NSW NATIONAL PARKS & WILDLIFE SERVICE

Review of Environmental Factors: Mebbin National Park

Cutters Campground Redevelopment and Byrrill Creek Walking Track Extension

Department of Planning and Environment, www.environment.nsw.gov.au
EHG 2022/0294; February 2022, updated April 2023

Contents

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Document control

Version	Date	Author/Modified by	Approved by
001	16/09/2022	Troy Jennings	
002	11/11/2022	Troy Jennings	Emma Kirsner
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1. Brief description of the proposed activity

Proposal name and brief description	Cutters Campground Redevelopment and Byrrill Creek Walking Track Extension Redevelopment of Cutters Camp camping area and day use area in Mebbin National Park to a more efficient layout providing greater visitor capacity. In addition, provision of new tracks and extensions to the Byrrill Creek Walking Track.
Location of activity	Mebbin National Park (See Figure 1).
Name of NPWS park or reserve	Mebbin National Park
Description of any unreserved land	N/A
NPWS Area	Tweed Byron Area – North Coast Branch
Council	Tweed Shire Council
NSW State electorate	Tweed
Estimate capital cost of project*	TBC
Estimated duration of project	4 - 6 weeks (weather depending for each separate component of the project, i.e. Campground and Walking Track)
Proposed commencement date	2023/2024 (pending weather, fire season, site testing and AHIP approval)
Proposed completion date	4 - 6 weeks from commencement date for each separate component of project (i.e. Campground and Walking Track) – initial construction completion expected within 2024/25 calendar year. With ongoing cyclic and reactive maintenance of walking track and campsites expected for the continued operation of that infrastructure beyond expiration of REF.

* Publication of the Review of Environmental Factors is required for proposals with a capital investment value of >$5 million and which commence after 1 July 2022.

Site Locality

Figure 1

0 2.5 5 10

Kilometres

MAP INFORMATION

This map does not provide detailed information on topography, alerts or opening times and may not be suitable for some activities.
Map published: 30/08/2022

2. Proponent's details

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Position	Ranger
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Proponent external to NPWS or DPE Environment and Heritage Group (EHG)

Organisation	NSW National Parks and Wildlife Service
ACN/ABN	30 841 387 271

NPWS/EHG proponents

Area Manager or Unit Manager	Tweed Byron Area – North Coast Branch of NPWS Tweed Byron Area Manager – Jenny Atkins North Coast Branch Manager – Russell Madeley

3. Permissibility and assessment pathway

3.1 Permissibility under NSW legislation

The following sections outline how the Activity is permissible under applicable NSW legislation.

3.1.1 National Parks and Wildlife Act 1974 (NPW Act)

On land reserved and acquired under the NPW Act

This Activity is consistent with the following objects of Section 2A of the Act:

(1) (a) the conservation of nature, including, but not limited to, the conservation of—

i. habitat, ecosystems and ecosystem processes, and
ii. biological diversity at the community, species and genetic levels, and
iii. landforms of significance, including geological features and processes, and
iv. landscapes and natural features of significance including wilderness and wild rivers,

(b) the conservation of objects, places or features (including biological diversity) of cultural value within the landscape, including, but not limited to—

i. places, objects and features of significance to Aboriginal people, and
ii. places of social value to the people of New South Wales, and
iii. places of historic, architectural or scientific significance

(c) fostering public appreciation, understanding and enjoyment of nature and cultural heritage and their conservation,

(d) providing for the management of land reserved under this Act in accordance with the management principles applicable for each type of reservation;

(2) The objects of the Act are to be achieved by applying the principles of ecologically sustainable development.

This Activity is consistent with the following reserve management principles (s.30E–30K):

(2) A national park is to be managed in accordance with the following principles—

(c) the protection of the ecological integrity of one or more ecosystems for present and future generations;

(d) the promotion of public appreciation and understanding of the national park's natural and cultural values;

(e) provision for sustainable visitor or tourist use and enjoyment that is compatible with the conservation of the national park's natural and cultural values

(f) provision for the sustainable use (including adaptive reuse) of any buildings or structures or modified natural areas having regard to the conservation of the national park's natural and cultural values.

Parks and Reserves of the Tweed Caldera Plan of Management, specifically Section 2.3, 3.2.2, 3.2.3 and 3.2.4:

- 2.3 Management Directions:
  - protection and enhancement of scenic values through the management of visually prominent infrastructure, park facility design and location and the rehabilitation of disturbed sites;
  - management of existing day use and camping areas in a sustainable and complementary way through designating settings and capacities for each area, in

addition to integrated planning with other agencies providing adjoining recreation opportunities;

- provision of sustainable and complementary opportunities for bushwalking, horse riding, cycling and adventure activities through identifying appropriate routes and sites, management standards, strategic planning, codes of conduct and cooperative arrangements with recreation groups
- integrating and promoting interpretive and educational opportunities through strategic planning, signage, publications and programs to assist in visitor understanding and enjoyment

- 3.2.2 Day Use Areas:
  - Manage day use areas in accordance with the functions, level of facilities and site capacity.
- 3.2.3 Camping:
  - Provide for camping at the existing camping areas in accordance with the level of facilities and site capacity.
- 3.2.4 Bushwalking:
  - Extend the walking track down to Byrrill Creek from Cutters Campground in Mebbin National Park.

A range of bushwalking opportunities are maintained that are sustainable and complement other opportunities nearby.

Assets of intergenerational significance

Two mapped assets of intergenerational significance occur within Mebbin National Park however neither of these areas have adopted conservation action plans:

- AIS_EO_014 Wollumbin Dogwood and Border Ranges Daisy
- AIS_EO_051 Wollumbin Dogwood.

Leasing, licensing, and easement provisions

N/A

For internal NPWS projects only

The Activity is consistent with the following:

- s.8 (3) The Secretary shall in the case of every national park, historic site, state conservation area, regional park, nature reserve, karst conservation reserve and Aboriginal area—

  (b) arrange for the carrying out of such works as the Secretary considers necessary for or in connection with the management and maintenance thereof.
- s.12 The Service is to carry out such works and activities as the Minister may direct, either generally or in a particular case, in relation to the following—

  (f) the provision of facilities and opportunities for sustainable visitor or tourist use and enjoyment on land reserved under this Act.

3.1.2 Wilderness Act 1987 (for activities in wilderness areas)

Not applicable – Mebbin National Park is not a declared wilderness area.

3.1.3 Biodiversity Conservation Act 2016 (BC Act)

The Activity is consistent with the following objectives in Section 1.3 of the Act:

(b) to maintain the diversity and quality of ecosystems and enhance their capacity to adapt to change and provide for the needs of future generations

(k) to establish a framework to avoid, minimise and offset the impacts of proposed development

(l) to establish a scientific method for assessing the likely impacts on biodiversity values of proposed development (completion of assessments of significance)

The Activity will maintain the diversity and quality of ecosystems within the park by enhancing and sustainably enabling the park to adapt to visitor usage both now and for future generations. Assessment of impacts to biodiversity values as a result of the Activity has been assessed using a framework of avoid and minimise and assessment which is consistent with Part 7, Section 7.2 of the Act (Test of significance). Assessments of significance ('five-part test') have been completed (refer to Appendix F) for threatened entities with potential to be impacted by the Activity. The assessment concluded that no significant impact is likely to occur.

3.1.4 NSW Reconstruction Authority Act 2022 (NSW RA Act)

The primary objective of this Act is to promote community resilience to the impact of disasters in New South Wales through:

(a) disaster prevention, preparedness, and adaptation, and

(b) recovery and reconstruction following disasters.

The Activity is not inconsistent with the State disaster mitigation plan or any disaster adaptation plan.

3.1.5 Rural Fires Act 1997 (RF Act)

NPWS has a legal responsibility under Section 63 of the *Rural Fires Act* to protect human life and property from fire on NPWS estate. The proposed Activity will be in accordance with the approved Reserve Fire Management Strategy and will reduce the risk of fire due to realignment of campsites. The site is regularly mown, reducing the fuel load. During Total or Park Fire Bans signs will be installed when required, website updated or in extreme events, the Park may be closed.

3.2 Environmental Planning and Assessment Act

3.2.1 Assessment pathway

It is confirmed that a REF is the applicable assessment pathway because each of the following apply:

- The Activity is not declared to be state significant infrastructure under s 2.13 of the Planning Systems SEPP.
- The Activity may be undertaken without development consent under the provisions of s 2.73(1)(a) of the Transport and Infrastructure SEPP as it is:
  - on land reserved under the NPW Act or acquired under Part 11 of the NPW Act, **and**
  - for a purpose authorised under the NPW Act.
- The Activity is not identified SEPP as not permissible without development consent under another environmental planning instrument that prevails over the Transport and Infrastructure. In particular:

  - The Activity is not in a coastal wetland or littoral rainforest or does not otherwise meet the criteria for development requiring consent outlined in s 2.7(2) of the Resilience and Hazards SEPP.
  - The Activity is not coastal protection works or, if coastal protection works, the Activity is one of the types of coastal protection works that may be carried out by or on behalf of a public authority without development consent.
  - The Activity is not a type of development requiring development consent under s 2.9 of the Resources and Energy SEPP.
- The Activity is not declared to be exempt development under an environmental planning instrument or fails to fully meet the requirements for exempt development.

3.2.2 Strategic plans

The Tweed Local Strategic Planning Statement (the Statement) presents Tweed Shire Council's 20-year vision for land-use in the local area, the special character and values that are to be preserved and how change will be managed into the future. The Statement provides the link between the State Government's strategic plans and Council's local land use plans and guidelines.

The Statement sets out five planning priorities for the natural environment. These are:

- Protect the Tweed's significant natural environment, resources, and landscape qualities, while cultivating sustainable growth and development, which promotes the health and vitality of the community.
- Promote, protect, conserve, and enhance the Tweed's high scenic quality, biological and ecological values for future generations and ecosystem health.
- Increase resilience and adapt to the impacts of natural hazards and climate change to ensure our future prosperity and wellbeing.
- Reduce carbon emissions and sustainably manage energy, water, waste, and development impacts.
- Safeguard the fragile coastal strip by protecting a green belt delineation between coastal settlements to limit urban sprawl and conserve natural landscapes.

The proposed Activity is not inconsistent with these planning priorities.

3.3 Other relevant NSW legislation

3.3.1 Coal Mine Subsidence Compensation Act 2017

Not applicable to the Activity.

3.3.2 Fisheries Management Act 1994

Not applicable – The Activity will not affect fish or marine vegetation including threatened species.

3.3.3 Heritage Act 1977

The Activity is on land that contains an item listed on the State Heritage Register (SHR), an item listed on the NPWS Heritage and Conservation Register under s.170 of the Heritage Act

(contained in the Historic Heritage Information Management System) and a place, building landscape feature or moveable heritage item older than 25 years.

Mebbin National Park as a whole is included within the listed item 01487 'Tweed Area High Conservation Value Old Growth Forest' on the NSW State Heritage Register. This item includes other National Parks and reserves in the area from Coffs Harbour north to the Queensland border.

No structures within Cutters Campground nor 'Cutters Camp' generally are included on Schedule 5 Environmental Heritage on the Tweed Local Environmental Plan 2014.

While the 'Log Loading Ramp' is shown on the LEP map in the location of Cutters Camp in Mebbin National Park and is included as Item 122 on the Tweed LEP 2014, its location in the listing is given as Lot 4339 DP 3050 Mebbin Forest Road, Uki (NM Architecture & Heritage P/L 2019). This is likely to be located within Wollumbin National Park not Mebbin National Park.

Cutters Camp Forestry Structure undertook conservation repairs and adaptive re-use works to the existing structure in 2019-2020. A statement of heritage impact on Cutters Camp Forestry Structure was undertaken in April 2019 (NM Architecture & Heritage P/L 2019).

The Activity would not impact or disturb any listed item on the State Heritage Register and the proposed works would not impact the existing Cutters Camp Forestry Structure.

3.3.4 Marine Estate Management Act 2014

Not applicable

3.3.5 Other Acts

No other Acts are applicable to the Activity.

3.4 Commonwealth legislation

3.4.1 Environment Protection and Biodiversity Conservation Act 1999

The *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) applies as the Activity is on land that contains the following, or the Activity may affect:

- World heritage or national heritage values of a place on the World Heritage List or National Heritage List.
- Nationally listed threatened species and ecological communities or listed migratory species.

A small portion of Mebbin National Park is listed as a World Heritage area but will not be impacted by the Activity as it is over 8 km from the site.

The Activity will not significantly impact on any Matter of National Environmental Significance (MNES) listed in the EPBC Act, inclusive of any migratory or threatened species or threatened communities. Assessments of Significance have been completed for species listed under the EPBC Act assessed as moderate or high likelihood of occurrence within the site (refer to Appendix F). Assessments of Significance have concluded that there will be no significant impact. On this basis no MNES would be significantly impacted by the proposed Activity.

3.4.2 Other Commonwealth Acts

No other Commonwealth Acts are applicable to the Activity.

3.5 Consistency with NPWS policy

Policy name	How proposal is consistent
Visitor Accommodation Policy	The general principles include providing a range of visitor accommodation, to be consistent with the relevant PoM, ensure natural and cultural values are protected; environmental impacts are minimised, measures taken to mitigate impacts on other park users, should be suitable for the location and suitably low-key; and meet high sustainability standards.
Walking Tracks Policy	This policy provides clear direction for the proposed extension to Byrrill Creek walking track. It includes how to meet government and industry standards in the design and classification, to provide a range of walking experience in parks that are suitable to the location and setting, to provide a quality walking experience for visitors fostering public appreciation, understand and enjoyment of natural and cultural heritage, and effective communication of the walking track experience available.
Vehicle Access Policy	The policy outlines objectives relevant to the management and removal and development of access roads within Cutters Camp. Relevant objectives include to plan, manage and regulate vehicle access to conserve nature and cultural heritage, protect human life and provide for an injury-free visit to parks; and to provide appropriate vehicle access for management purposes, including emergency access.
Parks Visitor Facilities Policy and Manual	This manual is used for planning, design and implementation of park facilities relevant to the redevelopment of Cutters Camp.
Visitor Safety Policy	This policy sets out the department's approach to managing risks to visitor safety on NPWS-managed lands.
Signage Policy and Procedure and Parks Signage Manual	This policy provides standards and policy and guidance and information for the preparation of signs relevant to this proposal.
Tree Risk Management Policy	This policy provides guidance on the process of identifying potential hazards and assessing risk from trees, so that appropriate control measures can be implemented.
Coastal Branch Camping Management Guidelines	This policy provides guidance to staff to enable an effective and consistent approach to the management of issues associated with camping across Coastal Branch including issues relating to online bookings.

3.6 Summary of licences and approvals

3.6.1 Approval under the National Parks and Wildlife Act

Internal NPWS approval or authorisation, including expenditure.

3.6.2 Other approvals

The Activity will require the following approvals:

- Under the provisions of the NPW Act 1974:
    - Aboriginal Heritage Impact Permit (AHIP) would be required (refer to Section 8).

3.6.3 Publication triggers

Triggers for publication of the Review of Environmental Factors

Permit or approval	Applicable?
Fisheries Management Act, sections 144, 200, 205 or 219	N/A
Heritage Act, section 57 (commonly known as a section 60)	N/A
National Parks and Wildlife Act, section 90 (AHIP)	Yes
Protection of the Environment Operations Act 1997, sections 47–49 or 122	N/A

As the Activity requires an AHIP, this triggers publication following determination of this REF.

4. Consultation – general

4.1 Statutory consultation

4.1.1 Consultation required under Transport and Infrastructure State Environmental Planning Policy

The SEPP requires consultation with relevant authorities as identified in the following table.

Consultation triggers under the Transport and Infrastructure SEPP

Authority (TISEPP section)	Trigger	Applicable to proposal?
Consultation with local council (s 2.10)	Development with impacts on council infrastructure or services (such as stormwater, sewer, water, roads and footpaths)	No
Consultation with local council (s 2.11)	Development with impacts on heritage items listed under the local environmental plan (LEP)	No
Consultation with local council (s 2.12)	Development that will change flood patterns on flood-liable land	No
Consultation with State Emergency Service (s 2.13)	Development on flood-liable land	No
Consultation with local council (s 2.14)	Development that is inconsistent with a certified coastal management program affecting land within the mapped coastal vulnerability area.	No
Consultation with NPWS (s 2.15(2)(a))	Development adjacent to land reserved or acquired under the NPW Act	No
Consultation with NPWS (s 2.15(2)(b))	Development on land in Zone C1 that is yet to be reserved under the NPW Act	No
Consultation with Transport for NSW (s 2.15(2)(c))	Development comprising a fixed or floating structure in or over navigable waters	No
Consultation with the Director of the Siding Spring Observatory (s 2.15(2)(d))	Development that may increase the amount of artificial light in the night sky and that is on land within the mapped dark sky region	No
Consultation with the Cth Department of Defence (s 2.15(2)(e))	Development located within the buffer around the defence communications facility near Morundah as mapped under the Lockhart, Narrandera or Urana LEPs	No
Consultation with the Subsidence Advisory NSW (s 2.15(2)(f))	Development on land in a mine subsidence district.	No

Authority (TISEPP section)	Trigger	Applicable to proposal?
Consultation with the Willandra Lakes Region World Heritage Advisory Committee and Heritage NSW (s 2.15(2)(g))	Development on, or reasonably likely to have an impact on, a part of the Willandra Lakes Region World Heritage Property	No
Consultation with the Western Parkland City Authority (s 2.15(2)(h))	Development within a Western City operational area (Western Parkland City Authority Act 2018, Schedule 2) with a capital investment value of $30 million or more	No
Consultation with Transport for NSW (s 2.221)	Traffic-generating development listed in Schedule 3	No

Details of required consultation

Tweed-Byron Aboriginal Land Council consultation and written notification of intent (the Activity) will be undertaken as per established protocols.

4.1.2 Consultation requirements for leases and licences

If the activity requires a lease or licence under s 151 or s 151H of the NPW Act, indicate if it requires:

☐ public consultation under s 151F

☐ referral to the NPW Advisory Council or another advisory committee under s 151G.

Not applicable to the Activity

4.2 Targeted consultation

4.2.1 Adjacent landowners

N/A

4.2.2 Wider community consultation and/or notification of works

N/A

4.2.3 Interest groups and/or notification

N/A

5. Consultation – Aboriginal communities

5.1 Native title notification requirements

1. Is the land subject to an Indigenous land use agreement (ILUA)? No
2. Has native title been **extinguished**? No

If relevant, provide an explanation of how native title has been extinguished.

3. Has there been a determination of native title applicable to the land or is there a native title claim pending (check the National Native Title Tribunal website)? No

If relevant, provide details of the native title claimant/holder.

4. If native title is not confirmed as extinguished, is the activity occurring on land reserved as park on or before 23 December 1996 **and** is an act in accordance with the purpose of reservation **and**
    a. is either a 'public work' as per subdivision 24J of the Native Title Act (e.g., a building or other structure that is fixed to the landscape, a road or bridge, a well or a bore, or involves major earthworks, carried out by a public authority)
    or
    b. involves the grant of a lease or easement?

    No

If relevant, provide details of the consultation that has occurred and the outcomes of that consultation.

5. If native title is not confirmed as extinguished and the circumstances of Question 4 do not otherwise apply, is the activity either:
    a. a facility for service to the public (as defined in subdivision 24K of the Native Title Act)
    or
    b. a low-level activity (as defined in subdivision 24L of the Native Title Act)?

    No

NPWS will consult with the DPIE Aboriginal Heritage and Joint Management Team/ NTS Corp as required. Tweed-Byron Aboriginal Land Council consultation and written notification of intent (the Activity) will be undertaken as per established protocols.

5.2 Parks under other joint management arrangements

Is the park's management subject to another joint management arrangement such as a memorandum of understanding? No

If relevant, provide details of the outcomes of any discussions with the advisory committee or consultative group.

5.3 Other parks

Tweed-Byron Aboriginal Land Council consultation and written notification of intent (the Activity)will be undertaken as per established protocols.

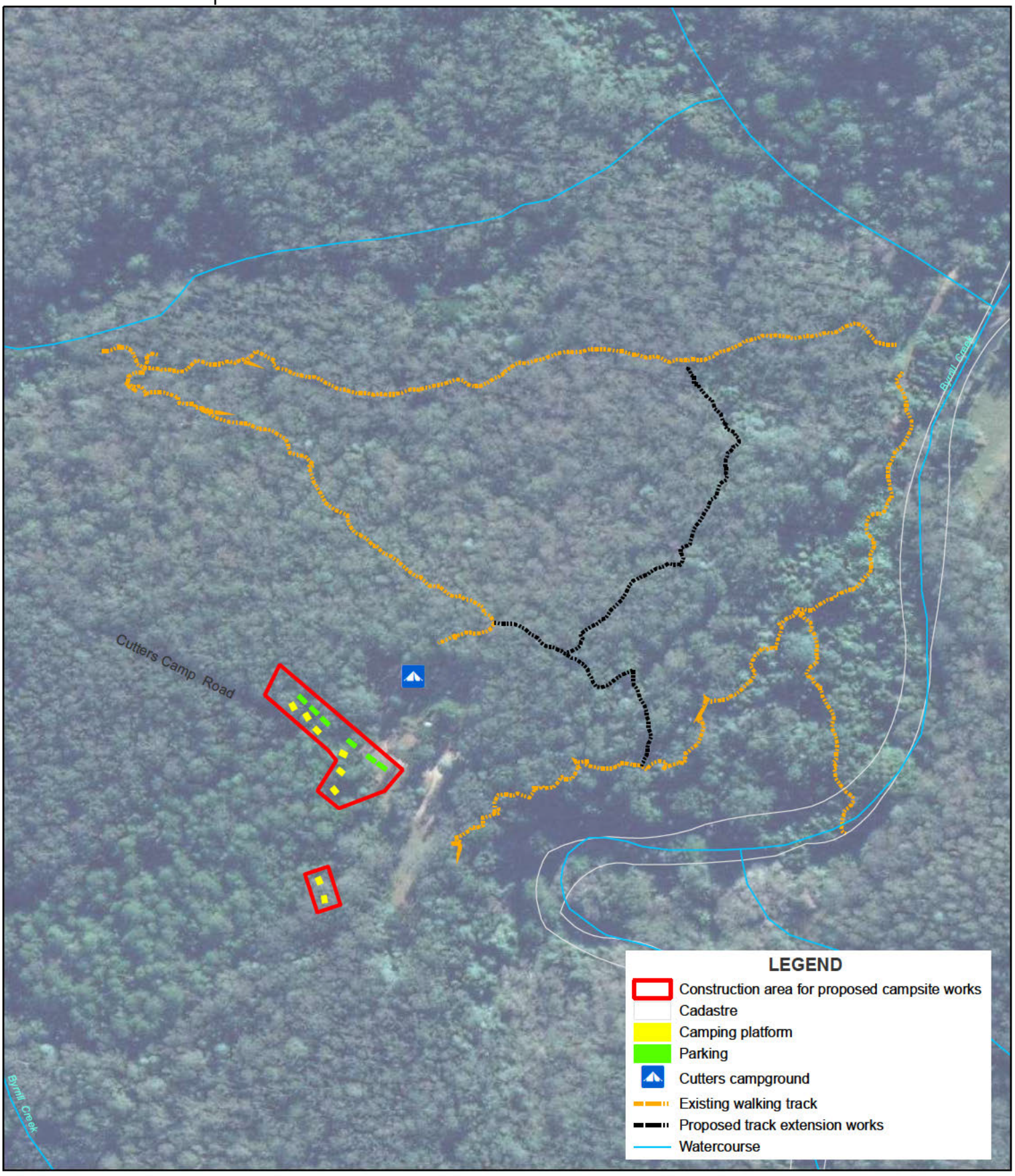
6. Proposed activity (or activities)

6.1 Location of activity

Description of location	The proposed Activity will be undertaken at the Cutters Campground in the northern section of Mebbin National Park (Figure 1 & Figure 2). Mebbin National Park is 34 km south-west of Murwillumbah and can be accessed from three points off Kyogle Road. Photos of the site are provided in Appendix A. Mebbin National Park has direct connectivity with Wollumbin State Conservation Area to the north and Border Ranges National Park to the south-west and shares landforms associated with the Tweed shield volcano erosion caldera.		
Site commonly known as If applicable	Cutters Campground and Day Use Area and Byrrill Creek Walking Track		
Park name Lands reserved under NPW Act	Mebbin National Park		
Other tenures Include lands acquired under Part 11 of the NPW Act	-		
Lot/DP If available	Lot 3, DP 728118		
Street address If available	Cutters Campground, Cutters Camp Road, NSW.		
Site reference	**Easting**: 519017	**Northing**: 6853511	**MGA zone**: 56

The Site

Figure 2



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Metres

MAP INFORMATION
This map does not provide detailed information on topography, alerts or opening times and may not be suitable for some activities.
Map published: 11/11/2022

NSW GOVERNMENT

6.2 Description of the proposed activity

National Parks and Wildlife Service (NPWS) is proposing to provide alternative routes to the flood damaged Byrrill Creek Walking Track and upgrade a section of the Cutters Campground in Mebbin National Park. The campground will include new camp platforms and a parking area in the cleared areas and within the edge of the existing Slash Pine plantation.

Photos of the site are provided in Appendix A and concept plans are provided in Appendix B.

6.2.1 The proposed activity: pre-construction, construction, operation, and remediation

The Activity has two components: redevelopment of Cutters Campground and extending the Byrrill Creek walking track.

Cutters Campground

Redevelopment of Cutters Campground is to provide a more usable site and maximise the number of campsites permissible under the current Plan of Management (maximum of 20 campsites). The redevelopment will occur within the existing campground area and along the south-western margin directly adjacent to the campground (Figure 2 & Appendix B). The proposed Activity consists of a number of components as follows:

- Cutters Camp Road will remain as the entrance into the redeveloped campground and will form an important part of a new loop road linking the top and bottom sections of the campground.
- An additional camping area will be established in the south-western part of the campground where eight very low-impact tent platforms and attached cooking areas will be built. Sites will be accessed by foot. All camps have a relatively small footprint of less than 18 m^2 in area for the installation of footings for the tent platforms. Some minor removal of regrowth vegetation or small trees may be required, in addition, the removal and relocation of fallen timber.
- In addition to the small impact area for camp platforms, removal of planted Slash Pines (*Pinus elliottii*) or other mature canopy trees (those which pose a safety risk) surrounding the campground will be undertaken. Trees will be mulched or used for firewood and retained for use on site.
- A new parking area on Cutters Camp Road will provide parking for campers using the new camping platforms.
- Native revegetation and planting will be carried out throughout the camping area, specifically between campgrounds and at the edge of the surrounding forest to enhance visual amenity, improve visitor experience, provide moderate privacy, protect tree root systems from heavy vehicle damage and give greater definition to campground elements.
- Up-to-date information bays will be established at either end of Cutters Campground precinct.
- Additional/ upgrade of picnic furniture will be added to the day use area.

Material for all access roads will be sourced from a nearby quarry using compatible weed-free gravels. Widths of new roads will be like the existing access road. Earthworks will be staged following removal of identified trees/ shrubs. Removed vegetation will be mulched and retained for use on site.

Drainage will be improved by ensuring adequate fall and cross-drains are installed across the site. Individual campsites will be hardened using gravels. As identified, large trees will be retained where possible unless they are considered unsafe. A Site Development Plan will be prepared. A concept plan is attached in Appendix B.

Byrrill Creek walking track

Walking track works will provide alternative routes from areas of the flood damaged Byrrill Creek Walking Track and connect to existing tracks within the park (see Figure 2 for proposed routes). Walking tracks in undisturbed areas will be 600 mm wide and may require a disturbance footprint of approximately 1 m for laying down and moving equipment, establishing sediment controls etc. There may be a need for passing bays or wider sections of track (> 600 mm) to be included if required. Construction methodology may include track building machines (i.e. power barrow), however, the majority of track works in undisturbed areas will be undertaken using hand tools (mattocks, rake-hoes and crowbars) due to site sensitivities. Shrubs and groundcovers will be removed or cut back as required, no mature trees or trees >100 mm dbh would require removal. Rock may be required for steeper sections of the tracks for step building and edging.

The stages in construction of walking tracks are as follows:

- The exact alignment of the track will be marked with flagging tape on pegs in the ground. Sensitive flora species have been flagged and are known to the project manager; these will be avoided.
- Vegetation removed along the alignment with hand tools and large fallen logs cut with chainsaws. All cut vegetation dispersed among the adjoining forest out of sight of the track. Vegetation removal and surface disturbance will be minimal, but this will result in walkers occasionally needing to negotiate buttress roots, vines and other vegetation and rocks.
- A low stone wall (0.5 m H x 2 m L x 0.5 m W) will be built at the junction of the existing track (section A) and the new proposed track to direct people along the new track route. The stone will be sourced off site.
- Stone sourced offsite will be used to build steps at either side of the crossing of Mebbin Forest Drive, and at the junction with the existing track (section A). Stone steps will be 600 mm wide and 180 mm high.
- Entrances will be suitably sign posted and mapped and signs will be posted at suitable locations advising walkers of track grade and hazards.
- Large stones (0.5 m diameter) will be placed where the track meets the road and the campground to show people where the track is. The stones will be dug into the ground by approximately 0.1 m so that they stay in place.
- At Sweetmans Creek, large stones will also be placed as seating for walkers and picnickers. They will be transported to site with power barrows and dug into the ground by approximately 0.1 m so that they stay in place.

All soil removed because of the track construction will be dispersed locally in the bush. Gravel will not be placed on the track surface.

6.2.2 The activity footprint (size of the area of impact)

The majority of proposed activities will occur within the existing footprint of the Cutters Campground and surrounding tracks in Mebbin National Park.

The Activity area for proposed campground upgrades and camping spots would be approximately 435 m^2.

The Activity area for proposed extension of Byrrill Creek walking track would be approximately 405 m^2. Byrrill Creek walking track will follow NPWS Walking Tracks Policy and involve minor understorey disturbance of native vegetation for the creation of a 0.5 m wide path.

6.2.3 Proposed construction methods, materials, and equipment

Plant and equipment will include a small excavator (1.5 tonne), truck for delivery of stone (10 tonne) in addition to personnel completing much of the works by hand, using an arrangement of hand tools (mattock, crowbar, shovels, rake-hoes, rakes) and power tools (auger, concrete mixer, generator, drill, angle grinder, chainsaw, angle grinder, power barrow etc). A side-by-side vehicle will be utilised where possible to transport equipment and supplies from laydown areas.

6.2.4 Receival, storage and on-site management for materials used in construction

All construction materials (i.e., gravel, bollards, etc.) delivered to the campground site will be stored short term. Longer term storage of materials will be off site or in areas outside the campground identified by NPWS staff as already disturbed and cleared within the park. No areas will be cleared or disturbed specifically for the stored goods. Prior to commencement of works some camp site bookings may be closed temporarily by NPWS staff as considered necessary in consultation with Area staff during construction to avoid safety issues and reduce risk.

6.2.5 Earthworks or site clearing including extent of vegetation to be removed

The following earthworks and site clearing will be undertaken:

- Identified trees and shrubs along tracks and around proposed campsites will be removed, mulched, retained for firewood, and stockpiled for later use.
- Areas to be terraced will be cut and filled using existing subgrade materials and surplus stockpiled for later use to construct camping sites and roads.
- Roads and car parks will be graded and gravel pavement applied using stockpiled materials.
- Camping areas will be constructed and graded and gravel pavement applied using stockpiled materials.

Campground vegetation removal

All camps have a relatively small footprint of less than 18 m^2 in area. Camps will require small scale disturbance for the installation of footings for the tent platforms. Approximately 435 m^2 of Plant Community Type (PCT) 3139 - Border Ranges Brush Box-Tallowwood Wet Forest will be disturbed due to the proposed campsite placement, this will also include removal of several planted Slash Pines (*Pinus elliottii*) surrounding the campground.

Walking track vegetation removal

The proposed extension of Byrrill Creek walking track would be approximately 405 m^2. The Byrrill Creek walking track would follow NPWS Walking Tracks Policy and involve minor understorey disturbance of native vegetation for the creation of a 0.5 m wide path. Vegetation to be impacted corresponds to PCT 3172 - Northern Ranges Brush Box-Flooded Gum Wet Forest. Shrubs and groundcovers will be removed or cut back as required, no mature trees or trees >100 mm dbh would require removal. Sensitive flora species (i.e., threatened flora) have been flagged and are known to the project manager, these will be avoided.

6.2.6 Environmental safeguards and mitigation measures

Vehicle and pedestrian traffic along Cadell Road during the works program will be managed as per an appropriate traffic management plan and WHS Plan.

The campground, day use area, walking track and fire track adjacent to the Cutters Campground precinct may be closed to visitors during the construction phase or until deemed safe to re-open.

Environmental safeguards and mitigation include the following:

Geology, soils, and landform

- An Erosion and Sedimentation Control Plan would be prepared and would comply with the *"Blue Book"* (Soils and Construction, Managing Urban Stormwater Volume 1, 4th Edition March 2004) (Landcom 2004).
- Monitoring of erosion and sediment control post construction will be completed until staff are satisfied, they can be safely removed.
- Access would be restricted and clearly defined for all construction personnel.
- Removal of vegetation and soil would be minimised as much as practicable.
- Non-essential or excessive fuels, oils and chemicals would not be stored at the site.
- Refuelling of plant and maintenance of machinery would be undertaken at least 40 m from waterways or drainage lines in designated refuelling areas.
- Disturbed surfaces would be compacted and stabilised in anticipation of a rain event to reduce the potential for erosion.
- Regular consultation of weather forecasts and flood warnings would occur whilst works occur.
- Removal of vegetation and soil would be minimised as much as practicable.

Biodiversity

- Vegetation clearing would be minimised to the immediate footprint only.
- If lopping or pruning of any vegetation is required, it will be completed by a certified and experienced arborist in accordance with *AS 4970-2009 Protection of trees on development sites.*
- Vegetation to be cleared along tracks will be mulched and/ or retained and dispersed into surrounding vegetation.
- Walking track works will follow the NPWS Walking Tracks Policy.
- No burning or removal from site of cleared vegetation will occur. All woody vegetation around proposed campsites will be mulched, retained for firewood, and stockpiled for later use.
- Track guidance notes will be prepared for contractors detailing specific measures to minimise environmental impacts and provide contingency measures as appropriate.
- A plan of threatened flora locations will be provided to contractors prior to clearing and where aggregations of threatened flora occur signage is to be installed stating 'threatened flora location' (or words of similar intention) to alert construction personnel.
- Where threatened flora is present, the NPWS project manager will be present during works in these areas to avoid directly impacting threatened flora species.
- Landscaping or screen plantings installed at the camps will be native flora species consistent with the PCT in which each camp is located. Planting schedules will be developed in conjunction with NPWS.
- If unexpected threatened species are discovered (i.e., a species not assessed within this report), work would stop immediately until statutory assessments have been updated.
- If a Koala is present within any tree to be removed (i.e., Slash Pine removal) (or within 30 m of an area to be cleared/ disturbed), 24 hours would be provided for the animal to disperse of its own volition.

- The *'Arrive Clean, Leave Clean'* guidelines (Department of the Environment 2015) will be adopted to minimise introduction of weed seed, pests or propagules to the site.
- Measures will be implemented during construction works to ensure hygiene protocols for minimising the introduction and spread of Myrtle Rust/Chytrid Fungus/Cinnamon Fungus are developed and maintained in accordance with current best practice and/or NPWS policies or guidelines (e.g., *Saving Our Species Hygiene Guidelines* (NSW Department of Planning and Environment 2020)).
- All machinery/ vehicles/ personnel will enter and exit along the main entry route so additional impacts or disturbance do not occur to native vegetation or aquatic habitat.
- Appropriate sedimentation and erosion controls would be installed and maintained during construction and operations to limit impacts on adjacent vegetation and waterways.
- Contingencies would be required to address the risk of bushfire including spark arrestors, suspending works in extreme bushfire danger periods.
- Provide ongoing management to control weeds following works.
- Continue site monitoring and control of noxious and environmental weeds.

Noise and vibration

- All works will be undertaken in accordance with the *Interim Construction Noise Guideline* (Department of Environment & Climate Change NSW 2009).
- The construction team will be briefed to create awareness of the locality of sensitive receivers (i.e., neighbours/residents along access roads into the National Park) and the importance of minimising noise emissions.
- Mufflers and appropriate covers will be fitted to all plant and machinery used during the works where appropriate.
- The contractor will be required to minimise and contain noise outputs using best practice (e.g., by avoiding generating unnecessary noise onsite) and high-quality plant and equipment.

Air quality

- Vehicles and all fuel powered machinery and equipment will be maintained to meet the requirements of the POEO Act.
- All vehicles transporting waste or other materials that may produce odours or dust will be covered during transportation.
- Debris and wastes will be cleaned from the Activity area as soon as practical to ensure light-weight material is not disseminated by wind gusts.
- No burning of timber or other wastes will occur.
- If winds are high and works are creating high levels of dust that are either likely to discomfort nearby neighbours (i.e. neighbours/residents along access roads into the National Park) or create a safety hazard to traffic or personnel, works will be modified or ceased until the dust hazard is eliminated or reduced to an acceptable level; alternatively, dust suppression measures will be implemented to minimise or prevent air pollution from dust.
- Any stockpiles will be appropriately managed (i.e., covered, kept at low heights, wet down etc) so the potential for air pollution is minimised.

Water quality, hydrology, and drainage

- Appropriate erosion and sediment controls will be in place prior to the commencement of any excavation works. Controls would comply with the *"Blue Book"* (Soils and Construction, Managing Urban Stormwater Volume 1, 4th Edition March 2004) (Landcom 2004).
- All areas where excavation is required and/ or vegetation is removed will be turfed, seeded, revegetated, or otherwise stabilised with the most appropriate method.
- Refuelling of plant and maintenance of machinery will be undertaken at least 40 m from waterways or drainage lines.
- Disturbed surfaces will be compacted and stabilised in anticipation of a rain event to reduce the potential for erosion.
- Spill kits will be available at all times and staff trained in effective deployment.
- Erosion and sediment controls will be monitored for effectiveness and be maintained until the site is remediated and stabilised.

Non-Aboriginal heritage

- If any non-Aboriginal items of significance are located during the works, all work will cease and NPWS will be contacted immediately.

Aboriginal heritage

- An Aboriginal Cultural Heritage Assessment will be undertaken, and recommended mitigation measures implemented before proposed activities commence.
- If suspected Aboriginal material has been uncovered because of development activities within the Activity area:
  a) Work in the surrounding area will stop immediately.
  b) A temporary fence will be erected around the site, with a buffer zone of at least 10 m (unless otherwise impractical) around the known edge of the site.
  c) An appropriately qualified archaeological consultant will be engaged to identify the material.
  d) If the material is found to be of Aboriginal origin, the Aboriginal community will be consulted in a manner as outlined in the *Aboriginal Cultural Heritage Consultation Requirements for Proponents* (DECCW 2010).
  e) Should the works be deemed to have harmed the Aboriginal objects, Heritage NSW will be notified immediately via the NSW Environment Line.

- Aboriginal site monitors will be engaged to support the unexpected find procedure to assist construction staff to identify Aboriginal objects should they be present.
- Although it is unlikely that Aboriginal human remains will be located at any stage during earthworks within the Activity area, should this event arise it is recommended that all works will halt in the immediate area to prevent any further impacts to the remains. The site will be cordoned off and the remains themselves will be left untouched. The nearest Police Station, the Tweed Byron LALC or NTS Corp and the Heritage NSW Regional Office (Coffs Harbour) will all be notified as soon as possible. If the remains are found to be of Aboriginal origin and the police do not wish to investigate the site for criminal activities, the Aboriginal community and Heritage NSW will be consulted as to how the remains will be dealt with. Work will only resume after an agreement is reached between all notified parties, provided it is in accordance with all parties' statutory obligations.

- All NPWS staff and contractors will be made aware of their responsibilities under the NPW Act and made aware of appropriate procedures in the event of Aboriginal objects or remains being discovered during the construction process.

Visual amenity

- The final landform will be designed to maintain the visual amenity of the site.
- The site will be left in a tidy state at the end of each workday.
- Incorporate planning and design principles in the *NPWS Park Facilities Manual* in the Master Plan.

Land uses and services

- Notification of road closures and impacts to camping and/ or visitor facilities will be provided at least five days prior to the commencement of construction activities via the NPWS website.
- Implement temporary traffic control measures when required (e.g., when offloading excavators) to minimise disruptions to local traffic and allow safe access and departure of construction vehicles.
- Exclusion zones will be established along access routes if pre-site work risk assessment determines it is necessary to do so.

Dangerous goods/ chemical and waste management

- The resource hierarchy detailed by the *Waste Avoidance Resource Recovery Act 2001* will be adopted.
- Waste materials requiring removal from site will be classified, handled and stored on-site in accordance with the *'Waste Classification Guidelines: Part 1 Classifying Waste'* (EPA 2014) until collection by a contractor for disposal.
- Where no feasible and reasonable options for waste avoidance and reuse of recycling are available, all residual waste material will be disposed to a suitably licensed landfill or waste management facility.
- Waste destined for recycling or reuse will be stored separately and in a suitable location to avoid mixing with other materials/ wastes.
- All working areas will be monitored to ensure the site and any construction compounds (i.e. existing campground parking area) required are kept free of rubbish and cleaned at the end of each working day.
- Storage and handling of any dangerous goods will be undertaken in accordance with *The Storage and Handling of Dangerous Goods Code of Practice 2005.*
- Spill kits will be available at all times and staff trained in effective deployment.

Any excavated natural material will be treated in accordance with the requirements of the POEO Act.

6.2.7 Sustainability measures – including choice of materials and water/energy efficiency

Sustainability principles adopted for the project design are that facilities should embody sustainable materials and design applications, provide for the ongoing efficient use of resources, and where possible assist in educating park users as to sustainable resource management and conservation principles.

The Activity will incorporate planning and design principles in the *NPWS Park Facilities Manual* including:

- **Consistent look and feel** – Facilities should create a consistent look and feel for national parks and reserves in New South Wales.
- **Sustainability** (refer above).
- **Heritage** – Protection of natural and cultural heritage values, as part of the park experience, is to be achieved in all facilities provision.
- **Harmony with nature** – Natural features in the landscape should dominate, and facilities should harmonise with their setting.
- **Enhancing the visitor experience** – Facilities should enhance and not detract from the visitor experience and should be fit for the purpose intended.
- **Genuine materials** – Materials are to be genuine and true to character.

6.2.8 Construction timetable and staging and hours of operation

General hours of operation for the construction contractors will be 6am - 5pm Monday to Friday. Work may occur on weekends where required. No works would occur on public holidays or when the Fire Danger Rating is Extreme or Catastrophic. A construction timetable will be developed as part of Site Development Plan.

7. Reasons for the activity and consideration of alternatives

7.1 Objectives and reasons for the proposal

The Plan of Management allows for a maximum of 20 campsites at Cutters Campground, but the current layout severely limits the actual number of usable sites. Formalisation and reconfiguration of the site will maximise the full complement of approved sites and provide opportunities for increased revenue. The redevelopment will be able to better cater to the current range of known vehicle-based camping types including tent camping, campervan, camper-trailer, and small caravans.

A reconfiguration will also separate camping from the day use area where separate facilities and furniture will be provided.

The Plan of Management also provides for an expansion of Byrrill Creek walking track to provide better access to Byrrill Creek and existing tracks within the park.

Redevelopment of Cutters Campground and the walking track will:

- Improve the overall layout, formalise sites and provide better access across the precinct.
- Cater to a wide range of vehicle-based camper experiences and introduce new concepts such as tent platforms, park/ drive through bays, allocated sites and a specified group booking area.
- Increase the park's popularity.
- Increase the number of approved camping sites and maximise the per night occupancy rate.
- Increase revenue and improve equity through the introduction of online bookings and compliance.
- Eliminate theft and loss of revenue through the removal of the current on-site cash payment and registration system.
- Increase compliance and reduce law enforcement.
- Increase safety by separating the campground from the day use area.
- Provide a better visitor experience through the provision of new facilities.
- Decrease maintenance and running costs of aging facilities.
- Enhance the visitor experience by providing a formalised, longer walk.

7.2 Consideration of alternatives

Alternatives to the proposal include:

- Make no changes and maintain the existing camping area design, layout and retain aging infrastructure and antiquated self-registration system.
- Close the camping area and rehabilitate the site.
- Improve a section of the precinct only.
- Lease the site to an external provider.

7.3 Justification for preferred option

The preferred option is to upgrade Cutters Campground and day use area and extend the Byrrill Creek walking track and provide better access to walking tracks. The following justification for the preferred option includes:

- It is consistent with legislation and policy including Objects of the Act, Plan of Management and Park Facilities Manual in that it provides for sustainable visitor and tourist use and enjoyment that is compatible with the conservation of the park's natural values.
- It provides a revenue stream for Northern Rivers Region with potential for revenue increase in the future.
- It is an important accommodation facility being the northern-most national park campground to Queensland and the closest to Wollumbin National Park.
- Cutters Campground is an existing disturbed site, so impacts are minimal.
- The existing site layout and gradient presents major limitations. If left in its current form, the campground will never have the capacity to cater for the approved site numbers (maximum of 20 campsites) or raise sufficient funds to be self-sustaining as it is severely impacted by a lack of level areas for pitching a tent or parking a campervan/ trailer etc. A precinct upgrade will maximise the potential use.
- An upgrade and extension to the walking track will open new opportunities for visitors of all ages and abilities by providing a conveniently located, low grade walking experience in a unique rainforest setting.
- Provide a range of car-based camping experiences.

7.4 Site suitability

Site character	N/A
Landscape context	N/A
Application of site suitability matrix	N/A
Strategic site assessment (if required by the matrix)	N/A

8. Description of the existing environment

8.1 Overview of the project area

Prior to reservation as a national park, the area was managed as part of the Mebbin State Forest. During the forestry years, Cutters Campground was one of many sites within the park, cleared and used for forestry activities including providing on-site accommodation for forestry workers. During the forestry era, a significant amount of timber was removed from the area resulting in Cutters Campground being highly disturbed. The cleared site today is 1 ha in size, set amongst rehabilitating dry sclerophyll forest on the upper exposed areas and wet sclerophyll grading to subtropical rainforest in the more sheltered gullies and creeklines. Adjoining the site directly to the south-west lies a mature Slash Pine forest, one of the many remnant forestry plantations within the park.

Byrrill Creek walking track lies directly to the north and east of Cutters Campground and leads through predominantly wet sclerophyll and subtropical rainforest. The walking track provides campers and day visitors the opportunity to take a walk through a wet sclerophyll forest and subtropical rainforest.

8.2 Natural values

8.2.1 Geology, geomorphology, and topography

Mebbin National Park and surrounding areas are landforms associated with the Tweed shield volcano erosion caldera. Through millions of years of erosion much of the parent basalt material has been eroded to reveal the underlying sedimentary rocks to the east and west of Wollumbin. These include Bundamba Group, Walloon coal measures and Kangaroo Creek sandstones comprising clay stones, sandstones, and narrow coal seams.

8.2.2 Soil types and properties (including contamination)

The following soil types (Australian Soil Classification)(NSW Department of Planning and Environment 2021) have been mapped within the site:

- **Kurosols** – are from parent materials that are highly siliceous, siliceous to intermediate in composition and where rainfall is from 50 to 1,350 mm in poorly drained sites or 750 to 1,300 mm on well-drained sites. The surface of Kurosol soils are often acidic. Generally, this soil type has very low agricultural potential with high acidity (pH < 5.5) and low chemical fertility. Kurosols commonly have low water-holding capacity and are often sodic.
- **Dermosols** – are found in imperfectly drained sites (yellow and grey dermosols) with rainfall between 550 mm and 1,350 mm and in well-drained sites with rainfall between 450 mm and 1,200 mm. Dermosols generally have high agricultural potential with good structure and moderate to high chemical fertility and water-holding capacity with few problems.

The Acid Sulfate Soil (ASS) Risk mapping (Department of Planning Industry and Environment 2011) was reviewed for the site and no acid sulfate soils were identified within the site or in proximity. The proposed Activity would not involve the significant soil impact or significant disturbance of soils and is not likely to impact areas that posed high risk of acid sulfate soil.

8.2.3 Watercourses, waterbodies, and wetlands (including their catchment values)

Byrrill Creek is a main upper tributary of the Byrrill Creek Catchment. Mebbin National Park plays an important role in providing a reliable source of high-quality water to Tweed municipal water reservoir and many individual downstream agricultural and domestic uses. The park supports myriad creeks and tributaries in the upper reaches of the Byrrill Creek sub-catchment, one of the upper most tributaries of the Tweed River. Refer to Figure 2 for waterways in the proximity to the Activity footprint.

8.2.4 Coasts and estuaries

No coastal risk areas within the proposed work area.

8.2.5 Biodiversity

The Park includes several vegetation types, including dry sclerophyll forest, wet sclerophyll forest and subtropical rainforest. Subtropical rainforest and wet sclerophyll communities occur in areas adjacent to the campground and on lower east and south-east facing slopes toward Byrrill Creek.

Overview of terrestrial and aquatic biodiversity

A number of mapped PCTs occur surrounding the site (NSW Department of Planning and Environment 2023a), these include:

- PCT 3147 Far North Brush Box-Bloodwood Wet Forest.
- PCT 3253 Northern Hinterland Grey Gum-Turpentine Mesic Forest.
- PCT 3322 Far North Ranges Red Gum Grassy Forest.
- PCT 3004 Far North Bangalow Palm Swamp Forest.
- PCT 3064 Far North Hoop Pine Dry Rainforest.
- PCT 3172 North Ranges Brush Box-Flooded Gum Wet Forest.
- PCT 3002 Lower Richmond Hills Dry-Subtropical Rainforest.
- PCT 3174 Northern Turpentine-Brush Box Wet Forest.
- PCT 3011 Far North Lowland Subtropical Rainforest.

Byrrill Creek Walking Track

Byrrill Creek Walking Track predominately transitions through subtropical rainforest near Byrrill Creek into wet sclerophyll forest on higher slopes leading away from the creekline.

In areas closer to Byrrill Creek, the canopy consists of White Booyong (*Argyrodendron trifoliolatum*), Flooded Gum (*Eucalyptus grandis*), Brush Box (*Lophostemon confertus*), Forest Oak (*Allocasuarina torulosa*) and Green Bolly Gum (*Neolitsea australiensis*). The mid storey consists of Bangalow Palms (*Archontophoenix cunninghamiana*), Guioa (*Guioa semiglauca*), Kamala spp. (*Mallotus* spp.), Native Tamarind (*Diploglottis australis*) and Tree Heath (*Trochocarpa laurina*). The shrub layer was dominated with Walking Stick Palm (*Linospadix monostachyos*), Cordylines (*Cordyline spp.*), Orange Thorn (*Pittosporum multiflorum*) and Native Ginger (*Alpinia caerulea*). Several vines including Wait-a-while (*Calamus muelleri*), Native Yam (*Dioscorea transversa*) and Lawyer Vine (*Smilax australis*) were common. Based on region, landscape position and floristics, this community is most similar with PCT 3172 - North Ranges Brush Box-Flooded Gum Wet Forest. However, other similar PCTs may overlap within the park

and in areas closer to Byrrill Creek it may transition more into subtropical rainforest (i.e., PCT 3002 & 3011).

Leading up the slope away from Byrrill Creek the vegetation transitions into predominately wet sclerophyll forest with a canopy dominated with Turpentine (*Syncarpia glomulifera*), Brush Box (*Lophostemon confertus*) and Forest Oak (*Allocasuarina torulosa*). The occurrence of White Booyong (*Argyrodendron trifoliolatum*), Flooded Gum (*Eucalyptus grandis*), Green Bolly Gum (*Neolitsea australiensis*) and Pink Bloodwood (*Corymbia intermedia*) was also common. The midstorey consists of Kamala spp. (*Mallotus* spp.), Maiden's Wattle (*Acacia maidenii*), Native Tamarind (*Diploglottis australis*) and Guioa (*Guioa semiglauca*). Of important note was the presence of a several threatened Scrub Turpentine (*Rhodamnia rubescens*). The understorey was dominated by Walking Stick Palm (*Linospadix monostachyos*), Cordylines (*Cordyline spp.*), Native Ginger (*Alpinia caerulea*), Gristle Fern (*Blechnum cartilagineum*), Bracken (*Pteridium esculentum*), Lomandra (*Lomandra longifolia*), Veiny Wilkiea (*Wilkiea huegeliana*), White Supplejack (*Ripogonum album*), Basket Grass (*Ottochloa gracillima*) and Indian Pennywort (*Centella asiatica*). Based on region, landscape position and floristics, this community was consistent with PCT 3172 - North Ranges Brush Box-Flooded Gum Wet Forest.

Cutters Campground

Surrounding Cutters Campground and predominately near the proposed works, the canopy consists of Green Bolly Gum (*Neolitsea australiensis*), Hoop Pine (*Araucaria cunninghamii*), Turpentine (*Syncarpia glomulifera*) and remnants of planted Slash Pine* (*Pinus elliottii**). The midstorey consists of Tree Heath (*Trochocarpa laurina*), Guioa (*Guioa semiglauca*), Euodia (*Melicope micrococca*), Poison Peach (*Trema tomentosa*) and Bangalow Palm (*Archontophoenix cunninghamiana*). In disturbed areas and along existing roads, the occurrence of Tea-tree (*Leptospermum* spp.) and Lantana* (*Lantana camara**) were common. The understorey was dominated with Lomandra (*Lomandra longifolia*), Native Ginger (*Alpinia caerulea*), Raspberry (*Rubus moluccanus*), Saw-sedge (*Gahnia spp.*) and Bracken (*Pteridium esculentum*). The groundcover consists of Basket Grass (*Oplismenus aemulus*), Whiteroot (*Lobelia purpurascens*), Blady Grass (*Imperata cylindrica*), Buttercup (*Ranunculus spp.*) and Sedge (*Juncus spp.*). A number of vine species including Burny Vine (*Trophis scandens*), Native Grape (*Cayratia clematidea*) and Water Vine (*Cissus spp*.) were common. Based on region, landscape position and floristics, this community corresponds with PCT 3139 - Border Ranges Brush Box-Tallowwood Wet Forest. This area has historically been disturbed and the presence of planted species and introduced species were common.

In cleared grassy areas surrounding picnic areas, groundcover was dominated with Couch (*Cynodon dactylon*).

Areas of outstanding biodiversity value or critical habitat

Areas of Outstanding Biodiversity Value (AOBV) are special areas with irreplaceable biodiversity values that are important to the whole of New South Wales, Australia or globally. AOBV are listed under Part 3 of Biodiversity Conservation Regulation 2017. No AOBVs occur within the site or in proximity to the site and therefore would not be impacted as a result of the proposed Activity.

Similarly, no critical habitat listed under Section 220T of the *Fisheries Management Act 1994* occur within the site or in proximity to the site and therefore would not be impacted as a result of the proposed Activity.

Environmental assets of intergenerational significance (AIS)

Two mapped assets of intergenerational significance occur within Mebbin National Park however neither of these areas have adopted conservation action plans:

- AIS_EO_014 Wollumbin Dogwood and Border Ranges Daisy.
- AIS_EO_051 Wollumbin Dogwood.

It is not expected that any assets of intergenerational significance will be impacted by the proposed Activity.

Threatened ecological communities

A search of the BioNet Atlas (NSW Department of Planning and Environment 2023b) was completed to identify potential threatened ecological communities (TEC) within a 10 km x 10 km search area centred on the site. A total of 13 TECs have been recorded within the search area. PCT 3172 and PCT 3139 mentioned above do not correspond to any TEC. Within the park, one TEC - *Lowland Rainforest in the NSW North Coast and Sydney Basin Bioregions* is known to occur; this TEC occurs closer to Byrrill Creek. Lowland Rainforest TEC transitions into PCT 3172 and PCT 3139 around the walking track and Cutters Campground. *Lowland Rainforest in the NSW North Coast and Sydney Basin Bioregions* is listed as Endangered under the BC Act. The proposed walking track would not impact Lowland Rainforest TEC within the Park however it is noted that it occurs near the Activity area.

Threatened species and populations

Threatened flora

Background searches were undertaken to identify threatened flora species previously recorded in the locality or have the potential to occur within the locality (refer to Figure 2, Appendix C & D). Results indicate 53 threatened flora species with the potential to occur in the locality. Potential of occurrence assessments for threatened flora species identified in searches were undertaken for all identified species (refer to Appendix E). Four threatened flora species were identified to have a moderate or higher likelihood of occurrence and to potentially be impacted by the proposed Activity (refer to Table 1 & Appendix F). Assessments of significance in accordance BC Act and EPBC Act were completed for flora species which have the potential to be impacted by the Activity. The assessments concluded that the Activity would be unlikely to result in a significant impact to any identified threatened flora species.

Table 1 – Threatened flora with a moderate or higher likelihood of occurrence in Activity area

Scientific Name	Common Name	BC Act[1]	EPBC Act[1]
Endiandra hayesii	Rusty Rose Walnut	V	V
Endiandra muelleri subsp. *bracteata*	Green-leaved Rose Walnut	E	-
Owenia cepiodora	Onion Cedar	V	V
Rhodamnia rubescens	Scrub Turpentine	CE	CE

1) V = Vulnerable; E = Endangered; CE = Critically Endangered

Threatened fauna

Background searches were undertaken to identify threatened fauna species previously recorded in the locality or have the potential to occur within the locality (refer to Appendix C & D). Results indicate 70 threatened fauna species with the potential to occur in the locality. Potential of occurrence assessments for threatened fauna species identified in searches were undertaken for all identified species (refer to Appendix E). Thirty-four threatened fauna species were identified to have a moderate or higher likelihood of occurrence and to potentially be impacted by the proposed Activity (refer to Table 2 & Appendix F). Assessments of significance in accordance BC

Act and EPBC Act were completed for fauna species which have the potential to be impacted by the Activity. The assessments concluded that the Activity would be unlikely to result in a significant impact to any identified threatened fauna species.

Table 2 – Threatened fauna with a moderate or higher likelihood of occurrence in Activity area

Scientific Name	Common Name	BC Act[1]	EPBC Act[1]
Birds			
Atrichornis rufescens	Rufous Scrub-bird	V	E
Calyptorhynchus lathami	Glossy Black-Cockatoo	V	-
Carterornis leucotis	White-eared Monarch	V	-
Coracina lineata	Barred Cuckoo-shrike	V	-
Cyclopsitta diophthalma coxeni	Coxen's Fig-Parrot	CE	E
Dasyornis brachypterus	Eastern Bristlebird	E	E
Glossopsitta pusilla	Little Lorikeet	V	-
Menura alberti	Albert's Lyrebird	V	-
Ninox strenua	Powerful Owl	V	-
Podargus ocellatus	Marbled Frogmouth	V	-
Ptilinopus magnificus	Wompoo Fruit-Dove	V	-
Ptilinopus regina	Rose-crowned Fruit-Dove	V	-
Turnix melanogaster	Black-breasted Button-quail	CE	V
Tyto novaehollandiae	Masked Owl	V	-
Tyto tenebricosa	Sooty Owl	V	-
Mammals			
Aepyprymnus rufescens	Rufous Bettong	V	-
Dasyurus maculatus	Spotted-tailed Quoll	V	E
Micronomus norfolkensis	Eastern Coastal Free-tailed Bat	V	-
Miniopterus australis	Little Bent-winged Bat	V	-
Miniopterus orianae oceanensis	Large Bent-winged Bat	V	-
Nyctimene robinsoni	Eastern Tube-nosed Bat	V	-
Nyctophilus bifax	Eastern Long-eared Bat	V	-
Petauroides volans	Greater Glider	E	E
Petaurus australis	Yellow-bellied Glider	V	V
Phascolarctos cinereus	Koala	V	E
Phoniscus papuensis	Golden-tipped Bat	V	-
Planigale maculata	Common Planigale	V	-
Potorous tridactylus	Long-nosed Potoroo	V	V
Pteropus poliocephalus	Grey-headed Flying-fox	V	V
Saccolaimus flaviventris	Yellow-bellied Sheathtail-bat	V	-
Scoteanax rueppellii	Greater Broad-nosed Bat	V	-
Thylogale stigmatica	Red-legged Pademelon	V	-

Scientific Name	Common Name	BC Act[1]	EPBC Act[1]
Reptiles			
Coeranoscincus reticulatus	Three-toed Snake-tooth Skink	V	E
Hoplocephalus stephensii	Stephens' Banded Snake	V	-

1) V = Vulnerable; E = Endangered; CE = Critically Endangered

SEPP (Biodiversity and Conservation) 2021 – Chapter 4 Koala Habitat Protection 2021

Chapter 4 Koala Habitat Protection 2021 within SEPP (Biodiversity and Conservation) 2021 does not apply to land dedicated or reserved under the *National Parks and Wildlife Act 1974*. However, it is DPE policy that the objectives and principles of these SEPPs are applied to the assessment of on park activities.

The site occurs within Tweed LGA (North Coast) which is listed under Schedule 2 of the SEPP (Biodiversity and Conservation) 2021. Three Schedule 3 listed Koala use tree species, Forest Oak (*Allocasuarina torulosa*), Pink Bloodwood (*Corymbia intermedia*) and Flooded Gum (*Eucalyptus grandis*) were identified within the Park. SEPP (Biodiversity and Conservation) 2021 defines 'koala habitat' as – "however described in a plan of management under this Chapter (Chapter 4 Koala Habitat Protection 2021) or a former Koala SEPP and includes core koala habitat". Under the definition of SEPP (Biodiversity and Conservation) 2021 – Chapter 3 Koala Habitat Protection 2020, the definition of 'potential koala habitat' is defined as – "areas of native vegetation where trees of the types listed in Schedule 2 constitute at least 15% of the total number of trees in the upper or lower strata of the tree component". Within the Park, Flooded Gum would in some parts constitute at least 15% of the upper canopy or lower tree component, as such the site is consistent with the definition of 'potential koala habitat'. Koalas have been recorded within the surrounding locality; therefore, consideration of the objectives and principles of Chapter 4 Koala Habitat Protection 2021 have been applied. Safeguards would be adopted to mitigate potential impacts.

Threatened Species Within The Site

Figure 3

[redacted]

LEGEND

- Construction area for proposed campsite works
- Cadastre
- Camping platform
- Parking
- Cutters campground
- Existing walking track
- Proposed track extension works
- Watercourse

GeoLINK Threatened Flora Records
- Scrub Turpentine

Bionet Flora Records
- Onion Cedar

Recorded Threatened Species From Previous Survey
- Green-leaved Rose Walnut
- Rusty Rose Walnut
- Scrub Turpentine

Byrrill Creek

0 20 40 80
Metres

MAP INFORMATION
This map does not provide detailed information on topography, alerts or opening times and may not be suitable for some activities.
Map published: 11/11/2022

NSW GOVERNMENT

8.3 Cultural values

8.3.1 Aboriginal cultural heritage

Mebbin National Park and Cutters Campground is amongst a landscape that is part of the identity, spirituality, connection, and resource base for the local Aboriginal community including the Nganduwal, Galibal, Githabul and Widjabal Wiabal peoples. The local Aboriginal community maintain a unique and deeply felt association with and connection to the land and water of the region.

There are many Aboriginal places in the locality of Mebbin related to ancient travel routes associated with trade and meeting and ceremonial places, most particularly in relation to travel to and from Wollumbin, a place of great significance associated with cultural activities. At Cutters Campground, there is a Bora Ring site that indicates this place was an important Aboriginal meeting place on travel routes, and its site characteristics may have influenced the later use of the Cutters Campground site. The Cutters Campground area is identified as being within an Aboriginal Place of Heritage Significance on the Tweed Shire Council Aboriginal Cultural Heritage Management Plan (Tweed Shire Council 2018).

An Aboriginal Heritage Information Management System (AHIMS) search undertaken for the site identified eleven registered cultural sites or items within the search area, of which two occur in close proximity to Cutters campground (refer to Appendix G).

Aboriginal Cultural Heritage Assessment (ACHA) will be undertaken for the proposed Activity. Under the provisions of the *National Parks and Wildlife Act* 1974, an Aboriginal Heritage Impact Permit (AHIP) would be required from DPC Heritage NSW, with appropriate archaeological mitigation measures.

8.3.2 Historic heritage values

Cutters Camp has links to the former forestry tenure which operated in Mebbin sometime around the 1940's to mid-1990's. A few disused forestry structures remain in the Park including a forestry shed at Cutters Camp. The shed, colloquially known as 'Cutters Hut' was an old barracks building relocated from Rummery Park Forestry Camp and Rest Area to Mebbin State Forest in 1942 (Thematic Forest History UNE/LNE CRA Regions, 1998). Since NPWS took over management of the Park in 1999 the shed has been largely modified and little of the original fabric remains. Its position within the campground and the inclusion of a brick chimney makes it a popular shelter for visitors.

Also remaining from the forestry tenure is a small number of tree plantings creating an informal avenue into Cutters Camp. These trees provide shade, habitat and character and reveal an element of the site's former use and commemoration of the people that worked there.

A Statement of Heritage Impact (NM Architecture & Heritage P/L 2019) for Cutters Hut was undertaken on 17 April 2019 for conservation repairs and adaptive re-use of the existing structure. Repairs and upgrades of the existing structure involved replacement of roofing, gutters, rainwater pipes and tank, structural repairs, fireplace repairs and concrete repairs.

The proposed Activity will not impact any identified heritage values within the site; however, due diligence procedures will be incorporated into mitigation measures.

8.4 Social values

Mebbin is the most northern National Park in the State which provides a unique, affordable bush camping experience in a relatively remote location. It also offers a range of other activities

including bush walking (along approved fire trails), horse riding and mountain bike riding (permitted on approved trails), birdwatching, group camping, picnicking and a short, formalised walk. The Park is located approximately 40 minutes from Murwillumbah and adjacent to Wollumbin National Park. The camping area is quite popular during school holidays, Easter, and long-weekends. Redevelopment of the camping area and tracks will have temporary impacts on recreation while the Activity is underway. Once complete, the site will significantly improve visitor experience and opportunities.

8.4.1 Scenic and visually significant areas

Mebbin Forest Road and Cadell Road leading to Cutters Camp provide an ideal opportunity for visitors to experience a scenic drive through subtropical and wet sclerophyll forests.

The camping area is not visible from the surrounding ridges or hills and will have minimal impact upon the scenic and visual values of the area. Retention of most trees and shrubs surrounding the precinct and within the campground will limit the visual impact.

The impact of the existing campground footprint and bush track is minimal.

8.4.2 Education and scientific values

Scientific values will be unaffected by the redevelopment. Education values will be increased due to new interpretive signage and guided walk.

8.4.3 Interests of external stakeholders

Adjoining landowners and local government are generally supportive of recreational activities in the local area and with the provision of high quality/ standard camping facilities.

Improvements to the site are likely to enhance the Park's popularity and increase security.

8.5 Matters of National Environmental Significance

Mebbin National Park provides potential habitat for several threatened species listed in the EPBC Act. The Protected Matters Search Tool (PMST) (Department of Climate Change Energy the Environment and Water 2023a) identified 85 threatened species and six TECs which may have habitat within a 10 km radius of the site (refer to Appendix D). Relevant species are included in the potential occurrence assessments in Appendix E.

An EPBC Act assessment of significance was completed for all EPBC Act species identified to be potentially impacted by the proposed Activity. The assessment under the 'significant impact criteria' in the EPBC Act determined that impacts to these threatened entities were unlikely to be significant (refer to Appendix F – EPBC Significance Assessments).

No other MNES entities would be significantly impacted by the Activity.

9. Impact assessment

9.1 Physical and chemical impacts during all stages of the activity

Is the proposed activity likely to…	Applicable? *	Impact level (negligible; or low, medium or high adverse; or positive; or N/A)	Reasons (describe the type, nature and extent of impact, taking into account the receiving environment and proposed safeguards which will limit the impact)	Safeguards/mitigation measures
1. impact on soil quality or land stability?	☒	**Campground**: Medium **Walking track**: Low	**Campsites and car parking** Construction of the camp sites and additional parking requires clearing of vegetation and minor excavation for the construction of camp platforms, paths, and parking. The works would disturb the soil profile; erosion and sediment safeguards would limit impacts. **Walking Tracks** Construction of walking tracks requires minor clearing of vegetation and construction of a class 4 track including benching and potentially stairs (where necessary). Clearing and earthworks would result in minor disturbance of soils within the walking track footprint.	• An Erosion and Sedimentation Control Plan would be prepared and would comply with the "Blue Book" (Soils and Construction, Managing Urban Stormwater Volume 1, 4th Edition March 2004). • Monitoring of erosion and sediment control post construction will be completed until staff are satisfied, they can be safely removed. • Access would be restricted and clearly defined for all construction personnel. • Removal of vegetation and soil would be minimised as much as practicable. • Non-essential or excessive fuels, oils and chemicals would not be stored at the site. • Refuelling of plant and maintenance of machinery would be undertaken at least 40 m away from waterways or drainage lines in designated refuelling areas. • Disturbed surfaces would be compacted and stabilised in anticipation of a rain event to reduce the potential for erosion.

Is the proposed activity likely to…	Applicable? *	Impact level (negligible; or low, medium or high adverse; or positive; or N/A)	Reasons (describe the type, nature and extent of impact, taking into account the receiving environment and proposed safeguards which will limit the impact)	Safeguards/mitigation measures
				• Regular consultation of weather forecasts and flood warnings would occur during works. • Removal of vegetation and soil would be minimised as much as practicable.
2. affect a waterbody, watercourse, wetland or natural drainage system – either physically or chemically (e.g., due to runoff or pollution)?	☒	**Campground**: Low **Walking track**: Negligible	No proposed works are within close proximity to Byrrill Creek or involve disturbance of embankments associated with Byrrill Creek or any tributaries. Where necessary, sediment control measures will be established during proposed works. Existing drainage lines and water flows will be maintained.	• Appropriate erosion and sediment controls will be in place prior to the commencement of any excavation works. Controls would comply with the "Blue Book" (Soils and Construction, Managing Urban Stormwater Volume 1, 4th Edition March 2004). • All areas where excavation is required and/or vegetation is removed will be turfed, seeded, revegetated, or otherwise stabilised with the most appropriate method. • Refuelling of plant and maintenance of machinery will be undertaken at least 40 m away from waterways or drainage lines. • Disturbed surfaces will be compacted and stabilised in anticipation of a rain event to reduce the potential for erosion. • Spill kits will be always available at construction sites and staff trained in effective deployment. • Erosion and sediment controls will be monitored for effectiveness and be maintained until the site is remediated and stabilised.

Is the proposed activity likely to…	Applicable? *	Impact level (negligible; or low, medium or high adverse; or positive; or N/A)	Reasons (describe the type, nature and extent of impact, taking into account the receiving environment and proposed safeguards which will limit the impact)	Safeguards/mitigation measures
3. change flood or tidal regimes, or be affected by flooding?	☐	N/A	N/A	N/A
4. affect or be affected by coastal processes and coastal hazards, including those under climate change projections (e.g., sea level rise)?	☐	N/A	N/A	N/A
5. involve the use, storage, or transport of hazardous substances, or use or generate chemicals which may build up residues in the environment?	☒	**Campground**: Low **Walking track**: Negligible	A low level of fuel usage would be required to power machinery and vehicles. No other hazardous materials would be required for the activities. Safeguards would mitigate potential impacts.	• Waste materials requiring removal from site will be classified, handled and stored on-site in accordance with the '*Waste Classification Guidelines: Part 1 Classifying Waste*' (EPA 2014) until collection by a contractor for disposal. • Where no feasible and reasonable options for waste avoidance and reuse of recycling are available, all residual waste material will be disposed to a suitably licensed landfill or waste management facility. • Waste destined for recycling or reuse will be stored separately and in a suitable location to avoid mixing with other materials/ wastes. • All working areas will be monitored to ensure the site and any construction compounds required

Is the proposed activity likely to…	Applicable? *	Impact level (negligible; or low, medium or high adverse; or positive; or N/A)	Reasons (describe the type, nature and extent of impact, taking into account the receiving environment and proposed safeguards which will limit the impact)	Safeguards/mitigation measures
				are kept free of rubbish and cleaned at the end of each working day. • Storage and handling of any dangerous goods will be undertaken in accordance with *The Storage and Handling of Dangerous Goods Code of Practice 2005*. • Sufficient spill kits will always be kept on site and staff trained in effective deployment. • Any excavated natural material will be treated in accordance with the requirements of the *POEO Act*.
6. involve the generation or disposal of gaseous, liquid or solid wastes or emissions?	☒	**Campground**: Negligible **Walking track**: Negligible	The proposed Activity would not generate or require disposal of any wastes beyond standard operational volumes. Waste would be minimised with the adoption of guidelines and safeguards would mitigate potential impacts. Vegetation 'waste' would be relocated into adjacent habitat to decompose and provide fauna habitat.	• The resource hierarchy detailed by the Waste *Avoidance Resource Recovery Act 2001* will be adopted.
7. involve the emission of dust, odours, noise, vibration or radiation?	☒	**Campground**: Low **Walking track**: Negligible	The proposed Activity would not involve the generation of dust, noise or vibration beyond standard operational levels. Safeguards would mitigate potential impacts. No permanent sensitive receivers are located within 200 m of the Activity.	• All works will be undertaken in accordance with the *Interim Construction Noise Guideline* (Department of Environment & Climate Change NSW 2009). • The construction team will be briefed to create awareness of the locality of sensitive receivers (i.e. local neighbours along access routes into

Is the proposed activity likely to…	Applicable? *	Impact level (negligible; or low, medium or high adverse; or positive; or N/A)	Reasons (describe the type, nature and extent of impact, taking into account the receiving environment and proposed safeguards which will limit the impact)	Safeguards/mitigation measures
				the National Park) and the importance of minimising noise emissions. • Mufflers and appropriate covers will be fitted to all plant and machinery used during the works where appropriate. • The contractor will be required to minimise and contain noise outputs using best practice (e.g. by avoiding generating unnecessary noise onsite) and high-quality plant and equipment. • Vehicles and all fuel powered machinery and equipment will be maintained to meet the requirements of the *POEO Act.* • All vehicles transporting waste or other materials that may produce odours or dust will be covered during transportation. • Debris and wastes will be cleaned from the Activity area as soon as practical to ensure light-weight material is not disseminated by wind gusts. • No burning of timber or other wastes will occur. • If winds are high and works are creating high levels of dust that are either likely to discomfort nearby neighbours (i.e. neighbours/residents along access roads into the National Park) or create a safety hazard to traffic or personnel, works will be modified or ceased until the dust hazard is eliminated or reduced to an

Is the proposed activity likely to…	Applicable? *	Impact level (negligible; or low, medium or high adverse; or positive; or N/A)	Reasons (describe the type, nature and extent of impact, taking into account the receiving environment and proposed safeguards which will limit the impact)	Safeguards/mitigation measures
				acceptable level; alternatively, dust suppression measures will be implemented to minimise or prevent air pollution from dust. • Any stockpiles will be appropriately managed (i.e. covered, kept at low heights, wet down etc) so the potential for air pollution is minimised.

9.2 Biodiversity impacts during all stages of the activity

Is the proposed activity likely to…	Applicable? *	Impact level (negligible; or low, medium or high adverse; or positive; or N/A)	Reasons (describe the type, nature and extent of impact, taking into account the receiving environment and proposed safeguards which will limit the impact)	Safeguards/mitigation measures
1. affect any declared area of outstanding biodiversity value or critical habitat or environmental asset of intergenerational significance?	☐	N/A	N/A	N/A
2. result in the clearing or modification of vegetation, including ecological communities and plant community	☒	**Campground**: Low	The proposed activities will require clearing of vegetation as follows: • Approximately 435 m^2 of clearing for campground works (including camp	• Vegetation clearing would be minimised to the immediate footprint only. • Limiting impacts on adjacent areas of native vegetation (e.g., by installation of temporary fencing or flagging).

Is the proposed activity likely to…	Applicable? *	Impact level (negligible; or low, medium or high adverse; or positive; or N/A)	Reasons (describe the type, nature and extent of impact, taking into account the receiving environment and proposed safeguards which will limit the impact)	Safeguards/mitigation measures
types of conservation significance? ^		**Walking track**: Negligible	platforms, carparking, paths etc.). Some of this vegetation has previously been disturbed and would also require removal of some planted Slash Pines. • Approximately 405 m^2 of clearing for Byrrill Creek walking track (this would only include minor understorey clearing and no removal of mature native trees or threatened flora). • Vegetation impacts are considered low in the context that clearing impacts are discrete, of low impact. Clearing impacts is unlikely to significantly affect vegetation structure or integrity.	
3. endanger, displace, or disturb terrestrial or aquatic fauna, including fauna of conservation significance, or create a barrier to their movement? ^	☒	**Campground**: Low **Walking track**: Negligible	During the construction process, temporary disturbance to fauna will occur from vegetation clearing and disturbance from noise, plant, and personnel. No barriers to movement would occur, and fauna would retain the ability to disperse freely throughout the Activity area. Assessments of significance determined for likely/ known species concluded it would be unlikely to significantly impact on habitat for any threatened flora species (refer to Appendix F).	• Walking track works will follow the NPWS Walking Tracks Policy. • If a Koala is present within any tree to be removed (i.e., Slash Pine removal) (or within 30 m of an area to be cleared/ disturbed), 24 hours would be provided for the animal to disperse of its own volition. • If unexpected threatened species are discovered (i.e., a species not assessed within this report), work would stop immediately until statutory assessments have been updated.
4. result in the removal of protected flora or	☒	**Campground**: Low	Impacts to habitat for threatened flora species will occur from track construction and	• Walking track works will follow the NPWS Walking Tracks Policy.

Is the proposed activity likely to…	Applicable? *	Impact level (negligible; or low, medium or high adverse; or positive; or N/A)	Reasons (describe the type, nature and extent of impact, taking into account the receiving environment and proposed safeguards which will limit the impact)	Safeguards/mitigation measures
plants or fungi of conservation significance? ^		**Walking track**: Negligible	campground works, however, threatened flora within these areas have been identified and clearly marked. Known threatened flora will be avoided and assessments of significance determined for likely/ known species concluded it would be unlikely to significantly impact on habitat for any threatened flora species (refer to Appendix F). Safeguards would mitigate potential residual impacts.	• Track guidance notes will be prepared for contractors detailing specific measures to minimise environmental impacts and provide contingency measures as appropriate. • A plan of threatened flora locations will be provided to contractors prior to clearing and where aggregations of threatened flora occur signage is to be installed stating 'threatened flora location' (or words of similar intention) to alert construction personnel. • Where threatened flora is present, to ensure construction of walking trails avoid directly impacting any threatened flora species, NPWS project manager should be present during works in these areas. If impacts are unavoidable in some instances, track redirection may be required. • If unexpected threatened species are discovered (i.e., a species not assessed within this report), work would stop immediately until statutory assessments have been updated.
6. contribute to a key threatening process to biodiversity or ecological integrity?	☒	**Campground**: Low **Walking track**:	The Activity would marginally contribute to some key threatened processes, mainly associated with clearing of native vegetation and removal of dead wood and dead trees. Despite this, the degree that the Activity would contribute to any threatening process is not considered likely to	• Landscaping or screen plantings installed at the camps will be native flora species consistent with the plant community type in which each camp is located. Planting schedules will be developed in conjunction with NPWS.

Is the proposed activity likely to…	Applicable? *	Impact level (negligible; or low, medium or high adverse; or positive; or N/A)	Reasons (describe the type, nature and extent of impact, taking into account the receiving environment and proposed safeguards which will limit the impact)	Safeguards/mitigation measures
		Negligible	place the local population of any of the subject species or community at significant risk of extinction. Mitigation measures would mitigate residual impacts.	• Vegetation to be cleared along tracks will be mulched and/ or retained and dispersed into surrounding vegetation.
7. introduce weeds, pathogens, pest animals or genetically modified organisms into an area?	☒	**Campground**: Low **Walking track**: Negligible	The Activity would be unlikely to introduce new weeds or pests to the site which would significantly impact biodiversity values, with the adoption of appropriate mitigation measures.	• The *'Arrive Clean, Leave Clean'* guidelines (Department of the Environment 2015) will be adopted to minimise introduction of weed seed, pests, or propagules to the site. • Measures will be implemented during construction works to ensure hygiene protocols for minimising the introduction and spread of Myrtle Rust/ Chytrid Fungus/ Cinnamon Fungus are developed and maintained in accordance with current best practice and/or NPWS policies or guidelines (e.g., Saving Our Species Hygiene Guidelines (NSW Department of Planning and Environment 2020)). • Ensure all machinery/ vehicles/ personnel enter and exit along the main entry route so additional impacts or disturbance do not occur to native vegetation or aquatic habitat. • Provide ongoing management to control weeds following works. • Continue site monitoring and control of noxious and environmental weeds

9.3 Community impacts during all stages of the activity

Is the proposed activity likely to…	Applicable? *	Impact level (negligible; or low, medium or high adverse; or positive; or N/A)	Reasons (describe the type, nature and extent of impact, taking into account the receiving environment and proposed safeguards which will limit the impact)	Safeguards/mitigation measures
1. affect community services or infrastructure?	☒	**All activities:** Negligible	Due to the isolated nature of the Activity, it is unlikely that any works would affect any community services or infrastructure, beyond short term disruptions to site visitors.	• Notification of road closures and impacts to camping and/ or visitor facilities will be provided at least five days prior to the commencement of construction activities via the NPWS website
2. affect sites important to the local or broader community for their recreational or other values or access to these sites?	☒	**All activities:** Positive	Long-term benefits of the work will outweigh short-term inconvenience and impacts. The proposed Activity provides an upgrade of an existing camping and day use area. Improved facilities and better accessible walk track.	• Notification of road closures and impacts to camping and/ or visitor facilities will be provided at least five days prior to the commencement of construction activities via the NPWS website. • Exclusion zones will be established along access routes if pre-site work risk assessment determines it is necessary to do so.
3. affect economic factors, including employment, industry, and property value?	☒	**All activities:** Positive	Once completed it is expected that the facilities would generate significant tourism to the benefit of both park operators and commercial tour operators.	• Developed in accordance with the development plan.
4. have an impact on the safety of the community?	☒	**All activities:** Positive	The Activity would provide safer and enhanced visitor experiences and reduce site risks for staff, volunteers, contractors and park visitors	• Notification of any site closures and impacts to visitor facilities would be provided in advance prior to the commencement of construction activities via the NPWS website.
5. cause a bushfire risk?	☒	**All activities:** Low	During construction safeguards will mitigate potential impacts. Ongoing operation of the facilities will be in accordance with Reserve bushfire strategies, including consideration of	• No burning of timber or other wastes will occur. • Contingencies would be required to address the risk of bushfire including spark arrestors,

Is the proposed activity likely to…	Applicable? *	Impact level (negligible; or low, medium or high adverse; or positive; or N/A)	Reasons (describe the type, nature and extent of impact, taking into account the receiving environment and proposed safeguards which will limit the impact)	Safeguards/mitigation measures
			closure of the park during times of extreme bushfire risk	suspending works in extreme bushfire danger periods.
6. affect the visual or scenic landscape? ^	☒	**All activities:** Positive	The Activity provides an upgrade of an existing camping and day use area and better access and options for walking trails.	• The final landform will be designed to maintain and improve the visual amenity of the site. • incorporated planning and design principles in the *NPWS Park Facilities Manual* in the Master Plan.

9.4 Natural resource impacts during all stages of the activity

Is the proposed activity likely to…	Applicable? *	Impact level (negligible; or low, medium or high adverse; or positive; or N/A)	Reasons (describe the type, nature and extent of impact, taking into account the receiving environment and proposed safeguards which will limit the impact)	Safeguards/mitigation measures
1. result in the degradation of the park or any other area reserved for conservation purposes?	☒	Negligible	Providing recommended mitigation measures are adhered to, the longer-term benefits will outweigh any potential short-term impacts. The works would improve accessibility throughout areas of the park and allow for better management of the park and visitors. Activity area is limited and minor in extent. Impacts will occur over a short period of time and have a high chance of recovery. The Activity has been sited to avoid impact to any significant flora or fauna and is of a design that fits with the landscape to minimise impacts.	None required.
2. affect the use of, or the community's ability to use, natural resources?	☐	N/A	N/A	N/A
3. involve the use, wastage, destruction or depletion of natural resources including water, fuels, timber or extractive materials? ^	☐	N/A	N/A	N/A

Is the proposed activity likely to…	Applicable? *	Impact level (negligible; or low, medium or high adverse; or positive; or N/A)	Reasons (describe the type, nature and extent of impact, taking into account the receiving environment and proposed safeguards which will limit the impact)	Safeguards/mitigation measures
4. provide for the sustainable and efficient use of water and energy? †	☒	Positive	Sustainable materials and design applications, provide for the ongoing efficient use of resources, and where possible assist in educating park users as to sustainable resource management and conservation principles	• The Activity will incorporate planning and design principles in the *NPWS Park Facilities Manual*

9.5 Aboriginal cultural heritage impacts during all stages of the activity

Is the proposed activity likely to…	Applicable? *	Impact level (negligible; or low, medium or high adverse; or positive; or N/A)	Reasons (describe the type, nature and extent of impact, taking into account the receiving environment and proposed safeguards which will limit the impact)	Safeguards/mitigation measures
1. disturb the ground surface or any vegetation likely to contain culturally modified trees?	☒	Medium	Track works and camp construction will require ground disturbance and minor excavation/ removal of soil and rock. No works will occur in proximity to any culturally modified trees.	• An Aboriginal Cultural Heritage Assessment will be undertaken and implementation of recommended mitigation measures before proposed activities commence.
2. affect or occur near known Aboriginal objects, Aboriginal places or an Aboriginal cultural asset of intergenerational significance? If so, can impacts be avoided? How?	☒	Medium	AHIMS searches undertaken for the site identified eleven registered cultural sites or items within the search area, of which two occur in close proximity to Cutters campground. Aboriginal Cultural Heritage Assessment (ACHA) will be undertaken for the proposed Activity. Under the provisions of the *National Parks and Wildlife Act 1974*, an Aboriginal Heritage Impact Permit (AHIP) would be required from Department of Premier and Cabinet (DPC) Heritage NSW, with appropriate archaeological mitigation measures.	• An Aboriginal Cultural Heritage Assessment will be undertaken and implementation of recommended mitigation measures before proposed activities commence. • If suspected Aboriginal material has been uncovered because of work within the Activity area: a) Work in the surrounding area will stop immediately. b) A temporary fence will be erected around the site, with a buffer zone of at least 10 m (unless otherwise impractical) around the known edge of the site. c) An appropriately qualified archaeological consultant will be engaged to identify the material. d) If the material is found to be of Aboriginal origin, the Aboriginal community will be consulted in a manner as outlined in the

Is the proposed activity likely to…	Applicable? *	Impact level (negligible; or low, medium or high adverse; or positive; or N/A)	Reasons (describe the type, nature and extent of impact, taking into account the receiving environment and proposed safeguards which will limit the impact)	Safeguards/mitigation measures
				Aboriginal Cultural Heritage Consultation Requirements for Proponents (DECCW 2010). e) Should the works be deemed to have harmed the Aboriginal objects Heritage NSW will be notified immediately via the NSW Environment Line. • Aboriginal site monitors will be engaged to support the unexpected find procedure to assist construction staff to identify Aboriginal objects should they be present. • Although it is unlikely that Aboriginal Human Remains will be located at any stage during earthworks within the Activity area, should this event arise it is recommended that all works will halt in the immediate area to prevent any further impacts to the remains. The site will be cordoned off and the remains themselves will be left untouched. The nearest Police Station, the Tweed Byron LALC or NTS Corp and the Heritage NSW Regional Office (Coffs Harbour) will all be notified as soon as possible. • All NPWS staff and contractors will be made aware of their responsibilities under the NPW Act and made aware of appropriate procedures in the event of Aboriginal objects or remains

Is the proposed activity likely to…	Applicable? *	Impact level (negligible; or low, medium or high adverse; or positive; or N/A)	Reasons (describe the type, nature and extent of impact, taking into account the receiving environment and proposed safeguards which will limit the impact)	Safeguards/mitigation measures
				being discovered during the construction process
3. affect areas: - within 200 m of waters - within a sand dune system - on a ridge top, ridge line or headland - within 200 m below or above a cliff face - in or within 20 m of a cave, rock shelter or a cave mouth? If so, can impacts be avoided? How?	☒	Medium	Cutters Campground and Byrrill Creek walking track are within 200 m of Byrrill Creek and AHIMS searches undertaken for the site identified eleven registered cultural sites or items within the search area, of which two occur in close proximity to Cutters campground. Aboriginal Cultural Heritage Assessment (ACHA) will be undertaken for the proposed Activity. Under the provisions of the *National Parks and Wildlife Act 1974*, an Aboriginal Heritage Impact Permit (AHIP) is would be required from DPC Heritage NSW, with appropriate archaeological mitigation measures.	As above
4. affect wild resources which are used or valued by the Aboriginal community or affect access to these resources?	☒	Negligible	The Activity would be unlikely to significantly affect resources which may be used by the Aboriginal community.	None required.
5. affect access to culturally important locations?	☒	Low	Whilst works are being undertaken the site may be closed (when required), however, this will only be short term.	• NPWS will consult with the DPIE Aboriginal Heritage and Joint Management Team/ NTS Corp as required. Tweed-Byron Aboriginal Land Council consultation and written notification of

Is the proposed activity likely to…	Applicable? *	Impact level (negligible; or low, medium or high adverse; or positive; or N/A)	Reasons (describe the type, nature and extent of impact, taking into account the receiving environment and proposed safeguards which will limit the impact)	Safeguards/mitigation measures
				intent (the Activity) will be undertaken as per established protocols. • Notification of road closure and impacts to camping and/ or visitor facilities will be provided at least five days prior to the commencement of construction activities via the NPWS website

9.6 Other cultural heritage impacts during all stages of the activity

Is the proposed activity likely to…	Applicable? *	Impact level (negligible; or low, medium or high adverse; or positive; or N/A)	Reasons (describe the type, nature and extent of impact, taking into account the receiving environment and proposed safeguards which will limit the impact)	Safeguards/mitigation measures
1. affect or occur near places, buildings or landscapes of heritage significance? ^	☒	Low	A Statement of Heritage Impact (NM Architecture & Heritage P/L, 2019) for Cutters Hut was undertaken on 17 April 2019 for conservation repairs and adaptive re-use of the existing structure. The site is known for its cultural heritage values and heritage items may be in the area of proposed works. The proposed Activity will not impact any known/ identified heritage values within the site; however due diligence procedures will be incorporated into mitigation measures.	• If any non-Aboriginal items of significance are located during the works, all work will cease and NPWS will be contacted immediately
2. impact on relics or moveable heritage items, or an area with a high likelihood of containing relics? ^	☒	Low	As above	As above
3. impact on vegetation of cultural landscape value (e.g., gardens and settings, introduced exotic species, or evidence of broader remnant land uses)?	☒	Low	The existing campground is considered to be modified and does contain a small number of tree plantings which creating an informal avenue into Cutters Camp in addition to planted Slash Pines. The removal of Slash Pines would likely be required.	• If lopping or pruning of any vegetation is required, it will be completed by a certified and experienced arborist in accordance with *AS 4970-2009 Protection of trees on development sites.*

9.7 Impacts on matters of national environmental significance under the Environment Protection and Biodiversity Conservation Act during all stages of the activity

Is the proposal likely to affect MNES, including:	Applicable? *	Likely impact (negligible, low, medium or high adverse; or positive; or N/A)	Reasons (describe the type, nature and extent of impact, taking into account the receiving environment and proposed safeguards which will limit the impact)	Safeguards/mitigation measures
1. listed threatened species or ecological communities)?	☒	Low	The minor nature of the Activity would not significantly affect habitat for any threatened species or entities	Refer to Section 9.2
2. listed migratory species?	☒	Low	The low impacts of the Activity in a local context is not likely to affect habitat or migratory pathways for any migratory species	None required
3. the ecology of Ramsar wetlands?	☐	N/A	N/A	N/A
4. world heritage values of World Heritage properties?	☐	N/A	N/A	N/A
5. the national heritage values of national heritage places?	☐	N/A	N/A	N/A

9.8 Cumulative impacts during all stages of the activity

No other projects that have been approved, are in construction or are being proposed in the vicinity of the proposed Activity covered by this REF. As such, no other projects have the potential to interact with the current Activity at the construction, operation or remediation phases of the Activity.

When considered with other projects, is the proposed activity likely to affect…	Applicable? *	Impact level (negligible; or low, medium or high adverse; or positive; or N/A)	Reasons (describe the type, nature and extent of impact, taking into account the receiving environment and proposed safeguards which will limit the impact)	Safeguards/mitigation measures
1. natural landscape or biodiversity values through cumulative impacts?	☐	N/A	N/A	N/A
2. cultural (Aboriginal, shared, and historic heritage) values through cumulative impacts?	☐	N/A	N/A	N/A
3. social (amenity, recreation, education) values through cumulative impacts?	☐	N/A	N/A	N/A
4. the community through cumulative impacts on any other part of environment (e.g., due to traffic, waste generation or perceived over-development?	☐	N/A	N/A	N/A

10. Proposals requiring additional information

10.1 Lease or licence proposals under s 151 National Parks and Wildlife Act

Proponents must complete and submit a **sustainability assessment** together with the REF. Under NPWS policy this requirement **also** applies where NPWS is the proponent for projects of the kind listed in s 151A of the NPW Act.

For information on the sustainability assessment criteria and guidelines, including assessment templates, go to the Sustainability assessments page.

Indicate which sustainability assessment is attached:

☐ special activities or uses involving more than 400 people
– Sustainability Assessment **Template 2**

☐ built structures and facilities
– Sustainability Assessment **Template 3**.

Note that for **minor activities and uses** (usually events and similar proposals involving fewer than 400 people), a streamlined and combined REF and sustainability assessment template is available (**Template 1**).

10.2 Telecommunications facilities

10.2.1 Consideration of matters listed under s 153D National Parks and Wildlife Act

Factors requiring consideration	Response
1. Are there feasible alternative sites for the facility on land that is not reserved under the NPW Act?	N/A
2. Does the site of any aboveground facility cover the minimum area possible?	N/A
3. Is the facility to be designed and constructed to minimise risk of damage to the facility from bushfires?	N/A
4. Has the site and construction of the facility been selected to, as far as practicable, minimise visual impact?	N/A
5. Is it feasible to use an existing means of access to the site?	N/A
6. Is the facility essential for the provision of telecommunications services for land reserved under the NPW Act or for surrounding areas to be served by the facility?	N/A
7. Will the facility be removed, and the site restored as soon as possible after the facility becomes redundant (e.g., due to changes in technology)?	N/A
8. Has the site been selected after taking into account the objectives set out in any plan of management relating to the land?	N/A
9. If feasible, will the facility be co-located with an existing structure or located at a site that is already disturbed by an existing lease, licence, easement or right of way. If co-location is proposed, please indicate if: o The proponent will be the owner of the facility. o The proponent will be a co-user of the facility.	N/A

10.2.2 Provision and maintenance of an asset protection zone

NPWS requires telecommunication facilities to be protected by asset protection zones (APZs) consistent with the *Telecommunications Towers in Bush Fire Prone Areas – Practice Note 1/11*, unless the Rural Fire Service (RFS) endorses a different approach (e.g. no APZ or a lesser APZ).

1. Is the proposed telecommunication facility protected by an APZ that is already consistent with the RFS Practice Note? No

If relevant, provide details and a map of the existing APZ.

2. Does the activity's scope include establishment of an APZ consistent with the RFS Practice Note? No

If relevant, describe how this REF has considered the new APZ's environmental impacts.

3. If the proposed facility will not have an APZ consistent with the RFS Practice Note, has consultation occurred with the RFS? No

Not applicable to the Activity.

10.3 Activities within regulated catchments

Activities within regulated catchments are subject to the provisions of Chapter 6 of the Biodiversity and Conservation SEPP. The regulated catchments are:

- the Sydney Drinking Water Catchment
- the Sydney Harbour Catchment
- the Georges River Catchment
- the Hawkesbury-Nepean Catchment.

10.3.1 All regulated catchments

The Activity does not occur within any of the regulated catchments listed above (refer to Section 10.3).

The following factors require consideration

Factors	Response
Water quality and quantity	
(a) will the proposal have a neutral or beneficial effect on the quality of water entering a waterway?	N/A
(b) will the proposal have an adverse impact on water flow in a natural waterbody?	N/A
(c) will the proposal increase the amount of stormwater runoff from a site?	N/A
(d) will the proposal incorporate on-site stormwater retention, infiltration, or reuse?	N/A
(e) what is the impact of the proposal on the level and quality of the water table?	N/A
(f) what will be the cumulative environmental impact of the proposal on the regulated catchment?	N/A
(g) does the proposal make adequate provision to protect the quality and quantity of ground water?	N/A

Factors	Response
Aquatic ecology	
(a) will the proposal have a direct, indirect or cumulative adverse impact on terrestrial, aquatic or migratory animals or vegetation? How?	N/A
(b) does the proposal involve the clearing of riparian vegetation?	N/A
(c) will the proposal minimise or avoid the erosion of land abutting a natural waterbody and/or the sedimentation of a natural waterbody?	N/A
(d) will the proposal have an adverse impact on wetlands (not including those in mapped coastal wetlands and littoral rainforests areas)?	N/A
(e) does the proposal include adequate safeguards and rehabilitation measures to protect aquatic ecology?	N/A
(f) if the development site adjoins a natural waterbody, are additional measures required to ensure a neutral or beneficial effect on the water quality of the waterbody?	N/A
Flooding	
What is the likely impact of the proposal on periodic flooding that benefits wetlands and other riverine ecosystems?	N/A
Recreation and public access	
(a) what is the likely impact of the proposal on recreational land uses?	N/A
(b) will the proposal maintain or improve public access to and around foreshores without adverse impact on natural waterbodies, watercourses, wetlands, or riparian vegetation?	N/A

10.3.2 Sydney Drinking Water Catchment

The following is the template in Appendix 2 of the *Neutral or Beneficial Effect on Water Quality Assessment Guideline* (WaterNSW 2022) (aka *NorBE Guideline or NorBE Assessment Guideline*) available at www.waternsw.com.au/water-services/catchment-protection/building-and-development.

NorBE assessment questions	Response
1. Are there any identifiable potential impacts on water quality? What pollutants are likely? At what stage do the impacts occur?	N/A
2. For each pollutant list the safeguards needed to prevent or mitigate potential impacts on water quality?	N/A
3. Will the safeguards be adequate for the time required? How will they need to be maintained?	N/A
4. Will all impacts on water quality be effectively contained on the site by the identified safeguards (above) and not reach any watercourse, waterbody, or drainage depression? Or will impacts on water quality be transferred outside the site for treatment? How? Why?	N/A
5. Is it likely that a neutral or beneficial effect on water quality will occur? Justify	N/A

10.3.3 Sydney Harbour Catchment's Foreshores and Waterways Area

This sub-catchment is defined by the red line on the Sydney Harbour Foreshores and Waterways Area Map Sheet FWA_001 available at www.planningportal.nsw.gov.au/publications/environmental-planning-instruments/state-environmental-planning-policy-biodiversity-and-conservation-2021

Factors requiring consideration	Response
a) is the activity consistent with the following principles— i) Sydney Harbour is a public resource, owned by the public, to be protected for the public good ii) the public good has precedence over the private good iii) the protection of the natural assets of Sydney Harbour has precedence over all other interests?	N/A
b) will the activity promote the equitable use of the Foreshores and Waterways Area, including use by passive recreation craft?	N/A
c) will the activity have an adverse impact on the Foreshores and Waterways Area, including on commercial and recreational uses?	N/A
d) does the activity promote water-dependent land uses over other land uses?	N/A
e) will the activity minimise risk from rising sea levels or changing flood patterns as a result of climate change?	N/A
f) will the activity protect or reinstate natural intertidal foreshore areas, natural landforms, and native vegetation?	N/A
g) does the development protect or enhance terrestrial and aquatic species, populations, and ecological communities, including by avoiding physical damage to or shading of aquatic vegetation?	N/A
h) will the activity protect, maintain, or rehabilitate watercourses, wetlands, riparian lands, remnant vegetation and ecological connectivity?	N/A

10.4 Activities in River Murray riverine land

Applies to activities on lands within the land application map of Chapter 5 of the Biodiversity and Conservation SEPP. In the following table, the 'River Murray' means the Murray River, the waters and the bed and banks of its tributaries and associated water bodies, including related anabranches, creeks, lagoons, lakes, billabongs, and wetlands.

The matters listed under s 5.9 of the Biodiversity and Conservation SEPP have been considered in the following table.

Consideration of the planning principles for activities in River Murray riverine lands

Matters related to relevant planning principles	Response
Access	
1. Will the activity alienate or obstruct access to the foreshore of the River Murray?	N/A

Matters related to relevant planning principles	Response
2. Will the activity adversely impact the stability of riverbanks and vegetation growth due to uncontrolled access?	N/A
Bank disturbance	
3. Will the activity disturb the shape of the bank and riparian vegetation?	N/A
Flooding	
4. Where the activity is occurring on land subject to inundation by floodwater:	N/A
a. Are there hazards involved in developing the land?	N/A
b. Will the activity have a redistributive effect on floodwater?	N/A
c. Will the activity pose a pollution threat in the event of a flood?	N/A
d. Will the activity add to cumulative effects on the behaviour of floodwater?	N/A
e. Will infrastructure developed as part of the activity need to be replaced in the event of a flood? If so, at what cost?	N/A
Land degradation	
5. Will the activity seek to avoid or reduce land degradation processes such as erosion, native vegetation decline, pollution of ground or surface water, groundwater accession, salination and soil acidity, and adverse effects on the quality of terrestrial and aquatic habitats?	N/A
Landscape	
6. What measures will be taken to protect and enhance the riverine landscape (e.g., by maintaining native vegetation along the riverbank and adjacent land, rehabilitating degraded sites and stabilising and revegetating riverbanks with appropriate species)?	N/A
Water quality	
7. Will the activity seek to reduce pollution caused by salts and nutrients entering the River Murray or otherwise improve the quality of water in the River Murray?	N/A
Wetlands	
8. Where the activity may affect wetlands:	N/A
a. Will the activity provide for a hydrological regime appropriate for the maintenance or restoration of the productive capacity of the wetland?	N/A
b. Are measures such as a vegetated buffer incorporated into the activity to mitigate adverse effects on wetland values?	N/A

11. Summary of impacts and conclusions

Summarise the impacts and consider the cumulative impacts of the activity based on the classification of individual impacts as low, medium, or high adverse, negligible or positive. The *Guidelines for preparing a Review of Environmental Factors* provide further guidance.

Environmental factor	Consideration	Significance of impact*
(a) the environmental impact on the community	Social, economic, and cultural impacts as described in sections 9.3, 9.5 and 9.6	Not significant
(b) the transformation of the locality	Human and non-human environment as described in sections 9.1, 9.2 and 9.4	Not significant
(c) the environmental impact on the ecosystems of the locality	Amount of clearing, loss of ecological integrity, habitat connectivity/ fragmentation and changes to hydrology (both surface and groundwater) as described in sections 9.1, 9.2 and 9.4 and, for nationally listed threatened ecological communities, in section 9.7.	Not significant
(d) reduction of the aesthetic, recreational, scientific or other environmental quality or value of the locality	Visual, recreational, scientific, and other impacts as described in section 9.3.	Not significant
(e) the effects on any locality, place or building that has— (i) aesthetic, anthropological, archaeological, architectural, cultural, historical, scientific or social significance, or (ii) other special value for present or future generations	Impacts to Aboriginal and historic heritage associated with a locality (including intangible cultural significance), architectural heritage, social/community values and identity, scenic values and others, as described in sections 9.3, 9.5 and 9.6 and (for MNES heritage places) section 9.7.	Not significant
(f) the impact on the habitat of protected animals, within the meaning of the Biodiversity Conservation Act	Impacts to all native terrestrial species, including but not limited to threatened species, and their habitat requirements, as described in section 9.2.	Not significant
(g) the endangering of a species of animal, plant or other form of life, whether living on land, in water or in the air	Impacts to all listed terrestrial and aquatic species, and whether the proposal increases the impact of key threatening processes, as described in section 9.2	Not significant
(h) long-term effects on the environment	Long-term residual impacts to ecological, social and economic values as described in all parts of section 9.	Not significant
(i) degradation of the quality of the environment	Ongoing residual impacts to ecological, social and economic as described in section 9.4.	Not significant

Environmental factor	Consideration	Significance of impact*
(j) risk to the safety of the environment	Impacts to public and work health and safety, from contamination, bushfires, sea level rise, flood, storm surge, wind speeds, extreme heat, rockfall and landslip, and other risks likely to increase due to climate change as described in sections 9.1, 9.3 and 9.4.	Not significant
(k) reduction in the range of beneficial uses of the environment	Impacts to natural resources, community resources and existing uses as described in sections 9.3 and 9.4.	Not significant
(l) pollution of the environment	Impacts due to air pollution (including odours and greenhouse gases); water pollution (water quality health); soil contamination; noise and vibration (including consideration of sensitive receptors); or light pollution, as described in sections 9.1 and 9.3.	Not significant
(m) environmental problems associated with the disposal of waste	Transportation, disposal, and contamination impacts as described in section 9.3.	Not significant
(n) increased demands on natural or other resources that are, or are likely to become, in short supply	Impacts to land, soil, water, gravel, minerals, and energy supply as described in section 9.4.	Not significant
(o) the cumulative environmental effect with other existing or likely future activities	The negative synergisms with existing development or future activities as considered in section 9.8.	Not significant
(p) the impact on coastal processes and coastal hazards, including those under projected climate change conditions	Impacts arising from the proposed activity on coastal processes and impacts on the proposed activity from those coastal processes and hazards, both current and future, as considered in section 9.1.	Not significant
(q) applicable local strategic planning statements, regional strategic plans or district strategic plans made under the Act, Division 3.1	Inconsistency with the objectives, policies and actions identified in local, district and regional plans, as considered in section 3.2.2.	Not significant
(r) other relevant environmental factors.	Any other factors relevant in fully assessing impacts on the environment, such as native title.	Not significant

In conclusion:

- There **is not** likely to be a significant effect on the environment and an environmental impact statement is not required.

  Reason(s): The REF has considered potential environmental impacts associated with the Activity and where appropriate, mitigation measures have been specified to minimise identified impacts. In consideration of the scale, nature and duration of the Activity and ensuring mitigation measures, as outlined within this REF are implemented, the Activity is not considered to have a significant impact on the environment and therefore an EIS will not be required.

- There **is not** likely to be a significant effect on threatened species, populations, ecological communities or their habitats and a species impact statement is not required.

  Reason(s): Providing mitigation measures are taken to ensure identified threatened species are protected, there is unlikely to be a significant effect on threatened species, populations, ecological communities, or their habitats as a result of this Activity and therefore a species impact statement is not required. The Activity would not result in any significant impact to habitat of any threatened species, populations or communities as determined by the Assessment of Significance (Appendix F).

- The activity **is not** likely to have a significant impact on matters of national environmental significance listed under the Cwth Environment Protection and Biodiversity Conservation Act

  Reason(s): As above. The Activity would not result in any significant impact to habitat of any threatened species, populations or communities listed under the EPBC Act.

- The activity **will** require certification to the Building Code of Australia, Disability (Access to Premises – Buildings) Standards 2010 or Australian Standards in accordance with the NPWS Construction Assessment Procedures

12. Supporting documentation

Please provide details of documentation included with this application.

Document title	Author	Date
1. Appendix A – Site photos	GeoLINK	16/08/2022
2. Appendix B – Concept / site plans	GeoLINK	12/09/2022
3. Appendix C – NSW BioNet Atlas Search	NSW OEH	19/08/2022
4. Appendix D – EPBC Act Protected Matters Report	Dept. of Climate Change, Energy, the Environment and Water	19/08/2022
5. Appendix E – Likelihood of occurrence assessment	GeoLINK	16/09/2022
6. Appendix F – Assessments of significance	GeoLINK	16/09/2022
7. Appendix G – Heritage searches	NSW OEH	22/11/2023

13. Fees for external proponents

Proponents external to NPWS are required to pay an initial fee of $220 (a final fee is also required before determination of the REF).

☐ $220 payment/cheque for initial fee is enclosed.

☒ A waiver of fees is requested for the following reasons:

Works are being undertaken by NPWS and not an external proponent.

14. Declarations

As the person responsible for the preparation of the REF, I certify that, to the best of my knowledge, this REF is in accordance with the EP&A Act, the EP&A Regs and the Guidelines approved under section 170 of the EP&A Regs, and the information it contains is neither false nor misleading.

Signature	
Name (printed)	Troy Jennings
Position	Ecologist (GeoLINK)
Date	22/11/2023

By endorsing the REF, the proponent confirms that the information in the REF is accurate and adequate to ensure that all potential impacts of the activity can be identified.

Signature	
Name (printed)	Jenny Atkins
Position	Area Manager Tweed Byron Area
Date	05/01/2024

Seal (if signing under seal):

Next steps

- Submit the signed REF to the relevant NPWS Area Office, requesting determination of the REF and advice on when approval for the works may be forthcoming.

Appendix A: Site photos

Photo 1: View west of existing overflow camping area proposed for new camping platforms

Photo 2: View north of existing overflow camping area proposed for new camping platforms

Photo 3: Camping area proposed for new camping platforms (western end)

Photo 4: Existing Cutters Camp Road proposed for parking area upgrade adjacent to existing toilet block

Photo 5: Vegetation within Byrrill Creek walking track (Section '1A')

Photo 6: Vegetation within Byrrill Creek walking track (Section '1B')

Photo 7: Vegetation within Byrrill Creek walking track (Section '1C')

Appendix B: Concept/ site plans

Mebbin National Park
Cutters Campground
Concept Design

Drawing Schedule		
Dwg No.	**Title**	**Revision**
4370/01	Cover Sheet	A
4370/02	Site Assessment	-
4370/03	Layout - North	A
4370/03	Layout - South	-

Site Locality

CONCEPT DESIGN

Rev.	Description	Date	Des.	App.	Chk.
A	Contents updates	31/10/2022	RE	RE	RE

Amendments

GeoLINK environment | engineering | planning | design

Lennox Head Office
PO Box 119
Lennox Head NSW 2478
Tel: 02 6687 7666

Coffs Harbour Office
PO Box 1446
Coffs Harbour NSW 2450
Tel: 02 6651 7666

Armidale Office
PO Box 1267
Armidale NSW 2350
Tel: 02 6772 0454

Lismore Office
PO Box 229
Lismore NSW 2480
Tel: 02 6621 6677

Email: info@geolink.net.au

www.geolink.net.au

quality solutions sustainable future

Project Title

Cutters Camp - Mebbin NP

Client

NPWS

Designed	RE	Drawn	RE	Checked	RE
Approved	RE	Date	12/09/2022		

XREFs

Scale

metres 0 2 4 6 8 10

Drawing Title

Concept Plan
Cover Sheet

4370-1009

Drawing Number 4370/01

Revision A

Image A
Self registration shelter, paving and bollards to be removed. Bollards to be replaced with new to prevent vehicle access onto camping area.

Image B
Proposed location for camping platforms.
Picnic setting to be retained and restored.

Image C
Slash Pines (*Pinus elliottii*) to be removed to create space for additional camping platforms.

LEGEND

Existing
- Contours at 1.0 metre intervals
- Contours at 0.2 metre intervals
- Top of bank
- Bottom of bank
- Edge of road
- Investigation area

CONCEPT DESIGN

Rev.	Description	Date	Des.	App.	Chk.

Amendments

GeoLINK environment | engineering | planning | design

Lennox Head Office
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Client
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Designed	RE	Drawn	RE	Checked	RE
Approved	RE	Date	12/09/2022		

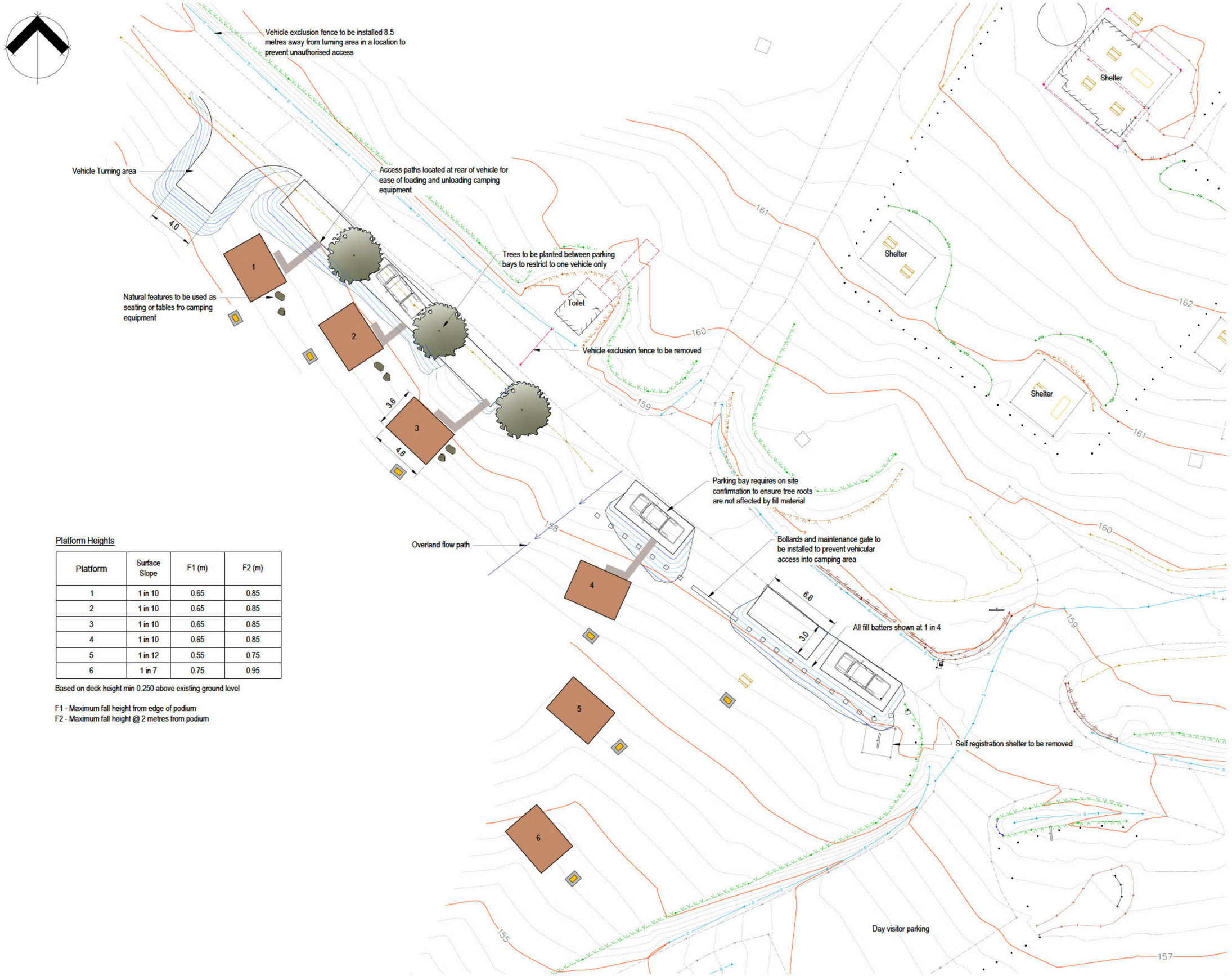
XREFs

Scale
metres 0 2.5 5 7.5 10 12.5

Drawing Title
Concept Plan
Site Assessment

4370-1009

Drawing Number 4370/02 *Revision*



LEGEND

Existing
- Contours at 1.0 metre intervals
- Contours at 0.2 metre intervals
- Top of bank
- Bottom of bank
- Edge of road

Proposed
- Compacted gravel access path
- Camping platform
- Contour at 0.1 metre intervals
- Wood fire flip plate barbecues

Platform Heights

Platform	Surface Slope	F1 (m)	F2 (m)
1	1 in 10	0.65	0.85
2	1 in 10	0.65	0.85
3	1 in 10	0.65	0.85
4	1 in 10	0.65	0.85
5	1 in 12	0.55	0.75
6	1 in 7	0.75	0.95

Based on deck height min 0.250 above existing ground level

F1 - Maximum fall height from edge of podium
F2 - Maximum fall height @ 2 metres from podium

CONCEPT DESIGN

Rev	Description	Date	Des.	App.	Chk.
A	Camping platforms relocated	18/10/2022	RE	RE	RE

Amendments

GeoLINK environment | engineering | planning | design

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Project Title
Cutters Camp - Mebbin NP

Client
NPWS

Designed	RE	Drawn	RE	Checked RE
Approved	RE	Date	12/09/2022	

XREFs

Scale
metres 0 1.5 3 4.5 6 7.5

Drawing Title
Concept Plan
Layout - North

4370-1009

Drawing Number	Revision
4370/03	A

LEGEND

Existing
- Contours at 1.0 metre intervals
- Contours at 0.2 metre intervals
- Top of bank
- Bottom of bank
- Edge of road

Proposed
- Compacted gravel access path
- Camping platform
- Contour at 0.1 metre intervals
- Wood fire flip plate barbecues

CONCEPT DESIGN

Rev.	Description	Date	Des.	App.	Chk.

Amendments

GeoLINK | environment | engineering | planning | design

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Project Title
Cutters Camp - Mebbin NP

Client
NPWS

Designed	RE	Drawn	RE	Checked	RE
Approved	RE	Date	31/10/2022		
XREFs					
Scale					

metres 0 1.5 3 4.5 6 7.5

Drawing Title
Concept Plan
Layout - South

4370-1009

Drawing Number *Revision*
4370/04

Appendix C: NSW BioNet Atlas Search

Data from the BioNet Atlas website, which holds records from a number of custodians. The data are only indicative and cannot be considered a comprehensive inventory, and may contain errors and omissions. Species listed under the Sensitive Species Data Policy may have their locations denatured (^ rounded to 0.1°C; ^^ rounded to 0.01°C. Copyright the State of NSW through the Department of Planning, Industry and Environment. Search criteria : Licensed Report of all Valid Record Threatened (listed on BC Act 2016) ,Commonwealth listed ,CAMBA listed ,JAMBA listed or ROKAMBA listed Entities in selected area [North: -28.39 West: 153.14 E 153.24 South: -28.49] returned a total of 1,143 records of 70 species.
Report generated on 19/08/2022 12:47 PM

Kingdom	Class	Family	Species Code	Scientific Name	Exotic	Common Name	NSW status	Comm. status	Records
Animalia	Amphibia	Myobatrachidae	3073	^^Mixophyes balbus		Stuttering Frog	E1,P,2	V	1
Animalia	Amphibia	Myobatrachidae	3075	^^Mixophyes iteratus		Giant Barred Frog	E1,P,2	E	32
Animalia	Amphibia	Limnodynastidae	3108	^^Philoria loveridgei		Loveridge's Frog	E1,P,2		3
Animalia	Amphibia	Myobatrachidae	3007	Assa darlingtoni		Pouched Frog	V,P		8
Animalia	Aves	Cacatuidae	0265	^^Calyptorhynchus lathami		Glossy Black-Cockatoo	V,P,2		3
Animalia	Aves	Accipitridae	0223	^^Erythrotriorchis radiatus		Red Goshawk	E4A,P,2	V	1
Animalia	Aves	Procellariidae	0069	Ardenna pacifica		Wedge-tailed Shearwater	P	J	1
Animalia	Aves	Atrichornithidae	0355	Atrichornis rufescens		Rufous Scrub-bird	V,P		12
Animalia	Aves	Monarchidae	0376	Carterornis leucotis		White-eared Monarch	V,P		19
Animalia	Aves	Campephagidae	0428	Coracina lineata		Barred Cuckoo-shrike	V,P		3
Animalia	Aves	Neosittidae	0549	Daphoenositta chrysoptera		Varied Sittella	V,P		1
Animalia	Aves	Psittacidae	0260	Glossopsitta pusilla		Little Lorikeet	V,P		2
Animalia	Aves	Accipitridae	0226	Haliaeetus leucogaster		White-bellied Sea-Eagle	V,P		2
Animalia	Aves	Apodidae	0334	Hirundapus caudacutus		White-throated Needletail	P	V,C,J,K	2
Animalia	Aves	Jacanidae	0171	Irediparra gallinacea		Comb-crested Jacana	V,P		1
Animalia	Aves	Ardeidae	0196	Ixobrychus flavicollis		Black Bittern	V,P		1
Animalia	Aves	Accipitridae	0230	Lophoictinia isura		Square-tailed Kite	V,P,3		1
Animalia	Aves	Menuridae	0351	Menura alberti		Albert's Lyrebird	V,P		26
Animalia	Aves	Strigidae	0246	Ninox connivens		Barking Owl	V,P,3		3
Animalia	Aves	Strigidae	0248	Ninox strenua		Powerful Owl	V,P,3		8
Animalia	Aves	Petroicidae	0380	Petroica boodang		Scarlet Robin	V,P		1
Animalia	Aves	Podargidae	0314	Podargus ocellatus		Marbled Frogmouth	V,P		7
Animalia	Aves	Columbidae	0025	Ptilinopus magnificus		Wompoo Fruit-Dove	V,P		72

Animalia	Aves	Columbidae	0021	Ptilinopus regina	Rose-crowned Fruit-Dove	V,P		67
Animalia	Aves	Turnicidae	0017	Turnix melanogaster	Black-breasted Button-quail	E4A,P	V	12
Animalia	Aves	Tytonidae	0250	Tyto novaehollandiae	Masked Owl	V,P,3		4
Animalia	Aves	Tytonidae	9924	Tyto tenebricosa	Sooty Owl	V,P,3		19
Animalia	Gastropoda	Camaenidae	I002	Thersites mitchellae	Mitchell's Rainforest Snail	E1	CE	2
Animalia	Insecta	Noctuidae	I021	Phyllodes imperialis southern subspecies	Southern Pink Underwing Moth	E1	E	1
Animalia	Mammalia	Potoroidae	1187	Aepyprymnus rufescens	Rufous Bettong	V,P		1
Animalia	Mammalia	Vespertilionidae	1353	Chalinolobus dwyeri	Large-eared Pied Bat	V,P	V	2
Animalia	Mammalia	Vespertilionidae	1354	Chalinolobus nigrogriseus	Hoary Wattled Bat	V,P		2
Animalia	Mammalia	Dasyuridae	1008	Dasyurus maculatus	Spotted-tailed Quoll	V,P	E	7
Animalia	Mammalia	Molossidae	1329	Micronomus norfolkensis	Eastern Coastal Free-tailed Bat	V,P		2
Animalia	Mammalia	Miniopteridae	1346	Miniopterus australis	Little Bent-winged Bat	V,P		29
Animalia	Mammalia	Miniopteridae	3330	Miniopterus orianae oceanensis	Large Bent-winged Bat	V,P		1
Animalia	Mammalia	Vespertilionidae	1357	Myotis macropus	Southern Myotis	V,P		4
Animalia	Mammalia	Pteropodidae	1290	Nyctimene robinsoni	Eastern Tube-nosed Bat	V,P		7
Animalia	Mammalia	Vespertilionidae	1336	Nyctophilus bifax	Eastern Long-eared Bat	V,P		12
Animalia	Mammalia	Pseudocheiridae	1133	Petauroides volans	Greater Glider	P	E	4
Animalia	Mammalia	Petauridae	1136	Petaurus australis	Yellow-bellied Glider	V,P	V	11
Animalia	Mammalia	Petauridae	1137	Petaurus norfolcensis	Squirrel Glider	V,P		1
Animalia	Mammalia	Phascolarctidae	1162	Phascolarctos cinereus	Koala	E1,P	E	71
Animalia	Mammalia	Vespertilionidae	1369	Phoniscus papuensis	Golden-tipped Bat	V,P		5
Animalia	Mammalia	Dasyuridae	1045	Planigale maculata	Common Planigale	V,P		1
Animalia	Mammalia	Potoroidae	1175	Potorous tridactylus	Long-nosed Potoroo	V,P	V	4
Animalia	Mammalia	Potoroidae	1175	Potorous tridactylus	Long-nosed Potoroo, Cobaki Lakes and Tweed Heads West population	E2,V,P	V	4
Animalia	Mammalia	Pteropodidae	1280	Pteropus poliocephalus	Grey-headed Flying-fox	V,P	V	6
Animalia	Mammalia	Emballonuridae	1321	Saccolaimus flaviventris	Yellow-bellied Sheathtail-bat	V,P		1
Animalia	Mammalia	Vespertilionidae	1361	Scoteanax rueppellii	Greater Broad-nosed Bat	V,P		1
Animalia	Mammalia	Macropodidae	1234	Thylogale stigmatica	Red-legged Pademelon	V,P		524
Animalia	Mammalia	Vespertilionidae	1025	Vespadelus troughtoni	Eastern Cave Bat	V,P		1

Animalia	Reptilia	Scincidae	2293	Coeranoscincus reticulatus	Three-toed Snake-tooth Skink	V,P	V	1
Animalia	Reptilia	Elapidae	2677	Hoplocephalus stephensii	Stephens' Banded Snake	V,P		4
Plantae	Flora	Sapindaceae	5889	^^Diploglottis campbellii	Small-leaved Tamarind	E1,2	E	2
Plantae	Flora	Ranunculaceae	5494	Clematis fawcettii	Northern Clematis	V	V	6
Plantae	Flora	Sapindaceae	5887	Cupaniopsis serrata	Smooth Tuckeroo	E1		1
Plantae	Flora	Ebenaceae	2564	Diospyros mabacea	Red-fruited Ebony	E1	E	2
Plantae	Flora	Lauraceae	8948	Endiandra floydii	Crystal Creek Walnut	E1	E	2
Plantae	Flora	Lauraceae	3491	Endiandra hayesii	Rusty Rose Walnut	V	V	31
Plantae	Flora	Lauraceae	8480	Endiandra muelleri subsp. bracteata	Green-leaved Rose Walnut	E1		10
Plantae	Flora	Acanthaceae	7310	Isoglossa eranthemoides	Isoglossa	E1	E	1
Plantae	Flora	Sapindaceae	8291	Lepiderema pulchella	Fine-leaved Tuckeroo	V		1
Plantae	Flora	Apocynaceae	1176	Ochrosia moorei	Southern Ochrosia	E1	E	2
Plantae	Flora	Meliaceae	3682	Owenia cepiodora	Onion Cedar	V	V	19
Plantae	Flora	Myrtaceae	4282	Rhodamnia maideniana	Smooth Scrub Turpentine	E4A		1
Plantae	Flora	Myrtaceae	4283	Rhodamnia rubescens	Scrub Turpentine	E4A	CE	30
Plantae	Flora	Myrtaceae	4284	Rhodomyrtus psidioides	Native Guava	E4A	CE	4
Plantae	Flora	Fabaceae (Caesalpinioideae)	8772	Senna acclinis	Rainforest Cassia	E1		8
Plantae	Flora	Myrtaceae	4290	Syzygium hodgkinsoniae	Red Lilly Pilly	V	V	2

Appendix D: EPBC Act Protected Matters Search

EPBC Act Protected Matters Report

This report provides general guidance on matters of national environmental significance and other matters protected by the EPBC Act in the area you have selected. Please see the caveat for interpretation of information provided here.

Report created: 19-Aug-2022

Summary

Matters of National Environment Significance

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

World Heritage Properties:	1
National Heritage Places:	1
Wetlands of International Importance (Ramsar	None
Great Barrier Reef Marine Park:	None
Commonwealth Marine Area:	None
Listed Threatened Ecological Communities:	6
Listed Threatened Species:	85
Listed Migratory Species:	15

Other Matters Protected by the EPBC Act

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

The EPBC Act protects the environment on Commonwealth land, the environment from the actions taken on Commonwealth land, and the environment from actions taken by Commonwealth agencies. As heritage values of a place are part of the 'environment', these aspects of the EPBC Act protect the Commonwealth Heritage values of a Commonwealth Heritage place. Information on the new heritage laws can be found at http://www.environment.gov.au/heritage

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

Commonwealth Lands:	1
Commonwealth Heritage Places:	None
Listed Marine Species:	20
Whales and Other Cetaceans:	None
Critical Habitats:	None
Commonwealth Reserves Terrestrial:	None
Australian Marine Parks:	None
Habitat Critical to the Survival of Marine Turtles:	None

Extra Information

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

State and Territory Reserves:	5
Regional Forest Agreements:	1
Nationally Important Wetlands:	None
EPBC Act Referrals:	2
Key Ecological Features (Marine):	None
Biologically Important Areas:	None
Bioregional Assessments:	1
Geological and Bioregional Assessments:	None

Details

Matters of National Environmental Significance

World Heritage Properties [Resource Information]

Name	State	Legal Status	Buffer Status
Gondwana Rainforests of Australia	QLD	Declared property	In buffer area only

National Heritage Places [Resource Information]

Name	State	Legal Status	Buffer Status
Natural			
Gondwana Rainforests of Australia	NSW	Listed place	In buffer area only

Listed Threatened Ecological Communities [Resource Information]

For threatened ecological communities where the distribution is well known, maps are derived from recovery plans, State vegetation maps, remote sensing imagery and other sources. Where threatened ecological community distributions are less well known, existing vegetation maps and point location data are used to produce indicative distribution maps.
Status of Vulnerable, Disallowed and Ineligible are not MNES under the EPBC Act.

Community Name	Threatened Category	Presence Text	Buffer Status
Coastal Swamp Oak (Casuarina glauca) Forest of New South Wales and South East Queensland ecological community	Endangered	Community may occur within area	In buffer area only
Coastal Swamp Sclerophyll Forest of New South Wales and South East Queensland	Endangered	Community likely to occur within area	In feature area
Dunn's white gum (Eucalyptus dunnii) moist forest in north-east New South Wales and south-east Queensland	Endangered	Community may occur within area	In buffer area only
Grey box-grey gum wet forest of subtropical eastern Australia	Endangered	Community may occur within area	In feature area
Lowland Rainforest of Subtropical Australia	Critically Endangered	Community likely to occur within area	In feature area
White Box-Yellow Box-Blakely's Red Gum Grassy Woodland and Derived Native Grassland	Critically Endangered	Community may occur within area	In buffer area only

Listed Threatened Species [Resource Information]

Status of Conservation Dependent and Extinct are not MNES under the EPBC Act.
Number is the current name ID.

Scientific Name	Threatened Category	Presence Text	Buffer Status
BIRD			

Scientific Name	Threatened Category	Presence Text	Buffer Status
Anthochaera phrygia Regent Honeyeater [82338]	Critically Endangered	Species or species habitat may occur within area	In feature area
Atrichornis rufescens Rufous Scrub-bird [655]	Endangered	Species or species habitat known to occur within area	In feature area
Botaurus poiciloptilus Australasian Bittern [1001]	Endangered	Species or species habitat likely to occur within area	In feature area
Calidris ferruginea Curlew Sandpiper [856]	Critically Endangered	Species or species habitat may occur within area	In feature area
Calyptorhynchus lathami lathami South-eastern Glossy Black-Cockatoo [67036]	Vulnerable	Species or species habitat known to occur within area	In feature area
Cyclopsitta diophthalma coxeni Coxen's Fig-Parrot [59714]	Endangered	Species or species habitat known to occur within area	In feature area
Dasyornis brachypterus Eastern Bristlebird [533]	Endangered	Species or species habitat known to occur within area	In buffer area only
Erythrotriorchis radiatus Red Goshawk [942]	Vulnerable	Species or species habitat may occur within area	In feature area
Falco hypoleucos Grey Falcon [929]	Vulnerable	Species or species habitat may occur within area	In feature area
Grantiella picta Painted Honeyeater [470]	Vulnerable	Species or species habitat may occur within area	In buffer area only
Hirundapus caudacutus White-throated Needletail [682]	Vulnerable	Species or species habitat known to occur within area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
Lathamus discolor Swift Parrot [744]	Critically Endangered	Species or species habitat known to occur within area	In feature area
Numenius madagascariensis Eastern Curlew, Far Eastern Curlew [847]	Critically Endangered	Species or species habitat may occur within area	In feature area
Rostratula australis Australian Painted Snipe [77037]	Endangered	Species or species habitat likely to occur within area	In feature area
Turnix melanogaster Black-breasted Button-quail [923]	Vulnerable	Species or species habitat known to occur within area	In feature area
FISH			
Maccullochella ikei Clarence River Cod, Eastern Freshwater Cod [26170]	Endangered	Species or species habitat may occur within area	In buffer area only
FROG			
Mixophyes balbus Stuttering Frog, Southern Barred Frog (in Victoria) [1942]	Vulnerable	Species or species habitat known to occur within area	In feature area
Mixophyes fleayi Fleay's Frog [25960]	Endangered	Species or species habitat likely to occur within area	In feature area
Mixophyes iteratus Giant Barred Frog, Southern Barred Frog [1944]	Vulnerable	Species or species habitat known to occur within area	In feature area
INSECT			
Argynnis hyperbius inconstans Australian Fritillary [88056]	Critically Endangered	Species or species habitat may occur within area	In feature area
Phyllodes imperialis smithersi Pink Underwing Moth [86084]	Endangered	Breeding may occur within area	In feature area
MAMMAL			
Antechinus arktos Black-tailed Antechinus [88217]	Endangered	Species or species habitat likely to occur within area	In buffer area only

Scientific Name	Threatened Category	Presence Text	Buffer Status
Chalinolobus dwyeri Large-eared Pied Bat, Large Pied Bat [183]	Vulnerable	Species or species habitat known to occur within area	In feature area
Dasyurus maculatus maculatus (SE mainland population) Spot-tailed Quoll, Spotted-tail Quoll, Tiger Quoll (southeastern mainland population) [75184]	Endangered	Species or species habitat known to occur within area	In feature area
Petauroides volans Greater Glider (southern and central) [254]	Endangered	Species or species habitat known to occur within area	In feature area
Petaurus australis australis Yellow-bellied Glider (south-eastern) [87600]	Vulnerable	Species or species habitat known to occur within area	In feature area
Petrogale penicillata Brush-tailed Rock-wallaby [225]	Vulnerable	Species or species habitat known to occur within area	In feature area
Phascolarctos cinereus (combined populations of Qld, NSW and the ACT) Koala (combined populations of Queensland, New South Wales and the Australian Capital Territory) [85104]	Endangered	Species or species habitat known to occur within area	In feature area
Potorous tridactylus tridactylus Long-nosed Potoroo (northern) [66645]	Vulnerable	Species or species habitat known to occur within area	In feature area
Pseudomys novaehollandiae New Holland Mouse, Pookila [96]	Vulnerable	Species or species habitat likely to occur within area	In feature area
Pseudomys oralis Hastings River Mouse, Koontoo [98]	Endangered	Species or species habitat known to occur within area	In buffer area only
Pteropus poliocephalus Grey-headed Flying-fox [186]	Vulnerable	Roosting known to occur within area	In feature area
PLANT			
Amyema plicatula [81879]	Endangered	Species or species habitat likely to occur within area	In buffer area only

Scientific Name	Threatened Category	Presence Text	Buffer Status
Antrophyum austroqueenslandicum Border Ranges Lined Fern, Lamington Ox Tongue Fern [74525]	Critically Endangered	Species or species habitat may occur within area	In buffer area only
Arthraxon hispidus Hairy-joint Grass [9338]	Vulnerable	Species or species habitat known to occur within area	In feature area
Baloghia marmorata Marbled Balogia, Jointed Baloghia [8463]	Vulnerable	Species or species habitat likely to occur within area	In buffer area only
Bosistoa transversa Three-leaved Bosistoa, Yellow Satinheart [16091]	Vulnerable	Species or species habitat known to occur within area	In feature area
Bulbophyllum globuliforme Miniature Moss-orchid, Hoop Pine Orchid [6649]	Vulnerable	Species or species habitat may occur within area	In feature area
Clematis fawcettii Stream Clematis [4311]	Vulnerable	Species or species habitat known to occur within area	In feature area
Corchorus cunninghamii Native Jute [14659]	Endangered	Species or species habitat likely to occur within area	In feature area
Corokia whiteana [17820]	Vulnerable	Species or species habitat may occur within area	In buffer area only
Cryptocarya foetida Stinking Cryptocarya, Stinking Laurel [11976]	Vulnerable	Species or species habitat likely to occur within area	In feature area
Cryptostylis hunteriana Leafless Tongue-orchid [19533]	Vulnerable	Species or species habitat may occur within area	In buffer area only
Cynanchum elegans White-flowered Wax Plant [12533]	Endangered	Species or species habitat likely to occur within area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
Davidsonia jerseyana Davidson's Plum [67219]	Endangered	Species or species habitat likely to occur within area	In buffer area only
Davidsonia johnsonii Smooth Davidsonia, Smooth Davidson's Plum, Small-leaved Davidson's Plum [67178]	Endangered	Species or species habitat likely to occur within area	In buffer area only
Desmodium acanthocladum Thorny Pea [17972]	Vulnerable	Species or species habitat known to occur within area	In feature area
Diospyros mabacea Red-fruited Ebony, Silky Persimmon, Ebony [18548]	Endangered	Species or species habitat likely to occur within area	In feature area
Diploglottis campbellii Small-leaved Tamarind [21484]	Endangered	Species or species habitat known to occur within area	In feature area
Eidothea hardeniana Nightcap Oak [76351]	Critically Endangered	Species or species habitat may occur within area	In buffer area only
Elaeocarpus williamsianus Hairy Quandong [8956]	Endangered	Species or species habitat may occur within area	In buffer area only
Endiandra floydii Floyd's Walnut, Crystal Creek Walnut [52955]	Endangered	Species or species habitat known to occur within area	In feature area
Endiandra hayesii Rusty Rose Walnut, Velvet Laurel [13866]	Vulnerable	Species or species habitat likely to occur within area	In feature area
Euphrasia bella Lamington Eyebright, Mt. Merino Eyebright [4425]	Vulnerable	Species or species habitat may occur within area	In buffer area only
Floydia praealta Ball Nut, Possum Nut, Big Nut, Beefwood [15762]	Vulnerable	Species or species habitat known to occur within area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
Fontainea australis Southern Fontainea [24037]	Vulnerable	Species or species habitat known to occur within area	In buffer area only
Gossia fragrantissima Sweet Myrtle, Small-leaved Myrtle [78867]	Endangered	Species or species habitat known to occur within area	In buffer area only
Hicksbeachia pinnatifolia Monkey Nut, Bopple Nut, Red Bopple, Red Bopple Nut, Red Nut, Beef Nut, Red Apple Nut, Red Boppel Nut, Ivory Silky Oak [21189]	Vulnerable	Species or species habitat likely to occur within area	In feature area
Isoglossa eranthemoides Isoglossa [16663]	Endangered	Species or species habitat known to occur within area	In buffer area only
Leichhardtia longiloba listed as Marsdenia longiloba Clear Milkvine [91911]	Vulnerable	Species or species habitat known to occur within area	In feature area
Lenwebbia sp. Main Range (P.R.Sharpe+ 4877) [87240]	Critically Endangered	Species or species habitat may occur within area	In buffer area only
Lepidium peregrinum Wandering Pepper-cress [14035]	Endangered	Species or species habitat may occur within area	In buffer area only
Macadamia integrifolia Macadamia Nut, Queensland Nut Tree, Smooth-shelled Macadamia, Bush Nut, Nut Oak [7326]	Vulnerable	Species or species habitat may occur within area	In feature area
Macadamia tetraphylla Rough-shelled Bush Nut, Macadamia Nut, Rough-shelled Macadamia, Rough-leaved Queensland Nut [6581]	Vulnerable	Species or species habitat known to occur within area	In feature area
Ochrosia moorei Southern Ochrosia [11350]	Endangered	Species or species habitat known to occur within area	In feature area
Owenia cepiodora Onionwood, Bog Onion, Onion Cedar [11344]	Vulnerable	Species or species habitat likely to occur within area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
Ozothamnus vagans Wollumbin Dogwood [56207]	Vulnerable	Species or species habitat known to occur within area	In buffer area only
Persicaria elatior Knotweed, Tall Knotweed [5831]	Vulnerable	Species or species habitat likely to occur within area	In feature area
Phaius australis Lesser Swamp-orchid [5872]	Endangered	Species or species habitat may occur within area	In feature area
Plectranthus nitidus Nightcap Plectranthus, Silver Plectranthus [55742]	Endangered	Species or species habitat likely to occur within area	In feature area
Rhodamnia rubescens Scrub Turpentine, Brown Malletwood [15763]	Critically Endangered	Species or species habitat known to occur within area	In feature area
Rhodomyrtus psidioides Native Guava [19162]	Critically Endangered	Species or species habitat known to occur within area	In feature area
Sarcochilus fitzgeraldii Ravine Orchid [19131]	Vulnerable	Species or species habitat known to occur within area	In feature area
Sarcochilus hartmannii Waxy Sarcochilus, Blue Knob Orchid [4124]	Vulnerable	Species or species habitat known to occur within area	In feature area
Sophora fraseri [8836]	Vulnerable	Species or species habitat likely to occur within area	In feature area
Symplocos baeuerlenii Small-leaved Hazelwood, Shrubby Hazelwood [19010]	Vulnerable	Species or species habitat likely to occur within area	In buffer area only
Syzygium hodgkinsoniae Smooth-bark Rose Apple, Red Lilly Pilly [3539]	Vulnerable	Species or species habitat likely to occur within area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
Syzygium moorei Rose Apple, Coolamon, Robby, Durobby, Watermelon Tree, Coolamon Rose Apple [12284]	Vulnerable	Species or species habitat may occur within area	In buffer area only
Thesium australe Austral Toadflax, Toadflax [15202]	Vulnerable	Species or species habitat likely to occur within area	In feature area
Uromyrtus australis Peach Myrtle [8830]	Endangered	Species or species habitat likely to occur within area	In buffer area only
Vincetoxicum woollsii listed as Tylophora woollsii [40080]	Endangered	Species or species habitat likely to occur within area	In feature area
Westringia rupicola [18260]	Vulnerable	Species or species habitat may occur within area	In feature area
REPTILE			
Coeranoscincus reticulatus Three-toed Snake-tooth Skink [59628]	Vulnerable	Species or species habitat known to occur within area	In feature area
Delma torquata Adorned Delma, Collared Delma [1656]	Vulnerable	Species or species habitat may occur within area	In feature area
Furina dunmalli Dunmall's Snake [59254]	Vulnerable	Species or species habitat may occur within area	In feature area

Listed Migratory Species [Resource Information]

Scientific Name	Threatened Category	Presence Text	Buffer Status
Migratory Marine Birds			
Apus pacificus Fork-tailed Swift [678]		Species or species habitat likely to occur within area	In feature area
Migratory Terrestrial Species			
Cuculus optatus Oriental Cuckoo, Horsfield's Cuckoo [86651]		Species or species habitat known to occur within area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
Hirundapus caudacutus White-throated Needletail [682]	Vulnerable	Species or species habitat known to occur within area	In feature area
Monarcha melanopsis Black-faced Monarch [609]		Species or species habitat known to occur within area	In feature area
Motacilla flava Yellow Wagtail [644]		Species or species habitat may occur within area	In feature area
Myiagra cyanoleuca Satin Flycatcher [612]		Species or species habitat known to occur within area	In feature area
Rhipidura rufifrons Rufous Fantail [592]		Species or species habitat known to occur within area	In feature area
Symposiachrus trivirgatus as Monarcha trivirgatus Spectacled Monarch [83946]		Species or species habitat known to occur within area	In feature area
Migratory Wetlands Species			
Actitis hypoleucos Common Sandpiper [59309]		Species or species habitat may occur within area	In feature area
Calidris acuminata Sharp-tailed Sandpiper [874]		Species or species habitat may occur within area	In feature area
Calidris ferruginea Curlew Sandpiper [856]	Critically Endangered	Species or species habitat may occur within area	In feature area
Calidris melanotos Pectoral Sandpiper [858]		Species or species habitat may occur within area	In feature area
Gallinago hardwickii Latham's Snipe, Japanese Snipe [863]		Species or species habitat known to occur within area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
Numenius madagascariensis			
Eastern Curlew, Far Eastern Curlew [847]	Critically Endangered	Species or species habitat may occur within area	In feature area
Pandion haliaetus			
Osprey [952]		Species or species habitat likely to occur within area	In buffer area only

Other Matters Protected by the EPBC Act

Commonwealth Lands [Resource Information]

The Commonwealth area listed below may indicate the presence of Commonwealth land in this vicinity. Due to the unreliability of the data source, all proposals should be checked as to whether it impacts on a Commonwealth area, before making a definitive decision. Contact the State or Territory government land department for further information.

Commonwealth Land Name	State	Buffer Status
Communications, Information Technology and the Arts - Telstra Corporation Limited		
Commonwealth Land - Australian Telecommunications Commission [16157]	NSW	In buffer area only

Listed Marine Species [Resource Information]

Scientific Name	Threatened Category	Presence Text	Buffer Status
Bird			
Actitis hypoleucos			
Common Sandpiper [59309]		Species or species habitat may occur within area	In feature area
Anseranas semipalmata			
Magpie Goose [978]		Species or species habitat may occur within area overfly marine area	In buffer area only
Apus pacificus			
Fork-tailed Swift [678]		Species or species habitat likely to occur within area overfly marine area	In feature area
Bubulcus ibis as Ardea ibis			
Cattle Egret [66521]		Breeding likely to occur within area overfly marine area	In feature area
Calidris acuminata			
Sharp-tailed Sandpiper [874]		Species or species habitat may occur within area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
Calidris ferruginea Curlew Sandpiper [856]	Critically Endangered	Species or species habitat may occur within area overfly marine area	In feature area
Calidris melanotos Pectoral Sandpiper [858]		Species or species habitat may occur within area overfly marine area	In feature area
Gallinago hardwickii Latham's Snipe, Japanese Snipe [863]		Species or species habitat known to occur within area overfly marine area	In feature area
Haliaeetus leucogaster White-bellied Sea-Eagle [943]		Species or species habitat known to occur within area	In feature area
Hirundapus caudacutus White-throated Needletail [682]	Vulnerable	Species or species habitat known to occur within area overfly marine area	In feature area
Lathamus discolor Swift Parrot [744]	Critically Endangered	Species or species habitat known to occur within area overfly marine area	In feature area
Merops ornatus Rainbow Bee-eater [670]		Species or species habitat may occur within area overfly marine area	In feature area
Monarcha melanopsis Black-faced Monarch [609]		Species or species habitat known to occur within area overfly marine area	In feature area
Motacilla flava Yellow Wagtail [644]		Species or species habitat may occur within area overfly marine area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
Myiagra cyanoleuca Satin Flycatcher [612]		Species or species habitat known to occur within area overfly marine area	In feature area
Numenius madagascariensis Eastern Curlew, Far Eastern Curlew [847]	Critically Endangered	Species or species habitat may occur within area	In feature area
Pandion haliaetus Osprey [952]		Species or species habitat likely to occur within area	In buffer area only
Rhipidura rufifrons Rufous Fantail [592]		Species or species habitat known to occur within area overfly marine area	In feature area
Rostratula australis as Rostratula benghalensis (sensu lato) Australian Painted Snipe [77037]	Endangered	Species or species habitat likely to occur within area overfly marine area	In feature area
Symposiachrus trivirgatus as Monarcha trivirgatus Spectacled Monarch [83946]		Species or species habitat known to occur within area overfly marine area	In feature area

Extra Information

State and Territory Reserves [Resource Information]

Protected Area Name	Reserve Type	State	Buffer Status
Border Ranges	National Park	NSW	In buffer area only
Mebbin	National Park	NSW	In feature area
Nightcap	National Park	NSW	In buffer area only
Wollumbin	National Park	NSW	In buffer area only
Wollumbin	State Conservation Area	NSW	In buffer area only

Regional Forest Agreements [Resource Information]

Note that all areas with completed RFAs have been included.

RFA Name	State	Buffer Status
North East NSW RFA	New South Wales	In feature area

EPBC Act Referrals [Resource Information]

Title of referral	Reference	Referral Outcome	Assessment Status	Buffer Status
Controlled action				
Clarrie Hall Dam Raising Project, Doon Doon, NSW	2018/8339	Controlled Action	Assessment Approach	In buffer area only
Not controlled action				
Improving rabbit biocontrol: releasing another strain of RHDV, sthrn two thirds of Australia	2015/7522	Not Controlled Action	Completed	In feature area

Bioregional Assessments

SubRegion	BioRegion	Website	Buffer Status
Clarence-Moreton	Clarence-Moreton	BA website	In feature area

Caveat

1 PURPOSE

This report is designed to assist in identifying the location of matters of national environmental significance (MNES) and other matters protected by the Environment Protection and Biodiversity Conservation Act 1999 (Cth) (EPBC Act) which may be relevant in determining obligations and requirements under the EPBC Act.

The report contains the mapped locations of:

- World and National Heritage properties;
- Wetlands of International and National Importance;
- Commonwealth and State/Territory reserves;
- distribution of listed threatened, migratory and marine species;
- listed threatened ecological communities; and
- other information that may be useful as an indicator of potential habitat value.

2 DISCLAIMER

This report is not intended to be exhaustive and should only be relied upon as a general guide as mapped data is not available for all species or ecological communities listed under the EPBC Act (see below). Persons seeking to use the information contained in this report to inform the referral of a proposed action under the EPBC Act should consider the limitations noted below and whether additional information is required to determine the existence and location of MNES and other protected matters.

Where data are available to inform the mapping of protected species, the presence type (e.g. known, likely or may occur) that can be determined from the data is indicated in general terms. It is the responsibility of any person using or relying on the information in this report to ensure that it is suitable for the circumstances of any proposed use. The Commonwealth cannot accept responsibility for the consequences of any use of the report or any part thereof. To the maximum extent allowed under governing law, the Commonwealth will not be liable for any loss or damage that may be occasioned directly or indirectly through the use of, or reliance

3 DATA SOURCES

Threatened ecological communities

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

Threatened, migratory and marine species

Threatened, migratory and marine species distributions have been discerned through a variety of methods. Where distributions are well known and if time permits, distributions are inferred from either thematic spatial data (i.e. vegetation, soils, geology, elevation, aspect, terrain, etc.) together with point locations and described habitat; or modelled (MAXENT or BIOCLIM habitat modelling) using

Where little information is available for a species or large number of maps are required in a short time-frame, maps are derived either from 0.04 or 0.02 decimal degree cells; by an automated process using polygon capture techniques (static two kilometre grid cells, alpha-hull and convex hull); or captured manually or by using topographic features (national park boundaries, islands, etc.).

In the early stages of the distribution mapping process (1999-early 2000s) distributions were defined by degree blocks, 100K or 250K map sheets to rapidly create distribution maps. More detailed distribution mapping methods are used to update these distributions

4 LIMITATIONS

The following species and ecological communities have not been mapped and do not appear in this report:

- threatened species listed as extinct or considered vagrants;
- some recently listed species and ecological communities;
- some listed migratory and listed marine species, which are not listed as threatened species; and
- migratory species that are very widespread, vagrant, or only occur in Australia in small numbers.

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

- listed migratory and/or listed marine seabirds, which are not listed as threatened, have only been mapped for recorded
- seals which have only been mapped for breeding sites near the Australian continent

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

Refer to the metadata for the feature group (using the Resource Information link) for the currency of the information.

Acknowledgements

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

-Office of Environment and Heritage, New South Wales
-Department of Environment and Primary Industries, Victoria
-Department of Primary Industries, Parks, Water and Environment, Tasmania
-Department of Environment, Water and Natural Resources, South Australia
-Department of Land and Resource Management, Northern Territory
-Department of Environmental and Heritage Protection, Queensland
-Department of Parks and Wildlife, Western Australia
-Environment and Planning Directorate, ACT
-Birdlife Australia
-Australian Bird and Bat Banding Scheme
-Australian National Wildlife Collection
-Natural history museums of Australia
-Museum Victoria
-Australian Museum
-South Australian Museum
-Queensland Museum
-Online Zoological Collections of Australian Museums
-Queensland Herbarium
-National Herbarium of NSW
-Royal Botanic Gardens and National Herbarium of Victoria
-Tasmanian Herbarium
-State Herbarium of South Australia
-Northern Territory Herbarium
-Western Australian Herbarium
-Australian National Herbarium, Canberra
-University of New England
-Ocean Biogeographic Information System
-Australian Government, Department of Defence
Forestry Corporation, NSW
-Geoscience Australia
-CSIRO
-Australian Tropical Herbarium, Cairns
-eBird Australia
-Australian Government – Australian Antarctic Data Centre
-Museum and Art Gallery of the Northern Territory
-Australian Government National Environmental Science Program
-Australian Institute of Marine Science
-Reef Life Survey Australia
-American Museum of Natural History
-Queen Victoria Museum and Art Gallery, Inveresk, Tasmania
-Tasmanian Museum and Art Gallery, Hobart, Tasmania
-Other groups and individuals

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

Please feel free to provide feedback via the Contact Us page.

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Appendix E: Threatened species likelihood of occurrence

Likelihood of occurrence assessment

A potential of occurrence assessment was completed to assess the likelihood of occurrence of each threatened species identified with the in the site. All threatened biodiversity identified in PMST and BioNet background research were considered. The assessment is based on the habitat profile for the species and other habitat information in the Threatened Species Profile Database (Office of Environment & Heritage 2022) and Species Profile and Threats Database (Department of Climate Change Energy the Environment and Water 2023b). The assessment also takes into consideration the dates and locations of nearby records, information about species populations in the locality and the likelihood of disturbance due to the Activity.

It is important to note that occurrence assessments for threatened species are based on those species likely to occur or known to occur within the Activity footprint and be affected by the proposed Activity. All threatened flora within the proposed Activity area will be retained in-situ on the basis of the 'avoid and minimise' principle and they would not be directly (physically) impacted by Activity works.

Table E1 Threatened flora likelihood of occurrence assessment

Scientific Name	Common Name	BC Act[1]	EPBC Act[1]	Habitat Requirement	Likelihood of occurrence	Outcome – Assessment of Significance (AoS)?
Amyema plicatula	-	E	E	Known only from one location within a remnant rainforest fragment on cleared farmland within the Rocky Creek area. Parasitic on mature Rosewood trees, growing on basalt-derived soils where subtropical rainforest would have grown before land-clearing occurred.	Low	Not recorded with Activity area. May occur within the locality or other parts of the National Park. Not considered further.
Antrophyum austroqueenslandicum	Border Ranges Lined Fern	-	CE	Known from a very narrow range near Tyalgum (in the Border Ranges NSW) and the Mount Jerusalem National Park (NSW). Epiphyte or lithophyte in subtropical to warm temperate rainforest. The plants are known to grow on rocks and trees beside a natural water pools.	Low	Not recorded with Activity area. May occur within the locality or other parts of the National Park. Not considered further.
Arthraxon hispidus	Hairy-joint Grass	V	V	Moist shady places in or on the edges of rainforest and wet eucalypt forest, often near creeks or swamps.	Low	No suitable habitat. Not considered further
Baloghia marmorata	Jointed Baloghia	V	V	Subtropical rainforest on soils derived from basalt.	Low	Not recorded with Activity area. May occur within the locality or other parts of the National Park. Not considered further.
Bosistoa transversa	Yellow Satinheart	V	V	Lowland subtropical rainforest up to 300 m in altitude, from Maryborough in Queensland to Nightcap Range (north of Lismore) in NSW.	Low	Not recorded with Activity area. May occur within the locality or other parts of the National Park. Not considered further.
Bulbophyllum globuliforme	Hoop Pine Orchid	V	V	Grows on Hoop Pines (*Araucaria cunninghamii*) in upland subtropical rainforest.	Low	Not recorded with Activity area. May occur within the locality or

Scientific Name	Common Name	BC Act[1]	EPBC Act[1]	Habitat Requirement	Likelihood of occurrence	Outcome – Assessment of Significance (AoS)?
						other parts of the National Park. Not considered further.
Clematis fawcettii	Northern Clematis	V	V	Drier rainforest, usually near streams.	Low	Not recorded with Activity area. May occur within the locality or other parts of the National Park. Not considered further.
Corchorus cunninghamii	Native Jute	E	E	Areas where rainforest and moist eucalypt forest meet, and areas which formerly supported this vegetation but have been converted to plantation.	Low	Not recorded with Activity area. May occur within the locality or other parts of the National Park. Not considered further.
Corokia whiteana	Corokia	V	V	Boundaries between wet eucalypt forest and warm temperate rainforest up to 800 m, associated with Brush Box (*Lophostemon confertus*) and littoral rainforest on the coast.	Low	Not recorded with Activity area. May occur within the locality or other parts of the National Park. Not considered further.
Cryptocarya foetida	Stinking Cryptocarya	V	V	Littoral rainforest in sandy soils, mature trees known on basalt soils.	Low	No suitable habitat. Not considered further
Cryptostylis hunteriana	Leafless Tongue-orchid	V	V	Does not have well defined habitat and is known from a range of communities, including swamp-heath and woodland.	Low	No suitable habitat. Not considered further
Cupaniopsis serrata	Smooth Tuckeroo	E	-	Subtropical and dry rainforest. In NSW, confined to the Tweed Valley.	Low	Not recorded with Activity area. May occur within the locality or other parts of the National Park. Not considered further.
Cynanchum elegans	White-flowered Wax Plant	E	E	Dry, littoral or subtropical rainforest, and occasionally in scrub or woodland.	Low	Not recorded with Activity area. May occur within the locality or other parts of the National Park. Not considered further.
Davidsonia jerseyana	Davidson's Plum	E	E	Lowland subtropical rainforest and wet eucalypt forest at low altitudes (below 300 m). Many trees are isolated trees in paddocks and roadsides in former rainforest habitats. Restricted to north-east NSW to as far south as Wardell.	Low	Not recorded with Activity area. May occur within the locality or other parts of the National Park. Not considered further.
Davidsonia johnsonii	Small-leaved Davidson's Plum	E	E	Wet sclerophyll forests, with a smaller number of sites known from subtropical rainforest. Plants still persist in cleared areas as isolated clumps in paddocks or in regrowth	Low	Not recorded with Activity area. May occur within the locality or

Scientific Name	Common Name	BC Act[1]	EPBC Act[1]	Habitat Requirement	Likelihood of occurrence	Outcome – Assessment of Significance (AoS)?
				dominated by Lantana (Lantana camara) and other weed species.		other parts of the National Park. Not considered further.
Desmodium acanthocladum	Thorny Pea	V	V	Fringes of riverine subtropical and dry rainforest on basalt-derived soils at low elevations.	Low	Not recorded with Activity area. May occur within the locality or other parts of the National Park. Not considered further.
Diospyros mabacea	Red-fruited Ebony	E	E	Usually grows as an understorey tree in lowland subtropical rainforest, often close to rivers. Soils are generally basalt-derived or alluvial.	Low	Not recorded with Activity area. May occur within the locality or other parts of the National Park. Not considered further.
Diploglottis campbellii	Small-leaved Tamarind	E	E	Riverine and subtropical rainforest and Brush Box forest, some trees isolated in paddocks and roadsides.	Low	Not recorded with Activity area. May occur within the locality or other parts of the National Park. Not considered further.
Eidothea hardeniana	Nightcap Oak	E	CE	Known only in the Nightcap Range north of Lismore in upland warm temperate rainforest, usually near creeks.	Low	Not recorded with Activity area. May occur within the locality or other parts of the National Park. Not considered further.
Elaeocarpus williamsianus	Hairy Quandong	E	E	Subtropical to warm temperate rainforest, including regrowth areas, on soils derived from metasediments.	Low	Not recorded with Activity area. May occur within the locality or other parts of the National Park. Not considered further.
Endiandra floydii	Crystal Creek Walnut	E	E	Warm temperate or subtropical rainforest with Brush Box overstorey, and in regrowth rainforest and Camphor Laurel forest.	Low	Not recorded with Activity area. May occur within the locality or other parts of the National Park. Not considered further.
Endiandra hayesii	Rusty Rose Walnut	V	V	Sheltered moist gullies in subtropical and warm temperate rainforest on alluvium or basalt.	**Known**	**Previously recorded in National Park. Not recorded in Activity area. AoS undertaken.**
Endiandra muelleri subsp. *bracteata*	Green-leaved Rose Walnut	E	-	Subtropical rainforest or wet eucalypt forest, chiefly at lower altitudes.	**Known**	**Previously recorded in National Park. Not recorded in Activity area. AoS undertaken.**
Euphrasia bella	Lamington Eyebright	V	V	Edge of cliffs near cool temperate rainforest with Antarctic Beech (*Nothofagus moorei*).	Low	No suitable habitat. Not considered further

Scientific Name	Common Name	BC Act[1]	EPBC Act[1]	Habitat Requirement	Likelihood of occurrence	Outcome – Assessment of Significance (AoS)?
Floydia praealta	Ball Nut	V	V	Riverine and subtropical rainforest, usually soils derived from basalt.	Low	Not recorded with Activity area. May occur within the locality or other parts of the National Park. Not considered further.
Fontainea australis	Southern Fontainea	V	V	Lowland subtropical rainforest, usually on basaltic alluvial flats, and also in cooler subtropical rainforest in the Nightcap Range. Restricted to the Tweed Valley and a few locations in the upper reaches of the Richmond Valley.	Low	Not recorded with Activity area. May occur within the locality or other parts of the National Park. Not considered further.
Gossia fragrantissima	Small-leaved Myrtle	E	E	Dry subtropical and riverine rainforest, isolated plants can be found in paddocks from regrowth mostly on basalt-derived soils. Occurs in south-east Queensland and in north-east NSW south to the Richmond River.	Low	Not recorded with Activity area. May occur within the locality or other parts of the National Park. Not considered further.
Hicksbeachia pinnatifolia	Red Bopple Nut	V	V	Subtropical rainforest, moist eucalypt forest and Brush Box forest.	Low	Not recorded with Activity area. May occur within the locality or other parts of the National Park. Not considered further.
Isoglossa eranthemoides	Isoglossa	E	E	Understorey of lowland subtropical rainforest, in moist situations on floodplains and slopes.	Low	Not recorded with Activity area. May occur within the locality or other parts of the National Park. Not considered further.
Leichhardtia longiloba	Clear Milkvine	E	V	Subtropical and warm temperate rainforest, lowland moist or open eucalypt forest adjoining rainforest and, sometimes, in areas with rock outcrops.	Low	Not recorded with Activity area. May occur within the locality or other parts of the National Park. Not considered further.
Lepiderema pulchella	Fine-leaved Tuckeroo	V	-	Infertile metasediments, fertile basalts and backswamp alluvium in the Tweed Valley within lowland subtropical rainforest.	Low	Not recorded with Activity area. May occur within the locality or other parts of the National Park. Not considered further.
Lepidium peregrinum	Wandering Pepper-cress	E	E	Only known from a limited number of sites. Known occurrences primarily recorded on sandy alluvium.	Low	No suitable habitat. Not considered further
Macadamia integrifolia	Macadamia Nut	-	V	While specimens have been collected from the North Coast of NSW (e.g. Lismore, Gross 1995), this species is not known to occur naturally in NSW. Grows in remnant rainforest, preferring partially open areas such as rainforest	Low	Not recorded with Activity area. May occur within the locality or other parts of the National Park. Not considered further.

Scientific Name	Common Name	BC Act[1]	EPBC Act[1]	Habitat Requirement	Likelihood of occurrence	Outcome – Assessment of Significance (AoS)?
				edges. Along with the Rough-shelled Bush Nut, this species forms the basis of the commercial macadamia nut industry in Australia.		
Macadamia tetraphylla	Rough-shelled Bush Nut	V	V	Grows in subtropical rainforest in coastal areas north of the Clarence R., chiefly in the Richmond and Tweed Valleys.	Low	Not recorded with Activity area. May occur within the locality or other parts of the National Park. Not considered further.
Ochrosia moorei	Southern Ochrosia	E	E	Riverine and lowland subtropical rainforest.	Low	Not recorded with Activity area. May occur within the locality or other parts of the National Park. Not considered further.
Owenia cepiodora	Onion Cedar	V	V	Subtropical and dry rainforest. In NSW, from Bangalow to the Macpherson Range.	**Known**	**Previously recorded in National Park. Not recorded in Activity area. AoS undertaken.**
Ozothamnus vagans	Wollumbin Dogwood	E	V	Occurs at higher elevations on the edges of escarpments in the caldera area of far northern NSW and southern Queensland. Prefers areas of disturbance and grows in open, sunny locations on rhyolite or basalt soils at altitudes greater than 500 m. The species is found on escarpment edges (i.e. at the top of ranges); margins of, or within large canopy gaps (e.g. treefall, rocky ledges, tracks) of, wet sclerophyll forest, subtropical rainforest and cool temperate rainforest; and roadsides.	Low	Not recorded with Activity area. May occur within the locality or other parts of the National Park. Not considered further.
Persicaria elatior	Tall Knotweed	V	V	Damp or swampy situations and sometimes with *Melaleuca linarifiolia*.	Low	No suitable habitat. Not considered further
Phaius australis	Southern Swamp Orchid	E	E	Swampy grassland or swampy forest including rainforest, eucalypt or paperbark forest mostly in coastal areas.	Low	No suitable habitat. Not considered further
Plectranthus nitidus	Nightcap Plectranthus	E	E	Rocky cliff faces and boulders, creek banks in shelter of adjacent rainforest.	Low	Not recorded with Activity area. May occur within the locality or other parts of the National Park. Not considered further.

Scientific Name	Common Name	BC Act[1]	EPBC Act[1]	Habitat Requirement	Likelihood of occurrence	Outcome – Assessment of Significance (AoS)?
Rhodamnia rubescens	Scrub Turpentine	CE	CE	Subtropical rainforests, warm temperate rainforests, littoral rainforests, and wet sclerophyll forests. It may also occur as a pioneer in adjacent areas of dry sclerophyll and grassy woodland associations.	**Recorded**	**Species recorded along proposed track works. AoS undertaken.**
Rhodomyrtus psidioides	Native Guava	CE	CE	Rainforest and its margins with sclerophyll vegetation, often near creeks and drainage lines. Pioneer species in disturbed environments such as regrowth and rainforest margins.	Low	Not recorded with Activity area. May occur within the locality or other parts of the National Park. Not considered further.
Sarcochilus fitzgeraldii	Ravine Orchid	V	V	Usually grows on rocks or rarely on bases of trees, in subtropical rainforest, usually near streams, from 500-700 m alt.; north from the Macleay R. NSW.	Low	Not recorded with Activity area. May occur within the locality or other parts of the National Park. Not considered further.
Sarcochilus hartmannii	Waxy Sarcochilus	V	V	Favours cliff faces on steep narrow ridges supporting eucalypt forest and clefts in volcanic rock from 500 to 1,000 m in altitude. Also found occasionally at the bases of fibrous trunks of trees, including cycads and grass-trees.	Low	No suitable habitat. Not considered further
Senna acclinis	Rainforest Cassia	E	-	Grows on the margins of subtropical, littoral and dry rainforests. Often found as a gap phase shrub.	Low	Not recorded with Activity area. May occur within the locality or other parts of the National Park. Not considered further.
Sophora fraseri	Brush Sophora	V	V	Bush Sophora occurs north from the Casino district in north-east NSW, where it is very rare. Usually found in wet situations in wet sclerophyll forest or vine forest, often near rainforest.	Low	Not recorded with Activity area. May occur within the locality or other parts of the National Park. Not considered further.
Symplocos baeuerlenii	Small-leaved Hazelwood	V	V	Occurs in temperate rainforest on less fertile soils derived from rhyolite, primarily in the Tweed and Brunswick Valleys in north-east NSW.	Low	Not recorded with Activity area. May occur within the locality or other parts of the National Park. Not considered further.
Syzygium hodgkinsoniae	Red Lilly Pilly	V	V	Riverine and subtropical rainforest on rich alluvial or basaltic soils.	Low	Not recorded with Activity area. May occur within the locality or other parts of the National Park. Not considered further.
Syzygium moorei	Coolamon	V	V	Found in subtropical and riverine rainforest at low altitude. It often occurs as isolated remnant paddock trees.	Low	Not recorded with Activity area. May occur within the locality or

Scientific Name	Common Name	BC Act[1]	EPBC Act[1]	Habitat Requirement	Likelihood of occurrence	Outcome – Assessment of Significance (AoS)?
						other parts of the National Park. Not considered further.
Thesium australe	Austral Toadflax	V	V	Grassland or grassy eucalypt woodland where *Themeda australis* is predominant, on grassy headlands.	Low	No suitable habitat. Not considered further
Uromyrtus australis	Peach Myrtle	E	E	Warm temperate rainforest associated with less fertile soils derived from rhyolite, often found with Coachwood (*Ceratopetalum apetalum*).	Low	Not recorded with Activity area. May occur within the locality or other parts of the National Park. Not considered further.
Vincetoxicum woollsii	Cryptic Forest Twiner	E	E	The Cryptic Forest Twiner is found from the NSW north coast and New England Tablelands to southern Queensland, but is very rare within that range. Grows in moist eucalypt forest, moist sites in dry eucalypt forest and rainforest margins.	Low	Not recorded with Activity area. May occur within the locality or other parts of the National Park. Not considered further.
Westringia rupicola	-	-	V	Westringia rupicola is known from south-east Queensland. Locations include The Pinnacle and Numinbah Valley, Gwongorella, and Warrie sections of Springbrook National Park, Mt Roberts and Ships Stern Range in Lamington National Park, Numinbah Forest Reserve and McPherson Range. Grows in crevices in sheer rhyolite cliffs. Associated species include *Plectranthus* sp., *Leptospermum microcarpum*, and *Callistemon comboynensis*	Low	Not recorded with Activity area. May occur within the locality or other parts of the National Park. Not considered further.

1) V = Vulnerable; E = Endangered; CE = Critically Endangered

Table E2 Threatened fauna likelihood of occurrence assessment

***Pelagic marine species identified in the search results are not assessed as habitat is does not occur within the site and unlikely be significantly affected by the proposed Activity.**

Scientific Name	Common Name	BC Act[1]	EPBC Act[1]	Habitat Requirement	Likelihood of occurrence	Outcome – Assessment of Significance (AoS)?
Frogs						
Assa darlingtoni	Pouched Frog	V	-	Cool, moist rainforest, including Antarctic Beech, or moist eucalypt forest in mountainous areas, mostly above 800 m but have been found as low as 300m.	Low	Not recorded with Activity area. May occur within the locality or other parts of the National Park. Not considered further.
Mixophyes balbus	Stuttering Frog	E	V	Cool rainforest, moist eucalypt forest and occasionally along creeks in dry eucalypt forest. Typically at elevations between 200 and 1420m above sea level in their northern range.	Low	Not recorded with Activity area. May occur within the locality or other parts of the National Park. Not considered further.
Mixophyes iteratus	Giant Barred Frog	E	E	Deep, damp leaf litter in rainforests, moist eucalypt forest and near dry eucalypt forest.	Low	Not recorded with Activity area. May occur within the locality or other parts of the National Park. Not considered further.
Philoria loveridgei	Loveridge's Frog	E	-	Dependent on high moisture levels, headwaters of small streams and soaks where groundwater is continually present, subtropical, warm temperate rainforest and wet eucalypt forest.	Low	Not recorded with Activity area. May occur within the locality or other parts of the National Park. Not considered further.
Mixophyes fleayi	Fleay's Frog	E	E	Rainforest and wet eucalypt forest of the escarpment and foothills, close to gravely streams.	Low	Not recorded with Activity area. May occur within the locality or other parts of the National Park. Not considered further.
Birds						
Anthochaera phrygia	Regent Honeyeater	CE	CE	Dry open forest and woodland with an abundance of nectar-producing eucalypts, particularly box-ironbark woodland, swamp mahogany forests, and riverine sheoak woodlands.	Low	Lack of preferred habitat in Activity area. May occur as fly over whilst foraging in greater locality. Not considered further.
Atrichornis rufescens	Rufous Scrub-bird	V	E	Subtropical, warm temperate, cool temperate rainforest and moist eucalypt forest with rainforest mid-storey. Moist, densely vegetated lower levels with deep leaf litter.	**High**	**Potential habitat associated with the Activity area. AoS undertaken.**

Scientific Name	Common Name	BC Act[1]	EPBC Act[1]	Habitat Requirement	Likelihood of occurrence	Outcome – Assessment of Significance (AoS)?
Botaurus poiciloptilus	Australasian Bittern	E	E	Permanent freshwater wetlands with tall dense vegetation, particularly bullrushes and spikerushes.	Low	No suitable habitat within Activity area. Not considered further.
Calidris ferruginea	Curlew Sandpiper	E	M	Tidal mudflats, sandy ocean shores and occasionally inland freshwater or salt-lakes.	Low	No suitable habitat within Activity area. Not considered further.
Calyptorhynchus lathami	Glossy Black-Cockatoo	V	-	Sheoaks in coastal forests and woodlands, timbered watercourses, and moist and dry eucalypt forests of the coast and the Great Divide up to 1000m.	**High**	**Potential habitat associated with the Activity area. AoS undertaken.**
Carterornis leucotis	White-eared Monarch	V	-	Coastal rainforest, swamp forest and wet eucalypt forest, prefers edges where trees frequently covered with vines.	**Moderate**	**Potential habitat associated with the Activity area. AoS undertaken.**
Coracina lineata	Barred Cuckoo-shrike	V	-	Rainforest, eucalypt woodlands, swamp woodlands and timber along watercourses.	**Moderate**	**Potential habitat associated with the Activity area. AoS undertaken.**
Cyclopsitta diophthalma coxeni	Coxen's Fig-Parrot	CE	E	Drier rainforests and adjacent wet eucalypt forest, wetter lowland also wetter lowland rainforests.	**Moderate**	**Potential habitat associated with the Activity area. AoS undertaken.**
Daphoenositta chrysoptera	Varied Sittella	V	-	Inhabits eucalypt forests and woodlands, especially rough-barked species and mature smooth-barked gums with dead branches, mallee and Acacia woodland.	Low	Marginal habitat associated within Activity area. Lack of records in locality.
Dasyornis brachypterus	Eastern Bristlebird	E	E	High elevation open forest, woodland with dense tussock or sedge understorey adjacent to rainforest or wet eucalypt forest.	**Moderate**	**Potential habitat associated with the Activity area. AoS undertaken.**
Erythrotriorchis radiatus	Red Goshawk	CE	V	Open woodland and forest, preferring a mosaic of vegetation types, a large population of birds as a source of food, and permanent water. Typically found in riparian habitats along or near watercourses or wetlands. In NSW, preferred habitats include mixed subtropical rainforest, Melaleuca swamp forest and riparian Eucalyptus forest of coastal rivers.	Low	No suitable habitat within Activity area. Not considered further.
Falco hypoleucos	Grey Falcon	E	V	Sparsely distributed in NSW, chiefly throughout the Murray-Darling Basin, with the occasional vagrant east of the Great Dividing Range. Usually restricted to shrubland, grassland and wooded watercourses	Low	No suitable habitat within Activity area. Not considered further.

Scientific Name	Common Name	BC Act[1]	EPBC Act[1]	Habitat Requirement	Likelihood of occurrence	Outcome – Assessment of Significance (AoS)?
				of arid and semi-arid regions, although it is occasionally found in open woodlands near the coast.		
Glossopsitta pusilla	Little Lorikeet	V	-	Forages primarily in the canopy of open Eucalyptus forest and woodland, yet also sources food in Angophora, Melaleuca and other tree species.	**High**	**Potential habitat associated with the Activity area. AoS undertaken.**
Grantiella picta	Painted Honeyeater	V	V	Boree, Brigalow and Box-Gum Woodlands and Box-Ironbark Forests. Specialist feeder on the fruits of mistletoes growing on woodland eucalypts and acacias. Prefers mistletoes of the genus Amyema.	Low	No suitable habitat within Activity area. Not considered further.
Haliaeetus leucogaster	White-bellied Sea-Eagle	V	-	Coastal habitats and around terrestrial wetlands characterised by the presence of large areas of open water (larger rivers, swamps, lakes, ocean). Habitats may include freshwater swamps, lakes, reservoirs, billabongs, saltmarsh, and sewage ponds in addition to bays and inlets, beaches, reefs, lagoons, estuaries and mangroves.	Low	No suitable habitat within Activity area. Not considered further.
Hirundapus caudacutus	White-throated Needletail	-	V, M	Most often recorded aerial foraging above wooded areas, including open forest and rainforest, and may also fly between trees or in clearings, below the canopy. Breeding does not occur in Australia.	Low	Potential habitat in National Park, however, species is aerial forager and unlikely to be impacted as a result of proposed works. No breeding habitat would be impacted. Not considered further.
Irediparra gallinacea	Comb-crested Jacana	V	-	Among vegetation floating on slow-moving rivers and permanent lagoons, swamps, lakes and dams.	Low	No suitable habitat within Activity area. Not considered further.
Ixobrychus flavicollis	Black Bittern	V	-	Dense vegetation fringing and in streams, swamps, tidal creeks and mudflats, particularly amongst swamp sheoaks and mangroves.	Low	No suitable habitat within Activity area. Not considered further.
Lathamus discolor	Swift Parrot	CE	CE	On mainland Australia foraging occurs where eucalypts are flowering profusely or where abundant lerp infestations occur. Favoured feed trees include winter flowering species such as Swamp Mahogany (*Eucalyptus robusta*), Spotted Gum (*Corymbia maculata*), Red Bloodwood (*C. gummifera*), Forest Red Gum (*E. tereticornis*),	Low	Lack of preferred habitat in Activity area. May occur as fly over whilst foraging in greater locality. Not considered further.

Scientific Name	Common Name	BC Act[1]	EPBC Act[1]	Habitat Requirement	Likelihood of occurrence	Outcome – Assessment of Significance (AoS)?
				Mugga Ironbark (*E. sideroxylon*), and White Box (*E. albens*). Commonly used lerp infested trees include Inland Grey Box (*E. microcarpa*), Grey Box (*E. moluccana*), Blackbutt (*E. pilularis*) and Yellow Box (*E. melliodora*).		
Lophoictinia isura	Square-tailed Kite	V	-	Dry woodland and open forest, particularly along major rivers and belts of trees in urban or semi-urban areas. Home ranges can extend over at least 100 km^2.	Low	No suitable habitat within Activity area. Not considered further.
Menura alberti	Albert's Lyrebird	V	-	Mixed rainforest and open wet forest frequently dominated by Brush Box.	**High**	**Potential habitat associated with the Activity area. AoS undertaken.**
Ninox connivens	Barking Owl	V	-	Eucalypt woodland, open forest, swamp woodlands and timber along watercourses.	Low	Marginal habitat within Activity area. Prefers dry sclerophyll woodland. Not considered further.
Ninox strenua	Powerful Owl	V	-	Woodland and open forest to tall moist forest and rainforest. Requires large tracts of forest or woodland habitat but may also occur in fragmented landscapes.	**High**	**Potential habitat associated with the Activity area. AoS undertaken.**
Petroica boodang	Scarlet Robin	V	-	Dry eucalypt forests and woodlands with an open and grassy understorey with few scattered shrubs. Both mature and regrowth vegetation are utilised; habitat usually contains abundant logs and fallen timber.	Low	No suitable habitat within Activity area. Not considered further.
Podargus ocellatus	Marbled Frogmouth	V	-	Subtropical rainforest spending most time is deep, wet sheltered gullies.	**High**	**Potential habitat associated with the Activity area. AoS undertaken.**
Ptilinopus magnificus	Wompoo Fruit-Dove	V	-	Rainforests, low-elevation moist eucalypt forest, and Brush Box forests.	**High**	**Potential habitat associated with the Activity area. AoS undertaken.**
Ptilinopus regina	Rose-crowned Fruit-Dove	V	-	Subtropical and dry rainforest, moist eucalypt forest and swamp forest.	**High**	**Potential habitat associated with the Activity area. AoS undertaken.**
Rostratula australis	Australian Painted Snipe	E	E	Well-vegetated shallows and margins of wetlands, dams, sewage ponds, wet pastures, marshy areas, irrigation systems, lignum, tea-tree scrub, and open timber.	Low	No suitable habitat within Activity area. Not considered further.

Scientific Name	Common Name	BC Act[1]	EPBC Act[1]	Habitat Requirement	Likelihood of occurrence	Outcome – Assessment of Significance (AoS)?
Turnix melanogaster	Black-breasted Button-quail	CE	V	Drier rainforests and vine scrubs, often in association with Hoop Pine and a deep moist leaf litter layer. During drought it may move to adjacent wetter rainforests.	**Moderate**	**Potential habitat associated with the Activity area. AoS undertaken.**
Tyto novaehollandiae	Masked Owl	V	-	Occurs in dry eucalypt forests and woodlands from sea level to 1100 m. Roosts and breeds in moist eucalypt forested gullies, using large tree hollows or sometimes caves for nesting.	**High**	**Potential habitat associated with the Activity area. AoS undertaken.**
Tyto tenebricosa	Sooty Owl	V	-	Occurs in rainforest, including dry rainforest, subtropical and warm temperate rainforest, as well as moist eucalypt forests. Nests in very large tree-hollows.	**High**	**Potential habitat associated with the Activity area. AoS undertaken.**
Invertebrate						
Argynnis hyperbius inconstans	Australian Fritillary	E	CE	Open swampy coastal habitat where the caterpillar's food plant, Arrowhead Violet (*Viola betonicifolia*) occurs.	Low	No suitable habitat within Activity area. Not considered further.
Phyllodes imperialis (southern subspecies)	Southern Pink Underwing Moth	E	E	Undisturbed subtropical rainforest below 600 m. Breeding habitat is restricted to areas where the caterpillar's food plant, a native rainforest vine, *Carronia multisepalea*, grows in a collapsed shrub-like form.	Low	No suitable habitat within Activity area. Not considered further.
Thersites mitchellae	Mitchell's Rainforest Snail	E	CE	Remnant areas of lowland subtropical rainforest and swamp forest on alluvial soils, found amongst leaf litter on the forest floor.	Low	No suitable habitat within Activity area. Not considered further.
Fish						
Maccullochella ikei	Eastern Freshwater Cod	E (FM Act)	E	Permanent clear rocky streams with instream cover and deep pools. Native to only the Clarence and Richmond Rivers in northern New South Wales.	Low	No suitable habitat within Activity area. Not considered further.
Mammals						
Aepyprymnus rufescens	Rufous Bettong	V	-	Tall moist eucalypt forest to open woodland with tussock grass understorey.	**High**	**Potential habitat associated with the Activity area. AoS undertaken.**

Scientific Name	Common Name	BC Act[1]	EPBC Act[1]	Habitat Requirement	Likelihood of occurrence	Outcome – Assessment of Significance (AoS)?
Antechinus arktos	Black-tailed Antechinus	E	E	Species is found in cool subtropical cloud forest / rainforest comprising complex notophyll vine forest and simple microphyll fern forest featuring a low canopy, very dense vines and a rocky substrate.	Low	No suitable habitat within Activity area. Not considered further.
Chalinolobus dwyeri	Large-eared Pied Bat	V	V	Roosts in caves (near their entrances), crevices in cliffs, old mine workings and in the disused, bottle-shaped mud nests of the Fairy Martin (*Petrochelidon ariel*), frequenting low to mid-elevation dry open forest and woodland close to these features.	Low	No suitable habitat within Activity area. Not considered further.
Chalinolobus nigrogriseus	Hoary Wattled Bat	V	-	Dry open eucalypt forests, favouring forests dominated by Spotted Gum, boxes and ironbarks and heathy coastal forests where Red Bloodwood and Scribbly Gum are common. Naturally sparse understorey is favourable.	Low	No suitable habitat within Activity area. Not considered further.
Dasyurus maculatus	Spotted-tailed Quoll	V	E	Dry and moist eucalypt forests and rainforests, fallen hollow logs, large rocky outcrops.	**Moderate**	**Potential habitat associated with the Activity area. AoS undertaken.**
Micronomus norfolkensis	Eastern Coastal Free-tailed Bat	V	-	Occurs in dry sclerophyll forest and woodland east of the Great Dividing Range. Roosts in tree hollows.	**Moderate**	**Potential habitat associated with the Activity area. AoS undertaken.**
Miniopterus australis	Little Bent-winged Bat	V	-	Moist eucalypt forest, rainforest and dense coastal scrub.	**Moderate**	**Potential habitat associated with the Activity area. AoS undertaken.**
Miniopterus orianae oceanensis	Large Bent-winged Bat	V	-	Forest or woodland, roost in caves, old mines and stormwater channels.	**Moderate**	**Potential habitat associated with the Activity area. AoS undertaken.**
Myotis macropus	Southern Myotis	V	-	Bodies of water, rainforest streams, large lakes, reservoirs.	Low	May occur in locality, however, forages over waterbodies, of which do not occur within Activity area. Not considered further.
Nyctimene robinsoni	Eastern Tube-nosed Bat	V	-	Streamside habitats within coastal subtropical rainforest and moist eucalypt forests with well developed rainforest understorey.	**High**	**Potential habitat associated with the Activity area. AoS undertaken.**
Nyctophilus bifax	Eastern Long-eared Bat	V	-	Lowland subtropical rainforest and wet and swamp eucalypt forest, extending to adjacent moist eucalypt forest.	**High**	**Potential habitat associated with the Activity area. AoS undertaken.**

Scientific Name	Common Name	BC Act[1]	EPBC Act[1]	Habitat Requirement	Likelihood of occurrence	Outcome – Assessment of Significance (AoS)?
Petauroides volans	Greater Glider	E	E	Wide range of habitats including tall open woodland, eucalypt forests and low woodlands.	**High**	**Potential habitat associated with the Activity area. AoS undertaken.**
Petaurus australis	Yellow-bellied Glider	V	V	Tall mature eucalypt forest generally in areas with high rainfall and nutrient rich soils. Dens in tree hollows of large trees, often in family groups. Forest type preferences vary with latitude and elevation; mixed coastal forests to dry escarpment forests in the north; moist coastal gullies and creek flats to tall montane forests in the south.	**High**	**Potential habitat associated with the Activity area. AoS undertaken.**
Petaurus norfolcensis	Squirrel Glider	V	-	Blackbutt, bloodwood and ironbark eucalypt forest with heath understorey in coastal areas, and box-ironbark woodlands and River Red Gum forest inland.	Low	No suitable habitat within Activity area. Not considered further.
Petrogale penicillata	Brush-tailed Rock-wallaby	E	V	North-facing cliffs and dry eucalypt forest and woodland, inhabiting rock crevices, caves, overhangs during the day, and foraging in grassy areas nearby at night.	Low	No suitable habitat within Activity area. Not considered further.
Phascolarctos cinereus	Koala	E	E	Appropriate food trees in forests and woodlands, and treed urban areas.	**Moderate**	**Potential habitat associated with the Activity area. AoS undertaken.**
Phoniscus papuensis	Golden-tipped Bat	V	-	Rainforest and adjacent sclerophyll forest. Roosts in abandoned hanging Yellow-throated Scrubwren and Brown Gerygone nests.	**High**	**Potential habitat associated with the Activity area. AoS undertaken.**
Planigale maculata	Common Planigale	V	-	Rainforest, eucalypt forest, heathland, marshland, grassland and rocky areas with surface cover close to water.	**Moderate**	**Potential habitat associated with the Activity area. AoS undertaken.**
Potorous tridactylus	Long-nosed Potoroo	V	V	Cool temperate rainforest, moist and dry forests, and wet heathland, inhabiting dense layers of grass, ferns, vines and shrubs.	**High**	**Potential habitat associated with the Activity area. AoS undertaken.**
Pseudomys novaehollandiae	New Holland Mouse	-	V	Occurs in open heathlands, open woodlands with a heathland understorey, and vegetated sand dunes.	Low	No suitable habitat within Activity area. Not considered further.
Pseudomys oralis	Hastings River Mouse	E	E	Dry open forests with dense, low groundcover with diverse mix of ferns, grass, sedges and herbs.	Low	No suitable habitat within Activity area. Not considered further.

Scientific Name	Common Name	BC Act[1]	EPBC Act[1]	Habitat Requirement	Likelihood of occurrence	Outcome – Assessment of Significance (AoS)?
Pteropus poliocephalus	Grey-headed Flying-fox	V	V	Subtropical and temperate rainforests, tall sclerophyll forests and woodlands, heaths and swamps as well as urban gardens and cultivated fruit crops.	**High**	**Potential habitat associated with the Activity area. AoS undertaken.**
Saccolaimus flaviventris	Yellow-bellied Sheathtail-bat	V	-	Forages in most habitats across its very wide range, with and without trees; appears to defend an aerial territory. Roosts singly or in groups of up to six, in tree hollows and buildings.	**Moderate**	**Potential habitat associated with the Activity area. AoS undertaken.**
Scoteanax rueppellii	Greater Broad-nosed Bat	V	-	Woodland through to moist and dry eucalypt forest and rainforest, though it is most commonly found in tall wet forest.	**Moderate**	**Potential habitat associated with the Activity area. AoS undertaken.**
Thylogale stigmatica	Red-legged Pademelon	V	-	Rainforest, vine scrub, moist eucalypt forest with dense understorey and ground cover.		**Potential habitat associated with the Activity area. AoS undertaken.**
Vespadelus troughtoni	Eastern Cave Bat	V	-	Cave roosting species found in dry open forest and woodland near cliffs and rocky overhangs.	Low	No suitable habitat within Activity area. Not considered further.
Reptiles						
Coeranoscincus reticulatus	Three-toed Snake-tooth Skink	V	E	Rainforest and occasionally moist eucalypt forest, on loamy or sandy soils.	**Moderate**	**Potential habitat associated with the Activity area. AoS undertaken.**
Delma torquata	Collared Delma	-	V	Usually inhabits eucalypt dominated woodland and open forest where it is associated with suitable micro-habitats ie. exposed rocky outcrops.	Low	No suitable habitat within Activity area. Not considered further.
Furina dunmalli	Dunmall's Snake	-	V	Preferred habitat is Brigalow forest and woodland with fallen timber and ground litter, growing on cracking clay soils and clay loam soils. Also occurs in eucalypt and Callitris woodland with fallen timber and ground litter.	Low	No suitable habitat within Activity area. Not considered further.
Hoplocephalus stephensii	Stephens' Banded Snake	V	-	Rainforest and eucalypt forests and rocky areas up to 950 m. Shelters between loose bark and tree trunks, amongst vines, or in hollow trunks limbs, rock crevices or under slabs during the day.	**High**	**Potential habitat associated with the Activity area. AoS undertaken.**

1) V = Vulnerable; E = Endangered; CE = Critically Endangered

Appendix F: Assessments of Significance

Assessments of Significance (BC Act)

Assessments of significance ('five-part tests') under Section 7.3 of the BC Act have been completed for the following threatened communities and species with potential to occur and be impacted at the site:

- Threatened flora (*Endiandra hayesii, Endiandra muelleri subsp. bracteata, Owenia cepiodora, & Rhodamnia rubescens,*)
- Threatened birds (Rufous Scrub-bird, Glossy Black-Cockatoo, White-eared Monarch, Barred Cuckoo-shrike, Coxen's Fig-Parrot, Eastern Bristlebird, Albert's Lyrebird, Wompoo Fruit-Dove, Rose-crowned Fruit-Dove, Black-breasted Button-quail & Little Lorikeet)
- Threatened nocturnal birds (Sooty Owl, Masked Owl, Marbled Frogmouth & Powerful Owl)
- Threatened bats (Grey-headed Flying-fox, Eastern Coastal Free-tailed Bat, Golden-tipped Bat, Eastern Long-eared Bat, Little Bent-winged Bat, Large Bent-winged Bat, Eastern Tube-nosed Bat, Yellow-bellied Sheathtail Bat & Greater Broad-nosed Bat)
- Threatened arboreal mammals (Koala, Greater Glider & Yellow-bellied Glider)
- Threatened terrestrial mammals (Rufous Bettong, Common Planigale, Spotted-tailed Quoll, Long-nosed Potoroo & Red-legged Pademelon)
- Threatened reptiles (Three-toed Snake-tooth Skink & Stephens' Banded Snake)

Threatened Flora

Threatened flora have been assessed together as they generally share similar habitat requirements and potential impacts as result of the proposed Activity. Threatened flora considered for this impact assessment are:

- *Endiandra hayesii* (Rusty Rose Walnut) listed as Vulnerable under the BC Act and EPBC Act.
- *Endiandra muelleri subsp. bracteata* (Green-leaved Rose Walnut) listed as Endangered under the BC Act.
- *Owenia cepiodora* (Onion Cedar) listed as Vulnerable under both the BC Act and EPBC Act.
- *Rhodamnia rubescens* (Scrub Turpentine) listed as Critically Endangered under both the BC Act and EPBC Act.

Specific Impacts

No threatened flora will be directly removed or directly impacted for the proposed Activity. The proposed Activity area was inspected by an ecologist and where threatened species identified (mainly Scrub Turpentine in areas associated with Byrrill Creek walking track) works will avoid disturbance by micro-siting of the walking track footprint. Habitat associated with threatened flora that will be disturbed within the Activity area is approximately 840 m^2. This area of impact considered to be small in the context of habitat in the locality. The walking track works involve minor vegetation removal consisting of understorey trimming and minor shrub removal incorporating approximately 405 m^2 of total disturbance. Whereas the campground works would involve approximately 435 m^2 of total disturbance.

Once operational, there is increased potential for disturbance to threatened flora by accidental damage or disturbance, creation of informal tracks or side tracks / shortcuts or by patrons actively picking or collecting fruit or flowers. While the incidence of these impacts cannot be quantified, it is expected that they would be very low.

Transmission of Myrtle Rust is a key threat to stems of Scrub Turpentine, within the Activity area there is the potential for infection from the construction and operational stages of the proposal. Myrtle Rust will be controlled during construction works via standard minimisation measures and operational impacts limited by provision of 'best practice' information to patrons to limit the spread of Myrtle Rust (and any other pathogens). Overall, due to the low – moderate impact, along with measures to avoid sensitive species, it is unlikely that the Activity would significantly impact threatened flora species.

The following is to be taken into account for the purposes of determining whether a proposed development or Activity is likely to significantly affect threatened species or ecological communities, or their habitats:

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

No threatened flora will be directly removed or directly impacted for the proposed Activity. The proposed Activity area was inspected by an ecologist and where threatened species identified (mainly in areas associated with Byrrill Creek walking track) works will avoid disturbance by micro-siting of the walking track footprint. Habitat associated with threatened flora that will be disturbed within the Activity area is approximately 840 m^2. This area of impact considered to be small in the context of habitat in the locality, in addition, the walking track works involve minor vegetation removal consisting of understorey trimming and minor shrub removal. Transmission of Myrtle Rust is a key threat to stems of Scrub Turpentine, with the Activity area there is the potential for infection from the construction and operational stages of the proposal. Myrtle Rust will be controlled during construction works via standard minimisation measures and operational impacts limited by provision of 'best practice' information to patrons to limit the spread of Myrtle Rust (and any other pathogens). On this basis, the construction and operation of the proposed Activity would be unlikely to have an adverse effect on the life cycle of any of the subject species such that a viable local population would be placed at risk of extinction.

(b) in the case of an endangered ecological community or critically endangered ecological community, whether the proposed development or Activity—

(i) is likely to have an adverse effect on the extent of the ecological community such that its local occurrence is likely to be placed at risk of extinction, or

(ii) is likely to substantially and adversely modify the composition of the ecological community such that its local occurrence is likely to be placed at risk of extinction

Not applicable

(c) in relation to the habitat of a threatened species or ecological community—

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

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

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

No threatened flora will be directly removed or directly impacted for the proposed Activity. Works will avoid disturbance where occurrence of threatened flora is known by micro-siting of the walking track footprint. Habitat associated with threatened flora that will be disturbed within the Activity area is approximately 840 m^2.

The proposed works would not result in the fragmentation of habitat for any of the subject threatened flora such that any population would be isolated or that key life cycle functions (flowering, pollination, genetic exchange, propagule dissemination) would be negatively impacted by the construction or operation of the proposed Activity.

The habitat to be removed / disturbed represents a small portion of available habitat for the mentioned species. Ongoing walking along the constructed track would be unlikely to significantly impact on threatened flora habitat.

Overall, it is unlikely that the disturbance of threatened flora habitat would result in a significant impact to the long-term survival of the any mentioned threatened species in the locality.

(d) whether the proposed development or Activity is likely to have an adverse effect on any declared area of outstanding biodiversity value (either directly or indirectly),

The proposed action will not impact on any declared area of outstanding biodiversity value.

(e) whether the proposed development or Activity is or is part of a key threatening process or is likely to increase the impact of a key threatening process.

A Key Threatening Process (KTP) is a process that threatens, or may have the capability to threaten, the survival or evolutionary development of species, population or ecological community. Key threatening processes are listed under the BC Act and at the present there are currently 39 listed KTPs.

The Activity would be consistent with the following KTPs related to threatened flora:

- *Clearing of native vegetation*: proposed works would require clearing of shrubs, vines and groundcovers. Within proposed camping sites the removal of some mature trees (mainly for safety reasons) will occur. With nominal vegetation disturbance required to adapt existing tracks and trails and install camps. Contributions to this KTP are considered very minor in the context of the park and surrounding habitat/vegetation.
- *Introduction and Establishment of Exotic Rust Fungi* (i.e., Myrtle Rust): introduction and transmission of Myrtle Rust is a concern for the proposed works but can be managed by standard control and minimisation measures during construction and addressed by education on best practice management during operations.
- *Invasion, establishment and spread of Lantana:* Lantana already occurs at low densities in some areas of the park. The construction and operation of the proposed Activity would be unlikely to

significantly increase the incidence of Lantana such that it would significantly affect threatened flora or communities.

- *Invasion of native plant communities by exotic perennial grasses:* Exotic grasses (mostly Broad-leaved paspalum) are common along track verges in some disturbed areas. There is potential that patrons may spread grass seed along the track and into areas of native vegetation. There is little risk of native grass invasion affecting any of the subject threatened flora or rainforest TEC due to low light conditions being unfavourable to exotic grasses.

The degree that the Activity would contribute to any threatening process is not considered likely to place the local population of any of the subject species at significant risk of extinction.

Conclusion

It is considered unlikely that the local population of any of the subject species would be placed at significant risk of extinction as a result of the proposal.

Threatened Forest Birds

Threatened forest birds have been assessed together as they generally share similar habitat requirements and potential impacts as result of the proposed Activity. Threatened forest birds considered for this impact assessment are:

- Rufous Scrub-bird (*Atrichornis rufescens*) listed as Vulnerable under the BC Act and Endangered under the EPBC Act.
- Glossy Black-Cockatoo (*Calyptorhynchus lathami*) listed as Vulnerable under the BC Act.
- White-eared Monarch (*Carterornis leucotis*) listed as Vulnerable under the BC Act.
- Barred Cuckoo-shrike (*Coracina lineata*) listed as Vulnerable under the BC Act.
- Coxen's Fig-Parrot (*Cyclopsitta diophthalma coxeni*) listed as Critically Endangered under the BC Act and Endangered under the EPBC Act.
- Eastern Bristlebird (*Dasyornis brachypterus*) listed as Endangered under both the BC and EPBC Act.
- Little Lorikeet (*Glossopsitta pusilla*) listed as Vulnerable under the BC Act.
- Albert's Lyrebird (*Menura alberti*) listed Vulnerable under the BC Act.
- Wompoo Fruit-Dove (*Ptilinopus magnificus*) listed Vulnerable under the BC Act.
- Rose-crowned Fruit-Dove (*Ptilinopus regina*) listed Vulnerable under the BC Act.
- Black-breasted Button-quail (*Turnix melanogaster*) listed as Critically Endangered under the BC Act and Vulnerable under the EPBC Act.

Specific Impacts

The proposed works for Byrrill Creek track extension would involve minor understorey (i.e., ground cover and shrubs) clearing and trimming, no mature trees would be removed as part of this work. The proposed works for campsite placement and upgrade would involve a relatively small footprint of less than 18 m^2 in area for the installation of footings for the tent platforms. Some minor removal of regrowth vegetation and small trees may be required in these areas. In addition to the small impact area for camp platforms, the removal of planted Slash Pines (*Pinus elliottii*) and some mature trees surrounding the campground which pose a safety issue to campers will be undertaken. Habitat associated with threatened forest birds that will be disturbed within the Activity area is approximately 840 m^2.

The following is to be taken into account for the purposes of determining whether a proposed development or Activity is likely to significantly affect threatened species or ecological communities, or their habitats:

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

The proposed Activity involves minor understorey clearing and selective canopy trimming and clearing. Vegetation removal required for the proposed Activity would be minor in the context of the species home ranges or habitat requirements and no specific key resources (e.g. figs) would require removal. The removal of a few planted slash pines would remove some specific resources for Glossy Black Cockatoo, however, the impact of these would not significantly diminish any feeding or nesting resources for the species or any of the mentioned species as potential habitat occurs widely in the locality where extensive areas of foraging and roosting habitat occur within the surrounding National Parks. Being relatively mobile, none of the mentioned species would be likely to be impacted by the construction works (directly or indirectly). Human impacts from the operation of the Activity are likely to be minor and represent a relatively low intensification of use in the reserves which would be unlikely to affect foraging or breeding behaviours. It is unlikely that the Activity would significantly impact the life cycle of any of the mentioned species such that viable local population would be placed at risk of extinction.

(b) in the case of an endangered ecological community or critically endangered ecological community, whether the proposed development or Activity—

(i) is likely to have an adverse effect on the extent of the ecological community such that its local occurrence is likely to be placed at risk of extinction, or

(ii) is likely to substantially and adversely modify the composition of the ecological community such that its local occurrence is likely to be placed at risk of extinction

Not applicable

(c) in relation to the habitat of a threatened species or ecological community—

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

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

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

The proposed Activity would require minor vegetation removal for both walking tracks and campsites, a few mature canopy trees would also be removed around campsite areas. The minor vegetation clearing associated with proposed Activity would be very low in the context of reserved land in the locality and would not affect any core foraging, roosting, refuge or breeding habitat for any of the mentioned species. The proposed works are at a small scale and would not reduce the ability for dispersal, breeding or genetic exchange between any of the subject species. Habitat to be removed/modified is unlikely to be important for foraging, roosting, refuge or breeding for any of the subject species in the context of extensive areas of conservation reserved land. Overall, it is unlikely that the disturbance of habitat would result in a significant impact to the long-term survival of the any mentioned threatened species in the locality.

(d) whether the proposed development or Activity is likely to have an adverse effect on any declared area of outstanding biodiversity value (either directly or indirectly),

The proposed action will not impact on any declared area of outstanding biodiversity value.

(e) whether the proposed development or Activity is or is part of a key threatening process or is likely to increase the impact of a key threatening process.

A Key Threatening Process (KTP) is a process that threatens, or may have the capability to threaten, the survival or evolutionary development of species, population or ecological community. Key threatening processes are listed under the BC Act and at the present there are currently 39 listed KTPs.

The Activity would be consistent with the following KTPs related to threatened birds:

- *Clearing of native vegetation*: proposed works would require clearing of shrubs, vines and groundcovers. Within proposed camping sites the removal of some mature trees (mainly for safety reasons) will occur. With nominal vegetation disturbance required to adapt existing tracks and trails and install camps. Contributions to this KTP are considered very minor in the context of the park and surrounding habitat/vegetation
- *Removal of dead wood and dead trees:* Fallen timber is common along less well maintained tracks and will require removal and relocation. The impacts of these works are unlikely to be significant.

The degree that the Activity would contribute to any threatening process is not considered likely to place the local population of any of the subject species at significant risk of extinction.

Conclusion

It is unlikely that the proposed Activity would cause a significant impacted to any of the mentioned threatened forest birds.

Threatened nocturnal birds

Threatened nocturnal birds and owls have been assessed together as they generally share similar habitat requirements and potential impacts as result of the proposed Activity. Threatened nocturnal birds considered for this impact assessment are:

- Marbled Frogmouth (*Podargus ocellatus*) listed as Vulnerable under the BC Act.
- Powerful Owl (*Ninox strenua*) listed as Vulnerable under the BC Act.
- Masked Owl (*Tyto novaehollandiae*) listed as Vulnerable under the BC Act.
- Sooty Owl (*Tyto tenebricosa*) listed as Vulnerable under the BC Act.

Specific Impacts

The proposed works for Byrrill Creek track extension would involve minor understorey (i.e., ground cover and shrubs) clearing and trimming, no mature trees would be removed as part of this work. The proposed works for campsite placement and upgrade would involve a relatively small footprint of less than 18 m^2 in area for the installation of footings for the tent platforms. Some minor removal of regrowth vegetation and small trees may be required in these areas. In addition to the small impact area for camp platforms, the removal of planted Slash Pines (*Pinus elliottii*) and some mature trees surrounding the campground which pose a safety issue to campers will be undertaken. Habitat associated with threatened nocturnal birds that will be disturbed within the Activity area is approximately 840 m^2.

The following is to be taken into account for the purposes of determining whether a proposed development or Activity is likely to significantly affect threatened species or ecological communities, or their habitats:

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

The proposed Activity would largely impact understorey vegetation with a small number of mature Slash pines and mature trees around campsites to be removed. The removal of vegetation would not impact areas of nesting/ roosting habitat for any of the subject species. Vegetation removal required for the works would be minor in the context of the species home ranges or habitat requirements and habitat for prey items would be unlikely to be significantly affected. Being highly mobile, none of the subject species would be likely to be impacted by the proposed works (directly or indirectly). Human impacts from the operation of the are likely to be minor and represent a relatively low intensification of use in the reserves which would be unlikely to affect foraging or breeding behaviours. As such the proposal is unlikely to have an adverse effect on the life cycle of such species such that a viable local population would be placed at risk of extinction.

(b) in the case of an endangered ecological community or critically endangered ecological community, whether the proposed development or Activity—

(i) is likely to have an adverse effect on the extent of the ecological community such that its local occurrence is likely to be placed at risk of extinction, or

(ii) is likely to substantially and adversely modify the composition of the ecological community such that its local occurrence is likely to be placed at risk of extinction

Not applicable.

(c) in relation to the habitat of a threatened species or ecological community—

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

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

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

The proposed Activity would require minor vegetation removal for both walking tracks and campsites, a few mature canopy trees would also be removed around campsite areas. The minor works required for construction of the Byrrill Creek walking track and campsites would not significantly disturb foraging, roosting or nesting habitat for the subject species and would be unlikely to affect the prey base on which these species depend. The proposed works are at a small scale and would not reduce the ability for dispersal, breeding or genetic exchange between any of the subject species. Habitat to be removed/modified is unlikely to be important for foraging, roosting, refuge or breeding for any of the subject species in the context of extensive areas of conservation reserved land. Overall, it is unlikely that the disturbance of habitat would result in a significant impact to the long-term survival of the any mentioned threatened species in the locality.

(d) whether the proposed development or Activity is likely to have an adverse effect on any declared area of outstanding biodiversity value (either directly or indirectly),

The proposed action will not impact on any declared area of outstanding biodiversity value.

(e) whether the proposed development or Activity is or is part of a key threatening process or is likely to increase the impact of a key threatening process.

Threatening process means a process that threatens, or may have the capability to threaten, the survival or evolutionary development of species, populations or ecological communities. Key threatening processes (KTPs) are listed under the BC Act and at present there are 39 listed KTPs.

With respect to the threatened nocturnal birds, the proposed action is commensurate with the following KTPs:

- *Clearing of native vegetation*: proposed works would require clearing of shrubs, vines, and groundcovers. Within proposed camping sites the removal of some mature trees (mainly for safety reasons) will occur. With nominal vegetation disturbance required to adapt existing tracks and trails and install camps. Contributions to this KTP are considered very minor in the context of the park and surrounding habitat/vegetation.

The degree that the Activity would contribute to any threatening process is not considered likely to place the local population of any of the subject species at significant risk of extinction.

Conclusion

It is unlikely that the proposed Activity would cause a significant impacted to any of the mentioned threatened nocturnal birds.

Threatened bats

Threatened bats have been assessed together as they generally share similar habitat requirements, threats that affect their recovery, and potential impacts as result of the proposed Activity. Threatened bats considered for this impact assessment are:

- Eastern Coastal Free-tailed Bat (*Micronomus norfolkensis*) listed as Vulnerable under the BC Act.
- Eastern Long-eared Bat (*Nyctophilus bifax*) listed as Vulnerable under the BC Act.
- Little Bent-wing Bat (*Miniopterus australis*) listed as Vulnerable under the BC Act.
- Large Bent-winged Bat (*Miniopterus orianae oceanensis*) listed as Vulnerable under the BC Act.
- Eastern Tube-nosed Bat (*Nyctimene robinsoni*) listed as Vulnerable under the BC Act.
- Golden-tipped Bat (*Phoniscus papuensis*) listed as Vulnerable under the BC Act.
- Yellow-bellied Sheathtail-bat (*Saccolaimus flaviventris*) listed as Vulnerable under the BC Act.
- Greater Broad-nosed Bat (*Scoteanax rueppellii*) listed as Vulnerable under the BC Act.
- Grey-headed Flying-fox (*Pteropus poliocephalus*) listed as Vulnerable under both the BC Act and EPBC Act.

Specific Impacts

The proposed Activity will result in the impact of approximately 840 m^2 of potential habitat for these species. The impacted vegetation comprises a relatively minor amount of potential foraging and dispersal habitat for bats in the context of the site and adjacent areas of suitable habitat. Impacts are limited to the existing camping area and day-use areas and minor understorey clearing for Byrrill Creek walking track. Impacts are minor in nature and predominately involve understorey disturbance / clearing for camping sites and tracks, and the removal of planted Slash Pines and some mature trees surrounding the campground which pose a safety issue to campers. Habitat associated with threatened bats that will be disturbed within the Activity area is approximately 840 m^2.

The following is to be taken into account for the purposes of determining whether a proposed development or Activity is likely to significantly affect threatened species or ecological communities, or their habitats:

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

Vegetation impacts would predominately result in minor understorey clearing of native groundcovers, shrubs and vines, and the removal of planted Slash Pines and some mature trees surrounding the campground which pose a safety issue to campers. No hollow-bearing trees which may be used for roosting or breeding would be removed. No breeding camps occur in close proximity to the Activity. Vegetation impacts would form a negligible part of the foraging and sheltering requirements of any of the subject bats, and dispersal ability would not be impaired. Similarly, human impacts from the operation proposed works are likely to be minor and represent a relatively low intensification of use in the reserves which would be unlikely to affect foraging or breeding behaviours. As such the proposal is unlikely to have an adverse effect on the life cycle of such species such that a viable local population would be placed at risk of extinction.

(b) in the case of an endangered ecological community or critically endangered ecological community, whether the proposed development or Activity—

(i) is likely to have an adverse effect on the extent of the ecological community such that its local occurrence is likely to be placed at risk of extinction, or

(ii) is likely to substantially and adversely modify the composition of the ecological community such that its local occurrence is likely to be placed at risk of extinction

Not applicable.

(c) in relation to the habitat of a threatened species or ecological community—

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

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

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

The proposed Activity will result in the impact of approximately 840 m^2 of potential habitat for these species. The impacted vegetation comprises a relatively minor amount of potential foraging and dispersal habitat for bats in the context of the site and adjacent areas of suitable habitat. The habitat to be removed/modified is unlikely to be important for foraging, roosting, or breeding for any bat species in the context of extensive areas of conservation reserved land. The proposed works are at a small scale and would not reduce the ability for dispersal, breeding, or genetic exchange between any of the subject species. Overall, it is unlikely that the disturbance of habitat would result in a significant impact to the long-term survival of the any mentioned threatened species in the locality.

(d) whether the proposed development or Activity is likely to have an adverse effect on any declared area of outstanding biodiversity value (either directly or indirectly),

The proposed action will not impact on any declared area of outstanding biodiversity value.

(e) whether the proposed development or Activity is or is part of a key threatening process or is likely to increase the impact of a key threatening process.

Threatening process means a process that threatens, or may have the capability to threaten, the survival or evolutionary development of species, populations or ecological communities. Key threatening processes (KTPs) are listed under the BC Act and at present there are 39 listed KTPs.

With respect to the threatened bats, the proposed action is commensurate with the following KTPs:

- *Clearing of native vegetation*: proposed works would require clearing of shrubs, vines and groundcovers. Surrounding the proposed camping sites the removal of some mature trees (mainly for safety reasons) will occur. With nominal vegetation disturbance required to adapt existing tracks and trails and install camps. Contributions to this KTP are considered very minor in the context of the park and surrounding habitat/vegetation.

The degree that the Activity would contribute to any threatening process is not considered likely to place the local population of any of the subject species at significant risk of extinction.

Conclusion

It is unlikely that the proposed Activity would cause a significant impacted to any of the mentioned threatened bats.

Threatened arboreal mammals

Threatened arboreal mammals have been assessed together as they generally share similar habitat requirements and potential impacts as result of the proposed Activity. Threatened arboreal mammals considered for this impact assessment are:

- Koala (*Phascolarctos cinereus*) listed as Endangered under the BC Act and EPBC Act.
- Yellow-bellied Glider (*Petaurus australis*) listed as Vulnerable under both the BC Act and EPBC Act.

Specific Impacts

The proposed Activity will result in the impact of approximately 840 m^2 of potential habitat for these species. The impacted vegetation comprises a relatively minor amount of potential foraging habitat for arboreal mammals in the context of the site and adjacent areas of suitable habitat. Impacts are limited to the existing camping area and day-use areas and minor understorey clearing for Byrrill Creek walking track. Impacts are minor in nature and predominately involve understorey disturbance / clearing for camping sites and tracks, and the removal of planted Slash Pines and some mature trees surrounding the campground which pose a safety issue to campers.

The following is to be taken into account for the purposes of determining whether a proposed development or Activity is likely to significantly affect threatened species or ecological communities, or their habitats:

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

The vegetation removed as part of the proposed Activity largely involves understorey disturbance with minor removal of planted Slash Pines and some mature trees surrounding the campground which pose a safety issue to campers. No hollow-bearing trees which may be used for denning or breeding (in regard to Gliders) would be removed. These impacts would form a negligible part of the foraging and sheltering requirements of any of the subject arboreal species, and dispersal ability would not be impaired. Similarly, human impacts from the operation of the Activity are likely to be minor and represent a relatively low intensification of use in the reserves which would be unlikely to affect foraging or breeding behaviours. As such the proposal is unlikely to have an adverse effect on the life cycle of such species such that a viable local population would be placed at risk of extinction.

(b) in the case of an endangered ecological community or critically endangered ecological community, whether the proposed development or Activity—

(i) is likely to have an adverse effect on the extent of the ecological community such that its local occurrence is likely to be placed at risk of extinction, or

(ii) is likely to substantially and adversely modify the composition of the ecological community such that its local occurrence is likely to be placed at risk of extinction

Not applicable.

(c) in relation to the habitat of a threatened species or ecological community—

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

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

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

The vegetation removed as part of the proposed Activity largely involves understorey disturbance with minor removal of planted Slash Pines and some mature trees surrounding the campground which pose a safety issue to campers. The habitat to be removed/modified is unlikely to be important for foraging, refuge, denning or breeding for any of the subject species in the context of extensive areas of conservation reserved land. Landscape scale fragmentation is unlikely to occur from the proposed Activity as the work would involve minor removing vegetation removal rather than breaking apart of large blocks of vegetation into many smaller patches. No further habitat fragmentation on a landscape scale would occur because of the proposed works. Overall, it is unlikely that the disturbance of habitat would result in a significant impact to the long-term survival of the any mentioned threatened species in the locality.

(d) whether the proposed development or Activity is likely to have an adverse effect on any declared area of outstanding biodiversity value (either directly or indirectly),

The proposed action will not impact on any declared area of outstanding biodiversity value.

(e) whether the proposed development or Activity is or is part of a key threatening process or is likely to increase the impact of a key threatening process.

Threatening process means a process that threatens, or may have the capability to threaten, the survival or evolutionary development of species, populations or ecological communities. Key threatening processes (KTPs) are listed under the BC Act and at present there are 39 listed KTPs.

With respect to the threatened arboreal mammals, the proposed action is commensurate with the following KTPs:

- *Clearing of native vegetation*: proposed works would require clearing of shrubs, vines and groundcovers. Surrounding the proposed camping sites the removal of some mature trees (mainly for safety reasons) will occur. With nominal vegetation disturbance required to adapt existing tracks and trails and install camps. Contributions to this KTP are considered very minor in the context of the park and surrounding habitat/vegetation.

The degree that the Activity would contribute to any threatening process is not considered likely to place the local population of any of the subject species at significant risk of extinction.

Conclusion

It is considered unlikely that the Activity would cause a significant impact to threatened arboreal mammals.

Threatened terrestrial mammals

Threatened terrestrial mammals have been assessed together as they generally share similar habitat requirements and potential impacts as result of the proposed Activity. Threatened terrestrial mammals considered for this impact assessment are:

- Rufous Bettong (*Aepyprymnus rufescens*) listed as Vulnerable under the BC Act.
- Spotted-tailed Quoll (*Dasyurus maculatus*) listed as Vulnerable under the BC Act and Endangered under the EPBC Act.
- Common Planigale (*Planigale maculata*) listed as Vulnerable under the BC Act.
- Long-nosed Potoroo (*Potorous tridactylus*) listed as Vulnerable under both the BC Act and EPBC Act.
- Red-legged Pademelon (*Thylogale stigmatica*) listed as Vulnerable under the BC Act.

Specific Impacts

Impacts are limited to the existing camping area and day-use areas and minor understorey clearing for Byrrill Creek walking track. Impacts are minor in nature and predominately involve understorey disturbance / clearing for camping sites and tracks, and the removal of planted Slash Pines and some mature trees surrounding the campground which pose a safety issue to campers. Habitat associated with threatened terrestrial mammals that will be disturbed within the Activity area is approximately 840 m^2.

The following is to be taken into account for the purposes of determining whether a proposed development or Activity is likely to significantly affect threatened species or ecological communities, or their habitats:

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

Impacts are limited to the existing camping area and day-use areas and minor understorey clearing for Byrrill Creek walking track. These impacts would form a negligible part of the foraging and sheltering requirements of any of the subject terrestrial species. Similarly, human impacts from the operation of the Activity are likely to be minor and represent a relatively low intensification of use in the reserves which would be unlikely to affect foraging or breeding behaviours. As such the proposal is unlikely to have an adverse effect on the life cycle of such species such that a viable local population would be placed at risk of extinction.

(b) in the case of an endangered ecological community or critically endangered ecological community, whether the proposed development or Activity—

(i) is likely to have an adverse effect on the extent of the ecological community such that its local occurrence is likely to be placed at risk of extinction, or

(ii) is likely to substantially and adversely modify the composition of the ecological community such that its local occurrence is likely to be placed at risk of extinction

Not applicable.

(c) in relation to the habitat of a threatened species or ecological community—

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

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

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

Impacts are limited to the existing camping area and day-use areas and minor understorey clearing for Byrrill Creek walking track. Impacts are minor in nature and predominately involve understorey disturbance / clearing for camping sites and tracks, and the removal of planted Slash Pines and some mature trees surrounding the campground which pose a safety issue to campers. The habitat to be removed/modified is unlikely to be important for foraging, refuge or breeding for any of the subject species in the context of extensive areas of conservation reserved land. The proposed works are at a small scale and would not reduce the ability for dispersal, breeding or genetic exchange between any of the subject species. No further habitat fragmentation on a landscape scale would occur because of the proposed works. Overall, it is unlikely that the disturbance of habitat would result in a significant impact to the long-term survival of the any mentioned threatened species in the locality.

(d) whether the proposed development or Activity is likely to have an adverse effect on any declared area of outstanding biodiversity value (either directly or indirectly),

The proposed action will not impact on any declared area of outstanding biodiversity value.

(e) whether the proposed development or Activity is or is part of a key threatening process or is likely to increase the impact of a key threatening process.

A Key Threatening Process (KTP) is a process that threatens, or may have the capability to threaten, the survival or evolutionary development of species, population or ecological community. Key threatening processes are listed under the BC Act and at the present there are currently 39 listed KTPs.

The Activity would be consistent with the following KTPs related to threatened terrestrial mammals:

- *Clearing of native vegetation*: proposed works would require clearing of shrubs, vines and groundcovers. Within proposed camping sites the removal of some mature trees (mainly for safety reasons) will occur. With nominal vegetation disturbance required to adapt existing tracks and trails and install camps. Contributions to this KTP are considered very minor in the context of the park and surrounding habitat/vegetation.
- *Removal of dead wood and dead trees:* Fallen timber is common along less well maintained tracks and will require removal and relocation. The impacts of these works are unlikely to be significant.

The degree that the Activity would contribute to any threatening process is not considered likely to place the local population of any of the subject species at significant risk of extinction.

Conclusion

It is considered unlikely that the proposed Activity would significantly impact threatened terrestrial mammals.

Threatened reptiles

Threatened reptiles have been assessed together as they generally share similar habitat requirements and potential impacts as result of the proposed Activity. Threatened reptiles considered for this impact assessment are:

- Three-toed Snake-tooth Skink (*Coeranoscincus reticulatus*) listed as Vulnerable under the BC Act and Endangered under the EPBC Act.
- Stephens' Banded Snake (*Hoplocephalus stephensii*) listed as Vulnerable under the BC Act.

Specific Impacts

Impacts are limited to the existing camping area and day-use areas and minor understorey clearing for Byrrill Creek walking track. Impacts are minor in nature and predominately involve understorey disturbance / clearing for camping sites and tracks, and the removal of planted Slash Pines and some mature trees surrounding the campground which pose a safety issue to campers. Impacts to wet sclerophyll forest (habitat for threatened reptiles) will result in negligible disturbance to areas of leaf litter which may harbour prey items. No hollow-bearing trees would be removed, and any fallen timber will be removed and relocated (i.e. there will be no net reduction of shelter sites). No disturbance to rocky areas would be impacted with regard to impacting potential shelter areas. Habitat associated with threatened reptiles that will be disturbed within the Activity area is approximately 840 m^2.

The following is to be taken into account for the purposes of determining whether a proposed development or Activity is likely to significantly affect threatened species or ecological communities, or their habitats:

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

Impacts to wet sclerophyll forest as a result of the proposed works would result in negligible disturbance to areas of leaf litter which may harbour prey items. No hollow-bearing trees would be removed and any fallen timber will be removed and relocated (i.e., there will be no net reduction of shelter sites). No disturbance to rocky areas would be impacted with regard to impacting potential shelter areas. As such the proposal is unlikely to have an adverse effect on the life cycle of the species such that a viable local population of any mentioned threatened reptile would be placed at risk of extinction.

(b) in the case of an endangered ecological community or critically endangered ecological community, whether the proposed development or Activity—

(i) is likely to have an adverse effect on the extent of the ecological community such that its local occurrence is likely to be placed at risk of extinction, or

(ii) is likely to substantially and adversely modify the composition of the ecological community such that its local occurrence is likely to be placed at risk of extinction

Not applicable.

(c) in relation to the habitat of a threatened species or ecological community—

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

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

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

Impacts are limited to the existing camping area and day-use areas and minor understorey clearing for Byrrill Creek walking track. Impacts are minor in nature and predominately involve understorey disturbance / clearing for camping sites and tracks, and the removal of planted Slash Pines and some mature trees surrounding the campground which pose a safety issue to campers.

Disturbance to the litter layer, minor removal of shrubs and vine thickets and selective rock removal would be unlikely to affect habitat for threatened reptiles in the context of extensive areas of conservation reserved land. The habitat to be removed/modified is unlikely to be important for foraging or breeding for mentioned threatened reptiles in the context of extensive areas of conservation reserved land. No further habitat fragmentation on a landscape scale would occur because of the proposed works. Overall, it is unlikely that the disturbance of habitat would result in a significant impact to the long-term survival of the any mentioned threatened species in the locality.

(d) whether the proposed development or Activity is likely to have an adverse effect on any declared area of outstanding biodiversity value (either directly or indirectly),

The proposed action will not impact on any declared area of outstanding biodiversity value.

(e) whether the proposed development or Activity is or is part of a key threatening process or is likely to increase the impact of a key threatening process.

A Key Threatening Process (KTP) is a process that threatens, or may have the capability to threaten, the survival or evolutionary development of species, population or ecological community. Key threatening processes are listed under the BC Act and at the present there are currently 39 listed KTPs.

The Activity would be consistent with the following KTPs related to threatened reptiles:

- *Clearing of native vegetation*: proposed works would require clearing of shrubs, vines and groundcovers. Within proposed camping sites the removal of some mature trees (mainly for safety reasons) will occur. With nominal vegetation disturbance required to adapt existing tracks and trails and install camps. Contributions to this KTP are considered very minor in the context of the park and surrounding habitat/vegetation.
- *Removal of dead wood and dead trees:* Fallen timber is common along less well maintained tracks and will require removal and relocation. The impacts of these works are unlikely to be significant.

The degree that the Activity would contribute to any threatening process is not considered likely to place the local population of any of the subject species at significant risk of extinction.

Conclusion

It is considered unlikely that the proposed Activity would significantly impact threatened reptiles.

Assessments of Significance (EPBC Act)

For threatened biodiversity listed under the EPBC Act, significance assessments have been completed in accordance with the EPBC Act Policy Statement 1.1 Significant Impact Guidelines (Department of the Environment 2013). These significance assessments have been prepared for the following threatened species:

- **Flora**:
  - *Endiandra hayesii* (Rusty Rose Walnut) listed as Vulnerable under the EPBC Act.
  - *Owenia cepiodora* (Onion Cedar) listed as Vulnerable under the EPBC Act.
  - *Rhodamnia rubescens* (Scrub Turpentine) listed as Critically Endangered under the EPBC Act.
- **Fauna**
  - Rufous Scrub-bird (*Atrichornis rufescens*) listed as Endangered under the EPBC Act.
  - Coxen's Fig-Parrot (*Cyclopsitta diophthalma coxeni*) listed as Endangered under the EPBC Act.
  - Eastern Bristlebird (*Dasyornis brachypterus*) listed as Endangered under the EPBC Act.
  - Black-breasted Button-quail (*Turnix melanogaster*) listed as Vulnerable under the EPBC Act.
  - Spotted-tailed Quoll listed (*Dasyurus maculatus*) as Endangered under the EPBC Act.
  - Greater Glider (*Petauroides volans*) listed as Endangered under the EPBC Act.
  - Yellow-bellied Glider (*Petaurus australis*) listed as Vulnerable under the EPBC Act.
  - Koala (*Phascolarctos cinereus*) listed as Endangered under the EPBC Act.
  - Long-nosed Potoroo (*Potorous tridactylus*) listed as Vulnerable under the EPBC Act.
  - Grey-headed Flying-fox (*Pteropus poliocephalus*) listed as Vulnerable under the EPBC Act.
  - Three-toed Snake-tooth Skink (*Coeranoscincus reticulatus*) listed as Endangered under the EPBC Act.

Significant Impact Assessment - Critically endangered and endangered species listed under the EPBC Act

Significant impact criteria: An action is likely to have a significant impact on a critically endangered or endangered species if there is a real chance or possibility that it will:

- *Lead to a long-term decrease in the size of a population.*
- *Reduce the area of occupancy of the species.*
- *Fragment an existing population into two or more populations.*
- *Adversely affect habitat critical to the survival of a species.*
- *Disrupt the breeding cycle of a population.*
- *Modify, destroy, remove, isolate or decrease the availability or quality of habitat to the extent that the species is likely to decline.*
- *Result in invasive species that are harmful to a critically endangered or endangered species becoming established in the endangered or critically endangered species' habitat.*
- *Introduce disease that may cause the species to decline.*
- *Interfere with the recovery of the species.*

Definitions: *A 'population of a species' is an occurrence of the species in a particular area. In relation to critically endangered, endangered, or vulnerable threatened species, occurrences include but are not limited to:*

- *geographically distinct regional population, or collection of local populations, or*
- *a population, or collection of local populations, that occurs within a particular bioregion.*

Assessments have been completed for seven endangered or critically endangered species including Scrub Turpentine, Rufous Scrub-bird, Coxen's Fig-Parrot, Eastern Bristlebird, Spotted-tailed Quoll, Koala and Three-toed Snake-tooth Skink.

An assessment of the potential impact of the proposed action on the subject species (as above) with reference to the significant impact criteria as follows. An action is likely to have a significant impact on a critically endangered or endangered species if there is a real chance or possibility that it will:

- **Lead to a long-term decrease in the size of a population?**

Scrub Turpentine: the proposed Activity will pass through or in close proximity to small areas of known habitat and occurrences for Scrub Turpentine, however no plants will be directly impacted with the implementation of various mitigation strategies in the construction methodology (ecologist outlined works in relation to species locations and walkways will be moved to avoid impact). Transmission of Myrtle Rust is a key threat to Scrub Turpentine, with the Activity increasing the potential for infection from the construction and operational stages of the Activity. Myrtle Rust will be controlled during construction works via standard minimisation measures and operational impacts limited by provision of 'best practice' information to patrons to limit the spread of Myrtle Rust (and any other pathogens). On the basis of mitigation measures and avoidance it is unlikely the Activity would lead to a long-term decrease in the size of the local population of Scrub Turpentine.

Spotted-tailed Quoll: impacts are limited to the existing camping area and day-use areas and minor understorey clearing for Byrrill Creek walking track. These impacts would form a negligible part of the foraging requirements for Spotted-tailed Quoll. No rocky habitats or large fallen logs which may be used for denning or breeding would be removed. These impacts would form a negligible part of the foraging and sheltering requirements of any of the Spotted-tailed Quoll and dispersal ability would not be impaired over the extensive home ranges occupied by the species. Similarly, human impacts from the operation of the Activity are likely to be minor and represent a relatively low intensification of use in the reserves which would be unlikely to affect foraging or breeding behaviours. On this basis the activity

would be unlikely to lead to a long-term decrease in the size of the local population of the Spotted-tailed Quoll.

Koala: impacts are limited to the existing camping area and day-use areas and minor understorey clearing for Byrrill Creek walking track. These impacts would form a negligible part of the foraging requirements for Koala. Dispersal ability would not be impaired over the home ranges occupied by the species. The Activity would not result in any loss of mature Koala feed trees and human impacts from the operation of the Activity are likely to be minor and represent a relatively low intensification of use in the reserves which would be unlikely to affect foraging or breeding behaviours. On this basis the activity would be unlikely to lead to a long-term decrease in the size of the local population of the Koala.

Coxen's Fig-Parrot, Rufous Scrub-bird & Eastern Bristlebird: the proposed Activity involves minor understorey clearing and selective canopy trimming and clearing (around campsites). Vegetation removal required for proposed Activity would be minor in the context of the species home ranges or habitat requirements and no specific key resources would require removal. Similarly, human impacts from the operation of the Activity are likely to be minor and represent a relatively low intensification of use in the reserves which would be unlikely to affect foraging or breeding behaviours. On this basis the activity would be unlikely to lead to a long-term decrease in the size of the local population of Coxen's Fig-Parrot, Rufous Scrub-bird, or Eastern Bristlebird.

Three-toed Snake-tooth Skink: impacts are minor in nature and predominately involve understorey disturbance / clearing for camping sites and tracks, and the removal of planted Slash Pines and some mature trees surrounding the campground which pose a safety issue to campers. Impacts to wet sclerophyll forest (habitat for threatened reptiles) will result in negligible disturbance to areas of leaf litter which may harbour prey items. Any fallen timber will be removed and relocated (i.e., there will be no net reduction of shelter sites). Operation of the Activity are likely to be minor and represent a relatively low intensification of use in the reserves which would be unlikely to affect the species. On this basis the activity would be unlikely to lead to a long-term decrease in the size of the local population of the Three-toed Snake-tooth Skink.

- **Reduce the area of occupancy of the species?**

Scrub Turpentine: the minor works required for the Activity (840 m^2) would not result in any significant reduction of sclerophyll forest or rainforest communities which would reduce the area of occupancy of the species.

Spotted-tailed Quoll: substantial areas of habitat of several thousand hectares occurs for the species within the surrounding reserves and national park systems. The Activity would not reduce the area of occupancy of the species in this context.

Koala: the relatively minor works required for the Activity (840 m^2) would not result in any significant reduction of sclerophyll forest which would reduce the area of occupancy of the species.

Coxen's Fig-Parrot, Rufous Scrub-bird & Eastern Bristlebird: the minor works required for the Activity (840 m^2) would not result in any significant reduction of sclerophyll forest or rainforest communities which would reduce the area of occupancy of the species.

Three-toed Snake-tooth Skink: the minor works required for the Activity (840 m^2) would not result in any significant reduction of sclerophyll forest or rainforest communities which would reduce the area of occupancy of the species.

- **Fragment an existing population into two or more populations?**

Scrub Turpentine: the Activity would not result in any significant fragmentation of habitat for Scrub Turpentine which would affect Activity, breeding or reproductive potential.

Spotted-tailed Quoll: the Activity would not result in any fragmentation of habitat for the Spotted-tailed Quoll in a local context and extensive areas of habitat within local reserves would be unaffected.

Koala: the Activity would not fragment habitat for the Koala; no Koala feed trees will require removal and no barriers to movement or dispersal would occur.

Coxen's Fig-Parrot, Rufous Scrub-bird & Eastern Bristlebird: the proposed works are at a small scale and would not reduce the ability for dispersal, breeding or genetic exchange between any of these species. The Activity would not result in any fragmentation of habitat or populations.

Three-toed Snake-tooth Skink: disturbance to the litter layer, minor removal of shrubs and vine thickets and selective timber removal would be unlikely to affect habitat for threatened reptiles in the context of extensive areas of conservation reserved land. No habitat fragmentation or population fragmentation on a landscape scale would occur because of the proposed works.

- **Substantially adversely affect habitat critical to the survival of a species?**

Scrub Turpentine: based on the low impacts of construction, the Activity would not result in any significant impacts to habitat for Scrub Turpentine which is critical to the survival of the species.

Spotted-tailed Quoll: based on the likelihood of very low impacts to habitat for the Spotted-tailed Quoll, the Activity would not result in any significant impacts to habitat which is critical to the survival of the species.

Koala: based on the low impacts of construction and no removal of canopy trees, the Activity would not result in any significant impacts to habitat which is critical to the survival of the species.

Coxen's Fig-Parrot, Rufous Scrub-bird & Eastern Bristlebird: based on the low impacts of construction and no removal of canopy trees, the Activity would not result in any significant impacts to habitat which is critical to the survival of the species.

Three-toed Snake-tooth Skink: based on the low impacts of construction and no removal of canopy trees, the Activity would not result in any significant impacts to habitat which is critical to the survival of the species.

- **Disrupt the breeding cycle of a population?**

Scrub Turpentine: reproduction of Scrub Turpentine is unlikely to be affected by the Activity during either construction or operation as no individuals would be removed or disturbed. While infection by Myrtle Rust poses a significant risk of hampering reproductive success, prescribed mitigation measures will minimise the likelihood of Myrtle Rust infection. No other sub-populations of Scrub Turpentine within the local reserves would be affected directly or indirectly.

Spotted-tailed Quoll: based on the likelihood of very low impacts to habitat for the Spotted-tailed Quoll, and no impact to breeding habitat (i.e., denning sites) the Activity would be unlikely to disrupt the breeding cycle of a population of the species in a local context.

Koala: based on the likelihood of very low impacts to habitat for the Koala, the Activity would be unlikely to disrupt the breeding cycle of a population of the species in a local context.

Coxen's Fig-Parrot, Rufous Scrub-bird & Eastern Bristlebird: based on the likelihood of very low impacts to habitat for these species, the Activity would be unlikely to disrupt the breeding cycle of a population of any species in a local context.

Three-toed Snake-tooth Skink: based on the likelihood of very low impacts to habitat for the species, the Activity would be unlikely to disrupt the breeding cycle of a population of any species in a local context.

- **Modify, destroy, remove, isolate or decrease the availability or quality of habitat to the extent that the species is likely to decline?**

Scrub Turpentine: the works (as previously described) are of a minor nature over the extent of the Activity and would not modify, destroy, remove, isolate, or decrease the availability or quality of habitat to the extent that Scrub Turpentine is likely to decline. No other sub-populations of Scrub Turpentine within the local reserves would be affected directly or indirectly.

Spotted-tailed Quoll: based on the likelihood of very low impacts to habitat for the Spotted-tailed Quoll, the Activity would be unlikely to modify, destroy, remove, isolate, or decrease the availability or quality of habitat to the extent that the Spotted-tailed Quoll is likely to decline.

Koala: the works (as previously described) are of a minor nature over the extent of the Activity and would not modify, destroy, remove, isolate, or decrease the availability or quality of habitat to the extent that Koalas are likely to decline.

Coxen's Fig-Parrot, Rufous Scrub-bird & Eastern Bristlebird: the works (as previously described) are of a minor nature over the extent of the Activity and would not modify, destroy, remove, isolate, or decrease the availability or quality of habitat to the extent that these species are likely to decline.

Three-toed Snake-tooth Skink: the works (as previously described) are of a minor nature over the extent of the Activity and would not modify, destroy, remove, isolate, or decrease the availability or quality of habitat to the extent that the species is likely to decline.

- **Result in invasive species that are harmful to a critically endangered or endangered species becoming established in the endangered or critically endangered species' habitat?**

Scrub Turpentine: the risk of any invasive species (weeds, pests, or pathogens) affecting habitat for Scrub Turpentine is relatively low and would be mitigated by the various biosecurity strategies prescribed and continuation of NPWS management procedures.

Spotted-tailed Quoll: the risk of any invasive species (weeds, pests, or pathogens) significantly affecting the Spotted-tailed Quoll is very low and would be mitigated by the various biosecurity and continuation of NPWS management procedures.

Koala: the risk of any invasive species (weeds, pests, or pathogens) significantly affecting the Koala is very low and would be mitigated by the various biosecurity strategies prescribed.

Coxen's Fig-Parrot, Rufous Scrub-bird & Eastern Bristlebird: the risk of any invasive species (weeds, pests, or pathogens) significantly affecting these species is very low and would be mitigated by the various biosecurity and continuation of NPWS management procedures.

Three-toed Snake-tooth Skink: the risk of any invasive species (weeds, pests, or pathogens) significantly affecting the species is very low and would be mitigated by the various biosecurity and continuation of NPWS management procedures.

- **Introduce disease that may cause the species to decline?**

Scrub Turpentine: transmission of Myrtle Rust is a key threat to Scrub Turpentine, with the Activity increasing the potential for infection from the construction and operational stages of the Activity. Myrtle Rust will be controlled during construction works via standard minimisation measures and operational impacts limited by provision of 'best practice' information to patrons to limit the spread of Myrtle Rust (and any other pathogens).

Spotted-tailed Quoll: the construction or operation of the Activity would be unlikely to introduce any disease that may cause the species to decline.

Koala: the construction or operation of the Activity would be unlikely to introduce any disease that may cause the species to decline.

Coxen's Fig-Parrot, Rufous Scrub-bird & Eastern Bristlebird: the construction or operation of the Activity would be unlikely to introduce any disease that may cause the species to decline.

Three-toed Snake-tooth Skink: the construction or operation of the Activity would be unlikely to introduce any disease that may cause the species to decline.

- **Interfere with the recovery of the species?**

Scrub Turpentine: the construction or operation of the Activity would be unlikely to interfere with the recovery of Scrub Turpentine due to low impacts within small areas of habitat. Other sub-populations of

Scrub Turpentine within the local reserves would not be placed at any additional risk which might affect recovery of the species.

Spotted-tailed Quoll: the construction or operation of the Activity would be unlikely to interfere with the recovery of the species due to low impacts within substantial areas of high-quality habitat within the park and surrounding reserves.

Koala: the construction or operation of the Activity would be unlikely to interfere with the recovery of the species due to low impacts within substantial areas of high-quality habitat within the park and surrounding reserves.

Coxen's Fig-Parrot, Rufous Scrub-bird & Eastern Bristlebird: the construction or operation of the Activity would be unlikely to interfere with the recovery of the species due to low impacts within substantial areas of high-quality habitat within the park and surrounding reserves.

Three-toed Snake-tooth Skink: the construction or operation of the Activity would be unlikely to interfere with the recovery of the species due to low impacts within substantial areas of high-quality habitat within the park and surrounding reserves.

Conclusion

Overall due to the relatively low impacts associated with the Activity, it is unlikely that the proposed Activity would result in a significant impact to any listed threatened entity.

Significant Impact Assessment - Vulnerable species listed under the EPBC Act

Significant impact criteria: *An action is likely to have a significant impact on a vulnerable species if there is a real chance or possibility that it will:*

- *lead to a long-term decrease in the size of an important population;*
- *reduce the area of occupancy of an important population;*
- *fragment an existing population into two or more populations;*
- *adversely affect habitat critical to the survival of a species;*
- *disrupt the breeding cycle of an important population;*
- *modify, destroy, remove, isolate or decrease the availability or quality of habitat to the extent that the species is likely to decline;*
- *result in invasive species that are harmful to a vulnerable species becoming established in the vulnerable species' habitat;*
- *introduce disease that may cause the species to decline, or*
- *interfere with the recovery of the species.*

Definitions: *An 'important population' is a population that is necessary for a species' long-term survival and recovery. This may include populations identified as such in recovery plans, and/or that are:*

- *key source populations either for breeding or dispersal;*
- *populations that are necessary for maintaining genetic diversity, and/or*
- *populations that are near the limit of the species range.*

Assessments have been completed for seven vulnerable species including Rusty Rose Walnut, Onion Cedar, Black-breasted Button-quail, Greater Glider, Yellow-bellied Glider, Long-nosed Potoroo and Grey-headed Flying-fox.

Of the above-mentioned species, Black-breasted Button-quail, Greater Glider, Yellow-bellied Glider, Long-nosed Potoroo and Grey-headed Flying-fox occurrence within the Activity area would not be considered to meet the definition of an 'important population' as they unlikely to be key source

population, important for maintain genetic diversity or at the limit of their species range. For this reason, not all questions for these entities are considered below.

Regarding Rusty Rose Walnut and Onion Cedar these species are endemic the SE QLD / Northern NSW region, and its occurrence within the region and in National Park reserves would be considered a part of an 'important population'. For this reason, all questions for these entities are considered below.

An action is likely to have a significant impact on a critically endangered or endangered ecological community if there is a real chance or possibility that it will:

- **Lead to a long-term decrease in the size of an important population**

In relation to Rusty Rose Walnut and Onion Cedar, no threatened flora will be directly removed or directly impacted for the proposed Activity. The proposed Activity area was inspected by an ecologist and where threatened species identified (mainly Scrub Turpentine in areas associated with Byrrill Creek walking track) works will avoid disturbance by micro-siting of the walking track footprint. Habitat associated with threatened flora will be disturbed within the Activity area, however is would unlikely lead to a long-term decrease in the size of the population of these species.

Not applicable for species not a part of an important population (as mentioned above).

- **Reduce the area of occupancy of an important population**

This area of impact considered to be small in the context of habitat in the locality and across either species range, in addition, the walking track works involve minor vegetation removal consisting of understorey trimming and minor shrub removal. It is unlikely that the Activity would result in a significant reduction of area of occupancy for either species population across its range.

Not applicable for species not a part of an important population (as mentioned above).

- **Fragment an existing important population into two or more populations**

The proposed works would not result in the fragmentation of habitat for Rusty Rose Walnut and Onion Cedar such that the population would be isolated or that key life cycle functions (flowering, pollination, genetic exchange, propagule dissemination) would be negatively impacted by the construction or operation of the proposed Activity.

Not applicable for species not a part of an important population (as mentioned above).

- **Adversely affect habitat critical to the survival of a species**

The habitat to be removed / disturbed represents a small portion of available habitat for any of the mentioned species. Due to the minor nature of impact, it is unlikely that the proposed works would adversely affect habitat which would compromise the survival of any of the mentioned species.

- **Disrupt the breeding cycle of an important population**

The proposed works would not result in the significant impact of habitat for Rusty Rose Walnut and Onion Cedar such that the population would be isolated or that key life cycle functions (flowering, pollination, genetic exchange, propagule dissemination) would be negatively impacted by the construction or operation of the proposed Activity.

Not applicable for species not a part of an important population (as mentioned above).

- **Modify, destroy, remove, isolate or decrease the availability or quality of habitat to the extent that the species is likely to decline**

The habitat to be removed / disturbed represents a small portion of available habitat for the mentioned species. Ongoing walking along the constructed track would be unlikely to significantly impact on threatened flora or fauna habitat. Overall, it is unlikely that the disturbance of habitat would result in a significant impact to the habitat of the any mentioned threatened species that it would result in the decline of the species population.

- **Result in invasive species that are harmful to a vulnerable species becoming established in the vulnerable species' habitat**

The risk of any invasive species (weeds, pests, or pathogens) affecting habitat for threatened species is relatively low and would be mitigated by the various biosecurity strategies prescribed and continuation of NPWS management procedures. It is unlikely that the Activity would result in the exacerbation of invasive species than would already exists within the locality.

- **Introduce disease that may cause the species to decline, or**

Transmission of Myrtle Rust is a potential threat to threatened flora, with the Activity increasing the potential for infection from the construction and operational stages of the Activity. Myrtle Rust will be controlled during construction works via standard minimisation measures and operational impacts limited by provision of 'best practice' information to patrons to limit the spread of Myrtle Rust (and any other pathogens). Overall, it is unlikely that the Activity would significantly exacerbate disease for the population that it would result in the species decline.

The Activity would be unlikely to introduce any disease associated with mentioned threatened fauna that may cause the species to decline.

- **Interfere with the recovery of the species.**

The Activity would be unlikely to interfere with the recovery of either threatened flora species due to low impacts within small areas of habitat. Other sub-populations of threatened flora within the local reserves would not be placed at any additional risk which might affect recovery of the species.

In relation to threatened fauna, the Activity would be unlikely to interfere with the recovery of the species due to low impacts within substantial areas of high-quality habitat within the park and surrounding reserves.

Conclusion

Overall due to the relatively low extent and magnitude of impacts associated with the Activity, it is unlikely that the proposed Activity would result in a significant impact to any listed threatened entities.

Appendix G: Heritage searches

AHIMS Web Services (AWS)
Search Result

Your Ref/PO Number : Mebbin NP - Cutters Camp

Client Service ID : 842000

Troy Jennings

Level 1/64 Ballina St
Lennox Head New South Wales 2478

Attention: Troy Jennings

Email: tjennings@geolink.net.au

Date: 22 November 2023

Dear Sir or Madam:

AHIMS Web Service search for the following area at Lat, Long From : [redacted] - Lat, Long To : [redacted], conducted by Troy Jennings on 22 November 2023.

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

A search of Heritage NSW AHIMS Web Services (Aboriginal Heritage Information Management System) has shown that:

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

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

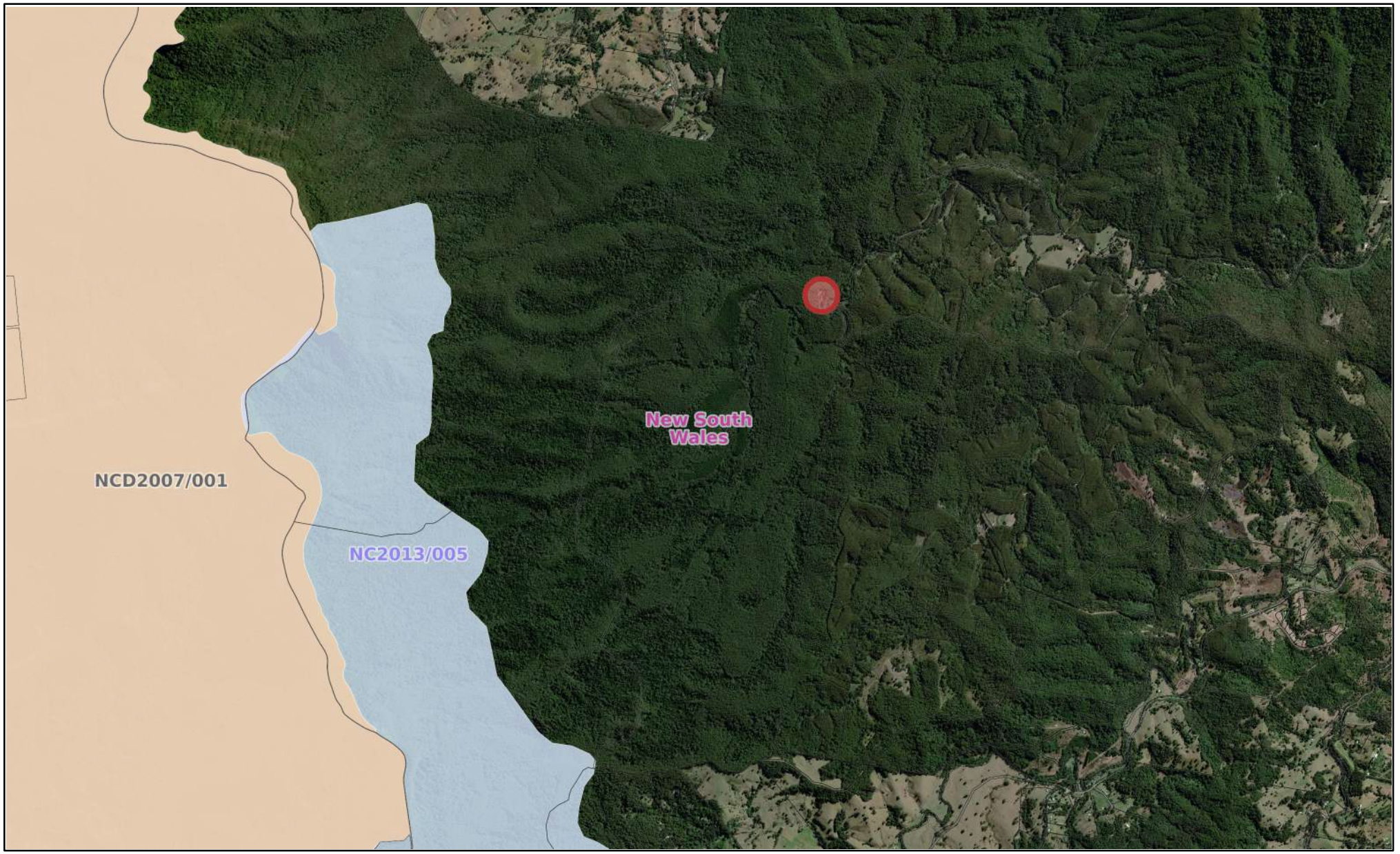
- You must do an extensive search if AHIMS has shown that there are Aboriginal sites or places recorded in the search area.
- If you are checking AHIMS as a part of your due diligence, refer to the next steps of the Due Diligence Code of practice.
- You can get further information about Aboriginal places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

Important information about your AHIMS search

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

Level 6, 10 Valentine Ave, Parramatta 2150
Locked Bag 5020 Parramatta NSW 2124
Tel: (02) 9585 6345

ABN 34 945 244 274
Email: ahims@environment.nsw.gov.au
Web: www.heritage.nsw.gov.au



Native Title Search

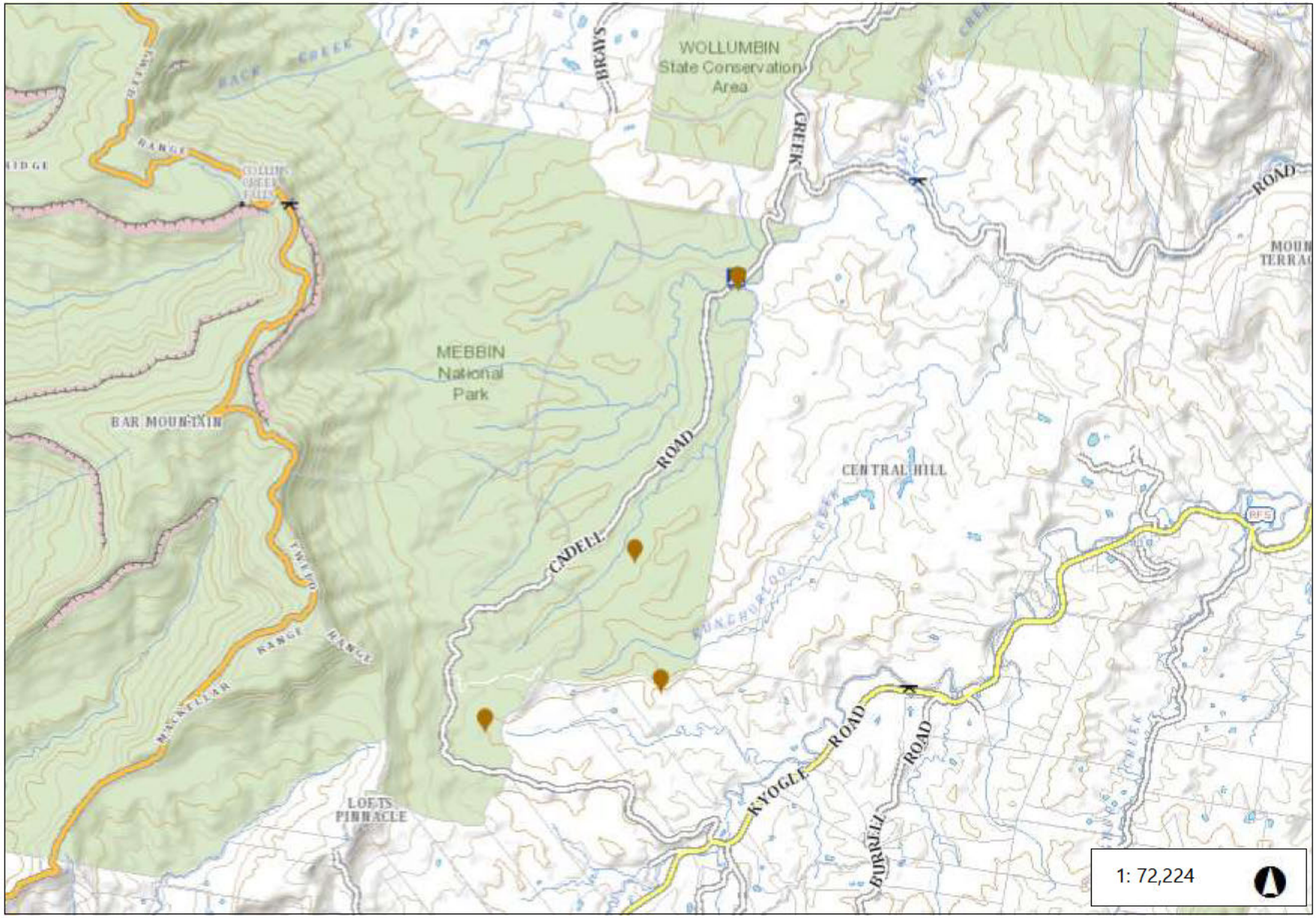
N

2km

Contact: geoscience.products@planning.nsw.gov.au
Date Saved: 22/08/2022 05:42

NSW GOVERNMENT | Heritage NSW

Mebbin NP - State Heritage Inventory



Legend

- World Heritage Areas NSW
- SEPP
- Local Environmental Plan
  - Cluster (label denotes number)
- Aboriginal Place
  - Cluster (label denotes number)
- State Heritage Register
  - Cluster (label denotes number)
- Interim Heritage Order
  - Cluster (label denotes number)

Notes

Notes

3,669.0 0 1,834.49 3,669.0 Meters

WGS_1984_Web_Mercator_Auxiliary_Sphere

This map is a user generated static output from the Heritage Management System and is for reference only. Information that appears on this map may or may not be accurate, current, or otherwise reliable.

THIS MAP IS NOT TO BE USED FOR NAVIGATION