EXECUTIVE SUMMARY

Introduction

This Environmental Assessment (EA) has been prepared by **ngh**environmental on behalf of Telstra to assess the potential environmental impacts associated with the construction and ongoing operation of a proposed Telstra mobile phone telecommunications facility on Crown Land Reserve Number 86770, Lot 169 DP 755904, South Durras, south coast of NSW. This EA:

- Describes the scope of works;
- Identifies statutory assessment and approval requirements in relation to the proposal;
- Identifies and assesses the environmental impacts of the proposal, with a focus on key issues identified by the NSW Department of Planning (DoP); and
- Identifies measures to manage risks and avoid or mitigate potential impacts.

Proposal

The proposed mobile phone base station site is located on elevated Crown land immediately adjacent to a former Council rubbish tip, off Durras Road. It is approximately 1 km north-west of the township of South Durras. The development site is located on and adjacent to a fire trail at the edge of woodland, with existing access from Durras Road. The site contains little or no ground cover. Several large trees *(Eucalyptus and Corymbia spp*) are located adjacent to the site although these would **not** require removal (though may require some removal of branches).

The proposal would involve the construction and operation of a 30m monopole fitted with antennas and an equipment hut within a fenced compound (5m x 10m). Country Energy would be engaged separately to install underground power to the site. As the power line route would pass through National Park, this component of the work would be assessed separately under Part 5 of the *Environmental Planning and Assessment Act 1979* (*EP&A Act)*.

Justification

Telstra has been awarded the contract to provide land-based mobile phone services under the 'Estens' Inquiry which will be subsidised by the Federal Government of Communications, IT and the Arts (DoCITA). The Federal Government will invest $181 million to ensure all Australians, including regional populations, have access to adequate telecommunications services.

Consultation

Extensive consultation has been carried out with relevant stakeholders since February, 2005. This has included consultation with the Department of Environment and Conservation (Parks and Wildlife Division), Department of Lands, Eurobodalla Shire Council, local community groups (including Friends of Durras and the Durras Progress Society) and local residents.

Key issues

Key issues identified by the NSW Department of Planning, to be investigated in this EA report, include flora and fauna, water and air quality, amenity and scale, bushfire, cultural heritage, compliance with the *Telecommunications Act 1997* and environmental risk assessment of the impact on the proposal on fauna, residential amenities and Aboriginal heritage.

Flora and fauna

No endangered ecological communities would be affected. Several threatened fauna occur in the area. Potential for biodiversity impacts would stem from clearing, soil disturbance and trampling. Risk of collision with infrastructure is present for species on the wing.

With the implementation of proposed safeguards, which centre on limiting the sphere of impact, preserving habitat features and minimising risk to fauna trapped in hollows of tree branches that may be lopped, the potential impacts are considered to be low and manageable.

Water and air quality

The site is located on elevated land that does not contain drainage lines. Air and water quality in the locality are high. Potential impacts could result in one discrete location during construction of the facility. These relate to soil disturbance, compaction and emissions produced during the operation of motorised equipment.

With the implementation of proposed safeguards, which centre on limiting the sphere of impact, stabilising disturbed areas and management of potential pollutants (fuels), the potential impacts are considered to be low and manageable.

Amenity and scale

The locality has high amenity values to residents and visitors. It is marketed as part of the 'nature coast' and capitalises on these recreational and aesthetic attributes. Potential for impact would stem from the scale (height) and contrast of the proposal to surrounding areas.

With the implementation of proposed safeguards, which have factored in siting, views from prominent areas, material selection and community consultation, the potential impacts are considered to be low and would be offset by the benefits of the proposal. These include improved coverage, capacity and call quality to the locality which would in turn greatly improve communications to the emergency services and would assist with activities within the National Park Estate.

Bushfire

The site is surrounded by bushland, representing a bushfire hazard. Bushfire hazards are present during construction (flammable materials and ignition sources brought onto the site, hot-work procedures). The proposal would not influence access to the area which would be temporarily improved with access off Durras Road reinstated but then restored after the installation of the facility to its current condition. The proposal would not influence the potential for containment lines. Operational bushfire risks are considered to be very low. The equipment would be contained within a compound (10 x 5m). The substrate would be gravel overlying geotextile fabric. This is considered to represent a very low bushfire hazard. Further clearing of vegetation around the immediate site will not be required to reduce any fire hazard to the proposed compound.

With the implementation of proposed safeguards, which centre on liaison with the RFS, management of flammable materials and ignition sources and access to appropriate fire fighting equipment, the potential impacts are considered to be low and manageable.

Cultural heritage

In general the area is assessed to be of low archaeological sensitivity. The installation of the telecommunications facility would not impact further on the identified Aboriginal site. No heritage items identified at the Commonwealth, state or local level would be impacted by works. As such, no cultural heritage mitigation measures are required.

Telecommunications Act 1997

The Act seeks to ensure that standard telephone services are reasonably accessible to all people in Australia on an equitable basis. This represents the main justification of the proposal. The proposal is not classified as "low impact" under the Low Impact Determination. Telstra have applied the precautionary principle in respect of site selection (Clause 5.1 of the ACIF Code) and designing infrastructure (Clause 5.2) for the purposes of minimising unnecessary or incidental radiofrequency (RF) emissions and exposure.

Environmental risk assessment

An assessment of risk was conducted taking into account the likelihood of impact and consequences if impact should occur. With mitigation measures implemented as stated in this EA, risks posed by the proposal as described are expected to be low.

Environmental management

Environmental management principles that would be applied during the construction and operation of the proposal are outlined in Section 5 of this report. They are in the form of a draft *Statement of Commitments* and include 22 safeguards to which the proponent would commit, if the proposal is approved for development.

Conclusion

This EA has assessed the likely environmental impacts that may result from the proposed construction and operation of a proposed Telstra mobile phone telecommunications facility on Crown Land Reserve Number 86770, Lot 169 DP 755904, South Durras, south coast of NSW.

Benefits of the proposal have been identified at the local level and include improved coverage, capacity and call quality to the areas of South Durras and North Durras and to major roads including Durras Road and to the Durras Lakes. This report considers that measures outlined in the *Statement of Commitments* are sufficient to manage environmental impacts and risks associated with the proposal.

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1 INTRODUCTION

1.1 About this report

This Environmental Assessment (EA) has been prepared by **ngh**environmental on behalf of Telstra to assess the potential environmental impacts associated with the construction and ongoing operation of a proposed Telstra mobile phone telecommunications facility on Crown Land Reserve Number 86770, Lot 169 DP 755904, South Durras, south coast of NSW. This EA:

- Describes the scope of works;
- Identifies statutory assessment and approval requirements in relation to the proposal;
- Identifies and assesses the environmental impacts of the proposal, with a focus on key issues identified by stakeholders (including the NSW Department of Planning, local and state government agencies and the community); and
- Identifies measures to manage risks and avoid or mitigate potential impacts.

The EA is intended to meet the assessment requirements of the Part 3A provisions of the *Environmental Planning and Assessment Act 1979 (EP&A Act)* and the Major Projects State Environmental Planning Policy 2005.

The EA draws together a number of specialist studies undertaken to assess the proposal, covering biodiversity and archaeological impacts. The findings of these studies have been incorporated into the EA. Supplementary material is provided as Attachments at the end of this document. This EA concludes with a *Statement of Commitments* to which the proponent, Telstra, would commit pending approval of the proposal, in order to mitigate the identified impacts.

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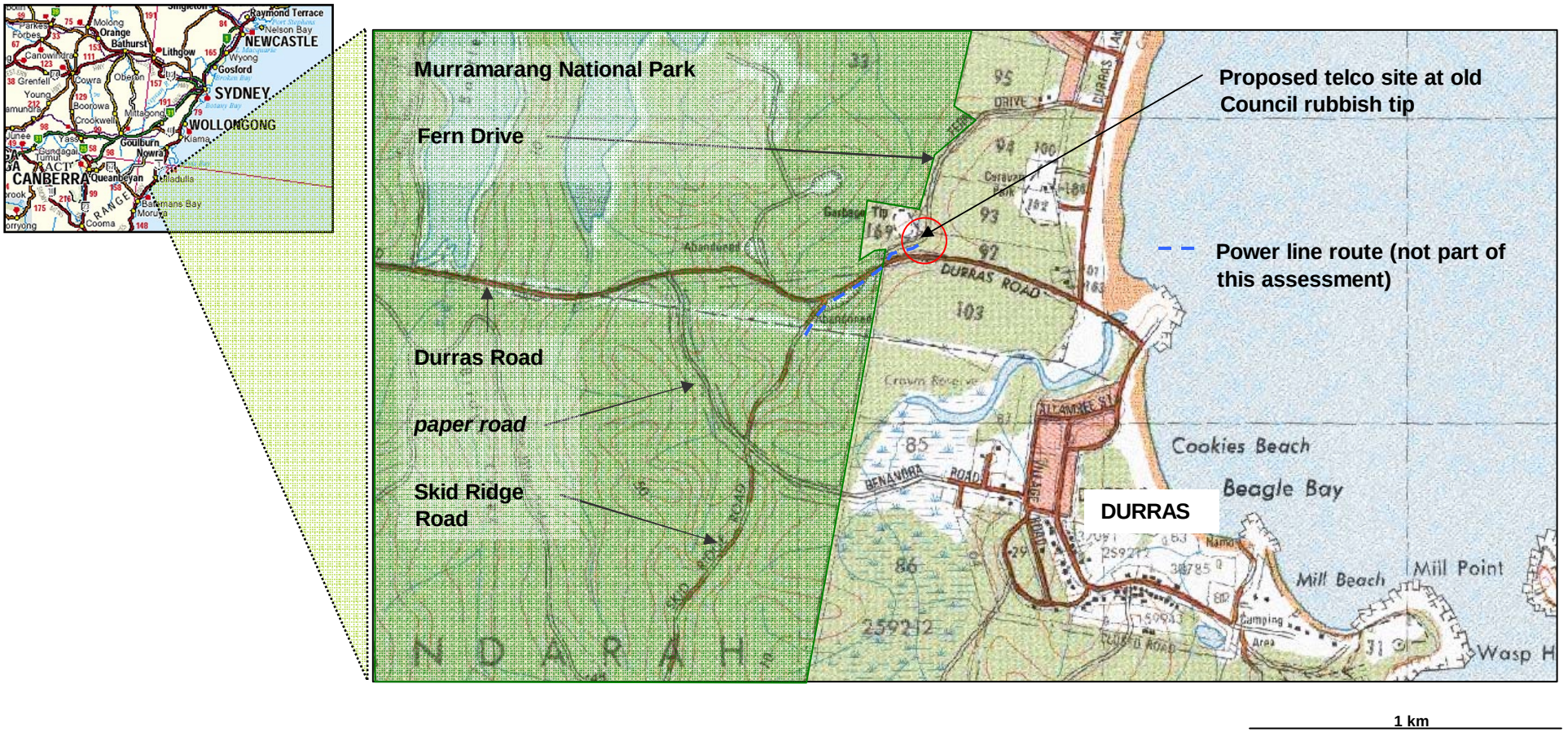

Figure 1.1 Location of the proposed Telstra mobile phone facility (topographic map)

(Source: NSW LPI topographic map series, 8926 – 1S, 1:25000 map sheet).

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1.2 Overview of the planning process

The *EP&A Act* is the main statute for environmental planning and development control in NSW. The Act establishes three principal types of statutory planning instrument; State Environmental Planning Policies (SEPP), Regional Environmental Plans (REP) and Local Environmental Plans (LEP).

Part 3A of the Act came into force on 1 August 2005. Part 3A integrates the assessment and approval regime for all Major Projects that need the approval of the Minister for Planning, previously dealt with by Parts 4 and 5 of the Act.

The proposal qualifies as a Major project because:

- It would be located within a sensitive coastal location (less than 100m from Murramarang National Park) as defined by *State Environmental Planning Policy (Major Projects) 2005* under *Schedule 2 Part 3A project – Specified Sites, clause 4)*.
- It constitutes a structure greater than 13 metres in height within a sensitive coastal location under *clause 1 Coastal Areas, subclause 1 (g) (i)*.

Additionally, the proposal is within the SEPP 71 boundary and therefore is considered a *significant coastal development*.

Under Part 3A, the proponent of a major project first submits a Project Application for the approval of the NSW Minister for Planning (submitted by **ngh**environmental on July 19, 2006). The Director-General of NSW DoP then issues the proponent with requirements for the Environmental Assessment, indicating the issues to be addressed and the level of assessment required and consultation requirements (supplied to **ngh**environmental on August 28, 2006). The Director-General's requirements may also require the proponent to include in an Environmental Assessment a statement of the commitments the proponent is prepared to make for environmental management and mitigation measures on the site.

After an Environmental Assessment has been prepared and accepted by the Director-General, the Report is placed on public exhibition for a minimum of 30 days during which time submissions from the community, local government and state agencies are accepted. Following the consultation period, the Director-General may require the proponent to respond to the comments, revise the proposal or revise the *Statement of Commitments*. The deemed refusal period for this proposal is 60 days.

1.3 Project justification

Telstra has been awarded the contract to provide land-based mobile phone services under the 'Estens' Inquiry which will be subsidised by the Federal Government. This tender includes the installation of a CDMA and GSM mobile telecommunications facility at South Durras.

As part of the independent Regional Telecommunications ('Estens') Inquiry, the Federal Government will invest $181 million in a comprehensive response that will ensure all Australians have access to adequate telecommunications services, enhance a range of existing services, and ensure that regional Australia continues to share equitably in the benefits of future technologies.

The Inquiry recommended that the Government provide additional funding to support the capital costs of extending land-based mobile phone services to small population centres and key highways in regional Australia. The Government has already provided funding to build 915 mobile phone base stations and repeaters along Australia's national highways, on regional highways, and in regional towns, which will result in 98% of the population having land-based mobile phone coverage. The Government will spend an additional $15.9 million over four years to further extend coverage to small population centres and along highways in regional Australia, such as South Durras.

The proposal involves the installation of CDMA and GSM mobile phone infrastructure and an equipment hut. One of the major considerations in selecting an appropriate site was to improve mobile phone coverage, capacity and call quality to the South Durras area, Durras Lake areas, foreshore, surrounds and major road connecting Durras to the Princes Highway. The basis of the proposed activity is to provide improved coverage, capacity and call quality to the areas of South Durras and North Durras and to major roads including Durras Road and to the Durras Lakes.

Private local individuals, businesses (including Durras Caravan Park and Murramarang Resort), Durras Progress Group and The Friends of Durras all support improved mobile services for Durras and surrounding areas. Mobile infrastructure in this area would greatly improve communications to the emergency services (Police, Rural Fire Services and Ambulance) and search and rescue.

The proposal is further justified in that alternative sites were considered but were deemed inappropriate (detailed below).

1.3.1 Consideration of alternatives

In defining the proposal, several alternatives were considered. These related to site location, site access and the 'do nothing' option.

Alternative Sites

Investigations identified four alternative sites for the proposed telecommunications facility, as detailed below.

1. Fern Drive, mid way along Fern Drive

   This site was originally preferred by the proponent however, Durras community groups were concerned that the visual impact of this site would be high, due to its proximity to the shoreline and residential homes. On these grounds the community groups in Durras opposed this site and suggested the Carls Mountain site and Skid Ridge Road site be investigated.

2. Carls Mountain, Carls Mountain Road, Murramarang National Park

   This site had support from the Durras Community and DEC (Durras community groups have approached Dave Cunningham, DEC Ranger regarding this site) and offered the potential of co-location with an existing Vodaphone tower. However, Telstra radio frequency engineers concluded that this site would not provide the required coverage and quality of mobile services to Durras as stipulated by the 'Estens' Inquiry. Extending the tower height would not overcome this limitation due to overshadowing of the local topography.

3. Skid Ridge Road, off Durras Road

   This site was generally preferred by local community groups but was unsuitable, being located within the Murramarang National Park. This site was rejected by DEC on the grounds that other potential sites were available outside of the National Park, under Section 153D of the *National Parks and Wildlife Act 1974*.

4. Big Bit Lookout, Big Bit Road, Benandarah State Forest

   This site had support from the Durras community and offered the potential of co-location on an existing antennae servicing the Princes Highway and surrounds. However, Telstra radio frequency engineers concluded that this site would not provide the required coverage and quality of mobile services to Durras as stipulated by the 'Estens' Inquiry. Extending the tower height would not overcome this limitation due to overshadowing of the local topography.

Therefore, on the basis of environmental, visual and technical grounds, and the support of the Durras community and the DEC, these sites were deemed inappropriate.

Site Access

A track opposite Skid Ridge Road travels to the west of Fern Drive, providing a potential alternative access way to the preferred site. This route was assessed and considered inappropriate for environmental reasons; it would require substantial clearing to gain the required width, it is within Murramarang National Park estate and it contains feed trees suitable for a threatened species (Glossy Black-Cockatoo).

Access to the site via Fern Drive (off Durras Road) represents the shortest, most direct and trafficable route from Durras Road. It would however make this area more accessible to the public. The potential for the reinstated access way to encourage rubbish dumping is an issue of concern to the local Council and has been addressed in this EA. The existing access arrangements would be reinstated after the construction of the facility.

The 'do nothing' option

The 'Estens' Inquiry has resulted in the Federal Government committing to invest $181 million in a comprehensive response that will ensure all Australians have access to adequate telecommunications services. It will enhance the range of existing services and ensure that regional Australia continues to share equitably in the benefits of future technologies.

A specific recommendation of the Inquiry was to provide additional funding to support the capital costs of extending land-based mobile phone services to small population centres and key highways in regional Australia. In response the Government will spend an additional $15.9 million over four years to further extend coverage to small population centres and along highways in regional Australia.

A 'do nothing' option would not improve mobile phone service coverage to Durras as stipulated by the 'Estens' Inquiry and would mean that the Durras Community could miss out on an opportunity for mobile communication in the area. This may also affect other services such as emergency (police, fire and ambulance) and DEC activities in the area. Therefore the 'do nothing' alternative is not considered viable.

1.4 Description of the proposal

1.4.1 Equipment to be installed

Telstra propose to install a fenced compound housing a telecommunications pole and equipment shelter to provide CDMA800 and GSM900 mobile phone coverage to the township of Durras, Durras Lakes and surrounds. The total proposed Telstra lease area is 46.75m^2 (8.5m x 5.5m). Concept drawings are provided as Attachment 2.

The proposed Durras telecommunications facility would include:

i) Mounting the following to a 30m steel monopole on concrete foundations:
   - Six (6) panel antennae (2 antennae per sector) at the 29.5m level for CDMA800 and GSM900 service,
   - One (1) omnidirectional antenna,
   - One (1) 0.6m diameter solid parabolic antenna at the 27m level, and

ii) Construction of a Telstra equipment shelter (3.28m x 2.28m x 2.995m high) of 'pale eucalypt' colour conforming to ICS National Standard. Concrete slab footings would measure 4.4m x 2.6m x 0.15m),

iii) Construction of a Telstra compound (10m by 5m) to be finished with crushed rock over geotextile membrane with timber border, surrounded by a 2.4m high security fence (coated in black PVC) with double access gates,

iv) Installation of a 450mm wide galvanised cable tray and supports from equipment shelter to tower, and

v) Installation of a GPS antenna (approximately 0.16m diameter x 0.13m high) on the equipment shelter at 3.2m high.

1.4.2 Access

Access would be via Fern Drive off Durras Road. This represents the shortest, most direct and easily trafficable route from Durras Road. The existing cleared easement is highly disturbed containing little or no vegetation and is generally over 4m wide (considerably wider in some places).

This track is currently inaccessible directly from Durras Road as a roadside drainage line has been constructed to limit access to the old tip site. Telstra propose to reinstate this access during construction and restore it to its existing condition at the completion of works. This would limit access to illegal dumpers or vandals and was the option advocated by the local Council (pers. comm. G. Pike, Engineering Assistant, Eurobodalla Shire Council, August 2006).

An adjacent track (shown as "existing dirt access track" on drawing S1, Attachment 2) travels west from the cleared area opposite Skid Ridge Road. This track would not be utilised for access to the site. It is narrow, contains *Allocasurina littoralis* (potential Glossy Black-Cockatoo feed trees) and is located within the Murramarang National Park. At most, this track ("existing dirt access track", shown on drawing S1, Attachment 2), would only be used to ensure that 4wd vehicles are parked off the road. No clearing or other works would be undertaken along the "existing dirt access track".

1.4.3 Power supply

Power would be supplied to the site by Country Energy and does not form part of this proposal. A Review of Environmental Factors (REF) has been prepared on behalf of Telstra by **ngh**environmental and lodged with County Energy (August 2006). The submission seeks to gain approval for Telstra to install approximately 550m of underground 11kv power line along

existing tracks and road verges, from the existing electricity connection on Skid Ridge Road, to the site identified by this proposal. The power supply is therefore being undertaken as a separate approvals process.

Consent for the power supply is being sought concurrent with this EA submission. Country Energy are the proponent and consent authority under Part 5 of the *EP&A Act*. As 410m of the proposed power line route would be located within Murramarang National Park, DEC would be asked to grant land owner consent and an easement over the power line route, pursuant to Section 153 of the Na*tional Parks and Wildlife Act* 1974. The remainder of the route follows Council road reserve and existing Crown management trails. Upon development consent being obtained, a Section 138 permit would be sought from Eurobodalla Shire Council to undertake works within these areas.

1.4.4 Ongoing maintenance and access arrangements

The proposed telecommunications facility would operate unattended. After installation, the proposed facility would require only routine maintenance (up to 5 times annually). This would generally be carried out using standard 4WD vehicles accessing the site via Fern Drive from the north.

1.4.5 Clearing

Clearing of vegetation would be restricted to the removal of overhanging branches that may pose an OH&S hazard, hinder vehicle movement or place the facility at risk of damage from falling branches. All pruning would be carried out in accordance with the *Australian Standard 4373: Pruning of Amenity Trees* and in accordance with relevant OH&S legislation and standards.

The proposed site has been chosen specifically to minimise impacting on native vegetation. The only large branches that would require removal are from the large trees immediately adjacent to the proposed compound site. At least one branch identified for removal contains a hollow, though it is unlikely that this is being utilised by any fauna (refer to Section 4.1.3). Other branch removal would be superficial and unlikely to affect the biodiversity values of the site or the health of the tree.

2 CONSULTATION

Extensive consultation has been carried out with relevant stakeholders since the outset of the proposal to install a Telstra mobile phone telecommunications facility in the locality of Durras (since February, 2005).

These have included consultation with the following groups and Departments:

NSW Department of Environment and Conservation (Parks and Wildlife Division) (DEC)

Dave Cunningham, Ranger, NSW Dept of Environment & Conservation (DEC), Parks and Wildlife Division (PWD) regarding siting of the proposed telecommunications facility in the Murramarang National Park, which was rejected. Mr. Cunningham appeared supportive of the proposed site at the old tip following conversations by phone (31.05.06).

NSW Department of Lands

Ray Walton (Parramatta Office, Department of Lands) attended a site visit (17.03.06) and gave in principle support to the selected site, which is crown land. A letter giving Department of Lands consent to lodge carry out the Project Application is appended to this report (Attachment 10).

Eurobodalla Shire Council

Property Manager Rob Addison was present at the site design visit (17.03.06) and confirmed that the proposal was located appropriately from a Council property viewpoint.

Access issues were raised by Council Engineering Assistant, Greg Pike. Limiting the ability for the public to dump rubbish in the area as well as maintaining bushfire access.

Local Community Groups

Representatives from local community action groups (including Friends of Durras and the Durras Progress Society) have been liaised with closely since their interest was recognised during initial site reconnaissance visits. Since that time (February 2005) representatives of the groups have assisted in locating a suitable site, by indicating the likelihood of community support for a given site.

A number of representatives were present during the site design visit (17.03.06) and indicated that they were happy with the proposed site at the old tip, given that it was located an acceptable distance from local residents and visual impacts would be low. Ian Edwards, an adjacent landowner, was initially concerned that the proposed headframe may be seen from his property, and requested that a balloon be flown. This was carried out in April 2006 at the site to determine the nature of any visual impacts (refer to Section). The balloon was not visible from Mr. Edwards' property, and Mr. Edwards indicated that he was pleased with the proposed site.

3 PLANNING CONTEXT

3.1 Local Government instruments and policies

3.1.1 Eurobodalla Rural Local Environmental Plan 1987

The proposed works are located on Crown land, zoned 1a - Rural (Environmental Constraints). The site is adjacent to zone 8 - National Park. Objectives of zone 1a include:

f) to permit a variety of uses where these are compatible with rural activity and the capability of the land, or require a location remote from urban areas or villages, or both, and

g) to permit the provision, expansion or maintenance of utility services within this zone.

Telecommunications facilities are permitted with development consent within zone 1 a. As stated above, this zone is recognised as appropriate for utility services and those developments that are best sited remotely from urban areas.

The visual impact on the nearby National Park estate has been considered in Section 4.3.

Figure 3.1 Zoning of the proposed site

3.2 State Government legislation and policy

3.2.1 Part 3A approval process

The proposal is a Major Project which would be assessed under Part 3A of the *Environmental Planning and Assessment Act 1979* (*EP&A Act*). The approval process applying to Major Projects under Part 3A and the Major Projects State Environmental Planning Policy is described in Section 1.2.

Part 3A integrates the assessment and approval regime for all Major Projects that need the approval of the Minister for Planning, previously dealt with by Parts 4 and 5 of the Act. Projects approved under Part 3A of the *EP&A Act* do not require authorisations under the:

- *Local Government Act 1993* (orders under section 124).
- *Fisheries Management Act 1994* (sections 201, 205 or 219, stop work orders);
- *Heritage Act 1977* (Part 4 or section 139);
- *National Parks and Wildlife Act 1974* (section 87, consent under section 90, interim protection and stop work orders);
- *Native Vegetation Act 2003* (section 12);
- *Rivers and Foreshores Improvement Act 1948* (Part 3A);
- *Rural Fires Act 1997* (section 100B);
- *Water Management Act 2000* (sections 89, 91);
- *Threatened Species Conservation Act 1995* (interim protection and stop work orders);
- *Protection of the Environment Operations Act 1997* (environment protection notices);

3.2.2 Director General's Requirements

Under the *EP&A Act*, Determining Authorities are to consider 'to the fullest extent possible all matters affecting or likely to affect the environment by reason of that activity'. The Director General's Requirements that outline the form and content of the EA are attached to this document (Attachment 1). They identify the key issues to be addressed in this EA, discussed in Section 4.

3.2.3 Ecologically Sustainable Development (ESD)

Ecologically sustainable development (ESD) involves the effective integration of social, economic and environmental considerations in decision-making processes. In 1992, the Commonwealth and all state and territory governments endorsed the *National Strategy for Ecologically Sustainable Development*. In NSW, the concept has been incorporated in legislation such as the *EP&A Act* and its Regulations.

For the purposes of the *EP&A Act* and other NSW legislation, the Intergovernmental Agreement on the Environment (1992) and the *Protection of the Environment Administration Act 1991* outline the following principles which can be used to achieve ESD.

(a) the precautionary principle—namely, that if there are threats of serious or irreversible environmental damage, lack of full scientific certainty should not be used as a reason for postponing measures to prevent environmental degradation.

In the application of the precautionary principle, public and private decisions should be guided by:

(i) careful evaluation to avoid, wherever practicable, serious or irreversible damage to the environment, and

(ii) an assessment of the risk-weighted consequences of various options,

(b) inter-generational equity—namely, that the present generation should ensure that the health, diversity and productivity of the environment are maintained or enhanced for the benefit of future generations,

(c) conservation of biological diversity and ecological integrity—namely, that conservation of biological diversity and ecological integrity should be a fundamental consideration,

(d) improved valuation, pricing and incentive mechanisms—namely, that environmental factors should be included in the valuation of assets and services, such as:

(i) polluter pays—that is, those who generate pollution and waste should bear the cost of containment, avoidance or abatement,

(ii) the users of goods and services should pay prices based on the full life cycle of costs of providing goods and services, including the use of natural resources and assets and the ultimate disposal of any waste,

(iii) environmental goals, having been established, should be pursued in the most cost effective way, by establishing incentive structures, including market mechanisms, that enable those best placed to maximise benefits or minimise costs to develop their own solutions and responses to environmental problems.

The aims, structure and content of this EA have incorporated these principles.

The precautionary principle has been adopted in the assessment of impact; all potential impacts have been considered and mitigated where a risk is present. Where uncertainty exists, measures have been suggested to address it.

The majority of potential impacts of the proposal are likely to be localised and would not diminish the options regarding land and resource uses and nature conservation available to future generations. The proposal is reversible, in that it could be fully decommissioned with negligible impact on the surrounding environment.

The impacts of the proposal on local populations of threatened species, threatened communities or their habitats have been assessed in Section 4.1.2 and 4.1.3. Parameters such as the site's soil, hydrology and native vegetation have been valued in terms of their broader contribution to the catchment and catchment processes.

The draft *Statement of Commitments* in Section 5.1 provides an auditable environmental management commitment to these parameters.

Based on the social benefits accruing from the proposal at a local level, and the assessed impacts on the environment, it is considered that the development would be ecologically sustainable within the context of the above ESD principles.

3.3 Commonwealth legislation

3.3.1 Environment Protection and Biodiversity Conservation Act 1999

This Act provides for a Commonwealth assessment and approvals system for:

a) Actions that have a significant impact on 'matters of national environmental significance';

b) Actions that (indirectly or directly) have a significant environmental impact on Commonwealth land; and

c) Actions carried out by the Commonwealth Government.

A proposal requires the approval of the Environment Minister if an action is likely to have a significant impact on a matter of national environmental significance or listed as a matter of national significance which includes:

i) World Heritage Properties,

ii) Wetlands of International Importance (Ramsar wetlands),

iii) Commonwealth Listed Threatened Species and Ecological Communities,

iv) Commonwealth Listed Migratory Species,

v) Nuclear action,

vi) Commonwealth marine areas, or

vii) Commonwealth land.

A search for Matters of National Environmental Significance based on the study area and a 10 kilometre buffer was undertaken using the Commonwealth Government's Protected Matters Search Tool. This tool covers World Heritage properties, National Heritage places, significant wetlands, migratory species, nationally listed threatened species and communities and other matters protected by the EPBC Act. The report generated by the Commonwealth Government's Protected Matters Search Tool is provided in full in Attachment 7 and discussed in Section 3.3.1 of this EA. Table 3.1 summarises the findings, which are discussed below.

Table 3.1 Protected Matters Search (10km buffer around the site)

Search tool obtained from the DEH Environmental Protection and Biodiversity Conservation website.

Item	Number
World Heritage Properties	0
National Heritage Places	0
Wetlands of International Significance: (Ramsar Sites)	0
Commonwealth Marine Areas	Relevant
Threatened Ecological Communities	0
Threatened Species	41
Migratory Species	38

Commonwealth Marine Areas

Approval may be required for a proposed activity that is likely to have a significant impact on the environment in a Commonwealth Marine Area. Generally the Commonwealth Marine Area stretches from three nautical miles to two hundred nautical miles from the coast.

The site is located on elevated land approximately 500m from the coastline. The proposed works would have a limited impact area. The potential for cascading impacts that which act to increase the sphere of impact (such as generation of pollution that may travel via waterways and drainage lines) is limited. Therefore, impacts of the proposal would not impact Commonwealth Marine Areas.

Management of water and air impacts have been discussed in detail in Section 4.2, which includes proposed environmental safeguards.

Threatened and migratory species

The potential for the proposal to impact species, populations and ecological communities listed as threatened under the Commonwealth *EPBC Act 1999* has been incorporated into Section 4.1 of this EA. An evaluation of the potential to be impacted is provided in full in Attachment 6.

No other matters of National Environmental Significance are relevant to this proposal.

3.3.2 Telecommunications Act 1997 (Commonwealth)

This Act regulates the service provision to consumers by telecommunications carriers. The objects of the Act include the provision of a regulatory framework which promotes the long-term interests of the users of carriage services and the efficiency and international competitiveness of the Australian telecommunications industry. The Act seeks to ensure that standard telephone services are reasonably accessible to all people in Australia on an equitable basis.

The activities of telecommunications carriers are also subject to the:

- *Telecommunications Code of Practice 1997*;
- *Telecommunications (Low Impact Facility) Determination 1997*, as amended by the *Telecommunications (Low Impact Facility) Determination Amendment 1,1999*;
- *Telecommunications (Environmental Impact Information) Regulations, 1997*, and
- *ACIF (ACIF C564:2002) Code of Practice 2002*.

The proposal to install a telecommunications facility at Durras is not classified as “low impact”. It contravenes the low impact criteria by being a new telecommunications tower.

According to the Australian Communications Industry Forum (ACIF) Industry Code, *ACIF C564:2002*, Deployment of Radio communications Infrastructure, Telstra have applied the precautionary principle in respect of site selection (Clause 5.1 of the ACIF Code) and designing infrastructure (Clause 5.2) for the purposes of minimising unnecessary or incidental radiofrequency (RF) emissions and exposure. In designing the telecommunications facility near Durras, Telstra have had regard to:

- *the reason for the installation considering coverage, capacity and quality,*
- *the positioning of the antennas to minimise obstruction of radio signals,*
- *the objective of restricting access to areas where RF exposure may exceed limits of the EMR standard,*
- *the type and features of the infrastructure that are required to meet service needs including the need for macro, micro or pico cells, and the need for directional and non-directional antennas,*
- *the objective of minimising power whilst meeting service objectives,*
- *whether the costs of meeting this objective are reasonable.*

Radio Frequency Electromagnetic Energy (RF EME) levels have been estimated from the proposed antennae location at Durras Drive, Durras. The maximum cumulative EME level at 1.5 m above ground level is estimated to be 0.23 % of the ACA mandated exposure limits (refer to full report Attachment 3). Furthermore, Telstra will apply the precautionary principle to the operation of the site in order to demonstrate compliance with the ACA regulations regarding maximum human exposure and take appropriate measures to restrict general public access to RF hazard areas. These measures will comply with Clause 5.7, Application of the Precautionary Approach to Site Operation, of the ACIF code.

A power line will be installed connecting the proposed telecommunication facility to existing electricity connection on Skid Ridge Road, within Murramurrang National Park. Under the *Telecommunications Act*, the definition of a telecommunications facility *does not* include the power line that services the facility. The installation of the power line *does not* form part of this proposal.

4 ASSESSMENT OF KEY ISSUES

Key issues have been defined by the NSW Department of Planning, specifically in relation to this proposal. These are issues considered to have potential to generate moderate to high level impacts and are therefore of greater priority in terms of investigation and mitigation strategies (refer to the Director General's Requirements, Attachment 1).

The sources of impact and strategy adopted by this EA for investigation are described for each key issue, in Table 4.1, below.

Table 4.1 Key issues

Issue	**Potential impact types**	**Strategy**
Flora and fauna	Clearing of vegetation during construction (compound 10 x 5m, minor branch lopping and track widening). Potential for spread of weeds through soil disturbance during construction. Direct and indirect impact on fauna habitat values. Impact on threatened species or endangered ecological communities.	Review of existing environment via a biodiversity assessment (including desktop literature review, onsite site assessment and surveying). Design of mitigation strategies to minimise risks. Refer to Section 4.1.
Water and air quality	Risk of soil and water pollution (sedimentation or chemical spill) Emissions of vehicles and equipment Generation of dust and vibration	Review of existing environment. Review of works practices and design of mitigation strategies to minimise risks. Refer to Section 4.2.
Amenity and scale	Visual impact. Affect on amenity of the area. Safety impacts.	Review of existing environment (including natural values and relevant stakeholders). Review of works practices and design of mitigation strategies to minimise risks. Refer to Section 4.3.
Bushfire	Risk of starting a fire. Access issues to fight fires in the area. Water supply issues to fight fires in the area.	Review of existing environment. Consultation with NSW Rural Fire Service. Review of works practices and site layout and design of mitigation strategies to minimise risks. Refer to Section 4.4.
Cultural heritage	Disturbance of aboriginal heritage sites or values. Disturbance of non-indigenous heritage sites or values.	Review of existing information on the site's archaeological and other heritage values. Design of mitigation strategies to minimise impacts. Refer to Section 4.5.
Legislative compliance	Potential of non-compliance with legislation including the Telecommunications Act 1997.	Review of relevant legislation. Refer to Section 3.
Risk assessment	Potential risks of the proposal to the above values.	Construction of a risk assessment table to evaluate the risks posed by the development. Refer to Section 4.6.

4.1 Flora and fauna

4.1.1 Approach

Assessment of the potential impact on flora and fauna included a desktop analysis of threatened fauna and flora (including ecological communities) under the *Threatened Species Conservation Act 1995* and *Environmental Protection & Biodiversity Conservation Act 1999* from the relevant databases (National Parks and Wildlife Atlas and EPBC Database).

A site assessment was made to identify the vegetation present onsite, the existing level of disturbance and flora and fauna habitat values. Additionally, surveying was undertaken to identify bats and arboreal fauna that may utilise hollows that would be impacted (3 person hours, anabat recording, stag watching and spotlighting). Survey work was undertaken on 27 July 2006. The weather conditions were fine and averaged 19 degrees Celsius during the night work.

4.1.2 Flora: Existing environment

The forest type on the site (including the proposed telco facility site and the Fern Drive access track from Durras Road to the site) is intermediate between two communities, as classified by Thomas, Gellie & Harrison (2002) in the Southern Region Comprehensive Regional Assessment:

Lowland Dry Shrub Forest

Corymbia gummifera / Syncarpia glomulifera (FE2).

This community is usually dominated by red bloodwood (*Corymbia gummifera*), which is present on the site, though not dominant. White stringybark (*E. globoidea*) is also common and yertchuk (*E. consideniana)* may occur. The shrub layer is usually "heathy" and may include shrubs such as *Banksia spinulosa, Acacia terminalis, Bossiaea obcordata, Hibbertia empetrifolia, Persoonia linearis, Leucopogon lanceolatus* and *Podolobium ilicifolium* with groundcover plants such as forbs *Patersonia glabrata, Dianella caerulea, Gonocarpus teucrioides, Brunoniella pumilio, Schelhammera undulata,* grasses *Imperata cylindrica, Entolasia stricta, Panicum simile* and bracken (*Pteridium esculentum*).

Coastal Lowlands Cycad Dry Shrub Forest

Corymbia maculata-Macrozamia communis (FE9)

This community is represented on the site by spotted gum (*Corymbia maculata*), blackbutt (*E. pilularis*) burrawangs (*Macrozamia communis*) and shrubs such as *Leucopogon juniperinus, Pultenaea daphnoides* and *Persoonia linearis.*

The undisturbed areas of vegetation growing on subsoil around the former quarry were found to be largely free of introduced plant species, but the former South Durras rubbish tip site is substantially infested with environmental weeds, as a consequence of garden waste disposal on the site. There are patches of cassia *(*Senna glabrata* and **S. septemtrionalis)*, a single wild tobacco bush (**Solanum mauritianum*), a single naturalised willow-leaved hakea (*Hakea salicifolia*), lion's tail (**Leonotis leonurus*) and New Zealand cabbage "palm" (**Cordyline australis*) along with several large clumps of groundcover weeds, **Chlorophytum comosum* (variegated and green forms), **Aristea ecklonii*, **Crassula multicava* and the fern **Nephrolepis cordifolia*. The exotic veldt grass **Ehrharta erecta* dominates the groundcover on track verges through this area (approximately 100 metres in length).

No weeds listed as noxious in the Eurobodalla or Shoalhaven Local Government Areas were recorded during this survey.

Threatened flora species and Endangered Ecological Communities (EECs)

No plant species which are listed on Schedules 1 or 2 of the *NSW Threatened Species Conservation Act 1995* were found on the site. However, the timing of the survey in winter was poor for detecting the presence of some plants such as orchids, which are only visible above ground for a small proportion of the year. Specifically it was poor for detection of the East Lynne midge orchid (*Genoplesium vernale*) which flowers in November-December and the leafless tongue orchid (*Cryptostylis hunteriana*), which flowers in December-January. The former species is known to occur in the Batemans Bay to Ulladulla area and the latter more to the north of Ulladulla. Both are listed as Vulnerable on Schedule 2 of the *TSC Act* and Endangered under the Commonwealth *EPBC Act*.

NPWS Wildlife Atlas records were consulted for records of threatened plant species from the Batemans Bay 1:100,000 map sheet to determine if any other species had the potential to occur in the area. These species, their habitat requirements and their likelihood of occurrence onsite are evaluated in Attachment 6. In consideration of their habitat requirement and the marginal nature of the forest habitat onsite for these species and the prior disturbance due to quarrying and rubbish disposal, there is a low probability that any species of flora listed as threatened occur onsite.

No Endangered Ecological Communities occur onsite. The forest communities represented onsite are common and widespread in the Batemans Bay area and likely to be adequately reserved in Murramurrang National Park and other conservation reserves in the region.

4.1.3 Fauna: Existing environment

As the area is surrounded by forest, foraging habitat values for fauna include foliage, seeds, pollen, nectar and sap. Particularly, many Allocasuarina littoralis (a feed tree of the threatened Glossy Black Cockatoo) are present nearby. Invertebrates, small birds and mammals may be prey for larger species including arboreal fauna and birds of prey.

Refugia onsite and in the immediate area includes dense heath for terrestrial species, mature trees and hollows for arboreal fauna. No cliffs or crags such as are used for cave dwelling bats were observed. The site is elevated and contains no drainage lines or wet depressions and hence no aquatic flora or fauna.

On a broader level, the pattern of forest and clearing in the area creates a mosaic preferred by some species, such as the Masked Owl. The site is located between Durras Lake and Beagle Bay and may therefore have high numbers of water birds such as the threatened Osprey flying over the site. Adjacent forest types, include swamp forest / shrubland and contain many mature eucalypts and a high density of hollow-bearing trees (Kevin Mills and Associates 2005).

Habitat types are illustrated in the photos of the site, Attachment 4.

No fauna were observed during one night's spotlight and stag watch surveying although it is likely that arboreal fauna (including Yellow-bellied Gliders) utilise the site, at least periodically. Anabat recording picked up two species from a total of 19 calls; Chocolate Wattle Bat (*Chalinolobus gouldii*) and White-striped Freetail Bat (*Tadarida australis*). Six *C. gouldii* calls were recorded and were rated as 'good' to 'very good' for call quality. The pulse shapes were generally curved and without a clear tail and some had the regular flip flop pattern. Recorded frequencies ranged from 28.25 to 30.97kHz and were generally too low for Mormopterus or Scotorepens which would have been extremely flat in shape. One call was recorded for *T. australis,* this call was flat with a slight slope and had a characteristic frequency of 12.61kHz and was easily identifiable.

Threatened fauna species

An evaluation of the likelihood of the presence onsite and potential for impact on threatened fauna listed as threatened was undertaken, Attachment 6 (species known from Murramurrang National Park and returned from the NPWS Wildlife Atlas & EPBC Database). Wetland, marine and pelagic species were excluded as these habitat types would not be impacted on by the proposal.

This evaluation identified that several species may be affected by modification to vegetation, these being those species that rely on hollows or tall eucalypt forest.

4.1.4 Potential impacts

Biodiversity impact types that would result from the proposed works include:

- Minor clearing to widen the current track ("Fern Road") from Durras Road to the site;
- Minor clearing to re-open the shorter, currently blocked track from Durras Road to the old South Durras rubbish tip site;
- Minor clearing of the disturbed tip site to excavate and install the telecommunication facility;
- Potential for collision impacts throughout the operation of the facility;
- Indirect impacts as a result of soil disturbance and trampling that may facilitate the spread of weeds or instigate soil erosion.

In total, the area that would be impacted would not exceed 200m^2, the majority of which is already disturbed (refer the Attachment 4: Photographs of the site). The clearing would impact on disturbed ground cover and the branches of tall eucalypts within the works area.

At least one branch that would be removed contains a hollow. There is a high density of hollows and mature trees in the local area (portions 92 -95, private land; Kevin Mills and Associates 2005). As well, a large amount of local habitat is reserved within Murramurrang National Park.

Collision impacts may occur with aerial fauna and the proposed telecommunication equipment. In the United States, some warning lights on towers have been shown to attract migrating birds at night (Cochran and Graber 1958, cited in Canada Bird Studies 2001), possibly because they are used as references for navigation or because they attract insect prey. Kerlinger and Kerns (2003) found that infrastructure lacking guy wires was less likely to result in collisions than infrastructure with guy wires. The proposal would not have lights or guy wires and therefore, minimal collisions are anticipated.

Considering these factors, and the small extent of the works proposed, no species would appear to have greater than a low level of potential impact.

4.1.5 Proposed safeguards

While the potential for impact is considered to be low, safeguards which would be implemented to ensure that the impacts are acceptable would include:

- The proposed impact areas and access routes would be delineated in order to restrict impacts.
- Vehicle and machinery movements and temporary storage of equipment/materials would be entirely within the proposed envelope of the delineated construction site.
- Vegetation would be cut in a manner which ensures survival of the groundcover/shrub/tree.
- Tree branch removal would occur only within the proposed clearance zone.

- All hollow bearing trees would be retained where possible and works kept as far as possible from them.
- Any lopping of branches containing hollows which must be undertaken would be carried out in a manner that ensures trapped animals are safely relocated. Safeguards to reduce the potential for injury or death of animals include the inspection of hollows on the tree and the sectional dismantling or supervision of works by a licensed wildlife carer or handler.
- Fauna habitat attributes such as fallen timber, logs and rocks/boulders would be relocated adjacent to the site to provide potential habitat for fauna species.

4.2 Water and air quality

4.2.1 Existing environment

The site proposed for works is located on elevated land approximately 500m from the coastline. The site has been grossly disturbed in the past, while used as a rubbish tip. Nonetheless, land forms are now stable and vegetated.

No drainage lines or waterways are present. Slopes are minimal and therefore, the potential for sediment or pollution to be transported outside the works area is minimal.

Air quality is high, as no polluting industries or high density traffic occur in the locality.

The climate is ocean mediated, having average summer temperatures around 25 degrees Celsius and average winter temperatures around 18 degrees in winter. Rainfall peaks in early autumn, being least in late winter (Figure 4.1).

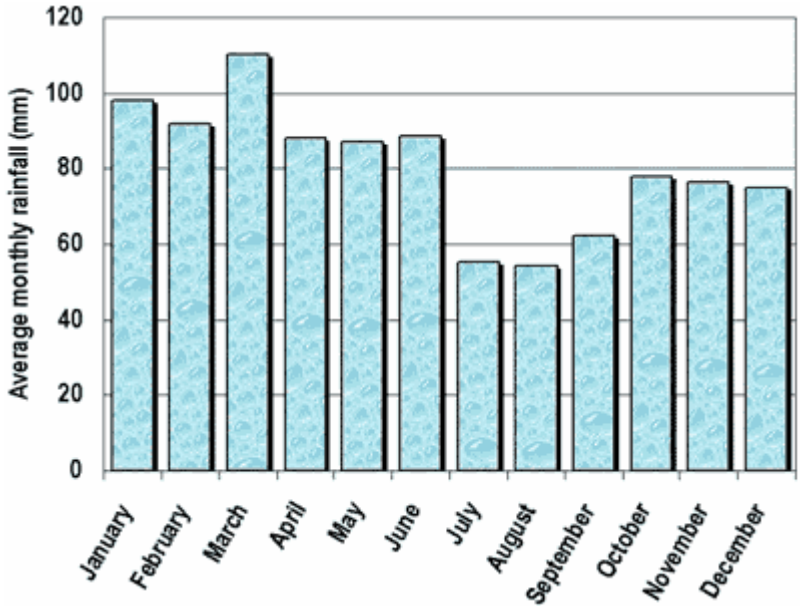


Figure 4.1 Climate: rainfall averages

On average, the region receives 964.8 mm of rain each year (Australian Bureau of Meteorology weather station at Moruya Heads Pilot Station, elevation 17m; sourced from the DEC PWD Murramurrang National Park website).

4.2.2 Potential impacts

Potential impacts would be concentrated during the installation phase of the facility, as ongoing maintenance would require access on existing roads by standard 4WD vehicles, approximately five times per year.

Likely impacts during the installation phase include:

- Mechanical disturbance of soils during footing excavation, including removal of vegetation that stabilises the surface. This would result in the potential for erosion of exposed, disturbed soils, and other impacts such as loss of soil structure and topsoil. Erosion is most likely to occur during and after rainfall, and has the potential to spread the sphere of impact to adjacent areas.

  The key variables influencing the extent of runoff and stormwater pollution are weather and density of vegetation cover. Much of the area's rainfall occurs during spring. The occurrence of a major storm event during works would potentially result in high levels of turbid runoff. The timing of works would avoid this higher rainfall window.

- Compaction of soils by heavy machinery and repeated vehicular passage may occur. Compaction increases the density of soils, reducing their porosity, permeability and therefore their capacity to support plant growth (Tulau 2000). Given the small number of vehicles and limited use of large machinery to install the facility, this impact is anticipated to be minor.

- Impacts could include alteration of the soils chemical properties due to accidental application of chemicals, such as hydrocarbons. This affect would be unlikely to affect groundwater or watercourses due to the site's location and elevation and the small scale of the proposed works.

- Local air quality can be affected by the generation of dust and fine particulate matter during excavation and when clearing vegetation and transporting loads. Emissions would be generated during the operation of equipment, such as excavators, cranes and motor vehicles. Impacts would occur in one discrete location and would be limited both spatially and temporally.

The proposed works would have a limited impact area. Due to landform slope and timing of the works in the period of least rainfall, the potential for cascading impacts (such as generation of pollution that may travel via waterways and drainage lines) is limited. Impacts (with the implementation of the controls below) are likely to be low and short-term.

4.2.3 Proposed safeguards

- Works would avoid times of predicted rainfall.

- Soil excavated for the footings would be disposed of at an approved land fill site. As the top soil is likely to contain a large proportion of exotic seeds, it would not be respread at the site.

- Disturbed soils would be stabilised as soon as practical during works.

  This would involve covering with geotextile fabric and crushed rock within the compound.

  The access off Durras Road that would be reinstated for the installation phase would be removed and restored to its existing condition after the works are complete. Disturbed soils in this area would be stabilised with geotextile fabric and oversown with local native grasses.

- The proposed impact areas and access routes would be delineated in order to restrict impacts.
- Access areas would be identified before works and only these areas would be trafficked during works.
- All motorised equipment, including vehicles, would be maintained so as to minimise emissions.
- Chemicals, including hydrocarbons and herbicides, would not be stored onsite.
- Refuelling of machinery would take place offsite.
- A spill containment/contamination strategy or plan would be developed and communicated to all staff prior to the commencement of the works.

4.3 Amenity and scale

4.3.1 Approach

The potential visual impact of the proposed tower was considered in detail during the site selection process. A balloon (approximately 600mm diameter) was flown from the proposed site at a height of 35m (5m above the height of the tower) and the site was then viewed from a number of vantage points including the township of South Durras, along Durras Road, from Mr. Edwards' property (northeast of the site) from the coastal strip of Durras Lake Road, and from Durras Beach dunes (due east of the site). Reference is made to the *Coastal Design Guidelines of NSW* (2003) in the assessment below.

4.3.2 Existing environment

South Durras is considered a hamlet (population size less than 500 people). The *Coastal Design Guidelines of NSW* note that for these areas, vegetation and landform visually dominate development and buildings and that development is set well back from the foreshore, not dominating vistas from and to the coast. With regard to the height of developments, the guidelines note that heights of up to two storeys are maintained, heights are subject to place-specific urban design studies.

Key issues identified for hamlets include

The key issues are:

- Encroachment into the surrounding hinterland by new development;
- Increasing population impacts on sewerage plants and the water supply;
- New houses and infill development out of scale with existing buildings and the size of lots;
- Exotic landscape species in private gardens and public parks;
- Replacing native vegetation in bushland areas;
- Clearing of large areas of native vegetation when establishing bushfire protection areas;
- Additional traffic related to increased population and visitation;
- Degraded water quality in streams and wetlands arising from increased urban run off; and
- Uncontrolled access to natural areas.

The locality has scenic waterbodies (Beagle Bay, Durras Lake) as well as a diversity of native vegetation communities. Beaches, rock platforms, spotted gum forests and rainforest gullies are located within Murramurrang National Park which offers opportunities for camping, picnicking, bush walking, cycling, car touring, canoeing, fishing and swimming. The area is marketed as part of the 'nature coast' and capitalises on these recreational and aesthetic attributes.

4.3.3 Potential impacts

The proposal would not exacerbate key issues identified by the *Coastal Design Guidelines of NSW.* However, the proposal has the potential to detract from the naturalness of the environment, which is appreciated by residents and visitors to the area alike. The impact is determined by the visibility of the structure (a factor of scale and material selection) and contrast between the structure and its setting.

The site was chosen to reduce opposition to the proposal. Minimising visual impact was one of the selection criteria. Local stakeholders were involved in site selection early in the proposal (refer to Section 2).

When the balloon was flown at the site, it proved to be well shielded by trees and only just visible from Durras Road, between trees. This would temporarily affect passing vehicles. It is likely that the tower would not normally be visible from this location as the balloon is visually more prominent than the tower would be, due to its red colour. The balloon was not visible from the other locations (the township of South Durras, along Durras Road, from Mr. Edwards' property, from the coastal strip of Durras Lake Road or from Durras Beach dunes).

The results of the balloon flying exercise demonstrated that the visual impact due to the scale of the proposal would be low. The proposed tower would be grey, with a pale eucalypt coloured equipment shelter, further reducing the contrast between the facility and its setting. As such, the visual impacts of the proposal would be low.

The basis of the proposed activity is to provide improved coverage, capacity and call quality to the locality which would in turn greatly improve communications to the emergency services (Police, Rural Fire Services and Ambulance) and would assist with activities within the National Park Estate. Therefore, the proposal is considered to have benefits to the amenity of the area, for local residents, visitors and service providers which will largely offset the visual impact of the proposal.

4.3.4 Proposed safeguards

To minimise the impacts of the proposal upon the amenity of the area:

- The local community would be notified of the timing of works.
- The proposed tower would be grey, with a pale eucalypt coloured equipment shelter.
- Soils disturbed during the installation of the facility would be stabilised as soon as practicable after works.
- The facility, once constructed, would be secured to prevent public access.
- The access off Durras Road would be restored to its current state to prevent access.

4.4 Bushfire

4.4.1 Existing environment

The site is located in a small clearing adjacent to the cleared ex-rubbish tip site and contains little or no ground cover. Durras Road, Fern Drive and Skid Ridge Road constitute other cleared areas in the immediate vicinity. These areas are surrounded by bushland (refer to Figure 4.2).

Being located close to South Durras, the South Durras Brigade would be able to provide rapid response time to fires in the area.

Figure 4.2 Aerial photo of the proposal site

4.4.2 Potential impacts

Bushfire hazards are present during construction. Flammable materials and ignition sources brought onto the site, such as fuels, would increase the risk of fire during the construction period. Correct handling and storage procedures would mitigate against the risk of ignition. Appropriate fire fighting equipment would be held on site when the fire danger is very high to extreme, and a minimum of one person on site would be trained in its use.

Prior to works, the NSW Rural Fire Service would be consulted in regard to the adequacy of bushfire prevention procedures to be implemented onsite during construction. These procedures would in particular cover any hot-work procedures and response measures to control any incident.

The proposal would not influence access to the area which would be temporarily improved with access off Durras Road reinstated but then restored after the installation of the facility to its current condition. The proposal would not influence the potential for containment lines.

Operational bushfire risks are considered to be very low. Maintenance workers would visit the site several times per year using established access tracks and standard 4WD vehicles. All power lines connecting the facility to the electricity grid would be underground, minimising the potential for fire ignition from faulty or broken lines. The potential for a fire to start is considered very low.

Asset protection zones (APZs) described by *Planning for Bushfire Protection Guidelines* are generally only applied to residential buildings. The equipment shelter (3.28 x 2.28m) would be small and contained within a compound (10 x 5m). The substrate would be gravel overlying geotextile fabric. This is considered to represent a very low bushfire hazard. Further clearing of vegetation around the immediate site will not be required to reduce any fire hazard to the proposed compound.

4.4.3 Proposed safeguards

- The NSW Rural Fire Service would be consulted in regard to the adequacy of bushfire prevention measures to be implemented onsite during construction. These measures would in particular cover hot-work procedures and response protocols in the event of a fire during construction.
- Flammable materials and ignition sources brought onto the site, such as fuels, would be handled and stored as per manufacturer's instructions.
- During the construction phase, appropriate fire fighting equipment would be held onsite when the fire danger is very high to extreme, and a minimum of one person on site would be trained in its use.

4.5 Cultural heritage

4.5.1 Approach

An archaeologist (Julie Dibden of NSW Archaeology) was engaged to assess potential impact on Aboriginal heritage posed by the installation of the power route, to service the proposed telecommunication facility. Hence, the assessment included the majority of the proposed telecommunication site. Ms Dibden has provided a letter which states that the power route report is sufficient to assess the proposal as outlined in this EA (Attachment 8). Relevant sections of the report are summarised in this section.

Non-indigenous heritage was assessed with reference to existing registers. No potential artefacts were observed during site assessment by the project officer, botanist or the archaeologist during their assessments.

4.5.2 Aboriginal heritage

The archaeological assessment was undertaken for the purposes of identifying whether or not any Aboriginal sites or archaeologically sensitive landforms are present in the proposal area. Violet Parsons represented the Batemans Bay Local Aboriginal Land Council. The assessment is provided in full in Attachment 8.

A search of the New South Wales Department of Environment and Conservation Aboriginal Heritage Information Management System (AHIMS) indicated that no previously recorded Aboriginal sites are located within the proposal area (AHIMS #16421). Five sites are listed to be present in the immediate local area. These would not be affected by the proposal. The comprehensive field survey conducted for this assessment recorded one archaeological site. This site would not be affected by the proposal.

In general the area is assessed to be of low archaeological sensitivity. The recorded archaeological site is substantially disturbed and assessed to be of low archaeological significance. The installation of the telecommunications facility (excluding power line installation) would not impact further on the identified site. As such, no mitigation measures are required.

4.5.3 Non-indigenous heritage: Existing environment

Heritage registers exist at the Commonwealth, state and local level. No items are recorded at the Commonwealth level (refer to Table 4.2). As defined by the NSW State Heritage Register, a property is a heritage item if it is:

i) listed on the State Heritage Register, a register of places and items of particular importance to the people of NSW, and/or

ii) listed in the heritage schedule of the local council's Local Environmental Plan (LEP).

A search of the NSW State Heritage register revealed three items are listed for the Eurobodalla Shire. These are located at Moruya, Montague Island and Bergalia and therefore are well removed from the proposed site and would not be affected by the proposal.

Table 4.2 shows those items listed at the state or local level. The site proposed is covered by the Eurobodalla Rural LEP 1987. Schedule 1 of the LEP lists heritage items by locality; two items are listed for Durras (refer to Table 4.3). Neither of these items have potential to be impacted by the proposal.

Table 4.2 Summary of heritage listings

Listings generated by the Matters of National Significance search tool for a 10km around the site.

Name of register	Number of places
(Commonwealth) World Heritage (Commonwealth)	0
National Heritage Places (Commonwealth)	0

Table 4.3 Summary of places on state and local heritage registers in the Eurobodalla Shire, June 2004

Name of register	Number of places	Change since July 2000
State Heritage Register	3	0
Local Environment Plan	154	+1

Table 4.4 Eurobodalla Rural LEP: Heritage items listed for Durras

Item	Location	Distance from proposed site
Myrtle Beach-Wasp Head geological site comprising rock platforms and adjacent coastal cliffs to the low water mark.	Approximately 20 hectares of land between Mill Beach and Myrtle Beach.	2 km +
McMillan's sawmill wharf and skids.	foreshore adjoining and on Part Lot, DP 755904, Banyandah Street, at southern end of Mill Beach.	~ 2km

4.5.4 Potential impacts

No potential impacts would result to Aboriginal artefacts or listed heritage items

4.5.5 Proposed safeguards

No mitigation is required.

4.6 Environmental risk assessment

As per the Australian Standard 4360 2004, the main elements of the risk management process are to communicate and consult, establish the context, identify risks, analyse risks, evaluate risks, treat risks and monitor and review

In effect, the objective of this EA is to address these criteria in order to minimise environmental hazards posed by the development. Specifically, stakeholders were identified and consulted early in the planning process (refer to Section 2). The existing environment and potential for impact were considered as subheadings in relation to the key issues identified by the NSW Department of Planning's Director General's Requirements. The level of impact or risk was determined for each key issue. Safeguards were developed to address potential impacts. Given the short duration of works, adaptive management (or monitor and review) is not appropriate. Telstra however, accept the responsibility for ensuring that these safeguards are effectively implemented onsite.

The table below summarises the level of impact anticipated for each key issue.

Table 4.5 Risk assessment

Key issue	Impact types	Likelihood of impact	Likely consequences of impact	Risk level *
Flora and fauna	Habitat modification	Moderate given the nature of the works	Low given the small extent of works	Low Low
Flora and fauna	Injury to fauna	Moderate given the nature of the works	Low given the small extent of works	Low Low
Water and air	Pollution of soil, water and air	Moderate given the nature of the works	Low given the small spatial and temporal extent of the works	Low
Amenity and scale	Visual impact	Low given the view-shed from the site	Moderate given the environmental qualities of the area	Low Low
Amenity and scale	Public safety	Low given the low EME levels and ability to secure the compound	High given the seriousness of radiation and electrocution risks	Low
Bushfire	Fire	Low given the nature of the works	High given the density of bushland	Low
Cultural heritage	Destruction or degradation of artefacts or listed items	Low given the location of works	Low given the assessed low sensitivity of the area	Low

* *assuming mitigation measures are effectively implemented*

5 ENVIRONMENTAL MANAGEMENT

5.1 Draft Statement of Commitments

Under the Part 3A reforms, proponents are required to provide a draft *Statement of Commitments* on how they propose to manage the project to minimise, and where possible avoid, impacts. Twenty-two environmental safeguards have been developed for the construction and operation of the proposed telecommunication facility within this EA. They are summarised in Table 5.1, in the order they appear in this EA. Where items appear under more than one heading within the EA, they are mentioned only under the most relevant heading in the following table.

Table 5.1 Draft Statement of Commitments

	Impact	Objective	Mitigation tasks	By	Timing	Auditing	Criteria
SoC1.	Flora and fauna	Minimise the impact area	• The proposed impact areas and access routes would be delineated in order to restrict impacts.	Telstra contractors	Before works commence	Telstra contractor	No impacts outside delineated works area
SoC2.	Flora and fauna	Minimise the impact area	• Vehicle and machinery movements and temporary storage of equipment/materials would be entirely within the proposed envelope of the delineated construction site.	Telstra contractors	During construction	Telstra contractor	No impacts outside delineated works area
SoC3.	Flora and fauna	Minimise the modification to habitat	• Vegetation would be cut in a manner which ensures survival of the groundcover/shrub/tree.	Telstra contractors	During construction	Telstra contractor	Minimal modification to vegetation
SoC4.	Flora and fauna	Minimise the modification to habitat	• Tree branch removal would occur only within the proposed clearance zone.	Telstra contractors	During construction	Telstra contractor	No impacts outside delineated works area
SoC5.	Flora and fauna	Minimise the modification to habitat	• All hollow bearing trees would be retained where possible and works kept as far as possible from them.	Telstra contractors	During construction	Telstra contractor	Minimal impact on hollow-bearing trees
SoC6.	Flora and fauna	Minimise the modification to habitat	• Fauna habitat attributes such as fallen timber, logs and rocks/boulders would be relocated adjacent to the site to provide potential habitat for fauna species.	Telstra contractors	During construction	Telstra contractor	Minimal modification to habitat resources

	Impact	Objective	Mitigation tasks	By	Timing	Auditing	Criteria
SoC7.	Flora and fauna	Minimise risk of injury to fauna	• Any lopping of branches containing hollows which must be undertaken would be carried out in a manner that ensures trapped animals are safely relocated. Safeguards to reduce the potential for injury or death of animals include the inspection of hollows on the tree and the sectional dismantling or supervision of works by a licensed wildlife carer or handler.	Wildlife handler / carer	Before other works commence	Telstra contractor	No injury to fauna
SoC8.	Water and air	Minimise impact on soils, water and air quality	• Works would avoid times of predicted rainfall.	Telstra contractors	During construction	Telstra contractor	No works during prolonged wet weather
SoC9.	Water and air	Minimise impact on soils, water and air quality	• Soil excavated for the footings would be disposed of at an approved land fill site. As the top soil is likely to contain and large proportion of exotic seeds, it would **not** be respread at the site.	Telstra contractors	At the completion of the works	Telstra contractor	Excavated soils removed from the site to an approved facility
SoC10.	Water and air	Minimise impact on soils, water and air quality	• Disturbed soils would be stabilised as soon as practical during works. This would involve covering with geotextile fabric and crushed rock within the compound. The access off Durras Road that would be reinstated for the installation phase would be removed and restored to its existing condition after the works are complete. Disturbed soils in this area would be stabilised with geotextile fabric and oversown with local native grasses.	Telstra contractors	At the completion of the works	Telstra contractor	Stable landforms at the completion of works
SoC11.	Water and air	Minimise impact on soils, water and air quality	• Access areas would be identified before works and only these areas would be trafficked during works.	Telstra contractors	Before works commence	Telstra contractor	No impacts outside delineated works area

	Impact	Objective	Mitigation tasks	By	Timing	Auditing	Criteria
SoC12.	Water and air	Minimise impact on soils, water and air quality	• All motorised equipment, including vehicles, would be maintained so as to minimise emissions.	Telstra contractors	During construction and operation of the facility	Telstra contractor	Only well maintained equipment would be used
SoC13.	Water and air	Minimise risk of spills	• Chemicals, including hydrocarbons and herbicides, would not be stored onsite.	Telstra contractors	During construction and operation of the facility	Telstra contractor	No storage onsite
SoC14.	Water and air	Minimise risk of spills	• Refuelling of machinery would take place offsite.	Telstra contractors	During construction and operation of the facility	Telstra contractor	No refuelling onsite
SoC15.	Water and air	Minimise risk of spills	• A spill containment/contamination strategy or plan would be developed and communicated to all staff prior to the commencement of the works.	Telstra contractors	Before works commence	Telstra contractor	All contractors inducted before works commence
SoC16.	Amenity and scale	Minimise contrast of structure to existing environment	• The proposed tower would be grey, with a pale eucalypt coloured equipment shelter.	Telstra contractors	Before works commence	Telstra contractor	As stated
SoC17.	Amenity and scale	Minimise risk to the public	• The facility, once constructed, would be secured to prevent public access.	Telstra contractors	At the completion of the construction phase	Telstra contractor	As stated
SoC18.	Amenity and scale	Minimise risk to the public	• The local community would be notified of the timing of works.	Telstra contractors	Before works commence	Telstra contractor	Works advertised in local media

	Impact	Objective	Mitigation tasks	By	Timing	Auditing	Criteria
SoC19.	Amenity and scale	Minimise risk to the public and potential for rubbish dumping	• The access off Durras Road would be restored to its current state to prevent access	Telstra contractors	At the completion of the construction phase	Telstra contractor	Stable, impassable access way reinstated
SoC20.	Bushfire	Minimise risk of bushfire	• The NSW Rural Fire Service would be consulted in regard to the adequacy of bushfire prevention measures to be implemented onsite during construction. These measures would in particular cover hot-work procedures and response protocols in the event of a fire during construction.	Telstra contractors	Before works commence	Telstra contractor	RFS protocols implemented onsite
SoC21.	Bushfire	Minimise risk of bushfire	• Flammable materials and ignition sources brought onto the site, such as fuels, would be handled and stored as per manufacturer's instructions.	Telstra contractors	During construction and operation of the facility	Telstra contractor	As stated
SoC22.	Bushfire	Minimise risk of bushfire	• During the construction phase, appropriate fire fighting equipment would be held onsite when the fire danger is very high to extreme, and a minimum of one person on site would be trained in its use.	Telstra contractors	Before and during the construction phase	Telstra contractor	As stated

6 CONCLUSION

This Environmental Assessment (EA) has assessed the likely environmental impacts that may result from the proposed construction and operation of a proposed Telstra mobile phone telecommunications facility on Crown Land Reserve Number 86770, Lot 169 DP 755904, South Durras, south coast of NSW.

Benefits of the proposal have been identified at the local level. The basis of the proposed activity is to provide improved coverage, capacity and call quality to the areas of South Durras and North Durras and to major roads including Durras Road and to the Durras Lakes. Mobile infrastructure in this area would greatly improve communications to the emergency services (Police, Rural Fire Services and Ambulance), search and rescue and within the National Park Estate. Site selection has involved local residents, community groups, local businesses, the Eurobodalla Shire Council and Department of Environment and Conservation in order to minimise opposition to the proposal.

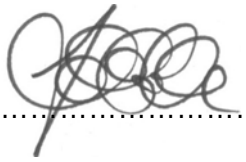
Key issues with respect to the proposal have been investigated and environmental safeguards have been identified in order that these benefits can be achieved in an environmentally sustainable manner. Measures to which the proponent would commit are outlined in Section 5.1. This report considers that these measures are sufficient to manage environmental impacts and risks associated with the proposal.

7 ASSESSMENT PERSONNEL

Brooke Marshall and John Turville of **ngh**environmental constitute the document's primary authors. The information contained in this document is neither false nor misleading. All information is considered by the authors to be correct at the time of writing.

John Turville

nghenvironmental (Project Manager)



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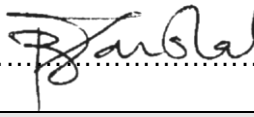
Brooke Marshall

nghenvironmental (Project Officer)



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Authors	Experience
John Turville *B. App. Sc., Grad. Dip (Env Sc.), MEIANZ, RABQSA Provisional Auditor (EMS)*	John's expertise focuses on the development of environmental management systems (EMS) to ISO 14001 standard and the internationally recognised Travel and Tourism accreditation scheme, Green Globe 21, associated environmental reporting and the development of environmental management plans and codes of practice in line with industry best practice. John has a keen interest in the fields of sustainable tourism, sustainability for business and industry (eco-efficiency), organic farming and gardening and environmental management. Minimising the environmental impacts associated with business and industry is one of John's greatest challenges and motivations. Since commencing work with **ngh**environmental, John has project managed the roll-out of telecommunications facilities on behalf of Telstra under the Federal Government's Telecommunications Inquiry - the Besley Inquiry. John was instrumental in securing sought after funding from the Federal Government (Department of Agriculture, Fisheries and Forestry - DAFF) to implement Environmental Management Systems on 20 dairy farms in the Bega Valley on behalf of the Bega Cooperative Society Limited (Bega Cheese).
Brooke Marshall *Bachelor of Natural Resources (Hons*)	Since joining **ngh**environmental in 2004, Brooke has prepared impact assessment reports relating to residential developments, road construction, water supply infrastructure, river modification and prescribed burning activities. These reports have included threatened flora and fauna species assessments requiring research, fieldwork and GIS components. She has also prepared REFs and EMPs for sensitive areas including sub-alpine areas. Recent projects involve wind farm environmental impact assessment and natural values strategic assessment, both projects were in the Snowy River Shire. Brooke is currently focusing on environmental impact assessment, biodiversity assessments and wildlife management issues. She has carried out comprehensive faunal surveys on the south coast, in the southern tablelands and snowy mountains region and has experience with cage and Elliot traps, hair tubes, spotlighting, call play-back, scat and sign searches and bird / reptile / amphibian searches and anabat recording.

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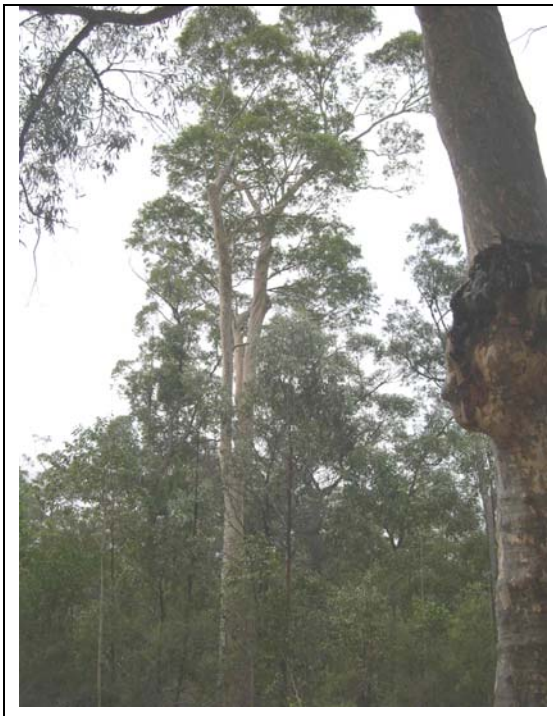
ATTACHMENT 1: DIRECTOR GENERAL'S REQUIREMENTS

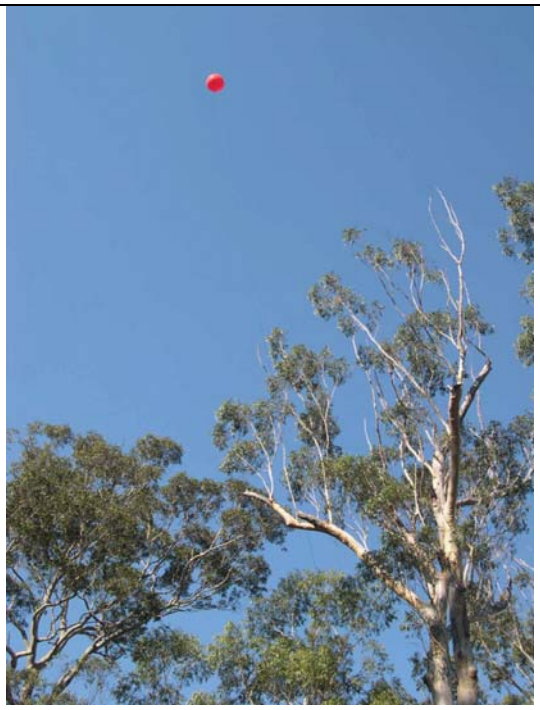
ATTACHMENT 2: CONCEPT DRAWINGS OF THE PROPOSAL

ATTACHMENT 3: EME LEVELS REPORT

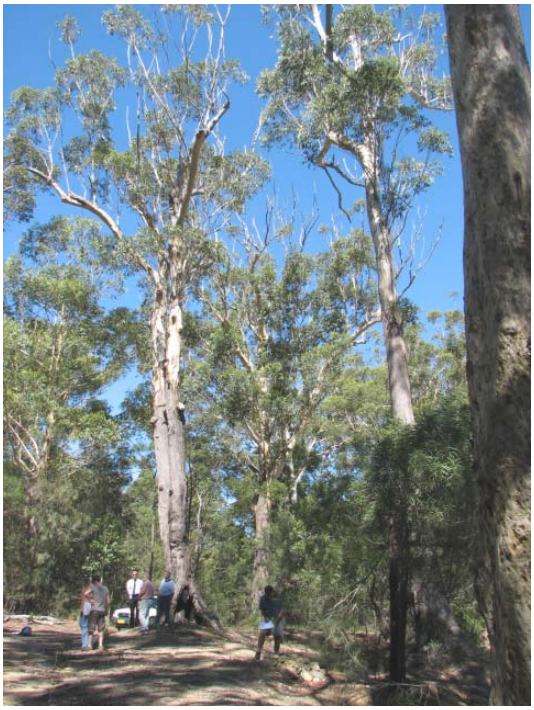
ATTACHMENT 4: PHOTOGRAPHS OF THE SITE



Tall spotted gums surrounding the site



Balloon positioned 5m above the level of the proposed tower.



The site has been disturbed in the past and contains little or no ground cover.

Durras Road

The blocked access way would be reinstated during construction and then restored after the works to ensure that public access to the site is restricted.

ATTACHMENT 5: FLORA SPECIES LIST FOR THE SITE

Relative abundance is given by a cover abundance scale (modified Braun-Blanquet):

1 1 to a few individuals present, less than 5% cover

2 many individuals present, but still less than 5% cover

3 5 - < 20% cover

4 20 - < 50% cover

5 50 - < 75% cover

6 75 - 100% cover

Cover/abundance scores relate to general abundance over the entire site, not to representative quadrats.

*Introduced species and Australian natives naturalised outside their natural range due to dumping of garden waste are preceded by an asterisk.

Scientific name	**Common name**	**Family**	**Abundance**
TREES			
Acacia irrorata ssp irrorata	green wattle	Fabaceae	0-3
Acacia longifolia ssp longifolia	Sydney golden wattle	Fabaceae	0-2
Acacia mearnsii	black wattle	Fabaceae	1
Allocasuarina littoralis	black sheoak	Casuarinaceae	2-3
Corymbia gummifera	red bloodwood	Myrtaceae	1
Corymbia maculata	spotted gum	Myrtaceae	1-3
Elaeocarpus reticulatus	blueberry ash	Elaeocarpaceae	1
Eucalyptus pilularis	blackbutt	Myrtaceae	0-3
Synoum glandulosum	scentless rosewood	Meliaceae	1
SHRUBS, SUB-SHRUBS			
Acacia terminalis ssp angustifolia	sunshine wattle	Fabaceae	0-2
Banksia spinulosa var. spinulosa	hairpin banksia	Proteaceae	1
Bossiaea obcordata		Fabaceae	0-2
**Hakea salicifolia narrow leafed form*		Proteaceae	1
Hibbertia linearis	guineaflower	Dilleniaceae	1
**Leonotis leonurus*		Lamiaceae	1
Leucopogon juniperinus	prickly beard heath	Epacridaceae	1
Macrozamia communis	burrawang	Zamiaceae	0-2
Notelaea longifolia forma longifolia	large mock olive	Oleaceae	1

Notelaea venosa	veined mock olive	Oleaceae	1
Persoonia linearis	narrow-leaved geebung	Proteaceae	1
Podolobium ilicifolium	holly-leaf pea	Fabaceae	1
Pultenaea daphnoides		Fabaceae	1
**Senna pendula var. glabrata*		Fabaceae	0-2
**Senna septemtrionalis*		Fabaceae	1
**Solanum mauritianum*	wild tobacco bush	Solanaceae	1
FERNS			
Calochlaena dubia	common ground fern	Dicksoniaceae	0-3
**Nephrolepis cordifolia*	fishbone fern	Davalliaceae	0-3
Pteridium esculentum	bracken	Dennstaedtiaceae	0-3
Pteris tremula	tender brake	Pteridaceae	1
VINES AND TWINERS			
Cissus hypoglauca	native grape, water vine	Vitaceae	0-2
Glycine clandestina	twining glycine	Fabaceae	1
Hardenbergia violacea	native sarsaparilla	Fabaceae	1
Hibbertia scandens		Dilleniaceae	1
FORBS			
**Aristea ecklonii*		Iridaceae	0-3
**Bidens pilosa*	cobbler's peg	Asteraceae	1
**Centaurium ?erythraea*	centaury	Gentianaceae	1
**Chlorophytum comosum*		Anthericaceae	0-3
**Cirsium vulgare*	black or spear thistle	Asteraceae	0-2
**Conyza albida*	fleabane	Asteraceae	1
**Crassula multicava*	stonecrop	Crassulaceae	0-2
Desmodium gunnii	southern tick trefoil	Fabaceae	1
Dianella caerulea	blue flax lily	Phormiaceae	0-2
Dichondra repens	kidney weed	Convolvulaceae	1
**Erigeron karvinskianus*	seaside daisy	Asteraceae	1
Euchiton sp.		Asteraceae	1
**Hedychium gardnerianum*	ginger lily	Zingiberaceae	1
Hydrocotyle sp.		Apiaceae	0-2

**Hypochaeris radicata*	cat's ear, flatweed	Asteraceae	0-3
Opercularia aspera	stinkweed	Rubiaceae	1
Patersonia glabrata		Iridaceae	1
Pomax umbellata		Rubiaceae	1
Pratia purpurascens	whiteroot	Lobeliaceae	1
Scaevola ramosissima	fan flower	Goodeniaceae	1
Senecio minimus		Asteraceae	
**Tradescantia fluminensis*	wandering jew	Commelinaceae	1
Urtica incisa	stinging nettle	Urticaceae	0-3
Viola hederacea	ivy-leafed violet	Violaceae	2
GRASSES			
Aristida vagans	three awn grass	Poaceae	1
Cymbopogon refractus	barbed wire grass	Poaceae	1
**Ehrharta erecta*	panic veldtgrass	Poaceae	0-3
Entolasia stricta	wiry panic	Poaceae	2
Imperata cylindrica var. *major*	blady grass	Poaceae	0-3
Microlaena stipoides	weeping grass	Poaceae	1
Notodanthonia longifolia	curly wallaby grass	Poaceae	0-2
Poa ensiformis		Poaceae	1
Aristida vagans	three awn grass	Poaceae	1
Cymbopogon refractus	barbed wire grass	Poaceae	1
GRAMINOIDS			
**Cordyline australis*		Asteliaceae	1
Gahnia sieberiana	red fruited saw-sedge	Cyperaceae	1
Isolepis nodosa		Cyperaceae	1
Juncus usitatus	common or tussock rush	Juncaceae	1
Lomandra longifolia	spiny matrush	Lomandraceae	1
Lomandra multiflora ssp multiflora		Lomandraceae	1
Lomandra obliqua		Lomandraceae	

ATTACHMENT 6: THREATENED SPECIES EVALUATIONS

Flora

NPWS Wildlife Atlas records were consulted for records of threatened plant species from the Batemans Bay 1:100,000 map sheet to determine if any other species had the potential to occur in the area. These species, their habitat requirements and their likelihood of occurrence onsite are evaluated below.

Species	Category *	Habitat required	Likelihood of presence onsite
Correa baeuerlenii, shrub (Rutaceae)	V, v	Grows in a range of forested habitats, often in riparian or rocky sites, between Batemans Bay (two very old and one 1971 record between Nelligen and Runnyford) and Bega. Neither rocky nor riparian habitat is present, and the species is quite a conspicuous one and was not seen on the site.	Low
Aldrovanda vesiculosa, aquatic herb (Droseraceae)	E	Grows in shallow freshwater and has been recorded in wetlands in the Moruya area. No suitable habitat is present.	Low
Cryptostylis hunteriana, terrestrial orchid (Orchidaceae)	V, v	Grows in sandy soils in coastal situations. Descriptions of its preferred habitat include "swamp-heath on sandy soils" (Weston 1993), "Favours swamp fringes in Victoria, while in New South Wales it occupies habitats ranging from scrubby swamp fringes to steep bare hillsides in tall eucalypt forest" (Bishop 1996) and "open woodland with a heath understorey" on dry sandy soil for the NSW Central Coast (Bell, 2001). No areas with sandy soils or swamp-heath vegetation occur on the route, so the species is unlikely to occur here. There is one record on the DEC Atlas from Murramurrang NP near East Lynne. The forest in the East Lynne area includes heathy forest which is more likely to provide suitable habitat.	Low
Genoplesium vernale, terrestrial orchid (Orchidaceae)	V, v	This species occurs between Mogo and Jervis Bay in a range of dry, mostly heathy forest or woodland types, which very rarely include spotted gum (*Corymbia maculata*). The forest type occurring on the site is only marginally suitable habitat for this species and this combined with the prior site disturbance means that the probability of its occurrence in the vicinity is very low.	Low
Thesium australe, austral toadflax, perennial forb (Santalaceae)	V, v	This species is a root parasite on grasses, typically kangaroo grass (*Themeda triandra*), occurring in grasslands and grassy woodlands. The nearest records are from south of Moruya and Ulladulla on coastal grassy headlands. No suitable habitat is present on the site.	Low

Species	**Category ***	**Habitat required**	**Likelihood of presence onsite**
Persicaria elatior, annual forb (Polygonaceae)	V, v	Grows in seasonally wet sites, including stream banks and swamp margins (J. Miles, pers. obs.). The nearest record is at Catalina in Batemans Bay. No suitable habitat is present on the site.	Low

V listed as Vulnerable in NSW in Schedule 2 of the *Threatened Species Conservation Act*

E listed as Endangered in NSW in Schedule 1 of the *Threatened Species Conservation Act*

v listed as Vulnerable in the schedules of the Commonwealth *Environmental Protection and Biodiversity Conservation Act*

e listed as Endangered in the schedules of the Commonwealth *Environmental Protection and Biodiversity Conservation Act*

Fauna

An evaluation of the likelihood of the presence onsite and potential for impact on threatened fauna from species listed as threatened found within the Murramarang National Park (from the NPWS Wildlife Atlas & EPBC Database) is presented below. Wetland, marine and pelagic species have been excluded from this list as these habitat types would not be impacted by the proposal.

Species and Status*	**Ecology**	**Likelihood of occurrence onsite**	**Potential to be impacted**
Striated Fieldwren *Calamanthus fuliginosus* V TSC	This species nests on the ground under bushes and tussocks and forages in undergrowth. It favours swampy heaths and tussock fields in coastal areas, where it nests close to the ground in untidy domed nests made of moss, grass and leaves. Breeding on the ground, this species is susceptible to predation by foxes, dogs and cats as well as trampling by stock and human traffic.	This species has been recorded approximately 5km from the site. Potential habitat would not be affected.	Nil
Square-tailed Kite *Lopoitinia isura* V TSC	This species' preferred habitat is open eucalypt forest and woodland (Schodde & Tidemann 1986). Here it predates in forest canopy (Klippel 1992) and builds large stick nests in tall trees where it preys on small birds in the tree tops (Klippel 1992). Resident pairs have territories of greater than 100 km². The species is believed to be nomadic (Slater *et al.* 1986).	Two records occur south of Bateman's Bay. Potential habitat would not be affected.	Nil
White-bellied Sea-eagle *Haliaetus leucogaster-* JAMBA/CAMBA	Not listed as threatened under TSC Act. Inhabits coasts, islands, estuaries and inlets.	Likely to occur in the area. Potential habitat would not be affected.	Nil
White throated Needletail *Hirundapus caudacutus* JAMBA/CAMBA	This is a fast flying species, occurring in Australia in large numbers during the non-breeding season (October – August). It roosts in trees and forages on flying insects, commonly in thermals associated with storm fronts or bush fires (Australian Museum 2003) and often with other species, including the Fork-tailed Swift.	Most records for this species in NSW are coastal. Several records occur in the locality. Potential habitat would not be affected.	Nil

Species and Status*	Ecology	Likelihood of occurrence onsite	Potential to be impacted
Gang-gang Cockatoo *Callocephalon fimbriatum* V TSC	This species occupies tall montane forests and woodlands (particularly heavily timbered and mature wet sclerophyll forests) in summer as well as sub-alpine Snow Gum woodland and occasionally temperate rainforests (Forshaw 1989). The Gang-gang Cockatoo occurs at lower altitudes in drier, more open eucalypt forests and woodlands (particularly box-ironbark assemblages) (Shields and Crome 1992). This species requires large hollows in which to breed (Gibbons 1999, Gibbons and Lindenmayer 2002). Breeding usually occurs in tall mature sclerophyll forests that have a dense understorey, and occasionally in coastal forests.	Several records occur within the locality. A small amount of potential nesting habitat may be affected.	Low
Glossy Black Cockatoo *Calyptohynchus lathami* V TSC	This is a species of open forests and woodland, dependent mainly on the seeds of Allocasuarina trees as a food source (Blakers *et al*. 1984). Large trees with hollows are required for breeding sites (Emison *et al*. 1987). Competition for hollows increases with openness of habitat and can be a threat to this species. Potential feed tree species were observed at the site and feeding signs (chewed cones) were also observed. Feed tree species are relatively common regionally, and the proposal would not impact on this tree species.	Several records occur within the locality. A small amount of potential nesting habitat may be affected.	Low
Brown Treecreeper *Climacteris picumnus* V TSC	The species occurs in eucalypt woodlands, mallee and drier open forest of eastern Australia (Schodde & Tidemann 1986). Threats include the loss of hollow bearing trees, decrease in the diversity of ground-dwelling invertebrates (Bromham *et al.* 1999) and increased competition with aggressive honeyeater species.	A record occurs close to the site. A small amount of potential nesting habitat may be affected.	Low
Black-faced Monarch *Monarcha melanopsis* JAMBA/CAMBA	This species occurs in coastal NSW from rainforests, eucalypt woodlands, coastal scrub, and damp gullies in rainforest (Pizzey & Knight, 1997).	Several records occur in the locality. A small amount of potential habitat may be affected.	Low

Species and Status*	**Ecology**	**Likelihood of occurrence onsite**	**Potential to be impacted**
Rufous Fantail *Rhipidura rufifrons* JAMBA/CAMBA	This species occurs in the understorey of rainforest and wet eucalypt forest and gullies, paperbark mangroves and water courses. During migration it tends to occupy streets, towns and farms.	Several records occur in the locality. No suitable habitat would be affected.	Nil
Satin Flycatcher *Myiagra rubecula* JAMBA/CAMBA	This species occurs in heavily vegetated gullies in forests; during migration it occurs in coastal forests, woodlands, mangroves, trees in open country and gardens.	No local records occur. No suitable habitat would be affected.	Nil
Regent Honeyeater *Xanthomyza Phrygia* E TSC E EPBC JAMBA/CAMBA	This species inhabits eucalypt forests and woodlands (Blakers *et al.* 1984). It is highly nomadic and relatively large numbers can arrive at and vacate areas depending on local and regional flowering of favoured species. It feeds mostly on the flowers of eucalypts (particularly box and ironbark species), but also eats invertebrates and exotic fruits (Blakers *et al.* 1984). Although formerly recorded in areas where favoured food trees were relatively scarce (Blakers *et al.* 1984), this species is now almost completely restricted to a few relatively intact extensive stands of its favoured tree species, mostly on the inland side of the Great Dividing Range (Garnett 1993).	A record occurs close to the site. A small amount of potential foraging habitat may be affected.	Low
Olive Whistler *Pachycephala olivacea* V TSC	In coastal areas, this species strongly favours moist forest and riparian thickets, especially teatree thickets (Blakers *et al*. 1984, Emison *et al.* 1987).	Three records occur in the locality. A small amount of potential but marginal foraging habitat may be affected.	Low
Fork-tailed Swift *Apus pacificus* EPBC	Forages over open country and nests in cliffs and tall tress. Occasional mass movements occur and this species may spend nights on the wing (Pizzey and Knight 2003).	Local records are present for this species. It is a migrant to the area. A small amount of potential habitat may be affected.	Low

Species and Status*	**Ecology**	**Likelihood of occurrence onsite**	**Potential to be impacted**
Rainbow Bee-eater *Merops ornatus* EPBC	A species of open woodlands and riverbanks. This species can form loose colonies when breeding, in northern Australia. Migrants usually follow established routes.	No local records occur. A small amount of potential habitat may be affected.	Low
Turquoise Parrot *Neophema pulchella* V TSC	The Turquoise Parrot feeds on grass and herb seeds and nests in holes in trees or stumps. It normally lives on the edges of eucalypt woodland where it has access to grassy areas. It tends to prefer sheltered valleys amongst rocky hills (Klippel, 1992).	Records occur from Durras Lake. A small amount of potential habitat may be affected.	Low
Ground Parrot (eastern subsp.) *Pezoporus wallicus wallicus* V TSC	This species is closely associated with heathlands and sedgelands. It is present in swampy areas, dry ridges and is tolerant to burned areas of these habitat types. It is sedentary with local seasonal movements (Pizzey & Knight 2003). It nests in tussock stunted bush (Pizzey et al. 1997).	No local records occur. A small amount of potential habitat may be affected.	Low
Diamond Firetail *Stagonopleura guttata* V TSC	Occurs predominantly west of the Great Dividing Range (Blakers *et al.* 1984, Schodde and Mason 1999) although local populations are known. Feeds on the ground on grass seeds, in groups from 5 to 150 individuals (Schodde and Tidemann 1986), nesting in pairs or communally in shrubs and small trees. Restricted largely to ungrazed or lightly grazed woodland remnants of grassy eucalypt woodlands, including Box-Gum and Snow Gum Woodlands, and grassland and riparian areas, and sometimes lightly wooded farmland. May form large flocks during winter and autumn.	No local records occur. No suitable habitat would be affected.	Nil
Swift Parrot *Lathamus discolour* E TSC E EPBC	This species is highly nomadic and relatively large numbers can arrive at and vacate areas depending on local and regional flowering of favoured species. In eastern NSW, Swift Parrots are present only in winter and therefore rely on winter-flowering eucalypts such as *Eucalyptus robusta* (Swamp Mahogany) and *Corymbia maculata* (Spotted Gum) (Brereton 1996).	No local records occur for this species. No suitable habitat would be affected.	Low
Orange-bellied Parrot *Neophema chrysogaster* E EPBC	This species breeds during the summer in south-west Tasmania. It migrates in the non-breeding season to the mainland where it feeds in coastal saltmarshes and dunes. It is usually patchily distributed from south-east South Australia to the eastern portion of Gippsland in Victoria.	No local records occur for this species. A small amount of potential but marginal foraging habitat may be affected.	Nil

Species and Status*	**Ecology**	**Likelihood of occurrence onsite**	**Potential to be impacted**
Superb Fruit-Dove *Ptilinopus superbus* V TSC	This species is largely confined to pockets of suitable habitat as far south as Moruya. Preferred habitat is rainforest and similar closed forests where it forages high in the canopy, eating the fruits of many tree species such as figs and palms. It may also forage in eucalypt or acacia woodland where there are fruit-bearing trees.	No potential habitat would be affected.	Nil
Barking Owl *Ninox connivens* V TSC	This species preys on mammals, birds and invertebrates, and can take prey as large as rabbits (Schodde & Tideman 1995). Mated pairs occupy a 30 to 200 hectare territory, depending on habitat quality. The species is found in drier forest and woodland and has been recorded persisting around human habitation. Habitat essential for the lifecycle of this species includes forest or woodland habitat, large nesting hollows and an abundance of prey species.	No local records occur for this species. A small amount of potential but marginal foraging habitat may be affected.	Low
Powerful Owl *Ninox strenua* V TSC	This species is dependent on large territories in coastal and mountain eucalypt forest (Blakers *et al.* 1984). Territories are usually centred around gullies, with roost and nest sites located centrally (Fleay 1968). Large tree hollows are required in which to nest (Emison *et al.* 1987). Abundant arboreal mammals within forests (which form about 80% of the diet of this species) are a requirement of this species (Blakers *et al.* 1984).	Local records occur for this species. A small amount of potential but marginal foraging habitat may be affected.	Nil-Low
Masked Owl *Tyto novaehollandiae* V TSC	This species forages in a range of forest and woodland types but requires large tree hollows for nesting. Forested areas adjacent to areas of dense and sparse ground cover within close proximity are required for foraging (Garnett 1993). This species also occurs in fragmented forest-pastoral land usually near creek lines and in open grassy woodland.	Local records occur for this species. A small amount of potential foraging habitat may be affected.	Low
Sooty Owl *Tyto tenebricosa* V TSC	Pairs of this species establish large permanent territories in rainforest and wet eucalypt forest (Blakers *et al.* 1984). Within these forests they prey mostly on a variety of small to medium terrestrial and arboreal mammals (Blakers *et al.* 1984). The Sooty Owl may also nest in dry sclerophyll forest, adjacent to moister forests, if trees with suitable hollows are present.	Local records occur for this species. A small amount of potential roosting habitat may be affected.	Low

Species and Status*	**Ecology**	**Likelihood of occurrence onsite**	**Potential to be impacted**
Brush-tailed Phascogale *Phascogale tapoatafa* V TSC	This species is found in a variety of forest types. Preferred habitat is likely to be open dry sclerophyll forest with little ground cover on ridges up to 600 metres (Cuttle 1983). It is predominantly carnivorous, foraging on arthropods, invertebrates, small vertebrates and nectar (Strahan 1995). It requires tree hollows in which to nest.	One record occurs approximately 5km north of the site. A small amount of potential habitat may be affected.	Low
Spotted-tail Quoll *Dasyurus maculatus* V TSC E EPBC	Sclerophyll forest, rainforest in mountainous country, and coastal habitats can be utilised by this species (Le Souef & Burrell 1926). Habitat attributes which are likely to be critical to the life cycle of the Quoll are large areas of undisturbed habitat which provide a variety of key food and other resources such as large hollow logs, or small caves (dens) at ground level for denning. Quolls appear to be most abundant in areas with few roads and where foxes are either absent or kept in check by dingoes (Resource and Conservation Assessment Council, 1996). The species was identified in the Long Beach area from the NPWS Database records; however, the likely presence of foxes on the Surfside section reduces the likelihood of the species occurring in this area.	A record occurs within 10km of the site. Suitable habitat does not occur at the site due to its disturbance history.	Nil
White-footed Dunnart *Sminthopsis leucopus* V TSC	Research on this species in a recently logged area near Bega suggests that preferable habitat is treeless ridges and mid slopes with sparse ground cover of less than 51% (Lunney *et al.* 1989). The study suggested that it seeks initial seral stages of forest regenerating from gross disturbance" (Lunney *et al.* 1989). It constructs a bark nest beneath fallen timber or dense litter (Menkhorst and Knight 2001). The species was not identified in the area from the NPWS Database records.	No local records occur for this species. A small amount of potential habitat may be affected.	Low
Koala *Phascolarctos cinereus* V TSC	This species utilises a wide range of forest and woodland types. They are solitary with distinct home ranges (Strahan 1995) and utilise a diverse range of eucalypt trees typically present on high nutrient soils (Klippel 1992).	No local records occur. No suitable habitat would be affected.	Nil

Species and Status*	**Ecology**	**Likelihood of occurrence onsite**	**Potential to be impacted**
Yellow-bellied Glider *Petaurus australis* V TSC	This species is restricted to tall mature eucalypt forest in a band between coastal and higher altitude forests along large portions of the Victorian, New South Wales and Queensland coasts (Russell 1983). Habitat critical to the lifecycle of this species includes areas of contiguous tall sclerophyll forest, that provide large hollow bearing trees (den sites), and a food source, including a variety of invertebrates, sap feed trees, eucalypt nectar and pollen, manna and insect exudates. NPWS Database records show that the species has been found at the site with an abundance of records in the region.	This species is present in the locality, including close to the site.	Low
Squirrel Glider *Petaurus norfolcensis* V TSC	This species is found in dry sclerophyll woodland, prefering dense, white-barked eucalyptus country (Klippel 1992) and is generally absent from closed forest (Menkhorst *et al.,* 1988). A mix of eucalypts, banksias and acacias including some winter flowering species and abundant hollows are required by this species. Fragmentation, predation by foxes and cats and inappropriate fire regimes are listed as threats to this species (NSW NPWS 1999*).*	Recorded within 10km to the north and south of the site. A small amount of potential habitat may be affected.	Low
Southern Brown Bandicoot (eastern) *Isodon obesulus obesulus* E TSC E EPBC	Scrubby habitat with low ground cover occasionally burnt out is preferred by this species (Braithwaite 1983). A preference for thick undergrowth can also provide protection from predators such as foxes (Lobert & Lee 1990). The species is generally nocturnal.	Not recorded within 10km of the site. No suitable habitat would be affected.	Nil
Long-nosed Potoroo *Potorous tridactylus* V TSC V EPBC	This species occurs in coastal heath, dry and wet sclerophyll forest and requires thick contiguous undergrowth. Individuals are generally concentrated where soil is light and sandy (Johnston 1983).	A local record occurs within 10km of the site. No suitable habitat would be affected.	Nil
Grey-headed Flying-fox *Pteropus poliocephalus* V TSC V EPBC	This species roosts in large camps, generally in wetter vegetation such as rainforest or swamp forest. Groups fly out at night to feed on fruit, nectar and blossom, particularly of *Eucalyptus, Melaleuca* and *Banksia*. This species shows fidelity to roosting areas but may feed in orchards. It appears to be showing increasing tolerance to human disturbance.	Recorded within 10km to the north and south of the site. No suitable habitat would be affected.	Nil

Species and Status*	**Ecology**	**Likelihood of occurrence onsite**	**Potential to be impacted**
Eastern Freetail-bat *Mormopterus norfolkensis* V TSC	The Eastern Freetail-bat is found along the east coast from south Queensland to southern NSW in sclerophyll forest and woodland east of the Great Dividing Range. It is solitary and probably insectivorous (DEC website). In the southern rivers region the Eastern Freetail-bat is known to be associated with dry sclerophyll forests (shrubby sub-formation) and wet sclerophyll forests (grassy sub-formation). Key habitat features for this species in this area are tree hollows, loose bark or man-made structures in which to roost and breed and dry and wet sclerophyll forests in which to forage (DEC website).	Several records occur approximately 7km south-east of the site. A small amount of potential roosting habitat may be affected.	Low
Common or Eastern Bent-wing Bat *Miniopterus schreibersii oceanensis* V TSC	This species is a common although vulnerable species. It roosts and raises its young in caves and mine tunnels (Strahan 1983). The species appears to forage above the forest canopy in a diverse range of forest types (Strahan 1983).	Records occur within 10km to the south-west of the site. No potential habitat would be affected.	Nil
Large-eared Pied Bat, Large Pied Bat *Chalinolobus dwyeri* *V EPBC*	Found near cliffs and caves with Bungonia marking the southern limit. Very patchy distribution in NSW. Roosts in caves, crevices and mud Fairy Martin nests in low to mid-elevation dry open forest and woodland close to these features. Found in well-timbered areas containing gullies. Likely to hibernate through the coolest months.	Not recorded within 10km of the site. No suitable habitat would be affected.	Nil
Golden-tipped Bat *Kerivoula papuensis* V TSC	This species is distributed along the east coast of Australia in scattered locations from Cape York Peninsula in Queensland to Bega in southern NSW. It is found in rainforest and adjacent sclerophyll forest and roosts in abandoned hanging Yellow-throated Scrubwren and Brown Gerygone nests located in rainforest gullies on small first- and second-order streams.	No local records occur. No potential habitat would be affected.	Nil

Species and Status*	**Ecology**	**Likelihood of occurrence onsite**	**Potential to be impacted**
Large-footed Myotis *Myotis adversus* V TSC	This species forages on the surface of water bodies such as rivers, lakes and swamps and roosts in caves, mine, tunnels and old buildings (Hall & Richards 1979).	Records occur from Durras Lake. No potential habitat would be affected.	Nil
Great or Eastern False Pipistrelle *Falsistrellus tasmaniensis* V TSC	Little is known of the habitat requirements of this species. It is found in a range of habitats including dry and wet sclerophyll forest but appears to prefer wet sclerophyll forest (Hall & Richards 1979). This species roosts in tree hollows (Phillips & Inwards 1984).	Records occur south of Batemans Bay. A small amount of potential habitat may be affected.	Low
Greater Broad-nosed Bat *Scoteanex rueppellii* V TSC	This species is recorded from a range of habitats, from woodland to rainforest (Hall & Richards 1979). It is known to roost in tree hollows (Richards 1983) but has also been found in roof spaces. Its diet includes slow-flying insects. It may prefer riparian areas adjacent cleared areas in which to forage.	No local records occur. A small amount of potential roosting habitat may be affected.	Low

V TSC Listed as Vulnerable on the *NSW Threatened Species Conservation Act, 1995*

E TSC Listed as Endangered on the *NSW Threatened Species Conservation Act, 1995*

V EPBC Listed as Vulnerable on the *Environmental Protection Biodiversity Conservation Act, 1999*

E EPBC Listed as Endangered on the *Environmental Protection Biodiversity Conservation Act, 1999*

JAMBA/CAMBA Listed on the Japan - Australia Migratory Bird Agreement (JAMBA), China - Australia Migratory Bird Agreement (CAMBA).

ATTACHMENT 7: MATTERS OF NATIONAL SIGNIFICANCE REPORT

ATTACHMENT 8: ARCHAEOLOGICAL ASSESSMENT

ATTACHMENT 9: LOCAL ABORIGINAL LAND COUNCIL LETTER

ATTACHMENT 10: DEPARTMENT OF LANDS LETTER