for the accuracy of any information contained in this document including data concerning location and technical designation of the gas distribution and transmission network (the Information). The Information should not be relied on for accurate distance or depth of cover measurements.

Any representations and warranties, express or implied, are excluded to the fullest extent permitted by law. No liability shall be accepted for any loss or damage including, without limitation, direct, indirect or consequential loss, arising out of or in connection with the use or re-use of the Information.

1. Cut and cap existing 90PE-80 25mbar mains at 2 no. locations and abandon highlighted sections.

2. Cut and cap existing 63PE-80 25mbar mains at 2 no. locations and abandon highlighted sections.

- Client shall provide pre-ex trench from site boundary. Site boundary deemed to include footway to front of development as client is relaying as part of development works.

ISSUE	REVISION	DRWN. BY / DATE	CHECKED BY / DATE	APPR'D BY / DATE
1	Construction Issue	BL(C) 30/06/23	TK 06/07/23	TK 06/07/23

WAYLEAVE REQD:	No	O.S. REF. NO'S:	N/A
MATRLS. DELIVERY:	N/A	SURVEYED BY:	N/A
METER SIZE: N/A	SUPPLY PRESS: 25mbar	OUTLET PRESS:	N/A

Design Department - DUBLIN

Gas Networks Ireland

PROJECT: **MA - St. Anne's Court**	DATE: 30/06/2023	SCALE: 1:500	
	DRAWN: BL(C)	APPR.: TK	
TITLE: **Design Drawing**	DRG. NO. 48009425	PROJ. NO. 48009425	SH. 1 of 3