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

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### DEVELOPMENT An Bord Pleanála – Submission Ted Living 'Build to Rent' SHD

17 November 2021

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 Authority:</b>         | means An Bord Pleanála (hereinafter referred to as the "Planning Authority")   |
| <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>The Applicant:</b>              | means Ted Living Limited (hereinafter referred to as the "Applicant")  |
| <b>The Development:</b>            | means the proposed development situated at the former Ted Castles site and DunLeary House, Old Dun Leary Road, Cumberland Street and Dun Leary Hill, Dun Laoghaire, (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 Ted Living Limited (the "Applicant") within its submission to An Bord Pleanála (the 'Planning Authority'), 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 Authority 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

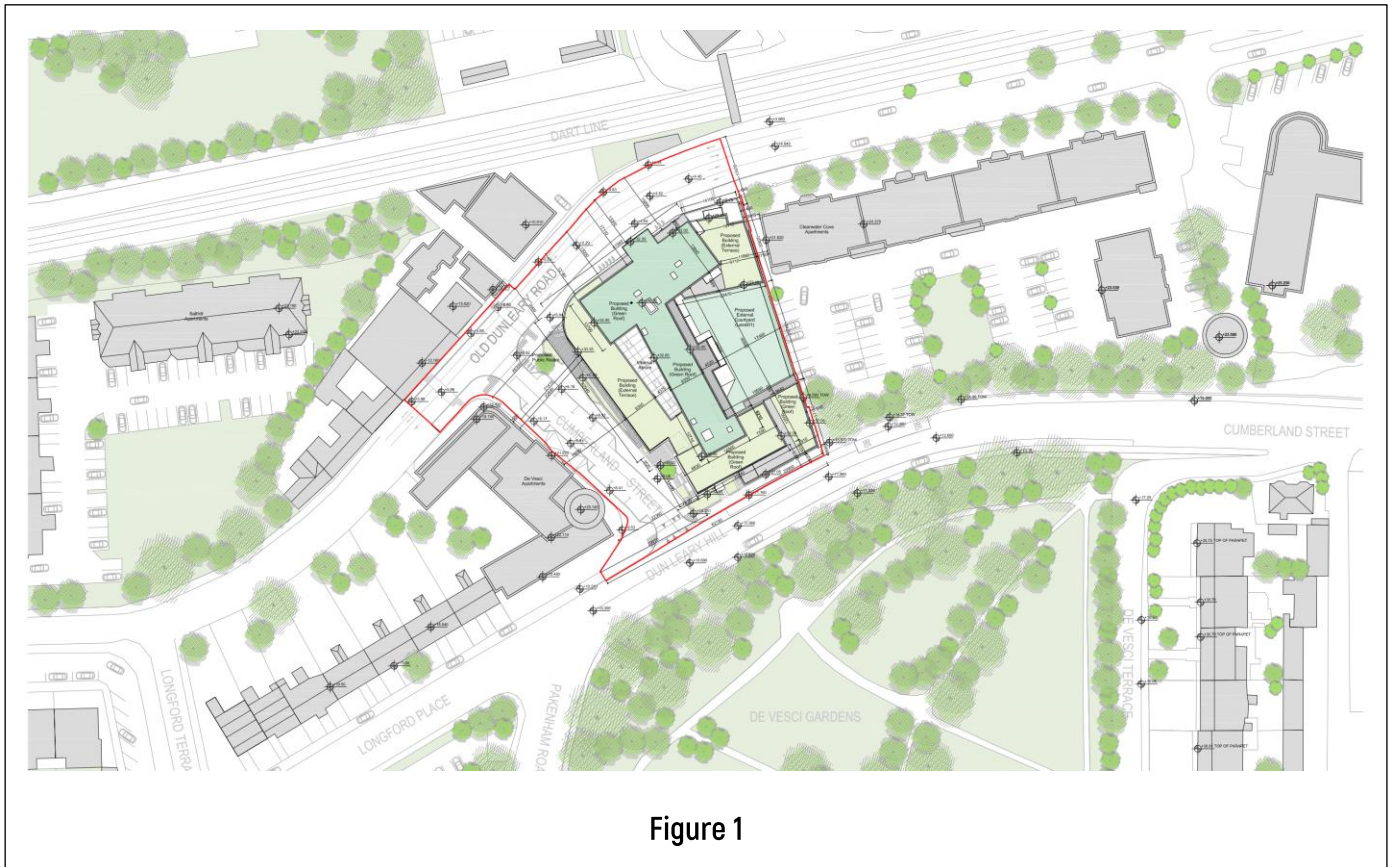
The proposed development at the former Ted Castles site and DunLeary House (a proposed Protected Structure), Old Dun Leary Road, Cumberland Street and Dun Leary Hill, Dun Laoghaire will consist of:

- The provision of 146 no. apartment units (Build to Rent) and all associated ancillary facilities (including residential amenities) in a building with an overall height ranging from 6 storeys (with set backs from 4<sup>th</sup> & 5<sup>th</sup> storey) addressing Dun Leary Hill, to 5 and 8 storeys (with set back from 7<sup>th</sup> storey) addressing Old Dun Leary Road and 6-7 storeys (with set backs at 8<sup>th</sup> storey) addressing Cumberland Street. The proposal provides for private and communal open spaces in the form of balconies and terraces throughout.
- A retail unit (c.290m<sup>2</sup>) at ground floor level addressing Old Dun Leary Road and Cumberland Street
- The refurbishment, partial removal and adaptation of a 4 storey building on site known as "DunLeary House" (a proposed Protected Structure) to provide co-working office suites (c.247m<sup>2</sup>) at Levels 01,02 and 03. The works will include partial removal of original walls and floors, removal of non original extensions to DunLeary House, repointing and repair of brickwork and granite fabric, reinstatement of timber sash windows, removal of existing roof, removal; alteration and reinstatement of internal floor layouts, reinstatement of entrance point on DunLeary Hill, removal of non original level 00 and linking the existing building to the new development from level 00 to level 03 with the construction of 3 new floors of development (with set back at roof level) above the existing building. It is proposed to repair, reinstate and improve the existing boundary treatment to DunLeary House.
- Provision of 52 no. car parking spaces in total - 44 no. car parking spaces provided at level 00. At Cumberland Street 11 no. existing on street car parking spaces will be removed and 8 no. on street car parking spaces provided. Provision of 277 bicycle

parking spaces (94 no. cycle parking spaces accommodated in bicycle stands and 183 no. long term bicycle parking spaces within a secure storage area) and 4 no. motorbike parking spaces, all at Level 00. A new vehicular entrance/cycle path (off the Old Dun Leary Road), ancillary plant areas, ESB substation and storage areas.

- Extensive hard and soft landscaping throughout, green roof, public lighting, signage, boundary treatments and public realm improvements.
- The demolition of the existing open fronted shed on site and all associated ancillary site services and site development works.

## SITE LOCATION/LAYOUT MAP





## 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

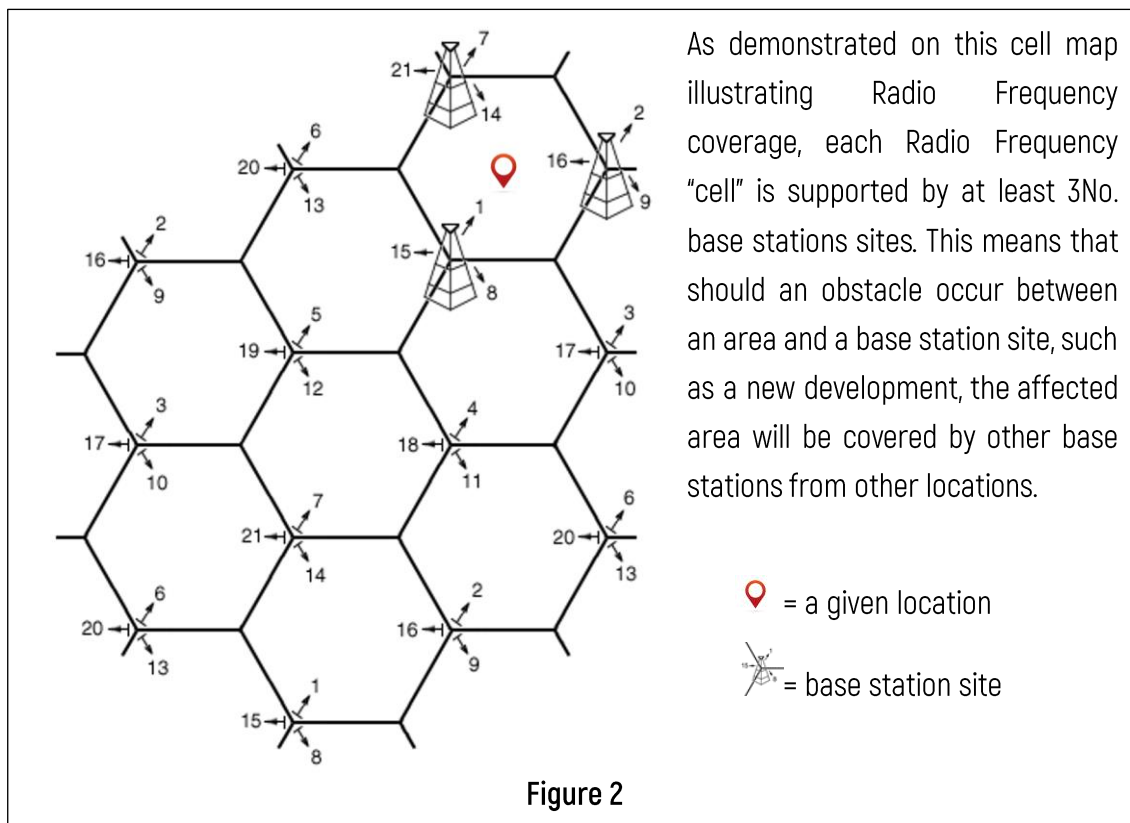
Radio Frequency links & Microwave Transmission Links are used in Ireland's mobile phone and fixed wireless networks and disseminate at an average above ground level height of 20m, making them the most relevant Telecommunication Channels to be assessed in relation to the height and scale of a new development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

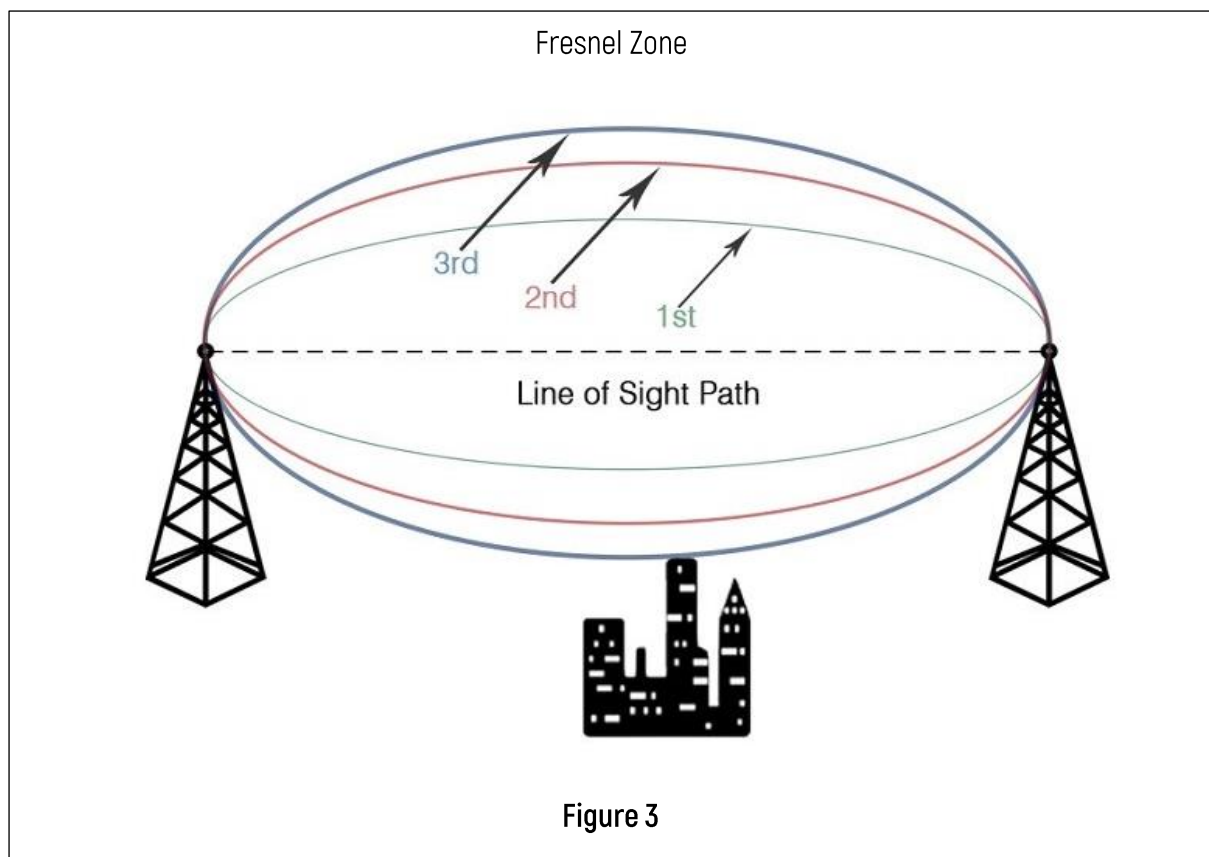




Cellular networks offer a number of desirable features, but most notably, additional cell towers can be added indefinitely and are not limited by the horizon, therefore it can be considered **indeterminable** as to whether a new development affects the Radio Frequency coverage of a geographical area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

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 Development, require specific mitigation measures in order to retain them.

ISM has recommended and the Applicant has accepted, to provide a dedicated allocation of space at and on the Lift Shaft overrun together with access to a power supply, where steel support structures can be fixed at a future date if required, to provide necessary mitigation measures should retention of any Microwave links be required (subject to planning permission if applicable). Refer to Figure 7 of the appendices for full analysis.

ISM can therefore conclude that the proposal being made by the Applicant within its submission to the Planning Authority 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)

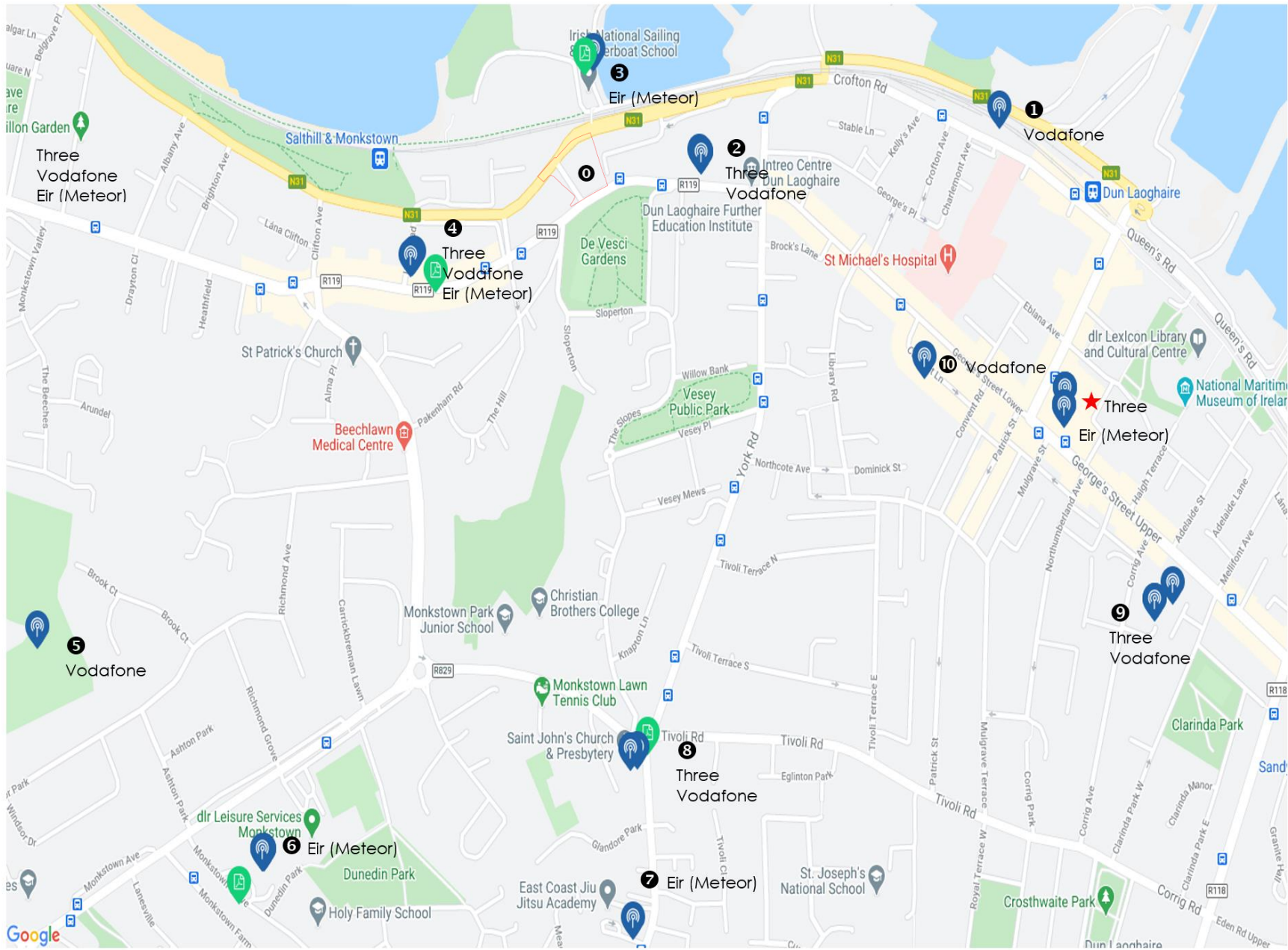
Figure 6: Identification of local area Cells by Cell ID (Walk Test Data)

Figure 7: Mitigation Measure Design

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

- 1 Proposed Development
- 1 Dún Laoghaire
- 2 Intreo
- 3 Motor Yacht Club
- 4 Generation Health
- 5 Blackrock College RFC
- 6 DLR Leisure
- 7 P McCormack & sons
- 8 St. John's \*
- 9 Brook House
- 10 Bloomfield Shopping C.
- ★ Dún Laoghaire Shop

\* ISM Site

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Client  
Ted Living Limited

Project  
The Ted, Dun Laoghaire - BTR

| Option    | 1                            |
|-----------|------------------------------|
| Date      | 17/11/2021                   |
| File Name | The Ted, Dun Laoghaire - BTR |

Drawing:  
Area Site Analysis

| Building | Drawing No. | Zone | Rev |
|----------|-------------|------|-----|
| SPN      | G 1921      |      | 1   |

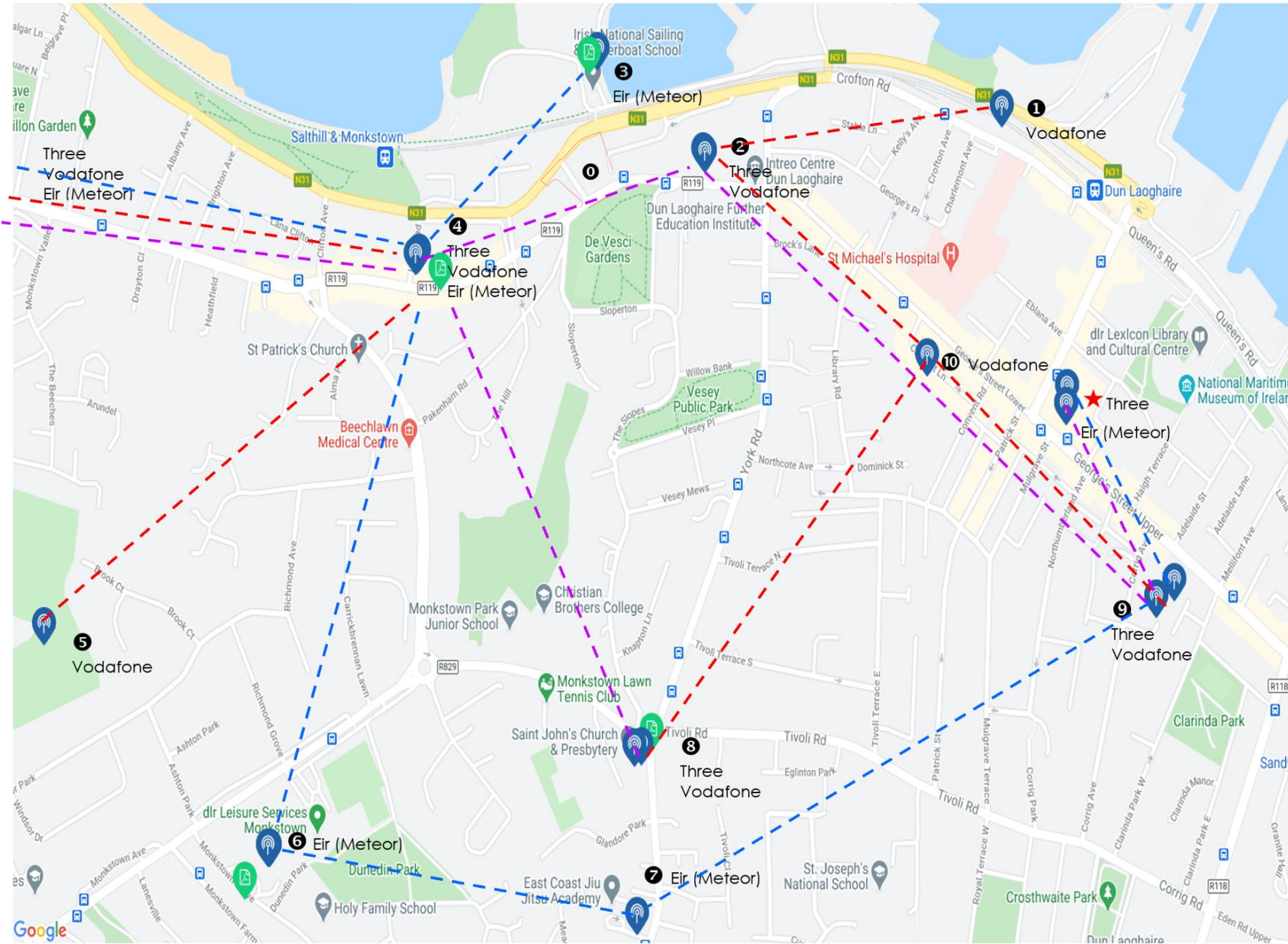
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Figure 5

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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|           |                              |
|-----------|------------------------------|
| Option    | 1                            |
| Date      | 17/11/2021                   |
| File Name | The Ted, Dun Laoghaire - BTR |

Drawing:

Link Analysis

| Building | Drawing No. | Zone | Rev |
|----------|-------------|------|-----|
| SPN      | G 1921      |      | 1   |

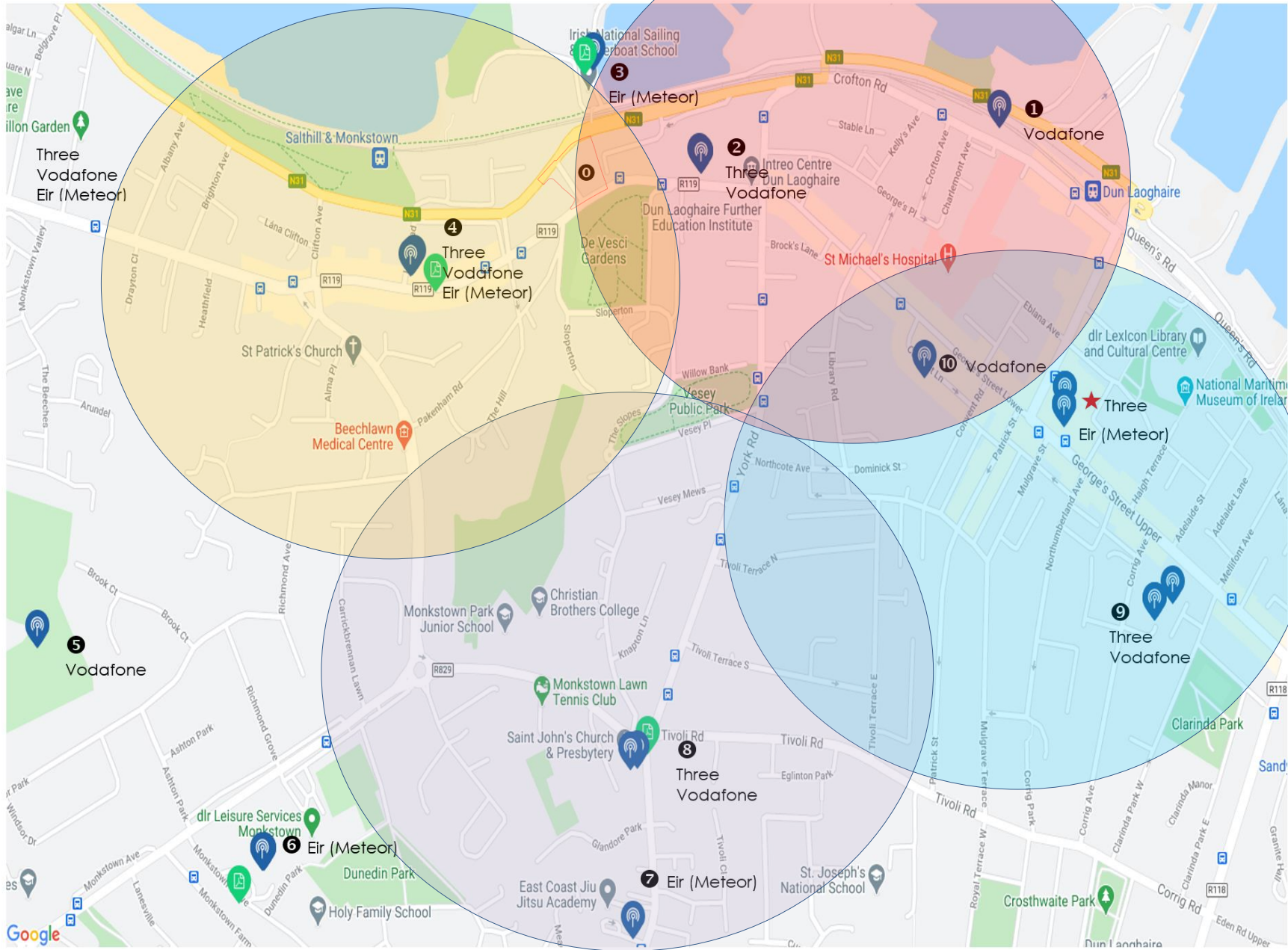
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Figure 6

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

- Multiple Cell IDs
- 1. Brook House Cell ID
- 2. Bloomfield S.C. Cell ID
- 3. Dún Laoghaire Shop Cell ID
- Generation Health Cell ID
- Intreo Cell ID
- St John's Cell ID

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. Measurements were then mapped against the public roadway to provide the results

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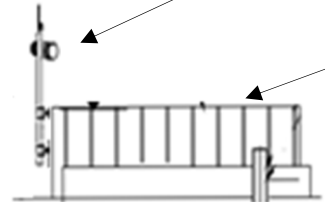
Drawing:  
Cell Identification Analysis

| Building | Drawing No. | Zone | Rev |
|----------|-------------|------|-----|
| SPN      | G 1921      |      | 1   |

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Figure 7

## EXAMPLE



2No. Ø 0.3m Microwave link dishes mounted on steel support pole affixed to Lift shaft overrun

Lift Shaft Overrun

## Mitigation Measure Design

Appllicant hase nominated a locationsa within the Roof Plan to monnt steel support poles capable of holding 2No. Ø0.3m dishes ea. □ Location

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

## Typical Installation



- Transmission Link
- Transmission Link
- Location of Steel support poles

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| Date      | 17/11/2021                   |
| File Name | The Ted, Dun Laoghaire - BTR |

Drawing:  
Mitigation Measure

| Building | Drawing No. | Zone | Rev |
|----------|-------------|------|-----|
| SPN      | G 1921      |      | 1   |

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