NOTE: THIS APPLIES TO KMART MALL ROOF ONLY.

Environmental EME Report
14-16 Hall Street, MOONEE PONDS VIC 3039

This report provides a summary of Calculated RF EME Levels around the wireless base station

Date: 10/3/2017 **RFNSA Site No.: 3039009**

Introduction

The purpose of this report is to provide calculations of EME levels from the existing facilities at the site and any proposed additional facilities.

This report provides a summary of levels of radiofrequency (RF) electromagnetic energy (EME) around the wireless base station at 14-16 Hall Street MOONEE PONDS VIC 3039. These levels have been calculated by Kordia - IRFA using methodology developed by the Australian Radiation Protection and Nuclear Safety Agency (ARPANSA).

The maximum EME level calculated for the existing systems at this site is 0.011% of the public exposure limit.

The ARPANSA Standard

ARPANSA, an Australian Government agency in the Health and Ageing portfolio, has established a Radiation Protection Standard specifying limits for general public exposure to RF transmissions at frequencies used by wireless base stations. The Australian Communications and Media Authority (ACMA) mandates the exposure limits of the ARPANSA Standard.

How the EME is calculated in this report

The procedure used for these calculations is documented in the ARPANSA Technical Report "Radio Frequency EME Exposure Levels - Prediction Methodologies" which is available at http://www.arpansa.gov.au.

RF EME values are calculated at 1.5m above ground at various distances from the base station, assuming level ground.

The estimate is based on worst-case scenario, including:

- wireless base station transmitters for mobile and broadband data operating at maximum power
- simultaneous telephone calls and data transmission
- an unobstructed line of sight view to the antennas.

In practice, exposures are usually lower because:

- the presence of buildings, trees and other features of the environment reduces signal strength
- the base station automatically adjusts transmit power to the minimum required.

Maximum EME levels are estimated in 360° circular bands out to 500m from the base station.

These levels are cumulative and take into account emissions from all wireless base station antennas at this site.
The EME levels are presented in three different units:

- volts per metre (V/m) – the electric field component of the RF wave
- milliwatts per square metre (mW/m²) – the power density (or rate of flow of RF energy per unit area)
- percentage (%) of the ARPANSA Standard public exposure limit (the public exposure limit = 100%).

Results

The maximum EME level calculated for the existing systems at this site is 0.65 V/m; equivalent to 1.12 mW/m² or 0.011% of the public exposure limit.

Radio Systems at the Site

This base station currently has equipment for transmitting the following services:

Carrier	Radio Systems
Optus	Mobile Donor Link

There are currently no proposed radio systems for this site.

Calculated EME Levels

This table provides calculations of RF EME at different distances from the base station for emissions from existing equipment alone and for emissions from existing equipment and proposed equipment combined.

Distance from the antennas at 14-16 Hall Street in 360° circular bands	Maximum Cumulative EME Level at 1.5m above ground – all carriers at this site					
	Existing Equipment			Existing and 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	0.65	1.12	0.011%			
50m to 100m	0.31	0.25	0.0025%			
100m to 200m	0.16	0.071	0.00071%			
200m to 300m	0.083	0.018	0.00018%			
300m to 400m	0.055	0.0082	0.000082%			
400m to 500m	0.042	0.0047	0.000047%			
Maximum EME level	0.65	1.12	0.011			
	12.63 m from the antennas at 14-16 Hall Street					

Calculated EME levels at other areas of interest

This table contains calculations of the maximum EME levels at selected areas of interest that have been identified through the consultation requirements of the Communications Alliance Ltd Deployment Code C564:2011 or via any other means. The calculations are performed over the indicated height range and include all existing and any proposed radio systems for this site.

Additional Locations		Height / Scan relative to location ground level	Maximum Cumulative EME Level All Carriers at this site Existing and Proposed Equipment		
			Electric Field V/m	Power Density mW/m²	% of ARPANSA exposure limits
1	Moonee Ponds Kinder Haven	0m to 10m	0.0064	0.00011	0.0000011%

RF EME Exposure Standard

The calculated EME levels in this report have been expressed as percentages of the ARPANSA RF Standard and this table shows the actual RF EME limits used for the frequency bands available. At frequencies below 2000 MHz the limits vary across the band and the limit has been determined at the Assessment Frequency indicated. The four exposure limit figures quoted are equivalent values expressed in different units – volts per metre (V/m), watts per square metre (W/m²), microwatts per square centimetre (μW/cm²) and milliwatts per square metre (mW/m²). Note: 1 W/m² = 100 μW/cm² = 1000 mW/m².

Radio Systems	Frequency Band	Assessment Frequency	ARPANSA Exposure Limit (100% of Standard)
LTE 700	758 – 803 MHz	750 MHz	37.6 V/m = 3.75 W/m² = 375 μW/cm² = 3750 mW/m²
WCDMA850	870 – 890 MHz	900 MHz	41.1 V/m = 4.50 W/m² = 450 μW/cm² = 4500 mW/m²
GSM900, LTE900, WCDMA900	935 – 960 MHz	900 MHz	41.1 V/m = 4.50 W/m² = 450 μW/cm² = 4500 mW/m²
GSM1800, LTE1800	1805 – 1880 MHz	1800 MHz	58.1 V/m = 9.00 W/m² = 900 μW/cm² = 9000 mW/m²
LTE2100, WCDMA2100	2110 – 2170 MHz	2100 MHz	61.4 V/m = 10.00 W/m² = 1000 μW/cm² = 10000 mW/m²
LTE2300	2302 – 2400 MHz	2300 MHz	61.4 V/m = 10.00 W/m² = 1000 μW/cm² = 10000 mW/m²
LTE2600	2620 – 2690 MHz	2600 MHz	61.4 V/m = 10.00 W/m² = 1000 μW/cm² = 10000 mW/m²
LTE3500	3425 – 3575 MHz	3500 MHz	61.4 V/m = 10.00 W/m² = 1000 μW/cm² = 10000 mW/m²

Further Information

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).

Information about RF EME can be accessed at the ARPANSA website, http://www.arpansa.gov.au, including:

- Further explanation of this report in the document "Understanding the ARPANSA Environmental EME Report"
- The procedure used for the calculations in this report is documented in the ARPANSA Technical Report; "Radio Frequency EME Exposure Levels - Prediction Methodologies"
- the current RF EME exposure standard
  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]

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

The Communications Alliance Ltd Industry Code C564:2011 'Mobile Phone Base Station Deployment' is available from the Communications Alliance Ltd website, http://commsalliance.com.au .

Contact details for the Carriers (mobile phone companies) present at this site and the most recent version of this document are available online at the Radio Frequency National Site Archive, http://www.rfnsa.com.au.

EME Guide
for Site Safety

RFNSA Site No: 3039009
Document Issue No: 1
Document Issue Date: 10/03/2017
Address:
14-16 Hall Street
MOONEE PONDS
VIC 3039

This Report was prepared by: Kordia Solutions Pty Ltd

An Important Message to people accessing this building or structure

There are radio communications antennas operating on this building or structure. The antennas on this building or structure produce a form of energy known as electromagnetic energy (EME).

You should not access Exclusion Zones, which are areas close to the antennas.

This EME guide is endorsed by AMTA and the MCF as a standard for EME Site Safety Documentation.

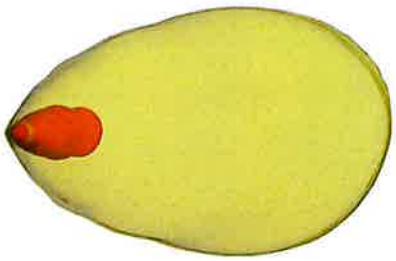
DO NOT STAND IN FRONT OF ANTENNAS

DO NOT ACCESS RED AND YELLOW EXCLUSION ZONES

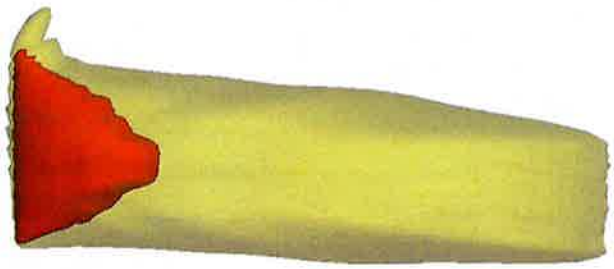
This document will show Exclusion Zones around the antennas, don't enter these areas. The latest version of this EME Guide is accessible at www.rfnsa.com.au or from the facility owner, the mobile carrier, or radio service operator occupying the site.

Exclusion zones are defined by the Australian EME Standard "ARPANSA Radiation Protection Standard - Maximum Exposure Levels to Radiofrequency Fields (RPS3)."

Make sure you view all the Exclusion Zone drawings so you get a complete understanding of the site.



Plan



Elevation

Red Zone = Exclusion Zone. No access without confirmed transmitter power reduction or transmitter shutdown.

Yellow Zone = Exclusion Zone. Limited access to specially trained personnel (RF Workers).

White Zone = General access

Note - This EME Guide replaces the Radio Communications Site Management Book (RCSMB).

1. Be aware of these Access Controls on site

If you need to access this site contact the site owner, manager or the Carriers and Radio Service Operators occupying the site.

Access Control Procedures at Site

For Access to this site contact the site owner, manager or the Carriers and Radio Service Operators occupying the site. Please also refer to the EME Safe Work Procedures Page for this site at www.rfnsa.com.au

Before accessing the site, staff/visitors/contractors must consult EME drawings in Sections 1 and 2 of this document to identify: areas where the respective limits may be exceeded and antennas that may need to be switched off.

Personal RF EME alarms should be used to verify safe working conditions.

Site access:14-16 Hall Street Moonee Ponds Victoria 3039

Site contact: Ron Mayes Ph: 03 9370 5411 Mobile: 0432 001 917 Email: ron.mayes@mirvac.com

Maintenance work can be completed during standard business hours, 0800-1730

MACRO: Antenna maintenance access via rooftop access door.

IBC: Access to the building is via access door. IBC antennas are mounted in the ceiling and above general public access, ladder required to access IBC antennas.

2. EME Safe Work Procedures to be followed at this site

1. Be appropriately trained
2. Receive a safety briefing from Site Manager
3. Do not stand in front of antennas
4. Observe safety signs
5. Ensure you view the current version of this EME Guide (www.rfnsa.com.au)
6. Check site drawings and antenna exclusion zones
7. Check for site updates - see caution sheets
8. Use a safe work method statement
9. Use a personal RF monitor
10. Questions - ask for help

3. Carriers and Radio Service Operators on site

Carrier/RSO	Antenna	Contact No.
Optus	MACRO: LR-ANT1 IBC: LB-ANT1, LB-ANT2, LB-ANT3, LB-ANT4, LB-ANT5, LB-ANT6, LB-ANT7, LB-ANT8, LB-ANT9, LB-ANT10, LB-ANT11, LB-ANT12, LB-ANT13	02 9342 0890

4. Site owner or manager contact details

Name	Role	Company	Contact Details
-	Owner	The Mirvac Group	TBA
Ron Mayes	Manager	The Mirvac Group	03 9370 5411 0432 001 917 ron.mayes@mirvac.com

Please Note: The site owner or manager contact information is current at the Issue Date but may change without notice to the Mobile Carriers or Radio Service Operators occupying the site.

Important Information about this EME Guide

Site safety information including exclusion zone diagrams in this EME Guide have an "Issue date" incorporated on each page and are correct for that date.

To ensure that you have the most current site safety information available, check the online version of this EME Guide using the RFNSA number reference found on the front cover.

On-line Site Information

MCF National Site Archive www.rfnsa.com.au

Mobile Site Safety www.mobilesitesafety.com

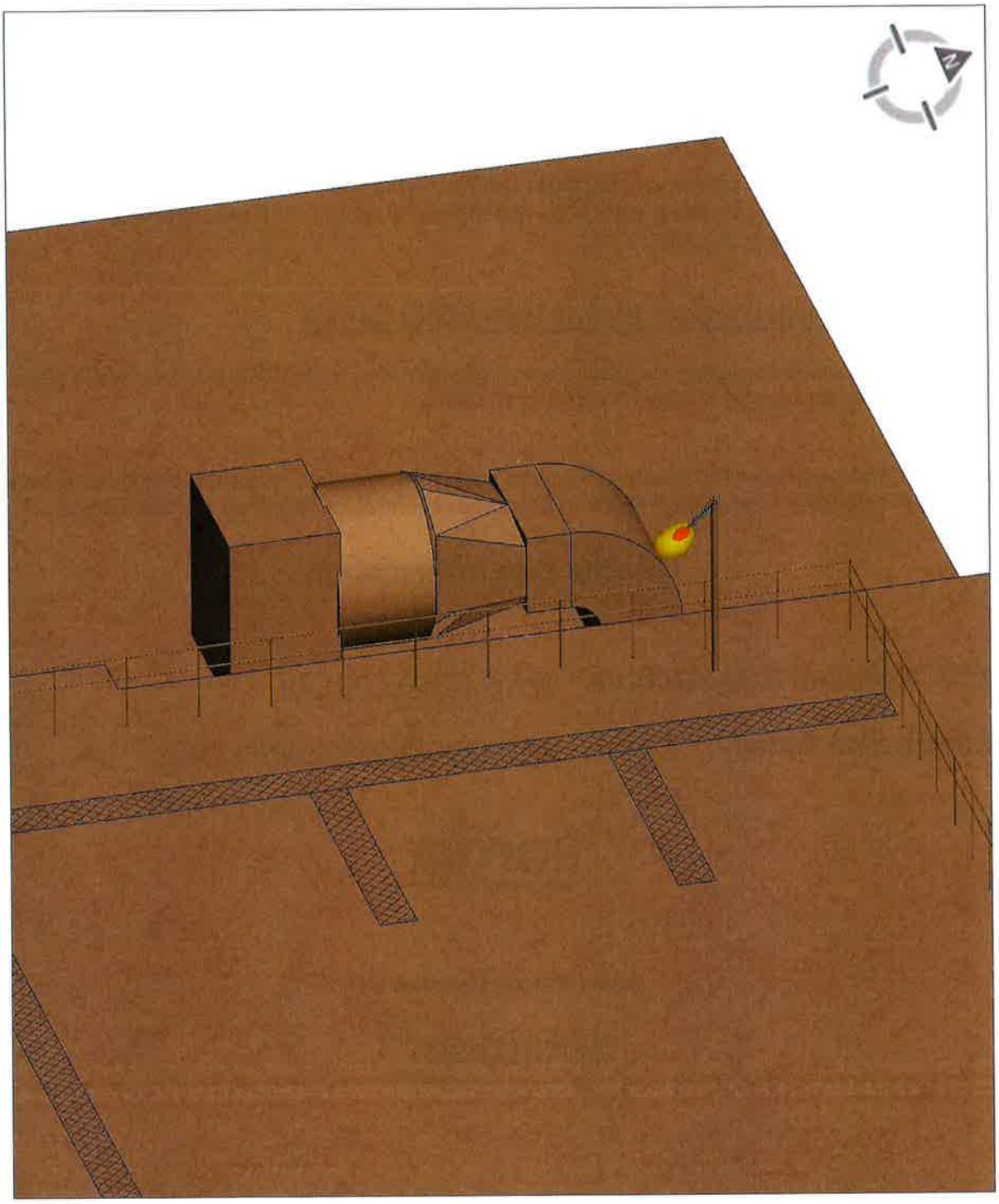
kordia
people & technology as one

Aerial images provided by:

nearmap.com

Sections 1 and 2: Detailed Site Exclusion Zone Drawings (below)

Perspective View

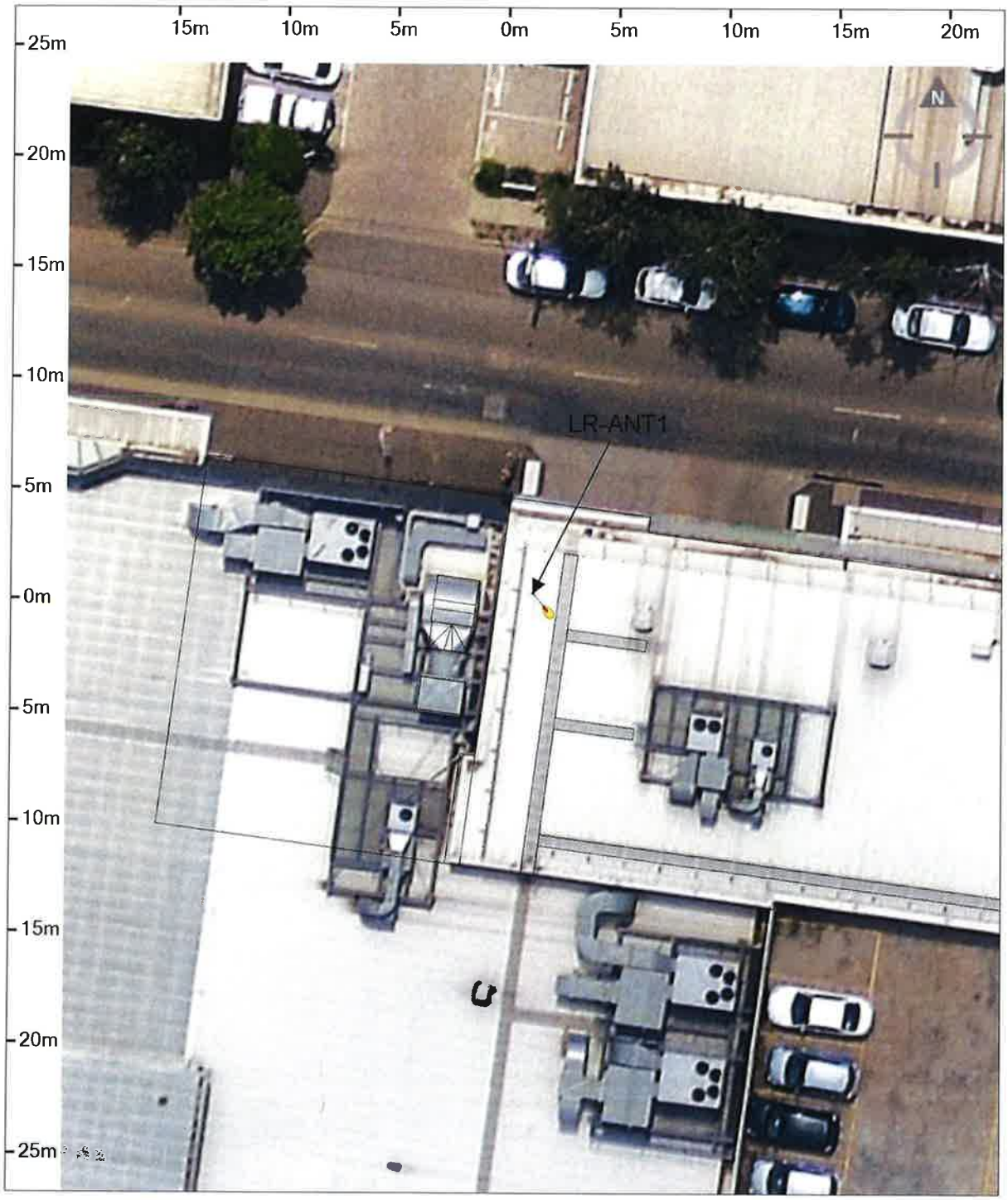


Exclusion zone Legend

Areas above RPS3 public limits

Areas above RPS3 occupational limits

Site Locality

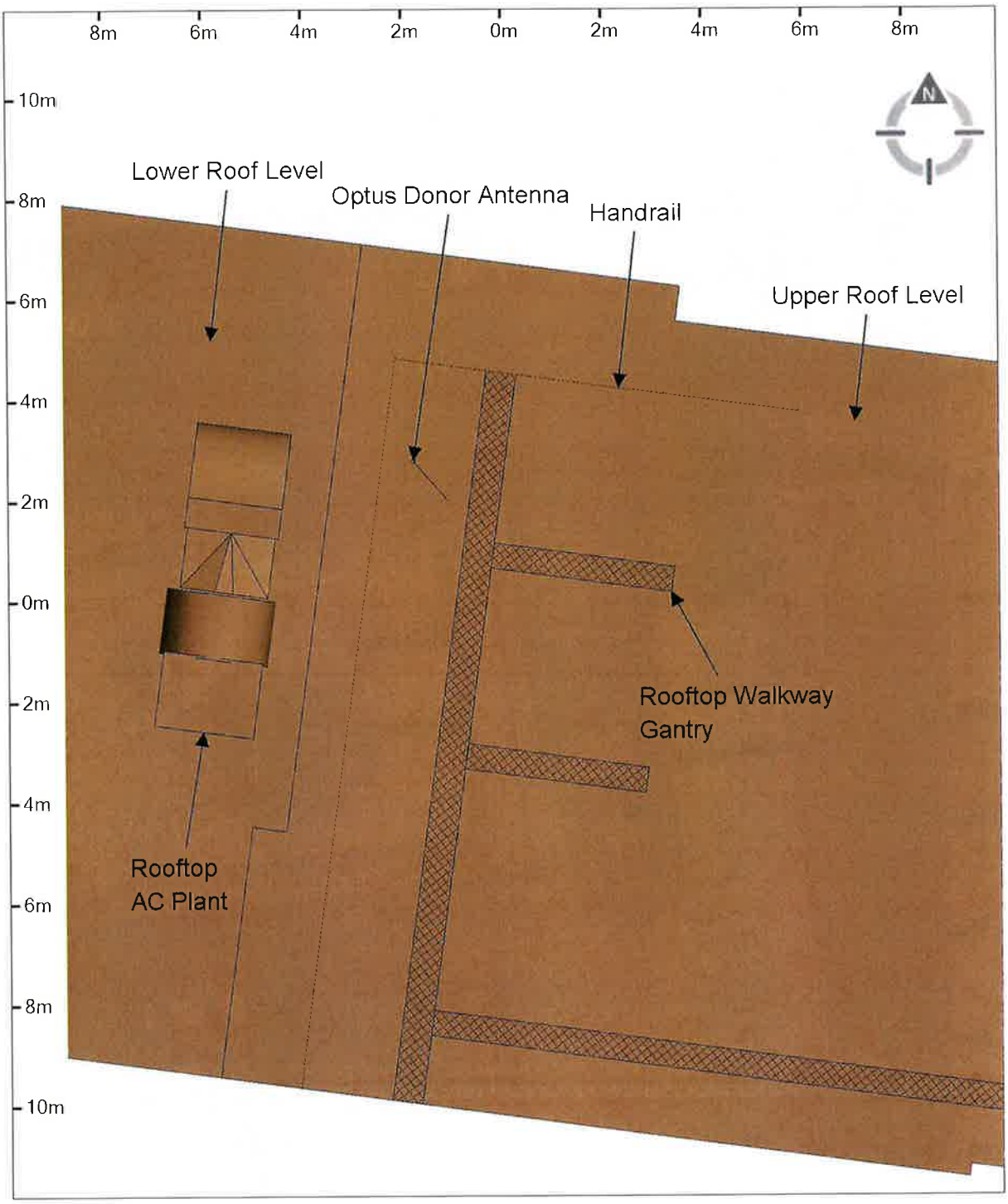


Exclusion zone Legend

Areas above RPS3 public limits

Areas above RPS3 occupational limits

Site Layout

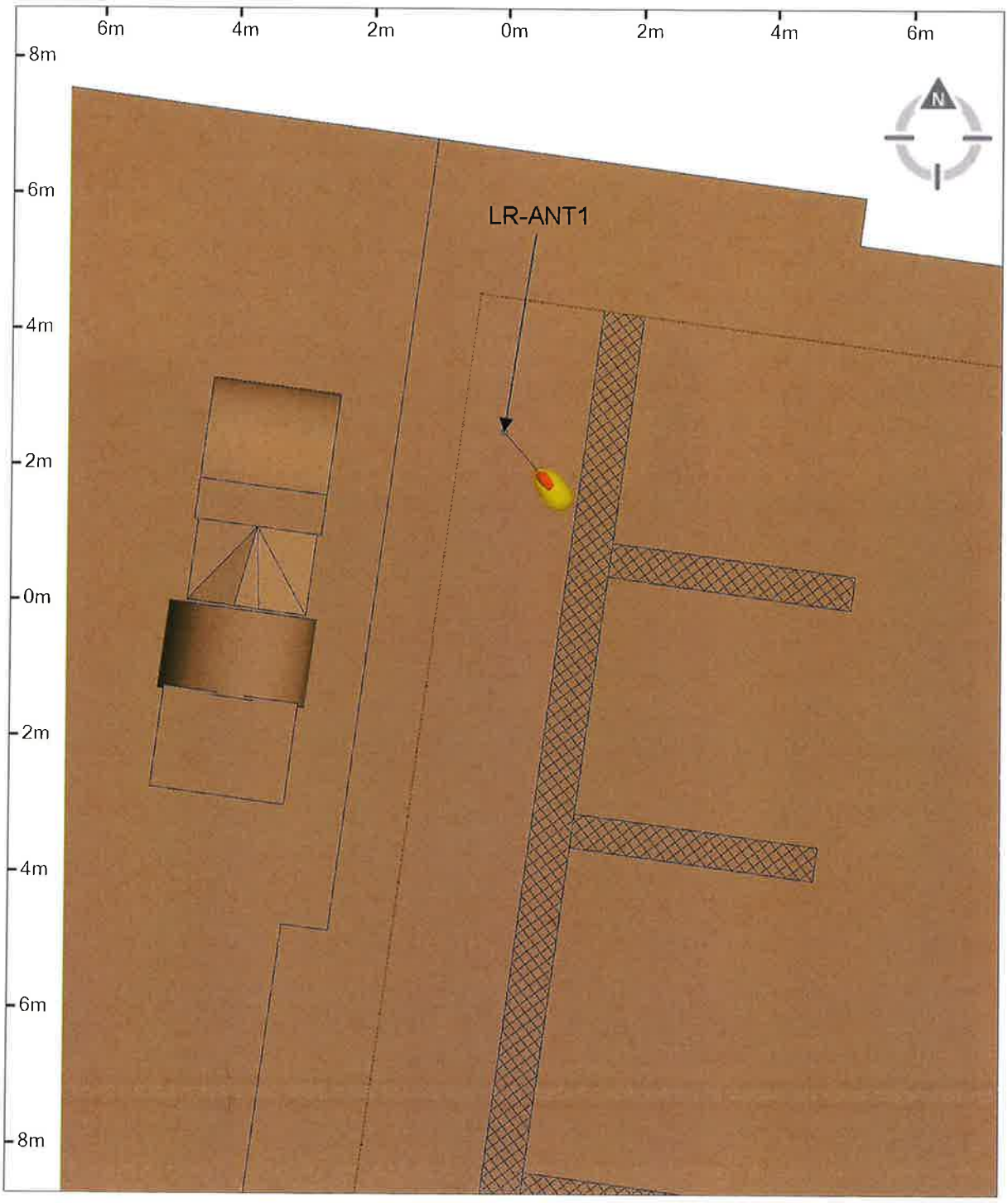


Exclusion zone Legend

Areas above RPS3 public limits

Areas above RPS3 occupational limits

Plan View

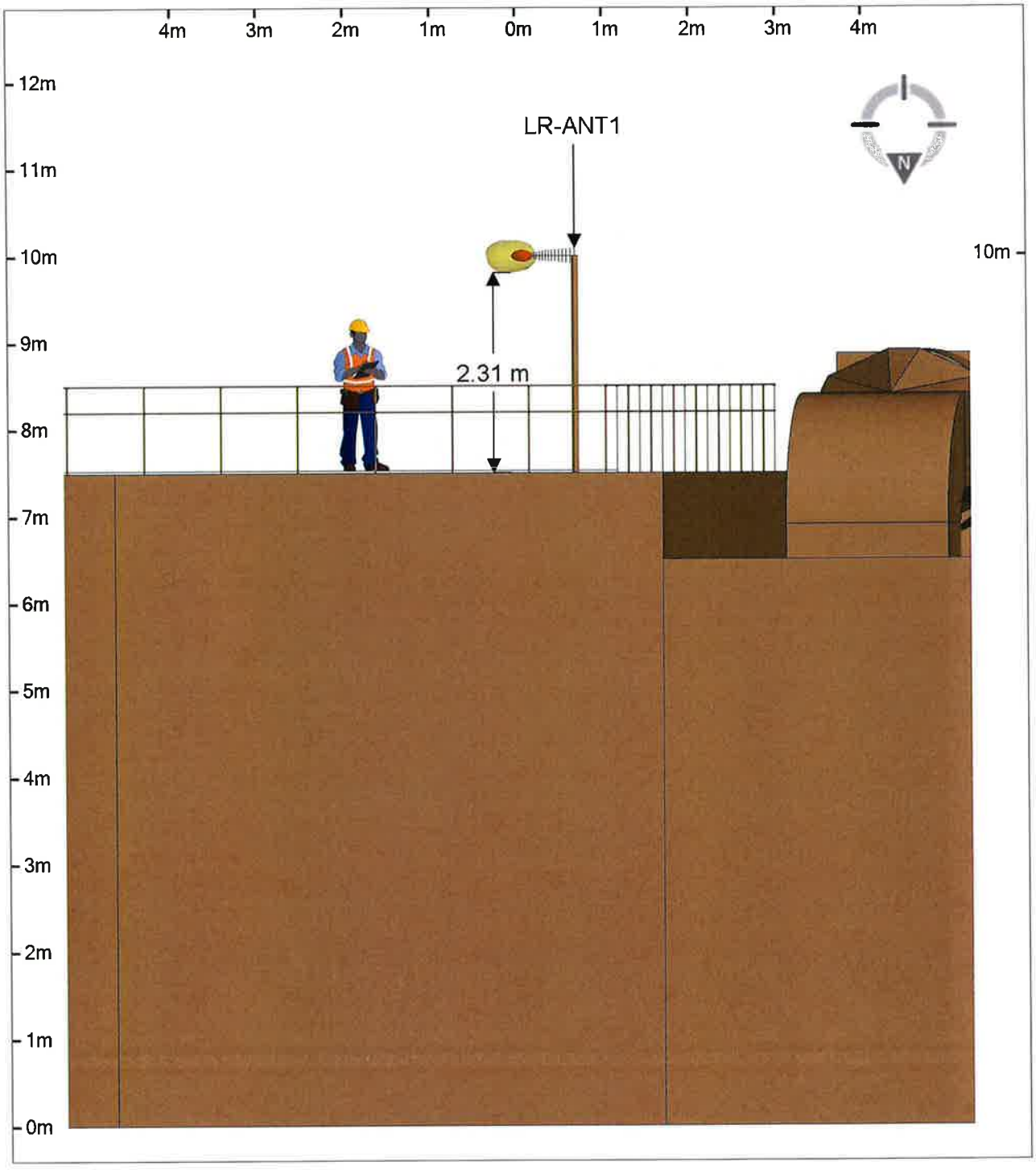


Exclusion zone Legend

Areas above RPS3 public limits

Areas above RPS3 occupational limits

Elevation View from Homer Street (North)

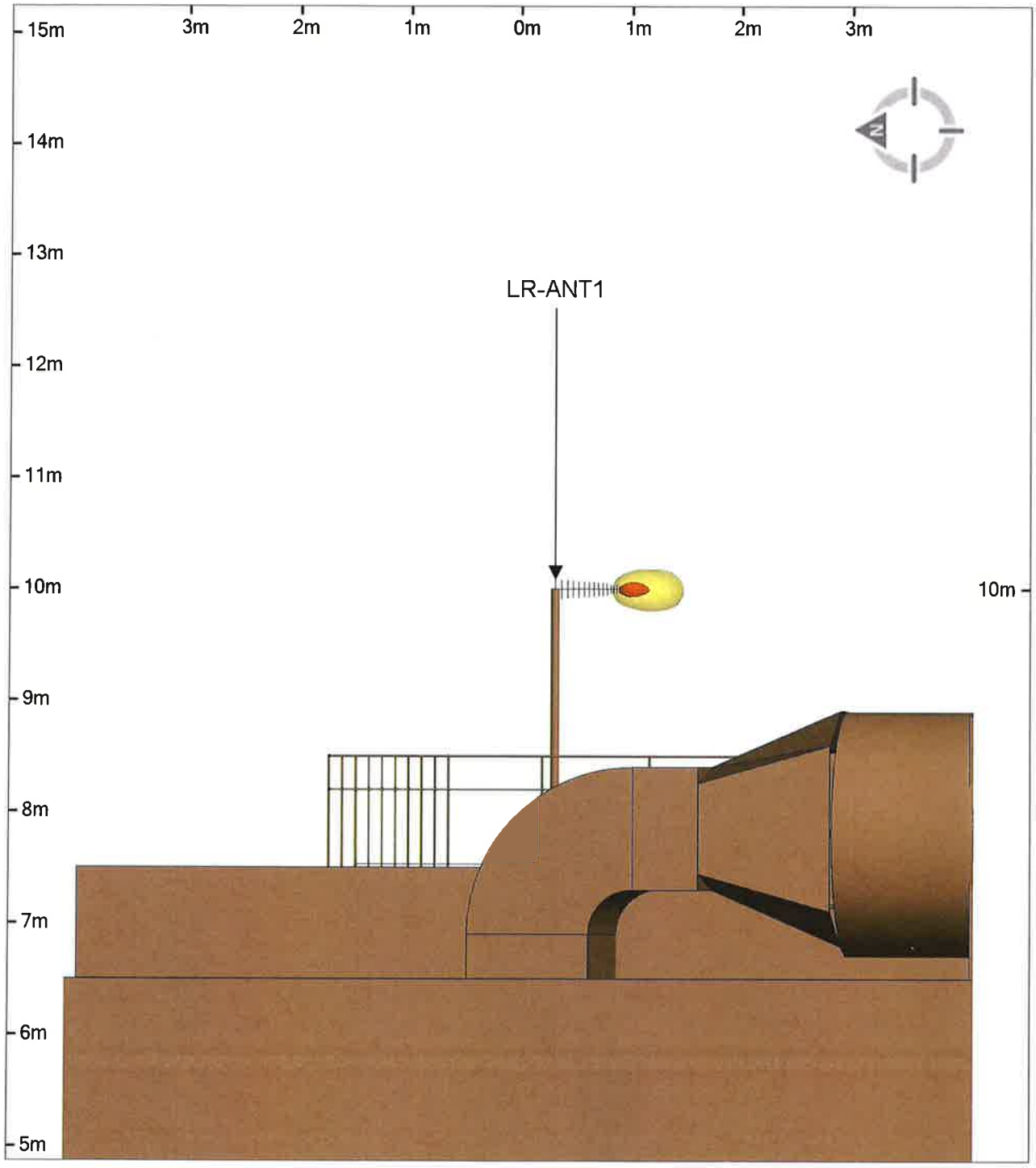


Exclusion zone Legend

Areas above RPS3 public limits

Areas above RPS3 occupational limits

Elevation View from Everage Street (West) (Close-up)

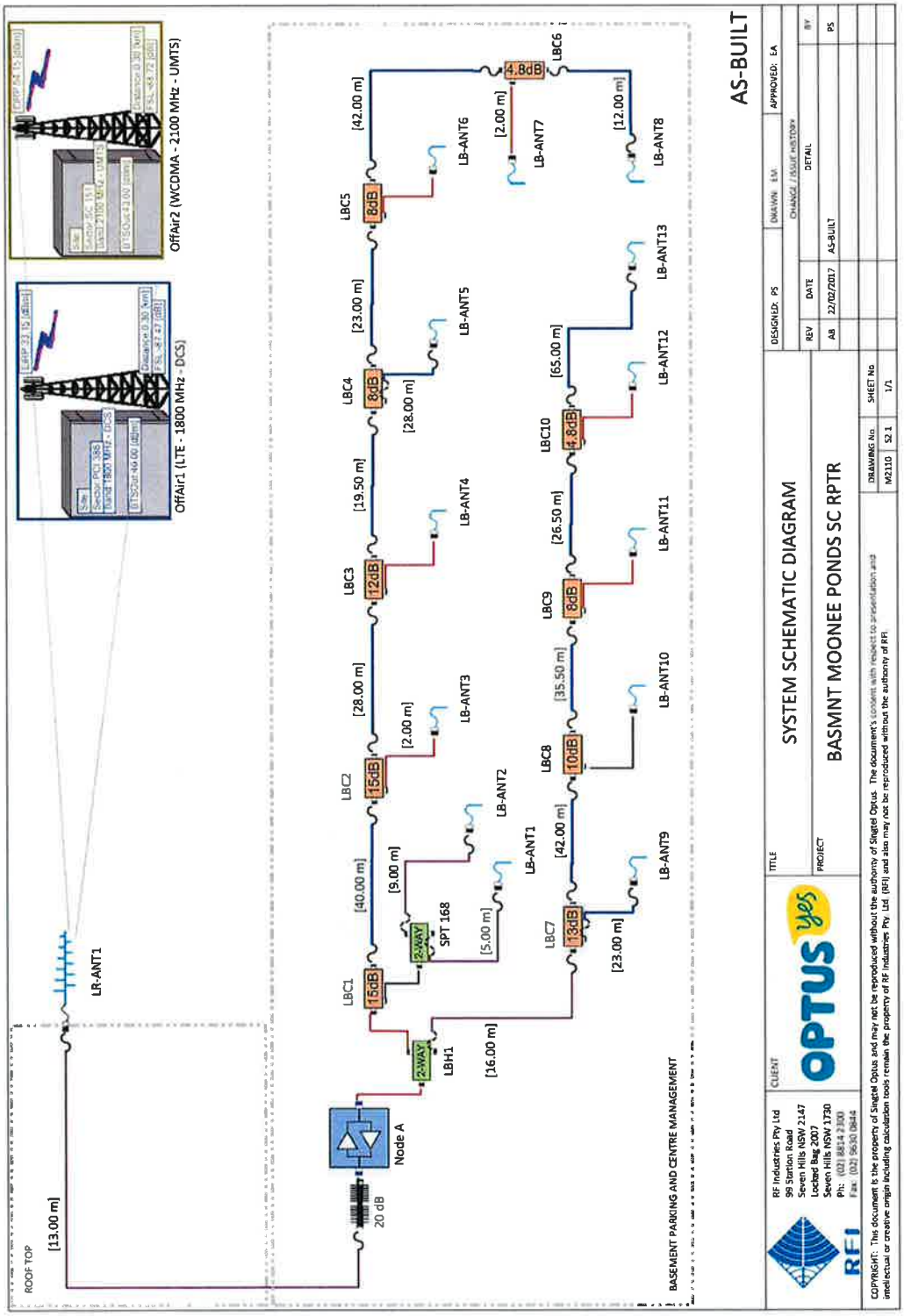


Exclusion zone Legend

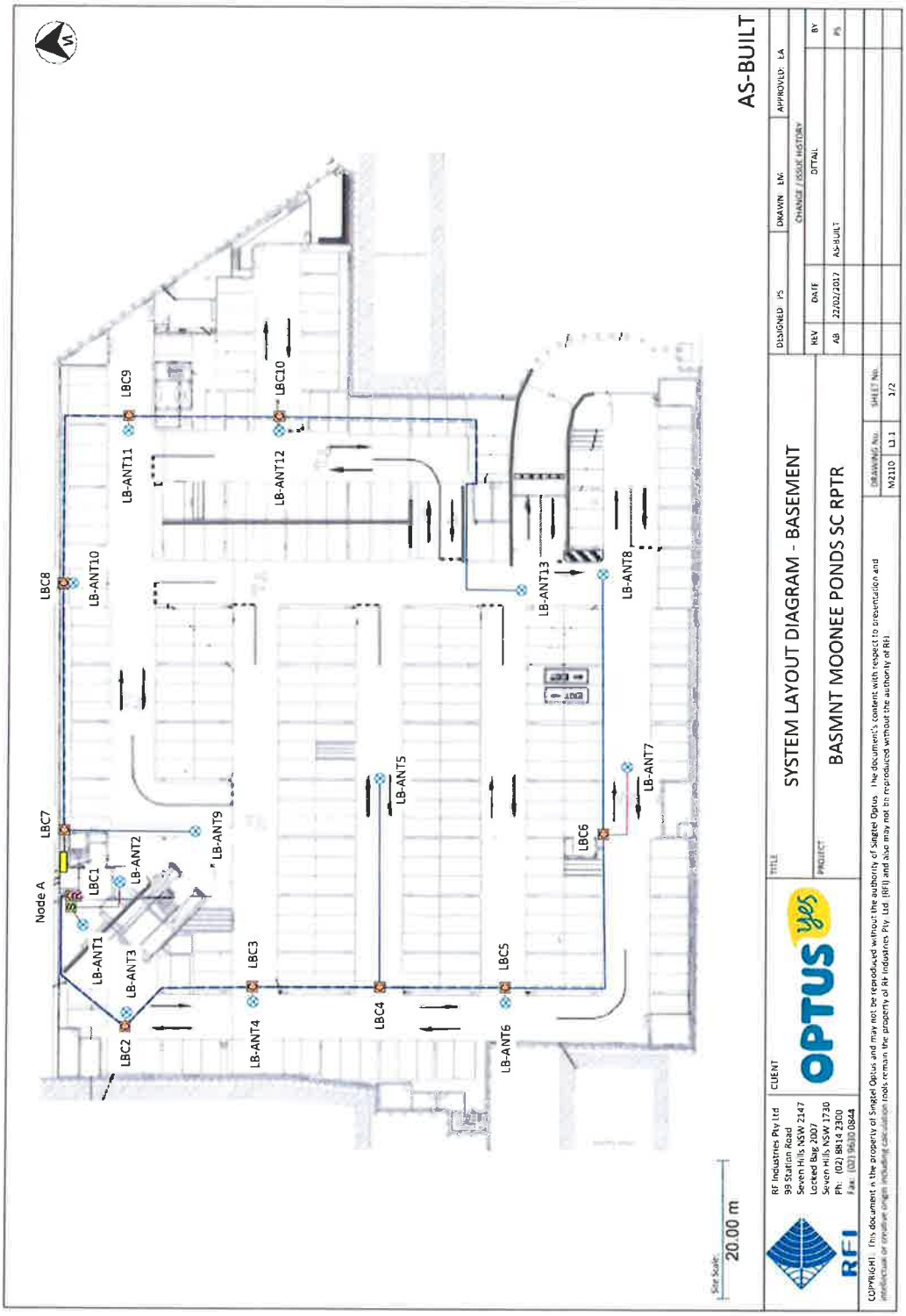
Areas above RPS3 public limits

Areas above RPS3 occupational limits

Optus IBC System Schematic



Optus IBC Plumbing Diagram



Section 3: Equipment Installed at this Site

Equipment List - Macro

Diagram Ref	Owner Ref	Owner	Type/Make/Model	Height (m)	Bearing (°)	Mech. Tilt (°)	Elec. Tilt (°)	Pol	System/Sector	Power (Watts)
LR-ANT1	LR-ANT1	Optus	Yagi/RF Industries/ LPDA7030-11-10SMA	10	139	0	0	Vertical	LTE 1800 + WCDMA2100 S2	4.6558

Equipment List - IBC

Diagram Ref	Owner	Type/Make/Model	Height (m)	Bearing (°)	Pol	System/Sector	Power (Watts)
LB-ANT1 - LB-ANT13	Optus	Omni-Directional/ RF Industries/ DAS6927-SOC-N	3	0	Vertical	LTE 1800 + WCDMA2100	0.020 (LB-ANT8)

Section 4: Site Specific Documents

Below are photos of the site used for the assessment.