

Planning Report Proposed Fixed Wireless Facility

849 Wallaga Lake Road
Wallaga Lake NSW 2546

NBN Site Reference NBN-2NWZ-2BMG-5105 – Wallaga Lake

The contents of this document reflect NBN Co's current position on the subject matter of this document. It is provided solely to explain information relevant to NBN Co's planning proposal. The contents of this document should not be relied upon as representing NBN Co's final position on the subject matter, except where stated otherwise. Any dates provided are indicative only, are subject to change and are dependent upon a number of factors.

Prepared on behalf of NBN Co Limited
By Aurecon Australasia Pty. Ltd
May 2015

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Executive Summary

Proposal	<p>NBN Co propose to install a new fixed wireless broadband facility at Wallaga Lake comprised of the following:</p> <ul style="list-style-type: none"> ▪ 40m slimline monopole; ▪ 3 X panel antennas; ▪ 3 X parabolic dishes; ▪ 2 X outdoor units (ODU) at ground level; ▪ 2.4m high chainwire security compound fencing; & ▪ Ancillary equipment associated with operation of facility, including cable trays, cabling, safe access methods, bird proofing, earthing, electrical works and air-conditioning equipment. 	
Purposes	<p>The proposed facility is necessary to provide NBN Co fixed wireless broadband coverage the rural-residential outskirts of Wallaga Lake and provide a critical link for other NBN Fixed Wireless Facilities in the Bega Valley LGA</p>	
Property Details	<p><i>Lot & DP No:</i> Lot 3 DP565460</p> <p><i>Road Address:</i> 849 Wallaga Lake Rd, Wallaga Lake NSW 2546</p> <p><i>Property Owner:</i> Jennifer Ann Munckton & Edward Graham Munckton</p>	
Town Planning Scheme	<p><i>Council:</i> Bega Valley Shire Council</p> <p><i>Zone:</i> R2 – Low Density Residential</p>	
Applicable Planning Policies	Relevant State & Local Planning Policies	Complies
	<i>State Environmental Planning Policy (Infrastructure) 2007</i>	Yes
	<i>NSW Telecommunications Facilities Guideline including Broadband (2010)</i>	Yes
	<i>Bega Valley Local Environmental Plan 2013</i>	Yes
Application	<p>Use and development of the land for the purposes of construction & operation of a Fixed Wireless Base Station (Fixed Wireless Broadband)</p>	
Applicant	<p>NBN Co Limited (NBN Co) c/- Aurecon Australasia Pty. Ltd Level 2, 116 Military Road Neutral Bay NSW 2089 Contact: Thomas Withers Our Ref: NBN-2NWZ-2BMG-5105 – Wallaga Lake</p>	

1 INTRODUCTION

NBN Co has engaged Ericsson as the equipment vendor and project manager to establish the infrastructure required to facilitate the fixed wireless component of the National Broadband Network. Ericsson has in turn engaged Aurecon to act on its behalf in relation to the establishment of the required fixed wireless network infrastructure.

The NBN is a high speed broadband network that is intended to utilise a combination of optical fibre, fixed wireless and satellite technology to offer advanced broadband services to premises across Australia. As part of the progressive roll out, these improvements to broadband services will ultimately deliver benefits to various areas such as business, education, entertainment and health.

In response to the fixed wireless component of this network, NBN Co requires a fixed wireless transmission site at Wallaga Lake to provide connection between the fibre network and surrounding fixed wireless sites in the Northern Bega Valley LGA.

An in-depth site selection process was undertaken in the area prior to confirming the site as the preferred location. This process matched potential candidates against five key factors, namely:

- Town planning considerations (such as zoning, surrounding land uses, environmental significance and visual impact);
- The ability of the site to provide signal to other sites within the network;
- Construction feasibility; and
- The ability for NBN Co to secure a lease agreement with the landowner.

This application seeks planning consent for:

- a 40m high monopole
- radio transmission equipment and
- ancillary equipment shelter,

Located at 849 Wallaga Lake Road, Wallaga Lake NSW 2546;

This submission will provide assessment in respect of the relevant planning guidelines, and demonstrates site selection on the basis of:

- The site is appropriately located & sited so as to minimise visual impact on the immediate & surrounding area;
- The proposal complies with the *Principles of the NSW Telecommunications Facilities Guideline including Broadband (2010)*
- The site will achieve the required coverage objectives for the area;
- The proposal operates within the regulatory framework of Commonwealth, State and Local Government; and
- The facility operates within all current and relevant standards and is regulated by the Australian Communications and Media Authority.
- The facility operates within all current and relevant standards and is regulated by the Australian Communications and Media Authority.

2 BACKGROUND

2.1 NBN Co and the National Broadband Network

NBN Co is the organisation responsible for overseeing the upgrade of Australia's existing telecommunications network and for providing wholesale services to retail service providers. The NBN is designed to provide Australians with access to fast, affordable and reliable internet and landline phone services.

NBN Co plans to upgrade the existing telecommunications network in the most cost-efficient way using best-fit technology and taking into consideration existing infrastructure.

The NBN's fixed wireless network will use cellular technology to transmit signals to and from a small antenna fixed on the outside of a home or business, which is pointed directly towards the fixed wireless facility.

NBN Co's fixed wireless network is designed to offer service providers with wholesale access speeds of up to 25Mbps for downloads and 5Mbps for uploads.

2.2 What is Fixed Wireless and how is it different to Mobile Broadband?

The NBN's fixed wireless network, which uses advanced technology commonly referred to as LTE or 4G, is engineered to deliver services to a fixed number of premises within each coverage area. This means that the bandwidth per household is designed to be more consistent than mobile wireless, even in peak times of use.

Unlike a mobile wireless service where speeds can be affected by the number of people moving into and out of the area, the speed available in a fixed wireless network is designed to remain relatively steady.

2.3 The Fixed Wireless Network – Interdependencies

Although fixed wireless facilities are submitted to Council as standalone developments from a planning perspective, they are highly interdependent. Each fixed wireless facility is connected to another to form a chain of facilities that link back to the fibre network. This is called the 'transmission network'.

The transmission network requires line of sight from facility to facility until it reaches the fibre network. The fixed wireless network will remain unconnected without the transmission network and a break in this chain can have flow on effects to multiple communities.

A typical fixed wireless facility will include three antennas mounted above the surrounding area. Each antenna is designed to cover a set area to maximise signal strength.

These network antennas communicate to a small antenna installed on the roof of each customer's home or business. The proposed Fixed Wireless facility at Wallaga Lake is the Wireless Hub site (refer to Figure 1). It has been designed not only to provide wireless

broadband services to surrounding premises, but is also a critical connection point between adjoining Fixed Wireless facilities via the transmission network.

The character of the Fixed Wireless network is visually demonstrated through Figure 1 below.

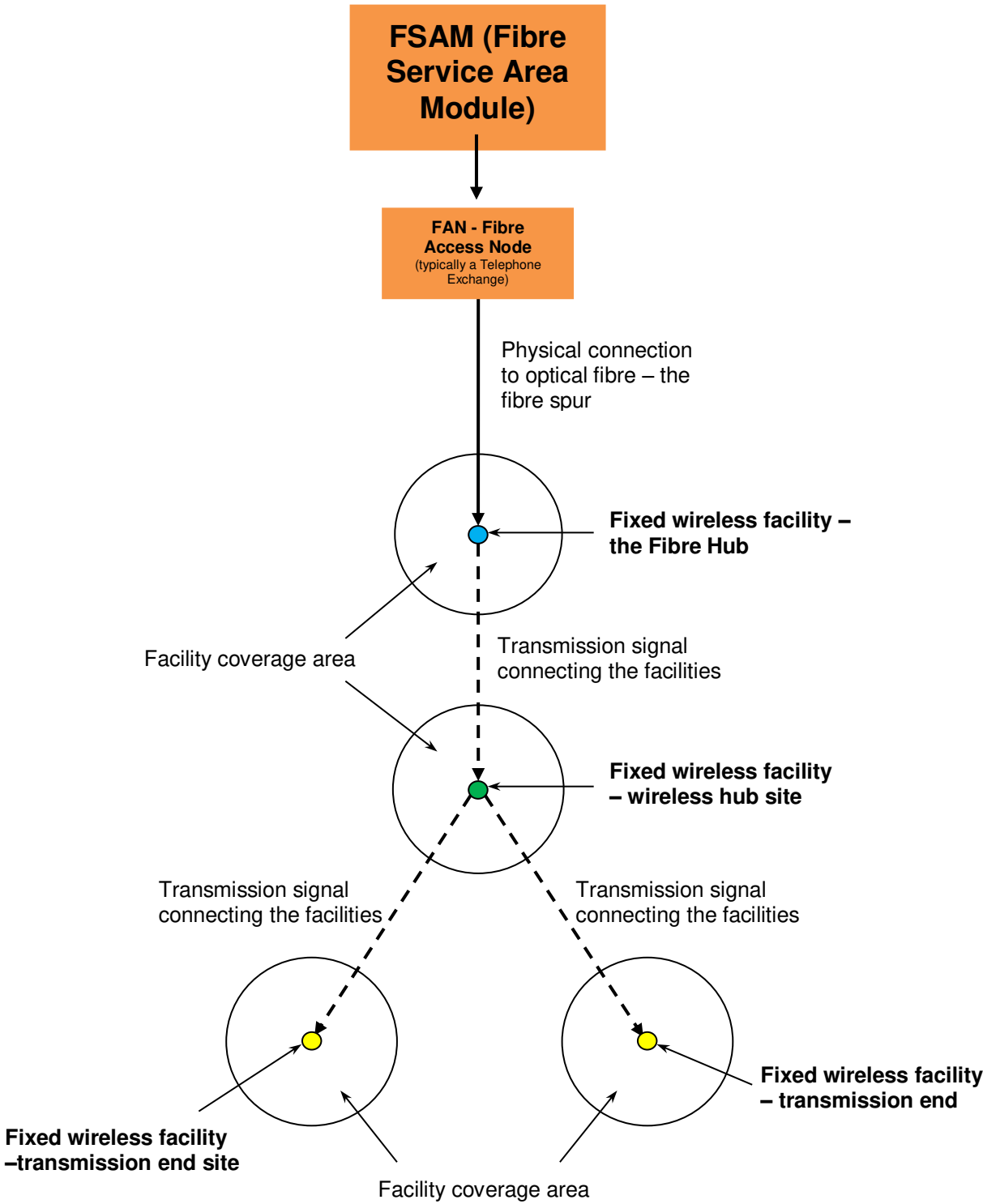


Figure 1: The fixed wireless network

3 SITE SELECTION

Planning for a new fixed wireless broadband facility is a complex process. NBN Co conducts a rigorous multi-stage scoping process, as outlined below.

3.1 Identification of areas requiring Fixed Wireless coverage

NBN Co's Fixed Wireless locations are determined by a number of factors including the availability of both the NBN Co Fibre transit network and the availability of Point of Interconnect (POI) facilities to allow for the installation of NBN Co fibre equipment. NBN Co uses a number of methods to identify those parts of Australia that require Fixed Wireless coverage. When an area is identified as requiring Fixed Wireless coverage, investigations are undertaken to determine the measures required to provide this coverage.

NBN Co has identified a requirement to provide a Fixed Wireless facility at Wallaga Lake. The facility is designed to provide Fixed Wireless internet services to dwellings in the Wallaga Lake area, in addition to serving as a key communications link for other NBN Fixed Wireless facilities in the wider region.

3.2 Site Selection Parameters

NBN Co generally identifies an area where the requirement for a Fixed Wireless facility would be highest, a 'search area.' A preliminary investigation of the area is then generally undertaken, in conjunction with planning and property consultants, radiofrequency engineers and designers in order to identify possible locations to establish a facility.

Generally speaking, new sites must be located within, or immediately adjacent to, the identified search area in order to be technically feasible. However, while the operational and geographical aspects of deploying new facilities are primary factors, there are also many other issues that influence network design, which have to be resolved in parallel.

Some of the issues that may be considered include visual amenity, potential co-location opportunities, the availability and suitability of land as well as a willing site provider, occupational health and safety, construction issues (including structural and loading feasibility and access for maintenance purposes), topographical constraints affecting network line of site, legislative policy constraints, environmental impacts, and cost implications.

The number, type and height of facilities required to complete the Fixed Wireless network are largely determined by the above operational, geographical and other factors discussed that influence final network design. These compounding factors often severely restrict the available search area within which a facility can be established to provide Fixed Wireless internet services to a local community.

3.3 Opportunities to Colocate

A search of the Radio Frequency National Site Archive reveals a number of colocation opportunities in the wider area. Analysis of these potential opportunities revealed that the sites were not suitable due to their distance from the intended service area in Wallaga Lake. The closest colocation opportunity is located 4.14km away from the desired area at

Akolele Off Umbarra Road. Excessive distance from the intended service areas results in a significant drop in service quality and reliability. The colocation sites were discounted as 'technically infeasible'. Figure 2 identifies the location of the various structures ('nearby site') in relation to the proposed site (Site 2546017).

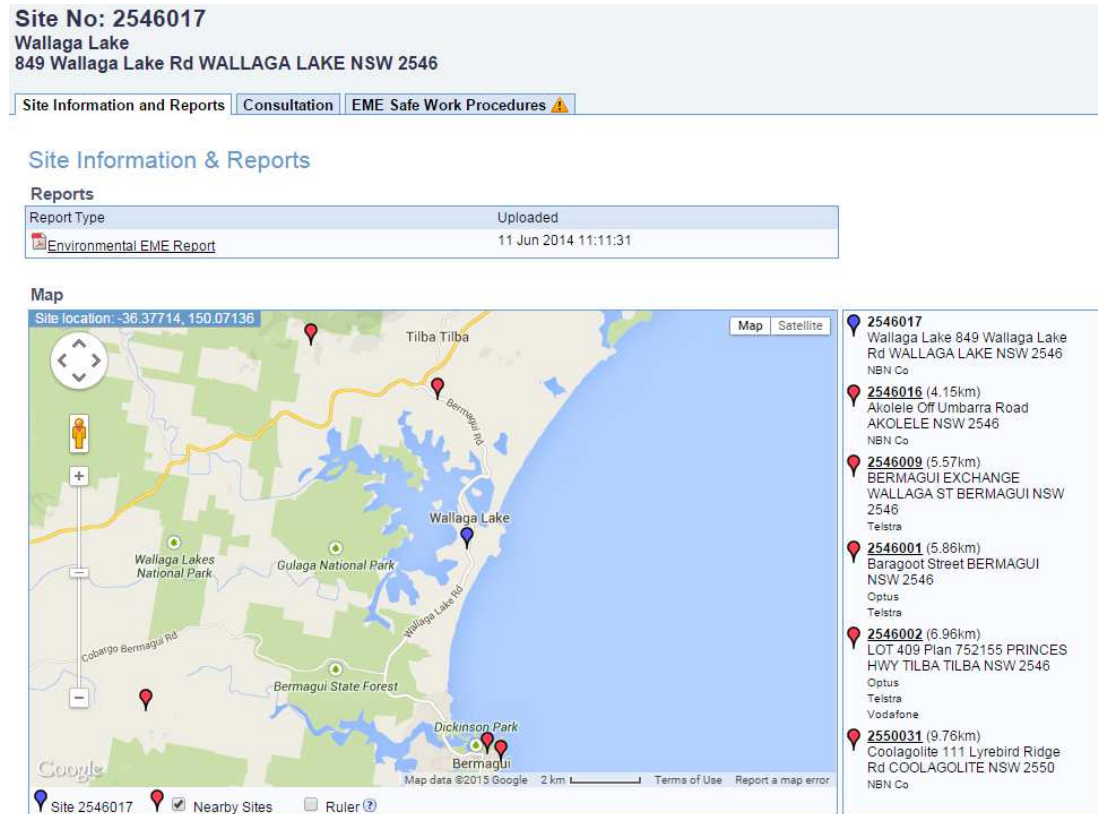


Figure 2 - Opportunities to Co-locate

3.4 Candidate Sites

Following the identification of the search area, a number of candidate sites were examined. Each candidate was assessed based on the ability to meet the coverage objectives and site considerations detailed above. A total of 3 (three) candidates were selected for in-depth investigation, as per Figure 3 below.

NBN Co endeavours to avoid locating search areas in close proximity to residential localities and potentially sensitive land uses, where practicable.

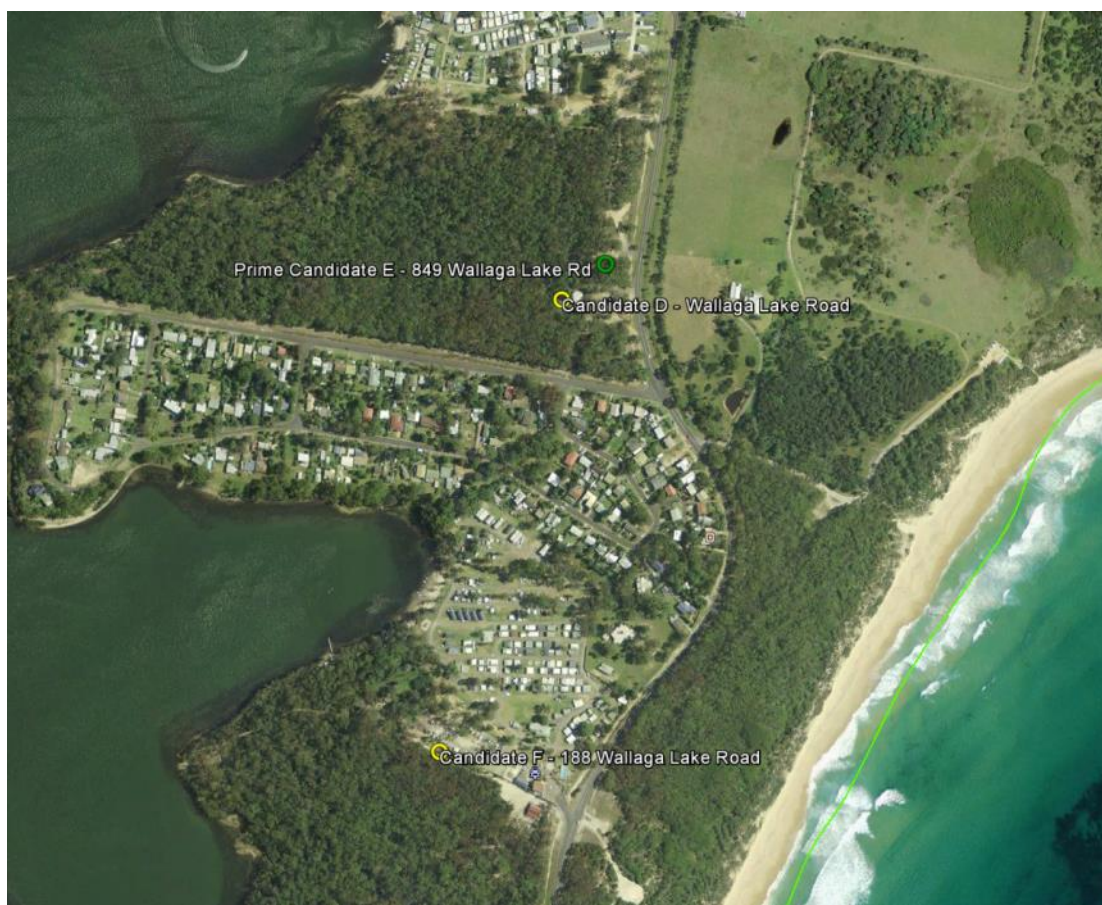


Figure 3 – NBN Co Candidate Sites (Source: Google Earth 2014)

A summary of the candidates that were proposed is set out below, including a description of the opportunities and constraints that each site afforded.

Candidate	Address and Lot Number	Facility Type	Description
D	Bega Valley Shire Council land Lot 118 DP752130 Wallaga Lake Road <i>Lat: -36.37754, Long: 150.07074</i> Greenfield Site	New 40m Monopole	<p>NBN Co investigated establishing a new 40m high monopole facility at Lot 118 Wallaga Lake Road, Wallaga Lake.</p> <p><i>Candidate D</i> is an R2 (Low Density Residential) zoned, largely vacant lot, owned by Bega Valley Shire Council.</p> <p>The chosen site on the lot is located close to the eastern boundary, in an existing clearing, adjacent to a Council water tank structure.</p> <p>The candidate is appropriately sited so as to minimise visual impact on the immediate & surrounding area. The site also achieves good coverage of the Wallaga Lake area while requiring the same tower height as other available candidates.</p>

Candidate	Address and Lot Number	Facility Type	Description
			<p>The site provides existing power access, good separation between sensitive land uses.</p> <p>The site makes use of an existing cleared area and an existing access track but will require some additional vegetation clearing.</p> <p>Candidates D and E provided comparative advantages over E in terms of amenity however E provided a reduced level of clearing and improved access. Candidate E was selected as the prime candidate.</p>
E	<p>Lot 3 DP565460 849 Wallaga Lake Road</p> <p><i>Lat: -36.37714, Long: 150.07136</i></p> <p>Greenfield Site Prime Candidate</p>	New 40m Monopole	<p>NBN Co investigated establishing a new 40m high monopole facility at 849 Wallaga Lake Road, Wallaga Lake.</p> <p><i>Candidate E</i> is an R2 (Low Density Residential) zoned, largely vacant lot owned by a private owner.</p> <p>The chosen site is located to the centre of the lot where it is setback from Wallaga Lake Road and the landowner's residential dwelling.</p> <p>The site makes use of existing cleared areas and an existing access in order to minimise clearing required for the compound area, electrical easement, access and bushfire protection. The site will require some additional vegetation clearing.</p> <p>The Candidate is appropriately sited so as to minimise visual impact on the immediate & surrounding area. The site also achieves good coverage of the Wallaga Lake area while requiring the same tower height as other available candidates.</p> <p>The site provides existing power access, good separation between sensitive land uses.</p> <p>Following an evaluation of the alternative options, and the constraints in the area, a new monopole and associated infrastructure on 849 Wallaga Lake Road, Wallaga Lake was deemed to be the most acceptable solution. Detailed site characteristics and our proposal are presented in the following sections of this report.</p> <p>The site offers:</p>

Candidate	Address and Lot Number	Facility Type	Description
			<ul style="list-style-type: none"> • 150m setback from the closest existing residential dwellings in the wider area; • Excellent screening using moderately dense native vegetation in immediate vicinity; • Low visibility location for existing dwellings in the area and for the waterfront; • Good siting on the periphery of residential areas in Wallaga Lake; and • Suitable location from a technical perspective.
F	<p>Lot 42 DP771586 118 Wallaga Lake Road</p> <p><i>Lat: -36.38271, Long: 150.06900</i></p> <p>Greenfield Site</p>	New 40m Monopole	<p>NBN Co investigated establishing a new 40m high monopole facility at 118 Wallaga Lake Road, Wallaga Lake.</p> <p><i>Candidate F</i> is an SP3 (Tourist) zoned lot largely utilised as the Wallaga Lake Resort.</p> <p>The chosen site on the lot is located adjacent the southern boundary in an existing clearing.</p> <p>While ideally located to achieve coverage objectives candidate F is significantly more visible to residential dwellings to the North and North-west, along Wallaga Lake Road and from units within the Wallaga Lake Resort.</p> <p>The site makes use of an existing cleared area and an existing access track but will still require some additional vegetation clearing.</p> <p>Candidate F was discounted due to its high visibility from residential dwellings in the surrounding area and Wallaga Lake Road.</p>

4 SUBJECT SITE & SURROUNDS

The proposed facility is to be located at 849 Wallaga Lake Road, Wallaga Lake. Figure 4 and Figure 5 identify the subject property within the context of the local area as well as the proposed location of the facility on the property.

Access to the site location is via an existing access point off Wallaga Lake Road.



Figure 4 Aerial map of the site within the context of the wider Wallaga Lake area (Source: SixMaps)

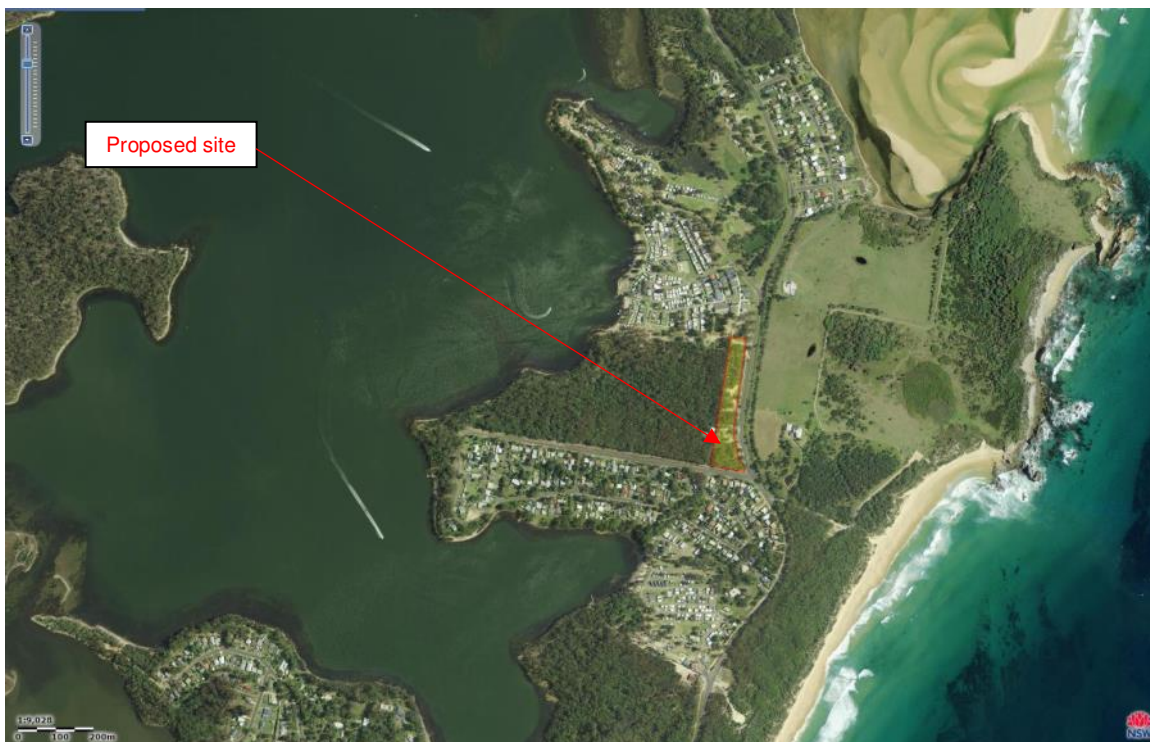


Figure 5 - Aerial map of the site within the context of the local area (Source: SixMaps)

The wider subject property is classified as R2 (Low Density Residential) and features a residential dwelling located approximately 40m south of the proposed site. The land is

adjacent to Council owned land to the west containing a large water tank structure. The proposed development site is located in a previously semi-cleared area of the lot, surrounded by vegetation to the north, south and to the west and is accessed by a dirt/gravel track.

The area has been chosen as it provides good natural elevation, is distanced from existing sensitive land uses and takes advantage of natural screening opportunities.

The built form and typical land uses on nearby and adjoining properties are predominantly residential dwellings, recreation or tourism uses. Low density residential development is concentrated to the north and to the south of the proposed development site is zoned as R2 or SP3. The closest residential dwelling external to the subject land is approximately 150m from the site.

No community sensitive sites such as schools have been identified within a 500m radius of the proposed development location on the subject property.

5 THE PROPOSAL

5.1 Facility and Equipment Details

5.1.1 Equipment to be installed

Approval is sought for the use and development of a Fixed Wireless Base Station facility, comprising a 40m metre high monopole and ancillary components including two outdoor units (ODU) enclosed within a secure compound which measures approximately 80m².

The specific components of the proposed installation are described below:

- The installation of a 40m high slimline monopole (coloured standard factory grey), with a circular headframe at the top of the monopole;
- The installation of three 600mm parabolic dishes for transmission purposes, at an elevation of 38m on the monopole;
- The installation of three (3) panel antennas (dimensions 1077mm high x 300mm wide x 115mm deep), attached to the headframe at an elevation of 40m;
- The installation of a 2.4m high chain wire security compound fence (compound area 8m x 10m), with 3m wide access gate;
- The installation of two (2) outdoor equipment units (dimensions: 1500mm high x 650mm wide x 650mm deep) at ground level, adjacent to the proposed monopole. The outdoor units will be installed on a concrete slab of dimensions 2400mm x 1000mm and will be metallic grey in colour;
- The installation of associated feeder cables that will run aboveground from the equipment cabinets, and then internally within the monopole to the antennas.
- The installation of a NBN underground electrical line (approximately 30m) running to a new power pole within the property boundary. The underground electrical line will require the clearing of a 3m x 30m corridor that will not be maintained

This NBN Fixed Wireless facility will operate as a 'Wireless Hub site (refer to Figure 1). It will link with sites at 'Bermagui Town', 'Coolagolite' and 'Mystery Bay'. The connection provided by Wallaga Lake to Coolagolite and Mystery Bay will then provide further connection to facilities in Cobargo, Nangudga and Corunna Village. These sites do not form part of this application.

Figure 7 represents an example of a slimline monopole and headframe while Figure 6 represents an example of a parabolic dish.

Figure 8 identifies the specific site on the subject property where the proposed development is to be located.

Please refer to **Appendix 3 – Site layout and Design** for further details.



Figure 7 – Example of a monopole and circular headframe



Figure 6 - Example of a parabolic dish antenna



Figure 8 - Proposed site on subject property (photo taken facing North-east)

5.1.2 Access and Parking Details

The NBN compound will be accessed via an access track off Wallaga Lake Road. This access track is proposed as it makes use of existing clearing and allows NBN to minimise vegetation removal for access. It is considered that no clearing in addition to the compound area and Asset Protection Zone (APZ) will be required. No trees outside the APZ will need to be removed from the access track.

Plans indicating the details of the proposal form part of the documentation of this application. Figure 9 represents the existing access point.



Figure 9 - Access point off Wallaga Lake Road (facing South-east towards Wallaga Lake Road)



Figure 10 - Access point off Wallaga Lake Road (North-west from Wallaga Lake Road)

Additional photos of the site and proposed development plans are provided as **Appendices 2 & 3 respectively.**

The site access is considered to be appropriate given the NBN Co facility will not be a significant generator of traffic.

During the construction phase, a truck will be used to deliver the equipment and a crane will be utilised to lift most of the equipment into place. Any traffic impacts associated with construction will be of a short-term duration and are not anticipated to adversely impact on the surrounding Road network. In the unlikely event that Road closure will be required, NBN Co will apply to the relevant authorities for permission.

A total construction period of approximately ten 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, excavation and construction of foundations;
- Stage 2 (Weeks 2, 3 and 4) – Construction of the monopole;
- Stage 3 (Weeks 5 and 6) – Construction of the equipment shelter and fences;
- Stage 4 (Weeks 7 – 10) – Installation of antennas and radio equipment, as well as equipment testing.

Once operational, the facility will function on a continuously unstaffed basis and will typically only require maintenance works three times a year.

5.1.3 Utility Service Details

Electricity to power the site will be sourced from an existing Essential Energy pole approximately 50m southeast from the proposed site location. Power will be supplied to the site via a 30m underground line which will remove the requirement to clear vegetation to maintain the minimum separation necessary for overhead power lines and vegetation. The underground line will run to a new power pole within the property boundary and will connect to the Essential Energy pole via a 50m overhead line. In the unlikely event that power is not available to the site a temporary power supply would be required in the form of a generator. Upgrades to the existing power facilities will be at the applicant's expense.

5.1.4 Construction and Noise

Noise and vibration emissions associated with the proposed facility are expected to be limited to the construction phase outlined above. Noise generated during the construction phase is anticipated to be of short duration and accord with the standards outlined in the relevant EPA guidelines. Construction works are planned only to occur between the hours of 7.00am and 6.00pm.

There is expected to be some low level noise from the ongoing operation of air conditioning equipment associated with the equipment shelter, once installed. Noise emanating from the air conditioning equipment is expected to be at a comparable level to a domestic air conditioning installation, and should generally accord with the background noise levels prescribed by relevant guidelines.

6 CURRENT PLANNING CONTROLS

The proposal has been assessed having regard to the relevant Heads of Consideration under Section 79 C (1) of the *Environmental Planning and Assessment Amendment Act, 1979*. This provides that, in determining a development application, a consent authority is to take into consideration such of the following matters as are of relevance to the development the subject of the development application.

6.1 Commonwealth Legislation – The Telecommunications Act

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.

Further clarification of the term ‘low impact’ is provided in the *Telecommunications Act 1997* and the *Telecommunications (Low Impact Facilities) Determination 1997*, which was gazetted subsequent to the Act. The *Telecommunications (Low Impact Facilities) Determination 1997* establishes certain facilities, which cannot be considered ‘low impact’ facilities.

The proposed facility is not low impact under the definitions contained in the Commonwealth legislation. Planning consent is therefore required for the proposed facility.

Compliance with the requirements of S79C(1) is discussed in this Chapter and the potential impacts of the proposal on the environment, natural and human is discussed in Chapter 7 of this SEE.

6.2 State Environmental Planning Policies (SEPPs) and Regional Plans

6.2.1 The Environmental Planning and Assessment Act 1979

The *Environmental Planning and Assessment Act 1979* (the Act) is the primary statute regulating the environmental planning and development in NSW. Clause 5 sets out the objectives of the Act. One relevant objective of the EP&A Act is to:

“A) to encourage

(iii) the protection, provision and co-ordination of communication and utility services,”

The proposal will ensure the reliable provision of services to the rural surrounds of Wallaga Lake. The proposal can thus be seen to be consistent with this objective of the Act.

Telecommunications facilities are not Designated Development under Schedule 3 of the Environmental Planning & Assessment Regulation 1994, and consequently do not require the preparation of an Environmental Impact Statement.

However under the provisions of Part 4 of the EP&A Act, a DA and accompanying Statement of Environmental Effects (SEE) must be lodged with the consent authority.

Section 79C(1) of the EP&A Act outlines the issues that are to be addressed in this SEE. Section 79C is a reference tool designed to assist planning authorities and developers in the preparation and assessment of DAs and specifies exactly which issues must be considered by the consent authority when assessing the application.

6.2.2 The Native Vegetation Act 2003 and the Native Vegetation Regulation 2013

The Native Vegetation (NV) Act 2003 was introduced in 2005 with an aim to reduce broad scale clearing of land in NSW.

The NV Act regulates the clearing of native vegetation on all land in NSW except for land listed in Schedule 1 of the Act. Excluded land falls into the following categories:

- national parks and other conservation areas
- state forests and reserves
- urban areas.

The subject site has been classified as R2 – Low Density Residential (urban area) and tree clearing is not subject to the provisions of the Native Vegetation Act 2003 and the regulation.

6.2.3 State Environmental Planning Policies (SEPPs)

According to Planning Certificate Under Section 149 (2), certificate No. 20109148, dated 19 June 2012, twenty-eight (28) SEPPs have been identified as pertaining to this land. However, only five (5) are considered to be relevant to the proposal:

1. SEPP No. 1 - Development Standards
2. SEPP No. 26 – Littoral Rainforests
3. SEPP No. 44 – Koala Habitat Protection
4. SEPP (Infrastructure) 2007
5. SEPP No. 71 – Coastal Protection

6.2.3.1 SEPP No. 1 – Development Standards

This SEPP provides flexibility in the application of planning controls operating by virtue of development standards in circumstances where strict compliance with those standards would, in any particular case, be unreasonable or unnecessary.

Comment: This document is submitted for assessment of compliance by Bega Valley Shire Council.

6.2.3.2 SEPP No. 26 – Littoral Rainforests

SEPP No. 26 – Littoral Rainforests guides development proposed in areas classified as littoral rainforest. Given the high ecological value of these areas, development on land identified as littoral rainforest is generally not supported.

Section 149 certificate number 2014/08268 indicates SEPP No. 26 to be a relevant planning instrument that applies to development being carried out on the land. Figure 11 identifies a 100m radius around the proposed site on the subject property in relation to the closest areas classified as littoral rainforest. The buffer zone shown in red

represents a radius of 100m around the structure. No land mapped as Littoral Rainforest (SEPP26 Yellow) is located within the vicinity of the site.

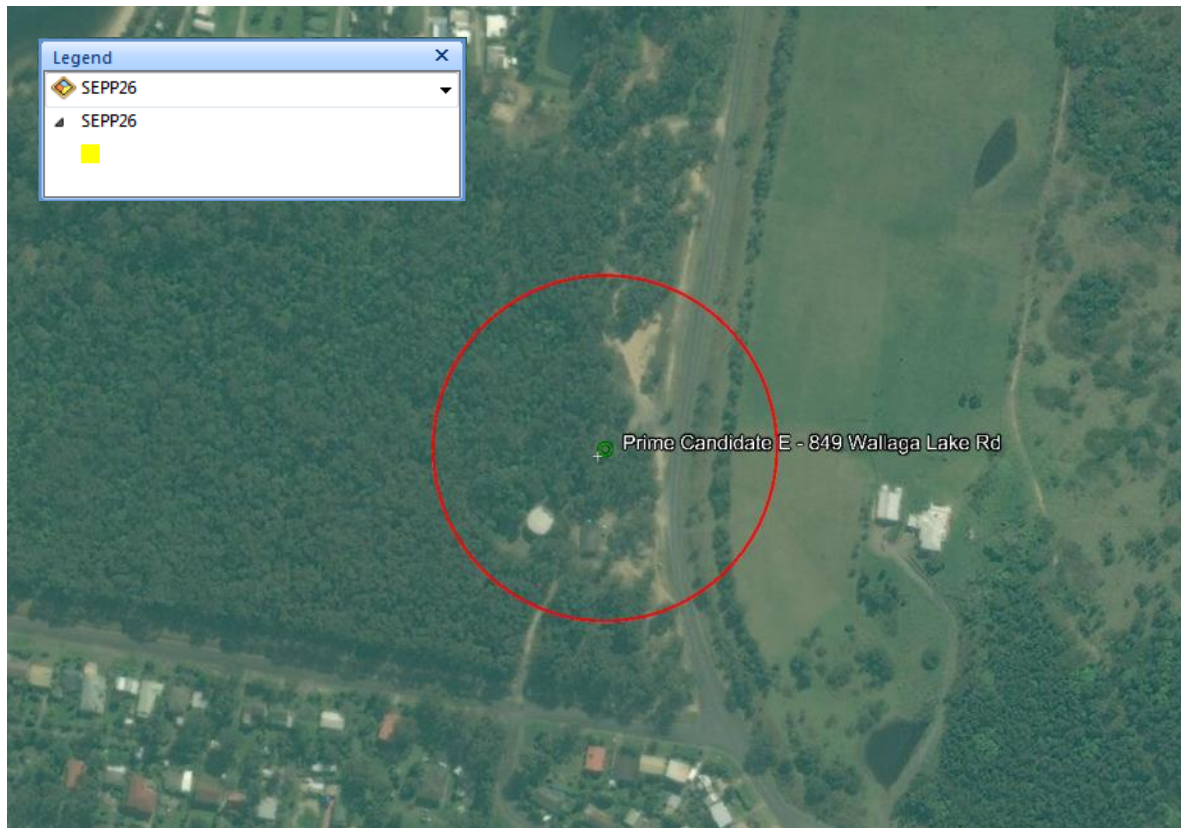


Figure 11 SEPP 26 Mapping

Figure 11 demonstrates that the proposed site is not within 100m of land to which SEPP 26 applies, and is therefore NOT subject to the provisions of SEPP 26.

6.2.3.3 SEPP No. 44 – Koala Habitat Protection

This SEPP aims to encourage the proper conservation and management of areas of natural vegetation that provide habitat for koalas to ensure a permanent free-living population over their present range and reverse the current trend of koala population decline.

Comment: It is considered that the proposal is unlikely to pose any significant impact in respect to koala habitat protection given the small compound area and minimal clearing. An ecological assessment report (Appendix 7) has been prepared by a qualified ecologist on behalf of Aurecon and NBN Co following a desktop and onsite analysis. The report includes an assessment under this SEPP.

6.2.3.4 SEPP (Infrastructure) (2007)

The SEPP (Infrastructure 2007) was gazetted on 21 December 2007, providing a consistent planning regime for infrastructure and the provision of services across NSW, along with providing for consultation with relevant public authorities during the assessment process. Division 21 of the SEPP applies to telecommunications and other communication

facilities, establishing the approval regimes for telecommunications in NSW. Division 21 classifies certain telecommunications development that is permitted without consent, with consent and exempt from local environmental approvals.

Telecommunications facility is defined to mean:

*“(a) any part of the infrastructure of a telecommunications network, or
(b) any line, cable, optical fibre, equipment, apparatus, tower, mast, antenna, dish, tunnel, duct, hole, pit, pole or other structure in connection with a telecommunications network.”*

Reference is made to clause 115 (1), which states:

“Development for the purposes of telecommunications facilities, other than development in clause 114, may be carried out by any person with consent on any land.”

Telecommunications facilities are therefore permissible in all zones within the Bega Valley LGA with the consent of the Council.

The *SEPP (Infrastructure) 2007* as amended by the *SEPP (Infrastructure) Amendment (Telecommunications Facilities) 2010* is of specific relevance to the proposal as the provisions of clauses 113 and 115 are being relied upon for permissibility of the proposed development at the subject location and are the basis for lodging and seeking Council consent for this development.

Clause 116 and 116A allow for greater flexibility in installing new towers and facilities. Under this amendment, new telecommunications towers required to deliver broadband or mobile phone access in certain rural or industrial zones would be allowed as complying development subject to amenity and safety issues like height limits and separation from residential areas.

This proposal does not meet the requirements of exempt or complying development under this SEPP due to –

1. Proposed development is not located on land zoned as either ‘rural’ or ‘industrial’.

In addition, NBN Co is not a public authority for the purposes of the SEPP so clause 114 is not applicable.

Clause 115(3) of the SEPP provides that:

Before determining a development application for development to which this clause applies, the consent authority must take into consideration any guidelines concerning site selection, design, construction or operating principles for telecommunications facilities that are issued by the Director-General for the purposes of this clause and published in the Gazette.

In this respect, the *NSW Telecommunications Facilities Guideline including Broadband (July 2010)* has been issued by the Director General.

6.2.3.5 SEPP No. 71 – Coastal Protection

SEPP 71 – Coastal Protection has been made to ensure development in the NSW Coastal Zone is appropriate and suitably located, there is a consistent and strategic approach to coastal planning and management, and there is a clear development assessment framework for the coastal zone.

Section 149 certificate number 2014/08268 states that the land is captured within the coastal zone. Figure 12 identifies the position of the proposed site on the subject property in relation to the coastal zone and sensitive coastal locations as defined in SEPP 71.



Figure 12 - SEPP 71

Based on the location of the proposed development, the provisions of SEPP 71 will need to be addressed

The aims of SEPP 71 include –

1. to protect and manage the natural, cultural, recreational and economic attributes of the New South Wales coast, and
2. to protect and improve existing public access to and along coastal foreshores to the extent that this is compatible with the natural attributes of the coastal foreshore, and
3. to ensure that new opportunities for public access to and along coastal foreshores are identified and realised to the extent that this is compatible with the natural attributes of the coastal foreshore, and
4. to protect and preserve Aboriginal cultural heritage, and Aboriginal places, values, customs, beliefs and traditional knowledge, and
5. to ensure that the visual amenity of the coast is protected, and

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6. to protect and preserve beach environments and beach amenity, and
 7. to protect and preserve native coastal vegetation, and
 8. to protect and preserve the marine environment of New South Wales, and
 9. to protect and preserve rock platforms, and
 10. to manage the coastal zone in accordance with the principles of ecologically sustainable development (within the meaning of section 6 (2) of the Protection of the Environment Administration Act 1991), and
 11. to ensure that the type, bulk, scale and size of development is appropriate for the location and protects and improves the natural scenic quality of the surrounding area, and
 12. to encourage a strategic approach to coastal management.

Furthermore, SEPP 71 –

1. requires certain development applications to carry out development in sensitive coastal locations to be referred to the Director-General for comment, and
2. identifies master plan requirements for certain development in the coastal zone

Clause 7 of SEPP 71 requires that ‘matters for consideration’ are to be taken into account by a consent authority when it determines a development application to carry out development on land to which the SEPP applies. An applicant must therefore demonstrate compliance with the matters of consideration. The matters of consideration are –

1. the aims of this Policy set out in clause 2
2. existing public access to and along the coastal foreshore for pedestrians or persons with a disability should be retained and, where possible, public access to and along the coastal foreshore for pedestrians or persons with a disability should be improved,
3. opportunities to provide new public access to and along the coastal foreshore for pedestrians or persons with a disability,
4. the suitability of development given its type, location and design and its relationship with the surrounding area,
5. any detrimental impact that development may have on the amenity of the coastal foreshore, including any significant overshadowing of the coastal foreshore and any significant loss of views from a public place to the coastal foreshore,
6. the scenic qualities of the New South Wales coast, and means to protect and improve these qualities
7. measures to conserve animals (within the meaning of the Threatened Species Conservation Act 1995) and plants (within the meaning of that Act), and their habitats
8. measures to conserve fish (within the meaning of Part 7A of the Fisheries Management Act 1994) and marine vegetation (within the meaning of that Part), and their habitats
9. existing wildlife corridors and the impact of development on these corridors,
10. the likely impact of coastal processes and coastal hazards on development and any likely impacts of development on coastal processes and coastal hazards,
11. measures to reduce the potential for conflict between land-based and water-based coastal activities,
12. measures to protect the cultural places, values, customs, beliefs and traditional knowledge of Aboriginals,
13. likely impacts of development on the water quality of coastal waterbodies,
14. the conservation and preservation of items of heritage, archaeological or historic significance,

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15. only in cases in which a council prepares a draft local environmental plan that applies to land to which this Policy applies, the means to encourage compact towns and cities,
 16. only in cases in which a development application in relation to proposed development is determined:
 - a. the cumulative impacts of the proposed development on the environment, and
 - b. measures to ensure that water and energy usage by the proposed development is efficient.

Our compliance with the matters for consideration are outlined below in Table 1 –

Table 1 - SEPP 71 Compliance

Matters for Consideration	Compliance	How the matter has been achieved
Aims of the policy		
1. to protect and manage the natural, cultural, recreational and economic attributes of the New South Wales coast	✓	Siting the structure in a location where environmental impact is low and away from areas of high community / aesthetic value, while still providing maximum broadband coverage to the community. The importance aesthetic values to the economic prosperity of the Wallaga Lake area as a tourist destination has been an important consideration to siting the facility in a low visibility location.
2. to protect and improve existing public access to and along coastal foreshores to the extent that this is compatible with the natural attributes of the coastal foreshore	✓	The proposed facility will occupy a small footprint (80m ²). The proposed location will not impact on existing public access along the coastal foreshore. The site is on private land is does not provide access to the coastal foreshore.
3. to ensure that new opportunities for public access to and along coastal foreshores are identified and realised to the extent that this is compatible with the natural attributes of the coastal foreshore	✓	The site is not in a location suitable for future public access to the coastal foreshore. The closest coastal feature is Wallaga Lake. Formal access points to this coastal lake already exist.
4. to protect and preserve Aboriginal cultural heritage, and Aboriginal places, values, customs, beliefs and traditional knowledge	✓	No items of Aboriginal cultural heritage or places are capture on the subject lot. An AHIMS search has been undertaken which confirms this position (Appendix 5)
5. to ensure that the visual amenity of the coast is protected	✓	The proposed structure is the shortest structure possible while still providing reliable high speed broadband to the wider Wallaga Lake community. The structure is well screened by existing mature native vegetation and is not located in a significant view or vista.
6. to protect and preserve beach environments and beach amenity	✓	The proposed site in not located close to a beach environment. The closest beach is located over 400m to the East of the site.
7. to protect and preserve native coastal vegetation	✓	The proposed development in the chosen location requires the least amount vegetation removal in comparison to other alternatives on the same lot. It takes advantage of an area featuring lower density of vegetation, and makes use of any existing access track to reduce further vegetation removal. An

Matters for Consideration	Compliance	How the matter has been achieved
		ecological assessment has been undertaken which confirms that the development will not result in significant environmental impact (Appendix 7).
8. to protect and preserve the marine environment of New South Wales	✓	The proposed development is not located in the 'marine' environment.
9. to manage the coastal zone in accordance with the principles of ecologically sustainable development (within the meaning of section 6 (2) of the <u>Protection of the Environment Administration Act 1991</u>)	✓	<p>Siting the proposed structure has taken the principles of ecologically sustainable development into account.</p> <ol style="list-style-type: none"> 1. The precautionary principle into account. An ecological report confirms that serious or irreversible damage to the environment can be avoided. An environmental risk assessment of all alternatives was undertaken before selected the chosen location. The proposed site results in the least amount of both environmental and visual impact in comparison to the alternative candidates. 2. Intergenerational equity achieved through minimising environmental impact while maximising broadband connectivity. 3. Conservation of biodiversity and ecological integrity can be achieved. Proposed site location minimises environmental impact. 4. N/A
5. to ensure that the type, bulk, scale and size of development is appropriate for the location and protects and improves the natural scenic quality of the surrounding area	✓	The telecommunications facilities are synonymous with rural / coastal areas. The proposed development has been strategically located to avoid significant views and vistas, takes advantage of mature native vegetation for screening, and offers excellent separation from the bulk of the Wallaga Lake urban area and

Matters for Consideration	Compliance	How the matter has been achieved
		significant coastal features.
6. to encourage a strategic approach to coastal management	✓	N/A
General Matters for Consideration		
7. existing public access to and along the coastal foreshore for pedestrians or persons with a disability should be retained and, where possible, public access to and along the coastal foreshore for pedestrians or persons with a disability should be improved	✓	See point 2
8. opportunities to provide new public access to and along the coastal foreshore for pedestrians or persons with a disability	✓	See point 3
9. the suitability of development given its type, location and design and its relationship with the surrounding area	✓	See point 5
10. any detrimental impact that development may have on the amenity of the coastal foreshore, including any significant overshadowing of the coastal foreshore and any significant loss of views from a public place to the coastal foreshore	✓	The proposed development will not result in significant adverse impact on coastal amenity or coastal overshadowing. The proposed site is away from significant coastal features.
11. the scenic qualities of the New South Wales coast, and means to protect and improve these qualities	✓	The proposed site is not located in a significant view or vista, or close to a significant coastal feature.
12. measures to conserve animals (within the meaning of the <i>Threatened Species Conservation Act 1995</i>) and plants (within the meaning of that Act), and their habitats	✓	Minimising impact on flora and fauna has been achieved by siting the proposed development in a location where vegetation (potential habitat) density is lowest in comparison to the surrounding environment.
13. measures to conserve fish (within the meaning of Part 7A of the <i>Fisheries Management Act 1994</i>) and marine vegetation (within the meaning of that Part), and their habitats	✓	Proposed development is not located in a marine environment and will not impact on fish or marine vegetation. The proposed development does not create waste or contaminants.
14. existing wildlife corridors and the impact of development on these corridors	✓	An ecological report confirms that the proposed development will not result in significant impacts on wildlife corridors (Appendix 7).
15. the likely impact of coastal processes and coastal	✓	The proposed development is not located in a coastal hazard

Matters for Consideration	Compliance	How the matter has been achieved
hazards on development and any likely impacts of development on coastal processes and coastal hazards		zone.
16. measures to reduce the potential for conflict between land-based and water-based coastal activities	✓	The proposed development will not adversely impact water based coastal activities due to its location greater than 100m from the high-water mark.
17. measures to protect the cultural places, values, customs, beliefs and traditional knowledge of Aboriginals	✓	The subject lot does not feature any known Aboriginal cultural places (Appendix 5).
18. likely impacts of development on the water quality of coastal waterbodies	✓	The proposed development will not affect water quality as it does not produce waste or contaminants, and will not result in increased stormwater or sediment runoff.
19. the conservation and preservation of items of heritage, archaeological or historic significance	✓	The subject lot does not feature any known heritage items (Appendix 5).
20. only in cases in which a council prepares a draft local environmental plan that applies to land to which this Policy applies, the means to encourage compact towns and cities	✓	N/A
21. only in cases in which a development application in relation to proposed development is determined a) the cumulative impacts of the proposed development on the environment b) measures to ensure that water and energy usage by the proposed development is efficient	✓	a) Cumulative impacts of the proposed development have been shown to be low, including ecological and visual impacts b) Development minimises power usage using dynamic power adaptors to reduce power to the site when user demand is low, and regulating temperature control depending on ambient air temperature. Water services are not required and will not be connected.

NBN Co contend that the proposed development meets the aims of SEPP 71, and the matters for consideration have been adequately addressed.

6.2.4 NSW Telecommunications Facilities Guideline including Broadband (2010)

The proposal's consistency with the Guideline principles is addressed in Table 2 below.

Table 2 Compliance with the Principles of NSW Telecommunications Facilities Guideline including Broadband (2010)

Principle 1: A Telecommunications Facility should be sited to minimise visual impact	
Specific Principles	Comment
<p>(a) <i>As far as practical, a telecommunications facility that is to be mounted on an existing building or structure should be integrated with the design and appearance of the building or structure.</i></p> <p>(b) <i>The visual impact of telecommunications facilities should be minimised, visual clutter is to be reduced particularly on tops of buildings, and their physical dimensions (including support mounts) should be sympathetic to the scale and height of the building to which it is to be attached, and sympathetic to adjacent buildings.</i></p> <p>(c) <i>Where telecommunications facilities protrude from a building or structure and are predominantly backgrounded against the sky, the facility and their support mounts should be either the same as the prevailing colour of the host building or structure, or a neutral colour such as grey should be used.</i></p> <p>(d) <i>Ancillary facilities associated with the telecommunications facility should be screened or housed, using the same colour as the prevailing background to reduce its visibility, including the use of existing vegetation where available, or new landscaping where possible and practical</i></p> <p>(e) <i>A telecommunications facility should be located and designed to respond appropriately to its rural landscape setting.</i></p> <p>(f) <i>A telecommunications facility located on, or adjacent to, a State or local heritage item or within a heritage conservation area, should be sited and designed with external colours, finishes and scale sympathetic to those of the heritage item or conservation area.</i></p> <p>(g) <i>A telecommunications facility should be located so as to minimise or avoid the obstruction of a significant view of a heritage</i></p>	<p>(a) to (c) These principles relate to facilities that are located on an existing building or structure and are not directly applicable to a new freestanding monopole such as that proposed in this development application.</p> <p>(d) The associated equipment will be housed in two small outdoor units which are metallic grey in colour. Given the modest size of the housing units and the surroundings of the proposed site it is not anticipated that a colour match in this instance would reduce the visual impact to the public.</p> <p>(e) The facility has been located and designed to respond to its urban / rural-residential landscape context. This is discussed in <i>Section 7.1 – Visual Impacts</i>.</p> <p>(f) The proposed site is not within any heritage conservation area and is not in close proximity to any heritage items identified in the <i>Bega Valley LEP 2012</i> (Appendix 5)</p> <p>(g) The local area is characterised by areas of low density residential development featuring single residential dwellings clustered to the north and the</p>

<p><i>item or place, a landmark, a streetscape, vista or a panorama, whether viewed from public or private land.</i></p> <p><i>(h) The relevant local government authority must be consulted where the pruning, lopping, or removal of any tree or other vegetation would contravene a Tree Preservation Order applying to the land or where a permit or development consent is required.</i></p> <p><i>(i) A telecommunications facility that is no longer required is to be removed and the site restored, to a condition that is similar to its condition before the facility was constructed.</i></p> <p><i>(j) The siting and design of telecommunications facilities should be in accordance with any relevant Industry Design Guides.</i></p>	<p>south. Wallaga Lake is located approximately 400m to the West and the foreshore is located approximately 600m to the East. Having consideration to the nature of the area and the location of surrounding residential development and coastal setting, the facility has been sited in the most responsible location on the periphery of the urban development areas and distanced from Wallaga Lake and the foreshore to minimise visual impact. Surrounding mature vegetation will provide the additional benefit of screening the facility. The proposed development will not impact on a significant view or vista, and is close to existing telecommunications infrastructure.</p> <p>Refer <i>Section 7.1 – Visual Impacts</i></p> <p>(h) Approval to remove vegetation is sought as part of the application.</p> <p>(i) This aspect could be implemented by a condition of consent if the Council considers it appropriate.</p> <p>(j) The design and siting approach is discussed in <i>Section 7.1 – Visual Impacts</i></p>
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Principle 2: Telecommunications Facilities should be co-located wherever possible

Specific Principles	Comment
<p><i>(a) Telecommunications lines are to be located, as far as practical, underground or within an existing underground conduit or duct.</i></p> <p><i>(b) Overhead lines, antennas and ancillary telecommunications facilities should, where practical, be co-located or attached to existing structures such as buildings, public utility structures, poles, towers or other radio communications equipment to minimise the proliferation of telecommunication facilities and unnecessary clutter</i></p> <p><i>(c) Towers may be extended for the purposes of colocation.</i></p> <p><i>(d) The extension of an existing tower must be considered as a practical co-location solution prior to building new towers.</i></p>	<p>(a) N/A</p> <p>(b)(c)(d)(e) There are currently no existing carrier telecommunications facilities located in the vicinity, with the required position and/or height and/or structural suitability that are potentially capable of providing the wireless radio services to the locality on which the proposed equipment can be co-located. (Refer to <i>Section 3.0 Site Selection</i>).</p>

<p><i>(e) If a facility is proposed not to be co-located the proponent must demonstrate that colocation is not practicable.</i></p> <p><i>(f) If the development is for a co-location purpose, then any new telecommunications facility must be designed, installed and operated so that the resultant cumulative levels of radio frequency emissions of the colocated telecommunications facilities are within the maximum human exposure levels set out in the Radiation Protection Standard.</i></p>	f) N/A
Principle 3: Health Standards for exposure to radio emissions will be met	
Specific Principles	Comment
<p><i>(a) A telecommunications facility must be designed, installed and operated so that the maximum human exposure levels to radiofrequency emissions comply with Radiation Protection Standard.</i></p> <p><i>(b) An EME Environmental Report shall be produced by the proponent of development to which the Mobile Phone Network Code applies in terms of design, siting of facilities and notifications. The Report is to be in the format required by the Australian Radiation Protection Nuclear Safety Agency. It is to show the predicted levels of electromagnetic energy surrounding the development comply with the safety limits imposed by the Australian Communications and Media Authority and the Electromagnetic Radiation Standard, and demonstrate compliance with the Mobile Phone Networks Code.</i></p>	<p>(a) The proposed installation will comply with Australian Communications and Media Authority (ACMA) regulatory arrangements with respect to electromagnetic radiation exposure levels.</p> <p>(b) EME Exposure Levels from this site have been calculated in accordance with the ARPANSA prediction methodology and report format. This report has been provided in <i>Appendix 4</i>.</p> <p>Please also refer to <i>Section 7.11 – Public Safety</i>.</p>
Principle 4: Minimise disturbance and risk, and maximise compliance	
Specific Principles	Comment
<p><i>(a) The siting and height of any telecommunications facility must comply with any relevant site and height requirements specified by the Civil Aviation Regulations 1988 and the Airports (Protection of Airspace) Regulations 1996 of the Commonwealth. It must not penetrate any obstacle limitation surface shown on any relevant Obstacle Limitation Surface Plan that has been prepared by the operator of an aerodrome or airport operating within 30 kilometres of the proposed development and reported to the Civil Aviation Safety Authority Australia.</i></p>	<p>(a) The site does not fall within the Merimbula Airport Buffer Area and does not penetrate an obstacle limitation surface around the airfield. The site is >30kms from the Merimbula Airport.</p>

<p><i>(b) The telecommunications facility is not to cause adverse radio frequency interference with any airport, port or Commonwealth Defence navigational or communications equipment, including the Morundah Communication Facility, Riverina.</i></p> <p><i>(c) The telecommunications facility and ancillary facilities are to be carried out in accordance with the applicable specifications (if any) of the manufacturers for the installation of such equipment.</i></p> <p><i>(d) The telecommunications facility is not to affect the structural integrity of any building on which it is erected.</i></p> <p><i>(e) The telecommunications facility is to be erected wholly within the boundaries of a property where the landowner has agreed to the facility being located on the land.</i></p> <p><i>(f) The carrying out of construction of the telecommunications facilities must be in accordance with all relevant regulations of the Blue Book – ‘Managing Urban Stormwater: Soils and Construction’ (Landcom 2004), or its replacement.</i></p> <p><i>(g) Obstruction or risks to pedestrians or vehicles caused by the location of the facility, construction activity or materials used in construction are to be mitigated.</i></p> <p><i>(h) Where practical, work is to be carried out during times that cause minimum disruption to adjoining properties and public access. Hours of work are to be restricted to between 7.00am and 5.00pm, Mondays to Saturdays, with no work on Sundays and public holidays.</i></p> <p><i>(i) Traffic control measures are to be taken during construction in accordance with Australian Standard S1742.3-2002 Manual of uniform traffic control devices – Traffic control devices on roads.</i></p> <p><i>(j) Open trenching should be guarded in accordance with Australian Standard Section 93.080 – Road Engineering AS1165 – 1982 – Traffic hazard warning lamps.</i></p> <p><i>(k) Disturbance to flora and fauna should be minimised and the land is to be restored to a condition that is similar to its condition before the work was carried out.</i></p> <p><i>(l) The likelihood of impacting on threatened</i></p>	<p><i>(b) The base station is designed to create no electrical interference with other radio based systems and complies with the requirements of relevant Australian standards in this regard (see Section 7.9 – Electrical interference and Grounding).</i></p> <p><i>(c) The base station facilities are designed and will be installed in accordance with any relevant manufacturer specifications. The proposal will comply with the requirements of all relevant Australian Standards.</i></p> <p><i>(d) The facility is not being erected on any existing building or structure.</i></p> <p><i>(e) The location and layout of the facilities reflect siting discussions with the private land owner.</i></p> <p><i>(f) (h) (i) (j) These matters can be appropriately addressed through the imposition of conditions of development consent where relevant.</i></p> <p><i>(g) The proposed facility is secured by a fenced compound area to avoid access to the public. The proposal is therefore unlikely to put pedestrians or vehicles at risk.</i></p> <p><i>(h) Work will be carried out in accordance with the standard hours of work as recommended by council.</i></p> <p><i>(k)(l) While requiring minor vegetation removal, the site is the most suitable location in the context of the surrounding environment and the alternative candidates considered. The vegetation clearing represents the minimum extent necessary to establish the APZ, underground electrical line and a</i></p>
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<p><i>species and communities should be identified in consultation with relevant state or local government authorities and disturbance to identified species and communities avoided wherever possible.</i></p> <p><i>(m) The likelihood of harming an Aboriginal Place and / or Aboriginal object should be identified. Approvals from the Department of Environment, Climate Change and Water (DECCW) must be obtained where impact is likely, or Aboriginal objects are found.</i></p> <p><i>(n) Street furniture, paving or other existing facilities removed or damaged during construction should be reinstated (at the telecommunications carrier's expense) to at least the same condition as that which existed prior to the telecommunications facility being installed.</i></p>	<p>new power pole. The attached ecological report confirms that the proposed vegetation removal from the APZ will not result in significant environmental impact on the habitat corridor, significant vegetation or endangered ecological communities (Appendix 7).</p> <p>(m) A search of the AHIMS data base has been completed and it indicates that there are no items of Aboriginal archaeological heritage known to be located on, or in the vicinity of, the site (Please refer to Appendix 5).</p> <p>(n) This is unlikely to occur given the nature of the works and the location of the facility, however can be addressed through the imposition of conditions of development consent where relevant.</p>
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6.3 Local Government Policies

6.3.1 Bega Valley Local Environmental Plan 2013

The relevant local environmental plan applicable to the subject site is the *Bega Valley Local Environmental Plan 2013*. This Plan aims to make local environmental planning provisions for land in Bega Valley in accordance with the relevant standard environmental planning instrument under section 33A of the Act.

The particular aims of the Plan are as follows:

- (a) to protect and improve the economic, natural and social resources of Bega Valley through the principles of ecologically sustainable development, including conservation of biodiversity, energy efficiency and taking into account projected changes as a result of climate change,
- (b) to provide employment opportunities and strengthen the local economic base by encouraging a range of enterprises, including tourism, that respond to lifestyle choices, emerging markets and changes in technology,
- (c) to conserve and enhance environmental assets, including estuaries, rivers, wetlands, remnant native vegetation, soils and wildlife corridors,
- (d) to encourage compact and efficient urban settlement,
- (e) to ensure that development contributes to the natural landscape and built form environments that make up the character of Bega Valley,
- (f) to provide opportunities for a range of housing choice in locations that have good access to public transport, community facilities and services, retail and commercial services and employment opportunities,
- (g) to protect agricultural lands by preventing land fragmentation and adverse impacts from non-agricultural land uses,
- (h) to identify and conserve the Aboriginal and European cultural heritage of Bega Valley,
- (i) to restrict development on land that is subject to natural hazards,

- (j) to ensure that development has minimal impact on water quality and environmental flows of receiving waters.

The proposal is considered to be consistent with the broad intent of the LEP.

6.3.2 Zoning

Lot 3 DP565460 described as 849 Wallaga Lake Rd, Wallaga Lake is classified as zone R2 – Low Density Residential under the *Bega Valley Local Environmental Plan 2013* (Figure 7).

As the proposed NBN Co facility at Wallaga Lake is not classified as a ‘low impact facility’ under the *Telecommunications (Low Impact) Facilities Determination 1997*, consent is required for the use of the proposed facility.



Figure 7 Bega Valley Local Environmental Plan 2013 – Land Zoning Map
(Source: Bega Valley Shire Council 2013)

R2 – Low Density Residential Zone

The objectives of the R2 – Low Density Residential zone are:

- To provide for the housing needs of the community within a low density residential environment.

- It is considered that the proposal is consistent with these objectives. The proposed Fixed Wireless facility will support the day to day needs of residents in the area by providing a reliable high speed internet service. The proposed Fixed Wireless facility is located at the centre of the lot. Siting at this location of the lot will ensure that the facility is separated from existing and future uses on surrounding land, and that the facility is located so that it is screened and will not affect the scenic amenity of the surrounding residential dwellings.

Terrestrial biodiversity

The objectives of the Terrestrial Biodiversity overlay are:

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- (c) encouraging the conservation and recovery of native fauna and flora and their habitats.

In areas captured within the terrestrial biodiversity overlay, development consent must not be granted unless –

- (a) the development is designed, sited and will be managed to avoid any significant adverse environmental impact, or
- (b) if that impact cannot be reasonably avoided by adopting feasible alternatives—the development is designed, sited and will be managed to minimise that impact, or
- (c) if that impact cannot be minimised—the development will be managed to mitigate that impact.

NBN Co contend that the proposed structure will not have a significant impact on areas of significant vegetation and have considered the following requirements in establishing that position:

- (a) whether the development is likely to have:
 - (i) any adverse impact on the condition, ecological value and significance of the fauna and flora on the land, and
 - (ii) any adverse impact on the importance of the vegetation on the land to the habitat and survival of native fauna, and
 - (iii) any potential to fragment, disturb or diminish the biodiversity structure, function and composition of the land, and
 - (iv) any adverse impact on the habitat elements providing connectivity on the land, and
- (b) any appropriate measures proposed to avoid, minimise or mitigate the impacts of the development.

An ecological assessment report (Appendix 7) has been prepared by a qualified ecologist on behalf of Aurecon and NBN Co following a desktop and onsite analysis, considering the impact of our proposed development on the natural environment.

The following conclusions were drawn from the report:

- 1) Two threatened fauna species listed under TSC Act and / or EPBC Act were considered to have at least a moderate chance of occurrence within the subject site at some stage;
- 2) No threatened flora species or endangered ecological communities were considered likely to occur within the subject site;
- 3) No critical habitat listed under the TSC Act occurred within the investigation area;
- 4) The subject site contained vegetation dominated by White Stringybark (*Eucalyptus globoidea*), Southern Mahogany (*Eucalyptus botryoides*), Blue-leaved Stringybark (*Eucalyptus agglomerata*), Coast Grey Box (*Eucalyptus bosistoana*), Red Bloodwood (*Corymbia gummifera*) with a moderate native shrub understorey and a moderate to high groundcover of native and exotic species;
- 5) No hollow-bearing tree were recorded within the APZ or compound of the subject site;

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- 6) Vegetation clearing will be required within the proposed compound and the APZ will need to be undertaken and the understorey regularly maintained; and
 - 7) Providing the recommendations outlined below are followed the proposed activity is unlikely to significantly impact any threatened / migratory species or ecological community and their habitat and as such, no further assessments are required.

The report demonstrates that clearing of vegetation associated with the proposed APZ will not have a significant adverse effect on flora or fauna species.

We consider that the requirements of clause 6.5(4) of the LEP have been demonstrated; the development is designed, sited and will be managed to avoid any significant adverse environmental impact.

Clause 5.9 Preservation of trees or vegetation

The objective of Clause 5.9 is to preserve the amenity of the area, including biodiversity values, through the preservation of trees and other vegetation.

The proposed development includes the removal of nineteen trees and mowing or slashing of the ground layer. Clause 5.9 applies to this development because the clearing –

1. has not been previously approved within a previous development consent or permit, this application seeks Council consent for clearing,
2. is not on State Forest land
3. is not being undertaken in accordance with Electricity Supply Act 1995, the Roads Act 1993 or the Surveying and Spatial Information Act 2002
4. is not for plants declared to be noxious weeds under the Noxious Weeds Act 1993.

An ecological assessment submitted as Appendix 7 confirms that the tree clearing will not have significant environmental impact.

The vegetation clearing represents the minimum extent necessary to establish the APZ, underground electrical line and a new power pole.

6.3.4 Bega Valley Development Control Plan 2013:

The Bega Valley Development Control Plan 2013 (the DCP) applies to this application. Not all criteria specified within the DCP is relevant to the telecommunications development. The facility is considered to be generally compliant with the DCP. Consideration has been given to locate the facility in order to mitigate disturbance to residential, rural and natural resource land uses within the area. In particular:

- The facility has been located on the subject lot in order to both minimise clearing of vegetation and minimise the visibility of the facility to existing and future residential dwellings in the area.
- The facility has been sited in an area that has previously been cleared and is already subject to disturbance and has no significant habitat value.

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- The facility is appropriately setback from residential land uses to minimise impacts on the amenity of residential land uses.
 - The facility is not located where it may conflict with existing or future extractive land uses.
 - The facility is sympathetic to the Wallaga Lake landscape. The facility has been located away from prominent vistas, vantage points and panoramas and areas of European and indigenous cultural and heritage significance.
 - The facility has been located so that it will not impact negatively on the social or economic prosperity of residents and businesses in the area. The importance aesthetic values to the economic prosperity of the Wallaga Lake area as a tourist destination has been an important consideration to siting the facility in a low visibility location. The facility will provide residents and businesses with high speed broadband internet, providing new social and economic opportunities to the Wallaga Lake area.
 - A Bushfire Risk Assessment has been undertaken for the facility to ensure appropriate measures are taken regarding potential bushfire risks (Refer to Appendix 6).

7 OTHER ENVIRONMENTAL CONSTRAINTS AND OPPORTUNITIES

7.1 Visual Impact

7.1.1 Setting and Location

The siting of the proposed monopole on the subject property is considered appropriate. Critical to the site selection and decision making process was the potential impact of the structure in the visual landscape particularly as the site is located nearby to Wallaga Lake, a popular tourist destination.

The surrounding landscape features clusters of residential dwellings on lots to the north and the south. The site will not interrupt views of the beach and foreshore from the parkland area located to the east. The subject property is characterised by dense vegetation, access tracks, and a residential dwelling and large shed to the south.

The proposed development is located in a central location on subject property and is in close proximity to a large water tank structure owned by Council (Adjacent lot to the Southwest). The proximity to the existing tower and the water tank structure is important as it allows this infrastructure to be clustered together, restricting the visual impact of these uses to one location.

The predominant low-density urban development areas are located to the north and south of the proposed site. The primary views from the urban area are towards Wallaga Lake and the foreshore. The facility will not interrupt views of Wallaga Lake or the foreshore.

Considering the nature of urban development in Wallaga Lake, the site location is in a preferred 'periphery' location to existing residential dwellings.

The structure in the proposed location will not obscure an important view or vista. It has been strategically located away from existing dwellings to minimise impact.

7.1.2 Design

The proposed 40m metre monopole is the smallest structure capable of meeting coverage and operational objectives.

The design and construction materials are consistent with similar monopoles identified elsewhere in the region.

While the structure may be visible from some aspects, based on the siting the proposed development will not result in adverse impacts on visual amenity in the local area, or the prevailing views to or from Wallaga Lake and the foreshore.

7.2 Heritage

In order to determine any possible natural or cultural values of state or national significance associated with the site, a search was conducted through the relevant Heritage Registers (refer to Appendix 5). There are no known items of cultural, historical or environmental heritage significance located in the vicinity of the proposal site.

The proposed site is not located in a Heritage Conservation Area as defined in the Bega Valley LEP.

7.3 Electrical Interference and Grounding of the Facility

The NBN fixed wireless network is licensed by the Australian Communications and Media Authority (ACMA) for the exclusive use of the OFDMA2300 frequency band. As NBN Co is the exclusive licensee of this sub-band, emissions from NBN Co equipment within the frequency band should not cause interference.

Filters will also help to ensure that each facility meets the ACMA specifications for emission of spurious signals outside the NBN Co frequency allocations. NBN Co intends to promptly investigate any interference issues that are reported.

The facility is also designed to be grounded to the relevant Australian Standards – that is, the facility will be ‘earthed’.

7.4 Erosion, Sedimentation Control and Waste Management

All erosion and sediment control mitigation measures will be detailed in construction plans and will comply with the Building Code of Australia and local Council standards. In addition, contractors must comply with the ‘NBN Construction Specification’ that requires contractors to undertake the necessary erosion and sediment control measures in order to protect the surrounding environment. On completion of the installation, the site will be restored and reinstated to an appropriate standard. No waste which requires collection or disposal will be generated by the operation of the facility.

7.5 Traffic Generation

After the construction period, the only traffic generated by the base station will be that associated with maintenance vehicles. In this respect, it is estimated that maintenance of the facility will generate up to four maintenance visits per year and it will remain unattended at all other times. The traffic generation will therefore be minimal and not sufficient to create any adverse impacts in this regard or by creating a demand for parking facilities.

7.6 Utility Services

All services required for the ongoing operation of the base station are capable of being provided to the facility without impacting on the supply or reliability of these services to any existing consumers in the locality. No stormwater, sewerage or waste management facilities are required.

7.7 Noise

Noise and vibration emissions associated with the proposed facility will be limited to the initial construction phase. There will be some low level noise from the ongoing operation of air conditioning equipment associated with the equipment shelter, once installed. Noise emanating from the air conditioning equipment is at a comparable

level to a domestic air conditioning installation, and will generally accord with the background noise levels prescribed by Australian Standard AS1055.

7.8 Flora and Fauna

An ecological assessment has been undertaken by a qualified ecologist on behalf of Aurecon Australasia Pty Ltd to determine the value of the subject site in respect to ecological significance (refer to *Appendix 7*).

The key findings of the report are as follows –

- The subject site did not support an area of critical habitat as defined under the Threatened Species Conservation Act 1995;
- No hollow bearing trees were recorded on site;
- The subject site had been previously disturbed;
- The minor removal of vegetation as part of the proposed activity is unlikely to impact any threatened/migratory species or Endangered Ecological Communities and as such, no further assessments are required;

The recommendations drawn from the report include –

- Ensure the extent of clearing is clearly marked in the field prior to the commencement of vegetation clearing. Ensure that only the minimum vegetation clearing required is undertaken;
- Relocate all fallen timber and woody debris currently on the ground to nearby (outside of the APZ). Exercise caution in moving timber to minimise potential impacts to fauna that may be occupying fallen logs;
- Have the contact details of the nearest veterinary clinic and accredited wildlife carer in the case of injured fauna;

Based upon these findings, the proposal is not expected to have any detrimental impacts upon any flora or fauna species or their habitats.

7.9 Bushfire Assessment

Risk associated with bushfire hazards represents an important consideration for siting and development decision making. Section 149 certificate 2014/08268 indicates that the site is potentially bushfire prone.

A bushfire assessment report has been prepared to assess the level of risk associated with the bushfire hazards and to identify methods to mitigate the risk (Refer to *Appendix 6*)

The key findings of the report, taking into account relevant legislation as well as non-statutory documents such as the *Rural Fire Service Practice Note 1/11 Telecommunication Towers in Bush Fire Prone Areas* shown that –

-
- The proposal is able to comply with the recommended 10m APZ around the structure;
 - Construction of building elements to withstand a radiant heat of 40kW/m² and ember penetration into the structure is at the discretion of the owner/operators, as it is understood that this recommendation by the RFS Practice Note (Appendix 6) may not be achievable in some circumstances; and
 - It is generally the expectation of the owner or operator of the land containing an APZ to maintain the APZ and ensure its condition is maintained to provide continued bushfire risk management. Section 63 of the *Rural Fires Act 1997* puts the onus on the owner/operator of the land to ensure the vegetation within the APZ is managed and does not become a hazard. It is therefore recommended that an ongoing management plan for the maintenance of the APZ is prepared for the site.

Given these findings, the proposed development on the subject property can be undertaken while minimising the risk associated with bushfire hazards.

The requirement for materials to withstand 40kW/m² of radiant heat and withstand ember penetration into the structure and associated infrastructure is a guideline note on what 'should' occur given the importance of these facilities and every attempt should be made to protect the components where feasible and functional.

NBN Co accept the significance of locating telecommunications equipment in bushfire prone areas and this instance have sought to comply with the RFS practice note by:

1. Implementing an Asset Protection Zone of dimensions specified in the practice note
2. Running power cabling underground from the point of supply to the meter board and again to the equipment cabinet
3. Enclosing cable trays in galvanised casing
4. Ensuring that the equipment cabinet and meter board are designed to resist ember penetration

However, all telecommunications antennas must be constructed of radio frequency (RF) transparent material (similar to fibreglass) in order to operate. It is technically impossible for these elements of the facility to meet the 40kWm² performance criteria at this or any other telecommunications base station anywhere

We recommend that Council draft consent conditions relating to bushfire protection acknowledging that the developer should ensure that building elements will be constructed to withstand a radiant heat of 40kWm² where possible.

7.10 Endangered Species

In order to determine any possible Endangered Species associated with the site, a search was conducted through the relevant environmental searches. NBN Co was not able to identify known Endangered Species located in the vicinity of the proposal site.

7.11 Social and Economic Impacts

Access to high quality broadband is a necessary service in modern society. Initially, small to medium business customers accounted for a significant part of the demand for broadband technology, but broadband services have now been embraced by the general public. Usage of broadband services continues to widen as new technologies become progressively more affordable and accessible for the wider community.

The proposed development will provide significantly enhanced fixed wireless broadband coverage to the community at Wallaga Lake. This will be of particular benefit for residential dwellings, home and tourism related businesses in the locality.

The new National Broadband Network will provide the community with far greater access to high quality broadband services. Reliable broadband internet is important to ensure the economic growth of communities, and the facility is likely to have significant social and economic benefits for the local community.

Most importantly the NBN will provide urban and regional areas within the wider Bega Valley area the same opportunities afforded to metropolitan areas.

7.12 Public Safety

7.12.1 Radiofrequency Emissions

In relation to public safety and specifically Electromagnetic Emissions (EME) and public health, NBN Cooperates within the operational standards set by the Australian Communication and Media Authority (ACMA) and Australian Radiation Protection and Nuclear Safety Agency (ARPANSA). ARPANSA is a Federal Government agency incorporated under the Health and Ageing portfolio and is charged with the responsibility for protecting the health and safety of both people and the environment from the harmful effects of radiation (ionising and non-ionising).

All NBN Co installations are designed and certified by qualified professionals in accordance with all relevant Australian Standards. This ensures that the NBN Co facility does not result in any increase in the level of risk to the public. This facility is to be operated in compliance with the mandatory standard for human exposure to EME – currently the Radio communications (Electromagnetic Radiation Human Exposure) Standard 2003. The EME Report associated with this site is attached in Appendix 4. The report shows that the maximum predicted EME will equate to 0.11% of the maximum exposure limit. This is substantially less than 1% of the maximum allowable exposure limit (where 100% of the limit is still considered to be safe).

Moreover, all NBN Co equipment has the following features, all of which minimise the amounts of energy used and emitted:

- Dynamic/Adaptive Power Control is a network feature that automatically adjusts the power and minimises EME from the facility.
- Varying the facility's transmit power to the minimal required level, minimising EME from the network, and
- Discontinuous transmission, a feature that reduces EME emissions by automatically switching the transmitter off when no data is being sent.

7.12.2 Access

The proposed facility will have restrictions aimed at preventing public access, including a secured compound fence with a locked gate and warning signs placed around the facility.

7.13 The Public Interest and the Benefits of Telecommunications

The proposed NBN Co facility will have significant benefit for residents in the wider Bega Valley LGA. NBN Co believe that the public interest would be served by approval of the proposal, given benefits for enhanced broadband coverage in the area. The facility will have benefits for local residents, visitors to the area and businesses within the region.

7.13.1 Other Benefits of Reliable Broadband Services

There are numerous other benefits of telecommunications connectivity, as follows:

- There are many educational benefits justifying the implementation of the National Broadband Network. Curriculum and data sharing, increased availability and accessibility of research materials, and virtual classroom environments are good examples. Such elements are particularly beneficial within a tertiary education context.
- Businesses can, through internet usage, increase efficiency through time, resource and monetary savings. Improved broadband services effectively remove physical distance and travel time as a barrier to business. Increase home
- Improvements to broadband services may also be of benefit for local employees, by enabling telecommuting and home business. The telecommuting trend is heavily reliant on access to high quality internet services, and is anticipated to continually increase in popularity.

The public benefits of access to high quality broadband have been widely acknowledged for many years. Reliable internet access is now more than ever an integral component, so much so that its absence is considered a social disadvantage.

8 CONCLUSION

The proposed NBN Co facility, comprising a 40 metre monopole and associated equipment has been sited in the most appropriate location given the context of the local area and the service objectives – providing broadband services to the wider Bega Valley LGA by serving as the critical connection point within the fixed wireless network

The facility has been strategically sited and designed to minimise visibility within the surrounding environment as much as practicable before service is compromised. The visual impact of the development on the surrounding area has been assessed and given the siting and design, the proposal is considered unlikely to cause any significant harm to the visual amenity or scenic value of the area. Although the monopole will be visible from some vantage points, it is not considered a significant visual impact due to:

- The vegetation layers immediately surrounding the proposed development site providing excellent screening
- It's close proximity to a larger telecommunications lattice tower to the north and a recycling and waste transfer depot to the south;
- The use of a slim-line monopole structure instead of a lattice design;
- The facility has been located on the subject lot in order to both minimise clearing of vegetation and minimise the visibility of the facility to existing and future residential dwellings in the area.
- The facility has been sited in an area that has previously been cleared and is already subject to disturbance and has no significant habitat value.
- The facility is appropriately setback from residential land uses to minimise impacts on the amenity of residential land uses.
- The facility is sympathetic to the Wallaga Lake landscape. The facility has been located away from prominent vistas, vantage points and panoramas and areas of European and indigenous cultural and heritage significance.
- The facility has been located so that it will not impact negatively on the social or economic prosperity of residents and businesses in the area. The importance aesthetic values to the economic prosperity of the Wallaga Lake area as a tourist destination has been an important consideration to siting the facility in a low visibility location. The facility will provide residents and businesses with high speed broadband internet, providing new social and economic opportunities to the Wallaga Lake area.

The proposal is also consistent with the stated objectives of the *Bega Valley Environmental Plan 2013*.

It has been demonstrated that environmental impact associated within vegetation removal is not significant, and will not conflict with relevant environmental protection measures.

We respectfully request that Council considers the limited impacts and expected benefits of this proposed facility in assessing this Development Application.

9 APPENDIX

9.1 Appendix 1 – Copy of Title



LAND AND PROPERTY INFORMATION NEW SOUTH WALES - TITLE SEARCH

FOLIO: 3/565460

SEARCH DATE -----	TIME -----	EDITION NO -----	DATE -----
23/10/2013	11:36 AM	3	13/8/2013

LAND

LOT 3 IN DEPOSITED PLAN 565460
AT BEAUTY POINT
LOCAL GOVERNMENT AREA BEGA VALLEY
PARISH OF BERMAGUI COUNTY OF DAMPIER
TITLE DIAGRAM DP565460

FIRST SCHEDULE

JENNIFER ANN MUNCKTON
EDWARD GRAHAM MUNCKTON
AS JOINT TENANTS

(T AH946283)

SECOND SCHEDULE (2 NOTIFICATIONS)

- 1 LAND EXCLUDES MINERALS AND IS SUBJECT TO RESERVATIONS AND
CONDITIONS IN FAVOUR OF THE CROWN - SEE CROWN GRANT(S)
- 2 DP608846 EASEMENT FOR WATER SUPPLY AFFECTING THE LAND ABOVE
DESCRIBED SO BURDENED IN DP608846

NOTATIONS

UNREGISTERED DEALINGS: NIL

*** END OF SEARCH ***

PRINTED ON 23/10/2013

* Any entries preceded by an asterisk do not appear on the current edition of the Certificate of Title. Warning: the information appearing under notations has not been formally recorded in the Register.

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SAI Global Property Division an approved NSW Information Broker hereby certifies that the information contained in this document has been provided electronically by the Registrar General in accordance with section 96B(2) of the Real Property Act 1900.

9.2 Appendix 2 – Site Photographs



Figure 13 - Easterly aspect from site



Figure 14 - Westerly aspect from site



Figure 15 - Northerly aspect from site



Figure 16 - Southerly aspect from site

9.3 Appendix 3 – Site Layout and Design

DATE OF ISSUE		17-03-14	09-02-15	26-02-15				
DRAWING PACKAGE VERSION		1	2	4				
GENERAL								
2BMG-51-05-WALG-T1	COVER SHEET	01	A	B				
2BMG-51-05-WALG-T2	REFERENCE DOCUMENTS	01	A	B				
2BMG-51-05-WALG-C1	SITE SPECIFIC NOTES	01	A	B				
2BMG-51-05-WALG-C2	OVERALL SITE PLAN	01	A	B				
2BMG-51-05-WALG-C3	SITE SETOUT PLAN	01	A	B				
2BMG-51-05-WALG-C4	SITE ELEVATION	01	A	B				
ELECTRICAL								
2BMG-51-05-WALG-E0	ELECTRICAL SPECIFICATION	-	A	B				
2BMG-51-05-WALG-E1	ELECTRICAL SINGLE LINE DIAGRAM	-	A	B				
2BMG-51-05-WALG-E2	SITE EARTHING PLAN	-	A	B				
2BMG-51-05-WALG-E3	POWER DISTRIBUTION BOARD SCHEMATIC DETAILS	-	A	B				
RF AND TX CONFIGURATIONS								
2BMG-51-05-WALG-A1	NBN ANTENNA CONFIGURATION AND SETOUT PLAN	-	A	B				
STRUCTURAL								
CIVIL								
MONOPOLE / TOWER DESIGN								
T10411ER-M10T3-1-40TP	STANDARD MONOPOLE TYPE 3 - 40m GENERAL ARRANGEMENT	-	0	0				
T10411ER-M10T3-3-40FND	STANDARD MONOPOLE - TYPE 3 - 40m BORED PIER FOUNDATION DETAILS	-	0	0				
M10-2-HFC650	GENERIC MONOPOLE HFC-650 CIRCULAR HEADFRAME - ERECTION	-	0	0				
MM-2-UMRK	UNIVERSAL MONOPOLE RING ASSEMBLY KIT ERECTION DETAILS	-	1	1				
LEASE / LICENCE								
2BMG-51-05-WALG-L1	PLAN OF PROPOSED LEASE FOR TELECOMMUNICATION PURPOSES WITHIN LOT 3 DP565460	-	02	02				
LEVEL 3 POWER DESIGN								
DISTRIBUTION								
ERICSSON	CARLY FERGUSON	1	1	1				
AURECON	STEPH LEE	1	1	1				

SITE No: 2BMG-51-05-WALG
WALLAGA LAKE

849 WALLAGA LAKE ROAD,
WALLAGA LAKE,
NSW, 2546



PROJECT SUMMARY

NBN GREENFIELD 40m HIGH MONOPOLE
NBN 2-OFF CABINETS ON CONCRETE SLAB ON GROUND

Client:

Client:

Client:

Project:

NATIONAL BROADBAND NETWORK
SITE No: 2BMG-51-05-WALG
WALLAGA LAKE
849 WALLAGA LAKE ROAD,
WALLAGA LAKE,
NSW, 2546

FOR CONSTRUCTION

B26.02.15FOR CONSTRUCTION

A09.02.15DRAFT FOR CONSTRUCTION

0117.03.14PRELIMINARY ISSUE

RevDateRevision Details

Aurecon Australia Pty Ltd ABN 54 005 139 873

DESIGNEDFN

CHECKED:DP

APPROVED:SL

Drawing Title:

COVER SHEET

Drawing No.

2BMG-51-05-WALG-T1

Revision

B

SITE LOCATION



PRINCES HIGHWAY

AKOLELE

C:\pw_work\jane.nicolle\amazon\dms59122\Wallaga Map.JPG

WALLAGA LAKE ROAD



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SITE CO-ORDINATES

MONOPOLE LOCATION

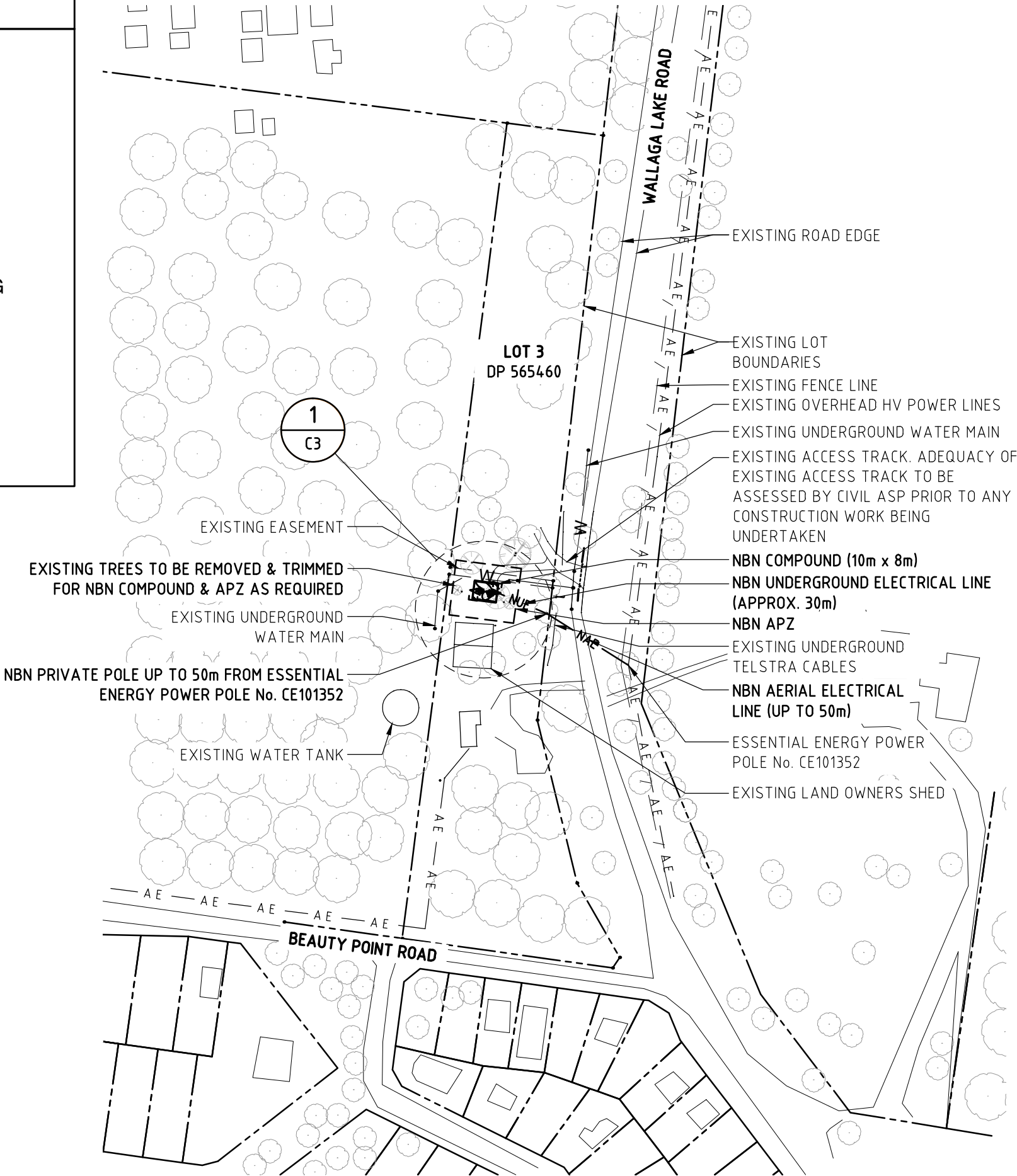
DATUM: MGA (GDA94)	ZONE: 56
LATITUDE	-36.37707°
LONGITUDE	150.07133°
EASTING	237 274
NORTHING	5 970 243

LEGEND

— NAE — NAE —	NBN AERIAL ELECTRICAL LINE
— NUE — NUE —	NBN UNDERGROUND ELECTRICAL LINE
- - - - -	NBN ASSET PROTECTION ZONE (APZ)
— A E — A E —	EXISTING AERIAL ELECTRICAL LINE
— / — / —	EXISTING BARBWIRE FENCE
- - - - -	EXISTING PROPERTY BOUNDARIES
— t —	EXISTING UNDERGROUND TELSTRA CABLE
— W —	EXISTING UNDERGROUND WATER MAIN

NOTE:

1. THE NBN POWER SUPPLY ROUTE SHOWN ON THE DRAWINGS IS INDICATIVE ONLY. ELECTRICAL CONTRACTOR TO DETERMINE AN EXACT ROUTE. ELECTRICAL CONTRACTOR TO LOCATE AND IDENTIFY EXISTING U/G SERVICES PRIOR TO COMMENCEMENT OF WORK



OVERALL SITE PLAN

SCALE 1:2000

Client:



Client:



Client:

Project:

NATIONAL BROADBAND NETWORK
SITE No: 2BMG-51-05-WALG
WALLAGA LAKE
849 WALLAGA LAKE ROAD,
WALLAGA LAKE,
NSW, 2546

FOR CONSTRUCTION

B	26.02.15	FOR CONSTRUCTION
A	09.02.15	DRAFT FOR CONSTRUCTION
01	17.03.14	PRELIMINARY ISSUE
Rev	Date	Revision Details



DESIGNED	FN
CHECKED:	DP
APPROVED:	SL

Drawing Title:
OVERALL
SITE PLAN

Drawing No. 2BMG-51-05-WALG-C2	Revision B
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EXISTING PROPERTY
BOUNDARY

NBN APZ

3 x NBN PANEL ANTENNAS WITH REMOTE
RADIO UNIT FIXED BEHIND THE PANEL
ANTENNAS (REFER DWG A1 FOR DETAILS)

NBN Ø600 PARABOLIC ANTENNA (TO
MYSTERY BAY)
(REFER MM-2-UMRK FOR DETAILS)

NBN MONOPOLE FOUNDATION
(REFER T10411ER-M10T3-3-40FND FOR
DETAILS) (REFER NOTE 4)

NBN ACCESS LADDER AND LAD-SAF

NBN Ø600 PARABOLIC ANTENNA
(TO COOLAGOLITE)
(REFER MM-2-UMRK FOR DETAILS)

NBN 40m HIGH MONOPOLE WITH CIRCULAR
HEADFRAME (REFER T10411ER-M10T3-1-40TP
& M10-2-HFC650 FOR DETAILS)

NBN 2.4m HIGH CHAINWIRE SECURITY
FENCE WITH 3m WIDE ACCESS GATE
(REFER NBN-STD-0012 FOR DETAILS)

NBN 75mm THICK SINGLE SIZED GRAVEL
OVER WEED MAT WITH TIMBER EDGING
(REFER NBN-STD-0012 FOR DETAILS)

EXISTING BUILDING

LEGEND

- NAE — NAE — NBN AERIAL ELECTRICAL LINE
- NUE — NUE — NBN UNDERGROUND ELECTRICAL LINE
- NBN ASSET PROTECTION ZONE (APZ)
- / — / — NBN COMPOUND FENCE
- ec — ec — NBN FINAL ELECTRICAL CIRCUITS IN
2xØ50 HDuPVC UNDERGROUND ELECTRICAL CONDUITS
- EXISTING PROPERTY BOUNDARY
- w — EXISTING UNDERGROUND WATER MAIN
- --- EXISTING EASEMENT

DETAIL

SCALE 1:125

1

C2

EXISTING ACCESS TRACK. ADEQUACY OF
EXISTING ACCESS TRACK TO BE ASSESSED
BY CIVIL ASP PRIOR TO ANY
CONSTRUCTION WORK BEING UNDERTAKEN

EXISTING UNDERGROUND WATER MAIN

EXISTING EASEMENT

Ø32mm EARTHING CONDUIT

NBN OUTDOOR CABINET SSC-02 ON 200 THICK CONCRETE
SLAB. (REFER NBN-STD-0016, 0034 AND NOTE 2 FOR
DETAILS)

NBN FINAL ELECTRICAL CIRCUITS IN
CONDUITS. INSTALL AS PER AS/NZS 3000

NBN OUTDOOR CABINET SSC-02 ON 200 THICK CONCRETE
SLAB. (REFER NBN-STD-0016, 0034 AND NOTE 2 FOR
DETAILS)

Ø32mm EARTHING CONDUIT

NBN METER PANEL & POWER DISTRIBUTION BOARD ON
H-FRAME (REFER NBN-STD-0022 & 0034 FOR DETAILS)

NBN 300 WIDE CABLE LADDER WITH 1 OFF
CABLE LADDER SUPPORT POST (REFER
NBN-STD-0013, 0014 & 0015 FOR DETAILS)

NBN GPS UNIT (1-OFF)

NBN Ø900 PARABOLIC ANTENNA
WITH 2x IPS2
(TO BERMAGUI TOWN)
(REFER MM-2-UMRK FOR DETAILS)

NBN UNDERGROUND ELECTRICAL
LINE IN HDuPVC ELECTRICAL
CONDUIT (APPROX. 30m)

NBN PRIVATE POLE

NBN AERIAL ELECTRICAL LINE
(APPROX. 50m)

NOTES:

1. THE NBN POWER SUPPLY ROUTE SHOWN ON THE DRAWINGS IS INDICATIVE ONLY. -
ELECTRICAL CONTRACTOR TO DETERMINE AN EXACT ROUTE. ELECTRICAL
CONTRACTOR TO LOCATE AND IDENTIFY EXISTING U/G SERVICES PRIOR TO
COMMENCEMENT OF WORK.
2. ENTIRE LAYER OF TOP SOIL 400BGL UNDER ODC SLAB TO BE EXCAVATED AND
BACKFILLED TO REQUIRED LEVEL WITH APPROVED MATERIAL (REFER GEOTECH
REPORT AND NBN-STD-0034 FOR DETAILS) AT LAYERS NOT EXCEEDING 200mm
AND COMPACTED TO NOT LESS THAN 95% STANDARD DRY DENSITY AS
PROVIDED UNDER AS1289
3. 2-OFF Ø32mm HDuPVC ELECTRICAL CONDUITS FOR EARTHING CONNECTIONS (SEB
TO ELECTRODE & H-FRAME TO ELECTRODE) TO BE CAST INTO ODC CONCRETE
SLAB. LOCATION & DIRECTION TO BE CONFIRMED BY ELECTRICAL BUILD
CONTRACTOR
4. PRESENCE OF A SUITABLY QUALIFIED GEOTECHNICAL ENGINEER IS REQUIRED AT
THE TIME OF EXCAVATION AND PRIOR TO FOUNDATION CONSTRUCTION TO
CONFIRM GROUND CONDITIONS.

Client:



Client:



Client:

Project:

NATIONAL BROADBAND
NETWORK
SITE No: 2BMG-51-05-WALG
WALLAGA LAKE
849 WALLAGA LAKE ROAD,
WALLAGA LAKE,
NSW, 2546

FOR CONSTRUCTION

B	26.02.15	FOR CONSTRUCTION
A	09.02.15	DRAFT FOR CONSTRUCTION
01	17.03.14	PRELIMINARY ISSUE
Rev	Date	Revision Details



DESIGNED FN

CHECKED: DP

APPROVED: SL

Drawing Title:
SITE SETOUT
PLAN

Drawing No.
2BMG-51-05-WALG-C3

Revision
B

Client:



Client:



Client:

Project:

NATIONAL BROADBAND
NETWORK
SITE No: 2BMG-51-05-WALG
WALLAGA LAKE
849 WALLAGA LAKE ROAD,
WALLAGA LAKE,
NSW, 2546

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01	17.03.14	PRELIMINARY ISSUE
Rev	Date	Revision Details



DESIGNED FN
CHECKED: DP
APPROVED: SL

Drawing Title:
SITE ELEVATION
AND DETAILS

Drawing No. 2BMG-51-05-WALG-C4
Revision B

▼ EL 40.00m
TOP OF MONOPOLE

▼ EL 38.85m
C/L 1 x NBN CANISTER

▼ EL 38.00m
C/L 1 x NBN Ø900 PARABOLIC ANTENNA + 2 x IPS2
(TO BERMAGUI TOWN)
C/L 1 x NBN Ø600 PARABOLIC ANTENNA
(TO COOLAGOLITE)
C/L 1 x NBN Ø600 PARABOLIC ANTENNA
(TO MYSTERY BAY)

▼ EL 40.00m
C/L 3 x 1077H NBN PANEL ANTENNAS
3 x 500H NBN RADIO UNITS
MOUNTED BEHIND ANTENNA

NBN 40m HIGH MONOPOLE WITH
CIRCULAR HEADFRAME (REFER
DWG T10411ER-M10T3-1-40TP
& M10-2-HFC650 FOR DETAILS)

EXISTING TREES TO BE REMOVED FOR
NBN COMPOUND & APZ
(REFER BFR FOR DETAILS)

NBN FEEDERS, FIBRE AND DC CABLES TO BE RUN
VERTICALLY INSIDE MONOPOLE

▼ EL 20.00m (APPROX.)
TOP OF EXISTING TREES

NBN 300 WIDE CABLE LADDER WITH
1 OFF CABLE LADDER SUPPORT POST
(REFER NBN-STD-0013, 0014 & 0015 FOR DETAILS)

NBN OUTDOOR CABINET SSC-02 ON CONCRETE SLAB
(REFER NBN-STD-0016 & 0034 FOR DETAILS)

NBN OUTDOOR CABINET SSC-02 ON CONCRETE SLAB
(REFER NBN-STD-0016 & 0034 FOR DETAILS)

NBN GPS UNIT (1-OFF)
(REFER NBN-STD-0013 FOR DETAILS)

NBN METER PANEL & DISTRIBUTION BOARD ON H-FRAME
(REFER NBN-STD-0022 & 0034 FOR DETAILS)

NBN 2.4m HIGH CHAINWIRE SECURITY
FENCE WITH 3m WIDE ACCESS GATE
(REFER NBN-STD-0012 FOR DETAILS)

3000
EASEMENT

▼ EL 0.00m
TOP OF CONCRETE

NBN MONOPOLE FOUNDATION
(REFER T10411ER-M10T3-40-FND FOR DETAILS)
(REFER NOTE 1)

EXISTING WATER MAIN
(INDICATIVE ONLY)

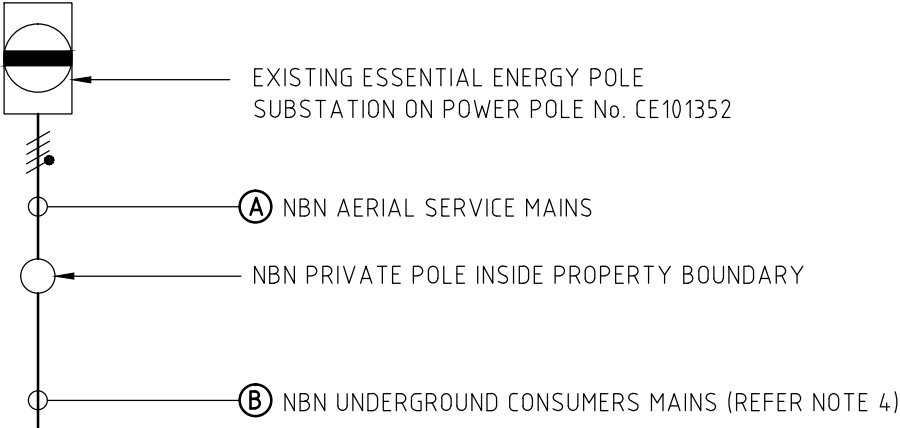
EAST ELEVATION

SCALE 1:200

NOTES:

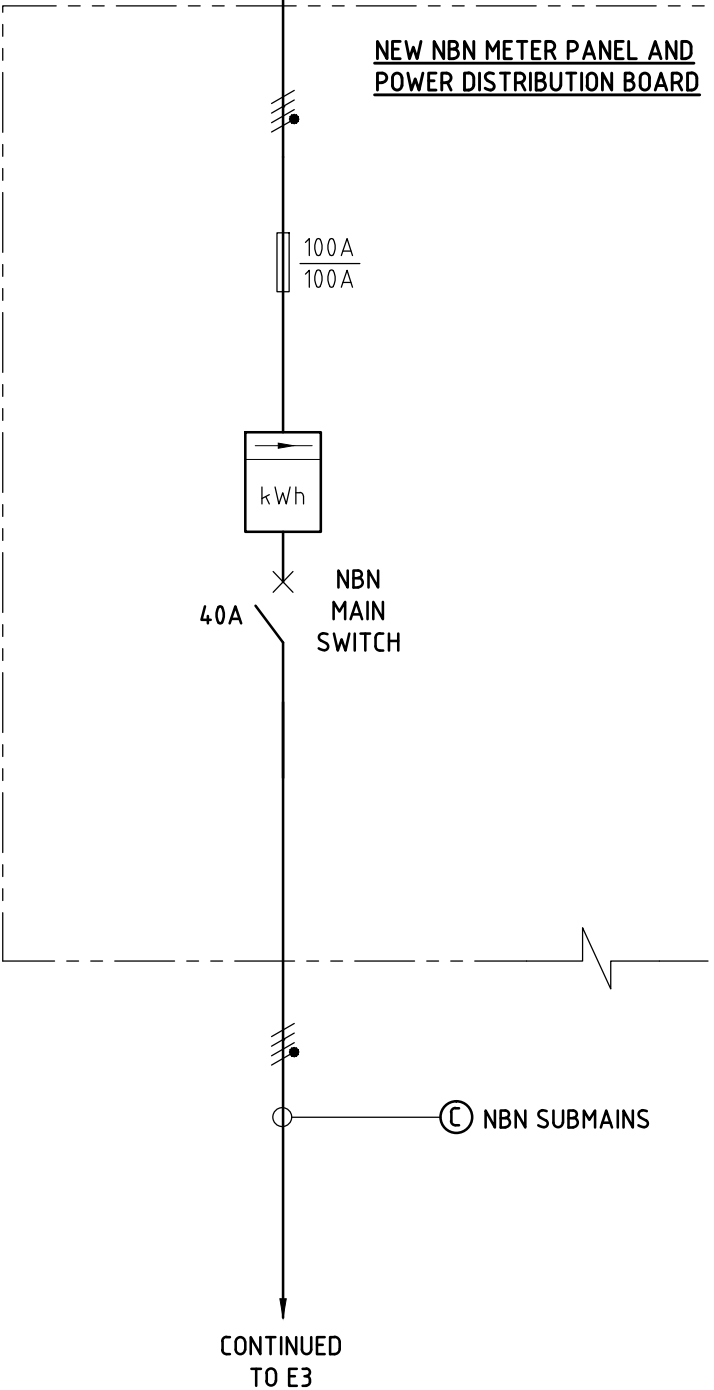
1. PRESENCE OF A SUITABLY QUALIFIED GEOTECHNICAL ENGINEER IS
REQUIRED AT THE TIME OF EXCAVATION AND PRIOR TO
FOUNDATION CONSTRUCTION TO CONFIRM GROUND CONDITIONS.

CABLE SCHEDULE							
CABLE	LENGTH (ESTIMATED)	CABLE TYPE	CORES	ACTIVE (SIZE)	NEUTRAL (SIZE)	EARTH (SIZE)	INSTALLATION METHOD
Ⓐ	50m	Al ABC	4 x 1C	25mm ²	25mm ²	-	AERIAL SERVICE MAINS FROM ESSENTIAL ENERGY POLE No. 101352 TO NBN PRIVATE POLE
Ⓑ	30m	Cu XLPE/PVC	4 x 1C	25mm ²	25mm ²	-	UNDERGROUND CONSUMERS MAINS FROM NBN PRIVATE POLE TO NBN METER PANEL ON H-FRAME VIA Ø50mm HDuPVC ELECTRICAL CONDUIT
Ⓒ	1m	Cu PVC/PVC	4 x 1C	10mm ²	10mm ²	-	NBN SUBMAINS (INSIDE PDB)



LEGEND:

- MINIATURE CIRCUIT BREAKER (MCB) OR MOULDED CASE CIRCUIT BREAKER (MCCB)
- MAIN SWITCH/ISOLATOR
- HRC FUSE, CARTRIDGE AND CARRIER
100A DENOTES 100A HRC FUSE CARTRIDGE
100A DENOTES SIZE OF CARRIER
- NEUTRAL
- THREE PHASE CIRCUIT
- ESSENTIAL ENERGY STANDARD KILOWATT-HOUR METER



NOTES:

- SUPPLY AUTHORITY IS ESSENTIAL ENERGY.
- LIAISE AND COORDINATE WITH SUPPLY AUTHORITY FOR CONNECTION OF NBN METER PANEL AND ALL WORK.
- ELECTRICAL CONTRACTOR SHALL INFORM/COORDINATE/SEEK PERMISSIONS FROM LANDLORD FOR THE NBN ELECTRICAL INSTALLATION.
- ELECTRICAL CONTRACTOR TO CONFIRM THAT THE SIZE OF THE CABLE IDENTIFIED CAN BE INSTALLED WITHOUT EXCEEDING THE MAXIMUM WORKING TENSION OF THE CABLE, PRIOR TO INSTALLATION OF THE CABLE. ALSO, CONFIRM THAT THE CONDUIT SIZE SPECIFIED IS APPLICABLE PRIOR TO INSTALLATION OF CABLE.

Client:

Client:

Client:

Project:

NATIONAL BROADBAND NETWORK
SITE No: 2BMG-51-05-WALG
WALLAGA LAKE
849 WALLAGA LAKE ROAD,
WALLAGA LAKE,
NSW, 2546

FOR CONSTRUCTION

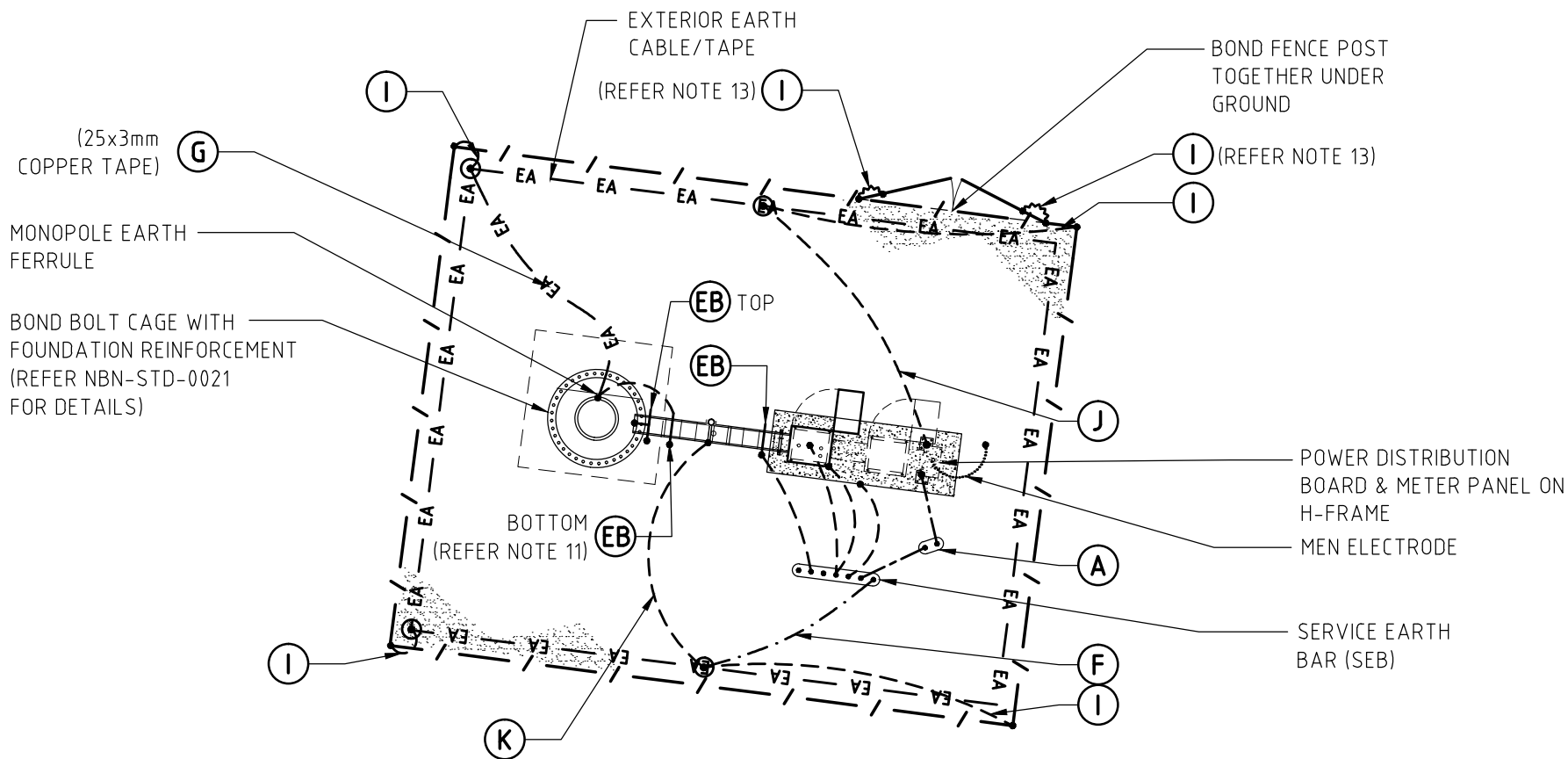
B	26.02.15	FOR CONSTRUCTION
A	09.02.15	DRAFT FOR CONSTRUCTION
Rev	Date	Revision Details

Aurecon Australia Pty Ltd ABN 54 005 139 873

DESIGNED	DM
CHECKED:	WL
APPROVED:	SL

Drawing Title:
ELECTRICAL
SINGLE LINE
DIAGRAM

Drawing No. 2BMG-51-05-WALG-E1	Revision B
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SITE EARTHING PLAN

SCALE : NTS

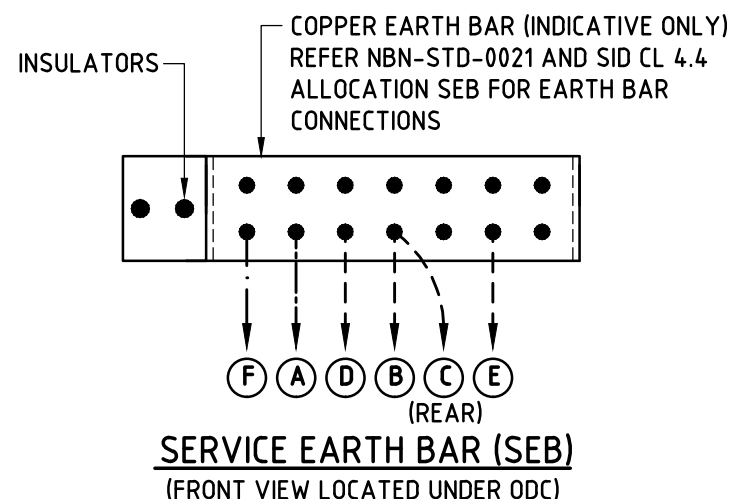
SPECIAL EARTHING NOTES:

1. ALLOWANCE SHALL BE MADE BY THE ELECTRICAL BUILD CONTRACTOR FOR ADDITIONAL ELECTRODES AS REQUIRED TO ACHIEVE EARTH RESISTANCE LESS THAN 5Ω
2. THE SITE COULD HAVE EARTHING ISSUES AND COULD BE GREATER THAN THE 5Ω THRESHOLD. ELECTRICAL BUILD CONTRACTOR TO CONTACT DESIGN ASP (WALTER LUI, AURECON) ON PH: 0419 180 215 DURING BUILD AND WHILE MOBILISED TO DISCUSS EARTHING RESULTS.

No OF ELECTRODES	DEPTH OF ELECTRODES
4	6m

LEGEND:

- ⊙ EARTHING ELECTRODE IN INSPECTION SLEEVE (TRAFFICABLE INSPECTION SLEEVE WHERE REQUIRED)
- 16mm² STRANDED COPPER GREEN / YELLOW PVC
- 35mm² STRANDED COPPER GREEN / YELLOW PVC
- EA — 70mm² BARE COPPER CABLE / 25x3 mm COPPER TAPE
- - - - 70mm² STRANDED COPPER GREEN / YELLOW PVC
- ~~~~~ FLEXIBLE BRAIDED STRAP
- (EB) EARTH BAR (RRU, FEEDER AND RAU EARTHING)
- ⊙ LINK BAR LOCATION BELOW PDB IN CABLE LADDER ON H-FRAME
- / — NEW NBN COMPOUND FENCE



EARTHING INSTALLATION

ALL ITEMS SHALL BE EARTHED GENERALLY AS SHOWN ON THIS DRAWING. FOR CONNECTION REFERENCE NUMBER, CABLE SIZE, REFER BELOW AND SITE DESIGN DRAWINGS. FOR SPECIFICATIONS AND CONNECTION DETAILS REFER TO "NBN RAN INSTALLATION" DESIGN/CONSTRUCTION SPECIFICATION, SECTION 11 "SITE EARTHING".

ITEM	DESCRIPTION
(A)	SEB TO POWER SYSTEM EARTH BAR VIA LINK BAR
(B)	BASE FRAME TO SEB
(C)	EQUIPMENT EARTH TO SEB
(D)	CONCRETE SLAB REO TO SEB
(E)	EARTH BAR TO SEB
(F)	SEB TO ELECTRODE (REFER NOTE 4)
(G)	MONOPOLE TO ELECTRODE
(H)	ANTENNA FRAME TO EQUIPOTENTIAL
(I)	FENCING AND GATES (REFER NOTE 12)
(J)	H-FRAME STEELWORK TO ELECTRODE (REFER NOTE 4)
(K)	GANTRY SUPPORT TO ELECTRODE (REFER NOTE 8)

NOTES:

1. ALL EARTHING TO COMPLY WITH AS/NZS3000 SECTION 5.3.2.
2. ALL EARTHING ELECTRODES SHALL BE 13mm DIAMETER COPPER BONDED HARDENED STEEL RODS DRIVEN TO 6m DEPTH UNLESS SPECIFIED OTHERWISE.
3. IF INSTALLED BY DRILLING, INSTALL ELECTRODES IN 75mm MINIMUM DIAMETER HOLES AND BACKFILL WITH APPROPRIATE EARTHING ENHANCING COMPOUND SUCH AS SAND-CEMENT MIX, BENTONITE GYPSUM MIX OR GRAPHITE MIX (GEM).
4. CABLES F AND J TO BE INSTALLED IN EARTH CONDUITS AS IDENTIFIED IN DRAWING C3.
5. PROVIDE MINIMUM OF 3-OFF EARTH BARS: ON HEADFRAME OR TURRET, ON MONOPOLE BELOW CABLE ENTRY PORT AND AT THE ODC.
6. SERVICE EARTH BAR SHALL BE FACE FIXED TO ODC BASE FRAME VIA INSULATORS.
7. WHERE LANDSCAPING IS REQUIRED, THE CONTRACTOR SHALL ENSURE THAT EXCAVATION FOR LANDSCAPING IS COMPLETE BEFORE INSTALLATION OF THE EARTH TAPE AND LEADS TO AVOID DAMAGE TO THE EARTHING SYSTEM.
8. ALL CABLE LADDER POSTS TO BE EARTHED VIA EARTH LEAD TO THE NEAREST ELECTRODE.
9. INSTALL NEW EARTH BAR CONNECTED TO MONOPOLE STUD IF INSUFFICIENT HOLES.
10. PROVIDE LINK BAR "TRAFFOLYTE" LABEL WHITE BACKGROUND AND MINIMUM 8mm HIGH BLACK LETTERING "BONDING TERMINAL / LINK BAR BEHIND"
11. PROVIDE BOTTOM EARTH BAR ON MONOPOLE BELOW CABLE TRAY AS PER NBN-STD-0031.
12. MAKE 1-HOLE LUG CONNECTION TO FENCE/SUPPORT POSTS (WITH TAPPED HOLE) FOR EARTHING BONDS.
13. 2mm MINIMUM THICKNESS ON 35mm² EQUIVALENT FLEXIBLE BRAIDED STRAP FOR FENCE AND GATE BONDING.

Client:



Client:



Client:



Project:

NATIONAL BROADBAND NETWORK
SITE No: 2BMG-51-05-WALG
WALLAGA LAKE
849 WALLAGA LAKE ROAD,
WALLAGA LAKE,
NSW, 2546

FOR CONSTRUCTION

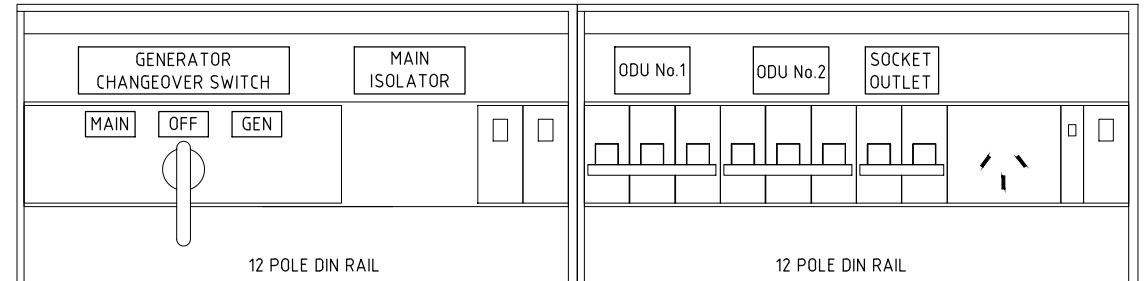
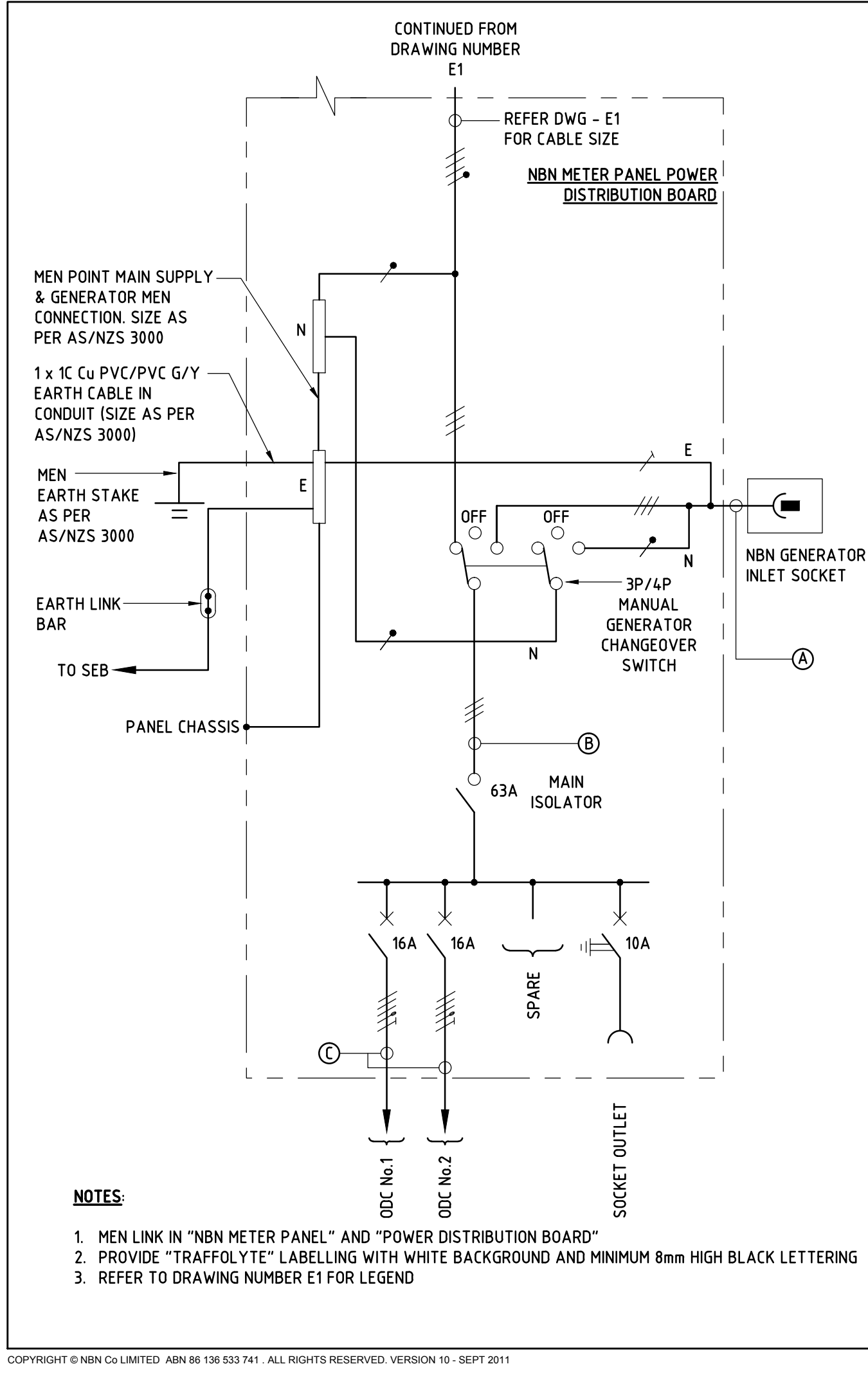
B	26.02.15	FOR CONSTRUCTION
A	09.02.15	DRAFT FOR CONSTRUCTION
Rev	Date	Revision Details



DESIGNED:	DM
CHECKED:	WL
APPROVED:	SL

Drawing Title:
SITE EARTHING PLAN

Drawing No. 2BMG-51-05-WALG-E2	Revision B
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PDB LAYOUT

NOTE: THREE PHASE MAIN SUPPLY

NBN POWER SUPPLY MATERIAL LIST			
ITEM	NO OFF	DESCRIPTION	DETAILS
1	2	ENCLOSURES NBN METER PANEL AND NBN POWER DISTRIBUTION BOARD	HAGER B & R "HORIZON" NSW N20
2	1	GENERATOR INLET SOCKET	50A, CLIPSAL, 56AI 550
3	1	SERVICE FUSE	100A
4	2	NEUTRAL LINK	PART OF ENCLOSURE
5	2	EARTH LINK	PART OF ENCLOSURE
6	1	ENERGY METER	BY SUPPLY AUTHORITY
7	1	CHANGEOVER SWITCH	NHP, SCOM634PD
8	1	DISTRIBUTION BOARD (DIN RAIL)	PART OF ENCLOSURE
9	1	CIRCUIT BREAKER / MAIN SWITCH	40A, NHP, DTCB10140C
10	1	MAIN ISOLATOR	63A, NHP, DINTMS633
11	2	CIRCUIT BREAKER	16A, NHP, DTCB10316C
12	1	CIRCUIT BREAKER	10A, RCD, NHP, DSRCB1030C
13	1	SOCKET OUTLET DIN RAIL	4PS010
14	1	EARTH LINK BAR	BLUE POINT BP165/7 OR CLIPSAL L7


CABLE SCHEDULE		# CABLE SIZE TO BE INCREASED IF:
ITEM	CABLE SIZE	
(A)	10mm ² 4C + E CU PVC/PVC	
(B)	10mm ² 3C CU PVC/PVC	
(C)#	10mm ² 4C+E CU PVC/PVC	

- A SECTION OF THE ELECTRICAL CONDUIT IS INSTALLED ABOVE GROUND.
- THE ODC CIRCUIT BREAKER IS LARGER THAN 16A


THE POWER DISTRIBUTION BOARD/METERING MUST COMPLY WITH THE CODES, STANDARDS, RULES, AND REGULATIONS OF ALL STATUTORY AUTHORITIES IN PARTICULAR: SERVICE AND INSTALLATION RULES OF NSW, AS/NZ 3000 WIRING RULES, AS3015, AS/NZ 3017 ELECTRICAL INSTALLATIONS VERIFICATION GUIDELINES, AND SUPPLY AUTHORITY REGULATIONS. THE DETAIL PROVIDED IS ONLY INDICATIVE AND SHALL BE CONFIRMED BY THE ELECTRICAL CONTRACTOR TO MEET THESE RELEVANT REQUIREMENTS.

ELECTRICIAN TO ENSURE ALL EQUIPMENT AND ASSOCIATED WIRING COMPLY WITH AS/NZ 3000 AND LOCAL POWER SUPPLY AUTHORITY REGULATION FOR ALTERNATE GENERATOR SUPPLY. CORRECT SWITCHING OF AUXILIARY SUPPLY NEUTRAL NEEDS TO BE CONFIGURED IN ACCORDANCE WITH AS/NZS3010.

Client:



Client:




Client:

Project:

NATIONAL BROADBAND NETWORK
SITE No: 2BMG-51-05-WALG
WALLAGA LAKE
849 WALLAGA LAKE ROAD,
WALLAGA LAKE,
NSW, 2546

FOR CONSTRUCTION

B	26.02.15	FOR CONSTRUCTION
A	09.02.15	DRAFT FOR CONSTRUCTION
Rev	Date	Revision Details



DESIGNED KT

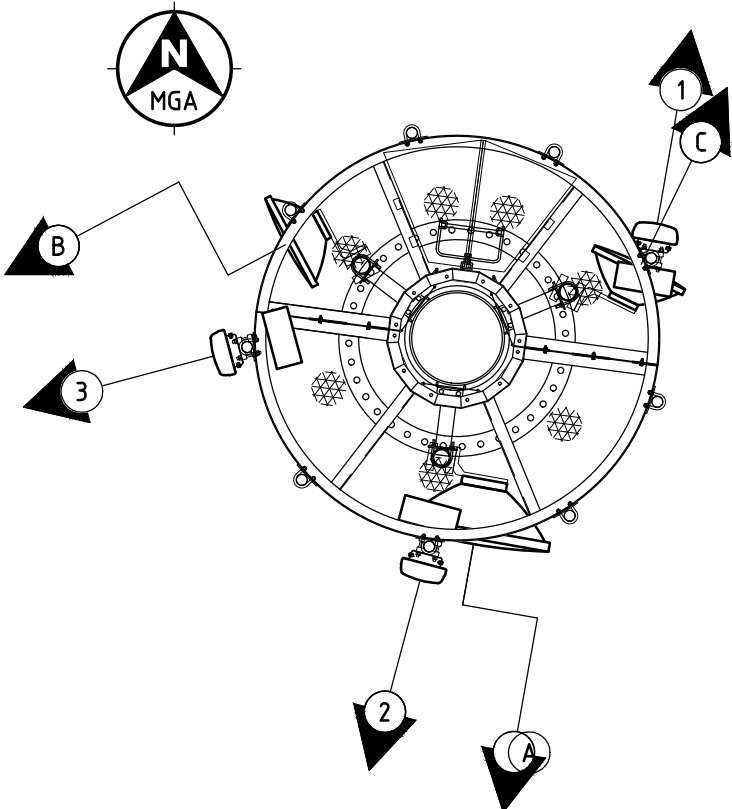
CHECKED: TD

APPROVED: SL

Drawing Title:
**POWER
DISTRIBUTION BOARD
SCHEMATIC DETAILS**

Drawing No. 2BMG-51-05-WALG-E3	Revision B
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NBN ANTENNA CONFIGURATION																	
SECTOR	SYMBOL	ANTENNA DETAIL								MAIN FEEDER DETAIL				RRU DETAIL		RF TAIL	
		TYPE	DIMENSION HxWxD	C/L HEIGHT	AZIMUTH	MECH TILT	ELEC TILT	DESTINATION	QUANTITY RAU	TYPE	OVERALL LENGTH	CANISTER HEIGHT	HYBRID EXTENSION	TYPE	LOCATION	TYPE	LENGTH
1		ARGUS-LLPX310R	1077x300x115	4.0m	10°	0°	4°	N/A	N/A	H&S HYBRID 19.6mm	50m	38.85m	3m	RRUS61	BEHIND ANTENNA	H&S 1/2" BIRD PROOFED LISCA CABLE	1.5m
2		ARGUS-LLPX310R	1077x300x115	4.0m	195°	0°	4°	N/A	N/A				3m	RRUS61	BEHIND ANTENNA		1.5m
3		ARGUS-LLPX310R	1077x300x115	4.0m	255°	0°	6°	N/A	N/A				3m	RRUS61	BEHIND ANTENNA		1.5m
4																	
5																	
6																	
A		PARABOLIC	ø900	38m	190°	N/A	N/A	BERMAGUI TOWN	3	LDF 1-50	50m	-	-	-	-	-	-
B		PARABOLIC	ø600	38m	242°	N/A	N/A	COOLAGOLITE	1	LDF 1-50	50m	-	-	-	-	-	-
C		PARABOLIC	ø600	38m	26°	N/A	N/A	MYSTERY BAY	2	LDF 1-50	50m	-	-	-	-	-	-
D																	
E																	
GPS		KRE 1012082/1	ø69x96	2.5m	0° TN	N/A	N/A	N/A		LDF 1-50	10m	-	-	-	-	-	-



ANTENNA SETOUT PLAN
SCALE 1:50

Client:

Client:

Client:

Project:

NATIONAL BROADBAND NETWORK
SITE No: 2BMG-51-05-WALG
WALLAGA LAKE
849 WALLAGA LAKE ROAD,
WALLAGA LAKE,
NSW, 2546

FOR CONSTRUCTION

B 26.02.15 FOR CONSTRUCTION

A 09.02.15 DRAFT FOR CONSTRUCTION

01 17.03.14 PRELIMINARY ISSUE

Rev Date Revision Details

Aurecon Australia Pty Ltd ABN 54 005 139 873

DESIGNED FN

CHECKED: DP

APPROVED: SL

Drawing Title:
NBN ANTENNA
CONFIGURATION &
SETOUT PLAN

Drawing No.
2BMG-51-05-WALG-A1

Revision
B

9.4 Appendix 4 – ARPANSA EME Report

Environmental EME Report

Wallaga Lake 849 Wallaga Lake Rd, WALLAGA LAKE NSW 2546

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

Date 11/6/2014

RFNSA Site No. 2546017

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 Wallaga Lake 849 Wallaga Lake Rd WALLAGA LAKE NSW 2546. These levels have been calculated by Ericsson using methodology developed by the Australian Radiation Protection and Nuclear Safety Agency (ARPANSA).

The maximum EME level calculated for the proposed systems at this site is 0.11% 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 mobile phone 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 proposed systems at this site is 2.069 V/m; equivalent to 11.36 mW/m² or 0.11% of the public exposure limit.

Radio Systems at the Site

There are currently no existing radio systems for this site.

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

Carrier	Radio Systems
NBN Co	LTE2300 (proposed)

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 Wallaga Lake 849 Wallaga Lake Rd in 360° circular bands	Maximum Cumulative EME Level – All carriers at this site					
	Existing Equipment			Proposed Equipment		
	Electric Field V/m	Power Density mW/m ²	% ARPANSA exposure limits	Electric Field V/m	Power Density mW/m ²	% ARPANSA exposure limits
0m to 50m				0.8	1.7	0.017%
50m to 100m				0.67	1.18	0.012%
100m to 200m				1.73	7.98	0.08%
200m to 300m				2.069	11.36	0.11%
300m to 400m				1.96	10.2	0.1%
400m to 500m				1.53	6.24	0.062%
Maximum EME level				2.069	11.36	0.11
				244.011 m from the antennas at Wallaga Lake 849 Wallaga Lake Rd		

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 ²	% of ARPANSA exposure limits
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/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)
WCDMA850	870 – 890 MHz	900 MHz	41.1 V/m = 4.50 W/m ² = 450 μW/cm ² = 4500 mW/m ²
GSM900, WCDMA900	935 – 960 MHz	900 MHz	41.1 V/m = 4.50 W/m ² = 450 μW/cm ² = 4500 mW/m ²
GSM1800, LTE1800	1805 – 1880 MHz	1800 MHz	58.1 V/m = 9.00 W/m ² = 900 μW/cm ² = 9000 mW/m ²
UMTS2100, WCDMA2100	2110 – 2170 MHz	2000 MHz	61.4 V/m = 10.00 W/m ² = 1000 μW/cm ² = 10000 mW/m ²

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>.

9.5 Appendix 5 – Heritage Searches

Courtney Lansdown

Date: 05 November 2013

PO Box 538

Neutral Bay New South Wales 2089

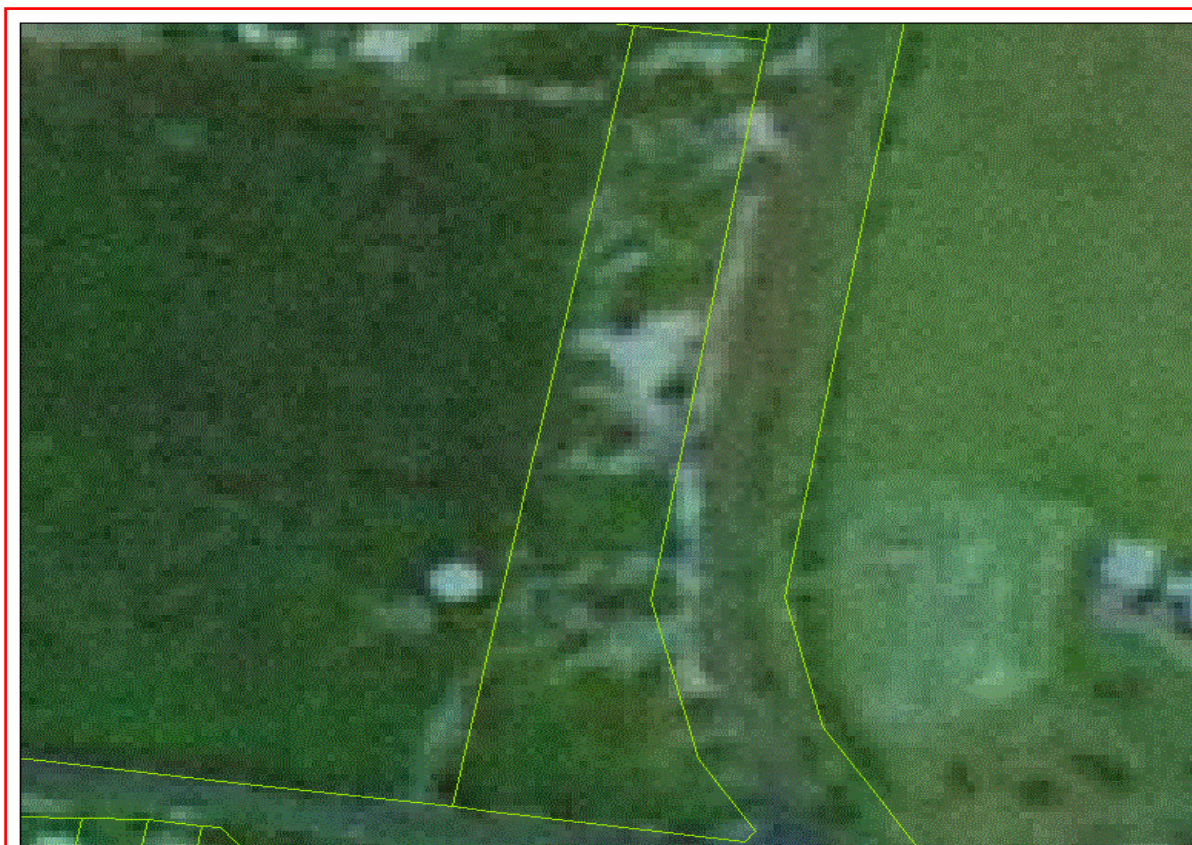
Attention: Courtney Lansdown

Email: courtney.lansdown@aurecongroup.com

Dear Sir or Madam:

**AHIMS Web Service search for the following area at Lot : 3, DP:DP565460 with a Buffer of 0 meters,
conducted by Courtney Lansdown on 05 November 2013.**

The context area of your search is shown in the map below. Please note that the map does not accurately display the exact boundaries of the search as defined in the paragraph above. The map is to be used for general reference purposes only.



A search of the Office of the Environment and Heritage AHIMS Web Services (Aboriginal Heritage Information Management System) has shown that:

0	Aboriginal sites are recorded in or near the above location.
0	Aboriginal places have been declared in or near the above location. *

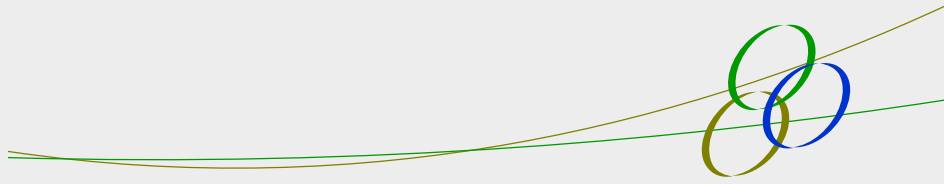
If your search shows Aboriginal sites or places what should you do?

- You must do an extensive search if AHIMS has shown that there are Aboriginal sites or places recorded in the search area.
- If you are checking AHIMS as a part of your due diligence, refer to the next steps of the Due Diligence Code of practice.
- You can get further information about Aboriginal places by looking at the gazettal notice that declared it. Aboriginal places gazetted after 2001 are available on the [NSW Government Gazette \(http://www.nsw.gov.au/gazette\)](http://www.nsw.gov.au/gazette) website. Gazettal notices published prior to 2001 can be obtained from Office of Environment and Heritage's Aboriginal Heritage Information Unit upon request

Important information about your AHIMS search

- The information derived from the AHIMS search is only to be used for the purpose for which it was requested. It is not to be made available to the public.
- AHIMS records information about Aboriginal sites that have been provided to Office of Environment and Heritage and Aboriginal places that have been declared by the Minister;
- Information recorded on AHIMS may vary in its accuracy and may not be up to date. Location details are recorded as grid references and it is important to note that there may be errors or omissions in these recordings,
- Some parts of New South Wales have not been investigated in detail and there may be fewer records of Aboriginal sites in those areas. These areas may contain Aboriginal sites which are not recorded on AHIMS.
- Aboriginal objects are protected under the National Parks and Wildlife Act 1974 even if they are not recorded as a site on AHIMS.
- This search can form part of your due diligence and remains valid for 12 months.

9.6 Appendix 6 – Bushfire Risk Assessment

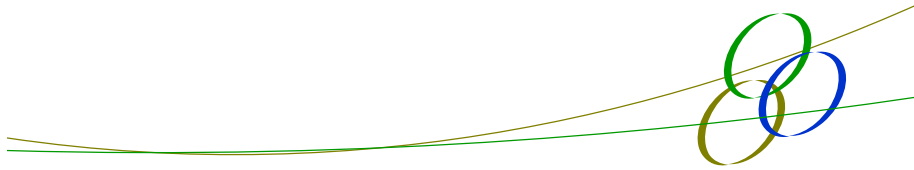


BUSHFIRE RISK ASSESSMENT

*For Proposed National Broadband Network Site No: 2BMG-51-05-WALG
Wallaga Lake*

Prepared for Aurecon

Prepared by Environmental Property Services



Quality Assurance & Version Control Table				
Project: Bushfire Risk Assessment – Wallaga Lake				
Client:	Aurecon Australia Pty Ltd			
Rev No.	Date	Our Reference	Author	Reviewer
V01	23/05/2014	11159 Wallaga Lake Draft	S. Jones	
V02	29/01/2015	11159 Wallaga Lake Final		
Checked by	L. Gorrell			
Approved by	M. MacDonald			
ENVIRONMENTAL PROPERTY SERVICES				
Hunter Level 1, 19 Stockton Street, Nelson Bay NSW 2315 (02) 4981 1600		Sydney Level 33, 264 George Street, Sydney NSW 2000 (02) 9258 1985		
Website: www.enviroproperty.com.au				



EXECUTIVE SUMMARY

In summary, this Bushfire Risk Assessment has been undertaken to identify the potential bushfire risks to the proposed tower and associated infrastructure and provides recommendations on bushfire protection measures required to mitigate the bushfire risk. This assessment has also considered the NSW Rural Fire Service (RFS) Practice Note 1/11 for Telecommunication Towers in Bush Fire Prone Areas (February 2012).

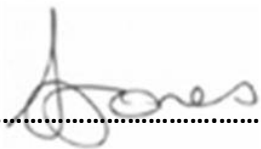
Overall this Bushfire Risk Assessment has concluded:

- The NBN site has been assessed as Bushfire Attack Level (BAL)-FZ;
- To establish the requisite 10 metre Asset Protection Zone (APZ) around the NBN tower and associated infrastructure the removal of nineteen (19) trees and mowing or slashing of the ground layer as illustrated in Figure 6-1 would be required;
- Construction of building elements to withstand a radiant heat of 40kW/m^2 and ember penetration into the structure is at the discretion of the owner/operators, as it is understood that this recommendation by the RFS Practice Note (Appendix 2) may not be achievable in some circumstances; and
- Access to the site will be from Wallaga Lake Road along approximately 50m NBN access track.

I hereby certify, in accordance with Section 79BA of the *Environmental Planning and Assessment Act 1979 No 203*:

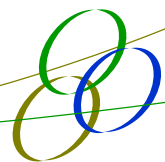
That I am a person recognised by the *NSW Rural Fire Service* as a qualified consultant in bushfire risk assessment.

SIGNATURE:

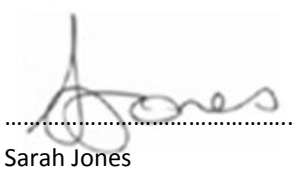
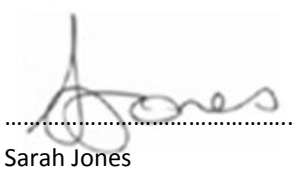
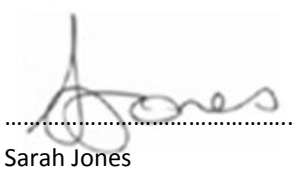


DATE: 29 January 2015

Sarah Jones
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Ecologist / Bushfire Planner

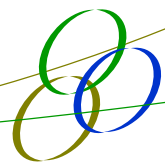


STATEMENT OF CERTIFICATION

Contact Information and Declaration			
Declaration:	<p>The declaration relates to the submission of this Bushfire Risk Assessment Report prepared for Aurecon Pty Ltd in respect of proposed NBN site 'Wallaga Lake'.</p> <p>The opinions and declarations in this Bushfire Risk Assessment Report are ascribed to Sarah Jones and are made in good faith and trust that such statements are neither false nor misleading.</p> <p>In preparing this Bushfire Risk Assessment Report, Sarah Jones has considered and relied upon information obtained from the public domain, supplemented by discussions between key EPS staff, representatives from Aurecon Australia Pty Ltd (Aurecon) and other consultants.</p>		
Aurecon Contact:	<p>Stuart Melville Town Planner, Environmental & Advisory Aurecon 116 Military Rd, Neutral Bay NSW 2089 Ph: (02) 9465 5427</p>		
Prepared by:	<table><tr><td><p>Sarah Jones Ecologist / Bushfire Planner Environmental Property Services PO Box 348 NELSON BAY NSW 2315 Ph: 02 4981 1600</p></td><td> Sarah Jones</td></tr></table>	<p>Sarah Jones Ecologist / Bushfire Planner Environmental Property Services PO Box 348 NELSON BAY NSW 2315 Ph: 02 4981 1600</p>	 Sarah Jones
<p>Sarah Jones Ecologist / Bushfire Planner Environmental Property Services PO Box 348 NELSON BAY NSW 2315 Ph: 02 4981 1600</p>	 Sarah Jones		
Application subject land address:	<p>Wallaga Lake Lot 3 DP 565460 849 Wallaga Lake Road Wallaga Lake NSW 2546</p>		

Disclaimer

Notwithstanding the precautions adopted within this report, it should always be remembered that bushfires burn under a wide range of conditions. An element of risk, no matter how small always remains, and although the standard is designed to improve the performance of such buildings, there can be no guarantee, because of the variable nature of bushfires, that any one building will withstand bushfire attack on every occasion.



Terms & Abbreviations

Abbreviation	Meaning
APZ	Asset Protection Zone
AS3959-2009	Australian Standard – Construction of Buildings in Bushfire Prone Areas
BCA	Building Code of Australia
BAL	Bushfire Attack Level
BPA	Bush Fire Prone Area (Also Bushfire Prone Land)
BFPL Map	Bush Fire Prone Land Map
BPMs	Bush Fire Protection Measures
<i>EPA Act</i>	<i>NSW Environmental Planning and Assessment Act 1979</i>
FDI	Fire Danger Index
FMP	Fuel Management Plan
ha	hectare
IPA	Inner Protection Area
LGA	Local Government Area
OEH	Office of Environment and Heritage
OPA	Outer Protection Area
PBP	Planning for Bushfire Protection 2006
RF Act	Rural Fires Act 1997
RF Regulation	Rural Fires Regulation
RFS	NSW Rural Fire Service

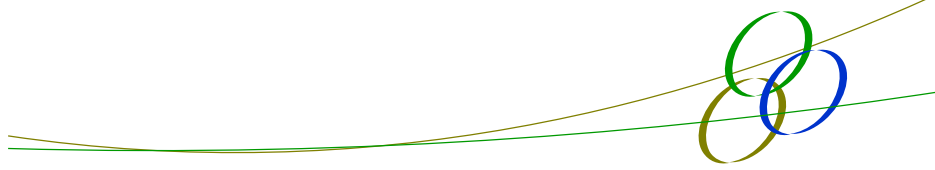


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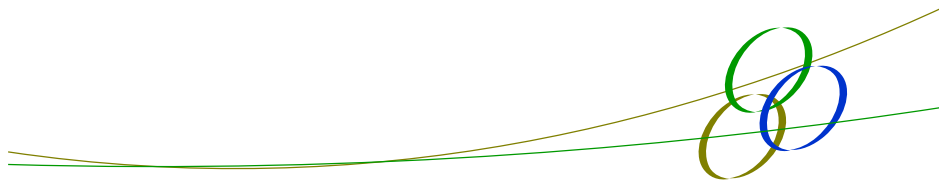
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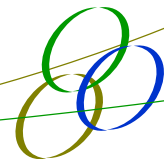
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1 INTRODUCTION

A Bushfire Risk Assessment (BRA) has been undertaken at Lot 3 DP 565460, 849 Wallaga Lake Road, Wallaga Lake NSW hereafter referred to as the “site” (Figure 1-1). The proposal includes installation of a 40m monopole, outdoor cabinets and associated infrastructure. Refer to Figure 1-1 and Figure 1-2 for Study Area.

The purpose of this assessment is to identify the potential bushfire risks to the proposed development and to provide recommendations on bushfire protection measures required to mitigate bushfire risk.

1.1 Site Particulars

Locality:	Lot 3 DP 565460, 849 Wallaga Lake Road, Wallaga Lake NSW
LGA:	Bega Valley
Forest Danger Index:	100 Forest Danger Index (FDI)
Boundaries:	The site is bound by Woodland to the north, east, and south and by Open Forest to the west

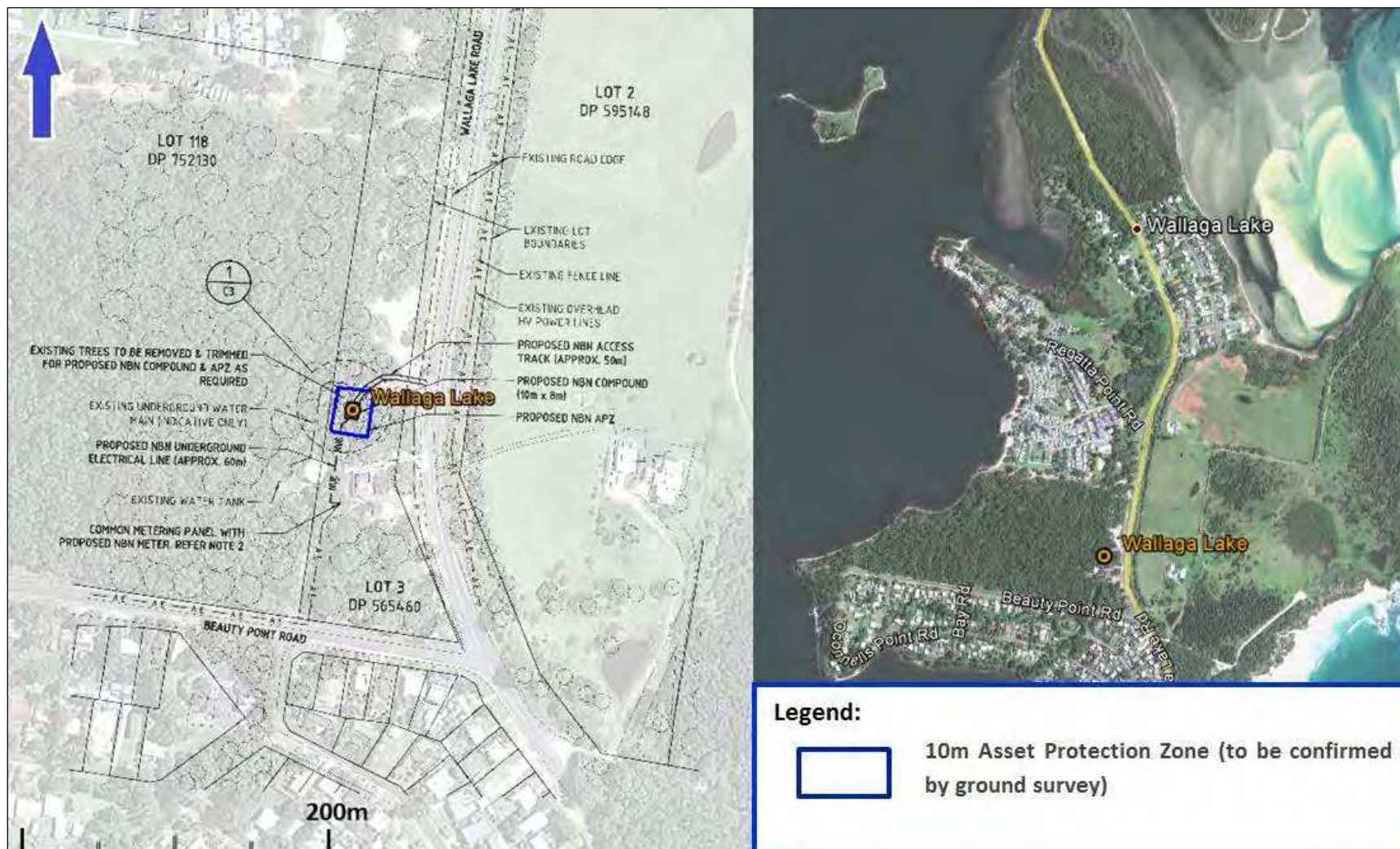
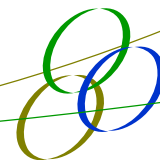


Figure 1-1: Site Location, showing regional position, site compound, infrastructure and Asset Protection Zone (APZ).

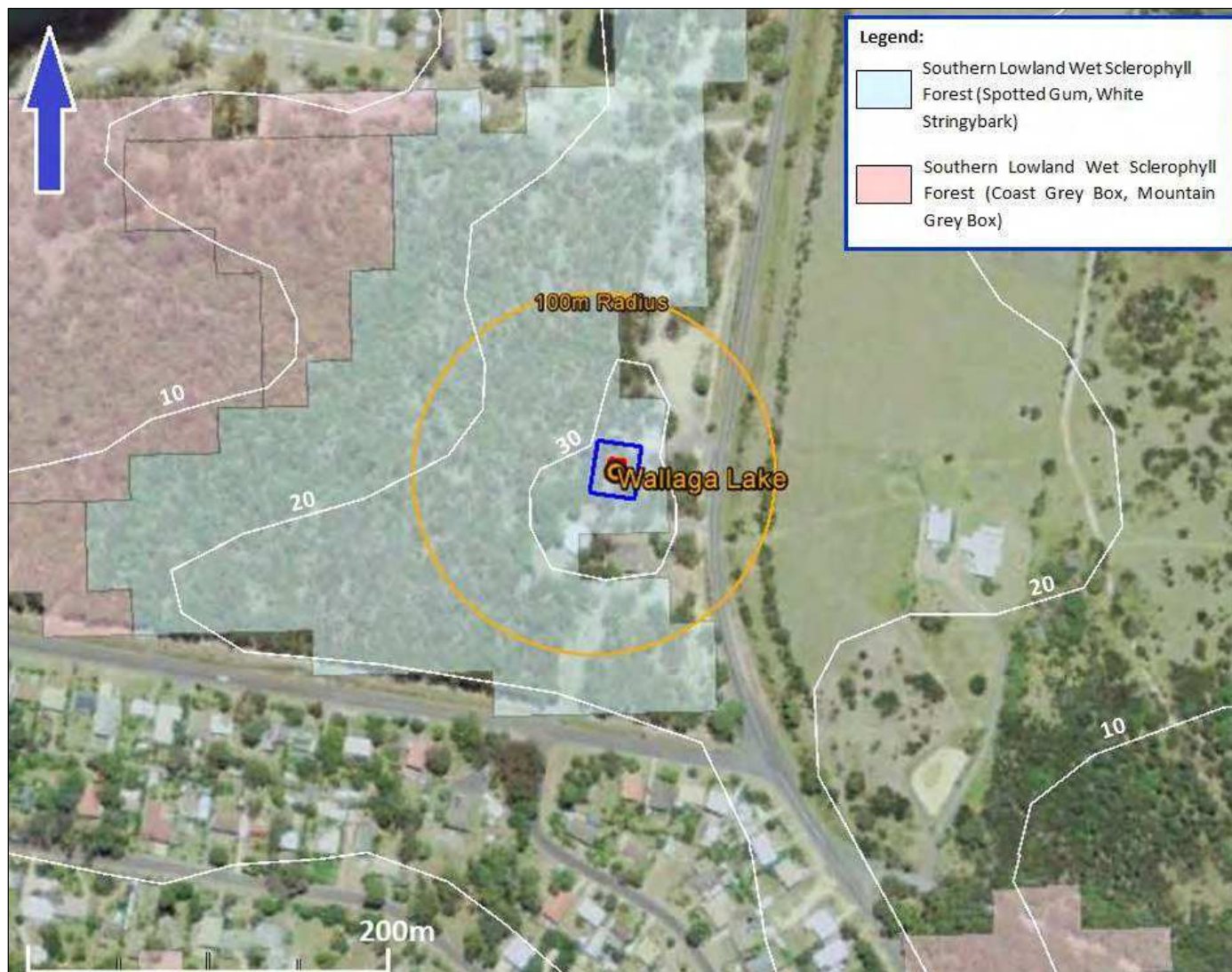
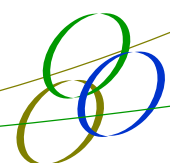
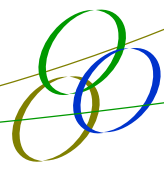


Figure 1-2: 100m radius (Study Area) showing topography and vegetation as mapped by OEH (Shoalhaven_Biometric_v2_E_3900)



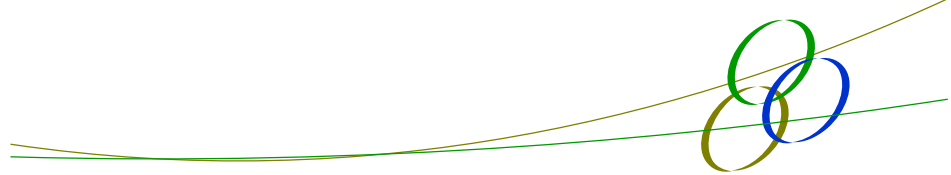
1.2 Description of Proposal

The proposal includes installation of a 40m monopole, NBN outdoor cabinets and associated infrastructure.

From the Site Set Out plan provided by Aurecon, we understand the proposal involves the following:

- Construction of one NBN outdoor cabinet on concrete slab;
- Proposed future outdoor cabinet;
- Erection of a 2.4m high chain wire security fence with 3m wide access gate;
- Installation of 1 parabolic antenna (to Bermagui Town);
- Installation of 1 parabolic antenna (to Coolagolite);
- Installation of a new power distribution board / meter panel on H-frame;
- Erection of a cable ladder with 1 cable ladder support post;
- Installation of underground submain in HDuPVC electrical conduit (approx 60m);
- Installation of electrical circuits in conduits;
- Installation of a GPS unit;
- Installation of 40m monopole with circular headframe; and
- Installation of monopole foundation.

The proposed NBN compound will be approximately 10m x 8m. Refer to Figure 1-1.



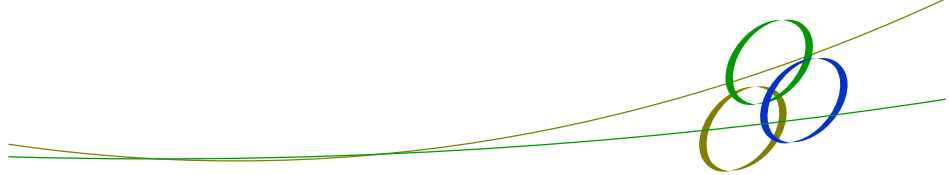
1.3 Objectives of Assessment

The proposal is for a telecommunication tower and associated infrastructure and therefore the Rural Fire Service Practice Note 1/11 (NSW RFS, 2012) provides recommendations on mitigation measures that should be taken to reduce the risk of loss of such infrastructure from the effects of bush fire attack. These being:

- A 10m APZ in all directions from the proposed tower / buildings / infrastructure associated with the tower shall be provided; and
- Materials should be designed to withstand 40kW/m^2 of radiant heat and withstand ember penetration into the structure and associated infrastructure.

This BRA has been undertaken to determine if the proposal can meet the RFS recommendations as detailed above and also to determine the Bushfire Attack Level (BAL) for the site using Method 1 of Australian Standard Construction of Buildings in Bush Fire Prone Areas (AS3959-2009).

The requirement for materials to withstand 40kW/m^2 of radiant heat and withstand ember penetration into the structure and associated infrastructure is a guideline note on what 'should' occur given the importance of these facilities and every attempt should be made to protect the components where feasible and functional.



2 METHODOLOGY

2.1 Vegetation Assessment

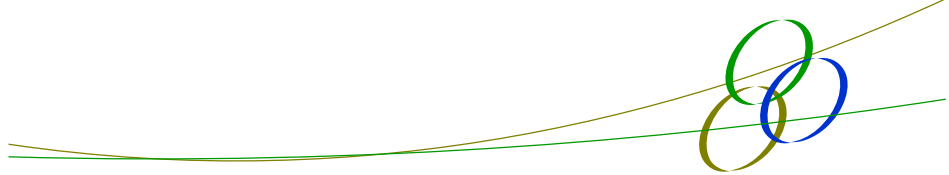
Vegetation surveys and vegetation mapping have been carried out on the site as follows:

- Aerial Photograph Interpretation to map vegetation cover and extent; and
- Vegetation types as classified by the Office of Environment and Heritage (OEH) layer Shoalhaven_Biometric_v2_E_3900.

2.2 Slope Assessment

Slope assessment has been undertaken as follows:

- Aerial Photograph Interpretation in conjunction with analysis of electronic contour maps with a contour interval of 10m.



3 SITE ASSESSMENT

The following assessment has been undertaken in accordance with the requirements of AS3959-2009. The fieldwork methodology used to determine and identify the predominant vegetation formation has been conducted in accordance with the 'Standards Australia (2009). *AS 3959 – 2009: Construction of Buildings in Bushfire-prone Area*' and Appendix 2 in 'NSW Rural Fire Service (2006). *Planning for Bushfire Protection – A Guide for Councils, Planners, Fire Authorities, Developers and Home Owners*' and as per Keith D. 2004 in: "Ocean Shores to Desert Dunes: the vegetation of New South Wales and the ACT (Department of Environment and Conservation NSW: Hurstville)". The site inspection was undertaken on the 8th May 2014.

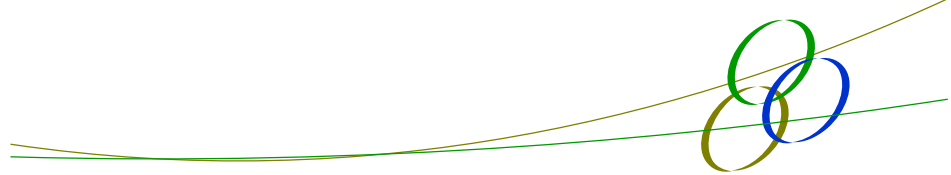
3.1 Vegetation and Slope Assessment

In accordance with AS3959-2009 an assessment of the vegetation over a distance of 100m in all directions from the site was undertaken. Vegetation that may be considered a bushfire hazard was identified in all directions from the site and is presented in Table 3-1.

In accordance with AS3959-2009, an assessment of the slope affecting the bushfire behaviour was undertaken for a distance of 100m from the location of the NBN site in the direction of the bushfire hazard. The slopes leading away from the site have been evaluated to identify both the average slope and the maximum slope present. These values help determine the level of gradient which will most significantly influence the fire behaviour of the site. Refer to Table 3-1 for Vegetation and Slope Assessment for the site.

Table 3-1: Vegetation and Slope Assessment

Direction	Vegetation Type within 100m of the Compound	Slope Vegetation Occurs On within 100m of the Site	Distance Vegetation is Away from the Proposed NBN Compound
North	Woodland	Downslope 0 – 5 degrees	Adjacent
East	Woodland followed by Grassland	Downslope 0 – 5 degrees	Adjacent
South	Woodland	Downslope 5 – 10 degrees	Adjacent
West	Open Forest	Downslope 5 – 10 degrees	Adjacent



4 BUSHFIRE ATTACK ASSESSMENT

4.1 Bushfire Attack Assessment

To determine the bush fire attack and required Bushfire Attack Level (BAL) for the proposed site the following steps were followed:

1. Determination of the vegetation types surrounding the proposed NBN Site, as assessed in section 3 of this report.
2. Determination of the distance between the vegetation and the proposed NBN Site has been assessed in section 3 of this report.
3. Determination of the effective slope.
4. A FDI of 100 was determined for the LGA.

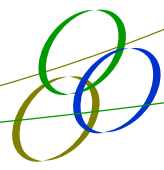
The Fire Danger Index (FDI) rating is derived from Table A2.3 of the *NSW Rural Fire Service Planning for Bush Fire Protection 2006*.

4.2 Determination of Bushfire Attack Levels

The results from the above steps were matched using Table 2.4.3 of AS3959-2009. The results from this bush fire risk assessment are detailed below in Table 4-1–Bush Fire Attack Assessment, with the highest BAL determined for the site being used for the site assessment.

Table 4-1: Bushfire Attack Assessment for the NBN Site

Vegetation Type and Direction	Average Slope of Land (degrees)	Vegetation Separation Distance from Compound once APZ is Established	Bushfire Attack Level (BAL)	Expected Radiant Heat
Woodland to the north	Downslope 0 – 5 degrees	10m	BAL-FZ	>40 kW/sqm
Woodland followed by Grassland to the east	Downslope 0 – 5 degrees	10m	BAL-FZ	>40 kW/sqm
Woodland to the south	Downslope 5 – 10 degrees	10m	BAL-FZ	>40 kW/sqm
Open Forest to the west	Downslope 5 – 10 degrees	10m	BAL-FZ	>40 kW/sqm

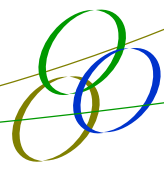


4.3 Proposal Compliance with the Determined BALs

The Site has been assessed as BAL-FZ. The RFS in their practice note recommends that the building components are able to withstand radiant heat of 40kW/m^2 and ember penetration into the structure and associated infrastructure. Where possible the building elements should be constructed to withstand a radiant heat of 40kW/m^2 , however, there are some components of the structure such as the cabling that is unable to meet this requirement.

Construction of building elements to withstand a radiant heat of 40kW/m^2 and ember penetration into the structure is at the discretion of the owner/operators, as it is understood that this recommendation by the RFS Practice Note (Appendix 2) may not be achievable in some circumstances.

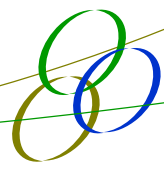
The NSW Rural Fire Service Practice Note 1/11 specifies “When the RFS is asked for comment on new towers or for existing towers, a 10 metre APZ from the tower/ buildings/ infrastructure associated with the tower shall be provided”. This ensures the fuel load directly surrounding the tower is reduced as well as creating a defensible space in which the tower can be protected during a fire.



5 FIRE FIGHTING PERSONNEL ACCESS

Access to the site will be from Wallaga Lake Road along approximately 50m NBN access track.

The proposed access is generally consistent with fire trail access requirements listed in Planning for Bush Fire Protection.



6 CREATION OF ASSET PROTECTION ZONE

Consistent with the Practice Note 1/11 (NSW RFS, 2012), it is recommended that a 10m APZ be established around the NBN tower and associated infrastructure. The APZ ensures that the presence of fuels are minimised close to a development, thereby minimising the impact of direct flame contact and radiant heat. It is recommended that this APZ be comprised entirely of an Inner Protection Area (IPA). An IPA must be such that:

- Tree canopy cover should be less than 15%;
- There is minimal fine fuel at ground level which could be set alight by a bushfire; and
- Any vegetation in the IPA does not provide a path for the transfer of fire to the development – that is, the fuels are discontinuous.

In order to establish the 10m APZ, nineteen trees require removal and the groundcover will need to be maintained at approximately 100mm through slashing or mowing.

6.1 Vegetation Clearing Works required to meet the Standards of an APZ

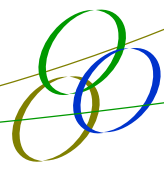
The vegetation within the area proposed for the 10m APZ has been surveyed, recorded and is illustrated within Figure 6-1.

The site assessment has shown that in order to establish the required 10m APZ the following will need to occur:

- Nineteen trees within the APZ require removal in accordance with Figure 6-1; and
- The groundcover should be slashed or mowed in order for the height to be maintained at approximately 100mm.



Figure 6-1: APZ Vegetation Assessment & Requirements



7 CONCLUSION & RECOMMENDATIONS

In summary, assessment of the proposal against the recommendations in the NSW RFS Practice Note 1/11 for Telecommunication Towers in Bush Fire Prone Areas has shown that the proposal is able to:

- Comply with the recommended 10m APZ around the structure;
- Construction of building elements to withstand a radiant heat of 40kW/m² and ember penetration into the structure is at the discretion of the owner/operators, as it is understood that this recommendation by the RFS Practice Note (Appendix 2) may not be achievable in some circumstances; and
- It is generally the expectation of the owner or operator of the land containing an APZ to maintain the APZ and ensure its condition is maintained to provide continued bushfire risk management. Section 63 of the Rural Fires Act 1997 puts the onus on the owner/operator of the land to ensure the vegetation within the APZ is managed and does not become a hazard. It is therefore recommended that an ongoing management plan for the maintenance of the APZ is prepared for the site.

The Bushfire Risk Assessment undertaken for the site has concluded that:

- The NBN site has been assessed as BAL-FZ; and
- To establish the requisite 10 metre Asset Protection Zone (APZ) around the NBN tower and associated infrastructure the removal of nineteen (19) trees and mowing or slashing of the ground layer as displayed in Figure 6-1 would be required.

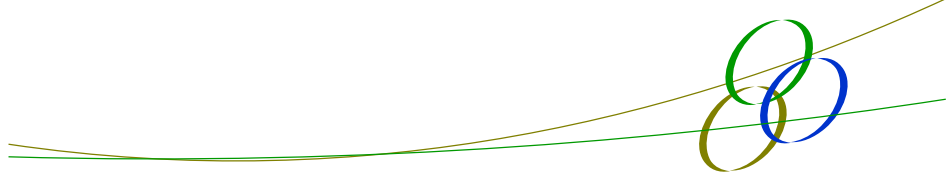
I hereby certify, in accordance with Section 79BA of the *Environmental Planning and Assessment Act 1979 No 203*:

That I am a person recognised by the *NSW Rural Fire Service* as a qualified consultant in bushfire risk assessment.

SIGNATURE:

DATE: 29 January 2015

Sarah Jones
B.Env.Sc., G.DIP.DBPA (Design for Bushfire Prone Areas)
FPA BPAD-A Certified Practitioner (BPD-PA-26512)
Ecologist / Bushfire Planner



8 BIBLIOGRAPHY

NSW Rural Fire Service (2012). *Practice Note 1/11 for Telecommunication Towers in Bush Fire Prone Areas*. February 2012.

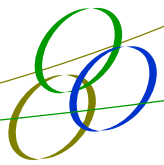
NSW Rural Fire Service (1997). *Bush Fire Protection for New and Existing Rural Properties*. September 1997, NSW Government.

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Appendix 1

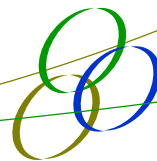
Site Photos



Site Photo 1 – Looking North



Site Photo 2 – Looking East



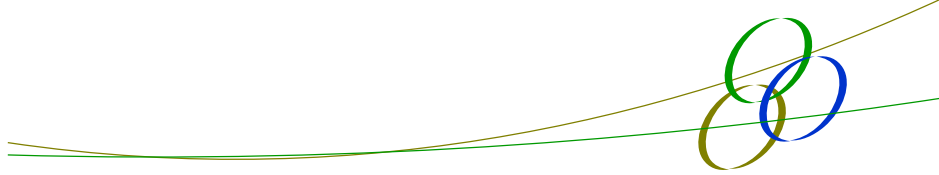
Site Photo 3 – Looking South



Site Photo 4 – Looking West

Appendix 2

Practice Note



Telecommunication Towers in Bush Fire Prone Areas

This Practice Note provides direction on the application of bush fire protection measures to Telecommunication Towers in Bush Fire Prone Areas.

Towers in Bush Fire Prone Areas are critical infrastructure for fire fighting communications and for providing warnings, information and communication channels for people in bush fire prone areas during bush fire emergencies.

Telecommunications sites support wide range of communications services, broadly they are those sites that have infrastructure associated with mobile phones, internet, microwave radio links, trunk mobile radio or private mobile radio (PMR). In some instances, a number of users establish autonomous sites adjacent to one another at the same geographic location. This is variable depending on the size, purpose, complexity and remoteness of the site and could be one hut connected to a shared antenna on a tower alternatively, It could be multiple huts on a location and connected to multiple towers.

As such, a 'precautionary approach' should be taken with respect to critical infrastructure associated with communications during emergencies.

Actions should be taken by owners/ operators to reduce the risk of loss of such infrastructure and associated infrastructure from the effects of bush fire attack.

The asset protection zone is only concerned with the underlying infrastructure required to support such services which are predominately structures and buildings. Essential equipment should be designed and housed in such a way as to minimise the impact of bush fires on the capabilities of the infrastructure to provide communications capability during bush fire emergencies.

When the RFS is asked for comment on new towers or for existing towers, a 10 metre APZ from the tower/ buildings/ infrastructure associated with the tower shall be provided.

Infrastructure does not include:

- road access to the site;
- power or other services to the site;
- associated fencing;

The APZ must be free of surface fuel and elevated fuel and should have minimum canopy.

When RFS provides comments on critical telecommunications infrastructure a recommendation to the owner of the critical infrastructure is made that the materials be designed to withstand 40kWm² of radiant heat and to withstand ember penetration into the structure and associated infrastructure.



When considering notices to manage fuel, distances should be consistent with the above criteria.

Owners/operators of critical telecommunications infrastructure may accept the risk of loss of the structure from the effects of bush fire.

However, the RFS does not accept loss of such structures as it will have a direct impact on life safety within the fire ground.

Definitions

Critical telecommunications infrastructure is identified in a Bush Fire Risk Management Plan.

A **location** is defined as the area of land which includes one or more co located Telecommunications sites.

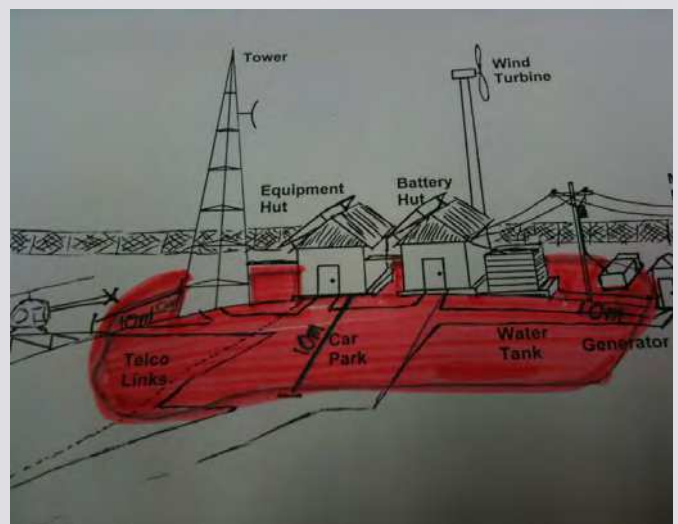
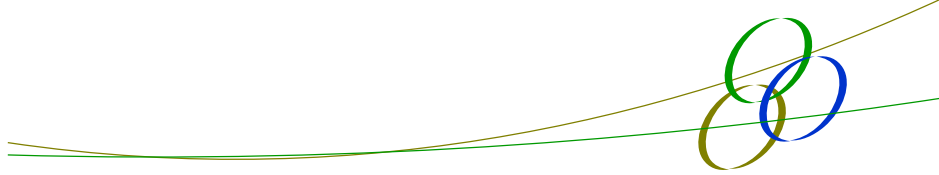


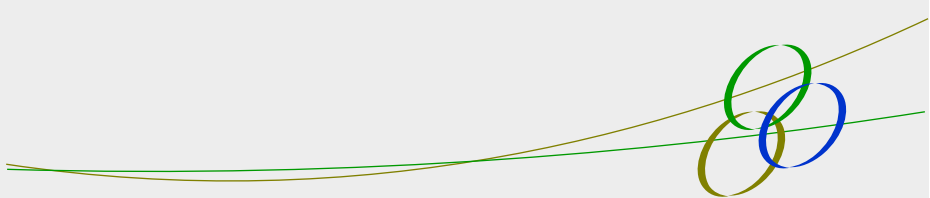
Figure 1: 10 metre APZ from the tower/ buildings/ infrastructure

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Appendix 3

APZ Creation





TECHNICAL NOTE: CREATION AND MAINTENANCE OF ASSET PROTECTION ZONES FOR TELECOMMUNICATIONS FACILITIES

Asset Protection Zone Establishment

On bushfire prone land in NSW a 10 metre Asset Protection Zone (APZ) is required surrounding the structure/equipment. The APZ does not include access tracks, power or compound fencing. The boundaries of the APZ are depicted on the For Construction (FC) Drawings.

Vegetation Clearing Works Required

The APZ must be free of surface fuel and elevated fuel and should have minimum canopy. Specifically the following is required:

- Confirmation of APZ size in accordance with FC Drawings
- Boundary marking of the APZ with survey pegs (painted fluorescent pink). Pegs be maintained permanently for ongoing maintenance work and be replaced/repainted as required
- Trees to be retained should be identified and marked with survey tape prior to any clearing works
- The groundcover should be slashed or mowed approx 100mm high
- Total removal of understorey / shrub species (refer to Figure 2 for crown & understorey illustration);
- Removal of designated trees
- Selective clearing of remaining trees so tree canopies to have a separation of more than 2m
- Site clean-up at completion of works and removal of tape on trees that are retained.

Methods of Vegetation Removal

Slashing and Trittering (turbo mowing)

- Cut material must be removed or allowed to decompose well before summer starts. Removed clippings to be disposed of at a licenced green waste facility (dumping clippings in the bush is illegal).
- It is preferable that weeds are completely removed.

Tree Pruning

The NSW Rural Fire Service *Standards for Asset Protection Zones* outlines three primary methods of pruning trees in APZs:

1. *Crown lifting (skirting)*
Remove the lowest branches (up to 2 metres from the ground).
2. *Thinning*
Remove smaller secondary branches whilst retaining the main structural branches of the tree.
3. *Selective pruning*
Remove branches that are specifically identified as creating a bush fire hazard (e.g. those overhanging assets).

See *Australian Standard 4373 (Pruning of Amenity Trees)*/NSW Rural Fire Service *Standards for Asset Protection Zones* for more information on tree pruning.

Note:

1. For some sites specific trees must be retained. Refer to FC/As-Built Drawings for identification of the trees.
2. Retention of a small amount(= <100 mm) of ground cover can greatly improve soil stability particularly on sloping sites.

Maintenance of Asset Protection Zones

In order to ensure continued compliance with planning consent requirements and certified development plans, Asset Protection Zones must be maintained to current standards in perpetuity by the owner/operator of the facility.

Failure of owners/operators of Telecommunications facilities to demonstrate ongoing compliance with safety obligations in this respect could lead to breaches of the *Rural Fires Act 1997* and/or *Environmental Planning & Assessment Act 1979*.

Current guidelines governing bush fire compliance in NSW are:

- *Rural Fires Act 1997*
- *Planning for Bush Fire Protection 2006*
- *Telecommunication Towers in Bush Fire Prone Areas (2012)*

Ongoing Compliance Requirements

1. Establishment

- Confirmation of correct implementation of APZ post construction required
- Development of a maintenance regime considering climatic, vegetation and bushfire risk characteristics of each site.

2. Ongoing Maintenance

- Implementation of maintenance plan to ensure regular hazard reduction in accordance with site specific plan.

3. Certification

- Periodic certification of APZ compliance to ensure appropriate maintenance procedures applied and establish compliance record.

4. Review

- Modification of maintenance plan to address changes in site configuration such as co-location.



Figure 1: Example compliance documents

References

NSW Rural Fire Service document Asset Protection Zones at

http://www.rfs.nsw.gov.au/dsp_content.cfm?CAT_ID=1060

NSW Rural Fire Service (RFS) 2006. Planning for Bushfire Protection: A guide for Councils, Planners, Fire Authorities, Developers and Home Owners. Australian Government Publishing Service, Canberra

NSW Rural Fire 'Standards for asset protection zones',

http://www.rfs.nsw.gov.au/file_system/attachments/State08/Attachment_20060130_7DE0A145.pdf

NSW RFS guidelines for Telecommunication Towers in Bushfire Prone Areas (NSW RFS, 2011)

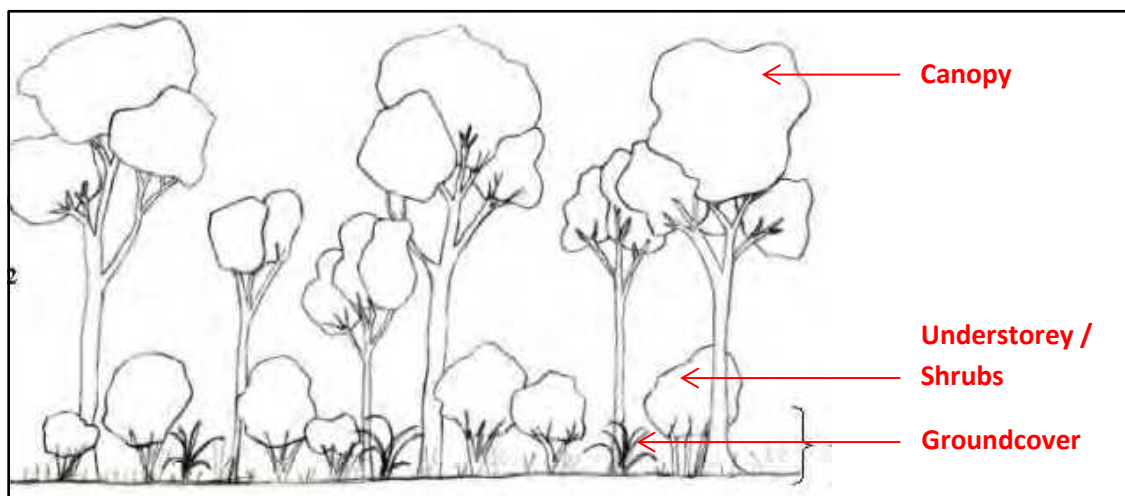


Figure 2: Vegetation Layers

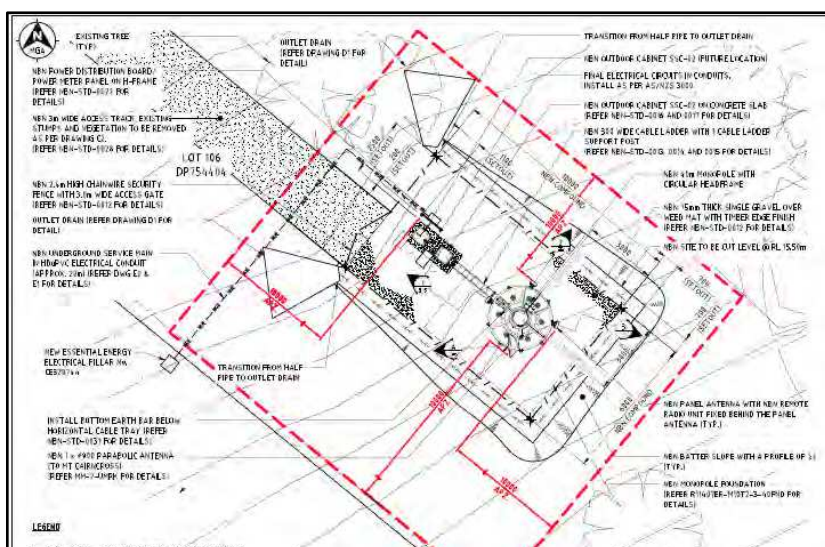
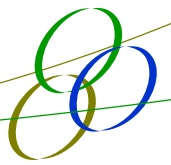


Figure 3: APZ Depiction on FC/AB Plans



Figure 4: Example Site before construction and post construction with compliant APZ clearance/soil stability ground cover

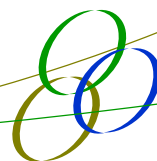


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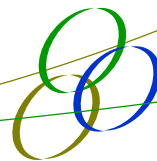
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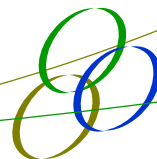
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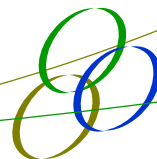
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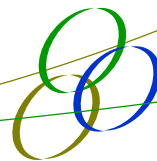
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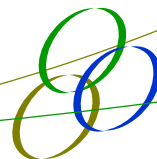
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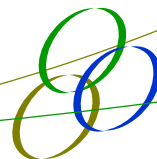
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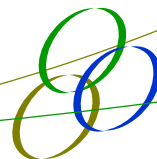
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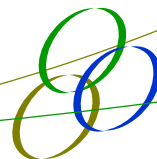
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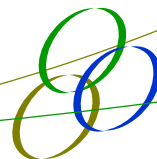
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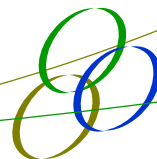
Tree 10 – to be removed



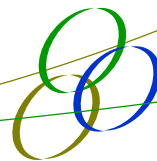
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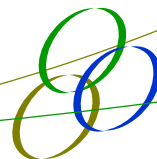
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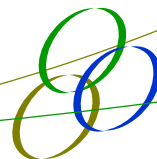
Tree 13 – to be removed



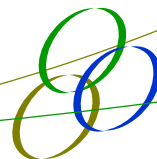
Tree 14 – to be removed



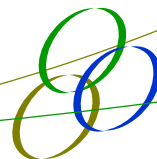
Tree 15 & Tree 16 – to be removed



Tree 17 – to be removed

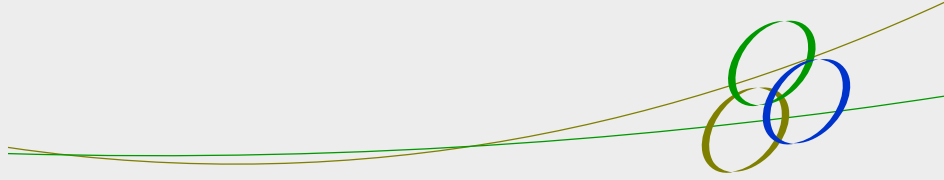


Tree 18 – to be removed



Tree 19 – to be removed

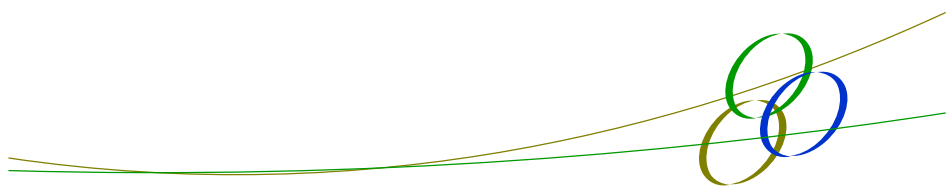
9.7 Appendix 7 - Ecological Assessment Report



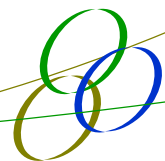
ECOLOGICAL ASSESSMENT REPORT (EA) 'WALLAGA LAKE' 849 WALLAGA LAKE RD, WALLAGA LAKE NSW

Prepared for Aurecon

Prepared by Environmental Property Services



Quality Assurance & Version Control Table				
Project: Ecological Assessment – Wallaga Lake				
Client:	Aurecon			
Rev No.	Date	Our Reference	Author	Reviewer
V01	23/05/2014	11159 Wallaga Lake Draft	L. Gorrell	
V02	29/01/2015	11159 Wallaga Lake Final		
Checked by	M. MacDonald			
Approved by	S. McCall			
ENVIRONMENTAL PROPERTY SERVICES				
Hunter Level 1, 19 Stockton Street, Nelson Bay NSW 2315 (02) 4981 1600		Sydney Level 33, 264 George Street, Sydney NSW 2000 (02) 9258 1985		
Website: www.enviroproperty.com.au				



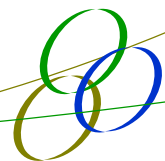
EXECUTIVE SUMMARY

Environmental Property Services (EPS) was engaged to prepare an Ecological Assessment Report (EA) for the proposed National Broadband Network (NBN) Expansion Project. This report details the ecological assessment for a proposed site referred to as 'Wallaga Lake' at Wallaga Lake, New South Wales (NSW), as part of the NBN Project. The proposed NBN site is located at 849 Wallaga Lake Road, Wallaga Lake NSW approximately 880m south of Wallaga Lake town centre.

The proposal includes the installation of a 40m high monopole and NBN outdoor cabinets to be installed in the proposed NBN compound on a concrete slab on a Greenfield site. Associated infrastructure includes but is not limited to a cable ladder, antennas, electrical line and conduit surrounded by a chain wire security fence with an access gate. The proposed NBN compound will be approximately 10m x 8m. A 10m Asset Protection Zone (APZ) surrounding the tower and cabinets is also required. We use the term 'subject site' throughout this report to refer to the proposed NBN compound and the 10m APZ.

The methods undertaken to complete the assessment included (1) Preliminary/Desktop Investigations and (2) Field Surveys and Assessments. Desktop assessments revealed that 93 threatened fauna species, 19 threatened flora species, and 8 Endangered Ecological Communities listed under TSC Act and / or EPBC Act and 44 Migratory Species listed under the EPBC Act had either been recorded, known or predicted to occur within the investigation area. Additionally, 33 Key Threatening Processes (KTP's) listed under the TSC Act and 27 invasive species listed under the EPBC Act were predicted to occur within the investigation area.

Of these, no threatened flora or migratory fauna species were likely to occur within the subject site. However, two threatened fauna species were found to have the potential to occur within the site on occasion. The subject site was situated in a flat area next to a roadway within sight of the coast. This site contained vegetation dominated by White Stringybark (*Eucalyptus globoidea*), Southern Mahogany (*Eucalyptus botryoides*), Blue-leaved Stringybark (*Eucalyptus agglomerata*), Coast Grey Box (*Eucalyptus bosistoana*), Red Bloodwood (*Corymbia gummifera*) with Rough-barked Apple (*Angophora floribunda*) also present. The mid-canopy layer was mostly absent however, the shrub layer consisted Stiff-leaf wattle (*Acacia obtusifolia*) and Sweet Pittosporum (*pittosporum undulatum*) with Burrawang (*Macrozamia communis*) also present, however not within the APZ of the site. A dense ground cover comprised of Lomandra (*Lomandra longifolia*), Kangaroo Grass (*Themeda australis*), Blue Flax-lily (*Dianella caerulea* var. *caerulea*), Paspalum (*Paspalum rugulosum*), Kidney Weed (*Dichondra repens*) and Blady Grass (*Imperata cylindrical*). The vegetation within the subject site was not part of an EEC or critical habitat as defined under the *Threatened Species Conservation Act 1995*.

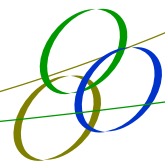


There were no hollow-bearing trees recorded within the APZ and compound of the subject site. It is considered likely that the subject site is mostly regrowth, with the exception of one tree that is of a size to be considered remnant as defined under the NV Act. As the site contains this one very large tree it is considered the site is both remnant, with majority of regrowth as defined under the *Native Vegetation Act 2003*.




An assessment of significance (seven-part test) under the *Environmental Planning and Assessment Act 1979* found that the proposal was unlikely to have a significant impact on threatened species, populations or ecological communities providing the recommended mitigation measures are adopted.

The following recommendations are made to minimise potential impacts:

- Ensure the extent of clearing is clearly marked in the field prior to the commencement of vegetation clearing. Ensure that only the minimum vegetation clearing required is undertaken;
- No hollow bearing trees were recorded on site;
- Relocate all fallen timber and woody debris currently on the ground to nearby (outside of the APZ). Exercise caution in moving timber to minimise potential impacts to fauna that may be occupying fallen logs;
- Have the contact details of the nearest veterinary clinic and accredited wildlife carer in the case of injured fauna;
- Ensure that equipment is free of plant material and soil that may contain weed seeds or soil-borne diseases prior to entering the site. Vehicles should be washed-down at an appropriate location where weeds are regularly managed prior to commencing work; and
- Ensure appropriate erosion and sediment control measures are implemented during the construction-phase to minimise potential indirect offsite impacts.



STATEMENT OF CERTIFICATION

Contact Information and Declaration			
Declaration:	<p>The declaration relates to the submission of this Ecological Assessment Report (EA) prepared for Aurecon in respect of proposed NBN site 'Wallaga Lake', NSW.</p> <p>The opinions and declarations in this EA are ascribed to Environmental Property Services (EPS) and are made in good faith and trust that such statements are neither false nor misleading.</p> <p>In preparing this EA, EPS has considered and relied upon information obtained from the public domain, supplemented by discussions between key EPS staff, representatives from Aurecon and other consultants.</p>		
Aurecon Contact:	<p>Stuart Melville Town Planner, Environmental & Advisory Aurecon 116 Military Rd, Neutral Bay NSW 2089 Ph: (02) 9465 5427</p>		
Prepared by:	<table><tr><td><p>Lily Gorrell Ecologist Environmental Property Services PO Box 348 NELSON BAY NSW 2315 Ph: 02 4981 1600</p></td><td> Lily Gorrell</td></tr></table>	<p>Lily Gorrell Ecologist Environmental Property Services PO Box 348 NELSON BAY NSW 2315 Ph: 02 4981 1600</p>	 Lily Gorrell
<p>Lily Gorrell Ecologist Environmental Property Services PO Box 348 NELSON BAY NSW 2315 Ph: 02 4981 1600</p>	 Lily Gorrell		
Application subject land address:	<p>Wallaga Lake Lot 3 DP 565460 849 Wallaga Lake Road Wallaga Lake NSW 2546</p>		

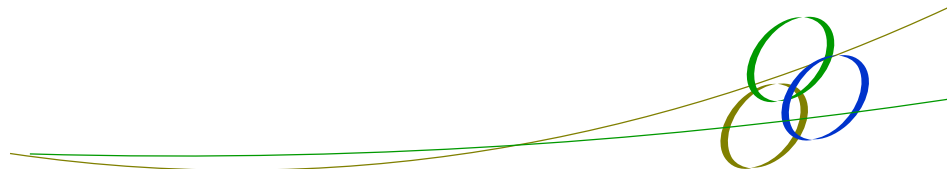
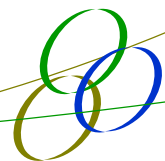


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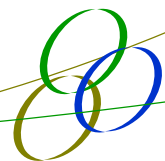
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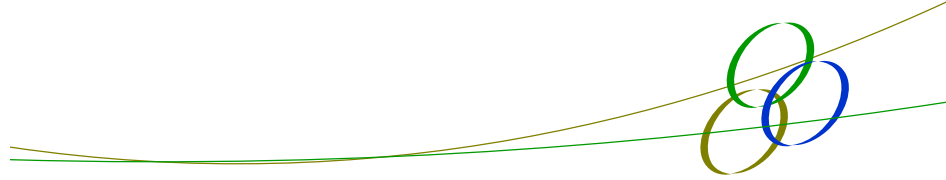
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Abbreviations

ABBREVIATION	DESCRIPTION
APZ	Asset Protection Zone
DA	Development Application
EP&A Act	NSW Environmental Planning and Assessment Act 1979
EPBC	Environment Protection and Biodiversity Conservation Act 1999
ISEPP	State Environmental Planning Policy (Infrastructure) 2007
KTP	Key Threatening Process
LEP	Local Environment Plan
LGA	Local Government Area
NBN	National Broadband Network
NES	National Environmental Significance
NSW	New South Wales
NV Act	NSW Native Vegetation Act 2003
OEH	NSW Office of Environment and Heritage
SEWPAC	Commonwealth Department of Sustainability, Environment, Water, Populations and Communities
TSC	Threatened Species Conservation Act 1995



1 BACKGROUND AND INTRODUCTION

1.1 Background

Environmental Property Services (EPS) was engaged to prepare an Ecological Assessment Report (EA) for the proposed National Broadband Network (NBN) Expansion Project. This report details the ecology assessment for a proposed site at Wallaga Lake, New South Wales (NSW), as part of the NBN Project.

1.2 Licensing

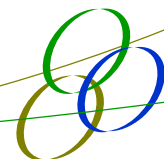
The field work component of this EA was conducted in accordance with a *National Parks and Wildlife Act 1974* (NP&W Act) Section 132 (c) Scientific Licence (SL100772). The licence permits the undertaking of biodiversity assessments, Species Impacts Statements, ecological surveys and abiotic sampling as part of flora and fauna survey work.

1.3 Introduction and Project Description

The proposed NBN tower site is located at 849 Wallaga Lake Road on the crest of a hill in undeveloped land approximately 880m south of Wallaga Lake town centre, NSW 2546. An aerial photo showing the locality, the location of the proposed activity and the NBN compound is shown in Figure 1-2.

The proposal includes the installation of a 40m high monopole and NBN outdoor cabinets to be installed in the proposed NBN compound on a concrete slab on a Greenfield site. Associated infrastructure includes but is not limited to a cable ladder, antennas, electrical line and conduit surrounded by a high chain wire security fence with an access gate. The proposed NBN compound will be approximately 10m x 8m.

A 10m Asset Protection Zone (APZ) surrounding the tower and cabinets is also required. We use the term 'subject site' throughout this report to refer to the proposed NBN compound and the 10m APZ.

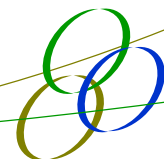


1.4 Site Overview

The subject site is located in a flat area next to a roadway within sight of the coast. This site contained vegetation dominated by White Stringybark (*Eucalyptus globoidea*), Southern Mahogany (*Eucalyptus botryoides*), Blue-leaved Stringybark (*Eucalyptus agglomerata*), Coast Grey Box (*Eucalyptus bosistoana*), Red Bloodwood (*Corymbia gummifera*) with Rough-barked Apple (*Angophora floribunda*) also present. The mid-canopy layer was mostly absent however, the shrub layer consisted Stiff-leaf wattle (*Acacia obtusifolia*) and Sweet Pittosporum (*pittosporum undulatum*) with Burrawang (*Macrozamia communis*) also present, however not within the APZ of the site and a ground cover of native and exotic grasses, native forbs and leaf litter as depicted in Figure 1-1 below (refer to Appendix 1 for additional site photographs). No hollow-bearing trees were recorded within the APZ and compound of the subject site.



Figure 1-1: Typical Vegetation at Site Location.



Summary of Land Details	
Lot and Deposited Plans	Lot 3 DP 565460
Address	849 Wallaga Lake Road Wallaga Lake, NSW, 2546
Site Coordinates	Datum: MGA (GDA 94) Zone 56 Lat: -36.37714 Long: 150.071351
Local Government Area	Bega Valley Council
Catchment Management	Southern Rivers CMA
Primary existing Land Use	Private; Rural
Current Zoning	R2 Low Density Residential (Bega Valley LEP 2013)



Figure 1-2: Aerial photograph of the Wallaga Lake site and the locality.

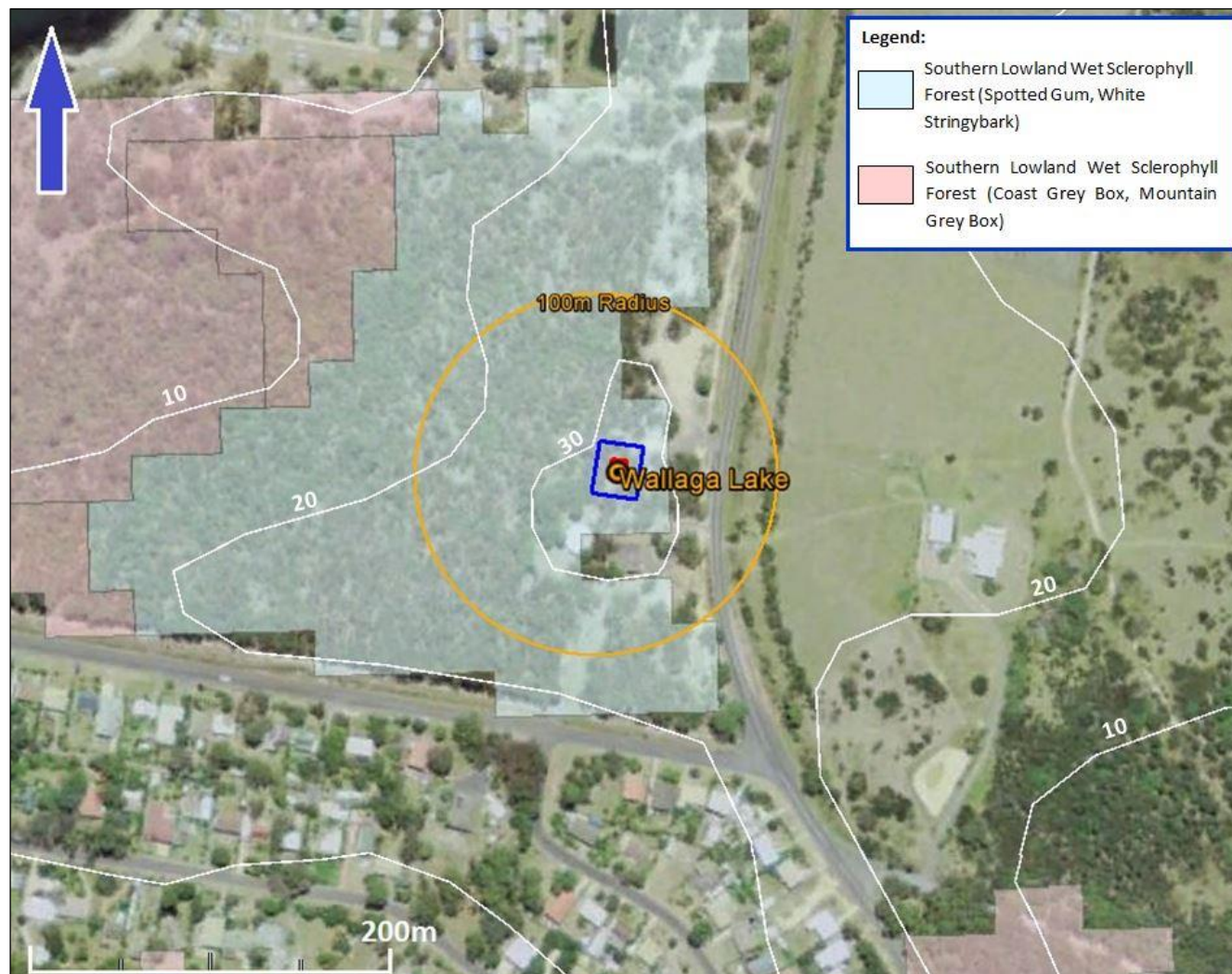
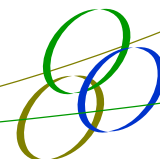
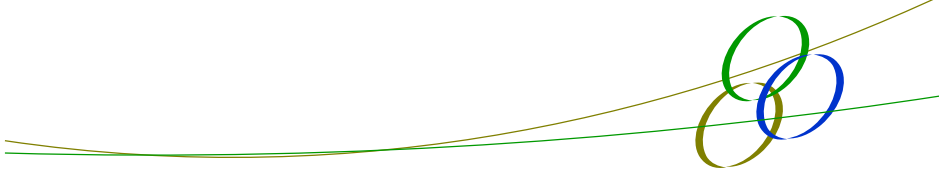


Figure 1-3: Surrounding Vegetation Communities (Vegetation information source: Six viewer: Shoalhaven_Biometric_v2_E_3900)



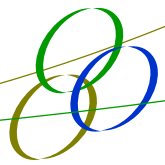
Figure 1-4: Proposed Wallaga Lake Compound Site, Approximate 10m APZ and trees to be removed.



2 AIMS AND OBJECTIVES

The aims and objectives of the ecology assessment are to:

- Review and assess NSW and Federal Government threatened species, wildlife and mapping databases;
- Review relevant legislation, guidelines and strategies that pertain to each site and the local area;
- Document the vegetation communities present within the site and determine their conservation significance;
- Assess the presence and quality of habitat for threatened flora and fauna species;
- Review wildlife mapping corridors and ecological significance that may relate to each site;
- Review aerial mapping and site plans for site identification;
- Review potential site ecological constraints; and
- Liaise and discuss with relevant agency experts, ecologists etc. as required.



3 LEGISLATIVE CONTEXT

This report has been prepared in accordance with the requirements of the following legislation:

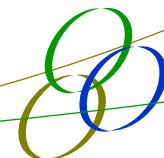
3.1 Commonwealth Legislation

3.1.1 Environment Protection and Biodiversity Conservation Act 1999

The primary objective of the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) is to 'provide for the protection of the environment, especially those aspects of the environment that are Matters of National Environmental Significance' (Matters of NES). Environmental approvals under the EPBC Act may be required for an 'action' that is likely to have a significant impact on Matters of NES being:

- World Heritage Areas;
- National Heritage Places;
- Ramsar wetlands of international importance;
- Nationally listed threatened species and ecological communities;
- Listed migratory species;
- Commonwealth marine areas;
- Nuclear actions;
- Great Barrier Reef Marine Park; and
- A water resource in relation to coal seam gas development and large coal mining development.

Of potential relevance to the site are Matters of NES which include nationally listed threatened species, ecological communities and listed migratory species. Where there is the potential for a proposal to have a significant impact on any Matter of NES a Referral under the EPBC Act is submitted to Department of Sustainability, Environment, Water, Population and Communities (SEWPAC) for approval.



3.2 NSW State Legislation

3.2.1 Environmental Planning and Assessment Act 1979

The *Environmental Planning and Assessment Act 1979* (EP&A Act) is the principal planning legislation for NSW, providing a framework for the overall environmental planning and assessment of development proposals. Various legislative instruments, such as the *NSW Threatened Species Conservation Act 1995* (TSC Act), are integrated with EP&A Act and have been reviewed separately. Clause 5A of the EP&A Act provides an outline of the ecological matters that must be taken into account in deciding whether there is likely to be a significant effect on threatened species, populations or ecological communities, or their habitats.

3.2.2 State Environmental Planning Policy (Infrastructure) 2007

The aim of the *State Environmental Planning Policy (Infrastructure) 2007* (ISEPP) is to facilitate the effective delivery of infrastructure across the State. The ISEPP allows for certain types of infrastructure to be permissible with or without consent or as Exempt or Complying Development.

3.2.3 Threatened Species Conservation Act 1995

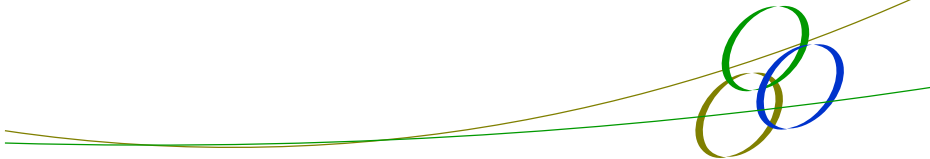
The *Threatened Species Conservation Act 1995* (TSC Act) aims to protect and encourage the recovery of threatened species, populations and communities listed under the Act. The TSC Act is integrated with the EP&A Act and requires consideration of whether a development (Part 4 of the EP&A Act) or an activity (Part 5 of the EP&A Act) is likely to significantly affect threatened species, populations and ecological communities or their habitat.

The potential impact of development of the site on any threatened species, populations or communities is assessed using Assessments of Significance under Section 5A of the EP&A Act (also known as a seven-part test). If the impacts are found to be 'significant', a Species Impact Statement (SIS) and concurrence from the Director General of the Office of Environment and Heritage (OEH) is required.

3.2.4 Native Vegetation Act 2003

Clause 22 of the *Native Vegetation Act 2003* states clearing for routine agricultural management activities is permitted:

- (1) *Clearing for routine agricultural management activities is permitted.*
- (2) *This section does not authorise any clearing of native vegetation:*

- 
- (a) if it exceeds the minimum extent necessary for carrying out the activity, or*
 - (b) if it is done for a work, building or structure before the grant of any statutory approval or other authority required for the work, building or structure.*

The *Native Vegetation Regulation 2013* Clause 36 provides the following definition with regards to clearing of vegetation for telecommunication infrastructure:

The construction, operation and maintenance of telecommunications infrastructure are routine agricultural management activities.

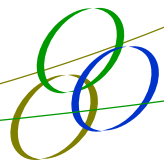
Therefore clearing of vegetation for the construction of telecommunication towers and associated infrastructure and the ongoing maintenance of the site, including any Asset Protection Zone (APZ) is permitted as a routine agricultural management activity without the requirement for a separate approval under the *Native Vegetation Act 2003*.

3.2.5 SEPP 44 – Koala Habitat Protection

SEPP 44 applies to each local government area (LGA) listed in Schedule 1 of the SEPP. Part 2 of SEPP 44 outlines development control of koala habitats only applies to the following land:

- (a) that is land to which this Policy applies, and*
- (b) that is land in relation to which a development application has been made, and*
- (c) that:*
 - (i) has an area of more than 1 hectare, or*
 - (ii) has, together with any adjoining land in the same ownership, an area of more than 1 hectare, whether or not the development application applies to the whole, or only part, of the land.*

The site investigation determined that there is one 'Secondary' koala feed tree species present being Coast Grey Box (*Eucalyptus bosistoana*) and two 'Stringybark/supplementary' Koala feed tree species present being White Stringybark (*Eucalyptus globoidea*) Blue-leaved Stringybark (*Eucalyptus agglomerata*) as listed under Schedule 2 of SEPP 44 for the Beg Valley Catchment Management Area. The construction of the proposed NBN tower and associated infrastructure only involves the removal of a limited amount of vegetation and the impact to this species will be minimal (see Appendix 8).



4 METHODS AND SURVEY ASSESSMENT TECHNIQUES

The methods undertaken to complete the assessment were in accordance with the following:

- NSW Office Environment Heritage (OEH) “*Field survey methods*” www.threatenedspecies.environment.nsw.gov.au; and
- OEH draft “*Threatened Biodiversity Survey and Assessment: Guidelines for Developments and Activities - Working Draft, November 2004*”

The methods are divided into two specific stages, including (1) Preliminary/Desktop Investigations and (2) Field Surveys and Assessments. Preliminary investigations included literature and database reviews while field surveys included site inspections and a rapid assessment of the site for flora, fauna and habitat.

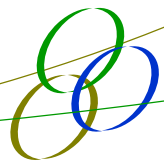
4.1 Database Review

A list of threatened species, populations and ecological communities that had been previously reported or modelled to occur within a defined radius of the subject site (the ‘investigation area’), was obtained by undertaking a search of the following online and publicly accessible databases.

4.1.1 NSW Government

The investigation area, or defined radius in which the state search was undertaken included an entire search of all ‘known’, ‘predicted’ and ‘recorded’ species in the *Bateman IBRA subregion*. As a result, the ‘recorded’ species information includes sightings/records from this entire search area.

- NSW BioNet - <http://www.bionet.nsw.gov.au/>
- Threatened Species, Populations, and Ecological Communities of NSW - <http://www.threatenedspecies.environment.nsw.gov.au/tsprofile/index.aspx>
- SIX Spatial Information Exchange - http://maps.six.nsw.gov.au/apps/channels_3.5/?config=vegetation



4.1.2 Australian Government

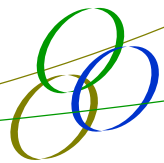
The investigation area or defined radius in which the federal search was undertaken included a 2km radius of the site.

- Commonwealth Department of Sustainability, Environment, Water, Population and Communities Protected Matters search tool
<http://www.environment.gov.au/epbc/pmst/index.html>

4.2 Flora and Fauna Survey

Due to the small size of the proposed compound and 10m APZ, the field survey consisted of a rapid site assessment on 8th May 2014 for approximately 2 hours. The site was identified by the presence of four marker pegs in the ground showing the four corners of the proposed compound.

A habitat assessment was conducted and the vegetation community present documented, along with a search for threatened flora and fauna species. The habitat assessment included recording the quality and presence of habitat for threatened fauna (hollow-bearing trees, nectar and seed producing trees and shrubs, leaf litter, fallen logs, burrows, rock outcrops and the presence of water). Additionally, assessment of the quality and presence of habitat for cryptic threatened flora species occurred. The location of trees within the compound and APZ were recorded using a handheld GPS (Garmin GPSMap62), photographs taken and trees marked with pink spray-paint. The coordinates of the four compound corner pegs were also recorded with the handheld GPS.



5 RESULTS AND DISCUSSION

5.1 Database Review

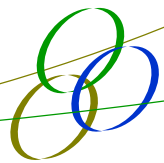
Raw data obtained from searches of NSW and Commonwealth databases are shown in Appendices 2 and 3 and are summarised below:

- A total of 93 threatened fauna species listed under TSC Act and / or EPBC Act had either been recorded, known or predicted to occur within the investigation area;
- A total of 19 threatened flora species listed under TSC Act and / or EPBC Act had either been recorded, known or predicted to occur within the investigation area;
- A total of eight Endangered Ecological Communities (EEC) listed under TSC Act and / or EPBC Act had either been recorded, known or predicted to occur within the investigation area;
- A total of 44 Listed Migratory species, listed under EPBC Act were likely to occur within the investigation area;
- No critical habitat listed under the TSC Act occurred within the investigation area;
- A total of 33 Key Threatening Processes (KTP's) listed under the TSC Act were predicted to occur within the investigation area; and
- A total of 27 invasive species listed under the EPBC Act were predicted to occur within the investigation area.

Each of these species, EEC, KTPs and invasive species were assessed to ascertain whether they were likely to occur on the subject site and/or be impacted by the proposed activity (Appendices 4-7).

5.2 Regional Vegetation Mapping

The subject site was mapped as 'Southern Lowland Wet Sclerophyll Forests'. The description for this community is currently under review; however, the current description is of a Tall dense eucalypt forests with straight-boled trees over 30m tall. Understorey includes an open stratum of tall mesophyllous shrubs, occasional vines and a continuous herbaceous groundcover (Figure 1-3).



5.3 Field Surveys

5.3.1 Vegetation Communities

The proposed compound was located in a flat area next to a roadway within sight of the coast at approximately 30m elevation. The vegetation surrounding the compound was dominated by White Stringybark (*Eucalyptus globoidea*), Southern Mahogany (*Eucalyptus botryoides*), Blue-leaved Stringybark (*Eucalyptus agglomerata*), Coast Grey Box (*Eucalyptus bosistoana*), Red Bloodwood (*Corymbia gummifera*) with Rough-barked Apple (*Angophora floribunda*) also present. The canopy was moderately open at the subject site (40% projected foliage cover; PFC). The mid-canopy layer was mostly absent however, the shrub layer consisted Stiff-leaf wattle (*Acacia obtusifolia*) and Sweet Pittosporum (*pittosporum undulatum*) with Burrawang (*Macrozamia communis*) also present, however not within the APZ of the site (25% PFC). A dense ground cover comprised of Lomandra (*Lomandra longifolia*), Kangaroo Grass (*Themeda australis*), Blue Flax-lily (*Dianella caerulea* var. *caerulea*), Paspalum (*Paspalum rugulosum*), Kidney Weed (*Dichondra repens*) and Blady Grass (*Imperata cylindrical*) (90% PFC) with a few bare earth patches and moderate leaf litter and fallen timber (See Appendix 1 for site photographs).

This vegetation assemblage loosely corresponds to the vegetation type, “Southern Lowland Wet Sclerophyll Forests”. The dominant tree species are not the most common species for this community, however they do form part of the community. This vegetation community is not consistent with the description of any threatened ecological community (listed under TSC Act or EPBC Act) indicated as potentially occurring within the subject site during the database review (see Appendix 5).

We estimate that the following trees occur within the 10m APZ and will need to be removed (see Table 5-1):

- Two *E. botryoides* (Southern Mahogany; 37 - 45 cm diameter at breast height; DBH);
- Four *E. globoidea* (White Stringybark; 22-73 cm DBH);
- Four *E. agglomerata* (Blue-leaved Stringybark; 23-38 cm DBH);
- Three *C. gummifera* (Red Bloodwood; 35-46 cm DBH)
- Five *E. bosistoana* (Coast Grey box; 32-43 cm DBH); and
- One *A. obtusifolia* (Stiff leaf Wattle; 28 cm DBH).



5.3.2 Habitat Assessment

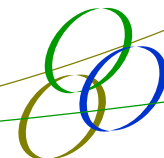
Habitat is defined under the *TSC Act 1995*, as an area or areas occupied, or periodically or occasionally occupied, by a species, population or ecological community and includes any biotic or abiotic component. The subject site contained a shallow patchy cover (< 1cm) cover of dry leaf litter (10% PFC). Fallen logs were present within the APZ however, none were of a size to contain hollows. The subject site did not contain rock outcrops and the subject site did not support an area of critical habitat as defined under the *Threatened Species Conservation Act 1995*.

Tree Data Table

The following table outlines those trees within the 10m APZ that require removal (see Figure 1-4 for hollow-bearing tree locations).

Table 5-1: Tree Data

Spray paint number	Species	Height (m)	DBH (cm)	Distance from compound fence (m)	Habitat Value	Canopy Cover %	Removal
Tree 1	<i>E. botryooides</i>	17	45	1	None	4	Yes
Tree 2	<i>E. globoidea</i>	17	35	4.6	None	1	Yes
Tree 3	<i>E. agglomerata</i>	16	38	2.9	None	2	Yes
Tree 4	<i>E. bosistoana</i>	17	43	9	None	3	Yes
Tree 5	<i>E. agglomerata</i>	18	38	8.8	None	4	Yes
Tree 6	<i>E. bosistoana</i>	18	32	8.8	None	4	Yes
Tree 7	<i>E. globoidea</i>	18	35	5.1	None	3	Yes
Tree 8	<i>E. agglomerata</i>	19	38	2.5	None	3	Yes
Tree 9	<i>E. bosistoana</i>	18	41	9	None	1	Yes
Tree 10	<i>E. globoidea</i>	13	22	5.2	None	1	Yes
Tree 11	<i>E. globoidea</i>	20	73	6.3	1 small dead limb with minor cracks	10	Yes
Tree 12	<i>Acacia obtusifolia</i>	18	28	9.1	None	4	Yes
Tree 13	<i>E. botryooides</i>	18	37	1	None	3	Yes
Tree 14	<i>C. gummifera</i>	18	35	3.6	None	5	Yes
Tree 15	<i>E. agglomerata</i>	10	23	8	None	1	Yes



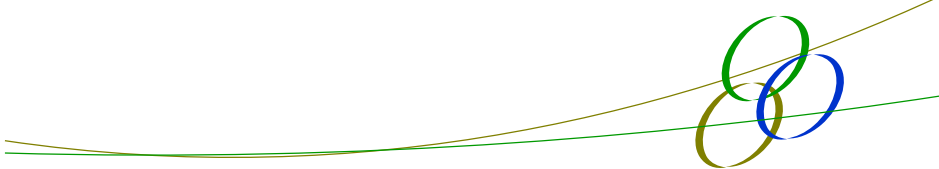
Spray paint number	Species	Height (m)	DBH (cm)	Distance from compound fence (m)	Habitat Value	Canopy Cover %	Removal
Tree 16	<i>C. gummifera</i>	16	36	8.5	None	2	Yes
Tree 17	<i>C. gummifera</i>	18	46	8.5	None	4	Yes
Tree 18	<i>E. bosistoana</i>	16	32	8	None	2	Yes
Tree 19	<i>E. bosistoana</i>	18	37	5.8	None	3	Yes

Hollow-bearing trees provide key habitat resources for a number of threatened fauna species that have the potential to occur within the subject site. The site did not contain any hollow bearing trees as assessed visually from the ground.

In order to meet the requirements outlined in the Rural Fire Service (RFS) Practice Note 1/11 (NSW RFS, 2012) a 10m APZ must be established surrounding the compound and associated infrastructure. It is recommended that this APZ be comprised entirely of an Inner Protection Area (IPA). An IPA must be such that:

- Tree canopy cover should be less than 15%;
- There is minimal fine fuel at ground level which could be set alight by a bushfire; and
- Any vegetation in the IPA does not provide a path for the transfer of fire to the development – that is, the fuels are discontinuous.

In order to meet these requirements it is recommended that all trees be removed within the APZ to reach the 15% canopy cover and 2m spacing between canopies. All trees for removal are classified as regrowth except for one remnant tree located within the 10m APZ. All trees within the APZ have been physically marked with pink spray paint and correspond to the numbers in table 5-1 (also see Appendix 1 for photographs).



Disturbance History

The subject site was located in a small clearing next to a roadway and surrounded by rural residential property. The understorey was not regularly maintained by slashing or mowing. There is evidence on the base and trunk of larger trees of fire most likely 2-3 years ago and minor weed invasion.

Regrowth

The subject site did contain a number of semi-mature trees. However, it is unlikely that the entire subject site is classified as regrowth under the NV Act as there was one trees 73 cm DBH at the site. Therefore, the site is classified as being Remnant as it is unlikely that this larger tree has regrown since 1990.

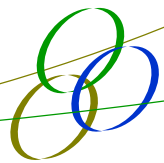
Habitat Connectivity

The vegetation within the subject site is connected to native vegetation to the west (Figure 1-3). The subject site is surrounded by rural residential land-use and the narrow area of land in which the site is located in does not provide for good connectivity within the broader landscape. The site is already situated at the edge of a cleared area, being next to a road and therefore the proposed compound and APZ will remove only a very small portion of native vegetation (maximum 0.04 ha) and will not further severe connectivity in the landscape.

5.3.1 Threatened Species

There were no threatened flora or fauna species observed during field surveys. Following the site inspection and habitat assessment, an assessment of the likelihood of occurrence of each threatened species, population and community (identified through the database searches) was undertaken (Appendices 4-5). No threatened flora species or ecological communities were considered likely to occur. However, we found that 2 threatened fauna species had some potential to occur within the subject site, being:

- *Phascolarctos cinereus* Koala
- *Sminthopsis leucopus* White-footed Dunnart



6 IMPACT ASSESSMENT

6.1 Environmental Protection and Biodiversity Conservation Act 1999

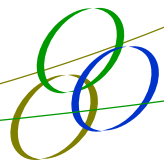
No threatened species or ecological communities listed under the EPBC Act were recorded within the subject site during surveys. However, one species listed under EPBC Act were considered at least moderately likely to occur within the subject site on some occasion (see Appendix 4). As only a very small area of potential foraging habitat for this species will be removed as a result of the proposal, it is considered unlikely that a significant impact on this threatened species will occur (see Appendix 8).

6.2 Threatened Species Conservation Act 1995 & Environmental Planning & Assessment Act 1979

No threatened species or ecological communities listed under the TSC Act were recorded within the subject site during surveys. However, two fauna species listed under TSC Act were considered at least moderately likely to occur within the subject site on some occasion (see Appendix 4). As only a very small area of potential foraging habitat for these species will be removed as a result of the proposal, it is considered unlikely that a significant impact on these threatened species will occur (see Appendix 8).

6.3 Direct Impacts

The proposed subject site (compound plus 10m APZ) will require the clearing or modification of a maximum of 20m x 20m (0.04 ha) of native vegetation. The compound has been located in a small clearing to minimise the amount of vegetation clearing required and so this amount is an over-estimate. All vegetation within the compound footprint is required to be removed for the tower and associated infrastructure to be built. Additionally, within the APZ (maximum 10m radius from tower and cabinets) trees will be removed and the understorey regularly maintained. Fallen logs and woody debris will need to be removed from the subject site as part of the proposal. However, we have recommended for these to be relocated to outside of the APZ, to provide ongoing habitat for fauna species.



6.3.1 Threatened Species

We undertook an assessment of significance (seven-part test; Appendix 8) for each threatened species considered likely to occur within the subject site (Appendix 4) and concluded that the proposal was unlikely to have a significant impact on any threatened species due to the small amount of vegetation to be removed and relocation of woody debris nearby. Additionally, we have provided several recommendations to minimise potential impacts on these species in Section 7.1.

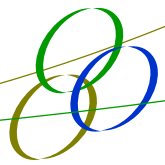
6.3.2 Key Threatening Processes and Invasive Species

The proposal is likely to have a minor contribution to two key threatening processes (KTPs) including “clearing of native vegetation “and may potentially contribute to “infection of native plants by *Phytophthora cinnamomi*”, listed under TSC Act. However, the contribution of the proposal to these KTPs is considered to be very small, particularly as we have recommended that fallen timber and woody debris be relocated to outside of the APZ and that equipment hygiene protocols be enforced during construction.

Additionally, provided the recommended equipment wash-down and hygiene protocols are followed to minimise weed spread, the proposed activity will not contribute to or enhance the presence of any invasive species listed under the EPBC Act.

6.4 Indirect Impacts

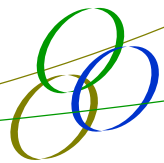
Providing that the recommended erosion and sediment controls are implemented during construction to minimise indirect impacts on adjacent areas, the proposed activity is unlikely to lead to any indirect impacts on threatened species or their habitats.



7 CONCLUSION AND RECOMMENDATIONS

This ecological assessment has reviewed and assessed the ecological attributes of a site at Wallaga Lake, NSW. The assessment revealed that:

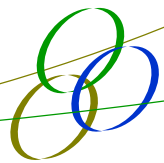
- A total of two threatened fauna species listed under TSC Act and / or EPBC Act were considered to have at least a moderate chance of occurrence within the subject site at some stage;
- No threatened flora species or endangered ecological communities were considered likely to occur within the subject site;
- No critical habitat listed under the TSC Act occurred within the investigation area;
- The subject site contained vegetation dominated by White Stringybark (*Eucalyptus globoidea*), Southern Mahogany (*Eucalyptus botryoides*), Blue-leaved Stringybark (*Eucalyptus agglomerata*), Coast Grey Box (*Eucalyptus bosistoana*), Red Bloodwood (*Corymbia gummifera*) with a moderate native shrub understorey and a moderate to high groundcover of native and exotic species;
- No hollow-bearing tree were recorded within the APZ or compound of the subject site;
- Vegetation clearing will be required within the proposed compound and the APZ will need to be undertaken and the understorey regularly maintained; and
- Providing the recommendations outlined below are followed the proposed activity is unlikely to significantly impact any threatened / migratory species or ecological community and their habitat and as such, no further assessments are required.



7.1 Recommendations

We provide the following recommendations to minimise potential impacts of the proposal on threatened species, populations and ecological communities that may occur within the subject site. Our assessment of significance has been undertaken on the assumption that these recommendations will be implemented as described.

- Ensure the extent of clearing is clearly marked in the field prior to the commencement of vegetation clearing. Ensure that only the minimum vegetation clearing required is undertaken;
- Relocate all fallen timber and woody debris currently on the ground to nearby (outside of the APZ). Exercise caution in moving timber to minimise potential impacts to fauna that may be occupying fallen logs;
- Have the contact details of the nearest veterinary clinic and accredited wildlife carer in the case of injured fauna;
- Ensure that equipment is free of plant material and soil that may contain weed seeds or soil-borne diseases prior to entering the site. Vehicles should be washed-down at an appropriate location where weeds are regularly managed prior to commencing work; and
- Ensure appropriate erosion and sediment control measures are implemented during the construction-phase to minimise potential indirect offsite impacts.

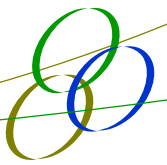


8 REFERENCES

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http://www.environment.nsw.gov.au/atlaspublicapp/UI_Modules/ATLAS_/AtlasSearch.aspx



Appendix 1

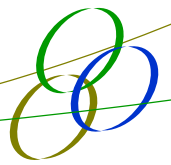
Site Photos



Site Photo 1 – Looking North



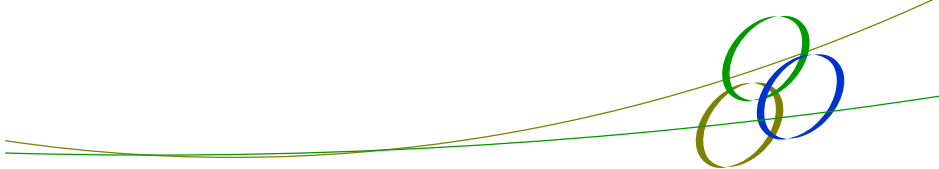
Site Photo 2 – Looking East



Site Photo 3 – Looking South



Site Photo 4 – Looking West



Appendix 2

Raw Data from the BioNet Atlas of NSW Wildlife Website












Data from the BioNet Atlas of NSW Wildlife website, which holds records from a number of custodians. The data are only indicative and cannot be considered a comprehensive inventory, and may contain errors and omissions.

Species listed under the Sensitive Species Data Policy may have their locations denatured (^ rounded to 0.1°; ^^ rounded to 0.01°).

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




Search criteria : Public Report of all Valid Records of Threatened (listed on TSC Act 1995) or Commonwealth listed Entities in Southern Rivers - Bateman CMA cut by IBRA Subregion returned a total of 3,721 records of 144 species.











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Kingdom	Class	Family	Species Code	Scientific Name	Exotic	Common Name	NSW status	Comm . status	Records	Info
Animalia	Amphibia	Myobatrachidae	3042	<i>Heleioporus australiacus</i>		Giant Burrowing Frog	V,P	V	3	
Animalia	Amphibia	Myobatrachidae	3073	<i>^Mixophyes balbus</i>		Stuttering Frog	E1,P,2	V	P	
Animalia	Amphibia	Hylidae	3166	<i>Litoria aurea</i>		Green and Golden Bell Frog	E1,P	V	2	
Animalia	Amphibia	Hylidae	3039	<i>Litoria littlejohni</i>		Littlejohn's Tree Frog	V,P	V	1	
Animalia	Reptilia	Elapidae	2676	<i>^Hoplocephalus bungaroides</i>		Broad-headed Snake	E1,P,2	V	2	
Animalia	Aves	Anatidae	0214	<i>Stictonetta naevosa</i>		Freckled Duck	V,P		2	
Animalia	Aves	Columbidae	0023	<i>Ptilinopus superbus</i>		Superb Fruit-Dove	V,P		6	
Animalia	Aves	Diomedidae	0846	<i>Diomedea antipodensis</i>		Antipodean Albatross	V,P	V	9	
Animalia	Aves	Diomedidae	0086	<i>Diomedea exulans</i>		Wandering Albatross	E1,P	E,J	25	
Animalia	Aves	Diomedidae	0847	<i>Diomedea gibsoni</i>		Gibson's Albatross	V,P	V	56	
Animalia	Aves	Diomedidae	0091	<i>Thalassarche cauta</i>		Shy Albatross	V,P	V	9	




Animalia	Aves	Diomedidae	0088	<i>Thalassarche melanophris</i>	Black-browed Albatross	V,P	V	46	
Animalia	Aves	Procellariidae	0072	<i>Ardenna carneipes</i>	Flesh-footed Shearwater	V,P	J,K	1	
Animalia	Aves	Procellariidae	0929	<i>Macronectes giganteus</i>	Southern Giant Petrel	E1,P	E	1	
Animalia	Aves	Procellariidae	0937	<i>Macronectes halli</i>	Northern Giant-Petrel	V,P	V	3	
Animalia	Aves	Procellariidae	0971	<i>Pterodroma solandri</i>	Providence Petrel	V,P	J	4	
Animalia	Aves	Procellariidae	0067	<i>Puffinus assimilis</i>	Little Shearwater	V,P		5	
Animalia	Aves	Ardeidae	0197	<i>Botaurus poiciloptilus</i>	Australasian Bittern	E1,P	E	3	
Animalia	Aves	Ardeidae	0196	<i>Ixobrychus flavicollis</i>	Black Bittern	V,P		6	
Animalia	Aves	Accipitridae	0218	<i>Circus assimilis</i>	Spotted Harrier	V,P		K	
Animalia	Aves	Accipitridae	0231	<i>Hamirostra melanosternon</i>	Black-breasted Buzzard	V,P,3		1	
Animalia	Aves	Accipitridae	0225	<i>Hieraaetus morphnoides</i>	Little Eagle	V,P		15	
Animalia	Aves	Accipitridae	0230	<i>Lophoictinia isura</i>	Square-tailed Kite	V,P,3		46	
Animalia	Aves	Accipitridae	8739	<i>Pandion cristatus</i>	Eastern Osprey	V,P,3		38	
Animalia	Aves	Falconidae	0236	<i>Falco hypoleucos</i>	Grey Falcon	E1,P,2		1	
Animalia	Aves	Falconidae	0238	<i>Falco subniger</i>	Black Falcon	V,P		1	
Animalia	Aves	Burhinidae	0174	<i>Burhinus grallarius</i>	Bush Stone-curlew	E1,P		6	
Animalia	Aves	Burhinidae	0175	<i>Esacus magnirostris</i>	Beach Stone-curlew	E4A,P		P	
Animalia	Aves	Haematopodidae	0131	<i>Haematopus fuliginosus</i>	Sooty Oystercatcher	V,P		117	
Animalia	Aves	Haematopodidae	0130	<i>Haematopus longirostris</i>	Pied Oystercatcher	E1,P		301	
Animalia	Aves	Charadriidae	0141	<i>Charadrius leschenaultii</i>	Greater Sand-plover	V,P	C,J,K	6	

Animalia	Aves	Charadriidae	0139	<i>Charadrius mongolus</i>	Lesser Sand-plover	V,P	C,J,K	5	
Animalia	Aves	Charadriidae	0138	<i>Thinornis rubricollis</i>	Hooded Plover	E4A,P		95	
Animalia	Aves	Scolopacidae	0166	<i>Calidris alba</i>	Sanderling	V,P	C,J,K	8	
Animalia	Aves	Scolopacidae	0161	<i>Calidris ferruginea</i>	Curlew Sandpiper	E1,P	C,J,K	11	
Animalia	Aves	Scolopacidae	0165	<i>Calidris tenuirostris</i>	Great Knot	V,P	C,J,K	13	
Animalia	Aves	Scolopacidae	0152	<i>Limosa limosa</i>	Black-tailed Godwit	V,P	C,J,K	5	
Animalia	Aves	Scolopacidae	0160	<i>Xenus cinereus</i>	Terek Sandpiper	V,P	C,J,K	K	
Animalia	Aves	Laridae	0120	<i>Onychoprion fuscata</i>	Sooty Tern	V,P		1	
Animalia	Aves	Laridae	0117	<i>Sternula albifrons</i>	Little Tern	E1,P	C,J,K	129	
Animalia	Aves	Cacatuidae	0268	<i>^^Callocephalon fimbriatum</i>	Gang-gang Cockatoo	V,P,3		126	
Animalia	Aves	Cacatuidae	0265	<i>^Calyptorhynchus lathami</i>	Glossy Black-Cockatoo	V,P,2		411	
Animalia	Aves	Psittacidae	0260	<i>Glossopsitta pusilla</i>	Little Lorikeet	V,P		65	
Animalia	Aves	Psittacidae	0309	<i>^^Lathamus discolor</i>	Swift Parrot	E1,P,3	E	39	
Animalia	Aves	Psittacidae	0305	<i>^^Neophema chrysogaster</i>	Orange-bellied Parrot	E4A,P,3	CE	P	
Animalia	Aves	Psittacidae	8913	<i>^^Pezoporus wallicus wallicus</i>	Eastern Ground Parrot	V,P,3		13	
Animalia	Aves	Strigidae	0246	<i>^^Ninox connivens</i>	Barking Owl	V,P,3		5	
Animalia	Aves	Strigidae	0248	<i>^^Ninox strenua</i>	Powerful Owl	V,P,3		187	
Animalia	Aves	Tytonidae	0250	<i>^^Tyto novaehollandiae</i>	Masked Owl	V,P,3		137	
Animalia	Aves	Tytonidae	9924	<i>^^Tyto tenebricosa</i>	Sooty Owl	V,P,3		155	
Animalia	Aves	Climacteridae	8127	<i>Climacteris picumnus victoriae</i>	Brown Treecreeper (eastern subspecies)	V,P		5	









Animalia	Aves	Acanthizidae	0500	<i>Calamanthus fuliginosus</i>	Striated Fieldwren	E1,P		5	
Animalia	Aves	Acanthizidae	0504	<i>Chthonicola sagittata</i>	Speckled Warbler	V,P		3	
Animalia	Aves	Meliphagidae	0603	<i>Anthochaera phrygia</i>	Regent Honeyeater	E4A,P	E	29	
Animalia	Aves	Meliphagidae	0448	<i>Epthianura albifrons</i>	White-fronted Chat	V,P		37	
Animalia	Aves	Neosittidae	0549	<i>Daphoenositta chrysoptera</i>	Varied Sittella	V,P		21	
Animalia	Aves	Pachycephalidae	0405	<i>Pachycephala olivacea</i>	Olive Whistler	V,P		12	
Animalia	Aves	Petroicidae	8367	<i>Melanodryas cucullata cucullata</i>	Hooded Robin (south-eastern form)	V,P		1	
Animalia	Aves	Petroicidae	0380	<i>Petroica boodang</i>	Scarlet Robin	V,P		3	
Animalia	Aves	Petroicidae	0382	<i>Petroica phoenicea</i>	Flame Robin	V,P		1	
Animalia	Aves	Petroicidae	0383	<i>Petroica rodinogaster</i>	Pink Robin	V,P		2	
Animalia	Aves	Estrildidae	0652	<i>Stagonopleura guttata</i>	Diamond Firetail	V,P		4	
Animalia	Mammalia	Dasyuridae	1008	<i>Dasyurus maculatus</i>	Spotted-tailed Quoll	V,P	E	32	
Animalia	Mammalia	Dasyuridae	1017	<i>Phascogale tapoatafa</i>	Brush-tailed Phascogale	V,P		4	
Animalia	Mammalia	Dasyuridae	1069	<i>Sminthopsis leucopus</i>	White-footed Dunnart	V,P		13	
Animalia	Mammalia	Peramelidae	1710	<i>Isodon obesulus obesulus</i>	Southern Brown Bandicoot (eastern)	E1,P	E	1	
Animalia	Mammalia	Phascolarctidae	1162	<i>Phascolarctos cinereus</i>	Koala	V,P	V	11	
Animalia	Mammalia	Burramyidae	1150	<i>Cercartetus nanus</i>	Eastern Pygmy-possum	V,P		8	

Animalia	Mammalia	Petauridae	1136	<i>Petaurus australis</i>	Yellow-bellied Glider	V,P		658	
Animalia	Mammalia	Petauridae	1137	<i>Petaurus norfolcensis</i>	Squirrel Glider	V,P		15	
Animalia	Mammalia	Pseudocheiridae	1133	<i>Petauroides volans</i>	Greater Glider population in the Eurobodalla local government area	E2,P		298	
Animalia	Mammalia	Potoroidae	1175	<i>Potorous tridactylus</i>	Long-nosed Potoroo	V,P	V	24	
Animalia	Mammalia	Pteropodidae	1280	<i>Pteropus poliocephalus</i>	Grey-headed Flying-fox	V,P	V	79	
Animalia	Mammalia	Emballonuridae	1321	<i>Saccolaimus flaviventris</i>	Yellow-bellied Sheath-tail-bat	V,P		7	
Animalia	Mammalia	Molossidae	1329	<i>Mormopterus norfolkensis</i>	Eastern Freetail-bat	V,P		30	
Animalia	Mammalia	Vespertilionidae	1353	<i>Chalinolobus dwyeri</i>	Large-eared Pied Bat	V,P	V	P	
Animalia	Mammalia	Vespertilionidae	1372	<i>Falsistrellus tasmaniensis</i>	Eastern False Pipistrelle	V,P		8	
Animalia	Mammalia	Vespertilionidae	1369	<i>Kerivoula papuensis</i>	Golden-tipped Bat	V,P		8	
Animalia	Mammalia	Vespertilionidae	1834	<i>Miniopterus schreibersii oceanensis</i>	Eastern Bentwing-bat	V,P		36	
Animalia	Mammalia	Vespertilionidae	1357	<i>Myotis macropus</i>	Southern Myotis	V,P		26	
Animalia	Mammalia	Vespertilionidae	1361	<i>Scoteanax rueppellii</i>	Greater Broad-nosed Bat	V,P		31	
Animalia	Mammalia	Otariidae	1882	<i>Arctocephalus pusillus doriferus</i>	Australian Fur-seal	V,P		14	








Animalia	Mammalia	Balaenidae	1561	<i>Eubalaena australis</i>	Southern Right Whale	E1,P	E	7	
Animalia	Mammalia	Balaenopteridae	1575	<i>Megaptera novaeangliae</i>	Humpback Whale	V,P	V	32	
Animalia	Mammalia	Physeteridae	1578	<i>Physeter macrocephalus</i>	Sperm Whale	V,P		1	
Plantae	Flora	Asteraceae	9458	<i>Senecio spathulatus</i>	Coast Groundsel	E1,P		P	
Plantae	Flora	Convolvulaceae	2234	<i>Wilsonia backhousei</i>	Narrow-leafed Wilsonia	V,P		3	
Plantae	Flora	Convolvulaceae	2235	<i>Wilsonia rotundifolia</i>	Round-leafed Wilsonia	E1,P		6	
Plantae	Flora	Droseraceae	6434	<i>Aldrovanda vesiculosa</i>	Waterwheel Plant	E1,P		6	
Plantae	Flora	Ericaceae	9508	<i>Budawangia gnidioides</i>	Budawangs Cliff-heath	V,P	V	4	
Plantae	Flora	Haloragaceae	9512	<i>Haloragis exalata</i> <i>subsp. exalata</i>	Square Raspwort	V,P	V	3	
Plantae	Flora	Myrtaceae	4038	<i>Eucalyptus aggregata</i>	Black Gum	V,P		K	
Plantae	Flora	Myrtaceae	4190	<i>Eucalyptus sturgissiana</i>	Ettrema Mallee	V,P		1	
Plantae	Flora	Orchidaceae	4386	<i>Caladenia tessellata</i>	Thick Lip Spider Orchid	E1,P,2	V	P	
Plantae	Flora	Orchidaceae	4415	<i>Cryptostylis hunteriana</i>	Leafless Tongue Orchid	V,P,2	V	5	
Plantae	Flora	Orchidaceae	11258	<i>Genoplesium vernale</i>	East Lynne Midge Orchid	V,P,2	V	4	
Plantae	Flora	Poaceae	9943	<i>Distichlis distichophylla</i>	Australian Saltgrass	E1,P		5	

Plantae	Flora	Polygonaceae	5280	<i>Persicaria elatior</i>	Tall Knotweed	V,P	V	7	
Plantae	Flora	Rhamnaceae	9857	<i>Pomaderris bodalla</i>	Bodalla Pomaderris	V,P		2	
Plantae	Flora	Rubiaceae	5680	<i>Galium australe</i>	Tangled Bedstraw	E1,P		4	
Plantae	Flora	Rutaceae	5769	<i>Correa baeuerlenii</i>	Chef's Cap Correa	V,P	V	19	
Plantae	Flora	Rutaceae	9530	<i>Zieria tuberculata</i>	Warty Zieria	V,P	V	57	
Plantae	Flora	Santalaceae	5871	<i>Thesium australe</i>	Austral Toadflax	V,P	V	8	
Community				<i>Bangalay Sand Forest of the Sydney Basin and South East Corner bioregions</i>	Bangalay Sand Forest of the Sydney Basin and South East Corner bioregions	E3		K	
Community				<i>Coastal Saltmarsh in the New South Wales North Coast, Sydney Basin and South East Corner Bioregions</i>	Coastal Saltmarsh in the New South Wales North Coast, Sydney Basin and South East Corner Bioregions	E3	V	K	
Community				<i>Freshwater Wetlands on Coastal Floodplains of the New South Wales North Coast, Sydney Basin and South East Corner Bioregions</i>	Freshwater Wetlands on Coastal Floodplains of the New South Wales North Coast, Sydney Basin and South East Corner Bioregions	E3		K	
Community				<i>Littoral Rainforest in the New South Wales North Coast, Sydney Basin and South East Corner Bioregions</i>	Littoral Rainforest in the New South Wales North Coast, Sydney Basin and South East Corner Bioregions	E3	CE	K	

Community	<i>Lowland Grassy Woodland in the South East Corner Bioregion</i>	Lowland Grassy Woodland in the South East Corner Bioregion	E3	CE	K	
Community	<i>River-Flat Eucalypt Forest on Coastal Floodplains of the New South Wales North Coast, Sydney Basin and South East Corner Bioregions</i>	River-Flat Eucalypt Forest on Coastal Floodplains of the New South Wales North Coast, Sydney Basin and South East Corner Bioregions	E3		K	
Community	<i>Swamp Oak Floodplain Forest of the New South Wales North Coast, Sydney Basin and South East Corner Bioregions</i>	Swamp Oak Floodplain Forest of the New South Wales North Coast, Sydney Basin and South East Corner Bioregions	E3		K	
Community	<i>Themeda grassland on seacliffs and coastal headlands in the NSW North Coast, Sydney Basin and South East Corner Bioregions</i>	Themeda grassland on seacliffs and coastal headlands in the NSW North Coast, Sydney Basin and South East Corner Bioregions	E3		K	

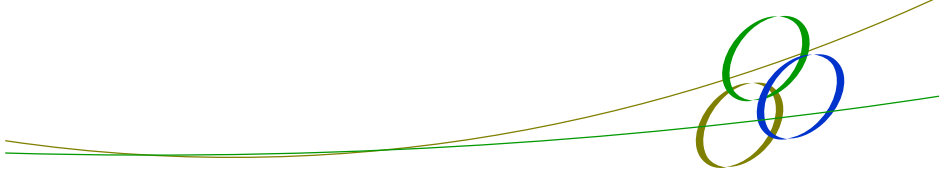
Threat	<i>Aggressive exclusion of birds from woodland and forest habitat by abundant Noisy Miners Manorina melanocephala</i>	Aggressive exclusion of birds from woodland and forest habitat by abundant Noisy Miners Manorina melanocephala	KTP		P	
Threat	<i>Alteration to the natural flow regimes of rivers and streams and their floodplains and wetlands</i>	Alteration to the natural flow regimes of rivers and streams and their floodplains and wetlands	KTP		P	
Threat	<i>Anthropogenic Climate Change</i>	Anthropogenic Climate Change	KTP	KTP	P	
Threat	<i>Bushrock removal</i>	Bushrock removal	KTP		P	
Threat	<i>Clearing of native vegetation</i>	Clearing of native vegetation	KTP	KTP	P	
Threat	<i>Competition and grazing by the feral European Rabbit, Oryctolagus cuniculus (L.)</i>	Competition and grazing by the feral European Rabbit, Oryctolagus cuniculus (L.)	KTP	KTP	P	
Threat	<i>Competition and habitat degradation by Feral Goats, Capra hircus Linnaeus 1758</i>	Competition and habitat degradation by Feral Goats, Capra hircus Linnaeus 1758	KTP	KTP	P	
Threat	<i>Competition from feral honey bees, Apis mellifera L.</i>	Competition from feral honey bees, Apis mellifera L.	KTP		P	

Threat	<i>Forest eucalypt dieback associated with over-abundant psyllids and Bell Miners</i>	Forest eucalypt dieback associated with over-abundant psyllids and Bell Miners	KTP		P	
Threat	<i>Herbivory and environmental degradation caused by feral deer</i>	Herbivory and environmental degradation caused by feral deer	KTP		P	
Threat	<i>High frequency fire resulting in the disruption of life cycle processes in plants and animals and loss of vegetation structure and composition</i>	High frequency fire resulting in the disruption of life cycle processes in plants and animals and loss of vegetation structure and composition	KTP		P	
Threat	<i>Importation of Red Imported Fire Ants Solenopsis invicta Buren 1972</i>	Importation of Red Imported Fire Ants Solenopsis invicta Buren 1972	KTP	KTP	P	
Threat	<i>Infection by Psittacine Circoviral (beak and feather) Disease affecting endangered psittacine species and populations</i>	Infection by Psittacine Circoviral (beak and feather) Disease affecting endangered psittacine species and populations	KTP	KTP	P	

Threat	<i>Infection of frogs by amphibian chytrid causing the disease chytridiomycosis</i>	Infection of frogs by amphibian chytrid causing the disease chytridiomycosis	KTP	KTP	P	
Threat	<i>Infection of native plants by Phytophthora cinnamomi</i>	Infection of native plants by Phytophthora cinnamomi	KTP	KTP	P	
Threat	<i>Introduction of the Large Earth Bumblebee Bombus terrestris (L.)</i>	Introduction of the Large Earth Bumblebee Bombus terrestris (L.)	KTP		P	
Threat	<i>Invasion and establishment of exotic vines and scramblers</i>	Invasion and establishment of exotic vines and scramblers	KTP		P	
Threat	<i>Invasion and establishment of Scotch Broom (Cytisus scoparius)</i>	Invasion and establishment of Scotch Broom (Cytisus scoparius)	KTP		P	
Threat	<i>Invasion and establishment of the Cane Toad (Bufo marinus)</i>	Invasion and establishment of the Cane Toad (Bufo marinus)	KTP	KTP	P	
Threat	<i>Invasion of native plant communities by African Olive Olea europaea subsp. cuspidata (Wall. ex G. Don) Cif.</i>	Invasion of native plant communities by African Olive Olea europaea subsp. cuspidata (Wall. ex G. Don) Cif.	KTP		P	

Threat	<i>Invasion of native plant communities by Chrysanthemoides monilifera</i>	Invasion of native plant communities by Chrysanthemoides monilifera	KTP		P	
Threat	<i>Invasion of native plant communities by exotic perennial grasses</i>	Invasion of native plant communities by exotic perennial grasses	KTP		P	
Threat	<i>Invasion of the Yellow Crazy Ant, Anoplolepis gracilipes (Fr. Smith) into NSW</i>	Invasion of the Yellow Crazy Ant, Anoplolepis gracilipes (Fr. Smith) into NSW	KTP		P	
Threat	<i>Invasion, establishment and spread of Lantana (Lantana camara L. sens. Lat)</i>	Invasion, establishment and spread of Lantana (Lantana camara L. sens. Lat)	KTP		P	
Threat	<i>Loss and degradation of native plant and animal habitat by invasion of escaped garden plants, including aquatic plants</i>	Loss and degradation of native plant and animal habitat by invasion of escaped garden plants, including aquatic plants	KTP	KTP	P	
Threat	<i>Loss of Hollow-bearing Trees</i>	Loss of Hollow-bearing Trees	KTP		P	
Threat	<i>Loss or degradation (or both) of sites used for hill-topping by butterflies</i>	Loss or degradation (or both) of sites used for hill-topping by butterflies	KTP		P	

Threat	<i>Predation and hybridisation by Feral Dogs, Canis lupus familiaris</i>	Predation and hybridisation by Feral Dogs, Canis lupus familiaris	KTP		P	
Threat	<i>Predation by Gambusia holbrooki Girard, 1859 (Plague Minnow or Mosquito Fish)</i>	Predation by Gambusia holbrooki Girard, 1859 (Plague Minnow or Mosquito Fish)	KTP		P	
Threat	<i>Predation by the European Red Fox Vulpes Vulpes (Linnaeus, 1758)</i>	Predation by the European Red Fox Vulpes Vulpes (Linnaeus, 1758)	KTP	KTP	P	
Threat	<i>Predation by the Feral Cat Felis catus (Linnaeus, 1758)</i>	Predation by the Feral Cat Felis catus (Linnaeus, 1758)	KTP	KTP	P	
Threat	<i>Predation, habitat degradation, competition and disease transmission by Feral Pigs, Sus scrofa Linnaeus 1758</i>	Predation, habitat degradation, competition and disease transmission by Feral Pigs, Sus scrofa Linnaeus 1758	KTP	KTP	P	
Threat	<i>Removal of dead wood and dead trees</i>	Removal of dead wood and dead trees	KTP		P	



Appendix 3

Raw Data EPBC Act Protected Matters Search Tool Results



EPBC Act Protected Matters Report

This report provides general guidance on matters of national environmental significance and other matters protected by the EPBC Act in the area you have selected.

Information on the coverage of this report and qualifications on data supporting this report are contained in the caveat at the end of the report.

Information is available about [Environment Assessments](#) and the EPBC Act including significance guidelines, forms and application process details.

Report created: 17/04/14 16:02:53

[Summary](#)

[Details](#)

[Matters of NES](#)

[Other Matters Protected by the EPBC Act](#)

[Extra Information](#)

[Caveat](#)

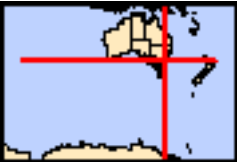
[Acknowledgements](#)



This map may contain data which are ©Commonwealth of Australia (Geoscience Australia), ©PSMA 2010

[Coordinates](#)

Buffer: 2.0Km



Summary

Matters of National Environmental Significance

This part of the report summarises the matters of national environmental significance that may occur in, or may relate to, the area you nominated. Further information is available in the detail part of the report, which can be accessed by scrolling or following the links below. If you are proposing to undertake an activity that may have a significant impact on one or more matters of national environmental significance then you should consider the [Administrative Guidelines on Significance](#).

World Heritage Properties:	None
National Heritage Places:	None
Wetlands of International Importance:	None
Great Barrier Reef Marine Park:	None
Commonwealth Marine Areas:	None
Listed Threatened Ecological Communities:	1
Listed Threatened Species:	51
Listed Migratory Species:	44

Other Matters Protected by the EPBC Act

This part of the report summarises other matters protected under the Act that may relate to the area you nominated. Approval may be required for a proposed activity that significantly affects the environment on Commonwealth land, when the action is outside the Commonwealth land, or the environment anywhere when the action is taken on Commonwealth land. Approval may also be required for the Commonwealth or Commonwealth agencies proposing to take an action that is likely to have a significant impact on the environment anywhere.

The EPBC Act protects the environment on Commonwealth land, the environment from the actions taken on Commonwealth land, and the environment from actions taken by Commonwealth agencies. As [heritage values](#) of a place are part of the 'environment', these aspects of the EPBC Act protect the Commonwealth Heritage values of a Commonwealth Heritage place and the heritage values of a place on the Register of the National Estate.

This part of the report summarises other matters protected under the Act that may relate to the area you nominated. Approval may be required for a proposed activity that significantly affects the environment on Commonwealth land, when the action is outside the Commonwealth land, or the environment anywhere when the action is taken on Commonwealth land. Approval may also be required for the Commonwealth or Commonwealth agencies proposing to take an action that is likely to have a significant impact on the environment anywhere.

A [permit](#) may be required for activities in or on a Commonwealth area that may affect a member of a listed threatened species or ecological community, a member of a listed migratory species, whales and other cetaceans, or a member of a listed marine species.

Commonwealth Land:	None
Commonwealth Heritage Places:	None
Listed Marine Species:	63
Whales and Other Cetaceans:	12
Critical Habitats:	None
Commonwealth Reserves Terrestrial:	None
Commonwealth Reserves Marine	None

Extra Information

This part of the report provides information that may also be relevant to the area you have nominated.

Place on the RNE:	4
State and Territory Reserves:	1
Regional Forest Agreements:	2
Invasive Species:	28
Nationally Important Wetlands:	1
Key Ecological Features (Marine)	1

Details

Matters of National Environmental Significance

Listed Threatened Ecological Communities [\[Resource Information \]](#)

For threatened ecological communities where the distribution is well known, maps are derived from recovery plans, State vegetation maps, remote sensing imagery and other sources. Where threatened ecological community distributions are less well known, existing vegetation maps and point location data are used to produce indicative distribution maps.

Name	Status	Type of Presence
Lowland Grassy Woodland in the South East Corner Bioregion	Critically Endangered	Community may occur within area

Listed Threatened Species [\[Resource Information \]](#)

Name	Status	Type of Presence
Birds		
Anthochaera phrygia Regent Honeyeater [82338]	Endangered	Species or species habitat known to occur within area
Botaurus poiciloptilus Australasian Bittern [1001]	Endangered	Species or species habitat known to occur within area
Dasyornis brachypterus Eastern Bristlebird [533]	Endangered	Species or species habitat likely to occur within area
Diomedea epomophora epomophora Southern Royal Albatross [25996]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
Diomedea epomophora sanfordi Northern Royal Albatross [82331]	Endangered	Foraging, feeding or related behaviour likely to occur within area
Diomedea exulans antipodensis Antipodean Albatross [82269]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
Diomedea exulans exulans Tristan Albatross [82337]	Endangered	Species or species habitat may occur within area
Diomedea exulans gibsoni Gibson's Albatross [82271]	Vulnerable	Foraging, feeding or

Name	Status	Type of Presence
		related behaviour likely to occur within area
Diomedea exulans (sensu lato) Wandering Albatross [1073]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
Fregetta grallaria grallaria White-bellied Storm-Petrel (Tasman Sea), White-bellied Storm-Petrel (Australasian) [64438]	Vulnerable	Species or species habitat likely to occur within area
Lathamus discolor Swift Parrot [744]	Endangered	Species or species habitat likely to occur within area
Macronectes giganteus Southern Giant-Petrel [1060]	Endangered	Species or species habitat may occur within area
Macronectes halli Northern Giant-Petrel [1061]	Vulnerable	Species or species habitat may occur within area
Neophema chrysogaster Orange-bellied Parrot [747]	Critically Endangered	Species or species habitat may occur within area
Pterodroma leucoptera leucoptera Gould's Petrel [26033]	Endangered	Species or species habitat may occur within area
Rostratula australis Australian Painted Snipe [77037]	Endangered	Species or species habitat may occur within area
Sternula nereis nereis Australian Fairy Tern [82950]	Vulnerable	Species or species habitat known to occur within area
Thalassarche bulleri Buller's Albatross, Pacific Albatross [64460]	Vulnerable	Species or species habitat may occur within area
Thalassarche cauta cauta Shy Albatross, Tasmanian Shy Albatross [82345]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
Thalassarche cauta salvini Salvin's Albatross [82343]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
Thalassarche cauta steadi White-capped Albatross [82344]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
Thalassarche eremita Chatham Albatross [64457]	Endangered	Foraging, feeding or related behaviour likely to occur within area
Thalassarche melanophris Black-browed Albatross [66472]	Vulnerable	Species or species habitat may occur within area
Thalassarche melanophris impavida Campbell Albatross [82449]	Vulnerable	Species or species habitat may occur within area
Fish		
Epinephelus daemeli Black Rockcod, Black Cod, Saddled Rockcod [68449]	Vulnerable	Species or species habitat likely to occur within area
Prototroctes maraena Australian Grayling [26179]	Vulnerable	Species or species

Name	Status	Type of Presence
		habitat likely to occur within area
Frogs		
Heleioporus australiacus Giant Burrowing Frog [1973]	Vulnerable	Species or species habitat likely to occur within area
Litoria aurea Green and Golden Bell Frog [1870]	Vulnerable	Species or species habitat may occur within area
Litoria littlejohni Littlejohn's Tree Frog, Heath Frog [64733]	Vulnerable	Species or species habitat may occur within area
Mammals		
Balaenoptera musculus Blue Whale [36]	Endangered	Species or species habitat may occur within area
Dasyurus maculatus maculatus (SE mainland population) Spot-tailed Quoll, Spotted-tail Quoll, Tiger Quoll (southeastern mainland population) [75184]	Endangered	Species or species habitat likely to occur within area
Eubalaena australis Southern Right Whale [40]	Endangered	Species or species habitat known to occur within area
Isoodon obesulus obesulus Southern Brown Bandicoot (Eastern) [68050]	Endangered	Species or species habitat likely to occur within area
Megaptera novaeangliae Humpback Whale [38]	Vulnerable	Species or species habitat known to occur within area
Phascolarctos cinereus (combined populations of Qld, NSW and the ACT) Koala (combined populations of Queensland, New South Wales and the Australian Capital Territory) [85104]	Vulnerable	Species or species habitat known to occur within area
Potorous tridactylus tridactylus Long-nosed Potoroo (SE mainland) [66645]	Vulnerable	Species or species habitat may occur within area
Pseudomys novaehollandiae New Holland Mouse, Pookila [96]	Vulnerable	Species or species habitat likely to occur within area
Pteropus poliocephalus Grey-headed Flying-fox [186]	Vulnerable	Foraging, feeding or related behaviour known to occur within area
Plants		
Cryptostylis hunteriana Leafless Tongue-orchid [19533]	Vulnerable	Species or species habitat may occur within area
Haloragis exalata subsp. exalata Wingless Raspwort, Square Raspwort [24636]	Vulnerable	Species or species habitat known to occur within area
Streblus pendulinus Siah's Backbone, Sia's Backbone, Isaac Wood [21618]	Endangered	Species or species habitat likely to occur within area
Thesium australe Austral Toadflax, Toadflax [15202]	Vulnerable	Species or species habitat likely to occur within area
Zieria tuberculata Warty Zieria [56736]	Vulnerable	Species or species habitat likely to occur within area

Name	Status	Type of Presence
Reptiles		
Caretta caretta Loggerhead Turtle [1763]	Endangered	Breeding likely to occur within area
Chelonia mydas Green Turtle [1765]	Vulnerable	Species or species habitat known to occur within area
Dermochelys coriacea Leatherback Turtle, Leathery Turtle, Luth [1768]	Endangered	Breeding likely to occur within area
Eretmochelys imbricata Hawksbill Turtle [1766]	Vulnerable	Species or species habitat known to occur within area
Natator depressus Flatback Turtle [59257]	Vulnerable	Species or species habitat known to occur within area
Sharks		
Carcharias taurus (east coast population) Grey Nurse Shark (east coast population) [68751]	Critically Endangered	Species or species habitat may occur within area
Carcharodon carcharias Great White Shark [64470]	Vulnerable	Species or species habitat may occur within area
Rhincodon typus Whale Shark [66680]	Vulnerable	Species or species habitat may occur within area
Listed Migratory Species [Resource Information]		
* Species is listed under a different scientific name on the EPBC Act - Threatened Species list.		
Name	Threatened	Type of Presence
Migratory Marine Birds		
Apus pacificus Fork-tailed Swift [678]		Species or species habitat likely to occur within area
Diomedea antipodensis Antipodean Albatross [64458]	Vulnerable*	Foraging, feeding or related behaviour likely to occur within area
Diomedea dabbenena Tristan Albatross [66471]	Endangered*	Species or species habitat may occur within area
Diomedea epomophora (sensu stricto) Southern Royal Albatross [1072]	Vulnerable*	Foraging, feeding or related behaviour likely to occur within area
Diomedea exulans (sensu lato) Wandering Albatross [1073]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
Diomedea gibsoni Gibson's Albatross [64466]	Vulnerable*	Foraging, feeding or related behaviour likely to occur within area
Diomedea sanfordi Northern Royal Albatross [64456]	Endangered*	Foraging, feeding or related behaviour likely to occur within area
Macronectes giganteus Southern Giant-Petrel [1060]	Endangered	Species or species habitat may occur within area
Macronectes halli Northern Giant-Petrel [1061]	Vulnerable	Species or species habitat may occur within

Name	Threatened	Type of Presence
Puffinus carneipes Flesh-footed Shearwater, Fleshy-footed Shearwater [1043]		area Foraging, feeding or related behaviour likely to occur within area
Sterna albifrons Little Tern [813]		Breeding likely to occur within area
Thalassarche bulleri Buller's Albatross, Pacific Albatross [64460]	Vulnerable	Species or species habitat may occur within area
Thalassarche cauta (sensu stricto) Shy Albatross, Tasmanian Shy Albatross [64697]	Vulnerable*	Foraging, feeding or related behaviour likely to occur within area
Thalassarche eremita Chatham Albatross [64457]	Endangered	Foraging, feeding or related behaviour likely to occur within area
Thalassarche impavida Campbell Albatross [64459]	Vulnerable*	Species or species habitat may occur within area
Thalassarche melanophris Black-browed Albatross [66472]	Vulnerable	Species or species habitat may occur within area
Thalassarche salvini Salvin's Albatross [64463]	Vulnerable*	Foraging, feeding or related behaviour likely to occur within area
Thalassarche steadi White-capped Albatross [64462]	Vulnerable*	Foraging, feeding or related behaviour likely to occur within area
Migratory Marine Species		
Balaenoptera edeni Bryde's Whale [35]		Species or species habitat may occur within area
Balaenoptera musculus Blue Whale [36]	Endangered	Species or species habitat may occur within area
Caperea marginata Pygmy Right Whale [39]		Species or species habitat may occur within area
Carcharodon carcharias Great White Shark [64470]	Vulnerable	Species or species habitat may occur within area
Caretta caretta Loggerhead Turtle [1763]	Endangered	Breeding likely to occur within area
Chelonia mydas Green Turtle [1765]	Vulnerable	Species or species habitat known to occur within area
Dermochelys coriacea Leatherback Turtle, Leathery Turtle, Luth [1768]	Endangered	Breeding likely to occur within area
Eretmochelys imbricata Hawksbill Turtle [1766]	Vulnerable	Species or species habitat known to occur within area
Eubalaena australis Southern Right Whale [40]	Endangered	Species or species habitat known to occur within area
Lagenorhynchus obscurus Dusky Dolphin [43]		Species or species

Name	Threatened	Type of Presence
Lamna nasus Porbeagle, Mackerel Shark [83288]	Vulnerable	habitat may occur within area
Megaptera novaeangliae Humpback Whale [38]		Species or species habitat likely to occur within area
Natator depressus Flatback Turtle [59257]		Species or species habitat known to occur within area
Orcinus orca Killer Whale, Orca [46]	Vulnerable	Species or species habitat known to occur within area
Rhincodon typus Whale Shark [66680]		Species or species habitat may occur within area
Migratory Terrestrial Species		
Haliaeetus leucogaster White-bellied Sea-Eagle [943]	Vulnerable	Species or species habitat known to occur within area
Hirundapus caudacutus White-throated Needletail [682]		Species or species habitat known to occur within area
Merops ornatus Rainbow Bee-eater [670]		Species or species habitat may occur within area
Monarcha melanopsis Black-faced Monarch [609]	Vulnerable	Species or species habitat known to occur within area
Myiagra cyanoleuca Satin Flycatcher [612]		Species or species habitat likely to occur within area
Rhipidura rufifrons Rufous Fantail [592]		Species or species habitat known to occur within area
Migratory Wetlands Species		
Ardea alba Great Egret, White Egret [59541]	Vulnerable	Species or species habitat known to occur within area
Ardea ibis Cattle Egret [59542]		Species or species habitat likely to occur within area
Gallinago hardwickii Latham's Snipe, Japanese Snipe [863]		Foraging, feeding or related behaviour may occur within area
Numenius minutus Little Curlew, Little Whimbrel [848]	Endangered*	Foraging, feeding or related behaviour likely to occur within area
Rostratula benghalensis (sensu lato) Painted Snipe [889]		Species or species habitat may occur within area

Other Matters Protected by the EPBC Act

Listed Marine Species		[Resource Information]
* Species is listed under a different scientific name on the EPBC Act - Threatened Species list.		
Name	Threatened	Type of Presence
Birds		
Apus pacificus Fork-tailed Swift [678]		Species or species habitat likely to occur within area
Ardea alba Great Egret, White Egret [59541]		Species or species habitat known to occur within area
Ardea ibis Cattle Egret [59542]		Species or species habitat likely to occur within area
Diomedea antipodensis Antipodean Albatross [64458]	Vulnerable*	Foraging, feeding or related behaviour likely to occur within area
Diomedea dabbenena Tristan Albatross [66471]	Endangered*	Species or species habitat may occur within area
Diomedea epomophora (sensu stricto) Southern Royal Albatross [1072]	Vulnerable*	Foraging, feeding or related behaviour likely to occur within area
Diomedea exulans (sensu lato) Wandering Albatross [1073]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
Diomedea gibsoni Gibson's Albatross [64466]	Vulnerable*	Foraging, feeding or related behaviour likely to occur within area
Diomedea sanfordi Northern Royal Albatross [64456]	Endangered*	Foraging, feeding or related behaviour likely to occur within area
Gallinago hardwickii Latham's Snipe, Japanese Snipe [863]		Foraging, feeding or related behaviour may occur within area
Gallinago megala Swinhoe's Snipe [864]		Foraging, feeding or related behaviour likely to occur within area
Gallinago stenura Pin-tailed Snipe [841]		Foraging, feeding or related behaviour likely to occur within area
Haliaeetus leucogaster White-bellied Sea-Eagle [943]		Species or species habitat known to occur within area
Hirundapus caudacutus White-throated Needletail [682]		Species or species habitat known to occur within area
Lathamus discolor Swift Parrot [744]	Endangered	Species or species habitat likely to occur within area
Macronectes giganteus Southern Giant-Petrel [1060]	Endangered	Species or species habitat may occur within

Name	Threatened	Type of Presence
Macronectes halli Northern Giant-Petrel [1061]	Vulnerable	area
Merops ornatus Rainbow Bee-eater [670]		Species or species habitat may occur within area
Monarcha melanopsis Black-faced Monarch [609]		Species or species habitat may occur within area
Myiagra cyanoleuca Satin Flycatcher [612]		Species or species habitat known to occur within area
Neophema chrysogaster Orange-bellied Parrot [747]	Critically Endangered	Species or species habitat likely to occur within area
Numenius minutus Little Curlew, Little Whimbrel [848]		Species or species habitat may occur within area
Pandion haliaetus Osprey [952]		Foraging, feeding or related behaviour likely to occur within area
Puffinus carneipes Flesh-footed Shearwater, Fleshy-footed Shearwater [1043]	Endangered*	Species or species habitat known to occur within area
Rhipidura rufifrons Rufous Fantail [592]		Species or species habitat known to occur within area
Rostratula benghalensis (sensu lato) Painted Snipe [889]		Species or species habitat known to occur within area
Sterna albifrons Little Tern [813]		Species or species habitat may occur within area
Thalassarche bulleri Buller's Albatross, Pacific Albatross [64460]	Vulnerable	Breeding likely to occur within area
Thalassarche cauta (sensu stricto) Shy Albatross, Tasmanian Shy Albatross [64697]		Species or species habitat may occur within area
Thalassarche eremita Chatham Albatross [64457]	Vulnerable*	Foraging, feeding or related behaviour likely to occur within area
Thalassarche impavida Campbell Albatross [64459]		Foraging, feeding or related behaviour likely to occur within area
Thalassarche melanophris Black-browed Albatross [66472]	Vulnerable*	Species or species habitat may occur within area
Thalassarche salvini Salvin's Albatross [64463]		Species or species habitat may occur within area
Thalassarche steadi White-capped Albatross [64462]	Vulnerable*	Foraging, feeding or related behaviour likely to occur within area

Name	Threatened	Type of Presence
Thinornis rubricollis rubricollis Hooded Plover (eastern) [66726]		Species or species habitat known to occur within area
Fish		
Acentronura tentaculata Shortpouch Pygmy Pipehorse [66187]		Species or species habitat may occur within area
Cosmocampus howensis Lord Howe Pipefish [66208]		Species or species habitat may occur within area
Heraldia nocturna Upside-down Pipefish, Eastern Upside-down Pipefish, Eastern Upside-down Pipefish [66227]		Species or species habitat may occur within area
Hippocampus abdominalis Big-belly Seahorse, Eastern Potbelly Seahorse, New Zealand Potbelly Seahorse [66233]		Species or species habitat may occur within area
Hippocampus breviceps Short-head Seahorse, Short-snouted Seahorse [66235]		Species or species habitat may occur within area
Hippocampus whitei White's Seahorse, Crowned Seahorse, Sydney Seahorse [66240]		Species or species habitat may occur within area
Histiogamphelus briggsii Crested Pipefish, Briggs' Crested Pipefish, Briggs' Pipefish [66242]		Species or species habitat may occur within area
Kimblaeus bassensis Trawl Pipefish, Bass Strait Pipefish [66247]		Species or species habitat may occur within area
Lissocampus runa Javelin Pipefish [66251]		Species or species habitat may occur within area
Maroubra perserrata Sawtooth Pipefish [66252]		Species or species habitat may occur within area
Notiocampus ruber Red Pipefish [66265]		Species or species habitat may occur within area
Phyllopteryx taeniolatus Common Seadragon, Weedy Seadragon [66268]		Species or species habitat may occur within area
Solegnathus spinosissimus Spiny Pipehorse, Australian Spiny Pipehorse [66275]		Species or species habitat may occur within area
Solenostomus cyanopterus Robust Ghostpipefish, Blue-finned Ghost Pipefish, [66183]		Species or species habitat may occur within area
Solenostomus paegnius Rough-snout Ghost Pipefish [68425]		Species or species habitat may occur within area
Stigmatopora argus Spotted Pipefish, Gulf Pipefish [66276]		Species or species habitat may occur within area
Stigmatopora nigra Widebody Pipefish, Wide-bodied Pipefish, Black Pipefish [66277]		Species or species habitat may occur within area

Name	Threatened	Type of Presence
Syngnathoides biaculeatus Double-end Pipehorse, Double-ended Pipehorse, Alligator Pipefish [66279]		Species or species habitat may occur within area
Urocampus carinirostris Hairy Pipefish [66282]		Species or species habitat may occur within area
Vanacampus margaritifer Mother-of-pearl Pipefish [66283]		Species or species habitat may occur within area
Vanacampus phillipi Port Phillip Pipefish [66284]		Species or species habitat may occur within area

Mammals		
Arctocephalus forsteri New Zealand Fur-seal [20]		Species or species habitat may occur within area
Arctocephalus pusillus Australian Fur-seal, Australo-African Fur-seal [21]		Species or species habitat may occur within area

Reptiles		
Caretta caretta Loggerhead Turtle [1763]	Endangered	Breeding likely to occur within area
Chelonia mydas Green Turtle [1765]	Vulnerable	Species or species habitat known to occur within area
Dermochelys coriacea Leatherback Turtle, Leathery Turtle, Luth [1768]	Endangered	Breeding likely to occur within area
Eretmochelys imbricata Hawksbill Turtle [1766]	Vulnerable	Species or species habitat known to occur within area
Natator depressus Flatback Turtle [59257]	Vulnerable	Species or species habitat known to occur within area

Whales and other Cetaceans		[Resource Information]
Name	Status	Type of Presence
Mammals		
Balaenoptera acutorostrata Minke Whale [33]		Species or species habitat may occur within area
Balaenoptera edeni Bryde's Whale [35]		Species or species habitat may occur within area
Balaenoptera musculus Blue Whale [36]	Endangered	Species or species habitat may occur within area
Caperea marginata Pygmy Right Whale [39]		Species or species habitat may occur within area
Delphinus delphis Common Dophin, Short-beaked Common Dolphin [60]		Species or species habitat may occur within area
Eubalaena australis Southern Right Whale [40]	Endangered	Species or species habitat known to occur within area

Name	Status	Type of Presence
Grampus griseus Risso's Dolphin, Grampus [64]	Vulnerable	Species or species habitat may occur within area
Lagenorhynchus obscurus Dusky Dolphin [43]		Species or species habitat may occur within area
Megaptera novaeangliae Humpback Whale [38]		Species or species habitat known to occur within area
Orcinus orca Killer Whale, Orca [46]		Species or species habitat may occur within area
Tursiops aduncus Indian Ocean Bottlenose Dolphin, Spotted Bottlenose Dolphin [68418]		Species or species habitat likely to occur within area
Tursiops truncatus s. str. Bottlenose Dolphin [68417]		Species or species habitat may occur within area

Extra Information

Places on the RNE	[Resource Information]
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Note that not all Indigenous sites may be listed.

Name	State	Status
Natural		
Murunna Point Coastal Area	NSW	Registered
Wallaga Lake National Park	NSW	Registered
Indigenous		
Merriman Island Aboriginal Place	NSW	Registered
Historic		
Montreal Goldfield	NSW	Registered

State and Territory Reserves	[Resource Information]
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Name	State
Gulaga	NSW

Regional Forest Agreements	[Resource Information]
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Note that all areas with completed RFAs have been included.

Name	State
Eden RFA	New South Wales
Southern RFA	New South Wales

Invasive Species	[Resource Information]
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Weeds reported here are the 20 species of national significance (WoNS), along with other introduced plants that are considered by the States and Territories to pose a particularly significant threat to biodiversity. The following feral animals are reported: Goat, Red Fox, Cat, Rabbit, Pig, Water Buffalo and Cane Toad. Maps from Landscape Health Project, National Land and Water Resouces Audit, 2001.

Name	Status	Type of Presence
Birds		
Acridotheres tristis Common Myna, Indian Myna [387]		Species or species habitat likely to occur within area
Alauda arvensis Skylark [656]		Species or species habitat likely to occur

Name	Status	Type of Presence
Anas platyrhynchos Mallard [974]		within area Species or species habitat likely to occur within area
Carduelis carduelis European Goldfinch [403]		Species or species habitat likely to occur within area
Columba livia Rock Pigeon, Rock Dove, Domestic Pigeon [803]		Species or species habitat likely to occur within area
Passer domesticus House Sparrow [405]		Species or species habitat likely to occur within area
Streptopelia chinensis Spotted Turtle-Dove [780]		Species or species habitat likely to occur within area
Sturnus vulgaris Common Starling [389]		Species or species habitat likely to occur within area
Turdus merula Common Blackbird, Eurasian Blackbird [596]		Species or species habitat likely to occur within area
Mammals		
Bos taurus Domestic Cattle [16]		Species or species habitat likely to occur within area
Canis lupus familiaris Domestic Dog [82654]		Species or species habitat likely to occur within area
Felis catus Cat, House Cat, Domestic Cat [19]		Species or species habitat likely to occur within area
Feral deer Feral deer species in Australia [85733]		Species or species habitat likely to occur within area
Mus musculus House Mouse [120]		Species or species habitat likely to occur within area
Oryctolagus cuniculus Rabbit, European Rabbit [128]		Species or species habitat likely to occur within area
Rattus rattus Black Rat, Ship Rat [84]		Species or species habitat likely to occur within area
Vulpes vulpes Red Fox, Fox [18]		Species or species habitat likely to occur within area
Plants		
Alternanthera philoxeroides Alligator Weed [11620]		Species or species habitat may occur within area
Chrysanthemoides monilifera subsp. monilifera Boneseed [16905]		Species or species habitat likely to occur within area
Chrysanthemoides monilifera subsp. rotundata Bitou Bush [16332]		Species or species

Name	Status	Type of Presence
Cytisus scoparius Broom, English Broom, Scotch Broom, Common Broom, Scottish Broom, Spanish Broom [5934]		habitat likely to occur within area Species or species habitat likely to occur within area
Lantana camara Lantana, Common Lantana, Kamara Lantana, Large-leaf Lantana, Pink Flowered Lantana, Red Flowered Lantana, Red-Flowered Sage, White Sage, Wild Sage [10892]		Species or species habitat likely to occur within area
Lycium ferocissimum African Boxthorn, Boxthorn [19235]		Species or species habitat likely to occur within area
Nassella trichotoma Serrated Tussock, Yass River Tussock, Yass Tussock, Nassella Tussock (NZ) [18884]		Species or species habitat likely to occur within area
Pinus radiata Radiata Pine Monterey Pine, Insignis Pine, Wilding Pine [20780]		Species or species habitat may occur within area
Rubus fruticosus aggregate Blackberry, European Blackberry [68406]		Species or species habitat likely to occur within area
Salvinia molesta Salvinia, Giant Salvinia, Aquarium Watermoss, Kariba Weed [13665]		Species or species habitat likely to occur within area
Senecio madagascariensis Fireweed, Madagascar Ragwort, Madagascar Groundsel [2624]		Species or species habitat likely to occur within area

Nationally Important Wetlands		[Resource Information]
Name	State	
Wallaga Lake	NSW	

Key Ecological Features (Marine)	[Resource Information]
Key Ecological Features are the parts of the marine ecosystem that are considered to be important for the biodiversity or ecosystem functioning and integrity of the Commonwealth Marine Area.	

Name	Region
Upwelling East of Eden	South-east

Coordinates

-36.37714 150.07135

Caveat

The information presented in this report has been provided by a range of data sources as acknowledged at the end of the report.

This report is designed to assist in identifying the locations of places which may be relevant in determining obligations under the Environment Protection and Biodiversity Conservation Act 1999. It holds mapped locations of World Heritage and Register of National Estate properties, Wetlands of International Importance, Commonwealth and State/Territory reserves, listed threatened, migratory and marine species and listed threatened ecological communities. Mapping of Commonwealth land is not complete at this stage. Maps have been collated from a range of sources at various resolutions.

Not all species listed under the EPBC Act have been mapped (see below) and therefore a report is a general guide only. Where available data supports mapping, the type of presence that can be determined from the data is indicated in general terms. People using this information in making a referral may need to consider the qualifications below and may need to seek and consider other information sources.

For threatened ecological communities where the distribution is well known, maps are derived from recovery plans, State vegetation maps, remote sensing imagery and other sources. Where threatened ecological community distributions are less well known, existing vegetation maps and point location data are used to produce indicative distribution maps.

For species where the distributions are well known, maps are digitised from sources such as recovery plans and detailed habitat studies. Where appropriate, core breeding, foraging and roosting areas are indicated under 'type of presence'. For species whose distributions are less well known, point locations are collated from government wildlife authorities, museums, and non-government organisations; bioclimatic distribution models are generated and these validated by experts. In some cases, the distribution maps are based solely on expert knowledge.

Only selected species covered by the following provisions of the EPBC Act have been mapped:

- migratory and
- marine

The following species and ecological communities have not been mapped and do not appear in reports produced from this database:

- threatened species listed as extinct or considered as vagrants
- some species and ecological communities that have only recently been listed
- some terrestrial species that overfly the Commonwealth marine area
- migratory species that are very widespread, vagrant, or only occur in small numbers

The following groups have been mapped, but may not cover the complete distribution of the species:

- non-threatened seabirds which have only been mapped for recorded breeding sites
- seals which have only been mapped for breeding sites near the Australian continent

Such breeding sites may be important for the protection of the Commonwealth Marine environment.

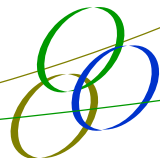
Acknowledgements

This database has been compiled from a range of data sources. The department acknowledges the following custodians who have contributed valuable data and advice:

- [-Department of Environment, Climate Change and Water, New South Wales](#)
- [-Department of Sustainability and Environment, Victoria](#)
- [-Department of Primary Industries, Parks, Water and Environment, Tasmania](#)
- [-Department of Environment and Natural Resources, South Australia](#)
- [-Parks and Wildlife Service NT, NT Dept of Natural Resources, Environment and the Arts](#)
- [-Environmental and Resource Management, Queensland](#)
- [-Department of Environment and Conservation, Western Australia](#)
- [-Department of the Environment, Climate Change, Energy and Water](#)
- [-Birds Australia](#)
- [-Australian Bird and Bat Banding Scheme](#)
- [-Australian National Wildlife Collection](#)
- Natural history museums of Australia
- [-Museum Victoria](#)
- [-Australian Museum](#)
- [-SA Museum](#)
- [-Queensland Museum](#)
- [-Online Zoological Collections of Australian Museums](#)
- [-Queensland Herbarium](#)
- [-National Herbarium of NSW](#)
- [-Royal Botanic Gardens and National Herbarium of Victoria](#)
- [-Tasmanian Herbarium](#)
- [-State Herbarium of South Australia](#)
- [-Northern Territory Herbarium](#)
- [-Western Australian Herbarium](#)
- [-Australian National Herbarium, Atherton and Canberra](#)
- [-University of New England](#)
- [-Ocean Biogeographic Information System](#)
- [-Australian Government, Department of Defence](#)
- [-State Forests of NSW](#)
- [-Geoscience Australia](#)
- [-CSIRO](#)
- Other groups and individuals

The Department is extremely grateful to the many organisations and individuals who provided expert advice and information on numerous draft distributions.

Please feel free to provide feedback via the [Contact Us](#) page.



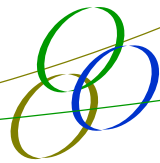
Appendix 4

Threatened Flora and Fauna Assessment

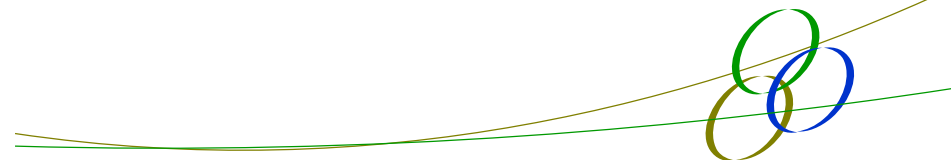
Species, populations and communities with a likelihood of occurrence of greater than Moderate have had potential impacts formally assessed using a 7-part test under the *Environmental Planning and Assessment Act 1979* (see Appendix 8).

E1 - Endangered; E2 - Endangered Population; E3 - Endangered ecological community; E4 Critically endangered; P - Protected; K - Known occurrence; PR - Predicted occurrence; V - Vulnerable; E4 critically endangered

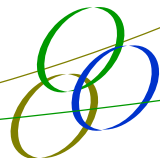
Scientific Name	Common Name	NSW status	Comm. status	Habitat Description	Records	Likelihood of occurrence	Potential Impacts
Amphibians							
<i>Heleioporus australiacus</i>	Giant Burrowing Frog	V, P	V	Distributed in south eastern NSW and Victoria, a northern population largely confined to the sandstone geology of the Sydney Basin and extending as far south as Ulladulla. Found in heath, woodland and open dry sclerophyll forest on a variety of soil types except clay based. Breeding habitat is generally soaks or pools within first or second order streams.	3	Low. Site is not suitable habitat for the presence of this species. No first or second order streams at the site	Low. Removal of only a very small portion of habitat.
<i>Litoria aurea</i>	Green and Golden Bell Frog	E1, P	V	Distributed from NSW north coast near Brunswick Heads, southwards along NSW coast to Victoria where it extends into east Gippsland. Inhabits marshes, dams and stream-sides, particularly those containing bulrushes or spikerushes. Optimum habitat includes water-bodies that are	2	Low. Site is not suitable habitat for the presence of this species. No marshes/dams/streams etc available for habitation.	Low. Removal of only a very small portion of habitat.



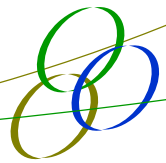
Scientific Name	Common Name	NSW status	Comm. status	Habitat Description	Records	Likelihood of occurrence	Potential Impacts
				unshaded, free of predatory fish such as Plague Minnow (<i>Gambusia holbrooki</i>), have a grassy area nearby and diurnal sheltering sites available. Some sites, particularly in the Greater Sydney region occur in highly disturbed areas.			
<i>Litoria littlejohni</i>	Littlejohn's Tree Frog,	V, P	V	Distribution includes the plateaus and eastern slopes of the Great Dividing Range from Watagan State Forest south to Buchan in Victoria. This species breeds in the upper reaches of permanent streams and in perched swamps. Non-breeding habitat is heath based forests and woodlands where it shelters under leaf litter and low vegetation.	1	Low-moderate. Site may provide suitable habitat conditions for the presence of this species. No permanent streams at the site.	Low. Removal of only a very small portion of habitat.
<i>Mixophyes balbus</i>	Stuttering Frog,	E1, P, 2	V	Stuttering Frogs occur along the east coast of Australia from southern Qld to north-eastern Victoria. Found in rainforest and wet, tall open forest in the foothills and escarpment on the eastern side of the Great Dividing Range. Outside the breeding season adults live in deep leaf litter and thick understorey vegetation on the forest floor.	P	Low. Site is not suitable habitat for the presence of this species. Site is right at the coast and vegetation is not consistent with that required by this species.	Low. Removal of only a very small portion of habitat.
Reptiles							
<i>Hoplocephalus bungaroides</i>	Broad-headed Snake	E1, P, 2	V	The Broad-headed Snake is largely confined to Triassic and Permian	2	Low. Site is not suitable habitat for this species. Site is right at the coast and	Low. Removal of



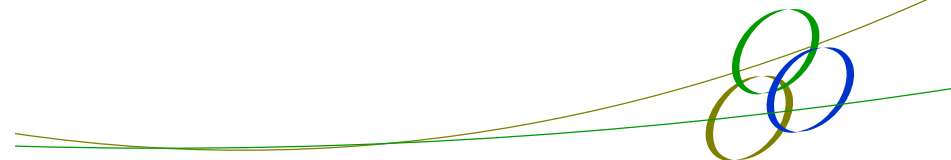
Scientific Name	Common Name	NSW status	Comm. status	Habitat Description	Records	Likelihood of occurrence	Potential Impacts
				<p>sandstones.</p> <p>Shelters in rock crevices and under flat sandstone rocks on exposed cliff edges. Moves from the sandstone rocks to shelters in hollows in large trees within 200m of escarpments in summer.</p>		vegetation/habitat requirements are not present at the site.	only a very small portion of habitat.
Birds							
<i>Stictonetta naevosa</i>	Freckled Duck	V,P		Found primarily in south-eastern and south-western Australia. Prefer permanent freshwater swamps and creeks with heavy growth of Cumbungi, Lignum or Tea-tree. During drier times they move from ephemeral breeding swamps to more permanent waters such as lakes, reservoirs, farm dams and sewage ponds.	2	Low. No wetlands/ swamps etc present. Site is situated right at the edge of a road and surrounded by residential property.	Low.
<i>Ptilinopus superbus</i>	Superb Fruit-Dove	V,P		Occurs primarily from north-eastern Qld to north-eastern NSW. It is much less common further south. Inhabits rainforest and similar closed forests where it forages high in the canopy, eating the fruits of many tree species. It may also forage in eucalypt or acacia woodland where there are fruit-bearing trees.	6	Low. The site is not suitable habitat for this species. Site is not rainforest or closed forest habitat.	Low.
<i>Botaurus poiciloptilus</i>	Australasian Bittern	E1,P	E	Inhabits terrestrial and estuarine wetlands, generally where there is permanent water. The species prefers	3	Low. No wetlands or permanent water at the subject site.	Low.



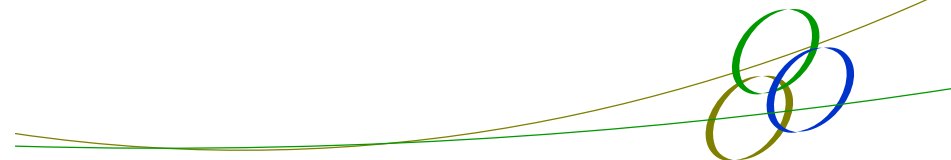
Scientific Name	Common Name	NSW status	Comm. status	Habitat Description	Records	Likelihood of occurrence	Potential Impacts
				wetlands with dense vegetation, including sedges, rushes and reeds.			
<i>Ixobrychus flavicollis</i>	Black Bittern	V,P		Inhabits both terrestrial and estuarine wetlands, generally in areas of permanent water and dense vegetation. Where permanent water is present, the species may occur in flooded grassland, forest, woodland, rainforest and mangroves.	6	Low. The site is not suitable habitat for this species. No permanent water or required wetland vegetation at the site.	Low.
<i>Circus assimilis</i>	Spotted Harrier	V,P	-	Grassy open woodland, inland riparian woodland, grassland and shrub steppe. Most commonly found in native grassland but also in agricultural areas.	K	Low. The site is not suitable habitat for this species. Site is right on the coast and vegetation requirements are not suitable at the site for this species.	Low.
<i>Hamirostramela nosternon</i>	Black-breasted Buzzard	V, P, 3		The Black-breasted Buzzard is found sparsely in areas of less than 500mm rainfall. Lives in a range of inland habitats, especially along timbered watercourses which is the preferred breeding habitat. Also hunts over grasslands and sparsely timbered woodlands.	1	Low-Moderate. Site may provide suitable habitat conditions however, site is right on the coast and preferred timbered watercourses are absent at the site.	Low. Removal of only a very small portion of habitat.
<i>Hieraaetus morphnoides</i>	Little Eagle	V,P		Found throughout the Australian mainland excepting the most densely forested parts of the Dividing Range escarpment. Occupies open eucalypt forest, woodland or open woodland. Sheoak or <i>Acacia</i> woodlands and riparian	15	Low-Moderate. Suitable habitat for the presence of this species. May form part of a larger home range.	Low. Removal of only a very small portion of



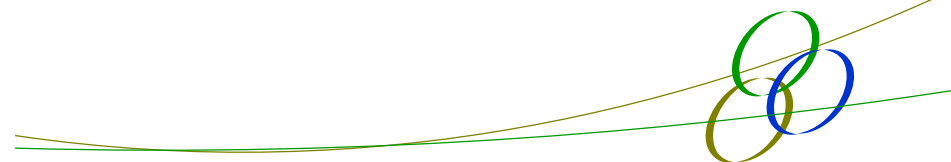
Scientific Name	Common Name	NSW status	Comm. status	Habitat Description	Records	Likelihood of occurrence	Potential Impacts
				woodlands of interior NSW are also used			habitat.
<i>Lophoictinia isura</i>	Square-tailed Kite	V,P,3	-	Timbered habitats including dry woodlands and open forests. Prefers timbered watercourses. Specialist hunter of passerines and insects.	46	Low - Moderate. Preferred timbered watercourse habitat absent, but may occasionally occur as part of a large home range.	Low. Removal of only a very small portion of habitat.
<i>Burhinus grallarius</i>	Bush Stone-curlew	E1,P	-	Wader-like bird that can be difficult to see in its lightly timbered, open forest or woodland habitat. Dry, open grassland and cropland, with cover nearby, may also provide habitat for the species.	6	Low. Site could provide some habitat/foraging for this species and may form part of a larger home range.	Low. Removal of only a very small portion of habitat.
<i>Callocephalon fimbriatum</i>	Gang-gang Cockatoo	V, P, 3	-	Distributed from southern Victoria through south- and central-eastern New South Wales. In summer, generally found in tall mountain forests and woodlands, particularly in heavily timbered and mature wet sclerophyll forests. In winter, may occur at lower altitudes in drier more open eucalypt forests and woodlands, and often found in urban areas	126	Low. Site is not suitable habitat for the presence of this species. Site is located right on the coast and vegetation is not suitable for this species.	Low.
<i>Calyptorhynchus slathami</i>	Glossy Black-Cockatoo	V,P,2	-	Feeds almost exclusively on the seeds of <i>Casuarina sp.</i> and <i>Allocasuarina sp.</i> Open forest and woodlands up to 1000m with feed trees present.	411	Low-Moderate. Site may be suitable habitat for the presence of this species. Preferred foraging species are absent from the site. May form part of a larger	Low. Removal of only a very small portion of habitat.



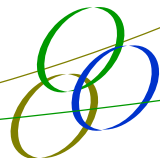
Scientific Name	Common Name	NSW status	Comm. status	Habitat Description	Records	Likelihood of occurrence	Potential Impacts
						home range.	
<i>Glossopsittapusilla</i>	Little Lorikeet	V,P	-	Forages in flowering eucalypts and Melaleuca sp. Riparian habitats are particularly used, due to higher soil fertility and greater productivity. Nests in tree hollows.	65	Low-Moderate. This highly mobile species may forage on flowering Eucalyptus sp. within the subject site and may form part of a larger home range. No tree hollows present at the site for use by this species.	Low. Removal of only a very small portion of foraging habitat.
<i>Lathamusdiscolor</i>	Swift Parrot	E1,P,3	E	Migrates to south-eastern mainland Mar-Oct. Winter-flowering trees such as <i>Eucalyptus robusta</i> , <i>Corymbia maculata</i> , <i>C. gummifera</i> , <i>E. sideroxylon</i> and <i>E. albens</i> are important. Breeds in Tasmania.	39	Low - Moderate. Preferred winter-flowering tree species absent from the site. May form part of a larger home range.	Low. Removal of only a very small portion of foraging habitat.
<i>Ninoxconnivens</i>	Barking Owl	V,P,3	-	Woodland and open forest including fragmented remnants and partly cleared farmland. Preferentially hunts small arboreal mammals such as squirrel gliders and ringtail possums. But as prey decreases becomes reliant on birds, invertebrates and terrestrial mammals such as rodents and rabbits. Large tree hollows are used for nesting.	5	Low-Moderate. Potential foraging habitat is present. Tree hollows of a size required by this species are not present.	Low. Removal of only a very small portion of foraging habitat.
<i>Ninoxstrenua</i>	Powerful Owl	V,P,3	-	Endemic to eastern and south-eastern Australia, mainly on the coastal side of the Great Dividing Range. Inhabits a	187	Low-Moderate. Suitable habitat for the presence of this species. Site may form	Low. Removal of only a very



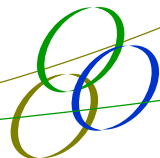
Scientific Name	Common Name	NSW status	Comm. status	Habitat Description	Records	Likelihood of occurrence	Potential Impacts
				range of vegetation types, from woodland and open sclerophyll forest to tall open wet forest and rainforest.		part of a larger home range.	small portion of habitat.
<i>Tyto novaehollandiae</i>	Masked Owl	V,P,3	-	Extends from the coast where it is most abundant to the western plains. Lives in dry eucalypt forests and woodlands from sea level to 1100m.	137	Low-Moderate. Suitable habitat for the presence of this species. Site may form part of a larger home range.	Low. Removal of only a very small portion of habitat.
<i>Tyto tenebricosa</i>	Sooty Owl	V,P,3	-	Occurring on the coast, coastal escarpment and eastern tablelands. There is no seasonal variation in its distribution. Occurs in rainforest, including dry rainforest, subtropical and warm temperate rainforest, as well as moist eucalypt forests. Roosts by day in the hollow of a tall forest tree or in heavy vegetation.	155	Low. Site is not suitable habitat for the presence of this species. Site is a disturbed site and habitat conditions are not suitable for this species. No large tree hollows present at the site	Low.
<i>Climacteris picumnus victoriae</i>	Brown Treecreeper (eastern subspecies)	V,P	-	Eucalypt forests and woodlands of inland plains and slopes of the Great Dividing Range. Mainly inhabits woodlands dominated by rough-barked eucalypts, usually with a grassy or sparse shrub understorey. Fallen timber is an important habitat component for foraging. Nests in tree hollows.	5	Low-Moderate. Site is located right on the coast. Site may provide suitable conditions for the presence of this species and may form part of a larger foraging home range.	Low. Removal of only a very small portion of habitat.
<i>Anthochaeraphrygia</i>	Regent Honeyeater	E4A,P	E	Dry open forest and woodland. Particularly box-ironbark woodland and riparian forests of river sheoak. Feeds on	29	Low-Moderate. Suitable habitat for the presence of this species. Site may form	Low. Removal of only a very



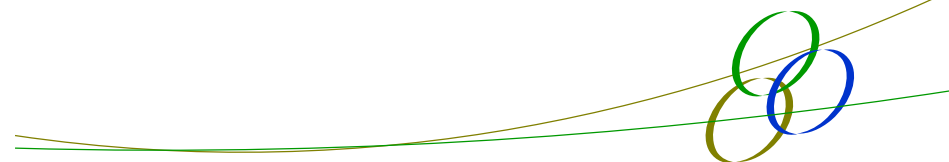
Scientific Name	Common Name	NSW status	Comm. status	Habitat Description	Records	Likelihood of occurrence	Potential Impacts
				the nectar from a wide range of eucalypts and mistletoes.		part of a larger home range for foraging.	small portion of habitat.
<i>Epthianura albifrons</i>	White Fronted chat	V,P		In NSW, it occurs mostly in the southern half of the state, in damp open habitats along the coast, and near waterways in the western part of the state. Along the coastline, it is found predominantly in saltmarsh vegetation but also in open grasslands and sometimes in low shrubs bordering wetland areas.	37	Low. The site is not preferred habitat for this species. Site is not saltmarsh vegetation or open grassland.	Low.
<i>Daphoenositta hrysoptera</i>	Varied Sittella	V,P	-	Eucalypt forests and woodlands, particularly those with rough-barked species, mature smooth-barked gums with dead branches, mallee and Acacia woodland.	21	Moderate. Suitable habitat for the presence of this species. This species may use the site as part of a larger home range for foraging.	Low. Removal of only a very small portion of habitat.
<i>Pachycephala olivacea</i>	Olive Whistler	V,P	-	Inhabits the wet forests on the ranges of the east coast. It has a disjunct distribution in NSW chiefly occupying the beech forests around Barrington Tops and the MacPherson Ranges in the north and wet forests from Illawarra south to Victoria. In the south it is found inland to the Snowy Mountains and the Brindabella Range. Mostly inhabit wet forests above about 500m. During the winter months they may move to lower altitudes.	12	Low. The site is not preferred habitat for this species.	Low.



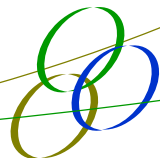
Scientific Name	Common Name	NSW status	Comm. status	Habitat Description	Records	Likelihood of occurrence	Potential Impacts
<i>Melanodryascucullata</i>	Hooded Robin (south-eastern form)	V, P		Prefers lightly wooded country, usually open eucalypt woodland, acacia scrub and mallee, often in or near clearings or open areas. Often perches on low dead stumps and fallen timber or on low-hanging branches. The nest is a small, neat cup of bark and grasses bound with webs, in a tree fork or crevice, from less than 1m to 5m above the ground.	1	Low-Moderate. Suitable habitat for the presence of this species. Site may form part of a larger home range. No nesting habitat was observed during field surveys.	Low. Removal of only a very small portion of habitat.
<i>Petroicaboodan g</i>	Scarlet Robin	V,P	-	Dry eucalypt forests and woodland with open grassy understorey with few scattered shrubs. Occurs in both mature and regrowth forests and occasionally occurs in mallee, wet forests, wetlands and tea-tree swamps.	3	Low-Moderate. Suitable habitat for the presence of this species. Site may form part of a larger home range for this species.	Low. Removal of only a very small portion of habitat.
<i>Petroicaphoenicea</i>	Flame Robin	V,P	-	Prefers clearings or areas with open understorey. Breeds in upland tall moist eucalypt forests and woodlands, often on ridges and slopes. In winter birds migrate to drier more open habitats in the lowlands (valleys and western slopes and plains).	1	Low-Moderate. Site is not a tall moist forest on ridge/slope environment. Habitat conditions not suitable for this species.	Low. Removal of only a very small portion of habitat.
<i>Petroicarodinoaster</i>	Pink Robin	V,P	-	Found in Tasmania and the uplands of eastern Victoria and far south-eastern NSW. Inhabits rainforest and tall, open eucalypt forest, particularly in densely vegetated gullies.	2	Low. Site is not suitable habitat for this species. Site is not rainforest or densely vegetated.	Low. Removal of only a very small portion of habitat.



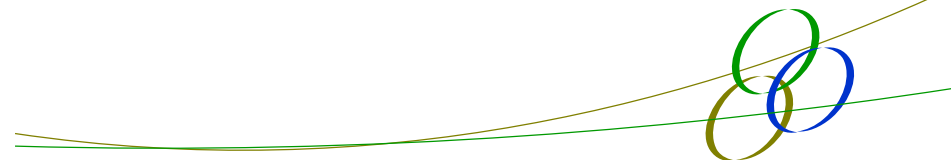
Scientific Name	Common Name	NSW status	Comm. status	Habitat Description	Records	Likelihood of occurrence	Potential Impacts
<i>Rostratula Australia</i>	Australian Painted Snipe	-	E, Migratory Wetland	Restricted to Australia. Most records are from the south east, particularly the Murray Darling Basin. In NSW many records are from the Murray-Darling Basin. Prefers fringes of swamps, dams and nearby marshy areas where there is a cover of grasses, lignum, low scrub or open timber.	-	Low. Site is not suitable habitat for this species	Low. Removal of only a very small portion of habitat.
<i>Dasyornisbrachypterus</i>	Eastern Bristlebird	-	E	Habitat is characterised by dense, low vegetation including heath and open woodland with a heathy understorey. Age of habitat since fires (fire-age) is of paramount importance to this species; Illawarra and southern populations reach maximum densities in habitat that has not been burnt for at least 15 years.	-	Low. Site is not suitable habitat for this species. No heathy understorey.	Low. Removal of only a very small portion of habitat.
<i>Macronectesgiganteus</i>	Southern Giant-Petrel	E1, P	E, Migratory Marine	The Southern Giant Petrel has a circumpolar pelagic range from Antarctica to approximately 20° S and is a common visitor off the coast of NSW. Over summer, the species nests in small colonies amongst open vegetation on Antarctic and subantarctic islands, including Macquarie and Heard Islands and in Australian Antarctic territory.	1	Low. Site is not suitable habitat for this species.	Low.
<i>Pterodromaleucoptera</i>	Gould's Petrel	V	E	Marine species, spending much of its time foraging at sea and coming ashore only to breed. The Australian subspecies breeds and roosts on two islands off		Low. Site is not suitable habitat for this species	Low.



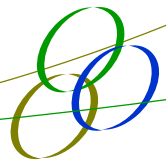
Scientific Name	Common Name	NSW status	Comm. status	Habitat Description	Records	Likelihood of occurrence	Potential Impacts
				NSW, Cabbage Tree and Boondelbah Islands			
<i>Macronectes halli</i>	Northern Giant-Petrel	V, P	V, Migratory Marine	Circumpolar pelagic distribution, usually between 40-64°S in open oceans. Their range extends into subtropical waters (to 28°S) in winter and early spring, and they are a common visitor in NSW waters, predominantly along the south-east coast during winter and autumn.	3	Low. Site is not suitable habitat for this species	Low.
<i>Pterodromasolandri</i>	Providence Petrel	V, P	J	This species is a marine, pelagic seabird that inhabits the subtropical and tropical waters of the south-west Pacific Ocean. On Lord Howe Island they nest in burrows or rock crevices on the forested upper slopes and summits of the remote mountains. Smaller numbers of birds nest at lower altitudes on grassy slopes within tall Kentia Palm forests.	4	Low. Site is not suitable habitat for this species	Low.
<i>Puffinus assimilis</i>	Little Shearwater	V, P		A widespread species in the subtropical Atlantic, Pacific and Indian Oceans. Marine species. Breeding sites at Lord Howe Island include Roach Island, Muttonbird Island, Blackburn Island and on the main Island at Muttonbird Point and Transit Hill.	5	Low. Site is not suitable habitat for this species	Low.
<i>Neophemachrysogaster</i>	Orange-bellied Parrot	E4A, P, 3	CE	Largely found in Tasmania, south-eastern South Australia and southern Victoria. There are occasional reports from NSW. The species spends winter mostly within	P	Low. Site is not suitable habitat for this species	Low.



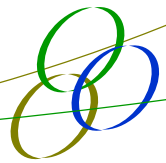
Scientific Name	Common Name	NSW status	Comm. status	Habitat Description	Records	Likelihood of occurrence	Potential Impacts
				3km of the coast in sheltered habitats including bays, lagoons, estuaries, coastal dunes and saltmarshes. Also inhabits small islands and peninsulas and occasionally saltworks and golf courses. Birds forage in low samphireherbland or taller coastal shrubland.			
<i>Sternulanereisn ereis</i>	Australian Fairy Tern	-	V	Occurs along the coasts of Victoria, Tasmania, SA and WA. The subspecies has been known from NSW in the past, but it is unknown if it persists there. Nests on sheltered sandy beaches, spits and banks above the high tide line and below vegetation. Has been found in embayments including offshore, estuarine or lacustrine (lake) islands, wetlands and mainland coastline.	-	Low. Site is not suitable habitat for this species	Low.
<i>Apus pacidicus</i>	Fork-tailed Swift	-	Migratory Marine	In NSW, the species is recorded in all regions. Many records occur east of the Great Divide. The Fork-tailed Swift is almost exclusively aerial with them foraging and roosting aerially.	-	Low-moderate. Site may form part of a larger home range for foraging purposes.	Low. Removal of only a very small portion of habitat.
<i>Ardea alba</i>	Great Egret, White Egret	-	Migratory Wetland	Reported in a wide range of wetland habitats (for example inland and coastal, freshwater and saline, permanent and ephemeral, open and vegetated, large and small, natural and artificial).	-	Low. Site is not suitable habitat for this species	Low.



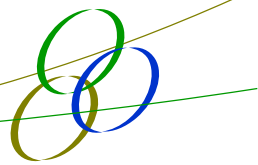
Scientific Name	Common Name	NSW status	Comm. status	Habitat Description	Records	Likelihood of occurrence	Potential Impacts
<i>Charadrius leschenaultii</i>	Greater Sand-plover	V, P	V, J, K	<p>Almost entirely restricted to coastal areas in NSW, mainly on sheltered sandy, shelly or muddy beaches or estuaries with large intertidal mudflats or sandbanks.</p> <p>Roosts during high tide on sandy beaches and rocky shores; begin foraging activity on wet ground at low tide, usually away from the edge of the water.</p>	6	Low. Site is not suitable habitat for this species	Low.
<i>Ardea ibis</i>	Cattle Egret	-	Migratory Wetland	<p>Two major distributions have been located; from north-east WA to the Top End of the Northern Territory and around south-east Australia.</p> <p>The Cattle Egret occurs in tropical and temperate grasslands, wooded lands and terrestrial wetlands. Observed in moist, low-lying poorly drained pastures with an abundance of high grass; it avoids low grass pastures.</p>	-	Low. Site is not suitable habitat for this species	Low.
<i>Gallinago hardwickii</i>	Latham's Snip, Japanese Snipe	-	Migratory Wetland	Latham's Snipe is a non-breeding visitor to south-eastern Australia. This species occurs in permanent and ephemeral wetlands up to 2000m above sea-level. They usually inhabit open, freshwater wetlands with low, dense vegetation.	-	Low. Site is not suitable habitat for this species	Low.
<i>Haliaeetus leucogaster</i>	White-bellied Sea-Eagle	-	Migratory Terrestrial	Distributed along the coastline of Australia, also extending inland along some larger waterways. Habitat includes large areas of open water. Terrestrial	-	Low-moderate. Site may form part of a larger home range for foraging purposes. No evidence of this species	Low. Removal of only a very small



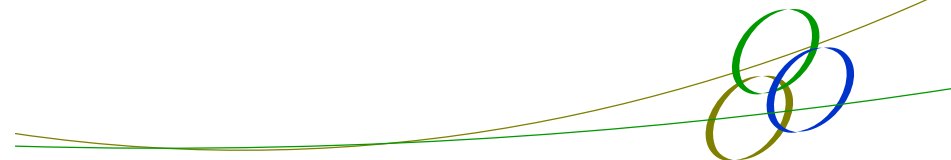
Scientific Name	Common Name	NSW status	Comm. status	Habitat Description	Records	Likelihood of occurrence	Potential Impacts
				habitats include coastal dunes, tidal flats, grassland, heathland, woodland, forest. Breeding territories are close to water, mainly in tall open forest or woodland, although nests are sometimes located in other habitats such as dense forest, closed scrub or in remnant trees on cleared land.		was observed at the site.	portion of habitat.
<i>Hirundapuscaud acutus</i>	White-throated Needletail	-	Migratory Terrestrial	Recorded in all coastal regions of Qld and NSW. In Australia, this species is almost exclusively aerial, almost always foraging aerially. Although it has been recorded roosting in trees in forests and woodlands, both among dense foliage in the canopy or in hollows. Probably recorded most often above wooded areas, including open forest and rainforest.	-	Low-moderate. Site may form part of a larger home range for foraging purposes. No evidence of this species was observed at the site. No tree hollows were recorded on site.	Low. Removal of only a very small portion of habitat.
<i>Meropsornatus</i>	Rainbow Bee-eater	-	Migratory Terrestrial	The Rainbow Bee-eater is distributed across much of mainland Australia occurring mainly in open forests (usually dominated by eucalypts) and woodlands, shrublands, and in various cleared or semi-cleared habitats.	-	Low-moderate. Site may form part of a larger home range for foraging purposes.	Low. Removal of only a very small portion of habitat.
<i>Monarchamelan opsis</i>	Black-faced Monarch	-	Migratory Terrestrial	The Black-faced Monarch is widespread in eastern Australia. Mainly occurs in rainforest ecosystems although it can be found in gullies in mountain areas or coastal foothills, softwood scrub	-	Low. Site is not suitable habitat for this species. Site is not a rainforest ecosystem and scrub species required are not	Low.



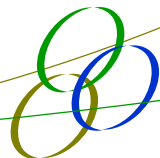
Scientific Name	Common Name	NSW status	Comm. status	Habitat Description	Records	Likelihood of occurrence	Potential Impacts
				dominated by Brigalow (<i>Acacia harpophylla</i>), coastal scrub dominated by Coast Banksia (<i>Banksia integrifolia</i>) and Southern Mahogany.		present.	
<i>Myiagracyanoleuca</i>	Satin Flycatcher	-	Migratory Terrestrial	The Satin Flycatcher is widespread in eastern Australia. Satin Flycatchers inhabit heavily vegetated gullies in eucalypt-dominated forests and taller woodlands, and on migration, occur in coastal forests, woodlands, mangroves and drier woodlands and open forests.	-	Low-moderate. Site may form part of a larger home range for foraging purposes.	Low. Removal of only a very small portion of habitat.
<i>Puffinus carneipes</i>	Flesh-footed Shearwater, Fleshy-footed Shearwater	-	Migratory Marine	The marine, pelagic Fleshy-footed Shearwater has been recorded mainly in subtropical waters, over continental shelves and slopes. Breeding may occur on islands within the Australasian region and Indian Ocean.	-	Low. Site is not suitable habitat for this species	Low.
<i>Rhipidura rufifrons</i>	Rufous Fantail	-	Migratory Terrestrial	The Rufous Fantail occurs in coastal and near coastal districts of northern and eastern Australia. In east and south-east Australia, this species mainly inhabits wet sclerophyll forests, often in gullies dominated by eucalypts such as Tallow-wood, Mountain Grey Gum, Narrow-leaved Peppermint, Mountain Ash, Alpine Ash, Blackbutt or Red Mahogany; usually with a dense shrubby understorey often including ferns. They also occur in subtropical and temperate	-	Low-moderate. Site may provide suitable habitat conditions for the presence of this species. Site does not have a heavily vegetated shrub layer.	Low. Removal of only a very small portion of habitat.



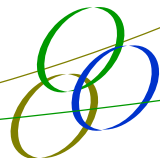
Scientific Name	Common Name	NSW status	Comm. status	Habitat Description	Records	Likelihood of occurrence	Potential Impacts
				rainforests; for example near Bega in south-east NSW, where they are recorded in temperate Lilly Pilly rainforest, with Grey Myrtle, Sassafras and Sweet Pittosporum subdominants.			
<i>Rostratula benghalensis (sensulato)</i>	Painted Snipe	-	E	Inhabits inland and coastal shallow freshwater wetlands. The species occurs in both ephemeral and permanent wetlands, particularly where there is a cover of vegetation, including grasses, Lignum and Samphire.	-	Low. Site is not suitable habitat for this species	Low.
<i>Sterna albifrons</i>	Little Tern	E1, P	Migratory Marine	Found on the north, east and south-east Australian coasts. Almost exclusively coastal, preferring sheltered environments; however may occur several kilometres from the sea in harbours, inlets and rivers. Nests in low dunes or on sandy beaches just above high tide mark near estuary mouths or adjacent to coastal lakes and islands.	129	Low. Site is not suitable habitat for this species	Low.
<i>Numenius Minutus</i>	Little Curlew	-	Migratory Wetland	Found feeding in short, dry grassland and sedgeland, including dry floodplains and blacksoil plains, which have scattered, shallow freshwater pools or areas seasonally inundated.	-	Low. Site is not suitable habitat for this species	Low.
<i>Pandion cristatus</i>	Eastern Osprey	V, P, 3	-	Eastern Ospreys are found right around the Australian coast line, except for Victoria and Tasmania. Favour coastal areas, especially the mouths of large	38	Low. Site is not suitable habitat for this species. No dead trees located on the site for nesting purposes.	Low.



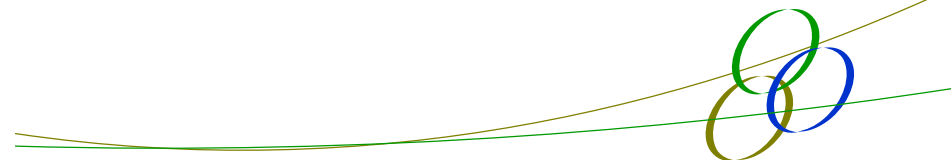
Scientific Name	Common Name	NSW status	Comm. status	Habitat Description	Records	Likelihood of occurrence	Potential Impacts
				rivers, lagoons and lakes. Nests are made high up in dead trees or in dead crowns of live trees, usually within one kilometre of the sea.			
<i>Falco hypoleucos</i>	Grey Falcon	E1, P, 1		Sparsely distributed in NSW, chiefly throughout the Murray-Darling Basin, with the occasional vagrant east of the Great Dividing Range. Usually restricted to shrubland, grassland and wooded watercourses of arid and semi-arid regions, although it is occasionally found in open woodlands near the coast. Also occurs near wetlands where surface water attracts prey.	1	Low. Site is not suitable habitat for this species. Site is located on the coast and is an open forest with little shrub/grass.	Low.
<i>Falcosubniger</i>	Black Falcon	V, P		Widely, but sparsely, distributed in NSW, mostly occurring in inland regions.	1	Low-moderate. Site may provide suitable habitat conditions for foraging purposes. Site is located right on the coast.	Low. Removal of only a very small portion of habitat.
<i>Esacusmagnirostris</i>	Beach Stone Curlew	E4A, P	-	Found exclusively along the coast, on a wide range of beaches, islands, reefs and in estuaries, and may often be seen at the edges of or near mangroves.	P	Low. Site is not suitable habitat for this species	Low.
<i>Haematopusfuliginosus</i>	Sooty Oystercatcher	V, P	-	Sooty Oystercatchers are found around the entire Australian coast. Favours rocky headlands, rocky shelves, exposed reefs with rock pools, beaches and	117	Low. Site is not suitable habitat for this species	Low.



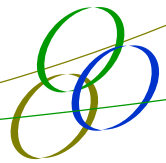
Scientific Name	Common Name	NSW status	Comm. status	Habitat Description	Records	Likelihood of occurrence	Potential Impacts
				muddy estuaries.			
<i>Haematopuslon girostris</i>	Pied Oystercatcher	E1, P	-	The species is distributed around the entire Australian coastline. Favours intertidal flats of inlets and bays, open beaches and sandbanks. Nests mostly on coastal or estuarine beaches although occasionally they use saltmarsh or grassy areas.	301	Low. Site is not suitable habitat for this species	Low.
<i>Charadriusmon golus</i>	Lesser Sand-plover	V, P	C, J, K	The Lesser Sand-Plover is widespread in coastal regions. Usually found in coastal littoral and estuarine environments. It inhabits large intertidal sandflats or mudflats in sheltered bays, harbours and estuaries, and occasionally sandy ocean beaches, coral reefs, wave-cut rock platforms and rocky outcrops.	5	Low. Site is not suitable habitat for this species	Low.
<i>Thinornisrubricollis</i>	Hooded Plover	E4A, P	-	The Hooded Plover (eastern) is widely dispersed on or near sandy beaches in south-eastern Australia. Occurs in coastal areas, on or near high energy sandy beaches. Sometimes found in habitats other than beaches, e.g. on rock platforms, reefs, around near coastal lakes and lagoons.	95	Low. Site is not suitable habitat for this species	Low.
<i>Stagonopleuraa uttata</i>	Diamond Firetail	V, P		Found in grassy eucalypt woodlands, including Box-Gum Woodlands and Snow Gum <i>Eucalyptus pauciflora</i> Woodlands. Also in open forest, mallee, Natural Temperate Grassland, and in secondary	4	Low-moderate. Site may provide suitable conditions for the presence of this species and may form part of a larger home range.	Low. Removal of only a very small portion of



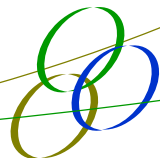
Scientific Name	Common Name	NSW status	Comm. status	Habitat Description	Records	Likelihood of occurrence	Potential Impacts
				grassland derived from other communities. Also found in riparian areas, and sometimes in lightly wooded farmland. Birds roost in dense shrubs or in smaller nests built especially for roosting.			habitat.
<i>Calidris alba</i>	Sanderling	V, P	C, J, K	Occur along the NSW coast, with occasional inland sightings. Often found on low beaches of firm sand, near reefs and inlets, along tidal mudflats and bare open coastal lagoons; individuals are rarely recorded in near-coastal wetlands. Roosts on bare sand, behind clumps of beach-cast kelp or in coastal dunes. Breeding occurs in the Northern Hemisphere.	8	Low. Site is not suitable habitat for this species	Low.
<i>Calidris ferruginea</i>	Curlew Sandpiper	E1, P	C, J, K	This species is distributed around most of the coastline of Australia. Generally occupies littoral and estuarine habitats, and in NSW is mainly found in intertidal mudflats of sheltered coasts. It also occurs in non-tidal swamps, lakes and lagoons on the coast and sometimes the inland.	11	Low. Site is not suitable habitat for this species	Low.
<i>Calidris tenuirostris</i>	Great Knot	V, P	C, J, K	Occurs within sheltered, coastal habitats containing large, intertidal mudflats or sandflats, including inlets, bays, harbours, estuaries and lagoons. Often recorded on sandy beaches with	13	Low. Site is not suitable habitat for this species	Low.



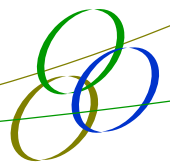
Scientific Name	Common Name	NSW status	Comm. status	Habitat Description	Records	Likelihood of occurrence	Potential Impacts
				mudflats nearby, sandy spits and islets and sometimes on exposed reefs or rock platforms.			
<i>Limosalimosa</i>	Black-tailed Godwit	V, P	C, J, K	This species is a migratory wading bird that breeds in Mongolia and Eastern Siberia and flies to Australia for the southern summer. Usually found in sheltered bays, estuaries and lagoons with large intertidal mudflats and/or sandflats. Further inland, can be found on mudflats and in water less than 10cm deep, around muddy lakes and swamps.	5	Low. Site is not suitable habitat for this species	Low.
<i>Xenuscinereus</i>	Terek Sandpiper	V, P	C, J, K	Recorded on coastal mudflats, lagoons, creeks and estuaries. Favours mudbanks and sandbanks located near mangroves, but may also be observed on rocky pools and reefs, and occasionally up to 10km inland around brackish pools.	K	Low. Site is not suitable habitat for this species	Low.
<i>Onychoprion fuscatus</i>	Sooty Tern	V, P	-	The Sooty Tern is found over tropical and sub-tropical seas. Large flocks can be seen soaring, skimming and dipping in off shore waters. Breeds in large colonies in sand or coral scrapes on offshore islands and cays including Lord Howe and Norfolk Islands.	1	Low. Site is not suitable habitat for this species	Low.
<i>Pezoporus wallicus</i>	Eastern Ground Parrot	V, P, 3	-	This species inhabits south-eastern Australia from southern Queensland through NSW to western Victoria. The Ground Parrot occurs in high rainfall	13	Low. Site is not suitable habitat for this species	Low.



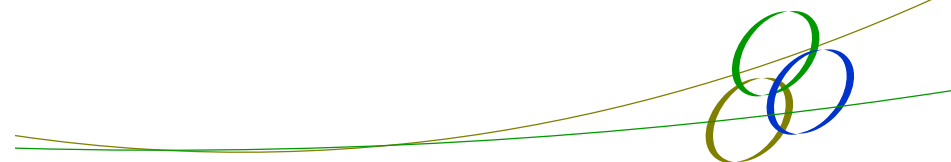
Scientific Name	Common Name	NSW status	Comm. status	Habitat Description	Records	Likelihood of occurrence	Potential Impacts
				coastal and near coastal low heathlands and sedgelands, generally below one metre in height and very dense (up to 90% projected foliage cover).			
<i>Calamanthus fuliginosus</i>	Striated Fieldwren	E1, P	-	Mainly a bird of ground and understorey vegetation, and can be found in swampy, coastal heathlands, tussocky grasslands, low shrubby vegetation and margins of swamps.	5	Low. Site is not suitable habitat for this species. Very little shrub storey vegetation present at the site.	Low.
<i>Chthonicola sagittata</i>	Speckled Warbler	V, P		The species is most frequently reported from the hills and tablelands of the Great Dividing Range, and rarely from the coast. Typical habitat would include scattered native tussock grasses, a sparse shrub layer, some eucalypt regrowth and an open canopy. Large, relatively undisturbed remnants are required for the species to persist in an area.	3	Low. Site may provide suitable habitat conditions for the presence of this species, however, site is situated right on the coast.	Low. Removal of only a very small portion of habitat.
Mammals							
<i>Dasyurus maculatus</i>	Spotted-tailed Quoll	V,P	E	A variety of vegetation such as rainforest, open forest, woodland, coastal heath, inland riparian forest. Have home ranges 750 - 3500 ha. Den sites may be located in hollow-bearing trees, fallen logs, small caves, rock crevices, boulder fields and rocky cliffs.	32	Low-Moderate. The species may use the subject site as part of a larger home range. No evidence of den or latrine sites were found within the subject site. Hollow bearing trees were not present at the site.	Low. Removal of only a very small portion of habitat.



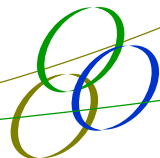
Scientific Name	Common Name	NSW status	Comm. status	Habitat Description	Records	Likelihood of occurrence	Potential Impacts
<i>Phascogale tapoatafa</i>	Brush-tailed Phascogale	V,P	-	Mostly found in dry sclerophyll open forest with sparse groundcover, east of the Great Dividing Range. However, has been recorded in heath, swamps, rainforest and wet sclerophyll forest. Nest and shelter in tree hollows with small entrances (2.5 - 4cm)	4	Low-Moderate. The species may use the subject site as part of a larger home range. No evidence of this species was observed. Hollow bearing trees were not present at the site for nesting purposes.	Low. Removal of only a very small portion of habitat.
<i>Sminthopsis leucopus</i>	White-footed Dunnart	V, P	-	The Shoalhaven area is the species' northern-most limit. This species habitat includes coastal dune vegetation, coastal forest, tussock grassland and sedgeland, heathland, woodland and forest. In NSW, the species seems to favour vegetation communities with an open understorey structure.	13	Moderate. The site is suitable habitat conditions for the presence of this species.	Moderate. Formally assessed in Appendix 8
<i>Isodon obesulus</i>	Southern Brown Bandicoot (Eastern)	E1, P	E	This species is generally only found in heath or open forest with a heathy understorey on sandy or friable soils. Nests may be located under Grass trees <i>Xanthorrhoea</i> spp., blackberry bushes and other shrubs, or in rabbit burrows.	1	Low-Moderate. The species may use the subject site as part of a larger home range. However, site is not heathy vegetation and preferred vegetation not present at the site. No evidence of burrowing was observed at the site.	Low. Removal of only a very small portion of habitat.
<i>Phascolarctos cinereus</i>	Koala	V,P	V	Found in eucalypt woodlands and forest foraging on preferred food trees.	11	Moderate. Koala may be present as part of a larger home range. Some feed trees are present on site.	Moderate. Formally assessed in Appendix 8



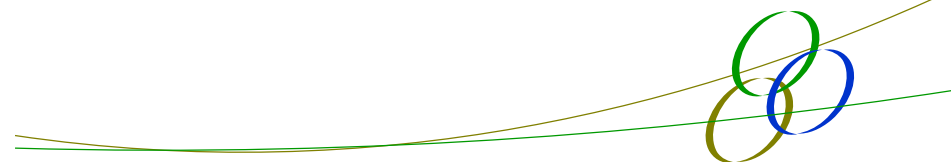
Scientific Name	Common Name	NSW status	Comm. status	Habitat Description	Records	Likelihood of occurrence	Potential Impacts
<i>Cercartetus nanus</i>	Eastern Pygmy-possum	V,P	-	Variety of habitats from rainforest to dry sclerophyll forest and woodland to heath. In most areas they prefer woodlands and heath. Feeds on nectar and pollen from banksias, eucalypts and Callistemon sp., with insects also taken.	8	Low-Moderate. The species may use the subject site as part of a larger home range. Eucalypts present; however, hollow bearing trees were not present at the site. Site is not heathy vegetation.	Low. Removal of only a very small portion of habitat.
<i>Petaurus australis</i>	Yellow-bellied Glider	V,P	-	Tall mature eucalypt forest, generally in areas with high rainfall and nutrient rich soils. Feed primarily on nectar, sap, honeydew and manna with pollen and insects also taken. Often leave a distinctive V-shaped feeding scar on tree trunks. Den in tree hollows of large trees.	658	Low-Moderate. The species may use the subject site as part of a larger home range. Eucalypts present; however, hollow bearing trees were not present at the site. No evidence of V-shaped feeding scars were recorded on site during field surveys.	Low. Removal of only a very small portion of habitat.
<i>Petaurus norfolcensis</i>	Squirrel Glider	V,P	-	Inhabits mature or old growth box, box-ironbark woodlands and river red gum forest west of the Great Dividing Range. Prefers mixed species stands with a shrub or Acacia midstorey. Uses tree hollows as den sites.	15	Low. Site may provide suitable habitat conditions for the presence of this species, however, site is situated right on the coast and is not old growth forest and does not contain an Acacia midstorey. No hollows recorded on site.	Low. Removal of only a very small portion of habitat.
<i>Petauroides volans</i>	Greater Glider population in the Eurobodalla	E2, P	-	The Greater Glider occurs in eucalypt forests and woodlands along the east coast of Australia. Feeds exclusively on eucalypt leaves, buds, flowers and	298	Low-Moderate. The species may use the subject site as part of a larger home range. Eucalypts present for	Low. Removal of only a very small



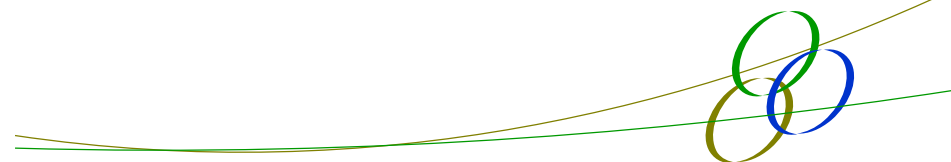
Scientific Name	Common Name	NSW status	Comm. status	Habitat Description	Records	Likelihood of occurrence	Potential Impacts
	LGA			mistletoe. Shelters during the day in tree hollows.		foraging purposes; however, hollow bearing trees were not present at the site.	portion of habitat.
<i>Potorous tridactylus</i>	Long-nosed Potoroo (SE mainland)	V, P	V	Inhabits coastal heaths and dry and wet sclerophyll forests. Dense understorey with occasional open areas is an essential part of habitat, and may consist of grass-trees, sedges, ferns or heath, or of low shrubs of tea-trees or melaleucas. A sandy loam soil is also a common feature.	24	Low-Moderate. The species may use the subject site as part of a larger home range. Site has a sparse understorey with little vegetated cover for shelter.	Low. Removal of only a very small portion of habitat.
<i>Pteropus poliocephalus</i>	Grey-headed Flying-fox	V, P	V	This species is generally found within 200 km of Australia's eastern coast. Generally occurs in subtropical and temperate rainforests, tall sclerophyll forests and woodlands, heaths and swamps as well as urban gardens and cultivated fruit crops. Roosting camps are commonly found in gullies, close to water, in vegetation with a dense canopy.	79	Low. Site may provide some suitable foraging for this species, however, site is not rainforest habitat and has a sparse shrub layer.	Low. Removal of only a very small portion of habitat.
<i>Saccolaimus flaviventris</i>	Yellow-bellied Sheath-tail-bat	V,P	-	Wide-ranging species found across northern and eastern Australia. Roosts singly or in groups of up to six, in tree hollows and buildings; in treeless areas they are known to utilise mammal burrows	7	Low-Moderate. Highly mobile species that may forage within the subject site at some stage. No tree hollows at the site for roosting.	Low. Removal of only a very small portion of habitat.
<i>Mormopterus norfolkensis</i>	Eastern Freetail-bat	V, P	-	The Eastern Freetail-bat is found along the east coast from south QLD to	30	Low-Moderate. Highly mobile species that may	Low. Removal of



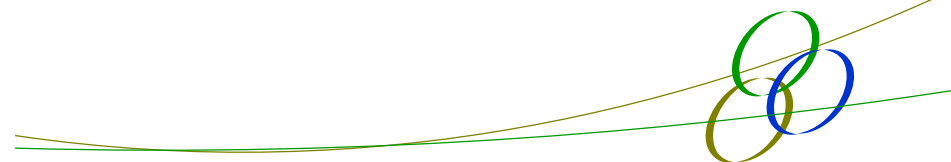
Scientific Name	Common Name	NSW status	Comm. status	Habitat Description	Records	Likelihood of occurrence	Potential Impacts
				southern NSW. Occurs in dry sclerophyll forest, woodland, swamp forests and mangrove forests east of the Great Dividing Range. Roost mainly in tree hollows but will also roost under bark.		forage within the subject site at some stage. No tree hollows at the site for roosting.	only a very small portion of habitat.
<i>Chalinolobus dwyeri</i>	Large-eared Pied Bat,	V, P	V	Roosts in caves (near their entrances), crevices in cliffs, old mine workings and in the disused, bottle-shaped mud nests of the Fairy Martin, frequenting low to mid-elevation dry open forest and woodland close to these features. Also found in well-timbered areas containing gullies.	P	Low-Moderate. Highly mobile species that may forage within the subject site at some stage. No caves or tree hollows at the site for roosting.	Low. Removal of only a very small portion of habitat.
<i>Isistrellus tasmaniensis</i>	Eastern False Pipistrelle	V, P	-	Found on the south-east coast and ranges of Australia, from southern Queensland to Victoria and Tasmania. Prefers moist habitats, with trees taller than 20 m. Generally roosts in eucalypt hollows, but has also been found under loose bark on trees or in buildings.	8	Low-Moderate. Highly mobile species that may forage within the subject site at some stage. No tree hollows at the site.	Low. Removal of only a very small portion of habitat.
<i>Kerivoula papuensis</i>	Golden-tipped Bat	V, P	-	Found in rainforest and adjacent wet and dry sclerophyll forest up to 1000m. Also recorded in tall open forest, Casuarina-dominated riparian forest and coastal Melaleuca forests. Roost mainly in abandoned hanging Yellow-throated Scrubwren and Brown Gerygone nests, also in tree hollows, dense foliage and epiphytes; located in rainforest gullies on	8	Low-Moderate. Highly mobile species that may forage within the subject site at some stage. No tree hollows at the site. No evidence of abandoned nesting was observed during field surveys.	Low. Removal of only a very small portion of habitat.



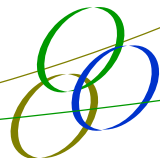
Scientific Name	Common Name	NSW status	Comm. status	Habitat Description	Records	Likelihood of occurrence	Potential Impacts
				small first- and second-order streams.			
<i>Miniopterus schreibersii oceanensis</i>	Eastern Bentwing-bat	V,P	-	Forages in a range of habitat types. Roosts in caves, derelict mines, culverts and other man-made structures. Form maternity colonies that are faithful to particular caves.	36	Low. The species may forage over the subject site. However, no potential roosting habitat present within the subject site.	Low. Removal of only a very small portion of habitat.
<i>Myotis macropus</i>	Southern Myotis	V,P	-	Forages over streams and pools catching insects and small fish by raking their feet across the water surface. Roost close to water in caves, mine shafts, tree hollows and man-made structures.	26	Low. The species may forage over the subject site. However, no potential roosting habitat present within the subject site.	Low. Removal of only a very small portion of habitat.
<i>Scoteanax rueppellii</i>	Greater Broad-nosed Bat	V, P	-	Utilises a variety of habitats from woodland through to moist and dry eucalypt forest and rainforest, though it is most commonly found in tall wet forest. This species usually roosts in tree hollows.	31	Low-Moderate. Highly mobile species that may forage within the subject site at some stage. No tree hollows at the site.	Low. Removal of only a very small portion of habitat.
<i>Pseudomys novaehollandiae</i>	New Holland Mouse, Pookila	-	V	The New Holland Mouse has a fragmented distribution across Tasmania, Victoria, New South Wales and Queensland. Known to inhabit open heathlands, woodlands and forests with a heathland understorey and vegetated sand dunes.	-	Low. Site does not contain a heath/shrubby understorey for shelter purposes. No evidence of this species was observed.	Low. Removal of only a very small portion of habitat.



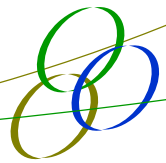
Scientific Name	Common Name	NSW status	Comm. status	Habitat Description	Records	Likelihood of occurrence	Potential Impacts
Plants							
<i>Seneciospathulatus</i>	Coast Groundsel	E1,P	-	Coast Groundsel grows on frontal dunes.	P	Low. Site is does not provide suitable conditions for the presence of this species. Site is open forest.	Low.
<i>Wilsoniabackhousei</i>	Narrow-leafed Wilsonia	V,P	-	Found on the coast between Mimosa Rocks National Park and Wamberal north of Sydney This is a species of the margins of salt marshes and lakes.	3	Low. Site is does not provide suitable conditions for the presence of this species. Site is open forest.	Low.
<i>Wilsoniarotundifolia</i>	Round-leafed Wilsonia	E1,P	-	Known from several sites in the Jervis Bay area, Royal National Park, near Deniliquin and on the lakebeds of Lake George and Lake Bathurst when these are exposed during droughts. Grows in mud in coastal saltmarsh and inland saline or brackish lake beds.	6	Low. Site is does not provide suitable conditions for the presence of this species. Site is open forest.	Low.
<i>Aldrovandaventriculosa</i>	Waterwheel Plant	E1, P		Known in NSW only from lagoons in the Moruya area on the south coast, from the Evans Head area on the north coast and from north of Guyra on the New England Tablelands. Found free-floating in near-coastal shallow freshwater lagoons that are rich in organic matter.	6	Low. Site is does not provide suitable conditions for the presence of this species. Site is open forest.	Low.
<i>Budawangiagnidioides</i>	Budawangs Cliff-heath	V,P	V	The Budawang Cliff-heath has only been recorded in the Northern Budawang Range west of Ulladulla. Grows in skeletal soil in sandstone crevices or on sandy ledges beneath cliffs, on the	4	Low. Site is does not provide suitable conditions for the presence of this species. Site is open forest.	Low.



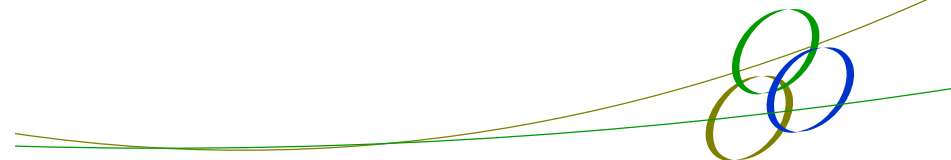
Scientific Name	Common Name	NSW status	Comm. status	Habitat Description	Records	Likelihood of occurrence	Potential Impacts
				margins of open forest and heathland.			
<i>Haloragis exalta</i> subsp. <i>exalta</i>	Square Raspwort	V,P	V	Square Raspwort occurs in 4 widely scattered localities in eastern NSW, distributed in the Central Coast, South Coast and North Western Slopes botanical subdivisions of NSW. It appears to require protected and shaded damp situations in riparian habitats.	3	Low. Site is does not provide suitable conditions for the presence of this species. Site is open forest. No riparian habitat at the site.	Low.
<i>Eucalyptus aggregata</i>	Black Gum	V, P		Grows on alluvial soils, on cold, poorly-drained flats and hollows adjacent to creeks and small rivers. Also occurs as isolated paddock trees in modified native or exotic pastures. Often grows with other cold-adapted eucalypts, such as Snow Gum or White Sallee, Manna or Ribbon Gum, Candlebark, Black Sallee and Swamp Gum. Black Gum usually occurs in an open woodland formation with a grassy groundlayer dominated either by River Tussock or Kangaroo Grass, but with few shrubs.	K	Low. Site is does not provide suitable conditions for the presence of this species. Site is not an open grassy woodland and co-occurring species are not present at the site. This species was not identified during site surveys.	Low.
<i>Eucalyptus sturgissiana</i>	Ettrema Mallee	V,P		Usually grows as an emergent in low shrub-heath. Grows on sandy, swampy soils.	1	Low. Site is does not provide suitable conditions for the presence of this species. Site is open forest with no heath vegetation present.	Low.
<i>Caladenia</i>	Thick-lipped	E1, P, 2	V	This species is endemic to mainland south-east Australia. Favours low, dry	P	Low-moderate. Site may provide some suitable	Low.



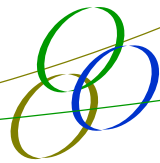
Scientific Name	Common Name	NSW status	Comm. status	Habitat Description	Records	Likelihood of occurrence	Potential Impacts
<i>tessellate</i>	Spider-orchid			sclerophyll woodland with a heathy or sometimes grassy understorey on clay loams or sandy soils.		conditions for the presence of this species. No heathy understorey present.	Removal of only a very small portion of vegetation
<i>Cryptostylis hunt-eriana</i>	Leafless Tongue-orchid	V, P, 2	V	Does not appear to have well defined habitat preferences and is known from a range of communities, including swamp-heath and woodland. The larger populations typically occur in woodland dominated by Scribbly Gum, Silvertop Ash, Red Bloodwood and Black Sheoak; appears to prefer open areas in the understorey and is often found in association with the Large Tongue Orchid and the Tartan Tongue Orchid.	5	Low. Due to the broad range of habitat preferences site may provide suitable conditions for the presence of this species. This species was not identified during the site inspection.	Low. Removal of only a very small portion of vegetation
<i>Genoplesium vernale</i>	East Lynne Midge-orchid	V, P, 2	V	The East Lynne Midge Orchid grows in 'poorer' dry sclerophyll woodland and forest on the south coast of NSW between Mogo and Ulladulla. It is confined to areas with good drainage and shallow, low fertility soils. Confined to areas with well-drained shallow soils of low fertility.	4	Low-moderate. Site may provide some suitable conditions for the presence of this species. This species was not identified during the site inspection.	Low. Removal of only a very small portion of vegetation
<i>Distichlis distichophylla</i>	Australian Saltgrass	E1, P	-	This species has limited NSW range it grows only in coastal situations, except for one existing population at Lake Cargellico. Scattered records are from the areas of Jervis Bay, Bermagui,	5	Low. Site does not provide suitable conditions for the presence of this species. Site is open forest.	Low.



Scientific Name	Common Name	NSW status	Comm. status	Habitat Description	Records	Likelihood of occurrence	Potential Impacts
				Wonboyn, Narooma, Bodalla and Nadgee Nature Reserve. A coloniser of damp saline soils; found at the edges of salt marshes and on low dunes.			
<i>Persicariaelati or</i>	Tall Knotweed	V, P	V	This species normally grows in damp places, especially beside streams and lakes. Occasionally in swamp forest or associated with disturbance.	7	Low. Site is does not provide suitable conditions for the presence of this species. Site is open forest, no streams or lakes present at the site.	Low.
<i>Pomaderris bodalla</i>	Bodalla Pomaderris	V,P		On the south coast <i>Pomaderris bodalla</i> occurs in moist open forest along sheltered gullies or along stream banks.	2	Low-moderate. Site may provide some suitable habitat conditions for the presence of this species however, site is not situated near streams or sheltered gullies.	Low. Removal of only a very small portion of vegetation
<i>Galium austral</i>	Tangled Bedstraw	E1, P	-	In NSW (and ACT Territory in Jervis Bay), Tangled Bedstraw has been recorded in Turpentine forest and coastal Acacia shrubland.	4	Low. Site is does not provide suitable conditions for the presence of this species. Site is open forest, no turpentine species were recorded and there is very little shrub present.	Low.
<i>Correa baeuerlenii</i>	Chef's Cap Correa	V, P	V	Occurs in riparian sites within forests of various eucalypts, including Silvertop Ash (<i>Eucalyptus sieberi</i>), Yellow Stringybark (<i>E. muelleriana</i>), Blue-leafed Stringybark (<i>E. agglomerata</i>) and Spotted Gum (<i>Corymbia maculata</i>), or she-oak	19	Low. Site is does not provide suitable conditions for the presence of this species. Site is open forest, with none of the co-occurring forest species present on site.	Low.



Scientific Name	Common Name	NSW status	Comm. status	Habitat Description	Records	Likelihood of occurrence	Potential Impacts
				woodland. It may also be found in near-coastal rocky sites.			
<i>Zieria tuberculata</i>	Warty Zieria	V, P	V	The Warty Zieria grows in heath amongst rocky outcrops on rain forest edges and in tall forest and shrubland. The flowers appear from late winter to spring.	57	Low. Site is not heath or rainforest habitat with a sparse shrub layer.	Low. Removal of only a very small portion of vegetation
<i>Thesium austral</i>	Austral Toadflax	V,P	V	Found in very small populations scattered across eastern NSW, along the coast, and from the Northern to Southern Tablelands. Occurs in grassland on coastal headlands or grassland and grassy woodland away from the coast. Grows in association with <i>Themeda australis</i> .	8	Low-moderate. <i>Themeda australis</i> was identified at the site however after an extensive search of the area this species was not identified on site.	Low. Removal of only a very small portion of vegetation
<i>Streblus pendulus</i>	Siah's Backbone, Isaac Wood	-	E	On the Australian mainland, this species is found in warmer rainforests, primarily along watercourses. From near sea level to 800m above sea level. The species grows in well-developed rainforest, gallery forest and drier, more seasonal rainforests.	-	Low. Site does not provide suitable habitat conditions for the presence of this species. Site is not rainforest habitat.	Low.



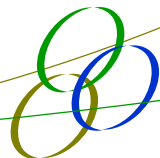
Appendix 5

Ecological Community Assessment

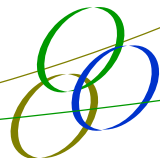
Species, populations and communities with a likelihood of occurrence of greater than Moderate have had potential impacts formally assessed using a 7-part test under the *Environmental Planning and Assessment Act 1979* (see Appendix 8).

E1 - Endangered; E2 - Endangered Population; E3 - Endangered ecological community; E4 Critically endangered; P - Protected; K - Known occurrence; PR - Predicted occurrence; V - Vulnerable; E4 critically endangered

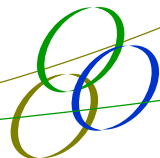
Community Name	NSW status	Comm. status	Habitat Description	Records	Likelihood of occurrence	Potential Impacts
<i>Bangalay Sand Forest of the Sydney Basin and South East Corner bioregions</i>	E3	-	Bangalay Sand Forest of the Sydney Basin and South East Corner bioregions typically has a dense to open tree canopy, approximately 5 - 20m tall. The most common tree species include Bangalay (<i>Eucalyptus botryoides</i>) and Coast Banksia (<i>Banksia integrifolia</i> subsp. <i>integrifolia</i>), while Blackbutt (<i>Eucalyptus pilularis</i>) and Lilly Pilly (<i>Acmenasmithii</i>) may occur in more sheltered situations, and Swamp Oak (<i>Casuarinaglauca</i>) may occur on dunes exposed to salt-bearing sea breezes or where Bangalay Sand Forest adjoins Swamp Oak Floodplain Forest of the NSW North Coast, Sydney Basin and South East Corner bioregions.	K	Low. This site is not representative of this EEC	Low. Removal of only a very small portion of vegetation within the area for the creation of the APZ.
<i>Coastal Saltmarsh in the New South Wales North Coast, Sydney Basin and South East Corner Bioregions</i>	E3	V	Coastal Saltmarsh occurs in the intertidal zone on the shores of estuaries and lagoons that are permanently or intermittently open to the sea. Characteristic plants include <i>Baumeajunceae</i> , Sea Rush (<i>Juncus kraussii</i> subsp. <i>australiensis</i>), Samphire (<i>Sarcocornia quinqueflora</i> subsp. <i>quinqueflora</i>), Marine Couch (<i>Sporobolus virginicus</i>), Streaked Arrowgrass	K	Low. This site is not representative of this EEC	Low. Removal of only a very small portion of vegetation within the area for the



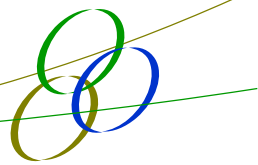
Community Name	NSW status	Comm. status	Habitat Description	Records	Likelihood of occurrence	Potential Impacts
			(<i>Triglochin striata</i>), Knobby Club-rush (<i>Ficinia nodosa</i>), Creeping Brookweed (<i>Samolus repens</i>), Swamp Weed (<i>Selliera radicans</i>), Seablite (<i>Suaeda australis</i>) and Prickly Couch (<i>Zoysia macrantha</i>).			creation of the APZ.
<i>Freshwater Wetlands on Coastal Floodplains of the New South Wales North Coast, Sydney Basin and South East Corner Bioregions</i>	E3	-	Typically occurs on silts, muds or humic loams in low-lying parts of floodplains, alluvial flats, depressions, drainage lines, backswamps, lagoons. They are dominated by herbaceous plants and have very few woody species. Generally occur below 20m elevation on level areas. Those that lack standing water most of the time are usually dominated by dense grassland or sedgeland vegetation, often forming a turf less than 0.5 metre tall and dominated by amphibious plants. Where they are subject to regular inundation and drying the vegetation may include large emergent sedges over 1 metre tall.	K	Low. This site is not representative of this EEC	Low. Removal of only a very small portion of vegetation within the area for the creation of the APZ.
<i>Littoral Rainforest in the New South Wales North Coast, Sydney Basin and South East Corner Bioregions</i>	E3	CE	The plant species of this community are predominantly rainforest species. Several species have compound leaves, and vines may be a major component of the canopy. These features differentiate littoral rainforest from forest or scrub, but while the canopy is dominated by rainforest species, scattered emergent individuals of sclerophyll species, such as <i>Angophora costata</i> , <i>Banksia integrifolia</i> , <i>Eucalyptus botryoides</i> and <i>Eucalyptus tereticornis</i> occur in many stands. The	K	Low. This site is not representative of this EEC	Low. Removal of only a very small portion of vegetation within the area for the creation of the APZ.



Community Name	NSW status	Comm. status	Habitat Description	Records	Likelihood of occurrence	Potential Impacts
			Sutherland Shire Littoral Rainforest Endangered Ecological Community which was listed previously as an endangered ecological community is included within this community.			
<i>Lowland Grassy Woodland in the South East Corner Bioregion</i>	E3	CE	<p>Located in rainshadow areas receiving less rainfall than more elevated terrain that partially surrounds them, with mean annual rainfall typically in the range of 700-1100 mm.</p> <p>Typically occurs in undulating terrain up to 500m in elevation on granitic substrates (e.g. adamellites, granites, granodiorites, gabbros, etc.) but may also occur on locally steep sites and on acid volcanic, alluvial and fine-grained sedimentary substrates.</p> <p>Contemporary tree-dominated stands of the community are largely relics or regrowth of originally taller forests and woodlands, which are likely to have had scattered shrubs and a largely continuous grassy groundcover. At some sites, mature trees may exceed 40m, although regrowth stands may be shorter than 10m.</p>	K	Low. This site is not representative of this EEC	Low. Removal of only a very small portion of vegetation within the area for the creation of the APZ.
<i>River-Flat Eucalypt Forest on Coastal Floodplains of the New South Wales North Coast, Sydney Basin and South East Corner Bioregions</i>	E3		Found on the river flats of the coastal floodplains. It has a tall open tree layer of eucalypts, (may exceed 40m), but can be considerably shorter in regrowth stands or under conditions of lower site quality. While the composition of the tree stratum varies considerably, the most widespread and abundant dominant trees include <i>Eucalyptus tereticornis</i> (forest red gum), <i>E. amplifolia</i>	K	Low. This site is not representative of this EEC	Low. Removal of only a very small portion of vegetation within the area for the creation of



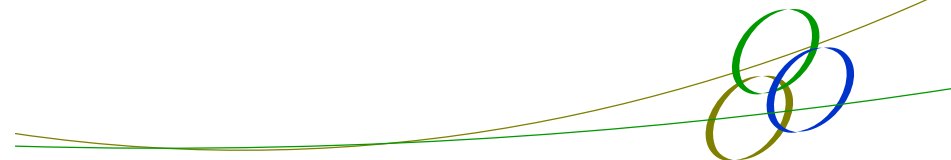
Community Name	NSW status	Comm. status	Habitat Description	Records	Likelihood of occurrence	Potential Impacts
			(cabbage gum), <i>Angophora floribunda</i> (rough-barked apple) and <i>A. subvelutina</i> (broad-leaved apple). <i>Eucalyptus baueriana</i> (blue box), <i>E. botryoides</i> (bangalay) and <i>E. elata</i> (river peppermint) may be common south from Sydney, <i>E. ovata</i> (swamp gum) occurs on the far south coast.			the APZ.
<i>Swamp Oak Floodplain Forest of the New South Wales North Coast, Sydney Basin and South East Corner Bioregions</i>	E3		This community is found on the coastal floodplains of NSW. It has a dense to sparse tree layer. Tree diversity decreases with latitude, and <i>Melaleucaericifolia</i> is the only abundant tree in this community south of Bermagui. The understorey is characterised by frequent occurrences of vines, <i>Parsonsiastraminea</i> , <i>Geitonoplesiumcymosum</i> and <i>Stephania japonica</i> var. <i>discolor</i> , a sparse cover of shrubs, and a continuous groundcover of forbs, sedges, grasses and leaf litter.	K	Low. This site is not representative of this EEC	Low. Removal of only a very small portion of vegetation within the area for the creation of the APZ.
<i>Themeda grassland on seacliffs and coastal headlands in the NSW North Coast, Sydney Basin and South East Corner Bioregions</i>	E3		<i>Themedaaustralis</i> is the dominant species in the Themeda Grassland on seacliffs and coastal headlands in the NSW North Coast, Sydney Basin and South East Corner bioregion ecological community. <i>Banksiaintegrifolia</i> subsp. <i>integrifolia</i> , <i>Westringiafruticosa</i> and <i>Acacia sophorae</i> occurs as an emergent shrub or as a dense cover where they have recruited over grasslands.	K	Low. This site is not representative of this EEC	Low. Removal of only a very small portion of vegetation within the area for the creation of the APZ.



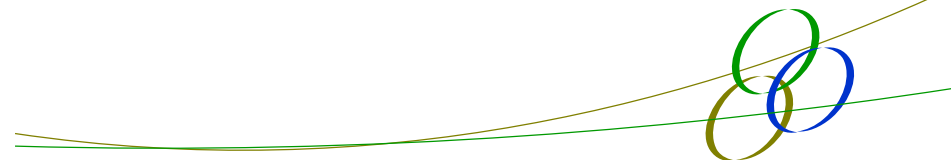
Appendix 6

Key Threatening Process (KTP) Assessment

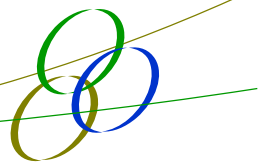
Key Threatening Process	NSW status	Comm. status	Likelihood of occurrence	Potential Impacts
Aggressive exclusion of birds from woodland and forest habitat by abundant Noisy Miners <i>Manorinamelanoccephala</i>	KTP		Moderate. The proposal will require the removal of a small portion of native vegetation however, will not exacerbate this KTP.	Low.
Alteration to the natural flow regimes of rivers and streams and their floodplains and wetlands	KTP		Low. No alteration to natural hydrological regimes will occur.	Low.
Anthropogenic Climate Change	KTP	KTP	Low - Moderate. The project will have a minor contribution to overall greenhouse gas emission during construction. However, this will be quite small.	Low.
Bushrock removal	KTP		Low. The subject site did not contain bushrock.	Low.
Clearing of native vegetation	KTP	KTP	Moderate. The proposal will require the removal of a small portion of native vegetation (< 0.04ha).	Low.
Competition and grazing by the feral European Rabbit, <i>Oryctolagus cuniculus</i> (L.)	KTP	KTP	Low. The proposal will not exacerbate the competition and grazing by rabbits.	Low.
Competition and habitat degradation by Feral Goats, <i>Capra hircus</i> Linnaeus 1758	KTP	KTP	Low. The proposal will not exacerbate the competition and grazing by goats.	Low.
Competition from feral honey bees, <i>Apis mellifera</i> L.	KTP		Low. The proposal will not exacerbate the competition by feral honeybees as no hollows will be removed.	Low.



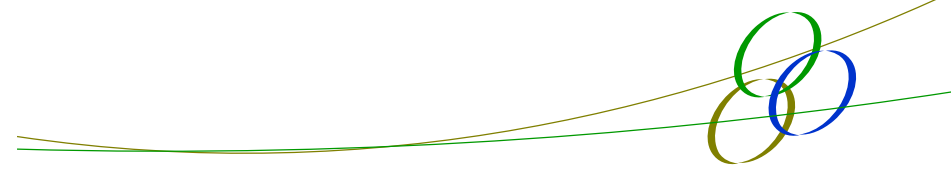
Key Threatening Process	NSW status	Comm. status	Likelihood of occurrence	Potential Impacts
Forest eucalypt dieback associated with over-abundant psyllids and Bell Miners	KTP		Low. The proposal will not provide further habitat for Bell Miners.	Low
Herbivory and environmental degradation caused by feral deer	KTP		Low. The proposal will not exacerbate herbivory by feral deer.	Low.
High frequency fire resulting in the disruption of life cycle processes in plants and animals and loss of vegetation structure and composition	KTP		Low. The proposal will not include high frequency fire management. The APZ understorey will be maintained.	Low.
Importation of Red Imported Fire Ants <i>Solenopsisinvicta</i> Buren 1972	KTP	KTP	Low. The proposal does not include importing fire ants.	Low.
Infection by PsittacineCircoviral (beak and feather) Disease affecting endangered psittacine species and populations	KTP	KTP	Low. The proposal does not expect to transmit bird diseases.	Low.
Infection of frogs by amphibian chytrid causing the disease chytridiomycosis	KTP	KTP	Low. The proposal does not expect to transmit this disease.	Low.
Infection of native plants by <i>Phytophthoracinnamomi</i>	KTP	KTP	Moderate. The proposal may facilitate the transmission of plant diseases through machinery transportation during construction.	Low. Equipment washdowns and hygiene protocols have been recommended.
Introduction of the Large Earth Bumblebee <i>Bombusterrestris</i> (L.)	KTP		Low. The proposal does not include importing bees or any associated activities that could cause introduction of bees.	Low.



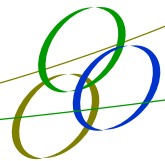
Key Threatening Process	NSW status	Comm. status	Likelihood of occurrence	Potential Impacts
Invasion and establishment of exotic vines and scramblers	KTP		Low - Moderate. The proposal may facilitate the transmission of plant parts through machinery transportation during construction.	Low. Equipment washdowns and hygiene protocols have been recommended.
Invasion and establishment of Scotch Broom (<i>Cytisusscoparius</i>)	KTP		Low - Moderate. The proposal may facilitate the transmission of plant parts through machinery transportation during construction.	Low. Equipment washdowns and hygiene protocols have been recommended.
Invasion and establishment of the Cane Toad (<i>Bufo marinus</i>)	KTP	KTP	Low. The proposal will not involve the transportation of frogs.	Low.
Invasion of native plant communities by African Olive <i>Olea europaea</i> L. subsp. <i>cuspidata</i> (Wall ex G. Don Cirferri)	KTP		Low - Moderate. The proposal may facilitate the transmission of plant parts through machinery transportation during construction.	Low. Equipment washdowns and hygiene protocols have been recommended.
Invasion of native plant communities by <i>Chrysanthemoides monilifera</i>	KTP		Low - Moderate. The proposal may facilitate the transmission of plant parts through machinery transportation during construction.	Low. Equipment washdowns and hygiene protocols have been recommended.
Invasion of native plant communities by exotic perennial grasses	KTP		Low - Moderate. The proposal may facilitate the transmission of plant parts through machinery transportation during construction.	Low. Equipment washdowns and hygiene protocols have been recommended.
Invasion of the Yellow Crazy Ant, <i>Anoplolepis gracilipes</i> (Fr. Smith) into NSW	KTP		Low. The proposal does not include importing fire ants or any associated activities that could lead to the invasion of yellow crazy ants.	Low.



Key Threatening Process	NSW status	Comm. status	Likelihood of occurrence	Potential Impacts
Invasion, establishment and spread of Lantana (<i>Lantana camara</i> L. sens.Lat)	KTP		Low - Moderate. The proposal may facilitate the transmission of plant parts through machinery transportation during construction.	Low. Equipment washdowns and hygiene protocols have been recommended.
Loss and degradation of native plant and animal habitat by invasion of escaped garden plants, including aquatic plants	KTP	KTP	Low - Moderate. The proposal may facilitate the transmission of plant parts through machinery transportation during construction.	Low. Equipment washdowns and hygiene protocols have been recommended.
Loss of Hollow-bearing Trees	KTP		Low-moderate. A small amount of trees containing hollows will need to be removed. However, the amount requiring removal is not considered to exacerbate this KTP	Low.
Loss or degradation (or both) of sites used for hill-topping by butterflies	KTP		Low - Moderate. The proposal will occupy only a small area and is unlikely to exacerbate this KTP.	Low.
Predation and hybridisation by Feral Dogs, <i>Canis lupus familiaris</i>	KTP		Low. The proposal is unlikely to enhance this KTP.	Low.
Predation by <i>Gambusia holbrooki</i> Girard, 1859 (Plague Minnow or Mosquito Fish)	KTP		Low. The subject site is not located near a waterway.	Low.
Predation by the European Red Fox <i>Vulpes Vulpes</i> (Linnaeus, 1758)	KTP	KTP	Low. The proposal is unlikely to enhance this KTP.	Low.
Predation by the Feral Cat <i>Feliscatus</i> (Linnaeus, 1758)	KTP	KTP	Low. The proposal is unlikely to enhance this KTP.	Low.
Predation, habitat degradation, competition and disease transmission by Feral Pigs, <i>Sus scrofa</i> Linnaeus 1758	KTP	KTP	Low. The proposal is unlikely to enhance this KTP.	Low.



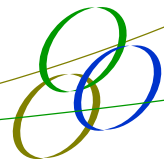
Key Threatening Process	NSW status	Comm. status	Likelihood of occurrence	Potential Impacts
Removal of dead wood and dead trees	KTP		Low. No dead trees or dead wood will be removed as part of this KTP	Low.



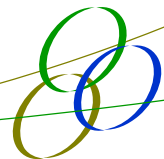
Appendix 7

Invasive Species Assessment

Scientific Name	Common Name	NSW status	Comm. status	Assessment
<i>Acridotheres tristis</i>	Common Myna, Indian Myna	-	Invasive Species	Proposed activity unlikely to exacerbate this KTP
<i>Alauda arvensis</i>	Skylark	-	Invasive Species	Proposed activity unlikely to exacerbate this KTP
<i>Anas platyrhynchos</i>	Mallard	-	Invasive Species	Proposed activity unlikely to exacerbate this KTP
<i>Carduelis carduelis</i>	European Goldfinch	-	Invasive Species	Proposed activity unlikely to exacerbate this KTP
<i>Columba livia</i>	Rock pigeon	-	Invasive Species	Proposed activity unlikely to exacerbate this KTP
<i>Passer domesticus</i>	House Sparrow	-	Invasive Species	Proposed activity unlikely to exacerbate this KTP
<i>Streptopelia chinensis</i>	Spotted Turtle-Dove	-	Invasive Species	Proposed activity unlikely to exacerbate this KTP
<i>Sturnus vulgaris</i>	Common starling	-	Invasive Species	Proposed activity unlikely to exacerbate this KTP
<i>Turdus merula</i>	Common blackbird	-	Invasive Species	Proposed activity unlikely to exacerbate this KTP
<i>Bos Taurus</i>	Domestic cattle	-	Invasive Species	Proposed activity unlikely to exacerbate this KTP
<i>Canis lupus familiaris</i>	Domestic Dog	-	Invasive Species	Proposed activity unlikely to exacerbate this KTP
<i>Felis catus</i>	Domestic Cat	-	Invasive Species	Proposed activity unlikely to exacerbate this KTP
<i>Mus musculus</i>	House Mouse	-	Invasive Species	Proposed activity unlikely to exacerbate this KTP
<i>Oryctolagus cuniculus</i>	Rabbit	-	Invasive Species	Proposed activity unlikely to exacerbate this KTP
<i>Feral Deer</i>	deer	-	Invasive Species	Proposed activity unlikely to exacerbate this KTP
<i>Rattus Rattus</i>	Black rat	-	Invasive Species	Proposed activity unlikely to exacerbate this KTP
<i>Vulpes Vulpes</i>	Fox	-	Invasive Species	Proposed activity unlikely to exacerbate this KTP



Scientific Name	Common Name	NSW status	Comm. status	Assessment
<i>Althernanthera philoxeroides</i>	Alligator Weed	-	Invasive Species	Proposed activity unlikely to exacerbate this KTP
<i>Chrysanthemoides monilifera</i>	Bitou Bush	-	Invasive Species	Proposed activity unlikely to exacerbate this KTP
<i>Chrysanthemoides monilifera subsp. Monilifera</i>	Boneseed	-	Invasive Species	Proposed activity unlikely to exacerbate this KTP
<i>Lycium ferocissimum</i>	African Boethorn	-	Invasive Species	Proposed activity unlikely to exacerbate this KTP
<i>Lantana camara</i>	Lantana	-	Invasive Species	Proposed activity unlikely to exacerbate this KTP
<i>Nassella trichotoma</i>	Serrated Tussock	-	Invasive Species	We have recommended equipment wash-down and hygiene protocol and as such the proposed activity is considered unlikely to exacerbate this KTP
<i>Pinus radiata</i>	Radiata Pine	-	Invasive Species	We have recommended equipment wash-down and hygiene protocol and as such the proposed activity is considered unlikely to exacerbate this KTP
<i>Rubus fruticosus aggregate</i>	Blackberry	-	Invasive Species	We have recommended equipment wash-down and hygiene protocol and as such the proposed activity is considered unlikely to exacerbate this KTP
<i>Seneciomadagascariensis</i>	Fireweed	-	Invasive Species	We have recommended equipment wash-down and hygiene protocol and as such the proposed activity is considered unlikely to exacerbate this KTP
<i>Salvinia molesta</i>	Salvinia	-	Invasive Species	Proposed activity unlikely to exacerbate this KTP



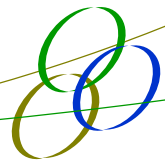
Appendix 8

Assessment of Significance - Seven-part tests

Considerations of the effects of the proposed development under the guidelines of Section 5A of the *Environmental Planning and Assessment Act 1979 (EPA Act 1979)* for threatened species, populations and / or ecological communities considered to have a moderate or greater likelihood of occurrence (see Appendices 4 - 6 for likelihood of occurrence assessment) are given below.

The following threatened species, populations and / or ecological communities have been considered:

- | | |
|---------------------------------|----------------------|
| • <i>Phascolarctos cinereus</i> | Koala |
| • <i>Sminthopsis leucopus</i> | White-footed Dunnart |



Seven - part tests - factors of assessment

The proposal will require the clearing of a maximum of 0.04ha of native vegetation to build a telecommunications tower, compound and a 10m APZ. The potential impacts of this proposal on threatened species, populations and ecological communities considered likely to occur within the subject site at some stage are considered below.

(a) in the case of a threatened species, whether the action proposed is likely to have an adverse effect on the life cycle of the species such that a viable local population of the species is likely to be placed at risk of extinction

Phascolarctos cinereus (Koala)

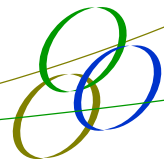
P. cinereus may occur within the subject site on occasion as part of a larger home range. No evidence of scats or scratchings on trees were evident at the subject site. One tree species within the site is determined to be a 'Secondary' koala feed tree species present being Coast Grey Box (*Eucalyptus bosistoana*) and two species are considered to be 'stringybarks/supplementary' feed trees being Blue-leaved stringybark (*E. agglomerata*) and White stringybark (*E. globoidea*). The subject site is located at the edge of an already cleared area next to a roadway surrounded by rural residential properties. There is a larger tract of vegetation to the west of the site that may provide suitable habitat for this species. The proposal will remove only a very small portion (maximum of 0.04ha) of the habitat available to the species. As such the proposal is not considered likely to have an adverse effect on the life cycle of *P. cinereus* such that a viable local population will be placed at risk of extinction.

Sminthopsis leucopus (White-footed Dunnart)

S. leucopus may occur within the subject site on occasion as part of a larger home range. This species was not spotted during the inspection and there was no evidence of scats/burrows at the subject site. The proposal will remove only a very small portion (maximum of 0.04ha) of the habitat available to the species. It has also been recommended that all hollow bearing logs within the compound and APZ be moved to outside this area to provide ongoing habitat for this, and other species that may use them. As such the proposal is not considered likely to have an adverse effect on the life cycle of *S. leucopus* such that a viable local population will be placed at risk of extinction.

(b) in the case of an endangered population, whether the action proposed is likely to have an adverse effect on the life cycle of the species that constitutes the endangered population such that a viable local population of the species is likely to be placed at risk of extinction

No endangered populations likely to occur within the subject site.



(c) in the case of an endangered ecological community or critically endangered ecological community, whether the action proposed:

- (i) is likely to have an adverse effect on the extent of the ecological community such that its local occurrence is likely to be placed at risk of extinction, or***
- (ii) is likely to substantially and adversely modify the composition of the ecological community such that its local occurrence is likely to be placed at risk of extinction***

No endangered ecological community likely to occur within the subject site.

(d) in relation to the habitat of a threatened species, population or ecological community:

- (i) the extent to which habitat is likely to be removed or modified as a result of the action proposed, and***

The proposal will remove or modify a maximum of 0.04ha of native vegetation, no hollow-bearing trees are to be removed and any habitat logs/fallen timber are to be relocated outside of the APZ.

- (ii) whether an area of habitat is likely to become fragmented or isolated from other areas of habitat as a result of the proposed action, and***

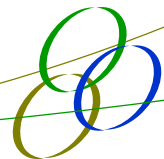
The proposal will not fragment or isolate habitat for any threatened species likely to occur within the site as the proposed compound is small in size and the maximum vegetation removed or modified is small (maximum 0.04ha).

- (iii) the importance of the habitat to be removed, modified, fragmented or isolated to the long-term survival of the species, population or ecological community in the locality***

The habitat within the site represents potential foraging habitat for threatened species as part of larger home ranges. Only a very small amount of possible foraging habitat will be removed as a result of the proposal which is small in size.

(e) whether the action proposed is likely to have an adverse effect on critical habitat (either directly or indirectly)

The subject site is not located near any declared areas of critical habitat



(f) whether the action proposed is consistent with the objectives or actions of a recovery plan or threat abatement plan

The proposal will remove a small area of native vegetation and as such this contradicts recovery strategies for each threatened species. However, key habitat features such as habitat logs are to be retained and relocated outside the APZ and the clearing required for the proposal is limited to a small extent.

(g) whether the action proposed constitutes or is part of a key threatening process or is likely to result in the operation of, or increase the impact of, a key threatening process

The potential of key threatening processes (KTPs) to impact the threatened species considered likely to occur within the site have been considered in Appendix 6 above. The proposal may increase the operation of the KTP “Clearing of vegetation”. However, the proposal will remove a maximum of 0.04ha of native vegetation and any fallen timber will be relocated nearby outside of the APZ and as such we consider that this is a very small contribution to this KTP. Additionally, the proposal has the potential to result in the operation of the “Infection of native plants by *Phytophthora cinnamomi*” KTP. However, we have recommended wash-down and equipment hygiene protocols to minimise the operation of this KTP.