





NOTE:
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SITE PLAN

SCALE 1:800

01	02.07.19	ISSUED FOR APPROVAL	RC	HI	MM :			
Rev	Date	Revision Details	Consultant	CAD	Designer	Verifier	Approver	



Client:	
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Project:	
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Project: MOBILE NETWORK
AUSTRALIA
SITE No:- P0945
GREENWOOD EAST
1 CANHAM WAY, GREENWOOD, WA 6024

Drawing Title:

DRAFT SITE PLAN

Drawing Status:

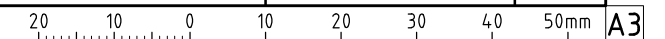
FOR APPROVAL

Drawing No.

P0945-P1

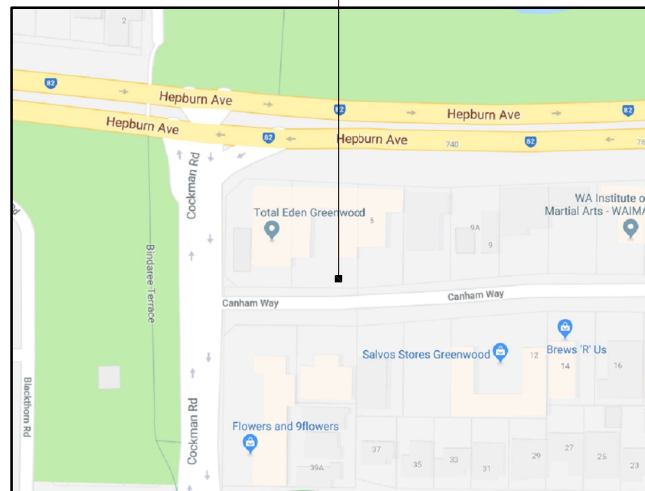
Revision

01



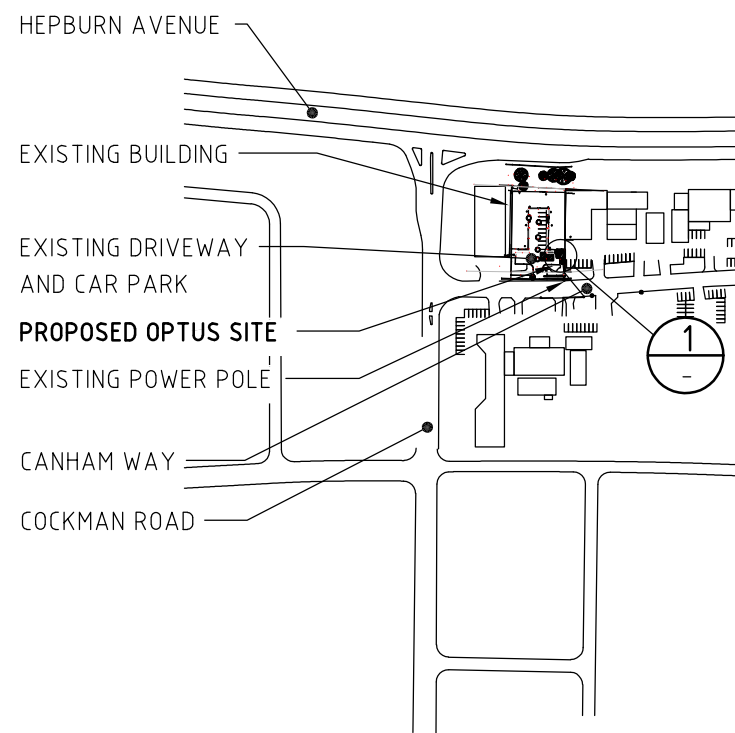


PROPOSED OPTUS BASE STATION



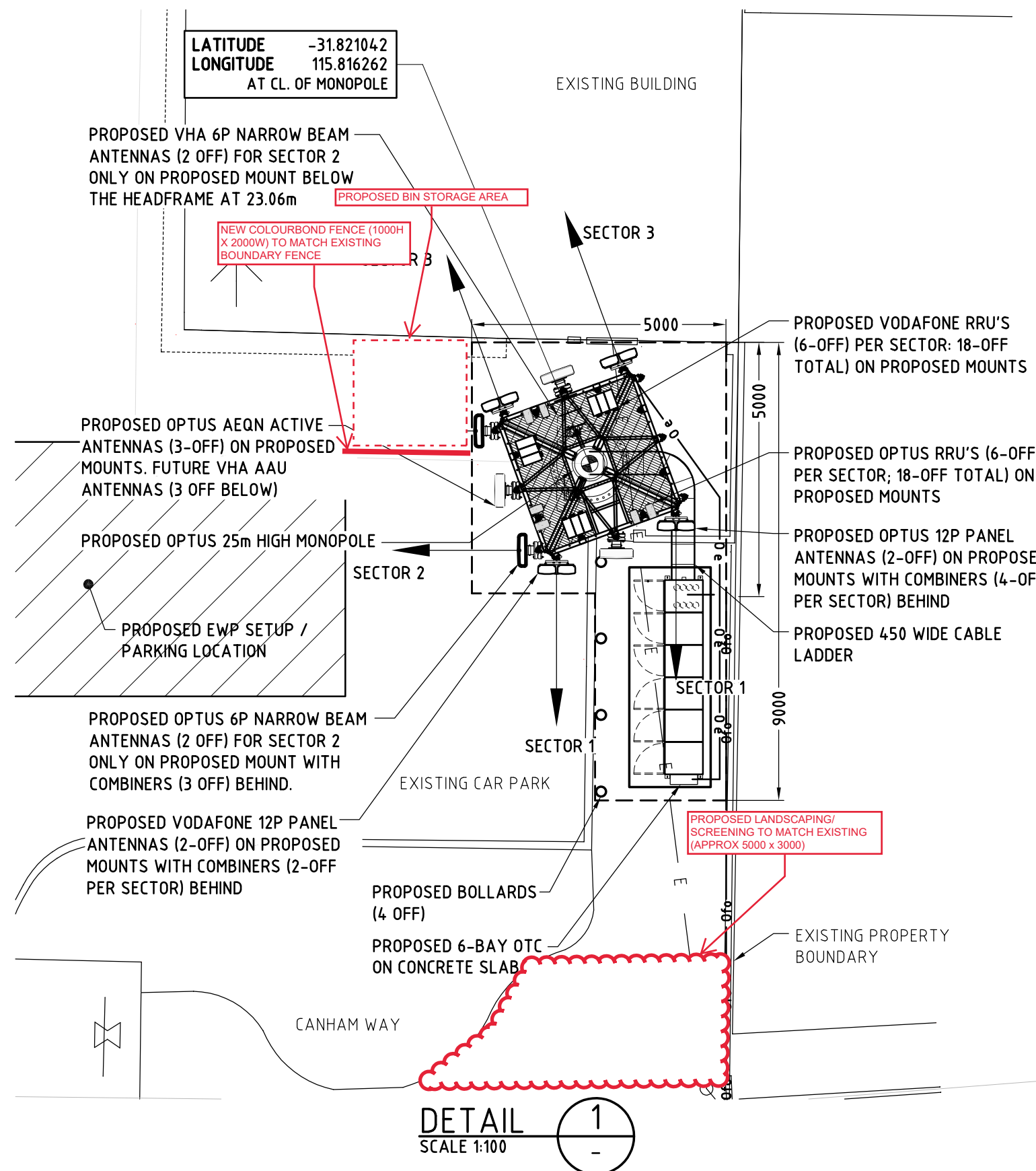
LOCALITY MAP

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OVERALL SITE PLAN

SCALE 1:5000



NOTE:
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SITE ADDRESS:

3 CANHAM WAY,
GREENWOOD, WA 6024

NOTES:

1. BASIS OF DESIGN

- > SITE INSPECTION 22/02/2019
- > OTHER INFORMATION

2. PANEL ANTENNAS

- > OPTUS: (S1 & S3) 1-OFF 12 PORT PANEL ANTENNA PER SECTOR AT 26.0m
- > OPTUS: (S2) 2-OFF 6 PORT NARROW BEAM ANTENNA PER SECTOR AT 26.0m
- > OPTUS: 1-OFF AEQN PANEL ANTENNA PER SECTOR AT 26.85m
- > VHA: (S1 & S3) 1-OFF 12 PORT PANEL ANTENNA PER SECTOR AT 26.0m
- > VHA: (S2) 12-OFF 6 PORT NARROW BEAM ANTENNA PER SECTOR AT 23.06m
- > SECTOR 1 - 180°, SECTOR 2 - 270°, SECTOR 3 - 340°
- > TO BE MOUNTED ON PROPOSED HEADFRAME, SUBJECT TO STRUCTURAL ADEQUACY OF POLE AND FOOTING

- > OPTUS AND VHA RRU's TO BE INSTALLED ON PROPOSED MOUNTS ON THE PROPOSED HEADFRAME

3. TRANSMISSION

- > TO BE LINK VIA PROPOSED OPTUS U/G FIBRE ROUTE

4. EQUIPMENT SHELTER

- > PROPOSED OPTUS 6-BAY OTC ON CONCRETE SLAB

5. OPTUS MONOPOLE

- > PROPOSED 25m HIGH MONOPOLE WITH MODULAR HEADFRAME AT 26.0m (NON-TRAFFICABLE)

6. FEEDER CABLES

- > FIBRE TRUNK CABLES FOR ALL SECTORS (6 off 9/18 H & S) IN PROPOSED OPTUS CABLE LADDER AND INTERNALLY WITHIN THE MONOPOLE
- > LENGTH: 35m FOR ALL SECTORS

7. SITE ACCESS

- > VIA CARPARK OFF COCKMAN ROAD

8. ANTENNA ACCESS

- > VIA EWP

9. POWER SUPPLY

- > FROM PROPOSED OPTUS METER PANEL TO BE INSTALLED IN BUILDING'S ELECTRICAL SWITCH ROOM
- > DETAILS TO BE CONFIRMED

Rev	Date	Revision Details	RC	HI	MM	Consultant	CAD	Designer	Verifier	Approver
01	02.07.19	ISSUED FOR APPROVAL								



Client:

Project:

MOBILE NETWORK
AUSTRALIA
SITE No:- P0945
GREENWOOD EAST

3 CANHAM WAY, GREENWOOD, WA 6024

Drawing Title:

DRAFT SITE LAYOUT

Drawing Status:

FOR APPROVAL

Drawing No.

P0945-P2

Revision

01



Before



After

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Rev.	Date	Created	Revision Description					

PROPOSED
OPTUS FACILITY



Before



After

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								Site Number. : P0945		Photographer :
Rev.	Date	Created	Revision Description						Drawing title Photomontage View 2	Drawing No. : M02

PROPOSED OPTUS FACILITY



Before



After

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Rev.	Date	Created	Revision Description					

PROPOSED
OPTUS FACILITY



Before



After

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								Site Number. : P0945		Photographer :
Rev.	Date	Created	Revision Description							Drawing title Photomontage View 4

	PROPOSED OPTUS FACILITY
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Before



After

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Rev.	Date	Created	Revision Description		<p>Drawing title Photomontage View 5</p>	<p>Site Number. : P0945</p>	<p>Photographer :</p>	<p>Date : 08.07.19</p>
					<p>Drawing No. : M05</p>	<p>Checker :</p>	<p>REV. A</p>	



Nathan Clinen
Nokia

25 March 2019
81107/11572310/1
Doc. Pages 1 + attachments

Greenwood (WA) - Structural Analysis
Optus: Greenwood P0153

Nathan,

I refer to your e-mail request of 8-Nov-2018 with accompanying redline mark-ups drawing regarding the structural consultation of the tower structure at the Greenwood site in WA.

GENERAL

The requirement is to assess the structural adequacy of the existing 44.5m steel tower structure to support the existing loading conditions.

SUMMARY

The tower structure has been assessed and is considered to be structurally **overstressed** for the existing loading conditions. Please refer to the attached structural report for loading conditions considered in the assessment and further recommendations.

Should you require further information, clarification or wish to discuss any aspect of this report, please call on (02) 9495 1021.

Regards,

Irene Dongol

Structel

Attach.
Structural Reports – Greenwood (WA)

Approved:

Todd Lankford
CPEng, MIEAust, NER, RPEQ, EC
4049717 (NER)

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REPORT ON EXISTING ANTENNA SUPPORT STRUCTURE 44.5m STEEL TOWER, GREENWOOD, WA

BRIEF




The proposal is to assess the structural adequacy of the existing Greenwood tower structure to accommodate the existing antenna loadings.

ASSESSMENT

The design criteria used is as follows:

Structure Site	: Greenwood (WA)
Site Address	: 6 Canham Way, Greenwood, WA 6024
Geographic Co-ordinates	: 31.82150 S, 115.81649 E (GDA94)
Structure Height	: 44.5m (AGL - nominal)
Basic Wind Speed	: 50m/s (Vu)
Serviceability Wind Speed	: 27m/s (Vs)
Topographic Multiplier	: 1.0
Wind Direction Multiplier	: 1.0 (Varies)
Terrain Category	: 2.9 (Varies)
Region	: A1
Structure Classification	: Type II
Design Loads	: Dead & Wind Loads on tower, antennas, feeders and mounting steelwork
Design Standards	: AS/NZS1170.2-2011, AS4100-1998, AS3600-2009, AS/NZS1170.0- 2002, AS 3995-1994

ANTENNAS INCLUDED IN ANALYSIS

R.L. (m)	Antenna	Bearing (Degrees)	Carrier/ Service	Feeder/s
41.72	3 x PRISM STATION 5AC + 3 x PRISM AP-5-60	190, 240, 270	-	-
40.72	1 x AIRFIBRE 600mm Dish	190	-	-
40.24	2 x AIRMAX AM-5AC21-60	45, 285	-	-
38.82	1 x AIRMAX AM-5AC21-60	165	-	-
38.32	2 x AIRMAX AM-5AC22-45	30, 270	-	-
29.37	1 x ARGUS R2V4PX310R 	270	Optus	6 x LCF78-50 (Assume)
23.87	1 x NOKIA FlexiHopper 300mm Dish  	0	Optus	-

Legend:

Antenna Is Also Fitted With ODU



Optus Proposed Removed – Tower assessed with and without this equipment

SUMMARY OF RESULTS OF STRUCTURAL ANALYSIS

- The existing antenna support structure is a free-standing steel lattice tower, nominally 44.5m in height (AGL). The tower consists of 5 x fully welded modules (bolted to each other). The original tower has been painted but it does not appear that it was galvanised.
- The tower legs were previously strengthened. The tower structure was assessed using information gathered from a Structel site audit completed on 19/02/2019.
- The existing antenna loading arrangements are as listed above. This list has been compiled from historical records held by Structel, the current proposal(s), Structel audit drawings and photos.
- Maximum loading levels (global) under current proposal:

	Strengthened Leg	Bracing
Existing	Up to 150%	Adequate
Optus proposed remove	Up to 140%	Adequate

Please note that the above loading levels assume the structure is in good condition and may be global results and may or may not include some local loading effects due to ancillary loads – which have been included in the analysis when known. Consideration of local loading effects can significantly alter the above values.

- The tower structure has been assessed and is deemed to be structurally **overstressed** to support the existing antenna arrangement.

- The above comments relating to the state of the structure are those uniquely determined by Structel for this assessment only, and shall not be used by any other design authority as a basis for ongoing certifications, assessments or comparisons for this or other sites.
- The above-grade portions of the foundation strengthening were measured during the tower audit and the geotechnical information has been provided. However, Structel are unable to certify the adequacy of the foundation as the details of the original foundation (below grade) were not provided and are not known to Structel.

RECOMMENDATIONS

- It appears from our tower audit that in general the corrosion is still mostly superficial, with the exception of some of the bracing members near the top of the structure which may need some rectification works. However, this corrosion is only going to continue to worsen unless the surface corrosion is fully remediated which would be a significant undertaking. Furthermore, there are some concerns about the quality of the welds and level of corrosion on the welds especially at the top of the tower.
- We believe the existing leg strengthening is only providing lateral resistance to brace the legs from buckling and are not actually sharing the axial load with the legs. This is due to the nature and quantity of the connections between the legs and the leg strengthening. With this, we are finding the tower legs to be stressed up to 150%. The leg strengthening could be revised or swapped to facilitate the sharing of axial load but again this would be a significant undertaking.
- Based on the above findings we will not be able to certify the tower at this stage. Furthermore, we believe the cost associated with mitigating the corrosion and strengthening the tower legs may exceed the costs related to replacing the structure.

Regards,



Irene Dongol

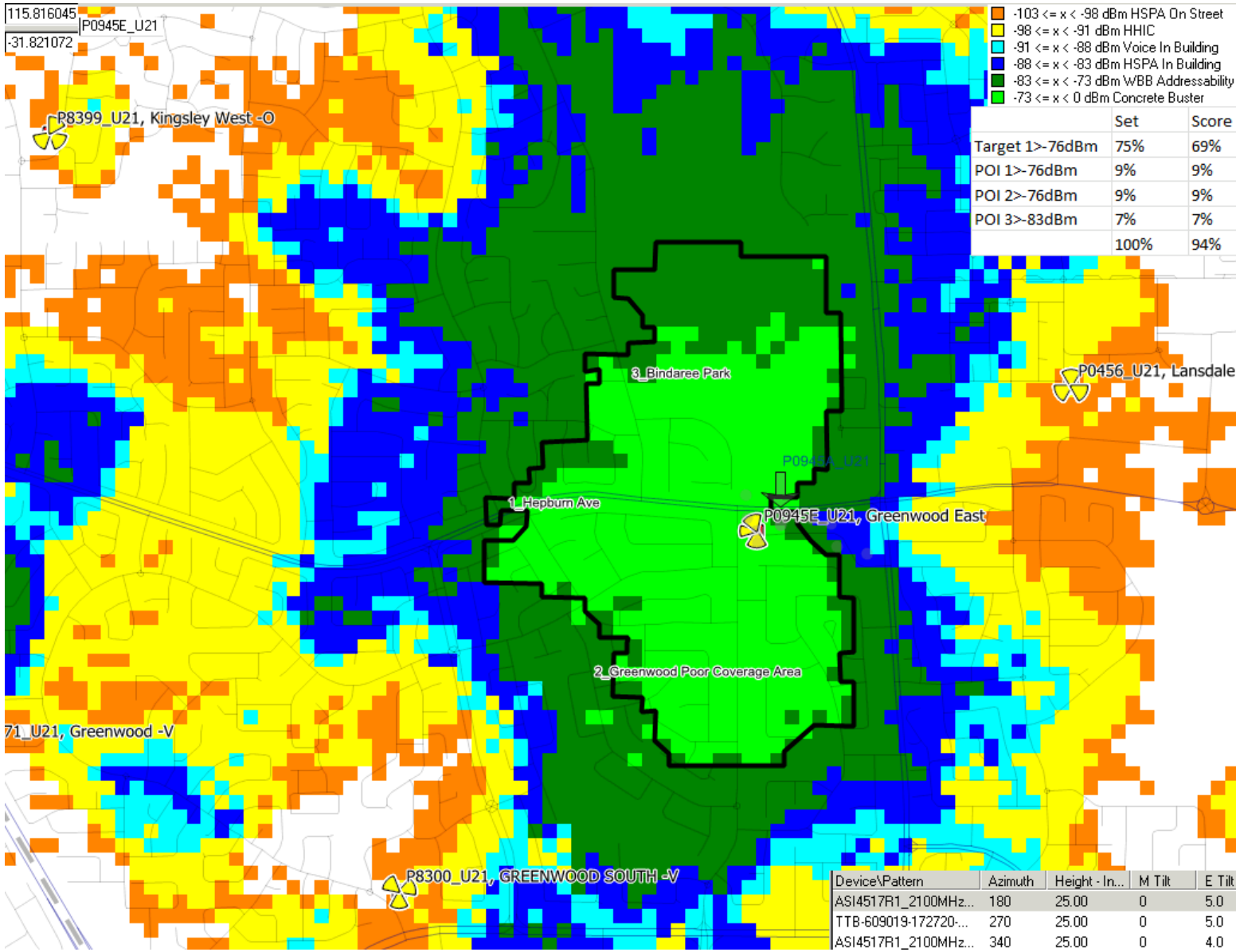
Structel 

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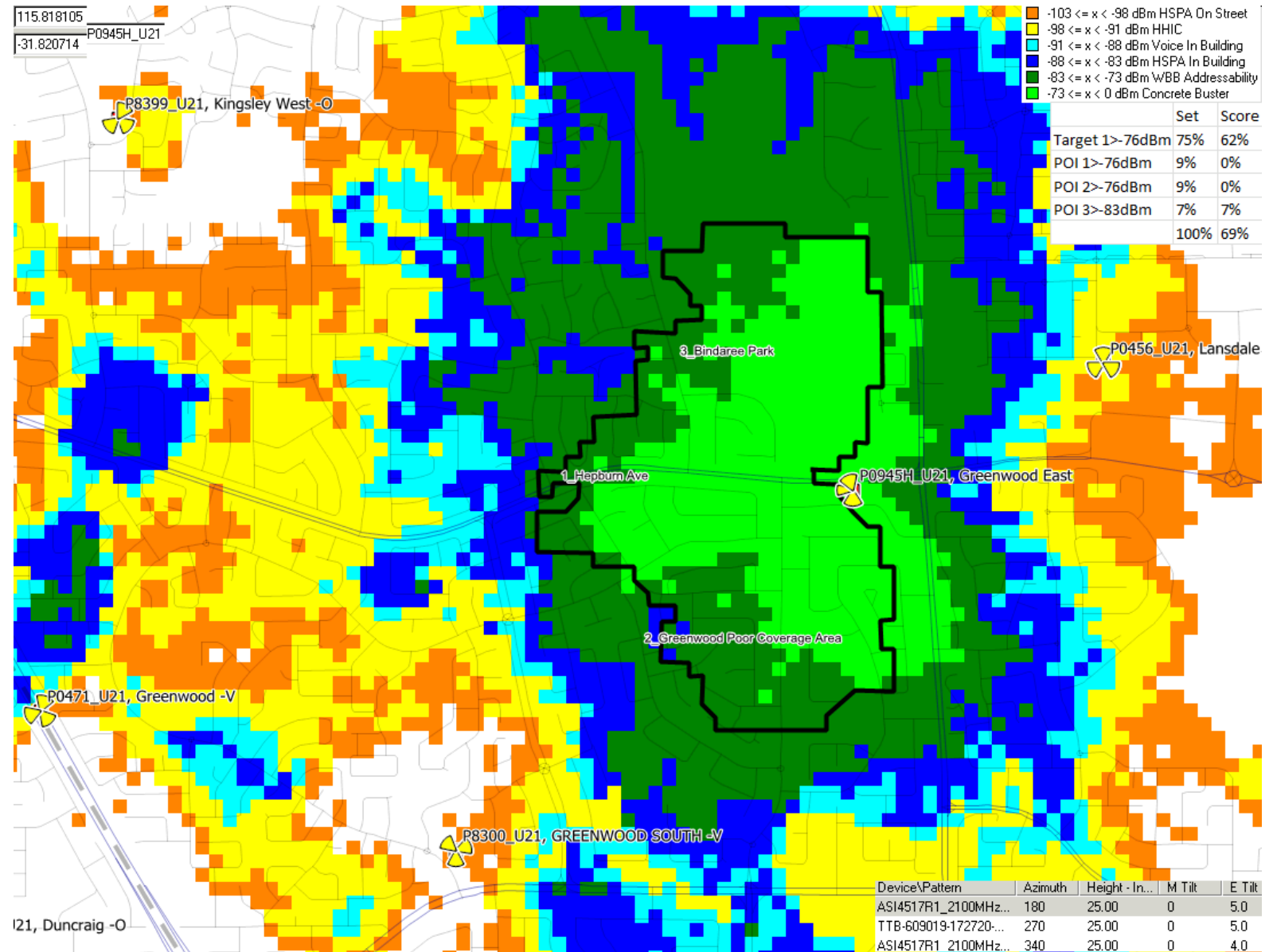
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81107/11572310/1

Coverage Map of Proposed Telecommunications Facility at 3 Canham Way, Greenwood WA 6024



Coverage Map of Proposed Telecommunications Facility co-locating at 19 Canham Way, Greenwood WA 6024



Comments Received During Advertising	Applicant's Response
<ul style="list-style-type: none"> Poor aesthetic value 	<p>This location was selected as a result of a site identification and selection process which included consultation with property and town planning professionals, architects and design engineers, structural engineers and radio frequency engineers within a defined search area, based on proximity to the existing Optus/Vodafone facility and its ability to replace the coverage delivered by the existing facility. The Carriers (Optus/Vodafone) objective is to achieve coverage and capacity to a targeted area at minimal impact to the surrounding built and natural environment. Therefore, it is considered that locating a facility within a light industry precinct as opposed to an environmentally significant recreational area or directly adjacent to residential dwellings was not appropriate and this proposed location will create less visual impact.</p> <p>The context of the proposed facility location, its setback from roadways (Hepburn Ave) and the positioning of the proposed facility on the site ensures that it will integrate well in the location and not impact upon any significant sightlines.</p> <p>Additional proposed vegetation screening and the surrounding built environment will screen all ground level equipment from sensitive land uses to the south, west and northwest. Siting of the facility in proximity to other infrastructure will provide a superior visual outcome by consolidating infrastructure in one location rather than dispersal in multiple locations throughout the suburb. The proposed facility will satisfy Optus and Vodafone's to network coverage and capacity requirements and establish sufficient future capacity to enable rapid deployment of future technologies such as 5G.</p> <p>The site is located within a light industry precinct. Given the surrounding area includes significant residential development and important recreational areas; the site selection and design seeks to minimise the impact of these land uses. In particular, buffers from the facility have been maintained or increased to residential dwellings to the south and west.</p> <p>As the site has already been significantly modified for its current land use, the proposal will not compromise any further environmental values.</p> <p>The monopole is a more effective and a less visually obtrusive solution for telecommunications infrastructure than a lattice structure. Design and colour have been considered and will be constructed to integrate into the surrounding location. The structure will be non-reflective (galvanised) in order to reduce its recognition in the landscape.</p>
<ul style="list-style-type: none"> Too close to playground, children social activities such as ballet studio and Lake Goollelal. 	<p>Optus and Vodafone are required to reinstate the lost network coverage in the area when the facility at 6 Canham Way was decommissioned. Services at this locality will need to provide for existing and future residents, businesses and industry within the Greenwood area, surrounding suburbs and along major transport routes in vicinity of the site. These services to customers are required to improve mobile network services (including voice calling and SMS), as well as video calling, video-</p>

	<p>based content services (like news, finance and sports highlights) and internet browsing. The maintained and improved Telecommunications service will also play a significant role in improving road user safety and is a vital first response tool for emergency services.</p> <p>This location was selected as a result of a site identification and selection process which included consultation with property and town planning professionals, architects and design engineers, structural engineers and radio frequency engineers within a defined search area, based on proximity to the existing Optus/Vodafone facility and its ability to replace the coverage delivered by the existing facility. The Carriers (Optus/Vodafone) objective is to achieve coverage and capacity in this area at minimal impact to the surrounding built and natural environment. Therefore, it is considered that locating a facility within a light industry precinct as opposed to an environmentally significant recreational area or directly adjacent to residential dwellings was not appropriate and this proposed location will create less visual impact to these sensitive uses.</p> <p>The site is located within a light industry precinct. Given the surrounding area includes significant residential development and important recreational areas; the site selection and design seeks to minimise the impact of these land uses. In particular, buffers from the facility have been maintained or increased to sensitive land uses to the south and west when comparing it to the original facility at 6 Canham Way.</p>
<ul style="list-style-type: none"> Should be placed in an area of higher industrial or commercial not in a low/small semi Industrial area that are near parks and residential areas. 	<p>Both Optus and Vodafone are required to provide a continuous network to its customers throughout the Suburb of Greenwood. The previous site at 6 Canham Way has provided telecommunications services to a significant area of Greenwood including Hepburn Avenue and the southern section of the Lake Goollelal recreational area.</p> <p>Optus and Vodafone are required to reinstate the lost network coverage in the area when the facility at 6 Canham Way was decommissioned. Services at this locality will need to provide for existing and future residents, businesses and industry within the Greenwood area, surrounding suburbs and along major transport routes in the vicinity of the site. These services to customers are required to improve mobile network services (including voice calling and SMS), as well as video calling, video-based content services (like news, finance and sports highlights) and internet browsing. The maintained and improved Telecommunications service will also play a significant role in improving road user safety and is a vital first response tool for emergency services.</p> <p>This location was selected as a result of a site identification and selection process which included consultation with property and town planning professionals, architects and design engineers, structural engineers and radio frequency engineers within a defined search area, based on proximity to the existing Optus/Vodafone facility and its ability to replace the coverage delivered by the existing facility. The Carriers (Optus/Vodafone) objective is to achieve a coverage objective in this area at minimal impact to the surrounding built and natural environment. Therefore, it is considered that locating a facility within a light industry</p>

	<p>precinct as opposed to an environmentally significant recreational area or directly adjacent to residential dwellings was not appropriate.</p> <p>Whilst the operational and geographical aspects of deploying new mobile base stations are primary factors, there are many other critical issues that should be effectively resolved in parallel that also influence network design. Some of the issues which need to be considered are (but not limited to);</p> <ul style="list-style-type: none"> • The potential to co-locate on an existing telecommunications facility; • The potential to locate on an existing building or structure; • Visual impact and the potential to obtain relevant town planning approvals (legislative policy constraints); • Engineering considerations and build feasibility including assessment of soil conditions, slope, flood prone land, structural and loading feasibility, access for maintenance purposes and ability to connect to electricity; • The cost of developing the site and the provision of utilities such as power/electricity, access to the facility and transmission links; • The availability and suitability of land and a willing site provider; • Occupational health and safety; • Proximity to community sensitive land uses and areas of environmental sensitive nature such as heritage items; • Other environmental considerations such as vegetation clearing, bushfire prone land ground disturbance during construction and operation of the facility; • Topographical constraints and Radio Frequency (RF) requirements (that is, the ability of a site to provide coverage to the target area). <p>The number, type and height of facilities required to provide additional capacity and coverage to the networks are largely determined by the above operational, geographical and other factors discussed that influence final network design. These compounded factors often severely restrict the availability of candidates.</p> <p>Large commercial precincts such as the Kingsway City Shopping Centre or the Warwick Grove Shopping Centre will not achieve the required coverage objectives from Optus and Vodafone as these commercial areas are located a significant distance from the original decommissioned facility at 6 Canham Way.</p>
<ul style="list-style-type: none"> • Too prominent and will not be consistent with the character of the area. 	<p>The Carriers (Optus/Vodafone) objective is to achieve coverage and capacity in this area at minimal impact to the surrounding built and natural environment. Therefore, it is considered that locating a facility within a light industry precinct as opposed to an environmentally significant recreational area or directly adjacent to residential dwellings was not appropriate and this proposed location will create less visual impact to these sensitive uses.</p>

	<p>The context of the proposed facility location, its setback from roadways (Hepburn Ave) and the positioning of the proposed facility on the site ensures that it will integrate well in the location and not impact upon any significant sightlines.</p> <p>Additional vegetation screening and the surrounding built environment will screen all ground level equipment from sensitive land uses to the south, west and northwest. Siting of the facility in proximity to other infrastructure will provide a superior visual outcome by consolidating infrastructure in one location rather than dispersal in multiple locations throughout the suburb.</p> <p>The site is located within a light industry precinct. Given the surrounding area includes significant residential development and important recreational areas; the site selection and design seeks to minimise the impact of these land uses. In particular, buffers from the facility have been maintained or increased to residential dwellings to the south and west.</p> <p>As the site has already been significantly modified for its current land use, the proposal will not compromise any further environmental values.</p> <p>The monopole is a more effective and a less visually obtrusive solution for telecommunications infrastructure than a lattice structure. Design and colour have been considered and will be constructed to integrate into the surrounding location. The structure will be non-reflective (galvanised) in order to reduce its recognition in the landscape.</p>
<ul style="list-style-type: none"> There will be little or no benefit to the residents in this area. Should be located further away from residential land use. 	<p>Optus and Vodafone are required to reinstate the lost network coverage in the area when the facility at 6 Canham Way was decommissioned. Services at this locality will need to provide for existing and future residents, businesses and industry within the Greenwood area, surrounding suburbs and along major transport routes in vicinity of the site. These services to customers are required to improve mobile network services (including voice calling and SMS), as well as video calling, video-based content services (like news, finance and sports highlights) and internet browsing. The maintained and improved Telecommunications service will also play a significant role in improving road user safety and is a vital first response tool for emergency services.</p> <p>This location was selected as a result of a site identification and selection process which included consultation with property and town planning professionals, architects and design engineers, structural engineers and radio frequency engineers within a defined search area, based on proximity to the existing Optus/Vodafone facility and its ability to replace the coverage delivered by the existing facility. The Carriers (Optus/Vodafone) objective is to achieve a coverage objective in this area at minimal impact to the surrounding built and natural environment. Therefore, it is considered that locating a facility within a light industry precinct as opposed to an environmentally significant recreational area or directly adjacent to residential dwellings was not appropriate.</p>

<ul style="list-style-type: none"> • Accumulation of telecommunication towers and infrastructure within close proximity of each other will have a negative visual amenity. 	<p>The objective of the proposed facility is to replace the existing Optus and Vodafone facility at 6 Canham Way, which has been decommissioned.</p> <p>Telecommunications facilities operate by transmitting and receiving signal in a given area. Accordingly, it means that in order to cover an area, antennas will generally need to be mounted on structures or buildings in or near the area where they intend to provide coverage.</p> <p>This proposed facility location was selected as a result of a site identification and selection process, which included consultation with property and town planning professionals, architects and design engineers, structural engineers and radio frequency engineers within a defined search area, based on proximity to the existing Optus/Vodafone facility and its ability to replace the coverage delivered by the existing facility. Several possible candidates were investigated in the initial site selection process, including co-location on other telecommunications structures within the vicinity, however it was concluded that a new slimline monopole was the most appropriate solution for a replacement facility.</p> <p>The Carriers (Optus/Vodafone) objective is to achieve a coverage objective in this area at minimal impact to the surrounding built and natural environment. Therefore, it is considered that locating a facility within a light industry precinct as opposed to an environmentally significant recreational area or directly adjacent to residential dwellings was not appropriate and will create less visual impact to these sensitive uses.</p> <p>An analysis has been provided to Council which provides a comparison of the coverage analysis for locating at the existing Telstra facility at 19 Canham Way and the proposed location. The analysis demonstrates that locating the facility on the Telstra facility will result in a substantial degradation and loss of coverage to key target areas within Vodafone and Optus's networks.</p>
<ul style="list-style-type: none"> • Health risk. 	<p>All mobile phone base stations are required to operate within radio frequency standards set by the ARPANSA and regulated by Australian Communications and Media Authority (ACMA).</p> <p>All mobile telecommunications facilities in Australia are required to comply with the relevant Radiation Protection Standard at all times. Carriers have a legal obligation to comply with the standards set down by the Australian government and do not have the authority to set the EME standards but rely on the advice of the Australian government (ARPANSA) and peak bodies such as the World Health Organisation on EME.</p> <p>The World Health Organisation (WHO) routinely review the medical research and science relevant to the Electromagnetic Energy (EME) generated by radiocommunications services. There is no substantiated scientific evidence of health effects from the EME generated by radiocommunications services that comply with national and international safety guidelines.</p>

There are many other useful sources of information available, including on the WHO website (www.who.org) and the ACMA and ARPANSA websites. A very detailed website at www.emfexplained.info is an excellent centralised location of information, including details and links to studies, myths and various other fact sheets and independent information.

Additionally, you may wish to access ARPANSA's "Talk to a Scientist" service to obtain clarity on radiation protection in Australia. This service runs via the following telephone line on 1800 022 333 from 11:00am to 12:30pm (AEST) on Tuesdays and Thursdays, except during public holidays. Further information regarding this service can be obtained from: <https://www.arpansa.gov.au/contact-us/talk-to-a-scientist>.

The latest advice from ARPANSA states:

"Health authorities, including ARPANSA and the WHO have examined the scientific evidence regarding possible health effects from base stations. Current research indicates that there are no established health effects from the low exposure to the RF EME from mobile phone base station antennas."

ARPANSA Fact sheet "Mobile Base Stations and Health" August 2016.

Advice from the World Health Organization:

"Exposure to electromagnetic fields is not a new phenomenon. However, during the 20th century, environmental exposure to man-made electromagnetic fields has been steadily increasing as growing electricity demand, ever-advancing technologies and changes in social behaviour have created more and more artificial sources..."

"Despite extensive research, to date there is no evidence to conclude that exposure to low level electromagnetic fields is harmful to human health."

<https://www.who.int/peh-emf/about/WhatIsEMF/en/index1.html>

"Considering the very low exposure levels and research results collected to date, there is no convincing scientific evidence that the weak RF signals from base stations and wireless networks cause adverse health effects."

<https://www.who.int/peh-emf/publications/facts/fs304/en/>

Additionally, the Department of Communications also quotes: "Some people may have concerns about possible health effects from exposure to electromagnetic energy (EME) coming from radiocommunications transmitters on towers and elsewhere. Exposure to radiofrequency (RF) EME has been the subject of detailed research by experts. Exposure limits are set well below the level at which adverse health effects are known to occur and include a wide safety margin to protect the public."

https://www.communications.gov.au/sites/g/files/net301/f/EME_Fact_Sheet_-

[Communities and their Parliamentary representatives updated 18-05-2015.pdf](https://www.communications.gov.au/sites/g/files/net301/f/EME_Fact_Sheet_-Communities_and_their_Parliamentary_representatives_updated_18-05-2015.pdf)

The maximum exposure limits have been designed to be safe to all people and at all times. ARPANSA states that the standard which protects people from EME exposure does not require distances between telecommunications facilities and areas, which may be considered sensitive. ARPANSA also highlights that:

“Similarly, the Deployment Code does not specify arbitrary distances at which infrastructure must be sited from community sensitive locations, because arbitrary distances do not necessarily reflect a precautionary approach. In fact, infrastructure sited further from a community sensitive area may need to operate at a higher power and may result in higher EME exposures in that sensitive area. Furthermore, it must be remembered that evidence gathered by ARPANSA confirms that exposure levels in public areas are typically hundreds or thousands of times less than the exposure limit set by the ACMA.”

We would also like to highlight some aspects of the public health and safety standards that we hope give you a greater peace of mind as well as reiterating ARPANSA’s position, based on ARPANSA’s continual review of these studies, that mobile base stations are not considered a public health risk.

Firstly, licensed radio frequency transmitters, including Mobile Base Stations and commercial radio and TV broadcast towers, are regulated to protect all people in all environments at all times including vulnerable members of the community (people who are ill, infants, children and the elderly), 24-hours a day, 7-days a week.

Australia has adopted the safety regulations recommended by the World Health Organisation (WHO). These regulations also have a significant safety margin, or precautionary approach built into them. We also highlight that by operating the mobile network at signal strengths significantly below that safety standard, the carriers have additionally applied a precautionary approach to the operation of their networks.

Secondly, we highlight that the national safety regulations protect the public by placing a limit on the strength of the signal that any licensed radio facility may transmit. The Standard has a significant safety margin and does not impose any general public distance-based restrictions. Consequently, radio facilities are found in all environments. For example, the Australian Communications and Media Authority’s (ACMA) Register of Licensed Radio Communications shows that nationally, there is a significant number of licensed radio facilities (including mobile network facilities) located in commercial areas, shopping centres, residential areas, recreational parks, schools and university campuses and hospitals across Australia. The ACMA Register of Licensed Radio is available at: http://web.acma.gov.au/pls/radcom/register_search.main_page

Thirdly, and importantly, as we mentioned before that the public health and safety standards recommended by the WHO are based on a very large body of peer-reviewed science. The WHO, the Australian Radiation

	<p>Protection and Nuclear Safety Agency (ARPANSA) and other international safety bodies advise that the weight of evidence shows that there are no substantiated or established health effects from radio frequencies employed within safety limits.</p> <p>Optus and Vodafone have a legal, environmental and ethical obligation to deliver a network that operates safely and responsibly, without posing risk to any members of the general public. At all times, and in any location, the carriers operate their mobile networks at signals strengths significantly below WHO and Australian standards.</p>
<ul style="list-style-type: none"> • Loss in property value. 	<p>The issue of property value is extremely fluxed, with variations in price being subject to a vast number of factors – many of which are subjective such as amenity, access to transport, condition of land improvements, views and, increasingly, the quality/availability of telecommunications services. However, often more significant are broader market forces affecting supply and demand for housing.</p> <p>Optus and Vodafone understand that there is a perception in the public arena that residing close to telecommunications equipment has an impact on property values. Unlike a transmission line or power easement, utility installations such as mobile base stations do not materially affect the ability of landowners to enjoy the use of their properties.</p> <p>There is widespread recognition that mobile telecommunications play a key economic role within society and as the proposal is for the replacement of the site at 6 Canham Way, there is a recognition that continuous provision of the Optus and Vodafone mobile services is in the public interest.</p> <p>Additionally, the presence of mobile and wireless telecommunications services is generally seen as an essential service especially in metropolitan areas. Mobile services enhance modern living providing connectivity, assisting work flexibility and assisting in emergency situations. In fact, it is a desirable asset when new businesses and potential home buyers are looking to obtain new premises. We are not aware of any evidence to suggest that such a facility would affect property values.</p>