



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

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**DEVELOPMENT**  
Belgard Square East,  
Blessington Road  
Belgard Road  
Tallaght  
Dublin 24

02 June 2022

Prepared by  
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## DEFINITIONS

<b>Author:</b>	Independent Site Management Limited (hereinafter referred to as "ISM")
<b>Mitigation Measures:</b>	means the allowances made for the retention of important Telecommunication Channels (hereinafter referred to as "Mitigation Measures")
<b>Planning Body:</b>	means An Bord Pleanála (hereinafter referred to as the "Planning Body")
<b>Radio Frequency:</b>	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.
<b>Microwave Links:</b>	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.
<b>Telecommunication Channels:</b>	means Radio Frequency links & Microwave Transmission links (hereinafter referred to as "Telecommunication Channels")
<b>Report Date:</b>	means the date which the assessment was carried out (hereinafter referred to as "Report Date")
<b>The Applicant:</b>	means Ravensbrook Limited (hereinafter referred to as the "Applicant")
<b>The Development:</b>	means the proposed development situated at Belgard Square East, Belgard Road and Blessington 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 Ravensbrook 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 proposed strategic housing development comprises a mixed-use development including 310 no. "Build-to-Rent" residential apartments, a creche and commercial units (c. 2,289 sqm) on a c. 1.26 ha site at Belgard Square East, Belgard Road and Blessington Road, Tallaght, Dublin 24.

The proposed development will consist of the demolition of existing boundary wall and construction of:

1. c. 2,289 sqm of retail/commercial floor space across 10 no. units including retail, restaurant/café and Class 2 financial/professional services and office use, and a crèche (257sqm) at ground and first floor levels;
2. 310 no. build to rent residential apartments including 99 no. one bedroom units, 203 no. 2 bedroom units and 8 no. three bedroom units within a part 6 to part 12 no. storey development across 3 blocks over partial basement;
3. c. 2,223 sqm of communal external amenity space provided in the form of a ground floor garden and external terraces at fifth, sixth, seventh and eighth floor levels; c. 1,026 sqm of public open space provided in the form of a central courtyard with landscaped areas at site perimeters;
4. c. 1,785 sqm of resident support facilities and services and amenities provided at basement, ground and first floor levels;
5. Vehicular access to the basement development from a new access point at Belgard Square East;
6. A new tertiary route will be provided in the southern part of the site linking Belgard Square East and Belgard Road;
7. Provision of 130 no. car parking spaces (including 8 no. club car spaces and 6 no. disabled access spaces) at basement level in addition to 5 no. set down spaces (4 no. serving creche) and 1 no. disabled access space at ground level, layby on Belgard Square East, 6 no. motorcycle spaces and a total of 763 no. bicycle parking spaces;

8. Provision of 4 no. Ø0.3m microwave link dishes to be mounted on 2 no. steel support pole affixed to lift shaft overrun, all enclosed in radio friendly GRP shrouds, together with associated equipment at roof level at Block B;
9. Provision of 3 no. ESB substations with switch rooms and plant rooms at basement level, hard and soft landscaped areas, bin and bicycle stores, public lighting, attenuation, green roof, plant at roof level, service connections and all ancillary site development works.

# SITE LOCATION/LAYOUT MAP



Figure 1



## 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

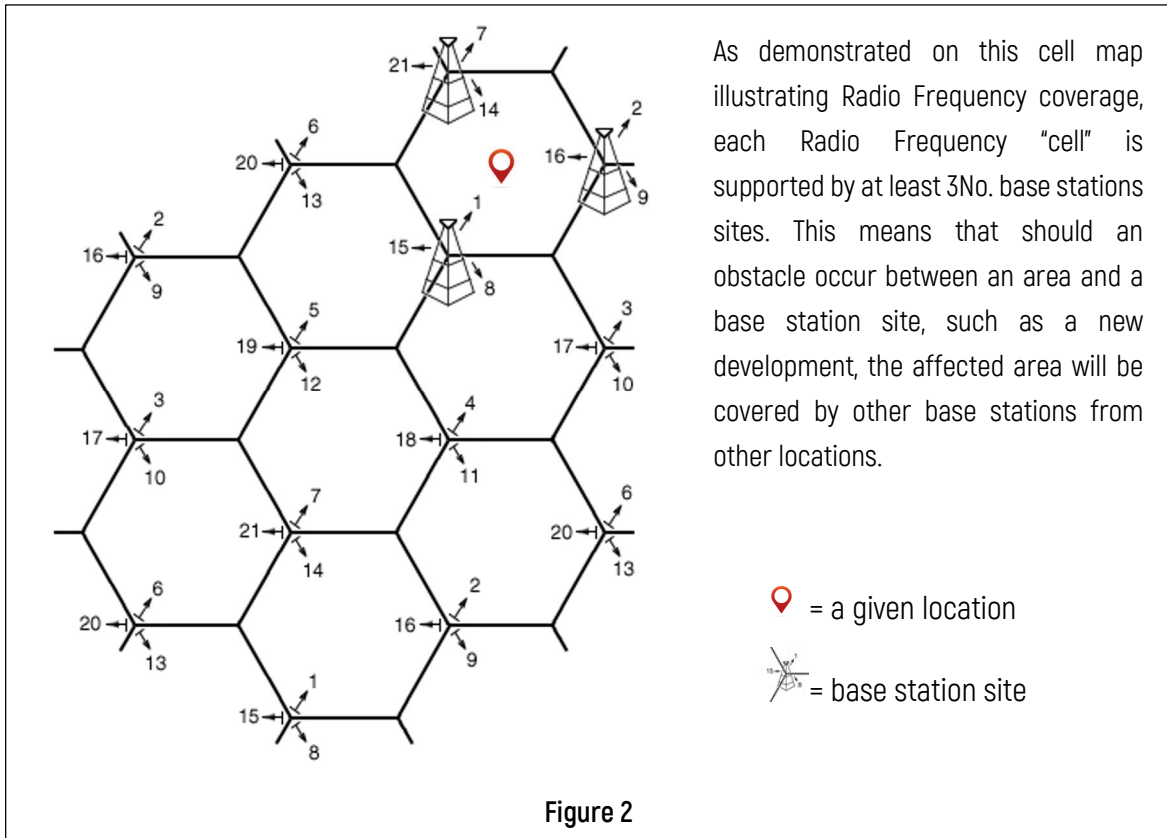
Radio Frequency links & Microwave Transmission Links are used in Ireland's mobile phone and fixed wireless networks and disseminate at an average above ground level height of 20m, making them the most relevant Telecommunication Channels to be assessed in relation to the height and scale of a new development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

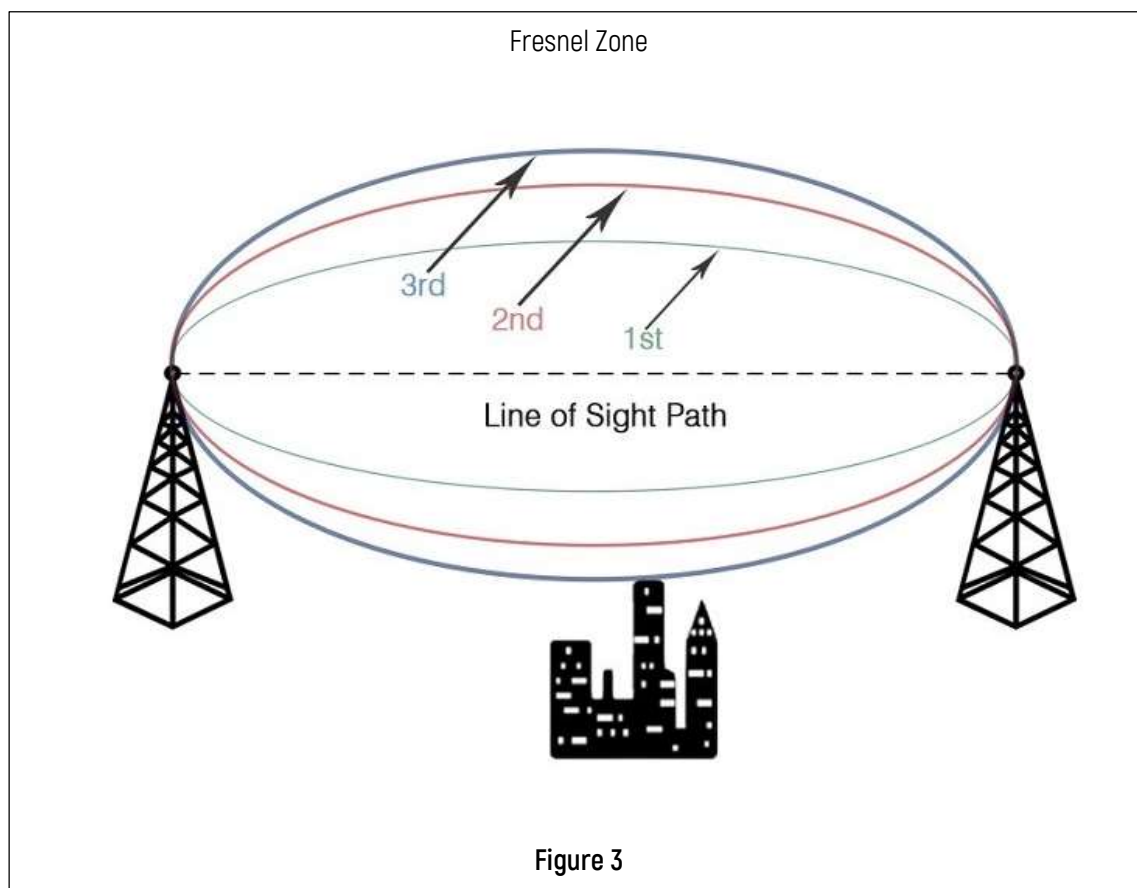




Cellular networks offer a number of desirable features, but most notably, additional cell towers can be added indefinitely and are not limited by the horizon, therefore it can be considered **indeterminable** as to whether a new development affects the Radio Frequency coverage of a geographical area 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 telecommunication masts identified herein.

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 lift shaft overrun on Block B.

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.

To adequately screen the infrastructure, the steel support poles and the associated equipment thereon, will be installed within Radio friendly GRP shrouds.

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

- 0 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  
 Ravensbrook Limited

Project  
 Belgard Square East

Option	1
Report Date	14/05/22
File Name	Belgard Square East

Drawing:  
 Area Site Analysis

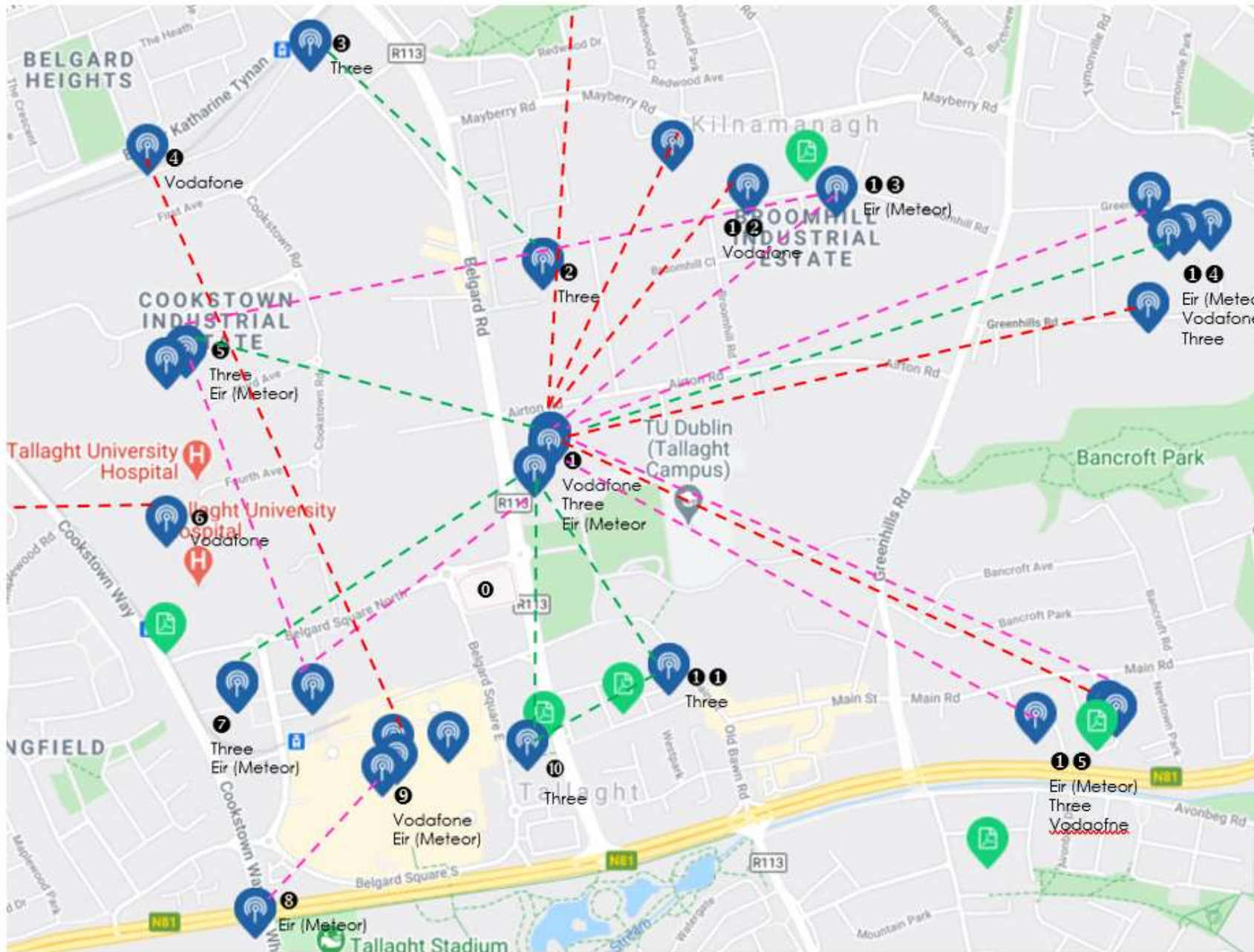
Building	Drawing No.	Zone	Rev
SPN	E 1622		1



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  
 This drawing to be read with relevant  
 Consultant Drawings

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

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Client  
 Ravensbrook Limited

Project  
 Belgard Square East

Option	1
Report Date	16/05/22
File Name	Belgard Square East

Drawing:  
 Link Analysis

Building	Drawing No.	Zone	Rev
SPN	E 1622		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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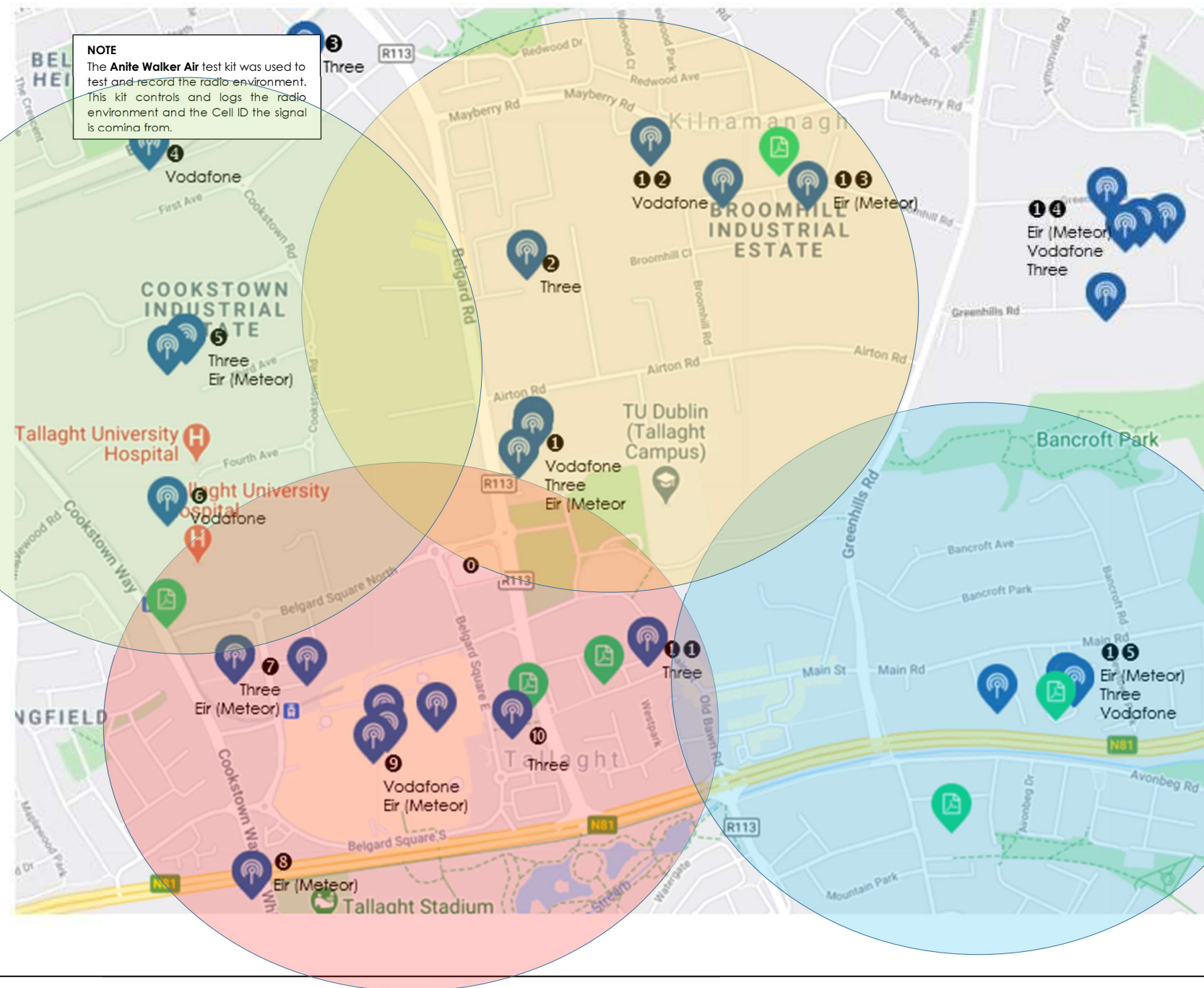
Client  
 Ravensbrook Limited  
 Project  
 Belgard Square East

Option	1
Report Date	16/05/22
File Name	Belgard Square East

Drawing:  
 Cell Identification Analysis

Building	Drawing No.	Zone	Rev
SPN	E 1622		1

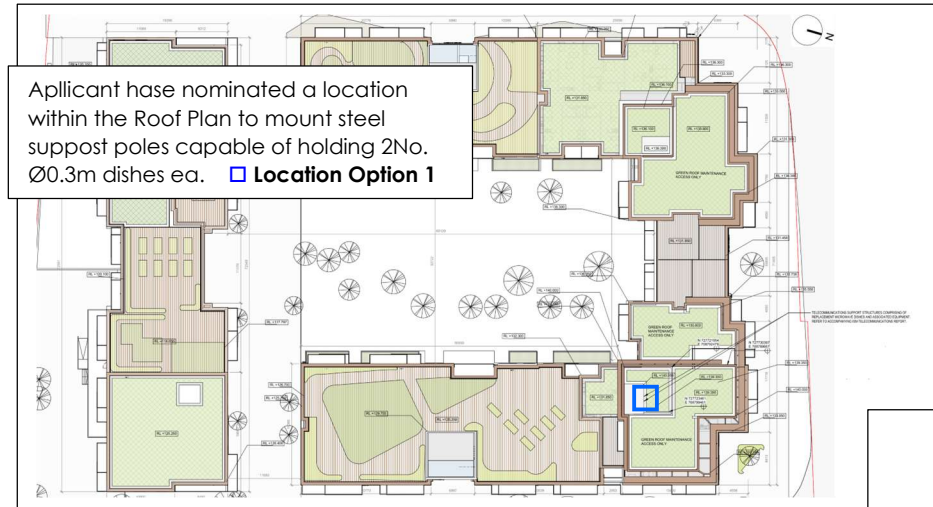
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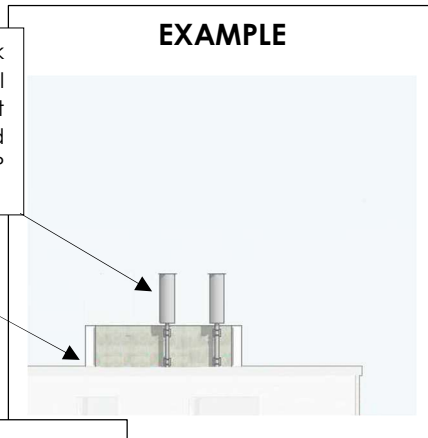
**NOTE**  
 The Anite Walker Air test kit was used to test and record the radio environment. This kit controls and logs the radio environment and the Cell ID the signal is coming from.

Figure 8

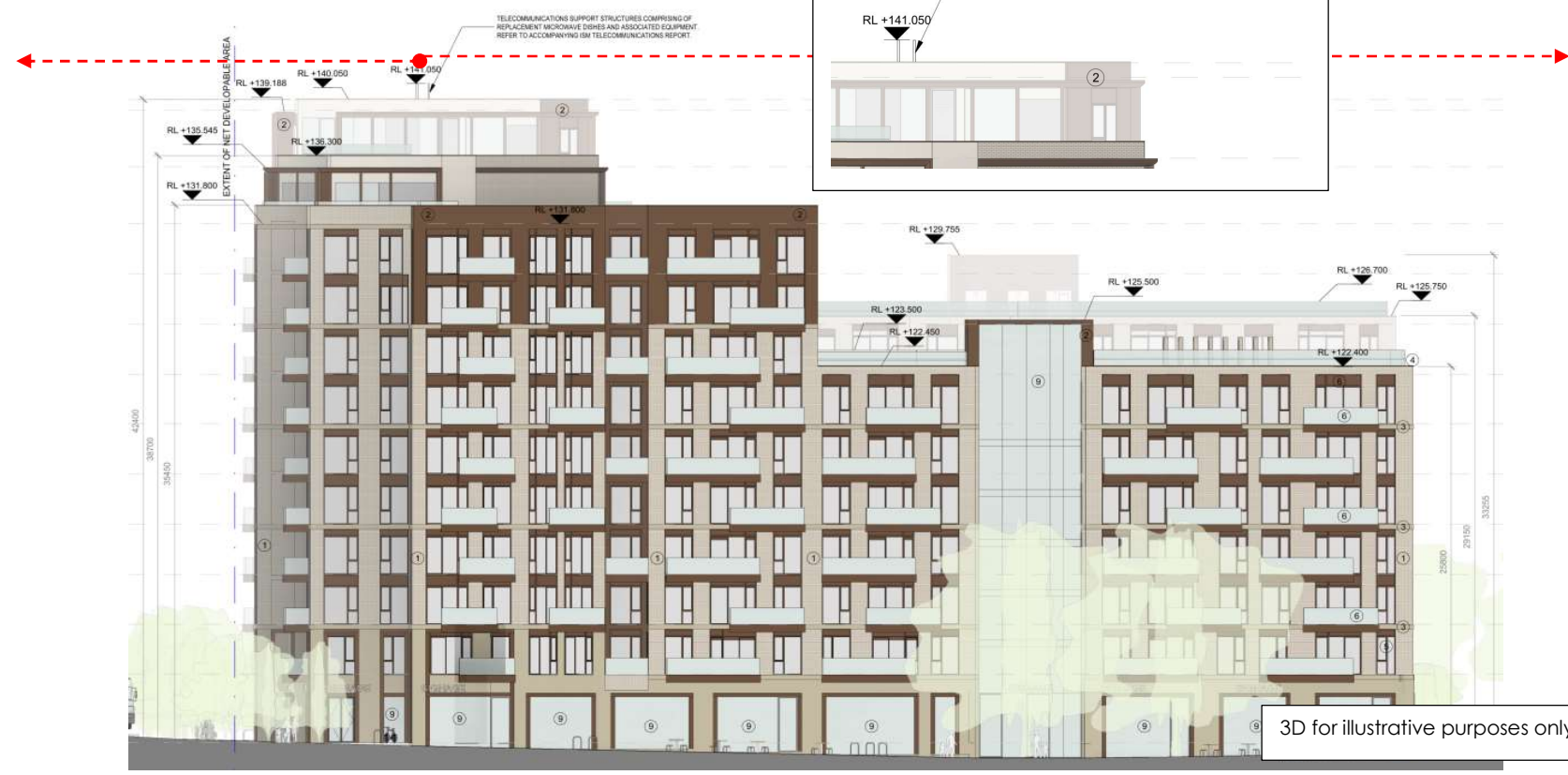
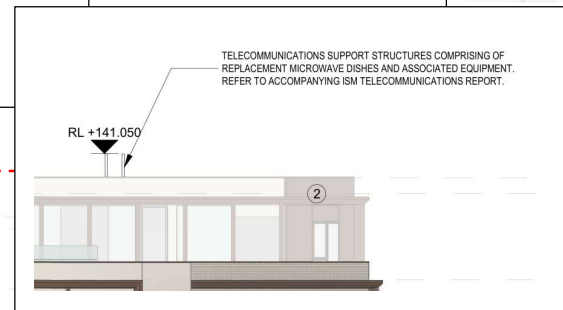
Mitigation Measure Design



2No. Ø 0.3m Microwave link dishes mounted on 2No. steel support poles affixed to the lift shaft over run and concealed with in radio friendly GRP shrouds



Lift Shaft Overrun



3D for illustrative purposes only

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

- Transmission Link
- Location of Steel support Poles

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Client  
Ravensbrook Limited  
  
Project  
Belgard Square East

<b>Option</b>	<b>1</b>
Report Date	16/05/22
File Name	Belgard Square East

Drawing:  
Mitigation Measure

Building	Drawing No.	Zone	Rev
SPN	E 1622		1