



Telecommunications Report - Section 3.2 of the Building Height Guidelines (2018)

**DEVELOPMENT
THE ARBOURY
TALLAGHT, DUBLIN 24**

12 May 2022

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DEFINITIONS

Author:	Independent Site Management Limited (hereinafter referred to as "ISM")
Mitigation Measures:	means the allowances made for the retention of important Telecommunication Channels (hereinafter referred to as "Mitigation Measures")
Planning Body:	means An Bord Pleanála (hereinafter referred to as the "Planning Body")
Radio Frequency:	means a frequency or band of frequencies in the range 104 to 1011 or 1012 Hz, of the electromagnetic spectrum suitable for use in telecommunications.
Microwave Links:	means the transmission of information by electromagnetic waves with wavelengths in the microwave range (1 m - 1 mm) of the electromagnetic spectrum suitable for use in telecommunications.
Telecommunication Channels:	means Radio Frequency links & Microwave Transmission links (hereinafter referred to as "Telecommunication Channels")
The Applicant:	means Landmarque Belgard Development Company Limited (hereinafter referred to as the "Applicant")
The Development:	means the proposed development situated at the former ABB Site, Belgard Road, Tallaght, Dublin 24 (hereinafter referred to as the "Development")



EXECUTIVE SUMMARY

Independent Site Management ('ISM') has been engaged to provide a specific assessment that the proposal being made by Landmarque Belgard Development Company Limited (the "Applicant") within its submission to An Bord Pleanála (the 'Planning Body'), allows for the retention of important Telecommunication Channels ("Telecommunication Channels") such as microwave links, to satisfy the criteria of Section 3.2 of the Building Height Guidelines (2018).

To provide this assessment, ISM reviewed the Applicant's proposed development (the "Development"), together with their proposed allowances to retain relevant Telecommunication Channels in the context of the immediate surrounding registered and documented telecommunication sites.

Pursuant to our review, ISM can conclude based on the findings outlined herein that the proposal being made by the Applicant within its submission to the Planning Body allows for the retention of important Telecommunication Channels, such as Microwave links, and therefore satisfies the criteria of Section 3.2 of the Building Height Guidelines (2018).

ABOUT THE AUTHOR

ISM is a consultancy firm and asset management company that provides telecommunication consultancy and services to developers and property owners.

ISM works closely with all providers of wireless and fixed line telecommunication services to bridge their infrastructure requirements with that of private and public development. ISM has successfully been providing this service in Ireland for 20 years.

ISM is a multidiscipline firm proficient in the 3 main areas in the delivery of telecommunication services:

- (1) Radio Frequency technology;
- (2) Microwave Transmission technology; &
- (3) Fixed Line fiber optic & copper technologies.

ISM has had an integral part in procuring, designing, building and subsequently managing over 300 mobile base station and/or fixed wireless sites, the vast majority of which originated in densely populated, urban environments.

ISM has designed built and operates 6 in-building distributed antenna systems, and 2 large area managed fibre optic networks.



DEVELOPMENT DESCRIPTION

The site of c.0.898 ha is located at the former ABB Site, Belgard Road, Tallaght, Dublin 24, D24 KD78. The site is bound by Belgard Road (R113) to the east, Belgard Square North to the North and Belgard Square East to the west and Clarity House to the south.

The proposed development will consist of:

1. Demolition of all existing structures on site (with a combined gross floor area of c. 3625 sqm)
2. The construction of a mixed-use residential development set out in 3 No. blocks including a podium over a basement, ranging in height from 2 to 13 storeys (with core access above to roof terrace), comprising:
 - 334 no. residential units of which 118 No. will be Build to Rent (BTR) residential units, with associated amenities and facilities across the development,
 - 4 No. retail/café/restaurant units and 3 no. commercial spaces associated with the 3 no. live-work units (723 sqm combined),
 - Childcare facility (144 sq.m.),
 - 670 No. bicycle parking spaces including 186 visitor spaces; 117 car parking spaces (including 6 disabled spaces) are provided at ground floor and basement level.
 - The overall development has a Gross Floor Area of 29,784 sq.m.
 - Two (2) podium residential courtyards and three (3) public accessible pocket parks, two (2) to the North & one (1) to the South.
 - Linear Park (as a provision of the Tallaght Town Centre LAP) providing safe public pedestrian and cycling access between Belgard Rd and Belgard Square East
3. Of the total 334 residential units proposed, unit types comprise:

Block A (Build-to-Rent)

- 91 no. 1 bed units
- 1 no. 2 bed 3 person units
- 26 no. 2 bed 4 person units

Blocks B & C

- 2 no. live-work studio units
- 102 no. 1-bed units
- 12 no. 2-bed 3 person units
- 88 no. 2-bed 4 person units including 5 no. duplex units
- 1 no. 2-bed 4 person live-work unit
- 11 no. 3-bed units



4. All associated works, plant, services, utilities, PV panels, provision of telecommunications infrastructure at roof level including microwave dishes (Block C) and site hoarding during construction

TELECOMMUNICATION CHANNELS

This report assesses the two wireless Telecommunication Channels or networks of Telecommunication Channels that may be affected by the height and scale of a new development, Radio Frequency links & Microwave Transmission links

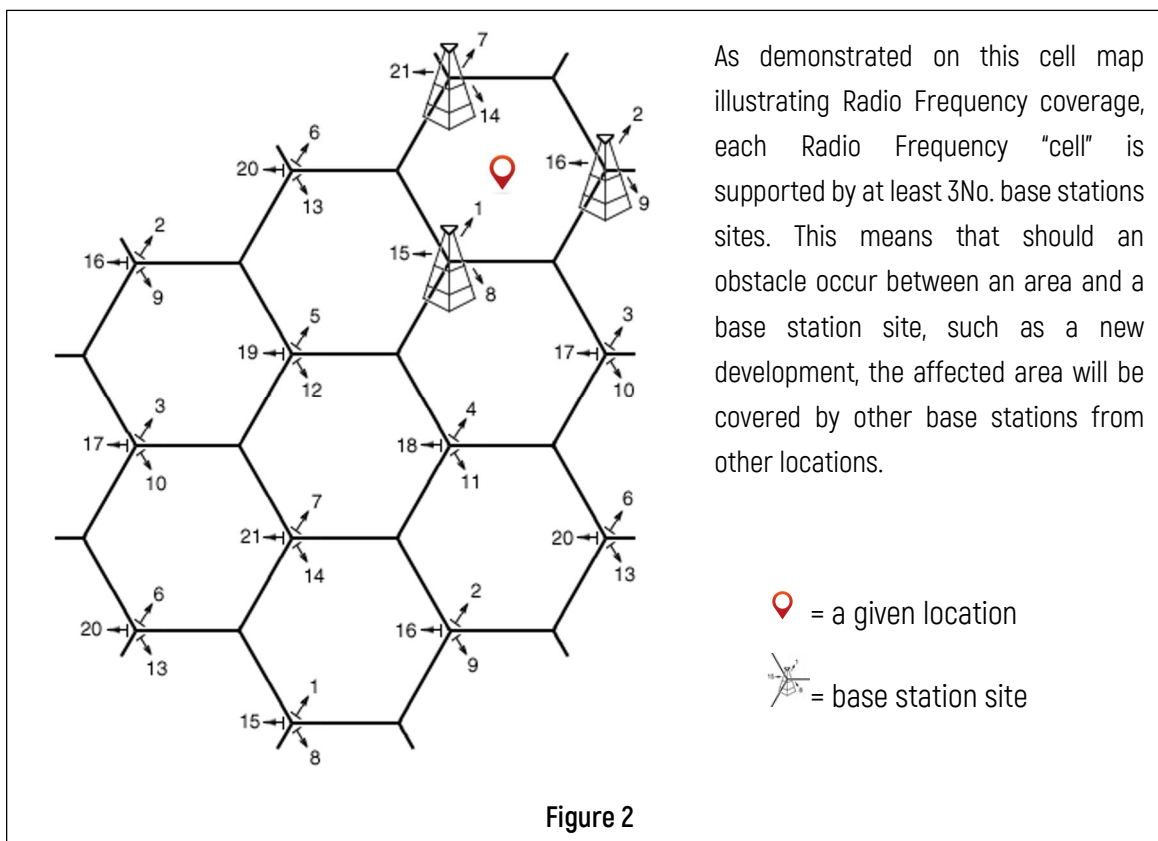
Radio Frequency links & Microwave Transmission Links are used in Ireland's mobile phone and fixed wireless networks and disseminate at an average above ground level height of 20m, making them the most relevant Telecommunication Channels to be assessed in relation to the height and scale of a new development and to that end what allowance the Applicant needs to make for their retention.

Mobile phones send and receive signals via links from nearby antenna sites or cellular towers, technically known as base stations, using Radio Frequency waves. Microwave Transmission links use microwave dishes to "transmit" from these base stations to other base stations forming a network. Radio Frequency waves operate at a lower power within lower frequencies of the radio spectrum, whereas Microwave Transmission operates at higher power within higher frequencies of the radio spectrum.

Radio Frequency waves are distributed over land areas in "cells", each served by at least one fixed-location transceiver (base station), but more normally by three cell sites or base stations. These base stations provide the cell with the network coverage, which can then be used for voice, data, and other types of content. A cell typically uses a different set of frequencies from neighbouring cells to avoid interference and provide guaranteed service quality within each cell.

When joined together, these cells provide Radio Frequency coverage over a wide geographic area (Cellular network). This enables numerous portable transceivers (e.g., mobile phones, tablets and laptops equipped with mobile broadband modems, pagers, etc.) to communicate with each other and with fixed transceivers and telephones anywhere in the network, via base stations, even if some of the transceivers are moving through more than one cell during transmission.



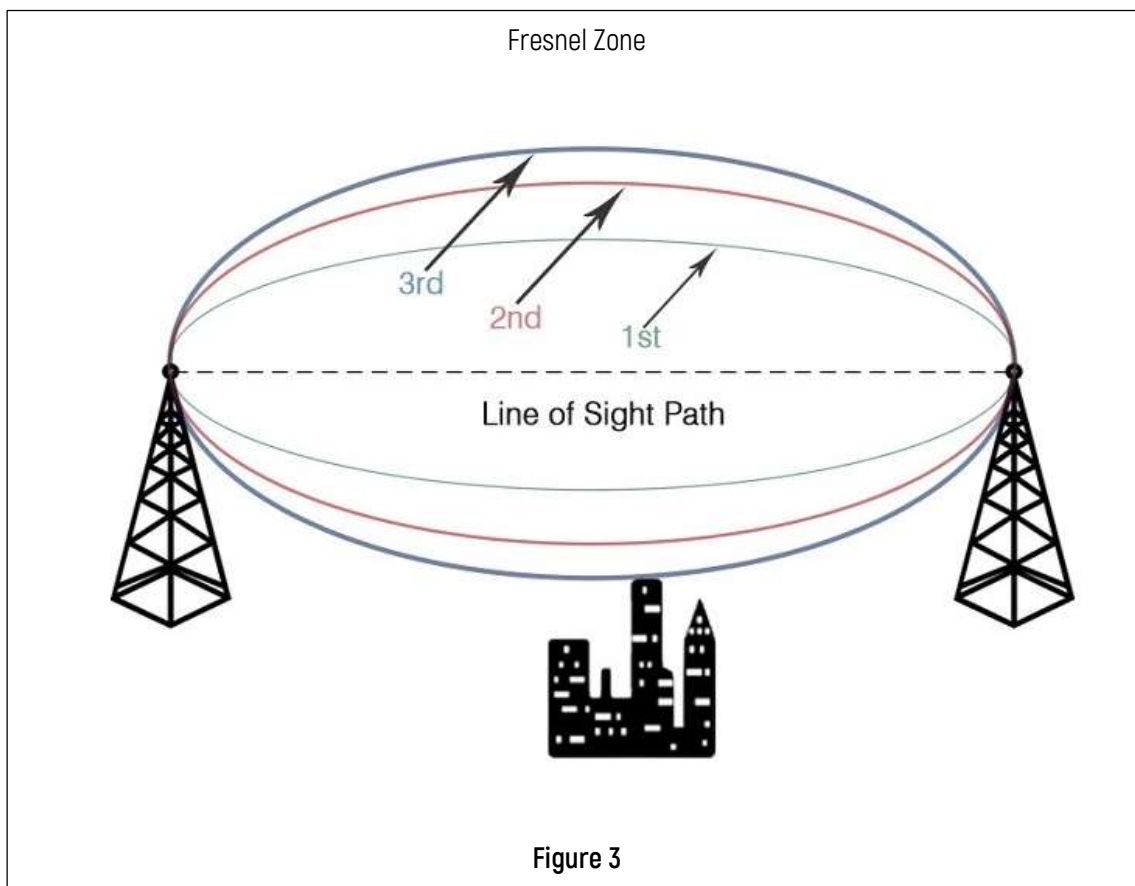


Cellular networks offer a number of desirable features, but most notably, additional cell towers can be added indefinitely and are not limited by the horizon, therefore it can be considered **indeterminable** as to whether a new development affects the Radio Frequency coverage of a geographical area which is being served by multiple base stations, not necessarily the closest.

Conversely, Microwave Transmission links are point-to-point links, which are easily determined to be affected, or not, by the height and scale of a new development. In point-to-point wireless communications, it is important for the line of sight between two base stations to be free from any obstruction (terrain, vegetation, buildings, wind farms and a host of other obstructions). As any interference or obstruction in the line of sight can result in a loss of signal.

While 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.



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, referred to herein, 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.

FINDINGS

ISM's assessment did not identify any Microwave Links that will require the Applicant to make specific allowances for their retention ("Mitigation Measures").

Our assessment has not identified any Radio Frequency links that will require the Applicant to make specific allowances for their retention.

ISM carried out a full assessment of neighbouring registered and documented telecommunication sites to assess what Microwave links would be impacted by the height and scale of the Development. Refer to Figure 5 & 6 of the appendices for full analysis. The assessment of Microwave Transmission links entailed both a visual survey of each identified neighbouring telecommunication site within a reasonable geographic proximity to the Development and a request for information from telecommunication providers where the visual survey was inconclusive.

ISM carried out a full assessment of neighbouring registered and documented telecommunication sites to assess what Radio Frequency links might be impacted by the height and scale of the Development. To assess this, we carried out a walk test throughout the surrounding areas to ascertain what cells were serving the street areas to the north, south, east & west of the Development site. Refer to Figure 7 of the appendices for full analysis

Our assessment identified Radio Frequency coverage for the local geographic area is served by several cells at strategic distances away from the development site on a 360° basis which is typical cell pattern for urban Radio Frequency coverage. The walk test data determined that the business, residential and public road areas to the north, south, east & west of the Development are adequately covered by the cell sites identified in figure 7 and are not reliant on Radio Frequency coverage from any one cell that would be obstructed by the Development.

Notwithstanding the fact that ISM did not identify any direct impact to either Telecommunication Channels such as Microwave Links or Radio Frequency links, ISM did identify a significantly high concentration of telecommunication sites with in a very close proximity to the Development.

Most notably, approximately 200m to the northeast of the Development is an Eir telecom exchange building which hosts 2 large high-capacity telecommunication masts being utilised by all 3No. Irish mobile operators. There is a sizable number of antennae (Radio Frequency links) and transmission dishes (Microwave Links) on both structures, and a strong likelihood that, as telecommunication networks expand, so will the proliferation of equipment on those structures.

Telecommunication Masts sited on the Eir Exchange Belgard Road



Figure 4

ISM is therefore recommending that the Applicant make a minor provision for telecommunication infrastructure within its submission, should the heigh and scale of the development impact future Microwave links needing to reach the noted telecommunication masts.

Please note that telecommunication networks are always evolving, and as such, these findings remain subject to change.

MITIGATION MEASURES

To provide an adequate allowance for the retention of and future telecommunication channels that may be impacted by the height and scale of the Development, the Applicant is seeking planning permission to install 4No, 300mm microwave link dishes mounted on 2No. steel support poles affixed to the plant screen at roof level on Block C.

These support poles are sufficient to accommodate 2No. Ø.3m Microwave links each, which provides an adequate solution for the Applicant to mitigate the impact the Development will have on any Microwave links emanating to and from the neighbouring telecommunication masts to the northeast of the Development.

Refer to Figures 8 of the appendices for full analysis.

ISM can therefore conclude that the proposal being made by the Applicant within its submission to An Bord Pleanála allows for the retention of important Telecommunication Channels, such as Microwave links, to satisfy the criteria of Section 3.2 of the Building Height Guidelines (2018).

APPENDICIES

Figure 5: Identification of neighbouring registered and documented telecommunication sites
(Area Telecommunication Analysis)

Figure 6: Identification of Microwave links disseminating from neighbouring registered and
documented telecommunication sites (Microwave Link Analysis)

Figure 7: Identification of local area Cells by Cell ID (Cell Identification Analysis)

Figure 8: Mitigation Measures (if required in future)

Figure 5

Area Telecommunication Analysis

Source: Comreg



Note
 All Dimensions to be checked on site
 No Dimensions to be scaled from this Drawing
 This drawing to be read with relevant
 Consultant Drawings

Proposed Development

- 1 Eir Belgard Road
- 2 Amazon
- 3 European Stoves
- 4 Golffood Tallaght
- 5 ESB Tallaght
- 6 Tallaght Hospital
- 7 Cross West
- 8 Maldron Hotel
- 9 The Square
- 10 Tallaght Garda Station
- 11 St John's House
- 12 RSA Tallaght
- 13 Bardahl Distributors
- 14 Greenhills
- 15 Lidl HQ

FINAL

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Client
 Landmarque Belgard
 Development Company Ltd

Project
 The Arboury

Option	1
Date	12/05/2022
File Name	The Arboury

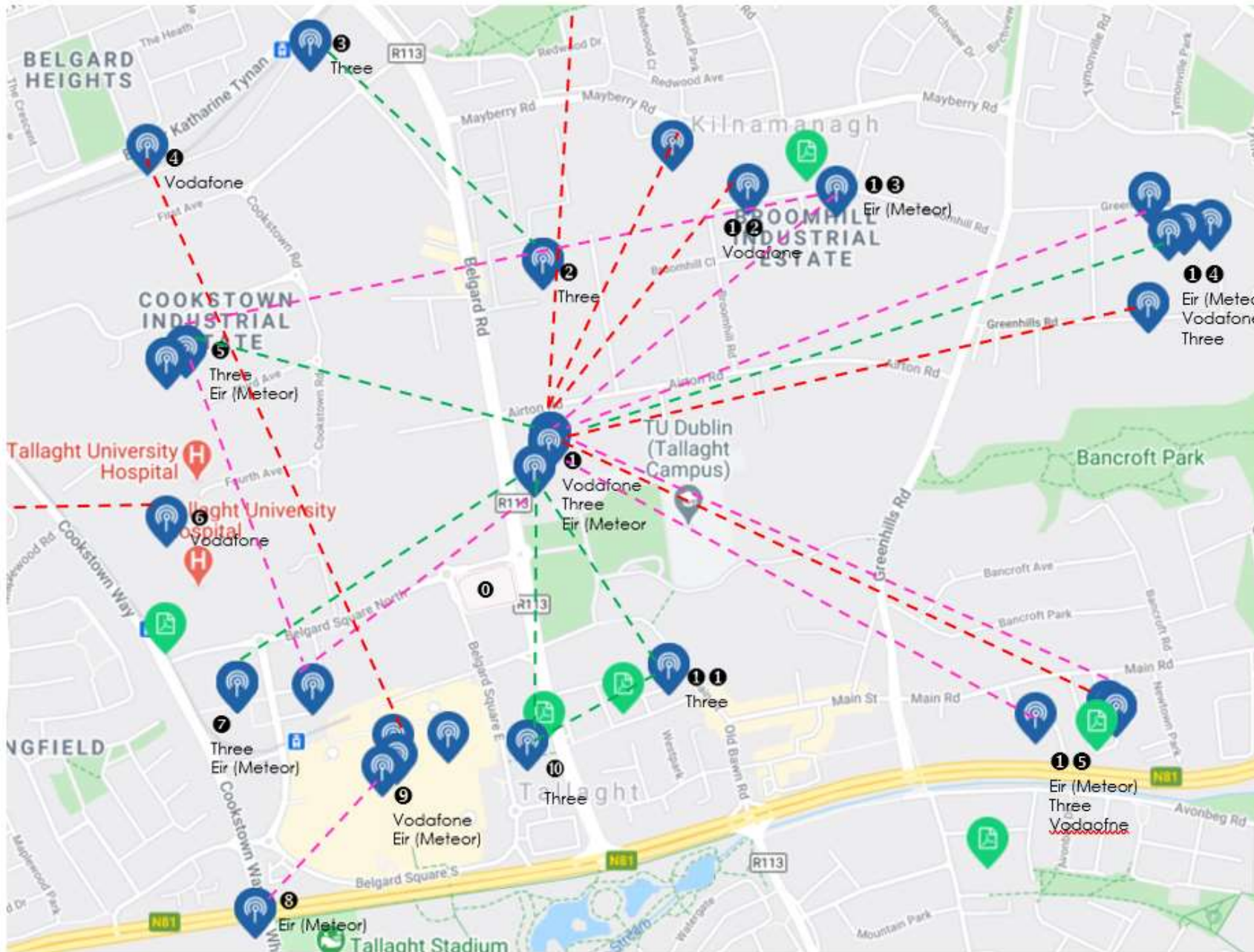
Drawing:
 Area Site Analysis

Building	Drawing No.	Zone	Rev
SPN	C 1022		1

Figure 6

Microwave Link Analysis

Source: Comreg ISM Vodafone Three & Eir Mobile



Note
 All Dimensions to be checked on site
 No Dimensions to be scaled from this Drawing
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 Consultant Drawings

- Three Transmission Link
- Vodafone Transmission Link
- Eir Transmission Link

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Drawing:
 Link Analysis

Building	Drawing No.	Zone	Rev
SPN	C 1022		1

Figure 7

Walk Test Data

Source: Comreg, ISM

Note
 All Dimensions to be checked on site
 No Dimensions to be scaled from this Drawing
 This drawing to be read with relevant
 Consultant Drawings

- Multiple Cell IDs
- St John's House
- Lidl HQ
- Multiple Cell IDs
- Eir Belgard Road
- Amazon
- Multiple Cell IDs
- Eir Belgard Road
- Golfwood Tallaght
- ESB Tallaght
- Tallaght Hospital
- Cross West
- Multiple Cell IDs
- Cross West
- Maldron Hotel
- The Square
- Tallaght Garda Station
- St John's House

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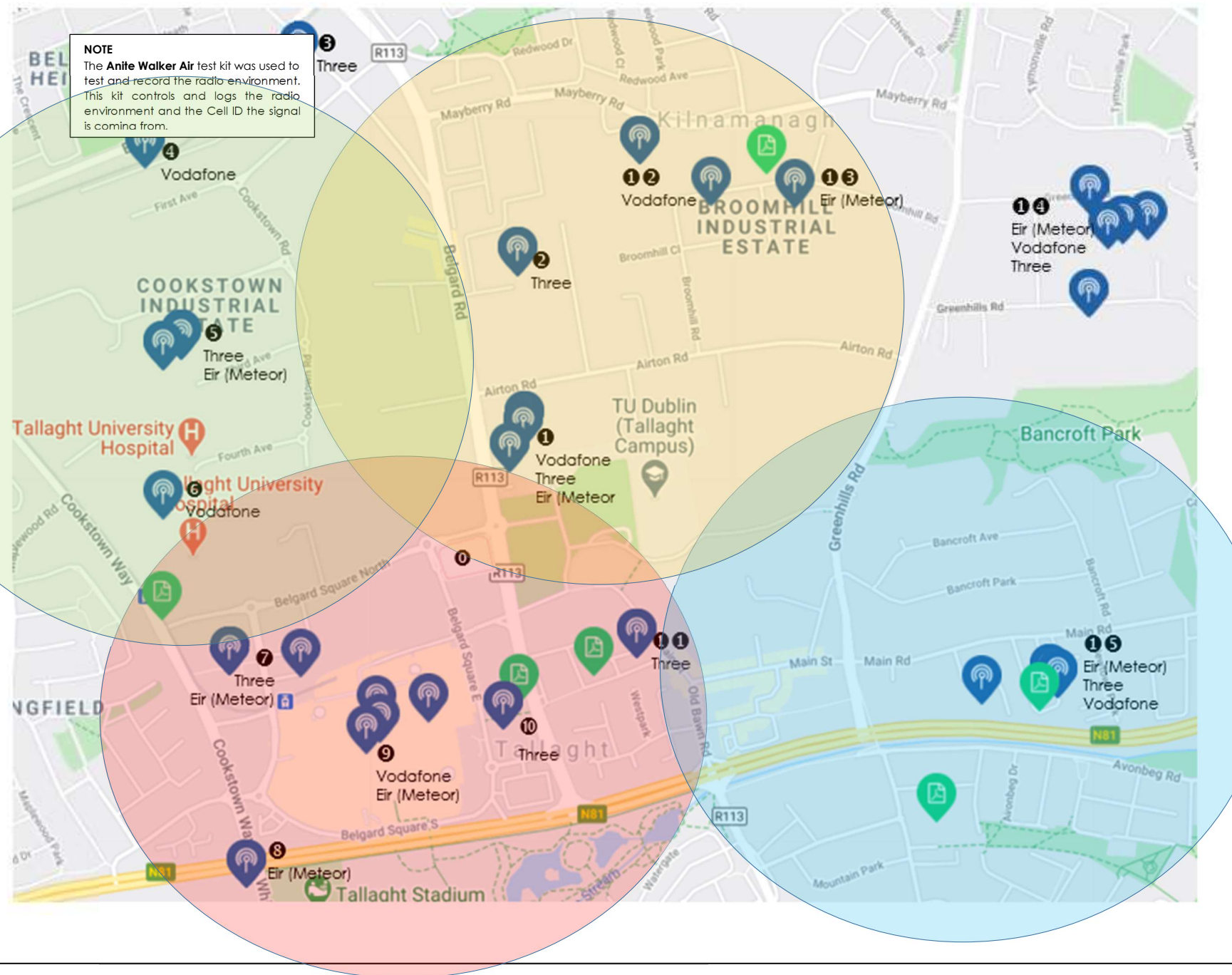


Figure 8

Mitigation Measure Design

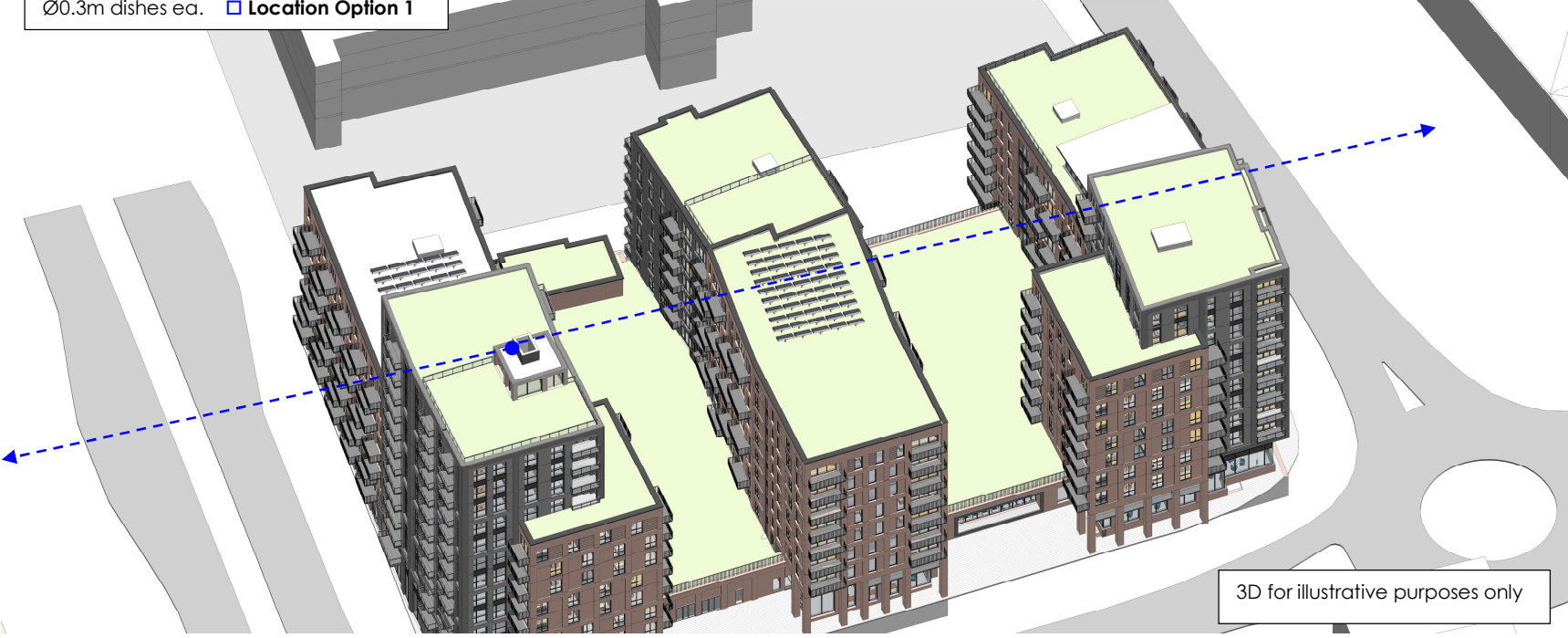
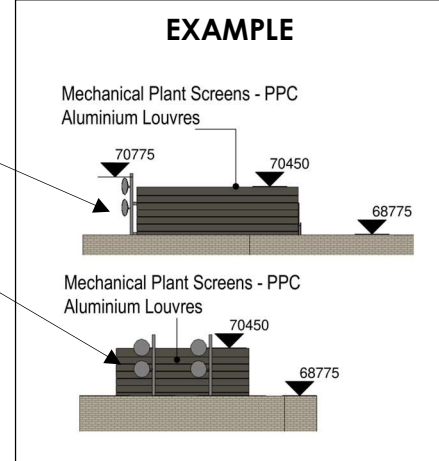
Source: Comreg ISM



2No. Ø 0.3m Microwave link dishes mounted on steel support poles affixed to plant screen steel work and concealed with in radio friendly GRP shrouds

Screen Plant Area

Appllicant have nominated a location within the Roof Plan to mount steel support poles capable of holding 2No. Ø0.3m dishes ea. □ Location Option 1



Note
All Dimensions to be checked on site
No Dimensions to be scaled from this Drawing
This drawing to be read with relevant Consultant Drawings

Typical Installation



- Transmission Link
- Location of Steel support Poles

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Drawing:
Mitigation Measure

Building	Drawing No.	Zone	Rev
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