



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

DEVELOPMENT An Bord Pleanála – Submission Parkgate Street SHD 2

15 June 2021

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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 Authority:	means An Bord Pleanála (hereinafter referred to as the "Planning Authority")
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 Ruirside Developments Limited (hereinafter referred to as the "Applicant")
The Development:	means the proposed Apartment Development at the junction of the R139 Road and Hole in the Wall Road (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 Ruirside Developments 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 height and scale of the Applicant's 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 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 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 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

In brief, permission is sought for Strategic Housing Development, with a life of 8 years, at 42A Parkgate Street, Dublin 8, for development comprising:

A 30-storey residential building ('Block A') (c.14,364 sq m gfa), including residential, café/restaurant, replacement office use and ancillary accommodation and works, located in the eastern apex of the site subject of otherwise consented development under ABP-306569-20.

The proposed new Block A building accommodates:

- 198no. 'Build To Rent' residential apartments (73no. studios, 97no. 1-bed, 27no. 2-bed & 1no. 3-bed) from 1st to 27th floors inclusive, including 53no. units with 'winter garden' balconies on the building's eastern elevation.
- Ancillary internal (c.384 sq m) and external (c.255 sq m) residents' private communal amenity areas and facilities, including ground floor reception/concierge area, lounge bars at mezzanine and 9th floors, and roof gardens at 9th and 28th floors. Also, access to residents' private communal amenity areas within the consented scheme ABP-306569-20.
- 1no. café/restaurant (c.223 sq m) at ground floor. Replacement office floor area (c.595.6 sq m total) accommodated between 1st and 8th floor levels of Block A.
- Ancillary residential bicycle storage (22no. spaces), refuse, circulation and plant, and non-residential back of house and circulation areas at ground and mezzanine floors.
- Building Maintenance Unit (BMU) at roof level.

Ancillary and associated site works and other structural and landscape works are proposed to tie the proposed new Block A building in with the consented development (ABP 306569-20). Proposed amendments to the consented scheme, include:

- At the interface of proposed Block A with the consented Block B2 office building:
 - a reduction by c.909 sq m total of office floor area over 6 floors within the consented Block B2 office building;



- a reduction by c.35 sq m of external residential amenity and associated minor amendments to landscaping at roof level of consented Block B2; and,
- localised changes to the northern Parkgate St façade of the consented Block B2 to include a shadow gap at its junction with proposed Block A.
- 16no. additional bicycle parking spaces accommodated within consented Block B1 undercroft area.
- Minor localised amendments to adjoining consented public realm area to tie in with proposed Block A at ground level.
- New telecommunications infrastructure at roof level of consented Block B1, including: 4no. 300mm microwave link dishes mounted on 2no. 2m high steel poles fixed to the consented lift shaft overrun, housed within GRP radio friendly shrouds, to mitigate potential for interference with existing telecommunication channels.

The site within which the proposed works sit, benefits from extant permission for residential-led mixed use strategic housing development under ABP 306569-20 (i.e. the consented development). Permission is not being re-sought for the consented development.

For avoidance of doubt, while the red line site boundary is drawn around the entire planning unit of ABP Ref. 306569-20, the development works for which permission is expressly sought are identified with a green dashed line, within the wider red line planning unit.

The overall site (c.0.82 ha) is principally bounded by Parkgate Street to the north, the River Liffey to the south, an existing electricity substation and the junction of Sean Heuston Bridge and Parkgate Street to the east, existing Parkgate Place office and residential development to the west. The application site includes areas of public footpath and roadway on Parkgate Street and a small landscaped area at the junction of Sean Heuston Bridge and Parkgate Street. There are Protected Structures on site.

SITE LOCATION MAP

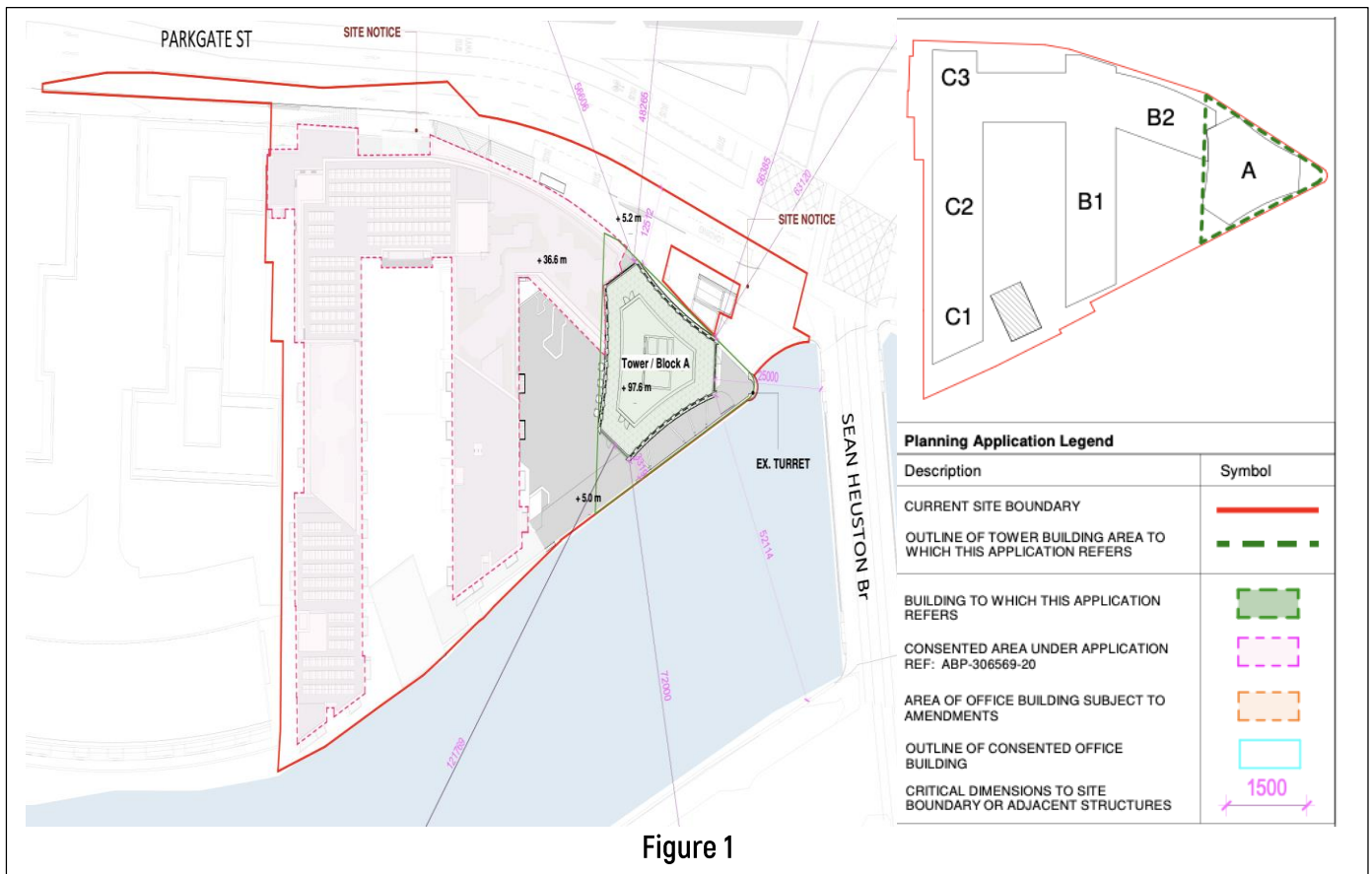


Figure 1

SITE ELEVATION

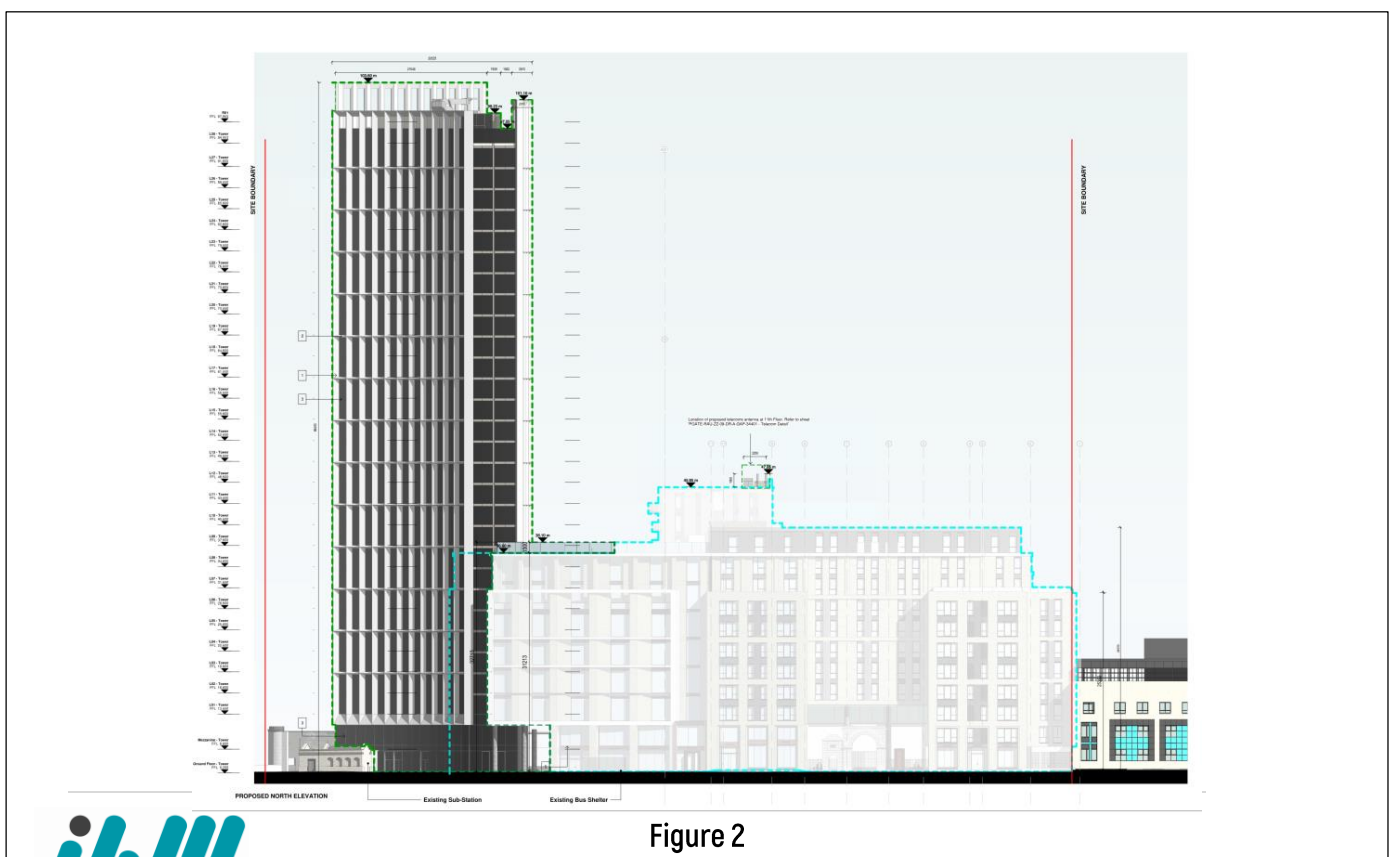


Figure 2



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

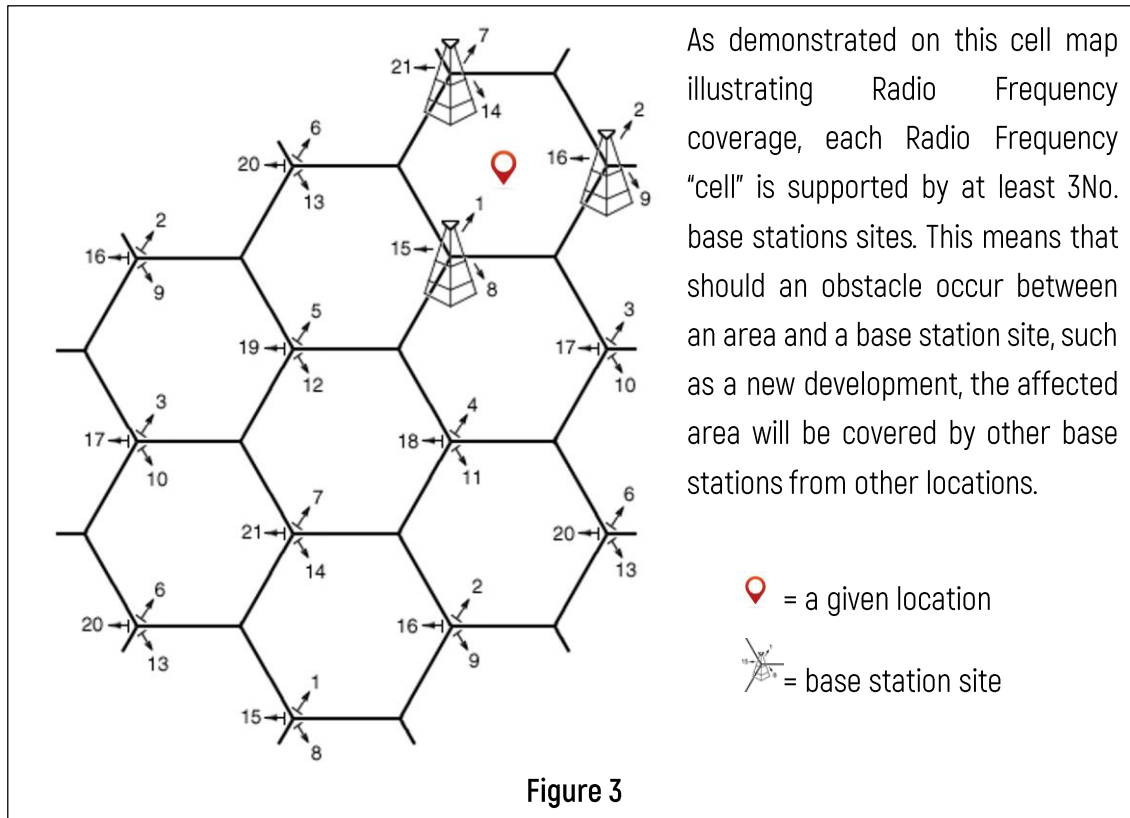
Radio Frequency links & Microwave Transmission Links are used in Ireland's mobile phone and fixed wireless networks and disseminate at an average above ground level height of 20m, making them the most relevant Telecommunication Channels to be assessed in relation to the height and scale of a new development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



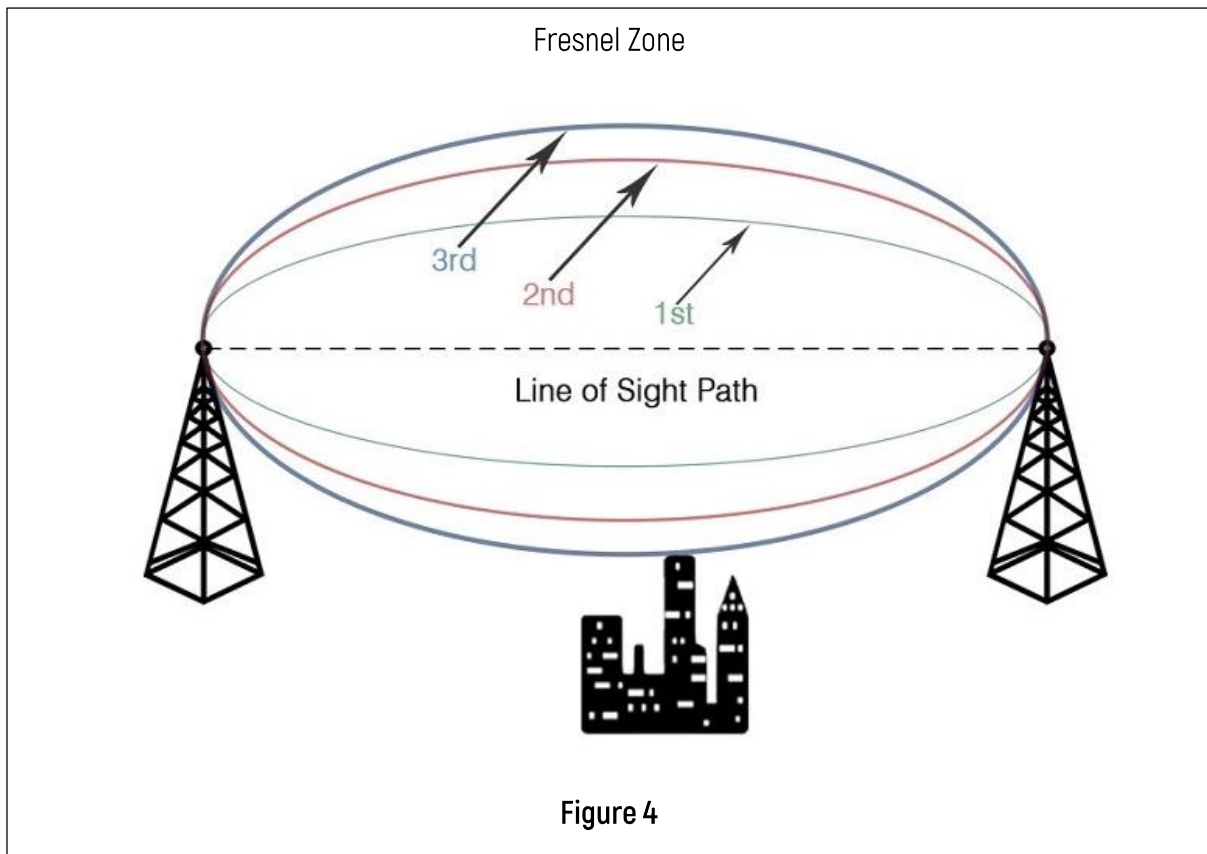


Cellular networks offer a number of desirable features, but most notably, additional cell towers can be added indefinitely and are not limited by the horizon, therefore it can be considered **indeterminable** as to whether a new development affects the Radio Frequency coverage of a geographical area 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 identified 2 No. 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 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 Development. Refer to Figure 5 & 6 of the appendices for full analysis.

Impacted Microwave links

- ① 1 No. is a Microwave link installed by Vodafone Ireland;
- ② 1 No. is a Microwave link installed by Three Ireland.

Vodafone Ireland and Three Ireland microwave link dishes are aligned at approximately 120°azimuths connecting the Criminal Courts of Justice (A-end) to base station sites situated (B-end) to the southeast of the Development.

These Microwave links are situated at approximate above ground level heights 25.6m (AGL) and therefore the Fresnel zone of each will be diffracted by the height of the Development. We've calculated the radius of the Fresnel zone of each link not to be greater than 6.89m at its widest point which would be at half the distance to the two aforementioned B-end sites. The current height of Block A within the Development has an approximate above ground level of 98.4m and is likely to cause significant diffraction to the Microwave links.

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 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 7 of the appendices for full analysis



Our assessment identified Radio Frequency coverage for the local geographic area is served by several cells at relative 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.

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 the 2No. identified Microwave links which will be impacted by the development, the Applicant is seeking planning permission to install 2No. support poles, affixed to, and rising 2 metres above, the Lift shaft overrun on the permitted Block B. To adequately screen the infrastructure, the poles and the Microwave link dishes will be installed within Radio friendly GRP cylindrical shrouds. Refer to Figure 8 of the appendices for full analysis.

These support poles are sufficient to accommodate 2No. Ø0.3m Microwave links each, which creates the ability for the Applicant to mitigate the impact the Development will have on the existing Microwave links emanating from the neighbouring Criminal Courts of Justice.

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 document telecommunication sites
(Area Telecommunication Analysis)

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

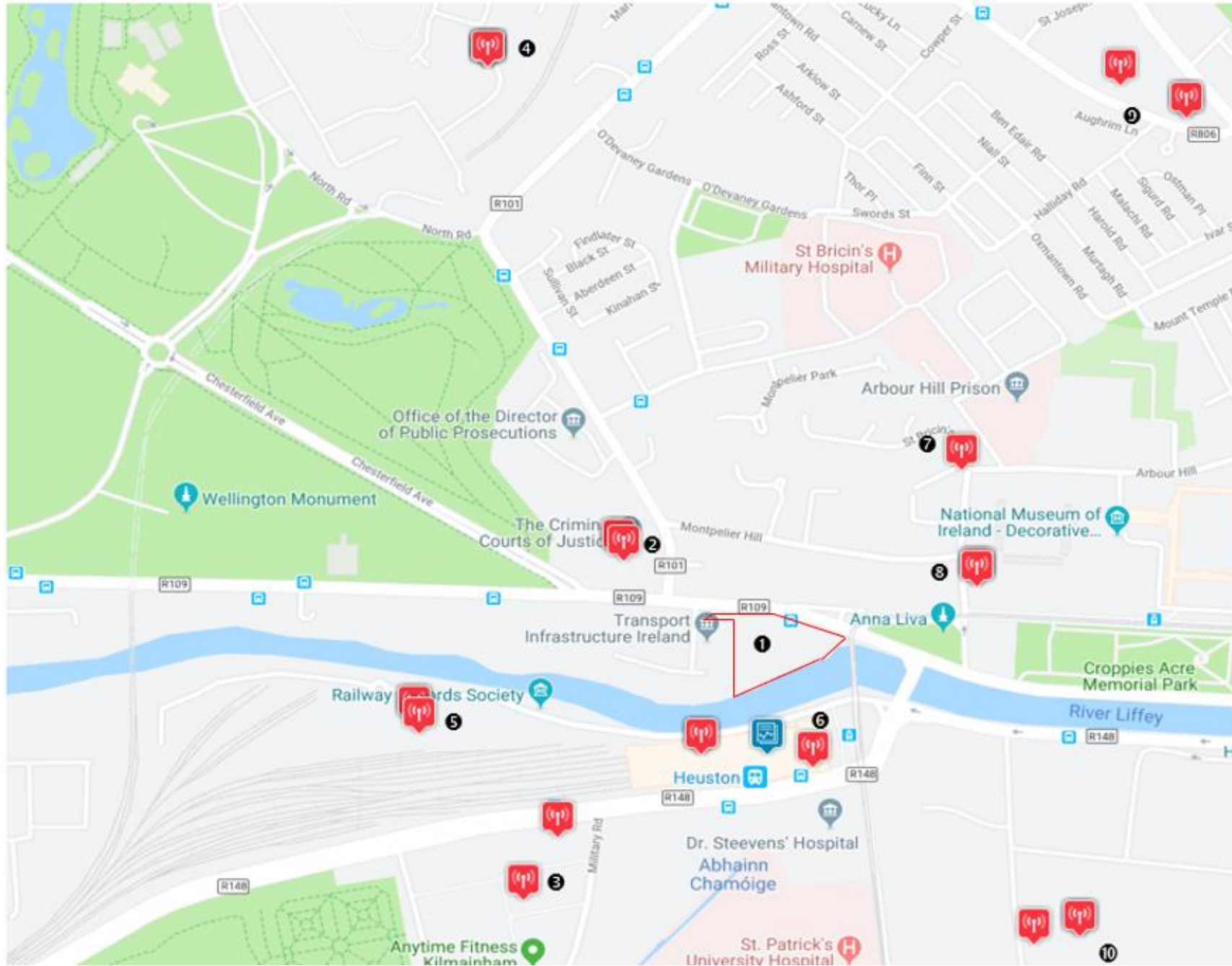
Figure 7: Walk Test Data

Figure 8: Mitigation Measures

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

- 1 Proposed Development
- 2 Criminal Justice
- 3 Eir Headquarters
- 4 Garda Headquarters
- 5 Irish Rail
- 6 Heuston Station
- 7 Arbour Terrace
- 8 Temple Street West
- 9 Motor Parts
- 10 Guinness Flaking Plant *

* ISM managed site

FINAL

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Client
 Ruirside Developments Limited

Project
 Parkgate Street SHD 2

Option	1
Date	15/06/2021
File Name	Parkgate Street SHD 2

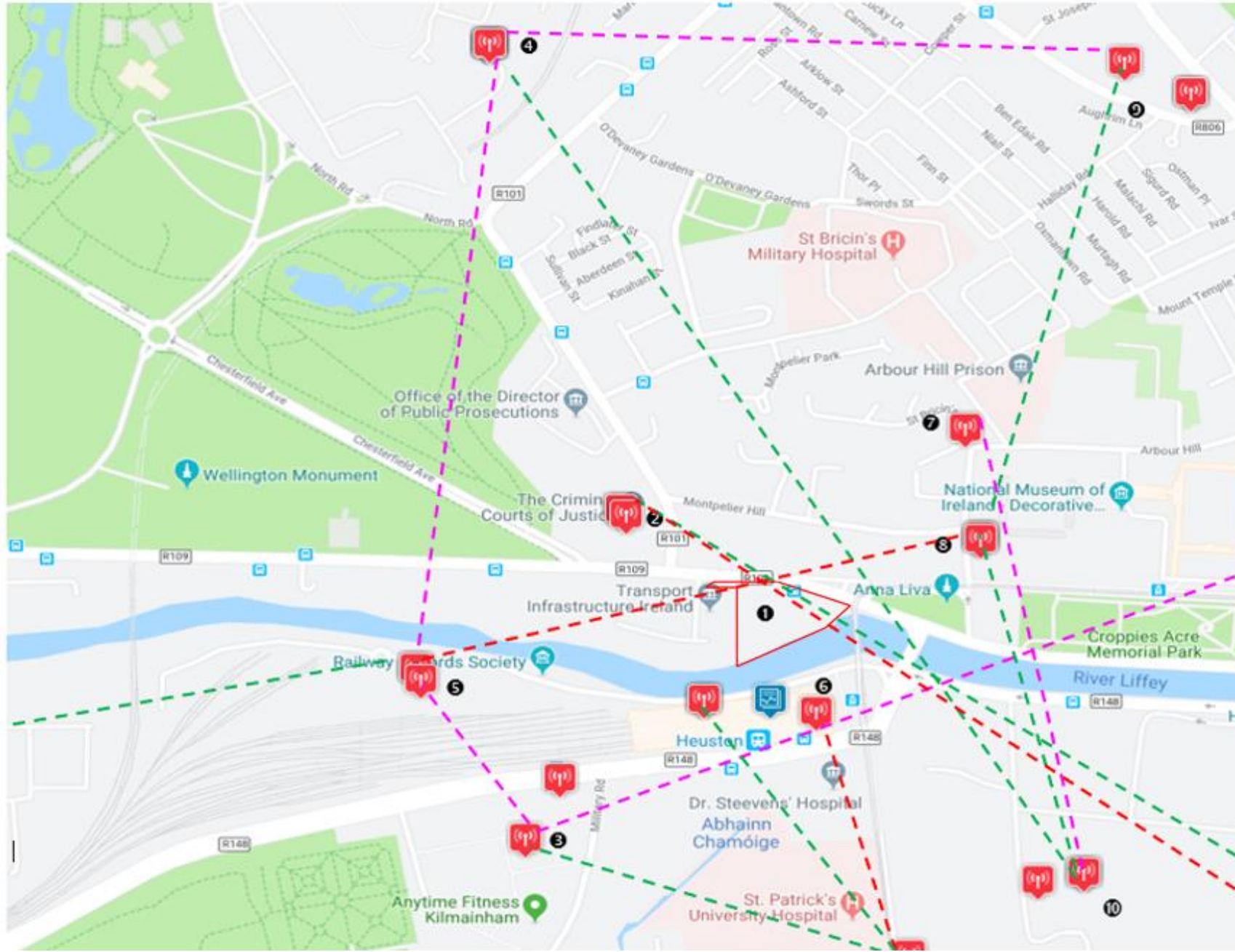
Drawing:
 Area Site Analysis

Building	Drawing No.	Zone	Rev
SPN	E 1021		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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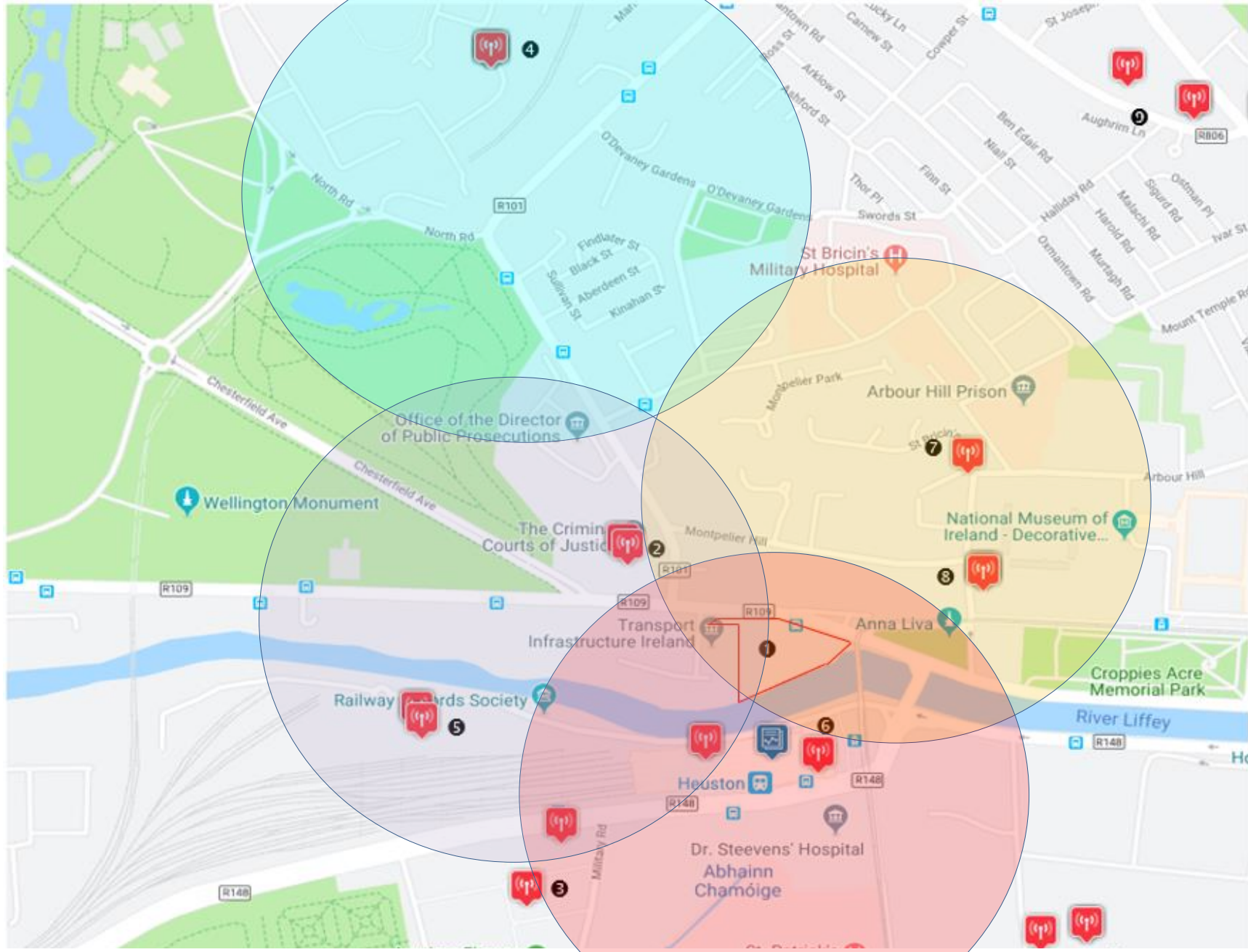
Drawing:
 Link Analysis

Building	Drawing No.	Zone	Rev
SPN	E 1021		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

- Garda HQ Cell ID
- Arbour Terrace and/or Temple Street West Cell ID
- Heuston Station Cell ID
- Irish Rail 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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Date	15/06/2021
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Drawing:
 Walk Test Data

Building	Drawing No.	Zone	Rev
SPN	E 1021		1

