16-May-2022

| | |
|---|---|
| Author | Barry O'Neill |
| Project ref | 21_0706 |
| Purpose | Planning |
| Version | P.00.04 |

Building Services
Consulting Engineers
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# UTILITY IMPACT ASSESSMENT

## RATOATH SOUTH SHD

CO. MEATH

| | |
|---|---|
| Architect | RKD Architects |
| Project Managers | Floton Project Management |
| Structural & Transport Engineers | OCSC Consulting Engineers |
| Services Engineers | BBSC Consulting Engineers |
| Environmental Consultants | Altemar |
| Landscape Architects | BSM |

On Behalf of Beo Properties Ltd.

| Revision | Date of Issue | Reason For Issue | By | Chk'd |
|---|---|---|---|---|
| P.00.04 | 16-May-2022 | PLANNING | BON | BON |
| | | | | |
| | | | | |

# PROPOSED DEVELOPMENT

## Summary Description

The development will principally consist of the construction of 452 no. residential units which are located in 12 neighbourhoods. Building heights ranging from 2-3 storey terraced houses and 3-4storey duplex buildings (1 storey ground floor units and 2 storey first and second floor units; 2 storey ground and first floor units and 2 storey second and third floor units) and 6-storey apartment blocks. Private open space associated with the residential units is provided in the form of rear gardens, balconies, terraces and winter gardens. The development includes a crèche with associated outdoor play areas at ground floor and at roof level; 4 no. commercial/retail units; a landscaped public open space which includes a civic plaza; communal open space in the form of communal courtyards for each neighbourhood; associated car and cycle parking serving the full development and uses therein; solar PV panels; a second phase of the Ratoath Outer Relief Road (RORR), that will run along the southern boundary of the application site join up to the existing constructed section of the RORR, with two priority controlled junctions; a series of pedestrian and cycle connections from the Fairyhouse Road (R155), Cairn Court, Glascarn Lane and the new RORR; internal road and shared surface networks including pedestrian and cycle paths; public lighting and all associated site development and infrastructural works, services provision, ESB substations, foul and surface water drainage, extension to the foul network, access roads/footpaths, lighting, landscaping and boundary treatment works and all ancillary works necessary to facilitate the development

(Full Statutory Description will be circulated separately to this report).

## KEY PROJECT DETAILS:

No. of Units: 452

Site Area: 14.166 Hectares

# Contents

# 1 PURPOSE OF REPORT

Beo Properties Ltd. appointed BBSC, April 2021 to study the impact on the Existing Utility to the development as set out under SI 600/2001.

The development will be over multiple phases.

It shall comprise Apartments, Landlord areas, Civic Amenity, Creche as outlined in the Development Description above

# 2 MEATH COUNTY DEVELOPMENT PLAN

The following is contained in the Meath County Development Plan 2021-2027 and is addressed within the context of this report as applicable to the proposed development

| Section / Policy | Commentary pertaining to proposed development |
|---|---|
| **6.15.3 Renewable Energy** | |
| The potential feasible renewable energy options for the County include, but are not limited to, a balanced mix of:<br>Bioenergy - crops, forestry;<br>Biomass - anaerobic digestion, combined heat and power (CHP);<br>Geothermal - hot dry rock reservoirs, groundwater aquifers;<br>Hydro energy - small and micro hydro systems;<br>Solar - passive solar heating, active solar heating;<br>Waste - landfill methane gas collection;<br>Wave - wave action, and;<br>Wind - onshore wind, offshore wind (single turbines and groups). | Solar Photovoltaic panels to be provided on a dwelling by dwelling basis as assessed by SEAI DEAP. |
| **6.15.3.1 Solar Energy**<br><br>There are a range of technologies available to exploit the benefits of harnessing energy of the sun, including solar panels, solar farms, solar energy storage facilities all of which contribute to a reduction in energy demand.<br><br>Solar technologies can be designed into buildings or retrofitted.<br><br>Large scale solar farms have been positively considered on suitable sites within the County in the recent past. As of May 2019, twenty solar photovoltaic farms have been granted planning permission across the County but none have commenced development. A number of other solar farm proposals are at the pre-planning stage.<br><br>Proposals for the development of solar farms will not be permitted within areas identified as being within Flood zones A or B as set out in the Planning System and Flood Risk Management Guidelines 2009 for Planning Authorities (or any updated guidelines).; | Solar Photovoltaic panels to be provided on a dwelling by dwelling basis as assessed by SEAI DEAP. |
| **6.15.3.6 Energy Efficiency**<br>The Council support the concept of generating renewable energy at a 'local' level and is cognisant of the benefits that accrue to local communities, for example using solar energy as a means to empower communities to take control of the production and consumption of energy. Local community engagement will form a key part of the Council's future energy strategy, and this engagement could be developed through the Public Participation Network (PPN) which could be used to inform people of the economic, environmental and social benefits of moving away from solid/fossil fuels towards a low carbon economy.<br>The Council will endeavour:<br>• To promote the rational uses of energy;<br>• To promote renewable energy;<br>• To promote and disseminate energy information; | All dwellings will be A2 or better as assessed to nZEB using SEAI DEAP software and workbooks. |

| | |
|---|---|
| • To protect the environment;<br>• To reduce energy waste in all sectors of society, and;<br>• To encourage the replacement of imported fossil fuels with regionally generated renewable energy in an effort to ensure security of energy supply, where it is feasible.<br>Ireland is committed to achieving its renewable energy and efficiency targets by 2020 as set down by the European Commission under the renewable energy directive | |
| INF OBJ 41<br>To promote the generation and supply of low carbon and renewable energy alternatives, having regard to the opportunities offered by the settlement hierarchy of the County and the built environment. | Solar Photovoltaic panels, air to water electrically powered heat pumps, electrically powered waste air heat pumps, demand controlled ventilation to be employed along with all lights to be LED.<br>Buildings fabric will to current Part L requirements. |
| INF OBJ 42<br>To support the recording and monitoring of renewable energy potential in the County in partnership with other stakeholders including the Sustainable Energy Authority of Ireland (SEAI). | SEAI Published DEAP values will be available to the Council via the SEAI portal website |
| INF OBJ 43<br>To require, where feasible and practicable, the provision of Photovoltaic solar panels in new residential developments, commercial developments, and public buildings for electricity generation/storage and/or water heating purposes so as to minimise carbon emissions and reduce dependence on imported fossil fuels and reduce energy costs | Solar Photovoltaic panels, demand controlled ventilation to be employed along with all lights to be LED. |
| INF OBJ 49<br>To support the use of heat pumps as an alternative to gas boilers, where appropriate, for domestic and commercial development | Air to water electrically powered heat pumps (houses), waste air heat pumps (apartments), to be employed. |
| 10. Climate Change Strategy | Buildings fabric will be to current or better than Part L requirements |
| 10.5.6 Residential<br>Mitigation Strategy<br>Promote and facilitate energy efficient building design, environmentally sustainable layout and locations | Development will be provided with Energy efficient public lighting and all buildings complying with INF OBJ 43, 49 above |
| INF POL 39<br>To encourage the attainment of high standards of energy efficiency and environmental sustainability in development. | Development will be provided with Energy efficient public lighting and all buildings complying with INF OBJ 43, 49 above |
| MOV OBJ 43<br>To require, where feasible and practicable, the provision of Photovoltaic solar panels in new residential developments, commercial developments, and public buildings for electricity generation/storage and/or water heating purposes so as to minimise carbon emissions and reduce dependence on imported fossil fuels and reduce energy costs. | Development will be provided with Energy efficient public lighting and all buildings complying with INF OBJ 43, 49 above |
| MOV OBJ 49<br>To support the use of heat pumps as an alternative to gas boilers, where appropriate, for domestic and commercial development | Development will be provided with Energy efficient public lighting and all buildings complying with INF OBJ 43, 49 above |
| Promote the use of lower carbon fuels in the home. | |

| | |
|---|---|
| **INF OBJ 41**<br>To promote the generation and supply of low carbon and renewable energy alternatives, having regard to the opportunities offered by the settlement hierarchy of the County and the built environment | Development will be provided with Energy efficient public lighting and all buildings complying with INF OBJ 43, 49 above |
| **INF OBJ 42** | See above. |
| **INF OBJ 43** | See above. |
| **10.5.8 Energy** | |
| **Encourage the uptake of more renewable energy sources** | |
| **INF POL 34**<br>To promote sustainable energy sources, locally based renewable energy alternatives, where such development does not have a negative impact on the surrounding environment (including water quality), landscape, biodiversity or local amenities. | Renewable energy, each dwelling to be provided with Solar Photovoltaic Panels, thus harvesting up to 1200 hours of the Suns energy, as identified in Meath Councils Appendix 13 Rural Design Guide |
| **INF OBJ 48**<br>To support Ireland's renewable energy commitments by promoting the use of district heating systems in urban residential and enterprise developments, where such developments will not negatively impact upon the surrounding landscape, environment, biodiversity or local amenities | Due to the amount of Solar Energy being provided as tabulated in Appendix 2 below |
| **11.11.2 EV Charging Points**<br>The Climate Action Plan, 2019 acknowledges that the pricing structure for EV vehicles is a major factor in consumers decision making. However the Plan also acknowledges the importance of 'ensuring the EV Charging network underpins public confidence.'19 The Council will encourage the provision of EV charging points in all developments for future proofing.<br>**DM OBJ 166**<br>All car parks shall include the provision of necessary wiring and ducting to be ; capable of accommodating future Electric Vehicle charging points, at a rate of 10% of total space numbers.<br>**DM OBJ 167**<br>In any car park in excess of 20 spaces where public access is available, one fully functional charging point for Electric Vehicles shall be provided in accordance with IEC 61851 Standard for Electric Vehicle Conductive Charging Systems. | Each House with own parking to be provided with EV Charging<br>For Maisonettes and Apartments 1 in 10 of car parking spaces shall be provided with car chargers, 2.4kw in size.<br>In Large Car Parking areas over 20 car spaces and subject to analysis by ESB Networks will be provided with or provision for future fast charging.<br>These chargers are commercial in nature and exceed ESB guidelines for domestic levels of connection<br>Note that latest generation of chargers require 350kw to be supplied as fast as the vehicle can accept<br>Ducting will be provided for all site car parking in accordance with Part L 2021 section 1.4.6. |

# 3 POTABLE WATER

The requirements for potable drinking water shall be EN806 all parts, Irish Water Standards.

Refer to the Civil and Structural Engineers for details of the site water distribution and expected water usage.

However, in order to comply with Irish Waters Terms and Conditions and SR50-3:2021, each unit or dwelling will require 227 litres of potable water to EN806 all parts per unit.

Irish Waters forms for applications shall be processed and application applied for as part of the planning conditions and as a notified body all aspects of their requirements for early utility planning shall be complied with the form being submitted on or shortly after the lodgement of the planning permission process. (https://www.water.ie/connections/get-connected/housing-development.xml)

The daily storage rate is determined at 105m³ and an expected average hourly demand of 17.1 l/s

In addition to the above figures allowance for fire hydrant flow rates shall also be included as per the Local Fire Fighting Requirements and as per Part B requirements, in the order of 25 to 35l/s (86 to 126m³/hr) range to Irish Water network modelling requirements.

The development will be supplied with 2 or more connections to each phase and tie in with the existing Irish Water network grid, each connection to be metered. Multiple connections will be required for fire fighting and daily demand requirements.

Water pipes, valves, meters shall all be to EN806 with plastic MDPE for in ground distribution and PEX-AL-PEX above ground distribution so.

Refer to Appendix 1 for details of calculations related to potable water requirements

# 4 FOUL AND WASTE WATER

Refer to the Civil and Structural Engineers for details of the site foul and waste water distribution and expected flow rates and usage.

Irish Waters forms for applications shall be processed and application applied for as part of the planning conditions and as a notified body all aspects of their requirements for early utility planning shall be complied with the form being submitted on or shortly after the lodgement of the planning permission process. (https://www.water.ie/connections/get-connected/housing-development.xml)

# 5 NATURAL GAS

The development is expected to be supplied with Natural Gas for cooking requirements.

Gas shall enter the site at a number of locations to Bord Gais requirements.

The gas may require an Area Gas step down facility and is subject to Bord Gais Network analysis, which is beyond scope of this study.

Gas shall be in road, to IS 813, IS 820 requirements as per Bord Gais requirements.

In line with the Climate Action Plan of 2019, measure 60, it is expected that gas for space heating is to be wound down and the need for space heating using gas will reduce to near zero levels over time.

*"60 - Effectively ban the installation of oil boilers from 2022 and the installation of gas boilers from 2025 in all new dwellings through the introduction of new regulatory standards for home heating systems, and ensure the supply chain for the installation of renewable heating systems is in place. Enact the NZEB performance requirements in regulation in 2019 to facilitate the banning of oil boilers"*

# 6 TELECOMS

Telecoms shall be routed in ground from a road side cabinets, secure, to each unit within the development. It is expected to provide Fibre to each unit or apartment and run from the nodes to dwelling in dedicated ducts or cable trays. The design is vendor neutral.

Manholes, cabinets shall be provided as required to allow for a one to one connection with both radial ring and spurs to the dwellings being provided.

Refer to the Telecommunication Assessment Report.

# 7 ELECTRICITY

The entire electrical installation, within buildings, street furniture etc. will be to IS10101 National rules of

The ESB network rules regarding housing estates shall be adhered to.

Power shall enter on a ring basis from 2 or more locations to ESB final design. The Power shall be stepped down using substations or substation kiosks to suit.

From the substation power shall be feed via 125 Wavin ducts to mini pillars and then feed to each dwelling. Apartments shall be feed from the sub stations to a meter cabinet with CT cut outs to suit and then feed via cable trays to each dwelling.

It is expected that a load of between 2.7MVA and 3.35MVA is expected subject to ESB standard load estimation internal modelling.

### 7.1 DWELLING LOADINGS

Each unit shall be allowed 16 KVA as per ESB recommendations to allow for heat pumps used for space heating and Electrical Vehicle charging.

For load estimation purposes each block of houses shall be feed from localised mini pillars, providing power up to 12 houses.

Refer to Appendix 2 for details of block loadings

### 7.2 COMMERCIAL LOADINGS

The Creche will be provided with an estimated 80KVA

The Proposed bakery will be provided with an estimated 80KVA

Other units hairdresser, conveyance stores i.e. small retail will be supplied with 49KVA each.

Refer to Appendix 2 for details of block loadings

### 7.3 ELECTRICAL CHARGING FOR VEHICLES

Fast Charger provisions shall be provided at the Creche and at main entrance spine route into the development.

In additional a fast electrical charger for suitable vehicles shall be provided on 1 per 10 dwellings to be located at suitable locations (to ESB agreements) as per Part L of the Building Regulations, 2021.

Should ESB reject the requirement for charge stations, ducting in paving shall be allowed for running to manholes to facilitate the future install of same as per Part L: 2021 which sets out requirements for ducting provision and charging requirements which will be applied.

### 7.4 SUB STATIONS

Based on the loads above some 6 to 8 sub stations of between 350KVA and 900KVA will be required to be supplied subject to ESB calculations, quantity, diversity, geography, routing, redundancy etc.

Refer to Appendix 3 for proposed location of Sub Stations.

### 7.5 METERING

All dwellings and other units, street lights shall be metered in accordance with ESB metering requirements

Apartments will be metered on a block-by-block basis with each block having a dedicated meter room.

### 7.6 EXISTING OVERHEAD LINES

Existing overhead lines to be diverted to in ground ducts with access via standard arrangements being provided, wayleaves.

# 8 STREET LIGHTING

Street lighting shall be suppled in accordance with local County Councils Public Street Lighting requirements, namely the Meath County Councils Public Lighting Specification.

The final level of lighting shall be agreed prior to design and installation with the Public Lighting section of MCC, final design shall be agreed during the BCAR process and shall be produced by Messers Redmond AMS.

Power shall be run generally in paving and under road crossings to suit design. Power shall be feed in accordance with ESB requirements for unmetered street lighting, however meters shall be provided to suit requirements.

Street Lighting will by means of poles and LED lights.

Zebra crossings, traffic lights shall be supplied with power and laid out to NRA rules and standards for same, to Civil Engineers details.

# 9 WAY LEAVES

Where any way leave is existing, following grant of planning permission, discussions and agreement with the relevant utility shall be entered into so as to ensure the safety and security of supply.

# 10 PRINCIPLE STANDARDS

### Building Regulations

- Technical Guidance Documents as A through M as published and set out in Law, Department of the Environment, relevant edition relates to date of publication and date of building.

### Potable Water

- Irish Water Publication, Guide to connect Water and wastewater Business, housing and mixed-use developments
- BS EN 806-1:2000. Specifications for installations inside buildings conveying water for human consumption. General.
- BS EN 806-2:2005. Specifications for installations inside buildings conveying water for human consumption. Design
- BS EN 806-3:2006. Specifications for installations inside buildings conveying water for human consumption. Pipe sizing. Simplified method
- BS EN 806-4:2010. Specifications for installations inside buildings conveying water for human consumption. Installation
- BS EN 806-5:2012. Specifications for installations inside buildings conveying water for human consumption. Operation and maintenance

### Foul And Waste Water (M&E only, above ground)

- Part F and G of the building Regulations.

### Natural Gas

- RGII - Registered gas installers technical guidance document 2017
- IS 813:2014 Domestic gas installations
- IS 820:2010 Non-domestic gas installations
- Gas Network Ireland publication - Guidelines for Designers and Builders – Domestic Sites

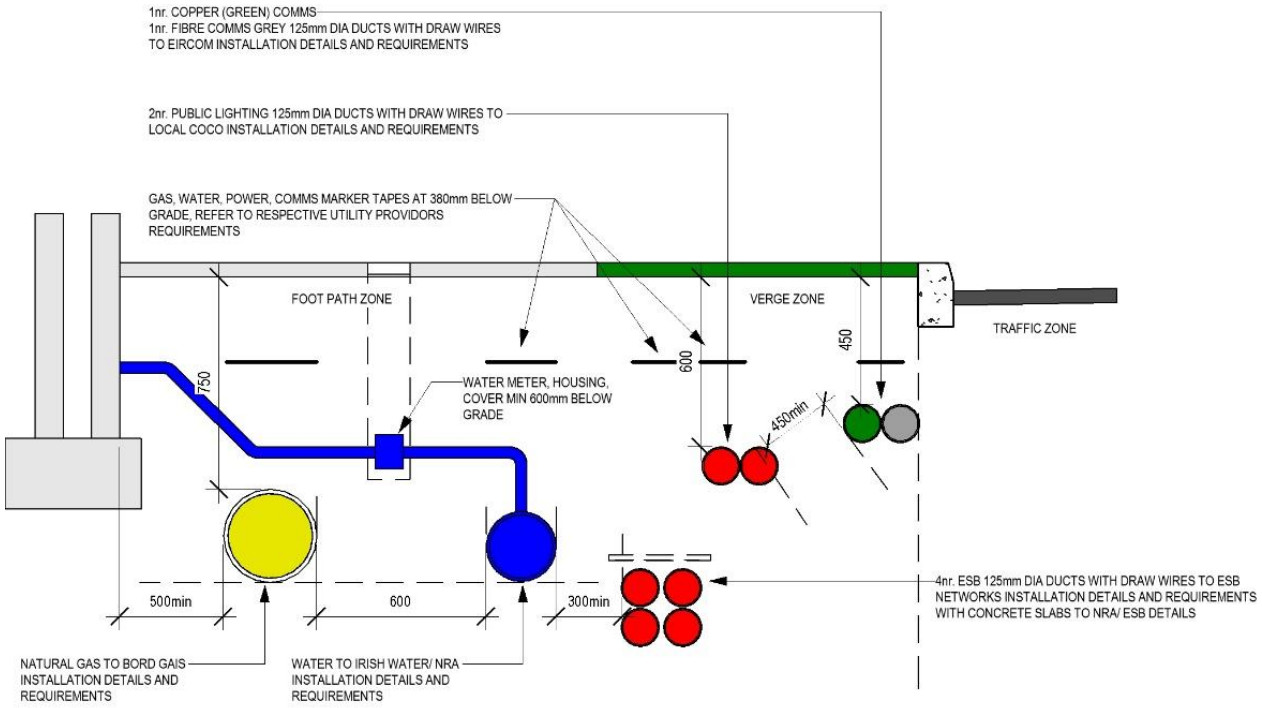
### General Electrical Standards

- IS10101 National Rules for Electrical Installation
- ESB Publication, Housing Schemes: Guidebook for ESB Networks Standards for Electrical Services

### Street Lighting

- SI 291 of 2013
- IS EN 13201-2:2015 Road Lighting – Part 2
- BS 5489-1:2013 Code of Practice for the Design of Road Lighting Part 1
- ESB Publication, Housing Schemes: Guidebook for ESB Networks Standards for Electrical Services

# 11 SITE SERVICES CO-ORDINATION DRAWINGS (TYPICAL)




NOTES
1. BUILDER, MECHANICAL, ELECTRICAL CONTRACTORS TO CONFIRM ALL SPACING WITH UTILITY PROVIDORS PRIOR TO INSTALLATION
2. SUBMIT ALL DETAILS TO DESIGN TEAM FOR APPROVALS
3. REFER TO NRA DOCUMENTS, ESB, IRISH WATER, TELCOMS PROVIDORS SPECIFICATIONS, DRAWINGS, VENDORS DETAILS PRIOR TO INSTALLATION WORKS
4. ALL DUCTS BELOW GROUND TO CONFORM TO IS 370:2007
5. ALL CONTRACTORS, PRIOR TO DIGGING CONTACT ALL PROVIDORS
6. ALL CONTRACTORS TO COMPLETE THE REQUIREMENTS OF Code of Practice For Avoiding Danger From Underground Services, Health and Safety Authority (by virtue of Section 60 of the Safety, Health and Welfare at Work Act 2005) SITE SAFETY STATMENTS, METHODS OF WORKS ETC. TO ENSURE NO LEAKS OR BREAKS OF SERVICES

Sample of Service Co-ordination in ground

# APPENDIX 1

Potable Water calculations

EN806, SR50-3:2021 Water Flow Calculations Above Ground load units per Dwelling/ Building

| Unit Description | Qty. | Beds | Water Storage (lts) | Fill Time (hrs) | Showers | Bath/ shower | Sinks | WC | WHB | LU | Flowrate (l/s) | Flow rate internal to a dwelling LU+ Fill |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Rowhouse A.1 | 61 | 3 bed | 227 | 2 | 1 | 1 | 1 | 3 | 3 | 24 | 0.75 | 0.782 |
| Rowhouse A.2 | 28 | 3 bed | 227 | 2 | 1 | 1 | 1 | 3 | 3 | 24 | 0.75 | 0.782 |
| Rowhouse B.1 | 30 | 3 bed | 227 | 2 | 1 | 1 | 1 | 3 | 3 | 24 | 0.75 | 0.782 |
| Rowhouse B.2 | 31 | 3 bed | 227 | 2 | 1 | 1 | 1 | 3 | 3 | 24 | 0.75 | 0.782 |
| Maisonette Corner Ground M.1 | 42 | 3 bed | 227 | 2 | 1 | 1 | 1 | 3 | 3 | 24 | 0.75 | 0.782 |
| Maisonette Corner Upper M.2 | 42 | 3 bed | 227 | 2 | 1 | 1 | 1 | 3 | 3 | 24 | 0.75 | 0.782 |
| Maisonette Mid-Terrace Ground M.3 | 34 | 3 bed | 227 | 2 | 1 | 1 | 1 | 3 | 3 | 24 | 0.75 | 0.782 |
| Maisonette Mid-Terrace Upper M.4 & M.6 | 49 | 3 bed | 227 | 2 | 1 | 1 | 1 | 3 | 3 | 24 | 0.75 | 0.782 |
| Maisonette 1-Bed Mid-Terrace UD C.5 | 15 | 1 bed | 227 | 2 | | 1 | 1 | 1 | 1 | 17 | 0.75 | 0.782 |
| Apartments 2-bed D.1 | 60 | 2 bed | 227 | 2 | | 1 | 1 | 1 | 1 | 17 | 0.75 | 0.782 |
| Apartments 2-bed D.2 | 20 | 2 bed | 227 | 2 | | 1 | 1 | 1 | 1 | 17 | 0.75 | 0.782 |
| Apartments 2-bed D.3 | 20 | 2 bed | 227 | 2 | | 1 | 1 | 1 | 1 | 17 | 0.75 | 0.782 |
| Apartments 3-bed D.4 | 20 | 3 bed | 227 | 2 | 1 | 1 | 1 | 3 | 3 | 24 | 0.75 | 0.782 |
| Retail Unit 1 | 1 | 5 staff | 225 | 2 | 1 | | 1 | 2 | 2 | 10 | 0.6 | 0.631 |
| Retail Unit 2 | 1 | 5 staff | 225 | 2 | 1 | | 1 | 2 | 2 | 10 | 0.75 | 0.781 |
| Retail Unit 3 | 1 | 5 staff | 225 | 2 | 1 | | 1 | 2 | 2 | 10 | 0.4 | 0.431 |
| Retail Unit 4 | 1 | 5 staff | 225 | 2 | 1 | | 1 | 2 | 2 | 10 | 0.6 | 0.631 |
| Creche | 1 | 140 persons | 5040 | 2 | 6 | | 4 | 12 | 12 | 54 | 1.2 | 1.900 |
| Total | 457 | | 108.544 | $m^3$ | | | 460 | | | 378 | | 14.535 |

Notes

EN806 loading units applied

EN806 flow rates applied

Irish Water Storage requirements applied

## Main incomer requirement Calculation

| | | |
|---|---|---|
| Kitchen Sinks | 460nr * 1 LU = 460LU | |
| | from EN806 requires | 2.50 l/s |
| Tank fill requirement | | |
| Total storage | 452dwellings x 227 lts = | 102,604lts |
| | Storage for Creche | |
| | 140x36l/person = | 5,040.00lts |
| | Storage for Retail | |
| | 4nr 5staff x 45l/person = | 900.00lts |
| | Fill time 2 hrs | |
| | Total | 108.544m³ |

| | |
|---|---|
| Flow rate required for tanks | 15.08 l/s |
| Fire Hydrants | 25.00 l/s |
| Total Flow | 42.58 l/s |
| Plus Allowance for other uses | 45.00l/s |

The development is expected to have a loading of up to 45 l/s subject to diversity

Calculation is based on ISEN806 and SR50-3:2021 requirements
Creche water demand, in above for more than 140 persons (staff and children)
Retail water demand not included i.e. café or similar, staff allowances only.

# APPENDIX 2

Electrical Block Loading Calculations (Mini Pillar Level)

<ESTIMATED ESB MINIPILLAR>

| A | B | C | D | E | F | G | H |
|---|---|---|---|---|---|---|---|
| Neigbourhood | Mark | DwellingsN | Family | Dwelling/ Unit | Electric Car Charging | Public Lighting | Mini Pillar KVA |
| | | | | | | | |
| A | MP-01 | 8 | ESB_MINI_Pillar | 40.5 kVA | 12.6 kVA | 0.1 kVA | 53.2 kVA |
| A | MP-02 | 30 | ESB_MINI_Pillar | 117.5 kVA | 12.6 kVA | 0.1 kVA | 150.2 kVA |
| A: 2 | | 38 | | 158.0 kVA | 25.2 kVA | 0.3 kVA | 203.4 kVA |
| B | MP-05 | 9 | ESB_MINI_Pillar | 44.0 kVA | 12.6 kVA | 0.1 kVA | 56.7 kVA |
| B | MP-06 | 7 | ESB_MINI_Pillar | 37.0 kVA | 12.6 kVA | 0.1 kVA | 49.7 kVA |
| B | MP-07 | 7 | ESB_MINI_Pillar | 37.0 kVA | 12.6 kVA | 0.1 kVA | 49.7 kVA |
| B | MP-08 | 9 | ESB_MINI_Pillar | 44.0 kVA | 12.6 kVA | 0.1 kVA | 56.7 kVA |
| B | MP-09 | 11 | ESB_MINI_Pillar | 51.0 kVA | 12.6 kVA | 0.1 kVA | 63.7 kVA |
| B: 5 | | 43 | | 213.0 kVA | 63.0 kVA | 0.6 kVA | 276.6 kVA |
| C | MP-13 | 7 | ESB_MINI_Pillar | 37.0 kVA | 12.6 kVA | 0.1 kVA | 49.6 kVA |
| C | MP-14 | 7 | ESB_MINI_Pillar | 37.0 kVA | 12.6 kVA | 0.1 kVA | 49.6 kVA |
| C | MP-15 | 6 | ESB_MINI_Pillar | 33.5 kVA | 0.0 kVA | 0.1 kVA | 33.6 kVA |
| C | MP-16 | 6 | ESB_MINI_Pillar | 33.5 kVA | 13.7 kVA | 0.1 kVA | 47.2 kVA |
| C | MP-17 | 6 | ESB_MINI_Pillar | 33.5 kVA | 13.7 kVA | 0.1 kVA | 47.2 kVA |
| C | MP-18 | 30 | ESB_MINI_Pillar | 117.5 kVA | 12.6 kVA | 0.1 kVA | 130.1 kVA |
| C: 6 | | 62 | | 292.0 kVA | 65.1 kVA | 0.3 kVA | 357.4 kVA |
| D | MP-02 | 8 | ESB_MINI_Pillar | 40.5 kVA | 10.2 kVA | 0.1 kVA | 50.8 kVA |
| D | MP-03 | 6 | ESB_MINI_Pillar | 33.5 kVA | 13.7 kVA | 0.1 kVA | 47.3 kVA |
| D | MP-04 | 13 | ESB_MINI_Pillar | 70.5 kVA | 23.9 kVA | 0.3 kVA | 94.6 kVA |
| D | MP-05 | 11 | ESB_MINI_Pillar | 51.0 kVA | 12.6 kVA | 0.1 kVA | 63.7 kVA |
| D: 5 | | 38 | | 195.5 kVA | 60.3 kVA | 0.6 kVA | 256.5 kVA |
| E | MP24 | 7 | ESB_MINI_Pillar | 37.0 kVA | 12.6 kVA | 0.1 kVA | 49.6 kVA |
| E | MP25 | 9 | ESB_MINI_Pillar | 44.0 kVA | 12.6 kVA | 0.1 kVA | 56.6 kVA |
| E | MP26 | 5 | ESB_MINI_Pillar | 30.0 kVA | 0.0 kVA | 0.1 kVA | 30.1 kVA |
| E | MP27 | 9 | ESB_MINI_Pillar | 44.0 kVA | 12.6 kVA | 0.1 kVA | 56.6 kVA |
| E: 4 | | 30 | | 155.0 kVA | 37.8 kVA | 0.2 kVA | 193.0 kVA |
| F | MP28 | 8 | ESB_MINI_Pillar | 40.5 kVA | 12.6 kVA | 0.1 kVA | 53.1 kVA |
| F | MP29 | 9 | ESB_MINI_Pillar | 44.0 kVA | 12.6 kVA | 0.1 kVA | 56.6 kVA |
| F | MP30 | 9 | ESB_MINI_Pillar | 44.0 kVA | 12.6 kVA | 0.1 kVA | 56.6 kVA |
| F | MP31 | 3 | ESB_MINI_Pillar | 23.0 kVA | 13.7 kVA | 0.1 kVA | 36.7 kVA |
| F | MP32 | 7 | ESB_MINI_Pillar | 37.0 kVA | 12.6 kVA | 0.1 kVA | 49.6 kVA |
| F: 5 | | 36 | | 188.5 kVA | 64.0 kVA | 0.3 kVA | 252.8 kVA |

| <ESTIMATED ESB MINIPILLAR> | | | | | | | |
|---|---|---|---|---|---|---|---|
| A | B | C | D | E | F | G | H |
| Neigbourhood | Mark | DwellingsN | Family | Dwelling/ Unit | Electric Car Charging | Public Lighting | Mini Pillar KVA |
| G | MP33 | 7 | ESB_MINI_Pillar | 37.0 kVA | 12.6 kVA | 0.1 kVA | 49.6 kVA |
| G | MP34 | 9 | ESB_MINI_Pillar | 44.0 kVA | 12.6 kVA | 0.1 kVA | 56.6 kVA |
| G | MP35 | 3 | ESB_MINI_Pillar | 23.0 kVA | 13.7 kVA | 0.1 kVA | 36.7 kVA |
| G | MP36 | 6 | ESB_MINI_Pillar | 33.5 kVA | 13.7 kVA | 0.1 kVA | 47.2 kVA |
| G | MP37 | 4 | ESB_MINI_Pillar | 26.5 kVA | 14.3 kVA | 0.1 kVA | 40.8 kVA |
| G: 5 | | 29 | | 164.0 kVA | 66.8 kVA | 0.3 kVA | 231.0 kVA |
| H | MP19 | 8 | ESB_MINI_Pillar | 40.5 kVA | 13.7 kVA | 0.1 kVA | 54.2 kVA |
| H | MP20 | 6 | ESB_MINI_Pillar | 33.5 kVA | 13.7 kVA | 0.1 kVA | 47.2 kVA |
| H | MP21 | 6 | ESB_MINI_Pillar | 33.5 kVA | 13.7 kVA | 0.1 kVA | 47.2 kVA |
| H | MP22 | 30 | ESB_MINI_Pillar | 117.5 kVA | 13.7 kVA | 0.1 kVA | 151.2 kVA |
| H | MP22A | 1 | ESB_MINI_Pillar_CO | 49.0 kVA | 0.0 kVA | 0.0 kVA | 49.0 kVA |
| H | MP22B | 1 | ESB_MINI_Pillar_CO | 49.0 kVA | 0.0 kVA | 0.0 kVA | 49.0 kVA |
| H | MP22C | 1 | ESB_MINI_Pillar_CO | 49.0 kVA | 0.0 kVA | 0.0 kVA | 49.0 kVA |
| H | MP22D | 1 | ESB_MINI_Pillar_CO | 49.0 kVA | 0.0 kVA | 0.0 kVA | 49.0 kVA |
| H | MP23 | 0 | ESB_MINI_Pillar | 0.0 kVA | 40.6 kVA | 1.0 kVA | 41.6 kVA |
| H: 9 | | 54 | | 421.0 kVA | 95.3 kVA | 1.2 kVA | 537.5 kVA |
| J | MP39 | 8 | ESB_MINI_Pillar | 40.5 kVA | 13.7 kVA | 0.1 kVA | 54.2 kVA |
| J | MP40 | 5 | ESB_MINI_Pillar | 30.0 kVA | 13.7 kVA | 0.1 kVA | 43.7 kVA |
| J | MP41 | 8 | ESB_MINI_Pillar | 40.5 kVA | 12.6 kVA | 0.1 kVA | 53.1 kVA |
| J | MP42 | 8 | ESB_MINI_Pillar | 40.5 kVA | 12.6 kVA | 0.1 kVA | 53.1 kVA |
| J | MP43 | 8 | ESB_MINI_Pillar | 40.5 kVA | 14.7 kVA | 0.1 kVA | 55.2 kVA |
| J: 5 | | 37 | | 192.0 kVA | 67.2 kVA | 0.3 kVA | 259.4 kVA |
| K | MP38 | 1 | ESB_MINI_Pillar_CO | 80.0 kVA | 0.1 kVA | 0.0 kVA | 80.1 kVA |
| K | MP45 | 30 | ESB_MINI_Pillar | 117.5 kVA | 13.7 kVA | 0.1 kVA | 147.2 kVA |
| K: 2 | | 31 | | 197.5 kVA | 13.8 kVA | 0.1 kVA | 227.3 kVA |
| L | MP46 | 6 | ESB_MINI_Pillar | 33.5 kVA | 14.9 kVA | 0.1 kVA | 48.5 kVA |
| L | MP47 | 6 | ESB_MINI_Pillar | 33.5 kVA | 0.0 kVA | 0.1 kVA | 33.6 kVA |
| L | MP48 | 4 | ESB_MINI_Pillar | 26.5 kVA | 12.6 kVA | 0.1 kVA | 39.1 kVA |
| L | MP49 | 8 | ESB_MINI_Pillar | 40.5 kVA | 12.6 kVA | 0.1 kVA | 53.1 kVA |
| L | MP50 | 6 | ESB_MINI_Pillar | 33.5 kVA | 13.7 kVA | 0.1 kVA | 47.2 kVA |
| L | MP51 | 5 | ESB_MINI_Pillar | 30.0 kVA | 0.0 kVA | 0.1 kVA | 30.1 kVA |
| L: 6 | | 35 | | 197.5 kVA | 53.8 kVA | 0.3 kVA | 251.6 kVA |
| M | MP52 | 7 | ESB_MINI_Pillar | 37.0 kVA | 12.6 kVA | 0.1 kVA | 49.6 kVA |
| M | MP53 | 7 | ESB_MINI_Pillar | 37.0 kVA | 12.6 kVA | 0.1 kVA | 49.6 kVA |
| M | MP54 | 10 | ESB_MINI_Pillar | 47.5 kVA | 12.6 kVA | 0.1 kVA | 60.1 kVA |
| M: 3 | | 24 | | 121.5 kVA | 37.8 kVA | 0.2 kVA | 159.4 kVA |
| Grand total: 57 | | 457 | | 2495.5 kVA | 650.0 kVA | 4.5 kVA | 3205.9 kVA |

Notes

All sub station locations are subject to final engineering design by ESB Networks

| Substation | KVA |
|---|---|
| 01 | 450 |
| 02 | 580 |
| 03 | 560 |
| 04 | 900 |
| 05 | 760 |
| 06 | 760 (Future) |
| 07 | 760 (ring road) |

Final Quantity of sub stations shall be agreed at time of application based on the National Loading Calculations as determined by ESB Networks as per National Code of Practice for the Customer Interface and governed by Commission for Regulation of Utilities

## PV CALCULATIONS

- SEAI DEAP calculation model
- Average calculation for dwellings based on typical plans types, subject to full solar PV analysis as per SEAI BER DEAP requirements

**PV Calculations, subject to Final BER Calculations** **SEAI PV CALCULATION METHOD** BEO SHD

| Unit Description | Qty. | Beds | Average Orientation | Watts per Panel | Nr of Panels | kWp | S (KW/yr) | zpv | result (KW/yr) | Total Panels | Total for Units (KW/yr) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Rowhouse A.1 | 12 | 3 Bed | South | 310 | 8 | 2.48 | 1036 | 1 | 2055 | 96 | 24,665 |
| Rowhouse A.1 | 13 | 3 Bed | E/W | 310 | 8 | 2.48 | 929 | 1 | 1843 | 104 | 23,961 |
| Rowhouse A.1 | 13 | 3 Bed | SE/SW | 310 | 8 | 2.48 | 1005 | 1 | 1994 | 104 | 25,921 |
| Rowhouse A.1 | 23 | 3 Bed | SE/SW | 310 | 8 | 2.48 | 1005 | 1 | 1994 | 184 | 45,860 |
| Rowhouse A.2 | 11 | 3 Bed | SE/SW | 310 | 8 | 2.48 | 1005 | 1 | 1994 | 88 | 21,933 |
| Rowhouse A.2 | 17 | 3 Bed | South | 310 | 8 | 2.48 | 1036 | 1 | 2055 | 136 | 34,942 |
| Rowhouse B.1 | 4 | 3 Bed | SE/SW | 310 | 8 | 2.48 | 1005 | 1 | 1994 | 32 | 7,976 |
| Rowhouse B.1 | 5 | 3 Bed | South | 310 | 8 | 2.48 | 1036 | 1 | 2055 | 40 | 10,277 |
| Rowhouse B.1 | 21 | 3 Bed | E/W | 310 | 8 | 2.48 | 929 | 1 | 1843 | 168 | 38,706 |
| Rowhouse B.2 | 5 | 3 Bed | SE/SW | 310 | 8 | 2.48 | 1005 | 1 | 1994 | 40 | 9,970 |
| Rowhouse B.2 | 6 | 3 Bed | E/W | 310 | 8 | 2.48 | 929 | 1 | 1843 | 48 | 11,059 |
| Rowhouse B.2 | 20 | 3 Bed | South | 310 | 8 | 2.48 | 1036 | 1 | 2055 | 160 | 41,108 |
| Maisonette Corner Ground M.1 | 3 | 3 Bed | SE/SW | 310 | 8 | 2.48 | 1005 | 1 | 1994 | 24 | 5,982 |
| Maisonette Corner Ground M.1 | 8 | 3 Bed | E/W | 310 | 8 | 2.48 | 929 | 1 | 1843 | 64 | 14,745 |
| Maisonette Corner Ground M.1 | 8 | 3 Bed | SE/SW | 310 | 8 | 2.48 | 1005 | 1 | 1994 | 64 | 15,951 |
| Maisonette Corner Ground M.1 | 23 | 3 Bed | South | 310 | 8 | 2.48 | 1036 | 1 | 2055 | 184 | 47,275 |
| Maisonette Corner Upper M.2 | 3 | 3 Bed | SE/SW | 310 | 8 | 2.48 | 1005 | 1 | 1994 | 24 | 5,982 |
| Maisonette Corner Upper M.2 | 8 | 3 Bed | E/W | 310 | 8 | 2.48 | 929 | 1 | 1843 | 64 | 14,745 |

| Unit Description | Qty. | Beds | Average Orientation | Watts per Panel | Nr of Panels | kWp | S (KW/yr) | zpv | result (KW/yr) | Total Panels | Total for Units (KW/yr) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Maisonette Corner Upper M.2 | 8 | 3 Bed | SE/SW | 310 | 8 | 2.48 | 1005 | 1 | 1994 | 64 | 15,951 |
| Maisonette Corner Upper M.2 | 23 | 3 Bed | South | 310 | 8 | 2.48 | 1036 | 1 | 2055 | 184 | 47,275 |
| Maisonette Mid-Terrace Ground M.3 | 4 | 3 Bed | SE/SW | 310 | 8 | 2.48 | 1005 | 1 | 1994 | 32 | 7,976 |
| Maisonette Mid-Terrace Ground M.3 | 6 | 3 Bed | SE/SW | 310 | 8 | 2.48 | 1005 | 1 | 1994 | 48 | 11,964 |
| Maisonette Mid-Terrace Ground M.3 | 8 | 3 Bed | E/W | 310 | 8 | 2.48 | 929 | 1 | 1843 | 64 | 14,745 |
| Maisonette Mid-Terrace Ground M.3 | 16 | 3 Bed | South | 310 | 8 | 2.48 | 1036 | 1 | 2055 | 128 | 32,887 |
| Maisonette Mid-Terace Upper M.4 & M.6 | 4 | 3 Bed | SE/SW | 310 | 8 | 2.48 | 1005 | 1 | 1994 | 32 | 7,976 |
| Maisonette Mid-Terace Upper M.4 & M.6 | 6 | 3 Bed | SE/SW | 310 | 8 | 2.48 | 1005 | 1 | 1994 | 48 | 11,964 |
| Maisonette Mid-Terace Upper M.4 & M.6 | 8 | 3 Bed | E/W | 310 | 8 | 2.48 | 929 | 1 | 1843 | 64 | 14,745 |
| Maisonette Mid-Terace Upper M.4 & M.6 | 15 | 3 Bed | South | 310 | 8 | 2.48 | 1036 | 1 | 2055 | 120 | 30,831 |
| Maisonette Mid-Terace Upper M.4 & M.6 | 2 | 3 Bed | SE/SW | 310 | 8 | 2.48 | 1005 | 1 | 1994 | 16 | 3,988 |
| Maisonette Mid-Terace Upper M.4 & M.6 | 2 | 3 Bed | E/W | 310 | 8 | 2.48 | 929 | 1 | 1843 | 16 | 3,686 |
| Maisonette Mid-Terace Upper M.4 & M.6 | 12 | 3 Bed | South | 310 | 8 | 2.48 | 1036 | 1 | 2055 | 96 | 24,665 |
| Maisonette 1-Bed Mid-Terrace UD M.5 | 2 | 1 Bed | SE/SW | 310 | 8 | 2.48 | 1005 | 1 | 1994 | 16 | 3,988 |
| Maisonette 1-Bed Mid-Terrace UD M.5 | 2 | 1 Bed | E/W | 310 | 8 | 2.48 | 929 | 1 | 1843 | 16 | 3,686 |
| Maisonette 1-Bed Mid-Terrace UD M.5 | 11 | 1 Bed | South | 310 | 8 | 2.48 | 1036 | 1 | 2055 | 88 | 22,610 |
| Apartments 2-bed D.1 | 20 | 2 Bed | South | 310 | 4 | 1.24 | 1036 | 1 | 1028 | 80 | 20,554 |
| Apartments 2-bed D.1 | 20 | 2 Bed | E/W | 310 | 4 | 1.24 | 929 | 1 | 922 | 80 | 18,431 |

| Unit Description | Qty. | Beds | Average Orientation | Watts per Panel | Nr of Panels | kWp | S (KW/yr) | zpv | result (KW/yr) | Total Panels | Total for Units (KW/yr) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Apartments 2-bed D.1 | 20 | 2 Bed | SE/SW | 310 | 4 | 1.24 | 1005 | 1 | 997 | 80 | 19,939 |
| Apartments 2-bed D.2 | 10 | 2 Bed | SE/SW | 310 | 4 | 1.24 | 1005 | 1 | 997 | 40 | 9,970 |
| Apartments 2-bed D.2 | 10 | 2 Bed | SE/SW | 310 | 4 | 1.24 | 1005 | 1 | 997 | 40 | 9,970 |
| Apartments 2-bed D.3 | 5 | 2 Bed | South | 310 | 4 | 1.24 | 1036 | 1 | 1028 | 20 | 5,139 |
| Apartments 2-bed D.3 | 5 | 2 Bed | SE/SW | 310 | 4 | 1.24 | 1005 | 1 | 997 | 20 | 4,985 |
| Apartments 2-bed D.3 | 5 | 2 Bed | South | 310 | 4 | 1.24 | 1036 | 1 | 1028 | 20 | 5,139 |
| Apartments 2-bed D.3 | 5 | 2 Bed | SE/SW | 310 | 4 | 1.24 | 1005 | 1 | 997 | 20 | 4,985 |
| Apartments 3-bed D.4 | 5 | 3 Bed | SE/SW | 310 | 4 | 1.24 | 1005 | 1 | 997 | 20 | 4,985 |
| Apartments 3-bed D.4 | 5 | 3 Bed | E/W | 310 | 4 | 1.24 | 929 | 1 | 922 | 20 | 4,608 |
| Apartments 3-bed D.4 | 5 | 3 Bed | SE/SW | 310 | 4 | 1.24 | 1005 | 1 | 997 | 20 | 4,985 |
| Apartments 3-bed D.4 | 5 | 3 Bed | South | 310 | 4 | 1.24 | 1036 | 1 | 1028 | 20 | 5,139 |
| **Total** | **452** | | | | | | | | | **3,136** | **778,820** |

Notes

All PV Calculations are based on most likely PV panels at Final BER stage

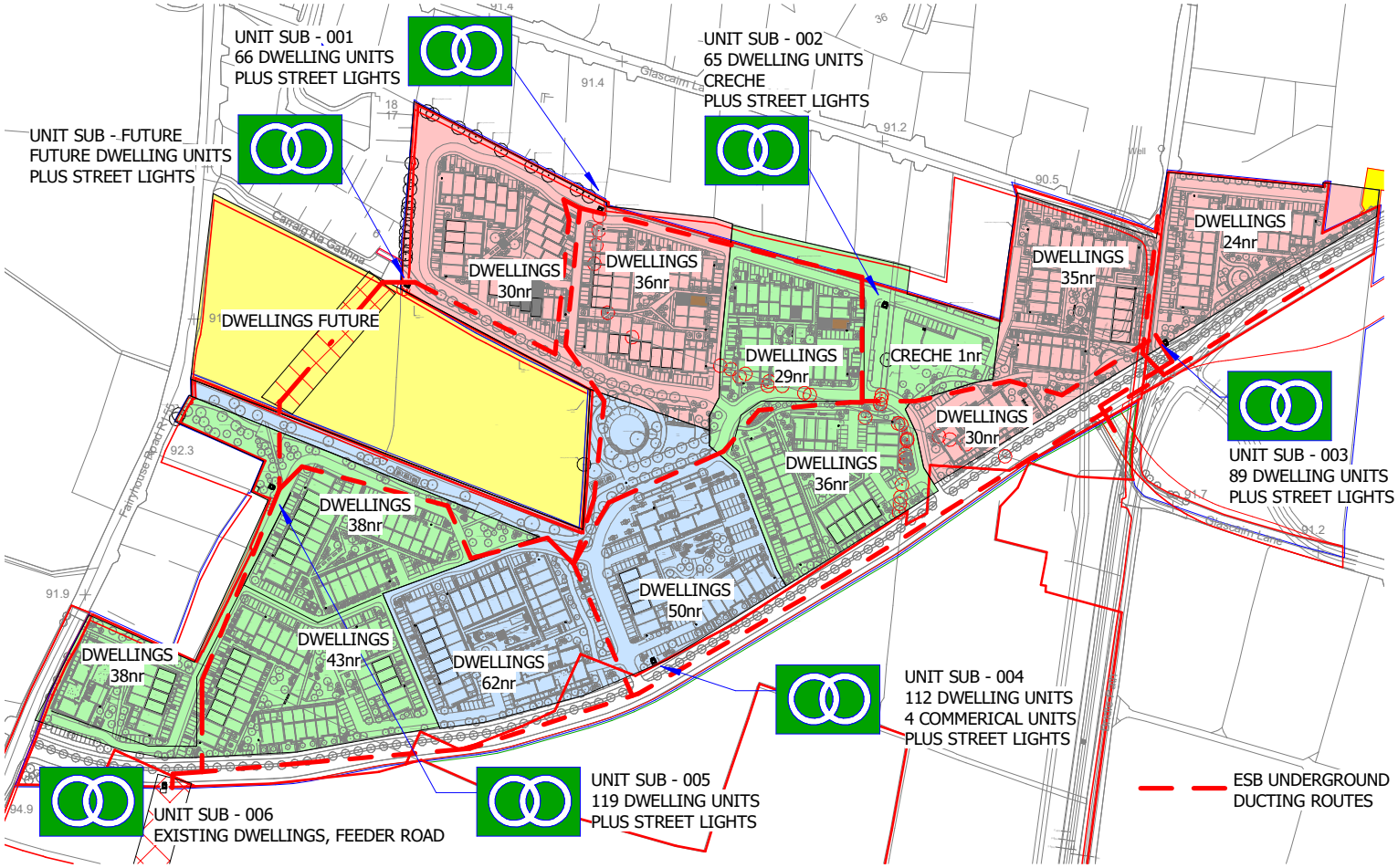
Most Average Orientation has been applied

Total results are plus or minus 15% of presented figure

All PV Calculations are based on SEAI formulas

# APPENDIX 3

Proposed ESB Substation Locations subject to application and agreement of ESB




ALL TRANSFORMER LOCATIONS AND ZONES TO ESB NETWORKS
FINAL DESIGN REQUIREMENT AT FUTURE DATE
PRESENTED HERE FOR INFORMATION ONLY

**BUILDING SERVICES ENGINEERS**
[p] 086 386 7097
[e] barry.oneill@bbsc.ie
[w] www.bbsc.ie

BBSC

BEO RESIDENTIAL SHD

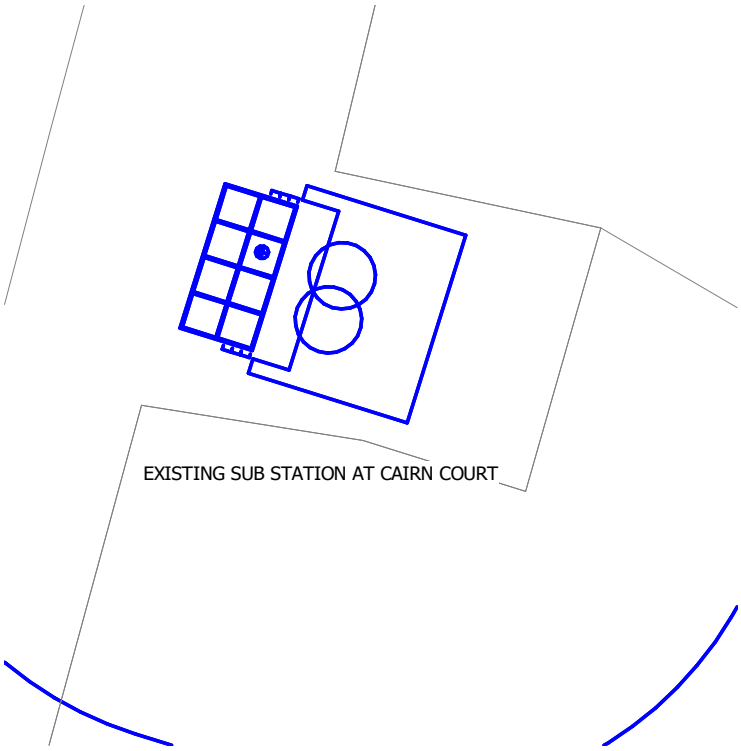
LANDS AT RATOATH Co. MEATH
21_07061RDP-BBSC-X-X-DR-ME-6002
PROPOSED ESB ZONES

Scale 1 : 4000

13/05/2022 15:18:58

# APPENDIX 4

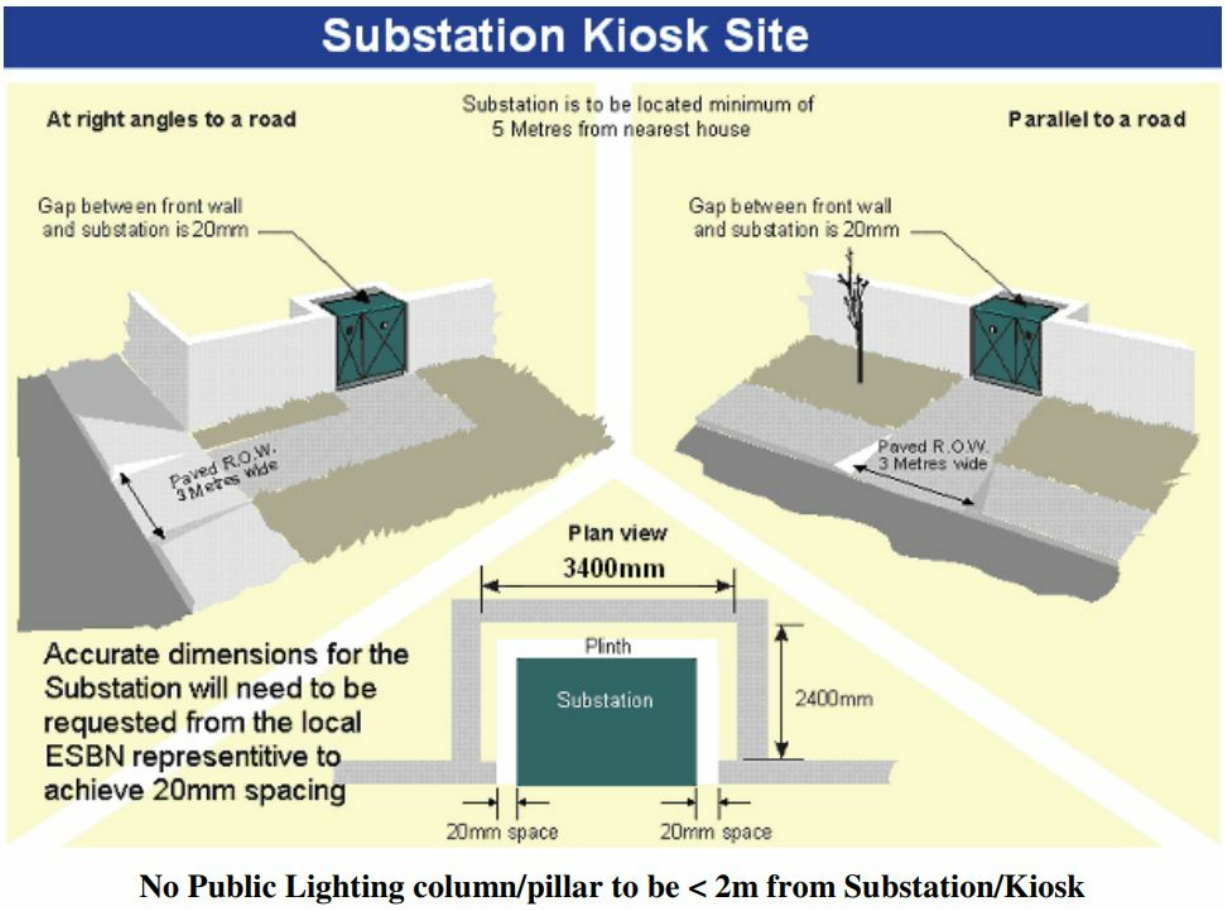
ESB Drawing




SAMPLE IMAGE OF TYPICAL UNIT STANDALONE SUB TO ESB SPECIFICATIONS APPLIES TO ALL SUB STATIONS

## 1 EXISTING CAIRN COURT SUBSTATION

1 : 100




**No Public Lighting column/pillar to be < 2m from Substation/Kiosk**

## ESB UNIT SUBSTATION DETAILS

TYPICAL HEIGHT OF UNITS 2m
SUBJECT TO ESBN REQUIREMENTS

ALL SUB STATIONS TO ESB DOCUMENTS
A3D-205071-16A Rev C FOR MV SUB STATIONS
Guidebook for ESB Networks Standards for Electrical Services Revision 5 January 2014

**BUILDING SERVICES ENGINEERS**
[p] 086 386 7097
[e] barry.oneill@bbsc.ie
[w] www.bbsc.ie

BEO RESIDENTIAL SHD
LANDS AT RATOATH Co. MEATH
21_0706 6003- CAIRN COURT SUBSTATION & TYPICAL UNIT SUB

Scale 1 : 100

13/05/2022 15:19:01

ESB Networks

# TITLE:

20210416-012_A0

COLOUR CODE:

- BLACK - 38KV & HIGHER VOLTAGE OVERHEAD LINES
- GREEN - MV(10KV/20KV) OVERHEAD LINES
- BLUE - LV (400V/230V) OVERHEAD LINES
- CYAN - 38KV & HIGHER VOLTAGE UNDERGROUND CABLE ROUTES
- RED - MV/LV (10KV/20KV/400V/230V) UNDERGROUND CABLE ROUTES

DATE: 16-Apr-2021

** SCALE: 1:3000

** SCALE WHEN PRINTED ON AN A0 PAGE
XY COORDINATES DISPLAYED IN IRISH GRID COORDINATE SYSTEM



## WARNING

THIS MAP INDICATES THE APPROXIMATE LOCATION OF ESB TRANSMISSION (400KV, 220KV, 110KV, 38KV) AND DISTRIBUTION (20KV, 10KV, 230V/400V) UNDERGROUND CABLES AND OVERHEAD LINES IN THE GENERAL AREA OF THE PROPOSED WORKS. ESB NETWORKS TAKES NO RESPONSIBILITY FOR THE ACCURACY OR COMPLETENESS OF THE MAP. IT IS THE USER'S RESPONSIBILITY TO INDEPENDENTLY VERIFY THE INFORMATION AND THE LOCATION OF UNDERGROUND CABLES AND OVERHEAD LINES. LOW VOLTAGE (230V/400V) SERVICE CABLES (E.G. HOUSE SERVICES, FACTORY/SHOP SERVICES, PUBLIC LIGHTING LAMP SERVICES, ETC) ARE NOT INCLUDED BUT THEIR PRESENCE SHOULD BE ANTICIPATED. THE DEPTHS OF UNDERGROUND CABLES MUST NEVER BE ASSUMED. ADDITIONAL MORE DETAILED INFORMATION IS AVAILABLE FOR HIGH VOLTAGE TRANSMISSION UNDERGROUND CABLES (38KV, 110KV, 220KV, 400KV) FROM THE LOCAL ESB NETWORKS TRANSMISSION REPRESENTATIVE - SEE ATTACHED LIST FOR CONTACT DETAILS OR CALL 1850 372 757. NO WORK SHOULD BE CARRIED OUT IN THE VICINITY OF 38KV OR HIGHER VOLTAGE UNDERGROUND CABLES WITHOUT PRIOR CONSULTATION WITH ESB NETWORKS. BEFORE ANY MECHANICAL EXCAVATION IS UNDERTAKEN, THE ACTUAL LOCATION OF ALL UNDERGROUND ELECTRICITY CABLES MUST BE ESTABLISHED AND VERIFIED ON THE SITE USING:
(A) UP-TO-DATE MAP RECORDS; (B) CABLE LOCATER EQUIPMENT OPERATED IN BOTH POWER AND RADIO MODES;
(C) CAREFUL HAND DIGGING OF TRIAL HOLES USING 'SAFE DIGGING PRACTICE'. REFER ALSO TO 'HSA CODE OF PRACTICE FOR AVOIDING DANGER FROM UNDERGROUND SERVICES'. ESB TAKES NO RESPONSIBILITY FOR AND SHALL BEAR NO LIABILITY, HOWSOEVER ARISING, IN RELATION TO ANY DAMAGE, INJURY/DEATH OR LOSS OF SUPPLY AS A RESULT OF DAMAGE OR INTERFERENCE WITH ITS NETWORKS.

ESB NETWORKS HAS ISSUED THIS MAP AS A PDF DOCUMENT. IF VIEWING A PAPER VERSION OF THIS MAP, THE VIEWER MUST ENSURE THAT IT HAS BEEN PRINTED IN COLOUR TO FIT TO AN A0 (OR LARGER) PAGESIZE AND THAT EACH OF THE COLOURS INDICATED ON THE COLOUR CODE LEGEND ABOVE ARE CLEAR AND DISTINCT FROM EACH OTHER TO MAINTAIN A CORRECT REPRESENTATION OF THE ELECTRICAL NETWORK INFORMATION.

X,Y: 300316 , 251154

X,Y: 303798 , 251154

X,Y: 303798 , 248846

COMMONS

COMMONS WEST

NEWTOWN W

NEWTOWN M

NEWTOWN C

JAMESTOWN M

JAMESTOWN E

JAMESTOWN S

LEGAGUNNIA

TANKARDSTOWN

GLASCAIRN M

FAIRYHOUSE

FAIRYHSE R.C

TATTERSALLS

BALLYBIN MID

35/25 AYCY

70/50 AYCY

400 ACSR

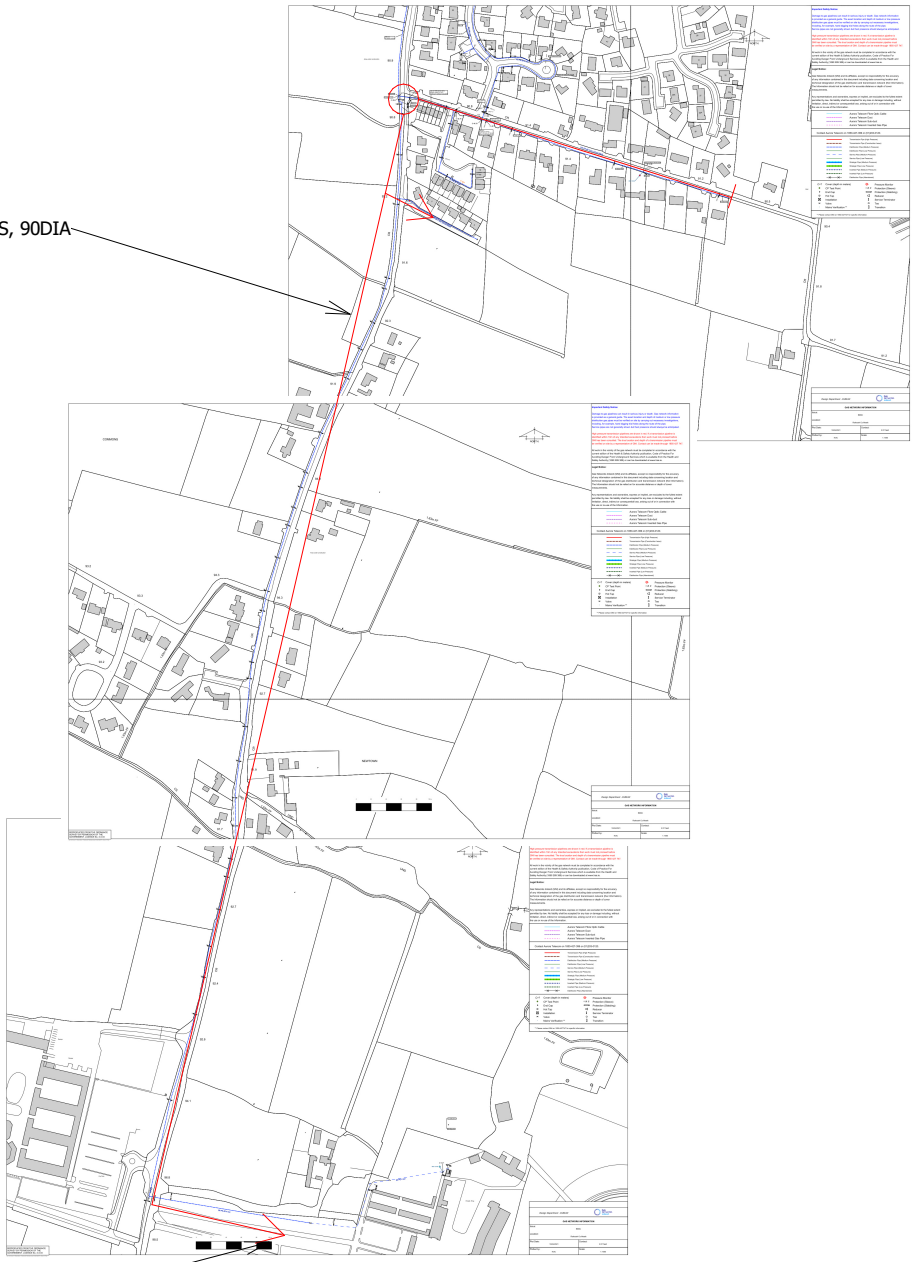
PLEASE NOTE THAT THERE ARE: HIGH VOLTAGE (38KV AND HIGHER VOLTAGES) OVERHEAD LINES AND UNDERGROUND CABLES ON THIS MAP. IF YOU INTEND WORKING, OR UNDERTAKING DEVELOPMENT WITHIN A CORRIDOR EXTENDING 40 METRES ON EITHER SIDE OF ANY HIGH VOLTAGE OVERHEAD LINES OR WITHIN A CORRIDOR EXTENDING 5 METRES ON EITHER SIDE OF ANY HIGH VOLTAGE UNDERGROUND CABLES YOU MUST CONTACT THE DESIGNATED PARTIES (PLEASE SEE ENCLOSED SHEET) IN ADVANCE OF THE WORKS

# APPENDIX 5

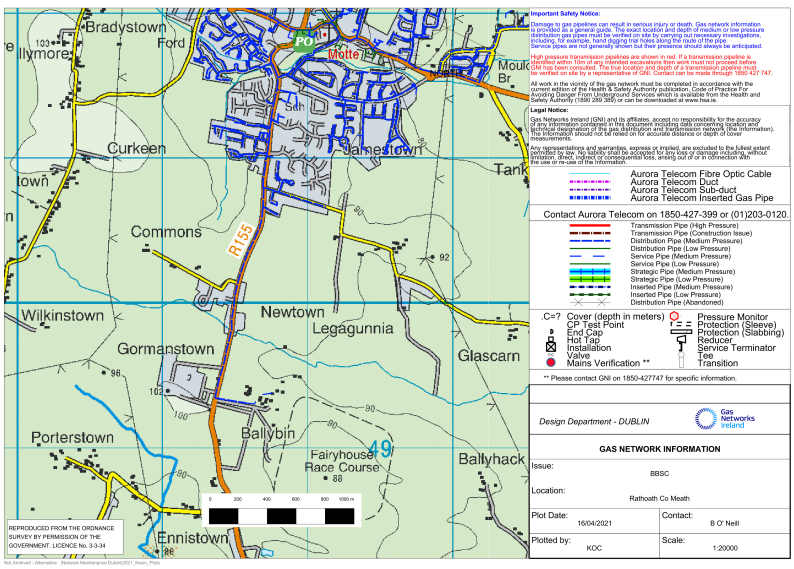
Bord Gais Drawing

SHEET SIZE A4

4BAR GAS, 90DIA



4BAR GAS, 90DIA




**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 1850-427 747.

All work in the vicinity of the gas network must be completed in accordance with the requirements of the Code of Practice for Avoiding Danger From Underground Services which is available from the Health and Safety Authority (1890 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/or depth (whether such information was obtained from a third party or otherwise). 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, consequential losses, arising out of or in connection with the use or re-use of the information.

Aurora Telecom Fibre Optic Cable
Aurora Telecom Duct
Aurora Telecom Sub-duct
Aurora Telecom Inserted Gas Pipe

Contact Aurora Telecom on 1850-427-399 or (01)203-0120.

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 Pipe (Medium Pressure)
Inserted Pipe (Low Pressure)
Distribution Pipe (Abandoned)

C=? Cover (depth in meters)
CP Test Point
End Cap
Hot Tap
Installation
Valve
Mains Verification **

Pressure Monitor
Protection (Sleeve)
Protection (Slabbing)
Reducer
Service Terminator
Tee
Transition

** Please contact GNI on 1850-427747 for specific information.

Design Department - DUBLIN

Gas Networks Ireland

**GAS NETWORK INFORMATION**

| | |
|---|---|
| Issue: | BBSC |
| Location: | Rathoath Co Meath |
| Plot Date: 16/04/2021 | Contact: B O' Neil |
| Plotted by: KOC | Scale: 1:20000 |

Not Archived - Alternative - [Network Maintenance Dublin]2021_Kevin_Plots

**BUILDING SERVICES ENGINEERS**
[p] 086 386 7097
[e] barry.oneill@bbsc.ie
[w] www.bbsc.ie

BEO RESIDENTIAL SHD

LANDS AT RATOATH Co. MEATH
21_0706 1RDP-BBSC-X-X-DR-ME-5400
EXISTING BORD GAIS NETWORK RATOATH AREA

Scale 1 : 1000

13/05/2022 15:18:31


**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 1850 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 (1890 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.

- Aurora Telecom Fibre Optic Cable
- Aurora Telecom Duct
- Aurora Telecom Sub-duct
- Aurora Telecom Inserted Gas Pipe

Contact Aurora Telecom on 1850-427-399 or (01)203-0120.

- 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 Pipe (Medium Pressure)
- Inserted Pipe (Low Pressure)
- Distribution Pipe (Abandoned)

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

** Please contact GNI on 1850-427747 for specific information.

*Design Department - DUBLIN*

Gas Networks Ireland

**GAS NETWORK INFORMATION**

| | |
|---|---|
| Issue: BBSC | |
| Location: Rathoath Co Meath | |
| Plot Date: 16/04/2021 | Contact: B O' Neill |
| Plotted by: KOC | Scale: 1:1000 |

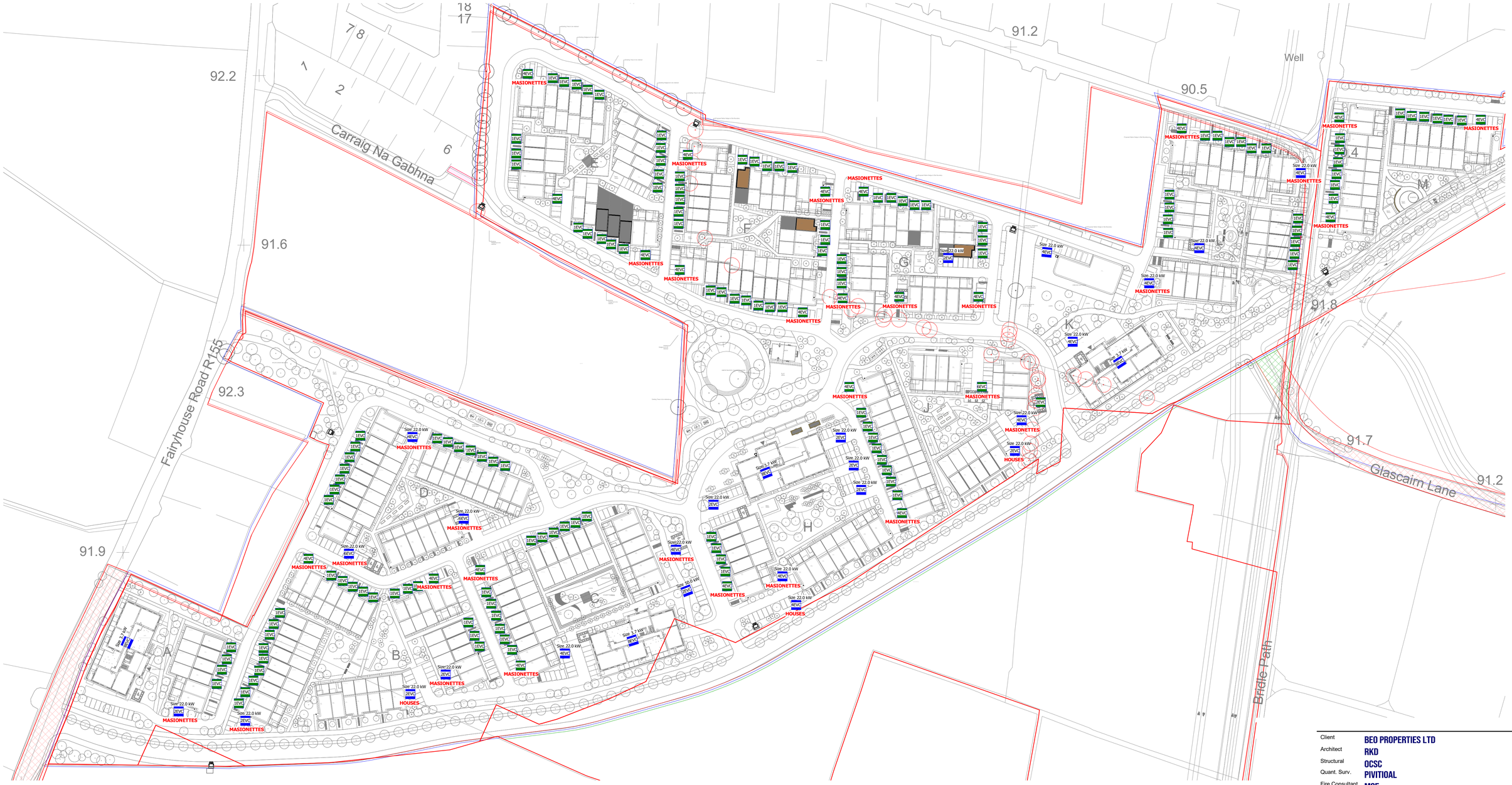
# APPENDIX 6

Proposed EV Charger Locations (To be as Per Part L:2021 section 1.4.6)

Subject to ESB requirements

REVISION HISTORY

| Rev | Description | Date | By |
|---|---|---|---|
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |




**COMMERICAL CHARGERS (TYPICAL)**

| | |
|---|---|
| Size 3.7 kW 1EVC | 2nr EV CHARGER FOR APARTMENT CAR PARK<br>RATED FOR 3.7kw/1PHASE/240V<br>COMMERICAL PAY AS YOU GO FROM LANDLORDS BOARD |
| Size 22.0 kW 2EVC | 2nr EV CHARGER ON SINGLE POLE<br>RATED FOR 22kw/3PHASE/400V<br>COMMERICAL PAY AS YOU GO |
| Size 50.0 kW 2EVC | 2nr EV CHARGER ON SINGLE POLE<br>RATED FOR 50kw/3PHASE/400V<br>COMMERICAL PAY AS YOU GO |

**DOMESTIC CHARGERS (TYPICAL)**

| | |
|---|---|
| Size 3.7 kW 1EVC | 1nr EV CHARGER FOR DWELLING<br>RATED FOR 3.7kw/1PHASE/240V<br>FROM DOMESTIC BOARD |
| Size 3.7 kW 4EVC | 4nr EV CHARGER FOR DWELLING (MASIONETTES)<br>RATED FOR 22kw/3PHASE/400V<br>FROM BOARD IN EACH MASIONETTE i.e. ONE TO ONE |

EV CHARGERS

| Unit Type | 01 Units | 02 KW | 03 Chargers | Count | Type |
|---|---|---|---|---|---|
| Community Point | 120 | 3.7 kW | 8 | 4 | 61_EVChargerSite |
| 3.7 kW: 4 | 120 | | | 4 | |
| Community Point | 16 | 22.0 kW | | 8 | 61_EVChargerSite |
| Community Point | 42 | 22.0 kW | | 14 | 61_EVChargerSite |
| Community Point | 30 | 22.0 kW | 4 | 1 | 61_EVChargerSite |
| 22.0 kW: 23 | 88 | | | 23 | |
| Community Point | 12 | 50.0 kW | 2 | 1 | 61_EVChargerSite |
| 50.0 kW: 1 | 12 | | | 1 | |
| House | 162 | 3.7 kW | | 162 | 61_EVChargerSite |
| 3.7 kW: 162 | 162 | | | 162 | |
| Grand total: 190 | 382 | | | 190 | |

| | |
|---|---|
| Client | BEO PROPERTIES LTD |
| Architect | RKD |
| Structural | OCSC |
| Quant. Surv. | PIVITIOAL |
| Fire Consultant | MCE |

BBSC
CHARTERED BUILDING SERVICES ENGINEERS
80 Willow Park Avenue, Glasnevin, Dublin, D11AE48
[p] 086 386 7097
[e] barry.oneill@bbsc.ie
[w] www.bbsc.ie

| App'd | Chk'd | Eng'r | Drawn |
|---|---|---|---|
| BON | BON | BON | BON |

Site

BEO RESIDENTIAL SHD
LANDS AT RATOATH Co. MEATH

Drawing Title

EV CHARGING POINTS

| Project Nr. | Scale | Date | Sheet Size |
|---|---|---|---|
| 21_0706 | As indicated | | A4 |

rev:- rev date :-

ISO file Reference: 1RDP-BBSC-X-X-DR-ME-6004

Project Status: PLANNING

13/05/2022 15:19:11

# APPENDIX 7

Further Information Relating to ESB

# RATOATH SOUTH SHD

## 19 APR 2022


PREPARED BY

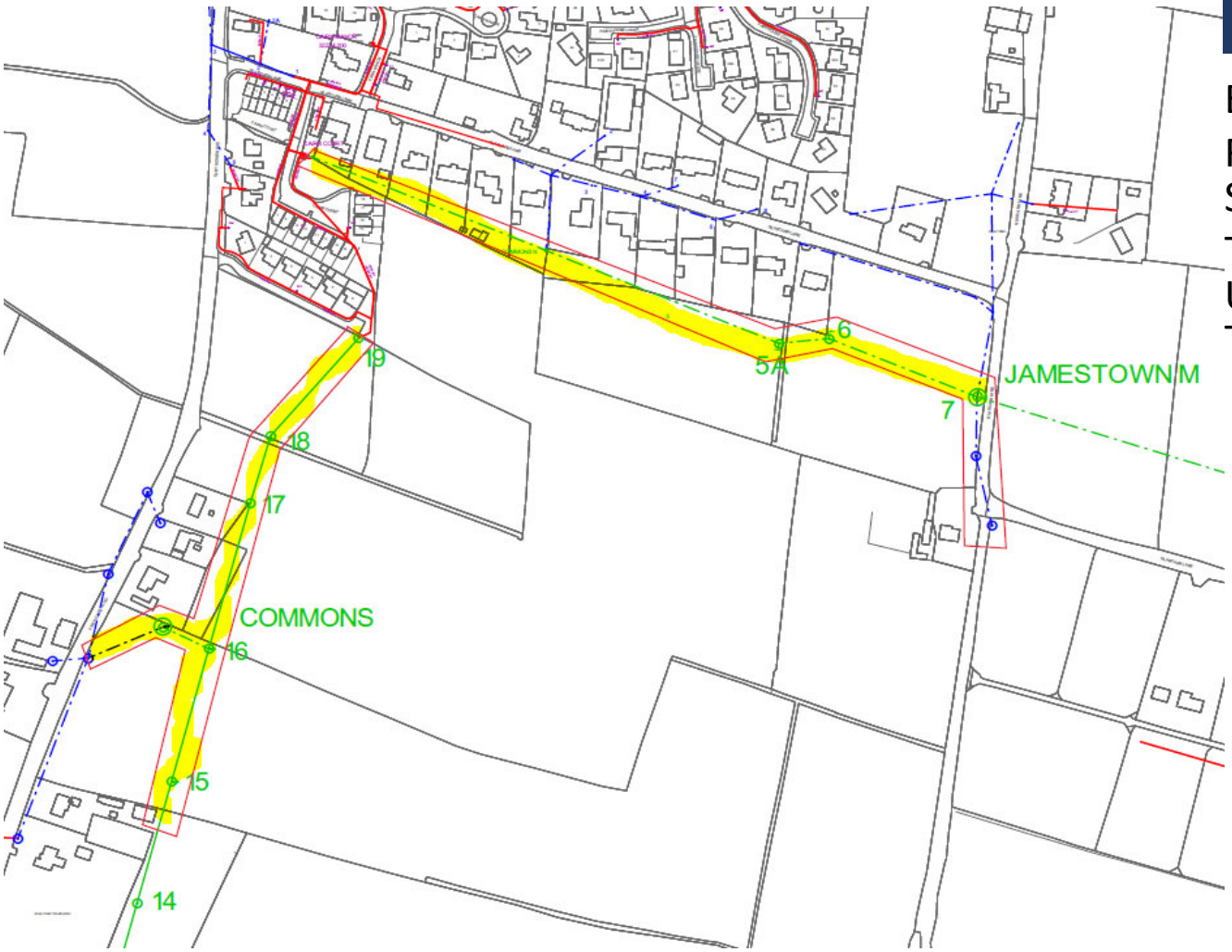
BARRY O'NEILL CENG

BBSC

80 WILLOW PARK AVENUE
GLASNEVIN
DUBLIN
BARRY.ONEILL@BBSC.IE


FOR

# BEO PROPERTIES LTD



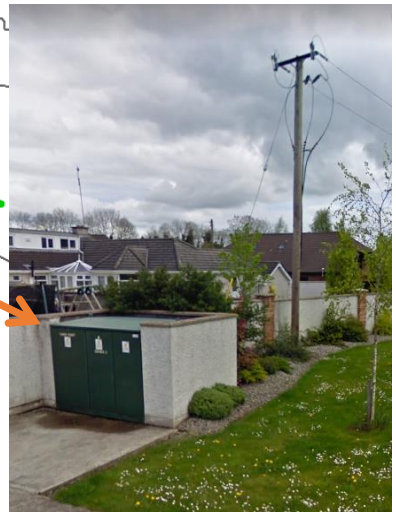

## CURRENT ESB NETWORK

ESB CURRENT OVERHEAD ROUTES

RUNS FROM THE SOUTH TO SERVICE THE SETTLEMENT OF RATOATH

THESE CABLES TO BE REDIRECTED TO UNDERGROUND DUCTS TO FACILITATE THE PROPOSED DEVELOPMENT

# TYPICAL UNIT SUB STATION
# CAIRN COURT

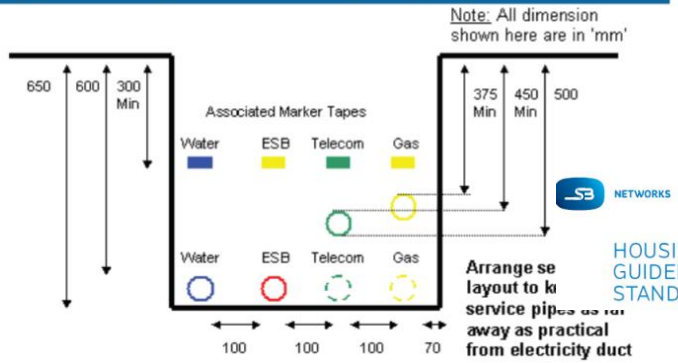
## CURRENT SUBS

Note ESB rises from underground duct to overhead cable at this point runs to service the buildings to the East of this unit Sub Station

POLE 19

Note ESB drops from overhead cable to underground duct at this point

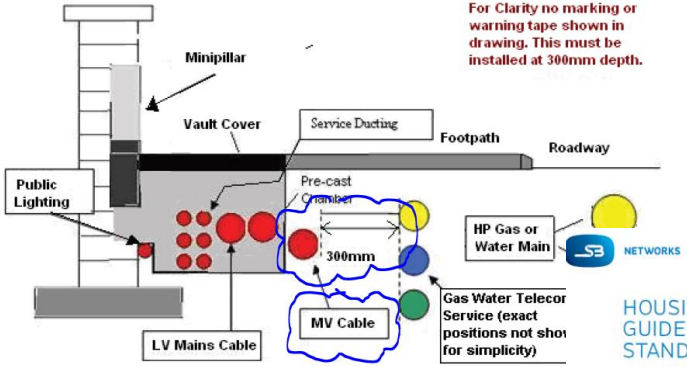
**Cross - Section of Utility Services Trench within House owners Property showing minimum depth and minimum spacing requirements**




HOUSING SCHEMES:
GUIDEBOOK FOR ESB NETWORKS
STANDARDS FOR ELECTRICAL SERVICES

## ESB GUIDANCE FOR DEVELOPERS

**Position and Spacing of ESB Networks Ducting in relation to other Utility Ducts and Pipes in Housing Schemes/Developments**

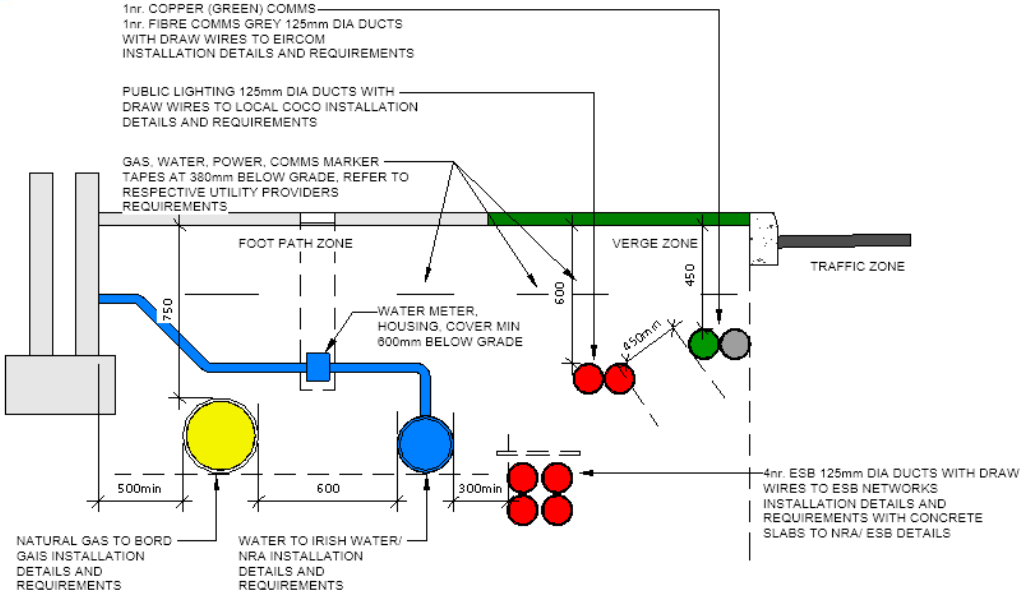



HOUSING SCHEMES:
GUIDEBOOK FOR ESB NETWORKS
STANDARDS FOR ELECTRICAL SERVICES

Normal standard clearance = 300mm. Clearance from High Pressure pipes = 600mm

## ESB 300mm MV TO OTHER SERVICES

## TYPICAL FOOT PATH SERVICES ZONES




NOTES
1. BUILDER, MECHANICAL, ELECTRICAL CONTRACTORS TO CONFIRM ALL SPACING WITH UTILITY PROVIDERS PRIOR TO INSTALLATION
2. SUBMIT ALL DETAILS TO DESIGN TEAM FOR APPROVALS
3. REFER TO NRA DOCUMENTS, ESB, IRISH WATER, TELECOM PROVIDERS SPECIFICATIONS, DRAWINGS, VENDORS DETAILS PRIOR TO INSTALLATION WORKS
4. ALL DUCTS BELOW GROUND TO CONFORM TO IS 370:2007
5. ALL CONTRACTORS, PRIOR TO DIGGING CONTACT ALL PROVIDERS
6. ALL CONTRACTORS TO COMPLETE THE REQUIREMENTS OF Code of Practice For Avoiding Danger From Underground Services, Health and Safety Authority (by virtue of Section 80 of the Safety, Health and Welfare at Work Act 2005) SITE SAFETY STATEMENTS, METHODS OF WORKS ETC. TO ENSURE NO LEAKS OR BREAKS OF SERVICES

## TYPICAL FOOT PATH SERVICES ZONES DETAIL

**VISUAL GUIDELINES**

Minipillars and substations / kiosks are a necessary part of the electricity network in housing schemes and all proposals should take into account the likely impact of these items on the visual environment.

Careful site selection is necessary, in particular for substations / kiosks since this will have a considerable influence on how obtrusive they will be.

To incorporate new minipillars and substations / kiosks into a housing scheme the following guidelines along with agreement from ESB Networks should be followed and the best solution obtained.

**Substations / Kiosk:**

1. Choose an unobtrusive sitting such as a link road for the substation / kiosk.
2. **A free standing site in open space is unacceptable.**
3. Remember there must be a separation of at least **5 metres between substations / kiosk and the nearest house.**
4. Integrate the substation / kiosk into a surrounding garden wall if at all possible and ensure that the front of the substation / kiosk is in line with the garden wall as per drawing.
5. The ground around the substation / kiosk must be properly reinstated to minimise visual impact. See Diagram on page 22.

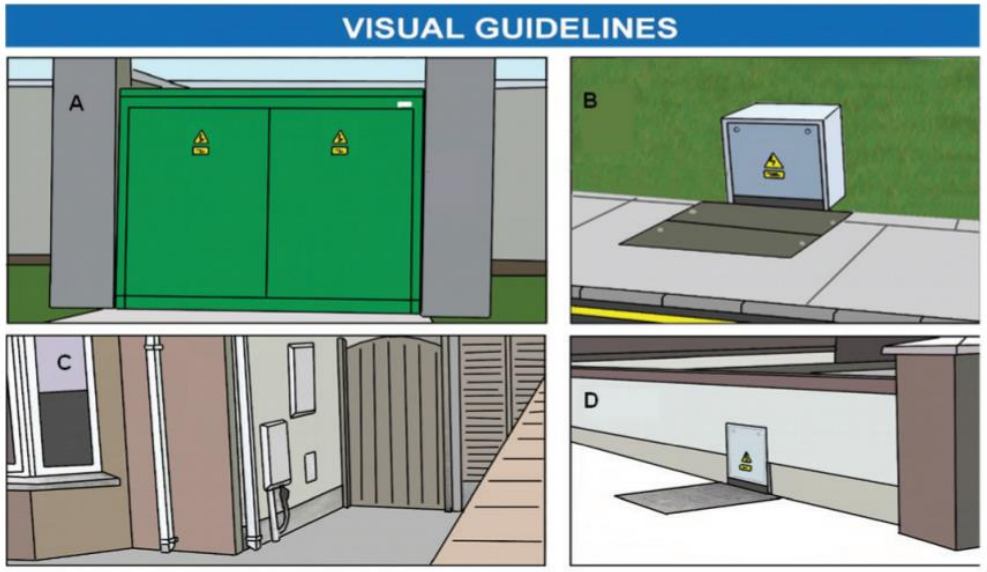
**Minipillars:**

Integrate minipillars into front garden walls and ensuring that the front of the minipillar is in line with the front of the wall. If there is no front garden wall, then the front of the minipillar should be in line with the inside edge of the footpath.

1. The Client and ESB Networks should agree the exact position of minipillars at an early stage.
2. If the garden wall is higher that the minipillar, continue the wall over the minipillar on a lintel or galvanised steel plate.
3. The vault frame should fit tightly against the front of the minipillar and should be level with the ground.
4. The ground around the minipillar must be properly finished to minimise visual impact.
5. The minipillar must not be installed in a lowered section of footpath.

# ESB VISUAL GUIDELINES

BBSC



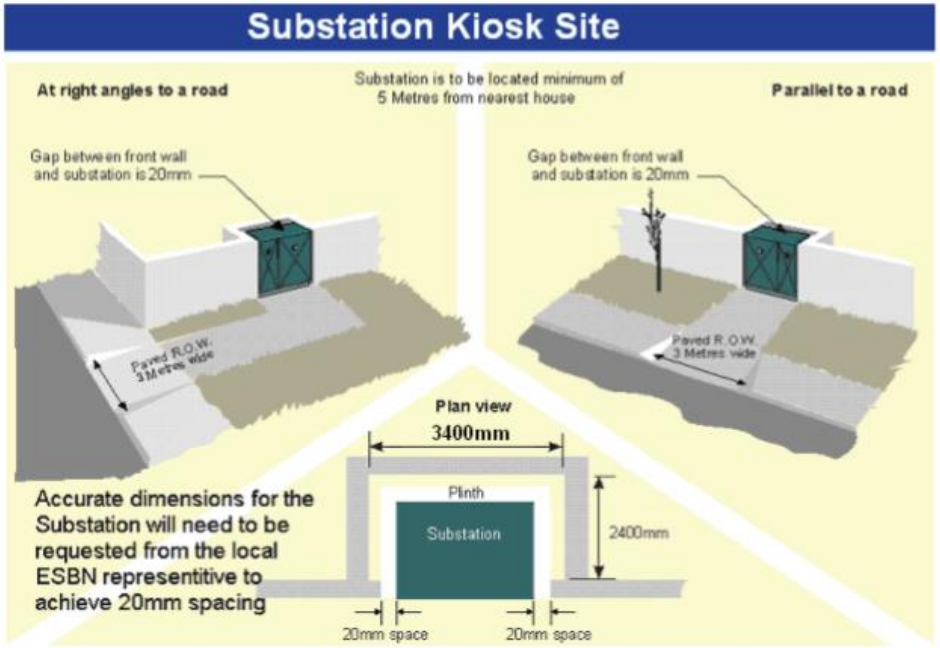

**A. Substation B. Minipillar C. Metering Cabinet D. Minipillar**

# ESB SUBSTATION: KIOSK

Guidebook for ESB Networks Standards for Electrical Services Revision 5 January 2014

**WARNING!!**

***Substation not completed to ESB Networks specification → Substation cannot be connected → Houses cannot be connected***

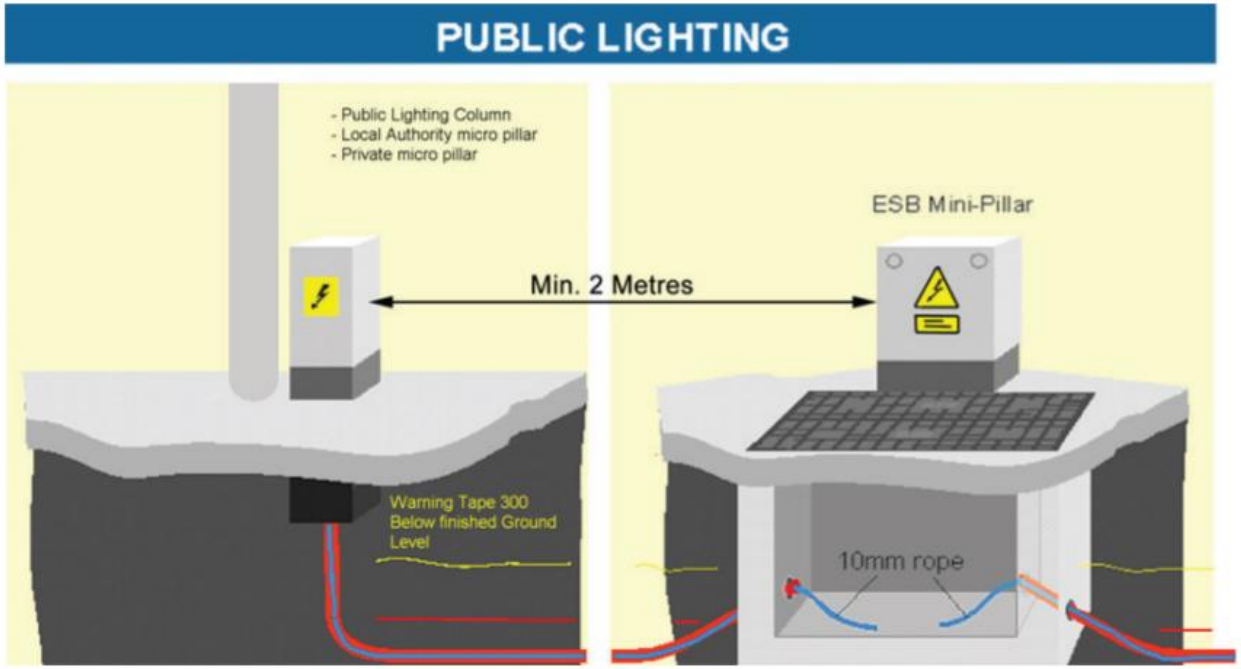



**No Public Lighting column/pillar to be < 2m from Substation/Kiosk**

21

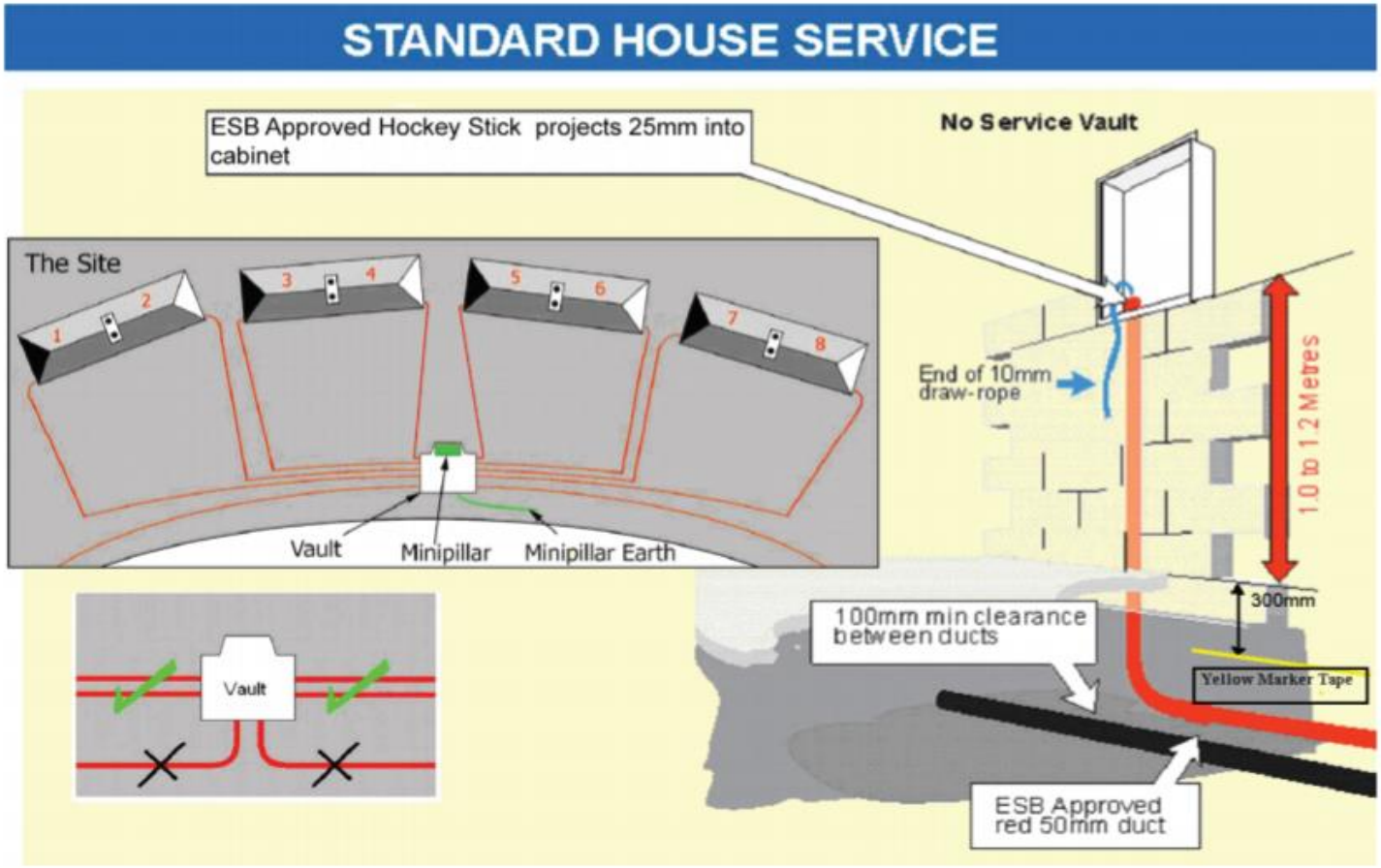
Existing Sub Station and Pole at Cairn Court

# ESB MINI PILLAR TYPES




ESB Mini pillar requirements

# ESB SUPPLY TO HOUSES / DUPLEX




ESB Housing Schemes network distibution requirements

## ESB OVERHEAD LINES

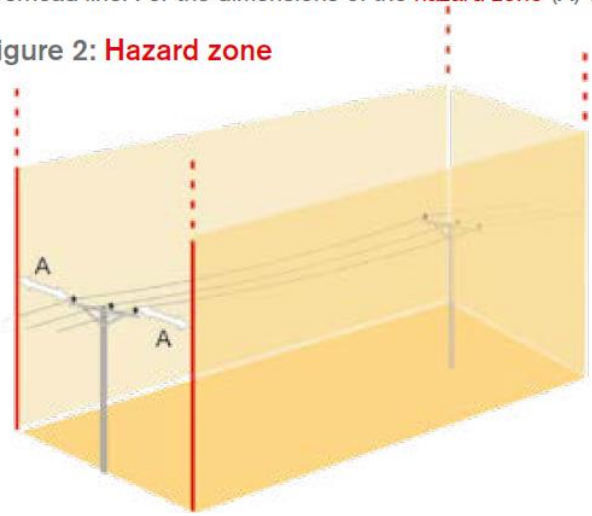
BBSC

### 2.4 Definitions

#### 2.4.1 Hazard zone

The hazard zone is a lateral area near an overhead electricity line which must normally be isolated from the work site by physical barriers. This minimises the risk of accidental contact or near contact with the overhead line by plant and machinery, equipment, scaffolding or other materials. See Figure 2. The dimensions of the hazard zone are related to the voltage of the overhead line. For the dimensions of the hazard zone (A) see Table 1.

Figure 2: Hazard zone




ESB NETWORKS

Code of Practice for Avoiding Danger from Overhead Electricity Lines

Table 1: Hazard zone minimum distances

| Nominal phase-to-phase voltage of overhead line | Minimum horizontal distance (A) in metres |
|---|---|
| LV, 10kV, 20kV and 38kV | 6.0 |
| 110kV, 220kV, 400kV (and other voltages in this range) | 10.0 |