

Radio Communications Site Management Book

NSA Site No: 2144012

Cnr Norval St & Hargrave Rd, Auburn, NSW, 2144

SWAH COMMUNICATIONS TOWER

RCSMB Issue No: 2

Valid at 18/03/2008

RCSMB Document Revision History

Issue No	Issue Date	Reason for Amendment
1	27/06/2007	3GIS EME Compliance
2	18/03/2008	Proposed Site Re-Design



Important Information about this Book

This book is designed to help anyone who is required to work near the radio telecommunications equipment installed on this property and to do so safely. This includes site owners, managers, their associates, contractors and staff.

Site information including RF EME Diagrams, access restriction(s) & RF signage in this manual have a "date of issue" incorporated on each page and are correct for that date.

To ensure that all the material contained in this manual is up to date call the RF ASSESSOR FOR THIS SITE, and check the online version of this manual.

Online Site Information

MCF National Site Archive - http://www.rfnsa.com.au

A Site Compliance Certificate (SCC) is associated with this document. After the site is constructed and found to comply with the relevant Australian Standards governing communication sites the Compliance Certificate will be issued and made available on the MCF National Site Archive (see above link details).

This manual includes information on:

1. Site Contact Details

- Site RF Assessor, telecommunications carrier(s) or Radio Service Operator(s) (RSOs) transmitting from this site.

- Who to contact?

2. Site RF EME Diagrams

3. Site Access Control

- Access Control Procedure
- RF Hazard Warning Signs installed
- Special Requirements / Local Rules

4. Equipment Installed at this site

- Summary of physical equipment installed
- Equipment list
- 5. Site Specific Documents
- 6. Safe Work Procedure
- 7. Additional Information Sources

Valid at 18/03/2008

Section 1 Site Contact Details

This section shows the contact details for all individuals or organisations with which this site is associated.

Site Information Contacts

Sito		Phone	(02) 9563 9500				
Owner	SWAH	Fax	-				
		Email	-				
The site ow	vner is the individual or organisation that	is respor	sible for the stated building(s) or structure(s) at this site.				
Site		Phone	(02) 9563 9897				
Manager	Peter De Robillard	Fax	(02) 9563 9520				
		Email	-				
The site ma	anager is the individual or organisation the	hat is resp	oonsible for managing access and maintenance on the				
stated build	ding(s) or structure(s) at this site.						
	Corearth Australia Pty Ltd	Phone	+61 7 3666 5333				
Site RF Assessor	Level 1, 168 Barry Parade	Fax	+61 7 3666 5366				
	Fortitude Valley QLD 4006	Email	emeservices@corearth.com				
The Site RF Assessor is the individual or organisation that is responsible for assessing the extent of RF emissions at the							
site, as well as certifying the site's compliance with relevant EME standards.							

Carrier(s) & Radio Service Operator(s) (RSOs)

Carrier / RSO Codes		Carrier / RSO Name	Contact Phone No		
3GIS	214402C	AUBURN WEST	Network Management		
			Centre		
			1800 555 533 [24hrs]		
SWAH	-	SWAH COMMUNICATIONS TOWER	Switchboard		
			(02) 9563 9500		



Who to contact in the following situations	Site Owner	Site Manager	Site RF Assessor	Carrier or RSO
Latest RF safety information			~	~
Access to restricted or controlled areas			(~)	
Mains power outages that may effect communications equipment	✓			~
Building renovations, servicing or general maintenance activities that may involve operations near communications antennas	~			
Site access changes	~	✓	~	
Damaged communications infrastructure		✓		~
Updates or changes to communications equipment		✓	✓	~



Section 2 Site RF EME Diagrams

How to read the RF EME Diagrams - See example below

= General access.

Plan and elevation view RF EME Diagrams display horizontal and vertical cross-sections of the emission patterns from transmitting antennas.

Persons viewing these drawings should ensure all diagrams provided are viewed as a collective whole rather than any one in isolation. This will provide maximum understanding of the site as detailed.

- <u>Red Zone</u> = No access without confirmed power reduction or transmitter shutdown.
 - = Limited access to specially trained carrier personnel (RF Workers).

Yellow Zone White Zone



IMPORTANT

General Public, staff and maintenance personnel are not permitted to enter red or yellow zones.



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AUBURN WEST

Cnr Norval St & Hargrave Rd AUBURN NSW 2144 AUSTRALIA

Cover Page	Page 1
45m To 42.6m Plan View	Page 2
42.1m To 39.5m Plan View	Page 3
39.4m To 37.3m Plan View	Page 4
36.8m To 32.9m Plan View	Page 5
8° TN Elevation	Page 6
98° TN Elevation	Page 7
188° TN Elevation	Page 8
278° TN Elevation	Page 9

DATUM ZONE

GDA94

EASTING NORTHING LATITUDE LONGITUDE

56 318051 6251592 -33.86031 151.0331

REF NO

BNE-VAS0005

REVISION NO

DATE OF ISSUE

18 March 2008

Modelling of exclusion zones complies with the ARPANSA standard

2

ProX5 calculates radiation patterns based on mathematical models from 'Microwave Scanning Antennas Volume 1 - Apertures' (R.C. Hansen, 1964, pp. 36-8).







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Section 3 Site Access Control

This section details the access control procedures in place at the site and the RF hazard warning signs.

Check that your RF EME access restrictions and RF signs are up to date.

The RF EME access restrictions and RF signage information about this site are maintained on a centralised database that is kept up to date for all carriers and known services transmitting from this site. Ensure that your RF EME access restriction information is up to date by contacting the RF Assessor for this site.

Access Control Procedure at Site

To Be Advised.

RF Hazard Warning Signs Installed

To Be Advised.

Special Requirements (Local Rules)

See also Site Specific Documents (Section 5)

Nil



Section 4 Equipment Installed At This Site

Summary of physical equipment installed

Carrier / RSO	Site Equipment	Location
3GIS	Antennas	3 x RFS APXV18-206517L PANEL antenna(s) mounted on the structure 6 x RFS SB1-220 DISH antenna(s) mounted on the structure 1 x ANDREW HP2-220 DISH antenna(s) mounted on the structure 3 x RFS SB2-220 DISH antenna(s) mounted on the structure 1 x ANDREW VHLP4-130 DISH antenna(s) mounted on the structure 1 x RFS SP4-220A DISH antenna(s) mounted on the structure
SWAH	Antennas	1 x ANDREW VHLP1-220 DISH antenna(s) mounted on the structure 1 x ANDREW VHLP2-180 DISH antenna(s) mounted on the structure 2 x RFI YB16-99 YAGI antenna(s) mounted on the structure 1 x ANDREW VHLPX2.5 DISH antenna(s) mounted on the structure 4 x GABRIEL QFD2-52-N DISH antenna(s) mounted on the structure 1 x RFI SMD4-68 FOLDED DIPOLE antenna(s) mounted on the structure 1 x ANDREW VHP1-180 DISH antenna(s) mounted on the structure 1 x RFI SMD2 FOLDED DIPOLE antenna(s) mounted on the structure 1 x RFI SMD2 FOLDED DIPOLE antenna(s) mounted on the structure 1 x ANDREW VHP1-130 DISH antenna(s) mounted on the structure

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3GIS

RCSMB Reference	Carrier Reference	Antenna Description	Bearing (deg)	Mounting Height (m)	Pol	Mechanical Downtilt (deg)	Electrical Downtilt (deg)	Frequency (MHz)	Equipment Function	Max. Antenna Power (W)
V	-	RFS APXV18-206517L PANEL	160	35.5	Х	0	0-6	2100	WCDMA2100	40 (20 + 20)
W	-	RFS APXV18-206517L PANEL	250	35.5	Х	0	0-6	2100	WCDMA2100	40 (20 + 20)
х	-	RFS APXV18-206517L PANEL	340	35.5	Х	0	0-6	2100	WCDMA2100	40 (20 + 20)
U	-	RFS SB1-220 DISH	110	40.5	V	0	0	23376	LINK	0.2
0	-	RFS SB2-220 DISH	320	40.5	V	0	0	23331	LINK	0.2
Т	-	RFS SB2-220 DISH	106	41.5	V	0	0	23355	LINK	0.2
N	-	RFS SB1-220 DISH	205	41.5	V	0	0	23355	LINK	0.2
Q	-	RFS SB1-220 DISH	37	41.5	V	0	0	233625	LINK	0.2
L	-	RFS SB1-220 DISH	289	40.5	V	0	0	233695	LINK	0.2
М	-	ANDREW VHLP4-130 DISH	161	38.5	V	0	0	12765	LINK	0.2
S	-	ANDREW HP2-220 DISH	86	38.5	V	0	0	23369	LINK	0.2
R	-	RFS SB2-220 DISH	81	40.5	V	0	0	23254	LINK	0.2
Р	-	RFS SB1-220 DISH	3	41.5	V	0	0	23355	LINK	0.2
К	-	RFS SP4-220A DISH	287	38.5	V	0	0	233875	LINK	0.2
Z	-	RFS SB1-220 DISH	104	40.0	V	0	0	23331	LINK	0.2

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SWAH

RCSMB Reference	Carrier Reference	Antenna Description	Bearing (deg)	Mounting Height (m)	Pol	Mechanical Downtilt (deg)	Electrical Downtilt (deg)	Frequency (MHz)	Equipment Function	Max. Antenna Power (W)
AB	-	ANDREW VHLPX2.5 DISH	326	43.3	Х	0	0	10700	LINK	0.01
AA	-	ANDREW VHP1-180 DISH	326	44.0	V	0	0	17700	LINK	0.03
В	-	ANDREW VHP4-130 DISH	270	43.5	V	0	0	13250	LINK	0.01
С	-	GABRIEL QFD2-52-N DISH	323	38.5	Х	0	0	5250	LINK	0.05 (0.05 + 0)
D	-	GABRIEL QFD2-52-N DISH	329	38.5	Х	0	0	5250	LINK	0.05 (0.05 + 0)
E	-	GABRIEL QFD2-52-N DISH	342	43.5	Х	0	0	5250	LINK	0.05 (0.05 + 0)
FA	-	GABRIEL QFD2-52-N DISH	306	43.5	Х	0	0	5250	LINK	0.04 (0.04 + 0)
FB	-	ANDREW VHLP1-220 DISH	306	44.0	V	0	0	23345	LINK	0.02
G	-	ANDREW VHLP2-180 DISH	158	43.0	V	0	0	17700	LINK	0.01
HA	-	RFI YB16-99 YAGI	326	34.5	Н	0	0	350	LINK	1
HB	-	RFI YB16-99 YAGI	326	34.2	Н	0	0	350	LINK	1
I	-	RFI SMD4-68 FOLDED DIPOLE	180	35.5	V	0	0	400	LOCAL	5
J	-	RFI SMD2 FOLDED DIPOLE	270	35.5	V	0	0	148	LOCAL	100

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Section 5 Site Specific Documents

No additional documents are required for Site Compliance.



Section 6 Safe Work Procedures

The following table is a summary of generic safety procedures for work on radio frequency transmitter sites. Always confirm site and company safety procedures.

No	Procedure	Summary				
1	Safe Work Procedure Read the site RF safety documentation. "Radio Communications Site Management Book" (RCSMB)	 Locate and read RCSMB and confirm latest version: Check NSA for latest update or contact Site Manager Identify restricted access and RF hazard areas Identify equipment, plant and codes involved Verify safety procedures in RCSMB with all personnel Contact Site Manager with any questions Do not enter restricted areas without power down 				
2	Interim Safe Work Instructions	 If RCSMB is incomplete, not updated or not available: Check NSA for latest update Contact Site Manager Use personal RF monitor to verify safe working conditions at all times 				
3	Locate Relevant Plant	Locate the following plant: • Antennas • Feeders or transmission line • Switches or splitters • Transmitters				
4	Match Plant Codes	Physically check feeder and antenna codes				
5	De-energise Plant Transmitter switch-off must be verified by use of RF radiation meter or personal RF monitor	De-energise transmitter when required using: • Key-interlock • Power diversion • Isolation • Earthing Break or isolate feeder at designated feeder opening point				
6	Use DO NOT ALTER Signs (where supplied)	 When equipment has a temporary status for safety purposes: Attach sign to relevant equipment Mark and log entry on sign Check sign status after change of shift 				
7	Pass-Through Procedure (Broadcast Sites)	 At broadcast sites, a transmitter power reduction may be used to allow safe pass-through of a designated area. Detailed procedure in Section 3 (Site Access Control) of RCSMB. Switch off and/or power reduction Use personal RF monitor or RF radiation meter to verify power reduction Confirm switch off and/or power reduction with personnel at transmitter Confirm safe working conditions Pass-through designated area 				
8	Reactivation of Transmitter(s)	Procedure is reversal of above Ensure all staff have moved to safe area				

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Section 7 Additional Information

What is RF EME?

Electromagnetic energy (EME) is the energy stored in an electromagnetic field. Radio Frequency (RF) EME refers to EME generated by radio waves. RF EME is a factor of everyday life. It is emitted by natural sources like the sun and the earth, and by man-made sources operating on radio waves such as TV and radio broadcasts, baby monitors, model planes as well as mobile phone base stations and radio communications facilities.

EME Safety Standard

The Australian Radiation Protection and Nuclear Safety Agency (ARPANSA), an agency of the Commonwealth Department of Health, has established a Radiation Protection Standard specifying limits for continuous exposure of the General Public and RF Workers to Radio Frequency transmissions. Further information on the safety standard can be gained from the ARPANSA web site.

Radio Communications Safety

ARPANSA, the World Health Organisation (WHO) and other internationally recognised health authorities have made an overall assessment of the safety and health impacts connected with EME.

There is a consensus among these organisations that there is no substantiated scientific evidence of health effects from the low levels of EME generated by radio communications facilities that comply with national and international safety guidelines.

The compliance certificate for this site is available on the National Site Archive. (refer Section 1)

Additional Information Sources

Australian Radiation Protection and Nuclear Safety Agency (ARPANSA)	www.arpansa.gov.au Tel: 03 9433 2211 1800 022 333
Australian Communications and Media Authority (ACMA)	www.acma.gov.au Tel: 02 6256 5451
World Health Organisation (WHO)	www.who.int/inf-fs/en/fact193.html email: infor@who.ch
Australian Mobile Telecommunications Association (AMTA) and Mobile Carriers Forum (MCF)	www.mcf.amta.org.au www.amta.org.au Tel: 02 6230 6055

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APPENDIX: DOCUMENT SET

PROVISIONAL RCSMB / FINAL RCSMB

Construction Phase	RF Compliance Document Set	Site RF Drawings	RCSMB Document	Site Assessment Report (SAR)	Site Compliance Certificate (SCC)
Preliminary	Preliminary	\checkmark			
Pre-Construction	Provisional RCSMB	✓	✓	\checkmark	
Post-Construction	Final RCSMB	\checkmark	\checkmark	\checkmark	\checkmark
Limited Draft	RCSMB	\checkmark	√*	√*	

* Special version of document with carriers and specified operators information only

Standard Power Levels

If power is not specifically requested otherwise, the following standard powers are used:-

Telstra / 3	GIS	Optus / Voda	fone
Technology	Power Per Port	Technology	Power Per Port
WCDMA 850	32 W 48.5 dBm	CDMA 800 / WCDMA 850	25 W 44 dBm
GSM 900	25 W 44 dBm	GSM 900	25 W 44 dBm
GSM 1800	25 W 44 dBm	GSM 1800	25 W 44 dBm
CDMA 2100	20 W 43 dBm	CDMA 2100	12.5 W 41 dBm
CDMA 2100 High Power	40 W 46 dBm	CDMA 2100 Moran	25 W 44 dBm
3G Microcell / M43	5 W 36 dBm	3G Microcell / M43	5 W 36 dBm

These powers may be higher than the actual levels for assessment purposes and have been specified¹ as standard powers by the Mobile Carriers Forum (MCF) at the MCF Operations Group RF Assessors meeting on 1 August 2005 in Melbourne, Australia.

Standard Electrical Downtilts

Where actual electrical downtilt is between 0 to 6 degrees (inclusive), a 6 degree pattern is used to illustrate worst case scenario for the standard range.

Where the actual electrical downtilt is greater than 6 degrees, the actual electrical downtilt is used.

This has been specified¹ by the Mobile Carriers Forum (MCF) at the MCF Operations Group RF Assessors meeting on 1 August 2005 in Melbourne, Australia.

Standard Frequencies

If frequency is not specifically requested otherwise, the following standard frequencies are used:-

	Technology	Frequency (MHz)
CDMA	800 / WCDMA 850	900
GSM	900	900
GSM	1800	1800
CDMA	2100 (all services)	2100

These frequencies may differ from the actual operating frequency for assessment purposes and are in accordance with the Australian Radiation Protection and Nuclear Safety Agency (ARPANSA) Technical Report on Radio Frequency EME Exposure Levels – Prediction Methodologies²

Site Issues Report

Where a site assessment cannot be completed due to insufficient or missing information, a **Site Issues Report** may be issued to request further action by way of additional drawings, data or site visit.

Reference Documents

¹ National Site Archive (NSA) *http://www.rfnsa.com.au* under in the following directory structure *Documents / MERCS / RF Assessors Coordination / RF Assessors Workshop - 1 August 05 / MCF Std mobile system pwrs antenna config - 1st August 2005.ppt*

²http://www.arpansa.gov.au/pubs/predmeth.pdf

Section 3 – Determining Compliance With Relevant Exposure Limits





SITE COMPLIANCE CERTIFICATE

NSA SITE NO 2144012 AUBURN WEST

RF Human Exposure Limits

The Australian Radiation Protection And Nuclear Safety Agency (ARPANSA) has produced a standard for exposure to RF transmissions - ARPANSA Radiation Protection Standard 2002 Maximum Exposure Levels to Radio Frequency Fields - 3 kHz to 300 GHz (RPS3)

The Australian Communications and Media Authority (ACMA) has a Licence Condition Determination (LCD) that requires that the general public is not exposed to RF transmission levels exceeding the general public limits specified in the ARPANSA Standard (RPS3)

State and Commonwealth Occupational Health & Safety Acts require compliance with the limits and requirements of the ARPANSA standard (RPS3)

Compliance Statement

This 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)

	Qualified NATA EME Signatory
NATA Endorsed Inspection Report	Name:
Accreditation No 15092	Signature:
WORLD RECOGNIED	Designation: RF Technical Officer
This document is issued in accordance with NATA's	Company: Corearth Australia Pty Ltd
accreditation requirements.	Date:
Accredited for compliance with ISO/IEC 17020.	RCSMB Issue No: Job Number:
	SAR Issue No: Job Number:
	SCC Issue No: Job Number:

Access Control, RF warning signs (if required) and Safe Working Procedures are in place as detailed in the accompanying Radio Communications Site Management Book (RCSMB).