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Tweed Shire Council
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2484

**For the attention of: Ms V. Conway, Town Planner, Development Assessment**

9th April 2018

Dear Ms Conway

**Re. DA18/0082 – Development Application for a Telecommunications Facility at Murwillumbah Golf Club, 233 Byangum Road, Murwillumbah, New South Wales, 2484**

Thank you for your letter dated 13th March 2018.

Your letter raised six issues. Urbis have provided council with a response to compliance with council pre-lodgement consultation and, while Urbis work through the remaining four issues, please find below Urbis' comments on the objections received by council (point 10).

**a) Proximity of the Telecommunications Mast to Residence**

The need for the site and the proposed area of mobile coverage enhancement is dealt with in chapters 5.4, 7 and 9.2.1, 10.3.9 of the previously submitted statement of environmental effects. Optus take the health and safety of the public very seriously and Optus acknowledges some people are genuinely concerned about the possible health effects of electromagnetic emissions (EME) from mobile phone base stations and is committed to addressing these concerns responsibly. Optus must strictly adhere to federal government legislation and regulations regarding mobile phone facilities and equipment as administered by the Australian Communications and Media Authority (ACMA).

Optus relies on the expert advice of national and international health authorities such as the Australian Radiation Protection and Nuclear Safety Authority (ARPANSA) and the World Health Organisation (WHO) for overall assessments of health and safety impacts. The WHO advises that all expert reviews on the health effects of exposure to radiofrequency fields have concluded that no adverse health effects have been established from exposure to radiofrequency fields at levels below the international safety guidelines that have been adopted in Australia.

Optus has strict procedures in place to ensure its base stations comply with these guidelines. Compliance with all applicable EME standards is part of Optus' responsible approach to EME and mobile phone technology.

ACMA adopted a technical standard for continuous exposure of the public to radiofrequency (RF) EME from mobile phone base stations. The standard, known as the

Radiocommunications (Electromagnetic Radiation – Human Exposure) Standard 2003, was prepared by ARPANSA and is based upon recommendations of ICNIRP (International Commission for Non-Ionising Radiation Protection), an agency associated with the WHO. Mobile carriers must comply with the Australian Standard on exposure to EME set by the ACMA.

The Standard operates by placing a limit on the strength of the signal (or RF EME) that Optus can transmit to and from any network base station. The Standard prescribes that signal strength be at low levels that protects the public at all times. In addition, the Standard has a significant safety margin and includes a precautionary approach. The public health standard does not prescribe distance based limitations.

To demonstrate compliance with the Standard, ARPANSA prescribes a compliance report using a standard methodology as evidence of compliance with the Standard. Carriers are obliged to undertake this analysis for each new facility and make it publicly available.

The ARPANSA-created compliance report demonstrates the maximum signal strength of a proposed facility, if it's handling the maximum number of users 24 hours a day. In this way, ARPANSA requires carriers to demonstrate the greatest possible impact that a new telecommunications facility could have on the environment, to give the community greater peace of mind. Base stations are designed to operate at the lowest possible power level to accommodate only the number of customers using the facility at any one time. This design function is called "adaptive power control" and ensures that the base station operates at minimum, not maximum, power levels at all times.

All Optus facilities are installed, designed and certified by qualified professionals in accordance with all relevant Australian Standards. This ensures that the Optus facility would not result in any increase in the level of risk to the public. This facility is to be operated in compliance with the mandatory standard for human exposure to EME – currently the *Radio communications (Electromagnetic Radiation Human Exposure) Standard 2003.*

The ARPANSA Environmental EME Report associated with this site shows that the maximum predicted EME levels will equate to 0.36% of the maximum exposure limit, which is significantly below the allowable exposure limit under the Australian Standard.

This measurement is based on the maximum worst case scenario, considering direct exposure at full operational capacity of the facility which is generally not a true representation of a real-life scenario. The signal from the facility is usually affected by various factors including service demand, the existing network support of surrounding base stations, distance, topography, physical and natural barriers (e.g. hills, trees, buildings et cetera).

Please refer to the table below for EME level predictions at various distances within 500 metres from the facility and 1.5 metres above ground level. The ARPANSA Environmental EME Report shows the maximum level of EME emitted has been calculated to be 0.36 percent of the ARPANSA public exposure limit at 238.47 metres from the telecommunications facility.

| Distance from the antennas at Murwillumbah Golf Club, 233 Byangum Road in 360° circular bands | Maximum Cumulative EME Level at 1.5m above ground – all carriers at this site | | | | | |
|---|---|---|---|---|---|---|
| | Existing Equipment | | | Proposed Equipment | | |
| | Electric Field V/m | Power Density mW/m² | % ARPANSA exposure limits | Electric Field V/m | Power Density mW/m² | % ARPANSA exposure limits |
| 0m to 50m | | | | 2.13 | 12.042 | 0.17% |
| 50m to 100m | | | | 1.97 | 10.25 | 0.13% |
| 100m to 200m | | | | 2.8 | 20.79 | 0.32% |
| 200m to 300m | | | | 3.089 | 25.31 | 0.36% |
| 300m to 400m | | | | 2.77 | 20.41 | 0.29% |
| 400m to 500m | | | | 2.13 | 12.064 | 0.17% |
| ***Maximum EME level*** | | | | 3.089 | 25.31 | 0.36 |
| | | | | 238.47 m from the antennas at Murwillumbah Golf Club, 233 Byangum Road | | |

Above: Calculated EME levels detail of ARPANSA Environmental EME Report dated 21st September 2017.

The maximum environmental EME levels from the proposed facility, once it is operational, have been estimated as being well within the ACMA mandated exposure limit. The maximum level is extremely low and the maximum environmental EME level from the site, once it is operational, will comply with the ACMA mandated exposure limit. Optus complies with the public health and safety standard by a significant margin.

Radiofrequency EME is not something that mobile phone networks have introduced to the environment. Radio communications facilities include television, AM and FM radio broadcast towers, paging network antennas, mobile network base stations and two-way radio systems supporting emergency services, council services, roadside assistance, taxi services and utility providers.

Whenever one listens to the radio or watches television, one is living with radiofrequency signals. Residential communities have been living with 24-hour exposure to radiofrequency energy for generations, literally since the invention of the "wireless".

Without further information, Optus are unable to comment on "research that demonstrates that such towers should not be located within 800 of any residence".

**b) There is Adequate Coverage in the Area at Present**

The need for the site and the proposed area of mobile coverage enhancement is dealt with in chapter 5.6 of the previously submitted statement of environmental effects. Briefly, Optus have undertaken testing and the proposal is an attempt to fill an identified gap in coverage in the area. Optus would not go to the time and expense of a development application or building the site if there was not an identified need for coverage.

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**c) Visual Impact of the Tower**

As per Note 6 on the submitted DA Plans, the outdoor equipment units would be painted “Pale Eucalypt”. The monopole, antennas and ancillary equipment would be their natural product colours as it is considered that they are less obtrusive. However, should council be minded to grant approval, any consent could be conditioned as to require painting of the facility in a colour to be specified by council.

Any potential impact upon views of Mount Warning is dealt with in chapter 10.3 and appendix R of the previously submitted statement of environmental effects. In summary, the proposal is substantially and significantly screened and located in an area where undulating and winding roads afford only glimpses of the proposal. When the proposal would be seen, it would be viewed in the context of other vertical elements and would not appear as an incongruous feature in the landscape nor significantly affect views in the area. This is also the case on views to Natural Bridge/Arch.

The appropriateness of the Telstra site is dealt with in chapter 4.1 of the submitted statement of environmental effects. An Optus facility at this site would not work as it is too far away from the target coverage area.

Please find enclosed a copy of the ARPANSA fact sheet entitled *Mobile Phone Base Stations and Health*. This can be forwarded to the objectors.

Should the objectors wish to further investigate the matter, it is suggested that they contact ARPANSA within the Federal Department of Health for independent advice. Their free phone number is 1800 020 103. Further information can also be obtained from:

http://arpansa.gov.au/emereports/index.cfm

http://arpansa.gov.au/radiationprotection/Factsheets/index.cfm

Optus hope that this addresses the concerns of the objectors. Urbis will provide comment on the four outstanding issues as soon as possible. In the meantime, should council require more information or wish to discuss the matter further, please do not hesitate to contact me on (02) 8233 9905.

Yours sincerely

Benjamin Davies
Senior Consultant

Enclosure(s)
1. ARPANSA fact sheet entitled *Mobile Phone Base Stations and Health*

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**For the attention of: Ms V. Conway, Town Planner, Development Assessment**

2nd May 2018

Dear Ms Conway

# Re. DA18/0082 – Development Application for a Telecommunications Facility at Murwillumbah Golf Club, 233 Byangum Road, Murwillumbah, New South Wales, 2484

Thank you for your email dated 27th April 2018.

There were 45 comments in the consolidated submissions attachment to your email. 22 of those comments were in your email of 9th April 2018.

Of the 23 new comments, no new issues were raised; the issues of potential impact upon public health and safety, existing coverage in the area, potential impact upon visual amenity, the Department of Education's exclusion zone policy and proximity to the school and possible property devaluation have already been addressed.

However, in relation to potential impact upon health and safety, Optus acknowledges that there is a substantial amount of information available to the public on EME and perceived health effects, particularly from mobile phones and mobile phone base stations. It is important to note that research and information should be taken only from credible scientific sources and from accredited scientific bodies.

It is worth reiterating that Optus relies on the expert advice of national and international health authorities such as the Australian Radiation Protection and Nuclear Safety Authority (ARPANSA) and the World Health Organisation (WHO) for overall assessments of health and safety impacts. The consensus is that there is no substantiated scientific evidence of health effects from the EME generated by radio frequency technology, including mobile phones and their base stations, that complies with national and international safety guidelines. Optus has strict procedures in place to ensure its mobile phones and base stations comply with these guidelines.

The Australian Communications and Media Authority (ACMA) adopted a technical standard for continuous exposure of the public to radiofrequency (RF) electromagnetic emissions (EME) from mobile phone base stations. The standard, known as the Radiocommunications (Electromagnetic Radiation – Human Exposure) Standard 2003, was prepared by the ARPANSA and is the based upon recommendations of ICNIRP (International Commission for

Non-Ionising Radiation Protection), an agency associated with the WHO. Mobile carriers must comply with the Australian Standard on exposure to EME set by the ACMA.

The use of the Standard in development applications involving telecommunications facilities was tested and supported by decisions made in the New South Wales Land and Environment Court, having regard to Telstra Corporation Limited v Hornsby Shire Council [2006] NSWLEC 133 which tested whether the proposed EME levels will harm the health and safety of the residents.

The Land and Environment Court ruled in favour of Telstra, on the basis that the Standards set by the ACMA are scientifically proved and robust. The Court stated that councils should adopt these standards when measuring and determining EME levels, given that it is the ACMA that has the responsibility for ensuring exposure limits do not adversely affect the heath and amenity of the community.

The Court further stated that it was not appropriate for the Court to set aside or disregard the existing safety standard nor is it appropriate for the Court to pioneer its own standards. The Court ruled it was appropriate for safety standards to be set by authorities with special expertise, such as ARPANSA.

In addition, it is also worth mentioning that one comment states that the proposal is for 5G services and the same comment refers to a “currently accepted danger zone of radiation” and a “’safe zone’”. This is incorrect.

The proposal is for 4G services and there is no danger or safe zone. Any proposed telecommunication facility that is compliant with the above standard is allowed within any distance to dwellings and schools and there is no need for a buffer zone. As stated in the previously provided Australian Government fact sheet:

> *“Because transmitters must operate below the ARPANSA standard, there is no particular advantage locating these away from schools. In fact, poor location of the transmitters can affect the performance of mobile handsets, requiring more power to be emitted from the handset to connect with nearby transmitters.”*
>
> [Australian Government fact sheet entitled *Communications Towers, Radio Transmitters and Safety Information for Schools, Teachers, Students, and Parents.]*

A discussion of the Brazilian study can be found here:

http://www.emfandhealth.com/Critique%20Brazilian%20Study.html

Optus hope that this addresses the concerns of the objectors. Should council require more information or wish to discuss the matter further, please do not hesitate to contact me on (02) 8233 9905.

Yours sincerelv

Benjamin Davies
Senior Consultant

Australian Government
Australian Radiation Protection and Nuclear Safety Agency

Fact Sheet

# Mobile Phone Base Stations and Health

## Based on current research there are no established health effects that can be attributed to the low RF EME exposure from mobile phone base station antennas.

### Introduction

There are mobile phone base station antennas on towers and buildings throughout Australia's populated areas. These antennas are part of the mobile phone network and they emit low level radiofrequency (RF) electromagnetic energy (EME). This fact sheet provides information about concern of adverse health effects arising from exposure to RF EME from base station antennas.

### How does the mobile phone network operate?

When a call is made from a mobile phone, RF signals are transmitted between its antenna and the antenna at a nearby base station. The phone call is then routed through the phone network to the destination phone. Base station antennas must be elevated and located clear of physical obstruction to ensure wide coverage.

In an area of increasing mobile phone use the number of additional base stations needed to maintain service quality increases, even in areas where mobile network coverage already exists. If this is not done the mobile network will not operate properly and, as a result, mobile phone users may not be able to connect to their network.

### Are base stations regulated in Australia?

The RF EME emissions from mobile phone base stations and other communications installations are regulated by the Australian Communications and Media Authority (ACMA). The ACMA's regulatory arrangements require base stations to comply with the exposure limits in the ARPANSA RF Standard. The ARPANSA Standard is designed to protect people of all ages and health status against all known adverse health effects from exposure to RF EME. The ARPANSA Standard is based on scientific research that shows the levels at which harmful effects occur and it sets limits, based on international guidelines, well below these harmful levels.

The ACMA also requires base stations to comply with an industry code of practice which requires telecommunications carriers to inform and consult with the local community when planning, installing or upgrading base stations.

### How much RF EME are people exposed to from base stations?

The maximum levels of exposure of RF EME from base stations may be calculated from details of the equipment installed. These calculations are made available in the ARPANSA EME reports provided by the telecommunications companies on the Radio Frequency National Site Archive website, www.rfnsa.com.au. The base station sites may be located by searching by postcode or town.

EME exposure to the public from base stations is typically hundreds of times below the limits of the ARPANSA RF Standard.



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## Do base stations cause any health effects?

Health authorities around the world, including ARPANSA and the World Health Organization, 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.

## How about people who work very close to base station antennas?

Workers accessing rooftops and towers that house base station antennas must consult with building and facility management before entering the site. A guide to working safely near mobile phone base stations is available at https://www.radioworksafe.com.au/.

## Conclusion

No adverse health effects are expected from continuous exposure to the RF EME emitted by the antennas on mobile phone base stations.

ARPANSA will continue to review the research into potential health effects of RF EME emissions from mobile phone base stations and other sources in order to provide accurate and up-to-date advice.

## Useful Links

ARPANSA fact sheet on RF EME
www.arpansa.gov.au/RadiationProtection/basics/rf.cfm

The ARPANSA RF Standard
www.arpansa.gov.au/Publications/codes/rps3.cfm

WHO fact sheet on base stations
www.who.int/peh-emf/publications/facts/fs304/en/

AMTA information on Australian base stations
www.rfnsa.com.au
www.mobilesitesafety.com.au

Australian Government
Department of Communications

# COMMUNICATIONS TOWERS, RADIO TRANSMITTERS AND SAFETY

**Information for schools, teachers, students, and parents**

## Radio transmitters—Are they safe?

Some parents, teachers, and students may have concerns about possible health effects from exposure to electromagnetic energy (EME) coming from radiocommunications transmitters on towers near schools as well as from WiFi routers and mobile phones. This factsheet outlines the steps the Australian Government takes to keep Australians safe.

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.

### What is EME?

RF EME is the energy in radio waves, and is used for wireless communication. It has been in use for over 100 years. It is used to send and receive signals between communications equipment such as broadcast towers, radios and televisions, mobile phone towers and phones, radar facilities, and electrical and electronic equipment. It is also part of our natural environment.

### How is EME regulated?

Two Australian Government agencies, the Australian Radiation Protection and Nuclear Safety Agency (ARPANSA) and the Australian Communications and Media Authority (ACMA), are responsible for regulating RF EME exposure.

ARPANSA is an independent Australian Government agency charged with protecting Australians from exposure to EME. ARPANSA is responsible for advising what safe levels of EME exposure are. ARPANSA has developed a public health standard which sets limits for human exposure to RF EME. The 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. The exposure standards take into account the many sources of RF EME present in the modern environment.

The ACMA licenses the operation of radiocommunications transmitters. Licences require transmitters to comply with the exposure limits set out in the ARPANSA standard.

### How much EME comes from radio transmitters?

All transmitters must operate below ARPANSA's public exposure standard. Typically transmitters operate at a tiny percentage of the ARPANSA standard.

## Should mobile phone transmitters be located a specified number of metres from schools?

Because transmitters must operate below the ARPANSA standard, there is no particular advantage locating these away from schools. In fact, poor location of the transmitters can affect the performance of mobile handsets, requiring more power to be emitted from the handset to connect with nearby transmitters. This is potentially of greater concern as handsets are used near the body.

## Is the scientific information on EME up to date?

ARPANSA maintains continual oversight of emerging research into the potential health effects of EME exposure in order to provide accurate and up-to-date advice to the Government. ARPANSA works with the World Health Organisation in researching the health effects of human exposure to EME. Should scientific evidence indicate that the current ARPANSA standard does not adequately protect the health of Australians, the Government would take immediate action to rectify the situation.

## Is EME from mobile phone handsets safe?

There is no clear evidence in the existing scientific literature that the use of mobile phones poses a long-term public health hazard (although the possibility of a small risk cannot be ruled out).

For those who are concerned, ARPANSA provides advice on strategies, particularly for children, to reduce EME exposure from handsets. ARPANSA advises that people who are concerned about the possibility of health effects can minimise their exposure to RF EME emissions by reducing call time, making calls where reception is good, using hands-free devices or speaker options, or by texting. People could also pay attention to the manufacturer's advice regarding spacing from the body if phones are to be attached to belts or placed in pockets.

## What about WiFi and laptops?

ARPANSA, as well as the World Health Organisation, have advised that there is no established scientific evidence showing that the low exposure to RF EME from WiFi adversely affects the health of children or the general population. On the basis of current scientific information ARPANSA sees no reason why WiFi should not continue to be used in schools and other places.

## Where can I find out more information?

Further information is available from the following expert bodies:

**Australian Radiation Protection and Nuclear Safety Agency**
www.arpansa.gov.au/Science/rf

www.arpansa.gov.au/pubs/eme/fact11.pdf

www.arpansa.gov.au/pubs/factsheets/018is_Wi-Fi.pdf

**Australian Communications and Media Authority**
www.acma.gov.au/Citizen/Consumer-info/Rights-and-safeguards/EME-hub

**World Health Organisation**
www.who.int/topics/electromagnetic_fields

www.who.int/mediacentre/factsheets/fs193/en/index.html

**International Commission on Non-Ionising Radiation Protection (ICNIRP)**
www.icnirp.org

You can also find out more about transmitters in your community, including EME reports and community consultation information, from the Radio Frequency National Site Archive www.rfnsa.com.au