



Specific Assessment - Section 3.2 of the Building Height Guidelines (2018)

DEVELOPMENT AN BORD PLEANÁLA – SUBMISSION ST JOSEPH'S HOUSE AND ADJOINING PROPERTIES SHD

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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 "ABP")
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 Homeland Silverpines Limited (hereinafter referred to as "the Applicant")
The Development:	means a development situated at <ol style="list-style-type: none">(1) 'Saint Joseph's House', Brewery Road, Stillorgan, Co. Dublin;(2) 'Madona House', Silverpines, Stillorgan, Blackrock, Co. Dublin ; &(3) Properties at 'Woodleigh', 'Cloonagh', 'Souk El Raab', 'Wellbrook', 'Calador', 'Alhambra', 'Dalwhinnie', 'Annaghkeen' & 'The Crossing'; all located at Leopardown Road, Dublin 18. (hereinafter collectively referred to as "St Joseph's House and Adjoining Properties SHD")



EXECUTIVE SUMMARY

Independent Site Management ('ISM') has been engaged to provide a specific assessment that the proposal being made by the Applicant (the "Applicant") within its submission to An Bord Pleanála ('ABP'), 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 height and scale of the Applicant's development, the Applicant's proposed allowances to retain relevant Telecommunication Channels, and identified existing Telecommunication Channels emanating from registered and documented telecommunication sites in the vicinity of the Development.

Pursuant to our review, ISM can 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, and therefore satisfies the criteria of Section 3.2 of the Building Height Guidelines (2018).



ABOUT ISM

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 the past 20 years.

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

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

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 a densely populated, urban environments.

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



DEVELOPMENT DESCRIPTION

Summary Description

The development will consist of a new residential and mixed use scheme to include apartments, residential amenity space, a café and a childcare facility as follows:

- The demolition of 10 no. properties and associated outbuildings at 'Madona House' (single storey), 'Woodleigh' (2 storeys), 'Cloonagh' (2 storeys), 'Souk El Raab' (2 storeys), 'Welbrook' (2 storeys), 'Calador' (2 storeys), 'Alhambra' (2 storeys), 'Dalwhinnie' (2 storeys), 'Annaghkeen' (2 storeys) and 'The Crossing' (single storey) (combined demolition approx. 2,291.3 sq m GFA)
- The refurbishment, separation and material change of use of Saint Joseph's House (a Protected Structure, RPS No. 1548) from residential care facility to residential use and a childcare facility; and the construction of a new build element to provide for an overall total of 463 no. residential units, residential amenity space and a café as follows:
 - Block A (5 storeys) comprising 49 no. apartments (13 no. 1 bed units, 33 no. 2 bed units and 3 no. 3 bed units);
 - Block B (4 - 7 storeys) comprising 88 no. apartments (28 no. 1 bed units, 57 no. 2 bed units and 3 no. 3 bed units);
 - Block C (5 - 7 storeys) comprising 115 no. apartments (26 no. studio units, 26 no. 1 bed units and 57 no. 2 bed units and 6 no. 3 bed units);
 - Block D (5 - 10 storeys) comprising 157 no. apartments (36 no. studio unit, 40 no. 1 bed units and 81 no. 2 bed units), residential amenity areas of approx. 636 sq m and a café of approx. 49 sq m;
 - Block E (St. Joseph's House) (2 storeys) comprising 9 no. apartments (8 no. 2 bed units and 1 no. 3 bed units) and a childcare facility of 282 sq m with associated outdoor play areas of approx. 130 sq m;
 - Block F (3 - 6 storeys) comprising 45 no. apartments (23 no. studio units, 10 no. 1 bed units; and 12 no. 2 bed units);
- Open Space (approx. 9,885 sq m)
- 259 no. car parking spaces (232 no. at basement level and 27 no. at surface level)
- 968 no. bicycle spaces (816 no. at basement level and 152 no. at surface level)



- 10 no. motorcycle spaces (all at basement level)
- Vehicular Access
- Basement Areas
- Substations and Switch Rooms
- All associated site development works

SITE LOCATION MAP



Figure 1



TELECOMMUNICATION CHANNELS

This report assessed 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

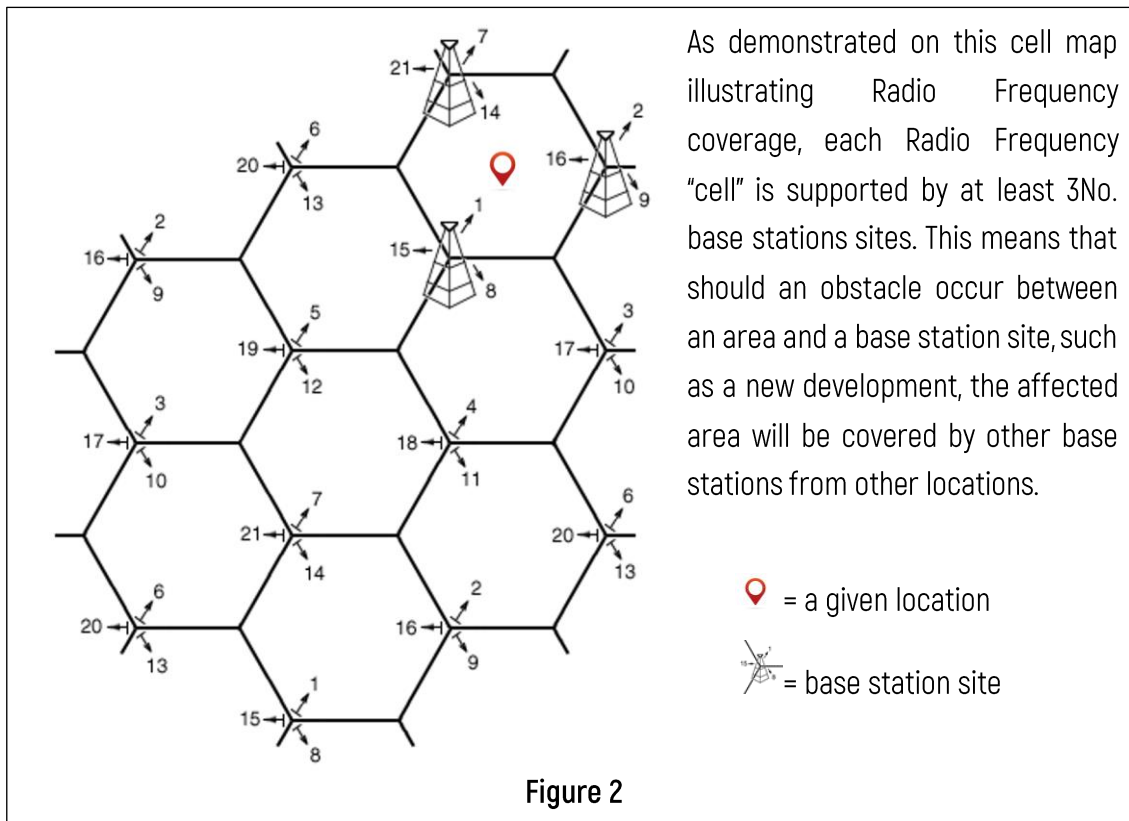
Radio Frequency links & Microwave Transmission Links are used in Ireland's mobile phone and fixed wireless networks and disseminate at an average above ground level height of 20m, making them the most relevant Telecommunication Channels to be assessed in relation to the height and scale of a new development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

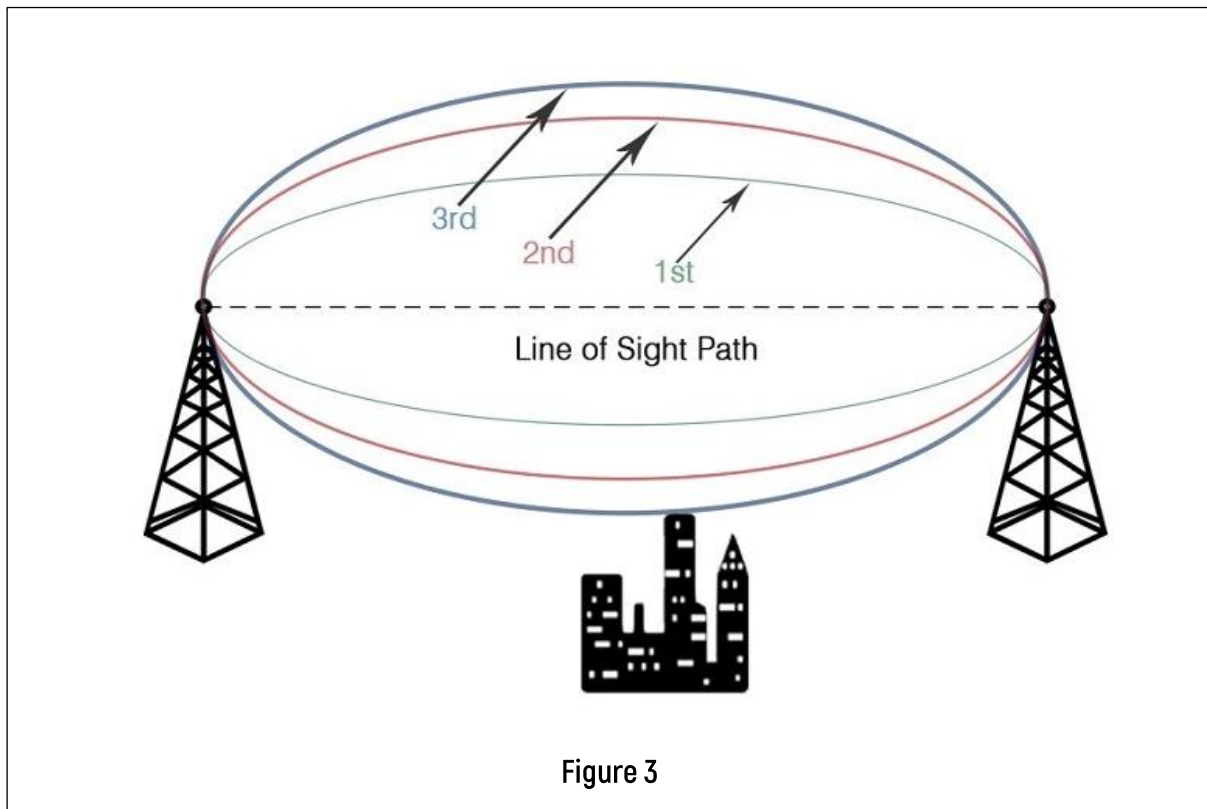




Cellular networks offer a number of desirable features, but Most notably, additional cell towers can be added indefinitely and are not limited by the horizon, therefore it can be considered **indeterminable** as to whether a new development affects the Radio Frequency coverage of a geographical area 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 allowances for their retention ("Mitigation Measures").

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

ISM carried out a full assessment of neighbouring registered and document telecommunication sites to assess what Microwave links would be impacted by the height and scale of the St Joseph's House and Adjoining Properties SHD. Refer to Figure 4 & 5 of the appendices for full analysis.

ISM carried out a full assessment of neighbouring registered and document telecommunication sites to assess what Radio Frequency links might be impacted by the height and scale of the St Joseph's House and Adjoining Properties SHD. To assess this, we carried out a walk test throughout the surrounding areas to ascertain what cells were serving the neighbourhoods to the north, south, east & west of the development site. Refer to Figure 6 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 St Joseph's House and Adjoining Properties SHD are adequately covered by the cell sites identified in figure 6 and are not reliant on Radio Frequency coverage from any one cell that would be obstructed by the St Joseph's House and Adjoining Properties SHD.

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



MITIGATION MEASURES

ISM did not identify any Telecommunication Channels that would as a consequence of the height and scale of the St Joseph's House and Adjoining Properties SHD require specific mitigation measures in order for them to be retained.

ISM has recommended and the Applicant has accepted, to provide an allocation of space together with access to a power supply, adjacent to the Lift shaft overrun on Block D where steel support structures can be fixed at a future date, should retention of any Microwave link be required. These steel support structures do not form part of this application and permission will be sought for such structures only if the need arises. Refer to Figure 7 of the appendices for full analysis.

ISM can therefore conclude that the proposed development 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 4: Identification of neighbouring registered and document telecommunication sites
(Area Telecommunication Analysis)

Figure 5: Identification of Microwave links disseminating from neighbouring registered and
document telecommunication sites (Microwave Link Analysis)

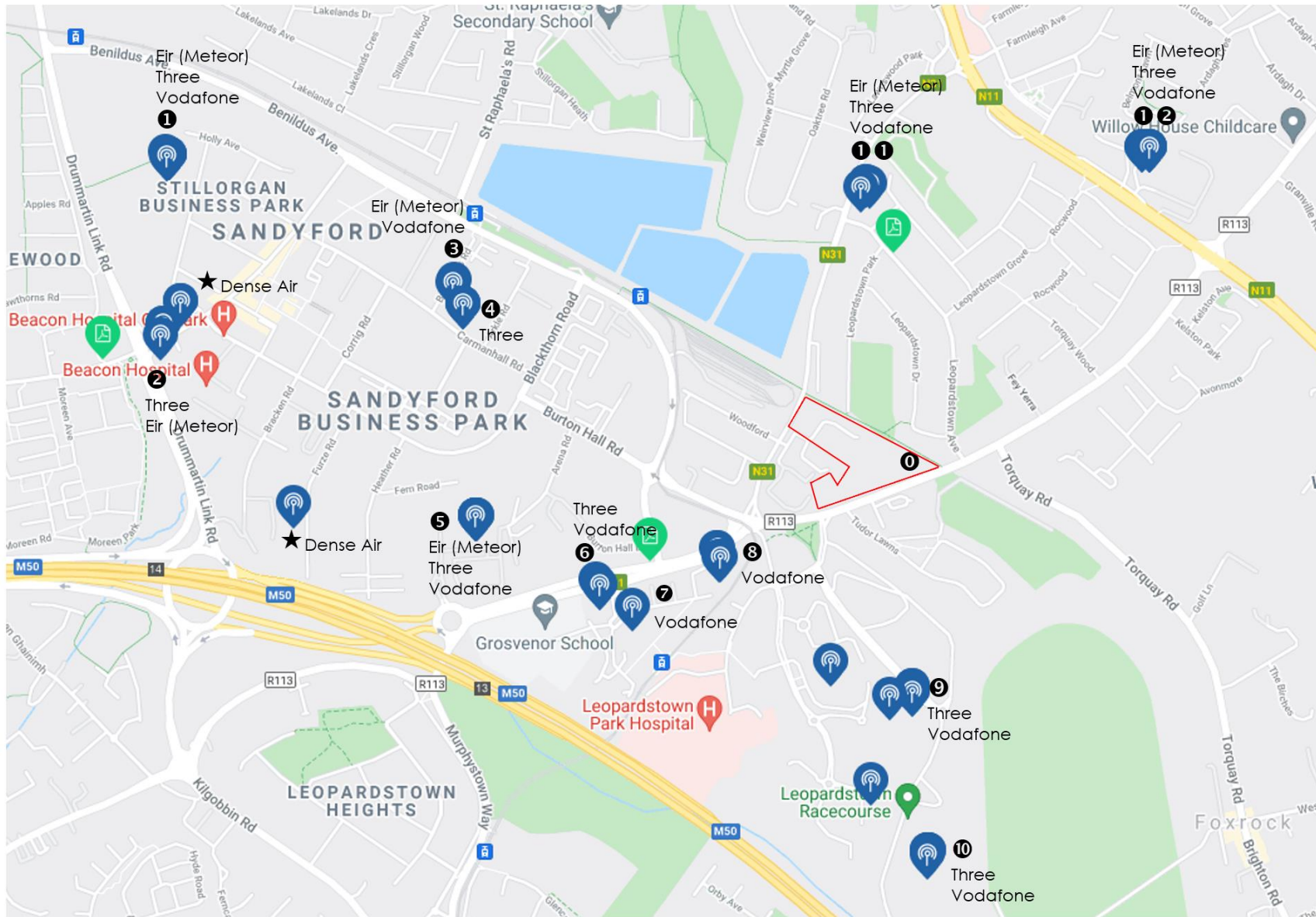
Figure 6: Walk Test Data

Figure 7: Mitigation Measures

Figure 4

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 St Olaf Bird Cage
- 2 Beacon Hospital
- 3 The Courtyard
- 4 The Chase
- 5 Leopardstown ESB
- 6 Leopardstown Clayton
- 7 AIB (DAS System)
- 8 Vodafone HQ
- 9 Microsoft HQ
- 10 L- Racecourse
- 11 Leopardstown Inn
- 12 Belmont NH
- ★ Dense Air site(s) (fibre fed)

FINAL



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Client
 Homeland Silverpines
 Project
 St Joseph's House & Adjoining
 Properties SHD

Option	1
Date	20/09/2021
File Name	St Joseph's House

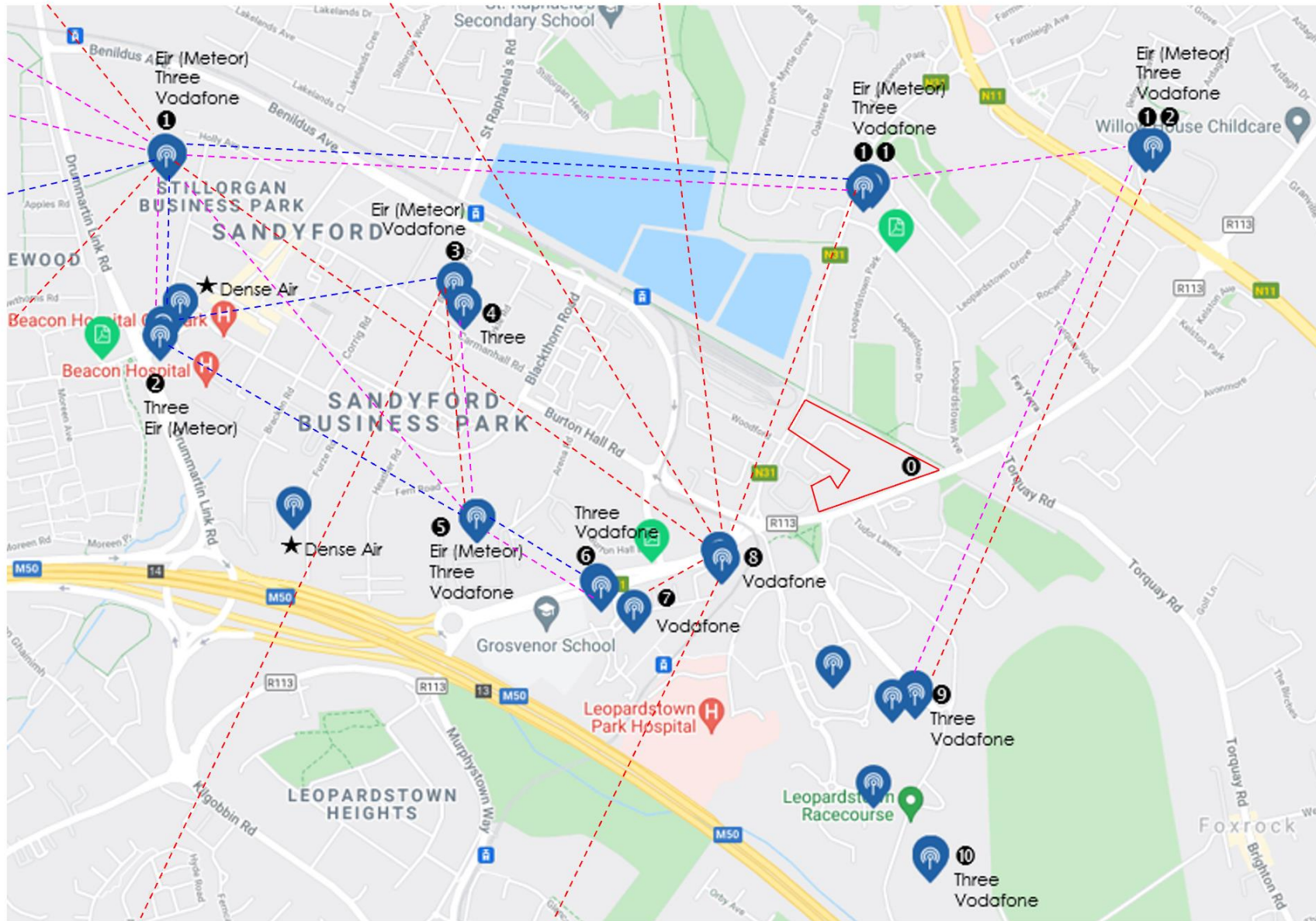
Drawing:
 Area Site Analysis

Building	Drawing No.	Zone	Rev
SPN	E 0421		1

Figure 5

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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 SITE MANAGEMENT

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Client
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Project
 St Joseph's House & Adjoining
 Properties SHD

Option	1
Date	20/09/2021
File Name	St Joseph's House

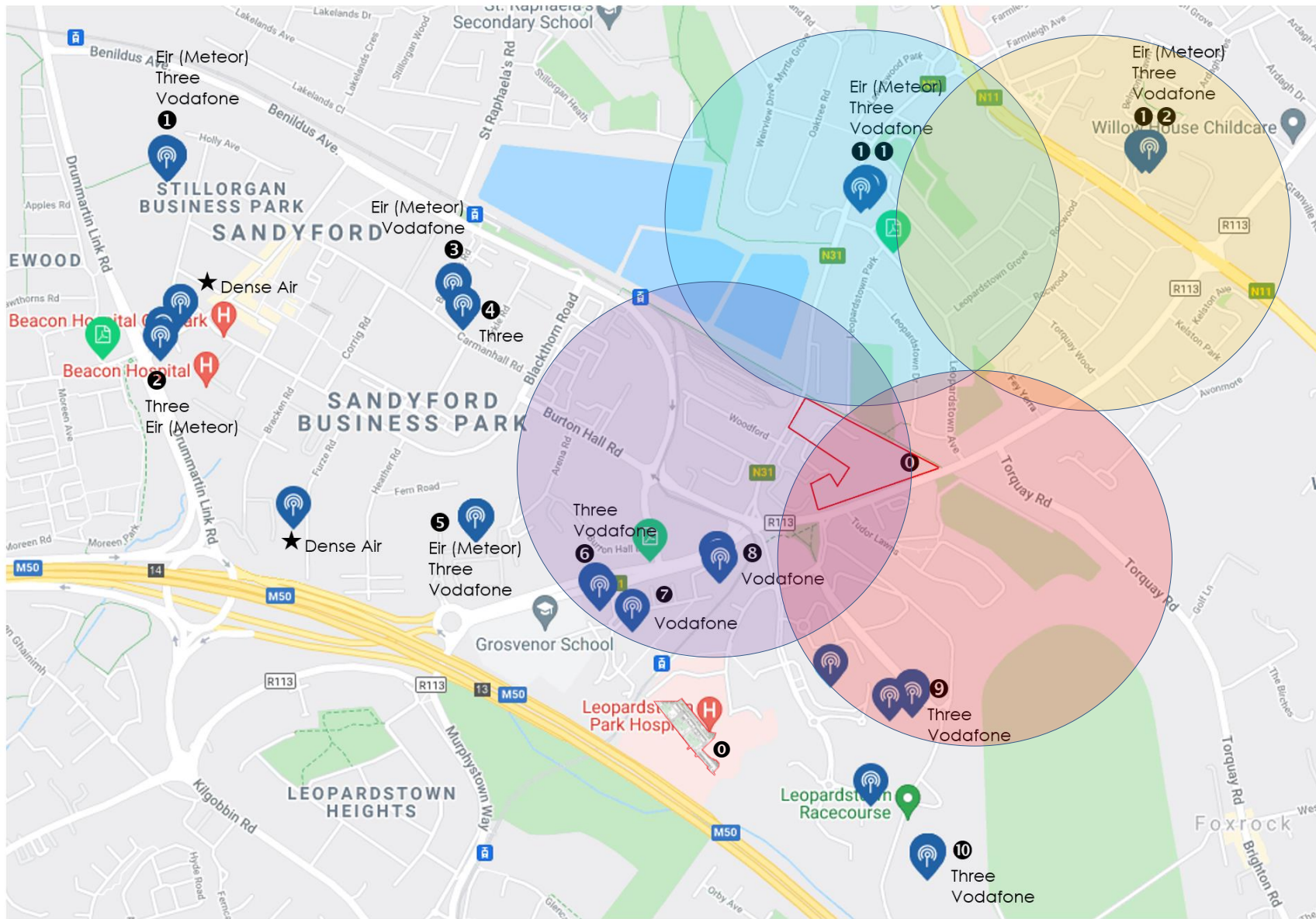
Drawing:
 Link Analysis

Building	Drawing No.	Zone	Rev
SPN	E 0421		1

Figure 6

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

- Leopardstown Inn Cell ID
- Belmont NS Cell ID
- Microsoft HQ Cell ID
- Leopardstown ESB Cell ID

NOTE
 The Anite Walker Air test kit was used to test and record the radio environment. This kit runs several phones with recording software simultaneously. These phones are connected back to a tablet which controls and logs the radio environment and the Cell ID the signal is coming from. Measurements were then mapped against the public roadway to provide the results

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Client: Homeland Silverpines
 Project: St Joseph's House & Adjoining Properties SHD

Option	1
Date	20/09/2021
File Name	St Joseph's House

Drawing: Walk Test Data

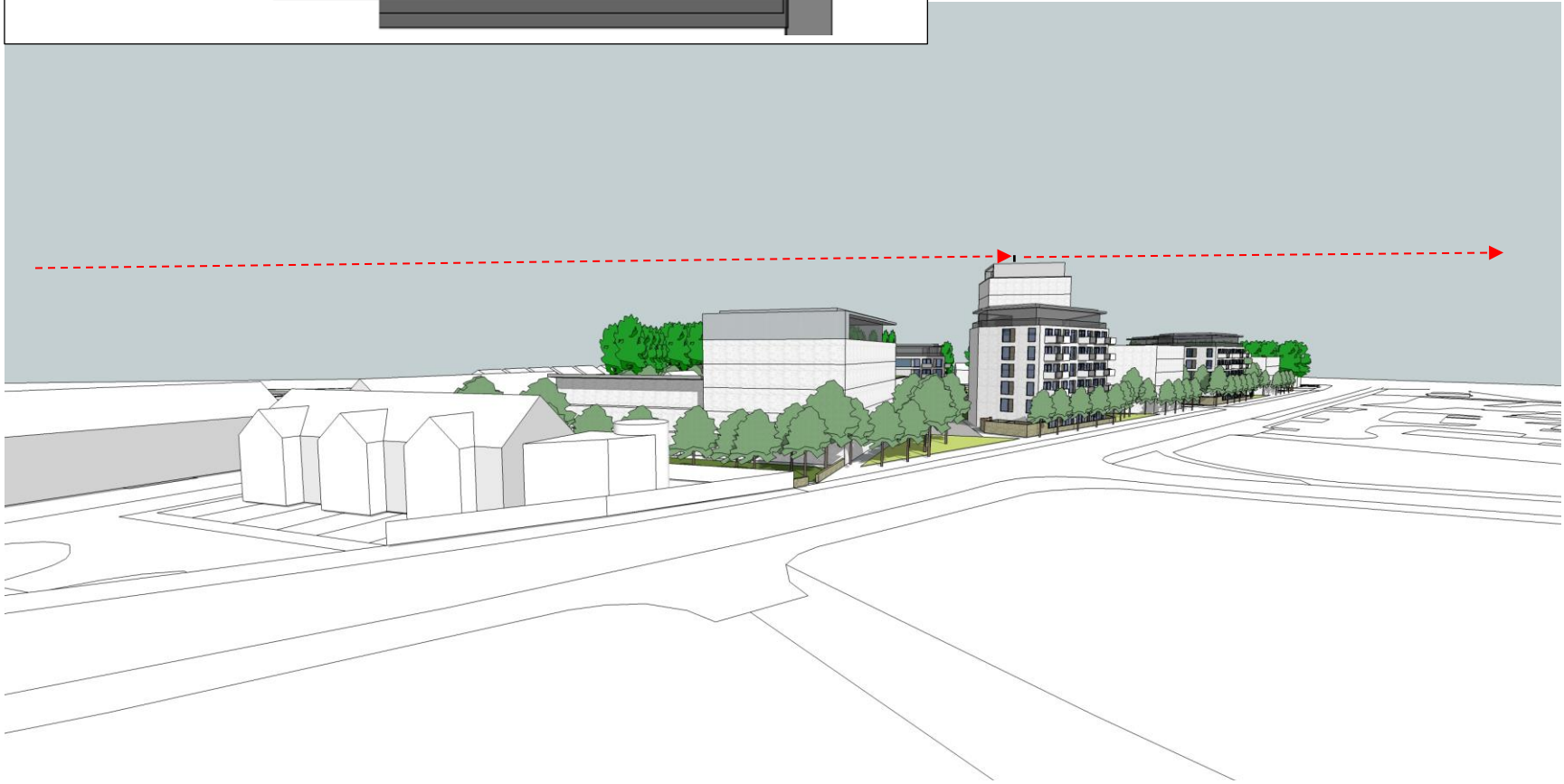
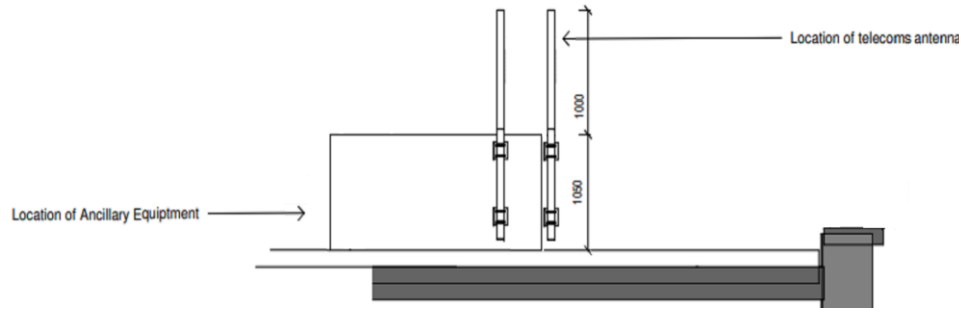
Building	Drawing No.	Zone	Rev
SPN	E 0421		1

Figure 7

Mitigation Measure Design

Source: Comreg ISM

EXAMPLE



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



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 Properties SHD

Option	1
Date	20/09/2021
File Name	St Joseph's House

Drawing:
 Mitigation Measure

Building	Drawing No.	Zone	Rev
SPN	E 0421		1