



# Statement of Environmental Effects

*for a proposed upgrade of an existing  
Vodafone telecommunications facility*

**Address:** Blue Cow Ski Tube Terminal, Blue Cow, Perisher

**RPD:** Lot 526 DP1171975

**April 2017**

Prepared on behalf of Vodafone Group Pty Ltd

## Document Controls

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## Executive Summary

|                                    |   |
|------------------------------------|---|
| <b>Proposal</b>                    | <p>Vodafone propose to modify the existing facility as follows:</p> <ul style="list-style-type: none"> <li>• Installation of <b>three (3)</b> new panel antennas, coloured ‘gull gray’;</li> <li>• Installation of <b>one (1)</b> new Tower Mounted Amplifier (TMA) below each panel antenna;</li> <li>• Installation of associated cable to run from the panel antennas through conduit routes to the existing insitu communications room;</li> <li>• Replacement of existing back bracket on lightning conductor (168.3X4.8 350 Grade).</li> </ul> <p>The proposed facility is to provide Vodafone customers with improved coverage and capacity.</p> |
| <b>Site Description / Location</b> | <p>Blue Cow Ski Tube Terminal, Blue Cow, Perisher<br/>RPD: Lot 526 DP1171975</p>  |
| <b>Planning Scheme</b>             | <p><b>Planning Scheme:</b> Snowy River Local Environmental Plan 2013<br/><b>Zoning:</b> E1 National Parks and Nature Reserves<br/><b>Existing Use:</b> Tourist Facility<br/><b>Proposed Use:</b> Telecommunications Facility</p>  |
| <b>Application Details</b>         | <p>Statement of Environmental Effects for the approval of a proposed upgrade of an existing Vodafone telecommunications facility.</p>   |

# 1. Introduction

## 1.1 Purpose of the Report

This Statement of Environmental Effects (SEE) report has been prepared by BMM Group on behalf of Vodafone, and accompanies a Development Application to the Alpine Resorts Team seeking approval for the proposed upgrade of the existing telecommunications facility. The proposed telecommunications upgrade is located at the Blue Cow Ski Tube Terminal, Blue Cow, Perisher (Lot 526 DP1171975) and will serve to enhance coverage and network capacity within the surrounding area.

This submission will provide assessment in respect of the relevant planning guidelines, NSW telecommunication guidelines, operational objectives and the minimisation of environmental impacts. The proposed development is identified as a local development requiring approval from Alpine Resorts Team.

## 1.2 Telecommunications Objective

The availability of high-speed, reliable, mobile telecommunications services is becoming an expectation of Australia's population, both in CBD and rural locations. This proposed upgrade of the facility at Blue Cow Terminal is just one of the upgrades proposed to enhance coverage and network capacity within the Perisher area.

Vodafone's existing customer base is growing rapidly across Australia. Consequently, many of Vodafone's existing facilities are at capacity or are no longer able to adequately service the customers in the area. The proposed new facility will help to serve the increasing volume of Vodafone customers in the vicinity of the site. The proposal will contribute towards greater service delivery and will ensure the continued growth of, and competition within the telecommunication industry; provision of improved telecommunications networks and enhance outcomes for the community, visitors and emergency communications.

This will be achieved by moving from a directional omni range facility where coverage spreads out in a 360-degree radius to a targeted directional panel antenna that provides coverage to different sectors within a 360-degree radius. This will provide additional capacity to the Vodafone network where it will improve mobile services for voice and broadband data for Vodafone customers.



### **1.3 Accompanying Reports**

The following drawings and reports accompany the DA submission and should be read in association with this Statement of Environmental Effects.

Appendix A – Site Plan

Appendix B – EME Report

## 2. Site and Surrounding Context

### 2.1 Site Characteristics

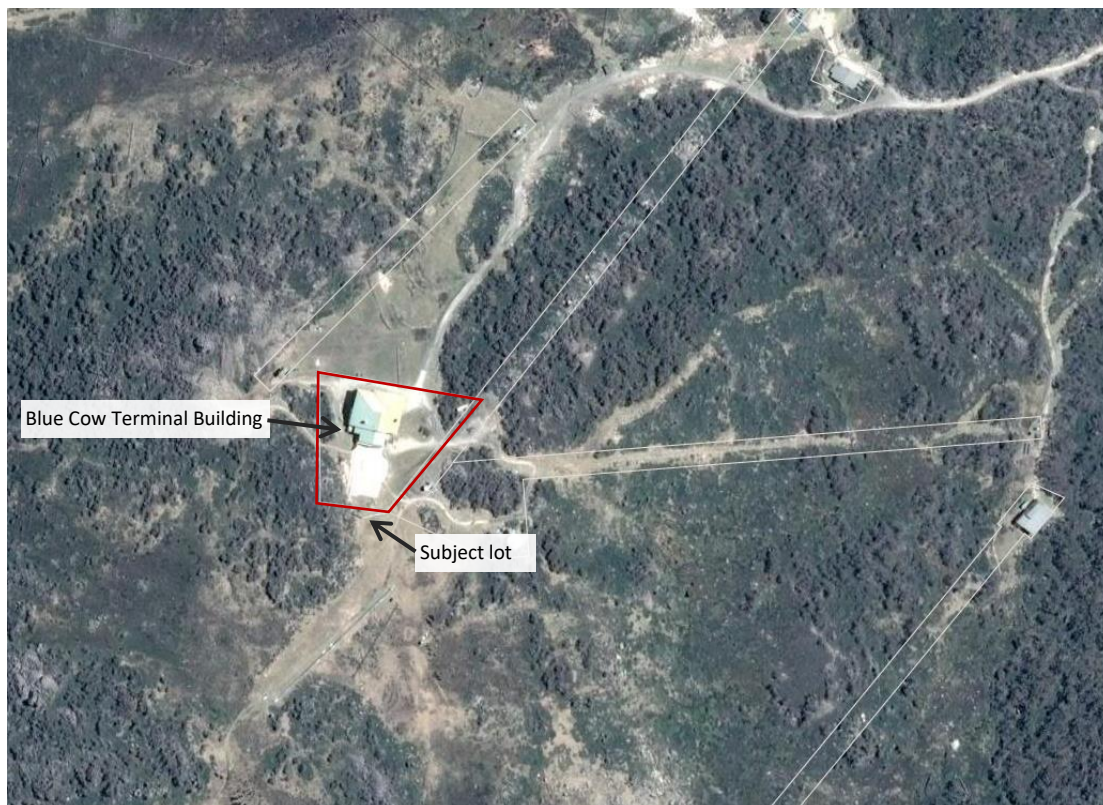
The telecommunications upgrade will be situated on the rooftop of the Blue Cow Ski Tube Terminal within the Perisher Resort. The land is formally described as Lot 526 DP1171975. The subject site is comprised of a three-storey ski terminal building. The existing Vodafone facility is located on the rooftop of the terminal building and comprises two (2) ‘rod like’ omni Vodafone antennas attached to the chimney and equipment racks located within a multi -user equipment room on the north side of the building. It is noted that a second chimney on the western aspect of the building contains existing panel antennas and omni antennas, owned by other carriers. Construction drawings indicate the location of all pre-existing infrastructure located on the terminal building.

The Local Government Authority for the proposal is Alpine Resorts Team. The site is zoned as ‘E1 National Parks and Nature Reserves’ under the *Snowy River Local Environmental Plan 2013*. **Table 1** provides a summary of the site details. **Figure 1** illustrates the location of the subject allotment, within a wider scale.

**Table 1:** Proposed Site Details

| Details                        | Comment  |
|--------------------------------|--|
| Street Address                 | Blue Cow Ski Tube Terminal, Blue Cow, Perisher                   |
| Legal Description              | Lot 526 DP1171975  |
| Owner                          | Perisher Blue Pty Ltd  |
| Proposed Development Footprint | Mounting on Lightning Conductor                                  |
| Zone                           | E1 National Parks and Nature Reserves                            |
| Planning Scheme                | Snowy River Local Environmental Plan 2013<br>Alpine Resorts Team |
| Current Use                    | Tourist Facility   |
| Access                         | Perisher Blue Cow Link Road                                      |





**Figure 1:** Location of the subject allotment and Blue Cow Terminal Building

The proposed upgrade works are restricted to the roof top and existing equipment room and will not result in the removal of vegetation. An existing power supply is available on site. A Locality Plan is provided as part of the Proposal Plans within **Appendix A**. **Figure 2** illustrates the location of the proposed facility on the rooftop.



**Figure 2:** Blue Cow Ski Terminal Building

There are no significant local planning or land use sensitivities in relation to the rooftop upgrade and installation. While the facility is within E1 National Parks and Nature Reserves zone, and is located within the Kosciuszko National Park, the construction and operation of the facility will not result in the removal or loss of ecologically significant flora and fauna, as per the Proposed Plan within **Appendix A**.

## 2.2 Surrounding Development

The proposed telecommunications facility is located within the Kosciuszko National Park, and forms part of the Perisher Resort. The site is bounded by ski fields and national park, with the inclusion of chair lifts along the eastern and western boundaries. The site adjoins the primary access route, Perisher Blue Cow Link Road, along the Northern aspect of the building.

**Figure 3 to 6** illustrates the surrounding land uses, existing infrastructure and natural features.



**Figure 3:** Existing infrastructure uses on the Blue Cow ski terminal





**Figure 4:** Surrounding ski fields to the east and south of the terminal building



**Figure 5:** Surrounding ski fields to the north of the terminal building



**Figure 6:** Surrounding ski fields and visual amenity surrounding the terminal building

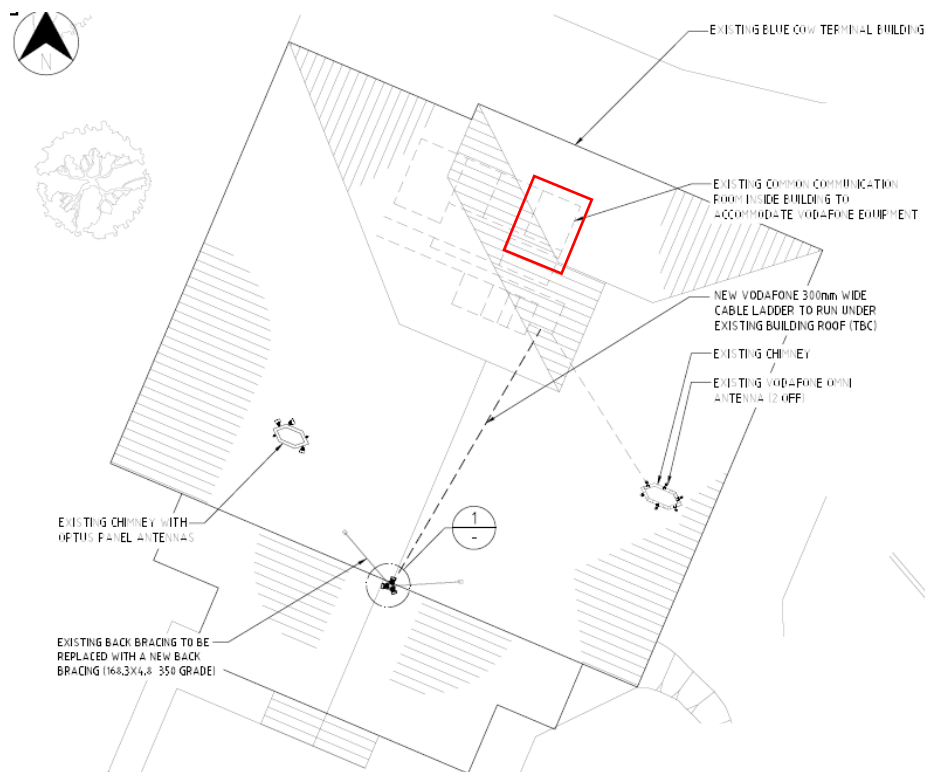
## 3. Proposed Development

### 3.1 Proposal Summary

The upgrade includes the installation of three new panel antenna and associated ancillary equipment, to be mounted on an existing lightning conductor following back bracing upgrades. Existing Vodafone omni technology housed on the chimney, is to be retained. The chimney structure was assessed and deemed structurally unsound and unable to accommodate the proposed panel antenna upgrades. A summary of the proposed development is as follows:

- Installation of **three (3)** new panel antennas, coloured ‘gull gray’;
- Installation of **one (1)** new Tower Mounted Amplifier (TMA) below each panel antenna;
- Installation of associated cable to run from the panel antennas through conduit routes to the existing insitu communications room;
- Replacement of existing back bracket on lightning conductor (168.3X4.8 350 Grade).

The proposed facility is to provide Vodafone customers with improved coverage and capacity. The proposed antenna installation, and communications room works are wholly contained within the Blue Cow terminal building envelope, as nominated in **Figure 7** below. Refer to **Appendix A – Proposal Plans** for further detail.



**Figure 7:** Proposed antenna and ancillary equipment installation, within Vodafone communication room.



### 3.2 Proposal Staging and Installation

The location of the proposed facility and access can be seen on the proposal drawings provided in **Appendix A**.

A total construction period of approximately two weeks (including civil works and network integration and equipment commissioning) is anticipated. Construction activities will involve four basic stages:

- Stage 1 (Week 1) – Site preparation works, including field testing, rooftop preparation and conductor stabilisation;
- Stage 2 (Week 2) – Installation of antennas and radio equipment, as well as equipment testing.

### 3.3 Access and Movement

Access to the building will occur via a proposed single entry point and off Perisher Blue Cow Link Road, and internal access. **Figure 8** demonstrated the proposed access track.



**Figure 8:** Proposed facility access track

General traffic movements are provided below:

#### CONSTRUCTION PERIOD

**Duration:** 2 weeks

**Hours:** 6-7hrs per day

**No. of Vehicles:** 2

**Parking Provision:** On site parking proximate to the construction area

#### OPERATIONS PERIOD

**Duration:** ongoing

**Hours:** 6-7 hours, totalling 1-2 days per year, outside of ski season

**No. of Vehicles:** 1x 4wd

**Parking Provision:** On site parking

Vehicular traffic will only be generated throughout the construction period as construction vehicles will need to access through the village to the site. Construction utility vehicles are to be used for the rooftop installation. Any traffic impacts associated with construction will be of a short-term duration and are not anticipated to adversely impact on the surrounding areas. On-going maintenance of the site will occur only periodically or when there is an emergency to restore the network, therefore traffic impacts will be minimal. Once operational there will be no adverse impacts and only occasional access required by passenger vehicles. There are no pedestrian impacts generated by the installation.

### 3.4 Utilities

The existing Vodafone telecommunications equipment within the communications room has sufficient power supply and will be separately metered. Any future upgrade of power that may be required in terms of the proposed use will be assessed and determined through the appropriate electricity authority. The facility does not require connectivity to any refuse or potable water supply, and will not result in water treatment or management plans.

## 4. Legislative and Referrals

The site is subject to the following planning legislation and policies:

- Telecommunications Act 1997
- Telecommunications Code of Practice 1997
- Telecommunications (Low-impact Facilities) Determination 1997
- Australian Communications Industry Forum (ACIF) Industry code
- NSW Telecommunications Facilities Guideline including Broadband 2010
- State Environmental Planning Policy (Infrastructure) 2007 (ISEPP)
- State Environmental Planning Policy (SEPP) (Kosciuszko National Park – Alpine Resort) 2007

Each of the above are addressed in Section 5 or Section 6.



## 5. Telecommunications Legislation Assessment

The installation of certain telecommunications facilities (as defined in the Telecommunications Act 1997) is regulated by the Australian Communications and Media Authority (ACMA) under the Telecommunications Act 1997. The legislative requirements are discussed below in further detail.

### 5.1 Telecommunications Act 1997

The *Telecommunications Act 1997 (TA)* came into operation in July 1997. This legislation establishes the criteria for 'low impact' telecommunication facilities. If a proposed facility satisfies the requirements of a 'low impact' facility, the development is exempt from the planning approval process.

Part 1 of Schedule 3 of the *TA* authorises a carrier to enter on land and exercise any of the following powers:

- Inspect the land;
- Install a facility;
- Maintain a facility.

A Carrier's power to install a facility is contingent upon:

- a) the Carrier being authorised to do so by a Facility Installation Permit, or
- b) the facility being a low-impact facility (as defined by the *Telecommunications (Low-Impact Facilities) Determination 1997* (as amended)), or
- c) the facility being temporary and used for a defence organisation for defence purposes, or
- d) if other conditions are satisfied in relation to the facility concerned.

The proposal is not classed as a low-impact facility under the Determination as it involves the upgrading and installation of equipment within an 'Area of Environmental Significance'.

As the proposed facility, does not meet the criteria mentioned above, the applicant is not empowered to undertake the proposed works without approval under NSW legislation, and must obtain development consent in accordance with the *Environmental Planning and Assessment Act 1979* and the *State Environmental Planning Policy (SEPP) (Kosciuszko National Park – Alpine Resort) 2007*.

*(Telecommunications Act 1997, p466)*

## **5.2 Telecommunications Code of Practice 1997**

The Telecommunications Code of Practice 1997 (TCP) is made under Schedule 3 of the Telecommunications Act 1997. The TCP ensures good practice measures under which a Carrier must operate and outlines conditions which carrier conduct must adhere to.

The proposal adheres to the conditions outlined in the TCP in accordance to the TA, in particular Section 2.11 best practice for inspection of land, Section 3.11 best practice for subscriber connection and Section 6.11 best practice conditions for maintenance of facilities.

This proposal has taken into consideration the requirements of carriers in the best practice conditions of the TCP and thus includes the best design, planning and location measurements to ensure the development is in accordance with sections 2.11 and 3.11 of the Act.

## **5.3 Telecommunications (Low-impact Facilities) Determination 1997**

The Telecommunications (Low-impact Facilities) Determination 1997 was made under subclause 6 (3) of Schedule 3 of the TA. The Act outlines under subclauses 6 (4), (5) and (7), that certain facilities cannot be low-impact facilities, these include the following:

- Designated overhead lines;
- A tower that is not attached to a building;
- A tower attached to a building and more than 5 metres high;
- An extension to a tower that has previously been extended; and
- An extension to a tower, if the extension is more than 5 metres high.

The proposal is not classed as a low-impact facility under the Determination as it involves the upgrading and installation of equipment within an 'Area of Environmental Significance'.

*(Telecommunications (Low-impact Facilities) Determination 1997, p. 3)*

## **5.4 Australian Communications Industry Forum (ACIF) Industry code**

The Australian Communications Industry Forum (ACIF) Industry code is a mandatory code for all Carriers and deals with concerns raised by the community. The code applies to Carriers who are installing, intending to install, operating, contracting or arranging for the installation of fixed radio communication infrastructure.

An underlying principle of the Code is that public health and safety is of paramount importance and the overarching driver of the code is the precautionary approach used to minimise the impact of telecommunications facilities. The precautionary approach must be applied to site selection, infrastructure design, installation and operation.

The precautionary approach has been adopted for the proposed development and careful consideration given to the following with respect to site selection:

- the site and surrounding land uses;
- the siting and design of the proposed facility; and
- proximity to sensitive land uses.

## **5.5 NSW Telecommunications Facilities Guideline including Broadband 2010**

The purpose of the NSW Telecommunications Facilities Guideline including Broadband is to:

- (a) provide a guide to the State-wide planning provisions and development controls for telecommunication facilities in NSW contained in State Environmental Planning Policy Infrastructure 2007 (SEPP Infrastructure);
- (b) provide guidance to assist the facilitation of the roll out of broadband in NSW.

The Guideline outlines the provisions of SEPP Infrastructure, which incorporates the facilities contained in the Determination, and provides for the development of further telecommunications facilities that do not require consent, together with complying developments. This Guideline operates in conjunction with relevant Commonwealth telecommunications legislation and SEPP Infrastructure. Where there is any inconsistency between Commonwealth laws and the laws of a State or Territory, the Commonwealth legislation prevails.

The proposed telecommunications facility complies with the aims of the guidelines as a result of the following:

- The facility is well removed from residential dwellings and the township area. Furthering the amenity retention, the facility will not result in the clearing of existing vegetation surrounding the area.
- The proposed structure complies with industry design guides;
- The proposed facility complies with all relevant health standards;



- All works and operations will comply with appropriate rules and regulations, as set by Council and relevant authorities;
- The facility and associated access will not result in any loss to vegetation or threatened species, or cultural values;
- The construction and operation of the propose telecommunications facility will not result in any notable risks to the local community or natural environment.

## 6. Assessment of Proposal – Section 79C (1) (a)

The following assessment has been structured in accordance with Section 79C(1)(a) of the Environmental Planning & Assessment Act 1979 (EP&A Act).

### 6.1 State Environmental Planning Policy (Infrastructure) 2007

The State Environment Planning Policy (Infrastructure) 2007 (ISEPP) facilitates the effective delivery of infrastructure across the State improving regulatory certainty and efficiency through a consistent planning, and providing greater flexibility in the location of infrastructure and service facilities.

Under ISEPP the proposed use, as per Clause 113, is defined as a telecommunications facility, meaning:

- (a) any part of the infrastructure of a telecommunications network, or
- (b) any line, cable, optical fibre, fibre access node, interconnect point, equipment, apparatus, tower, mast, antenna, dish, tunnel, duct, hole, pit, pole or other structure in connection with a telecommunications network, or
- (c) any other thing used in or in connection with a telecommunications network.

Under the Snowy River Local Environmental Plan 2013 the proposed development is prohibited, given the proposed use is not approved within the E1 zone. The prohibiting factors under the LEP are superseded by the State Environmental Planning Policy (Infrastructure) 2007 (ISEPP). Clause 115 of ISEPP states that “development for the purposes of telecommunications facilities, other than development in clause 114 or development that is exempt development under clause 20 or 116, may be carried out by any person with consent on any land”.

Telecommunications facilities are therefore permissible in all zones within the Snowy River with the consent of the relevant authority, with the relevant authority being the Alpine Resorts Team.

Clause 116 and 116A allow for greater flexibility around installing new towers and upgrading existing facilities. Under this amendment, new telecommunications towers and upgrades to existing facilities in certain rural or industrial zones is considered to be a complying development, subject to amenity and safety considerations regarding facility height limits and distancing from residential, rural and equivalent zones.

This proposal does not meet the requirements of exempt or complying development under ISEPP, as the facility and upgrades occur within an E1 zone.

## 6.2 State Environmental Planning Policy (Kosciuszko National Park – Alpine Resort) 2007

The State Environmental Planning Policy (Kosciuszko National Park – Alpine Resort) 2007 (Alpine SEPP) facilitates the protection and enhancement of the natural environment within the Alpine Resorts Regional. The Alpine SEPP ensures that development within the resort regions are managed in a manner by which the principles of ecologically sustainable development (including the conservation and restoration of ecological processes, natural systems and biodiversity) are retained.

As per the Alpine SEPP the proposed antennas and associated uses are defined, as a telecommunications facility, meaning:

- (a) any part of the infrastructure of a telecommunications network, or
- (b) any line, equipment, apparatus, tower, mast, antenna, tunnel, duct, hole, pit, pole or other structure or thing used, or to be used, in or in connection with a telecommunications network.

### 6.2.1 Matters for Consideration

The proposed telecommunications upgrades require assessment and consideration by the consent authority against the matters provided under the State Environmental Planning Policy (Kosciuszko National Park—Alpine Resorts) 2007, Part 2 Clause 14.

**Table 2** identifies the relevant considerations and compliance of the proposal.

**Table 2:** Compliance assessment under the State Environmental Planning Policy (Kosciuszko National Park—Alpine Resorts) 2007

| Matters for Consideration  | Compliance   |
|--|--|
| (1) In determining a development application that relates to land to which this Policy applies, the consent authority must take into consideration any of the following matters that are of relevance to the proposed development: |  |
| (a) the aim and objectives of this Policy, as set out in clause 2  | The proposed telecommunications upgrade and associated works are limited to pre-existing access pathways, and the Blue Cow terminal rooftop. The installation, operation and maintenance of the proposal will not result in any impacts to the existing or future ecological processes, natural systems or biodiversity, as the upgrade works remain within the building envelope and rooftop. |
| (b) the extent to which the development will achieve an appropriate balance between the conservation of  | The proposal does not require mitigating measures to reduce risk of environmental hazards, given the   |

|  |  |
|--|--|
| <p>the natural environment and any measures to mitigate environmental hazards (including geotechnical hazards, bush fires and flooding)</p>  | <p>development will not result in a loss or compromising the existing balance between conservation and the natural environment.</p>  |
| <p>(c) having regard to the nature and scale of the development proposed, the impacts of the development (including the cumulative impacts of development) on the following:</p> <ul style="list-style-type: none"> <li>(i) the capacity of existing transport to cater for peak days and the suitability of access to the alpine resorts to accommodate the development,</li> <li>(ii) the capacity of the reticulated effluent management system of the land to which this Policy applies to cater for peak loads generated by the development,</li> <li>(iii) the capacity of existing waste disposal facilities or transfer facilities to cater for peak loads generated by the development,</li> <li>(iv) the capacity of any existing water supply to cater for peak loads generated by the development</li> </ul> | <p>The proposed antenna upgrades on the Blue Cow Terminal will not result in alterations to or a long-term increase of demand on the capacity of existing transport access and routes. Movements associated with construction are of low intensity and are of short duration, ensuring existing transport access and systems remain. The ongoing maintenance is infrequent and will require a singular vehicle, with impacts considered negligible.</p> <p>The proposal will not result in the use of or connection to an effluent management system.</p> <p>The proposal will not result in the use of or connection to an existing waste disposal facility or transfer facility</p> <p>The proposal will not result in the use of or connection to an existing water supply.</p> |
| <p>(d) any statement of environmental effects required to accompany the development application for the development</p> <p>Note. This Policy applies to land that is in the ski resort area described in clause 32A of Schedule 6 to the Act and certain other land. Regulations made under the Act set out requirements relating to the preparation of the statement of environmental effects required to accompany a development application, including specific requirements for a statement of environmental effects relating to the ski resort area if the proposed development is advertised development.</p>  | <p>The Development Application is accompanied by the Statement of Environmental Effects.</p>   |
| <p>(e) if the consent authority is of the opinion that the development would significantly alter the character of the alpine resort—an analysis of the existing character of the site and immediate surroundings to assist in understanding how the development will relate to the alpine resort</p>   | <p>The proposed telecommunication upgrades are limited to the installation of three antenna, ancillary equipment and structural stabilisation of the existing lighting conductors. The development is of low intensity and scale, and does not result in the loss of existing Alpine character. The proposal is considered visually appropriate given the facility is a minor addition to the existing building structure, and will be largely undetected, integrating into the visual profile and setting of the existing building..</p>  |
| <p>(f) the Geotechnical Policy—Kosciuszko Alpine Resorts (2003, Department of Infrastructure, Planning and Natural Resources) and any measures proposed to address any geotechnical issues arising in relation to the development</p>  | <p>The proposal will not require assessment against the Geotechnical Policy, as the scope of works are limited to a rooftop installation.</p>  |

|  |   |
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| <p>(g) if earthworks or excavation works are proposed—any sedimentation and erosion control measures proposed to mitigate any adverse impacts associated with those works</p>  | <p>The proposal will not require earth or excavation works or earth mitigation works as a rooftop installation.</p>   |
| <p>(h) if stormwater drainage works are proposed—any measures proposed to mitigate any adverse impacts associated with those works</p>   | <p>The proposal does not include the use of or installation of stormwater drainage and associated works.</p>  |
| <p>(i) any visual impact of the proposed development, particularly when viewed from the Main Range</p>   | <p>The visual outputs associated with the installing three new panel antennas, ancillary equipment and structural stabilisation of the lightning conductor will not produce significant visual impact upon the landscape.</p> <p>The height of the panel antennas will not protrude above the conductor height, and are of a low intensity and scale.</p> <p>The panel antennas will be a ‘gull grey’ standard colour to camouflage the facility to the background landscape of the snowfields.</p> <p>The upgraded facility will not be visible from the Main Range.</p> |
| <p>(j) the extent to which the development may be connected with a significant increase in activities, outside of the ski season, in the alpine resort in which the development is proposed to be carried out</p>  | <p>The proposed use is not considered to result in the increase of activities outside of the ski season. The proposal will result in improved network capacity and coverage for Vodafone customers across all seasons, however will not result in increased activity.</p>   |
| <p>(k) if the development involves the installation of ski lifting facilities and a development control plan does not apply to the alpine resort:</p> <ul style="list-style-type: none"> <li>(i) the capacity of existing infrastructure facilities, and</li> <li>(ii) any adverse impact of the development on access to, from or in the alpine resort</li> </ul>   | <p>The proposed development does not require or propose the use of, or installation of ski lifting facilities.</p>  |
| <p>(l) if the development is proposed to be carried out in Perisher Range Alpine Resort:</p> <ul style="list-style-type: none"> <li>(i) the document entitled Perisher Range Resorts Master Plan, as current at the commencement of this Policy, that is deposited in the head office of the Department, and</li> <li>(ii) the document entitled Perisher Blue Ski Resort Ski Slope Master Plan, as current at the commencement of this Policy, that is deposited in the head office of the Department,</li> </ul> | <p>The proposed upgrade is located within the Perisher Range Resorts Master Plan area. The proposed upgrade is considered to be consistent with the intent and objectives of the Perisher Range Resorts Master Plan. The Master Plan aims to ensure that existing and planned telecommunications infrastructure possess the capacity to absorb the proposed increase in bed numbers. The proposed technology upgrades offer increase assurance that the Vodafone network possesses the ability to handle the coverage objectives and network</p>                          |



|  |  |
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|  | <p>capacity required by the Perisher Range Resorts Master Plan.</p> <p>The proposed upgrades are considered to be integral within the telecommunications infrastructure of the Perisher area, and will provide for improved telecommunication connections during a safety event, such as fire or emergency, as prescribed in the Perisher Range Resorts Master Plan.</p> |
| <p>(m) if the development is proposed to be carried out on land in a riparian corridor:</p> <p>(i) the long-term management goals for riparian land, and</p> <p>(ii) whether measures should be adopted in the carrying out of the development to assist in meeting those goals.</p> | <p>The proposed upgrades and installations will not be carried out within the riparian corridor.</p>   |
| <p>(2) The long-term management goals for riparian land are as follows:</p>  |  |
| <p>(a) to maximise the protection of terrestrial and aquatic habitats of native flora and native fauna and ensure the provision of linkages, where possible, between such habitats on that land</p>  | <p>The proposed upgrades and installations will not be carried out within the riparian corridor.</p>   |
| <p>(b) to ensure that the integrity of areas of conservation value and terrestrial and aquatic habitats of native flora and native fauna is maintained</p>   | <p>The proposed upgrades and installations will not be carried out within the riparian corridor.</p>   |
| <p>(c) to minimise soil erosion and enhance the stability of the banks of watercourses where the banks have been degraded, the watercourses have been channelised, pipes have been laid and the like has occurred.</p>   | <p>The proposed upgrades and installations will not be carried out within the riparian corridor.</p>   |
| <p>(3) A reference in this clause to land in a riparian corridor is a reference to land identified as being in such a corridor on a map referred to in clause 5.</p>   | <p>The proposed upgrades and installations will not be carried out within the riparian corridor.</p>   |

## 6.2.2 Permitted Consent

The proposed telecommunications upgrade will be located on the site of the Blue Cow terminal building, and therefore requires assessment against the relevant provisions of the Alpine SEPP. As per Part 5, Division 1, Clause 21 - the proposal, defined as a telecommunications facility, is considered to be a permitted development which may be carried out with consent on land to which the clause applies.

Consent is to be obtained from the Alpine Resort Team under the State Environmental Planning Policy (Kosciuszko National Park—Alpine Resorts) 2007.

### **6.3 Snowy River Local Environmental Plan 2013**

Assessment of the proposal against the LEP is not required, as per the provisions of Part 1 Clause 10 of the State Environmental Planning Policy (Kosciuszko National Park – Alpine Resort) 2007, and Part 3 Division 1 Section 36 of the Environmental Planning and Assessment Act 1979.

The proposal is however deemed to be appropriate within the local planning context, given the scale of works, existing facilities and low visual impact. The proposal will enhance social, economic and safety outcomes for the community through the provision of improved and more reliable network coverage.

## 7. Impact Assessment – Section 79C (1) (b)

### 7.1 Built and Natural Environment

#### 7.1.1 National Park Values and Conservation

Under the Alpine SEPP, Clause 17 the consent authority must, within 7 days of the lodgement of a development application that relates to land to which this Policy applies, refer the application to the Director-General of the Department of Environment and Climate Change for the comment of that Director-General.

The telecommunication installation will be located on the rooftop of the Blue Cow Ski Terminal, within the Kosciusko National Park. It is considered that referral and detailed assessment is not required given that the scope of works are limited to the upgrade of an existing rooftop telecommunications facility, that any potential impacts to the National Park are considered unlikely. Further, the proposal will not impact any ecological processes, natural systems and biodiversity as the upgrade works will remain within the building envelope of the existing rooftop of the Blue Cow Ski Tube Terminal.

#### 7.1.2 Visual Amenity

The potential visual impact associated installation of three new panel antennas and ancillary equipment are expected to be minimal. The Blue Cow Terminal accommodates existing telecommunications equipment on the chimney structures. The co-location of antennas on the existing lightning conductor will not result in a significant visual variation to the existing profile and visual amenity of the building. The height of the panel antennas will not protrude above the existing lightning conductor. The panel antennas will be a 'gull grey' standard colour to camouflage the facility to the background landscape of the snowfields. Associated cabling will run through the roof space and into the internal communications room which will not be visible from the outside of the building.

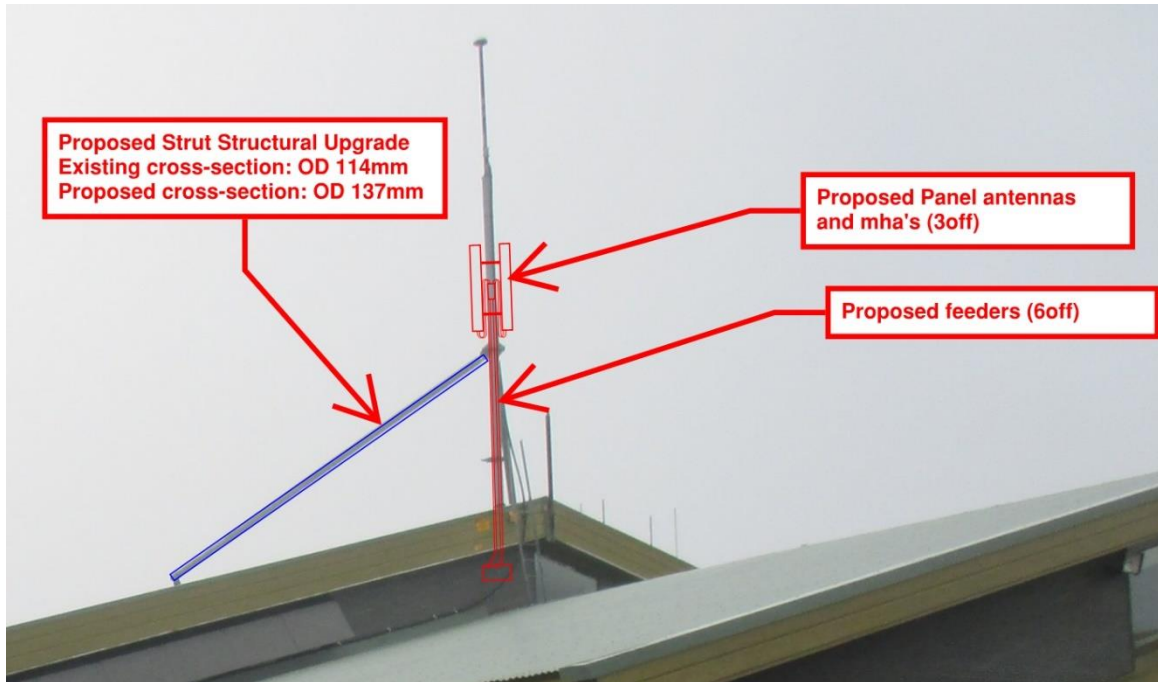
**Figures 9 to 12** demonstrate the scale of the proposed works, and minimal impact associated with the proposal.



**Figure 9:** Expected visual impact, as per the northern building aspect. Antenna installation impacts are minimal from 65m. Installation will be colour matched 'gull grey'.



**Figure 10:** Southern elevation. Proposed antennas will be colour matched 'gull grey'.



**Figure 11:** Detail of proposed antenna installation and structural upgrades. Antenna are of an appropriate size and scale, ensuring conductor function, and general site amenity.



**Figure 12:** Existing communications room fit out, to accommodate Vodafone upgrade.

### 7.1.3 Design & Built Form

The proposed upgrades are considered to be of an appropriate scale and form. The height of the panel antennas are to be co-located below the height of the existing lightning conductor. The installation will not result in an exposed equipment cabin, with all cabling and technology feeding into the existing internal communications room. The visual integration of the facility will also be enhanced by siting the proposed infrastructure to maintain consistency with the design and form of the rooftop structure and colour matching the equipment to ensure it is sympathetic to the building and the surrounding landscape.

### 7.1.4 Traffic, Access and Parking

Vehicular traffic will only be generated throughout the construction period as construction vehicles will need to access through the village to the site. It is expected that there would be approximately two additional vehicle movements per day during construction. It is anticipated that most of the construction work will be completed in approximately two weeks. Construction utility vehicles will be used for the rooftop installation.

There would be a minor increase in traffic volume on the surrounding roads during construction. However, any such impacts are expected to be negligible and short term in duration. On-going maintenance of the site will occur only periodically or when there is an emergency to restore the network, therefore traffic impacts will be minimal. There are no pedestrian impacts generated by the installation.

### 7.1.5 Utilities and Servicing

The existing Vodafone telecommunications equipment within the communications room has the appropriate power connection and separately metered. Any upgrade of power that maybe required in terms of the proposed new antenna configuration will be assessed and determined through the appropriate electricity authority.

### 7.1.6 Noise, Vibration and Pollution

The proposed telecommunications upgrade will not result in significant noise impacts during the construction and installation. All construction will be undertaken within the relevant guidelines as defined by the EPA standards, and will occur within a two-week period, outside of the ski season. Any potential noise impacts are expected to be minor and short term in duration. Works would be undertaken only during standard working hours.



It is not expected that construction works would have any vibration impacts on the surrounding area.

Noise generated during the operational stage of the facility includes air-conditioning units servicing the equipment cabin. The air-conditioning units are similar to those used for cooling of residential premises, and will comply with the relevant noise emission guidelines. The air-conditioning units are automatic, and will shut down when not required.

#### 7.1.7 Aboriginal Archaeology and Heritage

As there is no proposed development or works that will disturb cultural heritage areas and the work is located within and upon an existing building, it is determined that there will be no archaeological heritage impacts.

#### 7.1.8 Flora and Fauna

As the proposed development will be located upon the rooftop at Perisher there are no direct impacts to flora and fauna within the area.

#### 7.1.9 Bushfire

As the proposed development will be located upon the rooftop at Perisher, with no direct impacts or increased risk of bushfire. The proposal will not require, use or store flammable or hazardous material, and will not result in potential points of ignition.

#### 7.1.10 Soil Erosion and Sediment Control

Given the scale of the works and location of the proposal, there are no significant impacts or increased likelihood of erosion. To ensure the prevention of potential erosion whilst accessing the site ground disturbing activities will be kept to a minimum, with works occurring both outside periods of heavy rain and the winter ski season.

#### 7.1.11 Waste Management and Minimisation

Due to the relatively minor nature of the works, the generation of waste resulting from construction of the proposed facility is expected to be minimal. All waste and associated packaging material will also be disposed of at an approved waste disposal facility. The ongoing operation of the facility will be unmanned and will not generate any waste or odour emissions.

### 7.1.12 Contaminated Lands

The proposed facility upgrade will not encounter any contaminated soils, given the siting of the facility on the terminal rooftop.

### 7.1.13 Health and Safety, Hazards and Risk

The ACMA mandates exposure limits for continuous exposure of the general public to Radio Frequency Electro Magnetic Emissions (RF EME) from mobile base stations. These limits are specified in the 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 ("RPS 3").

In accordance with RPS 3, an estimate has been made of the maximum cumulative radiofrequency (RF) electromagnetic energy (EME) levels at ground level emitted from the proposed mobile base station. Estimates of RF EME levels are provided for 360° circular bands at 0-50, 50-100, 100-200, 200-300, 300-400 and 400-600m from the base of the antenna.

The applicant will obtain a report which confirms that the maximum cumulative EME level at 1.5 m above ground level is estimated to be within the ARPANSA public exposure limits. Fact Sheets produced by ARPANSA and the ACMA, the Mobile Carriers Forum (MCF) on mobile phone networks and health are provided in **Appendix B**.

The key perceived and potential environmental impacts for this proposed development have been identified as: health and risk issues (perceived); visual impact (potential); and potential impacts during construction of the proposed facility. Each of these aspects have been considered individually and collectively from a cumulative impact perspective.

A common concern about base station and local wireless network antennas relates to the possible long-term health effects that whole-body exposure to the RF signals may have. To date, the only health effect from RF fields identified in scientific reviews has been related to an increase in body temperature (> 1 °C) from exposure at very high field intensity found only in certain industrial facilities, such as RF heaters. The levels of RF exposure from base stations and wireless networks are so low that the temperature increases are insignificant and do not affect human health.

The strength of RF fields is greatest at its source, and diminishes quickly with distance. Access near base station antennas is restricted where RF signals may exceed international exposure limits. Recent surveys have indicated that RF exposures from base stations and wireless technologies in publicly accessible areas (including schools and hospitals) are normally thousands of times below international standards.



*(Electromagnetic fields and public health; WHO Fact Sheet No. 304 May 2006)*

The cumulative levels of EME in the proposed location fall well within the standard limits set by the ACMA. Any potential environmental impacts during construction are expected to be temporary and mitigated through the implementation of appropriate work practices and management measures specified in this development application report. Consequently, the proposed development is not considered likely to have an adverse cumulative impact on the environment and the community.

## **7.2 Social and Economic Impacts**

The proposed facility will upgrade and expand services in the Perisher area. This will ensure that the community, visitors, businesses and emergency services benefit from improved access to a mobile network service with both enhanced capacity and coverage. These services allow communities to enjoy:

- Greater business accessibility and flexibility;
- Reliable personal safety maintaining a mobile phone for critical communications and emergencies.
- Increased capacity for improving telecommunications capabilities, resulting in improved customer connectivity, and a consequent reduction in technology improvements delays.

The proposed development will provide this benefit without any significant change to the existing rooftop.

## 8. Suitability of the Development 79C (1) (c)

The proposed upgrade is deemed to be of low impact given the prior existence of telecommunications equipment on the rooftop, including existing Vodafone infrastructure and communications rooms. It is considered that the upgrade of the site and use of the lightning conductor are well suited and appropriate to the site and surrounding visual context.

The upgrades will not result in any additional development footprints within the National Park, promoting the facilitation of infrastructure co-siting. All construction and installation will be undertaken on the rooftop and the internal communications room. No earthworks are proposed as part of the upgrade works. Construction will be undertaken over an approximate two-week period. The proposal is expected to have no significant impacts on the ecological values of the site, and will not produce any significant visual impacts due to utilisation of the existing lightning conductor structure.

## 9. Public Submissions 79C (1) (d)

The lodgement of the DA to the NSW Department of Planning and infrastructure does not require a referral to additional agencies for approval. The Development Application will be publicly notified only if required by the Alpine Resorts Team.

## 10. Public Interest 79C (1) (e)

The proposed upgrade of the Vodafone telecommunications facility provides direct benefit for Vodafone customers through improved services to the Perisher area. The proposed technology upgrade offers increased assurance that the Vodafone network possesses the ability to handle the coverage objectives and network capacity required by the Perisher area.

The proposed upgrade is integral to the provision of quality telecommunications infrastructure of the Perisher area, and will provide for improved telecommunication connections during a natural disaster or emergency event.

The development provides the aforementioned benefits without any significant change to the existing rooftop.

## 11. Conclusion

The proposed telecommunication facility upgrade located on the Blue Cow Ski Terminal is considered integral to Vodafone Australia's ability to optimise their network and transmission requirements and to establish improved coverage throughout the Alpine Resorts area.

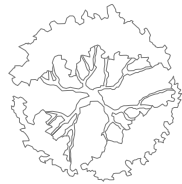
A detailed assessment of the proposed development has been undertaken with a view to ensure that the proposal complies with relevant Commonwealth, State and Local planning policies and procedures and the Precautionary Approach Principles as outlined in the Deployment Code. The proposed facility is considered appropriate given the following:

1. The proposed facility is deemed to be compatible with the surrounding land uses and will not result in a decrease to the general amenity of the area, nor will the proposal have a detrimental impact on the ecological stability and outcomes of the National Park.
2. The proposal will provide improved telecommunication infrastructure to the Perisher area ensuring the region will continue to receive up to date modern telecommunication infrastructure and technology;
3. The proposed development is expected to provide socio-economic benefits to the community, travellers and emergency services in the region;
4. The proposed site is considered the most viable option for the area as it meets the required radio frequency objectives, construction, access and power requirements of the facility. The co-siting of the proposed equipment on the roof-top and visual integration and no impact will occur to existing ecosystem and functions within the National Park;
5. The proposal is consistent with the stated objectives of the State Environmental Planning Policy (Kosciuszko National Park – Alpine Resort) 2007.

Having regard to the above and in light of the relevant heads of consideration listed under Section 79C of the EP&A Act, the proposal is considered to be both reasonable and appropriate, and as such warrants favourable consideration by the Alpine Resorts Team.



## Appendix A – Site Plan



|             |                    |           |
|-------------|--------------------|-----------|
| DATUM POINT | GDA94 CO-ORDINATES |           |
| ⊕           | LATITUDE           | -36.38611 |
|             | LONGITUDE          | 148.39313 |

EXISTING CHIMNEY WITH OPTUS PANEL ANTENNAS

EXISTING BACK BRACING TO BE REPLACED WITH A NEW BACK BRACING (168.3X4.8 350 GRADE)

EXISTING BLUE COW TERMINAL BUILDING

EXISTING COMMON COMMUNICATION ROOM INSIDE BUILDING TO ACCOMMODATE VODAFONE EQUIPMENT

NEW VODAFONE 300mm WIDE CABLE LADDER TO RUN UNDER EXISTING BUILDING ROOF (TBC)

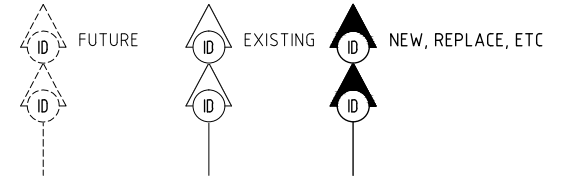
EXISTING CHIMNEY

EXISTING VODAFONE OMNI ANTENNA (2 OFF)

**SITE SETOUT PLAN**

SCALE 1:250

**LEGEND:**



**NOTES:**

1. ALL DIMENSIONS IN mm UNLESS STATED OTHERWISE.
2. THIS DRAWING IS DIAGRAMMATIC ONLY AND SHOULD NOT BE SCALED. DIMENSIONS, COORDINATES, AND LEVELS SHOWN ARE NOMINAL AND SUBJECT TO CONFIRMATION BY SURVEYOR.

NEW VODAFONE PANEL ANTENNAS (3 OFF, CELLS 11-V, 21-V & 31-V) ON EXISTING LIGHTNING ROD AND NEW COMBINERS (3 OFF) BEHIND NEW PANEL ANTENNAS.

DRAFT

**DETAIL**

SCALE: 1:30

|     |          |                      |        |       |          |        |
|-----|----------|----------------------|--------|-------|----------|--------|
| REV | DATE     | REVISION DESCRIPTION | VENDOR | DRAWN | DESIGNED | APPROD |
| A   | 02.05.17 | PRELIMINARY ISSUE    | myd    | MS    | MS       | PM     |

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**vodafone**  
**VODAFONE SITE 2739**  
 SKI TUBE TERMINAL  
 BLUE COW, KOSCIUSZKO NATIONAL PARK NSW 2627

|                                     |                          |           |
|-------------------------------------|--------------------------|-----------|
| <PROJECT>                           |                          |           |
| TITLE<br>SITE SETOUT PLAN           |                          |           |
| DRAWING STATUS<br>PRELIMINARY ISSUE | DRAWING No.<br>2739 - G2 | REV<br>01 |

**NOTES:**

1. ANTENNA ACCESS VIA EWP BY QUALIFIED RIGGER PERSONNEL.

EXISTING BACK BRACING TO BE REPLACED WITH A NEW  
BACK BRACING (168.3X4.8 350 GRADE)

NEW VODAFONE PANEL ANTENNAS (3 OFF. CELLS 11-V,  
21-V & 31-V) ON EXISTING LIGHTING ROD AND NEW  
COMBINERS (3 OFF) BEHIND NEW PANEL ANTENNAS.

EXISTING LIGHTNING ROD

EXISTING BLUE COW TERMINAL BUILDING

**DRAFT**

EXISTING CHIMNEY WITH  
OPTUS PANEL ANTENNAS

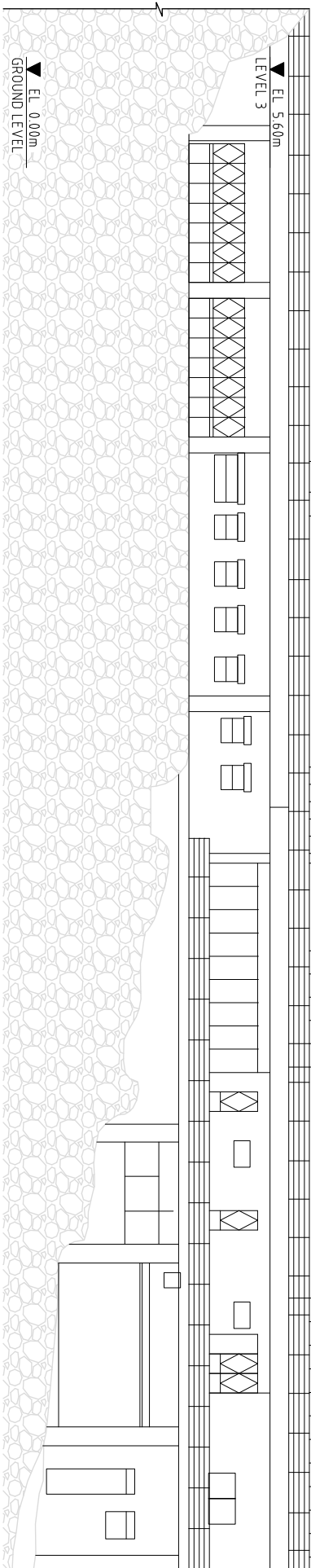
EXISTING VODAFONE  
ANTENNAS

EXISTING CHIMNEY

▼ EL 22.225m  
[ NEW VODAFONE PANEL ANTENNAS  
(3 OFF CELLS 11-V, 21-V & 31-V)  
WITH NEW COMBINERS (3 OFF)

▼ EL 17.36m  
[ EXISTING VODAFONE OMNI ANTENNAS (2 OFF)

▼ EL 17.36m  
[ EXISTING OPTUS PANEL ANTENNAS (3 OFF)



**EAST ELEVATION**

SCALE 1:150

|     |          |                   |                      |    |    |    |    |   |  |                |                   |              |     |
|-----|----------|-------------------|----------------------|----|----|----|----|---|--|----------------|-------------------|--------------|-----|
| REV | DATE     | PRELIMINARY ISSUE | REVISION DESCRIPTION | BY | HS | HS | PM | <p>Level 1, Unit B<br/>106 Robinson Road East<br/>Virginia, QLD, 4014<br/>T: +61 (0) 7 3286 3783<br/>www.highforce.com.au</p> | <p>VODAFONE SITE 2739<br/>BLUE COW<br/>SKI TUBE TERMINAL<br/>BLUE COW, KOSCIUSZKO NATIONAL PARK NSW 2627</p> | TITLE          | DRAMAING STATUS   | DRAMAING NO. | REV |
| A   | 02.05.17 | PRELIMINARY ISSUE |                      | BY | HS | HS | PM |   |  | SITE ELEVATION | PRELIMINARY ISSUE | 2739 - G3    | 01  |





## Appendix B – EME Report

# Environmental EME Report

## Ski Tube Terminal Blue Cow, KOSCIUSZKO NATIONAL PARK NSW 2627

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

Date 5/5/2017

RFNSA Site No. 2624001

### 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 Ski Tube Terminal Blue Cow KOSCIUSZKO NATIONAL PARK NSW 2627. These levels have been calculated by WaveForm Global 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 1.7% of the public exposure limit and with proposed alterations to this site the calculated maximum EME level will be 2.34% 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/m<sup>2</sup>) – 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 6.18 V/m; equivalent to 101.32 mW/m<sup>2</sup> or 1.7% of the public exposure limit.

The maximum EME level calculated for the existing and proposed systems at this site is 7.69 V/m; equivalent to 156.77 mW/m<sup>2</sup> or 2.34% 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    | WCDMA2100, GSM900, WCDMA900, LTE2100 |
| Vodafone | GSM900, WCDMA900, LTE850             |
| Telstra  | WCDMA850, LTE700                     |

It is proposed that this base station will have equipment for transmitting the following services:

| Carrier  | Radio Systems  |
|----------|--|
| Telstra  | LTE900 (proposed), WCDMA850, LTE700                                |
| Vodafone | GSM900, WCDMA900, LTE850, WCDMA2100 (proposed), LTE2100 (proposed) |
| Optus    | LTE2100, GSM900, WCDMA900, LTE1800 (proposed), WCDMA2100           |

## 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 Ski Tube Terminal Blue Cow 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/m <sup>2</sup> | % ARPANSA exposure limits | Electric Field V/m                                      | Power Density mW/m <sup>2</sup> | % ARPANSA exposure limits |
| 0m to 50m   | 2.55  | 17.3                            | 0.39%                     | 3.0   | 23.85                           | 0.49%                     |
| 50m to 100m   | 6.18  | 101.32                          | 1.7%                      | 7.69  | 156.77                          | 2.34%                     |
| 100m to 200m  | 5.88  | 91.86                           | 1.5%                      | 7.31  | 141.78                          | 2.081%                    |
| 200m to 300m  | 3.18  | 26.91                           | 0.45%                     | 4.14  | 45.4                            | 0.66%                     |
| 300m to 400m  | 2.17  | 12.46                           | 0.21%                     | 2.78  | 20.53                           | 0.3%                      |
| 400m to 500m  | 1.64  | 7.12                            | 0.12%                     | 2.097   | 11.66                           | 0.17%                     |
| <b>Maximum EME level</b>  | 6.18  | 101.32                          | 1.7                       | 7.69  | 156.77                          | 2.34                      |
|   | 78.63 m from the antennas at Ski Tube Terminal Blue Cow                       |                                 |                           | 81.29 m from the antennas at Ski Tube Terminal Blue Cow |                                 |                           |

## 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/m <sup>2</sup> | % of ARPANSA exposure limits |
| 1   No locations identified |   |  |                                 |                              |

## 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/m<sup>2</sup>), microwatts per square centimetre (μW/cm<sup>2</sup>) and milliwatts per square metre (mW/m<sup>2</sup>). Note: 1 W/m<sup>2</sup> = 100 μW/cm<sup>2</sup> = 1000 mW/m<sup>2</sup>.

| 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/m <sup>2</sup> = 375 μW/cm <sup>2</sup> = 3750 mW/m <sup>2</sup>    |
| WCDMA850                 | 870 – 890 MHz   | 900 MHz              | 41.1 V/m = 4.50 W/m <sup>2</sup> = 450 μW/cm <sup>2</sup> = 4500 mW/m <sup>2</sup>    |
| GSM900, LTE900, WCDMA900 | 935 – 960 MHz   | 900 MHz              | 41.1 V/m = 4.50 W/m <sup>2</sup> = 450 μW/cm <sup>2</sup> = 4500 mW/m <sup>2</sup>    |
| GSM1800, LTE1800         | 1805 – 1880 MHz | 1800 MHz             | 58.1 V/m = 9.00 W/m <sup>2</sup> = 900 μW/cm <sup>2</sup> = 9000 mW/m <sup>2</sup>    |
| LTE2100, WCDMA2100       | 2110 – 2170 MHz | 2100 MHz             | 61.4 V/m = 10.00 W/m <sup>2</sup> = 1000 μW/cm <sup>2</sup> = 10000 mW/m <sup>2</sup> |
| LTE2300                  | 2302 – 2400 MHz | 2300 MHz             | 61.4 V/m = 10.00 W/m <sup>2</sup> = 1000 μW/cm <sup>2</sup> = 10000 mW/m <sup>2</sup> |
| LTE2600                  | 2620 – 2690 MHz | 2600 MHz             | 61.4 V/m = 10.00 W/m <sup>2</sup> = 1000 μW/cm <sup>2</sup> = 10000 mW/m <sup>2</sup> |
| LTE3500                  | 3425 – 3575 MHz | 3500 MHz             | 61.4 V/m = 10.00 W/m <sup>2</sup> = 1000 μW/cm <sup>2</sup> = 10000 mW/m <sup>2</sup> |

## 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>.



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