Australian
Mobile Telecommunications
Association
ABN 98 065 814 315
First Floor
35 Murray Crescent
Griffith ACT 2603 Australia
PO Box 4309
Manuka ACT 2603 Australia
Ph +61 2 6239 6555
Fax +61 2 6239 6577
Web www.amta.org.au

Reply to the Senate Environment and Communications Committee to Questions on Notice from Public Hearing on Thursday, April 12, 2012

Page 17: Readings for Canberra Hospital:

The site EME report for the Canberra hospital is attached, taken from the industry's Radiofrequency National Site Archive (www.rfnsa.com.au) which is publicly accessible. The Committee will note that the total EME levels are exceedingly low, more than 500 times less than the Australian standard. This report is prepared in accordance with the ARPANSA methodology which has been independently checked by National Association of Testing Authorities (NATA) accredited assessors numerous times as part of ARPANSA's regular auditing process.

It is worth noting that the RFNSA is a key element of the industry's consultation process, providing transparency of process and information for the general public who may be interested in any mobile base station site that is being deployed or upgraded.

Despite the large and complex nature of the mobile network infrastructure located at the Canberra hospital site, the Committee should note that size and complexity of network infrastructure is not necessarily associated with high EME levels. In fact, it is commonplace that fields inside buildings supporting the infrastructure is so low that separate Distributed Antenna Systems (DAS) are installed within buildings to provide in-building coverage for doctors and patients inside as the fields from the rooftop infrastructure are too low to support these services from the outside.

See attachment site EME report.

Page 18: Compliance Checking by the Industry:

The industry is unable to comment on what other checks may be conducted by other parties or agencies. In regard to the industry's own auditing of mobile phone base stations for compliance with its own Radiofrequency Safety Compliance Program (RFSCP), the MCF co-ordinates a program of regular audits which are undertaken for sites selected by an independent body (Australian Centre for Radiofrequency Bioeffects Research, ACRBR). For 2010-2011, this included 30 sites across a range of metropolitan, regional and rural Australia, amongst all 3 of the major carriers (Telstra, Optus and VHA). The scope of the audit included:

1. 45 sites independently selected by the ACRBR
2. Carriers selected 10 sites each from the list
3. Carriers carried out desktop audits to the AMTA RFSCP format
4. Carriers visited each of the 10 sites and carried out a simple site audit to the AMTA RFSCP format
5. Carriers engaged independent measurement to 3 sites using the ARPANSA Measurement methodology

While the audit identified a few issues with the implementation of proper process (for which remedies have been proposed), the highlighted measurement variances were as expected and none of the predicted levels were exceeded.

It should be emphasised that auditing and measurement in this process focuses on the environmental levels of EME produced by the site (i.e. levels typically experienced by the public at ground level and other typically occupied spaces). These levels are many times (hundreds to thousands) below the Australian safety standard limits.

In regard to compliance with regulatory safety requirements (those levels normally only experienced by occupationally exposed personnel operating in close proximity to the antennas), all sites are issued with a Site Compliance Certificate, which certifies that the site has been assessed and found to comply with the RF Human Exposure Limits as specified by the ACMA Licence Condition Determination (LCD) and requirements of the ARPANSA Standard (RPS3). The certificate is provided by NATA accredited assessor, as required by the ACMA after a formal assessment of levels from the commissioned site. This certificate is publicly accessible from the RFNSA.

Page 18: <u>Precautionary Principle and Precautionary Approach</u>:

There are a range of common terms for precautionary or 'better-to-be-safe-than-sorry' approaches which are used interchangeably around the world by the community, governments, regulators and health authorities.

AMTA simply uses the generic 'precautionary approach' when discussing the deployment code to cover the general principle. We are talking about the same concept as the community and the code requires that this approach be used when siting a base station. In effect it is to reduce exposure as much as possible while still maintaining the quality of the network.

The 'precautionary principle' is the most common term used and the most defined and has been used by environmentalists since the early 1990s.

Numerous definitions of the 'precautionary principle' can be found in policy documents, international treaties and other political and legal texts.

Perhaps the best known example is the definition given in the declaration issued at the conclusion of the 1992 United Nations Conference on Environment and Development in Rio de Janeiro (the 'Rio Declaration'):

> *Where there are threats of serious or irreversible damage, lack of full scientific certainty shall not be used as a reason for postponing cost-effective measures to prevent environmental degradation.*

More recently in 2005, the United Nations Educational, Scientific and Cultural Organization (UNESCO) along with the World Commission on the Ethics of Scientific Knowledge and Technology (COMEST) formed an expert group which defined a working definition of the Precautionary Principle (PP) as:

> *When human activities may lead to morally unacceptable harm that is scientifically plausible but uncertain, actions shall be taken to avoid or diminish that harm.*

The COMEST report concluded that "…the grounds for concern that can trigger the PP need to be plausible or tenable" and that the scientific uncertainty should be "considerable."

The COMEST report also outlined what the principle does not do:

> *The PP is not based on 'zero risks' but aims to achieve lower or more acceptable risks or hazards.*
> *It is not based on anxiety or emotion, but is a rational decision rule, based in ethics, that aims to use the best of the 'systems sciences' of complex processes to make wiser decisions. Finally, like any other principle, the PP in itself is not a decision algorithm and thus cannot guarantee consistency between cases…*

The overall goal of the principle is to provide the best possible protection for human health and for the quality of the environment – which we agree with. In practice, however, taking precautionary action is no simple matter.

Deciding what precautions should be taken regularly result in fierce controversies because approval processes relating to specific products or technologies always involve conflicting interests. In the case of mobile phone technologies the debate tends to be uninformed, because of the complexity of the technology, most people are not aware of precautionary actions that are already in place.

When communities demand the application of the precautionary principle they are not aware that:

1. the precautionary principle is already built into the Australian safety standard and
2. the deployment code adds an additional layer of precautionary actions to be taken by carriers.

To explain these two points in more detail, first the international safety guidelines which are the basis of Australia's safety standard have been developed using conservative assumptions and already include large safety factors as a precaution to address any uncertainties.

Recently the Health Council of the Netherlands specifically addressed the question of whether or not there needed to be different exposure limits for children or other vulnerable groups in the community and concluded:

> *The answer to this question is: no, because the potential additional sensitivity of children and other vulnerable groups was explicitly accounted for in setting the exposure limits.*
> *It is one of the reasons why the exposure limits for the general population include an ample uncertainty margin of a factor of 50. Based on the data presented in this report, the Committee sees no reason to recommend different exposure limits for children than for adults.*

Also, a recent meeting of health authorities and policy makers, called together by the European Parliament, has concluded there is no need for additional or 'precautionary' measures to the existing safety limits for electromagnetic fields (EMF) used by mobile phone and wireless networks.

In 2010 the European Commission published a report from the meeting which rejected the call for a precautionary approach, saying “the Council Recommendation already contains a certain level of precaution.” The Commission said a revision of the exposure limits was not justified concluding that:

> *The Precautionary Principle excludes a purely hypothetical approach to risk. Safety factors must be applied to established facts in a consistent way to avoid an open ended process. So far, there are no new elements that would justify applying additional safety factors to the Council Recommendation.*
> *The differences in exposure limits between Member States are confusing for the public opinion. A common approach would be good for everybody, but this is in the hands of Member States.*

Secondly, the voluntary actions taken by the industry in Australia’s deployment code (referred to as ‘precautionary approaches’) add another layer of precaution. Base stations create exposures in public areas that are only 0.002-2% of the exposure limit in the Australian safety standard because they are constantly adapting their output levels to the lowest levels to make a quality connection depending on the number of calls they are handling and how far away the handsets are from them.

It is this ability to constantly reduce output levels which can make it difficult for the community to understand the most precautionary place for a base station is close to the area in which the services are required.

This is also why community suggestions of buffer zones around schools or other locations is inconsistent with a precautionary approach which aims to minimise emissions. If a base station was placed further from a school the facility may in fact need to operate at a higher power level to operate effectively and this could result in higher exposures at the school.

In the Code, the precautionary principle is manifested in the obligations it imposes on Carriers. Carriers are required to:

- Design and operate telecommunications infrastructure to minimise Radiofrequency EME/EMR exposure;
- Develop consultation plans about the deployment of infrastructure that is not subject to Development Approval;
- Turn off transmitters that are out of service;
- Test their decisions about the deployment of infrastructure against a range of important factors; and
- Document their decision making processes about the deployment of infrastructure.

As required by the code, carriers select and design sites and to minimise exposure, but sometimes carriers receive requests for an alternative site further away from homes or schools which are based on the mistaken belief that the further a base

station is away from people the less they would be exposed to the radio wave emissions it uses to communicate.

However, once a call is connected, both mobile phones and their base stations are designed to operate at the lowest levels to make a quality call. Base stations are constantly adapting their output levels depending on the number of calls they are handling and how far away the handsets are from them. This ability has also become increasingly effective as network software has developed.

In most cases the best location to build base stations in order to minimise emissions is closest to where those services are required including schools and residential areas. Therefore, the most consistent approach to the precautionary principle is to allow carriers to build base stations in the most effective locations for network coverage.

In addition, the mobiles industry funds health research via a license levy, provides up-to-date information to consumers and the general public, and ensures that base station are deployed with an effective consultation program – which are all additional precautionary actions.

Finally, the courts in Australia have decided that in the absence of credible evidence of risk, compliance with existing exposure guidelines is an appropriate precautionary approach.

For example, the application of the precautionary principle to base station siting was thoroughly addressed by the Chief Judge of the New South Wales Land and Environment Court (Telstra Corporation Limited v. Hornsby Shire Council 2006).

Mr Justice Preston concluded that the principle should not be used to try to avoid all risks (paragraph numbers from the judgment):

> *138 If there is not a threat of serious or irreversible environmental damage, there is no basis upon which the precautionary principle can operate. The precautionary principle does not apply, and precautionary measures cannot be taken, to regulate a threat of negligible environmental damage…*

He went on to outline the many inherently precautionary elements of the base station proposal:

> *188 …In the present case, such a precautionary approach has already been undertaken, first, in the standard-setting process…secondly, in the adoption of the Australian Standard RPS3 with margins of safety, thirdly, in the requirements of the relevant industry code to comply with the adopted standard, fourthly, in the measurement of existing and the estimation of predicted RF RPS3 levels from the proposed base station…fifthly, in the selection of equipment and antennas to be used in the proposed base station and, finally, in the efficient operation of the equipment and antennas to minimise RF EME levels generated from the proposed base station.*

The Court also declined to accept unfounded community fears as a basis for refusing the development application:

208 Responsiveness to public fear should be complemented by a commitment to deliberation in the form of reflection and reason giving. If the public is fearful about a trivial risk, a deliberative democracy should not respond by reducing that risk. Rather, it should use its institutions to dispel public fear that is, by hypothesis, without foundation. In this way, deliberative democracies avoid the tendency of popularist systems to fall prey to public fear when it is baseless. They use institutional safeguards to check public panics…

Summary of Estimated RF EME Levels around the Mobile Phone Base Station at Canberra Hospital (Main Building) 77 YAMBA DR, Garran ACT 2605

Introduction:

Date 19/3/2012

NSA Site No (2605001)

This report summarises the estimated maximum cumulative radiofrequency (RF) electromagnetic energy (EME) levels at ground level emitted from the existing Mobile Phone Base Station antennas at Canberra Hospital (Main Building) 77 YAMBA DR Garran ACT 2605 . Maximum EME levels are estimated in 360° circular bands out to 500m from the base station. The procedures for making the estimates have been developed by the Australian Radiation Protection And Nuclear Safety Agency (ARPANSA)[1]. These are documented in the ARPANSA Technical Report; "Radio Frequency EME Exposure Levels - Prediction Methodologies" which is available at http://www.arpansa.gov.au

EME Health Standard

ARPANSA, an Australian Government agency in the Health and Ageing portfolio has established a Radiation Protection Standard[2] specifying limits for continuous exposure of the general public to RF transmissions at frequencies used by mobile phone base stations. Further information can be gained from the ARPANSA web site.

The Australian Communications and Media Authority (ACMA)[3] mandates exposure limits for continuous exposure of the general public to RF EME from mobile phone base stations. Further information can be found at the ACMA website http://emr.acma.gov.au

Existing Site Radio Systems

Telstra / GSM900	Telstra / WCDMA850	3GIS / WCDMA2100	Optus / GSM900
Optus Vodafone Joint Venture / WCDMA2100			

Table of Predicted EME Levels – Existing

Distance from the antennas at Canberra Hospital (Main Building) 77 YAMBA DR in 360° circular bands	Maximum Cumulative EME Level – All carriers at this site (% of ARPANSA exposure limits[2]) Public exposure limit = 100%
0m to 50m	0.011%
50m to 100m	0.014%
100m to 200m	0.043%
200m to 300m	0.12%
300m to 400m	0.13%
400m to 500m	0.11%
Maximum EME level 354.18 m, from the antennas at Canberra Hospital (Main Building) 77 YAMBA DR	0.13%

Note: Estimation for the maximum level of RF EME at 1.5m above the ground from the existing antennas assuming level ground. The estimated levels have been calculated on the maximum mobile phone call capacity anticipated for this site. This estimation does not include possible radio signal attenuation due to buildings and the general environment. The actual EME levels will generally be significantly less than predicted due to path losses and the base station automatically minimising transmitter power to only serve established phone calls[5]. Where applicable, particular locations of interest in the area surrounding the base station, including topographical variations, are assessed in Appendix A " Other areas of Interest" table on the last page.

Summary – Existing Radio Systems

RF EME levels have been estimated from the existing antennas at Canberra Hospital (Main Building) 77 YAMBA DR Garran ACT 2605 . The maximum cumulative EME level at 1.5 m above ground level is estimated to be 0.13 % of the ARPANSA public exposure limits.

Existing and Proposed Site Radio Systems

Telstra / GSM900	3GIS / WCDMA2100	Optus / GSM900	Optus Vodafone Joint Venture / WCDMA2100
Telstra / WCDMA850	Telstra / WCDMA2100 (proposed)		

Table of Predicted EME Levels – Existing and Proposed

Distance from the antennas at Canberra Hospital (Main Building) 77 YAMBA DR in 360° circular bands	Maximum Cumulative EME Level – All carriers at this site (% of ARPANSA exposure limits[2]) Public exposure limit = 100%
0m to 50m	0.012%
50m to 100m	0.015%
100m to 200m	0.066%
200m to 300m	0.19%
300m to 400m	0.19%
400m to 500m	0.16%
Maximum EME level 316.68 m, from the antennas at Canberra Hospital (Main Building) 77 YAMBA DR	0.19%

Note: Estimation for the maximum level of RF EME at 1.5m above the ground from the existing and proposed antennas assuming level ground. The estimated levels have been calculated on the maximum mobile phone call capacity anticipated for this site. This estimation does not include possible radio signal attenuation due to buildings and the general environment. The actual EME levels will generally be significantly less than predicted due to path losses and the base station automatically minimising transmitter power to only serve established phone calls[5]. Where applicable, particular locations of interest in the area surrounding the base station, including topographical variations, are assessed in Appendix A "Other areas of Interest" table on the last page.

Summary – Existing and Proposed Radio Systems

RF EME levels have been estimated from the existing and proposed antennas at **Canberra Hospital (Main Building) 77 YAMBA DR** Garran ACT 2605 . The maximum cumulative EME level at 1.5 m above ground level is estimated to be **0.19** % of the ARPANSA public exposure limits.

Reference Notes:

1. The Australian Radiation Protection and Nuclear Safety Agency (ARPANSA) is a Federal Government agency incorporated under the Health and Ageing portfolio. ARPANSA is charged with responsibility for protecting the health and safety of people, and the environment, from the harmful effects of radiation (ionising and non-ionising).

2. Australian Radiation Protection and Nuclear Safety Agency (ARPANSA), 2002, 'Radiation Protection Standard: Maximum Exposure Levels to Radiofrequency Fields — 3 kHz to 300 GHz', Radiation Protection Series Publication No. 3, ARPANSA, Yallambie Australia.
[Printed version: ISBN 0-642-79400-6 ISSN 1445-9760]
[Web version: ISBN 0-642-79402-2 ISSN 1445-9760]

3. The Australian Communications and Media Authority (ACMA) is responsible for the regulation of broadcasting, radiocommunications, telecommunications and online content. Information on EME is available at http://emr.acma.gov.au/

4. The EME predictions in this report assume a near worst-case scenario including:
- base station transmitters operating at maximum power (no automatic power reduction)
- simultaneous telephone calls on all channels
- an unobstructed line of sight view to the antennas.
In practice a worst-case scenario is rarely the case. There are often trees and buildings in the immediate vicinity, and cellular networks automatically adjust transmit power to suit the actual telephone traffic. The level of EME may also be affected where significant landscape features are present and predicted EME levels might not be the absolute maximum at all locations.

5. Further explanation of this report may be found in "Understanding the ARPANSA Environmental EME Report" and other documents on the ARPANSA web site, http://www.arpansa.gov.au

Appendix A

Table of Other Areas of Interest

Additional Locations	Height / Scan relative to location ground level	Maximum Cumulative EME Level All Carriers at this site (% of ARPANSA exposure limits[2]) Public exposure limit = 100%
ACIF Code Section 5.5 - community consultation plan new sites	n/a	Existing Site Update - No additional locations identified. Refer to previous table for the environmental EME assessment
Topography/Buildings	n/a	No locations identified
Other (e.g. significant previous community concern)	n/a	No locations identified

Note: Estimation for the maximum EME levels at selected areas of interest over a height range relative to the specific ground level at the area of interest. This table includes any existing and proposed radio systems.

Estimation Notes / Assumptions – Other Areas of Interest
Variable ground topography has been included in the assessment of the "Other Areas of Interest" as per ARPANSA methodology