



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

DEVELOPMENT CLEEVES RIVERSIDE QUARTER

13 October 2025

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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 Coimisiún 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")
Report Date:	means the date which the assessment was carried out (hereinafter referred to as "Report Date")
The Applicant:	means Limerick City & County Council in partnership with Limerick Twenty Thirty DAC (hereinafter referred to as the "Applicant")
The Development:	means the proposed development on the site known locally as 'Cleeves Riverside Quarter' situated on the northern side of the River Shannon, Limerick City and occupies the area between; Stonetown Terrace Road to the northeast; O'Callaghan Strand to the southeast; Condell Road (R527) to the southwest; and, Salesian Primary School and the 'Fernhill' residential estate to the northwest and west respectively - all situated in the townland of Farranshone More in Limerick City. (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 Limerick City & County Council in partnership with Limerick Twenty Three DAC (the "Applicant") within its submission to An Coimisiún Pleanála (the 'Planning Body'), allows for the retention of important Telecommunication Channels ("Telecommunication Channels") such as microwave links, to satisfy both the criteria of Section 3.2 of the Building Height Guidelines (2018) and Section 3.4.2.4 of the Limerick Development Plan 2022-2028.

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 both the criteria of Section 3.2 of the Building Height Guidelines (2018) and, Section 3.4.2.4 of the Limerick Development Plan 2022-2028.

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 6 main areas in the delivery of telecommunication services:

- (1) Telecommunication Asset Management Cellular and Fixed Line Fibre Optic.
- (2) Telecommunication Contract and Licensing.
- (3) Radio Frequency technology.
- (4) Microwave Transmission technology.
- (5) In-building distributed antenna systems.
- (6) Fixed Line fibre 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 10 in-building distributed antenna systems, and 2 large managed fibre optic networks.



DEVELOPMENT DESCRIPTION

The proposed development comprises Phase II, of an overall Masterplan with four phases of development proposed. Phase II will commence subsequent to ongoing emergency stabilisation and repair of the Flaxmill protected structure (Phase I). Phase III is intended to comprise an educational campus, inclusive of the adaptive reuse of the Flaxmill Building as part of that development and will be subject to a future separate application. Phase IV comprising the Shipyard site will be the final phase of development.

Two structures within the site are designated protected structures; the Flaxmill Building (PS Ref no.264 & NIAH No. 21512053) and the octagonal brick chimney (PS Ref no.265 & NIAH No. 21512059), which are to be retained.

The proposed development includes:

- A. Demolition of a number of structures to facilitate development including (i) Salesians Secondary School and Fernbank House; (ii) 2 no. houses on North Circular Road; (iii) Residual piers from the basin of the reservoir; (iv) Upper Reservoir on Stonetown Terrace comprising 2 no. concrete water tanks, pump house and liquid storage tank; (v) 1960's lean-to building structures adjoining the Cold Store (former Weaving Mill); (vi) remaining fabric of c20th rear lean-to of the Flaxmill Building; (vii) c.1960s office building adjoining the Packing Store and Cheese Plant on North Circular Road; (viii) Cluster of buildings including altered part of the Linen Store, the former Linen Store, Storage Building, and Office/Lab building at O'Callaghan Strand / Stonetown Terrace with partial retention of existing stone wall; (ix) warehouse on the Shipyard site; and (x) partial removal of stone boundary wall defining the Cleaves site adjoining O'Callaghan Strand / Stonetown Terrace and around the Shipyard site.
- B Construction and phased delivery of:
 - I. Residential Development in 4 development 'zones' within the site ranging in height from 3 – 7 storeys (with screened service plant at roof level) comprising; (a) 234 no. residential units; (b) 270 no. student bedspaces with ancillary resident services at ground floor level; (c) 299sqm of commercial floorspace; and (d) a creche. The specific development details of each proposed development zone comprise the following:



- Salesians Zone – 1 no. building with 2 no. blocks extending to 6 and 7 storeys comprising 146 no. apartments (76 no. 1 bed; and 70 no. 2 bed); a creche; semi basement car and bicycle parking; reception area, plant rooms, and refuse storage, with screened external plant and photovoltaic panels at roof level; 20 no. 3 storey 3 bed triplex units with photovoltaic panels at roof level; and 30 no. car parking spaces for the dedicated use of the adjoining Salesians Primary School.
 - Quarry Zone – 1 no. Purpose Built Student Accommodation (PBSA) building with 3 no. blocks extending to 6 and 7 storeys comprising 270 no. bedspaces with study rooms, shared areas, exercise room, reception area, plant rooms, refuse storage and bicycle parking all at ground floor level and screened external plant and photovoltaic panels at roof level. Provision is made for telecommunication antennae on the roof top of one block. Consent is also sought for use of the PBSA accommodation, outside of student term time, for short-term letting purposes.
 - Stonetown Terrace Zone – 1 no. building extending to 4 - 5 storeys comprising 38 no. apartments (6 no. studios; 12 no. 1 beds; and 20 no. 2 beds) with plant rooms and refuse storage at ground level, ancillary infrastructure at basement level at northern end of the block, with screened external plant and photovoltaic panels at roof level; 9 no. 3 storey 3 bed townhouses with photovoltaic panels at roof level; and a dedicated secure bicycle storage facility.
 - O'Callaghan Strand Zone – 1 no. building extending to 4 / 5 storeys comprising 21 no. apartments (9 no. 1 bed and 12 no. 2 bed) with an open roof structure accommodating communal open space, plant and photovoltaic panels; and 299qm of commercial ground floorspace intended to accommodate Class 1, Class 2 and / or Class 3 uses, with provision for car parking in the undercroft.
- II. Dedicated mobility hub with canopy and photovoltaic panels including double stacker bicycle parking; and EV Charging spaces, within the Shipyard Zone. A dedicated pedestrian/cycle link connects North Circular Road with Condell Road. The remaining area of the zone shall accommodate temporary car parking and a temporary external event space to be used on a periodic basis as the need arises, pending future redevelopment proposals as detailed in the Masterplan (Stage IV).

- III. Extensive provision of Public Realm including creation of the Reservoir/Quarry Park, the Flaxmill Square and the Riverside Corridor. Significant areas of civic and green spaces are provided, incorporating formal and informal play space; nature based SuDs, permeability and access; and a riverside canopy with photovoltaic panels functioning as an outdoor event space and incorporating heritage interpretative panels
- IV. 3 no. dedicated bat houses;
- V. Telecommunication antennae on roof of Block 2A of the PBSA, including (a) 9 no. Support poles to support 2 no. antennae each; (b) 6 no. microwave dishes affixed to the plant screen; and (c) associated telecommunications equipment and cabinets (effectively screened). To facilitate technologically acceptable locations at the time of delivery, a micro-siting allowance of 3m is proposed on the roof top of Block 2A of the PBSA for the infrastructure.
- VI. Provision of vehicular access/egress points including (a) utilisation of existing access points to the Salesians Zone, to the Flaxmill and Quarry Zones and to the Mobility Hub on the Shipyard Site Zone; (ii) reopening an existing (currently blocked) access point off O'Callaghan Strand; (iii) new access points to the proposed undercroft carparking at Salesians from the North Circular Road and at the end of Stonetown Terrace road which provides access to the Stonetown Terrace Zone; and (iv) emergency access only from Stonetown Terrace to the Flaxmill Zone;
- VII. Provision of 30 no. dedicated car parking spaces to serve the Salesians Primary School; and
- VIII. All ancillary site development works including (a) water services, foul and surface water drainage and associated connections across the site and serving each development zone; (b) attenuation proposals; (c) raising the level of North Circular Road between Fernhill and O'Callaghan Strand; (d) refuse collection store (e) car and bicycle parking to serve the development; (f) public lighting; (g) all landscaping works; and (h) temporary construction measures including (i) construction access to the Quarry site including provision of a temporary access across the reservoir; and (ii) temporary use of onsite mobile crusher.

SITE LOCATION/LAYOUT MAP

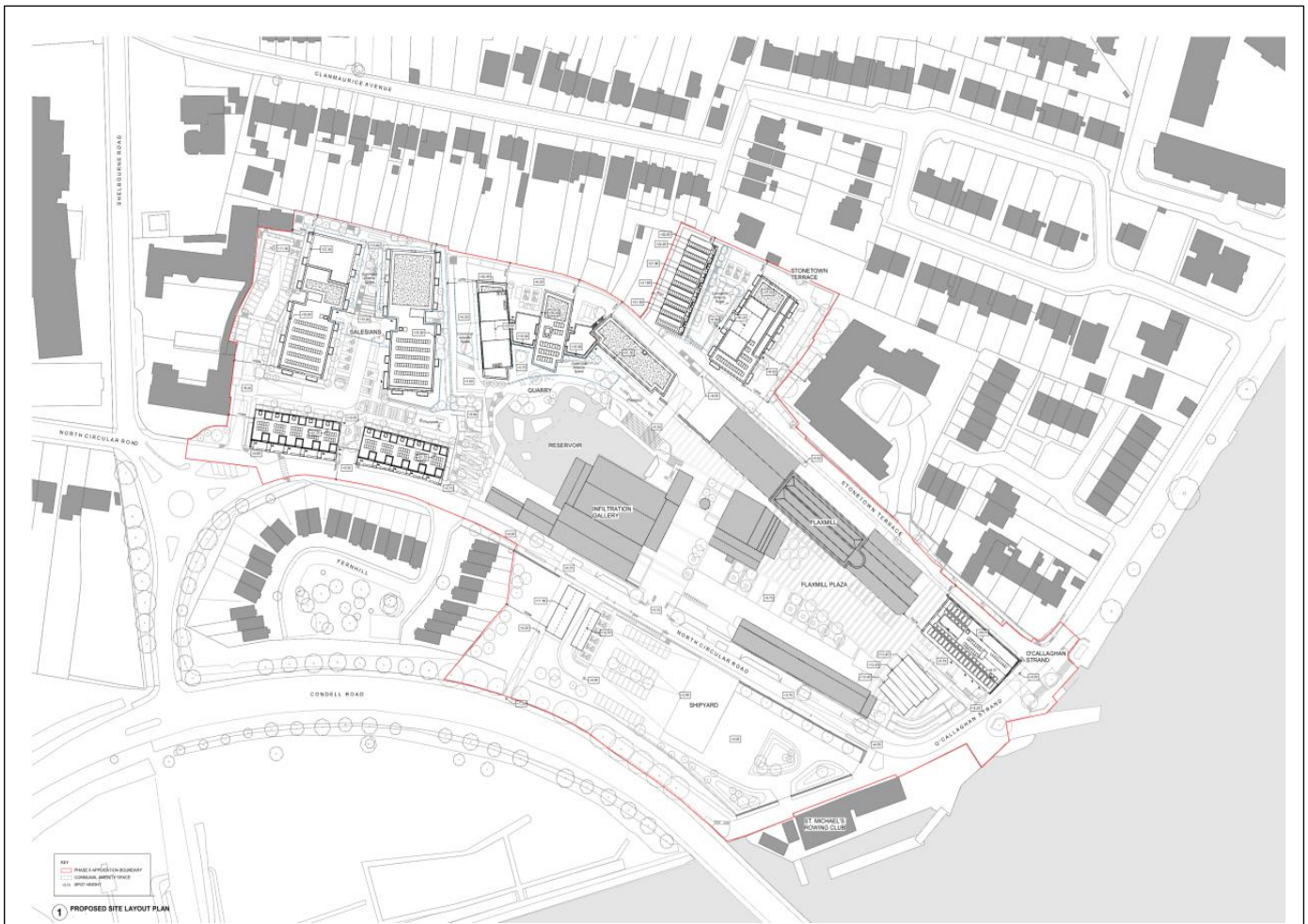


Figure 1

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.

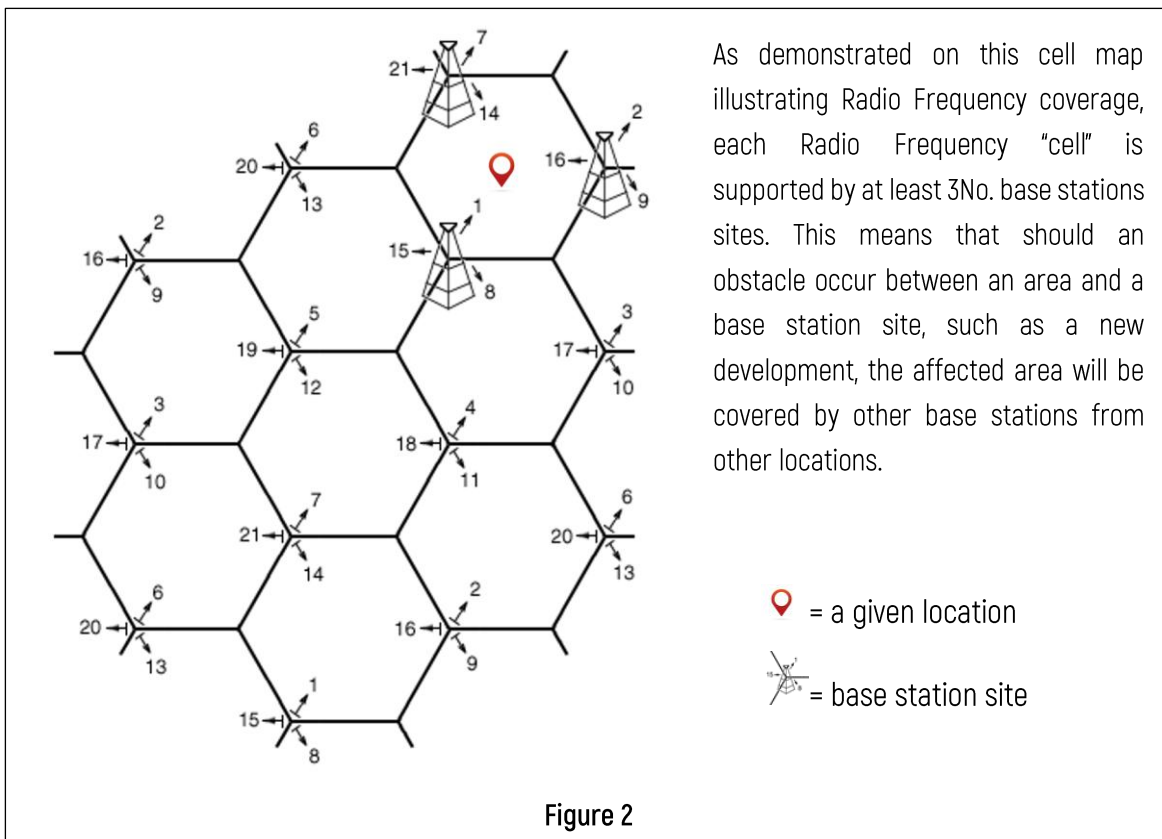
Radio Frequency links & Microwave Transmission Links are used in Ireland's mobile phone and fixed wireless networks and disseminate at an average above ground level height of 20m, making them the most relevant Telecommunication Channels to be assessed in relation to the height and scale of a new development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

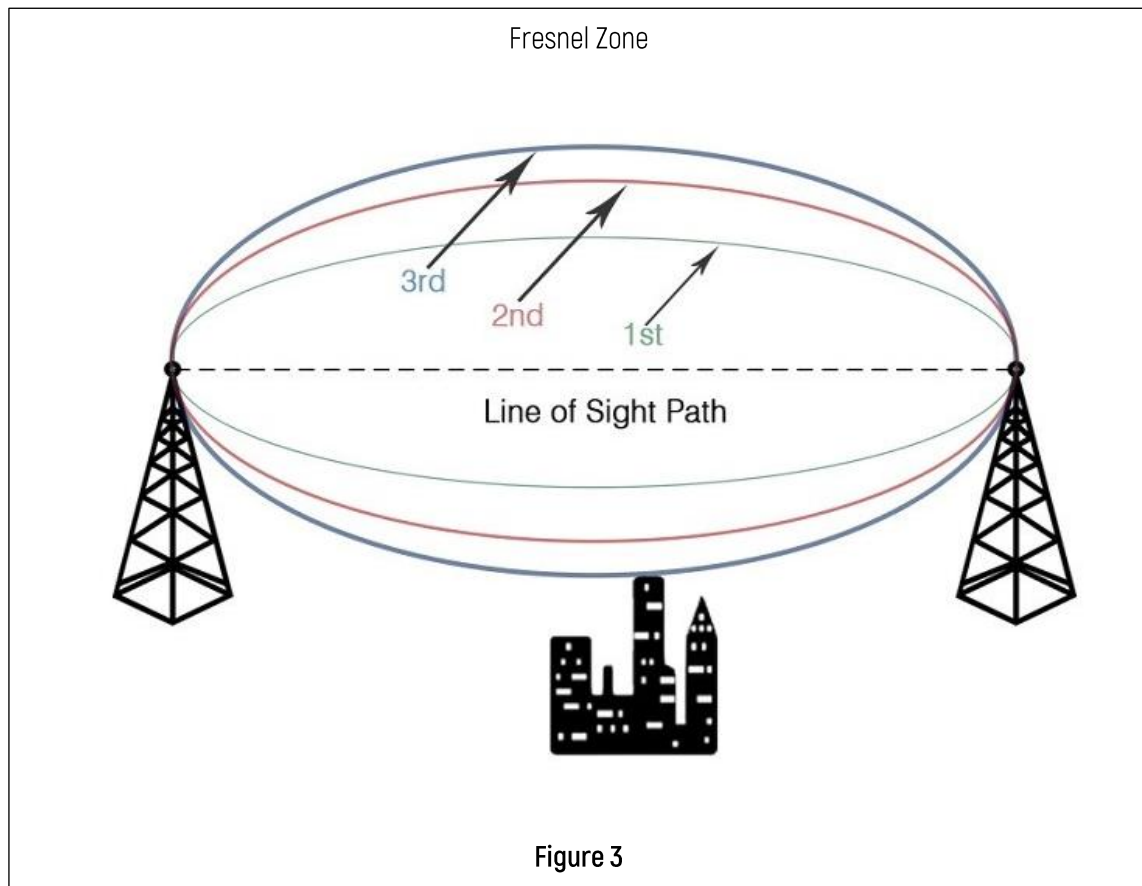




Cellular networks offer a number of desirable features, but most notably, additional cell towers can be added indefinitely and are not limited by the horizon, therefore it can be considered **indeterminable** as to whether a new development affects the Radio Frequency coverage of a geographical area 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 did not identify 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 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 drive test throughout the surrounding areas to ascertain what cells were serving the residential neighbourhoods and business districts to the north, south, east & west of the Development site. Refer to Figure 7 of the appendices for full analysis.

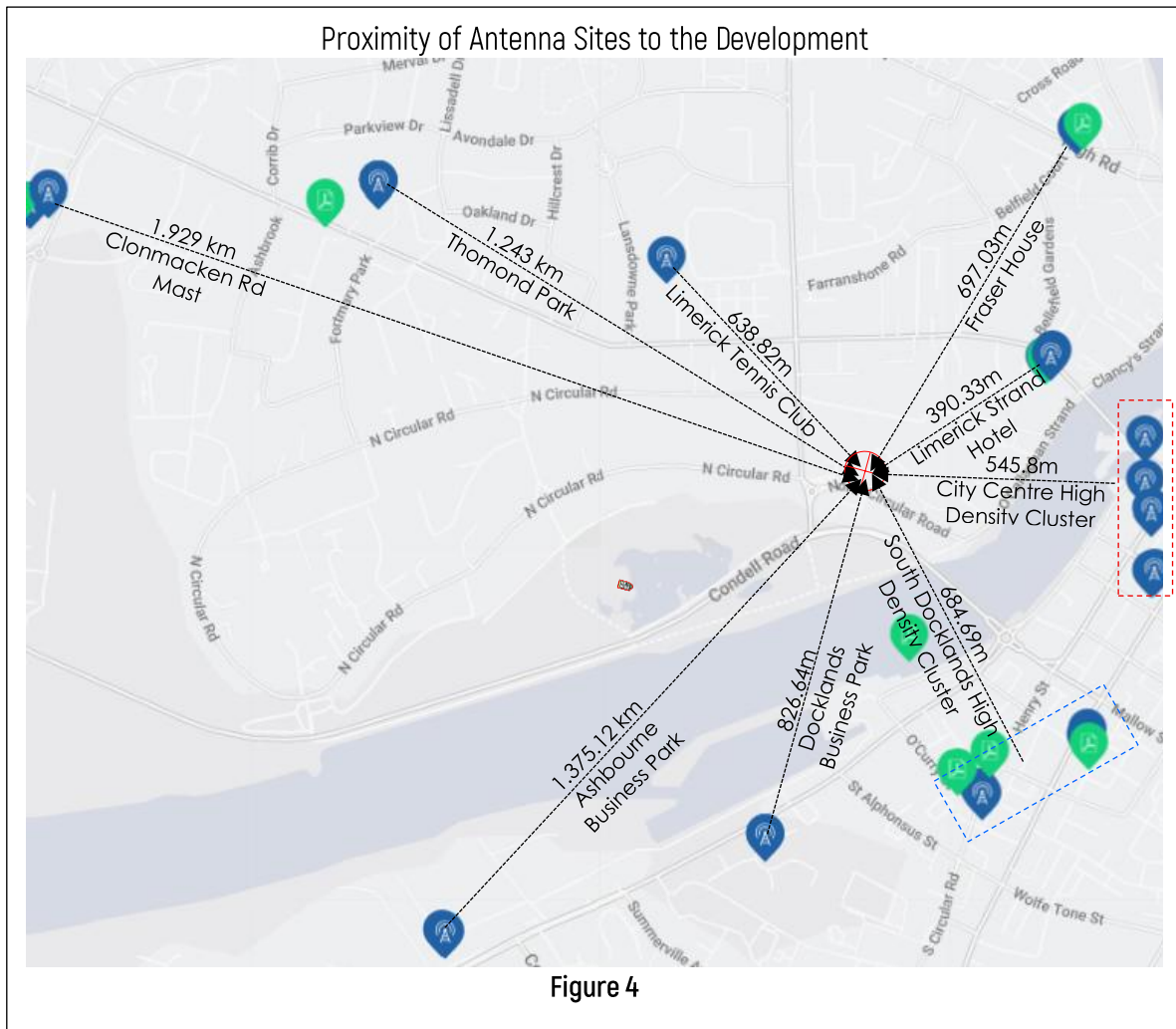
Our assessment identified Radio Frequency coverage for the local geographic area is served by a **lack of multi operator cells** in a suitable proximity to the Development, that would be adequate to support the proposed level of occupation. Currently, there are cells at a range of distances to the Development, which are not considered a cell pattern sufficient to provide coverage for a population density intended to exceed more than 1,500 occupants living working and residing. The drive test data determined that most of the local businesses (medical or otherwise), residential, and the public road and amenity areas to the west of the development site receive below optimal signal from the Radio Frequency links emanating from telecommunication antenna sites located up to 1.929km from the development site to the west by northwest 1.375km to the south by the southwest, up to 697m to the east by north east, and 548.8m to the east of

the development site. The antenna sites within the City Centre High Density cluster to the east of the development site should be considered 'area specific' and are likely to be at operating at or close to capacity, supporting the population footfall within the immediate local area they serve. These antennas sites are not designed to provide coverage beyond a 500m radius, especially on the high frequency bands used for LTE and 5G. This can equally be said for the other cell sites located in their current positions. These locations/positions are selected to support and provide coverage for the population, footfall and vehicular traffic within the immediate local area they are serving. It should also be noted that several of the sites identified herein are not multi-operator. We identified that 2 of the 3 closest sites to the Development on the northside of the river are only single operator, placing the burden over covering over 2 Km² on just 2 multi-operator sites, The Limerick Strand Hotel and a site much further away, Thomond Park which is 1.243km from the Development. Therefore, it's easy to conclude that by adding the Development into the existing radio environment, with its proposed/intend occupation levels that that the cells for these surrounding/neighboring antenna sites would shrink dramatically, leaving large pockets including but not limited to the Development itself devoid of cellular coverage.

By way of comparison, a typical cell pattern for urban Radio Frequency coverage, has antenna sites at distances from each other ranging from 250 to 500 metres depending on the population density. The technological prerequisite is to apply mobile cellular sites (1 per Mobile Network Operator) on a ratio of 1 site per 2,000 people. Combine this with the movement from low frequency (2G/3G) to higher frequencies bands (4G/5G) with the added obstacles of modern, energy saving building trends, such as insulation and triple glazing, the internal penetration of mobile signal has become significantly challenging, resulting in a potential requirement for 1 mobile cellular site per 2,000 head of population.

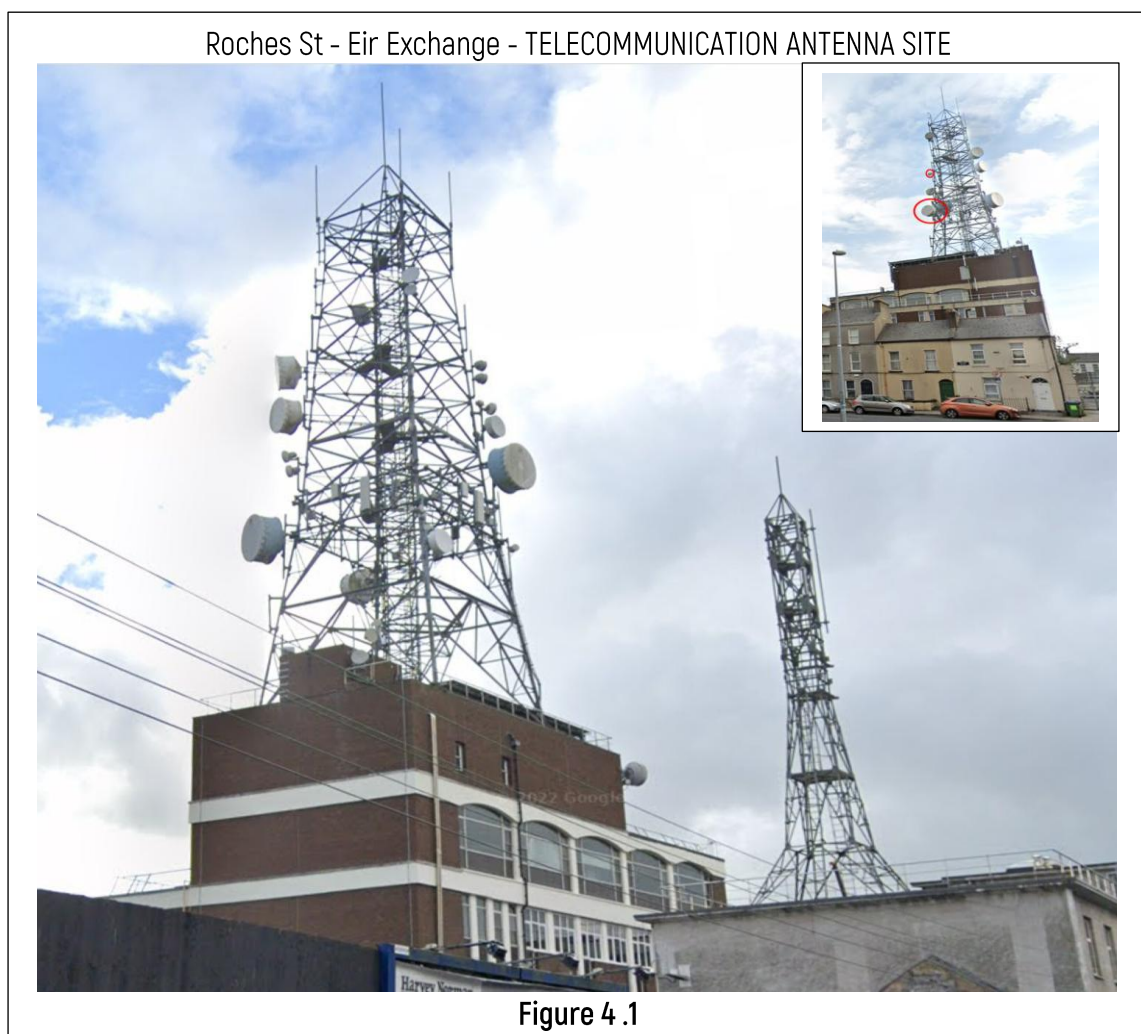
Our assessment recorded an average indoor coverage, at the current population levels, signal levels of -99db to 105-db for Three and Eir mobile networks and $\geq$ 115db for Vodafone, in buildings and outdoor locations on and along the North Circular Road. With -85db being the benchmark optimal coverage signal, anything over -100db is considered sub-optimal. Being that population density is a huge factor related to signal level and quality, it is our view that existing limited mobile signal conditions will become weaker and will be significantly impacted as the area is

continuously developed. This report also is not factoring in other permitted (or to be permitted) yet undeveloped schemes in the local area, however the author is aware and has reported on a permitted (or to be permitted) yet undeveloped scheme along Dock Road, south by southwest of the Development, which would exacerbate the signal power and quality even further if development in the same cycle as the subject development of this report.



Data collected¹ from recent projects of similar scale and density in areas urban and suburban to Dublin, that have completed and reached occupational status within the last 5 years shows a significant lack of coverage, particularly indoor or internal coverage, due to the deterioration of existing cells which significantly contracted as population density increased. This can even be said of locations whereby mast sites are situated 500 - 800m away. In these areas, data overwhelmingly demonstrates that the ability to make a voice call to emergency services from an internal location within the given development (we tested) is extremely limited if not non-existence.

Lastly, it is important to note that the Development is in reasonably close proximity to a telecommunication mast site (Refer to Figure 4.1), which is home to a significantly high concentration of Telecommunications Channels, with a large concentration of Microwave links, 40% of which are >1m in diameter. It should be noted that, as these Microwave Transmission Link dishes are above the average diameter of 300m, and have significantly larger Fresnel zones. Our survey did not find any Telecommunication Channels that would be impacted by the Development, noting that the height and site elevations of the Development appear outside the path of the Telecommunication Channels currently emanating from this telecommunication antenna site.



It is therefore our finding that the local area is currently underserved by telecommunication channels (mobile phone signal/voice & data services) and any increase in the population density residing in the area resulting from the proposed development will create a significant strain on existing capacity and cell size, which becomes smaller the greater number of people using or accessing it for voice and data services. We believe the findings herein support a technical justification for a new telecom site to be included in the Development strategy, thus providing for the retention of important Telecommunication Channels (Mitigation Measures).

We have set out the impact to the area within Figure 8.

MITIGATION MEASURES

To provide an adequate allowance to support the density and scale of the Development with the appropriate level of telecommunication channels (mobile phone signal /voice & data services), the Applicant is seeking planning permission to install the following:

- 9No. support poles, affixed to the plant screen on the northern most PBSA building rising 5 metres above parapet level. These support poles are sufficient to each accommodate 1No. 2m 2G/3G/4G antenna & 1No. 5G antenna each.
- 6No Ø0.3m Microwave links mounted on standoff brackets affixed to the plant screen's vertical I-beams, at 3No. locations (2No. Microwave links at each location) rising 3.5 metres above roof level.
- Together with all associated telecommunications equipment and cabinets (located within the plant screen); &
- To reduce the visual impact of the infrastructure, the antennae and microwave link dishes will be painted to match the plant screen.

This will provide an adequate solution for the Applicant to mitigate the impact the Development will have on the existing poor mobile phone signal in the area and provide both the occupants of the Development and the local area with adequate voice and data services to meet modern demands.

The proposed development of telecommunication infrastructure involves the micro-siting of telecommunication antenna by approximately 3 meters on the rooftop of Block 2a of the PBSA. The adjustment is intended to optimize signal coverage and network performance without altering the overall design or height of the installation. Preconstruction consultation with the Mobile Network Operators will determine the most technologically acceptable locations of the proposed antennae and dishes within the allocated micro-siting distance.

Please refer to Figure 9 of the appendices for full analysis and installation parameters for all the proposed new telecommunication infrastructure set out herein.



ISM can therefore conclude that the proposal being made by the Applicant within its submission to An Coimisiún Pleanála allows for the retention of important Telecommunication Channels, such as Microwave links, to satisfy both the criteria of Section 3.2 of the Building Height Guidelines (2018) and Section 3.4.2.4 of the Limerick Development Plan 2022-2028.

DISCLAIMER

Due to the confidential nature of planning applications/submissions, ISM does not, as standard practice, contact or involve Ireland's licenced Mobile Network Operators, namely: Vodafone Ireland; Three Ireland; or Eircom Limited t/a Eir Mobile, when preparing this report. If contact is made with a Mobile Network Operator, we duly note the source information within our reports.

ISM has wholly relied upon the publicly available information provided by Commission for Communications Regulation, "ComReg", its own extensive record of wireless infrastructure, and the results of a comprehensive visual survey carried out on the Report Date notated herein. Therefore, the specific Mobile Network Operator transmitting the identified telecommunication channel is recorded on a best endeavour basis.

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



APPENDICES

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: Cell Impact

Figure 9: Mitigation Measures

SOURCE INFORMATION

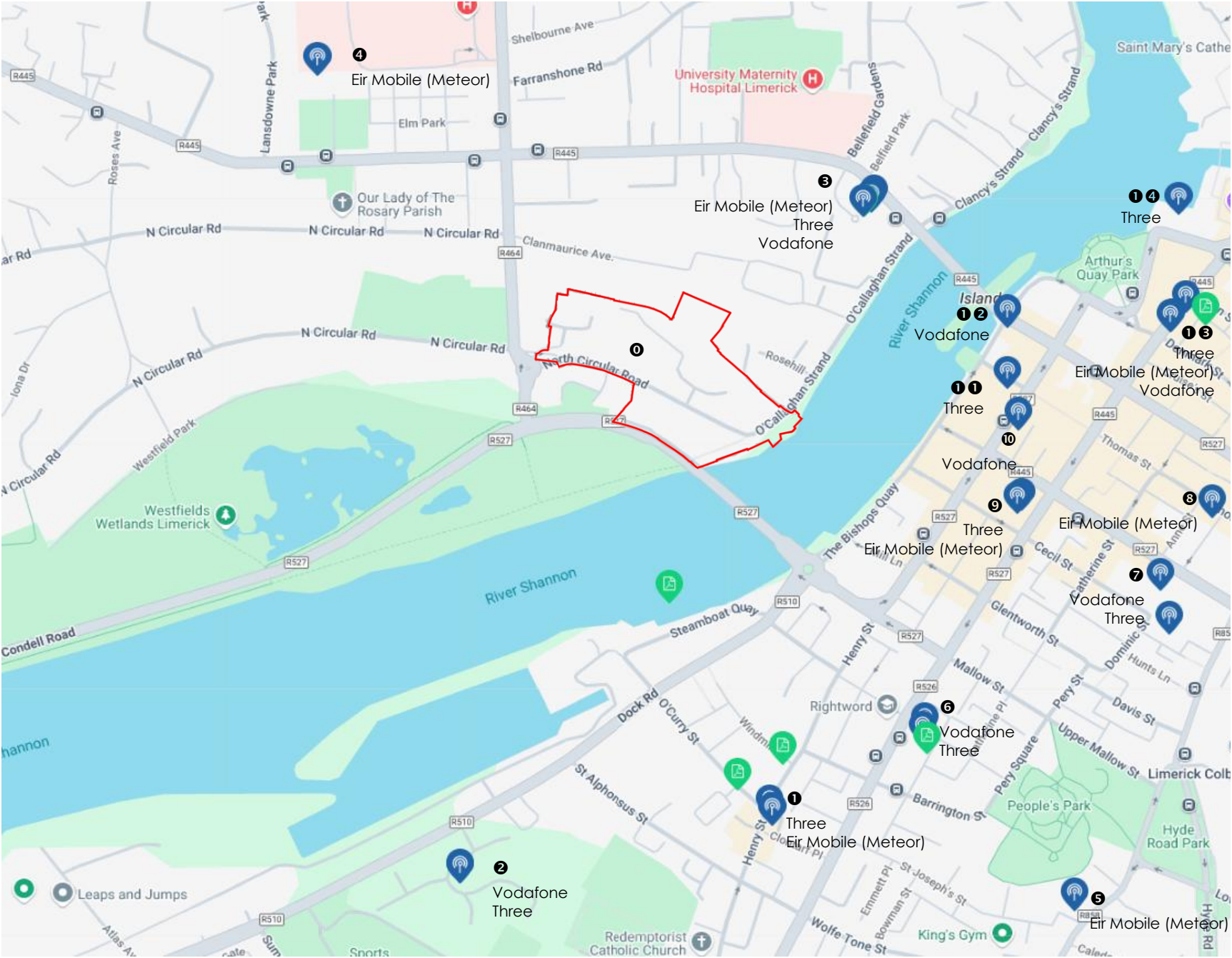
- ¹ The data reference in our findings, from recent projects of similar scale and density in areas urban and suburban to Dublin, was collected by the Author pursuant to carrying out various internal cellular signal walk tests for a large sample of residential and commercial buildings predominantly within the following urban centric local authorities: Dublin City Council; Fingal County Council; South Dublin County Council; Dun Laoghaire Rathdown County Council, and Galway City Council which govern significant proportion of population density within the state.

The data was collected using the Nextivity **COMPASS XR** Scanning receiver tool for site survey & installation and testing. The COMPASS XR scanning receiver can be used globally to deploy and verify multiple technologies, including 5G New Radio networks in sub-6 GHz spectrum, LTE, CBRS, and LMR public safety coverage.

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 Kyle House
- 2 Docklands Business Pk
- 3 Limerick Strand Hotel
- 4 Limerick Tennis Club
- 5 Parkview Apts
- 6 Crescent House
- 7 Priors Land – Exch/OPW
- 8 City Centre Car Park
- 9 AIB O’Connell St.
- 10 Savoy
- 11 Hanover Quay
- 12 Pier Hotel
- 13 19 & 27 Patrick Street
- 14 Sarsfield House

FINAL

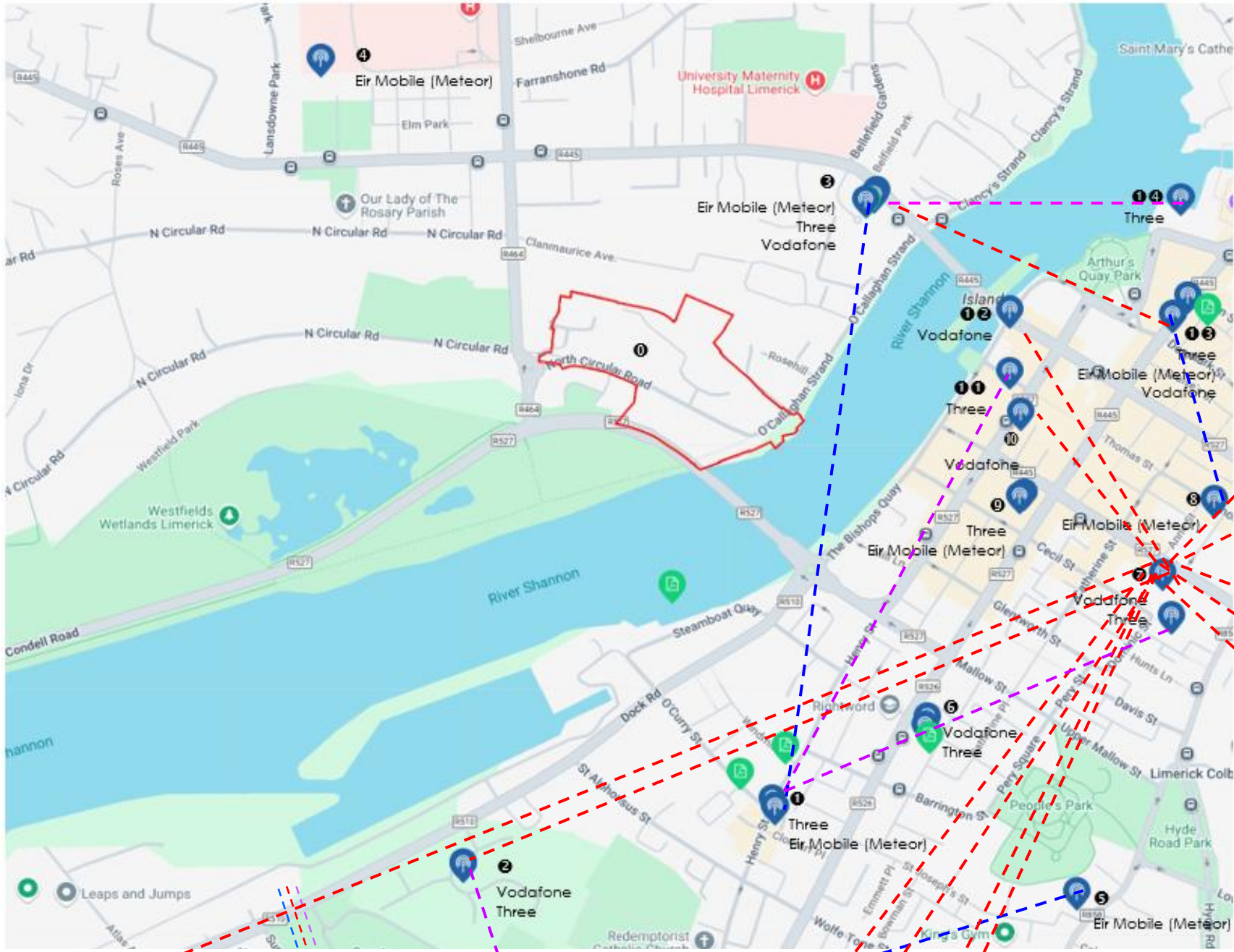
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Client
Limerick City & County Council
in partnership with Limerick
Twenty Thirty DAC
Project
Cleaves Riverside Quarter

Option	1
Report Date	18/09/25
File Name	Cleaves Riverside Quarter

Drawing:
Area Site Analysis

Building	Drawing No.	Zone	Rev
SPN	I 1525		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

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

FINAL



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Project
Cleevess Riverside Quarter

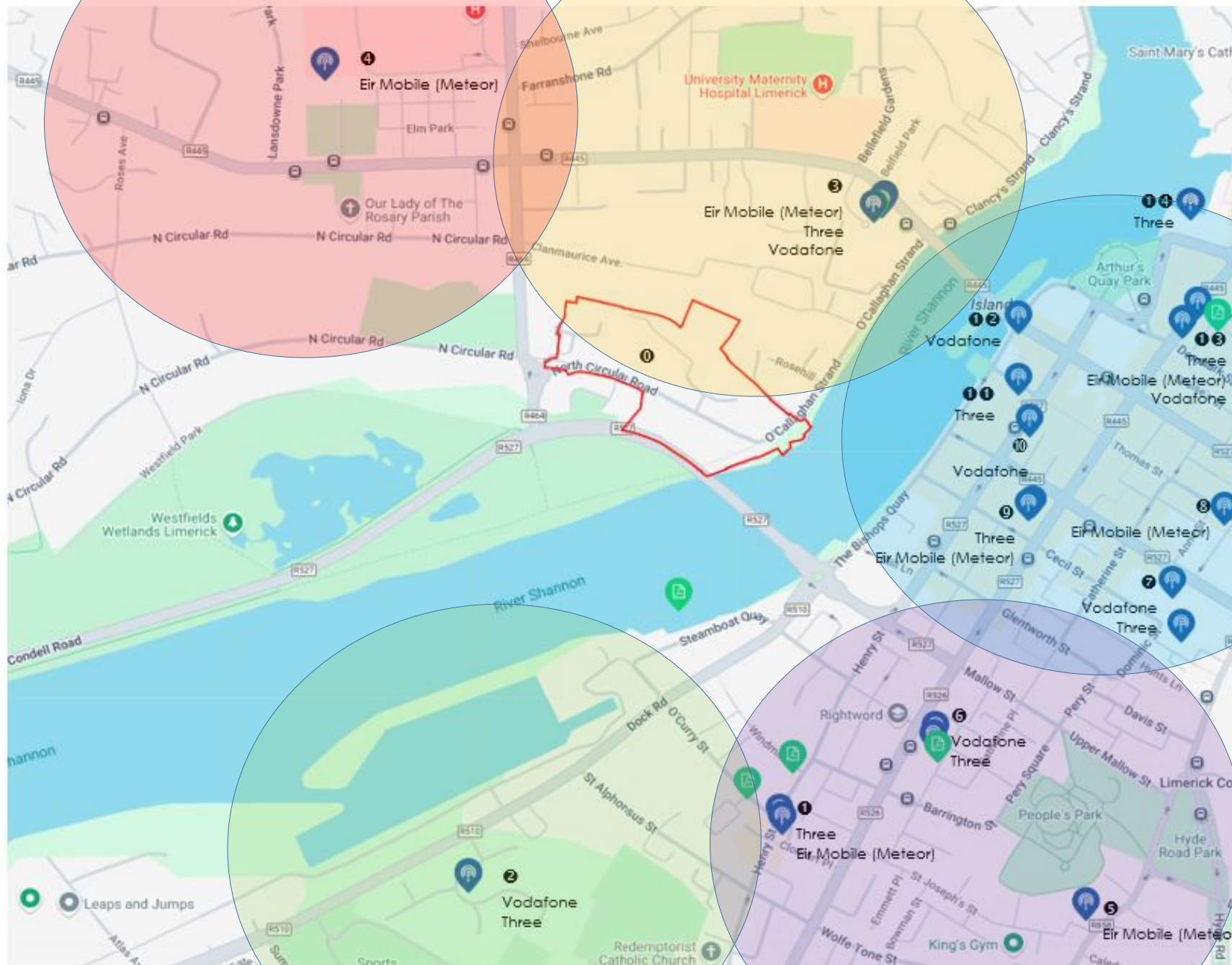
Option	1
Report Date	18/09/25
File Name	Cleevess Riverside Quarter

Drawing:			
Link Analysis			
Building	Drawing No.	Zone	Rev
SPN	I 1525		1

Figure 7

Drive 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

- ① Multiple Cell IDs
- ⑦ Priors Land – Exch/OPW
- ⑧ City Centre Car Park
- ⑨ AIB O'Connell St.
- ⑩ Savoy
- ⑪ Hanover Quay
- ⑫ Pier Hotel
- ⑬ 19 & 27 Patrick Street
- ⑭ Sarsfield House
- ⑮ Multiple Cell IDs
- ⑯ Limerick Strand Hotel
- ⑰ Multiple Cell IDs
- ⑱ Docklands Business Pk
- ⑲ Multiple Cell IDs
- ⑳ Limerick Tennis Club
- ㉑ Multiple Cell IDs
- ㉒ Kyle House
- ㉓ Parkview Apts
- ㉔ Crescent House

FINAL



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Twenty Thirty DAC

Project
Cleeves Riverside Quarter

Option	1
Report Date	18/09/25
File Name	Cleeves Riverside Quarter

Drawing:
Cell Identification Analysis

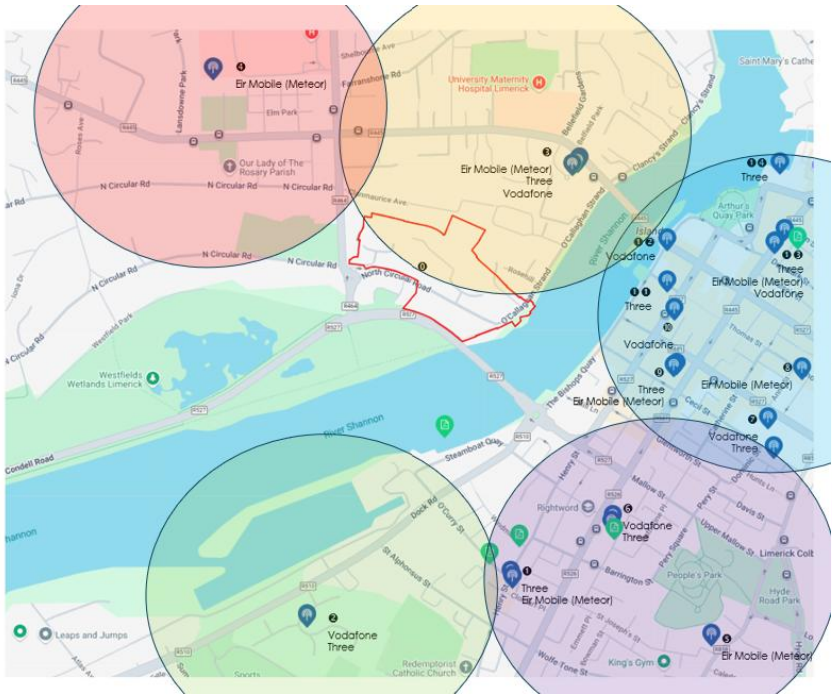
Building	Drawing No.	Zone	Rev
SPN	11525		1

Figure 8

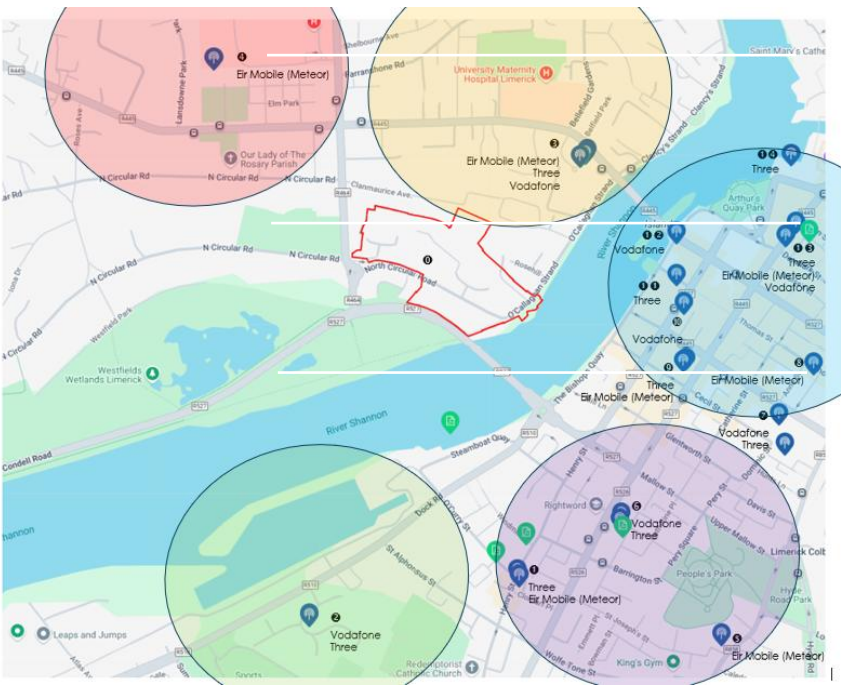
Cell Impact

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



Coverage Cells recorded August 2025



Coverage Cells Prediction POST Development

The increase in the population created by the population will cause the local area cells to shrink and areas both within the proposed development as well as areas outside the Development, will see a large reduction in coverage for voice and data services from all of Ireland's 3 mobile network providers

FINAL

ism INDEPENDENT
SITE MANAGEMENT

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in partnership with Limerick
Twenty Thirty DAC

Project
Cleaves Riverside Quarter

Option	1
Report Date	18/09/25
File Name	Cleaves Riverside Quarter

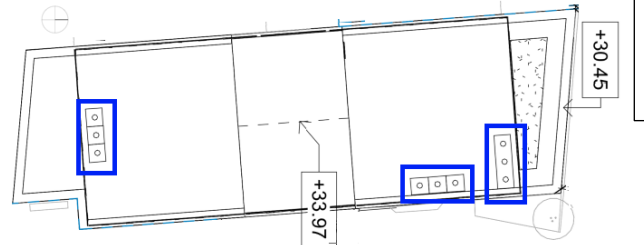
Drawing:
Mitigation Measure

Building	Drawing No.	Zone	Rev
SPN	I 1525		1

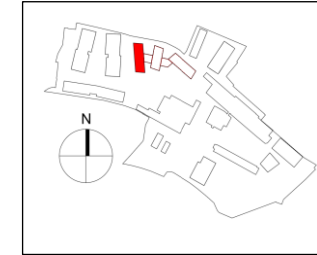
Figure 9

Mitigation Measure Design

Source: Comreg IS



Indicative locations at roof level of the Quarry PBSA for 9No. steel poles affixing 9No. 2G/3G/4G Antennas (2mL) & 9No. 5G Antennas (0.8mL) **Locations**



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

9No. support poles, affixed to the plant screen on the northern most PBSA building rising 5 metres above parapet level. These support poles are sufficient to each accommodate **1No.** 2m 2G/3G/4G antenna & **1No.** 5G antenna each.

6No. Ø0.3m Microwave links mounted on standoff brackets affixed to the plant screen's vertical I-beams, at 3No. locations (2No. Microwave links at each location) rising 3.5 metres above roof level.

Together with all associated telecommunications equipment and cabinets (located within the plant screen).

FINAL

ism INDEPENDENT
SITE MANAGEMENT

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Client
Limerick City & County Council
in partnership with Limerick
Twenty Thirty DAC

Project
Cleeves Riverside Quarter

Option	1
Report Date	18/09/25
File Name	Cleeves Riverside Quarter

Drawing:
Mitigation Measure

Building	Drawing No.	Zone	Rev
SPN	I 1525		1

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