

# Coastal Quarter SHD 2 Planning Application

MEP Engineering Report & Energy  
Statement  
Shankill Property Investments Ltd.

Sept 2022



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## Client signoff

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# Outline

This document has been prepared and checked in accordance with Atkins ISO45001:2018. This document has been prepared by Atkins, with all practical experience, caution and persistent work within the terms of the Contract with the Client, take into account of the resources devoted to us by agreement with the Client. Atkins reject any responsibility to the Client and others in respect of any matters outside the scope of the above. This document is confidential to the Client and Atkins accept no responsibility of whatsoever nature to third parties to whom this report, or any part thereof, is made known. Any such party relies on the report at its own risk.

# 1. Public Lighting Design

This section outlines the proposed public lighting schemes for the proposed houses and duplexes range in height from 2\_3 storeys with the proposed 4 no. apartment blocks ranging in height from 3 – 12 storeys. Block A will accommodate 162 no. Build-to-Rent (BTR) units. It is proposed that 274 no. units will be located within the administrative area of Dun Laoghaire-Rathdown County Council and 312 no. units will be located within the administrative area of Wicklow County Council. The childcare facility, retail, café and commercial unit will all be located in the administrative area of Wicklow County Council.

The public lighting system will be a very high quality, energy efficiency and future proofed road lighting for this new development.

Planning permission was granted on part of the subject site for 234 no. residential units, a childcare facility, café and retail unit subject to compliance with the terms of conditions attached to reference ABP-311181-21. The proposed development includes development as permitted under ABP-311181-21 together with minor revisions chiefly addressing conditions and new proposals for Blocks A and B which were previously refused.

## 1.1. Public Lighting Standards

Each category of roads, footpath, cycle track of the site development will be designed to its own specific requirements, illuminance level and uniformity to meet the lighting class for each area.

All works will comply with the latest editions of the relevant standards, in particular the works shall be designed to take full account of:

- BS EN 13201 part 2 – Road Lighting Performance requirements.
- BS EN 13201 Part 3 – Road Lighting Details calculation of performance.
- BS EN 13201 Part 4 – Details methods of measuring light performance.
- The Current British Standards for Road Lighting are BS 5489 and BS EN 13201.
- BS EN 60529 - Specification for Degrees of Protection for enclosures.
- BS EN 60598-2-3 - Luminaires for Road and Street Lighting.
- BS 5489 -1 - Code of Practice for the design of road lighting.
- BS EN ISO 1461 Hot dip galvanized coatings on fabricated iron and steel articles. Specifications and test methods.
- IS EN 40-1 – Lighting Columns (Definitions and terms)
- IS EN 40-2- Lighting Columns (General requirements and dimensions).
- IS EN 40-3 - Lighting Columns (Design and verification and Verification by testing).
- IS EN 40-5 - Lighting Columns (Requirements for steel lighting columns).
- Roads Act, 1993. Road Traffic Act, 1994.
- Safety, Health and Welfare at Work Act 2005.
- Safety, Health and Welfare at Work Construction Regulations 2013 & Building Control Act 2007.
- Road Traffic (Control of Traffic) Regulations 2006.
- I.S. 10101: The New National Rules for Electrical Installations
- ET211/2003: Code of Practice for Public Lighting Installations in Residential Areas.
- BS 7671:2018 - Requirements for Electrical Installations.

Where a design standard has been revised, the latest edition will apply to all new lighting design/ and installation.

## 1.2. Health & Safety

The attention of the Designer/ Developer will be drawn to the obligations arising under the Safety, Health and Welfare at Work Act 2005 or latest approved version such as: -

- Safety, Health and Welfare at Work (General Application) Regulations 2007 to 2021 or latest approved version. Account will be taken of any traffic management measures that may be required during the installation of public lighting schemes including compliance with Chapter 8 of the Traffic Signals Manual published by the Department of Transport.

## 1.3. General Public Lighting Design Requirement:

The site development public lighting installations will be designed by a competent public lighting engineer who has successfully completed the Institution of Lighting Professionals (ILP) Diploma in Exterior Lighting and is an active member of the Institution of Lighting Professionals, and as accepted by the DLRCC/ WCC County Council, to ensure that best practice is applied in the external lighting design of this residential development. This will include the requirement that public lighting schemes considers from junctions and traffic (both Pedestrian and Vehicular) conflict areas back i.e. T-junctions, pedestrian crossings, public and private car parking, etc.

All new systems of public lighting of a new development will be designed and installed in accordance with the requirements and as accepted by the DLRCC/ WCC. The overall lighting requirements for a specific area will be identified within the European design code. This will then be expanded and refined to take account of an area's unique character and needs in terms of vehicular/ pedestrian activity, location of local amenities, etc by the design brief. However, generally the requirements of the specific design code as stated above in Public Lighting Standards will be met.

As a general rule, new luminaires will be of LED technology source although consideration to alternative light sources (particularly for the purposes of floodlighting) will be given where appropriate. Whether there may be situations in popular locations used heavily at night a higher level of illumination will be anticipated. For particularly sensitive vicinity locations it will be recommended to arrange for trial installations to demonstrate the effectiveness of the lighting and its impact on surrounding areas. All luminaires will be manufactured to a minimum of IP66 to BS EN 60590 for the lamp containment area and manufactured from vandal-resistant material. Lanterns will be designed and tested to provide a minimum normal operating life of 25-years.

Construction of lighting columns and luminaire specifications shall comply with the DLRCC/ WCC Public Lighting Installations in Residential and Industrial Areas Guideline Document.

In determining levels of illumination, lighting positions and styles, the design brief will consider pedestrian and vehicular uses/ needs in relation to the following:

- Areas of activity - Shops, School entrances, Creche entrance, Gym, bus stops, paths, etc and areas of conflict (junctions, etc).
- Building heights.
- Street features - crossing points, sitting areas, tree planting, pinch-points, materials / colours, etc.
- Ground form levels (important to people with disabilities), hazards, etc. Local knowledge, incidence of vandalism, accident black spots, etc.

### 1.3.1. Obtrusive Lighting

Considerations will be given to the restriction of obtrusive light by:

- The control of the type of light source Restricting the level of light emitted by the luminaire at high angles usually between 70 and 90 degrees.
- The use of full horizontal cut off luminaires for mounting heights above 5.5m will have a substantial effect on restricting obtrusive light. Similarly, the use of shallow bowl luminaires for mounting heights of 5.5m or less will help to reduce the overall level of obtrusive light produced by road lighting installations but may add to the numbers of lighting units required.

- Special consideration will be given to the effect of lighting on adjacent areas used by other means of transport such as: Railways, harbours and adjacent unlit traffic routes and car parks. Also, careful consideration will be given to the design, installation, and maintenance of any lighting systems adjacent to the site to reduce the risk of damaging the night sight of the transport operators or reducing the visibility of signalling equipment.

### 1.3.2. Wildlife and Bats Lighting Areas

The lighting design is developed in line with guidelines and legislation for the protection of bats with an aim of minimising disruption and disturbance to local bat populations. A bat survey was carried within the project site which identified the key foraging (feeding) areas within the development site. Where possible the lighting proposals for the development have been specifically designed in order to minimise light intrusion within the identified key bat areas.

The lighting design follows Institute Lighting Professionals (ILP) Guidance Note 08/18 Bats and artificial lighting scheme for key bats area aims to minimise disturbance or disruption in key bats through the following design principles: -

- Following the design principles and lighting factors affecting bats the following measures have been included with the lighting design within bat areas 2700K/ LED lamps mounted at 5.0m pole downward direction.
- Only illuminating what needs to be illuminated (light directed to the path only).
- Reducing night time light levels.
- Confirmation of bat fly over areas and reducing the height of the luminaires.
- Shielding of Luminaires and Light.
- Type of Light – Warmer colour temperature 2700K/ 2200K or amber white versions.
- The efficiency /outputs of the luminaires will reduce based on the following use; -
  - 2700K – 20% reduction
  - 2200K – 40% reduction
  - Amber White (approx. 1700K) – 31% reduction.

The amber white with a narrow band of light (with no blue light emission) will be proposed in certain areas to reduce light impacts outside of pathways along areas highlighted with bat activity.

The lighting factors considered which will minimise the effect on bats are as follows: -

- Minimising or prevent light spill to any areas forming part of the bats commuting corridors, for instance lighting a pathway; the light ideally would be directed at the path only with no uplight or illumination of nearby trees, bushes, river, waters, buildings, etc. Lighting schemes will be designed with luminaires that provide no uplight, or have narrow downward beams of light, and will have optics or shields that prevent back spill etc.
- **Reflectance's** – downward lighting can be reflected from bright surfaces, so using Black Tarmac instead of bright gravel or concrete for the pathway is considered. The same applies to other materials such as the colour finish on the lights, poles, walls, street furniture etc.
- **Shielding of Luminaires & Light** – it is proposed to add shields / baffles or natural objects (hedges, flowers etc) to block the luminaire / light from the flight paths of bats.
- **Type of Light Proposed** – principally LED lighting which has no UV with exact cut-off optics will be used.
- **Lighting Controls** – one of the peak time for foraging for bats is during dusk.

### 1.3.3. Lighting Controls

Greater consideration in lighting plans is to use dynamic lighting controls to reduce lighting outside the prime hours of human activity. The lighting controls will be achieved via sensors/ dynamic controls especially in the Bats areas at eastern and northern boundary to shut off lighting when not required. The lights would remain off / low when there is no pedestrian traffic nearby and also can be controlled to dim/ or switch off during peak foraging hours.

## 1.4. Lighting Classes Proposed

The lighting classes assigned to the various locations within the development are outlined below and detailed in the public lighting report provided in Appendix A.

### 1.4.1. The Residential Areas

Residential areas will be designed using the following standards;

- Road / Paths - Class P4
- Courtyards - Class P4
- Church Road - Class C3
- Junctions - Class C2
- Steps - Class P2
- The class derived from BS EN 13201.
- Lighting for Bat areas will be installed on 5.0m columns.
- General street lighting will be installed on 6m columns.
- Car park luminaires will be installed on 8m columns.

### 1.4.2. Car Parks

Car parks are to be lit in accordance with BS5489-1:2013, recommendation as outlined in the CIBSE Lighting Guide and 'Secure by Design' guidance. The maintained illuminance level for the Car Park is proposed 20lux.

Group switching of car park lighting will be facilitated via an Astro-timer/ and photocell and a suitably rated contactor located within a dedicated feeder pillar.

### 1.4.3. Pedestrian Crossings

Pedestrian crossings will be lit in accordance with BS5489-1:2013 and ILP Technical Reports.

The maintained illuminance level for the pedestrian crossing is proposed as follows:

- Average vertical illuminance on this axis of pedestrian crossing at a height of 1m:  $E_v \geq 40$  lux
- Uniformity of vertical illuminance on lane in front of the driver ( $E_v \text{ min}/E_v \text{ av}$ ): 0.20
- Average horizontal illuminance on pedestrian crossing at ground level:  $E_h \geq 80$  lux
- Uniformity of horizontal illuminance ( $E_h \text{ min}/E_h \text{ av}$ ): 0.30

Traffic route lighting and lighting of residential estates will be powered by landlord boards.

### 1.4.4. Cycleways

Cycleways will be lit in accordance with BS5489-1:2013 and BSEN 13201-2. Lighting columns positioned on cycleways will be set back a minimum of 0.5m to avoid contact with handlebars. Where the cycleway cannot be accessed by an elevated platform, raising and lowering columns will be installed. Raising and lowering columns shall be orientated so that the lantern head can be lowered safely without obstruction and, when in its collapsed position, shall not cause an obstruction to road users and pedestrians.



## 1.5. Trees & Arboriculture

Trees and other vegetation will not impede the functions of public lighting units. A separation of 5metres between the lighting column and the outside of the crown will be allowed for the lighting to work as designed. Trees or vegetation will not be planted within 7metres of a public light column.

The design has taken into consideration the layout of the proposed public lighting column locations and the proposed landscape design. Both layouts will be coordinated to achieve the 7metres separation between all trees and public lighting columns.

## 1.6. Public Lighting Layout

The public lighting layout is detailed in the public lighting report provided in Appendix A and on drawings 5214419-ATK-01-ZZ-DR-EE-1301 & 5214419-ATK-01-ZZ-DR-EE 1302.

## 1.7. Access Chambers

Where appropriate, the access chambers for the site will be selected as per below standards indicating in the table 7.1;

**Table 7-1 Chamber Type Description**

Item	Chamber Type	Chamber Description
01	Large Inspection Chambers	All access chamber covers on the footpath to cater for a change of direction are proposed to be ductile iron with galvanized steel frame with frame opening 615mm x 615 mm to EN 124 B125 marked "Public Lighting" or "Traffic" with M16 stainless steel locking bolt
02	Medium Inspection Chambers	Access chamber covers on the footpath for straight through services are proposed to be ductile iron with galvanized steel frame with frame opening 720mm x 260 mm to EN 124 B125 marked "Public Lighting" or "Traffic" with M16 stainless steel locking bolt.
03	Small Inspection Chambers	Access chamber covers on the footpath for column connections shall be ductile iron with galvanized steel frame with frame opening 385mm x 260 mm to EN 124 B125 marked "Public Lighting" or "Traffic" with M16 stainless steel locking bolt or similar approved

## 2. Existing Utility Infrastructure

### 2.1. Identification of Utilities

A desk study of records from various utility companies will be undertaken and the following utility holders will be contacted, and records obtained / converted into digital format: -

- Irish Water (Foul and Watermain)
- ESB Networks
- Gas Networks Ireland (Transmission)
- Gas Networks Ireland (Distribution)
- Telecommunication/ Telecoms: Eir/ Virgin Media/ BT/ eNet or Aurora

During the construction phases of the project, realignment, upgrade and replacement of services and utilities is required in conjunction with and to accommodate the proposed works.

These works will include: -

- Minor utility diversions in the region of the proposed junction with the Old Dublin Road
- Provision of new services to provide connections to the proposed development.

There is currently a Medium Voltage overhead cable running through the site. With regard to the overhead power lines, it should be noted that the submitted details will be provided and liaison with the ESB Networks will occur before the design process to discuss the relocation of this overhead line.

### 2.2. Telecommunication Impact Assessment

The Telecommunications Impact Assessment has been carried out by BBSC on behalf of Shankill Property Investments Limited. The report was carried out to determine the impacts of any existing Telecommunication Channels within and in proximity of the proposed site.

The BBSC report concluded that: -

- The proposed development will not impact on fixed line telecommunications.
- The proposed development will not impact on existing sight lines.
- The proposed development may affect local radio (mobile phone) communications. On site network surveys, which can only be carried out once the development has been constructed, will be required to determine whether additional microwave radio transmitters are required. Recommendations will be implemented as needed.
- The proposed development would result in an approximate range of 1,465 to 2,637 additional people within the locality. For this quantum of development, a minimum of 3 to 4 additional mobile phone transmitters may be required to provide 4G or better service within the area. As is the case for developments of this scale, any requirement for additional mobile phone transmitters will be subject to a network load analysis by the mobile phone network providers that can only be carried out once the development has been constructed. Should this network load analysis conclude that additional mobile phone transmitters are required, these could be located in or at Block B2 as it is the tallest building within the proposed development (12 storeys). A standalone planning permission would be required for any mobile phone transmitters.

**For more complete information refer to Appendix B of this Report.**

## 3. Proposed Utilities

This section outlines the proposed MEP utilities schemes for the proposed residential development on lands at Harbour Point/ Coastal Quarter, Bray. The Gas, Electricity and ITC systems will be designed and installed to the current standards guidelines.

### 3.1. Current Standards Guidelines

All MEP works will comply with the latest editions of the relevant standards, in particular the works shall be designed to take full account of:

- Safety, Health and Welfare at Work Act 2005.
- Safety, Health and Welfare at Work Construction Regulations 2013.
- National Rules for Electrical Installations I.S. 10101:2020+AC1:2020 and including amendments published by NSAI.
- Code of Practice for the Design, Selection and Erection of LV Switchboards for Residential Applications: ET 208: 2000 published by the National Standards Authority of Ireland (NSAI).
- Code of Practice for Customer Interface, current edition published by ESB Networks (ESBN).
- ELECTRICAL SERVICES GUIDEBOOK – Housing Schemes, current edition published by ESB Networks.
- The Building Regulations published by the Department of Environment, Heritage and Local Government (DOEHLG).
- Code of Practice for Avoiding Danger from Underground Services published by the Health and Safety Authority (HSA).
- Criteria document Cer/08/071 and any other requirements specified by the Commission for Energy Regulation (CER).
- BS 7671 - Requirements for Electrical Installations.

Where a design standard has been revised, the latest edition will apply to all MEP design/ and installation.

### 3.2. Electrical Infrastructure Preliminary Information

#### 3.2.1. Primary Electrical Services

The total site electrical load is to be supplied by ESB Networks with a maximum estimated demand load of in the range of 4.6MW and five new ESB substations will be built for the 10kV supply.

It is proposed that a new power supply will be provided by the ESN at 10kV in a ring main loop configuration, so that either side of the loop feed can be loaded to carry twice the load in the event there is a fault on either side of the loop. This supply will be run underground from the site boundary to the dedicated MVA transformer.

New switchgear will be provided for each block apartment building which will include new four switch 10kV switchgear, proposed to be located in a new main electrical room adjacent MV substation. All substation will be situated in the Ground Floor. The new 10kV/400V/ 3-Phase transformer will be provided and will be set up as a double ended switchboard configuration with normally open tie breaker. The 400-Volt switchboard will be rated based on the final building load design.

A new power supply at LV will be taken from the new main switchboard to serve all power requirements for both Tenants/ and Landlord's areas. All switchgears, main distribution and sub-distribution boards will be metal clad pattern generally located in dedicated cubicles and confirmed to local Standards.

The main MV power cable will be buried in ducts or direct buried and the LV power cable for the buildings will be specified as multicore XLPE/SWA/PVC and run on the surface/cable ladder/tray. Final run-outs to terminals will be PVC cable encased in galvanized metal conduit/trunking to meet Irish standards. The electricity supply to each dwelling via standard ESB Networks standard LV minipillars scattered around the site.

#### **Clarification:**

The total estimated power electrical load for the development have been based on BSRIA / Rules of Thumb Guidelines for building services (5th Edition) - CIBSE / Energy Benchmarks.

- A figure of 84(W/m<sup>2</sup>) is allowed for landlord areas. The figure is expressed in W/m<sup>2</sup> NIA, based on a net to gross ratio of 80% and mechanical power for plantrooms requirements (Rules of thumbs 5th edition / Energy Benchmarks).
- Predicting Electrical Future Load Growth - 10% power load growth factor is considered regarding future power expansion for the building associated with Building expansion and function of the building or facilities and Equipment technology within the building.
- Renewable Energy - Based on the Heat Pumps Systems.
- Rule of Thumb - Flats / Apartments 80(w/m<sup>2</sup>) electrical load. Note, Flat or apartment 5.5/ 7.5kw is employed with all electrical cooking and heating via heat pumps.
- Every house which has a parking space on curtilage to be provided with a charging point. 20% of visitor spaces to have a charging point. Within the apartment Blocks, 20% of spaces to have a charging point with capacity to bring this up to 50%.
- The target efficiency for the apartment Blocks is 75% gross to net.
- Houses will be electric (heat pumps). Apartment Blocks will be a version of district heating with heat pumps supplemented by gas. It is allowed gas to each apartment block.
- Apartments can be assumed as 60sqm for 1-bed, 85 sqm for 2-beds and 110 sqm for 3 beds.
- The EV charging points is provided to a minimum to comply to latest County Council requirement, and allowances is made to provide a higher level of provisions for future proofing and based on a Minimum charging power per active charging station of 1.38KW
- Apartments Blocks will be served with gas. For Houses is allowed electrical cooking and heating/ hot water via heat pumps.

### **3.3. Gas Infrastructure**

This section outlines the proposed gas supply schemes for the residential development on lands at Ballymore Harbour Point - Bray - Coastal Quarter. If appropriate, the gas system will be designed and installed in accordance with the current guidelines, standards and industry regulations.

#### **3.3.1. Standards**

All works will comply with the latest editions of the relevant standards, in particular the works shall be designed to take full account of:

##### General

- Safety, Health and Welfare at Work Act 2005.
- Safety, Health and Welfare at Work Construction Regulations 2013.

##### For gas and main services

- Code of Practise for Gas Distribution Mains I.S. 329
- Installation of Gas Service Pipes I.S. 265
- Gas Infrastructure – Pipelines for max. operating pressure up to and including 16 bar SR 12007-5
- Gas Supply Systems – Natural Gas Measuring Stations I.S. EN 1776
- Gas Pressure Testing, Commissioning and Decommissioning Procedures I.S. EN 12327

- Gas infrastructure - Gas installation pipework I.S./ EN15001-2
- Gas Pressure Regulating Stations for Distribution I.S 821

#### For downstream of the meter

- Domestic Gas Installations I.S. 813
- Non-Domestic Gas Installations I.S. 820

### **3.3.2. Existing Situation**

On the south-east of the proposed residential development, an existing 250mm medium pressure gas pipe (4bar) of polyethylene material located on the right side of the railway.

An additional medium pressure gas pipe (4bar) with a diameter of 90mm is located on the west side of the development.

### **3.3.3. Proposed solution**

As indicated and preferred by GNI, the projects new gas network will connect from the west side existing medium gas main having a diameter of 90mm. An extension will be required from the existing mains as indicated above to serve the proposed site with a diameter of 90mm. From the main medium pressure gas line, branches with a 32-63mm diameter will be used to supply the consumer points. A distance of 3mtr needs to be maintained between the medium pressure line and the residential spaces. Where this distance can't be kept a gas regulator will be used to drop the pressure to a low pressure.

### **3.3.4. Preliminary Total Estimated Gas Load**

The residential development is split in two phases with a total gas load of 8MW. Phase one has a load of 3.5MW whereas phase two has a load of 4.5MW.

A detailed description of the gas load for each phase and building type is included in the below schedules:

The total estimated gas load for the development were based: -

- BSRIA / Rules of Thumb Guidelines for building services (5th Edition) - CIBSE / Energy Benchmarks are used to determine estimated total electrical load requirements.

### **3.3.5. Metering Strategy**

- Multi Occupancy Dwellings - The meters supplying the units will be located within the building.
- Single Occupancy Dwellings - The meters supplying the dwelling will be located outside the building

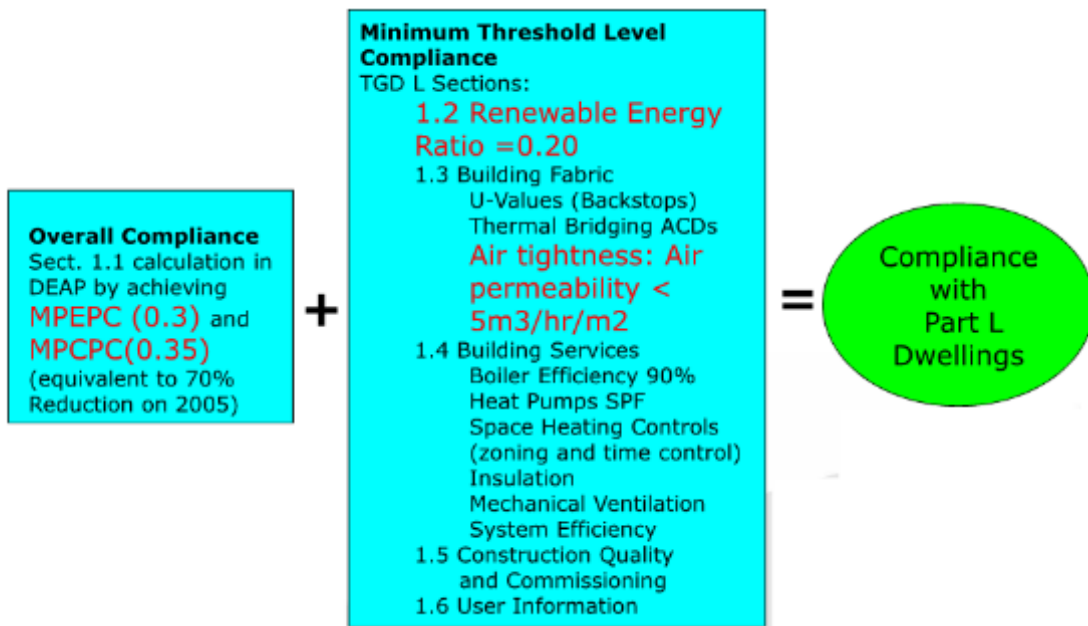
# 4. Energy Statement/ Nearly Zero Energy Building (NZEB)

The NZEB standard will apply to all buildings owned and occupied as refer to Department of Housing, Planning and Local Government and as per the building regulations and DEAP methodology. This will be equivalent to a 25% improvement in energy performance on the 2011 Building Regulations.

The key to Part L for NZEB compliance will include a Maximum Energy Performance Coefficient of 0.3, a Maximum Carbon Performance of 0.35 and a renewable Energy Ratio of 20%.

The cost optimal level is a primary energy performance of less than 125 kWh/m<sup>2</sup>/yr, when calculated using DEAP or upgrade of roof insulation and heating system. The nearly zero or very low amount of energy required will be covered to a very significant extent by energy from renewable sources, including energy from renewable sources produced on-site or nearby.

Proposed minimum threshold level compliance achieved with TGD L Dwellings as indicated below Fig 1: -



*Figure 1 - Minimum Threshold Level Compliance*

*(Overall compliances will be checked prior to commencement at Design Stage)*

The design for the dwellings and apartments will include:

- LED lighting accounted for in DEAP (efficient version);
- Efficient hot water uses in showers/ taps accounted for in DEAP (125 l/p/d and 6l/min flow restrictor);
- Heat pumps in a group heating scheme;
- Efficient condensing boilers in a group heating scheme;

## 4.1. Energy Statement

The proposed design strategy will ensure sustainable energy efficiency to ensure low running cost of use and consideration of green energy.

Some of considerations are listed below: -

- The houses have been designed to have a compact and efficient form, use of terrace and semidetached building formations limiting the heat loss and, where appropriate, availing of the heat gains through the fabric of the building.
- Highly insulated external building façade.
- Ensuring that the building is appropriately designed to limit need for cooling and, where air-conditioning or mechanical ventilation is installed (as appropriate), that installed systems are energy efficient, appropriately sized and adequately controlled.
- Materials with long time life expectancy and low embodied energy.
- Consideration of water saving measures including water saving devices and controls and limiting the heat loss from pipes, ducts and vessels used for the transport or storage of heated water or air.
- Providing energy efficient space heating and cooling systems, heating and cooling equipment, water heating systems, and ventilation systems, with effective controls.
- Providing energy efficient artificial lighting systems (LED) and adequate control of public and internal lighting systems.
- The guidance of the MEP design in compliance with Building Regulations Part L recommendations for conservation of fuel and energy setting of minimum energy performance requirements for building to achieve the Nearly Zero Energy Building, providing that the energy performance of the building is such as to limit the calculated primary energy consumption and related Carbon Dioxide (CO<sub>2</sub>) emissions as is reasonably practicable.
- Limitation of Carbon Dioxide (CO<sub>2</sub>) emissions to a Nearly Zero Energy Building level insofar as is reasonably practicable of for Landlord areas/ and Non-domestic buildings using the Non-domestic Energy Assessment Procedure (NEAP) published by Sustainable Energy Authority of Ireland.
- To meet the new building standards the energy performance of each house/ and apartment will comply with the requirement of Part L building regulations and achieving no lower than a BER of A2.
- System design that provides to the building owner or occupants sufficient information about the building, the fixed building services, controls and their maintenance requirements so that the building can be operated in such a manner as to use no more fuel and energy than is reasonable.

### 4.1.1. Exhaust Air Heat Pump

The exhaust air heat pump system is proposed in order to meet the renewable energy contribution required by NZEB/ Part L Building Regulations, the proposed system will cover up to 100% of the heating requirements of a well-insulated apartment and it also works in conjunction with underfloor heating, as appropriate.

#### Benefits:

- Modern heat pumps will typically provide 4 to 5 times more heat energy to the dwelling than the electrical energy they consume.
- The system proposed will also have lower consumption of energy and therefore reduce carbon emissions across the whole value chain.
- Reduces electricity bills, diverse applications, low maintenance costs, technology development, and most important is that the energy provided by heat pumps is considered as a truly renewable energy source.

### 4.1.2. PV Solar Systems

PV Solar Panels are also proposed as a supplementary to heat pump system in order to meet the renewable energy contribution required by NZEB/ Part L Building Regulations. The renewable sources will aim in general to provide 20% of the primary energy use in compliance with NZEB.

**Benefits:**

- It will reduction the fossil fuel consumption and carbon emissions to the environment.
- Overall reduction of the requirement to purchase electricity from the grid, and in contrary exporting energy to the grid.
- Reduces electricity bills, diverse applications, low maintenance costs, technology development, and most important is that solar energy is a truly renewable energy source.

## **4.2. E-Car Charging Provision**

The Electrical Car (E-Car) charging points are to be provided for the development, these will be distributed within the site ensuring that the E-Car charging points are assigned to private and visitor car parking spaces. The E-Car provision will include as follows: -

**DLRCC Site:**

- a. All houses to be ducted for the accommodation of future electric charging points connections;
- b. EV parking for 20% of parking associated with duplexes, apartments;
- c. All remaining duplexes/apartments to be ducted;
- d. 44No. in Total.

**WCC Site:**



- a. All houses to be ducted for the accommodation of future electric charging points connections;
- b. EV parking for 10% of parking associated with duplexes, apartments;
- c. All remaining duplexes/apartments to be ducted;
- d. 22No. in Total.



# Appendices

# 5. Appendix A – Public Lighting Report

## 5.1. Outdoor Lighting Report Readings

<b>DATE:</b>	August 2022		
<b>DESIGNER:</b>	NS		
<b>PROJECT No:</b>	5214419		
<b>PROJECT NAME:</b>	Coastal Quarter, Bray		
<div style="border: 1px solid black; padding: 5px; width: fit-content; margin: 10px auto;"><p>Coastal Quarter SHD, Planning Application</p><p>IS EN 13201-2:2015 / BS5489-1:2020 ILP - Guidance Note 08/18 Bats &amp; Artificial Lighting Road / Paths - Class P4 Courtyards - Class P4 Church Road - Class C3 Junctions - Class C2 Steps - Class P2</p><p>IS EN 12464-2:2014 Carpark - Light Traffic</p></div>			
<h2><u>Outdoor Lighting Report</u></h2>			
<p>Coastal Quarter - Bray</p>			
<b>PREPARED BY:</b>	Design Software from: Atkins Limited, 150 Airside Business Park, Swords, Co. Dublin, Ireland		

DATE: August 2022 DESIGNER: NS  
PROJECT No: 5214419 PROJECT NAME: Coastal Quarter, Bray



## Layout Report

### General Data

Dimensions in Metres Angles in Degrees

### Calculation Grids

ID	Grid Name	X	Y	X' Length	Y' Length	X' Spacing	Y' Spacing
1	Road/Paths	-0.10	-47.44	360.50	339.71	1.50	1.50
2	Courtyards	191.77	27.23	113.40	233.06	1.49	1.49
3	Carpark	91.63	2.55	76.45	47.52	1.50	1.49
4	Church Road	109.58	-28.25	152.83	41.38	1.50	1.48
5	Junctions	114.58	-27.88	152.83	46.01	1.50	1.48
6	Isolines	-29.66	-148.68	458.05	509.96	1.83	2.04
7	Steps	101.73	41.54	8.81	13.77	1.47	1.38

### Luminaires

#### Luminaire A Data

Supplier	
Type	Veolia Metro Streetlight 15w LED Street Op lc R03
Lamp(s)	8LED 2700K G4
Lamp Flux (klm)	2.16
File Name	SMTA08.GA-R03.ies
Maintenance Factor	0.83
Imax70,80,90(cd/klm)	537.8, 56.5, 0.3
No. in Project	46

#### Luminaire B Data

Supplier	
Type	Veolia Metro Streetlight 15w LED Forward Throw A Optic
Lamp(s)	8LED 2700K G4
Lamp Flux (klm)	2.15
File Name	SMTA08.GA-FTA.ies
Maintenance Factor	0.83
Imax70,80,90(cd/klm)	401.3, 47.0, 0.5
No. in Project	25

#### Luminaire C Data

Supplier	
Type	Veolia Metro Streetlight 15w LED Street Op lc R03
Lamp(s)	8LED 2700K G4
Lamp Flux (klm)	2.16
File Name	SMTA08.GA-R03.ies
Maintenance Factor	0.83
Imax70,80,90(cd/klm)	537.8, 56.5, 0.3
No. in Project	21

#### Luminaire D Data

Supplier	
Type	Veolia Metro Streetlight 134w LED Forward Throw Optic
Lamp(s)	64LED 3000K G4
Lamp Flux (klm)	18.42
File Name	SMTC22L.GA-R03.ies
Maintenance Factor	0.83
Imax70,80,90(cd/klm)	537.8, 56.5, 0.3
No. in Project	4

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**Luminaires**

**Luminaire E Data**


Supplier	
Type	Veeite Quad Series 14w LED Symmetric
Lamp(s)	8LED 2700K G4
Lamp Flux (klm)	1.58
File Name	5QDA04LGD-N.ies
Maintenance Factor	0.83
Imax70,80,90(cd/klm)	375.5, 40.5, 0.0
No. in Project	15

**Luminaire F Data**

Supplier	
Type	Veeite LED Bollard 18w LED Symmetric
Lamp(s)	4 x 4LED 3000K
Lamp Flux (klm)	1.79
File Name	58LE00315 - LED Bollard 4 x 4LED T4B - 18W Symmetric.ies
Maintenance Factor	0.83
Imax70,80,90(cd/klm)	450.8, 92.4, 21.5
No. in Project	11

**Luminaire G Data**

Supplier	
Type	Veeite Metro Streetlight 27w LED Forward Throw A Optic
Lamp(s)	12LED 2700K G4
Lamp Flux (klm)	3.22
File Name	5MFA10LGA-FTA.ies
Maintenance Factor	0.83
Imax70,80,90(cd/klm)	401.3, 47.0, 0.5
No. in Project	6

<b>DATE:</b> August 2022		<b>DESIGNER:</b> NS									
<b>PROJECT No:</b> 5214419		<b>PROJECT NAME:</b> Coastal Quarter, Bray									
											
<b><u>Layout</u></b>											
ID	Type	X	Y	Height	Angle	Tilt	Cant	Out-reach	Target X	Target Y	Target Z
1	B	162.93	22.75	6.00	0.00	0.00	0.00	0.50			
2	B	174.26	44.33	6.00	197.00	0.00	0.00	0.50			
3	B	152.85	64.59	6.00	65.00	0.00	0.00	0.50			
4	A	135.48	82.79	6.00	34.00	0.00	0.00	0.50			
5	A	116.36	105.39	6.00	45.00	0.00	0.00	0.50			
6	A	111.69	128.46	6.00	228.30	0.00	0.00	0.50			
7	B	95.82	129.95	6.00	46.00	0.00	0.00	0.50			
8	B	74.96	179.03	6.00	210.00	0.00	0.00	0.50			
9	B	54.01	193.80	6.00	25.50	0.00	0.00	0.50			
10	B	39.90	219.70	6.00	19.00	0.00	0.00	0.50			
11	B	69.93	223.87	6.00	113.00	0.00	0.00	0.50			
12	A	103.19	249.90	6.00	288.00	0.00	0.00	0.50			
13	C	134.29	267.96	5.00	270.00	0.00	0.00	0.50			
14	A	168.16	249.75	6.00	170.00	0.00	0.00	0.50			
15	C	142.61	247.61	5.00	96.00	0.00	0.00	0.50			
16	A	189.35	198.49	6.00	120.00	0.00	0.00	0.50			
17	A	189.14	177.42	6.00	214.00	0.00	0.00	0.50			
18	A	223.20	160.92	6.00	285.00	0.00	0.00	0.50			
19	B	201.42	153.58	6.00	205.00	0.00	0.00	0.50			
20	A	91.07	170.81	6.00	289.00	0.00	0.00	0.50			
21	A	119.37	182.56	6.00	292.00	0.00	0.00	0.50			
22	A	148.97	196.38	6.00	300.00	0.00	0.00	0.50			
23	A	238.30	127.56	6.00	201.00	0.00	0.00	0.50			
24	A	235.02	105.89	6.00	19.00	0.00	0.00	0.50			
25	A	257.01	86.42	6.00	197.00	0.00	0.00	0.50			
26	B	272.71	32.32	6.00	176.00	0.00	0.00	0.50			
27	A	253.16	47.43	6.00	22.00	0.00	0.00	0.50			
28	A	242.11	75.15	6.00	20.00	0.00	0.00	0.50			
29	B	234.78	80.83	6.00	109.00	0.00	0.00	0.50			
30	B	206.81	69.65	6.00	110.00	0.00	0.00	0.50			
31	B	183.56	60.44	6.00	103.00	0.00	0.00	0.50			
32	A	139.73	117.35	6.00	120.00	0.00	0.00	0.50			
33	A	167.25	128.47	6.00	108.00	0.00	0.00	0.50			
34	A	191.82	138.18	6.00	114.00	0.00	0.00	0.50			
35	D	174.23	-0.07	10.00	95.00	0.00	0.00	0.80			
36	B	91.17	245.54	6.00	197.00	0.00	0.00	0.50			

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<b>PROJECT No:</b> 5214419		<b>PROJECT NAME:</b> Coastal Quarter, Bray									



  

**Layout Continued**

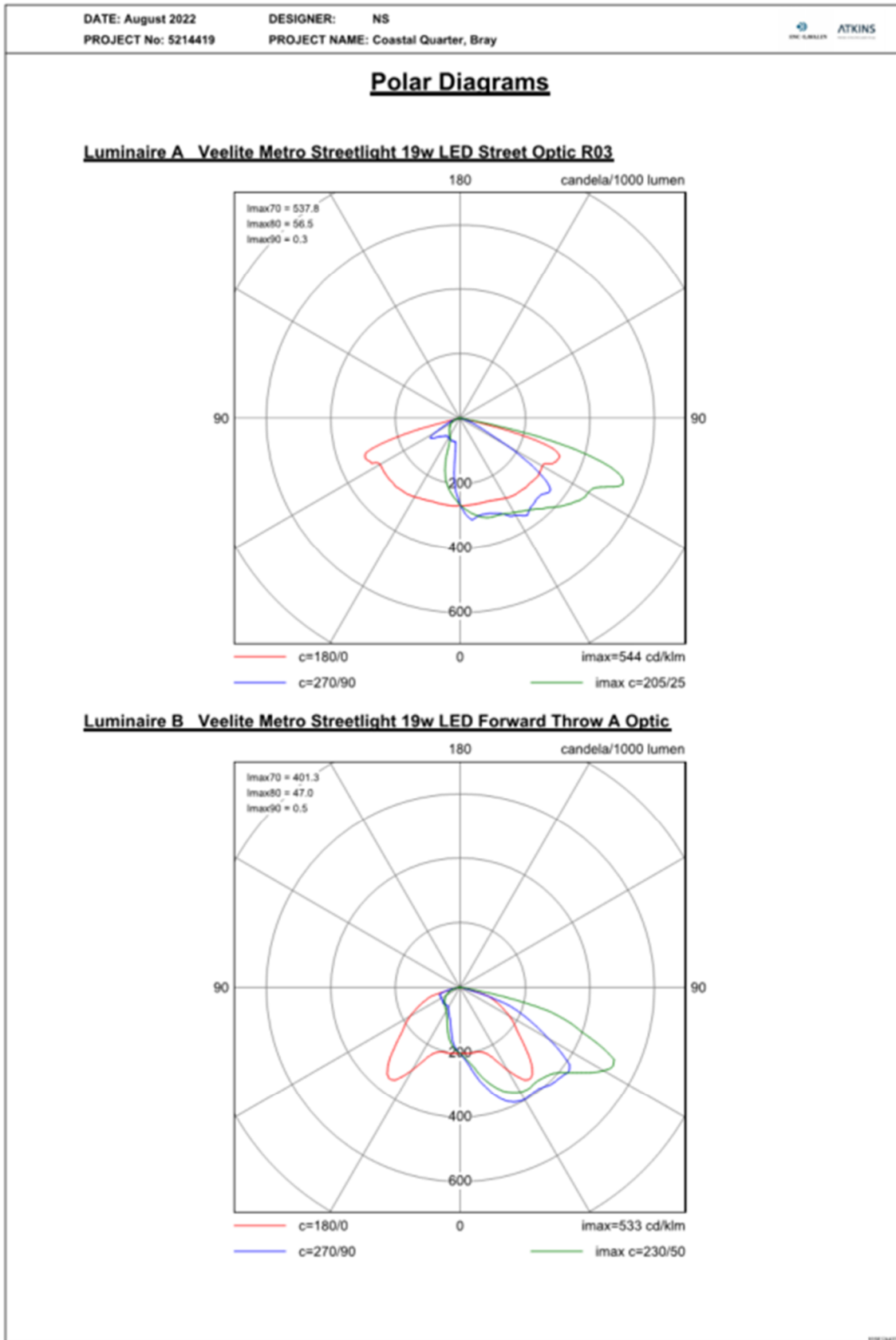
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37	D	245.56	-22.17	10.00	55.00	0.00	0.00	0.80			
38	B	257.55	-9.02	6.00	154.00	0.00	0.00	0.50			
39	D	126.73	6.89	10.00	281.00	0.00	0.00	0.80			
40	C	153.21	271.01	5.00	274.00	0.00	0.00	0.50			
41	D	217.21	4.36	10.00	255.00	0.00	0.00	0.80			
42	C	325.11	82.08	5.00	21.00	0.00	0.00	0.50			
43	A	267.12	57.22	6.00	194.00	0.00	0.00	0.50			
44	B	268.67	12.94	6.00	151.00	0.00	0.00	0.50			
45	B	242.98	13.89	6.00	34.00	0.00	0.00	0.50			
46	A	221.29	21.65	6.00	107.00	0.00	0.00	0.50			
47	A	252.72	40.89	6.00	292.00	0.00	0.00	0.50			
48	B	284.70	53.36	6.00	294.00	0.00	0.00	0.50			
49	A	313.88	59.73	6.00	298.00	0.00	0.00	0.50			
50	A	313.66	60.23	6.00	108.00	0.00	0.00	0.50			
51	C	324.64	81.98	5.00	201.00	0.00	0.00	0.50			
52	C	318.18	110.87	5.00	200.00	0.00	0.00	0.50			
53	C	301.69	134.69	5.00	297.00	0.00	0.00	0.50			
54	E	301.87	121.02	4.00	293.00	0.00	0.00	0.00			
55	C	296.04	155.23	5.00	22.00	0.00	0.00	0.50			
56	C	293.04	189.89	5.00	223.00	0.00	0.00	0.50			
57	C	283.75	178.76	5.00	202.00	0.00	0.00	0.50			
58	C	274.95	209.63	5.00	215.00	0.00	0.00	0.50			
59	C	245.38	242.22	5.00	291.00	0.00	0.00	0.50			
60	C	245.23	242.68	5.00	114.00	0.00	0.00	0.50			
61	C	265.21	227.74	5.00	212.00	0.00	0.00	0.50			
62	C	250.29	271.69	5.00	186.00	0.00	0.00	0.50			
63	C	234.07	276.55	5.00	36.00	0.00	0.00	0.50			
64	C	208.24	288.11	5.00	284.00	0.00	0.00	0.50			
65	C	173.11	280.97	5.00	290.00	0.00	0.00	0.50			
66	C	187.89	267.76	5.00	126.00	0.00	0.00	0.50			
67	A	189.66	177.65	6.00	34.00	0.00	0.00	0.50			
68	A	185.92	220.40	6.00	298.00	0.00	0.00	0.50			
69	A	161.66	232.20	6.00	215.00	0.00	0.00	0.50			
70	A	245.32	165.46	6.00	39.00	0.00	0.00	0.50			
71	A	265.27	174.86	6.00	274.00	0.00	0.00	0.50			
72	A	328.94	39.40	6.00	85.00	0.00	0.00	0.50			

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<b>Layout Continued</b>											
ID	Type	X	Y	Height	Angle	Tilt	Cant	Out-reach	Target X	Target Y	Target Z
73	A	339.27	33.21	6.00	178.00	0.00	0.00	0.50			
74	B	331.39	15.15	6.00	286.00	0.00	0.00	0.50			
75	A	325.39	-7.93	6.00	12.00	0.00	0.00	0.50			
76	A	347.41	-6.30	6.00	182.00	0.00	0.00	0.50			
77	A	357.33	-30.10	6.00	175.00	0.00	0.00	0.50			
78	A	333.18	-47.87	6.00	83.00	0.00	0.00	0.50			
79	A	304.84	-32.49	6.00	73.00	0.00	0.00	0.50			
80	A	310.88	-15.93	6.00	263.00	0.00	0.00	0.50			
81	F	206.88	256.44	1.00	270.00	0.00	0.00	0.00			
82	E	211.69	243.74	4.00	296.00	0.00	0.00	0.00			
83	E	217.28	232.18	4.00	298.00	0.00	0.00	0.00			
84	E	233.18	200.09	4.00	203.00	0.00	0.00	0.00			
85	F	226.49	190.78	1.00	270.00	0.00	0.00	0.00			
86	F	242.74	199.34	1.00	270.00	0.00	0.00	0.00			
87	E	261.64	131.21	4.00	36.00	0.00	0.00	0.00			
88	E	290.32	108.03	4.00	229.00	0.00	0.00	0.00			
89	E	274.51	100.77	4.00	310.00	0.00	0.00	0.00			
90	F	295.15	82.59	1.00	270.00	0.00	0.00	0.00			
91	F	282.93	72.18	1.00	53.00	0.00	0.00	0.00			
92	E	215.29	61.37	4.00	321.00	0.00	0.00	0.00			
93	F	197.95	41.70	1.00	256.00	0.00	0.00	0.00			
94	F	197.48	31.56	1.00	297.00	0.00	0.00	0.00			
95	F	231.49	43.64	1.00	148.00	0.00	0.00	0.00			
96	F	271.69	139.56	1.00	185.00	0.00	0.00	0.00			
97	E	285.83	87.34	4.00	326.00	0.00	0.00	0.00			
98	E	224.42	214.46	4.00	312.00	0.00	0.00	0.00			
99	E	206.27	214.94	4.00	270.00	0.00	0.00	0.00			
100	E	222.23	48.43	4.00	332.00	0.00	0.00	0.00			
101	E	274.48	117.84	4.00	270.00	0.00	0.00	0.00			
102	A	214.11	143.69	6.00	114.00	0.00	0.00	0.50			
103	A	107.67	48.37	6.00	182.00	0.00	0.00	0.50			
104	G	96.07	38.89	6.00	285.00	0.00	0.00	0.50			
105	G	121.89	46.06	6.00	284.00	0.00	0.00	0.50			
106	G	146.18	50.80	6.00	274.00	0.00	0.00	0.50			
107	G	150.09	18.78	6.00	108.00	0.00	0.00	0.50			
108	G	129.08	14.93	6.00	103.00	0.00	0.00	0.50			

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<b><u>Layout Continued</u></b>											
ID	Type	X	Y	Height	Angle	Tilt	Cant	Out-reach	Target X	Target Y	Target Z
109	G	103.76	8.87	6.00	103.00	0.00	0.00	0.50			
110	C	113.10	265.69	5.00	333.00	0.00	0.00	0.50			
111	A	293.46	-1.03	6.00	169.00	0.00	0.00	0.50			
112	A	303.89	13.44	6.00	335.00	0.00	0.00	0.50			
113	A	313.39	35.10	6.00	152.00	0.00	0.00	0.50			
114	B	78.96	150.42	6.00	22.00	0.00	0.00	0.50			
115	B	222.33	138.24	6.00	29.00	0.00	0.00	0.50			
116	A	168.96	215.40	6.00	208.00	0.00	0.00	0.50			
117	F	205.29	45.68	1.00	293.00	0.00	0.00	0.00			
118	E	239.36	232.57	4.00	85.00	0.00	0.00	0.00			
119	A	289.27	27.19	6.00	9.00	0.00	0.00	0.50			
120	B	55.27	214.31	6.00	216.00	0.00	0.00	0.50			
121	A	173.77	230.82	6.00	112.00	0.00	0.00	0.50			
122	C	117.01	253.05	6.00	333.00	0.00	0.00	0.50			
123	B	214.14	87.12	6.00	296.00	0.00	0.00	0.50			
124	B	170.35	72.94	6.00	291.00	0.00	0.00	0.50			
125	B	201.92	153.87	6.00	34.00	0.00	0.00	0.50			
126	A	252.02	118.17	6.00	296.00	0.00	0.00	0.50			
127	E	258.81	100.32	4.00	310.00	0.00	0.00	0.00			
128	F	200.64	253.31	1.00	239.00	0.00	0.00	0.00			





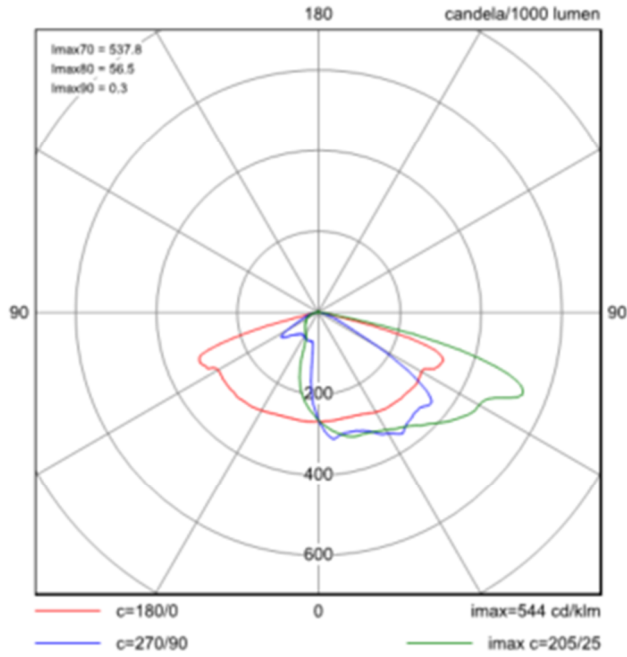
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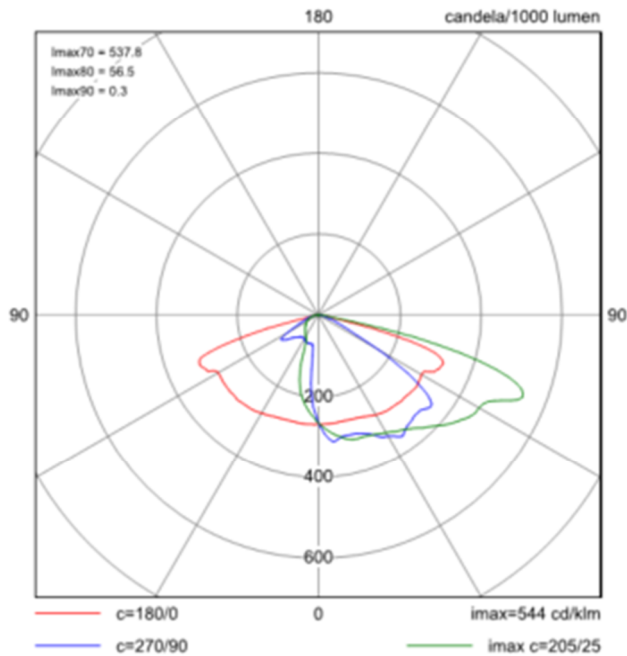


**Polar Diagrams Continued**

**Luminaire C Veelite Metro Streetlight 19w LED Street Optic R03**



**Luminaire D Veelite Metro Streetlight 134w LED Forward Throw Optic**

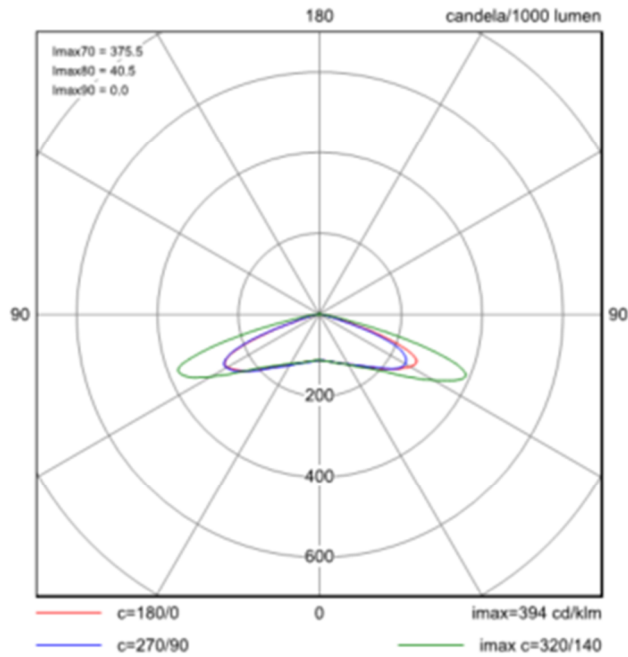


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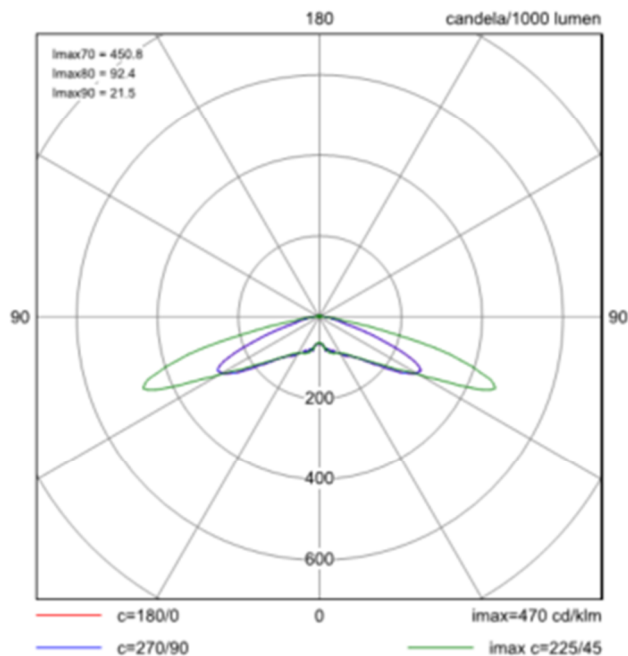


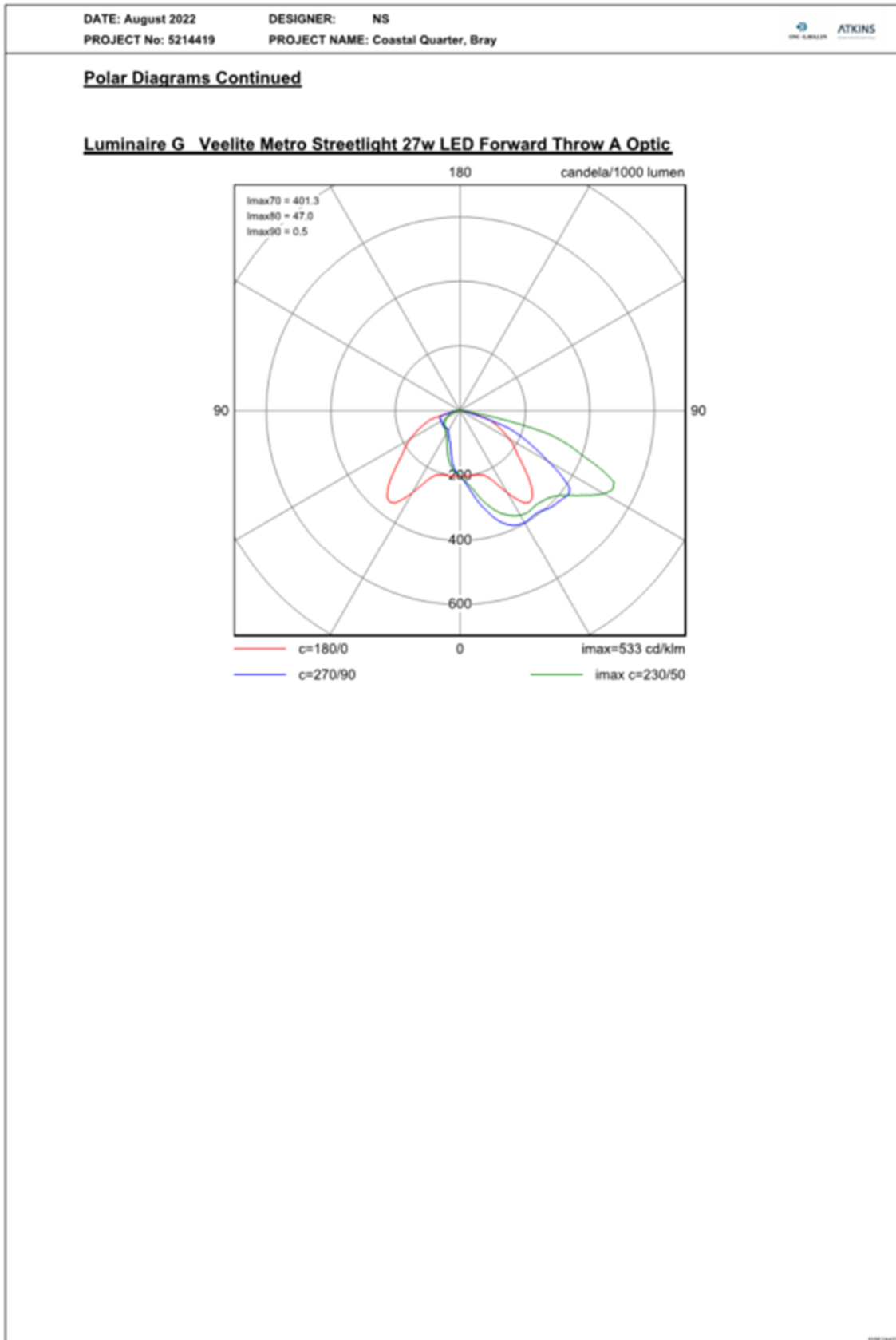
**Polar Diagrams Continued**

**Luminaire E Veelite Quad Series 14w LED Symmetric**

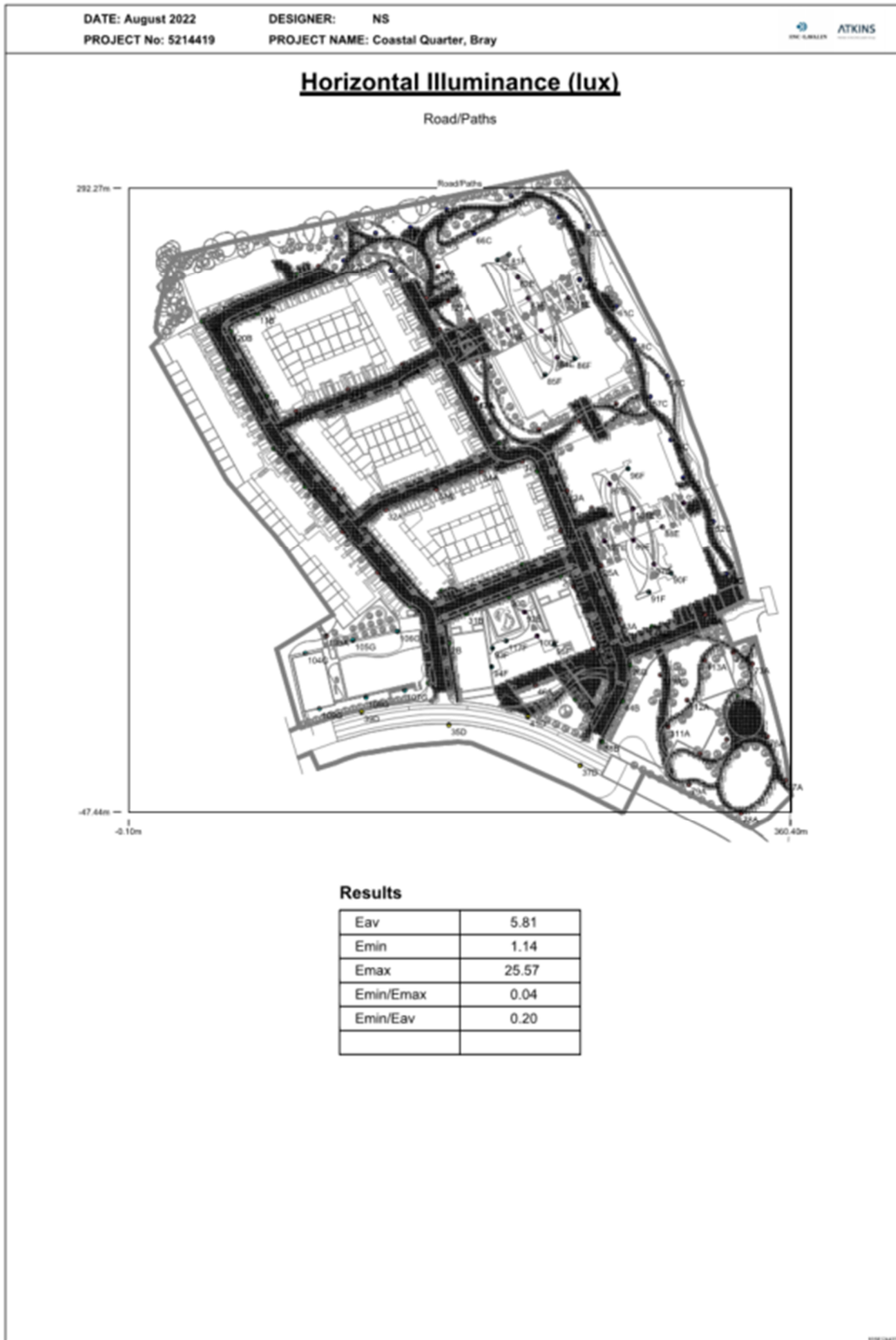


**Luminaire F Veelite LED Bollard 18w LED Symmetric**

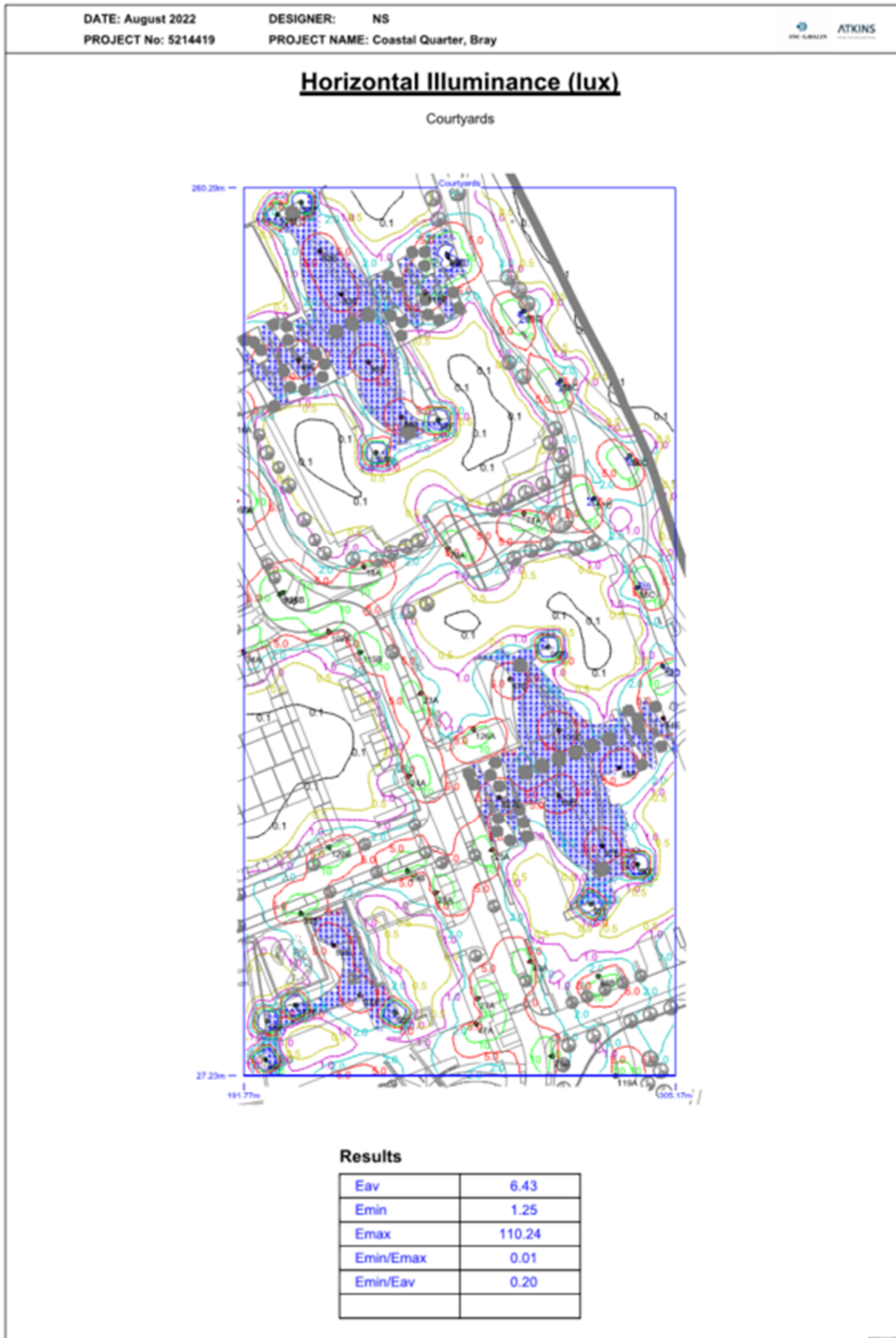




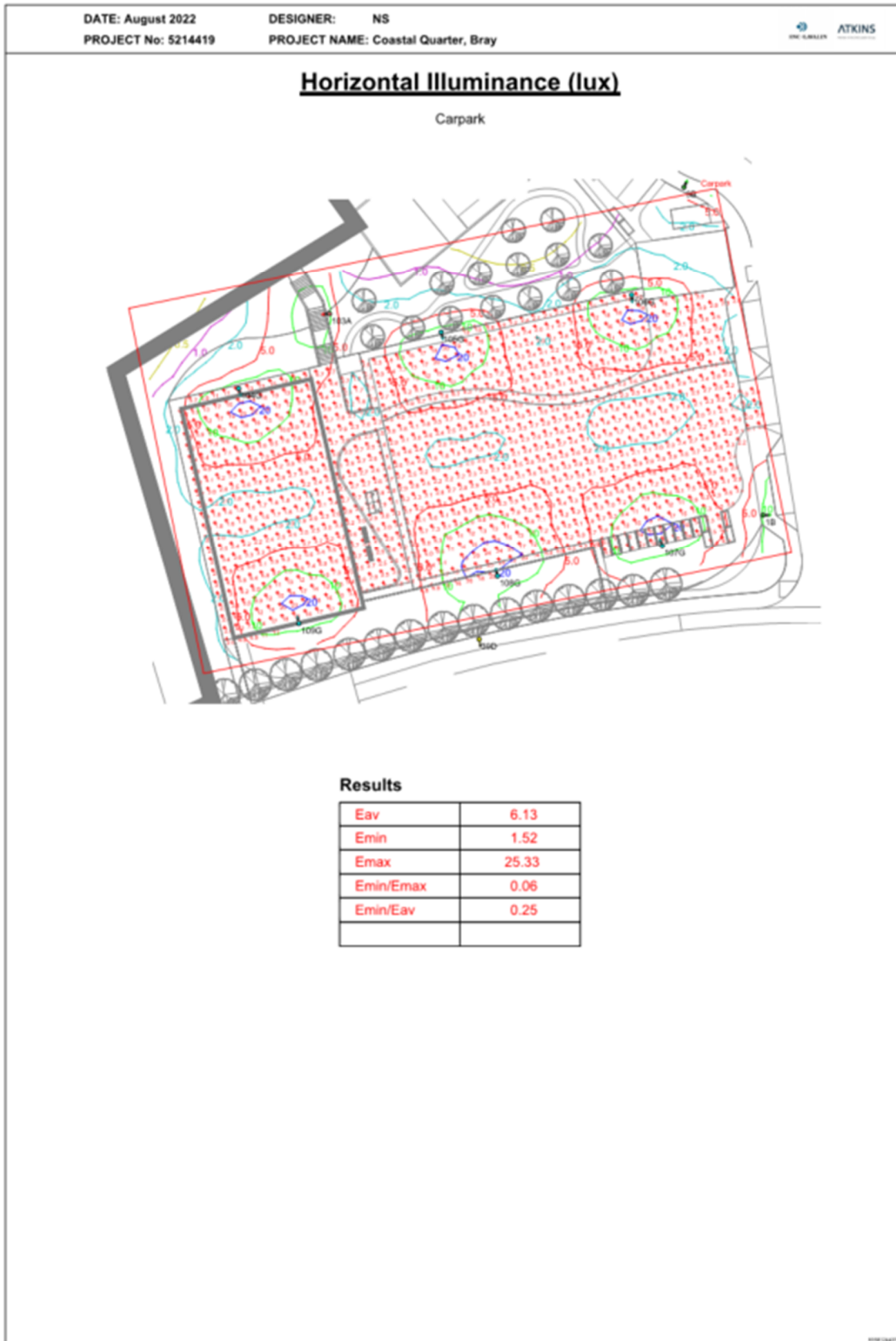
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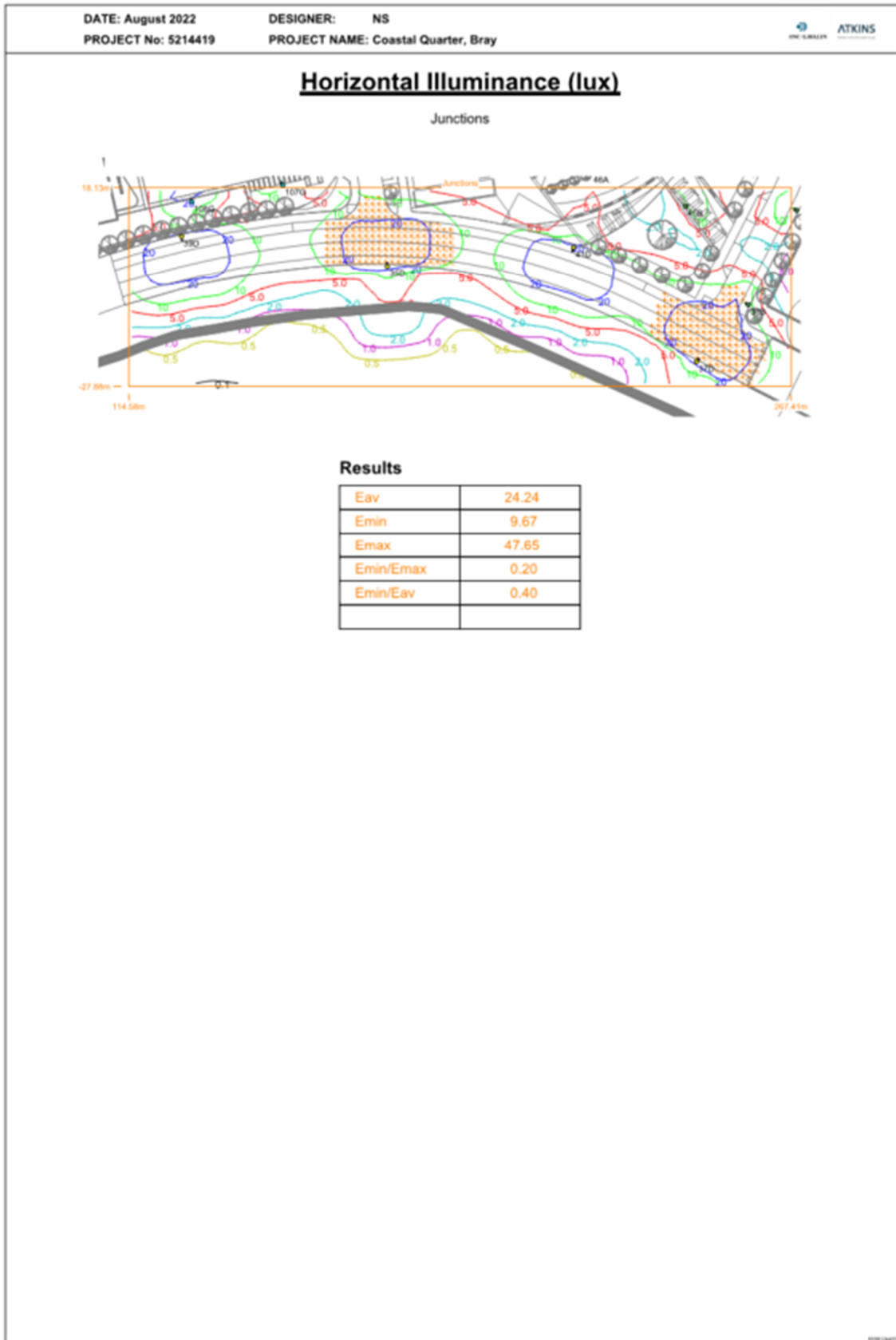
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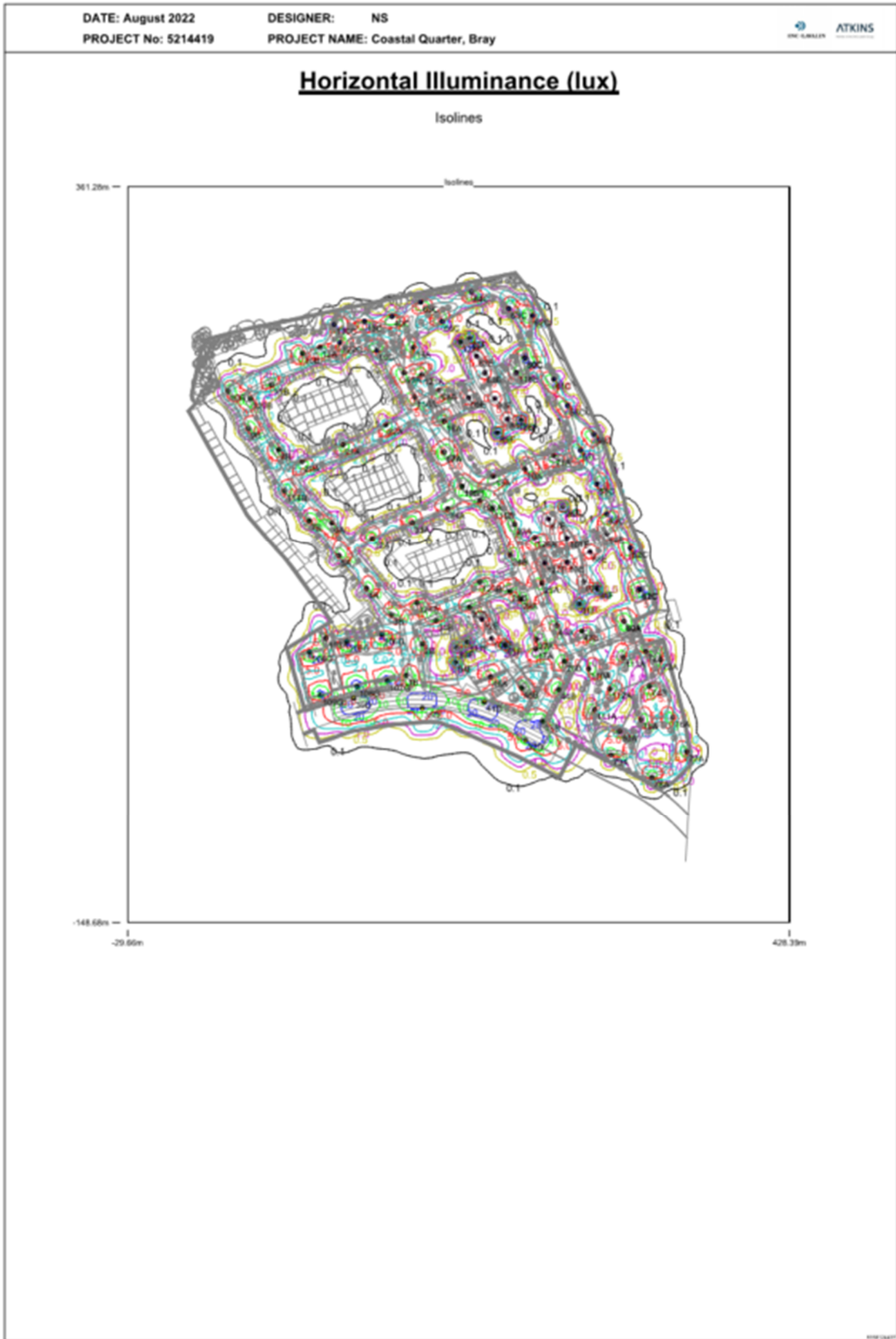


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## 5.2. Public Lighting Significant Notes

The enclosed public lighting report were consulted with DLRCC lighting department in the process of preparing the lighting design and their comments were incorporated.

The design now uses the following: -

- The attached Lighting Report shall be read in conjunction with drawings 5214419-ATK-01-ZZ-DR-EE-1301 & 5214419-ATK-01-ZZ-DR-EE-1302;
- Lumen output at 100,000 hours;
- Spot lamp replacement;
- Normal environment;
- 6 years cleaning cycle;
- 102 x Metro Streetlights LED with no tilt with following wattages/optic type/mounting arrangements:
  - 46 x 19w Street Optic R03 2700K (42 x Single Head and 2 x Twin Head) mounted on 44 x 6m poles – TYPE A Luminaire
  - 25 x 19w Forward Throw A Optic 2700K (23 x Single Head and 1 x Twin Head) mounted on 24 x 6m poles – TYPE B Luminaire
  - 21 x 19w Street Optic R03 2700K (17 x Single Head and 2 x Twin Head) mounted on 19 x 5m poles – TYPE C Luminaire
  - 4 x 134w Street Optic R03 3000K mounted on 4 x 10m poles – TYPE D Luminaire
  - 6 x 27w Forward Throw A Optic 2700K mounted on 6 x 6 poles – TYPE G Luminaire
- Also used are 15 x Quad Series 14w LED 3000K Symmetric mounted on 4m poles (TYPE E) and 11 x LED Bollard 18w 3000K Symmetric 1m tall (TYPE F) to light the courtyards.

Light levels as follows: -

- **Road / Paths** – 5.8 lux average, 1.1 lux minimum (0.20 uniformity).
- **Courtyards** – 6.4 lux average, 1.2 lux minimum (0.20 uniformity).

These levels comply with Class P4 of IS EN 13201-2:2015 / BS5489-1:2020 for residential roads / pedestrian areas (5.0 lux average, 1.0 lux minimum).

- **Steps** - 10 lux average, 5.9 lux minimum (0.55 uniformity). This complies with class P2 of IS EN 13201-2:2015 / BS 5489-1:2020 for paths (10 lux average, 2 lux minimum).
- **Carpark** – 6.1 lux average, 1.5 lux minimum (0.25 uniformity). This complies with IS EN 12464-2:2014 for parking areas – Light traffic (5.0 lux average, 0.25 uniformity).
- **Church Road** – 17 lux average, 0.40 uniformity. This complies with Class C3 of IS EN 13201:2015 for roads (15 lux average, 0.40 uniformity).
- **Junctions** – 24 lux average, 0.40 uniformity. This complies with Class C2 of IS EN 13201:2015 for conflict areas (20 lux average, 0.40 uniformity).

## 6. Appendix B

### 6.1. BBSC REPORT

15-SEP-2022

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Purpose Telecommunications  
Impact Assessment  
Version P.01.03



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# TELECOMMUNICATIONS IMPACT ASSESSMENT REPORT

## Coastal Quarter SHD 2 Former Bray Golf Club Lands, County Wicklow & Dublin

On Behalf of

**Shankill Property Investments Ltd.**

Revision	Date of Issue	Reason For Issue	By	Chk'd
P.01.03	15 Sep 2022	PLANNING	BON	BON

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## **EXECUTIVE SUMMARY**

BBSC have been engaged to provide a telecommunication impact assessment, to assess whether or not the proposal being made by Shankill Property Investments Limited within its submission to An Bord Pleanála ("ABP") impacts any existing Telecommunication Channels within and in proximity of the proposed site.

To provide this assessment, BBSC have reviewed the proposed development in the context of the immediate surrounding registered and documented telecommunication sites.

Pursuant to our review, BBSC can conclude based on the findings outlined herein that the proposal being made will not impact any existing Telecommunication Channels at the time of the assessment.

## 1.0 DEVELOPMENT DESCRIPTION

The applicant intends to apply to APB for permission for a Strategic Housing Development (SHD) comprising 586 no. residential units in a mix of apartments, duplexes and houses. In addition, a childcare facility, café, retail unit and 1 no. commercial unit (incorporating a gym and a juice bar) are proposed along with all associated and ancillary development and infrastructural works, hard and soft landscaping, open spaces, boundary treatment works, ancillary car and bicycle parking spaces at surface, undercroft and basement levels. The proposed houses and duplexes range in height from 2 – 3 storeys with the proposed 4 no. apartment blocks ranging in height from 3 – 12 storeys. Block A will accommodate 162 no. Build-to-Rent (BTR) units.

It is proposed that 274 no. units will be located within the administrative area of Dun Laoghaire-Rathdown County Council and 312 no. units will be located within the administrative area of Wicklow County Council. The childcare facility, retail, café and commercial unit will all be located in the administrative area of Wicklow County Council.

Planning permission was granted on part of the subject site for 234 no. residential units, a childcare facility, café and retail unit subject to compliance with the terms of conditions attached to reference ABP-311181-21. The current proposed development includes the development as previously permitted under ABP-311181-21 including minor revisions addressing conditions and new proposals for Blocks A and B which were previously refused.

The location of the proposed development is presented in Figure 6.

The proposed houses and duplexes range in height from 2 to 3 storeys, with the proposed apartment blocks ranging in height from 3 to 12 storeys. The following heights are proposed for each typology:

Houses & Duplexes	9.811m – 11.024m AOD
Block A	34.020m AOD
Block B	43.500m AOD
Block C	29.000m AOD
Block D	25.075m AOD



## **2.0 PURPOSE OF REPORT**

Shankill Property Investments Ltd. Appointed BBSC in September 2022 to review the potential impact which the proposed development may have on telecommunications, as set out under SI 600/2001.

This report addresses the following communication channels, relative to the proposed development:

- Voice communications via a fixed line located underground by network providers to the proposed development.
- Broadband via a fixed line located underground by network providers to the proposed development.
- Wireless radio signals / radio frequency coverage required for cellular communication links to base stations.
- Microwave transmission links for base station to other base stations for cellular communications, wireless microwave radio signals.

### 3.0 TELECOMMUNICATION CHANNELS

#### 3.1 MOBILE PHONE BASE STATIONS

Base stations transmit signals from mobile devices, using radio waves via antennas. These signals are usually low power and operate at lower frequencies of the radio spectrum under licences from the Office of the Communications Regulator to the Mobile Phone Providers. These base stations provide voice, data and other types of content.

#### 3.2 INTER-BASE STATIONS COMMUNICATIONS

Inter-base station communications are transmitted from base station to base station via microwave transmissions using direct line of sight antennas. These operate at a high power and high frequencies of the radio spectrum due to the larger volume of data needed. These are provided as part of base stations.

#### 3.3 CELLS

Each mobile phone is typically serviced by three or more cells sites or base stations. The minimum requirement is to be serviced by one base station.

It is not uncommon for each cell to provide multiple services such as GSM, LTE, services as in order to avoid interference from neighbouring cells, the cellular equipment will be set at different frequencies so as to guaranteed service quality within each cell.

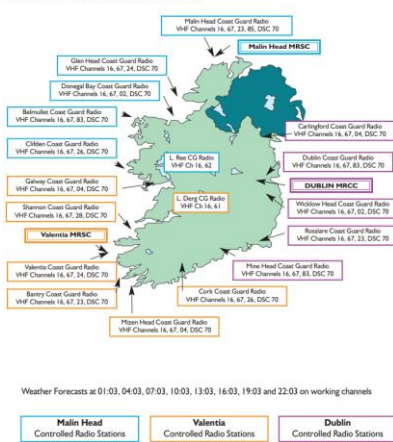
Marine Communications employing cellular communications within range of the base stations are also serviced by two or more base stations, subject to distance from the coast.

Marine Communications, typically specialist systems dedicated to the marine environment, are controlled by Coastguard Stations. These are either automated, non-automated or handheld VHF radio devices. Typical systems are Automatic Identification System (AIS), on-board Satellite Communications, VHF radio bands (nearest at Three Rock Mountain, Dublin Coast Guard Station, Wicklow Head Coast Guard Station), an Emergency Position Indicating Radio Beacon (EPIRB) amongst others. For further detail, please refer to the *Code of Practice, Safe Operation of Recreational Craft 2017, Department of Transport, Tourism and Sport*.

Small recreational vessels are required to be licenced with a Ship Radio Licence (VHF radio devices). Global Maritime Distress and Safety System (GMDSS) applies to Merchant Ships and Fishing Vessels. The use of these systems is outside the scope of this report.

#### 11.4 Marine VHF Communications Network

Irish Coast Guard  
Marine VHF Communications Network



**Dublin Coast Guard Radio**  
VHF Channels 16, 67, 83, DSC 70

**DUBLIN MRCC**

**Wicklow Head Coast Guard Radio**  
VHF Channels 16, 67, 02, DSC 70

**Rosslare Coast Guard Radio**  
VHF Channels 16, 67, 23, DSC 70

Figure 1 - VHF Coastal Communication Centres

### 3.4 CELLULAR NETWORK

A cellular network comprises of multiple cells sites to provide Radio Frequency coverage over a wide geographic area. This enables the public to use portable transceivers, i.e. any device with a SIM card to connect to the network, thus allowing a devices such as mobile phone, laptop, fire alarm systems to communicate with each other or to fixed landlines via telecommunication exchanges. This is carried out by means of fixed transceivers and telephones anywhere in the network or fixed line networks in the country or at global levels.

Base stations automatically hand over cell communications from station to station to ensure that movement does not affect the quality of the call or data transfer as occurring as a result of travelling.

### 3.5 FLEXIBILITY

Cellular networks are flexible and adapt quickly to the addition of more base stations, thus providing greater coverage. They are not limited by the horizon and can therefore it can be considered that the addition of a building within the line of sight of base stations, may indeterminably affect the quality of the radio frequency that the current system provides.

As microwave transmissions are generally line of sight communications, any obstruction can and will affect the transmission of data from point to point.

### 3.6 FRESNEL ZONE IMPACT

When installing microwave links, it is important to keep an elliptical region between the transmitting microwave link and the receiving microwave link free from any obstruction for the proper functioning of the system. This 3D elliptical region between the transmit antenna and the receive antenna is called the Fresnel Zone. The size of the ellipse is determined by the frequency of operation and the distance between the two sites.

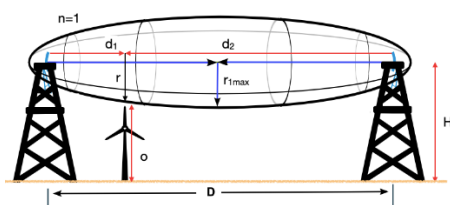


Figure 2 - Fresnel Zone

Essentially, if there is an obstacle in the Fresnel zone, part of the radio signal will be diffracted or bent away from the straight-line path. The practical effect is that on a point-to-point microwave link, the refraction will reduce the amount of energy reaching the receiving microwave dish. The thickness or radius of the Fresnel Zone depends on the frequency of the signal – the higher the frequency, the smaller the Fresnel Zone. Microwave links are high frequency radio links used for point-to-point transmission.

## 4.0 FIXED LINE TELECOMS

This section will address the following communication channel(s), in relation to the proposed development:

- Voice communications via a fixed line located underground by network providers to the proposed development.
- Broadband via a fixed line located underground by network providers to the proposed development.
- Fixed line telecoms will be routed in underground ducts from the existing street network underground to each domestic and commercial unit.
- It is expected to provide Fibre/ CAT 6 or CAT 7 to each dwelling from several on street cabinets to each dwelling or unit. This incoming service shall be routed underground.
- It is expected to provide Fibre/ CAT 6 or CAT 7 to each apartment or duplex unit from a common riser to each unit. The relevant service providers will install their services in a secure room within a common area of the apartment or duplex block for further distribution via the risers. The incoming service shall be routed underground.
- It is expected to provide Fibre/ CAT 6 or CAT 7 to each commercial unit from several on street cabinets to unit as required. The incoming service shall be routed underground.

It is not intended to provide any shared lines within the proposed development. Any phone or data lines that will be required for fire alarms or lifts within apartment blocks shall be provided within the proposed buildings to ensure that obligations regarding health and safety and other legal requirements can be met.

It should be noted that the design of any fixed line underground telecommunications will be vendor neutral and will be based on the provision of services from the existing infrastructure that is located within the proximity of the proposed development. The existing services shall be re-routed for the duration of the construction work and extended into the proposed development once the internal street network has been built. This is typical for developments of this scale and function.

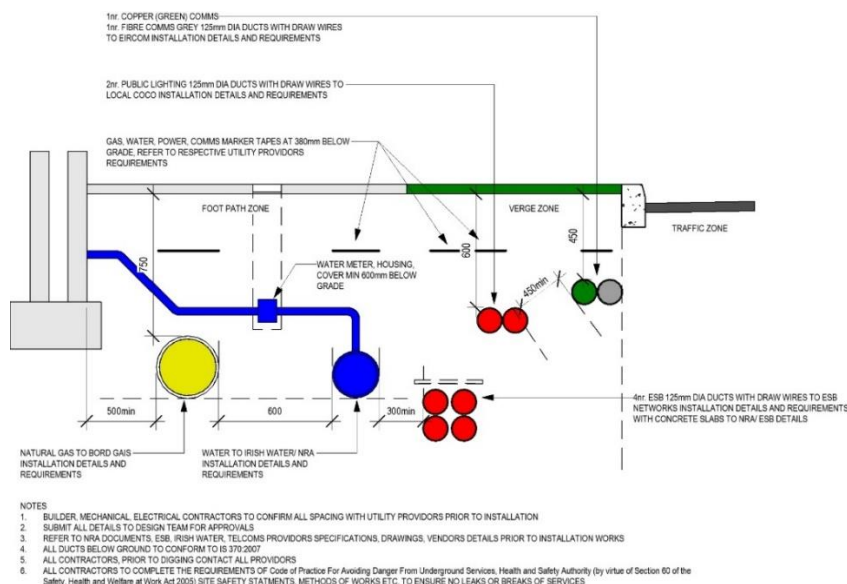


Figure 3 - Example of Service Co-ordination in Ground

The provision of broadband will generally be in accordance with *PAS 2016:2010 Next Generation Access for New Build Homes*.

In summary, the proposed development does not have any impact on existing fixed line telecoms. The proposed development will re-route existing underground services to each unit within the proposed development during the construction period.

## 5.0 FUTURE PROVISION OF MOBILE PHONE TRANSMITTERS

This section will, address the following communication channel(s), in relation to the proposed development:

- Wireless radio signals / radio frequency coverage required for cellular communication links to base stations.

Currently, there are at least 19 Mobile Phone Transmitters within the local area of the proposed development for a population of approximately 10,978 persons as of the 2016 Census. This equates to a coverage of 1 transmitter per 578 persons. Please refer to Appendix 4.

It should be noted that at the time of publication of this report, the 2022 Census data was not tabulated on a divisional basis and therefore could not be used for the purpose of this assessment.

The current coverage of 1 transmitter per 578 persons is a high ratio when compared with some areas within the State, such as Navan North, Co. Meath which has a density of approximately 1 transmitter per 211 persons.

Transmitters are typically located in or on existing water towers, commercial buildings or are standalone masts which require planning permission to mount.

With an estimated population of approximately 2.5 to 4.5 persons per household, the proposed development of 586 dwellings would result in approximate range of 1,465 to 2,637 additional people within the locality. For this quantum of development, a minimum of 3 to 4 additional mobile phone transmitters may be required to provide 4G or better service within the area.

As is the case for developments of this scale, any requirement for additional mobile phone transmitters will be subject to a network load analysis by the mobile phone network providers that can only be carried out once the development has been built. Should this network load analysis conclude that additional mobile phone transmitters are required, these could be located in or at Block B2 as it is the tallest building within the proposed development (12 storeys). A standalone planning permission would be required for any mobile phone transmitters.

In summary, the proposed development will generate an increase in population that may result in the requirement for additional mobile phone transmitters. A network load analysis will be carried out by the mobile phone network providers once the development has been built and should this analysis state that further transmitters are required, a planning application will be made.

## **6.0 EXISTING MOBILE PHONE TRANSMITTERS CELLULAR COVERAGE**

### **6.1 FIXED WIRELESS NETWORKS**

This section of the report addresses the following communication channels in relation to the proposed development:

- Wireless radio signals / radio frequency coverage required for cellular communication links to base stations.
- Microwave transmission links for base station to other base stations for cellular communications, wireless microwave radio signals.

Within Ireland, the mobile phone and fixed wireless networks usually broadcast at a height of 20m above finish ground level and equipment is generally mounted on high structures such as buildings, water towers and masts. In point-to-point wireless communications, it is important for the line of sight between two base stations to be free from any obstruction. At heights of 20m or above, the impact of surrounding buildings, tall trees and the effects of topology begin to affect the quality of the direct line of sight for transmissions in the microwave and radio frequency wavelengths. Any interference or obstruction in the line of sight can result in a loss of signal.

### **6.2 CELLULAR LINES OF SIGHTS**

The current cellular lines of sight permit a mesh arrangement of towers to form a local cellular mobile phone coverage network. This mesh arrangement creates the necessary links to provide the network connections required to ensure continuity of service at all times, allowing for diversification in routing of data and voice across the network.

Figure 4 below would indicate that the majority of the population of Bray area, and surrounding Marine Area, is covered by two or more base stations. The development area is indicated in Red. Base Station to Base Station paths are showing in yellow. Marine mobile phone devices communication paths are shown in green.

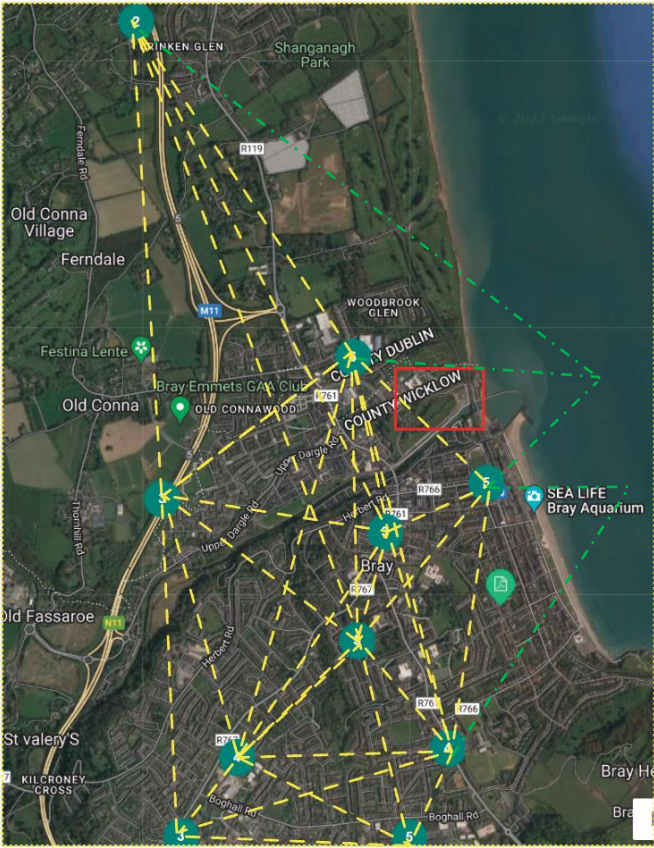


Figure 4 - Lines of Sight, Cellular Overview Bray

Figure 4 identifies the following principle towers that provide the sight lines closest to the development:

- Site THREE\_WK0001, Solus Water Tower, Corke Abbey Road, Little Bray, County Dublin, 5nr, plus report, 6 noted on drawing
- COMREG Site ID 3\_WK0004, Carlisle Ground, 2nr, Bray Train Station, Commercial Unit

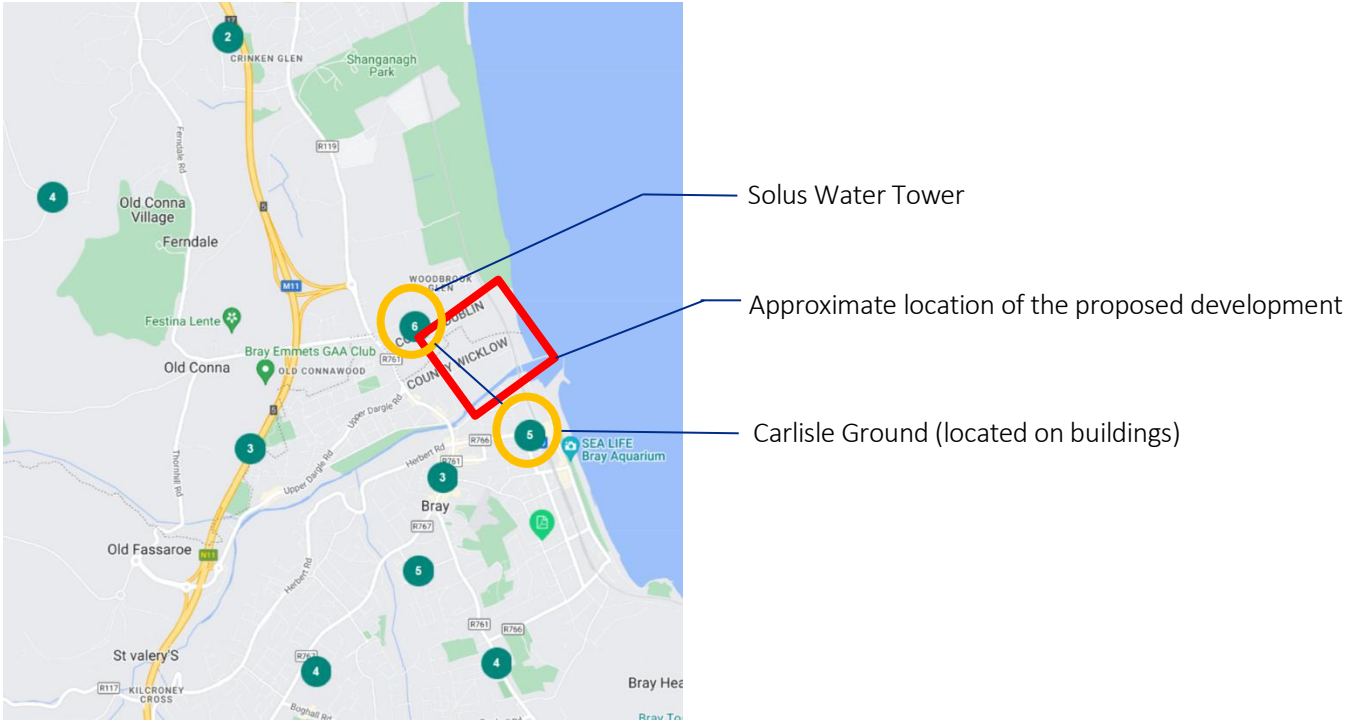


Figure 5 - Cellular Base Stations, Bray Area



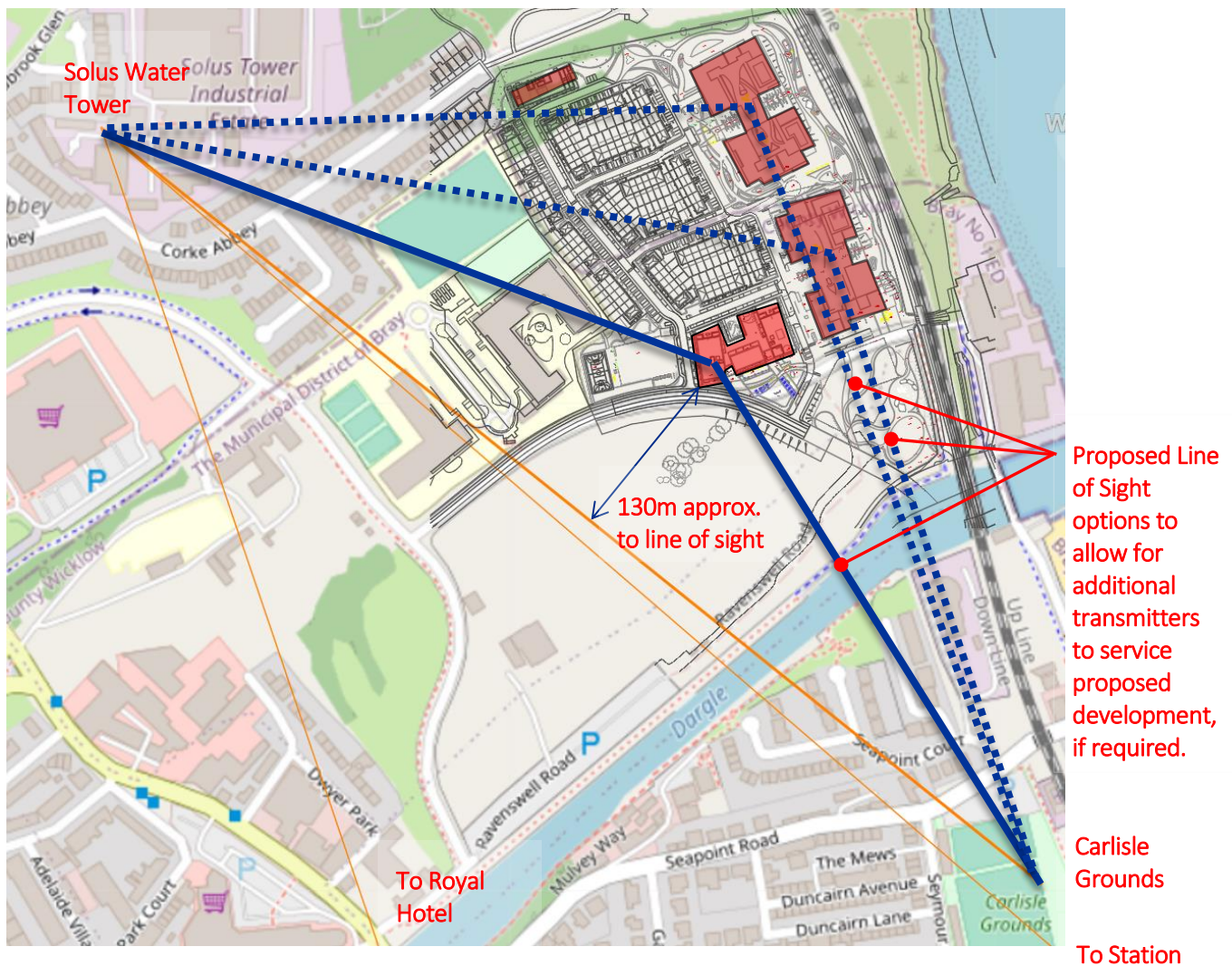


Figure 6 - Line of Sight, Mobile Transmitters. Map used for illustrative purposes only.

Figure 6 above identifies the lines of sight from the Solas Water Tower and Carlisle Grounds. Proposed buildings over 20m within the development are identified in red. It should be noted that the low level or standard dwellings (under 10m high) are not shown for clarity and should under normal conditions not affect line of sight as the tower transmitters are higher than house roofs.

It is concluded that:

- The existing line of sight from the Royal Hotel to the Solas Water Tower, should remain unaffected by the proposed development.
- The existing line of sight from the train station to the Solas Water Tower, should remain unaffected by the proposed development.
- The existing line of sight between the Water Tower and Carlisle Grounds should remain unaffected by the proposed development as it is set back from this line of sight by more than 130m.

While the proposed development will not impact on existing sight lines, the addition of a transmitter on Block B2 (12 storeys) would improve coverage for the increased population density detailed within Section 3.0. This would allow the proposed development to connect to base stations which may be required to service the development to connect to the wider network. However, as concluded within Section 4.0, any requirement for additional mobile phone transmitters will be subject to a network load analysis by the mobile phone network providers that can only be carried out once the development has been built. Should this network load analysis conclude that additional mobile phone transmitters are required, these could be located in or at Block B2 as it is the tallest building within the proposed development (12 storeys). A standalone planning permission would be required for any mobile phone transmitters.

### 6.3 MICROWAVE LINKS

In respect of the Microwave Fresnel Zone, Fresnel Calculations have been undertaken as seen in Table 1 below.

Solus Tower, Corke Abbey Road, Little Bray, County Dublin	Frequency MHZ	Fresnel Zone (m)					
		Km	Km	Km	Km	<b>Km</b>	Km
Distance to from Base Station		0.1	0.2	0.3	0.4	<b>0.5</b>	0.6
<b>Transmitter Type</b>							
<b>General</b>							
UHF TV	480	4.0	5.6	6.8	7.9	<b>8.8</b>	9.7
GSM 900 (MOBILE PHONE BASE)	925	2.8	4.0	4.9	5.7	<b>6.4</b>	7.0
GSM 1800 (MOBILE PHONE BASE)	1805	2.0	2.9	3.5	4.1	<b>4.6</b>	5.0
UMTS (MOBILE PHONE BASE)	2110	1.9	2.7	3.3	3.8	<b>4.2</b>	4.6
LTE 1800	1850	2.0	2.8	3.5	4.0	<b>4.5</b>	4.9
Results from Programme of Measurement of Non-Ionising Radiation Emissions Site Survey Report 16/15_3 As published by Commission for Communication Regulation (ComReg)							
DVB-T	546.85	3.7	5.2	6.4	7.4	8.3	9.1
DVB-T	568.42	3.6	5.1	6.3	7.3	8.1	8.9
DVB-T	769.96	3.1	4.4	5.4	6.2	7.0	7.6
DVB-T	738.91	3.2	4.5	5.5	6.4	7.1	7.8
LTE	816	3.0	4.3	5.3	6.1	6.8	7.4
LTE	806	3.1	4.3	5.3	6.1	6.8	7.5
LTE	796	3.1	4.3	5.3	6.1	<b>6.9</b>	7.5
GSM	936.568	2.8	4.0	4.9	5.7	6.3	6.9
GSM	947.594	2.8	4.0	4.9	5.6	6.3	6.9
GSM	927.625	2.8	4.0	4.9	5.7	6.4	7.0
UMTS-FDD	940	2.8	4.0	4.9	5.6	6.3	6.9
UMTS-FDD	958	2.8	4.0	4.8	5.6	6.3	6.9
UMTS-FDD	953.5	2.8	4.0	4.9	5.6	6.3	6.9
UMTS-FDD	932.5	2.8	4.0	4.9	5.7	6.3	6.9
GSM	1843.63	2.0	2.9	3.5	4.0	4.5	4.9
GSM	1807.34	2.0	2.9	3.5	4.1	4.6	5.0
LTE	1872.5	2.0	2.8	3.5	4.0	4.5	4.9
LTE	1855	2.0	2.8	3.5	4.0	4.5	4.9
UMTS-FDD	2157.5	1.9	2.6	3.2	3.7	4.2	4.6
UMTS-FDD	2117.5	1.9	2.7	3.3	3.8	4.2	4.6

Solus Tower, Corke Abbey Road, Little Bray, County Dublin	Frequency MHZ	Fresnel Zone (m)					
		Km	Km	Km	Km	<b>Km</b>	Km
Distance to from Base Station		0.1	0.2	0.3	0.4	<b>0.5</b>	0.6
UMTS-FDD	2167.5	1.9	2.6	3.2	3.7	4.2	4.6
UMTS-FDD	2147.5	1.9	2.6	3.2	3.7	4.2	4.6
UMTS-FDD	2162.5	1.9	2.6	3.2	3.7	4.2	4.6
UMTS-FDD	2152.5	1.9	2.6	3.2	3.7	4.2	4.6
UMTS-FDD	2112.5	1.9	2.7	3.3	3.8	4.2	4.6
UMTS-FDD	2132.5	1.9	2.7	3.2	3.8	4.2	4.6
UMTS-FDD	2127.5	1.9	2.7	3.3	3.8	4.2	4.6

Table 1 Determination of Fresnel Zone

From the table above, any structure at 20m in height or greater and is located within the Fresnel Zone (7m radius estimated at 796MHz, 0.5km) will not impact on signal strength, for a given atmospheric condition.

For 80% clearance the radius reduces to 5.6m and at 60%, 4.2m. The nearest building to this zone is more than 130m from the line of sight, as indicated in Figure 5.

From the above, it is concluded that the proposed development should not interfere with the Microwaves Fresnel Zone and it is subject to wavelength reflections from proposed building surfaces and edges.

It is further concluded that the proposed development may affect local radio (mobile phone) communications. On site network surveys once the development has been constructed will be required to determine whether addition microwave radio transmitters are required.

If a survey confirms that these are required, transmitters would be placed on the tallest Block B2 (12 storeys) which would be subject to a separate planning application.

## 7.0 ASSESSMENT (SI600/2001)

Assessment is based on Class 31, S.I. No. 600/2001 - Planning and Development Regulations, 2001, The following table reviews and assesses the development accordingly.

The following mobile phone and data coverage is noted as, see Appendix 1 for details

- 2G, ComReg has noted as Very Good to Good
- 3G, ComReg has noted as Very Good to Good
- 4G, ComReg has noted as Very Good to Good
- 5G, ComReg has noted as Very Good to Good

HEADING	REQUIREMENT	ASSESSMENT
<b>The carrying out by a statutory undertaker authorised to provide a telecommunications service of development consisting of the provision of—</b>		
<b>(a) underground telecommunications structures or other underground telecommunications works (including the laying of mains and cables and the installation underground of any apparatus or equipment),</b>		<p>Development to provided by in ground ducts to the existing street infrastructure.</p> <p>The Site is Green Field and is to be feed from the proposed Clonburris Ring Road</p> <p>Existing Overhead and in ground Ducted services exist in close proximity to the proposed development but do not enter or affect the proposed development</p>
<b>(b) overhead telecommunications,</b>	<p>1. Poles carrying overhead lines shall not exceed 10 metres in height.</p>	<p>No Pole is to be provided within the scope of the developments site boundary.</p> <p>Existing Overhead and in ground Ducted services exist in close proximity to the proposed development but do not enter or affect the proposed development</p>

HEADING	REQUIREMENT	ASSESSMENT
	<p>2. Poles carrying other equipment shall not exceed 10 metres in height and 0.6 metres in diameter measured at the widest point, where “other equipment” means one transmitting or receiving dish (the diameter of which shall not exceed 0.3 metres), or one panel antenna (the dimensions of which shall not exceed 0.5 metres in length x 0.3 metres in width x 0.2 metres in depth) used for the provision of a specific telecommunications service and the provision of which would otherwise require an additional pole route carrying overhead wires.</p>	<p>No Pole is to be provided within the scope of the developments site boundary.</p> <p>Existing Overhead and in ground Ducted services exist in close proximity to the proposed development but do not enter or affect the proposed development</p>
	<p>3. Where a pole or poles carry radio transmitting or receiving apparatus, the field strength of the non-ionising radiation emissions from that installation shall not exceed the limits specified by the Director of Telecommunications Regulation.</p>	<p>No Pole is to be provided within the scope of the developments site boundary.</p> <p>Existing Overhead and in ground Ducted services exist in close proximity to the proposed development but do not enter or affect the proposed development</p>
<p><b>(c) telephone kiosks or other telephone facilities in a public place not being on, over or along a public road,</b></p>	<p>No such kiosk or facility shall be situated within 10 metres of the curtilage of any house, save with the consent in writing of the owner or occupier thereof.</p>	<p>No Kiosk or Facility is to be provided within the scope of the developments site boundary.</p>
<p><b>(d) equipment for transmitting or receiving signals from satellites in space,</b></p>	<p>1. No such equipment shall exceed 10 metres in height</p>	<p>No such commercial (non domestic) equipment is to be provided within the scope of the developments site boundary.</p>
	<p>2. The diameter of any antenna shall not exceed 2 metres</p>	<p>No such commercial (non domestic) equipment is to be provided within the scope of the developments site boundary</p>
	<p>3. No such equipment shall be situated within 10 metres of the curtilage of any house save with the consent in writing of the owner or occupier thereof, or within 10 metres of the window of a workroom of any other structure</p>	<p>No such commercial (non domestic) equipment is to be provided within the scope of the developments site boundary</p>

HEADING	REQUIREMENT	ASSESSMENT
<p><b>(e) permanent telecommunications exchange and radio station containers,</b></p>	<p>1. The equipment housed in the container shall be used exclusively for the purposes of concentrating and re-routing calls and the container shall not have attached to it or within it, whether visible or not, any antennae for the direct transmission or reception of mobile telephony or other telecommunications signals in such a way that the container would act as an antennae support structure.</p>	<p>No such equipment is proposed within the scope of the developments site boundary unless requested by Utility Provider based on estimated needs of the community they service, i.e. <b>support local Mobile Telecommunications</b></p>
	<p>2. No such container shall exceed 10 metres in length, 3 metres in width or 3 metres in height.</p>	<p>No such equipment is to be provided within the scope of the developments site boundary</p>
	<p>3. No such container shall be situated within 10 metres of the curtilage of a house save with the consent in writing of the owner or occupier thereof, or within 10 metres of the window of a workroom of any other structure.</p>	<p>No such equipment is to be provided within the scope of the developments site boundary</p>
	<p>4. The field strength of the non-ionising radiation emissions from the radio station container shall not exceed the limits specified by the Director of Telecommunications Regulation.</p>	<p>No such equipment is to be provided within the scope of the developments site boundary</p>
<p><b>(f) cabinets forming part of a telecommunications system,</b></p>	<p>The volume above the ground-level of any such cabinet shall not exceed 2 cubic metres measured externally</p>	<p>Such equipment is to be provided within the scope of the developments site boundary.</p> <p>These are typically used as distribution and centres of wiring terminations, are street side, are approx. 1200x500x1400high.</p> <p>These have become sources of Art installations as directed by Local County Councils Arts Programmes.</p> <p>These are to be located in agreement of the Utility providers</p>
<p><b>(g) transportable radio installation,</b></p>	<p>1. The height of the structure for such an installation shall not exceed 15 metres in height and 2 metres in width at its widest point.</p>	<p>No such equipment is to be provided within the scope of the developments site boundary.</p>
	<p>2. The installation may only be used—</p>	

HEADING	REQUIREMENT	ASSESSMENT
	(a) to provide anticipated additional coverage at a sporting, social or other event, provided that the structure is not in place for more than 2 weeks before the event or for a period exceeding 8 weeks which shall include assembly and dismantling,	No such equipment is to be provided within the scope of the developments site boundary
	(b) for demonstration or simulation purposes, whether to demonstrate the visual effects of such structure in a particular location or to measure the output, and such structure shall be in place for a period of not more than 12 weeks, or	No such equipment is to be provided within the scope of the developments site boundary
	(c) as a temporary replacement for a structure, which has been accidentally or otherwise incapacitated, and such structure shall be in place for a period of not more than 12 weeks.	No such equipment is to be provided within the scope of the developments site boundary
	3. The planning authority in whose functional area the installation is placed shall be notified by the statutory undertaker in writing of the provision and purpose of such installation before it is made operational	No such equipment is to be provided within the scope of the developments site boundary
<b>(h) the attachment of additional antennae to an existing antenna support structure,</b>	1. The total number of such antennae shall not exceed 12, of which not more than 8 shall be dish type (whether shielded or not).	Such antennae are to be provided within the scope of the developments site boundary, these are subject to finalised design of Utility Network Requirements, typically on commercial buildings to support local Mobile Telecommunications based on the needs of the local community, are subject to future planning permissions by the Utility Network providers
	2. (a) The dimensions of any such antenna provided shall not exceed the greatest length, width or depth of any antenna for mobile telephony of corresponding type already attached to the structure.	No such antennae is to be provided within the scope of the developments site boundary
	(b) In any other case, the dimensions of any such antenna provided shall not exceed—	

HEADING	REQUIREMENT	ASSESSMENT
	(i) in the case of any panel type antenna, 1.5 metres in length × 0.4 metres in width × 0.15 metres in depth,	Such antennae is to be provided within the scope of the developments site boundary subject to finalised design of Utility Network Requirements, typically on commercial and or apartment buildings to support local Mobile Telecommunications  Subject to final load analysis, please note, proposed locations for the mounting of Mobile phone stations are <ul style="list-style-type: none"> <li>• Roof of Block A (40nr Apartments), not exceeding 3 number.</li> </ul>
	(ii) in the case of any co-linear type antenna, 5 metres in length × 0.1 metres in diameter, and	No such antennae is to be provided within the scope of the developments site boundary
	(iii) in the case of any dish type antenna (whether shielded or not), 1.8 metres in diameter.	Such antennae is to be provided within the scope of the developments site boundary subject to finalised design of Utility Network Requirements, typically on commercial/ apartment buildings to support local Mobile Telecommunications
	3. The attachment of such antennae shall not result in the field strength of the non-ionising radiation emissions from the site exceeding limits specified by the Director of Telecommunications Regulation.	No such antennae is to be provided within the scope of the developments site boundary
	4. The attachment of such antennae may be carried out by way of a platform only where the antenna support structure already incorporates a platform.	No such antennae is to be provided within the scope of the developments site boundary
	5. The height of the existing structure (including any antenna thereon) shall not be exceeded.	Refer to (b)(i) above
<b>(i) antennae for high capacity transmission links by way of attachment to existing high capacity antennae support structures,</b>	1. The addition shall be of the dish type antennae used for the sole purpose of point to point communication.	Such antennae is to be provided within the scope of the developments site boundary subject to finalised design of Utility Network Requirements, typically on commercial buildings to support local Mobile Telecommunications based on the needs of the local community, are subject to future planning permissions by the Utility Network providers  3nr. Microwave link dishes will be required on the highest building to ensure transmission links remain intact
	2. The additional antennae shall not exceed the number provided for in the existing design capacity of the support structure.	No such antennae is to be provided within the scope of the developments site boundary.



HEADING	REQUIREMENT	ASSESSMENT
	3. No new member shall be added to the structure save by way of brackets or other fixing systems used for the attachment of the additional antennae	No such antennae is to be provided within the scope of the developments site boundary.
	4. The maximum diameter of any added antenna shall not exceed the width of the support structure at the point at which the additional antenna is attached	No such antennae is to be provided within the scope of the developments site boundary.
	5. The planning authority in whose functional area the support structure exists shall be notified by the statutory undertaker in writing of the attachment of any such additional antennae at least 4 weeks before the antenna or antennae are attached.	Planning authority shall be notified via planning permission application as part of future planning application
	6. The attachment of such antenna shall not result in the field strength of the non-ionising radiation emissions from the radio installations on the site exceeding the limits specified by the Director of Telecommunications Regulation.	No such antennae is to be provided within the scope of the developments site boundary.
<b>(j) an antenna support structure in place of an existing antenna support structure,</b>	1. The replaced structure shall be removed no later than 4 weeks following its decommissioning.	There are no existing structures to be replaced, not applicable.

HEADING	REQUIREMENT	ASSESSMENT
	2. Where, for reasons of the integrity of the network or other operational reasons, the structure to be replaced remains in use during the construction of the replacement structure, the replacement structure shall be located as near as possible to the existing structure having regard to construction activity and safety requirements and, in any case, no replacement structure shall be located more than 20 metres from the replaced structure (measured from the base).	There are no existing structures to be replaced, not applicable.
	3. (a) The height of the replacement structure shall not exceed the height of the replaced structure.	There are no existing structures to be replaced, not applicable.
	(b)(i) Subject to sub-paragraph (ii), the width of the replacement structure shall not exceed the width of the replaced structure.	There are no existing structures to be replaced, not applicable.
	(ii) Where the replaced structure was 2 metres or less in width, the width of the replacement structure may not be more than twice the width of the replaced structure, all measurements to be taken at the widest point.	There are no existing structures to be replaced, not applicable.
	(c) Where the replaced structure did not incorporate an antenna platform, the replacement shall not incorporate such a platform.	There are no existing structures to be replaced, not applicable.
	4.(a) Subject to sub-paragraph (b), the antennae to be attached to the replacement structure shall not exceed the number of antennae on the replaced structure.	There are no existing structures to be replaced, not applicable.

HEADING	REQUIREMENT	ASSESSMENT
	(b) An additional 12 antennae for mobile telephony may be attached to the replacement structure, of which not more than 8 of the additional 12 shall be of the dish type (whether shielded or not).	There are no existing structures to be replaced, not applicable.
	5. (a) The dimensions of any additional antenna for mobile telephony shall not exceed the greatest length, width or depth of any antenna for mobile telephony of corresponding type on the replaced structure.	There are no existing structures to be replaced, not applicable.
	(b) In any other case, the dimensions of any antenna provided shall not exceed:	There are no existing structures to be replaced, not applicable.
	(i) in the case of any panel type antenna, 1.5 metres in length × 0.4 metres in width × 0.15 metres in depth,	There are no existing structures to be replaced, not applicable.
	(ii) in the case of any co-linear type antenna, 5 metres in length × 0.1 metres in diameter, and	There are no existing structures to be replaced, not applicable.
	(iii) in the case of any dish type antenna (whether shielded or not), 1.8 metres in diameter.	There are no existing structures to be replaced, not applicable.
	6. The replacement of an antenna support structure together with any replaced or additional antenna shall not result in the field strength of the non-ionising radiation emissions from the radio installations on the site exceeding the limits specified by the Director of Telecommunications Regulation.	There are no existing structures to be replaced, not applicable.
<b>(k) antennae attached to the following existing structures-</b>	(i) public or commercial buildings (other than education facilities, childcare facilities or hospitals) by way of attachment to roofs, facades, chimneys, chimney pots or vent pipes;	New Build, as such not applicable.
	(ii) telegraph poles, lamp posts, flag poles, CCTV poles;	New Build, as such not applicable
	(iii) electricity pylons.	New Build, as such not applicable

HEADING	REQUIREMENT	ASSESSMENT
	1. The antenna shall be attached directly to the structure (other than a structure with a flat roof) and not by way of a supporting fixture.	New Build, as such not applicable.
	2. In the case of a structure with a flat roof, a supporting fixture may be used provided that-	New Build, as such not applicable
	(a) the fixture does not exceed the height of any existing parapet or railing on the roof by more than 2 metres, and	New Build, as such not applicable.
	(b) access to the roof is not available to any person other than a person authorised by the statutory undertaker.	New Build, as such not applicable.
	3. Where an antenna is attached to the façade of a building or the exterior of a chimney or vent, the colour of the antenna shall match and blend with the colour of such façade, chimney or vent pipe.	New Build, as such not applicable.
	4. Where the antenna is hidden inside a chimney pot the existing chimney pot may be replaced by a chimney pot in a suitable material which shall be the same colour, size and shape as the replaced pot, and the antenna shall not protrude beyond the top of the chimney pot.	New Build, as such not applicable.
	5. The planning authority in whose functional area the structure on which the antennae will be attached is situated shall be notified by the statutory undertaker in writing of the proposed location of any such structure at least 4 weeks before such attachment	New Build, as such not applicable.

HEADING	REQUIREMENT	ASSESSMENT
	6. The field strength of any such antenna shall not result in the field strength of the non-ionising radiation emission from the radio installations on the site exceeding the limits specified by the Director of Telecommunications Regulation.	New Build, as such not applicable.

**TABLE 2 ASSESSMENT OF TELECOMMUNICATIONS**

## 8.0 CONCLUSION

BBSC were appointed to provide a telecommunication impact assessment for the proposed Coastal Quarter development in Bray.

Following this assessment, the following conclusions are made:

- The proposed development will not impact on fixed line telecommunications.
- The proposed development will not impact on existing sight lines.
- The proposed development may affect local radio (mobile phone) communications. On site network surveys, which can only be carried out once the development has been constructed, will be required to determine whether additional microwave radio transmitters are required. Recommendations will be implemented as needed.
- The proposed development would result in an approximate range of 1,465 to 2,637 additional people within the locality. For this quantum of development, a minimum of 3 to 4 additional mobile phone transmitters may be required to provide 4G or better service within the area. As is the case for developments of this scale, any requirement for additional mobile phone transmitters will be subject to a network load analysis by the mobile phone network providers that can only be carried out once the development has been constructed. Should this network load analysis conclude that additional mobile phone transmitters are required, these could be located in or at Block B2 as it is the tallest building within the proposed development (12 storeys). A standalone planning permission would be required for any mobile phone transmitters.

# APPENDIX 1

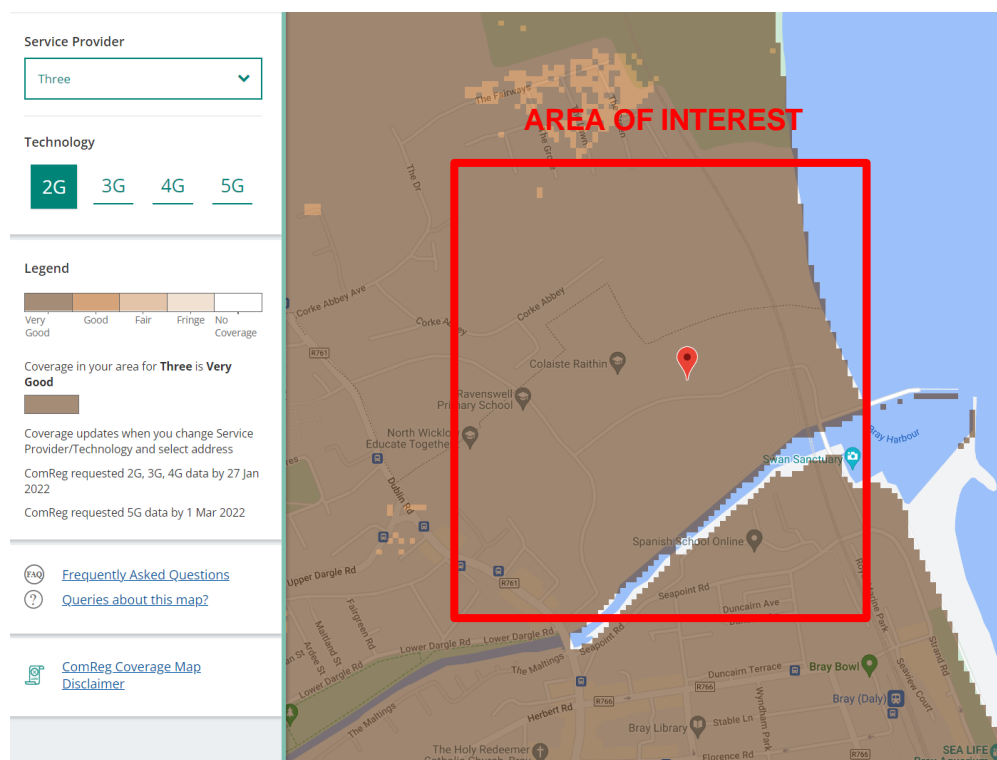
Mobile Coverage

Fibre Availability

Please note

- Cell Tower Data Obtained from <https://siteviewer.comreg.ie/#explore> 03<sup>rd</sup> Set 2022
- 2G, 3G, 4G, 5G coverage for all providers Data Obtained from <https://coveragemap.comreg.ie/map> 03 Sep 2022

## Example of Coverage map

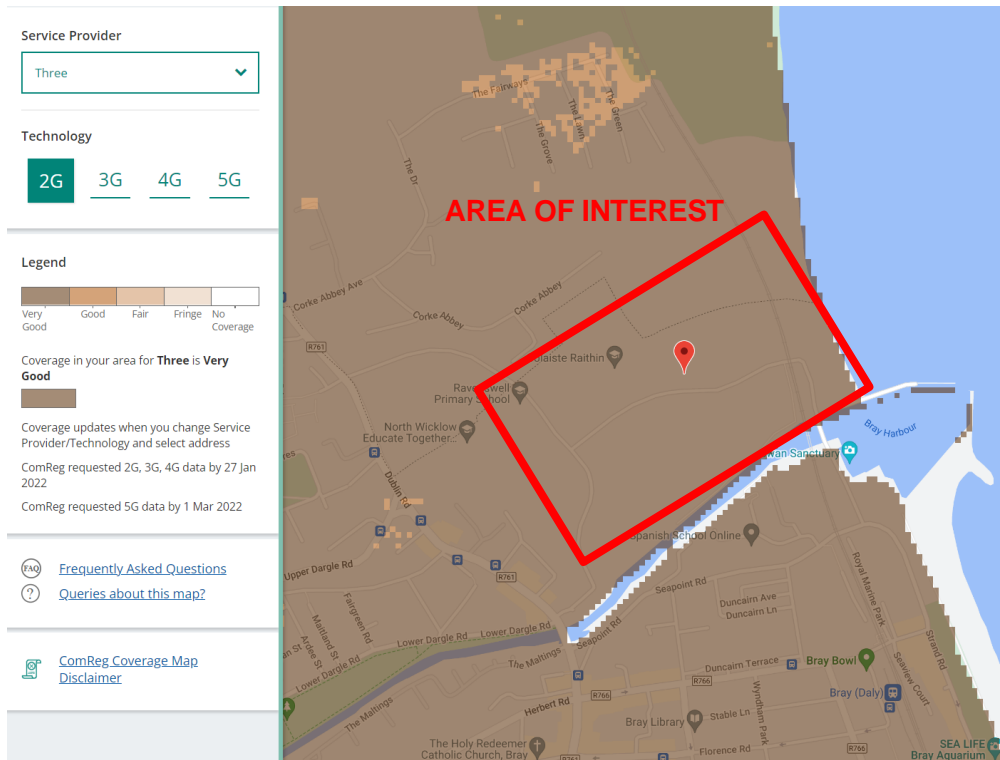


Note that ComReg has deemed that the coverage in Proposed Development area is Good to Very Good by ComReg standards.

The proposed Development will, in the main, fall into this same category.

There are over 20nr Cell Tower Masts or Locations listed on ComReg's site covering the Proposed Development area and the local area, see **Figure 6 - Line of Sight, Mobile Transmitters**

Based on the coverage as measured by ComReg, additional Cell Antennas will be required, these to be mounted on commercial and or apartments property only subject to further planning by the utility providers. Reason, the exact requirements may be meet by the existing infrastructure available within the local area, however the additional load will not be determinable until the users are connected and values measured, thus determining the additional number, if any, of Cell towers.

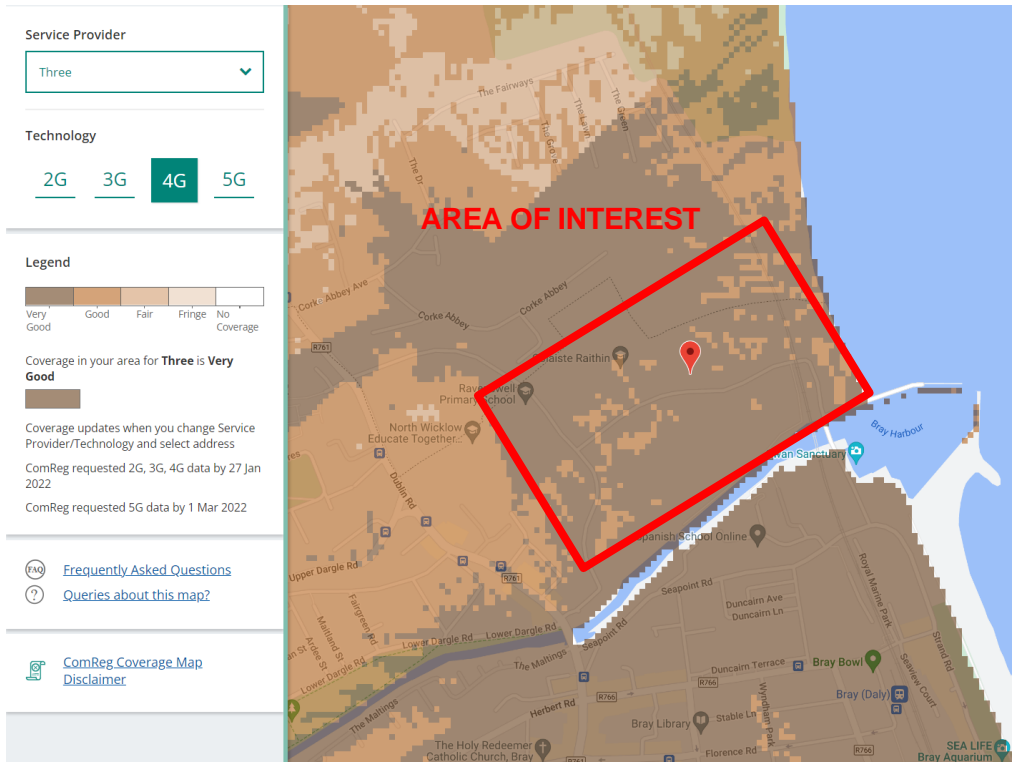


The 2G coverage is rated as Very Good by ComReg.



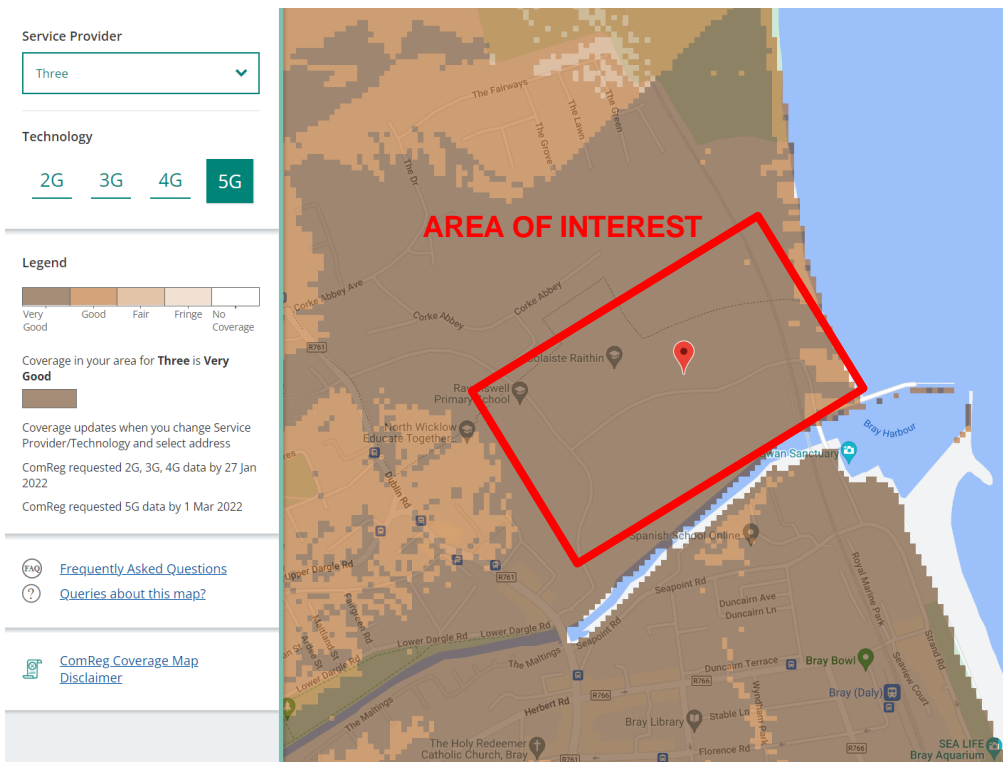
The 3G coverage is rated as Very Good by ComReg.



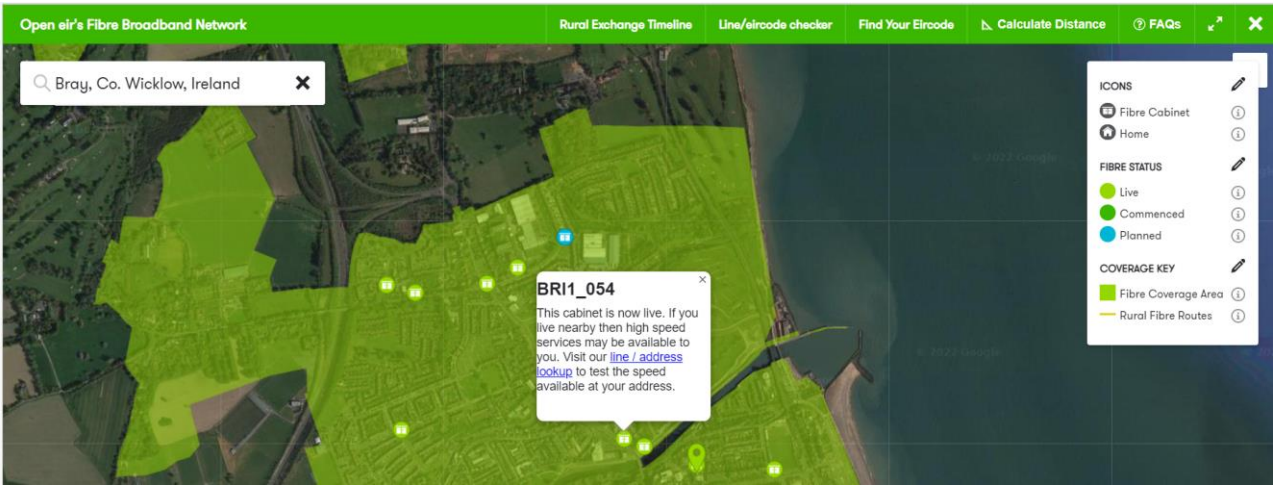


The 4G coverage is rated as Very Good by ComReg.

Eir network coverage map, for 5G indicates coverage only

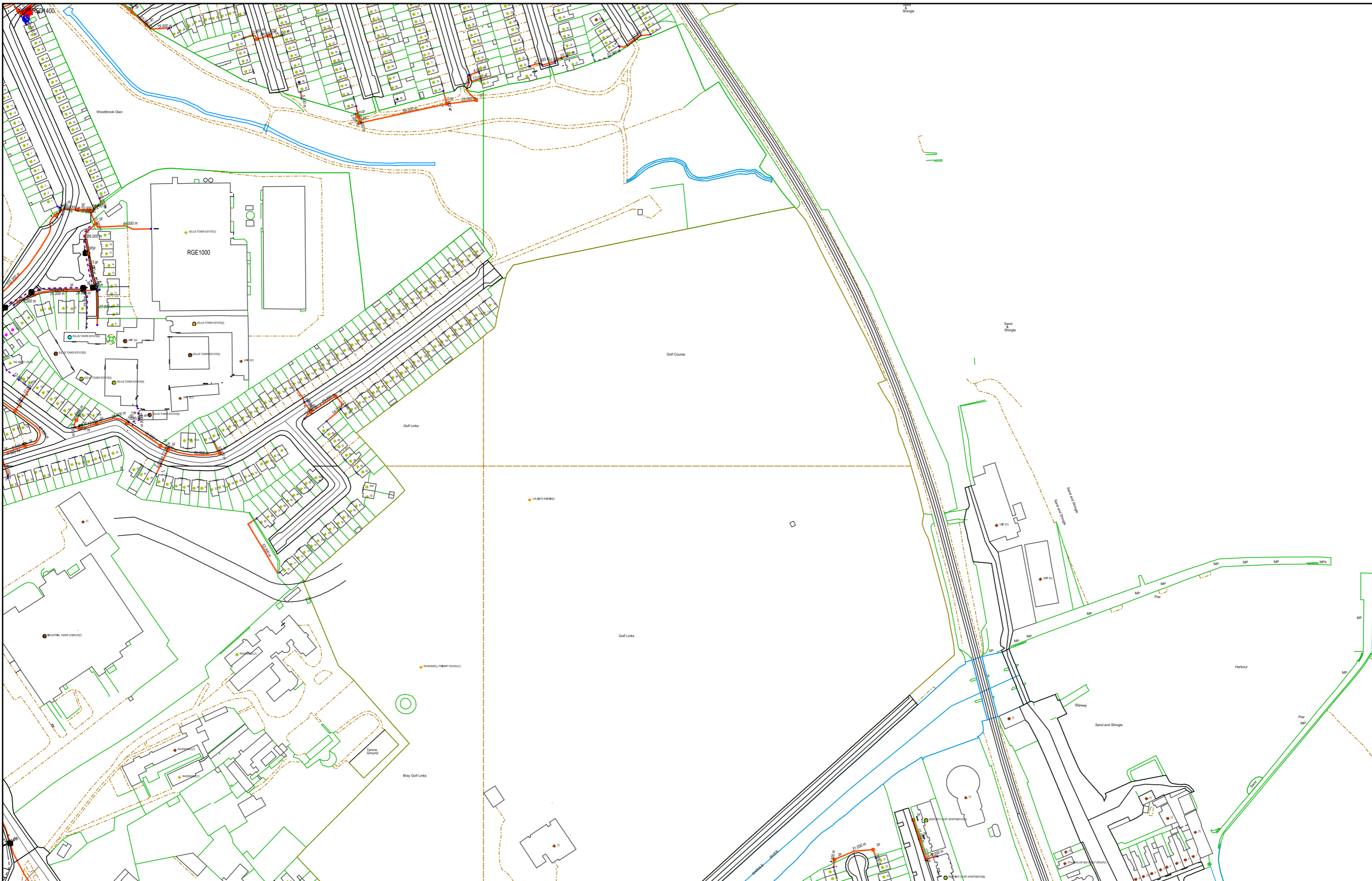



The 5G coverage is rated as Very Good by ComReg.



Fibre Links are available and adjacent to the development as indication in figure above and will be extended to the proposed development

APPENDIX 2  
Virgin Drawings  
Eir Drawings

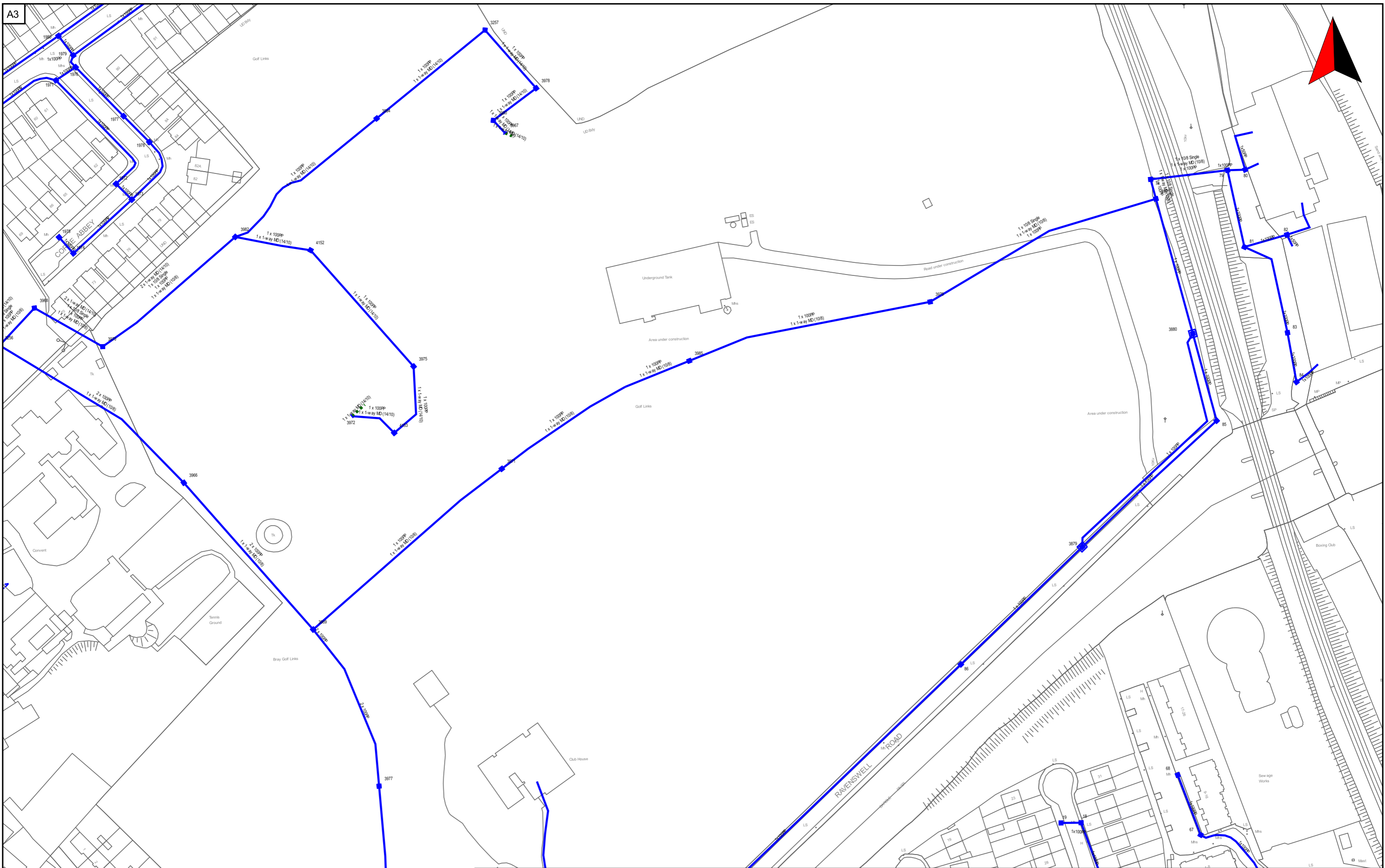
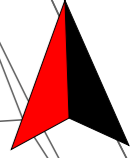




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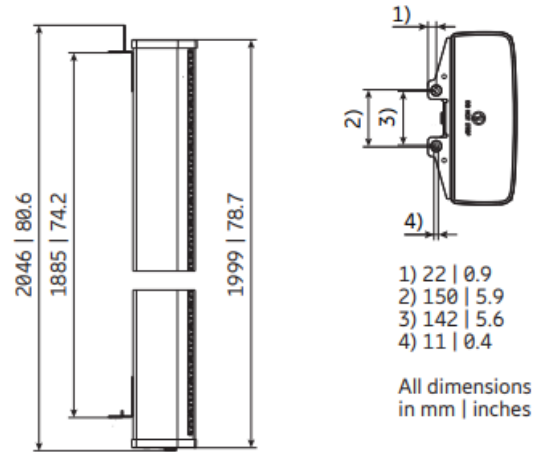
open eir Civil Engineering Infrastructure Service		Scale: 1:1500	Irish National Grid Co-Ordinates Centre XY: 326526 m, 219234 m
		Date 05/09/2022	Smallworld Powered by GE
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## APPENDIX 3

### Typical Microwave Mobile Phone Transmitters



Image of Typical Transmitter on Building as seen from roof, final arrangements subject to planning permission (if required) at later date.



Height / Width / Depth	mm	inches
	1999 / 448 / 164	78.7 / 17.6 / 6.5

Image of typical module, and size data of a typical Transmitter.

## APPENDIX 4 – LOCATIONS OF EXISTING MICROWAVE TRANSMITTERS AND BASE STATIONS

The following assesses the wireless or network Telecommunication Channels, which may be affected by the height and scale of a new development, Radio Frequency links & Microwave Transmission links

Site	Service Provider	Service Provision
<p>At Solas Water Tower, Shankill,</p> 	<p>1Nr. Eir, operated by Meteor Mobile Communications</p> <p>3Nr. Three</p> <p>1Nr. Vodafone</p>	<p>GSM, UMTS, LTE, NR</p> <p>UMTS, LTE, NR</p> <p>GSM, UMTS</p>
<p>At Carlisle Grounds</p> 	<p>2Nr. Three (note line of sight is to Solas Tower)</p>	<p>GSM, UMTS, LTE</p>
<p>At Commercial Building, Quinsborough Road</p> 	<p>1Nr. Eir, operated by Meteor Mobile Communications</p>	<p>GSM, UMTS, LTE, NR</p>
<p>At Daly Train Station, Bray</p> 	<p>1Nr. Vodafone</p>	<p>GSM, UMTS, LTE, NR</p>
<p>At Commercial Building near Royal Hotel, Seapoint Road/ Quinsborough Road</p> 	<p>2Nr. Three</p>	<p>GSM, UMTS, LTE, NR</p>

<b>GSM</b>	Global System for Mobile communication	<b>2G</b>
<b>UMTS</b>	Universal Mobile Telecommunications Service	<b>3G</b>
<b>LTE</b>	Long Term Evolution Long Term Evolution	<b>4G</b>
<b>NR</b>	New Radio Network	<b>5G</b>

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