

Dorrigo Escarpment Great Walk Ecological Assessment



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Abbreviations

Abbreviation	Description
ASRIS	Australian Soil Resource Information System
asl	Above sea level
API	Aerial Photographic Interpretation
BC Act	Biodiversity Conservation Act 2016
BLGA	Bellingen Local Government Area
Bindarri NP	Bindarri National Park
CAA	Controlled Activity Approval
CEMP	Construction Environmental Management Plan
CEEC	Critically Endangered Ecological Community
CHLGA	Coffs Harbour Local Government Area
DARC	Dorrigo Arc Rainforest Centre
DEECCW	Department of Environment, Energy, Climate Change and Water
DEGW	Dorrigo Escarpment Great Walk
DNG	Derived native grasslands
Dorrigo NP	Dorrigo National Park
ELA	Eco Logical Australia Pty Ltd
EWP	Elevated Work Platform
EEC	Endangered Ecological Community
EPBC Act	Environment Protection and Biodiversity Conservation Act 1999
EP&A Act	Environmental Planning and Assessment Act 1979
FFA	Flora and Fauna Assessment
FM Act	Fisheries Management Act 1994
GDE	Groundwater dependent ecosystems
GHFF	Grey Headed Flying Fox
GIS	Geographic Information System
GSG	Great Soil Group
НВТ	Hollow Bearing Tree
KFH	Key Fish Habitat
КТР	Key Threatening Processes
LEP	Local environmental plan
LGA	Local Government Area
LLS	NSW Local Land Services
MNES	Matters of National Environmental Significance

Abbreviation	Description
NCRWMP	North Coast Regional Weeds Plan 2023 – 2027
NP&W Act	NSW National Parks and Wildlife Act 1974
NPWS	National Parks and Wildlife Service
РСТ	Plant Community Type
PMST	Protected Matters Search Tool
RDP	Rapid Data Points
REF	Review of Environmental Factors
SCA	State Conservation Area
SEPP-TI	State Environmental Planning Policy (Transport and Infrastructure) 2021
SIS	Species Impact Statement
SVTM	State Vegetation Type Mapping
TEC	Threatened Ecological Community
TPZ	Tree Protection Zone
VIS	Vegetation Information System
WM Act	Water Management Act 2000
WoNS	Weeds of National Significance
WIRES	Wildlife Information, Rescue and Education Service Inc

Terms and definitions

Term / Definition	Description				
Compound site	Facilities used to support the operation of a construction site including site offices, workshops, delivery areas, storage areas, sheds, staff vehicle parking, materials, plant and equipment.				
Cumulative impacts	Impacts that, when considered together, have different and/or more substantial impacts than a single impact assessed on its own.				
DARC	Dorrigo Arc Rainforest Centre is the new visitor centre on the footprint of the existing Dorrigo Rainforest Centre. The DARC includes an elevated skywalk platform.				
DEGW (The Activity)	The Dorrigo Escarpment Great Walk (DEGW) is a single direction 4-day, 3-night walk starting at the new Dorrigo Arc Rainforest Centre in Dorrigo National Park and finishing at the Bindarray picnic area in the Bindarri National Park.				
	The DEGW includes:				
	• approximately 44.1 km of 600 to 900 mm wide walking track (in accordance with Australian Standard 2156: Walking tracks classification and signage, where possible)				
	• approximately 8.6 km upgraded management trails (8.1 km) and dormant roads (634 m)				
	• 3 new camps incorporating hut accommodation, a camping area and communal buildings				
	1 upgraded remote camping area including camping, tracks and amenities				
	• 1 future upgrade to the existing Baliiga picnic area, including parking, roads and amenities				
	• 43 waterway crossings (including 5 single-span pedestrian bridges and one vehicle bridge)				
	 14 scenic viewpoints 				
	wayfinding and interpretation components				
	temporary access				
	temporary construction sites.				
	The DEGW will accommodate up to 48 people at Camp 1 – Baliiga, and 24 at Camp 2 – Never N and Camp 3 – Bindarri with an estimated maximum 96 hikers plus day walkers at any one tim				
	The existing remote camp on Wild Cattle Creek adjacent to Slingsbys Trail is to be upgraded and named Waygarrgala, which is Gumbaynggirr for 'at the Antarctic beech'. The upgrade will provide an improved camping experience and manage impacts of anticipated increased use once the DEGW is operating. The camp will provide hikers, including those not walking the full 4-day walk, with overnight hiking options using sections of the DEGW and Syndicate track.				
Direct impacts:	Direct impacts affect the habitat of species and ecological communities and of individuals using the study area. They include, but are not limited to, death through predation, trampling, poisoning of the animal/plant itself and the removal of suitable habitat. When applying each factor, consideration must be given to all of the likely direct impacts of the proposed activity or development. When applying each factor, both long-term and short-term impacts are to be considered.				
Environment	As defined within the Environmental Planning and Assessment Act 1979 (NSW), all aspects of the surroundings of humans, whether affecting any human as an individual or in his or her social groupings.				
Hollow Bearing Tree (HBT)	Hollow bearing tree being alive or dead and has at least one hollow. A HBT is considered to contain a hollow if:				
	a. the entrance can be seen.				
	b. the entrance width is at least 5cm.				
	c. the hollow appears to have depth (i.e. you cannot see solid wood beyond the entrance).				
	d. the hollow is at least 1m above the ground.				

Term / Definition	Description
Indirect impact	Indirect impacts occur when activities affect species or ecological communities within the subject site. Indirect impacts may sterilise or reduce the habitability of adjacent or connected habitats. Indirect impacts can include loss of individuals, starvation, exposure to predators, loss of breeding habitat or disruption, loss of shade/shelter, reduction in habitat, weed invasion, noise, light spill, or increased human activity within or directly adjacent to sensitive habitat areas.
Local population	 Local population comprises those individuals known or likely to occur in the study area, as well as any individuals occurring in adjoining areas (contiguous or otherwise) that are known or likely to utilise habitats in the study area and includes the following definitions: The local population of a threatened plant species comprises those individuals occurring in the study area or the cluster of individuals that extend beyond the study area that could reasonably be expected to be cross-pollinating with those in the study area. The local population of resident fauna species comprises those individuals known or likely to occur in the study area, as well as any individuals occurring in adjoining areas (contiguous or otherwise) that are known or likely to utilise habitats in the study area. The local population of migratory or nomadic fauna species comprises those individuals that are likely to occur in the study area from time to time or return year to year.
The 'activity area'	 Refers to the area that may be directly impacted by construction and operation of the activity. The activity area includes both the: construction footprint, which is the area where construction activities would occur for the activity and includes land that would be temporarily impacted for the construction including compound sites; and operational footprint, which includes the areas that would be permanently impacted by the activity including the trails, campgrounds, maintenance access, and supporting infrastructure.
Study area	Study area is the area consisting of land in the vicinity of, and including, the activity area. The Study area is the wider area surrounding the activity area, including land that has the potential to be indirectly impacted by the activity beyond the immediate works area. For the purposes of this ecological assessment the Study area includes a 2 m wide track and a 12 m buffer (6 m either side of the track centre line). Bridges or water crossings have been nominated a 10 m wide buffer and camp sites have been nominated a 15 m wide buffer.



Executive summary

Eco Logical Australia (ELA) were engaged by National Parks and Wildlife Service (NPWS) to complete an ecological assessment for the proposed Dorrigo Escarpment Great Walk (DEGW).

NPWS is proposing to construct the Dorrigo Escarpment Great Walk (DEGW). The DEGW is located in Dorrigo National Park (Dorrigo NP) and Bindarri National Park (Bindarri NP) which are part of the World Heritage–listed Gondwana Rainforests of Australia. The DEGW is a single direction 4-day, 3night walk starting at the new Dorrigo Arc Rainforest Centre (DARC) in Dorrigo NP and finishing at the Bindarray picnic area in Bindarri NP. The walk covers a distance of approximately 44.1 km and includes:

- approximately 44.1 km of 600 to 900 mm wide walking track (in accordance with *Australian Standard 2156: Walking tracks classification and signage,* where possible)
- approximately 8.6 km upgraded management trails (8.1 km) and dormant roads (634 m)
- 3 new camps, incorporating hut accommodation, a camping area and communal buildings
- 1 upgraded remote camp area, including camping, tracks and amenities
- 1 future upgrade to the existing Baliiga picnic area, including parking, roads and amenities
- 43 waterway crossings including 5 single-span pedestrian bridges greater than 20 m long and one vehicle bridge
- 14 scenic viewpoints
- wayfinding and interpretation components
- temporary access
- temporary construction sites.

Construction is expected to start in mid-2025 and would take 24 to 48 months to complete.

The activity is to be assessed under Part 5 of the *Environmental Planning and Assessment Act 1979* (EP&A Act). Section 7.3 of the NSW *Biodiversity Conservation Act 2016* (BC Act) requires proponents of activities subject to Part 5 of the EP&A Act to determine whether they will have a significant impact on threatened species, populations or ecological communities and entry into the Biodiversity Offset Scheme if required.

This report describes impacts on native vegetation, threatened species, populations and communities listed under the BC Act, in addition to relevant Matters of National Environment Significance (MNES) listed under the Commonwealth *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act). This assessment consisted of two (2) parts including a literature and desktop review of ecology pertaining to the extent of the Study area and the second field survey and validation to assess the presence of native vegetation and threatened entities. In summary the:

- Desktop and literature review identified that:
 - The Study area occurs across two IBRA subregions, 'Chaelundi' and 'Coffs Coast and escarpment' of the NSW North Coast IBRA Bioregion.
 - The DEGW intersects numerous soil landscapes, with Colluvial Landscapes Never Never (Conn) and Erosional Landscape Ulong (ERul) being the most dominant.
 - Majority of the DEGW occurs across the Nymboida Meta-sediments in the NSW North Coast Bioregion Mitchell Landscape.
 - 43 watercourses traversed by the DEGW, with the largest being the Never Never River, Rosewood River, Wild Cattle Creek, and Urumbilum River.
 - Ten (10) threatened flora species and 46 threatened fauna species were previously recorded within a 5 km square radius of the Study area through the BioNet (Atlas of NSW Wildlife) database search.
 - A total of 33 flora, 47 fauna and 16 Migratory bird species were identified through the EPBC Protected Matters Search Tool (PMST) which identifies MNES with the potential to occur within the Study area.
 - 15 candidate Threatened Ecological Communities (TECs) were identified as potentially occurring within the Study area.
- Field validation undertaken by ELA (2023) and NPWS confirmed the presence of the following in the activity area:
 - Native vegetation comprised of 19 Plant Community Types (PCTs).
 - Areas of BC Act Endangered Ecological Community (EEC) *Lowland Rainforest in NSW North Coast and Sydney Basin Bioregion* and EPBC Act listed *Lowland Rainforest of Subtropical Australia.*
 - Other vegetation types formally recognised as an NSW PCT, and exotic pasture.
 - Seven (7) threatened flora species and five (5) threatened fauna species were recorded within the Study area.
 - \circ Ten (10) types of fauna habitats that may support local populations.

The culmination of the assessment formed the judgement of a likelihood of occurrence (Appendix A) for BC Act and EPBC Act threatened ecological communities, species and populations that were identified. This assessment concluded that 43 threatened species listed under the BC Act and 27 MNES have the potential to be affected by the activity. Therefore, Tests of Significance (ToS) and Assessments of Significance (AoS) were undertaken (Appendix B & C) which identified that no significant impact is likely to result from the activity and entry into the Biodiversity Offsets Scheme or referral to the minister for these entities is not required.

The activity study area is located within a range of different vegetation types of varying condition and in existing infrastructure / cleared areas. Predicted impacts to these areas can be classed as 'direct' or

'indirect' impacts. The total area of the overlay of the direct impact area of the proposed DEGW measures is 9.61 ha based on a ratio of existing disturbance including management trails, informal walking tracks and dormant fire trail roads. Impact ratio used are outlined in Table 1 below.

Project	Activity type	Impact summary				
component		Width (m)	Length (km)	Total area (ha)	Impact* ratio (%)	Max. actual impact area (ha)
Walking tracks	New walking track construction	2	18.715	3.743	100	3.743
	Existing informal historic trail - walking	2	18.495	3.699	50	1.850
	Existing informal historic track - vehicle	2	2.775	0.555	25	0.139
	Existing formal walking track - no works	2	4.635	0.927	0	0
	Subtotal		44.620	8.924		5.731
Bridges and viewpoints	New waterway crossings (37)	2	0.370	0.074	100	0.074
	New pedestrian bridges (5) (Section 6.3.2)	3	0.100	0.030	100	0.030
	New vehicle bridges (1)	4	0.030	0.012	100	0.012
	New viewpoints (12)	-	-	0.313	70	0.219
	Existing viewpoints - No works (2)	-	-	0.063	0	0
	Subtotal			0.491		0.335
DEGW	Camp 1 - Baliiga	-	-	0.689	70	0.482
camps	Camp 2 - Never Never (-	-	0.585	70	0.409
	Camp 3 - Bindarri	-	-	0.432	70	0.302
	Subtotal			1.706		1.194
Other precincts	Existing remote camp (Waygarrgala)	-	-	0.274	50	0.137
	Existing Baliiga picnic area	-	-	1.448	40	0.579
	Subtotal			1.722		0.716
Access	Dormant roads (634 m)	4.5	0.634	0.285	60	0.171
roads	Existing vehicle management trails (8.1 km)	4.5	8.120	3.654	40	1.462
	Subtotal		8.754	3.939		1.633
Total (ha)				16.783		9.610

Table 1 Impacts associated with the activity

Residual impacts included 'direct' and 'indirect' impacts were identified comprising:

- 9.61 ha of native vegetation comprised of 19 Plant Community Types (PCTs) will be impacted by the DEGW, refer Table 2 below.
- Impacts to the following threatened flora species: *Marsdenia longiloba* (Slender Marsdenia), *Niemeyera whitei* (Rusty Plum), *Parsonsia dorrigoensis* (Milky Silkpod), *Rhodamnia rubescens* (Scrub Turpentine), *Sarcochilus fitzgeraldii* (Ravine Orchid); and *Tylophora woollsii*.
- Impacts to the habitat of 44 threatened fauna species identified to occur or potentially occurring within the Study area.
- Up to ten (10) Hollow-Bearing Trees (HBTs) may be impacted by the activity, with most located within the new camp sites (note: NPWS intention is to design to retain, however if they are considered a hazard they will be required to be removed).
- A total of 12 weed species were recorded within the Study area. Two exotic species identified, *Lantana camara* and *Senecio madagascariensis*, are listed as Weeds of National Significance (WoNS). Three other species, *Ligustrum lucidum, Cinnamomum camphora* and *Ligustrum sinense*, are identified as additional species of concern and are listed for asset protection.

PLANT COMMUNITY TYPES

Table 2 Plant Community Types (PCTs) impact areas

Affected Area	Activity area (ha)
3019 - Northern Hinterland Baloghia-Booyong Subtropical Rainforest	0.27
3021 - Northern Lowland Subtropical Rainforest	0.03
3031 - Northern Escarpment Coachwood-Beech Rainforest	0.98
3032 - Northern Escarpment Sassafras-Booyong-Corkwood Rainforest	0.29
3033 - Northern Escarpment Sassafras-Prickly Ash Rainforest	0.30
3161 - Mid North Hinterland Wet Forest	0.013
3162 - Mid North Lowland Flooded Gum-Palm Wet Forest	0.05
3165 - Northern Brush Box Subtropical Wet Forest	0.18
3167 - Northern Hinterland Blackbutt-Forest Oak Wet Forest	0.24
3172 - Northern Ranges Brush Box-Flooded Gum Wet Forest	0.23
3174 - Northern Turpentine-Brush Box Wet Forest	0.29
3202 - Mid North Escarpment Ranges Blackbutt Forest	0.78
3203 - Northern Escarpment New England Blackbutt Wet Forest	0.06
3205 - Northern Escarpment New England Blackbutt-Tallowwood Wet Forest	0.03
3206 - Northern Escarpment Corkwood-Brush Box Wet Forest	1.50
3208 - Northern Escarpment Rocky Blackbutt Scrub Woodland	0.03
3248 - Northern Blackbutt-Turpentine Shrub Forest	0.16
3829 - Eastern New England Rocky Tea-tree Scrub	0.07
4107 - Mid North Escarpment Coachwood Warm Temperate Rainforest	3.61
4107 - Mid North Escarpment Coachwood Warm Temperate Rainforest (Blackbutt emergent)	0.22
Total	9.34
Cleared	0.04
Exotic Pasture	0.15

Affected Area	Activity area (ha)
Water	0.08
Total	9.61

The assessment of these impacts is presented in detail in Section 6 below. To minimise the potential impacts on the Study area from the activity and ensure no negative environmental outcomes, recommendations to mitigate potential impacts are detailed in Section 7.

WATERWAYS

Hydrology will be largely unaffected by this activity as there will be no significant change in catchment runoff however there is marginal potential to increase silt in the waterways during periods of rain. Waterway crossings will be designed to have minimal impact to water quality and aquatic ecology, with high level suspended swing bridges over larger rivers, and natural stepping stones where needed at other crossings. During construction of the bridges, machinery should avoid entering the waterway, and sediment retention measures should be taken to prevent silt washing in stream.

Mitigation measures have been provided in Section 7 in relation to erosion and sedimentation of these watercourses.

THREATENED SPECIES

Direct impacts to threatened flora and fauna species were initially assessed using data gathered from database and literature reviews. A likelihood of occurrence table was established to determine whether species habitat, distribution, ecology and behaviours were coherent with the habitat types recorded within the Study area (Appendix A).

THREATENED FLORA

Seven (7) threatened flora species were identified within the Study area during field surveys. A summary of the impacted and retained threatened flora species is displayed in Table 38. Mitigation measures have been proposed in Section 7 to minimise impacts.

THREATENED FAUNA

The likelihood of occurrence assessment identified five (5) known and 43 threatened fauna species considered likely or potentially to inhabit directly impacted native vegetation (Appendix A).

To determine the specific impacts on each threatened fauna species, data from the vegetation and habitat assessment in this EA, along with various resources such as the TBDC, survey guidelines, determinations, and conservation advice, were compiled. This information was used to establish suitable habitats similar to species polygons utilised by the NSW Biodiversity Assessment Method and analysed in ArcGIS. Mitigation measures have been proposed in Section 7 to minimise impacts.

THREATENED ECOLOGICAL COMMUNITIES

Direct impacts of up to 0.46 ha of BC Act listed EEC Lowland Rainforest in NSW North Coast and Sydney Basin Bioregion and up to 0.04 ha of EPBC Act listed Lowland Rainforest of Subtropical Australia within the activity area. To determine PCT associations with the relevant TECs, data from the vegetation in this EA, along with various resources such as Bionet Vegetation Information System, determinations, listing advice, and conservation advice, were compiled. Mitigation measures have been proposed in Section 7 to minimise impacts.

INDIRECT IMPACTS

Indirect impacts are those that do not directly affect habitat and individuals, but that have the potential to interfere through indirect action. Indirect impacts considered for this assessment include:

- Noise, dust and vibration during construction.
- Accidental damage to trees and vegetation outside of the activity footprint during construction.
- Water quality impacts due to increased surface water runoff, erosion, sedimentation, and chemical runoff during and following construction.
- Potential for the introduction and spread of pathogens, such as viruses and fungus, and weed species.
- Noise associated with human activity.
- Vegetation trampling and littering from human activity.
- Increased risk of unplanned fire through increasing access to remote areas and increasing numbers of people using the new walk.

Potential for the introduction and spread of pathogens

The construction and operation of the activity may result in the introduction and distribution of pathogens, such as viruses and fungus. Pathogens detrimental to biodiversity within the Study area include Chytridiomycosis Batrachochytrium dendrobatidis (Chytrid fungus) for amphibians, *Phytophthora cinnamomi* for causing dieback in plants and disease-causing rusts (basidiomycete fungi of the order Pucciniales) which affect Myrtaceae plant species through 'Myrtle rust'. There is evidence that both Chytrid fungus and Myrtle rust exist in the locality. Phytophthora has also been recorded in visitor precincts in the past.

Mitigation measures proposed in Section 7 are effective at both limiting the chance of introduction and reducing the risk of spread of pathogens and weeds.

CONCLUSION

The assessment identified the following ecological matters:

- Native vegetation comprised of 19 PCTs.
- Lowland Rainforest in NSW North Coast and Sydney Basin Bioregion (BC Act Endangered Ecological Community (EEC) and the EPBC listed *Lowland Rainforest of Subtropical Australia*.
- Seven (7) threatened flora species and five (5) threatened fauna species were recorded within the Study area and an additional 43 threatened fauna species are considered likely or potentially to inhabit directly impacted native vegetation (Appendix A).
- Ten (10) types of fauna habitats that may support local populations.

ToS and AoS were undertaken (Appendix B & C) which identified that no significant impact is likely to result from the activity and entry into the Biodiversity Offsets Scheme or referral to the minister for these entities is not required.

Residual impacts included both 'direct' and 'indirect' impacts which have been assessed in section 5 and measures provided in Section 7 to mitigate potential impacts related to sediment and erosion control, HBTs, pathogen and invasive weeds and construction must be implemented otherwise additional assessment may be required. Importantly, it is imperative strict hygiene protocols are implemented prior to and during construction, and during operation to prevent the spread of known pathogens occurring within the locality by humans and vehicles including *Phytophthora cinnamomi*, Chytrid fungus, Myrtle Rust and invasive weeds.

Given the design of the DEGW mitigation proposed the potential adverse cumulative impacts of the activity are expected to be negligible. The activity is <u>not</u> likely to:

- significantly impact threatened species or ecological communities or their habitats, within the meaning of the Biodiversity Conservation Act 2016 (BC Act) or Fisheries Management Act 1994.
- significantly impact threatened species, ecological communities or migratory species, within the meaning of the Environment Protection and Biodiversity Conservation Act 1999 (EPBC Act); therefore, no biodiversity offsets are required for threatened biota listed under the EPBC Act.



1. Background and purpose

This report describes impacts on native vegetation, threatened species, populations and communities listed under the BC Act and associated habitat features as a result of the activity. The impact assessment in this report is based on information gathered from data searches and field investigations. The report sets out the legislative context, methods used, impacts to the environment and recommendations to minimise these impacts.

1.1. Description of the Study area

1.1.1. Significant landscape features and topography

The Study area is located within the World Heritage-listed Gondwana Rainforests of Australia and encompasses parts of Dorrigo NP and Bindarri NP. The Study area occurs primarily along the Dorrigo escarpment sitting between Bellingen and Dorrigo townships, eventually meandering downslope into the Upper Orara Valley within the Coffs Harbour hinterland, NSW. The altitude within the Study area ranges from about 150 m metres near Bindarray Picnic Area to 990 metres at Dome Mountain. The Study area encompasses a diversity of rough terrain and significant landscape features including mountains, steep escarpments, rivers, creeks, gorges and waterfalls. Important landform features from west to east of the Study area include Dome Mountain, Rosewood River, Dibbs Head, Wild Cattle Creek, Never Never River, Gleniffer Falls, Mt Wondurrigah, Triple Peak, Tuckers Knob, Urumbilum River gorge, and Urumbilum Falls.

1.1.2. Geology

The Study area occurs primarily on the eastern edge of the Dorrigo Plateau which is a remnant of the Ebor Volcano and basalt outcrops of that volcano occur in the south-western part of Dorrigo NP. Much of the plateau region of the park is made up of Carboniferous metamorphic rocks mainly argillite and slates of the Moombil beds. Igneous rocks of Permian age outcrop in the southern part of Dorrigo NP (NPWS 1998). The Study area meanders through Bindarri NP within the Orara Escarpment and Orara Valleys where the geology is predominantly metasedimentary rocks.

1.1.3. Native vegetation

Generally, the Study area is characterised by high floristic diversity with numerous wet vegetation types. Warm temperate and subtropical rainforest communities, and tall wet sclerophyll forest communities dominate the Study area with some patches containing elements of old growth forest. Less prevalent vegetation types including small pockets of cool temperate rainforest and northern montane heath. The vegetation of the Study area represents *"Gondwanan" refugia – 'areas in which a large number of primitive and ancient species occur'* (NPWS 1998).

1.1.4. Connectivity

The Study area is characterised by large tracts of contiguous intact native forests derived from a variety of vegetation communities. These areas are surrounded by rich agricultural lands which were historically cleared in the early for logging and agricultural practices. Dorrigo NP protects the entire upper catchment of the Rosewood and Never Never Rivers, and Wild Cattle Creek, and is the scenic backdrop for the headwaters of the Bellingen Valley. Bindarri NP provides a link between the Dorrigo Plateau and mid north coast hinterland and coastal valley floors protecting the headwaters of the Orara and Urumbilum Rivers and an important scenic backdrop of the Coffs Harbour coast.

Both parks provide excellent connectivity throughout the landscape and act as movement corridors for a diverse range of mobile native fauna and allow for genetic dispersal for a high diversity of native plants.

There is a cleared area on the Dorrigo plateau edge on the western boundary of the Study area. This area once supported rainforest. An important management programme for the Dorrigo NP Plan of Management is to restore these areas back to rainforest. Some of the sclerophyll forest areas, particularly areas that were part of public state forests have been affected by logging and clearing in the 1950s (NPWS 1998) where obvious signs of thinning, remanent stumps and young regrowth were observed. A number of previously cleared areas on the edges of both parks have been regenerated and are in the process of establishing back to native forest.

1.1.5. Hydrology and waterways

The first three segments (aka 'days') of the DEGW are in Dorrigo NP, which contain three larger waterways and a series of smaller tributaries that are often ephemeral and flow only after rain. Rosewood River and Never Never River are clear streams that flow eastward into the Bellinger River and predominantly contain riparian zones of subtropical rainforest. Wild Cattle Creek flows north and west into the Nymboida River. Despite being headwater catchments without extensive drainage areas, Wild Cattle Creek, Never Never River, and Rosewood River are significant water systems due to the region's considerable rainfall. Dorrigo NP is home to several impressive and prominent waterfalls, including Gennifer, Cedar, Coachwood, and Casuarina Falls.

The park's northern part lies on elevated, undulating land at the Dorrigo Plateau's edge. The Never Never River drains eastward, and Wild Cattle Creek flows westward. An impressive escarpment forms in the northeast within the Never Never River catchment before the DEGW enters the central zone, the Rosewood River catchment. The river is moderately entrenched, with local relief reaching 940 meters above sea level (asl). The south encompasses the eastern Dorrigo Plateau's escarpment. The Rosewood River's headward erosion formed a deep valley, with steep slopes ranging from 16 to 33 degrees. Numerous streams descend over cascades to the Rosewood River, including the prominent McGraths Hump (853 meters asl), nearly isolated due to Rosewood River's erosion.

The main waterways in Bindarri NP, at the eastern end of the walk, are Urumbilum River and Bangalore Creek. Urumbilum River is a fourth order Strahler stream after its junction with third order Bangalore Creek, and flows into Orara River, then the Clarence River. The catchment and riparian zones of both waterways and their upper tributaries are relatively intact and vegetated with subtropical rainforest.



2. Description of activity

2.1. The activity (DEGW)

The activity involves the construction of the DEGW, a multi-day walk exploring Dorrigo and Bindarri NPs.

The DEGW is a single direction 4-day, 3-night walk starting at the new Dorrigo Arc Rainforest Centre (DARC) in Dorrigo NP and finishing at the Bindarray picnic area in Bindarri NP, a distance of approximately 44.1 km. A shorter overnight 2-day loop walk is proposed between the DARC and Camp 1 at Baliiga, with the return leg following the existing Rosewood Creek and Blackbutt tracks.

The proposed track route will use existing formal and informal walking routes, historical logging tracks, open ridges and areas of new construction. A variety of pedestrian bridges and crossings will be used to traverse 43 rivers and creeks. A total 14 viewpoints and rest locations will be established, including 2 small lookout platforms. A design principle is to manage the walk alignment to ensure minimal impacts, both to natural surface level and vegetation, in order to maintain a sustainable outcome ecologically and culturally.

The activity includes the construction/development of 3 new hiker camps and the upgrading of an existing remote camp on previously disturbed sites with existing access roads. The camps will accommodate up to 24 people on the 4-day walk and 48 people on the 2-day walk.

The DEGW includes:

- approximately 44.1 km of 600 to 900 mm wide walking track (in accordance with Australian Standard 2156: Walking tracks classification and signage, where possible)
- approximately 8.6 km of road upgrades, including management trails (8.1 km) and dormant roads (634 m)
- 3 new hiker camps
- 1 upgraded remote camping area, Waygarrgala Remote Camp
- 1 future upgrade to an existing day use area, Baliiga picnic area
- 43 waterway crossings (including 5 single-span pedestrian bridges greater than 20 m long, and one vehicle bridge)

- 14 scenic viewpoints.
- wayfinding and interpretation components
- temporary access
- temporary construction sites.

Construction of the track will mainly occur using hand track building techniques, with the use of small mechanical tools and machinery using natural materials from the construction footprint (2 m) where possible. Some small excavator machine work may be required on some sections, along with stonework in fragile and steeper areas. Where imported materials are required, the use of sling loads under helicopter may be used. Experienced specialist track builders will be used on new and sensitive sections that require experience in detailed alignment and construction to manage erosion control and safety, and to reduce direct and indirect impacts to the ecology.

The location of the proposed works is identified in Figure 1 below. The locations of the proposed features are provided in Figure 1 to Figure 17.



Figure 1: Location of the activity



Figure 2 Day 1 walk



Figure 3 Day 2 walk

Dorrigo Escarpment Great Walk – Ecological Assessment



Figure 4 Day 3 walk



Figure 5 Day 4 walk



Figure 6 Camp 1 (Baliiga) (New)



Figure 7 Baliiga picnic area



Figure 8 Camp 2 (Upper Never Never)



Figure 9 Camp 3 (Bindarri)



Figure 10 Waygarrgala Remote Camp



Figure 11 Whitneys Trail (Section 1)



Figure 12 Whitneys Trail (Section 2)



Figure 13 Whitneys Trail (Section 3)



Figure 14 Tuckers Knob Fire Trail (Section 1)


Figure 15 Tuckers Knob Fire Trail (Section 2)



Figure 16 Urumbilum River Bridge



Figure 17 Potential materials and storage locations

2.2. Personnel

The assessment has been conducted by ELA staff with support from NPWS staff. Staff names, project roles and relevant qualifications are presented in Table 3.

Staff	Project role	Qualifications
ELA		
Phoebe Smit	Senior Ecologist – Field Team Lead	B. Env. Sci. Mgmt, Ms Env. Mgmt. & Sust
Liam Scanlan	Ecologist - Field Team Lead	B. Sci (Hons)
Lachlan Copeland	Senior Botanist	B. Nat Res (Hons), PhD in plant systematics
Ronnie Hill	Ecologist	B. Env. Sci
Samantha Patch	Graduate Ecologist	B. Env. Sci. Mgmt & Marine Sci
Jack O'Sullivan	Graduate Ecologist	B. Env. Sci. Mgmt & Marine Sci
Claire Peacock	University scholarship student placement	Undergraduate study in B. Env. Sci

Table 3: Assessment personnel



3. Legislative context

3.1. Commonwealth and State Legislation

Table 4: Legislation relevant to the activity

Name	Relevance to the project			
Commonwealth Legislation	Commonwealth Legislation			
Environment Protection and Biodiversity Conservation Act 1999	The EPBC Act aims to protect Matters of National Environmental Significance (MNES) including World Heritage areas, threatened species and communities, and listed migratory species. An action that may or is likely to have a significant impact on MNES should be referred to the Commonwealth to determine whether it is a Controlled Action that requires approval from the Commonwealth.			
	Two (2) MNES known as Gondwana Rainforests of Australia listed on the World Heritage List (WHL #368) and on the National Heritage List (NHL #105704) occur within the Study area. Both these MNES will be referred to the minister to confirm if the activity is a controlled action. Refer to the DEGW MNES (ELA 2024) and DEGW SOHI (ELA 2024) reports for further detail.			
	An additional 28 MNES listed as TECs, threatened and/or migratory species are known or have been identified as having the potential to occur within the Study area (Appendix A). An Assessment of Significance was prepared for each of these species and determined that the proposed impacts are unlikely to result in a significant impact (Appendix C).			
	Given the very small disturbance area, the design which focuses on minimising impacts, and the deliberate limiting of the number of people permitted to walk the track, this impact assessment considers the impact to be negligible and not considered to significantly impact the natural values of the Gondwana Rainforests World Heritage and both parks.			
State Legislation				
Environmental Planning and Assessment Act 1979	The EP&A Act is the principal planning legislation for NSW, providing a framework for the overall environmental planning and assessment of development proposals. The EP&A Act places a duty on the determining authority to adequately address a range of environmental matters including maintenance of biodiversity and the likely impact to threatened species, populations, or ecological communities. The activity is to be assessed under Part 5 of the EP&A Act.			

Name	Relevance to the project
Biodiversity Conservation Act 2016	Section 7.3 of the BC Act requires proponents of activities subject to Part 5 of the EP&A Act to determine whether they will have a significant impact on threatened species, populations or ecological communities. The test for significant impact is described in Section 7.3 of the BC Act. A significant impact also occurs if the activity is carried out in an area of outstanding biodiversity value.
	A likelihood of occurrence assessment has been completed (Appendix A). It concluded that 44 threatened entities have the potential to be affected by the activity. Therefore, ToS under the BC Act were undertaken (Appendix B).
	It was determined that no significant impact is likely to result from the activity and the preparation of a Species Impact Statement (SIS) or entry into the Biodiversity Offset Scheme is not required.
Fisheries Management Act 1994 (FM Act)	The objectives of the FM Act are to conserve, develop and share the fishery resources of the State for the benefits of present and future generations. The FM Act provides protection and approval processes for activities which may impact on threatened species, protected marine vegetation, or involve dredging, reclamation, or obstruction of fish passage. The FM Act also regulates 'dredging work' and 'reclamation work' carried out by or on behalf
	of public authorities in Division 3 of Part 7. This includes any work that involves excavating water land or using material to fill on or reclaim water land.
	The project would involve works across the named waterways of Never Never River, Urumbilum River, and Rosewood River as well as numerous lower order unnamed waterways. This would involve dredging and reclamation as defined under the FM Act.
	The Department of Primary Industries (DPI) Fisheries regulates compliance with the FM Act and the Minister responsible for DPI. WaterNSW has been notified under section 199 of the FM Act of the proposed dredging and reclamation works in 'water land' and considered the matters raised by DPI Fisheries (on behalf of the Minister) in this assessment.



4. Methods

4.1. Literature review and database search

A review of readily available databases pertaining to the ecology and environmental features of the entire extent of the Study area and surrounding area, and existing vegetation mapping was conducted to identify records of threatened species, populations and communities and their potential habitat.

Databases and vegetation mapping that were reviewed included:

- Previous vegetation mapping under the State Vegetation Type Map (DPE 2022a).
- BioNet (Atlas of NSW Wildlife) database search (5 km) for threatened species, populations and ecological communities listed under the BC Act (DPE 2023b) (Accessed March 2023).
- EPBC Act PMST within a 5 km square radius for threatened and migratory species, populations and ecological communities listed under the Commonwealth EPBC Act (DCCEEW 2023a).
- Review of relevant planning instruments, documentation, and information relating to biodiversity values and threatened habitat.
- DPI Fisheries Spatial Data Portal for threatened fish species and Key Fish Habitat (KFH).
- Aerial photography (Google Street View and Google Earth) of the Study area and surrounds were also used to investigate the extent of vegetation cover and landscape features.
- Relevant Geographic Information System (GIS) datasets (including soil, geology) via eSpade (DPE 2023c).

Species from both the BioNet Wildlife Atlas and PMST were combined to produce a list of threatened species, populations and communities that may occur within the Study area. The likelihood of occurrences for threatened species, populations and communities in the Study area were then determined based on location of database records, the likely presence or absence of suitable habitat in the Study area, and knowledge of the species' ecology. This information informed the subsequent field assessments.

Following the field inspections, the likelihood of occurrence of each species, population or community was revised. This was based on validated extent, type of habitats and species recorded in the Study area. The likelihood of occurrence of species, populations and communities following the field inspection is presented within the likelihood table in Appendix A.

4.2. Field survey

The field survey was conducted by ELA ecologists and NPWS staff over 17 days on several occasions to cover the entirety of the Study area, refer Table 3. Field surveys included:

- Validation of existing vegetation mapping, determining type, condition and extent of PCTs and other vegetation types through the collection of Rapid Data Points (RDPs).
- Threatened flora survey for potential or likely threatened flora species similar to the parallel field traverse method described in Surveying threatened plants and their habitats (DPIE 2020).
- Fauna habitat assessment including the identification and use assessment of habitat features which included foraging resources, HBTs, dens/burrows, nests, hollow logs and Large Woody Debris (LWD), leaf litter, flaking bark, sphagnum moss, foraging habitat, rocky habitat and aquatic habitat.
- Opportunistic fauna sightings.

All field data was collected using mobile devices loaded with ESRI Collector for ArcGIS software.

RDPs recorded the dominant canopy, midstorey and groundcover species, structural cover condition, vegetation structure, potential PCT, priority or environmental weed species and cover, threatened species and count, soil texture, fire history, vegetation condition, landform element and pattern, notes, photo number, surveyor, and date were recorded. RDPs are less comprehensive than floristic plots, however they allow for rapid identification of PCTs which could then be extrapolated through Aerial Photographic Interpretation (API). Subsequent vegetation mapping was undertaken using an on-screen digitising approach in ArcPro. Spatial data and RDPs were loaded into ArcPro were used to guide the location and extent of vegetation types.

Opportunistic sightings of fauna were recorded on a smart phone. Assessment of the presence of threatened fauna species was determined through a habitat assessment. Where a habitat feature was identified, it was way pointed with ArcGIS software and details of the habitat feature noted down, including type, signs of use and size.

Survey effort is displayed in the map series in Appendix F. A list of staff and survey dates is detailed in Table 5 below.

Table 5: Survey program

Dates	Staff	Sections
28 June 2023	Andrew Winter, Lachlan Copeland, Phoebe Smith.	Day 3 of DEGW targeting <i>Sarcochilus</i> <i>fitzgeraldii</i> (Ravine Orchid) habitat
17 – 20 July 2023	Andrew Winter, Liam Scanlon, Ronnie Hill, Tom Denman, Phoebe Smith.	Orientation survey of segments of days 1 to 4 of DEGW
9 – 13 October 2023	Andrew Winter, Claire Peacock, Liam Scanlon, Phoebe Smith, Ronnie Hill, Samantha Patch, Tom Denman.	Entire length of days 1 to 2 of DEGW
16 – 20 October 2023	Andrew Winter, Jack O Sullivan, Liam Scanlon, Phoebe Smith, Ronnie Hill.	Entire length of days 3 to 4 of DEGW
19 January 2024	Andrew Winter, Clara Friswell, Phoebe Smith.	Waygarrgala Remote Camp, Baliiga Picnic Area and Camp.
8 February 2024	Andrew Winter, Sam Patch, Phoebe Smith.	Tuckers Knob area.
14 February 2024	Tom Denman, Phoebe Smith	Urumbilum camp and area.

4.2.1. Survey limitations

During field surveys some sections were surveyed through binoculars due to inaccessibility for the following reasons:

- Steep slopes, loose surfaces, and cliff edges.
- Dense vegetation (e.g. vines thickets).
- Private properties.

No sampling technique can eliminate the possibility that a species is present within a Study area. For example, some species of plant may be present in the soil seed bank and some fauna species use habitats on a sporadic or seasonal basis and may not be present within the Study area during surveys. The conclusions in this report are based upon data acquired for the REF and the environmental field surveys, therefore, they are merely indicative of the environmental condition of the Study area at the time of preparing the report, including the presence or otherwise of species. It should be recognised that Study area conditions, including the presence of threatened species, can change with time.



5. Results

5.1. Literature review

5.1.1. Connectivity

An aerial imagery analysis of the native vegetation connectivity of the Study area and locality was conducted in ArcGIS to determine potential impacts of the DEGW. The Study area is characterised by large tracts of contiguous intact native forests and given the nature of the works; any resultant disturbance will exist as a narrow, permeable barrier which will leave connectivity largely intact.

5.1.2. Landscape context

5.1.2.1. IBRA region

The Study area occurs within the NSW North Coast IBRA region and across two IBRA subregions, 'Chaelundi' and 'Coffs Coast and escarpment' (Figure 2).

5.1.2.2. Mitchell landscapes

The DEGW occurs across four (4) Mitchell landscapes with the majority occurring in the Nymboida Meta-sediments. A breakdown of all the Mitchell Landscapes in the Study area is detailed in Table 6.

Bioregion / Meso	Mitchell Landscape	Description	Segment
NSW North Coast Bioregion – Basalt Plateau	Dorrigo Basalts (Dob)	Elongate ridge top plateau on Tertiary basalt flows, eastern extension of the Ebor Tops landscape at lower elevation. General elevation 800 to 900m, local relief 50m. Deep, red and red-brown well-structured loams with high organic content in the topsoil and high fertility. Originally a major area of	Day 1

Table 6: Mitchell Landscapes occurring across the Study area (DECC 2002).

Dorrigo Escarpment Great Walk – Ecological Assessment

Bioregion / Meso	Mitchell Landscape	Description	Segment
		mixed warm temperate and cool temperate closed forest now mostly cleared.	
NSW North Coast Bioregion – Nymboida	Nymboida Meta- sediments (Nms)	Ranges, peaks and steep escarpment with high waterfalls and deep gorges on main streams on deformed steep dipping Carboniferous siliceous indurated mudstone, slate, chert and jasper, general elevation 300 to 1300m, local relief 700m, slopes to 300. Strong structural control on stream patterns and major topographic features, especially gorges and waterfalls. Soils are generally thin, stony and of low fertility and subtropical closed forests only occur where plant nutrients are available because of unusual rock types or through accumulation in the litter cycle.	Day 1 Day 2 Day 3 Day 4
NSW North Coast Bioregion – Nymboida	Nymboida Great Escarpment (Nge)	Ranges, peaks and steep escarpment with high waterfalls and deep gorges on main streams on Permian/Carboniferous granite, granodiorite and small intrusions dolerite and amphibolite within extensive area of moderately deformed Silurian-Devonian sandstone, greywacke, tuff, phyllite and slate. Northern sector is on slightly deformed Permian dacite and pyroclastics interbedded with conglomerate, sandstone and mudstone. General elevation 400 to 1400m, local relief 500m. Soils vary from shallow gritty sandy loam through red and yellow earthy gradational profiles to deep siliceous sands and loams on valley floors. Vegetation also varies with elevation, aspect and soil quality.	Day 4
SEQ Clarence Basin	Clarence - Richmond Alluvial Plains (Crp)	Wide valleys, channels, floodplains, terraces and estuaries of the Clarence and Richmond Rivers and other coastal streams on Quaternary alluvium, general elevation 0 to 50m, local relief 15m. Deep brown earths and structured brown clay on floodplains. Terrace with yellow texture-contrast soil containing ironstone concretions.	Day 4

5.1.2.3. Great soil group (GSG) soil type

The Study area primarily occurs across the more fertile Red Earths Great Soil Group (GSG) (Figure 3). The initial segment of Day 1 also occurs in Kransnozemm soil type, a small portion of Day 2 crosses into Soloth soil type and Day 4 is comprised of medium to heavy textured Alluvial soils.

5.1.2.4. Soil landscapes of central and eastern NSW

The Study area occurs across numerous soil landscapes as detailed in Table 7.

Table 7: Soil landscapes occurring across the Study area (DCCEEW 2024).

Soil Landscape	Description Se	
Residual Landscapes – Paddys Plains (REpp)	 This landscape is comprised of undulating low hills and rounded ridgetops on Tertiary basalts of the Dorrigo Plateau. The local relief reaches up to 80m, with elevation generally >700m on the eastern side of the plateau and rising to >1,200m on the western side. The soils are deep, well-drained Kransnozemms, grading to moderately deep to deep, well-drained, brown, stony Kransnozemms on the westerns Dorrigo Plateau. The vegetation was once dominated by tall closed (rainforest) and tall open forest (dry eucalypt forest), which has now been extensively cleared. Limitations of this soil landscape include: Strongly acidic soils with high topsoil organic matter, high subsoil erodibility, low subsoil fertility and aluminium toxicity potential Water erosion hazard. 	Day 1
Colluvial Landscapes – McGraths Hump (COmg)	 This landscape consists of steep to very steep mountains on metamorphic rocks of the Buffers Creek and McGraths Hump formations, plus unnamed flow basalts of the Dorrigo plateau, along the Dorrigo escarpment. Soils are deep, well-drained, minimal Kransnozemm, shallowing significantly on steeper slopes. The vegetation is largely uncleared, tall open-forest (dry sclerophyll forest), with tall closed-forest (subtropical rainforest) in more sheltered areas. Limitations of this soil landscape include: Strongly to very strongly acidic soils with low available subsoil water capacity and low subsoil fertility Steep slopes, high water erosion hazard, mass movement hazard, rock outcrop, rock fall hazard, shallow and discontinuous soils. 	Day 1
Colluvial Landscapes – McGraths Hump variant (COmga)	 This landscape is comprised of precipitous hills to mountains on the steepest parts of McGraths Hump and along the Dorrigo Escarpment, with cliffs and exposed rock faces being common. Soils and vegetation types similar to COmg soil landscape. Limitations of this soil landscape include: Shallow, discontinuous, strongly to very strongly acidic soils with low available subsoil water capacity and low subsoil fertility Extremely steep slopes, high mass movement hazard, high rock fall hazard, severe water erosion hazard, shallow and discontinuous soils, high to severe foundation hazard, low soil fertility, rock outcrop. 	Day 1
Colluvial Landscapes – Suicide (COsu)	 This landscape consists of steep hills and dissected valleys on Coffs Harbour Association metasediments in the wetter southern parts of the Orara Escarpment, Cascade Hills and Nymboida Gorges. The local relief ranges between 100-300m, with elevation reaching up to 900m. On the crest and upper slopes, soils are moderately deep to deep, well-drained, stony structured Yellow Earths, while on the mid-slopes and foot-slopes, soils are deep, stony structured Red Earths. Vegetation is mostly uncleared, tall closed-forest (subtropical rainforest), grading to tall open-forest (wet sclerophyll forest) on more exposed crests and north-facing slopes. Limitations of this soil landscape include: Strongly acidic stony soils with high aluminium toxicity potential, low wet bearing strength, high to very high subsoil erodibility and low fertility Steep slopes, high water erosion hazard, foundation hazard, mass movement hazard, high run-on. 	Day 1 Day 2 Day 3 Day 4
Erosional Landscape - Megan (ERme)	This landscape comprises of rolling hills set on Coffs Harbour Association metasediments in the wetter southern parts of the Orara Escarpment and Cascade Hills. The local relief reaches 200m, with elevations reaching up to	Day 1 Day 2

Soil Landscape	Description	Segment
	 925m. The soils are moderately deep to deep structured Red Earths and Prairie soils, with deep structure Yellow Earths on highly silty rocks and deep Kransnozemm in the moistest sites. Vegetation is partially cleared tall open- forest in the north and tall closed-forest in the south. Climatic variation across this landscape has caused the vegetation to vary markedly from north (wet sclerophyll forests) to south (rainforest). Limitations of this soil landscape include: Strongly acidic, stony soils of high erodibility, aluminium toxicity potential and low subsoil fertility Steep slopes, mass movement hazard, high water erosion hazard, foundation hazard. 	Day 3 Day 4
Erosional Landscape – Ulong (ERul)	 This landscape consists of rolling hills on Late Carboniferous metasediments of the Coffs Harbour Association in the wetter southern parts of the Orara Escarpment and Cascade Hills. The local relief reaches up to 90m, with elevations spanning between 50-870m. On the crests and ridges, the soils are moderately deep to deep, well-drained structured Red Earths and structured Yellow Earths. On the mid-slopes and lower slopes, the soils are moderately deep to deep, well-drained Kransnozemms and Red Podzolic soils. The vegetation grades from tall closed-forest to tall open-forest on more exposed crests and north-facing slopes, particularly towards the northern extent of this landscape. Limitations of this soil landscape include: Strongly acidic soils with low fertility, aluminium toxicity potential, low subsoil permeability, high subsoil erodibility and low subsoil available water capacity Water erosion hazard, steep slopes, high run-on. 	Day 1 Day 2 Day 3 Day 4
Colluvial Landscapes – Never Never (COnn)	 This landscape comprises very steep to precipitous mountain on Coffs Harbour Association metasediments in the wetter southern parts of the Orara Escarpment, the eastern Dorrigo Escarpment, and in the Never Never Valley south of Mount Moombil. The local relief ranges from 300-620m, elevations reaching up to 1,000m. The soils are deep, moderately well-drained structured Red Earths. Vegetation on the more exposed crests and north- facing slopes is comprised of uncleared, tall closed-forest grading to tall open- forest. Along lower slopes and valley bottoms, vegetation is generally tall closed-forest (subtropical rainforest). On the most exposed ridges and north- facing upper slopes, tall open-forest (dry sclerophyll forest) is present, particularly towards the northernmost parts of this landscape. Limitations of this soil landscape include: Stony, strongly acidic, slowly permeable soils of low fertility and high aluminium toxicity potential Steep to very steep slopes, high to severe water erosion hazard, high to severe foundation hazard, high mass movement hazard and rock fall hazard. 	Day 2 Day 3 Day 4
Transferra Landscapes – Kooralbyn (TRko)	This landscape consists of undulating rises, foot-slopes and drainage plains adjacent to steeper low hills and hills formed on carboniferous metasediments within the Coffs Harbour Association. The local relief spans up to 40m, with elevation ranging from 50-720m. The soils on foot-slopes are typically deep, moderately well-drained Soloths, and on drainage plains are deep, poorly drained Soloths. Tall closed-forest and tall open-forest has been extensively cleared and replaced by kikuyu dominated improved pastures. Limitations of this soil landscape include:	Day 2

Soil Landscape	Description	Segment
	 Strongly to very strongly acidic, hard-setting soils, very low wet bearing strength, very low subsoil permeability, high aluminium toxicity potential and low to very low fertility. High water erosion hazard, foundation hazard, seasonal water-logging, high run-on. 	
Alluvial Landscape – Dairyville (ALda)	This landscape comprises undulating to level alluvial terraces and floodplains in the upper Orara Valley and its surrounding tributary valleys. These areas exhibit a local relief of 5-10m, with elevation ranging from 130 to 190 m. Soils are typically moderately deep to deep, moderately well-drained Alluvial soils found on floodplains. Sandy channel deposits contain deep, moderately well- drained Structured, while terraces feature moderately deep to deep, well- drained structured Brown Earths. The original closed-forest vegetation has been completely cleared, and now primarily consists of improved pastures dominated by exotic species. Limitations of this soil landscape include:	Day 4
	 Low wet bearing strength, high topsoil organic matter, low subsoil fertility, extreme soil stoniness High foundation hazard, flood hazard, seasonal waterlogging, high water tables, high water erosion hazard, high run-on. 	

5.1.2.5. Topography

Topography varies greatly along the walking track. At its highest point (Day 1), the Study area reaches 990 m above sea level (asl) and drops to 150 m asl at its lowest (Day 4).



Figure 18: Landscape context



Figure 19: Great Soil Group

5.1.3. Hydrology and waterways

The proposed walking track crosses 21 first order, 8 second order, 3 third order, one fourth, and one fifth order waterways as classified by the Strahler Stream Order classification (Figure 4 to Figure 8). Of these, the largest are Never Never River, Rosewood River, and Urumbilum River. All three of these are mapped as KFH and pass through relatively undisturbed tracts of subtropical and warm temperate rainforest.

Most of the first and second order streams in the Study area are likely to be ephemeral and flow only after rain, which is relatively frequent in this region. The larger streams are characterised by bedrock and cobble beds in their upper reaches, and bedrock cobble beds below the escarpment, often with lateral gravel and cobble bars. River levels are responsive to catchment rain and can rise and fall quickly.

Waterways above third order, or lower order waterways that have threatened species, are classified as key fish habitat (Figure 4 to Figure 8). The first key fish habitat crossed is Rosewood River on the second day of the walk. The crossing location is shallow, with a bedrock bed and cobbles/boulders along the creek. The Rosewood River is approximately 10 m wide (bank to bank) and at an altitude of 640 m at the crossing (Photo 1). The second and third key fish habitat crossings occur where the walk crosses Never Never River near the end of Day 2 then again on Day 3 respectively (Photo 2 - Photo 3). The Never Never River is approximately 3 m wide at 590 m in elevation at the first crossing, and 560 m in elevation and 20 m wide at the second crossing. The river is relatively shallow and has a cobble and gravel bed. The walking track travels along some reaches of the Urumbilum River that are key fish habitat for several sections, before crossing twice near the end of the final day (Photo 4 - Photo 6). The river is relatively shallow, contains a cobble and gravel bed, with pooling in some areas.

All key fish habitat crossed by the walk fit the definition of Type 1 Highly sensitive, Class 1 Major key fish habitat (Fairfull 2013). Due to maintaining a permanent flow and containing gravel beds with rocks greater than 500 m in two dimensions and snags greater than 300 mm diameter. Bridges are the preferred crossing type for Class 1 key fish habitat (Fairfull 2013).



Photo 1: Rosewood River key fish habitat within the Study area.



Photo 2: Never Never River key fish habitat Day 2 within Study area.



Photo 3: Never Never River KFH Day 3 within Study area.



Photo 4: Urumbilum River Day 4 crossing within Study area.



Photo 5: Urumbilum River Day 4 view looking up to Urumbilum Falls from crossing point two.



Photo 6: Urumbilum River Day 4 view of river upstream from the proposed crossing point three.



Figure 20: Hydrology of the Study area



Figure 21: DEGW Day 1 hydrology



Figure 22: DEGW Day 2 hydrology



Figure 23: DEGW Day 3 hydrology



Figure 24: DEGW Day 4 hydrology

5.1.4. Vegetation and threatened ecological communities

Previous State Vegetation Type Mapping (SVTM) within the Study area (DPE, 2022) identified 15 PCTs. This is detailed in Table 8 and presented in Figure 9 to Figure 12.

The BioNet Vegetation Information System (VIS) was reviewed for any associated TECs for the PCTs mapped within the SVTM (DPIE 2022). Six (6) mapped PCTs were associated with *Lowland Rainforest in the NSW North Coast and Sydney Basin Bioregions* listed as an Endangered Ecological Community (EEC) commonly known as 'Lowland Rainforest' listed under the BC Act, and the Critically Endangered Ecological Community (CEEC) *Lowland Rainforest of Subtropical Australia* commonly referred to as Lowland Subtropical Rainforest listed under the EPBC Act

A candidate list of potential TECs that occur within the Study area was also obtained through a spatial search in BioNet, and the PMST. These have been considered in Appendix B.

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Table 8: Plant Community Types (PCTs) State Vegetation Type Mapping (DPE 2022b)

PCT ID	PCT Name	Vegetation Formation	Vegetation Class	Associated TEC
3021	Northern Lowland Subtropical Rainforest	Rainforests	Subtropical Rainforests	BC Act, E: Lowland Rainforest in the NSW North Coast and Sydney Basin Bioregions
3032	Northern Escarpment Sassafras-Booyong- Corkwood Rainforest	Rainforests	Northern Warm Temperate Rainforests	BC Act, E: Lowland Rainforest in the NSW North Coast and Sydney Basin Bioregions
3033	Northern Escarpment Sassafras-Prickly Ash Rainforest	Rainforests	Northern Warm Temperate Rainforests	BC Act, E: Lowland Rainforest on Floodplain in the New South Wales North Coast Bioregion
3035	Northern Ranges Coachwood Warm Temperate Rainforest	Rainforests	Northern Warm Temperate Rainforests	BC Act, E: Lowland Rainforest in the NSW North Coast and Sydney Basin Bioregions
3052	Northern Escarpment Antarctic Beech Rainforest	Rainforests	Cool Temperate Rainforests	No associated TEC
3161	Mid North Hinterland Wet Forest	Wet Sclerophyll Forests (Shrubby sub-formation)	North Coast Wet Sclerophyll Forests	No associated TEC
3162	Mid North Lowland Flooded Gum-Palm Wet Forest	Wet Sclerophyll Forests (Shrubby sub-formation)	North Coast Wet Sclerophyll Forests	No associated TEC
3165	Northern Brush Box Subtropical Wet Forest	Wet Sclerophyll Forests (Shrubby sub-formation)	North Coast Wet Sclerophyll Forests	BC Act, E: Lowland Rainforest in the NSW North Coast and Sydney Basin Bioregions
3166	Northern Escarpment Brush Box- Tallowwood-Maple Wet Forest	Wet Sclerophyll Forests (Shrubby sub-formation)	North Coast Wet Sclerophyll Forests	No associated TEC
3167	Northern Hinterland Blackbutt-Forest Oak Wet Forest	Wet Sclerophyll Forests (Grassy sub-formation)	Northern Hinterland Wet Sclerophyll Forests	No associated TEC
3174	Northern Turpentine-Brush Box Wet Forest	Wet Sclerophyll Forests (Shrubby sub-formation)	North Coast Wet Sclerophyll Forests;	No associated TEC
3202	Mid North Escarpment Ranges Blackbutt Forest	Wet Sclerophyll Forests (Shrubby sub-formation)	Northern Escarpment Wet Sclerophyll Forests	No associated TEC
3248	Northern Blackbutt-Turpentine Shrub Forest	Wet Sclerophyll Forests (Grassy sub-formation)	Northern Hinterland Wet Sclerophyll Forests	No associated TEC
3250	Northern Foothills Blackbutt Grassy Forest	Wet Sclerophyll Forests (Grassy sub-formation)	Northern Hinterland Wet Sclerophyll Forests	No associated TEC
4107	4107 - Mid North Escarpment Coachwood Warm Temperate Rainforest	Rainforests	Northern Warm Temperate Rainforests	BC Act, E: Lowland Rainforest in the NSW North Coast and Sydney Basin Bioregions

E = Endangered



Figure 25: DEGW PCTs Day 1 (SVTM 2022)



Figure 26: DEGW PCTs Day 2 (SVTM 2022)



Figure 27: DEGW PCTs Day 3 (SVTM 2022)



Figure 28: DEGW PCTs Day 4 (SVTM 2022)

5.1.5. Threatened species and populations

The BioNet Atlas search (DPE 2022b) returned ten (10) threatened flora species and 46 threatened fauna species previously recorded within a 5 km radius of the Study area (Figure 13 to Figure 16).

A total of 33 flora, 47 fauna and 16 Migratory bird species were identified through the PMST which identifies MNES with the potential to occur within the Study area.

A search of the Fisheries NSW Spatial Data Portal showed no threatened fish species occurring in the Study area. The endangered eastern freshwater cod (*Maccullochella ikei*) is mapped as having suitable habitat in Wild Cattle Creek approximately 6 km downstream of the DEGW as it crosses a first order tributary (Creek 27). This tributary is ephemeral and not suitable for eastern cod.

A likelihood of occurrence assessment has been completed in Appendix A.



Figure 29:Threatened flora species records within 5 km square radius of the Study area (DPE 2023b)



Figure 30: Threatened bird species records within 5 km square radius of the Study area (DPE 2023b)



Figure 31: Threatened mammal species records within 5 km square radius of the Study area (DPE 2023b)



Figure 32: Threatened insect, reptile and amphibian species records within 5 km square radius of the Study area (DPE 2023b)
5.2. Field Survey

5.2.1. Vegetation validation

The Study area covers approximately 9.61 ha (refer Table 1 and Table 34) and is located on land that predominantly contains remnant vegetation with small portions of existing infrastructure and agricultural land.

Field validation undertaken by ELA (2023) confirmed the presence of 19 PCTs within the Study area. Areas containing existing infrastructure, cleared vegetation, exotic pasture and water were also mapped (Table 9 to Table 29; and mapped Figure 33 to Figure 36). A well defined map series of the PCTs recorded across the Study is presented in Appendix E.

Detailed vegetation descriptions of PCTs are provided in Table 10 to Table 28 which is a compilation of field survey data collected by staff and information from the VIS (DPE 2022). The photographs below each table illustrate that vegetation type in the Study area.

РСТ	Plant Community Type Name
3019	Northern Hinterland Baloghia-Booyong Subtropical Rainforest
3021	Northern Lowland Subtropical Rainforest
3031	Northern Escarpment Coachwood-Beech Rainforest
3032	Northern Escarpment Sassafras-Booyong-Corkwood Rainforest
3033	Northern Escarpment Sassafras-Prickly Ash Rainforest
3161	Mid North Hinterland Wet Forest
3162	Mid North Lowland Flooded Gum-Palm Wet Forest
3165	Northern Brush Box Subtropical Wet Forest
3167	Northern Hinterland Blackbutt-Forest Oak Wet Forest
3172	Northern Ranges Brush Box-Flooded Gum Wet Forest
3174	Northern Turpentine-Brush Box Wet Forest
3202	Mid North Escarpment Ranges Blackbutt Forest
3203	Northern Escarpment New England Blackbutt Wet Forest
3205	Northern Escarpment New England Blackbutt-Tallowwood Wet Forest
3206	Northern Escarpment Corkwood-Brush Box Wet Forest
3208	Northern Escarpment Rocky Blackbutt Scrub Woodland
3248	Northern Blackbutt-Turpentine Shrub Forest
3829	Eastern New England Rocky Tea-tree Scrub
4107	Mid North Escarpment Coachwood Warm Temperate Rainforest Mid North Escarpment Coachwood Warm Temperate Rainforest (Blackbutt Emergent)

Table 9: PCTs identified within the DEGW

Table 10: PCT 3019 vegetation description

3019 - Northern Hinterland Baloghia-Booyong Subtropical Rainforest		
Vegetation formation	Rainforests	
Vegetation Class	Subtropical Rainforests	
Conservation status	Listed BC Act, E: Lowland Rainforest in the NSW North Coast and Sydney Basin Bioregions Listed EPBC Act, CE: Lowland Rainforest of Subtropical Australia	
Description	This PCT is widespread on coastal ranges and hinterland north from Bulahdelah. In the Study area it occurs as a tall dense rainforest between 650 – 830 meters asl. This PCT occurs adjacent to Dome Road and again near Barree Fire Road on the Dorrigo and Orara Escarpments. Tree species richness is very high and of a variable composition. It occurs on soils of moderate to high fertility on a range of lithologies, including basalt and clay-rich sediments.	
Characteristic canopy trees	Argyrodendron actinophyllum (Black Booyong), Diploglottis australis (Native Tamarind), Dendrocnide excelsa (Giant Stinging Tree), Lophostemon confertus, Niemeyera whitei (Rusty Plum), Daphnandra micrantha, Elattostachys nervosa (Green Tamarind), Ficus watkinsiana (Strangling Fig), Quintinia verdonii (Smooth Possumwood), Orites excelsus (Prickly Ash), Pararchidendron pruinosum (Snow Wood), Akania bidwillii (Turnipwood), Pennantia cunninghamii (Brown Beech), Planchonella australis (Black Apple), Polyscias murrayi (Pencil cedar), Pothos longipes (Pothos), Schizomeria ovata (Crab apple) and Sloanea woollsii (Yellow Carabeen).	
Characteristic mid- storey	Alectryon subcinereus (Native Quince), Acmena smithii (Lilly Pilly), Archontophoenix cunninghamiana (Bangalow Palm), Baloghia inophylla (Brush Bloodwood), Cryptocarya rigida (Forest Maple), Cyathea australis (Black Tree-fern), Myrsine variabilis, Cordyline stricta (Narrow-leaved Palm-lily), Polyosma cunninghamii (Featherwood), Tasmannia insipida (Brush Pepperbush) and Wilkiea huegeliana (Veiny Wilkiea). The epiphyte fern Asplenium australasicum (Bird's Nest Fern) occurs within the mid and upper storey. A diverse range of vines occur, including Calamus muelleri (Wait-a-While), Cissus antarctica (Kangaroo Vine), Derris involuta (Native Derris), Linospadix monostachyos (Walking Stick Palm), Petermannia cirrosa (Petermannia), Ripogonum discolor (Prickly Supplejack), Ripogonum elseyanum (Hairy Supplejack), Carronia multisepalea (Carronia) and Smilax australis (Lawyer Vine)	
Characteristic groundcovers	Lastreopsis decomposita (Trim Shield-fern), Gymnostachys anceps (Settlers' Twine), Lomandra spicata, Cyperus filipes (Slender Cyperus), Pellaea falcata (Sickle Fern), Pollia crispata (Pollia) and Drymophila moorei (Orange Berry).	
Variation and disturbance	High condition with a mature canopy.	
No. sites sampled	9 RDPs	
Threatened flora species	Niemeyera whitei, Sarcochilus fitzgeraldii, Tylophora woollsii, Marsdenia longiloba (Clear Milkvine)	
Fauna habitats	HBTs providing habitat for a number of species including small arboreal mammals and Microbats. Fleshy fruit trees and seasonal nectar flowering trees occur for a wide variety of birds including rainforest fruit doves and Grey-headed Flying Fox (GHFF). LWD (LWD) occurs which may provide habitat for small mammals, reptiles and amphibians. Rocky habitat which provides potential habitat for small mammals and reptiles, where both shelter and thermoregulation can be achieved. Burrows identified within the Study area may provide shelter for a range of mammals. The vine <i>Carronia multisepalea</i> was identified within this PCT and is an important feed vine for the threatened Southern Pink underwing moth (<i>Phyllodes</i> <i>imperialis smithersi</i>). Bird nests identified within this PCT indicate suitability of habitat for past or future breeding. Some unoccupied bird nests may be used by other species, such as microchiropteran bats, for roosting or breeding habitat. A dry ephemeral stream occurs within the Study area, which when flowing may provide habitat for a range of macroinvertebrates and frogs.	

3019 - Northern Hinterland Baloghia-Booyong Subtropical Rainforest

Activity area

0.54ha



Table 11: PCT 3021 vegetation description

3021 - Northern Lowlan	3021 - Northern Lowland Subtropical Rainforest	
Vegetation formation	Rainforests	
Vegetation Class	Subtropical Rainforests	
Conservation status	Listed BC Act, E: Lowland Rainforest in the NSW North Coast and Sydney Basin Bioregions BC Act, E: Lowland Rainforest on Floodplain in the New South Wales North Coast Bioregion Listed EPBC Act, CE: Lowland Rainforest of Subtropical Australia	
Description	The PCT is widespread in disjunct locations on the coast, lower foothills and coastal ranges north from Bulahdelah, with the most extensive occurrence being in the Coffs Harbour hinterland. In the Study area, this PCT occurs as two patches between Jersey Bull Road and Wonga Trail in Bindarri NP. This PCT occurs as a tall to extremely tall dense rainforest with the canopy or sub-canopy almost always including palm <i>Archontophoenix cunninghamiana</i> , often with the highest foliage cover of any species. The PCT occurs mainly at mid elevations of 200- 240 metres asl within the Study area. It usually occurs on clay-rich sedimentary or metasedimentary substrates, on creek flats or sheltered lower slopes.	
Characteristic canopy trees	Canopy is dominated by <i>Lophostemon confertus, Sloanea australis</i> (Maiden's Blush) and <i>Diploglottis australis</i> with <i>Eucalyptus saligna</i> (Sydney Blue Gum) occasionally occurring.	
Characteristic mid- storey	Archontophoenix cunninghamiana, Callicoma serratifolia (Black Wattle), Quintinia sieberi (Possumwood), Trochocarpa laurina (Tree Heath), Ackama paniculosa (Soft Corkwood), Ficus coronata (Sandpaper Fig) and Cyathea leichhardtiana (Prickly Tree Fern). Austrocallerya megasperma.	
Characteristic groundcovers	Lomandra spicata	
Variation and disturbance	High condition with a mature canopy.	
No. sites sampled	1 RDP	
Threatened flora species	Parsonsia dorrigoensis (Milky Silkpod)	

3021 - Northern Lowland Subtropical Rainforest

0.04ha

Fauna habitats

Fleshy fruit trees and seasonal nectar flowering trees occur for a wide variety of birds including rainforest fruit doves and GHFF. A dry ephemeral stream which when flowing may provide habitat for a range of macroinvertebrates and frogs.

Activity area



Table 12: PCT 3031 vegetation description

3031 - Northern Escarpment Coachwood-Beech Rainforest		
Vegetation formation	Rainforests	
Vegetation Class	Northern Warm Temperate Rainforests	
Conservation status	N/A	
Description	This PCT generally occurs on the escarpments and higher ranges between Washpool NP and Barrington Tops. Within the Study area the PCT occurs scattered throughout on mid to upper slopes of the Dorrigo and Upper Orara Escarpment ranging from 510 -955 metres asl. This PCT is one of the dominant PCTs within the Study area, occurring as a very tall to extremely tall rainforest. The canopy is typically dominated by two species with the highest cover, almost always including <i>Ceratopetalum apetalum</i> .	
Characteristic canopy trees	Ceratopetalum apetalum (Coachwood), Acradenia euodiiformis (Yellow Satinheart), Acacia melanoxylon (Blackwood), Ackamia paniculosa, Schizomeria ovata, Daphnandra micrantha, Callicoma serratifolia, Tristaniopsis collina (Mountain Water Gum), Acmena smithii, Doryphora sassafras (Sassafras), Nothofagus moorei (Antarctic Beech), Orites excelsus, Tristaniopsis laurina (Water Gum), and Lophostemon confertus (Brush Box) and Eucalyptus campanulata (New England Blackbutt) as old growth emergent.	
Characteristic mid- storey	Pittosporum multiflorum (Orange Thorn), Alyxia ruscifolia (Prickly Alyxia), Anopterus macleayanus (Queensland laurel), Quintinia verdonii, Sarcopteryx stipata (Steelwood), Cinnamomum oliveri (Oliver's Sassafras), Cordyline petiole (Broad-leaved Palm Lily), Cyathea australis, Cyathea leichhardtiana, Tasmannia insipida, Leucopogon lanceolatus (Lance Bearded-heath), Linospadix monostachyos, Myrsine variabilis, Triunia youngiana (Spice Bush), Neolitsea dealbata (Hairy-leaved Bolly Gum), Notelaea longifolia (Large Mock-olive), Pittosporum undulatum (Native Daphne), Pothos longipes, Quintinia sieberi, Dysoxylum fraserianum, Sloanea woollsii, Stenocarpus salignus (Scrub Beefwood), Cryptocarya dorrigoensis, Synoum glandulosum (Scentless Rosewood), Archontophoenix cunninghamiana, Trochocarpa laurina and Wilkiea huegeliana. Vines occurring include Calamus muelleri,	

3031 - Northern Escarpment Coachwood-Beech Rainforest		
	Palmeria scandens (Anchor Vine), Petermannia cirrosa, Ripogonum discolor, Ripogonum elseyanum, Rubus nebulosus (Green-leaved Bramble)	
Characteristic groundcovers	Lomandra spicata (Jungle Mat-rush), Blechnum cartilagineum (Gristle Fern), Lomandra longifolia (Spiny-headed Mat-rush), Lepidosperma laterale (Variable Sword-sedge, Adiantum hispidulum (Rough Maidenhair Fern), Gymnostachys anceps, Blechnum patersonii (Strap Water Fern), Blechnum wattsii (Hard Water Fern), Drymophila moorei	
Variation and disturbance	High condition with a mature canopy.	
No. sites sampled	31 RDPs	
Threatened flora species	Niemeyera whitei, Marsdenia longiloba, Tylophora woollsii, Sarcochilus fitzgeraldii	
Fauna habitats	HBTs occur providing habitat for a number of species including small arboreal mammals and Microbats, and very large hollows (>40cm) suitable for Forest Owls and large arboreal mammals such as Yellow-bellied Glider and Greater Gliders. Fleshy fruit trees and seasonal nectar flowering trees occur for a wide variety of birds including rainforest fruit doves and GHFF. Wompoo Fruit-Dove was recorded calling within a section of this PCT. Glossy Black- Cockatoo feed tree <i>Allocasuarina</i> stand. LWD occurs within this PCT which may provide habitat for small mammals, reptiles and amphibians. Rocky habitat occurs providing potential habitat for small mammals and reptiles, where both shelter and thermoregulation can be achieved. Burrows identified within the Study area may provide shelter for a range of mammals. Some unoccupied bird nests may be used by other species, such as microchiropteran bats, for roosting or breeding habitat. Examples of nest material found include Gerygone nest, Lyrebirds display nest and brush turkey nest. A permanent, rocky stream occurred in this PCT, providing habitat for aquatic fauna including macroinvertebrates and frogs.	

Activity area



Table 13: PCT 3032 vegetation description

3032 - Northern Escarpment Sassafras-Booyong-Corkwood Rainforest	
Vegetation formation	Rainforests
Vegetation Class	Northern Warm Temperate Rainforests
Conservation status	Listed BC Act, E: Lowland Rainforest in the NSW North Coast and Sydney Basin Bioregions Listed EPBC Act, CE: Lowland Rainforest of Subtropical Australia

3032 - Northern Escarpment Sassafras-Booyong-Corkwood Rainforest	
Description	This PCT occurs extensively on escarpments and adjacent ranges north from Barrington Tops. In the Study area the PCT occurs scattered throughout on mid slopes of the Dorrigo Escarpment ranging from 570- 875 metres asl. The PCT is very tall to extremely tall dense rainforest. The canopy composition is very variable, although frequently includes <i>Doryphora sassafras</i> and <i>Schizomeria ovata</i> .
Characteristic canopy trees	Ackama paniculosa, Argyrodendron actinophyllum, Ceratopetalum apetalum, Sloanea woollsii, Callicoma serratifolia, Doryphora sassafras, Orites excelsus, Ficus watkinsiana, Lophostemon confertus, Acacia melanoxylon, Eucalyptus campanulata
Characteristic mid-storey	Acmena smithii, Anopterus macleayanus, Archontophoenix cunninghamiana, Baloghia inophylla, Cordyline stricta (Narrow-leaved Palm Lily), Cryptocarya glaucescens (Jackwood), Cryptocarya meissneriana (Thick-leaved Laurel), Hymenosporum flavum (Native Frangipani), Cyathea australis, Myrsine variabilis, Neolitsea dealbata, Pittosporum multiflorum, Planchonella australis, Quintinia verdonii, Quintinia sieberi, Sarcopteryx stipata, Stenocarpus salignus, Synoum glandulosum, Tasmannia insipida, Trochocarpa laurina and Wilkiea huegeliana. Vine species occurring include: Calamus muelleri, Gynochthodes jasminoides (Sweet Morinda), Parsonsia velutina (Hairy Silkpod), Cissus antarctica, Linospadix monostachyos, Palmeria scandens, Ripogonum discolor and Ripogonum elseyanum.
Characteristic groundcovers	Lomandra spicata, Lastreopsis decomposita, Dianella caerulea (Blue Flax-lily), Blechnum cartilagineum and Blechnum patersonii
Variation and disturbance	High condition with a mature canopy.
No. sites sampled	11 RDPs
Threatened flora species	Niemeyera whitei
Fauna habitats	Fleshy fruit trees and seasonal nectar flowering trees occur for a wide variety of birds including rainforest fruit doves and GHFF. LWD occurs within this PCT which may provide habitat for small mammals, reptiles and amphibians. Examples of nest material found include Gerygone nest, Lyrebirds display nest and Brush Turkey nest. Flaking bark can provide habitat for a range of reptiles and microbats.

Activity area

0.64ha



Table 14: PCT 3033 vegetation description

3033 - Northern Escarpment Sassafras-Prickly Ash Rainforest	
Vegetation formation	Rainforests
Vegetation Class	Northern Warm Temperate Rainforests
Conservation status	Listed BC Act, E: Lowland Rainforest on Floodplain in the NSW North Coast Bioregion
Description	This PCT occurs extensively on the escarpments and adjacent ranges north from Barrington Tops. In the Study area the PCT generally occurs upslope from PCT 3031 ranging from 660 – 970 meters asl. The PCT occurs as very tall to extremely tall dense rainforest on Dorrigo Escarpment on a wide range of lithologies and soil types.
Characteristic canopy trees	Ceratopetalum apetalum, Schizomeria ovata, Doryphora sassafras, Callicoma serratifolia, Orites excelsus, Lophostemon confertus, Planchonella australis, Acacia melanoxylon, Ackama paniculosa, Araucaria cunninghamii (Hoop Pine), Sloanea australis, Tristaniopsis Iaurina, Elaeodendron australe (Red Olive Plum), Karrabina benthamiana (Red Carabeen)
Characteristic mid-storey	Acmena smithii, Acradenia euodiiformis, Anopterus macleayanus, Elattostachys nervosa, Ficus watkinsiana, Hymenosporum flavum, Linospadix monostachyos, Neolitsea dealbata, Polyosma cunninghamii, Quintinia sieberi, Ripogonum discolor, Archirhodomyrtus beckleri (Rose Myrtle), Sarcopteryx stipata, Stenocarpus salignus, Triunia youngiana, Tasmannia insipida, Wilkiea huegeliana, Cyathea australis
Characteristic groundcovers	Lomandra spicata; Gymnostachys anceps, Blechnum patersonii, Doodia aspera (Prickly Rasp Fern)
Variation and disturbance	High condition with a mature canopy.
No. sites sampled	8 RDPs
Threatened flora species	Niemeyera whitei, Tylophora woollsii, Sarcochilus fitzgeraldii
Fauna habitats	HBTs occur providing habitat for a number of species including small arboreal mammals and Microbats, and very large hollows (>40cm) suitable for Forest Owls and large arboreal mammals such as Yellow-bellied Glider and Greater Gliders. Fleshy fruit trees and seasonal nectar flowering trees occur for a wide variety of birds including rainforest fruit doves and GHFF. LWD occurs within this PCT which may provide habitat for small mammals, reptiles and amphibians. Rocky habitat which provide potential habitat for small mammals and reptiles, where both shelter and thermoregulation can be achieved.

Activity area

0.64ha



Table 15: PCT 3161 vegetation description

3161 - Mid North Hinterland Wet Forest	
Wet Sclerophyll Forests (Shrubby sub-formation)	
North Coast Wet Sclerophyll Forests	
N/A	
This PCT occurs on lower slopes and sheltered slopes and occasionally in gullies, in coastal ranges and valleys between Woolgoolga and Macksville, North Coast. In the Study area the PCT occurs as a single patch between Jersey Bull Road and Wonga Trail, upslope of Urumbilum River in Bindarri NP. The PCT occurs at low elevations ranging between 215 – 255 metres asl.	
Eucalyptus saligna, Eucalyptus microcorys, Lophostemon confertus, with emergent Eucalyptus pilularis (Blackbutt)	
Archontophoenix cunninghamiana, Ackama paniculosa, Cyathea sp., occasionally occurring were Schizomeria ovata, Ficus coronata and Allocasuarina torulosa (Forest She-oak).	
Cyperus filipes, Adiantum hispidulum, Blechnum sp. and Lepidosperma laterale	
This PCT occurs predominantly in a good or undisturbed condition with a mature canopy.	
1 RDP	
Rhodamnia rubescens (Scrub Turpentine), Parsonsia dorrigoensis, Niemeyera whitei	
Fleshy fruit trees and seasonal nectar flowering trees occur for a wide variety of birds including rainforest fruit doves and GHFF. Glossy Black-Cockatoo feed tree <i>Allocasuarina torulosa</i> . LWD occurs within this PCT which may provide habitat for small mammals, reptiles and amphibians.	



3162 - Mid North Lowland Flooded Gum-Palm Wet Forest	
Vegetation formation	Wet Sclerophyll Forests (Shrubby sub-formation)
Vegetation Class	North Coast Wet Sclerophyll Forests
Conservation status	N/A
Description	This PCT occurs on sheltered lower slopes and along creeks, in coastal lowland valleys between Woolgoolga and Macksville, North Coast. This PCT occurs predominately on clay- rich sediments and metasediments located on sheltered lower slopes and along creeks in the Upper Orara Valley in Bindarri NP abutting the Urumbilum River. This PCT occurs at relatively low elevations of mostly less than 170 metres asl, occurringas a tall open sclerophyll forest with a dense tall mesic subcanopy within the Study area. It grades into PCT 3174 upslope and 3172 downslope.
Characteristic canopy trees	<i>Eucalyptus grandis</i> (Flooded Gum) <i>, Lophostemon conferta</i> (Brushbox) and <i>Eucalyptus saligna</i> (Sydney Blue Gum)
Characteristic mid- storey	Archontophoenix cunninghamiana (Bangalow Palm), Cyathea australis (Rough Tree Fern), Neolitsea dealbata (White Bolly Gum), Polyscias murrayi (Pencil Cedar) and Callicoma serratifolia (Black Wattle)
Characteristic groundcovers	Dianella caerulea (Blue Flax-lily) and Calochlaena dubia (Rainbow Fern)
Variation and disturbance	High condition with mature canopy trees and a dense subcanopy to a slightly degraded condition at the end of Pine Rd (end point of DEGW) which contains mature regrowth from historic clearing, occurring with a disturbed groundcover.
No. sites sampled	1 RDP
Threatened flora species	Marsdenia longiloba (Clear Milkvine)
Fauna habitats	Amphibian habitat in and adjacent to Strahler. HBTs occur providing habitat for a number of small arboreal mammals and Microbats. Fleshy fruit trees and seasonal nectar flowering trees occur for a wide variety of birds including rainforest fruit doves and GHFF. Known Koala feed trees occur (<i>Eucalyptus saligna</i>).

Table 16: PCT 3162 vegetation description

Activity area

0.06ha



Table 17: PCT 3165 vegetation description

3165 - Northern Brush Box Subtropical Wet Forest	
Vegetation formation	Wet Sclerophyll Forests (Shrubby sub-formation)
Vegetation Class	North Coast Wet Sclerophyll Forests
Conservation status	Listed BC Act, E: Lowland Rainforest in the NSW North Coast and Sydney Basin Bioregions BC Act, E: Lowland Rainforest on Floodplain in the New South Wales North Coast Bioregion Listed EPBC Act, CE: Lowland Rainforest of Subtropical Australia
Description	This PCT occurs at disjunct locations in the ranges north from Lismore and in coastal ranges and valleys from Coffs Harbour to Taree. In the Study area the PCT occurs as three patches south of Dome Road ranging in elevation from 610 - 730 metres asl. The canopy commonly includes <i>Lophostemon confertus</i> , which often has the highest foliage cover. PCT 3202 or 3248 occurs upslope.
Characteristic canopy trees	Lophostemon confertus, Ceratopetalum apetalum, Schizomeria ovata
Characteristic mid-storey	Sarcopteryx stipata, Wilkiea huegeliana, Tabernaemontana pandacaqui (Banana Bush), Doryphora sassafras, Pittosporum multiflorum, Ripogonum discolor, Triunia youngiana, Quintinia spp., Callicoma serratifolia, Acradenia euodiiformis
Characteristic groundcovers	Lomandra spp., Gymnostachys anceps
Variation and disturbance	High condition with a mature canopy.
No. sites sampled	2 RDP
Threatened flora species	Niemeyera whitei
Fauna habitats	HBTs occur providing habitat for a number of species including small arboreal mammals and Microbats, and very large hollows (>40cm) suitable for Forest Owls and large arboreal mammals such as Yellow-bellied Glider and Greater Gliders. Fleshy fruit trees and seasonal nectar flowering trees occur for a wide variety of birds including rainforest fruit doves and GHFF. LWD occurs within this PCT which may provide habitat for small mammals, reptiles and amphibians. Amphibian habitat in and adjacent to ephemeral Strahlers – <i>Assa darlingtoni</i> (Pouched Frog) listed as Vulnerable under the BC Act was heard calling within this PCT, providing habitat for aquatic fauna including macroinvertebrates and frogs.
Activity area	0.19ha



Table 18: PCT 3167 vegetation description

3167 - Northern Hinterland Blackbutt-Forest Oak Wet Forest	
Vegetation formation	Wet Sclerophyll Forests (Grassy sub-formation)
Vegetation Class	Northern Hinterland Wet Sclerophyll Forests
Conservation status	N/A
Description	This PCT is a very tall to extremely tall sclerophyll forest occurring along the coastal hills and ranges from north of Lismore to Bulahdelah. In the Study area the PCT occurs within Bindarri NP primarily along Bangalore Road ranging in elevation from 225-570 metres asl. The tree canopy almost always includes <i>Eucalyptus pilularis</i> with a sub-canopy of a sub-canopy of <i>Allocasuarina torulosa</i> .
Characteristic canopy trees	Eucalyptus pilularis, Eucalyptus microcorys, Lophostemon confertus, Argyrodendron actinophyllum, Araucaria cunninghamii, Ackama paniculosa, Quintinia sieberi, Acradenia euodiiformis, Karrabina benthamiana
Characteristic mid-storey	Allocasuarina torulosa, Synoum glandulosum, Cryptocarya rigida, Trochocarpa laurina, Callicoma serratifolia, Elaeocarpus reticulatus (Blueberry Ash). Vines occurring include: Cissus hypoglauca (Water Vine), Smilax australis, Gynochthodes jasminoides, Hymenosporum flavum, Macrozamia sp. (Cycad), Palmeria racemosa (Anchor Vine), Parsonsia velutina, Triunia youngiana
Characteristic groundcovers	Blechnum cartilagineum, Dianella caerulea, Adiantum formosum (Black Stem), Sticherus flabellatus (Shiny Fan Fern), Rubus nebulosus
Variation and disturbance	High condition with variation from historic logging.
No. sites sampled	3 RDP
Threatened flora species	Parsonsia dorrigoensis
Fauna habitats	Stag occur providing habitat for a number of Microbat species. Fleshy fruit trees and seasonal nectar flowering trees occur for a wide variety of birds including rainforest fruit doves and GHFF. Glossy Black-Cockatoo feed tree <i>Allocasuarina torulosa</i> . LWD occurs within this PCT which may provide habitat for small mammals, reptiles and amphibians. Wompoo Fruit-dove was heard calling within this PCT. A permanent, rocky stream was present in the Study area, providing habitat for aquatic fauna including macroinvertebrates and frogs.

Activity area

0.39ha



Table 19: PCT 3172 vegetation description

3172 - Northern Ranges Brush Box-Flooded Gum Wet Forest		
Vegetation formation	Wet Sclerophyll Forests (Shrubby sub-formation);	
Vegetation Class	North Coast Wet Sclerophyll Forests;	
Conservation status	N/A	
Description	Extremely tall sclerophyll open forest which occurs predominantly in the Border Ranges and adjacent ranges and foothills in the Murwillumbah-Woodenbong-Lismore district, with scattered and disjunct occurrences south to the ranges west of Coffs Harbour. In the Study area this PCT occurs as two patches. One patch occurs along Whitneys Road in Dorrigo NP (715-790 metres asl) and the second patch occurs in Bindarri NP between Jersey Bull Road and Pine Creek Road (145-195 metres asl).	
Characteristic canopy trees	Eucalyptus grandis, Lophostemon confertus, Ceratopetalum apetalum, Eucalyptus microcorys	
Characteristic mid-storey	Callicoma serratifolia, Cyathea australis, Archontophoenix cunninghamiana, Polyscias murrayi, Cryptocarya glaucescens, Quintinia sieberi, Neolitsea dealbata, Archirhodomyrtus beckleri	
Characteristic groundcovers	Blechnum cartilagineum, Dianella caerulea	
Variation and disturbance	High condition with a mature canopy.	
No. sites sampled	11 RDP	
Threatened flora species	Niemeyera whitei, Marsdenia longiloba, Grammitis stenophylla (Narrow-leafed Finger Fern)	
Fauna habitats	HBTs occur providing habitat for a number of species including small arboreal mammals and Microbats, and very large hollows (>40cm) suitable for Forest Owls and large arboreal mammals such as Yellow-bellied Glider and Greater Gliders. Fleshy fruit trees and seasonal nectar flowering trees occur for a wide variety of birds including rainforest fruit doves and GHFF. Glossy Black-Cockatoo feed tree <i>Allocasuarina torulosa</i> . LWD occurs within this PCT which may provide habitat for small mammals, reptiles and amphibians. Rocky habitat which provides potential habitat for small mammals and reptiles, where both shelter and thermoregulation can be achieved.	

Activity area

0.55ha



Table 20: PCT 3174 vegetation description

3174 - Northern Turpentine-Brush Box Wet Forest		
Vegetation formation	Wet Sclerophyll Forests (Shrubby sub-formation)	
Vegetation Class	North Coast Wet Sclerophyll Forests	
Conservation status	N/A	
Description	Extremely tall open forest which occurs on coastal ranges and valleys north from Bulahdelah. Within the Study area is located on the lower and mid slopes of the valleys within Bindarri NP. The canopy is characterized mostly by <i>Syncarpia glomulifera</i> and <i>Lophostemon confertus</i> , accompanied commonly by <i>Eucalyptus microcorys</i> .	
Characteristic canopy trees	Syncarpia glomulifera, Lophostemon confertus and Eucalyptus microcorys.	
Characteristic mid-storey	Cryptocarya rigida, Trochocarpa laurina, Callicoma serratifolia, Schizomeria ovata, Acmena smithii, occasionally Pilidiostigma glabrum (Plum Myrtle), Elaeodendron australe, Embelia australiana (Embelia), Stenocarpus salignus, Archontophoenix cunninghamiana, Litsea australis (Brown Bolly Gum). Allocasuarina torulosa is also very frequent and occasionally has a high foliage cover in the sub-canopy. Species occurring occasionally include Quintinia sieberi, Alloxylon pinnatum (Dorrigo Waratah), Petermannia cirrosa	
Characteristic groundcovers	Lomandra spicata, Cyperus filipes, Blechnum wattsii, Blechnum cartilagineum, Lomandra longifolia, Sticherus flabellatus and Dianella caerulea, with occasional occurrences of Doodia aspera	
Variation and disturbance	High condition with a mature canopy.	
No. sites sampled	5 RDP	
Threatened flora species	Niemeyera whitei, Parsonsia dorrigoensis, Grammatis stenophylla	
Fauna habitats	Fleshy fruit trees and seasonal nectar flowering trees occur for a wide variety of birds including rainforest fruit doves and GHFF. Glossy Black-Cockatoo feed tree <i>Allocasuarina torulosa</i> . Sphagnum moss was present within this PCT, supporting a wide variety of birds, mammals, frogs and invertebrates. A permanent stream occurs is this PCT, providing habitat for aquatic fauna including macroinvertebrates and frogs.	



Table 21: PCT 3202 vegetation description

3202 - Mid North Escarpment Ranges Blackbutt Forest		
Vegetation formation	Wet Sclerophyll Forests (Shrubby sub-formation)	
Vegetation Class	Northern Escarpment Wet Sclerophyll Forests	
Conservation status	N/A	
Description	This PCT occurs extensively on the slopes on the south side of Dorrigo escarpment and less extensively in the Tapin Tops area north-west of Taree. Very tall to extremely tall, sclerophyll open forest with a sparse to dense sub-canopy or mid-stratum of low to tall trees and a sparse to dense mixed ground layer. Within the Study area occurs primarily on upperslopes within Dorrigo and Bindarri NP 510 – 795 metres asl. The tree canopy very frequently includes <i>Eucalyptus pilularis</i> occasionally with <i>Eucalyptus campanulata</i> .	
Characteristic canopy trees	The canopy is dominated by <i>Eucalyptus pilularis</i> occasionally with <i>Eucalyptus campanulata, Lophostemon confertus, Syncarpia glomulifera</i> and <i>Eucalyptus microcorys.</i> In some areas the canopy was dominated by <i>Eucalyptus campanulata</i> .	
Characteristic mid-storey	Trochocarpa laurina, Callicoma serratifolia, Elaeocarpus reticulatus. Other midstorey species include Archontophoenix cunninghamiana, Ackama paniculosa, Acmena smithii, Alloxylon pinnatum, Anopterus macleayanus, Ceratopetalum apetalum, Cordyline stricta, Cryptocarya rigida, Cyathea australis, Elaeocarpus reticulatus, Linospadix monostachyos, Neolitsea dealbata, Xanthorrhoea sp., Notelaea longifolia, Orites excelsus, Synoum glandulosum, Argyrodendron actinophyllum, Carronia multisepalea, Diospyros pentamera (Myrtle Ebony), Elattostachys nervosa (Green Tamarind), Embelia australiana, Tabernaemontana pandacaqui	
Characteristic groundcovers	Blechnum cartilagineum, Dianella caerulea, Hibbertia scandens, Lastreopsis sp., Lomandra longifolia, Lomandra spicata, Pteridium esculentum (Common Bracken), Smilax sp.	
Variation and disturbance	High condition with a mature canopy.	
No. sites sampled	11 RDP	
Threatened flora species	Niemeyera whitei, Marsdenia longiloba, Parsonsia dorrigoensis	
Fauna habitats	HBTs occur providing habitat for a number of species including small arboreal mammals and Microbats, and very large hollows (>40cm) suitable for Forest Owls and large arboreal mammals such as Yellow-bellied Glider and Greater Gliders. Fleshy fruit trees and seasonal nectar flowering trees occur for a wide variety of birds including rainforest fruit doves and GHFF. Glossy Black-Cockatoo feed tree <i>Allocasuarina torulosa</i> . LWD occurs within this PCT which may provide habitat for small mammals, reptiles and amphibians. Rocky habitat which provides potential habitat for small mammals and reptiles, where both shelter and thermoregulation can be achieved. Burrows identified within the Study area may provide shelter for a range of mammals. The vine <i>Carronia multisepalea</i> was identified within this PCT and is an important feed vine for the threatened Southern Pink underwing moth.	
Activity area	0.95ha	

3202 - Mid North Escarpment Ranges Blackbutt Forest



Table 22: PCT 3203 vegetation description

3203 - Northern Escarpment New England Blackbutt Wet Forest		
Vegetation formation	Wet Sclerophyll Forests (Shrubby sub-formation)	
Vegetation Class	Northern Escarpment Wet Sclerophyll Forests	
Conservation status	N/A	
Description	This PCT is mainly restricted to the high ranges in the western part of New England NP with isolated occurrences in the ranges west of Kempsey, north coast and northern tablelands. In the Study area, this PCT occurs on the Dorrigo Escarpment at high elevations >900m asl between Dibbs Head and Slingsbys Trail on granodiorite and metasediments. This PCT occurs as a very tall to extremely tall, sclerophyll open forest with a sparse to dense subcanopy or mid-stratum of low to tall trees and a sparse to dense mixed ground layer. The canopy is dominated by <i>Eucalyptus campanulata</i> .	
Characteristic canopy trees	Eucalyptus campanulata	
Characteristic mid- storey	Trochocarpa laurina, Callicoma serratifolia, Ceratopetalum apetalum, Synoum glandulosum, Allocasuarina littoralis (Black She-oak), Cordyline stricta, Tasmannia insipida, Archirhodomyrtus beckleri, Leucopogon lanceolatus, Alyxia ruscifolia, Banksia integrifolia subsp. monticola (Mountain Banksia) and Notelaea longifolia with Palmeria scandens	
Characteristic groundcovers	Blechnum cartilagineum, Dianella caerulea and Lomandra longifolia	
Variation and disturbance	High condition with a mature canopy.	
No. sites sampled	4 RDPs	
Threatened flora species	N/A	
Fauna habitats	HBTs occur providing habitat for a number of species including small arboreal mammals and Microbats, and very large hollows (>40cm) suitable for Forest Owls and large arboreal mammals such as Yellow-bellied Glider and Greater Gliders. Seasonal nectar flowering trees occur for GHFF and other arboreal mammals. Stands of <i>Allocasuarina</i> spp. identified within this PCT are possible feed trees for Glossy Black-cockatoo is listed as Vulnerable under BC and EPBC act.	

3203 - Northern Escarpment New England Blackbutt Wet Forest

Activity area



Table 23: PCT 3205 vegetation description

3205 - Northern Escarpment New England Blackbutt-Tallowwood Wet Forest		
Vegetation formation	Wet Sclerophyll Forests (Shrubby sub-formation)	
Vegetation Class	Northern Escarpment Wet Sclerophyll Forests	
Conservation status	N/A	
Description	Very tall to extremely tall, sclerophyll open forest, with a sparse to dense sub-canopy of small trees, which occurs extensively on escarpment ranges between east of Tenterfield and Barrington Tops, North Coast. In the Study area this PCT occurs on escarpment ranges in Dorrigo NP at mid to high elevations of 640-700 metres asl. The tree canopy very frequently includes <i>Eucalyptus campanulata</i> , commonly with <i>Eucalyptus microcorys</i> or <i>Eucalyptus saligna</i> and occasionally <i>Eucalyptus laevopinea</i> (Silver Top Stringybark).	
Characteristic canopy trees	Eucalyptus campanulata, Eucalyptus microcorys, Eucalyptus laevopinea	
Characteristic mid- storey	Trochocarpa laurina, Cryptocarya rigida, Leucopogon lanceolatus, Allocasuarina torulosa, Archirhodomyrtus beckleri. Other mid-storey species include Leptospermum spp.	
Characteristic groundcovers	Blechnum cartilagineum, Lomandra longifolia, Calochlaena dubia	
Variation and disturbance	High condition with a mature canopy.	
No. sites sampled	1 RDP	
Threatened flora species	N/A	
Fauna habitats	Fleshy fruit trees and seasonal nectar flowering trees occur for a wide variety of birds including rainforest fruit doves and GHFF. Glossy-black Cockatoo feed tree <i>Allocasuarina torulosa</i> . LWD occurs within this PCT which may provide habitat for small mammals, reptiles and amphibians.	
Activity area	0.06ha	



3206 - Northern Escarpment Corkwood-Brush Box Wet Forest		
Vegetation formation	Wet Sclerophyll Forests (Shrubby sub-formation)	
Vegetation Class	Northern Escarpment Wet Sclerophyll Forests	
Conservation status	N/A	
Description	This PCT occurs on the escarpment ranges from south-east of Tenterfield to north-west of Taree, with a disjunct southern occurrence on Barrington Tops. In the study the PCT occurs predominately on the Dorrigo Escarpment >600m asl as a very tall mature open sclerophyll forest with a tall mesic or rainforest subcanopy. It grades in and out of PCT 4107 – Mid North Escarpment Coachwood Warm Temperate Rainforest and although sheltered it occurs on more exposed or steep slopes on the edge of the Dorrigo Escarpment than PCT 4107. Some areas comprise very mature old growth Brush Box or Tallowwood trees with 150-200 cm DBH. Although similar species occur within PCT 4107, this PCT occurs as a more open sclerophyll community with associated wet sclerophyll shrubs and groundcover and has a dominant Myrtaceae canopy.	
Characteristic canopy trees	Lophostemon confertus and Eucalyptus microcorys with a subcanopy of Schizomeria ovata, Ceratopetalum apetalum and Tristaniopsis collina	
Characteristic mid- storey	Trochocarpa laurina, Anopterus macleayanus, Tasmannia insipida, Cryptocarya glaucescens, Cryptocarya rigida, Wilkiea huegeliana, Sarcopteryx stipata, Doryphora sassafras, Quintinia verdonii, Pittosporum multiflorum, Ripogonum discolor and Eupomatia laurina (Copper Laurel)	
Characteristic groundcovers	Blechnum cartilagineum, Blechnum wattsii, Dianella caerulea and Lomandra longifolia	
Variation and disturbance	High condition with a mature canopy.	
No. sites sampled	26 RDPs	
Threatened flora species	Niemeyera whitei, Parsonsia dorrigoensis	
Fauna habitats	Amphibian habitat in and adjacent to ephemeral Strahlers – <i>Assa darlingtoni</i> (Pouched Frog) listed as Vulnerable under the BC Act was heard calling within this PCT within an ephemeral pool of a drainage line. HBTs occur providing habitat for a number of species including small arboreal mammals and Microbats, and very large hollows (>40cm) suitable for Forest Owls and large arboreal mammals such as Yellow-bellied Glider and Greater Gliders. Fleshy fruit trees and seasonal nectar flowering trees occur for a wide variety of birds including rainforest fruit	

doves and Grey-headed Flying Fox. Known Koala trees occur (Eucalyptus micorcorys).

Table 24: PCT 3206 vegetation description

Activity area

2.54ha



3208 - Northern Escarpme	nt Rocky Blackbutt Scrub Woodland
Vegetation formation	Wet Sclerophyll Forests (Shrubby sub-formation)
Vegetation Class	Northern Escarpment Wet Sclerophyll Forests
Conservation status	N/A
Description	This PCT occurs as a tall to very tall dry shrubby sclerophyll open forest found on rugged gorge and escarpment slopes along the North Coast escarpment between Carrai and Nymboida. Within the Study area the PCT occurs on upperslopes of Bindarri NP ranging between 800-850 metres asl. The tree canopy almost always includes a high cover of <i>Eucalyptus campanulata</i> . This PCT is found on shallow sandy soils derived from sedimentary, metamorphic and granitic rocks and occurs on a range of aspects on steep to very steep slopes, often broken by exposed rocks and boulders.
Characteristic canopy trees	Eucalyptus campanulata
Characteristic mid- storey	Leucopogon lanceolatus, Allocasuarina torulosa, Hakea ochroptera (Hakea), Xanthorrhoea australis (Austral Grass-tree), with occasional occurrences of Acmena smithii and Cordyline petiolaris
Characteristic groundcovers	<i>Dianella caerulea, Entolasia stricta</i> (Wiry Panic) <i>, Lomandra longifolia</i> (Spiny-headed Mat- rush) <i>, Poa</i> sp.
Variation and disturbance	This PCT occurs predominantly in a good or undisturbed condition as with a very mature canopy.
No. sites sampled	1 RDP
Threatened flora species	N/A
Fauna habitats	HBTs occur providing habitat for a number of species including small arboreal mammals and Microbats, and very large hollows (>40cm) suitable for Forest Owls and large arboreal mammals such as Yellow-bellied Glider and Greater Gliders. Seasonal nectar flowering trees occur for GHFF. Glossy Black-Cockatoo feed tree <i>Allocasuarina torulosa</i> . LWD occurs within this PCT which may provide habitat for small mammals, reptiles and amphibians. Rocky habitat which provides potential habitat for small mammals and reptiles, where both shelter and thermoregulation can be achieved.
a	0.000

Table 25: PCT 3208 vegetation description

Activity area

0.06ha



3248 - Northern Blackbutt	-Turpentine Shrub Forest		
Vegetation formation	Wet Sclerophyll Forests (Grassy sub-formation)		
Vegetation Class	Northern Hinterland Wet Sclerophyll Forests		
Conservation status	N/A		
Description	This PCT typically occurs as a very tall to extremely tall, shrubby or shrub-grass sclerophyll open forest, which occurs in the coastal hills and coastal hinterland ranges north from Bulahdelah. In the Study area the PCT occurs on mid to upper slopes within Bindarri NP at elevations between 245-650 metres asl. The canopy very frequently includes <i>Eucalyptus pilularis</i> , which often dominates with the highest foliage cover. It occurs on fine-grained sedimentary and meta-sedimentary lithologies, or occasionally on coarser-grained substrates such as sandstone or conglomerate.		
Characteristic canopy trees	The canopy frequently includes <i>Eucalyptus pilularis</i> with <i>Angophora costata</i> (Smooth- barked Apple), <i>Syncarpia glomulifera, Eucalyptus microcorys, Allocasuarina torulosa</i> and <i>Lophostemon confertus</i> .		
Characteristic mid- storey	Callistemon salignus, Callicoma serratifolia, Archirhodomyrtus beckleri, Trochocarpa laurina, Archontophoenix cunninghamiana; Cyathea sp., Cryptocarya glaucescens, Ceratopetalum apetalum, Persoonia media (Medium Geebung), Synoum glandulosum		
Characteristic groundcovers	Lepidosperma lateral, Lomandra longifolia, Ottochloa gracillima (Pademelon grass), Oplismenus aemulus (Australian Basket grass), Pteridium esculentum, Oplismenus imbecillis (Creeping Beard Grass), Smilax australis, Sticherus flabellatus var. flabellatus, Hibbertia scandens		
Variation and disturbance	High condition with a mature canopy.		
No. sites sampled	8 RDP		
Threatened flora species	Rhodamnia rubescens, Parsonsia dorrigoensis		
Fauna habitats	HBTs occur providing habitat for a number of species including small arboreal mammals and Microbats. Fleshy fruit trees and seasonal nectar flowering trees occur for a wide variety of birds including rainforest fruit doves and GHFF. Glossy Black-Cockatoo feed tree <i>Allocasuarina torulosa</i> . LWD occurs within this PCT which may provide habitat for small mammals, reptiles and amphibians. Nest material, specifically Lyrebirds display nest, occurs within the Study area and potentially providing habitat for other fauna species.		

Table 26: PCT 3248 vegetation description

Activity area

0.43ha



Table 27: PCT 3829 vegetation description

3829 - Eastern New England Rocky Tea-tree Scrub		
Vegetation formation	Heathlands	
Vegetation Class	Northern Montane Heaths	
Conservation status	N/A	
Description	This PCT typically occurs on scattered on rock outcrops along the eastern New England escarpment, between east of Glen Innes and east of Tamworth, with isolated occurrences near Dorrigo. In the Study area the PCT occurs at high elevations between 615 - 975 metres asl. A mid to dense shrubland where the various dominant shrub species confer the highest foliage. The ground layer consists of bare, open rocky shelves interspersed with patches of sedges, grasses and herbs.	
Characteristic canopy trees	Eucalyptus campanulata	
Characteristic mid- storey	Alyxia ruscifolia, Acrotriche aggregata (Red Cluster Heath), Leucopogon lanceolatus, Prostanthera ovalifolia (Oval-leaf Mintbush). Subcanopy shrubby layer includes Leptospermum sp. and Zieria sp. Other mid-storey species include Hakea sp., Monotoca sp., and Tristaniopsis collina	
Characteristic groundcovers	Lomandra longifolia, Plectranthus parviflorus (Cockspur Flower), Gonocarpus sp., Lepidosperma sp., Entolasia stricta, Dianella sp.	
Variation and disturbance	High condition relatively undisturbed from historic forestry activities.	
No. sites sampled	2 RDP	
Threatened flora species	N/A	
Fauna habitats	Open and exposed rocky platforms occur providing habitat for small mammals and reptiles, where both shelter and thermoregulation can be achieved. This habitat also represents potential foraging habitat for predators such as owls and raptors. Fleshy fruit trees and seasonal nectar flowering trees occur for a wide variety of birds and GHFF.	
Activity area	0.09ha	



Table 28: PCT 4107 vegetation description

4107 - Mid North Escarpment Coachwood Warm Temperate Rainforest		
Vegetation formation	Rainforests	
Vegetation Class	Northern Warm Temperate Rainforests	
Conservation status	Listed BC Act, E: Lowland Rainforest in the NSW North Coast and Sydney Basin Bioregions Listed EPBC Act, CE: Lowland Rainforest of Subtropical Australia	
Description	Very tall to extremely tall dense rainforest, or rarely extremely tall sclerophyll open forest with a dense rainforest sub-canopy, which occurs on the ranges and escarpment in the eastern Dorrigo district. In the Study area occurs at elevations of 660-795 metres asl. The canopy almost always includes a high cover of <i>Ceratopetalum apetalum</i> , very frequently <i>Acmena smithii</i> and <i>Doryphora sassafras</i> , commonly <i>Schizomeria ovata</i> , with <i>Lophostemon confertus</i> occurring rarely. Emergent <i>Araucaria cunninghamii</i> is very frequently present and occasionally is common in the canopy. This PCT occurs on clay- rich sedimentary or metasedimentary. At lower elevations it occurs in sheltered creeks and gullies, however at higher elevations it may occur on more exposed slopes.	
Characteristic canopy trees	The canopy is dominated by <i>Ceratopetalum apetalum</i> with <i>Acmena smithii</i> , <i>Doryphora</i> <i>sassafras</i> and <i>Schizomeria ovata</i> . Other canopy species include <i>Callicoma serratifolia</i> , <i>Acacia melanoxylon</i> , <i>Pittosporum undulatum</i> , <i>Toona ciliata</i> (Red cedar), <i>Anopterus</i> <i>macleayanus</i> , <i>Synoum glandulosum</i> , <i>Planchonella australis</i> , <i>Acradenia euodiiformis</i> , <i>Sloanea woollsii</i> , <i>Orites excelsus</i> , <i>Ackama paniculosa</i> , <i>Endiandra introrsa</i> (Dorrigo Plum), <i>Diploglottis australis</i> , <i>Quintinia verdonii</i> , <i>Niemeyera whitei</i> and <i>Nothofagus moorei</i> . Emergent <i>Lophostemon confertus</i> , <i>Tristaniopsis collina</i> , <i>Araucaria cunninghamii</i> , <i>Ficus</i> <i>watkinsiana</i> . Occasionally <i>Eucalyptus pilularis</i> , <i>Eucalyptus microcorys</i> , <i>Argyrodendron actinophyllum</i> , <i>Daphnandra tenuipes</i> (Red-flowered Socketwood), <i>Dendrocnide excelsa</i> , <i>Brachychiton acerifolius</i> (Flame Tree), <i>Akania bidwillii</i> , <i>Sloanea</i> <i>australis</i> , <i>Argyrodendron trifoliolatum</i> (White Booyong), <i>Allocasuarina torulosa</i> . <i>Viscum</i> <i>album</i> (Mistletoe) was present in the canopy.	
Characteristic mid-storey	Quintinia sieberi, Triunia youngiana, Archontophoenix cunninghamiana, Cryptocarya rigida, Cordyline stricta, Cryptocarya glauca, Cyathea australis, Cyathea leichhardtiana, Embelia australiana, Cryptocarya microneura (Murrogun), Neolitsea dealbata, Pittosporum multiflorum, Cryptocarya obovata (Pepperberry), Sarcopteryx stipata, Stenocarpus salignus, Archirhodomyrtus beckleri and Trochocarpa laurina. Other mid- storey species include Polymeria calycina (Slender Bindweed), Wilkiea huegeliana, Melicope micrococca (Hairy-leaved Doughwood), Melicope sp., Syzygium oleosum (Blue Lilly Pilly), Sarcopteryx stipata, Duboisia myoporoides (Corkwood), Guioa semiglauca (Guioa), Guioa semiglauca, Pandorea pandorana (Wonga Wonga Vine), Pyrossia sp., Legnephora moorei (Round-leaf Vine), Asplenium sp., Anopterus macleayanus, Acronychia oblongifolia (White Aspen), Atractocarpus chartaceus (Narrow-leaved Gardenia), Carronia multisepalea, Polyosma cunninghamii and Polyscias murrayi. Species occurring occasionally include Stenocarpus salignus, Cryptocarya meissneriana, Tasmannia insipida, Alyxia ruscifolia, Polyosma cunninghamii, Rubus nebulosus, Baloghia inophylla, Parsonsia fulva (Furry Silkpod), Stenocarpus salignus, Trochocarpa montana, Pararchidendron pruinosum, Cyperus sp., and Gymnostachys anceps. Vines occurring include: Ripogonum fawcettianum (Small Supplejack), Petermannia cirrosa, Linospadix monostachyos, Ripogonum discolor, Cissus hypoglauca, Calamus muelleri, Ripogonum elseyanum, Cissus antarctica, Smilax australis, Marsdenia rostrata, Pothos longipes	
Characteristic groundcovers	Lomandra spicata, Blechnum cartilagineum, Dianella caerulea, Lomandra longifolia, Calochlaena dubia, Lomandra hystrix (Green Mat-rush), Adiantum hispidulum, Gymnostachys anceps, Hibbertia scandens, Blechnum patersonii, Blechnum wattsii, Lastreopsis sp., Embelia australiana, Drymophila moorei and Lastreopsis decomposita. Other groundcover species include Adiantum formosum, Sticherus flabellatus, Drymophila moorei, Drymophila moorei, Entolasia stricta, Ottochloa sp.,	

4107 - Mid North Escarpment Coachwood Warm Temperate Rainforest		
	Panicum pygmaeum (Pygmy Panic), Juncus sp., Pteridium esculentum, Alocasia brisbanensis (Cunjevoi), Rubus rosifolius (Rose-leaf Bramble)	
Variation and disturbance	Generally high condition with mature trees with several occurrences along adjacent fire trails.	
No. sites sampled	51 RDP	
Threatened flora species	Niemeyera whitei, Marsdenia longiloba, Grammitis stenophylla, Sarcochilus fitzgeraldii	
Fauna habitats	HBTs occur providing habitat for a number of species including small arboreal mammals and Microbats, and very large hollows (>40cm) suitable for Forest Owls and large arboreal mammals such as Yellow-bellied Glider and Greater Gliders. Fleshy fruit trees and seasonal nectar flowering trees occur for a wide variety of birds including rainforest fruit doves and GHFF. Glossy Black-Cockatoo feed tree <i>Allocasuarina torulosa</i> . LWD occurs within this PCT which may provide habitat for small mammals, reptiles and amphibians. Rocky habitat which provides potential habitat for small mammals and reptiles, where both shelter and thermoregulation can be achieved. Burrows identified within the Study area may provide shelter for a range of mammals. Some unoccupied bird nests may be used by other species, such as microchiropteran bats, for roosting or breeding habitat. Examples of nest material found include brush turkey and bowerbird nest. A rocky, ephemeral stream which when flowing may provide habitat for a range of macroinvertebrates and frogs. The vine <i>Carronia multisepalea</i> was identified within this PCT and is an important feed vine for the threatened Southern Pink underwing moth. Wompoo Fruit-dove was heard calling within this PCT.	

Activity area

5.17ha



Table 29: PCT 4107 (Blackbutt Emergent) vegetation description

4107 - Mid North Escarpment Coachwood Warm Temperate Rainforest (Blackbutt Emergent)		
Vegetation formation	Rainforests	
Vegetation Class	Northern Warm Temperate Rainforests	
Conservation status	Listed BC Act, E: Lowland Rainforest in the NSW North Coast and Sydney Basin Bioregions Listed EPBC Act, CE: Lowland Rainforest of Subtropical Australia	
Description	Very tall to extremely tall dense rainforest, or rarely extremely tall sclerophyll open forest with a dense rainforest sub-canopy, which occurs on the ranges and escarpment	

4107 - Mid North Escarpment Coachwood Warm Temperate Rainforest (Blackbutt Emergent)			
	in the eastern Dorrigo district. In the Study area occurs at elevations of 660-795 metres asl. The canopy almost always includes a high cover of <i>Ceratopetalum apetalum</i> , very frequently <i>Acmena smithii</i> and <i>Doryphora sassafras</i> , commonly <i>Schizomeria ovata</i> , with <i>Lophostemon confertus</i> occurring rarely. Emergent <i>Eucalyptus pilularis</i> is very frequently present and occasionally is common in the canopy. Additionally, <i>Araucaria cunninghamii</i> is common. This PCT occurs on clay-rich sedimentary or metasedimentary. At lower elevations it occurs in sheltered creeks and gullies, however at higher elevations it may occur on more exposed slopes.		
Characteristic canopy trees	The canopy is of similar composition of PCT 4107 (Table 26), however Emergent <i>Eucalyptus pilularis</i> was present. <i>Araucaria cunninghamii</i> also common.		
Characteristic mid-storey	Synoum glandulosum, Callicoma serratifolia, Ripogonum fawcettianum, Quintinia sieberi		
Characteristic groundcovers	Blechnum sp.		
Variation and disturbance	Generally high condition with mature trees with several occurrences along adjacent fire trails.		
No. sites sampled	1 RDP		
Threatened flora species	Niemeyera whitei		
Fauna habitats	HBTs occur providing habitat for a number of species including small arboreal mammals and Microbats, and very large hollows (>40cm) suitable for Forest Owls and large arboreal mammals such as Yellow-bellied Glider and Greater Gliders. Fleshy fruit trees and seasonal nectar flowering trees occur for a wide variety of birds including rainforest fruit doves and GHFF. Glossy Black-Cockatoo feed tree <i>Allocasuarina torulosa</i> . LWD occurs within this PCT which may provide habitat for small mammals, reptiles and amphibians. Rocky habitat which provides potential habitat for small mammals and reptiles, where both shelter and thermoregulation can be achieved. The vine <i>Carronia multisepalea</i> was identified within this PCT and is an important feed vine for the threatened Southern Pink underwing moth. A rocky, ephemeral stream with pools which when flowing may provide habitat for a range of macroinvertebrates and frogs. Burrows identified within the Study area may provide shelter for a range of mammals. Some unoccupied bird nests may be used by other species, such as microchiropteran bats, for roosting or breeding habitat. Examples of nest material found include brush turkey and bowerbird nest. Wompoo Fruit-dove was heard calling within this PCT.		

Activity area

0.88ha





Figure 33: DEGW Day 1 PCTs (ELA 2023)



Figure 34: DEGW Day 2 PCTs (ELA 2023)



Figure 35: DEGW Day 3 PCTs (ELA 2023)



Figure 36: DEGW Day 4 PCTs (ELA 2023)

5.2.2. Threatened ecological communities

PCTs identified within the Study area are associated with the following TECs listed under the BC and / or EPBC Acts:

- Lowland Rainforest in the NSW North Coast and Sydney Basin Bioregions Listed as Endangered under the BC Act.
- Lowland Rainforest on Floodplain in the New South Wales North Coast Bioregion Listed as Endangered under the BC Act.
- Lowland Rainforest of Subtropical Australia Listed as Critically Endangered under the EPBC Act.

Detailed assessment of the characteristic of each associated PCT was considered against their relevant final determination (BC Act) or listing advice (EPBC Act).

Eleven (11) other TECs were also considered (Appendix A), these were ruled out from the assessment due to geographical limitations and / or vegetation communities within the Study area not containing the appropriate assemblage of species.

Map series containing patches of TECs are detailed in Appendix H.

5.2.2.1. BC Act TEC discussion

LOWLAND RAINFOREST IN NSW NORTH COAST AND SYDNEY BASIN BIOREGIONS

The following PCTs are associated to the listed BC Act EEC *Lowland Rainforest in NSW North Coast and Sydney Basin Bioregion* (Lowland Rainforest):

- 3019: Northern Hinterland Baloghia-Booyong Subtropical Rainforest.
- 3021: Northern Lowland Subtropical Rainforest.
- 3032: Northern Escarpment Sassafras-Booyong-Corkwood Rainforest.
- 3165: Northern Brush Box Subtropical Wet Forest.
- 4107: Mid North Escarpment Coachwood Warm Temperate Rainforest.

The description of the listed community in the Final Determination states that 'Lowland Rainforest is an ecological community consisting of the vegetation formation 'subtropical rainforest' and some related, structurally complex forms of dry rainforest, excluding Littoral Rainforest. In a relatively undisturbed state, Lowland Rainforest has a closed canopy, characterised by a high diversity of trees whose leaves may be mesophyllous and encompass a wide variety of shapes and sizes. Typically, the trees form three major strata: emergents, canopy and sub-canopy which, combined with variations in crown shapes and sizes, give the canopy an irregular appearance. The trees are taxonomically diverse at the genus and family levels, and some may have buttressed roots. A range of plant growth forms are present in Lowland Rainforest, including palms, vines and vascular epiphytes. Scattered eucalypt emergents (e.g. *Eucalyptus grandis, Eucalyptus saligna*) may occasionally be present. In disturbed stands of this community the canopy continuity may be broken, or the canopy may be smothered by exotic vines. In the north of its range, Lowland Rainforest is found up to 600m above sea level, but in the Sydney Basin bioregion it is limited to elevations below 350m' (NSW Scientific Committee 2021).

The associated PCTs found within the Study area have a closed canopy, characterised by a high diversity of trees whose leaves are mesophyllous and encompass a wide variety of shapes and sizes. Typically, the trees form three major strata: emergents, canopy and sub-canopy which, combined with variations in crown shapes and sizes, give the canopy an irregular appearance (Floyd 1990). The trees recorded are taxonomically diverse at the genus and family levels and have buttressed roots. A range of plant growth forms are present in Lowland Rainforest, including palms, vines, and vascular epiphytes. Scattered Myrtaceae emergents are also occasionally present (including *Lophostemon confertus* (Brush Box) and *Eucalyptus microcorys* (Tallowwood).

All dominant canopy species present within the associated PCTs within the Study area are listed in the final determination and include *Lophostemon confertus*, *Sloanea australis*, *Diploglottis australis*, *Ackama paniculosa*, *Ceratopetalum apetalum*, *Sloanea woollsii*. Additionally, scattered eucalypt emergents were present, including *Eucalyptus saligna* and *Eucalyptus pilularis*. *Araucaria cunninghamii* was also occasionally present. *Archontophoenix cunninghamiana*, *Cryptocarya rigida*, *Schizomeria ovata* and *Acmena smithii* were often present in the mid-storey. The groundcover is dominated by *Lastreopsis* spp., *Pollia crispata* and *Adiantum formosum*.

However, within the Study area, PCT 3019 occurs between 650 – 830 metres asl, and patches of PCT 3165 occur at 610 - 730 metres asl, therefore these PCTs do not align with the final determination. Whilst PCT 3021 occurs at 200- 240 metres asl and portions of PCT 3032 and PCT 4107 occur with a range of 570- 875 metres asl, and 315 - 980 metres asl respectively, as such patches of these PCT align with the final determination (NSW Scientific Committee 2021).

LOWLAND RAINFOREST ON FLOODPLAIN IN THE NSW NORTH COAST BIOREGION

Lowland Rainforest on Floodplain in the NSW North Coast Bioregion (Lowland Rainforest on Floodplain) is listed as an EEC under the BC Act and is associated with the following PCTs within the Study area:

- 3033: Northern Escarpment Sassafras-Prickly Ash Rainforest
- 3165: Northern Brush Box Subtropical Wet Forest.

PCT 3033 is consistent with the list of plants characteristic of this TEC as listed within paragraph 8 of the final determination (NSW Scientific Committee 2011). Whereas PCT 3165 occurs as a tall open forest, often with one canopy layer within the Study area. This does not match the Lowland Rainforest on Floodplain community listing of a closed canopy forest. Additionally, the canopy was dominated by *Lophostemon confertus*, and more closely aligned with a wet sclerophyll formation.

This TEC also only applies where the PCT is situated within the NSW North Coast bioregion and on a floodplain as per paragraph 2 in the final determination (NSW Scientific Committee 2011). However, no definition of floodplain is listed in this determination. The VIS notes for this TEC that the 'floodplain' should be guided by the best available fine scale spatial data that represents alluvial deposits in the NSW North Coast bioregion.

Given the above a GIS analysis of the patches of these PCTs was undertaken across the Study area, which concluded the following:

• PCT 3033 is mapped only on ridges and is located away from any alluvial and riverine areas

• PCT 3165 is mapped on the edge of the Dorrigo escarpment away from any defined floodplain.

Based on these characteristics, these PCTs are not consistent with the final determination of *Lowland Rainforest on Floodplain*, and therefore this TEC is not considered to occur within the Study area.

5.2.2.2. EPBC Act TEC discussion

EPBC ACT LOWLAND RAINFOREST OF SUBTROPICAL AUSTRALIA

The EPBC listed Threatened Ecological Community (TEC) *Lowland Rainforest of Subtropical Australia* contains a narrower definition than the Lowland Rainforests NSW description. Table 29 details a review of the Key diagnostic characteristics (DSEWPC 2011) of this TEC and associated PCTs within the Study area.

Table 30: Lowland Subtropical Rainforest

Key diagnostic characteristics (DSEWPC 2011)	PCT 3019 in the Study area	PCT 3021 in the Study area	PCT 3032 in the Study area	PCT 3165 in the Study area	PCT 4107 in the Study area
Distribution of the ecological community is primarily in the NSW North Coast and Southeastern Queensland bioregions, according to Interim Biogeographic Regionalisation for Australia (IBRA) version 6.1 (2004).	Yes, occurs in NSW North Coast IBRA Bioregion.	Yes, occurs in NSW North Coast IBRA Bioregion.	Yes, occurs in NSW North Coast IBRA Bioregion.	Yes, occurs in NSW North Coast IBRA Bioregion.	Yes, occurs in NSW North Coast IBRA Bioregion.
The ecological community occurs on: soils derived from basalt or alluvium; or enriched rhyolitic soils; or basaltically enriched metasediments.	Yes, occurs on soils derived from basalt or alluvium.	Yes, occurs on soils derived from basalt or alluvium.	Yes, occurs on soils derived from basalt or alluvium.	Yes, occurs on soils derived from basalt or alluvium.	Yes, occurs on soils derived from basalt or alluvium.
The ecological community generally occurs at an altitude less than 300 m above sea level. Aspect can result in the community being found at >300 m altitude on north-facing slopes.	No, this PCT within the Study area is located greater than 300 m asl.	Yes, within the Study area this PCT is located below 300 m asl.	No, this PCT within the Study area is located greater than 300 m asl.	No, this PCT within the Study area is located greater than 300 m asl.	Yes, this PCT within the Study area is located on north facing slopes between 300-600 m asl.
The ecological community typically occurs in areas with high annual rainfall (>1300mm).	Yes, occurs in areas with high annual rainfall of >1300mm. Dorrigo mean annual rainfall is 1932mm from 1997-2023 (BOM 2023).	Yes, occurs in areas with high annual rainfall of >1300mm. Dorrigo mean annual rainfall is 1932mm from 1997- 2023 (BOM 2023).	Yes, occurs in areas with high annual rainfall of >1300mm. Dorrigo mean annual rainfall is 1932mm from 1997-2023 (BOM 2023).	Yes, occurs in areas with high annual rainfall of >1300mm. Dorrigo mean annual rainfall is 1932mm from 1997-2023 (BOM 2023).	Yes, occurs in areas with high annual rainfall of >1300mm. Dorrigo mean annual rainfall is 1932mm from 1997-2023 (BOM 2023).
The ecological community is typically more than 2 km inland from the coast.	Yes, these areas occur >15km inland from the coast.	Yes, these areas occur >15km inland from the coast.	Yes, these areas occur >15km inland from the coast.	Yes, these areas occur >15km inland from the coast.	Yes, these areas occur >15km inland from the coast.
The structure of the ecological community is typically a tall (20 m–30 m) closed forest, often with multiple canopy layers.	Yes, this PCT occurs as a tall, closed forest, often with multiple canopies and subcanopy layers.	Yes, this PCT occurs as a tall, closed forest, often with multiple canopies and subcanopy layers.	Yes, this PCT occurs as a tall, closed forest, often with multiple canopies and subcanopy layers.	No, this PCT occurs as a tall open forest, often with one canopy layer and often one subcanopy layer.	Yes, this PCT occurs as a tall, closed forest, often with multiple canopy layers.
Patches of the ecological community typically have high species richness (at least 30 woody species from Appendix A).	Yes, this PCT has at least 30 woody species from Appendix A.	Yes, this PCT has at least 30 woody species from Appendix A.	Yes, this PCT has at least 30 woody species from Appendix A.	Yes, this PCT has at least 30 woody species from Appendix A.	Yes, this PCT has at least 30 woody species from Appendix A.
Conclusion	No, this PCT within the Study area does not conform to the listing of Lowland Subtropical Rainforest.	Yes, this PCT within the Study area conforms to the listing of Lowland Subtropical Rainforest.	No, this PCT within the Study area does not conform to the listing of Lowland Subtropical Rainforest.	No, this PCT within the Study area does not conform to the listing of Lowland Subtropical Rainforest.	Yes, this PCT within the Study area conforms to the listing of Lowland Subtropical Rainforest.

5.2.3. Flora

A total of 247 flora species were identified during the field survey undertaken in April 2023 (Appendix D). Of these, 235 were native and 12 were exotic species.

5.2.3.1. Threatened flora species habitat

A total of seven (7) threatened flora species were identified within the Study area (Table 31; Photo 7 to Photo 13) and location identified in Appendix H.

Scientific Name	Common Name	BC Act	EPBC Act	Abundance (m ²)
Grammitis stenophylla	Narrow-leaf Finger Fern	E	Not listed	96
Marsdenia longiloba	Slender Marsdenia	E	V	24
Niemeyera whitei	Rusty Plum	V	Not listed	304
Parsonsia dorrigoensis	Milky Silkpod	V	E	44
Rhodamnia rubescens	Scrub Turpentine	CE	CE	18
Sarcochilus fitzgeraldii	Ravine Orchid	V	V	334
Tylophora woollsii		E	E	6

Table 31: Threatened flora species recorded within the Study area

V = vulnerable, E = endangered, CE = critically endangered



Photo 7: *Grammitis stenophylla* (Narrow-leaf Finger Fern)



Photo 8: *Marsdenia longiloba* (Slender Marsdenia)



Photo 9: Niemeyera whitei (Rusty Plum)



Photo 10: *Parsonsia dorrigoensis* (Milky Silkpod)



Photo 11: *Rhodamnia rubescens* (Scrub Turpentine)



Photo 12: *Sarcochilus fitzgeraldii* (Ravine Orchid)



Photo 13: Tylophora woollsii (Cryptic Forest Climber)

5.2.3.2. Priority weeds

The NSW *Biosecurity Act 2015* and regulations provide specific legal requirements for state level priority weeds (Table 31). All plants listed under the Act are regulated with a general biosecurity duty to prevent, eliminate or minimise any biosecurity risk they may pose. Any person who deals with any plant, who knows (or ought to know) of any biosecurity risk, has a duty to ensure the risk is prevented, eliminated or minimised, so far as is reasonably practicable.

Specific legal requirements apply to State determined priorities under the North Coast Regional Weeds Plan 2023 – 2027 (NCRWMP) (LLS North Coast 2022). Refer to the NCRWMP for species specific management objectives and obligations under each management category (LLS North Coast 2022). Weeds listed as 'other weeds of regional concern' under the plan warrant resources for local control or management programs and are a priority to keep out of the region. Inclusion in this list may assist Local Control Authorities and/or land managers to prioritise action in certain circumstances where it can be demonstrated the weed poses a threat to the environment, human health, agriculture and the like.

A total of 12 weed species were recorded within the Study area. Two exotic species identified, *Lantana camara* and *Senecio madagascariensis,* are listed as Weeds of National Significance (WoNS). Three other species, *Ligustrum lucidum, Cinnamomum camphora* and *Ligustrum sinense,* are identified as additional species of concern and are listed for asset protection.

The weeds present and associated information is presented in Table 31 below.

Scientific Name	Common Name	WoNS	Priority weed obligations
Andropogon virginicus	Whisky Grass	No	Nil
Anthoxanthum odoratum	Sweet Vernal Grass	No	Nil
Cenchrus clandestinus	Kikuyu Grass	No	Nil
Cinnamomum camphora	Camphor Laurel	No	Nil – Listed for asset protection
Lantana camara	Lantana	Yes	Mandatory Measure prohibits sale within or import into NSW Listed for asset protection
Ligustrum lucidum	Large-leaved Privet	No	Nil - Listed for asset protection
Ligustrum sinense	Small-leaved Privet	No	Nil - Listed for asset protection
Marsdenia velutina	Velvet Milkweed	No	Nil
Plantago lanceolata	Lamb's Tongues	No	Nil
Senecio madagascariensis	Fireweed	Yes	Mandatory Measure prohibits sale within or import into NSW Listed for asset protection
Solanum mauritianum	Wild Tobacco Bush	No	Nil
Solanum nigrum	Black-berry Nightshade	No	Nil

Table 32: Priority	wweeds and othe	r weeds of concern	identified dur	ing field survey
10010 32.1110110	y weeds and othe	i weeds of concern	i lucilitilicu uul	ing neia suive
5.2.4. Fauna

5.2.4.1. Fauna habitats

A total of 27 native fauna species were opportunistically sighted in the Study area, these are listed in Appendix D. The habitat assessment identified the following fauna habitat features and signs of usage occurring in the Study area:

- Foraging resources.
- Aquatic habitats
- HBTs and stags.
- Dens and burrows.
- Hollow logs and LWD.
- Leaf litter.
- Flaking bark.
- Sphagnum moss.
- Rocky habitat.
- Nests.

These features are described further below and are presented in a map series in Appendix E.

FORAGING RESOURCES

A range of suitable foraging habitat for threatened species were recorded within the Study area.

Wet sclerophyll forests are widespread throughout the Study area, occurring on slopes, ridges, and occasionally in gullies. They are predominantly characterized by a canopy dominated by Eucalypts. The midstorey consists of multiple layers of both sclerophyllous and mesophyllous trees and shrubs, including species that flower and fruit, thus providing foraging resources for various birds and mammal species. This habitat type is notable for its abundance of tree hollows, which serve as shelter and nesting sites for arboreal mammals, birds, and microbats. Koala feed trees, including both primary and secondary species such as *Eucalyptus microcorys, Eucalyptus grandis, and Eucalyptus saligna*, were primarily identified within wet sclerophyll forest communities. Additionally, these forests often feature mature and dense stands of *Allocasuarina torulosa*, which are preferred food resources for the Glossy Black-Cockatoo.

Rainforests, encompassing subtropical, warm temperate, and cool temperate classifications, were identified throughout the Study area. Temperate rainforests are typically found at higher elevations and feature a more homogeneous canopy layer composed of a diverse array of species, including *Nothofagus moorei, Doryphora sassafras, Ceratopetalum apetalum*, and *Schizomeria ovata*. In contrast, subtropical rainforests tend to occur at lower elevations on sheltered slopes and gullies. They are characterized by a less uniform structure with multiple strata layers, often featuring species with buttress roots, figs, palms, and numerous vines. A number of fleshy fruit bearing trees occur throughout the Study area, primarily within rainforest habitats providing good quality foraging habitat for GHFF and birds such as Wompoo Fruit Dove, Rose-crowned Fruit Dove and Superb Fruit Dove. Such trees and shrubs include *Acronychia oblongifolia, Archontophoenix cunninghamiana, Cinnamomum oliveri, Cryptocarya obovata, Dysoxylum fraserianum, Elaeocarpus reticulatus, Ficus coronata*, and *Sloanea woollsii*. The Southern pink underwing moth (*Phyllodes*)

imperialis smithersi) feed vine *Carronia multisepala* was identified within the Study area, sometimes as dense pockets within subtropical rainforest communities (Photo 14).

Heathlands represent a small portion of the Study area, typically found on isolated rock outcrops. They are characterized by sparse or absent canopy cover and dense shrubbery dominated by species like *Alyxia ruscifolia*, *Hakea spp.*, and *Leptospermum spp*. Despite their limited extent, these areas provide open habitats that support birds and mammals, while also offering ideal thermoregulation conditions for reptiles.



Photo 14: Carronia multisepalea southern pink underwing moth feed plant recorded in the Study area

AQUATIC HABITATS

The subtropical streams and ephemeral drainage lines of the Dorrigo and Bindarri NPs provide a diverse range of aquatic habitat, including deep pools, bedrock, scour holes, waterfalls, rapids, shallow riffles and runs (Photo 15 - Photo 16). Stream substrate changes between confined bedrock and cobble beds in the upper reaches of larger rivers, to a semi-confined bed of cobble and gravel beds that move during very high flow events downstream of the Study area in the Rosewood, Never Never, and Urumbilum Rivers.

Due to the bedrock substrate in the upper reaches, instream primary productivity is limited to a small amount of algae production, and food-web dynamics are likely driven by inputs from litter fall. Native riparian vegetation is intact, and nearly all waterways are well-shaded and receive regular inputs of leaf litter and LWD. A large amount of shade is also provided by the steep valley

walls in some locations. Aquatic macroinvertebrate communities are relatively undisturbed and consist of a broad range of trophic groups.

First and second order streams accumulate litter when dry, this gets washed downstream once flow commences after rainfall. Depending on rainfall intensity and frequency, flow in these drainage lines can last between one to several weeks before ceasing.

The walk crosses three waterways mapped as KFH. These are the Rosewood River, Never Never River, and Urumbilum River. At each of these crossing, the rivers are classed as Type 1, Class 1 key fish habitat.

The fish community of the upper reaches of Rosewood River, Never Never River, and Urumbilum River consists of species typical of coastal rivers in northern NSW, including Long-finned Eel (*Anguilla reinhardtii*), Short-finned Eel (*Anguilla reinhardtii*). Waterfalls and steep cascades can act as barriers to the upstream movement of species more typical of mid-reach species such as Eel-tailed Catfish (*Tandanas tandanas*), Australian Bass (*Macquaria novemaculeata*), Bullrout (*Notesthes robusta*), Doubolays Rainbowfish (*Melanotaenia duoulayi*), Australian Smelt (*Retropinna semoni*), and Striped Gudgeon (*Goiomorphus australis*).



Photo 15: Shallow riffle habitat at Never Never River in the Study area



Photo 16: Deep pools with undercut banks recorded in the Study area

HBTS AND STAGS

HBTs and stags occur widely across the Study area, ranging in sizes from small cracks and fissures (<5 cm diameter) which may provide shelter to small reptiles and tree roosting microbats, to large established hollows (>40 cm diameter) capable of hosting large birds and arboreal mammals (Photo 17).

DENS AND BURROWS

Burrows and potential den sites were identified in the Study area (Photo 17). These areas may provide shelter for a range of mammals including threatened species such as Spotted-tailed Quoll.





Photo 17: Large HBT (left) potential den (right) recorded in the Study area

HOLLOW LOGS AND LWD

LWD and fallen timber that contain hollows were also recorded within the Study area (Photo 18). These may provide habitat for small mammals, reptiles and amphibians.



Photo 18: LWD with hollow recorded in the Study area

LEAF LITTER

Areas characterised by tall moist forests contained dense leaf litter which form detritus and humus aiding in soil moisture retention by cooling the ground surface and holding moisture in decaying organic matter (Photo 19). This deep leaf litter provides habitat for a number of species including herpetofauna and invertebrates.



Photo 19: Deep leaf litter of the Study area

FLAKING BARK

Flaking bark was recorded on several trees and stags within the Study area (Photo 20). Flaking bark can provide sheltering habitat for a range of reptiles and microbats.



Photo 20: Flaking bark recorded in the Study area

SPHAGNUM MOSS

Sphagnum moss occurred within wet habitats along the Study area on rocks and logs (Photo 21). Sphagnum moss has is known to support habitat for a variety of birds, mammals, frogs and invertebrates. The threatened species Sphagnum Frog (*Philoria sphagnicolus*) occurs in Sphagnum Moss beds.



Photo 21: Sphagnum moss on a rock recorded in the Study area

ROCKY HABITAT

Rocky areas were identified within the Study area (Photo 22 - Photo 23). These areas offer potential habitat for small mammals and reptiles, providing opportunities for both shelter and thermoregulation.



Photo 22: Rocky area recorded in the Study area



Photo 23: Rocky crevice recorded in the Study area

NESTS

A range of nests and breeding display mounds were identified within the Study area including:

- Bowerbird bower (Photo 24)
- Lyrebird mounds
- Potential Scrubwren or Gerygone nest (Photo 25)
- Brush Turkey nests
- Potential Eastern Robin nest (Photo 26).

Bird nests indicate suitability of habitat for past and future breeding. Some unoccupied bird nests may be used by other species, such as microchiropteran bats, for roosting or breeding habitat.



Photo 24: Bowerbird bower



Photo 25: Potential Scrubwren or Gerygone nest near waterway



Photo 26: Potential Eastern Yellow Robin nest

5.2.4.2. Threatened fauna species and habitat

Two threatened fauna species were opportunistically sighted during the field survey, this includes:

- Stephens's Banded Snake (Hoplocephalus stephensii) listed as vulnerable under the BC Act
- Wompoo Fruit-Dove (*Ptilinopus magnificus*) listed as vulnerable under the BC Act.

Pouched Frog (*Assa darlingtoni*) individuals were recorded calling within the Study area and both Koala (*Phascolarctos cinereus*) and Spotted-tailed Quoll (*Dasyurus maculatus*) scats were also recorded in the Study area (Photo 27 and Photo 28).

Native vegetation and fauna habitat identified within the Study area have the potential to provide roosting and / or foraging habitat for threatened fauna species identified in Table 33.

Tests of Significance under the BC Act have been applied to these species in Appendix B and location identified in Appendix H.



Photo 27: Spotted-tailed Quoll (Dasyurus maculatus) scat



Photo 28: Koala (Phascolarctos cinereus) scats

Table 33: Threatened and migratory fauna species known, likely or potentially occurring and their relevant suitable habitat within the Study area

Scientific Name	Common Name	BC Act	EPBC Act	Habitat features (section 4.2.4.2)	Vegetation types (section 4.2.1)
Amphibians					
Assa darlingtoni	Pouched Frog	V		Moist deep leaf litter and rocky scree slopes	Rainforest and wet sclerophyll forest (>100 m asl)
Litoria brevipalmata	Green-thighed Frog	V		Semi-permanent and permanent waterbodies	Rainforest, wet sclerophyll forest and heathlands
Litoria subglandulosa	Glandular Frog	V		Permanent streams	Rainforest, wet sclerophyll forest and heathlands (>500 m asl)
Mixophyes balbus	Stuttering Frog	E	V	Permanent and ephemeral streams with permanent pools	Rainforest and wet sclerophyll forest
Mixophyes iteratus	Giant Barred Frog	E	E	Semi-permanent and permanent waterbodies, undercut banks	Streams inclusive of 50m buffer
Philoria sphagnicolus	Sphagnum Frog	V	V	Sphagnum moss	Rainforest and wet sclerophyll forest (>250m asl)
Ave					
Atrichornis rufescens	Rufous Scrub- bird	V	E	Foraging resources, Leaf litter, woody debris	Rainforest and wet sclerophyll forest >600m asl)
Calyptorhynchus Iathami	Glossy Black- Cockatoo	V	V	Allocasuarina stands, Large hollows (>15 cm diameter)	Wet sclerophyll forest
Glossopsitta pusilla	Little Lorikeet	V		HBTs, foraging resources	Wet sclerophyll forest
Haliaeetus leucogaster	White-bellied Sea-Eagle	V		Large trees, watercourses	Wet sclerophyll forest
Hieraaetus morphnoides	Little Eagle	V		Large trees	Wet sclerophyll forest
Hirundapus caudacutus	White- throated Needletail	V	V, M	Species is almost entirely a	erial
Ninox strenua	Powerful Owl	V		Large hollows (>20 cm diameter)	Rainforest and wet sclerophyll forest
Pachycephala olivacea	Olive Whistler	V		Wet forest	Rainforest and wet sclerophyll forest
Petroica boodang	Scarlet Robin	V		Foraging resources, LWD	Rainforest and wet sclerophyll forest
Petroica phoenicea	Flame Robin	V		Foraging resources, LWD	Rainforest, wet sclerophyll forest and heathlands
Ptilinopus magnificus	Wompoo Fruit-Dove	V		Fruiting trees	Rainforest and wet sclerophyll forest
Ptilinopus regina	Rose-crowned Fruit-Dove	V		Fruiting trees	Rainforest and wet sclerophyll forest
Ptilinopus superbus	Superb Fruit- Dove	V		Fruiting trees	Rainforest and wet sclerophyll forest

	attan
Scientific Name Common BC EPBC Habitat features Vegetation types (se Name Act (section 4.2.4.2) 4.2.1)	ection
Turnix melanogaster Black- CE V Leaf litter, foraging Rainforest and wet	
breasted resources sclerophyll forest	
Button-quail	
Tyto novaehollandiae Masked Owl V Large hollows (>20 cm Rainforest and wet	
diameter) sclerophyll forest	
Tyto tenebricosa Sooty Owl V Large hollows (>20 cm Rainforest and wet	
diameter) sclerophyll forest	
Migratory Birds	
Cuculus optatus Oriental M Forest ecotones, Rainforest and wet	
Cuckoo foraging resources sclerophyll forest	
Monarcha melanopsis Black-faced M Wet forest, foraging Rainforest	
Monarch resources	
Mviaara cvanoleuca Satin M Gullies, watercourses, Wet sclerophyll fores	st
Flycatcher foraging resources	
Rhipidura rufifrons Rufous Fantail M Foraging resources, Rainforest and wet	
dense understory sclerophyll forest	
Symposiachrus Spectacled M Foraging resources, Rainforest and wet	
trivirgatus Monarch dense understory sclerophyll forest	
Insects	
Phyllodes imperialis Pink E E Carronia multisepalea Subtropical Rainfore	st
southern subspecies Underwing (<600m asl)	
Moth	
Microbats	
Chalinolobus dwyeri Large-eared Foraging resources Rainforest, wet scler	ophyll
Pied Bat, forest and heathland	ls
Large Pied Bat	
Falsistrellus Eastern False V HBTs, Foraging	
tasmaniensis Pipistrelle resources	
Miniopterus australis Little V Foraging resources Rainforest, wet scler	ophyll
Bentwing-bat forest and heathland	s
Miniopterus orianae Large Bent- V Foraging resources Rainforest, wet scler	ophyll
oceanensis winged Bat forest and heathland	s
Nyctophilus bifax Eastern Long- V HBTs, flaking bark, palm Rainforest, wet scler	ophyll
eared Bat fronds, foraging forest	
resources	
Phoniscus papuensis Golden-tipped V Gerygone and Rainforest and wet	
Bat Scrubwren nests, water sclerophyll forests	
courses	
Saccolaimus Yellow-bellied V HBTs, foraging resources Rainforest, wet scier	ophyll
flaviventris Sheathtail-bat forest and heathland	IS
Scoteanax rueppellii Greater V HBTs, foraging resources Rainforest and wet	
Broad-nosed sclerophyll forest	
Bat	
	o nhull
Cercartetus nanus Eastern V HBIS, LWD, foraging Rainforest, wet scier	opnyll
rygniy- resources forest and neathland	15
Provine receiver the Spotted-tailed V F HRTs dens LWD with Rainforest wet scler	ophyll
Ouoli hollows forest and heathland	ls

Scientific Name	Common Name	BC Act	EPBC Act	Habitat features (section 4.2.4.2)	Vegetation types (section 4.2.1)
Notamacropus parma	Parma Wallaby	V	V	Foraging resources	Rainforest and wet sclerophyll forest
Petauroides volans	Southern Greater Glider	E	E	HBTs, Eucalyptus species	Wet sclerophyll forest
Petaurus australis	Yellow-bellied Glider	V		HBTs, Eucalypt forest	Wet sclerophyll forest
Phascogale tapoatafa	Brush-tailed Phascogale	V		HBTs	Rainforest, wet sclerophyll forest and heathlands
Phascolarctos cinereus	Koala	E	E	Eucalyptus species	Wet sclerophyll forest
Potorous tridactylus	Long-nosed Potoroo	V	V	Foraging resources in high vegetation cover (>70%)	Wet sclerophyll forest and rainforest
Pteropus poliocephalus	Grey-headed Flying-fox	V	V	fleshy fruit bearing trees, <i>Eucalyptus</i> species	Rainforest, wet sclerophyll forest and heathlands
Thylogale stigmatica	Red-legged Pademelon	V		Foraging resources	Rainforest and wet sclerophyll forest
Reptile					
Hoplocephalus stephensii	Stephens' Banded Snake	V		HBTs, LWD and rocky areas	Rainforest and wet sclerophyll forest
Harrisoniascincus zia	Rainforest Cool-skink		V	Leaf litter, rocky areas, Nothofagus moorei	Rainforest >500m



6. Impact assessment

6.1. Summary of impacts

Across the activity area, the project has been located within a range of different vegetation types of varying condition and in existing infrastructure / cleared areas. Predicted impacts to these areas can be classed as 'direct' or 'indirect' impacts.

The total area of the overlay of the direct impact area of the proposed DEGW measures 9.61 ha. The DEGW walking track footprint is 2 m wide, with an assessed 12 m buffer (6 m either side of the track centre line) to allow for micro-siting. For area of impact assessment, a 2 m corridor has been used over the full 44.1 km of track with a ratio applied depending on the existing impacts. This assessment approach followed the initial micro-sitting within the intended walking route corridor and allows for further micro-siting during construction design.

It is important to note that the direct impacts for walking track construction would be restricted to on average 900 mm width. Final track pavement will be 600 to 900 mm. Indirect impact area once complete during operation would be between 1 to 1.5 m wide footprint of the track including benching and drainage.

Road and access upgrades would be restricted to the existing road formation and some maintenance trimming of vegetation would be undertaken. No realignment is proposed.

As many of the walking tracks are existing, a ratio of impact has been used to calculate the overall impact or disturbance. Based on a walking track footprint of 2 m, the ratios applied are identified in (Table 34). In summary, 4.429 ha of land has been subjected to existing impacts with the remaining 5.181 ha considered not to have been previously disturbed.

A detailed activity footprint is shown in Appendix E.

Table 34: Impacts associated with the activity

Project	Activity type			Impact sun	nmary	
component		Width (m)	Length (km)	Total area (ha)	Impact* ratio (%)	Max. actual impact area (ha)
Walking tracks	New walking track construction	2	18.715	3.743	100	3.743
	Existing informal historic trail - walking	2	18.495	3.699	50	1.850
	Existing informal historic track - vehicle	2	2.775	0.555	25	0.139
	Existing formal walking track - no works	2	4.635	0.927	0	0
	Subtotal		44.620	8.924		5.731
Bridges and viewpoints	New waterway crossings (37)	2	0.370	0.074	100	0.074
	New pedestrian bridges (5) (Section 6.3.2)	3	0.100	0.030	100	0.030
	New vehicle bridges (1)	4	0.030	0.012	100	0.012
	New viewpoints (12)	-	-	0.313	70	0.219
	Existing viewpoints - No works (2)	-	-	0.063	0	0
	Subtotal			0.491		0.335
DEGW camps	Camp 1 - Baliiga	-	-	0.689	70	0.482
	Camp 2 - Never Never	-	-	0.585	70	0.409
	Camp 3 - Bindarri	-	-	0.432	70	0.302
	Subtotal			1.706		1.194
Other precincts	Existing remote camp (Waygarrgala)	-	-	0.274	50	0.137
	Existing Baliiga picnic area	-	-	1.448	40	0.579
	Subtotal			1.722		0.716
Access roads	Dormant roads (634 m)	4.5	0.634	0.285	60	0.171
	Existing vehicle management trails (8.1 km)	4.5	8.120	3.654	40	1.462
	Subtotal		8.754	3.939		1.633
Total (ha)				16.783		9.610

6.1.1. Direct impacts (general)

6.1.1.1. Watercourses

The proposed walking track crosses 21 first order, 17 second order, 3 third order, one fourth, and one fifth order waterways, as classified by the Strahler Stream Order system. Hydrology will be

largely unaffected by this activity as there will be no significant change in catchment runoff however there is marginal potential to increase silt in the waterways during periods of rain. Waterway crossings will be designed to have minimal impact to water quality and aquatic ecology, with high level suspended swing bridges over larger rivers, and natural stepping stones where needed at other crossings. These crossing types will have a small impact to the waterway once constructed. Swing bridges will be narrow and trafficable by one person at a time, so would not cast a large shadow on the water. Bridges should be installed in a way that requires minimal disturbance to the riverbank and bed. Where possible, the footings should be positioned away from the bank, and sediment control measures used during construction. During construction of the bridges, machinery should avoid entering the waterway, and sediment retention measures should be taken to prevent silt washing in stream.

An increase in walking traffic will potentially result in an increase in litter and is likely to mean an increase in impacts from people going to the toilet near the waterways. This has the potential to pollute water and increase nutrient content in rivers that are key fish habitat. Walkers should be educated in responsible toilet habits and encouraged bury waste away from the stream and carry used toilet paper and other rubbish out with them.

Aquatic habitat assessments were completed at waterway crossings and most of the unnamed tributaries to confirm potential habitat for threatened aquatic species. No threatened aquatic habitat was identified and as such no targeted surveys were required.

Mitigation measures have been provided in Section 7 in relation to erosion and sedimentation of these watercourses.

6.1.2. Direct impacts (Flora)

6.1.2.1. Clearing of vegetation

The project proposes to remove a total of 9.61 ha of native vegetation within the Study area across the 44.1 km and is spread across 19 PCTs (Table 35). The remaining vegetation types do not align with a formally recognised PCT, this vegetations consists of exotic pasture (0.15 ha) and cleared vegetation (0.04 ha). The remaining extent of the activity area consists of existing infrastructure (0.01 ha) and water (0.08 ha).

Plant Community Type	
3019 - Northern Hinterland Baloghia-Booyong Subtropical Rainforest	

Table 35: Vegetation impact areas within the activity footprint

3019 - Northern Hinterland Baloghia-Booyong Subtropical Rainforest	0.27
3021 - Northern Lowland Subtropical Rainforest	0.03
3031 - Northern Escarpment Coachwood-Beech Rainforest	0.98
3032 - Northern Escarpment Sassafras-Booyong-Corkwood Rainforest	0.29
3033 - Northern Escarpment Sassafras-Prickly Ash Rainforest	0.30
3161 - Mid North Hinterland Wet Forest	0.013
3162 - Mid North Lowland Flooded Gum-Palm Wet Forest	0.05
3165 - Northern Brush Box Subtropical Wet Forest	0.18

3167 - Northern Hinterland Blackbutt-Forest Oak Wet Forest

Activity area (ha)

0.24

Plant Community Type	Activity area (ha)
3172 - Northern Ranges Brush Box-Flooded Gum Wet Forest	0.23
3174 - Northern Turpentine-Brush Box Wet Forest	0.29
3202 - Mid North Escarpment Ranges Blackbutt Forest	0.78
3203 - Northern Escarpment New England Blackbutt Wet Forest	0.06
3205 - Northern Escarpment New England Blackbutt-Tallowwood Wet Forest	0.03
3206 - Northern Escarpment Corkwood-Brush Box Wet Forest	1.50
3208 - Northern Escarpment Rocky Blackbutt Scrub Woodland	0.03
3248 - Northern Blackbutt-Turpentine Shrub Forest	0.16
3829 - Eastern New England Rocky Tea-tree Scrub	0.07
4107 - Mid North Escarpment Coachwood Warm Temperate Rainforest	3.61
4107 - Mid North Escarpment Coachwood Warm Temperate Rainforest (Blackbutt emergent)	0.22
Total	9.34
Cleared	0.04
Exotic Pasture	0.15
Water	0.08
Total	9.61

6.1.2.2. Threatened Ecological Communities

The project proposes to directly impact a total of up to 0.46 ha of BC Act listed EEC Lowland Rainforest in NSW North Coast and Sydney Basin Bioregion and up to 0.04 ha of Lowland Rainforest of Subtropical Australia within the activity area and is spread across three PCTs (Table 36).

Table 36: TEC impact areas within the activity area

Plant Community Type	Threatened Ecological Community (BC/EPBC Act)	Activity area (ha)
PCT 3021	BC/EPBC Act	0.03
PCT 3032 Northern Escarpment Sassafras-Booyong-Corkwood Rainforest	BC Act	0.05
PCT 4107 Mid North Escarpment Coachwood Warm Temperate Rainforest	BC Act	0.37
PCT 4107 Mid North Escarpment Coachwood Warm Temperate Rainforest	BC/EPBC Act	0.01

6.1.2.3. HBTs

A total of 114 HBTs were identified within the Study area. Of these, ten (10) are likely to be impacted by the activity. Table 37 details the number of HBTs to be removed, retained and their hollow size class. HBT locations are identified on mapping in Appendix G. Table 37: HBTs identified within the Study area

Hollow size class	Count
Impacted	
>300 mm	1
100 mm - 200 mm	5
50 mm - 100 mm	2
Stag	2
Subtotal	10
Not impacted	
< 50 mm	1
>300 mm	46
100 mm - 200 mm	13
200 mm - 300 mm	23
50 mm - 100 mm	7
Old Growth (Likely Hollows)	9
Potential HBT	4
Stag	1
Subtotal	104
Grand Total	114

6.1.2.4. Threatened species

Direct impacts to threatened flora and fauna species were initially assessed using data gathered from database and literature reviews. A likelihood of occurrence table was established to determine whether species habitat, distribution, ecology and behaviours were coherent with the habitat types recorded within the Study area (Appendix A). Mitigation measures are detailed in Section 7.

Seven (7) threatened flora species were identified within the Study area during field surveys. A summary of the impacted and retained threatened flora species is displayed in Table 37. Mitigation measures have also been proposed in Section 7 to minimise impacts.

Common Name	Scientific Name	BC Act	EPBC Act	Retained in Study area (m²)	Impacted (count)
Narrow-leaf finger fern	Grammitis stenophylla	E	Not listed	96	0
Slender marsdenia	Marsdenia longiloba	E	V	20	4
Rusty plum	Niemeyera whitei	V	Not listed	264	40
Milky silkpod	Parsonsia dorrigoensis	V	E	40	4
Scrub turpentine	Rhodamnia rubescens	CE	CE	16	2
Ravine orchid	Sarcochilus fitzgeraldii	V	V	290	44
Cryptic forest twiner	Tylophora woollsii	E	E	5	1

Table 38: Threatened and Migratory fauna species impact summary

6.1.3. Direct impacts (fauna)

The likelihood of occurrence assessment identified five (5) known and 44 potential threatened fauna species to inhabit directly impacted native vegetation (Appendix A).

To determine the specific impacts on each threatened fauna species, data from the vegetation and habitat assessment in this ecological assessment, along with various resources such as the TBDC, survey guidelines, determinations, and conservation advice, were compiled. This information was used to establish suitable habitats similar to species polygons utilised by the NSW Biodiversity Assessment Method and analysed in ArcGIS. This is summarised in Table 38.

Table 39: Threatened fauna species impact summary

Common Name	Scientific Name	BC Act	EPBC Act	Resources	Habitat	Overall Impacts (ha)
	Amphibians					
Pouched Frog	Assa darlingtoni	V		NSW Survey Guide for Threatened Frogs (DPIE) (2020b), topographic data, vegetation mapping (ELA 2023)	Rainforest and wet sclerophyll forest (>100 m asl)	3.79
Green-thighed Frog	Litoria brevipalmata	V		NSW Survey Guide for Threatened Frogs (DPIE) (2020b), NSW Hydrography dataset, vegetation mapping (ELA 2023), field observations	Rainforest, wet sclerophyll forest and heathlands within 100 m buffer of streams	4.22
Glandular Frog	Litoria subglandulosa	V		NSW Survey Guide for Threatened Frogs (DPIE) (2020b), topographic data, vegetation mapping (ELA 2023), field observations	Rainforest, wet sclerophyll forest and heathlands (>500 m asl)	1.61
Stuttering Frog	Mixophyes balbus	E	V	NSW Survey Guide for Threatened Frogs (DPIE) (2020b), Hydrography dataset, vegetation mapping (ELA 2023), field observations	Rainforest and wet sclerophyll forest within 500 m buffer of streams	9.27
Giant Barred Frog	Mixophyes iteratus	E	E	NSW Survey Guide for Threatened Frogs (DPIE) (2020b), NSW Hydrography dataset, vegetation mapping (ELA 2023), field observations	Rainforest, wet sclerophyll forest and heathlands within 50 m buffer of streams	1.20
Sphagnum Frog	Philoria sphagnicolus	V	V	NSW Survey Guide for Threatened Frogs (DPIE) (2020b), topographic data, vegetation mapping (ELA 2023)	Rainforest and wet sclerophyll forest (>250m asl)	3.24
	Ave					
Rufous Scrub-bird	Atrichornis rufescens	V	E	Vegetation mapping (ELA 2023), topographic data, conservation advice (DAWE (2014)	Rainforest and wet sclerophyll forest >600m asl)	6.97
Glossy Black-Cockatoo	Calyptorhynchus lathami	V	V	NSW TBDC, Vegetation mapping (ELA 2023), field observations	Wet sclerophyll forest, Hollows (>15 cm diameter)	3.56, six (6) suitable hollows)
Little Lorikeet	Glossopsitta pusilla	V		NSW TBDC (OEH), Vegetation mapping (ELA 2023), field observations	Wet sclerophyll forest, hollows.	3.56, eight (8) suitable hollows)
White-bellied Sea-Eagle	Haliaeetus leucogaster	V		NSW TBDC (OEH), Vegetation mapping (ELA 2023)	Wet sclerophyll forest	3.56
Little Eagle	Hieraaetus morphnoides	V		NSW TBDC (OEH), Vegetation mapping (ELA 2023)	Wet sclerophyll forest	3.56
White-throated Needletail	Hirundapus caudacutus	V	V, M	Draft referral guideline (CoA 2015)	Species is almost exclusively aerial	0
Powerful Owl	Ninox strenua	V		NSW TBDC, Vegetation mapping (ELA 2023), field observations	Rainforest and wet sclerophyll forest, Hollows (>20 cm diameter)	9.27, one (1) suitable hollow
Olive Whistler	Pachycephala olivacea	V		NSW TBDC (OEH), Vegetation mapping (ELA 2023)	Rainforest and wet sclerophyll forest	9.27
Scarlet Robin	Petroica boodang	V		NSW TBDC (OEH), Vegetation mapping (ELA 2023)	Rainforest and wet sclerophyll forest	9.27

					Dorrigo Escarpment Gre	at Walk – Ecological Assessment
Common Name	Scientific Name	BC Act	EPBC Act	Resources	Habitat	Overall Impacts (ha)
Flame Robin	Petroica phoenicea	V		NSW TBDC (OEH), Vegetation mapping (ELA 2023)	Rainforest and wet sclerophyll forest	9.27
Wompoo Fruit-Dove	Ptilinopus magnificus	V		NSW TBDC (OEH), Vegetation mapping (ELA 2023)	Rainforest and wet sclerophyll forest	9.27
Rose-crowned Fruit-Dove	Ptilinopus regina	V		NSW TBDC (OEH), Vegetation mapping (ELA 2023)	Rainforest and wet sclerophyll forest	9.27
Superb Fruit-Dove	Ptilinopus superbus	V		NSW TBDC (OEH), Vegetation mapping (ELA 2023)	Rainforest and wet sclerophyll forest	9.27
Black-breasted Button- quail	Turnix melanogaster	CE	V	NSW TBDC (OEH), Vegetation mapping (ELA 2023)	Rainforest and wet sclerophyll forest	9.27
Masked Owl	Tyto novaehollandiae	V		NSW TBDC, Vegetation mapping (ELA 2023), field observations	Rainforest and wet sclerophyll forest, Hollows (>20 cm diameter)	9.27, one (1) suitable hollow
Sooty Owl	Tyto tenebricosa	V		NSW TBDC, Vegetation mapping (ELA 2023), field observations	Rainforest and wet sclerophyll forest, Hollows (>20 cm diameter)	9.27, one (1) suitable hollow
	Migratory Birds					
Oriental Cuckoo	Cuculus optatus		Μ	NSW TBDC (OEH), Vegetation mapping (ELA 2023)	Rainforest and wet sclerophyll forest	9.27
Black-faced Monarch	Monarcha melanopsis		М	NSW TBDC (OEH), Vegetation mapping (ELA 2023)	Rainforest	5.71
Satin Flycatcher	Myiagra cyanoleuca		Μ	Draft referral guideline (CoA 2015), Vegetation mapping (ELA 2023)	Wet sclerophyll forest	3.56
Rufous Fantail	Rhipidura rufifrons		Μ	Draft referral guideline (CoA 2015), Vegetation mapping (ELA 2023	Rainforest and wet sclerophyll forest	9.27
Spectacled Monarch	Symposiachrus trivirgatus		Μ	Draft referral guideline (CoA 2015), Vegetation mapping (ELA 2023	Rainforest and wet sclerophyll forest	9.27
	Insects					
Pink Underwing Moth	Phyllodes imperialis southern subspecies	E	E	NSW TBDC (OEH), Vegetation mapping (ELA 2023), topographic data, field observations.	Subtropical rainforest (<600m asl)	0.03
	Microbats					
Large-eared Pied Bat, Large Pied Bat	Chalinolobus dwyeri	V	E	NSW TBDC (OEH), Vegetation mapping (ELA 2023).	Rainforest, wet sclerophyll forest and heathlands	9.34
Eastern False Pipistrelle	Falsistrellus tasmaniensis	V		NSW TBDC (OEH), Vegetation mapping (ELA 2023), field observations.	Rainforest, wet sclerophyll forest and hollows.	9.27, ten (10) suitable hollows
Little Bentwing-bat	Miniopterus australis	V		NSW TBDC (OEH), Vegetation mapping (ELA 2023).	Rainforest, wet sclerophyll forest and heathlands	9.34 ha

					Dorrigo Escarpment Gre	eat Walk – Ecological Assessment
Common Name	Scientific Name	BC Act	EPBC Act	Resources	Habitat	Overall Impacts (ha)
Large Bent-winged Bat	Miniopterus orianae oceanensis	V		NSW TBDC (OEH), Vegetation mapping (ELA 2023).	Rainforest, wet sclerophyll forest and heathlands	9.34
Eastern Long-eared Bat	Nyctophilus bifax	V		NSW TBDC (OEH), Vegetation mapping (ELA 2023), field observations.	Rainforest, wet sclerophyll forest and hollows.	9.27, ten (10) suitable hollows
Golden-tipped Bat	Phoniscus papuensis	V		NSW TBDC (OEH), Vegetation mapping (ELA 2023), field observations.	Rainforest, wet sclerophyll forest, hollows and remnant nests	9.27, ten (10) suitable hollows
Yellow-bellied Sheathtail- bat	Saccolaimus flaviventris	V		NSW TBDC (OEH), Vegetation mapping (ELA 2023), field observations.	Rainforest, wet sclerophyll forest, heathlands and hollows.	9.34, ten (10) suitable hollows
Greater Broad-nosed Bat	Scoteanax rueppellii	V		NSW TBDC (OEH), Vegetation mapping (ELA 2023), field observations.	Rainforest, wet sclerophyll forest (<500m asl), and hollows.	0.80, ten (10) suitable hollows
	Mammals					
Eastern Pygmy-possum	Cercartetus nanus	V		NSW TBDC (OEH), Vegetation mapping (ELA 2023), field observations.	Rainforest, wet sclerophyll forest and heathlands, hollows.	9.34, eight (8) suitable hollows
Spotted-tailed Quoll	Dasyurus maculatus	V	E	NSW TBDC (OEH), Vegetation mapping (ELA 2023), field observations.	Rainforest, wet sclerophyll forest and heathlands, hollows.	9.34, eight (8) suitable hollows
Parma Wallaby	Notamacropus parma	V	V	NSW TBDC (OEH), Vegetation mapping (ELA 2023)	Rainforest and wet sclerophyll forest	9.27
Southern Greater Glider	Petauroides volans	E	E	NSW TBDC (OEH), Vegetation mapping (ELA 2023), field observations.	Wet sclerophyll forest and hollows.	3.56 and eight (8) suitable hollows
Yellow-bellied Glider	Petaurus australis	V		NSW TBDC (OEH), Vegetation mapping (ELA 2023), field observations.	Wet sclerophyll forest and hollows.	3.56, eight (8) suitable hollows
Brush-tailed Phascogale	Phascogale tapoatafa	V		NSW TBDC (OEH), Vegetation mapping (ELA 2023), field observations.	Rainforest, wet sclerophyll forest and heathlands, hollows.	9.34, eight (8) suitable hollows
Koala	Phascolarctos cinereus	Е	E	NSW TBDC (OEH), Vegetation mapping (ELA 2023)	Wet sclerophyll forest	3.56
Long-nosed Potoroo	Potorous tridactylus	V	V	NSW TBDC (OEH), Vegetation mapping (ELA 2023)	Wet sclerophyll forest and rainforest	9.27
Grey-headed Flying-fox	Pteropus poliocephalus	V	V	NSW TBDC (OEH), Vegetation mapping (ELA 2023)	Rainforest, wet sclerophyll forest and heathlands	9.27
Red-legged Pademelon	Thylogale stigmatica	V		NSW TBDC (OEH), Vegetation mapping (ELA 2023)	Wet sclerophyll forest and rainforest	9.27
	Reptile					
Stephens' Banded Snake	Hoplocephalus stephensii	V		NSW TBDC (OEH), Vegetation mapping (ELA 2023)	Rainforest and wet sclerophyll forest. Hollows.	9.27 and eight (8) suitable hollows
Rainforest Cool-skink	Harrisoniascincus zia		V	Vegetation mapping (ELA 2023), conservation advice (DCCEEW 2023b), topographic data.	Rainforest (>500 m asl)	5.34

6.1.4. Indirect impacts

Indirect impacts are those that do not directly affect habitat and individuals, but that have the potential to interfere through indirect action. Indirect impacts considered for this assessment include:

- Noise, dust and vibration during construction.
- Accidental damage to trees and vegetation outside of the activity footprint during construction.
- Water quality impacts due to increased surface water runoff, erosion, sedimentation, and chemical runoff during and following construction.
- Potential for the introduction and spread of pathogens, such as viruses and fungus, and weed species.
- Noise associated with human activity.
- Vegetation trampling and littering from human activity.
- Increased risk of unplanned fire through increasing access to remote areas and increasing numbers of people using the new walk.

6.1.4.1. Noise, dust and vibration during construction

Noise, dust and vibration will be produced during the construction of the proposed walking track and may have an indirect impact on local fauna. Impacts to fauna are considered insignificant considering construction is temporary.

6.1.4.2. Accidental damage to trees and vegetation outside of the activity footprint during construction

There is the potential for accidental damage to trees and vegetation, including threatened species, outside of the activity footprint during construction. Impacts to vegetation are considered negligible if the recommended mitigation measures provided in Section 7 are applied.

6.1.4.3. Water quality impacts due to increased surface water runoff, erosion, sedimentation, and chemical runoff during and following construction

During the construction period, there is the potential for an increase in surface water runoff, erosion and sedimentation. Due to the presence of watercourses, drainage lines and dams within the Study area, and the significance of the slope gradients, mitigation measures have been provided to reduce and avoid potential indirect impacts to waterways. This potential indirect impact is likely to extend into the operational phase of the activity, with the channelling of human activity along the walking track, intensifying erosion and adding to water turbidity. A sediment and erosion control plan would be developed and implemented to manage indirect impacts. Considering the proposed mitigation measures, the overall impact is considered to be minor.

6.1.4.4. Potential for the introduction and spread of pathogens, such as viruses and fungus, and weed species

The construction and operation of the activity may result in the introduction and distribution of pathogens, such as viruses and fungus. Pathogens detrimental to biodiversity within the Study area include *Chytridiomycosis Batrachochytrium dendrobatidis* (Chytrid fungus) for amphibians, *Phytophthora cinnamomi* for causing dieback in plants and disease-causing rusts (basidiomycete fungi of the order Pucciniales) which affect Myrtaceae plant species through 'Myrtle rust'. There is

evidence that all three pathogens; Chytrid fungus, Myrtle rust and Phytophthora exist in the locality.

Possible weed infestation can result if weed propagules are introduced by machinery during construction, or from visitors during operation. Additionally, the transfer of weed propagules may occur during construction by machinery and construction workers. The operation of the activity can also exacerbate existing weed infestations through visitor use. Mitigation measures proposed in Section 7 are effective at both limiting the chance of introduction and reducing the risk of spread of pathogens and weeds.

The introduced amphibian chytrid fungus has caused the decline of dozens of species of frogs in NSW and is the likely cause of localised extinctions for at least two species. It naturally lives on rotting vegetation but is able to infect the keratin in the skin of frogs and causes death through changes to the chemical composition of the frog. The fungus is dependent on moisture for survival and so is prevalent in aquatic and riparian environments and is intolerant of sustained temperatures approaching 30°C. Hence it impacts more severely on frogs that spend the majority of their time around streams and swamps in upland areas and the fungus is now considered to be widespread and established throughout the coast and adjacent ranges of eastern Australia.

The fungus can be transported around on organic material including mud and leaves that remain moist and so hikers are considered a potential source of spread as they move around the landscape carrying organic matter on their boots and clothes and deposit that in new locations. This is most likely an issue where streams are crossed as this is where infected material can most easily be collected on clothing and then also washed off back into water. This is a significant issue in that there are multiple strains of the fungus, and the introduction of new strains may have additive impacts to already affected populations of frogs. The removal of organic material from footwear and clothing, either mechanically or through chemical treatments, is considered the most effective way of preventing further spread by human activities (NSW DPIE 2020).

According to the Report "Management strategies for Phytophthora in the Gondwana Rainforests of Australia World Heritage Area" (R. Daniel et al. 2013), Dorrigo National Park recorded the highest number of positive isolations in soil samples for Phytophthera cinnamomi compared to other national parks within the World Heritage Area. The activity involves the construction of walking tracks and upgrades to vehicle trails, which are listed as 'high risk' activities for the spread and introduction of pathogens through transport on vehicles, tools and footwear, and through the disturbance of soils. Additionally, increased pedestrian presence will occur during the operation of the DEGW. Given these factors, management for pathogens and invasive weeds should be considered carefully through strict hygiene protocols and ongoing monitoring during the construction and operation of the activity.

Management of these pathogens are to be included in an overall hygiene management plan within the Construction Environmental Management Plan (CEMP and Operational Management Plan (OMP) including strategies for Phytophthora, Chytrid, Myrtle rust and invasive weed management. Management actions should include but not limited to;

- 1. Hygiene Management Plan
 - a. hygiene protocols (detailed hygiene protocols are listed in Section 7);
 - b. mapping the presence and absence of the pathogens and weeds into GIS layers

- c. monitoring of infected areas to determine the impacts of the disturbances on plant, fungal and animal species, populations and assemblages.
- d. Continued sampling and monitoring of the occurrence and spread of the pathogen, including land adjacent to the Activity within the NP Estate.
- 2. Monitoring or testing of flora for susceptibility to *Phytophthera* and Myrtle rust, and amphibians for Chytrid.

Detailed management actions will be provided within the hygiene management plan within the CEMP and OMP.

6.1.4.5. Noise associated with human activity.

Noise associated with an increase in human activity is likely to impact on local resident fauna during the construction and operation of the activity. Fauna may be deterred from the Study area during these times. It is expected that impacts associated with noise will peak during construction and diminish during operation to an extent considered unlikely to significantly affect fauna provided they are managed via the mitigation measures provided in Section 7.

6.1.4.6. Vegetation trampling and littering from human activity.

Increased human activity is required for construction of the activity and is expected during the activity operation. Indirect impacts associated with increased human activity include trampling of vegetation and littering. These impacts have the potential to degrade the local vegetation. Several mitigation measures have been recommended in Section 7 to reduce risks associated with increased human activity.

6.1.5. Key threatening processes

The following Key Threatening Processes (KTP) currently listed on the Schedules of the BC Act, are associated with the activity:

- Alteration to the natural flow regimes of rivers and streams and their floodplains and wetlands.
- Clearing of native vegetation.
- Infection of frogs by amphibian chytrid causing the disease chytridiomycosis.
- Infection of native plants by Phytophthora cinnamomi.
- Introduction and establishment of Exotic Rust Fungi of the order Pucciniales pathogenic on plants of the family Myrtaceae.
- Invasion and establishment of exotic vines and scramblers.
- Invasion of native plant communities by exotic perennial grasses.
- Invasion, establishment and spread of Lantana (Lantana camara L. sens. lat).
- Loss of HBTs.
- Removal of dead wood and dead trees.
- Unplanned inappropriate fire regimes.

Mitigation measures addressing key threatening processes have been provided in Section 7.

6.2. NSW Biodiversity Conservation Act 2016

6.2.1. Test of Significance

If a species, population, or ecological community listed under Schedules 1 or 2 of the BC Act is likely to be affected, the factors set out to establish if there is likely to be a significant impact on that species, population, ecological community, or habitat, must be assessed. Section 7.3 of the BC Act sets out five factors that must be addressed as part of a Test of Significance. This enables a decision to be made as to whether there is likely to be a significant impact on the species and if a BDAR is required. A ToS was completed for the following NSW BC Act listed entities. Several species were grouped based on similar habitat and impacts to streamline the process:

Endangered communities

• Lowland Rainforest in the NSW North Coast and Sydney Basin Bioregions

Threatened flora

- narrow-leaf finger fern (*Grammitis stenophylla*)
- ravine orchid (Sarcochilus fitzgeraldii)
- rusty plum, plum boxwood (Niemeyera whitei)
- scrub turpentine (*Rhodamnia rubescens*)

Threatened vine species

- cryptic forest twiner (*Tylophora woollsii*)
- slender marsdenia (Marsdenia longiloba)
- milky silkpod (*Parsonsia dorrigoensis*)

Threatened fauna

Insects

– southern subspecies pink underwing moth (Phyllodes imperialis)

Amphibians

- pouched frog (Assa darlingtonia)
- sphagnum frog (*Philoria sphagnicolus*)
- green-thighed frog (*Litoria brevipalmata*)

Stream-dependent amphibians

- glandular frog (Litoria subglandulosa)
- stuttering frog (*Mixophyes balbus*)
- giant barred frog (*Mixophyes iteratus*)

Reptiles

• Stephens' banded snake (Hoplocephalus stephensii)

Aves

white-throated needletail (Hirundapus caudacutus)

Ground and low nesting birds

• rufous scrub-bird (Atrichornis rufescens)

- black-breasted button-quail (*Turnix melanogaster*)
- olive whistler (Pachycephala olivacea)
- scarlet robin (*Petroica boodang*)
- flame robin (*Petroica phoenicea*)

Raptors and tree nesting birds

- varied sittella (Daphoenositta chrysoptera)
- white-bellied sea-eagle (Haliaeetus leucogaster)
- little eagle (Hieraaetus morphnoides)
- black bittern (*Ixobrychus flavicollis*)

Fruit-doves

- wompoo fruit-dove (*Ptilinopus magnificus*
- rose-crowned fruit-dove (Ptilinopus regina
- superb fruit-dove (*Ptilinopus superbus*

Hollow-dependent birds

- little lorikeet (Glossopsitta pusilla)
- masked owl (Tyto novaehollandiae)
- sooty owl (Tyto tenebricosa)
- powerful owl (*Ninox strenua*)
- glossy black-cockatoo (Calyptorhynchus lathami)

Microbats

- eastern false pipistrelle (Falsistrellus tasmaniensis)
- eastern long-eared bat (Nyctophilus bifax)
- little bentwing-bat (*Miniopterus australis*)
- large bent-winged bat (*Miniopterus orianae oceanensis*)
- yellow-bellied sheathtail-bat (Saccolaimus flaviventris)
- greater broad-nosed bat (Scoteanax rueppellii)

Fruit-bats

• grey-headed flying-fox (*Pteropus poliocephalus*)

Hollow-dependent mammals

- spotted-tailed quoll (Dasyurus maculatus)
- eastern pygmy-possum (Cercartetus nanus)
- yellow-bellied glider (*Petaurus australis*)
- southern greater glider (*Petauroides Volans*)
- brush-tailed phascogale (Phascogale tapoatafa)

Large mammals

- koala (*Phascolarctos cinereus*)
- parma wallaby (Notamacropus parma)

- long-nosed potoroo (*Potorous tridactylus*)
- red-legged pademelon (*Thylogale stigmatica*)

ToS were undertaken, which concluded that the activity is unlikely to result in a significant impact to any of the above threatened entities (Appendix B).

6.3. Commonwealth Environment Protection and Biodiversity Conservation Act 1999

6.3.1. Assessment of Significance

The EPBC Act establishes a process for assessing the environmental impacts of activities and activity where MNES may be affected. Under the Act any action which *"has, will have, or is likely to have a significant impact on a MNES"* is defined as a "controlled action", and requires approval from the Commonwealth DCCEEW which is responsible for administering the EPBC Act.

An AoS was completed for the following MNES:

Critically endangered ecological communities (n = 1)

Lowland Rainforest of Subtropical Australia

Vulnerable species (n = 11)

- slender marsdenia (Marsdenia longiloba)
- ravine orchid (Sarcochilus fitzgeraldii)
- stuttering frog (*Mixophyes balbus*)
- sphagnum frog (*Philoria sphagnicolus*)
- glossy black-cockatoo (Calyptorhynchus lathami)
- white-throated needletail (Hirundapus caudacutus)
- black-breasted button-quail (*Turnix melanogaster*)
- parma wallaby (*Notamacropus parma*)
- long-nosed potoroo (*Potorous tridactylus*)
- grey-headed flying-fox (Pteropus poliocephalus)
- rainforest cool-skink (Harrisoniascincus zia)

Endangered species (n = 8)

- cryptic forest twiner (Tylophora woollsii)
- milky silkpod (*Parsonsia dorrigoensis*)
- giant barred frog (*Mixophyes iteratus*)
- rufous scrub-bird (*Atrichornis rufescens*)
- pink underwing moth (Phyllodes imperialis) southern subspecies
- spotted-tailed quoll (Dasyurus maculatus)
- southern greater glider (*Petauroides volans*)
- koala (Phascolarctos cinereus)

Critically endangered species (n = 1)

• scrub turpentine (*Rhodamnia rubescens*)

Migratory species (n = 5)

• oriental cuckoo (*Cuculus optatus*)

- black-faced monarch (Monarcha melanopsis)
- satin flycatcher (*Myiagra cyanoleuca*)
- rufous fantail (Rhipidura rufifrons)
- spectacled monarch (Symposiachrus trivirgatus)

The MNES report for the DEGW contains all Assessments of Significance for the above species, which concluded that no significant impact is likely to result from the activity. The assessments have been provided in Appendix C.



7. Mitigation measures

To minimise the potential impacts on the Study area and improve environmental outcomes, the following recommendations to mitigate potential impacts have been recommended.

Table 40: Recommendations

Aspect	Potential impact	Appropriate mitigation measure	
Pre-Construction			
Sediment and Erosion control	 Sedimentation Erosion Run-off into waterways/drainage lines 	 Develop a Construction Environmental Management Plan (CEMP) and Operational Management Plan with relevant mitigation measures to ameliorate potential impacts to biodiversity values outside of the activity footprint. The CEMP must include: Prepare a sediment and erosion control plan. Erosion and sediment mitigation must be consistent with current Best Management Practice (i.e. Managing Urban Stormwater: Soils and Construction 4th Edition Landcom, 2004) to prevent entry of sediment into the waterway prior to any earthworks being undertaken. establishment of clearly defined areas, such as the approved activity footprint and any 'no-go' areas within/adjacent to work site boundaries that are not to be in any way disturbed or damaged by the works, particularly adjacent to vegetation to be retained and the streams within the Study area. construction fencing prior to and during construction to ensure that construction related impacts are contained within the construction areas. sediment fencing should be placed 2 m within the construction footprint and machinery lay-down areas. surface runoff should be diverted away from areas of soil disturbance and drainage lines. vehicle and machinery movement will be confined to designated tracks and work areas. 	

Aspect	Potential impact	Appropriate mitigation measure
		 work will not take place during or after heavy rain when doing so is likely to cause soil erosion or soil structural damage. no washing of concrete will be undertaken on site. the site-specific CEMP must include instructions for dealing with orphaned or injured native animals and include the contact details for the NSW Wildlife Information, Rescue and Education Service Inc. (WIRES).
		• Drainage should be controlled in the works footprint in line with the <i>Protection of the Environment Operations Act 1997</i> requirements to avoid impacts on adjacent/nearby habitats and threatened ecological communities.
Habitat and	 Loss of ten hollow- 	Clear delineation of vegetation to be removed and establishment of 'No-Go' zones.
vegetation bearing tre • Accidental trees and v outside the footprint • Removal of species hab • Removal of ecological of	bearing treesAccidental damage to	 Prior to the commencement of any works, all HBTs should be visually marked within the footprint with blue high visibility spray paint.
	 trees and vegetation outside the activity footprint Removal of threatened species habitat Removal of a threatened ecological community 	 Micro-siting of infrastructure or use of construction methods that do not impact trees must be implemented, and arborist must certify tree protection measures that can enable the protection of all HBTs outside of the activity footprint. Construction activities within the tree protection zone (TPZ) of trees to be retained must be assessed and approved by the project arborist and must comply with AS 4970-2009 - <i>Protection of trees on development sites</i>. The CEMP must detail tree protection measures to retain all HBTs outside the activity footprint. A pre-clearance survey should be undertaken for the hollow-bearing tree to be removed in the activity footprint. The clearance survey would:
		 Ensure all non-hollow-bearing vegetation is removed prior to the felling of HBTs. This should start with under scrubbing the mid-storey layer followed by removal of the non-hollow bearing canopy. Felling is recommended outside of spring or summer because it is primary breeding season for a number of hollow dwelling fauna. During felling of non-HBTs, damage to HBTs should not occur. For trees containing hollows, hollows should be sectionally lopped by a suitably qualified tree climber or tree felling company qualified to operate from an Elevated Work Platform (EWP). Hollow bearing sections should be lowered to the ground by the tree climber or EWP operator for the ecologist to inspect the hollow. Once the hollow is on the ground it would be inspected for any fauna using a torch. The trunk of the tree, when it contains a hollow should remain in situ for 24 hours after felling with no vehicle or machinery movement taking place around the trunk. This is to ensure that if fauna is present within an area of the hollow that could not be inspected, they have an opportunity to self-relocate. The trees should not be pushed over with an excavator. If any nests are identified in the canopy, they should be removed by the suitably qualified tree climber / EWP
		 or any nests are identified in the canopy, they should be removed by the suitably qualified tree climber / EWP operator before the tree is felled. The nest should be safely relocated to the ground for the ecologist to inspect.

Aspect	Potential impact	Appropriate mitigation measure	
Prevent impacts to known threatened flora	 Removal of threatened flora species and threatened fauna habitat 	 Any injured or exotic fauna species would be taken to the nearest RSPCA or veterinary clinic. Fauna relocation sites should be identified prior to the commencement of felling. Information on threatened species within the locality and identified during targeted surveys will be included in the induction process for relevant personnel. Pre-clearance surveys and micrositing for threatened flora species listed under the BC and/or EPBC Acts will be undertaken, each threatened flora species will be tagged with visible flagging tape to prevent damage during construction and avoid removal where practicably possible. An unexpected, threatened flora or fauna procedure will be developed and if species are discovered, works will stop 	
		immediately, and the environment manager notified. An ecologist will then be engaged to determine management actions to avoid or mitigate any potential impact.	
Weed and pathogen management	• Weed and pathogen introduction.	 Prepare a weed and pathogen hygiene management plan to be included within the CEMP. This would include: Management protocol for declared priority weeds under the Biosecurity Act 2015 during and after construction. Weed hygiene protocol in relation to plant, machinery and all imported materials. Any occurrences of pathogens such as Myrtle Rust, Chytrid fungus and <i>Phytophthora cinnamomi</i> would be monitored, treated and reported. Always use matter from in-situ, where unavoidable imported material must be checked and cleaned. Install disinfecting facilities – wash-down bays, footbaths and/or scrubbing stations at primary entrance/exit points for both vehicles/machinery with smaller personal facilities at all storage and construction sites. Inductions must include training and procedures to reduce off-track disturbance to minimise contact with soil, in all locations. All stockpiles and storage sites are allocated to previously disturbed areas. These areas must be checked for weed and pathogen prior to use. In priority areas (TECs) install signage ('stay on marked track') to reduce track disturbance and divert or elevate tracks in areas that have the potential to become muddy. A hygiene check list for personnel and vehicles is recommended and a hygiene kit should be kept in each field vehicle for staff to implement hygiene procedures as required (Refer to Appendix I). 	
		 Phytophthora cinnamomi, Chytrid fungus, Myrtle Rust and invasive weed control measures must be undertaken from the commencement of the project to minimise the risk of spread and to the site. The following guidelines should be followed: <u>Hygiene guidelines (nsw.gov.au)</u> <u>https://www.rbgsyd.nsw.gov.au/science/plants/pests-diseases/phytophthora-dieback/disinfection-procedures</u> <u>http://www.environment.gov.au/biodiversity/invasive-species/publications/management-phytophthora-cinnamomi-biodiversity conservation</u> 	

Aspect	Potential impact	Appropriate mitigation measure	
		 R. Daniel, D. Guest and T. Bishop, 2013. Management strategies for Phytophthora in the Gondwana Rainforests of Australia World Heritage Area. Faculty of Agriculture and Environment, The University of Sydney. Managing Dieback Best Practise Guideline" (Managing Phytophthora Dieback in Bushland, Edition 7, 2015, A Guide for Landholders and Community Conservation Groups, Dieback Working Group). 	
During Constructi	ion		
Weeds and pathogens	 Weeds and pathogen hygiene protocols 	• All pathogens and invasive weeds Invasive plants can be spread by dispersal of seed and vegetative material on wind, animals, waterways and people (via contaminated clothing, hats, footwear, tools, equipment, machinery and vehicles; DoE 2015).	
		Personnel, clothing, footwear, tools and equipment (DPIE Hygiene Protocols, 2020).	
		 Check – check personnel, clothing, footwear, backpacks and equipment for soil, plant material and other debris Clean 	
		 Remove all soil, plant material and other debris using a hard brush and (if required) clean water Wash dirty hands with soap and water 	
		iii. Remove seeds from clothing, footwear, tools and equipment by hand. Where possible, have a co-worker check you have removed all seeds.	
		5. Dry – where practical, ensure hands, clothing, footwear and equipment are dry before proceeding	
		Phytophthora cinnamomi	
		The proposed activity may facilitate the spread of Phytophthera through the landscape on equipment machinery or boots. Ultimately the responsibility lies with the land managers, stakeholders, contractors and visitors to the area, however example measures are recommended below for managing Phytophthora (R. Daniel, D. Guest and T. Bishop, 2013):	
		1. Test areas for the presence of Phytophthora before starting work;	
		2. Assume the activity to be carried out has the potential to introduce Phytophthora	
		3. Clean footwear, equipment, machinery and tools before entering an area	
		4. Spray soles of shoes, and soak tools with one of the following disinfectants before entering and when leaving a site:	
		i. Methylated spirits (70% v/v)	
		ii. Quaternary ammonium disinfectant	
		iii. Ensure that any adhering soil and plant material is removed	
		iv. Repeat this when moving from potentially infested areas to non-infested areas	
		5. Always work in areas free of Phytophthora before working in infested areas	
		6. Minimise soil disturbance	

Aspect	Potential impact	Appropriate mitigation measure
		7. Restrict activities to dry periods where possible. Avoid or minimise activities during wet periods because soil is more
		likely to adhere to shoes, tools and equipment and the pathogen is also more active under these conditions
		8. Use only construction material (gravel, sand, etc.) and plants that have come from accredited suppliers, or that has been tested for Phytophthora
		9. Install footwear washing/scrubbing stations in popular areas where Phytophthora is present, or at high risk of being introduced,
		10. Ensure staff, stakeholders and contractors are aware of Phytophthora and its impacts and are suitably trained in the hygiene measures available.
		Myrtle Rust
		Myrtle Rust spores can quickly spread via people on contaminated clothing, footwear, tools, vehicles and machinery, as wel as on animals" (DPIE Hygiene Protocols, 2020).
		Hygiene protocol for personnel, clothing, footwear, tools and equipment:
		1. Disinfect – spray down equipment and clothing with disinfectant
		2. Clean:
		i. wash all personnel clothing including hats using detergent and warm water or hot machine wash
		ii. shower thoroughly to remove residual spores from skin and hair (DPIE Hygiene Protocols, 2020).
		Hygiene protocol for vehicles and heavy machinery
		1. Check – exterior and interior of vehicles and machinery for soil, plant material and other debris
		2. Clean:
		i. Remove large clods of soil
		Remove all soil, plant material and other debris from the interior using vacuum or dustpan and brushDispose of debris in a bag and put in commercial waste bin
		iv. If returning from a potentially contaminated area, wash vehicle and/or machinery ASAP (e.g. at commercial
		carwash) before heading back to base. Spray tyres with a disinfectant (Table 2) if no carwash is available (DPIE Hygiene Protocols, 2020).
		3. Disinfect:
		i. Use 70 % alcohol wipes or spray bottle to apply disinfectant to vehicle/machinery interior focusing on seats, steering wheel, gear stick, pedals and floor.
		Spray exterior with disinfectant or hand pressure sprayer. Leave disinfectant on surface for 30 seconds before rinsing with clean water (DPIE Hygiene Protocols, 2020).
Aspect	Potential impact	Appropriate mitigation measure
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		 Chytrid fungus Humans can spread the disease by contaminated footwear and equipment and by (illegally) moving frogs from one area to another" (DPIE Hygiene Protocols, 2020). 1. Where practical, select clothing, footwear, tools and equipment that are easy to clean (e.g. non-absorbent). 2. Where practical, pack separate sets of equipment (including shoes) for each site (DPIE Hygiene Protocols, 2020). 3. Before arriving and leaving site. 4. Check - Thoroughly check all personnel, clothing, footwear and equipment for soil, water, organic material or other debris. Where possible, have a co-worker double-check for you. 5. Clean - Remove all soil, water, organic material or other debris using a hard brush and clean water. 6. Disinfect - Spray or soak potentially contaminated materials with disinfectant (Table 7). Leave for 30 seconds before proceeding. Where practical, rinse with clean water. 7. Dry - Where practical, ensure all clothing, footwear, tools and equipment are dry before proceeding (DPIE Hygiene Protocols, 2020).
Chemicals and waste material	 Runoff of chemicals Pollution of the environment Spread of pathogens or invasive plant material 	 Ensure fertilisers, turf, mulch, weeds and imported soils are not unintentionally introduced into areas of ENV and NVR (i.e. through natural drainage pathways or general proximity). Chemicals and rubbish must be contained to the construction area. All chemicals should be correctly stored within bunding. Weed removal should be undertaken using mechanical and manual means. If herbicides are to be used, they should be used as described in the product label. Use in proximity to creek lines should be limited. The site-specific CEMP should include measures to reduce the spread of weeds, what weed species are present on site and how best to treat them. Refer to the Noxious and environmental weed control handbook: a guide to weed control in non-crop, aquatic and bushland situations (5th edition, Department of Primary Industries)
Habitat	Protection of HBTs	• Temporary tree protection measures (such as machinery exclusion zones from tree roots and tree trunk protection) should be in place for any retained trees and to protect adjacent native vegetation during all construction works. High visibility orange bunting should be placed at a 1 m distance from the trunk of the tree with 'no-go' signage attached.
Site access	Trampling of vegetationSpread of weeds	• Work vehicle access should be restricted to designated work areas and existing formed access trails/roadways.
Waterways	 Increased sedimentation during bridge / waterway crossing construction 	 Once completed, the creek bed profile to be maintained at the same level before work. Instream and culvert crossings should be designed and constructed in accordance with the national guidelines entitled 'Why do fish need to Cross the Road? Fish Passage Requirements for Waterway Crossings' (Fairfull and Whitebridge 2003).

Dorrigo Escarpment Great Walk – Ecological Assessment

Aspect	Potential impact	Appropriate mitigation measure
Aspect	 Increase rubbish and human waste along waterway 	 Appropriate mitigation measure This document is available at the following website at this link: <u>https://www.dpi.nsw.gov.au/data/assets/pdf_file/0004/633505/Whydo-fish-need-to-cross-the-road_booklet.pdf;</u> Erosion and sediment mitigation devices are to be erected in a manner consistent with current Best Management Practice (i.e. Managing Urban Stormwater: Soils and Construction 4th Edition Landcom, 2004) to prevent entry of sediment into the waterway prior to any earthworks being undertaken. These are to be maintained in good working order for the duration of the works and subsequently until the site has been stabilised and the risk of erosion and sediment movement from the site is minimal. Environmental protection measures are to be removed from the site once the site has been stabilised and the risk of sediment movement is minimal. Any material removed from the waterway that is to be temporarily deposited or stockpiles on land is to be located well away from the waterway and to be contained by appropriate sediment control devices. Machinery is not to enter or work from the waterway unless in accordance with the proposed works.
		 Prior to use at the site and/or entry into the waterway, machinery is to be appropriately cleaned degreased and serviced. Spill kits are to be available on site at all times during the works. Works in the waterway are conducted during periods of no or low stream flow to minimise sedimentation. Any dewatering system required for the works must be designed to adequately meet the required volumes of water and all water must be treated to that of the ambient upstream water quality before being returned to the waterway: a. Intake pipes must be screened with mesh no greater than 6mm in diameter; b. The dewatering system must be of sufficient size to meet the capacity of the job; c. Daily checks of the sediment levels in the dewatering sediment dams are to be conducted to ensure adequate storage capacity; d. Dewatering operations must ensure retention of spoil for a long enough period to allow mobilised sediments to settle
		 out; e. Discharge points for the dewatering and or pump around systems must be designed to prevent erosion, scour or visible turbid plumes; f. A visual inspection of the waterway is to be conducted at all times during dewatering operations to ensure that no visible plumes are generated within the waterway from dewatering operations. The concrete culvert floor and any associated apron or scour protection must be recessed by a minimum of 100mm below the natural bed level of the stream measured at the downstream (outlet) end. Damage to existing native riparian vegetation is to be avoided or minimised and any damage caused is to be restored. NPWS Project Manager must notify DPI Fisheries and the Environment Protection Authority immediately if any fish kills occur in the vicinity of the works. In such cases, all works other than emergency response procedures are to cease until the

Dorrigo Escarpment Great Walk – Ecological Assessment

Aspect	Potential impact	Appropriate mitigation measure
		issue is rectified and approval is given by DPI Fisheries and/or the Environment Protection authority for the works to proceed.
Operational		
Weeds and pathogens	 Weeds and pathogen hygiene protocols 	 Follow the relevant weeds and pathogen hygiene procedures as listed in 'During Construction'. Wash down stations for hikers shoes, camping gear, backpacks and hats are recommended at the start and finish of the DEGW track. Instructions should be issued to hikers on booking confirmation with the details on the website asking hikers to check, clean, disinfect and dry their outdoor gear, such as cleaning the mud from boots, camping gear and vehicles before and after they visit the area.
		An example of the instructions is provided below. This was taken from 'Keeping it clean - A Tasmanian field manual' to prevent the spread of freshwater pests and pathogens (<u>15130802_52keepingitcleanspreadswe.pdf (nre.tas.gov.au</u>)).
		Always start your trip with clean, dirt free dry gear
		 Remove dirt from your machinery, boots, camping and bushwalking gear, horses' hooves and bike tyres Obey track and road closed signs, these may have been closed to prevent the disease spreading Keep to formed tracks, moving off infected tracks into uninfected areas will spread the disease Where tracks are designated as one way, always walk in the direction indicated Clean your gear before you leave your campsite. Brush the soil off your tent floor, pegs, toilet trowel etc. Use wash down stations where provided
		 When you get home Clean mud and dirt from your gear, vehicles, bikes and animals It is vital that soil is washed straight into your septic or sewerage systems, where root rot will die You can do this by washing over a trough or drain



8. Conclusion

ELA were engaged by NPWS to complete an ecological assessment for the proposed DEGW to be assessed under the EP&A Act. The assessment identified the following ecological matters:

- Native vegetation comprised of 19 PCTs.
- Lowland Rainforest in NSW North Coast and Sydney Basin Bioregion (BC Act Endangered Ecological Community (EEC) and the EPBC listed *Lowland Rainforest of Subtropical Australia*.
- Seven (7) threatened flora species and five (5) threatened fauna species were recorded within the Study area and an additional 43 threatened fauna species considered likely or potentially to inhabit directly impacted native vegetation (Appendix A).
- Ten (10) types of fauna habitats that may support local populations including ten (10) HBTs.

ToS and AoS were undertaken (Appendix B & C) which identified that no significant impact is likely to result from the activity and entry into the Biodiversity Offsets Scheme or referral to the minister for these entities is not required.

Residual impacts included both 'direct' and 'indirect' impacts which have been assessed in section 6 and measures provided in Section 7 to mitigate potential impacts related to sediment and erosion control, HBTs, pathogen and invasive weeds and construction must be implemented otherwise additional assessment may be required. Importantly, it is imperative strict hygiene protocols are implemented prior to and during construction, and during operation to prevent the spread of known pathogens occurring within the locality by humans and vehicles including *Phytophthora cinnamomi*, Chytrid fungus, Myrtle Rust and invasive weeds.

Given the design of the DEGW mitigation proposed the potential adverse cumulative impacts of the activity are expected to be negligible. The activity is not likely to:

• significantly impact threatened species or ecological communities or their habitats, within the meaning of the Biodiversity Conservation Act 2016 (BC Act) or Fisheries Management Act 1994.

 significantly impact threatened species, ecological communities or migratory species, within the meaning of the Environment Protection and Biodiversity Conservation Act 1999 (EPBC Act); therefore, no biodiversity offsets are required for threatened biota listed under the EPBC Act.

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Appendix A Likelihood of occurrence

The table below provides the collated results from the 5 km database searches (buffered around the Study area) of the NSW Wildlife Atlas and the EPBC Protected Matters Search Tool. An assessment of likelihood of occurrence was made for threatened and migratory species identified from the database searches. Five terms for the likelihood of occurrence of species are used in this report. This assessment was based on database or other records, presence or absence of suitable habitat, features of the activity site, results of the field survey and professional judgement. The terms for likelihood of occurrence are defined below:

- "known" the species was or has been observed on the site.
- "likely" a medium to high probability that a species uses the site.
- "potential" suitable habitat for a species occurs on the site, but there is insufficient information to categorise the species as likely to occur, or unlikely to occur.
- "unlikely" a very low to low probability that a species uses the site.
- "no" habitat on site and in the vicinity is unsuitable for the species.

The likelihood of occurrence was only one factor among other factors, which was used to determine whether to apply the BC Act or EPBC Significant Impact Criteria assessments to threatened species, populations, communities or migratory species.

Table 41: TEC likelihood table

Scientific Name	BC Act Status	EPBC Act Status	Distribution and Habitat	Likelihood of Occurrence	Impact Assessment Required	Justification
Coastal Saltmarsh in the New South Wales North Coast, Sydney Basin and South East Corner Bioregions	Ε		This community occurs in the intertidal zone along the NSW coast. Species composition varies with elevation and latitude, with Saltmarsh in southern NSW being generally more species-rich than further north. Species restricted to coastal saltmarshes include <i>Distichlis distichophylla</i> (Endangered), <i>Halosarcia pergranulata subsp. pergranulata, Wilsonia backhousei</i> (Vulnerable) and <i>Wilsonia rotundifolia</i> (Endangered).	None	No	TEC does not occur within the Study area
Swamp Oak Floodplain Forest of the New South Wales North Coast, Sydney Basin and South East Corner Bioregions	Ε	Ε	Occurs in sub-tropical, sub-humid and temperate climatic zones from Curtis Island, north of Gladstone, in Queensland to Bermagui in southern New South Wales. This ecological community is typically found where groundwater is saline or brackish but can occur in areas where groundwater is relatively fresh. It is typically found on coastal flats, floodplains, drainage lines, lake margins, wetlands, and estuarine fringes where soils are at least occasionally saturated, water-logged or inundated. Typically associated with low-lying coastal alluvial floodplains and alluvial flats. The canopy layer is dominated by Casuarina glauca (swamp oak, swamp she-oak). This often occurs as a relatively uniform upper layer of swamp oak, with height and density being dependent on the local environmental conditions.	None	No	TEC does not occur within the Study area
White Gum Moist Forest in the NSW North Coast Bioregion	Ε	Ε	Occurs in the NSW North Coast bioregion and adjacent bioregions in South Eastern Queensland and New England Tablelands, with a scattered distribution north from Dorrigo and Coffs Harbour in New South Wales to Warwick and Canungra in Queensland. This ecological community typically occurs on deep, fertile soils and is largely confined to fertile basaltic derived soils, or fine-grained sediments of colluvium or alluvium depending on upstream environments. Dunn's white gum moist forest, in its undisturbed state, is a structurally complex, layered wet sclerophyll forest that generally occupies areas of transition between rainforest and drier eucalypt forest. The ecological community is generally a tall, open forest with a multi-stratum understory of rainforest trees, shrubs and vines (typically mesic). The canopy of the ecological community may occur as pure stands of <i>Eucalyptus dunnii</i> (Dunn's white gum), though more often the canopy is co-dominated by Dunn's white gum with <i>E. saligna</i> (Sydney blue gum), <i>E. grandis</i> (Flooded gum), <i>E. microcorys</i> (Tallowwood) and/or <i>Lophostemon</i> <i>confertus</i> (Brush box).	None	No	TEC does not occur within the Study area
Freshwater Wetlands on Coastal Floodplains of the New South Wales North Coast, Sydney Basin and	Ε		Known from along the majority of the NSW coast. However, it is distinct from Sydney Freshwater Wetlands which are associated with sandplains in the Sydney Basin bioregion. Associated with coastal areas subject to periodic flooding and in which standing fresh water persists for at least part of the year in most years. Typically occurs on silts, muds or humic loams in low-lying parts of floodplains, alluvial flats,	None	No	TEC does not occur within the Study area

				0	orrigo Escarpment Great W	/alk – Ecological Assessmen
Scientific Name	BC Act Status	EPBC Act Status	Distribution and Habitat	Likelihood of Occurrence	Impact Assessment Required	Justification
South East Corner Bioregions			depressions, drainage lines, backswamps, lagoons and lakes but may also occur in backbarrier landforms where floodplains adjoin coastal sandplains. Generally, occur below 20 m elevation on level areas. They are dominated by herbaceous plants and have very few woody species. The structure and composition of the community varies both spatially and temporally depending on the water regime: Those that lack standing water most of the time are usually dominated by dense grassland or sedgeland vegetation, often forming a turf less than 0.5 metre tall and dominated by amphibious plants including <i>Paspalum distichum</i> (water couch), <i>Leersia hexandra</i> (swamp rice- grass), <i>Pseudoraphis spinescens</i> (mud grass) and <i>Carex appressa</i> (tussock sedge).			
Grey box-grey gum wet forest of subtropical eastern Australia (EPBC)/Grey Box - Grey Gum Wet Sclerophyll Forest in the NSW North Coast Bioregion (BC)	Ε	E	The ecological community is limited to the New South Wales north coast (NNC) and South-Eastern Queensland (SEQ) IBRA Bioregions 3 from near Coffs Harbour in NSW to the southern areas of southeast Queensland. Within these areas it occurs in the Moreton Basin, Scenic Rim, Woodenbong, Cataract, Rocky River Gorge, Washpool, Dalmorton, Clarence Sandstones and Chaelundi IBRA subregions. The ecological community typically occurs on escarpment slopes and foothills, on inland hills and ranges between 100m and 600m altitude. It is mainly associated with areas where mean annual rainfall exceeds approximately 1000mm and does not exceed 1260mm. It may occur in areas with somewhat lower or higher rainfall than this where topography or other factors create a suitable microclimate. The Grey box-grey gum wet forest at maturity typically has a tall to very tall open canopy dominated by its characteristic Eucalyptus species with or without hoop pine (<i>Araucaria cunninghamii</i>).	None	No	TEC does not occur within the Study area
Littoral Rainforest in the New South Wales North Coast, Sydney Basin and South East Corner Bioregions	E		Occurs only on the coast and is found at locations in the NNC Bioregion, Sydney Basin Bioregion and South East Corner (SEC) Bioregion. Littoral Rainforest is very rare and occurs in many small stands. Most stands occur within two kilometres of the sea, though are occasionally found further inland within reach of the maritime influence.	None	No	TEC does not occur within the Study area
Lowland Rainforest in the NSW North Coast and Sydney Basin Bioregions	Ε		The ecological community in the NNC and Sydney Basin (SB) Bioregions is comprised of subtropical rainforest and some related, structurally complex forms of dry rainforest, excluding Littoral Rainforest in the NNC, SB and SEC Bioregions and Lowland Rainforest on Floodplain in the NNC Bioregion. Lowland Rainforest may be associated with a range of high-nutrient geological substrates, notably basalts and fine-grained sedimentary rocks, on coastal plains and plateaux, footslopes and foothills. In the north of its range, Lowland Rainforest is found up to 600m above sea level, but in the Sydney Basin bioregion it is limited to elevations below 350m. This ecological community, in a relatively undisturbed state, has a closed canopy, characterised by a high diversity of	Known	Yes	Associated PCT within Study area where elevation is below 600m.

					Dorrigo Escarpment Great	Walk – Ecological Assessment
Scientific Name	BC Act Status	EPBC Act Status	Distribution and Habitat	Likelihood of Occurrence	Impact Assessment Required	Justification
			trees whose leaves may be mesophyllous and encompass a wide variety of shapes and sizes. Typically, the trees form three major strata: emergents, canopy and sub-canopy which, combined with variations in crown shapes and sizes, give the canopy an irregular appearance.			
Lowland Rainforest of Subtropical Australia		CE	This ecological community primarily occurs from Maryborough in Queensland to the Clarence River (near Grafton) in New South Wales (NSW), but is also in isolated areas between the Clarence River and Hunter River such as the Bellinger and Hastings Valleys. This ecological community occurs on basalt and alluvial soils, including sand and old/elevated alluvial soils as well as floodplain alluvia. It also occurs occasionally on historically enriched rhyolitic soils and basaltically enriched metasediments. Lowland Rainforest mostly occurs in areas <300 m above sea level. Aspect can result in the community being found at >300 m altitude on north-facing slopes, but typically 300 m defines the extent of the lowlands. In addition, Lowland Rainforest typically occurs in areas with high annual rainfall (>1300 mm). The canopy comprises a range of tree species but in some areas a particular species may dominate e.g. palm forest, usually dominated by <i>Archontophoenix cunninghamiana</i> (bangalow palm) or <i>Livistona australis</i> (cabbage palm); and riparian areas dominated by <i>Syzygium floribundum</i> (syn. <i>Waterhousea floribunda</i>) (weeping satinash/weeping lilly pilly).	Known	Yes	Associated PCT within Study area where elevation is below 300m.
Lowland Rainforest on Floodplain in the New South Wales North Coast Bioregion	Ε		Occurs on riverine corridors and alluvial flats with rich, moist silts often in sub- catchments dominated by basic volcanic substrates. Major examples once occurred, and remnants remain, on the floodplains of the Tweed, Richmond, Clarence, Bellinger, Macleay, Hastings, Manning, and Hunter Rivers. Other minor river systems also support the community. This community occurs on fertile soils in lowland river valleys.	None	No	TEC does not occur within the Study area
Montane Peatlands and Swamps of the New England Tableland, NSW North Coast, Sydney Basin, South East Corner, South Eastern Highlands and Australian Alps bioregions	Ε		The ecological community is currently known from parts of the Local Government Areas of Armidale Dumaresq, Bega Valley, Bellingen, Blue Mountains, Bombala, Cooma-Monaro, Eurobodalla, Gloucester, Greater Argyle, Guyra, Hawkesbury, Lithgow, Oberon, Palerang, Severn, Shoalhaven, Snowy River, Tenterfield, Tumbarumba, Tumut, Upper Lachlan and Wingecarribee but may occur elsewhere in these bioregions. The community is associated with accumulated peaty or organic-mineral sediments on poorly drained flats in the headwaters of streams. It occurs on undulating tablelands and plateaux, above 400-500 m elevation, generally in catchments with basic volcanic or fine-grained sedimentary substrates or, occasionally, granite.	None	No	TEC does not occur within the Study area

					Dorrigo Escarpment Great	Walk – Ecological Assessment
Scientific Name	BC Act Status	EPBC Act Status	Distribution and Habitat	Likelihood of Occurrence	Impact Assessment Required	Justification
New England Peppermint <i>(Eucalyptus nova- anglica</i>) Grassy Woodlands	CE	CE	This ecological community occurs from Dumaresq, Guyra, Inverell, Severn and Tenterfield Local Government Areas, but may occur elsewhere on the New England Tablelands (NET). New England Peppermint is typically an open forest or woodland that occurs at high elevations on valley flats and depressions that are subject to cold air drainage. Soils are poorly drained loam-clays derived from basalt, fine-grained sedimentary or acid volcanic substrates. The tree layer, when present, is usually 8 to 20m tall and dominated by New England Peppermint (<i>Eucalyptus nova-anglica</i>), occasionally in association with other tree species including mountain gum (<i>E.</i> <i>dalrympleana subsp. heptantha</i>) and Blakely's red gum (<i>E. blakelyi</i>). The shrub layer is either sparse or absent. There is a dense ground layer of various grasses and herbs.	None	No	TEC does not occur within the Study area
Subtropical eucalypt floodplain forest and woodland of the New South Wales North Coast and South East Queensland bioregions	Ε	Ε	Occurs in the NNC and SEQ IBRA bioregions and on Curtis Island in the Brigalow Belt North (BBN) IBRA Bioregion. This encompasses an area from just north of Newcastle, New South Wales (around Raymond Terrace) in the south, to just north of Gladstone in Queensland. The ecological community is found on alluvial landforms, including floodplains, the riparian zones of parent rivers and other order tributaries, alluvial flats, floodplain/alluvial terraces and periodically flooded depressions. It generally occurs below 50 m above sea-level (ASL), although it can occur up to 250 m ASL. The structure of this ecological community, in its undisturbed state, varies from tall open forest to woodland, although partial clearing may have reduced the canopy to scattered trees in some areas. Elsewhere, there may be localised areas of denser closed forest and/or low forest, often associated with other disturbance (including flooding). The tree canopy is dominated by eucalypts and/or other myrtaceous trees (specifically from the Angophora, Corymbia, Lophostemon and Syncarpia genera), often as a mixture of species.	None	No	TEC does not occur within the Study area
Swamp Sclerophyll Forest on Coastal Floodplains of the New South Wales North Coast, Sydney Basin and South East Corner Bioregions	Ε		The ecological community is associated with humic clay and sandy loam soils on waterlogged or periodically flooded areas. These soils are generally deposited during flood events and occur on the flats, drainage lines and river terraces of the Coastal Floodplain. The community is usually found below 20m in elevation although sometimes up to 50 m elevation on small floodplains or where the larger floodplains adjoin lithic (rocky) substrates or coastal sand plains. It is found in the NNC and SEC bioregions. The most common trees in Swamp Sclerophyll Forest <i>include Eucalyptus robusta</i> (Swamp Mahogany), <i>Melaleuca quinquenervia</i> (Broadleaved paperbark) and, south from Sydney, <i>Eucalyptus botryoides</i> (Bangalay) and <i>Eucalyptus longifolia</i> (Woollybutt).	None	No	TEC does not occur within the Study area

				D	orrigo Escarpment Great Wa	alk – Ecological Assessment
Scientific Name	BC Act Status	EPBC Act Status	Distribution and Habitat	Likelihood of Occurrence	Impact Assessment Required	Justification
Themeda grassland on sea cliffs and coastal headlands in the NSW North Coast, Sydney Basin and South East Corner Bioregions	Ε		Occurs on sea cliffs and coastal headlands is found on a range of substrates in the NSW North Coast, Sydney Basin and South East Corner bioregions. Stands on sandstone are infrequent and small.	None	No	TEC does not occur within the Study area
White Box - Yellow Box - Blakely's Red Gum Grassy Woodland and Derived Native Grassland in the NSW North Coast, New England Tableland, Nandewar, Brigalow Belt South, Sydney Basin, South Eastern Highlands, NSW South Western Slopes, South East Corner and		Ε	Occurs in in the Brigalow Belt South (BBS), Nandewar, NET, SEQ, SB, NNC, South Eastern Highlands (SEH), SEC, NSW South Western Slopes, Victorian Midlands and Riverina Bioregions The ecological community occurs on a variety of soil parent material without apparent strong overall patterns in floristics. However, in areas with heavier textured soils derived from basalt substrates (for example north of Tamworth and on the Inverell Plateau) the grass <i>Dichanthium sericeum</i> (Queensland blue grass) has been found to be dominant.	None	No	TEC does not occur within the Study area

V = Vulnerable, E= Endangered Ecological Community, CE = Critically Endangered Ecological Community.

Table 42: Threatened flora species likelihood table

Scientific Name	Common Name	BC Act Status	EPBC Act Status	Distribution and habitat	Number of records within 5 km (BioNet)	Likelihood of Occurrence	Impact Assessment Required	Justification
Acacia chrysotricha	Newry Golden Wattle	E		Restricted to an area south of Bellingen on the NSW north coast. An understorey species on rainforest edges and in wet or dry eucalypt forest in steep narrow gullies on quartzite soils.	0	Unlikely	No	Species was not recorded from the Study area during the field survey.

								Dorrigo Escarpment Great Walk – Ecological Assessment
Scientific Name	Common Name	BC Act Status	EPBC Act Status	Distribution and habitat	Number of records within 5 km (BioNet)	Likelihood of Occurrence	Impact Assessment Required	Justification
Acronychia littoralis	Scented Acronychia	E	E	Found between Fraser Island in Queensland and Port Macquarie on the north coast of NSW. Occurs in transition zones between littoral rainforest and swamp sclerophyll forest; between littoral and coastal cypress pine communities; and margins of littoral forest.	0	No	No	No transition zones between littoral rainforest and sclerophyll or coastal cypress pine communities occur within the Study area.
Arthraxon hispidus	Hairy Jointgrass	V	V	Occurs over a wide area in south-east Queensland, and on the northern tablelands and north coast of NSW, but is never common. Also found from Japan to central Eurasia. Moisture and shade-loving grass, found in or on the edges of rainforest and in wet eucalypt forest, often near creeks or swamps.	0	Unlikely	No	Species was not recorded from the Study area during the field survey.
Asperula asthenes	Trailing Woodruff	V	V	Occurs only in NSW. It is found in scattered locations from the Central Coast (Mandalong area) north to near Kempsey, with several records from the Port Stephens / Karuah / Wallis Lakes area / Forster (including Myall Lakes NP, New England NP, Wallingat NP and Darawnk NR). Occurs in damp sites, often along riverbanks.	0	No	No	The distribution of this species does not overlap with the Study area.
Bertya sp. Clouds Creek (M.Fatemi 4)		Ε		Endemic to north-eastern New South Wales where it occurs from the Gibraltar Range, east of Glen Innes, to the Macleay Gorges, south-east of Armidale. Records east of the Great Divide detailed within the Recovery Plan for <i>Bertya sp</i> . Cobar-Coolabah refer to this taxon. Occurs within heath or low shrubland vegetation surrounded by stunted eucalypts at altitudes from 300-1000 m above sea level.	0	Unlikely	No	Species was not recorded from the Study area during the field survey.
Boronia umbellata	Orara Boronia	V	V	Found at only a few locations between Glenreagh and Lower Bucca, north of Coffs Harbour, but it is locally common in the restricted area where it occurs. This Boronia grows as an understorey shrub in and around gullies in wet open forest. It appears to regenerate	0	Unlikely	No	Species was not recorded from the Study area during the field survey.

								Dorrigo Escarpment Great Walk – Ecological Assessment
Scientific Name	Common Name	BC Act Status	EPBC Act Status	Distribution and habitat	Number of records within 5 km (BioNet)	Likelihood of Occurrence	Impact Assessment Required	Justification
				well after disturbance, but it is not known whether prolonged or repeated disturbance affects long-term persistence.				
Callistemon pungens			V	In NSW, the species occurs from near Inverell to the eastern escarpment in New England NP. Habitats range from riparian areas dominated by <i>Casuarina</i> <i>cunninghamiana subsp. cunninghamiana</i> to woodland and rocky shrubland.	0	No	No	The distribution of this species does not overlap with the Study area.
Cryptostylis hunteriana	Leafless Tongue Orchid	V	V	The Leafless Tongue Orchid has been recorded from as far north as Gibraltar Range NP south into Victoria around the coast as far as Orbost. This species does not appear to have well defined habitat preferences and is known from a range of communities, including swamp-heath and woodland. The larger populations typically occur in woodland dominated by Scribbly Gum (<i>Eucalyptus sclerophylla</i>), Silvertop Ash (<i>E.</i> <i>sieberi</i>), Red Bloodwood (<i>Corymbia gummifera</i>) and Black Sheoak (<i>Allocasuarina littoralis</i>); appears to prefer open areas in the understorey of this community and is often found in association with the Large Tongue Orchid (<i>C. subulata</i>) and the Tartan Tongue Orchid (<i>C. erecta</i>).	0	No	No	The distribution of this species does not overlap with the Study area.
Cynanchum elegans	White- flowered Wax Plant	Ε	Ε	Restricted to eastern NSW where it is distributed from Brunswick Heads on the north coast to Gerroa in the Illawarra region. The species has been recorded as far west as Merriwa in the upper Hunter River valley. <i>Cynanchum elegans</i> occurs on the edge of dry rainforest vegetation. Other associated vegetation types include littoral rainforest; <i>Leptospermum</i> <i>laevigatum</i> (Coastal Tea-tree) – <i>Banksia integrifolia</i> <i>subsp. integrifolia</i> (Coastal Banksia) coastal scrub; <i>Eucalyptus tereticornis</i> (Forest Red Gum) aligned open forest and woodland; <i>Corymbia maculate</i> (Spotted	0	Potential	No	Species was not recorded from the Study area during the site inspection.

Scientific Name	Common Name	BC Act Status	EPBC Act Status	Distribution and habitat	Number of records within 5 km (BioNet)	Likelihood of Occurrence	Impact Assessment Required	Justification
				Gum) aligned open forest and woodland; and <i>Melaleuca armillaris</i> (Bracelet Honeymyrtle) scrub to open scrub.				
Dichanthium setosum	Bluegrass	V	V	Occurs on the NET, North West Slopes and Plains and the Central Western Slopes of NSW, extending to northern Queensland. It occurs widely on private property, including in the Inverell, Guyra, Armidale and Glen Innes areas. Often found in moderately disturbed areas such as cleared woodland, grassy roadside remnants and highly disturbed pasture.	0	No	No	The distribution of this species does not overlap with the Study area.
Endiandra hayesii	Rusty Rose Walnut, Velvet Laurel	V	V	A restricted distribution from Burleigh Heads in Queensland to the Richmond River in north-east NSW. It is locally abundant in some parts of its range in NSW. Sheltered moist gullies in lowland subtropical and warm temperate rainforest on alluvium or basaltic soils. The species occurs in regrowth and highly modified forms of these habitats.	0	No	No	The distribution of this species does not overlap with the Study area.
Eucalyptus nicholii	Narrow- leaved Peppermint	V	V	This species is sparsely distributed but widespread on the NET from Nundle to north of Tenterfield, being most common in central portions of its range. Found largely on private property and roadsides, and occasionally in conservation reserves. Planted as urban trees, windbreaks and corridors. Typically grows in dry grassy woodland, on shallow soils of slopes and ridges. Found primarily on infertile soils derived from granite or metasedimentary rock.	0	No	No	This species naturally occurs on the NET.
Euphrasia arguta		CE	CE	Known from Nundle State Forest and adjacent private land, in NSW, where it was rediscovered in 2008. These populations occur at the border between the	0	No	No	The distribution of this species does not overlap with the Study area.

NET and the NNC bioregions. *E. arguta* are found in

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								Dorrigo Escarpment Great Walk – Ecological Assessment
Scientific Name	Common Name	BC Act Status	EPBC Act Status	Distribution and habitat	Number of records within 5 km (BioNet)	Likelihood of Occurrence	Impact Assessment Required	Justification
				eucalypt forests with a mixed grass and shrub understorey.				
Euphrasia collina subsp. muelleri	Mueller's Eyebright	E	E	In NSW it was recorded more than 100 years ago in the upper Murray and McIntyre Rivers and near Dorrigo and Cootamundra. The only NSW collections in the past 50 years were made in the vicinity of the Tinderry Range between Canberra and Cooma (1970) and between Uralla and Tamworth (1987).	0	No	No	The distribution of this species does not overlap with the Study area.
Euphrasia orthocheila subsp. peraspera	Tenterfield Eyebright	E	E	Currently only known from two swamps in the Tenterfield area. Recorded from moist open situations such as swamps.	1	Unlikely	No	Generally recorded in moist open situations such as swamps and from the Tenterfield area. Dorrigo records date back to 1893-1910.
Gingidia rupicola	Mountain Angelica	E	E	Endemic to NSW and known from only two locations within New England NP. Occurs in <i>Eucalyptus</i> <i>pauciflora</i> (Snow Gum) Woodland and at the edge of <i>Nothofagus moorei</i> (Antarctic Beech) forest.	0	No	No	Species is known to grown in cracks and ledges of rocks on cliff faces at altitudes of 1400 - 1750 m asl, which is outside of the range that occurs within the Study area.
Grammitis stenophylla	Narrow-leaf Finger Fern	Ε		Grammitis stenophylla is known from thirty (30) locations across New South Wales. The species is known to occur in twenty-four (24) conservations reserves. It is common in several areas, such as the Mount Warning Shield, the sandstone reserves of the lower Clarence, the granites of Washpool, Gibraltar and Nymbioda National Parks, and also Mt Jerusalem and Nightcap NP. The species was also recently recorded from New England NP. Moist places, usually near streams, on rocks in rainforest and dry and moist eucalypt forest.	0	Known	Yes	Populations of this species were recorded from the Study area.
Haloragis exalata subsp. velutina	Tall Velvet Sea-berry	V	V	This subspecies of Tall Sea-berry occurs on the north coast of NSW and south-eastern Queensland. It is plentiful in inaccessible areas of the upper Macleay River. Grows in damp places near watercourses.	0	No	No	The distribution of this species does not overlap with the Study area.

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Scientific Name	Common Name	BC Act Status	EPBC Act Status	Distribution and habitat	Number of records within 5 km (BioNet)	Likelihood of Occurrence	Impact Assessment Required	Justification
Hibbertia hexandra	Tree Guinea Flower	Ε		The main occurrence of Tree Guinea Flower is in the coastal ranges of the Mount Warning area of north- east NSW including Mt Warning and Nightcap National Parks. However, there is an important separate occurrence in the Wauchope–Kendall area, which may be a new species. Typically grows in heath, open forest or rainforest.	0	No	No	The distribution of this species does not overlap with the Study area.
Hicksbeachia pinnatifolia	Red Boppel Nut	V	V	Coastal areas of north-east NSW from the Nambucca Valley north to south-east Qld. Subtropical rainforest, moist eucalypt forest and Brush Box forest.	14	Potential	No	Species was not recorded from the Study area during the field survey.
Kardomia prominens		CE		A NSW endemic that is known from only two locations: Nymboida and Moses Rock (Nymboi- Binderay NP). Dry open forest on rocky ridges and steep rocky slopes with very shallow soils. Associated with species that favour poor soils, such as <i>Eucalyptus</i> <i>pyrocarpa</i> (Large-fruited Blackbutt), <i>Leptospermum</i> <i>petersonii</i> (Lemon-scented Teatree) and <i>Leptospermum microcarpum</i> .	0	Unlikely	No	Species was not recorded from the Study area during the field survey.
Kardomia silvestris	Woodland Babingtonia	E		In NSW the species is known from the Dorrigo area and Mount Neville Nature Reserve. Grows amongst granite or rhyolite rock outcrops in shrubby woodland. Occurs with species such as <i>Eucalyptus</i> <i>prava</i> (Orange Gum), (<i>Leptospermum brevipes</i> (Tea- tree) and <i>Leucopogon melaleucoides</i> (Bearded Heath).	6	Potential	No	Species was not recorded from the Study area during the field survey.
Lindsaea incisa	Slender Screw Fern	Ε		In NSW, the species is known from fifteen locations between Port Macquarie and the Queensland Border. Occurs in waterlogged or poorly drained sites along creeks, dominated by Paperbarks where ferns, sedges are common. Moist shrubby eucalypt forest on metasediments.	0	No	No	The distribution of this species does not overlap with the Study area.
Macadamia integrifolia	Macadamia Nut		V	Not known to occur naturally in NSW. Occurs in remnant rainforest.	0	No	No	This species does not occur naturally in NSW.

								Dorrigo Escarpment Great Walk – Ecological Assessment
Scientific Name	Common Name	BC Act Status	EPBC Act Status	Distribution and habitat	Number of records within 5 km (BioNet)	Likelihood of Occurrence	Impact Assessment Required	Justification
Macadamia tetraphylla	Rough-shelled Bush Nut	V	V	Confined chiefly to the north of the Richmond River in north-east NSW, extending just across the border into Queensland. Many records, particularly those further south, are thought to be propagated. Found in subtropical rainforest, usually near the coast.	0	Unlikely	No	Species is confined to the north of the Richmond River, all occurrences south of this area are thought to be propagated.
Marsdenia longiloba	Slender Marsdenia	E	V	In NSW, occurs at scattered locations on the north coast north from Barrington Tops. Subtropical and warm temperate rainforest, lowland moist eucalypt forest adjoining rainforest, areas with rock outcrops.	6	Known	Yes	Populations of this species was recorded from the Study area.
Neoastelia spectabilis	Silver Sword Lily	V	V	Restricted to NSW and has only been recorded in New England NP, on the eastern edge of the NET. Grows in rock crevices near waterfalls and in seepage lines on rocky slopes in Antarctic Beech rainforest, between 900 - 1150 m altitude.	0	No	No	The distribution of this species does not overlap with the Study area.
Niemeyera whitei	Rusty Plum, Plum Boxwood	V		Coast and adjacent ranges of northern NSW from the Macleay River into southern Qld. Rainforest and adjacent moist eucalypt forest.	114	Known	Yes	Populations of this species was recorded from the Study area.
Oberonia complanata	Yellow- flowered King of the Fairies	Ε		Within NSW, there are several historical collections (all pre 1917) of this species from Byron Bay and Lismore, and a collection from Coffs Harbour from 1961. More recent observations of this species have been made from Lismore and Wollumbin. This species grows on trees and rocks in littoral rainforest, subtropical rainforest, dry rainforest, wet or dry eucalypt forests, dunes (including stabilised sands), stream-side areas, swampy forests and mangroves.	6	Potential	No	Species was not recorded from the Study area during the site inspection.
Oberonia titania	Red-flowered King of the Fairies	V		NSW north coast north from Kendall to Qld; also, Norfolk Island. Littoral and subtropical rainforest, paperbark swamps, eucalypt-forested gorges and mangroves.	6	Potential	No	Species was not recorded from the Study area during the site inspection.

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Scientific Name	Common Name	BC Act Status	EPBC Act Status	Distribution and habitat	Number of records within 5 km (BioNet)	Likelihood of Occurrence	Impact Assessment Required	Justification
Olearia flocktoniae	Dorrigo Daisy Bush	E	E	Northern fall of the Dorrigo Plateau in north-east NSW. Disturbed locations, such as roadsides or timber plantations adjacent to wet eucalypt forest or rainforest.	18	Potential	No	Species was not recorded from the Study area during the field survey.
Owenia cepiodora	Onion Cedar	V	V	North from the Richmond River in north-east NSW extending just across the border into Queensland. Subtropical and dry rainforest on or near soils derived from basalt.	0	No	No	The distribution of this species does not overlap with the Study area.
Parsonsia dorrigoensis	Milky Silkpod	V	E	Found only within NSW, in the north coast region between Kendall and Woolgoolga. Subtropical and warm-temperature rainforest, rainforest margins, and moist eucalypt forest up to 800 m, on brown clay soils.	28	Known	Yes	Populations of this species was recorded from the Study area.
Persicaria elatior	Knotweed, Tall Knotweed	V	V	Occurs in south-eastern NSW (Mt Dromedary (an old record), Moruya State Forest near Turlinjah, the Upper Avon River catchment north of Robertson, Bermagui, and Picton Lakes. In northern NSW it is known from Raymond Terrace (near Newcastle) and the Grafton area (Cherry Tree and Gibberagee State Forests). This species normally grows in damp places, especially beside streams and lakes. Occasionally in swamp forest or associated with disturbance.	0	No	No	The distribution of this species does not overlap with the Study area.
Phaius australis	Southern Swamp Orchid	Ε	Ε	Occurs in Queensland and north-east NSW as far south as Coffs Harbour. Swampy grassland or swampy forest including rainforest, eucalypt or paperbark forest, mostly in coastal areas.	0	No	No	Recent molecular studies have demonstrated that Phaius australis falls within the variation of the widespread and variable Phaius tankervillae which is known to grow in the NSW north coast North from Kempsey in paperbark Melaleuca species swamps and amongst grasses and low shrubs in damp to swampy sites in open forest at altitudes that range from 0-50m (Copeland and Backhouse

								Dorrigo Escarpment Great Walk – Ecological Assessmen
Scientific Name	Common Name	BC Act Status	EPBC Act Status	Distribution and habitat	Number of records within 5 km (BioNet)	Likelihood of Occurrence	Impact Assessment Required	Justification
								2022). This habitat or altitude range does not occur within the Study area.
Plectranthus nitidus	Nightcap Plectranthus	Ε	Ε	In NSW it was previously known only from Nightcap NP near Terania Creek in northern NSW. However, the species has now been recorded as far south as Chaelundi NP near Nymboida. Grows on rocky cliff- faces and boulders, in the shelter and shade provided by the adjacent rainforest and dry rainforest.	0	No	No	Species occurs from the Nightcap to Mcpherson Ranges which is north of the Study area.
Rhodamnia rubescens	Scrub Turpentine	CE	CE	Occurs in coastal districts north from Batemans Bay in New South Wales, approximately 280 km south of Sydney, to areas inland of Bundaberg in Queensland. Found in littoral, warm temperate and subtropical rainforest and wet sclerophyll forest usually on volcanic and sedimentary soils.	56	Known	Yes	Populations of this species was recorded from the Study area.
Rhodomyrtus psidioides	Native Guava	CE	CE	Occurs from Broken Bay, approximately 90 km north of Sydney, New South Wales, to Maryborough in Queensland. Populations are typically restricted to coastal and sub-coastal areas of low elevation however the species does occur up to 120 km inland in the Hunter and Clarence River catchments and along the Border Ranges in NSW. Pioneer species found in littoral, warm temperate and subtropical rainforest and wet sclerophyll forest often near creeks and drainage lines.	26	Potential	No	Species was not recorded from the Study area during the field survey.
Samadera sp. Moonee Creek	Moonee Quassia	E	E	Scattered distribution from the Moonee Creek area north of Coffs Harbour to north-east of Grafton. Shrubby layer below tall moist eucalypt forest and tall dry eucalypt forest, including forest edges, mostly at lower altitudes.	0	Unlikely	No	Species was not recorded from the Study area during the site inspection.
Sarcochilus fitzgeraldii	Ravine Orchid	V	V	North-east NSW, north of the Macleay River, to Maleny in south-east Qld. On rocks or rarely on bases	7	Known	Yes	Populations of this species was recorded from the Study area.

								Dorrigo Escarpment Great Walk – Ecological Assessment
Scientific Name	Common Name	BC Act Status	EPBC Act Status	Distribution and habitat	Number of records within 5 km (BioNet)	Likelihood of Occurrence	Impact Assessment Required	Justification
				of trees, in subtropical rainforest, usually near streams, from 500-700 m.				
Senna acclinis	Rainforest Senna	E		Occurs in coastal districts and adjacent tablelands of NSW from the Illawarra in NSW to Queensland. Grows on the margins of subtropical, littoral and dry rainforests.	0	Potential	No	Species was not recorded from the Study area during the field survey.
Syzygium hodgkinsoniae	Red Lilly Pilly	V	V	A restricted range from the Richmond River in north- east NSW to Gympie in Queensland. Usually found in riverine and subtropical rainforest on rich alluvial or basaltic soils.	0	No	No	This species is restricted to a range that is north of the Study area.
Thesium australe	Austral Toadflax	V	V	Found in very small populations scattered across eastern NSW, along the coast, and from the Northern to Southern Tablelands. Occurs in grassland on coastal headlands or grassland and grassy woodland away from the coast.	0	No	No	No grassland or grassy woodland habitat occurs within the Study area.
Triplarina imbricata	Creek Triplarina	E	Ε	Found only in a few locations in the escarpment ranges and near Tabulam in north-east NSW. Occurs along watercourses in low open forest with <i>Tristaniopsis laurina</i> (Water Gum) or in montane bogs, often with Baekea amissa.	0	Unlikely	No	Species closest known population is in Nymboida which is outside of the Study area. Additionally, this species was not recorded within the Study area during the field survey
Tylophora woollsii	Cryptic Forest Twiner	Ε	Ε	found from the NNC and NET to southern Queensland, but is very rare within that range. Known on the Tablelands from the Bald Rock and Boonoo Boonoo areas north of Tenterfield. This species grows in moist eucalypt forest, moist sites in dry eucalypt forest and rainforest margins.	2	Known	Yes	Populations of this species was recorded from the Study area.
Total records					290			-
BC Act Key:	V = vulnerable, E =	endangere	d, E = enda	ngered population, CE = critically endangered				

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Table 43: Threatened fauna species likelihood table

Scientific Name	Common Name	BC Act Status	EPBC Act Status	Distribution and habitat	Number of records within 5 km	Likelihood of Occurrence	Impact Assessment Required	Justification
Amphibia								
Assa darlingtoni	Pouched Frog	V	V	North-east NSW and far south-east Qld. There are three isolated populations in NSW: Dorrigo Plateau and Gibraltar Range, Border Ranges. Cool, moist rainforest (including Antarctic Beech), or moist eucalypt forest in mountainous areas, mostly above 800 m.	55	Known	Yes	Recorded within the Study area. Suitable habitat widely available and an abundance of records in a 5 km square radius of the Study area.
Litoria booroolongensis	Booroolong Frog	Ε	E	Restricted to NSW and north-eastern Victoria, predominantly along the western-flowing streams of the Great Dividing Range. Several populations have recently been recorded in the Namoi catchment. Permanent streams with some fringing vegetation cover such as ferns, sedges or grasses.	1	Unlikely	No	The species is rare throughout most of the remainder of its range and predominately in western flowing streams.
Litoria brevipalmata	Green-thighed Frog	V		Isolated localities along the coast and ranges from just north of Wollongong to south-east Qld. Rainforest and moist eucalypt forest to dry eucalypt forest and heath, typically in areas where surface water gathers after rain.	2	Likely	Yes	Species known from the catchment, suitable permanent and semi-permanent streams are present in the Study area.
Litoria subglandulosa	Glandular Frog	V		Occurs on the eastern escarpment of the Great Dividing Range from the "The Flags" near Walcha north to Girraween NP. Along streams in rainforest, moist and dry eucalypt forest or in subalpine swamps	4	Likely	Yes	Species known from the catchment and suitable stream habitat in rainforest and moist eucalypt forest occurs across the Study area.
Mixophyes balbus	Stuttering Frog	E	V	Along the east coast of Australia from southern Qld to north-eastern Victoria. Rainforest and wet, tall open forest in the foothills and escarpment on the eastern side of the Great Dividing Range.	27	Likely	Yes	The Dorrigo region appears to be a stronghold for this species. Suitable streams in rainforest and wet sclerophyll forest occur across the Study area.
Mixophyes iteratus	Giant Barred Frog	E	E	Coast and ranges from Eumundi in south-east Qld to Warrimoo in the Blue Mountains. Freshwater permanent/semi-permanent streams, generally at	56	Likely	Yes	Species known from the catchment and suitable permanent and semi-permanent

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Scientific Name	Common Name	BC Act Status	EPBC Act Status	Distribution and habitat	Number of records within 5 km	Likelihood of Occurrence	Impact Assessment Required	Justification
				lower elevation. Riparian rainforest or wet sclerophyll forest is favoured.				stream habitat occur within the Study area.
Philoria sphagnicolus	Sphagnum Frog	V	V	Eastern escarpment of the Great Dividing Range in north-east NSW from Chaelundi State Forest south to Killabakh Nature Reserve near Comboyne. Rainforest (including Antarctic Beech forest) and wet sclerophyll forests at high elevation, in Sphagnum Moss beds or seepages on steep slopes. They can also occur at lower elevation in wet coastal foothills.	42	Likely	Yes	Species known from the catchment and suitable freshwater stream habitat and soaks including sphagnum masses occur within the Study area.
Aves								
Actitis hypoleucos	Common Sandpiper		Μ	Occurs along all coastlines of Australia and in many areas inland. The common sandpiper utilises a wide range of coastal wetlands and some inland wetlands, with varying levels of salinity, and is mostly found around muddy margins or rocky shores and rarely on mudflats. These muddy margins are usually narrow and may be steep. The species is often associated with mangroves, and sometimes found in areas of mud littered with rocks or snags.	0	No	No	No suitable wetlands occur within the Study area.
Anthochaera phrygia	Regent Honeyeater	CE	CE	In NSW the distribution is very patchy and mainly confined to the two main breeding areas and surrounding fragmented woodlands.	0	Unlikely	No	Species is not known to occur within a 5 km square radius and there is no key eucalypt species or riparian she-oak habitat within the Study area.
Apus pacificus	Fork-tailed Swift		Μ	Recorded in all regions of NSW. Riparian woodland, swamps, low scrub, heathland, saltmarsh, grassland, Spinifex sandplains, open farmland and inland and coastal sand-dunes.	2	No	No	Lack of suitable habitat and this species is almost exclusively aerial in Australia.
Artamus cyanopterus cyanopterus	Dusky Woodswallow	V		The species occurs throughout most of New South Wales, but is sparsely scattered in, or largely absent from, much of the upper western region. Most breeding activity occurs on the western slopes of the	1	Unlikely	No	This species is generally found within drier habitats.

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Scientific Name	Common Name	BC Act Status	EPBC Act Status	Distribution and habitat	Number of records within 5 km	Likelihood of Occurrence	Impact Assessment Required	Justification
				eucalypt forests and woodlands, including mallee associations, with an open or sparse understorey of eucalypt saplings, acacias and other shrubs, and ground-cover of grasses or sedges and fallen woody debris. It has also been recorded in shrublands, heathlands and very occasionally in moist forest or rainforest. Also found in farmland, usually at the edges of forest or woodland.				
Atrichornis rufescens	Rufous Scrub-bird	V	Ε	The northern subspecies (<i>A. r. rufescens</i>) occurs between the Mistake Range in Qld and the Gibraltar Range in northern NSW. The southern subspecies (<i>A. r.</i> <i>ferrieri</i>) is confined to NSW, from the Dorrigo Plateau to Barrington Tops. Found at high-altitude (above 600m) subtropical, warm temperate and cool temperate rainforests, and wet sclerophyll forests.	0	Potential	Yes	Suitable habitat occurs within the Study area and species is known from the region.
Botaurus poiciloptilus	Australasian Bittern	Ε	Ε	In NSW they may be found over most of the state except for the far north-west. This species favours permanent freshwater wetlands with tall, dense vegetation, particularly bullrushes (<i>Typha spp.</i>) and spikerushes (<i>Eleocharis spp.</i>).	0	No	No	No permanent freshwater wetlands with tall dense vegetation occur within the Study area.
Calidris acuminata	Sharp-tailed Sandpiper		V, M	Widespread in both inland and coastal locations and in both freshwater and saline habitats.	0	No	No	No suitable habitat within the Study area.
Calidris canutus	Red Knot, Knot		Е, М	Occurs along the coast of Australia. Inhabit intertidal mudflats, sandflats and sandy beaches of sheltered coasts, in estuaries, bays, inlets, lagoons and harbours; sometimes on sandy ocean beaches or shallow pools on exposed wave-cut rock platforms or coral reefs.	0	No	No	No suitable coastal marine habitat within the Study area
Calidris ferruginea	Curlew Sandpiper		CE, M	In NSW, they are widespread east of the Great Divide, especially in coastal regions. Occur on intertidal mudflats in sheltered coastal areas, such as estuaries, bays, inlets and lagoons, and also around non-tidal	0	No	No	No suitable coastal marine habitat within the Study area

Dorrigo Escarpment Great Walk – Ecological Assessment Scientific Name EPBC BC Act Distribution and habitat Number Likelihood Common Name Impact Justification Status Act of records of Assessment Status within 5 Occurrence Required km swamps, lakes and lagoons near the coast, and ponds in saltworks and sewage farms. In NSW, the species is widespread, but scattered. C. 0 Unlikely Calidris melanotos Pectoral Sandpiper Μ No Species is not known from the melanotos occurs in shallow fresh to saline wetlands. locality. Found at coastal lagoons, estuaries, bays, swamps, lakes, inundated grasslands, saltmarshes, river pools, creeks, floodplains and artificial wetlands. Calyptorhynchus Glossy Black-Cockatoo V V The species is uncommon although widespread 28 Likely Yes Suitable habitat including stands lathami of feed trees (Allocasuarina throughout suitable forest and woodland habitats, from the central Queensland coast to East Gippsland in species) identified within the Victoria, and inland to the southern tablelands and Study area. central western plains of NSW, with a small population in the Riverina. C. lathami Inhabits open forest and woodlands of the coast and the Great Dividing Range where stands of sheoak occur. Black Sheoak (Allocasuarina littoralis) and Forest Sheoak (A. torulosa) are important foods. Charadrius Greater Sand Plover V In NSW, the species has been recorded between the 0 No suitable coastal marine V. M No No leschenaultii northern rivers and the Illawarra, with most records habitat within the Study area coming from the Clarence and Richmond estuaries. Almost entirely restricted to coastal areas in NSW, occurring mainly on sheltered sandy, shelly or muddy beaches or estuaries with large intertidal mudflats or sandbanks. Circus assimilis Spotted Harrier V Found throughout the Australian mainland, except in Unlikely This species occupies open 2 No densely forested or wooded habitats, and rarely in habitats such as grassy Tasmania. Grassy open woodland, inland riparian woodlands, grasslands and woodland, grassland, shrub steppe, agricultural land agricultural settings. The habitat and edges of inland wetlands. within the Study area are generally open forest to closed rainforest.

Dorrigo Escarpment Great Walk – Ecological Assessment Scientific Name BC Act EPBC Likelihood Common Name Distribution and habitat Number Impact Justification Status Act of records of Assessment Status within 5 Occurrence Required km Climacteris **Brown Treecreeper** V V Endemic to eastern Australia and occurs in eucalypt 0 Unlikely No This species generally inhabits forests and woodlands of inland plains and slopes of open habitat and there are no picumnus victoriae (south-eastern) the Great Dividing Range. It is less commonly found on records within the locality. coastal plains and ranges. Cuculus optatus **Oriental Cuckoo** Migratory bird that spends non-breeding season (Sept-Suitable rainforest and wet М 0 Potential Yes May) in coastal regions across northern and eastern sclerophyll forest occurs within Australia as well as offshore islands. Occur in rainforest, the Study area. vine thickets, wet sclerophyll forest or open Casuarina, Acacia or Eucalyptus woodlands. Frequently at edges or ecotones between habitat types. Cyclopsitta Coxen's Fig-Parrot CE CE Limited to about five populations scattered between 0 No No Study area is south of the species diophthalma coxeni Bundaberg in Queensland and the Hastings River in known distribution. NSW. Usually recorded from drier rainforests and adjacent wetter eucalypt forest but rarely seen due to its small size and cryptic habits. Also found in the wetter lowland rainforests that are now largely cleared in NSW. Daphoenositta Varied Sitella V The Varied Sittella is sedentary and inhabits most of 1 Potential Yes Suitable eucalypt forests and chrysoptera mainland Australia except the treeless deserts and woodlands exist within the Study open grasslands. Distribution in NSW is nearly area. continuous from the coast to the far west. The Varied Sittella's population size in NSW is uncertain but is believed to have undergone a moderate reduction over the past several decades. Inhabits eucalypt forests and woodlands, especially those containing rough-barked species and mature smooth-barked gums with dead branches, mallee and Acacia woodland. 0 The species was formerly Dromaius Emu population in the E2 In north-eastern NSW, now restricted to coastal and No No novaehollandiae New South Wales near-coastal areas between Evans Head and Red Rock widespread in north-eastern North Coast Bioregion and a small isolated population further west in the NSW, but is now restricted to and Port Stephens coastal and near-coastal areas Bungawalbin area. It is not known whether it persists in local government area the Port Stephens area. On the NSW north coast, found between Evans Head and Red in grasslands, heathland, shrubland, open and shrubby Rock and a small isolated

Dorrigo Escarpment Great Walk – Ecological Assessment Scientific Name BC Act EPBC Number Likelihood Common Name Distribution and habitat Impact Justification Status Act of records of Assessment Status within 5 Occurrence Required km woodlands, forest, swamps, sedgeland, tea-tree population further west in the plantations and open farmland, and littoral rainforest. Bungawalbin area. Coastal and subcoastal northern and eastern Australia, Unlikely No suitable wetlands or major Ephippiorhynchus Black-necked Stork Е 2 No asiaticus south to central-eastern NSW and with vagrants rivers occur within the Study recorded further south and inland. In NSW, floodplain area. wetlands of the major coastal rivers are key habitat. Also minor floodplains, coastal sandplain wetlands and estuaries. The species is very rare in NSW, extending south to Erythrotriorchis Red Goshawk CE Unlikely This species is very rare and is V 0 No found north of about 30°S which radiatus about 30°S, with most records north of this, in the Clarence River Catchment, and a few around the lower is the northern extent of the Richmond and Tweed Rivers. Formerly, it was at least Study area. occasionally reported as far south as Port Stephens. The Red Goshawk inhabits open woodland and forest, preferring a mosaic of vegetation types, a large population of birds as a source of food, and permanent water, and are often 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. Falco hypoleucos Occur in NSW, chiefly throughout the Murray-Darling The species known distribution is Grey Falcon V V 0 No No Basin, with the occasional vagrant east of the Great west of the Study area Dividing Range. The Grey Falcon is usually restricted to shrubland, grassland and wooded watercourses of arid and semi-arid regions, although it is occasionally found in open woodlands near the coast. 0 Gallinago Latham's Snipe V. M Migrant to east coast of Australia, extending inland No No No permanent and ephemeral hardwickii west of the Great Dividing Range in NSW. Freshwater, wetlands within the Study area saline or brackish wetlands up to 2000 m above sealevel; usually freshwater swamps, flooded grasslands or heathlands.

Dorrigo Escarpment Great Walk – Ecological Assessment EPBC Scientific Name BC Act Distribution and habitat Number Likelihood Common Name Impact Justification Status Act of records of Assessment Status within 5 Occurrence Required km Glossopsitta pusilla Little Lorikeet V In NSW, found from the coast westward as far as 5 Likely Yes Suitable Eucalypt forest habitat Dubbo and Albury. Dry, open eucalypt forests and within the Study area. woodlands, including remnant woodland patches and roadside vegetation. Grantiella picta Painted Honeyeater The Painted Honeyeater is nomadic and occurs at low 0 Species distribution is west of the V V No No densities throughout its range. The greatest Study area. concentrations of the bird and almost all breeding occurs on the inland slopes of the Great Dividing Range in NSW, Victoria and southern Queensland. During the winter it is more likely to be found in the north of its distribution. Inhabits Boree/ Weeping Myall (Acacia pendula), Brigalow (A. harpophylla) and Box-Gum Woodlands and Box-Ironbark Forests. Gygis alba White Tern V Vagrant birds occur in coastal NSW waters. Recorded 1 No No No suitable coastal marine from Coffs harbour to south of Wollongong. Also Lord habitat within the Study area Howe and Norfolk Island. Oceanic islands, offshore waters. Haliaeetus White-bellied Sea-V Distributed along the coastline of mainland Australia 2 Likely Yes No nest trees identified within leucogaster Eagle and Tasmania, extending inland along some of the the Study area. However open larger waterways, especially in eastern Australia. sclerophyll forest along Freshwater swamps, rivers, lakes, reservoirs, watercourse occurs within the billabongs, saltmarsh and sewage ponds and coastal Study area waters. Terrestrial habitats include coastal dunes, tidal flats, grassland, heathland, woodland, forest and urban areas. Hieraaetus Little Eagle V Throughout the Australian mainland, with the 2 Likely Yes No nest trees identified within morphnoides exception of the most densely forested parts of the the Study area. However open Dividing Range escarpment. Open eucalypt forest, eucalypt forest occurs within the woodland or open woodland, including sheoak or Study area. Acacia woodlands and riparian woodlands of interior NSW.

Dorrigo Escarpment Great Walk – Ecological Assessment EPBC Scientific Name BC Act Number Likelihood Common Name Distribution and habitat Impact Justification Status Act of records of Assessment Status within 5 Occurrence Required km Hirundapus White-throated V V, M All coastal regions of NSW, inland to the western slopes 3 Potential Yes Species is mostly aerial in Australia however is known from and inland plains of the Great Divide. Occur most often caudacutus Needletail over open forest and rainforest, as well as heathland, the locality. and remnant vegetation in farmland. Irediparra Comb-crested Jacana V The Comb-crested Jacana occurs on freshwater 0 No permanent freshwater No No gallinacea wetlands in northern and eastern Australia, mainly in wetlands occur within the Study coastal and subcoastal regions, from the north-eastern area. Kimberley Division of Western Australia to Cape York Peninsula then south along the east coast to the Hunter region of NSW, with stragglers recorded in southeastern NSW. Inhabit permanent freshwater wetlands, either still or slow-flowing, with a good surface cover of floating vegetation, especially water-lilies, or fringing and aquatic vegetation. Marginal habitat and a record is Ixobrychus Black Bittern V In NSW, records are scattered along the east coast, Yes 1 Potential flavicollis with individuals rarely being recorded south of Sydney known from the region. or inland. Terrestrial and estuarine wetlands. Also flooded grassland, forest, woodland, rainforest and mangroves where permanent water is present. In NSW mostly occurs on the coast and south west Lathamus discolor Swift Parrot Е CE 0 Unlikely No favoured feed trees occur, No slopes. Found in areas where eucalypts are flowering and species is not known from profusely or where there are abundant lerp (from sapthe a 5 km square radius. sucking bugs) infestations. Favoured feed trees include winter flowering species such as Swamp Mahogany (Eucalyptus robusta), Spotted Gum (Corymbia maculate), Red Bloodwood (C. gummifera), Forest Red Gum (E. tereticornis), Mugga Ironbark (E. sideroxylon), and White Box (E. albens). Lophoictinia isura Squared-tailed Kite V In NSW, scattered records of the species throughout 5 Unlikelv No No nest trees identified within the state indicate that the species is a regular resident the study area and no dry open eucalyptus or woodland occurs in the north, north-east and along the major westflowing river systems. Found in a variety of timbered within the study area. habitats including dry woodlands and open forests.

							Dorrigo E	scarpment Great Walk – Ecological Assessment
Scientific Name	Common Name	BC Act Status	EPBC Act Status	Distribution and habitat	Number of records within 5 km	Likelihood of Occurrence	Impact Assessment Required	Justification
				Shows a particular preference for timbered watercourses.				
Melanodryas cucullata cucullata	Hooded Robin (south- eastern)	V	Ε	The south-eastern form (<i>subspecies cucullata</i>) is found from Brisbane to Adelaide and throughout much of inland NSW, with the exception of the extreme north- west, where it is replaced by <i>subspecies picata</i> . Two other subspecies occur outside NSW. The Hooded Robin requires structurally diverse habitats featuring mature eucalypts, saplings, some small shrubs and a ground layer of moderately tall native grasses.	0	Unlikely	No	Generally, occurs in open woodland and is not known from the region.
Monarcha melanopsis	Black-faced Monarch		Μ	In NSW, the species occurs around the eastern slopes and tablelands of the Great Divide. Occurs in rainforest ecosystems.	0	Potential	Yes	Species occurs within the region and there are suitable rainforest ecosystems present within the Study area.
Motacilla flava	Yellow Wagtail		Μ	Migratory bird that inhabits well-watered open grasslands and the fringes of wetlands. This species roosts in mangroves and other dense vegetation.	0	Unlikely	No	No suitable habitat within the Study area in the form of open grassy flats near water or open areas with low vegetation.
Myiagra cyanoleuca	Satin Flycatcher		Μ	In NSW, they are widespread on and east of the Great Divide and sparsely scattered on the western slopes, with very occasional records on the western plains. Inhabit heavily vegetated gullies in eucalypt-dominated forests and taller woodlands, and on migration, occur in coastal forests, woodlands, mangroves and drier woodlands and open forests	0	Potential	Yes	Species occurs within the region and there is suitable ecosystems within the Study area.
Neophema chrysostoma	Blue-winged Parrot		V	Migratory bird during non-breeding period, from autumn to early spring, birds are recorded from northern Victoria, eastern South Australia, south- western Queensland and western New South Wales, with some birds reaching south-eastern New South Wales and eastern Victoria. This species occurs in grasslands and grassy woodlands and are often found	0	Unlikely	No	The species distribution is typically west and south of the Study area.

							Dorrigo E	scarpment Great Walk – Ecological Assessment
Scientific Name	Common Name	BC Act Status	EPBC Act Status	Distribution and habitat	Number of records within 5 km	Likelihood of Occurrence	Impact Assessment Required	Justification
				near wetlands both near the coast and in semi-arid zones				
Neophema pulchella	Turquoise Parrot	V		Occurs along the length of NSW from the coastal plains to the western slopes of the Great Dividing Range. Eucalypt and cypress pine open forests and woodlands, ecotones between woodland and grassland, or coastal forest and heath.	1	Unlikely	No	The species known distribution is generally west of the Study area.
Ninox strenua	Powerful Owl	V		In NSW, it is widely distributed throughout the eastern forests from the coast inland to tablelands, with scattered records on the western slopes and plains. Woodland, open sclerophyll forest, tall open wet forest and rainforest.	21	Likely	Yes	Suitable habitat occurs within the Study area.
Numenius madagascariensis	Eastern Curlew		CE, M	In NSW the species occurs across the entire coast but is mainly found in estuaries such as the Hunter River, Port Stephens, Clarence River, Richmond River and ICOLLs of the south coast. It generally occupies coastal lakes, inlets, bays and estuarine habitats, and in New South Wales is mainly found in intertidal mudflats and sometimes saltmarsh of sheltered coasts.	0	No	No	No suitable habitat occurs within the Study area
Pachycephala olivacea	Olive Whistler	V		In NSW chiefly occurs around Barrington Tops and the MacPherson Ranges, and from the Illawarra south to Victoria. In the south it is found inland to the Snowy Mountains and the Brindabella Range. Mostly inhabits wet forests above about 500m.	3	Potential	Yes	Suitable habitat occurs within the Study area.
Pandion cristatus	Eastern Osprey	V		This species is common around the northern coast, especially on rocky shorelines, islands and reefs. The species is uncommon to rare or absent from closely settled parts of south-eastern Australia. There are a handful of records from inland areas. Favour coastal areas, especially the mouths of large rivers, lagoons and lakes.	0	No	No	No suitable coastal areas occur within the Study area.

Dorrigo Escarpment Great Walk – Ecological Assessment EPBC Scientific Name BC Act Number Likelihood Common Name Distribution and habitat Impact Justification Status Act of records of Assessment Status within 5 Occurrence Required km Pandion haliaetus Μ Migratory bird, occur in littoral and coastal habitats and 0 No No No suitable coastal marine Osprey terrestrial wetlands of tropical and temperate Australia habitat within the Study area and offshore islands. V Suitable eucalypt and wet forest Petroica boodang Scarlet Robin In NSW, it occurs from the coast to the inland slopes. 0 Likely Yes Dry eucalypt forests and woodlands, and occasionally in occur within the Study area. mallee, wet forest, wetlands and tea-tree swamps. V Petroica phoenicea Flame Robin In NSW, breeds in upland areas, and in winter many 1 Likely Yes Suitable habitat occurs within the birds move to the inland slopes and plains, or Study area. occasionally to coastal areas. Likely that there are two separate populations in NSW, one in the Northern Tablelands, and another ranging from the Central to Southern Tablelands. Breeds in upland tall moist eucalypt forests and woodlands. In winter uses dry forests, open woodlands, heathlands, pastures and native grasslands. Occasionally occurs in temperate rainforest, herbfields, heathlands, shrublands and sedgelands at high altitudes. Phaethon Red-tailed Tropicbird V Ranges throughout tropical and subtropical zones of 1 No No The Study area is not a marine rubricauda the Indian and West Pacific Oceans, breeding on environment. oceanic islands. Lord Howe Island is said to have the greatest breeding concentration in the world. Marine. Ptilinopus Wompoo Fruit-Dove V In NSW, occurs south along coast and coastal ranges to 171 Known Yes Suitable habitat within the Study magnificus the Hunter River. Rainforest, low-elevation moist area. Recorded during field eucalypt forest and brush box forests. survey. Rose-crowned Fruit-V 50 Abundance of records from the Ptilinopus regina In NSW, found on coast and ranges north from Likelv Yes Dove Newcastle. Vagrants are occasionally found further locality and suitable habitat south to Victoria. Sub-tropical and dry rainforest, moist occurs within the Study area. eucalypt forest and swamp forest, where fruit is plentiful. Ptilinopus superbus Superb Fruit-Dove V Principally from north-eastern Qld to north-eastern 6 Likely Yes Abundance of records from the NSW. Further south, it is confined to pockets of suitable locality and suitable habitat habitat, and occurs as far south as Moruya. Rainforest occurs within the Study area.
Dorrigo Escarpment Great Walk – Ecological Assessment

Scientific Name	Common Name	BC Act Status	EPBC Act Status	Distribution and habitat	Number of records within 5 km	Likelihood of Occurrence	Impact Assessment Required	Justification
				and closed forests. May also forage in eucalypt or acacia woodland where there are fruit-bearing trees.				
Rhipidura rufifrons	Rufous Fantail		Μ	Occurs in coastal and near coastal districts of northern and eastern Australia. Mainly inhabits wet sclerophyll forests, often in gullies. They also occur in subtropical and temperate rainforests	0	Likely	Yes	Suitable habitat occurs within the Study area.
Rostratula australis	Australian Painted Snipe	Ε	Ε	In NSW many records are from the Murray-Darling Basin including the Paroo wetlands, Lake Cowal, Macquarie Marshes, Fivebough Swamp and more recently, swamps near Balldale and Wanganella. Prefers fringes of swamps, dams and nearby marshy areas where there is a cover of grasses, lignum, low scrub or open timber.	0	No	No	No suitable habitat occurs within the Study area.
Stagonopleura guttata	Diamond Firetail	V	V	It is widely distributed in NSW, with a concentration of records from the Northern, Central and Southern Tablelands, the Northern, Central and South Western Slopes and the North West Plains and Riverina. Not commonly found in coastal districts, though there are records from near Sydney, the Hunter Valley and the Bega Valley. This species has a scattered distribution over the rest of NSW, though is very rare west of the Darling River. Found in grassy eucalypt woodlands, including Box-Gum Woodlands and Snow Gum (<i>Eucalyptus pauciflora</i>) Woodlands.	0	No	No	Suitable habitat does not occur within the Study area
Sternula nereis nereis	Australian Fairy Tern		V	Occurs along the coasts of Victoria, Tasmania, South Australia and Western Australia; occurring as far north as the Dampier Archipelago near Karratha. The subspecies has been known from New South Wales (NSW) in the past, but it is unknown if it persists there. found in embayments of a variety of habitats including offshore, estuarine or lacustrine (lake) islands, wetlands and mainland coastline	0	No	No	No suitable coastal marine habitat within the Study area

Dorrigo Escarpment Great Walk – Ecological Assessment EPBC Scientific Name BC Act Distribution and habitat Number Likelihood Common Name Impact Justification of records Status Act of Assessment Status within 5 Occurrence Required km *Symposiachrus* Spectacled Monarch Μ Coast and eastern slopes of Great Dividing Range to 0 Potential Yes Suitable rainforest and wet sclerophyll habitat occur within northern Hunter Region. Occasional records further trivirgatus south at sites around Newcastle, Central Coast and the Study area. Sydney Black-breasted CE V South-eastern Qld and far north-eastern NSW, mainly Yes Suitable habitat occurs within the Turnix 1 Potential on and east of the Great Divide but extending inland to Study area. melanogaster Button-guail the inner western slopes. Very few NSW records in recent times. Dry rainforests, vine forest and vine thickets. May also occupy wetter subtropical rainforests, sometimes in association with moist eucalypt forest. V Recorded over approximately 90% of NSW, excluding Suitable habitat occurs within the Tvto Masked Owl 7 Likely Yes novaehollandiae the most arid north-western corner. Most abundant on Study area. the coast but extends to the western plains. Dry eucalypt forests and woodlands from sea level to 1100 m. V 33 Suitable habitat occurs within the Tyto tenebricosa Sooty Owl Occupies the easternmost one-eighth of NSW, Likely Yes occurring on the coast, coastal escarpment and eastern Study area. tablelands. Dry rainforest, subtropical and warm temperate rainforest, as well as moist eucalypt forests. Insects Occur on the south-east Queensland and north-east This species is known from Argynnis hyperbius Australian Fritillary CE 0 Е No No inconstans NSW in open swampy coastal areas where the larval swampy habitat in coastal areas food plant Arrowhead Violet (Viola betonicifolia) occurs. Most recently known from a few widespread localities between Port Macquarie and Gympie. Е 35 Carronia multisepalea was Phyllodes imperialis Pink Underwing Moth Е In NSW it is known to occur in a small number of Likelv Yes southern localities from the QLD border to Wardell, and there is recorded within the Study area and below 600 m in elevation subspecies a disjunct population in the Bellingen area. Inhabits subtropical rainforest below about 600 m elevation; within this species range. breeding habitat is restricted to areas where the caterpillar's food plant Carronia multisepalea occurs.

							Dorrigo E	scarpment Great Walk – Ecological Assessmen
Scientific Name	Common Name	BC Act Status	EPBC Act Status	Distribution and habitat	Number of records within 5 km	Likelihood of Occurrence	Impact Assessment Required	Justification
Mammals								
Cercartetus nanus	Eastern Pygmy- possum	V		In NSW it extents from the coast inland as far as the Pilliga, Dubbo, Parkes and Wagga Wagga on the western slopes. Rainforest, sclerophyll forest (including Box-Ironbark), woodland and heath.	8	Likely	Yes	Suitable rainforest and sclerophyll forest within the Study area
Chalinolobus dwyeri	Large-eared Pied Bat, Large Pied Bat	V	E	Found mainly in areas with extensive cliffs and caves, from Rockhampton in Queensland south to Bungonia in the NSW Southern Highlands. It is generally rare with a very patchy distribution in NSW. There are scattered records from the NET and North West Slopes.	0	Unlikely	No	Species is not known from the region and contains a patchy distribution.
Dasyurus maculatus	Spotted-tailed Quoll	V	E	Found on the east coast of NSW, Tasmania, eastern Victoria and north-eastern Qld. Rainforest, open forest, woodland, coastal heath and inland riparian forest, from the sub-alpine zone to the coastline.	34	Known	Yes	Suitable habitat occurs within the Study area abundance of records within the locality and species scats were recorded during field survey.
Falsistrellus tasmaniensis	Eastern False Pipistrelle	V		The Eastern False Pipistrelle is found on the south-east coast and ranges of Australia, from southern Queensland to Victoria and Tasmania. Prefers moist habitats, with trees taller than 20 m. Generally, roosts in eucalypt hollows, but has also been found under loose bark on trees or in buildings.	0	Potential	Yes	Suitable habitat occurs within the Study area.
<i>Micronomus</i> norfolkensis	Eastern Coastal Free- tailed Bat	V		The Eastern Freetail-bat is found along the east coast from south Queensland to southern NSW. Occur in dry sclerophyll forest, woodland, swamp forests and mangrove forests east of the Great Dividing Range. Roost mainly in tree hollows but will also roost under bark or in man-made structures.	0	Unlikely	No	Species generally known from dry sclerophyll forest, woodland, swamp forests and mangrove forest.
Miniopterus australis	Little Bentwing-bat	V		East coast and ranges south to Wollongong in NSW. Moist eucalypt forest, rainforest, vine thicket, wet and dry sclerophyll forest, Melaleuca swamps, dense coastal forests and banksia scrub.	12	Likely	Yes	Potential foraging habitat occurs within the Study area.

Dorrigo Escarpment Great Walk – Ecological Assessment EPBC Scientific Name BC Act Distribution and habitat Number Likelihood Common Name Impact Justification Status Act of records of Assessment Status within 5 Occurrence Required km Large Bent-winged V Occur along the east and north-west coasts of 110 Likely Yes Potential foraging habitat occurs Miniopterus Australia. Caves are the primary roosting habitat, but Bat within the Study area. orianae oceanensis also use derelict mines, storm-water tunnels, buildings and other man-made structures. Parma Wallaby V Their range is now confined to the coast and ranges of Likely Suitable habitat occurs within the Notamacropus V 6 Yes central and northern NSW from the Gosford district to Study area and records known parma south of the Bruxner Highway between Tenterfield and from the locality. Casino. Preferred habitat is moist eucalypt forest with thick, shrubby understorey, often with nearby grassy areas, rainforest margins and occasionally drier eucalypt forest. Nyctophilus bifax Eastern Long-eared V Found from Cape York through eastern Queensland to 3 Likely Yes Suitable habitat occurs within the Bat the far north-east corner of NSW. In NSW they appear Study area and records known to be confined to the coastal plain and nearby coastal from the locality. ranges, extending south to the Clarence River area, with a few records further south around Coffs Harbour. The species can be locally common within its restricted range. Lowland subtropical rainforest and wet and swamp eucalypt forest, extending into adjacent moist eucalypt forest. Petauroides volans Southern Greater Е Е Occurs in eastern Australia, in eucalypt forests and 8 Likely Yes Suitable habitat occurs within the Glider woodlands, where it has a broad distribution from Study area and species is known around Proserpine in Queensland, south through NSW from the locality. and the Australian Capital Territory into Victoria. Yellow-bellied Glider Likely Yes Suitable habitat within the Study Petaurus australis V Along the eastern coast to the western slopes of the 23 Great Dividing Range, from southern Qld to Victoria. area. Records within a 5 km Tall mature eucalypt forest generally in areas with high square radius of the Study area. rainfall and nutrient rich soils. Petrogale Brush-tailed Rock-F V In NSW they occur from the Queensland border in the 1 Potential No Marginal rocky and cliffline penicillata wallaby north to the Shoalhaven in the south, with the habitat occurs within the Study population in the Warrumbungle Ranges being the area. western limit. Occupy rocky escarpments, outcrops and

Dorrigo Escarpment Great Walk – Ecological Assessment EPBC Scientific Name BC Act Distribution and habitat Number Likelihood Common Name Impact Justification Status Act of records of Assessment Status within 5 Occurrence Required km cliffs with a preference for complex structures with fissures, caves and ledges, often facing north. Brush-tailed V In NSW it is mainly found east of the Great Dividing 8 Likelv Yes Suitable habitat occurs within the Phascogale tapoatafa Phascogale Range although there are occasional records west of Study area and records known the divide. Dry sclerophyll open forest, heath, swamps, from the locality. rainforest and wet sclerophyll forest. Suitable eucalypt forest habitat Phascolarctos Koala F F In NSW it mainly occurs on the central and north coasts 235 Known Yes cinereus with some populations in the west of the Great Dividing within the Study area. Abundance of records occur Range. There are sparse and possibly disjunct within the locality and Koala scats populations in the Bega District, and at several sites on the southern tablelands. Eucalypt woodlands and were recorded within the Study forests. area. Long-nosed Potoroo V In NSW it is generally restricted to coastal heaths and 5 Suitable wet sclerophyll forest Potorous V Likelv Yes tridactylus forests east of the Great Dividing Range, with an annual occurs within the Study area. rainfall exceeding 760 mm. Coastal heaths and dry and wet sclerophyll forests. Pseudomys V Fragmented distribution across eastern NSW. Open 0 No records within the locality and New Holland Mouse No No novaehollandiae heathlands, woodlands and forests with a heathland lack of preferred habitat within understorey, vegetated sand dunes. the Study area. Pseudomys oralis Hastings River Mouse Е Е A patchy distribution spanning the Great Dividing 0 Unlikely No Marginal suitable habitat occurs Range from the Hunter Valley, south of Mt Royal, north however this species is not to the Bunya Mountains near Kingaroy in south-east known from the locality. Queensland, at elevations between 300 m and 1100 m. A variety of dry open forest types with dense, low ground cover and a diverse mixture of ferns, grass, sedges and herbs. Pteropus Grey-headed Flying-V Along the eastern coast of Australia, from Bundaberg in 47 Likely No flying-fox camps identified V Yes poliocephalus Qld to Melbourne in Victoria. Subtropical and within the Study area, however, fox temperate rainforests, tall sclerophyll forests and suitable foraging habitat within woodlands, heaths and swamps as well as urban the Study area. gardens and cultivated fruit crops.

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Scientific Name	Common Name	BC Act Status	EPBC Act Status	Distribution and habitat	Number of records within 5 km	Likelihood of Occurrence	Impact Assessment Required	Justification
Saccolaimus flaviventris	Yellow-bellied Sheathtail-bat	V		Wide-ranging species found across northern and eastern Australia. There are scattered records of this species across the NET and North West Slopes. Roosts singly or in groups of up to six, in tree hollows and buildings; in treeless areas they are known to utilise mammal burrows.	0	Potential	Yes	Suitable habitat exists within the Study area.
Scoteanax rueppellii	Greater Broad-nosed Bat	V		The Greater Broad-nosed Bat is found mainly in the gullies and river systems that drain the Great Dividing Range, from north-eastern Victoria to the Atherton Tableland. It extends to the coast over much of its range. In NSW it is widespread on the NET, however, does not occur at altitudes above 500 m. Utilises a variety of habitats from woodland through to moist and dry eucalypt forest and rainforest, though it is most commonly found in tall wet forest.	2	Potential	Yes	Marginal suitable habitat that occurs below 500m elevation within the Study area.
Thylogale stigmatica	Red-legged Pademelon	V		Patchily distributed along coastal and subcoastal eastern Australia south to the Watagan Mountains and the Wyong district in NSW. There are unconfirmed records from the western NET (e.g. west of Emmaville). Inhabits forest with a dense understorey and ground cover, including rainforest, moist eucalypt forest and vine scrub	1	Potential	Yes	Suitable habitat occurs within the Study area.
Reptilia								
Hoplocephalus stephensii	Stephens' Banded Snake	V		Coast and ranges from Southern Qld to Gosford in NSW. Rainforest and eucalypt forests and rocky areas up to 950 m in altitude.	25	Known	Yes	Suitable habitat occurs within the Study area. Recorded during the field survey.
Coeranoscincus reticulatus	Three-toed Snake- tooth Skink	V	V	The Three-toed Snake-tooth Skink occurs on the coast and ranges from the Macleay valley in NSW to south- eastern Queensland. It is very uncommon south of Grafton. Rainforest and occasionally moist eucalypt forest, on loamy or sandy soils. The Three-toed Snake-	0	Unlikely	No	Species is very uncommon south of Grafton.

Dorrigo Escarpment Great Walk – Ecological Assessment EPBC Scientific Name BC Act Number Likelihood Common Name Distribution and habitat Impact Justification Status Act of records of Assessment Status within 5 Occurrence Required km tooth Skink lives in loose soil, leaf litter and rotting logs, and feeds on earthworms and beetle grubs. Rainforest Cool-skink V Generally, occurs at high elevation in NSW and QLD 0 Yes Species distribution overlaps with Harrisoniascincus Potential zia ranging from > 500 m elevation, with most occurrences Study area and suitable habitat from > 700 m. This species inhabits elevation areas with occurs. Nothofagus moorei (Antarctic beech) Myuchelys georgesi **Bellinger River** CE CE Endemic to the Bellinger Catchment on the north coast 89 No No Species distribution does not **Snapping Turtle** of NSW. Habitat preference is for moderate to deep overlap with the Study area. pools with a rocky substrate (Spencer et al. 2007). Crustaceans 0 Euastacus morgani Morgan's Cravfish CE Endemic to a single known highland site at Bindarri NP Unlikely No The species is only known to in the coastal mountains of the mid north coast of occur northwest of the Study eastern New South Wales. area at a highland site in Bindarri NP. Simple Crayfish, Small Е The simple crayfish is endemic to the headwater 0 Unlikely No Species distribution does not Euastacus simplex Mountain Cravfish reaches (typically between approximately 1100 and overlap with the Study area. 1400 m above sea level) of the New England region of New South Wales. This species was once considered to be widespread, occurring in various drainage systems including the Styx River (Macleay River Basin) and Nymboida and Guy Fawkes rivers (Clarence River Basin) in the north and the Hastings River Basin in the south. However, the southern extent of what was thought to be their range is now considered to be that of other *Euastacus* species. The species has been collected from a range of streams (small and medium sized), both in vegetated (dry sclerophyll forest and heath) and areas cleared for pasture. Fish Maccullochella ikei Clarence River Cod, Е The only breeding population of the species is in the 0 No Species distribution does not No Eastern Freshwater Mann-Nymboida sub-catchment of the Clarence River. overlap with the Study area. There is thought to be less than 100 mature individuals Cod

Dorrigo Escarpment Great Walk – Ecological Assessment

Scientific Name	Common Name	BC Act Status	EPBC Act Status	Distribution and habitat	Number of records within 5 km	Likelihood of Occurrence	Impact Assessment Required	Justification
				in the wild. The Clarence River cod prefers clear rocky streams and rivers with low flow velocity and abundant instream cover of rocks, timber or tussocks. Research indicates that Clarence River Cod are associated with deeper parts of the river near cover, especially around rocky islands, large boulders and pools in fast-flowing water. LWD and rocky overhangs may provide shelter and important spawning sites.				
Total records					1201			
BC Act Key:	V = vulnerable, E = endangered	, E = endang	ered popula	ation, CE= critically endangered				

 BC Act Key:
 V = vulnerable, E = endangered, E = endangered population, CE= critically endangered

 EPBC Act Key:
 V = vulnerable, E = endangered, CE = critically endangered, X = extinct, M = Migratory, Mar = Marine

Appendix B Test of significance (BC Act)

1 4 4

Under Part 7, Division 1 of the NSW BC Act, the test of significance 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. This test has been applied to ecological communities and species listed under the BC Act that are considered to be potentially impacted by the activity. Species with similar habitat requirements have been grouped to streamline the process.

Species that have been assessed against the test of significance were identified through the development of the Likelihood of Occurrence (Appendix A). The following listed species and populations are assessed below:

THREATENED ECOLOGICAL COMMUNITIES

Lowland Rainforest in the NSW North Coast and Sydney Basin Bioregions.

FLORA

Narrow-leaf Finger Fern (Grammitis stenophylla) Ravine Orchid (Sarcochilus fitzgeraldii) Rusty Plum, Plum Boxwood (Niemeyera whitei) () Scrub Turpentine (Rhodamnia rubescens) Threatened Vines Cryptic Forest Twiner (Tylophora woollsii) Slender Marsdenia (Marsdenia longiloba) Milky Silkpod (Parsonsia dorrigoensis)

AMPHIBIANS

Pouched Frog (*Assa darlingtonia*) Sphagnum Frog (*Philoria sphagnicolus*) Green-thighed Frog (*Litoria brevipalmata*) Stream Dependent Amphibians Glandular Frog (Litoria subglandulosa) Stuttering Frog (Mixophyes balbus) Giant Barred Frog (Mixophyes iteratus)

AVES

Aerial birds White-throated Needletail (*Hirundapus caudacutus*) Ground and low nesting birds: Rufous Scrub-bird (*Atrichornis rufescens*) Black-breasted Button-quail (*Turnix melanogaster*) Olive Whistler (*Pachycephala olivacea*) Scarlet Robin (*Petroica boodang*) Flame Robin (*Petroica phoenicea*) Raptors and tree nesting birds Varied Sittella (*Daphoenositta chrysoptera*) White-bellied Sea-eagle (*Haliaeetus leucogaster*) Little Eagle (*Hieraaetus morphnoides*) Black Bittern (*Ixobrychus flavicollis*) Fruit doves Wompoo Fruit-dove (*Ptilinopus magnificus*) Rose-crowned Fruit-dove (Ptilinopus regina) Superb Fruit-dove (Ptilinopus superbus) Hollow-dependent birds Little Lorikeet (Glossopsitta pusilla) Masked Owl (Tyto novaehollandiae) Sooty Owl (Tyto tenebricosa) Powerful Owl (Ninox strenua) Glossy Black-cockatoo (Calyptorhynchus lathami)

MICROBATS

Cave-dwelling bats Little Bentwing-bat (*Miniopterus* australis) () Large Bent-winged Bat (*Miniopterus orianae oceanensis*) Predominantly abiotic habitat roosting bats Eastern False Pipistrelle (*Falsistrellus tasmaniensis*) Eastern Long-eared Bat (*Nyctophilus bifax*) Yellow-bellied Sheathtail-bat (*Saccolaimus flaviventris*) Greater Broad-nosed Bat (*Scoteanax rueppellii*).

INSECTS

Southern subspecies Pink Underwing Moth (Phyllodes imperialis)

MAMMALS

Fruit Bats
Grey-headed Flying-fox (Pteropus poliocephalus)
Hollow dependent mammals
Spotted-tailed Quoll (Dasyurus maculatus)
Eastern Pygmy-possum (Cercartetus nanus)
Yellow-bellied Glider (Petaurus australis)
Southern Greater Glider (Petauroides volans)
Brush-tailed Phascogale (Phascogale tapoatafa)
Large mammals
Koala (Phascolarctos cinereus)
Parma Wallaby (Notamacropus parma)
Long-nosed Potoroo (Potorous tridactylus)
Red-legged Pademelon (Thylogale stigmatica)

REPTILES

Stephens' Banded Snake (Hoplocephalus stephensii).

B1 Threatened Ecological Communities

Lowland Rainforest in the NSW North Coast and Sydney Basin Bioregions impact profile

Scientific Common B name name	3C Status	Ecology and habitat	Potential impacts
Lowland Lowland E Rainforest in Rainforest the NSW North Coast and Sydney Basin Bioregions		In a relatively undisturbed state, the community has a closed canopy, characterised by a high diversity of trees whose leaves may be mesophyllous and encompass a wide variety of shapes and sizes. Typically, the trees form three major strata: emergents, canopy and sub-canopy which, combined with variations in crown shapes and sizes results in an irregular canopy appearance. The trees are taxonomically diverse at the genus and family levels, and some may have buttressed roots. A range of plant growth forms are present, including palms, vines and vascular epiphytes. From the NSW north coast south to the Hawkesbury River. Associated with a range of high-nutrient geological substrates, notably basalts and fine-grained sedimentary rocks, on coastal plains and plateaux, footslopes and foothills.	Lowland Rainforest is known to occur from the Study area and the final determination advice is consistent with three (3) PCTS (PCT 3021, 3032 and 4107) that occur below 600 m in altitude. Direct removal of up to 0.46 ha is proposed to occur to this TEC, this includes 0.07 ha of impacts to areas that have previously been impacted (see section 6). Impacts are proposed to occur to the following growth forms: groundcover, vines, woody midstorey and canopy species that are <15cm DBH; with exception to areas of this TEC that occur at proposed bridge sites, which may involve the removal of larger occurrences of canopy species and additional growth forms. Indirect impacts during and post construction include higher risk of invasion of exotic plant species, edge effects and trampling of elements from foot traffic within this TEC.

Lowland Rainforest in the NSW North Coast and Sydney Basin Bioregions impact profile

BC Act	Question	Response
7.3.1 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	N/A
7.3.1 b) i	In the case of an endangered ecological community or critically endangered ecological community, whether the proposed development or activity: 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	The DEGW will disturb a portion of Lowland Rainforest, however as detailed above, this is limited to mostly understorey vegetation and forms only part of the patches that exist within the Study area and wider surrounds. According to the State Vegetation Type Map (SVTM) and elevation intersect, it is estimated up to 5,000 ha of potential suitable habitat for this TEC occurs in the adjacent NP estate. The proposed impacts are therefore unlikely to contribute to the extinction any patches of this TEC either in the short or long term.

BC Act	Question	Response
7.3.1 b) ii	In the case of an endangered ecological community or critically endangered ecological community: Whether the proposed development or activity 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.	The impacts to patches of this TEC is limited only to mostly understorey vegetation with additional underground components of this TEC remaining relatively undisturbed. Given the integrity of the occurrence of this TEC and the scale of the activity it is clear that the activity will unlikely modify the composition of the local occurrence enough to be placed at risk of extinction.
7.3.1 c) i	In relation to the habitat of a threatened species or ecological community: The extent to which habitat is likely to be removed or modified as a result of the proposed development or activity	Direct removal of up to 0.46 ha is proposed to occur to this TEC, this includes 0.07 ha of impacts to areas that have previously been impacted (existing impacts) (see section 6). Impacts are proposed to occur to the following growth forms: groundcover, vines, woody midstorey and canopy species that are <15cm DBH; with exception to areas of this TEC that occur at proposed bridge sites, which may involve the removal of larger occurrences of canopy species and additional growth forms. Further minor modification may occur through indirect impacts which will be limited through mitigation measures given in section 7.
7.3.1 c) ii	In relation to the habitat of a threatened species or ecological community: 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	Given the linear context of the activity and wider extent of the TEC patches that occur within the Study area, an area of the TEC will become isolated or fragmented as a result of the activity.
7.3.1 c) iii	In relation to the habitat of a threatened species or ecological community: The importance of the habitat to be removed, modified, fragmented or isolated to the long-term survival of the species, population or ecological community in the Locality.	The TEC patches within the Study areas is maintained in a high condition and in the broader sense maintains an integral occurrence of an otherwise heavily disturbed TEC across its range. However, the limited proposed removal and modification of the remaining TEC is not considered likely to inhibit the persistence of this TEC within the Study area and surrounds, considering up to 5,000 ha of potential suitable habitat will remain in the adjacent NP estate.
7.3.1 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).	No Areas of Outstanding Biodiversity Value occur on or near the Study area.
7.3.1 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.	 KTP relevant to the proposed activity and outcomes are listed below. Alteration to the natural flow regimes of rivers and streams and their floodplains and wetlands Increases to this KTP is predicted to be minor, major streams will incorporate suspended bridges while lower order streams crossings may contain steppingstones. Clearing of native vegetation.

BC Act	Question	esponse	
		 Increase to this KTP on relevar estimated to be 0.46 ha of nat this TEC of a predominantly lin Invasion and establishment of exot scramblers & Invasion of native pla exotic perennial grasses & Invasion spread of Lantana (Lantana camaro) 	it listed entities is ive vegetation for ear footprint. ic vines and nt communities by , establishment and r L. sens. lat.)
		 Risk of an increase in potential species is expected to be minin managed further via the mitiga listed in section 7. 	invasion of exotic nal and will be ation measures
		 Loss of HBTs & Removal of dead woo o Increase to this KTP on relevan considered minimal given that are estimated to be removed. standing dead wood would be woody debris would be incorp walking track where possible. 	ood and dead trees at listed entities is just eight (8) HBTs Low occurrences of removed whilst orated into the
		 Infection of frogs by amphibian chy disease chytridiomycosis. 	trid causing the
		 Chytrid is known to occur with and was observed in a Tusked field survey. Potential spread f minimised through mitigation presented in section 7. 	in the Study area Frog during the rom chytrid will be measures
Conclusion	Is there likely to be a significant impact?	o. A significant impact is not likely.	

B2 Threatened Flora

Grammitis stenophylla (Narrow-leaf Finger Fern) impact profile

Scientific name	Common name	BC Status	Ecology and habitat	Potential impacts
Grammitis stenophylla	Narrow-leaf Finger Fern	Ε	<i>Grammitis stenophylla</i> is known from thirty (30) locations across New South Wales. The species is known to occur in twenty four (24) conservations reserves. It is common in several areas, such as the Mount Warning Shield, the sandstone reserves of the lower Clarence, the granites of Washpool, Gibraltar and Nymbioda National Parks, and also Mt Jerusalem and Nightcap NP. The species was also recently recorded from New England NP. Moist places, usually near streams, on rocks in rainforest and dry and moist eucalypt forest. The Endangered status of this species does not appear to be warranted, and requires review. This species is a candidate for delisting from the NSW BC Act.	Disturbance of potential suitable habitat (area is difficult to quantify but would be restricted to riparian and rocky areas with suitable microhabitats). Indirect impacts during construction and operation through pedestrian trampling. No direct removal of this species should occur with an estimated 96 m ² area. These microhabitats are to be retained in the Study area and surrounds.

Test of significance - Grammitis stenophylla (Narrow-leaf Finger Fern)

BC Act	Question	Response
7.3. 1 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	Activities likely to have an adverse effect on the life cycle of <i>Grammitis stenophylla</i> include disturbances to spore production/dispersal, the removal/alteration of rocky habitat and loss of microhabitat features such as shade from the removal of nearby vegetation. Approximately a 96 m ² area of this species was recorded within the Study area, no impacts are predicted to occur to these areas. To further limit the impact of the activity on the lifecycle of <i>Grammitis stenophylla</i> , where possible realignment of track has occurred to avoid populations identified within the DEGW which will limit indirect impacts, specifically this has occurred at Tuckers Knob which contained the largest and widespread population of this species. Additionally, impacts to populations and potential suitable habitat at significant rocky waterways will be limited by constructing suspended bridges which will reduce the occurrence of pedestrians trampling on the habitat of this species.
7.3.1 b) i	In the case of an endangered ecological community or critically endangered ecological community, whether the proposed development or activity: 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	N/A

BC Act	Question	Response
7.3.1 b) ii	In the case of an endangered ecological community or critically endangered ecological community: Whether the proposed development or activity 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.	N/A
7.3.1 c) i	In relation to the habitat of a threatened species or ecological community: The extent to which habitat is likely to be removed or modified as a result of the proposed development or activity	No known occurrence of this species will be impacted, however potential suitable habitat may be affected through indirect impacts from human traffic and removal of microhabitats during construction. Mitigation measures in section 7 of this report aims to minimise the amount of indirect impacts to this species.
7.3.1 c) ii	In relation to the habitat of a threatened species or ecological community: 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	The threatened species habitat within the Study area is unlikely to be fragmented by the track given that any resultant disturbance will be a permeable narrow barrier in a discrete location that will not affect physical or functional connectivity between populations.
7 3.1 c) iii	In relation to the habitat of a threatened species or ecological community: The importance of the habitat to be removed, modified, fragmented or isolated to the long-term survival of the species, population or ecological community in the Locality.	<i>Grammitis stenophylla</i> was recorded along the proposed DEGW. The species has an Extent of Occurrence of 15892407 km ² and Area of Occurrence of 696 km ² (OEH, 2023). The activity has avoided approximately 96 m ² of known areas of this species within the Study area and surrounds, although it may disturb potential suitable habitat. This is not expected to be important for the long-term survival of these species in the locality given that it was currently not occupied with this status being reserved for the large populations of the Study areas such as Tuckers Knob.
7.3.1 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).	No Areas of Outstanding Biodiversity Value occur on or near the Study area.
7.3.1 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.	 KTP relevant to the proposed activity and outcomes are listed below. Alteration to the natural flow regimes of rivers and streams and their floodplains and wetlands Increases to this KTP is predicted to be minor, major streams will incorporate suspended bridges while lower order streams crossings may contain steppingstones. Clearing of native vegetation. Increase to this KTP on relevant listed entities is estimated to be 9.27 ha of native vegetation of a predominantly linear footprint.

BC Act	Question	Respons	e
		•	 Invasion and establishment of exotic vines and scramblers & Invasion of native plant communities by exotic perennial grasses & Invasion, establishment and spread of Lantana (<i>Lantana camara</i> L. sens. lat.) Risk of an increase in potential invasion of exotic species is expected to be minimal and will be managed further via the mitigation measures listed in section 7.
		•	Loss of HBTs & Removal of dead wood and dead trees o Increase to this KTP on relevant listed entities is considered minimal given that just ten (10) HBTs are estimated to be removed. Low occurrences of standing dead wood would be removed whilst woody debris would be incorporated into the walking track where possible.
		•	Infection of frogs by amphibian chytrid causing the disease chytridiomycosis.
			 Chytrid is known to occur within the Study area and was observed in a Tusked Frog during the field survey. Potential spread from chytrid will be minimised through mitigation measures presented in section 7 and the CEMP.
Conclusion	Is there likely to be a significant impact?	No. A sig	nificant impact is not likely.

Sarcochilus fitzgeraldii (Ravine Orchid) impact profile

Scientific name	Common name	BC Status	Ecology and habitat	Potential impacts
Sarcochilus fitzgeraldii	Ravine Orchid	V	North-east NSW, north of the Macleay River, to Maleny in south- east Qld. On rocks or rarely on bases of trees, in subtropical rainforest, usually near streams, from 500-700 m.	334 individuals were recorded within the study area. NPWS will undertake pre-clearance surveys prior to construction to ensure the recommended mitigation measures detailed in Table 39 of the FFA are implemented to ensure the protection of each individual where practicably possible. Direct impacts are predicted to an estimated 44 individuals occurring along the proposed walking track. Indirect impacts may occur during construction and operation through pedestrian trampling and potential for illegal poaching. The DEGW will likely avoid at a minimum 290 individuals identified within the Study Area.

BC Act	Question	Response
7.3.1 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	Activities likely to have an adverse effect on the life cycle of <i>Sarcochilus fitzgeraldii</i> include interruptions to seed dispersal, the removal/alteration of rocky habitat and loss of micro habits such as shade due to removal of nearby vegetation and disturbance of growth strata on rock faces. Approximately 334 individuals were identified within the Study area, the DEGW has proposed to avoid most of these individuals as per Table 39. To further limit the impact of the activity on the lifecycle of <i>Sarcochilus fitzgeraldii</i> , where possible realignment of track has occurred to avoid populations identified within the DEGW which will limit indirect impacts. Specifically, this has occurred at Tuckers Knob which contained the largest population of this species.
7.3.1 b) i	In the case of an endangered ecological community or critically endangered ecological community, whether the proposed development or activity: 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	N/A
7.3.1 b) ii	In the case of an endangered ecological community or critically endangered ecological community: Whether the proposed development or activity 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.	N/A
7.3.1 c) i	In relation to the habitat of a threatened species or ecological community: The extent to which habitat is likely to be removed or modified as a result of the proposed development or activity	It is difficult to quantify the habitat for this species given that it grows in niche microhabitats supported by surface rock. The proposed works are may impact up to 44 individuals with 290 individuals to likely be avoided. Indirect impacts from operation through pedestrian trampling on growth strata may also modify its habitat.
7.3.1 c) ii	In relation to the habitat of a threatened species or ecological community: 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	The threatened species habitat within the Study area is unlikely to be fragmented by the track given that any resultant disturbance will be a permeable narrow barrier in a discrete location that will not affect physical or functional connectivity between populations.
7.3.1 c) iii	In relation to the habitat of a threatened species or ecological community: The importance of the habitat to be removed, modified, fragmented or	<i>Sarcochilus fitzgeraldii</i> were recorded on rocky habitats within the DEGW on Day 3 of the walk. The largest population was avoided through realignment. Residual impacts to an estimated 44 individuals and adjacent habitat is not expected to be

Test of significance - Sarcochilus fitzgeraldii (Ravine Orchid)

BC Act	Question	Response
	isolated to the long-term survival of the species, population or ecological community in the Locality.	important for the long-term survival of these species in the locality.
7.3.1 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).	No Areas of Outstanding Biodiversity Value occur on or near the Study area.
7.3.1 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.	 KTP relevant to the proposed activity and outcomes are listed below. Alteration to the natural flow regimes of rivers and streams and their floodplains and wetlands Increases to this KTP is predicted to be minor, major streams will incorporate suspended bridges while lower order streams crossings may contain steppingstones. Clearing of native vegetation. Increase to this KTP on relevant listed entities is estimated to be 9.27 ha of native vegetation of a predominantly linear footprint. Invasion and establishment of exotic vines and scramblers & Invasion of native plant communities by exotic perennial grasses & Invasion, establishment and spread of Lantana (<i>Lantana camara</i> L. sens. lat.) Risk of an increase in potential invasion of exotic species is expected to be minimal and will be managed further via the mitigation measures listed in section 7. Loss of HBTs & Removal of dead wood and dead trees Increase to this KTP on relevant listed entities is considered minimal given that just ten (10) HBTs are estimated to be removed. Low occurrences of standing dead wood would be removed whilst woody debris would be incorporated into the walking track where possible. Infection of frogs by amphibian chytrid causing the disease chytridiomycosis. Chytrid is known to occur within the Study area and was observed in a Tusked Frog during the field survey. Potential spread from chytrid will be minimised through mitiation measures
Conclusion	Is there likely to be a significant	No. A significant impact is not likely.
	impact?	

Scientific name	Common name	BC Status	Ecology and habitat	Potential impacts
Niemeyera whitei	Rusty Plum	V	Coast and adjacent ranges of northern NSW from the Macleay River into southern Qld. Rainforest and adjacent moist eucalypt forest.	Three hundred and four (304) individuals were recorded within the study area, with forty (40) individuals expected to be impacted. Pre-clearance surveys will be undertaken prior to the construction of the track in accordance with Table 39 of the FFA. Mitigation measures will be implemented prior to and during construction to avoid impacts to each individual, where practicably possible. The predicted impact of up to 40 seedlings or juveniles and disturbance of up to 9.27 ha of potential habitat have been considered for this assessment. Indirect impacts during construction and operation through pedestrian trampling. N <i>Niemeyera whitei</i> was not identified at any campsites and therefore adult trees will be retained.

Niemeyera whitei (Rusty Plum) impact profile

Test of significance - Niemeyera whitei (Rusty Plum)

BC Act	Question	Response
7.3.1 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	Activities likely to have an adverse effect on the life cycle of <i>Niemeyera whitei</i> include interruptions to seed dispersal, trampling on seedlings and the removal of potential habitat. A total of 304 individuals were identified within the Study area, the DEGW has proposed to retain most of these individuals therefore it is unlikely that the lifecycle of this species will be affected such that a viable local population of the species is likely to be placed at risk of extinction.
7.3.1 b) i	In the case of an endangered ecological community or critically endangered ecological community, whether the proposed development or activity: 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	N/A
7.3.1 b) ii	In the case of an endangered ecological community or critically endangered ecological community:	N/A.

BC Act	Question	Response
	Whether the proposed development or activity 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.	
7.3.1 c) i	In relation to the habitat of a threatened species or ecological community: The extent to which habitat is likely to be removed or modified as a result of the proposed development or activity	The proposed works include the estimated impact of up to 40 <i>Niemeyera whitei</i> seedlings or juveniles and an estimated 9.27 ha of potential habitat. An estimated 264 individuals will be avoided in the Study area and a large continuous amount of potential habitat occurs in the wider NP Estate. According to the SVTM, it is estimated approximately > 17,000 ha of suitable habitat for these species occurs in the adjacent NP estate.
7.3.1 c) ii	In relation to the habitat of a threatened species or ecological community: 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	The threatened species habitat within the Study area is unlikely to be fragmented by the track given that any resultant disturbance will be a permeable narrow barrier in a discrete location that will not affect physical or functional connectivity between populations.
7.3.1 c) iii	In relation to the habitat of a threatened species or ecological community: The importance of the habitat to be removed, modified, fragmented or isolated to the long-term survival of the species, population or ecological community in the Locality.	<i>Niemeyera whitei</i> was recorded widely across the Study area. Given that no adult trees will be impacted, the removal of the individuals and potential habitat is not expected to be important for the population in the locality.
7.3.1 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).	No Areas of Outstanding Biodiversity Value occur on or near the Study area.
7.3.1 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.	 KTP relevant to the proposed activity and outcomes are listed below. Alteration to the natural flow regimes of rivers and streams and their floodplains and wetlands Increases to this KTP is predicted to be minor, major streams will incorporate suspended bridges while lower order streams crossings may contain steppingstones. Clearing of native vegetation. Increase to this KTP on relevant listed entities is estimated to be 9.27 ha of native vegetation of a predominantly linear footprint. Invasion and establishment of exotic vines and scramblers & Invasion of native plant communities by

BC Act	Question	Response
		 exotic perennial grasses & Invasion, establishment and spread of Lantana (<i>Lantana camara</i> L. sens. lat.) Risk of an increase in potential invasion of exotic species is expected to be minimal and will be managed further via the mitigation measures listed in section 7.
		 Loss of HBTs & Removal of dead wood and dead trees Increase to this KTP on relevant listed entities is considered minimal given that just ten (10) HBTs are estimated to be removed. Low occurrences of standing dead wood would be removed whilst woody debris would be incorporated into the walking track where possible.
		 Infection of frogs by amphibian chytrid causing the disease chytridiomycosis. Chytrid is known to occur within the Study area and was observed in a Tusked Frog during the field survey. Potential spread from chytrid will be minimised through mitigation measures presented in section 7.
Conclusion	Is there likely to be a significant impact?	No. A significant impact is not likely.

Scientific name	Common name	BC Status	Ecology and habitat	Potential impacts
Rhodamnia rubescens	Scrub Turpentine	CE	Occurs in coastal districts north from Batemans Bay in New South Wales, approximately 280 km south of Sydney, to areas inland of Bundaberg in Queensland. Found in littoral, warm temperate and subtropical rainforest and wet sclerophyll forest usually on volcanic and sedimentary soils.	Eighteen (18) individuals were recorded within the study area. Pre-clearance surveys will be undertaken prior to the construction of the track in accordance with Table 39 of the FFA. Mitigation measures will be implemented prior to and during construction to avoid impacts to each individual, where practicably possible. The predicted impact of up to two (2) seedlings or juveniles and disturbance of up to 9.27 ha of potential habitat have been considered for this assessment. Indirect impacts during construction and operation through pedestrian trampling and potential spread of Myrtle Rust. No adult trees were recorded within the Study area.
Test of significance	- Rhodamnia ru	hoscons (Sci	ruh Turnentine)	

Rhodamnia rubescens (Scrub Turpentine) impact profile

Test of significance - *Rhodamnia rubescens* (Scrub Turpentine)

BC Act	Question	Response
7.3.1 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	Activities likely to have an adverse effect on the life cycle of <i>Rhodamnia rubescens</i> include interruptions to seed dispersal, trampling on seedlings, spread of myrtle rust and removal of potential habitat. A total of 18 individuals were identified within the Study area, all showed signs of Myrtle Rust. The DEGW has proposed to retain most of these individuals and no adult trees will be removed, therefore it is unlikely that the lifecycle of this species will be affected such that a viable local population of the species is likely to be placed at risk of extinction. Indirect impacts during construction and operation through pedestrian trampling and potential spread of Myrtle Rust may also modify its habitat.
7.3.1 b) i	In the case of an endangered ecological community or critically endangered ecological community, whether the proposed development or activity: 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	N/A
7.3.1 b) ii	In the case of an endangered ecological community or critically endangered ecological community:	N/A.

BC Act	Question	Response
	Whether the proposed development or activity 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.	
7.3.1 c) i	In relation to the habitat of a threatened species or ecological community: The extent to which habitat is likely to be removed or modified as a result of the proposed development or activity	The DEGW will include the disturbance of up to 9.27 ha of potential habitat and an estimated removal of two (2) individuals that were seedlings or juveniles. An estimated 16 individuals will be retained in the Study area and a large continuous amount of potential habitat occurs in the wider NP Estate. According to the SVTM, it is estimated approximately >17,000 ha of suitable habitat for these species occurs in the adjacent NP estate.
7.3.1 c) ii	In relation to the habitat of a threatened species or ecological community: 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	The threatened species habitat within the Study area is unlikely to be fragmented by the track given that any resultant disturbance will be a permeable narrow barrier in a discrete location that will not affect physical or functional connectivity between populations.
7.3.1 c) iii	In relation to the habitat of a threatened species or ecological community: The importance of the habitat to be removed, modified, fragmented or isolated to the long-term survival of the species, population or ecological community in the Locality.	All specimens identified within the Study area showed signs of Myrtle Rust and were seedlings or juveniles. The impacts to two (2) of these individuals and areas of potential habitat is not expected to be important for the long-term survival of this species in the Locality.
7.3.1 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).	No Areas of Outstanding Biodiversity Value occur on or near the Study area.
7.3.1 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.	 KTP relevant to the proposed activity and outcomes are listed below. Alteration to the natural flow regimes of rivers and streams and their floodplains and wetlands Increases to this KTP is predicted to be minor, major streams will incorporate suspended bridges while lower order streams crossings may contain steppingstones. Clearing of native vegetation. Increase to this KTP on relevant listed entities is estimated to be 9.27 ha of native vegetation of a predominantly linear footprint. Invasion and establishment of exotic vines and scramblers & Invasion of native plant communities by

BC Act	Question	Response	
		 exotic perennial grasses & Invasion, establishmen spread of Lantana (<i>Lantana camara</i> L. sens. lat.) Risk of an increase in potential invasion of exspecies is expected to be minimal and will be managed further via the mitigation measure listed in section 7. 	t and cotic s
		 Loss of HBTs & Removal of dead wood and dead t Increase to this KTP on relevant listed entitie considered minimal given that just ten (10) F are estimated to be removed. Low occurrent standing dead wood would be removed whil woody debris would be incorporated into the walking track where possible. 	rees s is IBTs ces of st e
		 Infection of frogs by amphibian chytrid causing the disease chytridiomycosis. Chytrid is known to occur within the Study area a was observed in a Tusked Frog during the field su Potential spread from chytrid will be minimised through mitigation measures presented in section 	e nd rvey. n 7.
Conclusion	Is there likely to be a significant impact?	No. A significant impact is not likely.	

Scientific name	Common name	BC Status	Ecology and habitat	Potential impacts
Marsdenia longiloba	Slender Marsdenia	E	In NSW, occurs at scattered locations on the north coast north from Barrington Tops. Subtropical and warm temperate rainforest, lowland moist eucalypt forest adjoining rainforest, areas with rock outcrops.	Twenty-four (24) individuals were recorded within the study area. NPWS will undertake pre- clearance surveys and micrositing prior to and during construction to ensure the recommended mitigation measures detailed in Table 39 of the FFA are implemented to ensure the protection of each individual where practicably possible. Predicted direct impacts of four (4) individuals and disturbance to up to 9.27 ha of potential habitat have been considered for this assessment. Indirect impacts during construction and operation through pedestrian trampling and potential spread of <i>Phytophthora cinnamomi</i> .
Parsonsia dorrigoensis	Milky Silkpod	V	Found only within NSW, in the north coast region between Kendall and Woolgoolga. Subtropical and warm- temperature rainforest, rainforest margins, and moist eucalypt forest up to 800 m, on brown clay soils.	Forty-four (44) individuals were recorded within the study area. NPWS will undertake pre- clearance surveys and micro- siting prior to and during construction to ensure the recommended mitigation measures detailed in Table 39 of the FFA are implemented to ensure the protection of each individual where practicably possible. Predicted direct impacts of four (4) individuals and disturbance to up to 9.27 ha of potential habitat have been considered for this assessment. Indirect impacts during construction and operation through pedestrian trampling and potential spread of <i>Phytophthora cinnamomi</i> .
Tylophora woollsii	Cryptic Forest Twiner	Ε	found from the NSW north coast and New England Tablelands to southern Queensland, but is very rare within that range. Known on the Tablelands from the Bald Rock and Boonoo Boonoo areas north of Tenterfield. This species grows in moist eucalypt	Six (6) individuals were recorded within the study area. NPWS will undertake pre- clearance surveys and micrositing prior to and during construction to ensure the recommended mitigation measures detailed in Table 39

Threatened Vines impact profile

Scientific name	Common name	BC Status	Ecology and habitat	Potential impacts
			forest, moist sites in dry eucalypt forest and rainforest margins.	of the FFA are implemented to ensure the protection of each individual where practicably possible. Predicted direct impacts of one (1) individuals and disturbance to up to 9.27 ha of potential habitat have been considered for this assessment. Indirect impacts during construction and operation through pedestrian trampling and potential spread of <i>Phytophthora cinnamomi</i> .

Test of significance – Threatened Vines

BC Act	Question	Response
7.3.1 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	Activities likely to have an adverse effect on the life cycle of these threatened vines include interruptions to seed dispersal and the removal of suitable habitat. The spread of <i>Phytophthora</i> <i>cinnamomi</i> has the potential to have an adverse effect on the lifecycle of <i>Marsdenia longiloba</i> and <i>Tylophora woollsii</i> however this is already known to occur within the Study area. All three species were identified within the Study area. The DEGW has proposed to retain most of these individuals and large continuous areas of habitat will persist in the wider NP Estate (approximately >17,000 ha of suitable habitat according to the SVTM), therefore it is unlikely that the lifecycle of these species will be affected such that a viable local population of the species is likely to be placed at risk of extinction.
7.3.1 b) i	In the case of an endangered ecological community or critically endangered ecological community, whether the proposed development or activity: 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	N/A
7.3.1 b) ii	In the case of an endangered ecological community or critically endangered ecological community: Whether the proposed development or activity 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.	N/A.
7.3.1 c) i	In relation to the habitat of a threatened species or ecological community:	The DEGW will include the disturbance of up to 9.27 ha of potential habitat for these species with a large continuous area of potential habitat occurring in the wider NP Estate. According

BC Act	Question	Response
	The extent to which habitat is likely to be removed or modified as a result of the proposed development or activity	to the SVTM, it is estimated approximately >17,000 ha of potential suitable habitat for these species occurs in the adjacent NP estate.
7.3.1 c) ii	In relation to the habitat of a threatened species or ecological community: 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	The threatened species habitat within the Study area is unlikely to be fragmented by the track given that any resultant disturbance will be a permeable narrow barrier in a discrete location that will not affect physical or functional connectivity between populations.
7.3.1 c) iii	In relation to the habitat of a threatened species or ecological community: The importance of the habitat to be removed, modified, fragmented or isolated to the long-term survival of the species, population or ecological community in the Locality.	The individuals to be impacted and potential habitat to be removed is not expected to be important for the long-term survival of these species in the Locality given that all these species widely occurred across the length of the Study area.
7.3.1 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).	No Areas of Outstanding Biodiversity Value occur on or near the Study area.
7.3.1 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.	 KTP relevant to the proposed activity and outcomes are listed below. Alteration to the natural flow regimes of rivers and streams and their floodplains and wetlands Increases to this KTP is predicted to be minor, major streams will incorporate suspended bridges while lower order streams crossings may contain steppingstones. Clearing of native vegetation. Increase to this KTP on relevant listed entities is estimated to be 9.27 ha of native vegetation of a predominantly linear footprint. Invasion and establishment of exotic vines and scramblers & Invasion of native plant communities by exotic perennial grasses & Invasion, establishment and spread of Lantana (<i>Lantana camara</i> L. sens. lat.) Risk of an increase in potential invasion of exotic species is expected to be minimal and will be managed further via the mitigation measures listed in section 7. Loss of HBTs & Removal of dead wood and dead trees Increase to this KTP on relevant listed entities is considered minimal given that just ten (10) HBTs are estimated to be removed. Low occurrences of standing dead wood would be removed whilst

BC Act	Question	Response
		 woody debris would be incorporated into the walking track where possible. Infection of frogs by amphibian chytrid causing the disease chytridiomycosis. Chytrid is known to occur within the Study area and was observed in a Tusked Frog during the field survey. Potential spread from chytrid will be minimised through mitigation measures presented in section 7.
Conclusion	Is there likely to be a significant impact?	No. A significant impact is not likely.

B3 Threatened Amphibians

Assa darlingtoni (Pouched Frog) impact profile

Scientific name	Common name	BC Status	Ecology and habitat	Potential impacts
Assa darlingtoni	Pouched Frog	V	North-east NSW and far south-east Qld. There are three isolated populations in NSW: Dorrigo Plateau, Gibraltar Range and Border Ranges. Cool, moist rainforest (including Antarctic Beech), or moist eucalypt forest in mountainous areas, mostly above 800 m. Breeding habitat within damp leaf litter and under logs in wet sclerophyll forest and rainforest.	Direct impact of up to 3.79 ha of potential habitat for this species and indirect impacts during construction, through trampling and potential spread of Chytrid fungi causing the disease chytridiomycosis. Chytrid is able to be transported around on organic material including mud and leaves that remain moist and so hikers and increased/ongoing visitor use are considered a potential source of spread as they move around the landscape carrying organic matter on their boots and clothes and deposit that in new locations.

Test of significance - Assa darlingtoni (Pouched Frog)

BC Act	Question	Response
7.3.1 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 from the activity that have the potential to have an adverse effect on the life cycle of Pouched Frog include disturbances to breeding habitat, Chytrid fungi and habitat loss and modification. Up to 3.79 ha of potential habitat within the Study area may be directly impacted. This habitat is directly adjacent to similar habitat within the broader NP estate. According to the SVTM, it is estimated >8,000 ha of potential suitable habitat that could host the microhabitats for this species occur in the adjacent NP estate. Given the primarily linear design of the activity (with exception to campsites) it is considered that the removal of this habitat is unlikely to cause an adverse effect on the life cycle of these species such that a viable local population of the species will be placed at risk of extinction. To further limit the effect of the activity on the lifecycle of this species mitigation measures have been provided in section 7. This includes the removal of organic material from footwear and clothing, either mechanically or through chemical treatments are considered the most effective way of preventing further
		spread of Chytrid fungus by human activities (NSW DPIE 2020).
7.3.1 b) i	In the case of an endangered ecological community or critically endangered ecological community, whether the proposed development or activity:	N/A

BC Act	Question	Response
	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	
7.3.1 b) ii	In the case of an endangered ecological community or critically endangered ecological community: Whether the proposed development or activity 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.	N/A
7.3.1 c) i	In relation to the habitat of a threatened species or ecological community: The extent to which habitat is likely to be removed or modified as a result of the proposed development or activity	The extent of potential habitat to be impacted is estimated to be 3.79 ha based on suitable vegetation types. Large continuous amounts of this habitat will remain adjacent to the Study area and in the wider NP Estate. According to the SVTM, it is estimated approximately >8000 ha of potential suitable habitat that could host the microhabitats for this species occur in the adjacent NP estate. Limited modification to areas of adjoining habitat could occur indirectly during construction and operation.
7.3.1 c) ii	In relation to the habitat of a threatened species or ecological community: 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	Given the context of the activity and the mobility of this species this species habitat is not predicted to be fragmented given that any resultant disturbance will be confined mostly by a permeable narrow barrier in a discrete location that will not affect physical or functional connectivity between populations.
7.3.1 c) iii	In relation to the habitat of a threatened species or ecological community: The importance of the habitat to be removed, modified, fragmented or isolated to the long-term survival of the species, population or ecological community in the Locality.	The potential habitat to be removed (3.79 ha) is not expected to be important for the long-term survival of this species given that most of the potential habitat has previously been disturbed (3.19 ha) and that potential habitat will remain within the Study area and broader NP estate.
7.3.1 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).	No Areas of Outstanding Biodiversity Value occur on or near the Study area.
7.3.1 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.	 KTP relevant to the proposed activity and outcomes are listed below. Alteration to the natural flow regimes of rivers and streams and their floodplains and wetlands Increases to this KTP is predicted to be minor, major streams will incorporate suspended bridges

BC Act	Question	Response
		while lower order streams crossings may contain steppingstones.
		 Clearing of native vegetation. Increase to this KTP on relevant listed entities is estimated to be 9.27 ha of native vegetation of a predominantly linear footprint.
		 Invasion and establishment of exotic vines and scramblers & Invasion of native plant communities by exotic perennial grasses & Invasion, establishment and spread of Lantana (Lantana camara L. sens. lat.)
		 Risk of an increase in potential invasion of exotic species is expected to be minimal and will be managed further via the mitigation measures listed in section 7.
		 Loss of HBTs & Removal of dead wood and dead trees Increase to this KTP on relevant listed entities is considered minimal given that just ten (10) HBTs are estimated to be removed. Low occurrences of standing dead wood would be removed whilst woody debris would be incorporated into the walking track where possible.
		 Infection of frogs by amphibian chytrid causing the disease chytridiomycosis. Chytrid is known to occur within the Study area and was observed in a Tusked Frog during the field survey. Potential spread from chytrid will be minimised through mitigation measures presented in section 7.
Conclusion	Is there likely to be a significant	No. A significant impact is not likely.

Philoria sphagnicola (Sphagnun	n Frog) impact profile
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impact?

Scientific name	Common name	BC Status	Ecology and habitat	Potential impacts
Philoria sphagnicola	Sphagnum Frog	V	Eastern escarpment of the Great Dividing Range in north-east NSW from Chaelundi State Forest south to Killabakh Nature Reserve near Comboyne. Rainforest (including Antarctic Beech forest) and wet sclerophyll forests at high elevation, in Sphagnum Moss beds or seepages on steep slopes. They can also occur at lower elevation in wet coastal foothills. Breeding habitat within permanently wet seepages. Eggs are laid in moist locations such as rock crevices, under logs or in burrows in Sphagnum Moss.	Direct removal of up to 3.24 ha of potential habitat for this species and indirect impacts during construction, through trampling and potential spread of Chytrid fungi causing the disease chytridiomycosis. Chytrid is able to be transported around on organic material including mud and leaves that remain moist and so hikers and increased/ongoing

Scientific name	Common name	BC Status	Ecology and habitat	Potential impacts
				visitor use are considered a potential source of spread as they move around the landscape carrying organic matter on their boots and clothes and deposit that in new locations.
Test of significance	- Philoria sphagnico	<i>la</i> (Sphagnu	m Frog)	

BC Act	Question	Response
7.3.1 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 from the activity that have the potential to have an adverse effect on the life cycle of Pouched Frog include disturbances to breeding habitat, Chytrid fungus and habitat loss and modification. Breeding and foraging habitat is in Sphagnum Moss beds or seepages on steep slopes within the Study area. This habitat is directly adjacent to similar habitat within the broader NP estate. According to the SVTM and mapped altitude, it is estimated approximately >8000 ha of potential suitable habitat that could host the microhabitats for this species occur in the adjacent NP estate. Given the primarily linear design of the activity (with exception to campsites) it is considered that the disturbance to this habitat is unlikely to cause an adverse effect on the life cycle of these species such that a viable local population of the species will be placed at risk of extinction. To further limit the effect of the activity on the lifecycle of this species mitigation measures have been provided in section 7. This includes the removal of organic material from footwear and clothing, either mechanically or through chemical treatments which are considered the most effective way of preventing further spread of Chytrid fungus by human activities (NSW DPIE 2020)
7.3.1 b) i	In the case of an endangered ecological community or critically endangered ecological community, whether the proposed development or activity: 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	N/A
7.3.1 b) ii	In the case of an endangered ecological community or critically endangered ecological community: Whether the proposed development or activity 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.	N/A

BC Act	Question	Response
7.3.1 c) i	In relation to the habitat of a threatened species or ecological community: The extent to which habitat is likely to be removed or modified as a result of the proposed development or activity	The extent of potential habitat is difficult to define however impacts to suitable ecosystems which have the potential to host habitat for this species is estimated to be 3.24 ha. Large continuous amounts of this habitat will remain adjacent to the Study area and in the wider NP Estate. Limited modification to areas of adjoining habitat could occur indirectly during construction and operation.
7.3.1 c) ii	In relation to the habitat of a threatened species or ecological community: 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	Given the context of the activity and the mobility of this species, this species habitat is not predicted to be fragmented given that any resultant disturbance will be confined mostly by a permeable narrow barrier in a discrete location that will not affect physical or functional connectivity between populations.
7.3.1 c) iii	The potential habitat to be removed (3.24 ha) is not expected be important for the long-term survival of this species given t most of the potential habitat has previously been disturbed (3.29 ha) and the potential habitat will remain within the Stud area and broader NP estate.	
7.3.1 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).	No Areas of Outstanding Biodiversity Value occur on or near the Study area.
7.3.1 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.	 KTP relevant to the proposed activity and outcomes are listed below. Alteration to the natural flow regimes of rivers and streams and their floodplains and wetlands Increases to this KTP is predicted to be minor, major streams will incorporate suspended bridges while lower order streams crossings may contain steppingstones. Clearing of native vegetation. Increase to this KTP on relevant listed entities is estimated to be 9.27 ha of native vegetation of a predominantly linear footprint. Invasion and establishment of exotic vines and scramblers & Invasion of native plant communities by exotic perennial grasses & Invasion, establishment and spread of Lantana (<i>Lantana camara</i> L. sens. lat.) Risk of an increase in potential invasion of exotic species is expected to be minimal and will be managed further via the mitigation measures listed in section 7.

BC Act	Question	Response
		 Loss of HBTs & Removal of dead wood and dead trees Increase to this KTP on relevant listed entities is considered minimal given that just ten (10) HBTs are estimated to be removed. Low occurrences of standing dead wood would be removed whilst woody debris would be incorporated into the walking track where possible. Infection of frogs by amphibian chytrid causing the disease chytridiomycosis. Chytrid is known to occur within the Study area and was observed in a Tusked Frog during the field survey. Potential spread from chytrid will be minimised through mitigation measures presented in section 7.
Conclusion	Is there likely to be a significant impact?	No. A significant impact is not likely.

Scientific name	Common name	BC Status	Ecology and habitat	Potential impacts
Litoria brevipalmata	Green-thighed Frog	V	Isolated localities along the coast and ranges from just north of Wollongong to south-east Qld. Rainforest and moist eucalypt forest to dry eucalypt forest and heath, typically in areas where surface water gathers after rain. Breeding occurs following heavy rainfall from spring to autumn, with larger temporary pools and flooded areas preferred. Breeding habitat occurs in large floodplains, depressions, billabongs and semi- permanent/ephemeral wet areas.	Direct removal of up to 4.22 ha of potential habitat for this species and indirect impacts during construction, through trampling and potential spread of Chytrid fungi causing the disease chytridiomycosis. Chytrid is able to be transported around on organic material including mud and leaves that remain moist and so hikers and increased/ongoing visitor use are considered a potential source of spread as they move around the landscape carrying organic matter on their boots and clothes and deposit that in new locations.

Litoria brevipalmata (Green-thighed Frog) impact profile

Test of significance - Litoria brevipalmata (Green-thighed Frog)

BC Act	Question	Response
7.3.1 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 from the activity that have the potential to have an adverse effect on the life cycle of Green-thighed Frog include disturbances to breeding habitat, spread of Chytrid fungi through ongoing use and increased visitors, and habitat loss and modification. Breeding habitat for this species may be any semi- permanent/ephemeral wet areas and depressions. This habitat can occur at most drainage lines within the Study area, impacts will be limited through the primarily linear design of the activity (with exception to campsites). Additionally, the removal of organic material from footwear and clothing, either mechanically or through chemical treatments are recommended and are considered the most effective way of preventing further spread of Chytrid fungus by human activities (NSW DPIE 2020), this is detailed in Section 7. Therefore, it is considered that the disturbance to this potential breeding habitat is unlikely to cause an adverse effect on the life cycle of these species such that a viable local population of the species will be placed at risk of extinction. To further limit the effect of the activity on the lifecycle of this species mitigation measures have been provided in section 7.
7.3.1 b) i	In the case of an endangered ecological community or critically endangered	N/A
BC Act	Question	Response
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	ecological community, whether the proposed development or activity: 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	
7.3.1 b) ii	In the case of an endangered ecological community or critically endangered ecological community: Whether the proposed development or activity 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.	N/A
7.3.1 c) i	In relation to the habitat of a threatened species or ecological community: The extent to which habitat is likely to be removed or modified as a result of the proposed development or activity	The extent of potential foraging habitat to be impacted is estimated to be 4.22 ha based upon species polygon guidance given in DPIE 2020. Large continuous amounts of this habitat will remain adjacent to the Study area and in the wider NP Estate. Limited modification to areas of adjoining habitat could occur indirectly during construction and operation.
7.3.1 c) ii	In relation to the habitat of a threatened species or ecological community: 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	Given the context of the activity and the mobility of this species this species habitat is not predicted to be fragmented given that any resultant disturbance will be confined mostly by a permeable narrow barrier in a discrete location that will not affect physical or functional connectivity between populations.
7.3.1 c) iii	In relation to the habitat of a threatened species or ecological community: The importance of the habitat to be removed, modified, fragmented or isolated to the long-term survival of the species, population or ecological community in the Locality.	The potential habitat to be removed (4.22 ha) is not expected to be important for the long-term survival of this species given that most of the potential habitat has previously been disturbed and that potential habitat will remain within the Study area and broader NP estate.
7.3.1 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).	No Areas of Outstanding Biodiversity Value occur on or near the Study area.
7.3.1 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.	KTP relevant to the proposed activity and outcomes are listed below. • Alteration to the natural flow regimes of rivers and streams and their floodplains and wetlands • Increases to this KTP is predicted to be minor, major streams will incorporate suspended bridges

BC Act	Question	Respons	e
			while lower order streams crossings may contain steppingstones.
		•	Clearing of native vegetation.
			 Increase to this KTP on relevant listed entities is estimated to be 9.27 ha of native vegetation of a predominantly linear footprint.
		•	Invasion and establishment of exotic vines and scramblers & Invasion of native plant communities by exotic perennial grasses & Invasion, establishment and spread of Lantana (<i>Lantana camara</i> L. sens. lat.)
			 Risk of an increase in potential invasion of exotic species is expected to be minimal and will be managed further via the mitigation measures listed in section 7.
		•	Loss of HBTs & Removal of dead wood and dead trees
			 Increase to this KTP on relevant listed entities is considered minimal given that just ten (10) HBTs are estimated to be removed. Low occurrences of standing dead wood would be removed whilst woody debris would be incorporated into the walking track where possible.
		•	Infection of frogs by amphibian chytrid causing the disease chytridiomycosis. Chytrid is known to occur within the Study area and was observed in a Tusked Frog during the field survey. Potential spread from chytrid will be minimised through mitigation measures presented in section 7.
Conclusion	Is there likely to be a significant impact?	No. A sig	nificant impact is not likely.

Scientific name	Common name	BC Status	Ecology and habitat	Potential impacts	Chytrid fungi
Litoria subglandulosa	Glandular Frog	V	Occurs on the eastern escarpment of the Great Dividing Range from the "The Flags" near Walcha north to Girraween NP. Along streams in rainforest, moist and dry eucalypt forest or in subalpine swamps. Breeding occurs in permanent or semi- permanent pools	Direct removal of up to 1.61 ha of potential foraging habitat for this species and indirect impacts during construction, through trampling and potential spread of Chytrid fungi causing the disease chytridiomycosis.	Chytrid fungi is able to be transported around on organic material including mud and leaves that remain moist and so hikers and increased/ongoing visitor use are considered a potential source

Stream Dependent Amphibians - *Litoria subglandulosa* (Glandular Frog), *Mixophyes balbus* (Stuttering Frog), *Mixophyes iteratus* (Giant Barred Frog) impact profile

Scientific name	Common name	BC Status	Ecology and habitat	Potential impacts	Chytrid fungi
Mixophyes balbus	Stuttering Frog	Ε	Along the east coast of Australia from southern Qld to north-eastern Victoria. Rainforest and wet, tall open forest in the foothills and escarpment on the eastern side of the Great Dividing Range. Breed in riffle zones in streams after rain events when water levels subside. Eggs are laid on rock shelves or shallow riffles in small, flowing streams.	Disturbance of 9.27a of potential foraging habitat and indirect impacts during construction and operation through trampling. Potential spread of Chytrid fungi and other pathogens.	of spread as they move around the landscape carrying organic matter on their boots and clothes and deposit that in new locations. Specifically, the risk increases when streams are crossed as this is where infected
Mixophyes iteratus	Giant Barred Frog	Ε	Coast and ranges from Eumundi in south-east Qld to Warrimoo in the Blue Mountains. Freshwater permanent/semi-permanent streams, generally at lower elevation. Breeding takes place from late spring to summer. Once eggs are laid and fertilised in the water, the female kicks them out of the water where they stick onto a suitable bank (e.g. overhanging or steeply sloped). Hatchlings drop or wriggle into the water.	Direct removal of up to 1.20 ha of potential foraging habitat for this species and indirect impacts during construction, through trampling and potential spread of Chytrid fungi causing the disease chytridiomycosis.	easily be collected on clothing and then also washed off back into water.

Test of significance - Stream Dependent Amphibians

BC Act	Question	Response
7.3.1 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 from the activity that have the potential to have an adverse effect on the life cycle of stream dependent Amphibians (Glandular Frog, Stuttering Frog and Giant Barred Frog) include disturbances to breeding habitat, spread of Chytrid fungi through ongoing use and increased visitors, habitat loss and modification. Breeding habitat for these species is restricted to flowing streams, which can occur at higher order drainage lines within the Study area. Impacts to these areas will be limited given the design of the suspended bridges avoiding critical bank habitat. Additionally, the removal of organic material from footwear and clothing, either mechanically or through chemical treatments are recommended and are considered the most effective way of preventing further spread of Chytrid fungus by human activities (NSW DPIE 2020), this is detailed in Section 7. , Therefore, it is considered that the remaining removal of foraging habitat is unlikely to cause an adverse effect on the life cycle of these species such that a viable local population of the species will be placed at risk of extinction.

BC Act	Question	Response
		To further limit the effect of the activity on the lifecycle of this species mitigation measures have been provided in section 7.
7.3.1 b) i	In the case of an endangered ecological community or critically endangered ecological community, whether the proposed development or activity: 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	N/A
7.3.1 b) ii	In the case of an endangered ecological community or critically endangered ecological community: Whether the proposed development or activity 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.	N/A
7.3.1 c) i	In relation to the habitat of a threatened species or ecological community: The extent to which habitat is likely to be removed or modified as a result of the proposed development or activity	The extent of potential habitat to be impacted is estimated to be 9.27 ha for Stuttering Frog, 1.61 ha for Glandular Frog and 1.20 ha for Giant Barred Frog based on the species polygon guidance in DPIE 2020. Large continuous amounts of this habitat will remain adjacent to the Study area and in the wider NP Estate. According to the SVTM, it is estimated up to 17,000 ha of available habitat could host these microhabitats such as permanent running streams for these species occur in the adjacent NP estate. Limited modification to areas of adjoining habitat could occur indirectly during construction and operation.
7.3.1 c) ii	In relation to the habitat of a threatened species or ecological community: 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	Given the context of the activity and the mobility of these species this species habitat is not predicted to be fragmented given that any resultant disturbance will be confined mostly by a permeable narrow barrier in a discrete location that will not affect physical or functional connectivity between populations.
7.3.1 c) iii	In relation to the habitat of a threatened species or ecological community: The importance of the habitat to be removed, modified, fragmented or isolated to the long-term survival of the species, population or ecological community in the Locality.	The potential foraging habitat to be removed for these species is not expected to be important for the long-term survival of a population given that most of the potential habitat has previously been disturbed and that potential habitat will remain within the Study area and broader NP estate. According to the SVTM, it is estimated up to 17,000 ha of potential suitable habitat that could host the microhabitats for these species occur in the adjacent NP estate
7.3.1 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).	No Areas of Outstanding Biodiversity Value occur on or near the Study area.

BC Act	Question	Response
BC Act 7.3.1 e)	Question 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.	 Response KTP relevant to the proposed activity and outcomes are listed below. Alteration to the natural flow regimes of rivers and streams and their floodplains and wetlands Increases to this KTP is predicted to be minor, major streams will incorporate suspended bridges while lower order streams crossings may contain steppingstones. Clearing of native vegetation. Increase to this KTP on relevant listed entities is estimated to be 9.27 ha of native vegetation of a predominantly linear footprint. Invasion and establishment of exotic vines and scramblers & Invasion of native plant communities by exotic perennial grasses & Invasion, establishment and spread of Lantana (<i>Lantana camara</i> L. sens. lat.) Risk of an increase in potential invasion of exotic species is expected to be minimal and will be managed further via the mitigation measures listed in section 7. Loss of HBTs & Removal of dead wood and dead trees on Increase to this KTP on relevant listed entities is considered minimal given that just ten (10) HBTs are estimated to be removed. Low occurrences of standing dead wood would be removed whilst woody debris would be incorporated into the walking track where possible. Infection of frogs by amphibian chytrid causing the disease chytridiomycosis. Chytrid is known to occur within the Study area and was observed in a Tusked Frog during the field survey. Potential spread from chytrid will be minimised
Conclusion	Is there likely to be a significant	No. A significant impact is not likely.

B4 Threatened Aves

Ground or low nesting birds impact profile

Scientific name	Common name	BC Status	Ecology and habitat	Potential impacts
Atrichornis rufescens	Rufous Scrub- bird	V	The southern subspecies (<i>Atrichornis rufescens ferrieri</i>) is confined to NSW, from the Dorrigo Plateau to Barrington Tops. High- altitude (above 600 m) subtropical, warm temperate and cool temperate rainforests, and wet sclerophyll forests.	Direct impact of up to 6.97 ha of forest habitat which may present foraging and nesting habitat for this species. Incidental mortality during construction. Indirect impacts during construction and operation through pedestrian activity and maintenance.
Pachycephala olivacea	Olive Whistler	V	In NSW chiefly occurs around Barrington Tops and the MacPherson Ranges, and from the Illawarra south to Victoria. In the south it is found inland to the Snowy Mountains and the Brindabella Range. Mostly inhabits wet forests above about 500 m.	Direct impact of up to 9.27 ha of forest habitat which may present foraging and nesting habitat for this species. Incidental mortality during construction. Indirect impacts during construction and operation through pedestrian activity and maintenance
Petroica boodang	Scarlet Robin	V	In NSW, it occurs from the coast to the inland slopes. Dry eucalypt forests and woodlands, and occasionally in mallee, wet forest, wetlands and tea-tree swamps.	Direct impact of up to 9.27 ha of forest habitat which may present foraging and nesting habitat for this species. Incidental mortality during construction. Indirect impacts during construction and operation through pedestrian activity and maintenance
Petroica phoenicea	Flame Robin	V	In NSW, breeds in upland areas, and in winter many birds move to the inland slopes and plains, or occasionally to coastal areas. Likely that there are two separate populations in NSW, one in the Northern Tablelands, and another ranging from the Central to Southern Tablelands. Breeds in upland tall moist eucalypt forests and woodlands. In winter uses dry forests, open woodlands, heathlands, pastures and native grasslands. Occasionally occurs in temperate rainforest, herbfields, heathlands, shrublands and sedgelands at high altitudes.	Direct impact of up to 9.27 ha of habitat which may present foraging and nesting habitat for this species. Incidental mortality during construction. Indirect impacts during construction and operation through pedestrian activity and maintenance
Turnix melanogaster	Black-breasted Button-quail	CE	South-eastern Qld and far north- eastern NSW, mainly on and east of the Great Divide but extending	Direct impact of up to 9.27 ha of forest habitat which may present foraging and nesting

Scientific name	Common name	BC Status	Ecology and habitat	Potential impacts
			inland to the inner western slopes.	habitat for this species.
			Very few NSW records in recent	Incidental mortality during
			times. Dry rainforests, vine forest	construction. Indirect impacts
			and vine thickets. May also occupy	during construction and
			wetter subtropical rainforests,	operation through pedestrian
			sometimes in association with	activity and maintenance.
			moist eucalypt forest.	

Test of significance - Ground or low nesting birds

7.3.1 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 extinctionActivities likely to have an adverse effect on the life cycle of the species or aging habitat and loss of nesting/perching and sheltering habitat. Disturbance of potential habitat for these species is proposed to occur, although breeding and foraging habitat adjacent to the study and the broader NP estate will remain. Given the above cur, although breeding and foraging habitat adjacent to the study and the broader NP estate will remain. Given the above cur, although breeding and foraging habitat adjacent to the study and the broader NP estate will remain. Given the above cur, although breeding and foraging habitat adjacent to the study and the broader NP estate will remain. Given the above cure, although breeding and foraging habitat. To further militigate the effect of the activity is is considered in the case of an endangered ecological community or critically endangered ecological community. whether the proposed development or activity. Is likely to have an adverse effect on the extent of the ecological community. Whether the proposed development or activity is likely to substantially and adversely modify the composition of the ecological community such that its local occurrence is likely to ablace at risk of extinction.N/A7.3.1 b) iiIn the case of an endangered ecological community or critically endangered ecological community. Whether the proposed development or arisk of extinction.N/A7.3.1 c) iiIn the case of an endangered ecological community such that its local occurrence is likely to balace at <br< th=""><th>BC Act</th><th>Question</th><th>Response</th></br<>	BC Act	Question	Response
7.3.1 b) iIn the case of an endangered ecological community or critically endangered ecological community, whether the proposed development or activity: 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, orN/A7.3.1 b) iiIn the case of an endangered ecological community or critically endangered ecological community: Whether the proposed development or activity 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.N/A.7.3.1 c) iIn relation to the habitat of a threatened species or ecological community:The extent of potential habitat to be removed is estimated to occur up to 9.27 ha for these species. This is mostly restricted to groundcover + vines, woody midstorey and canopy species (-15 cm DBH for the linear walking track)	7.3.1 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	Activities likely to have an adverse effect on the life cycle of ground or low nesting birds (Rufous Scrub-bird, Black-breasted Button-quail, Olive Whistler, Scarlet Robin and Flame Robin) include incidental mortality during construction, impacts to foraging habitat and loss of nesting/perching and sheltering habitat. Disturbance of potential habitat for these species is proposed to occur, although breeding and foraging habitat adjacent to the study and the broader NP estate will remain. Given the above context and primarily linear design of the activity it is considered unlikely that the activity will have an adverse effect on the life cycle of this species such that a viable local population of the species is likely to be placed at risk of extinction. To further mitigate the effect of the activity on the lifecycle of this species pre-clearing will be conducted to reduce instances of possible mortality and disruptions to lifecycle during nesting periods (section 7).
7.3.1 b) iiIn the case of an endangered ecological community or critically endangered ecological community:N/A.Whether the proposed development or activity 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.N/A.7.3.1 c) iIn relation to the habitat of a threatened species or ecological community:The extent of potential habitat to be removed is estimated to occur up to 9.27 ha for these species. This is mostly restricted to groundcover + vines, woody midstorey and canopy species (<15cm DBH for the linear walking track)	7.3.1 b) i	In the case of an endangered ecological community or critically endangered ecological community, whether the proposed development or activity: 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	N/A
7.3.1 c) iIn relation to the habitat of a threatened species or ecological community:The extent of potential habitat to be removed is estimated to occur up to 9.27 ha for these species. This is mostly restricted to groundcover + vines, woody midstorey and canopy species (<15cm DBH for the linear walking track)	7.3.1 b) ii	In the case of an endangered ecological community or critically endangered ecological community: Whether the proposed development or activity 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.	N/A.
	7.3.1 c) i	In relation to the habitat of a threatened species or ecological community:	The extent of potential habitat to be removed is estimated to occur up to 9.27 ha for these species. This is mostly restricted to groundcover + vines, woody midstorey and canopy species (<15cm DBH for the linear walking track)

BC Act	Question	Response
	The extent to which habitat is likely to be removed or modified as a result of the proposed development or activity	Limited modification to areas of adjoining habitat could occur indirectly during construction and operation.
7.3.1 c) ii	In relation to the habitat of a threatened species or ecological community: 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	The habitat for these mobile species will not be fragmented by the activity as the resultant disturbance will be a permeable linear barrier in a discrete location that will not affect connectivity between populations.
7.3.1 c) iii	In relation to the habitat of a threatened species or ecological community: The importance of the habitat to be removed, modified, fragmented or isolated to the long-term survival of the species, population or ecological community in the Locality.	The potential habitat proposed to be removed/disturbed for construction and operation of the DEGW represents a primarily linear area of potential habitat available to a local population of these species. Given that this habitat extends into the Study area and the broader NP estate, the removal and modification is not likely to impact the long-term survival of these species.
7.3.1 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).	No Areas of Outstanding Biodiversity Value occur on or near the site.
7.3.1 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.	 KTP relevant to the proposed activity and outcomes are listed below. Alteration to the natural flow regimes of rivers and streams and their floodplains and wetlands Increases to this KTP is predicted to be minor, major streams will incorporate suspended bridges while lower order streams crossings may contain steppingstones. Clearing of native vegetation. Increase to this KTP on relevant listed entities is estimated to be 9.27 ha of native vegetation of a predominantly linear footprint. Invasion and establishment of exotic vines and scramblers & Invasion of native plant communities by exotic perennial grasses & Invasion, establishment and spread of Lantana (<i>Lantana camara</i> L. sens. lat.) Risk of an increase in potential invasion of exotic species is expected to be minimal and will be managed further via the mitigation measures listed in section 7. Loss of HBTs & Removal of dead wood and dead trees Increase to this KTP on relevant listed entities is considered minimal given that just ten (10) HBTs are estimated to be removed. Low occurrences of standing dead wood would be removed whilst

BC Act	Question	Response
		 woody debris would be incorporated into the walking track where possible. Infection of frogs by amphibian chytrid causing the disease chytridiomycosis. Chytrid is known to occur within the Study area and was observed in a Tusked Frog during the field survey. Potential spread from chytrid will be minimised through mitigation measures presented in section 7.
Conclusion	Is there likely to be a significant impact?	No. A significant impact is not likely.

Scientific name	Common name	BC Status	Ecology and habitat	Potential impacts
Haliaeetus leucogaster	White-bellied Sea-Eagle	V	Distributed along the coastline of mainland Australia and Tasmania, extending inland along some of the larger waterways, especially in eastern Australia. Freshwater swamps, rivers, lakes, reservoirs, billabongs, saltmarsh and sewage ponds and coastal waters. Terrestrial habitats include coastal dunes, tidal flats, grassland, heathland, woodland, forest and urban areas.	Direct impact of up to 3.56 ha of potential foraging habitat. Indirect impacts during construction and operation through pedestrian activity and maintenance.
Hieraaetus morphnoides	Little Eagle	V	Throughout the Australian mainland, with the exception of the most densely-forested parts of the Dividing Range escarpment. Open eucalypt forest, woodland or open woodland, including sheoak or Acacia woodlands and riparian woodlands of interior NSW.	Direct impact of up to 3.56 ha of potential foraging habitat. Indirect impacts during construction and operation through pedestrian activity and maintenance.

Raptors impact profile

Test of significance – Raptors

BC Act	Question	Response
7.3.1 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	Activities likely to have an adverse effect on the life cycle of White-bellied Sea-Eagle and Little Eagle include fragmentation to foraging habitat and loss of nesting/perching and sheltering habitat. White-bellied Sea-Eagle and Little Eagle considered are likely to occur in a range of habitats across the Study area. The proposed track will disturb potential foraging habitat for these species, no stick nests indicating breeding were identified across the Study area. Impacts to foraging habitat is primarily linear and will remain directly adjacent to the Study area and in the broader NP estate. According to the SVTM, it is estimated approximately >5,000 ha of potential suitable habitat occurs in the adjacent NP estate. Given this context, it is considered unlikely that the removal of this habitat will cause an adverse effect on the life cycle of these species such that a viable local population of the species is likely to be placed at risk of extinction. To further mitigate the effects of the activity on the life cycle of this species, pre-clearing measures for potential habitat features (most specifically stick nests) will be conducted at camp sites to reduce instances of possible mortality (section 7).
7.3.1 b) i	In the case of an endangered ecological community or critically endangered ecological community, whether the proposed development or activity:	N/A

BC Act	Question	Response
	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	
7.3.1 b) ii	In the case of an endangered ecological community or critically endangered ecological community: Whether the proposed development or activity 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.	N/A.
7.3.1 c) i	In relation to the habitat of a threatened species or ecological community: The extent to which habitat is likely to be removed or modified as a result of the proposed development or activity	The extent of potential habitat to be removed is estimated to occur up to 3.56 ha for these species. This is mostly restricted to groundcover + vines, woody midstorey and canopy species (<15cm DBH) for the linear walking track. Limited modification to areas of adjoining habitat could occur indirectly during construction and operation.
7.3.1 c) ii	In relation to the habitat of a threatened species or ecological community: 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	The habitat for these mobile species will not be fragmented by the activity as the resultant disturbance will be a permeable linear barrier in a discrete location that will not affect connectivity between populations.
7.3.1 c) iii	In relation to the habitat of a threatened species or ecological community: The importance of the habitat to be removed, modified, fragmented or isolated to the long-term survival of the species, population or ecological community in the Locality.	The potential habitat proposed to be removed/disturbed for construction and operation of the DEGW represents a primarily linear area of potential habitat available to a local population of these species. Given that this habitat extends into the Study area and the broader NP estate (approximately >5,000ha), the removal and modification is not likely to impact the long-term survival of these species.
7.3.1 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).	No Areas of Outstanding Biodiversity Value occur on or near the Study area.
7.3.1 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.	 KTP relevant to the proposed activity and outcomes are listed below. Alteration to the natural flow regimes of rivers and streams and their floodplains and wetlands Increases to this KTP is predicted to be minor, major streams will incorporate suspended bridges while lower order streams crossings may contain steppingstones. Clearing of native vegetation.

BC Act	Question	Response
		 Increase to this KTP on relevant listed entities is estimated to be 3.56 ha of native vegetation of a predominantly linear footprint.
		e invasion and establishment of exotic vines and scramblers & Invasion of native plant communities by exotic perennial grasses & Invasion, establishment and spread of Lantana (<i>Lantana camara</i> L. sens. lat.)
		 Risk of an increase in potential invasion of exotic species is expected to be minimal and will be managed further via the mitigation measures listed in section 7.
		 Loss of HBTs & Removal of dead wood and dead trees Increase to this KTP on relevant listed entities is considered minimal given that just ten (10) HBTs are estimated to be removed. Low occurrences of standing dead wood would be removed whilst woody debris would be incorporated into the walking track where possible.
		 Infection of frogs by amphibian chytrid causing the disease chytridiomycosis. Chytrid is known to occur within the Study area and was observed in a Tusked Frog during the field survey. Potential spread from chytrid will be minimised through mitigation measures presented in section 7.
Conclusion	Is there likely to be a significant impact?	No. A significant impact is not likely.

Scientific name	Common name	BC Status	Ecology and habitat	Potential impacts
Ptilinopus magnificus	Wompoo Fruit- Dove	V	In NSW, occurs south along coast and coastal ranges to the Hunter River. Rainforest, low-elevation moist eucalypt forest and brush box forests.	Disturbance of up to 9.27 ha of potential habitat containing fruiting trees which may present foraging and nesting habitat for this species. Incidental mortality during construction. Ongoing indirect disturbance of adjacent habitat from increased human interaction and maintenance.
Ptilinopus regina	Rose-crowned Fruit-Dove	V	In NSW, found on coast and ranges north from Newcastle. Vagrants are occasionally found further south to Victoria. Sub-tropical and dry rainforest, moist eucalypt forest and swamp forest, where fruit is plentiful.	Disturbance of up to 9.27 ha of potential habitat containing fruiting trees which may present foraging and nesting habitat for this species. Incidental mortality during construction. Ongoing indirect disturbance of adjacent habitat from increased human interaction and maintenance.
Ptilinopus superbus	Superb Fruit- Dove	V	Principally from north-eastern Qld to north-eastern NSW. Further south, it is confined to pockets of suitable habitat, and occurs as far south as Moruya. Rainforest and closed forests. May also forage in eucalypt or acacia woodland where there are fruit-bearing trees.	Disturbance of up to 9.27 ha of potential habitat containing fruiting trees which may present foraging and nesting habitat for this species. Incidental mortality during construction. Ongoing indirect disturbance of adjacent habitat from increased human interaction and maintenance.

Fruit-Dove impact profile

Test of significance – Fruit-Doves

BC Act	Question	Response
7.3.1 a)	In the case of a threatened species: whether the proposed development or activity is likely to have an adverse	Activities likely to have an adverse effect on the life cycle of Fruit-Doves include the clearance of habitat and loss of nesting/perching and sheltering habitat.
	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 activity will disturb potential foraging habitat that contains fruiting trees and potential nesting/perches for these species. However, potential breeding and foraging habitat will remain within the Study area adjacent to the impact area and in the broader NP estate. According to the SVTM, it is estimated
		approximately >17,000 ha of potential suitable habitat for these species occurs in the adjacent NP estate. Given the above context and primarily linear design of the activity it is considered

unlikely that the activity will have an adverse effect on the life

BC Act	Question	Response
		cycle of this species such that a viable local population of the species is likely to be placed at risk of extinction.
		To further mitigate the effect of the activity on the lifecycle of these species pre-clearing will be conducted to reduce instances of possible mortality and disruptions to lifecycle during nesting periods (section 7).
7.3.1 b) i	In the case of an endangered ecological community or critically endangered ecological community, whether the proposed development or activity: 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	N/A
7.3.1 b) ii	In the case of an endangered ecological community or critically endangered ecological community: Whether the proposed development or activity 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.	N/A.
7.3.1 c) i	In relation to the habitat of a threatened species or ecological community: The extent to which habitat is likely to be removed or modified as a result of the proposed development or activity	The extent of disturbance is up to 9.27 ha for these species. This is mostly restricted to groundcover + vines, woody midstorey and canopy species (<15cm DBH) for the linear walking track. Limited modification to areas of adjoining habitat could occur indirectly during construction and operation.
7.3.1 c) ii	In relation to the habitat of a threatened species or ecological community: 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	The habitat for these mobile species will not be fragmented by the activity as the resultant disturbance will be a permeable linear barrier in a discrete location that will not affect connectivity between populations.
7.3.1 c) iii	In relation to the habitat of a threatened species or ecological community: The importance of the habitat to be removed, modified, fragmented or isolated to the long-term survival of the species, population or ecological community in the Locality.	The potential habitat proposed to be removed/disturbed for construction and operation of the DEGW represents a primarily linear area of potential habitat available to a local population of these species. Given that this habitat extends into the Study area and the broader NP estate (>17,000ha), the removal and modification is not likely to impact the long-term survival of these species.
7.3.1 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).	No Areas of Outstanding Biodiversity Value occur on or near the Study area.

BC Act	Question	Response
BC Act 7.3.1 e)	Question 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.	 Response KTP relevant to the proposed activity and outcomes are listed below. Alteration to the natural flow regimes of rivers and streams and their floodplains and wetlands Increases to this KTP is predicted to be minor, major streams will incorporate suspended bridges while lower order streams crossings may contain steppingstones. Clearing of native vegetation. Increase to this KTP on relevant listed entities is estimated to be 9.27 ha of native vegetation of a predominantly linear footprint. Invasion and establishment of exotic vines and scramblers & Invasion of native plant communities by exotic perennial grasses & Invasion, establishment and spread of Lantana (<i>Lantana camara</i> L. sens. lat.) Risk of an increase in potential invasion of exotic species is expected to be minimal and will be managed further via the mitigation measures listed in section 7. Loss of HBTs & Removal of dead wood and dead trees on Increase to this KTP on relevant listed entities is considered minimal given that just ten (10) HBTs are estimated to be removed. Low occurrences of standing dead wood would be removed whilst woody debris would be incorporated into the walking track where possible. Infection of frogs by amphibian chytrid causing the disease chytridiomycosis. Chytrid is known to occur within the Study area and was observed in a Tusked Frog during the field survey. Potential spread from chytrid will be minimised to be removend to be removed.
Conclusion	Is there likely to be a significant impact?	No. A significant impact is not likely.

Scientific name	Common name	BC	Ecology and habitat	Potential impacts
Glossopsitta pusilla	Little Lorikeet	V	In NSW, found from the coast westward as far as Dubbo and Albury. Dry, open eucalypt forests and woodlands, including remnant woodland patches and roadside vegetation.	Disturbance of up to 3.56 ha of potential forest habitat which may present foraging for this species and eight (8) HBTs that may provide roosting habitat. Incidental mortality during construction. Ongoing indirect disturbance of adjacent habitat from increased human interaction and maintenance.
Tyto novaehollandiae	Masked Owl	V	Recorded over approximately 90% of NSW, excluding the most arid north-western corner. Most abundant on the coast but extends to the western plains. Dry eucalypt forests and woodlands from sea level to 1100 m.	Disturbance of up to 9.27 ha of potential forest habitat which may present foraging for this species and one (1) HBTs that may provide roosting habitat. Incidental mortality during construction. Ongoing indirect disturbance of adjacent habitat from increased human interaction and maintenance.
Tyto tenebricosa	Sooty Owl	V	Occupies the easternmost one- eighth of NSW, occurring on the coast, coastal escarpment and eastern tablelands. Dry rainforest, subtropical and warm temperate rainforest, as well as moist eucalypt forests.	Disturbance of up to 9.27 ha of potential forest habitat which may present foraging for this species and one (1) HBTs that may provide roosting habitat. Incidental mortality during construction. Ongoing indirect disturbance of adjacent habitat from increased human interaction and maintenance.
Ninox strenua	Powerful Owl	V	In NSW, it is widely distributed throughout the eastern forests from the coast inland to tablelands, with scattered records on the western slopes and plains. Woodland, open sclerophyll forest, tall open wet forest and rainforest.	Disturbance of up to 9.27 ha of potential forest habitat which may present foraging for this species and one (1) HBTs that may provide roosting habitat. Incidental mortality during construction. Ongoing indirect disturbance of adjacent habitat from increased human interaction and maintenance.

Hollow-dependent birds – impact profile

Scientific name	Common name	BC Status	Ecology and habitat	Potential impacts
Calyptorhynchus lathami	Glossy Black- Cockatoo	V	The species is uncommon although widespread throughout suitable forest and woodland habitats, from the central Queensland coast to East Gippsland in Victoria, and inland to the southern tablelands and central western plains of NSW, with a small population in the Riverina. Inhabits open forest and woodlands of the coast and the Great Dividing Range where stands of sheoak occur.	Disturbance of up to 3.56 ha of potential forest habitat which may present foraging for this species and up to six (6) HBTs that may provide roosting habitat. Incidental mortality during construction. Ongoing indirect disturbance of adjacent habitat from increased human interaction and maintenance.

Test of significance – Hollow-dependant birds

BC Act	Question	Response
7.3.1 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	Activities likely to have an adverse effect on the life cycle of Hollow-dependant birds include fragmentation to foraging habitat and loss of HBTs. Hollow-dependant birds considered are likely to occur in a range of habitats across the Study area. The proposed track will disturb potential foraging and remove a small amount of potential roosting habitat for these birds. This habitat is directly adjacent to similar high-quality habitat within the broader NP estate. According to the SVTM, it is estimated approximately >5,000 ha of Wet Sclerophyll Forest and >12,000 ha of Rainforest occurs in the adjacent NP estate, providing suitable habitat for these species. Given the primarily linear design of the activity it is considered unlikely that the removal of this habitat will cause an adverse effect on the life cycle of these species such that a viable local population of the species is likely to be placed at risk of extinction. To further mitigate the effects of the activity on the life cycle of this species, pre-clearing measures for potential habitat features (most specifically HBTs) will be conducted to reduce instances of possible mortality (section 7).
7.3.1 b) i	In the case of an endangered ecological community or critically endangered ecological community, whether the proposed development or activity: 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	N/A
7.3.1 b) ii	In the case of an endangered ecological community or critically endangered ecological community: Whether the proposed development or activity is likely to substantially and adversely modify the composition of	N/A.

BC Act	Question	Response
	the ecological community such that its local occurrence is likely to be placed at risk of extinction.	
7.3.1 c) i	In relation to the habitat of a threatened species or ecological community: The extent to which habitat is likely to be removed or modified as a result of the proposed development or activity	The extent of disturbance is up to 9.27 ha for the forest owl species and 3.56 ha for Little Lorikeet and Glossy Black Cockatoo. This is mostly restricted to groundcover + vines, woody midstorey and canopy species (<15cm DBH) for the linear walking track. Up to eight (8) HBTs with suitably sized hollows for roosting is estimated to be removed for Little Lorikeet, six (6) for Glossy Black Cockatoo, and one (1) for the forest owls. that may provide roosting habitat will be removed. Limited modification to areas of adjoining habitat could occur indirectly during construction and operation.
7.3.1 c) ii	In relation to the habitat of a threatened species or ecological community: 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	The habitat for these mobile species will not be fragmented by the activity as the resultant disturbance will be a permeable linear barrier in a discrete location that will not affect connectivity between populations.
7.3.1 c) iii	In relation to the habitat of a threatened species or ecological community: The importance of the habitat to be removed, modified, fragmented or isolated to the long-term survival of the species, population or ecological community in the Locality.	The potential habitat proposed to be removed/disturbed for construction and operation of the DEGW represents a primarily linear area of potential habitat available to a local population of these species. Given that this habitat extends into the Study area and the broader NP estate, the removal and modification is not likely to impact the long-term survival of these species.
7.3.1 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).	No Areas of Outstanding Biodiversity Value occur on or near the Study area.
7.3.1 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.	 KTP relevant to the proposed activity and outcomes are listed below. Alteration to the natural flow regimes of rivers and streams and their floodplains and wetlands Increases to this KTP is predicted to be minor, major streams will incorporate suspended bridges while lower order streams crossings may contain steppingstones. Clearing of native vegetation. Increase to this KTP on relevant listed entities is estimated to be 9.27 ha of native vegetation of a predominantly linear footprint. Invasion and establishment of exotic vines and scramblers & Invasion of native plant communities by

BC Act	Question	Response
		 exotic perennial grasses & Invasion, establishment and spread of Lantana (<i>Lantana camara</i> L. sens. lat.) Risk of an increase in potential invasion of exotic species is expected to be minimal and will be managed further via the mitigation measures listed in section 7.
		 Loss of HBTs & Removal of dead wood and dead trees Increase to this KTP on relevant listed entities is considered minimal given that just ten (10) HBTs are estimated to be removed. Low occurrences o standing dead wood would be removed whilst woody debris would be incorporated into the walking track where possible.
		 Infection of frogs by amphibian chytrid causing the disease chytridiomycosis. Chytrid is known to occur within the Study area and was observed in a Tusked Frog during the field survey. Potential spread from chytrid will be minimised through mitigation measures presented in section 7.
Conclusion	Is there likely to be a significant impact?	No. A significant impact is not likely.

B5 Threatened Microbats

Cave-dwelling bats impact profile

Scientific name	Common name	BC Status	Ecology and habitat	Potential impacts
Miniopterus australis	Little Bentwing- bat	V	East coast and ranges south to Wollongong in NSW. Moist eucalypt forest, rainforest, vine thicket, wet and dry sclerophyll forest, Melaleuca swamps, dense coastal forests and banksia scrub.	Direct impact of up to 9.34 ha of potential foraging habitat. Indirect impacts during construction and operation through pedestrian activity and maintenance. No breeding habitat is predicted to be directly impacted.
Miniopterus orianae oceanensis	Large Bent- winged Bat	V	Occur along the east and north- west coasts of Australia. Caves are the primary roosting habitat, but also use derelict mines, storm-water tunnels, buildings and other man-made structures.	Direct impact of up to 9.34 ha of potential foraging habitat. Indirect impacts during construction and operation through pedestrian activity and maintenance. No breeding habitat is predicted to be directly impacted.
Chalinolobus dwyeri	Large-eared Pied Bat		Found mainly in areas with extensive cliffs and caves, from Rockhampton in Queensland south to Bungonia in the NSW Southern Highlands. It is generally rare with a very patchy distribution in NSW. There are scattered records from the New England Tablelands and North West Slopes.	Direct impact of up to 9.34 ha of potential foraging habitat. Indirect impacts during construction and operation through pedestrian activity and maintenance. No breeding habitat is predicted to be directly impacted.

Test of significance - Cave-dwelling bats

BC Act	Question	Response
7.3.1 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	Activities likely to have an adverse effect on the life cycle of Microbats include loss of breeding habitat, foraging habitat and fragmentation. The activity would result in the disturbance of potential foraging habitat for these species, no breeding habitat will be disturbed. The foraging habitat proposed to be impacted is directly adjacent to similar high-quality habitat available for these species within the broader NP estate. According to the SVTM, it is estimated approximately >17,000 ha of suitable habitat occurs in the adjacent NP estate. Given the primarily linear design of the activity it is considered unlikely that the removal of this habitat will cause an adverse effect on the life cycle of these species such that a viable local population of the species is likely to be placed at risk of extinction.
7.3.1 b) i	In the case of an endangered ecological community or critically endangered	N/A

BC Act	Question	Response
	ecological community, whether the proposed development or activity:	
	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	
7.3.1 b) ii	In the case of an endangered ecological community or critically endangered ecological community:	N/A.
	Whether the proposed development or activity 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.	
7.3.1 c) i	In relation to the habitat of a threatened species or ecological community:	The extent of disturbance to foraging habitat is up to 9.34 ha for these species. This is mostly restricted to groundcover + vines, woody midstorey and canopy species (<15cm DBH) for the linear
	The extent to which habitat is likely to be removed or modified as a result of the proposed development or activity	walking track. Limited modification to areas of adjoining habitat could occur indirectly during construction and operation.
7.3.1 c) ii	In relation to the habitat of a threatened species or ecological community: 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	The habitat for these mobile species will not be fragmented by the activity as the resultant disturbance will be a permeable linear barrier in a discrete location that will not affect connectivity between populations.
7.3.1 c) iii	In relation to the habitat of a threatened species or ecological community: The importance of the habitat to be removed, modified, fragmented or isolated to the long-term survival of the species, population or ecological community in the Locality.	The potential habitat proposed to be removed/disturbed for construction and operation of the DEGW represents a primarily linear area of potential habitat available to a local population of these species. Given that this habitat extends into the Study area and the broader NP estate (>17,000 ha of potential suitable habitat), the removal and modification is not likely to impact the long-term survival of these species.
7.3.1 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).	No Areas of Outstanding Biodiversity Value occur on or near the Study area.
7.3.1 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.	 KTP relevant to the proposed activity and outcomes are listed below. Alteration to the natural flow regimes of rivers and streams and their floodplains and wetlands Increases to this KTP is predicted to be minor, major streams will incorporate suspended bridges

BC Act	Question	Respons	e
			while lower order streams crossings may contain steppingstones.
		•	Clearing of native vegetation.
			 Increase to this KTP on relevant listed entities is estimated to be 9.34 ha of native vegetation of a predominantly linear footprint.
		•	Invasion and establishment of exotic vines and scramblers & Invasion of native plant communities by exotic perennial grasses & Invasion, establishment and spread of Lantana (<i>Lantana camara</i> L. sens. lat.)
			 Risk of an increase in potential invasion of exotic species is expected to be minimal and will be managed further via the mitigation measures listed in section 7.
		•	Loss of HBTs & Removal of dead wood and dead trees
			 Increase to this KTP on relevant listed entities is considered minimal given that just ten (10) HBTs are estimated to be removed. Low occurrences of standing dead wood would be removed whilst woody debris would be incorporated into the walking track where possible.
		•	Infection of frogs by amphibian chytrid causing the disease chytridiomycosis. Chytrid is known to occur within the Study area and was observed in a Tusked Frog during the field survey. Potential spread from chytrid will be minimised through mitigation measures presented in section 7.
Conclusion	Is there likely to be a significant impact?	No. A sig	nificant impact is not likely.

Scientific name	Common name	BC Status	Ecology and habitat	Potential impacts
Falsistrellus tasmaniensis	Eastern False Pipistrelle	V	South-east coast and ranges of Australia, from southern Queensland to Victoria and Tasmania. Prefers moist habitats. Generally, roosts in eucalypt hollows, but has also been found under loose bark on trees or in buildings.	Disturbance of up to 9.27 ha of potential forest habitat which may present foraging for this species and ten (10) HBTs that may provide roosting habitat. Incidental mortality during construction. Ongoing indirect disturbance of adjacent habitat from increased human interaction and maintenance.
Nyctophilus bifax	Eastern Long- eared Bat	V	Cape York to far north-east corner of NSW. Lowland subtropical rainforest and wet	Disturbance of up to 9.27 ha of potential forest habitat which may present foraging for this

Predominantly abiotic habitat roosting bats impact profile

Scientific name	Common name	BC Status	Ecology and habitat	Potential impacts
			and swamp eucalypt forest, extending into adjacent moist eucalypt forest. Roosts in tree hollows, the hanging foliage of palms, in dense clumps of foliage of rainforest trees, under bark and in shallow depressions on trunks and branches, among epiphytes, in the roots of strangler figs, among dead fronds of tree ferns and less often in buildings.	species and ten (10) HBTs that may provide roosting habitat. Additional impacts to other roosts such as palm fronds and bark will also occur. Incidental mortality during construction. Ongoing indirect disturbance of adjacent habitat from increased human interaction and maintenance.
Saccolaimus flaviventris	Yellow-bellied Sheathtail-bat	V	Wide-ranging species found across northern and eastern Australia. Roosts singly or in groups of up to six, in tree hollows and buildings.	Disturbance of up to 9.34 ha of potential forest habitat which may present foraging for this species and ten (10) HBTs that may provide roosting habitat. Incidental mortality during construction. Ongoing indirect disturbance of adjacent habitat from increased human interaction and maintenance.
Scoteanax rueppellii	Greater Broad- nosed Bat	V	Found mainly in the gullies and river systems that drain the Great Dividing Range. Species usually roosts in tree hollows, it has also been found in buildings.	Disturbance of up to 0.80 ha of potential forest habitat which may present foraging for this species and ten (10) HBTs that may provide roosting habitat. Incidental mortality during construction. Ongoing indirect disturbance of adjacent habitat from increased human interaction and maintenance

Test of significance - Predominantly abiotic habitat roosting bats

BC Act	Question	Response
7.3.1 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	Activities likely to have an adverse effect on the life cycle of Microbats include loss of breeding habitat, foraging habitat and fragmentation. The activity would result in the disturbance of potential foraging habitat for these species, and a minor amount of potential roosting habitat. Foraging and roosting habitat proposed to be impacted is directly adjacent to similar high-quality habitat available for these species within the broader NP estate. According to the SVTM, it is estimated approximately >17,000 ha of potential suitable habitat for these species occur in the adjacent NP estate Given the primarily linear design of the activity it is considered unlikely that the removal of this habitat will cause an adverse effect on the life cycle of these species such that a viable local population of the species is likely to be placed at risk of extinction.

BC Act	Question	Response
7.3.1 b) i	In the case of an endangered ecological community or critically endangered ecological community, whether the proposed development or activity: 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	N/A
7.3.1 b) ii	In the case of an endangered ecological community or critically endangered ecological community: Whether the proposed development or activity 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.	N/A
7.3.1 c) i	In relation to the habitat of a threatened species or ecological community: The extent to which habitat is likely to be removed or modified as a result of the proposed development or activity	The extent of disturbance to foraging habitat is up to 9.34 ha for these species. This is mostly restricted to groundcover + vines, woody midstorey and canopy species (<15cm DBH) for the linear walking track. It is estimated that ten (10) HBTs that provide roosting habitat for these species will occur. Additional abiotic habitats that provide roosting habitat for Eastern Long-eared Bat may also occur incidentally during construction. Limited modification to areas of adjoining habitat could occur indirectly during construction and operation.
7.3.1 c) ii	In relation to the habitat of a threatened species or ecological community: 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	The habitat for these mobile species will not be fragmented by the activity as the resultant disturbance will be a permeable linear barrier in a discrete location that will not affect connectivity between populations.
7.3.1 c) iii	In relation to the habitat of a threatened species or ecological community: The importance of the habitat to be removed, modified, fragmented or isolated to the long-term survival of the species, population or ecological community in the Locality.	The potential habitat proposed to be removed/disturbed for construction and operation of the DEGW represents a primarily linear area of potential habitat available to a local population of these species. Given that this habitat extends into the Study area and the broader NP estate (approximately >17,000 ha), the removal and modification is not likely to impact the long-term survival of these species.
7.3.1 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).	No Areas of Outstanding Biodiversity Value occur on or near the Study area.
7.3.1 e)	Whether the proposed development or activity is or is part of a key threatening	KTP relevant to the proposed activity and outcomes are listed below.

BC Act	Question	Response
	process or is likely to increase the impact of a key threatening process.	 Alteration to the natural flow regimes of rivers and streams and their floodplains and wetlands Increases to this KTP is predicted to be minor, major streams will incorporate suspended bridges while lower order streams crossings may contain steppingstones.
		Clearing of native vegetation.
		 Increase to this KTP on relevant listed entities is estimated to be 9.34 ha of native vegetation of a predominantly linear footprint.
		 Invasion and establishment of exotic vines and scramblers & Invasion of native plant communities by exotic perennial grasses & Invasion, establishment and spread of Lantana (Lantana camara L. sens. lat.)
		 Risk of an increase in potential invasion of exotic species is expected to be minimal and will be managed further via the mitigation measures listed in section 7.
		• Loss of HBTs & Removal of dead wood and dead trees
		 Increase to this KTP on relevant listed entities is considered minimal given that just ten (10) HBTs are estimated to be removed. Low occurrences of standing dead wood would be removed whilst woody debris would be incorporated into the walking track where possible.
		 Infection of frogs by amphibian chytrid causing the disease chytridiomycosis.
		 Chytrid is known to occur within the Study area and was observed in a Tusked Frog during the field survey. Potential spread from chytrid will be minimised through mitigation measures presented in section 7.
Conclusion	Is there likely to be a significant impact?	No. A significant impact is not likely.

B6 Threatened Insects

Phyllodes imperialis - southern subspecies (Pink Underwing Moth) impact profile

Scientific name	Common name	BC Status	Ecology and habitat	Potential impacts
Phyllodes imperialis	Pink Underwing Moth	Ε	In NSW it is known to occur in a small number of localities from the QLD border to Wardell, and there is a disjunct population in the Bellingen area. Subtropical rainforest below about 600 m elevation; breeding habitat is	Direct impact of up to 0.03 ha of suitable subtropical rainforest habitat where the host plant <i>Carronia multisepalea</i> was identified.

Scientific name	Common name	BC Status	Ecology and habitat	Potential impacts
			restricted to areas where the caterpillar's food plant <i>Carronia multisepalea</i> occurs.	

Test of significance - Phyllodes imperialis southern subspecies (Pink Underwing Moth)

BC Act	Question	Response
7.3.1 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	Activities likely to have an adverse effect on the life cycle of Koala include incidental mortality of larvae during construction phase and loss of habitat and fragmentation. Pink Underwing Moth food plant, <i>Carronia multisepalea</i> was identified in abundance across the Study area below 600 m in elevation. Given the primarily linear design of the activity and the extent of the suitable habitat within the locality, the disturbance is unlikely to have an adverse effect on the life cycle of this species such that a viable local population of the species is likely to be placed at risk of extinction. To further mitigate the effects of the activity on the life cycle of this species, where practical no <i>Carronia multisepalea</i> will be removed (section 7).
7.3.1 b) i	In the case of an endangered ecological community or critically endangered ecological community, whether the proposed development or activity: 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	N/A
7.3.1 b) ii	In the case of an endangered ecological community or critically endangered ecological community: Whether the proposed development or activity 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.	N/A
7.3.1 c) i	In relation to the habitat of a threatened species or ecological community: The extent to which habitat is likely to be removed or modified as a result of the proposed development or activity	The extent of disturbance is 0.03 ha of potential habitat within a large contiguous patch within the NP estate. Limited modification to areas of adjoining habitat could occur indirectly during construction and operation.
7.3.1 c) ii	In relation to the habitat of a threatened species or ecological community: Whether an area of habitat is likely to become fragmented or isolated from	The habitat for these mobile species will not be fragmented by the activity as the resultant disturbance will be a permeable linear barrier in a discrete location that will not affect connectivity between populations.

BC Act	Question	Response
	other areas of habitat as a result of the proposed development or activity	
7.3.1 c) iii	In relation to the habitat of a threatened species or ecological community: The importance of the habitat to be removed, modified, fragmented or isolated to the long-term survival of the species, population or ecological community in the Locality.	The potential habitat proposed to be removed/disturbed for construction and operation of the DEGW represents a primarily linear area of potential habitat available to a local population of these species. Given that this habitat extends into the Study area and the broader NP estate, the removal and modification is not likely to impact the long-term survival of these species.
7.3.1 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).	No Areas of Outstanding Biodiversity Value occur on or near the Study area.
7.3.1 e)	Whether the proposed development or activity is or is part of a key threatening	KTP relevant to the proposed activity and outcomes are listed below.
	process or is likely to increase the impact of a key threatening process.	 Alteration to the natural flow regimes of rivers and streams and their floodplains and wetlands
		 Increases to this KTP is predicted to be minor, major streams will incorporate suspended bridges while lower order streams crossings may contain steppingstones.
		Clearing of native vegetation.
		 Increase to this KTP on relevant listed entities is estimated to be 9.27 ha of native vegetation of a predominantly linear footprint.
		 Invasion and establishment of exotic vines and scramblers & Invasion of native plant communities by exotic perennial grasses & Invasion, establishment and spread of Lantana (Lantana camara L. sens. lat.)
		 Risk of an increase in potential invasion of exotic species is expected to be minimal and will be managed further via the mitigation measures listed in section 7.
		• Loss of HBTs & Removal of dead wood and dead trees
		 Increase to this KTP on relevant listed entities is considered minimal given that just ten (10) HBTs are estimated to be removed. Low occurrences of standing dead wood would be removed whilst woody debris would be incorporated into the walking track where possible.
		 Infection of frogs by amphibian chytrid causing the disease chytridiomycosis.
		 Chytrid is known to occur within the Study area and was observed in a Tusked Frog during the field survey.

BC Act	Question	Response
		Potential spread from chytrid will be minimised through mitigation measures presented in section 7.
Conclusion	Is there likely to be a significant impact?	No. A significant impact is not likely.

B7 Threatened Mammals

Pteropus poliocephalus (Grey-headed Flying-fox) impact profile

Scientific name	Common name	BC Status	Ecology and habitat	Potential impacts
Pteropus poliocephalus	Grey-headed Flying-fox	V	Along the eastern coast of Australia, from Bundaberg in Qld to Melbourne in Victoria. Subtropical and temperate rainforests, tall sclerophyll forests and woodlands, heaths and swamps as well as urban gardens and cultivated fruit crops.	Direct impact of up to 9.27 ha of potential foraging habitat. No roosting habitat is expected to be impacted given no camps were observed within the Study area and surrounds.

Test of significance -	· Pteropus	poliocephalus	(Grey-headed	Flying-fox
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BC Act	Question	Response
7.3.1 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	Activities likely to have an adverse effect on the life cycle of Grey-headed Flying-fox (GHFF) include the fragmentation of habitat, and loss of roosting and foraging habitat. The activity would result in the disturbance of up to 9.27 ha of potential Grey-headed Flying-fox foraging habitat with this mostly being restricted to understory vegetation. No GHFF camps were identified within the Study area, and none were identified within the locality (DCCEEW 2015). Due to the minor impacts to foraging habitats and no impacts to breeding habitat the proposed activity is unlikely to have an adverse effect on the life cycle of these species such that a viable local population is likely to be placed at risk of extinction.
7.3.1 b) i	In the case of an endangered ecological community or critically endangered ecological community, whether the proposed development or activity: 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	N/A
7.3.1 b) ii	In the case of an endangered ecological community or critically endangered ecological community: Whether the proposed development or activity 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.	N/A.
7.3.1 c) i	In relation to the habitat of a threatened species or ecological community:	The extent of disturbance to foraging habitat is up to 9.27 ha for these species. This is mostly restricted to groundcover + vines, woody midstorey and canopy species (<15cm DBH) for the linear walking track. Limited modification to areas of adjoining habitat could occur indirectly during construction and operation.

BC Act	Question	Response
	The extent to which habitat is likely to be removed or modified as a result of the proposed development or activity	
7.3.1 c) ii	In relation to the habitat of a threatened species or ecological community: 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	Potential GHFF foraging habitat within Study area and broader NP estate will not be fragmented by the walking track as any resultant disturbance will be permeable linear barrier in a discrete location that will not affect physical or functional connectivity between populations.
7.3.1 c) iii	In relation to the habitat of a threatened species or ecological community: The importance of the habitat to be removed, modified, fragmented or isolated to the long-term survival of the species, population or ecological community in the Locality.	The potential foraging habitat to be removed is not expected to be important for the long-term survival of a population of GHFF given that most of the potential habitat has previously been disturbed, no habitat containing camps will be removed, and a larger portion of the potential habitat will remain within the Study area and broader NP estate.
7.3.1 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).	No Areas of Outstanding Biodiversity Value occur on or near the site.
7.3.1 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.	 KTP relevant to the proposed activity and outcomes are listed below. Alteration to the natural flow regimes of rivers and streams and their floodplains and wetlands Increases to this KTP is predicted to be minor, major streams will incorporate suspended bridges while lower order streams crossings may contain steppingstones. Clearing of native vegetation. Increase to this KTP on relevant listed entities is estimated to be 9.27 ha of native vegetation of a predominantly linear footprint. Invasion and establishment of exotic vines and scramblers & Invasion of native plant communities by exotic perennial grasses & Invasion, establishment and spread of Lantana (<i>Lantana camara</i> L. sens. lat.) Risk of an increase in potential invasion of exotic species is expected to be minimal and will be managed further via the mitigation measures listed in section 7.

BC Act	Question	Response
		 Increase to this KTP on relevant listed entities is considered minimal given that just ten (10) HBTs are estimated to be removed. Low occurrences of standing dead wood would be removed whilst woody debris would be incorporated into the walking track where possible. Infection of frogs by amphibian chytrid causing the disease chytridiomycosis. Chytrid is known to occur within the Study area and was observed in a Tusked Frog during the field survey. Potential spread from chytrid will be minimised through mitigation measures presented in section 7.
Conclusion	Is there likely to be a significant impact?	No. A significant impact is not likely.

Hollow dependent mammals - *Cercartetus nanus* (Eastern Pygmy-possum), *Dasyurus maculatus* (Spotted-tailed Quoll) *Petaurus australis* (Yellow-bellied Glider), *Petauroides volans* (Southern Greater Glider) and *Phascogale tapoatafa* (Brushtailed Phascogale) impact profile.

Scientific name	Common name	BC Status	Ecology and habitat	Potential impacts
Cercartetus nanus	Eastern Pygmy- possum	V	In NSW it extents from the coast inland as far as the Pilliga, Dubbo, Parkes and Wagga Wagga on the western slopes. Rainforest, sclerophyll forest (including Box-Ironbark), woodland and heath. Feeds largely on nectar and pollen collected from banksias, eucalypts and bottlebrushes; an important pollinator of heathland plants such as banksias; soft fruits are eaten when flowers are unavailable.	Disturbance of up to 9.34 ha of foraging habitat. Removal of eight (8) HBTs and disturbance to LWD that may provide shelter habitat. Incidental mortality during construction. Ongoing disturbance of adjacent habitat from increased human interaction and maintenance.
Dasyurus maculatus	Spotted-tailed Quoll	V	Found on the east coast of NSW, Tasmania, eastern Victoria and north-eastern Qld. Rainforest, open forest, woodland, coastal heath and inland riparian forest, from the sub-alpine zone to the coastline. HBTs, fallen logs, other animal burrows, small caves and rock outcrops are often used as den sites. A generalist predator with a preference for medium-sized (500g-5kg) mammals. Consumes a variety of prey, including gliders, possums, small wallabies, rats, birds, bandicoots, rabbits, reptiles and insects. Also eats carrion and takes domestic fowl.	Disturbance of up to 9.34 ha of foraging habitat. Removal of eight (8) HBTs and disturbance to LWD that may provide shelter habitat. Incidental mortality during construction. Ongoing disturbance of adjacent habitat from increased human interaction and maintenance.
Petauroides australis	Yellow-bellied Glider	V	Occurs in eastern Australia, in eucalypt forests and woodlands, where it has a broad distribution from around Proserpine in Queensland, south through NSW and the Australian Capital Territory into Victoria. Feed primarily on plant and insect exudates, including nectar, sap, honeydew and manna with pollen and insects providing protein. Den, often in family	Disturbance of up to 3.56 ha of foraging habitat. Removal of eight (8) HBTs that may provide shelter habitat. Incidental mortality during construction. Ongoing disturbance of adjacent habitat from increased human interaction and maintenance.

Scientific name	Common name	BC Status	Ecology and habitat	Potential impacts
			groups, in hollows of large trees.	
Petauroides volans	Southern Greater Glider	Ε	Occurs in eastern Australia, in eucalypt forests and woodlands, where it has a broad distribution from around Proserpine in Queensland, south through NSW and the Australian Capital Territory into Victoria. Feed primarily on plant and insect exudates, including nectar, sap, honeydew and manna with pollen and insects providing protein. Den, often in family groups, in hollows of large trees.	Disturbance of up to 3.56 ha of foraging habitat. Removal of eight (8) HBTs that may provide shelter habitat. Incidental mortality during construction. Ongoing disturbance of adjacent habitat from increased human interaction and maintenance.
Phascogale tapoatafa	Brush-tailed Phascogale	V	In NSW it is mainly found east of the Great Dividing Range although there are occasional records west of the divide. Dry sclerophyll open forest, heath, swamps, rainforest and wet sclerophyll forest. Feeds mostly on arthropods but will also eat other invertebrates, nectar and sometimes small vertebrates. Nest and shelter in tree hollows with entrances 2.5 - 4 cm wide and use many different hollows over a short time span.	Disturbance of up to 9.34 ha of foraging habitat. Removal of eight (8) HBTs that may provide shelter habitat. Incidental mortality during construction. Ongoing disturbance of adjacent habitat from increased human interaction and maintenance.

Test of significance - Hollow dependent mammals

BC Act	Question	Response
7.3.1 a)	In the case of a threatened species: whether the proposed development or activity is likely to have an adverse	Activities likely to have an adverse effect on the life cycle of hollow dependent mammals include incidental mortality during construction, loss of sheltering and foraging habitat.
	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	Suitable foraging habitat for all these species occurs within the Study area and is proposed for removal. Removal of suitable HBTs and disturbance to LWD that may provide shelter habitat for these species would also occur. However, potential breeding and foraging habitat will remain for all these species within the Study area and in the broader NP estate. According to the SVTM, it is estimated approximately >5,000 ha of Wet Sclerophyll Forest and >12,000 ha of Rainforest occurs in the
		adjacent NP estate, providing suitable habitat for these species. Given the above context and the primarily linear design of the activity it is considered unlikely that the activity will have an

adverse effect on the life cycle of this species such that a viable

BC Act	Question	Response
		local population of the species is likely to be placed at risk of extinction.
		To further mitigate the effect of the activity on the lifecycle of these species pre-clearing will be conducted to reduce instances of possible mortality (section 7).
7.3.1 b) i	In the case of an endangered ecological community or critically endangered ecological community, whether the proposed development or activity: 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	N/A
7.3.1 b) ii	In the case of an endangered ecological community or critically endangered ecological community: Whether the proposed development or activity 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.	N/A
7.3.1 c) i	In relation to the habitat of a threatened species or ecological community: The extent to which habitat is likely to be removed or modified as a result of the proposed development or activity	The activity will disturb up to an estimated 9.34 ha of potential foraging habitat to these species which is mostly restricted to groundcover + vines, woody midstorey and canopy species (<15cm DBH) for the linear walking track. Removal of up to eight (8) HBTs and disturbance to LWD will also occur. Limited modification to areas of adjoining habitat could occur indirectly during construction and operation.
7.3.1 c) ii	In relation to the habitat of a threatened species or ecological community: 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	Given the context of the activity and the mobility of these species the activity will not fragment or isolate an area of potential habitat.
7.3.1 c) iii	In relation to the habitat of a threatened species or ecological community: The importance of the habitat to be removed, modified, fragmented or isolated to the long-term survival of the species, population or ecological community in the Locality.	The potential habitat to be removed is not expected to be important for the long-term survival of a population of these species given that most of the potential habitat has previously been disturbed and a minor amount of sheltering features will be removed. A Large portion of potential habitat will remain within the Study area and broader NP estate.
7.3.1 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).	No Areas of Outstanding Biodiversity Value occur on or near the Study area.

BC Act	Question	Response		
BC Act 7.3.1 e)	Question 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.	Response KTP relevant to the proposed activity and outcomes are listed below. • Alteration to the natural flow regimes of rivers and streams and their floodplains and wetlands • Increases to this KTP is predicted to be minor, major streams will incorporate suspended bridges while lower order streams crossings may contain steppingstones. • Clearing of native vegetation. • Increase to this KTP on relevant listed entities is estimated to be 9.34 ha of native vegetation of a predominantly linear footprint. • Invasion and establishment of exotic vines and scramblers & Invasion of native plant communities by exotic perennial grasses & Invasion, establishment and spread of Lantana (<i>Lantana camara</i> L. sens. lat.) • Risk of an increase in potential invasion of exotic species is expected to be minimal and will be managed further via the mitigation measures listed in section 7. • Loss of HBTs & Removal of dead wood and dead trees • Increase to this KTP on relevant listed entities is considered minimal given that just ten (10) HBTs are estimated to be removed. Low occurrences of standing dead wood would be removed whilst woody debris would be incorporated into the walking track where possible. • Infection of frogs by amphibian chytrid causing the disease chytridiomycosis. • Chytrid is known to occur within the Study area and was observed in a Tusked Frog during the field survey. Potential spread from chytrid will be minimised		
Conclusion	Is there likely to be a significant impact?	No. A significant impact is not likely.		

Large mammals - Notamacropus parma (Parma Wallaby), Phascolarctos cinereus (Koala), Potorous tridactylus (Long-nosed Potoroo) and Thylogale stigmatica (Red-legged Pademelon) impact profile

Scientific name	Common name	BC Status	Ecology and habitat	Potential impacts
Notamacropus parma	Parma Wallaby	V	Their range is now confined to the coast and ranges of central and northern NSW from the Gosford district to south of the Bruxner Highway between Tenterfield and Casino. Preferred habitat is moist eucalypt forest with thick, shrubby understorey, often with nearby grassy areas, rainforest margins and occasionally drier eucalypt forest.	Disturbance of up to 9.27 ha of foraging habitat. Ongoing disturbance of adjacent habitat from increased human interaction and maintenance.
Phascolarctos cinereus	Koala	Ε	In NSW it mainly occurs on the central and north coasts with some populations in the west of the Great Dividing Range. There are sparse and possibly disjunct populations in the Bega District, and at several sites on the southern tablelands. Eucalypt woodlands and forests.	Disturbance of up to 3.56 ha of <i>Eucalyptus</i> forest that contains feed tree species. Ongoing disturbance of adjacent habitat from increased human interaction and maintenance.
Potorous tridactylus	Long-nosed Potoroo	V	In NSW it is generally restricted to coastal heaths and forests east of the Great Dividing Range, with an annual rainfall exceeding 760 mm. Coastal heaths and dry and wet sclerophyll forests.	Disturbance of up to 9.27 ha of suitable forest. Ongoing disturbance of adjacent habitat from increased human interaction and maintenance.
Thylogale stigmatica	Red-legged Pademelon	V	Patchily distributed along coastal and subcoastal eastern Australia south to the Watagan Mountains and the Wyong district in NSW. There are unconfirmed records from the western New England Tablelands (e.g. west of Emmaville). Inhabits forest with a dense understorey and ground cover, including rainforest, moist eucalypt forest and vine scrub	Disturbance of up to 9.27 ha of foraging habitat. Ongoing disturbance of adjacent habitat from increased human interaction and maintenance.

Test of significance – Large mammals
BC Act	Question	Response
7.3.1 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	Activities likely to have an adverse effect on the life cycle of these large mammals include loss of habitat and fragmentation. Suitable foraging and shelter habitat will remain for these species within the Study area and in the broader NP estate. According to the SVTM, it is estimated approximately >5,000 ha of Wet Sclerophyll Forest and >12,000 ha of Rainforest occurs in the adjacent NP estate, providing suitable habitat for these species. Given the primarily linear context of the activity and the extent of the habitat within the locality, the removal/disturbance of this habitat is unlikely to have an adverse effect on the life cycle of these species such that a viable local population of the species is likely to be placed at risk of extinction.
7.3.1 b) i	In the case of an endangered ecological community or critically endangered ecological community, whether the proposed development or activity: 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	N/A
7.3.1 b) ii	In the case of an endangered ecological community or critically endangered ecological community: Whether the proposed development or activity 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.	N/A
7.3.1 c) i	In relation to the habitat of a threatened species or ecological community: The extent to which habitat is likely to be removed or modified as a result of the proposed development or activity	The extent of potential habitat to be removed is 9.27 ha for Parma Wallaby, Long-nosed Potoroo and Red-legged Pademelon, including 3.56 ha for Koala. This is mostly restricted to groundcover + vines, woody midstorey and canopy species (<15cm DBH) for the linear walking track. Limited modification to areas of adjoining habitat could occur indirectly during construction and operation.
7.3.1 c) ii	In relation to the habitat of a threatened species or ecological community: 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	Given the context of the activity and the mobility of these species any resultant disturbance will be permeable linear barrier in a discrete location that will not affect physical or functional connectivity between populations.
7.3.1 c) iii	In relation to the habitat of a threatened species or ecological community: The importance of the habitat to be removed, modified, fragmented or isolated to the long-term survival of the	The potential habitat to be removed is not expected to be important for the long-term survival of a population of these species given that most of the potential habitat has previously been disturbed and that a larger portion of the potential habitat will remain within the Study area surrounds and broader NP estate (up to 17,000 ha of suitable habitat). The NPWS Koala

BC Act	Question	Response	
	species, population or ecological community in the Locality.	Conservation Action Plan (KCAP) identifies key risks and prescribes management and monitoring activities for the endangered koala in Bindarri National Park which falls within Study area. The KCAP can be used to assist the proponent to assess key risks, undertake conservation activities, and requirements for measuring and reporting within the Bindarri NP area. Bindarri NP is considered to host important habitat fo koala and is proposed to be gazetted within the Great Koala National Park, which aims to protect koala populations on the mid north coast with a focus on creating and protecting existin koala corridors.	
7.3.1 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).	No Areas of Outstanding Biodiversity Value occur on or near the Study area.	
7.3.1 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.	 KTP relevant to the proposed activity and outcomes are listed below. Alteration to the natural flow regimes of rivers and streams and their floodplains and wetlands Increases to this KTP is predicted to be minor, major streams will incorporate suspended bridges while lower order streams crossings may contain steppingstones. Clearing of native vegetation. Increase to this KTP on relevant listed entities is estimated to be 9.27 ha of native vegetation of a predominantly linear footprint. Invasion and establishment of exotic vines and scramblers & Invasion of native plant communities by exotic perennial grasses & Invasion, establishment and spread of Lantana (<i>Lantana camara</i> L. sens. lat.) Risk of an increase in potential invasion of exotic species is expected to be minimal and will be managed further via the mitigation measures listed in section 7. Loss of HBTs & Removal of dead wood and dead trees Increase to this KTP on relevant listed entities is considered minimal given that just ten (10) HBTs are estimated to be removed. Low occurrences of standing dead wood would be removed whilst woody debris would be incorporated into the walking track where possible. 	

BC Act	Question	Response
		 Chytrid is known to occur within the Study area and was observed in a Tusked Frog during the field survey. Potential spread from chytrid will be minimised through mitigation measures presented in section 7.
Conclusion	Is there likely to be a significant impact?	No. A significant impact is not likely.

B8 Threatened Reptile

Threatened reptile impact profile

Scientific name	Common name	BC Status	Ecology and habitat	Potential impacts
Hoplocephalus stephensii	Stephens' Banded Snake	V	Coast and ranges from Southern Qld to Gosford in NSW. Rainforest and eucalypt forests and rocky areas up to 950 m in altitude. Stephens' Banded Snake is nocturnal, and shelters between loose bark and tree trunks, amongst vines, or in hollow trunks limbs, rock crevices or under slabs during the day. At night it hunts frogs, lizards, birds and small mammals.	Disturbance of up to 9.27 ha of foraging habitat. Removal of ten (10) HBTs and disturbance to LWD that may provide shelter habitat. Incidental mortality during construction. Ongoing disturbance of adjacent habitat from increased human interaction and maintenance.

Test of significance - Hoplocephalus stephensii (Stephens' Banded Snake)

BC Act	Question	Response
7.3.1 a)	In the case of a threatened species: whether the proposed development or activity is likely to have an adverse	Activities likely to have an adverse effect on the life cycle of Stephens' Banded Snake include incidental mortality during construction, loss of sheltering and foraging habitat.
	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	Suitable foraging habitat for all this species occurs within the Study area and is proposed for removal. Removal of suitable HBTs and disturbance to LWD that may provide shelter habitat for this species would also occur. However, suitable foraging and shelter habitat will remain for all these species within the Study area and in the broader NP estate. According to the SVTM, it is estimated approximately >5,000 ha of Wet Sclerophyll Forest and >12,000 ha of Rainforest occur in the adjacent NP estate, providing suitable habitat for this species. Given the above context and the primarily linear design of the activity it is considered unlikely that the activity will have an adverse effect on the life cycle of this species such that a viable local population of the species is likely to be placed at risk of extinction.
		To further mitigate the effect of the activity on the lifecycle of these species pre-clearing will be conducted to reduce instances of possible mortality (section 7).
7.3.1 b) i	In the case of an endangered ecological community or critically endangered ecological community, whether the proposed development or activity: 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	N/A

BC Act	Question	Response
7.3.1 b) ii	In the case of an endangered ecological community or critically endangered ecological community: Whether the proposed development or activity 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.	N/A
7.3.1 c) i	In relation to the habitat of a threatened species or ecological community: The extent to which habitat is likely to be removed or modified as a result of the proposed development or activity	The activity will disturb an estimated 9.27 ha of potential foraging habitat to this species which is mostly restricted to groundcover + vines, woody midstorey and canopy species (<15cm DBH) for the linear walking track. Removal of up to ten (10) HBTs and disturbance to LWD will also occur. Limited modification to areas of adjoining habitat could occur indirectly during construction and operation.
7.3.1 c) ii	In relation to the habitat of a threatened species or ecological community: 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	Given the context of the activity and the mobility of this species the activity will not fragment or isolate an area of potential habitat.
7.3.1 c) iii	In relation to the habitat of a threatened species or ecological community: The importance of the habitat to be removed, modified, fragmented or isolated to the long-term survival of the species, population or ecological community in the Locality.	The potential habitat to be removed is not expected to be important for the long-term survival of a population of this species given that most of the potential habitat has previously been disturbed and a minor amount of sheltering features will be removed. A large portion of potential habitat will remain within the Study area and broader NP estate (up to 17,000 ha of suitable habitat).
7.3.1 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).	No Areas of Outstanding Biodiversity Value occur on or near the Study area.
7.3.1 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.	 KTP relevant to the proposed activity and outcomes are listed below. Alteration to the natural flow regimes of rivers and streams and their floodplains and wetlands Increases to this KTP is predicted to be minor, major streams will incorporate suspended bridges while lower order streams crossings may contain steppingstones. Clearing of native vegetation.

BC Act	Question	Respons	e
			 Increase to this KTP on relevant listed entities is estimated to be 9.27 ha of native vegetation of a predominantly linear footprint.
		•	Invasion and establishment of exotic vines and scramblers & Invasion of native plant communities by exotic perennial grasses & Invasion, establishment and spread of Lantana (<i>Lantana camara</i> L. sens. lat.)
			 Risk of an increase in potential invasion of exotic species is expected to be minimal and will be managed further via the mitigation measures listed in section 7.
		•	Loss of HBTs & Removal of dead wood and dead trees
			 Increase to this KTP on relevant listed entities is considered minimal given that just ten (10) HBTs are estimated to be removed. Low occurrences of standing dead wood would be removed whilst woody debris would be incorporated into the walking track where possible.
		•	Infection of frogs by amphibian chytrid causing the disease chytridiomycosis.
			 Chytrid is known to occur within the Study area and was observed in a Tusked Frog during the field survey. Potential spread from chytrid will be minimised through mitigation measures presented in section 7.
Conclusion	Is there likely to be a significant impact?	No. A sig	nificant impact is not likely.

Appendix C Assessment of significance (EPBC Act)

The EPBC Act PMST (REF supporting document B) combined with a LoO assessment (Appendix A) returned a list of 11 threatened species and five (5) Migratory species that are known or likely to occur within the Study area. These species have the potential to be impacted by the proposed works, and have been assessed in accordance with the EPBC Act Significant Impact Guidelines (CoA 2013):

VULNERABLE SPECIES

Slender Marsdenia (Marsdenia longiloba) Ravine Orchid (Sarcochilus fitzgeraldii) Pouched Frog (Assa darlingtoni) Stuttering Frog (Mixophyes balbus) Sphagnum Frog (Philoria sphagnicolus) Glossy Black-Cockatoo (Calyptorhynchus lathami) White-throated Needletail (Hirundapus caudacutus) Black-breasted Button-quail (Turnix melanogaster) Parma Wallaby (Notamacropus parma) Long-nosed Potoroo (Potorous tridactylus) Grey-headed Flying-fox (Pteropus poliocephalus) Rainforest Cool-skink (Harrisoniascincus zia)

ENDANGERED SPECIES

Milky Silkpod (Parsonsia dorrigoensis)

Cryptic Forest Twiner (Tylophora woollsii)

Giant Barred Frog (Mixophyes iteratus)

Rufous Scrub-bird (Atrichornis rufescens)

Pink Underwing Moth (*Phyllodes imperialis* southern subspecies)

Spotted-tailed Quoll (Dasyurus maculatus)

Southern Greater Glider (Petauroides volans)

Koala (Phascolarctos cinereus)

CRITICALLY ENDANGERED SPECIES

Scrub Turpentine (*Rhodamnia rubescens*)

CRITICALLY ENDANGERED ECOLOGICAL COMMUNITIES

Lowland Rainforest of Subtropical Australia

MIGRATORY SPECIES Oriental Cuckoo (*Cuculus optatus*) White-throated Needletail (*Hirundapus caudacutus*) Black-faced Monarch (*Monarcha melanopsis*) Satin Flycatcher (*Myiagra cyanoleuca*) Rufous Fantail (*Rhipidura rufifrons*) Spectacled Monarch (*Symposiachrus trivirgatus*).

Appendix D Flora and fauna list

Family	Scientific Name	Common Name	Notes
Flora			
Rousseaceae	Abrophyllum ornans	Native Hydrangea	
Fabaceae	Acacia melanoxylon	Blackwood	
Cunoniaceae	Ackama paniculosa	Soft Corkwood	
Myrtaceae	Acmena smithii	Lilly Pilly	
Rutaceae	Acradenia euodiiformis	Yellow Satinheart	
Rutaceae	Acronychia oblongifolia	White Aspen	
Ericaceae	Acrotriche sp.		
Pteridaceae	Adiantum formosum	Black Stem	
Pteridaceae	Adiantum hispidulum	Rough Maidenhair Fern	
Pteridaceae	Adiantum sp.		
Akaniaceae	Akania bidwillii	Turnipwood	
Sapindaceae	Alectryon subcinereus	Native Quince	
Casuarinaceae	Allocasuarina littoralis	Black She-oak	
Casuarinaceae	Allocasuarina torulosa	Forest Oak	
Proteaceae	Alloxylon pinnatum	Dorrigo Waratah	
Araceae	Alocasia brisbanensis	Cunjevoi	
Apocynaceae	Alyxia ruscifolia	Prickly Alyxia	
Poaceae	Andropogon virginicus	Whisky Grass	*
Myrtaceae	Angophora costata	Smooth-barked Apple	
Escalloniaceae	Anopterus macleayanus	Queensland laurel	
Poaceae	Anthoxanthum odoratum	Sweet Vernal Grass	*
Araucariaceae	Araucaria cunninghamii	Hoop Pine	
Myrtaceae	Archirhodomyrtus beckleri	Rose Myrtle	
Arecaceae	Archontophoenix cunninghamia na	Bangalow Palm	
Arecaceae	Archontophoenix sp.		
Fabaceae	Pararchidendron pruinosum	Snow Wood	
Malvaceae	Argyrodendron actinophyllum	Black Booyong	
Malvaceae	Argyrodendron trifoliolatum	White Booyong	
Proteaceae	Orites excelsus	Prickly Ash	
Aspleniaceae	Asplenium australasicum	Bird's Nest Fern	
Aspleniaceae	Asplenium sp.		
Rubiaceae	Atractocarpus benthamianus	Native Gardenia	
Rubiaceae	Atractocarpus chartaceus	Narrow-leaved Gardenia	
	aust giant vine		
Fabaceae	Austrocallerya megasperma	Native Wisteria	
Myrtaceae	Backhousia myrtifolia	Grey Myrtle	
Myrtaceae	Backhousia sp.		
Euphorbiaceae	Baloghia inophylla	Brush Bloodwood	

Family	Scientific Name	Common Name	Notes
Proteaceae	Banksia integrifolia subsp. Monticola	Mountain Banksia	
Blechnaceae	Blechnum nudum	Fishbone Water Fern	
Blechnaceae	Blechnum cartilagineum	Gristle Fern	
Blechnaceae	Blechnum sp.		
Blechnaceae	Blechnum wattsii	Hard Water Fern	
Blechnaceae	Blechnum patersonii	Strap Water Fern	
Malvaceae	Brachychiton acerifolius	Flame Tree	
Phyllanthaceae	Breynia oblongifolia	Coffee Bush	
Arecaceae	Calamus muelleri	Wait-a-While	
Cunoniaceae	Callicoma serratifolia	Black Wattle	
Myrtaceae	Callistemon salignus	Willow Bottlebrush	
Cupressaceae	Callitris macleayana	Stringybark Pine	
Cupressaceae	Callitris rhomboidea	Port Jackson Pine	
Dicksoniaceae	Calochlaena dubia	Rainbow Fern	
Convolvulaceae	Polymeria calycina	Slender Bindweed	
Capparaceae	Capparis arborea	Native Pomegranate	
Cyperaceae	Carex sp.		
Menispermaceae	Carronia multisepalea	Carronia	
Poaceae	Cenchrus clandestinus	Kikuyu Grass	*
Cunoniaceae	Ceratopetalum apetalum	Coachwood	
Thelypteridaceae	Christella dentata	Binung	
Lauraceae	Cinnamomum camphora	Camphor Laurel	*
Lauraceae	Cinnamomum oliveri	Oliver's Sassafras	
Vitaceae	Cissus antarctica	Kangaroo Vine	
Vitaceae	Cissus hypoglauca	Water Vine	
Lamiaceae	Clerodendrum floribundum	Lolly Bush	
Lamiaceae	Plectranthus parviflorus	Cockspur Flower	
Asparagaceae	Cordyline sp.		
Asparagaceae	Cordyline petiolaris	Broad-leaved Palm Lily	
Asparagaceae	Cordyline stricta	Narrow-leaved Palm Lily	
Asteraceae	Coronidium elatum	White Paper Daisy	
Lauraceae	Cryptocarya foveolata	Mountain Walnut	
Lauraceae	Cryptocarya dorrigoensis	Dorrigo Laurel	
Lauraceae	Cryptocarya glaucescens	Jackwood	
Lauraceae	Cryptocarya meisneriana	Thick-leaved Laurel	
Lauraceae	Cryptocarya obovata	Pepperberry	
Lauraceae	Cryptocarya rigida	Forest Maple	
Cyatheaceae	Cyathea australis	Black Tree-fern	
Cyatheaceae	Cyathea leichhardtiana	Prickly Tree Fern	

Family	Scientific Name	Common Name	Notes
Cyatheaceae	Cyathea sp.		
Poaceae	Cynodon dactylon	Couch Grass	
Cyperaceae	Cyperus filipes	Cyperus	
Cyperaceae	Cyperus sp.		
Atherospermataceae	Daphnandra sp.		
Atherospermataceae	Daphnandra tenuipes	Red-flowered Socketwood	
Davalliaceae	Davallia sp.		
Solanaceae	Duboisia myoporoides	Corkwood	
Urticaceae	Dendrocnide excelsa	Giant Stinging Tree	
Fabaceae	Derris involuta	Native Derris	
Asphodelaceae	Dianella sp.	Blue Flax-lily	
Asphodelaceae	Dianella caerulea	Blue Flax-lily	
Dioscoreaceae	Dioscorea transversa	Native Yam	
Ebenaceae	Diospyros sp.		
Ebenaceae	Diospyros pentamera	Myrtle Ebony	
Sapindaceae	Diploglottis australis	Native Tamarind	
Blechnaceae	Doodia aspera	Prickly Rasp Fern	
Atherospermataceae	Doryphora sassafras	Sassafras	
Alstroemeriaceae	Drymophila moorei	Orange Berry	
Meliaceae	Dysoxylum fraserianum	Rosewood	
Meliaceae	Dysoxylum mollissimum	Red Bean	
Meliaceae	Dysoxylum rufum	Hairy Rosewood	
Meliaceae	Dysoxylum sp.		
Elaeocarpaceae	Elaeocarpus reticulatus	Blueberry Ash	
Celastraceae	Elaeodendron australe	Red Olive Plum	
Sapindaceae	Elattostachys nervosa	Green Tamarind	
Primulaceae	Embelia sp.		
Primulaceae	Embelia australiana	Embelia	
Lauraceae	Endiandra introrsa	Dorrigo Plum	
Lauraceae	Endiandra discolor	Rose Walnut	
Poaceae	Entolasia stricta	Wiry Panic	
Myrtaceae	Eucalyptus andrewsii	New England Blackbutt	
Myrtaceae	Eucalyptus campanulata	New England Blackbutt	
Myrtaceae	Eucalyptus grandis	Flooded Gum	
Myrtaceae	Eucalyptus microcorys	Tallowwood	
Myrtaceae	Eucalyptus pilularis	Blackbutt	
Myrtaceae	Eucalyptus saligna	Sydney Blue Gum	
lantaginaceae	Plantago lanceolata	Lamb's Tongues	*
Asteraceae	Senecio madagascariensis	Fireweed	*

Family	Scientific Name	Common Name	Notes
Moraceae	Ficus sp.		
Moraceae	Ficus coronata	Sandpaper Fig	
Moraceae	Ficus watkinsiana	Strangling Fig	
Cyperaceae	Gahnia sieberiana	Red-fruit Saw-sedge	
Lamiaceae	Gmelina leichardtii	White Beech	
Haloragaceae	Gonocarpus sp.		
Polypodiaceae	Grammatis stenophylla	Narrow-leafed Finger Fern	
Sapindaceae	Guioa semiglauca	Guioa	
Araceae	Gymnostachys anceps	Settlers' Twine	
Araceae	Gymnostachys sp.		
Proteaceae	Hakea sp.		
Proteaceae	Hakea ochroptera	Hakea	
Dilleniaceae	Hibbertia scandens	Climbing Guinea Flower	
Euphorbiaceae	Homalanthus populifolius	Bleeding Heart	
Araliaceae	Hydrocotyle geraniifolia	Forest Pennywort	
Pittosporaceae	Hymenosporum flavum	Native Frangipani	
Asteraceae	Hypochaeris radicata	Catsear	
Juncaceae	Juncus sp.		
Cunoniaceae	Karrabina benthamiana	Red Carabeen	
Myrtaceae	Kunzea ericoides	Burgan	
Verbenaceae	Lantana camara	Lantana	*
Dryopteridaceae	Lastreopsis sp.		
Dryopteridaceae	Lastreopsis decomposita	Trim Shield-fern	
Menispermaceae	Legnephora moorei	Round-leaf Vine	
Cyperaceae	Lepidosperma sp.		
Cyperaceae	Lepidosperma laterale	Variable Swordsedge	
Myrtaceae	Leptospermum polygalifolium subsp. Montanum	Mountain Teatree	
Myrtaceae	Leptospermum sp.		
Ericaceae	Leucopogon lanceolatus	Lance Bearded-heath	
Oleaceae	Ligustrum lucidum	Large-leaved Privet	*
Oleaceae	Ligustrum sinense	Small-leaved Privet	*
Arecaceae	Linospadix monostachyos	Walking Stick Palm	
Lauraceae	Litsea australis	Brown Bolly Gum	
Asparagaceae	Lomandra sp.		
Asparagaceae	Lomandra hystrix	Green Mat-rush	
Asparagaceae	Lomandra longifolia	Spiny-headed Mat-rush	
Asparagaceae	Lomandra spicata	Jungle Mat-rush	
Proteaceae	Lomatia silafolia	Crinkle Bush	
Myrtaceae	Lophostemon confertus	Brush Box	

Family	Scientific Name	Common Name	Notes
Zamiaceae	Macrozamia sp.	Cycad	
Apocynaceae	Marsdenia longiloba	Clear Milkvine	
Apocynaceae	Marsdenia rostrata	Milk Vine	
Apocynaceae	Marsdenia velutina	Velvet Milkweed	*
Rutaceae	Melicope sp.		
Rutaceae	Melicope micrococca	Hairy-leaved Doughwood	
Ericaceae	Monotoca sp.		
Rubiaceae	Gynochthodes jasminoides	Sweet Morinda	
Primulaceae	Myrsine variabilis		
Lauraceae	Neolitsea sp.		
Lauraceae	Neolitsea dealbata	Hairy-leaved Bolly Gum	
Lomariopsidaceae	Nephrolepis cordifolia	Fishbone Fern	
Sapotaceae	Niemeyera whitei	Rusty Plum	
Oleaceae	Notelaea longifolia	Large Mock-olive	
Nothofagaceae	Nothofagus moorei	Antarctic Beech	
Oleaceae	Notelaea ovata	Forest Olive	
Poaceae	Oplismenus aemulus	Australian Basket Grass	
Proteaceae	Orites excelsus	Prickly Ash	
Poaceae	Ottochloa gracillima	Pademelon grass	
Asteraceae	Ozothamnus sp.		
Monimiaceae	Palmeria racemosa	Anchor Vine	
Monimiaceae	Palmeria scandens	Anchor Vine	
Bignoniaceae	Pandorea pandorana	Wonga Wonga Vine	
Poaceae	Panicum pygmaeum	Pygym Panic	
Fabaceae	Pararchidendron pruinosum	Snow Wood	
Apocynaceae	Parsonsia dorrigoensis	Milky Silkpod	
Apocynaceae	Parsonsia fulva	Furry Silkpod	
Apocynaceae	Parsonsia velutina	Hairy Silkpod	
Iridaceae	Patersonia glabrata	Native Iris	
Pteridaceae	Pellaea nana	Dwarf Sickle Fern	
Pteridaceae	Pellaea sp.		
Pennantiaceae	Pennantia cunninghamii	Brown Beech	
Piperaceae	Peperomia tetraphylla	Four-leave Peperomia	
Proteaceae	Persoonia media	Medium Geebung	
Petermanniaceae	Petermannia cirrosa	Petermannia	
Myrtaceae	Pilidiostigma glabrum	Plum Myrtle	
Piperaceae	Piper hederaceum	Giant Pepper Vine	
Pittosporaceae	Pittosporum multiflorum	Orange Thorn	
Pittosporaceae	Pittosporum undulatum	Native Daphne	

Family	Scientific Name	Common Name	Notes
Sapotaceae	Planchonella australis	Black Apple	
Sapotaceae	Planchonella sp.		
Polypodiaceae	Platycerium bifurcatum	Elkhorn Fern	
Lamiaceae	Plectranthus sp.		
Poaceae	Poa sp.		
Commenlinaceae	Pollia crispata	Pollia	
Escalloniaceae	Polyosma cunninghamii	Featherwood	
Araliaceae	Polyscias murrayi	Pencil cedar	
Araceae	Pothos longipes	Pothos	
Lamiaceae	Prostanthera sp.		
Rubiaceae	Psychotria daphnoides	Smooth Psychotria	
Rubiaceae	Psychotria loniceroides	Hairy Psychotria	
Dennstaedtiaceae	Pteridium esculentum	Common Bracken	
Polypodiaceae	Pyrossia sp.		
Paracryphiaceae	Quintinia sieberi	Possumwood	
Paracryphiaceae	Quintinia verdonii	Smooth Possumwood	
Myrtaceae	Rhodamnia rubescens	Scrub Turpentine	
Ripogonaceae	Ripogonum discolor	Prickly Supplejack	
Ripogonaceae	Ripogonum elseyanum	Hairy Supplejack	
Ripogonaceae	Ripogonum fawcettianum	Small Supplejack	
Ripogonaceae	Ripogonum sp.		
Rosaceae	Rubus nebulosus	Green-leaved Bramble	
Rosaceae	Rubus rosifolius	Rose-leaf Bramble	
Apocynaceae	Cynanchum viminale subsp. bru nonianum	Caustic Vine	
Orchidaceae	Sarcochilus fitzgeraldii	Ravine Orchid	
Sapindaceae	Sarcopteryx stipata	Steelwood	
Cunoniaceae	Schizomeria ovata	Crabapple	
Elaeocarpaceae	Sloanea australis	Maiden's Blush	
Elaeocarpaceae	Sloanea sp.		
Elaeocarpaceae	Sloanea woollsii	Yellow Carabeen	
Smilacaceae	Smilax australis	Lawyer Vine	
Smilacaceae	Smilax glyciphylla	Sweet Sarsaparilla	
Solanaceae	Solanum nigrum	Black-berry Nightshade	*
Proteaceae	Stenocarpus salignus	Scrub Beefwood	
Proteaceae	Stenocarpus sinuatus	Firewheel Tree	
Gleicheniaceae	Sticherus flabellatus	Shiny Fan Fern	
Myrtaceae	Syncarpia glomulifera	Turpentine	
Meliaceae	Synoum glandulosum	Scentless Rosewood	
Solanaceae	Solanum mauritianum	Wild Tobacco Bush	*

Family	Scientific Name	Common Name	Notes
Myrtaceae	Syzygium oleosum	Blue Lilly Pilly	
Myrtaceae	Syzygium sp.		
Apocynaceae	Tabernaemontana pandacaqui	Banana Bush	
Winteraceae	Tasmannia insipida	Brush Pepperbush	
Meliaceae	Toona ciliata	Red Cedar	
Myrtaceae	Tristaniopsis collina	Hill Kanuka	
Myrtaceae	Tristaniopsis laurina	Water Gum	
Proteaceae	Triunia youngiana	Spice Bush	
Ericaceae	Trochocarpa laurina	Tree Heath	
Moraceae	Trophis scandens	Burny Vine	
Apocynaceae	Tylophora woollsii		
Monimiaceae	Wilkiea huegeliana	Veiny Wilkiea	
Asphodelaceae	Xanthorrhoea australis	Austral Grass-tree	
Asphodelaceae	Xanthorrhoea johnsonii	Johnson's grass tree	
Rutaceae	Zieria southwellii	Smooth Zieria	
Fauna			
Megapodiidae	Alectura lathami	Australian Brush-turkey	
Cacatuidae	Cacatua galerita	Sulphur-crested Cockatoo	
Canidae	Canis lupus dingo	Dingo	
Pachycephalidae	Colluricincla harmonica	Grey Shrikethrush	
Climacteridae	Cormobates leucophaea	White-throated Treecreeper	
Dicruridae	Dicrurus bracteatus	Spangled Drongo	
Petroicidae	Eopsaltria australis	Eastern Yellow Robin	
Falconidae	Falco peregrinus	Peregrine Falcon	
Elapidae	Hemiaspis signata	Marsh Snake	
Elapidae	Hoplocephalus stephensii	Stephens's Banded Snake	V
Columbidae	Leucosarcia melanoleuca	Wonga Pigeon	
Columbidae	Macropygia phasianella	Brown Cuckoo-dove	
Meliphagidae	Meliphaga lewinii	Lewin's Honeyeater	
Menuridae	Menura novaehollandiae	Superb Lyrebird	
Accipitridae	Milvus migrans	Black Kite	
Estrildidae	Neochmia temporalis	Red-browed Finch	
Oriolidae	Oriolus sagittatus	Olive-backed Oriole	
Pachycephalidae	Pachycephala pectoralis	Golden Whistler	
Phascolarctidae	Phascolarctos cinereus	Koala	E
Psittaculidae	Platycercus elegans	Crimson Rosella	
Cinclosomatidae	Psophodes olivaceus	Eastern Whipbird	
Columbidae	Ptilinopus magnificus	Wompoo Fruit-dove	

Family	Scientific Name	Common Name	Notes	
Ptilonorhynchidae	Ptilonorhynchus violaceus	Satin Bowerbird		
Paradisaeidae	Ptiloris paradiseus	Paradise Riflebird		
Rhipiduridae	Rhipidura albiscapa	Grey Fantail		
Artamidae	Strepera graculina	Pied Currawong		
V - vulnorable E - ondangered: CE - critically endangered: *Evotic				

V = vulnerable, E = endangered; CE = critically endangered; *Exotic

Appendix E PCT mapping




















































Appendix F DEGW survey effort




















































Appendix G HBTs within the DEGW Study area





















































Appendix H Threatened species




















































Appendix I Hygiene inspection checklist and hygiene kits

Vehicle Registration:Company:Driver's Name:Passenger Names:Make and Model:Bush Fire Act Compliant:
YES / NOCondition of vehicle prior to inspection:Image: Compliant inspection:

VEHICLE HYGIENE INSPECTION CHECKLIST

The NPWS standard: Vehicle exterior and interior is free of plant material, soil, slurry and mud.

Vehicle Soil/Plant Material	NA	Compliant	Not	Comment	Initials
Checks:			Compliant		
Wheels: inside and tyre					
tread					
Tracks					
Fenders: mud flaps, wheel					
arches					
Undercarriage: axel, chassis,					
diff, belly-plate, suspension,					
spare tyre					
Exterior: running boards					
(under), bull bar, towbar,					
bumper, grill, spare tyre, all					
panels					
Bucket, blade, forks					
Rippers					
Interior: cab (mats) tray,					
between cab and tray					

Other Checks:	NA	Compliant	Not Compliant	Comment	Initials
Hygiene kit with all contents on board vehicle					
Weeds and/or seeds					
Other:					

This vehicle has been inspected and, in relation to the NPWS hygiene standard, it: (tick left box)								
	Meets the standard		Meets the standard a	ifter clean-down		Does not meet the standard		
Inspector's Name:			Signature:	Date:	Time:		Agency:	

PERSONNEL/FIELD WORK HYGIENE INSPECTION CHECKLIST

The NPWS standard: Equipment, tools, clothing and footwear are free of plant material, soil, slurry and mud.

Equipment/Tools Soil/Plant	NA	Compliant	Not	Comment	Initials	
Material Checks:			Compliant			
Hygiene Kit:						
First Aid Kit:						
Phone:						
Backpack:						
Other site-specific field equipment/tools: (list on the left)						

Clothing/Footwear	NA	Compliant	Not	Comment	Initials
Soil/Plant Material Checks:			Compliant		
Footwear: including socks,					
shoe laces and underneath					
Shirt/Jumper: including on					
collar, in pockets, cuffs					
Pants: pockets, cuffs, belt					
Hat/Helmet					
Glasses					
Other:					

All equipment, tools, clothing and footwear has been inspected and, in relation to the NPWS hygiene standard, it: (tick left box)

Meets the standard	Meets the standard af	ter clean-down	Does not meet the standard		
Inspector's Name:	Signature:	Date:	Time:	Agency:	

VEHICLE HYGIENE KIT:

- 1. Portable Self-Priming Water Pump Kit.
- 2. 5 L pressurized weed sprayer.
- 3. 4 L methylated spirits or another recommended Phytophthora disinfectant (e.g., household bleach diluted 1 part with 4 parts water, sodium hypochlorite diluted 1 part with 1500 parts water, etc.).
- 4. Water container (20 L minimum).
- 5. Hard brush.
- 6. Paint scraper.
- 7. Dust pan/brush.
- 8. 70% alcohol wipes.
- 9. Towel.
- 10. Disposable rubbish bags for waste.
- 11. Disposable gloves for handling disinfectant (DPIR 2021).

PERSONAL/FIELD WORK HYGIENE KIT:

- 1. Optional: tub/container with lid to use as shoe bath.
- 1 L methylated spirits or another recommended Phytophthora disinfectant (e.g., household bleach diluted 1 part with 4 parts water, sodium hypochlorite diluted 1 part with 1500 parts water, etc.).
- 3. Hard brush or hoof pick.
- 4. Spray bottle.
- 5. Towel.
- 6. Disposable gloves.
- 7. Zip lock bag (for disposing of gloves).