Biodiversity Assessment

Murrays Crossing Quarry Tumbarumba

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Acronyms and abbreviations

AOBV	Area of Outstanding Biodiversity Value
BV	Biodiversity Values (As Mapped on the BV Map viewer)
BA	Biodiversity Assessment
BC Act	*Biodiversity Conservation Act 2016* (NSW)
BHQ	Bald Hill Quarry Pty Ltd
Biosecurity Act	*Biosecurity Act 2015* (NSW)
BOM	Australian Bureau of Meteorology
Cwth	Commonwealth
DAWE	Department of Agriculture, Water and the Environment (Cwth) (formerly DoEE)
DECCW	(Former) Department of Environment, Climate Change and Water (NSW) (now DPE)
DoEE	(Former) Department of the Environment and Energy (Cwth) (now DAWE)
DPE	(Former) Department of Planning and Environment (NSW) (formerly DPIE)
DPIE	Department of Planning, Industry and Environment (NSW) (now DPE)
EEC	Endangered ecological community – as defined under relevant law applying to the Proposal
EES	Environment, Energy and Science (NSW), Division of DPIE (formerly OEH, and, prior, DECCW)
EIA	Environmental impact assessment
EIS	Environmental impact statement
EPBC Act	*Environment Protection and Biodiversity Conservation Act 1999* (Cwth)
EP&A Act	*Environmental Planning and Assessment Act 1979* (NSW)
FM Act	*Fisheries Management Act 1994* (NSW)
ha	hectares
HBT	Hollow-bearing tree
SEPP	State Environmental Planning Policy (NSW)
KFH	Key Fish Habitat
km	kilometres
LEP	Local Environment Plan
m	metres
NES	Matters of National Environmental Significance under the EPBC Act (*c.f.*)

NPW Act	*National Parks and Wildlife Act 1974* (NSW)
NV Act	*Native Vegetation Act 2003* (NSW)
OEH	(Former) Office of Environment and Heritage (NSW) (now DPE)
SVC	Snowy Valleys Council
tpa	Tonnes per annum
TSR	Travelling Stock Reserve

1. Introduction

This Biodiversity Assessment (BA) has been prepared for Bald Hill Quarry Pty Ltd (BHQ) to consider the potential biodiversity impacts associated with the proposed extension of current operations at Murrays Crossing Quarry in Tumbarumba. The Proposal would include the construction, operation and rehabilitation of a quarry extension to existing quarry operations. Bald Hill Quarry Pty Ltd is approved to extract and process up to 15,000 tonnes per annum (tpa). The Proposal aims to extract 100,00 tpa with peak volumes of 200,00 tpa over approximately 25 years.

This Biodiversity Assessment (BA) identifies and assesses the potential biodiversity impacts associated with the construction and operation of the proposed Murray's Crossing Quarry (the Proposal). NGH has prepared this BA on behalf of the Proponent, Bald Hill Quarry Pty Ltd (the Proponent).

The Proposal is classified as integrated development under section 4.46 of the NSW *Environmental Planning and Assessment Act 1979* (EP&A Act) as it requires additional statutory authorisations.

The Proposal (extractive industries) is Designated Development under section 4.10 of the NSW *Environmental Planning and Assessment Act 1979* (EP&A Act) and Schedule 3 of the Environmental Planning and Assessment Regulation 2021 (EP&A Regulation).

This BA has been prepared in accordance with Part 4 of the EP&A Act to support a Development Application (DA) to be lodged with Snowy Valleys Council. This BA addresses the flora and fauna assessment requirements of the Proposal.

1.1 Purpose of this report

NGH was engaged by BHQ to undertake a BA for the proposed works to support an Environmental Impact Statement (EIS). This report assesses the impacts of the proposed development on biodiversity values in the Subject Land. The report identifies and describes biodiversity values in terms of vegetation structure, composition, type and condition, and fauna habitats, sightings and signs.

The potential for, and significance of, impacts to threatened species and communities listed under the *NSW Biodiversity Conservation Act 2016* (BC Act) Act, *Fisheries Management Act 1994* (FM Act) and *Commonwealth Environmental Protection and Biodiversity Conservation Act* (EPBC Act) have been evaluated.

The report addresses the flora and fauna assessment requirements under Part 4 of the EP&A Act and the Biodiversity Offset Scheme thresholds under Section 7.2 of the BC Act. Where relevant, recommendations are provided to avoid and minimise flora and fauna impacts.

The following definitions are used in this BA:

Proposal: All works involved in the implementation and operation of the development as described in this EIS.

Subject Land: All land within the affected lot boundaries. The Subject Land comprises Freehold Land and the Crown Quarry Reserve, which amounts to approximately 15.41 ha of land. Hereby referred to as the Subject land.

Development footprint: The development footprint is approximately 13.24ha, including a total pit footprint of 8.68ha, and involves:

- Land directly impacted by the quarry extension
- Areas where vehicle and plant will cause ground disturbance
- Land proposed for stockpiling and/or ancillary use.

Study area: The Subject Land (as described above).

Locality: The Subject Land plus a 10km buffer.

1.2 The Proposal

1.2.1 Site Location and Description

The location of the development site is provided in (Figure 1-1). The existing pit and proposed quarry extension would be located across the following Lot and DP numbers (Table 1-1):

Table 1-1 Existing operations at Murray's Crossing Quarry.

Land Description	Zoning	Owner	Components
Lot 659, 663, 665, 452, 20, 172, 173, 174, 175, 176, 177, 178, DP755892 Lot 179 DP1100528 Lot 1 DP1150973 Lot 1 DP111861	RU1 Primary Production.	Bald Hill Quarry Pty Ltd.	Quarry, sediment dam, topsoil stockpiles, waste dumps, workshop, office.
Lot 732 DP755892 Crown Reserve (81837)	RU1 Primary Production.	Crown Lands and Snowy Valley Council.	Quarry, processing plant, sediment dam and office.
Lot 7028 DP96852 Travelling Stock Reserve (51191)	RU1 Primary Production.	Crown Lands and Snowy Valley Council.	Material stockpiles and sediment dam.

In 2009, BHQ entered into an existing land use rights agreement for the Crown Quarry Reserve with Snowy SVC. BHQ also have a permit from Murray Local Land Services to use the TSR (R51191). Operational activities conducted on the TSR include stockpiling of material, water capture in a sediment dam, loading of trucks and site access. As such, the TSR has not been included in this development application.

The Proposal would involve a quarry extension to the south of the existing operation. The proposed extension would involve the extension of the quarry onto approximately 5 hectares (ha) of freehold land owned by BHQ, and involve the following Lot and DP numbers:

- Lot 1 DP1150973
- Lot 20 DP755892
- Lot 172 DP755892
- Lot 452 DP755892
- Lot 659 DP755892

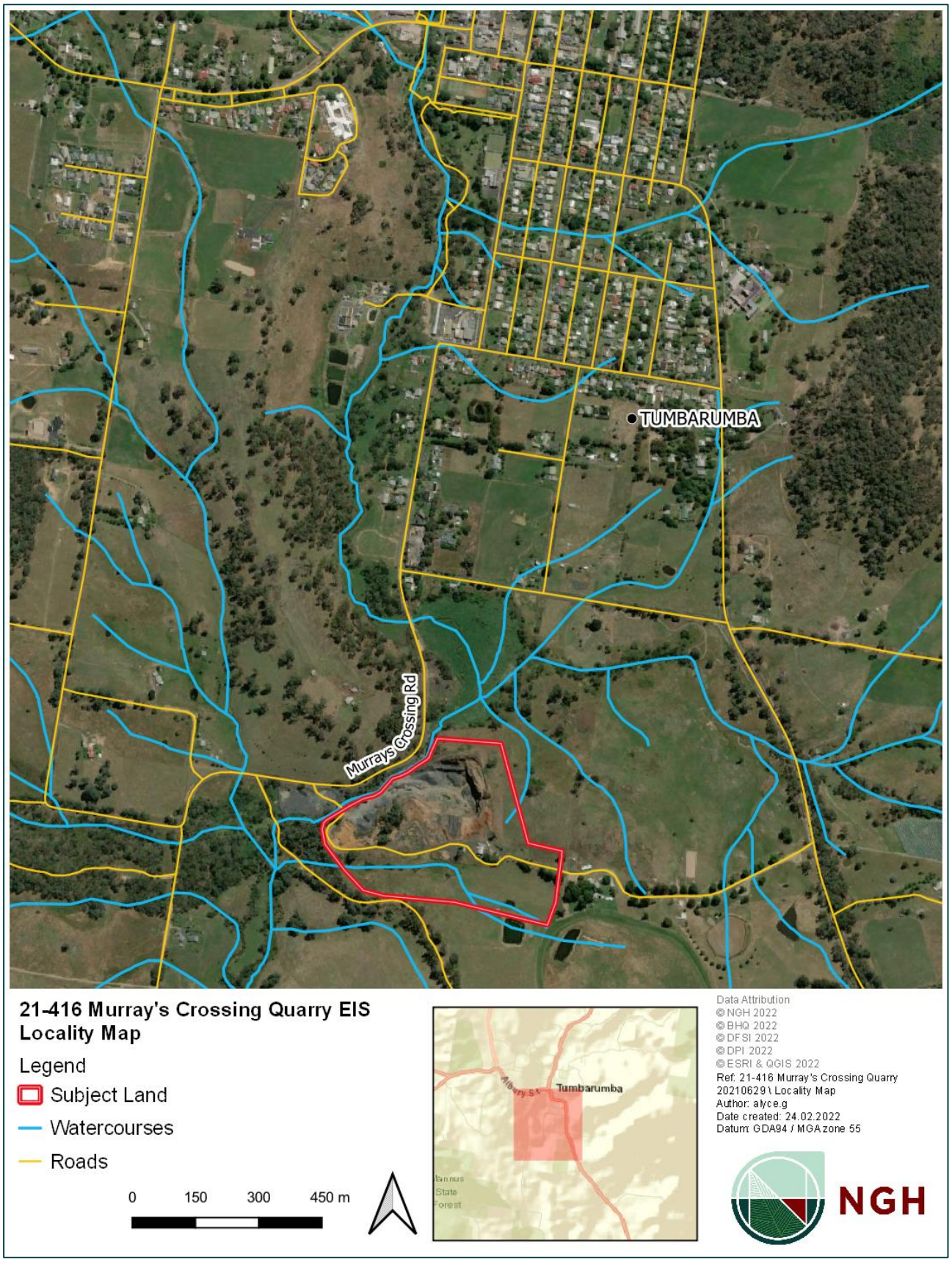


Figure 1-1 Locality Map

The site is located approximately 2km south of Tumbarumba in the Snowy Valleys Council (SVC) Local Government Area (LGA). The existing operation is accessible via Murrays Crossing Road, to the north of the site. The proposed quarry extension is located immediately south-southeast of the existing quarry operation (Figure 1-2) and would be accessed via an internal haulage route.

The development site falls within a gently sloping to undulating landscape. Large portions of land within the surrounding landscape have been cleared for agricultural purposes, namely broadacre cropping and grazing. Forested areas, associated with the Travelling Stock Route (TSR), occur to the west of the Proposal. Farm dams are located along drainage lines. Tumbarumba Creek, located immediately northwest of the Subject Land, is the receiving waterbody. Vehicles, existing quarry operations and stockpiling sites are the main land disturbances within the Subject Land. A racecourse, cemetery and agricultural activities are the other disturbing land uses in proximity to the Proposal.

Figure 1-2 Existing development

1.2.2 Proposal Description

BHQ received Development Consent for the Murrays Crossing Quarry in 1992; however, quarrying activities within the Crown Quarry Reserve have been evident since the 1940s. In 2009, BHQ entered into an existing land use rights agreement for the Crown Quarry Reserve with Snowy Valley Council (SVC). BHQ also have a permit from Local Land Services to stockpile material and load trucks on the TSR. As such, the existing stockpile location (refer to Figure 1-2) has not been included in this assessment.

The Proposal involves a quarry extension south to southeast of the current Murray's Crossing operation.

The Proposal (refer to Figure 1-3) would include:

- A new quarry footprint of approximately 8.68ha, which would include:
  - The existing quarry (2.88ha)
  - The proposed quarry extension (5.8ha)
- Drill and blasting for extraction up to five to six times a year
- Use of existing quarrying equipment for road construction and quarry operations
- Relocation of the existing workshop and amenities building
- Construction of a waste stockpile
- Construction of a sediment dam
- The diversion of an ephemeral watercourse within the southern portion of the Subject Land
- The removal of an existing farm dam
- Haulage of extracted rock via the proposed internal haul roads, to an existing processing plant, located within the Subject Land
- An increase in truck movements, from 24 per day to:
  - 30 per day during extraction periods of up to 100,000 tonnes per annum (tpa)
  - 60 per day during extraction periods of up to 200,000 tpa

The Proposal would include the current operating conditions of the Murray's Crossing Quarry, including:

- Four to five full time staff
- No additional permanent buildings
- No additional water usage
- No new accesses to the local and regional road network
- Use of the on-site rock processing plant located within the Subject Land

The Proposal seeks approval for extraction of 100,000 tpa with peak periods of 200,000 tpa over a period of 25 years. Total extraction would not exceed 3 million tonnes of hard rock (basalt) for the life of the project.

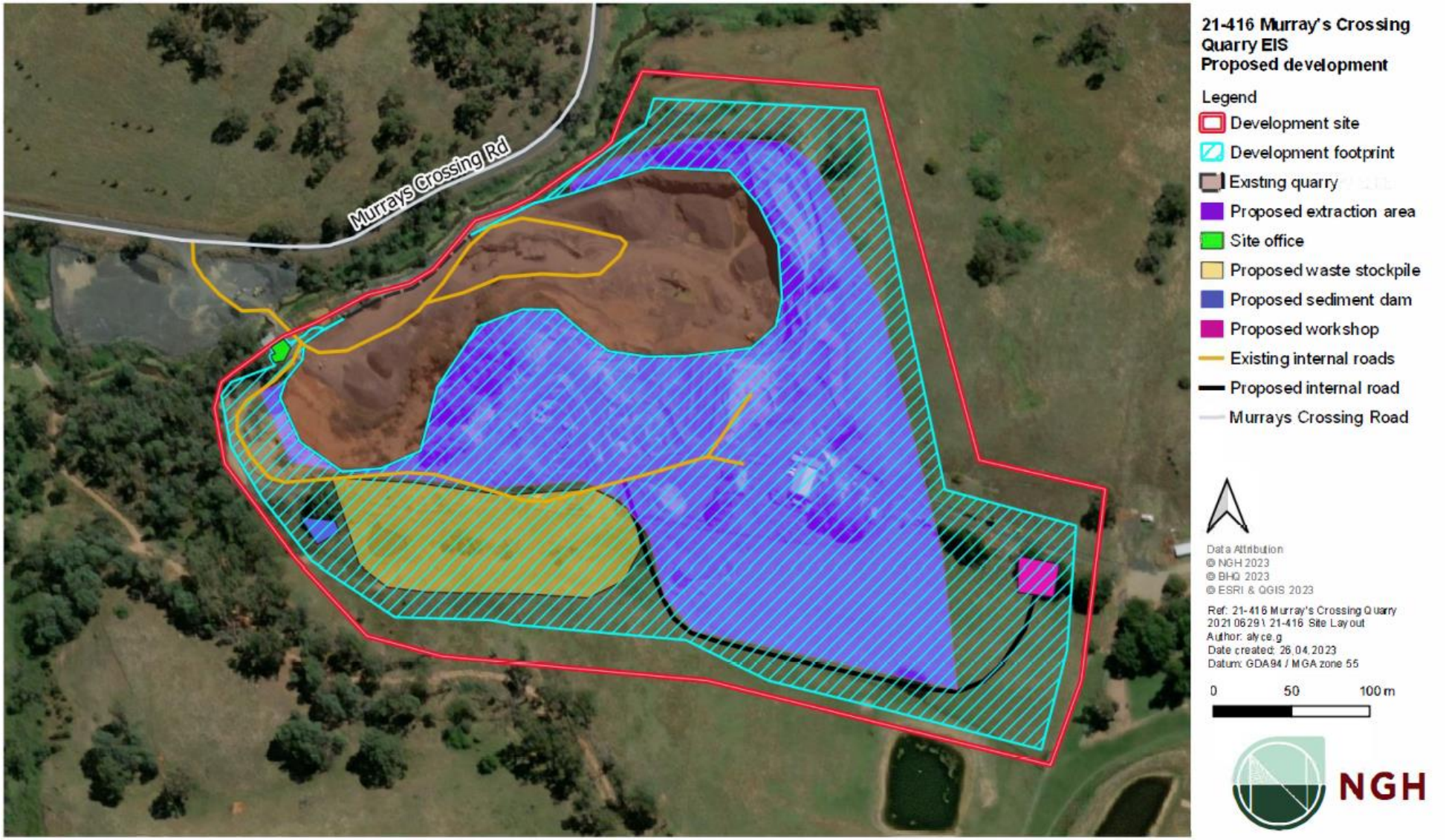


Figure 1-3 Proposed development

2. Statutory Considerations

2.1 NSW Biodiversity Conservation Act 2016

The BC Act aims to maintain a healthy, productive and resilient environment for the greatest well-being of the community, now and into the future, consistent with the principles of ecologically sustainable development. The BC Act contains lists of critically endangered, endangered, and vulnerable species, populations and ecological communities, as well as a list of key threatening processes in NSW.

The primary requirement under the BC Act, is to determine whether a development is likely to significantly affect threatened species. According to clause 7.7(2) of the BC Act, if a proposed development is likely to significantly affect threatened species, the development application is to be accompanied by a biodiversity development assessment report (BDAR). According to this clause, development is considered likely to significantly affect threatened species if:

> *(a) it is likely to significantly affect threatened species or ecological communities, or their habitats, according to the BC Act 5-part Test, or*
>
> *(b) the development exceeds the biodiversity offsets scheme threshold if the biodiversity offsets scheme applies to the impacts of the development on biodiversity values, or*
>
> *(c) it is carried out in a declared area of outstanding biodiversity value.*

This assessment considers the potential impacts to biodiversity for the proposed amalgamation of current operations at Murrays Crossing Quarry in Tumbarumba and disturbance areas.

2.2 Environment Protection and Biodiversity Conservation Act 1999

The EPBC Act protects nationally and internationally important flora, fauna, ecological communities and heritage places, which are defined in the EPBC Act as matters of national environmental significance. Matters of national environmental significance relevant to biodiversity are:

- Wetlands of international importance
- Nationally threatened species and ecological communities
- Migratory species
- Commonwealth marine areas

Significance of impacts is determined in accordance with the Significance impact guidelines 1.1 – Matters of National Environmental Significance (DoE 2013). Where a Proposal is likely to have a significant impact on a matter of national environmental significance, the Proposal is referred to the Commonwealth Environment Minister via the Department of Agriculture, Water and Environment (DAWE). The Minister then determines whether the Proposal is a 'controlled action'. If a Proposal is declared a controlled action, an assessment of the action is carried out and the Minister makes a decision to approve, approve with conditions, or not approve the proposed action.

This assessment considers the potential for the Proposal to impact on matters of national environmental significance relevant to biodiversity.

2.3 Environmental Planning and Assessment Act 1979

The EP&A Act encourages proper management, development and conservation of natural and artificial resources, protection and conservation of the environment including native plants and animals, threatened species, populations, ecological communities and their habitats and ecologically sustainable development.

This BA has been completed under Part 4 of the EP&A Act and aims to address BHQ's duty in respect to considering the environmental impact of the Proposal under Clause 5.5 of the EP&A Act and Section 228 of the EP&A Regulation.

2.4 Fisheries Management Act 1998 No 38

This Act provides conservation for fish and fish habitats and outlines approval processes for the activities that may impact on threatened species and habitats.

The Proposal involves:

- The diversion of an ephemeral watercourse within the southern portion of the Subject Land
- The removal of a farm dam, through which the ephemeral watercourse flows
- The construction of a new sediment directly west of the farm dam to be removed

Refer to section 5.1.2 for details and indicative mapping.

The proposed diversion would flow into Tumbarumba Creek, which is mapped as Key Fish Habitat (KFH). Indicative mapping also suggests that the Murray Crayfish (*Euastacus armatus*) occurs within Tumbarumba Creek (DPI, 2022).
Consultation with Fisheries was conducted via email on 2 March 2022 (refer to Appendix I). Fisheries responded via email on 7 March 2022, requesting that the BA include a threatened aquatic species assessment to address whether there are likely to be any significant impacts downstream on listed threatened species, populations or ecological communities listed under the FM Act, particularly the Murray Crayfish (*Euastacus armatus*). An assessment of significance under the FM Act was conducted (Appendix G). A significant impact on threatened species was considered unlikely.

2.5 NSW Biodiversity Act 2015

The Biosecurity Act guides the management of weeds at the regional level throughout NSW. Under the Act, all priority weeds are regulated with a *general biosecurity duty* to prevent, eliminate or minimise any biosecurity risk they may pose. Any person who deals with any priority weed 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. Individual landholders and managers are required under the Act to control priority weeds for their area according to the relevant biosecurity toolset (Table 2-1).

One priority weed, Blackberry *(Rubus fruticosus species aggregate*) was identified at the site. This is discussed further in Section 4.3.5 .

Table 2-1 Biosecurity Act 2015 toolset for weed management (DPI, 2022)

Outcome category	*Biosecurity toolset*
Weeds excluded from entering state	Prohibited Matter: Declaration and management of significant weeds not present in NSW or part of NSW.
Weeds to be eradicated	Control Order: Management of weeds that are the targets of approved eradication programs. Although a Control Order is for a five–year period, this can be renewed for longer eradication programs.
Weeds to be effectively managed to reduce spread on regional basis	Biosecurity Zone: Weeds subject to ongoing 'strategic' regional management.
All Weeds	General Biosecurity Duty: Requires any person dealing with biosecurity matter or a carrier of biosecurity matter and who knows or ought to know of the biosecurity risks associated with that activity to take measures to prevent, minimise or eliminate the risk as far as is reasonably practicable. Specific measures to reduce the risk will be detailed in regional weeds plans for priority weeds. Note however, that the General Biosecurity Duty exists for all weeds that present a biosecurity risk.
Other Biosecurity tools	Mandatory Measures Regulation: May require persons to take specific actions with respect to weeds or carriers of weeds. Emergency Order: To respond to a current or imminent biosecurity risk that may have a significant impact. Biosecurity Direction: An enforceable instruction to a person or class of persons to take action to: Prevent, eliminate or minimise a biosecurity risk Prevent, manage or control a biosecurity impact Enforce any instrument under the Act. Biosecurity Undertaking: An authorised officer may accept in writing an undertaking by a person that sets out the measures a person has agreed to implement to remedy a contravention, a likely contravention, or suspected contravention of the Act.

2.6 Crown Land Management Act 2016 No 58

The objects of this Act are:

a) *To provide for the ownership, use and management of the Crown land of NSW and,*
b) *To provide clarity concerning the law applicable to Crown land, and*
c) *To require environmental, social, cultural heritage and economic considerations to be taken into account in decision making about Crown land, and*

d) *To provide for the consistent, efficient, far and transparent management of Crown land for the benefit of New South Wales, and*
e) *To facilitate the use of Crown land by the Aboriginal people of New South Wales because of the spiritual, social, cultural and economic importance of land to aboriginal people and, where appropriate, to enable the co-management of dedicated or reserved Crown land, and*
f) *To provide for the management of Crown land having regard to the principles of Crown land management.*

BHQ received Development Consent for the Murrays Crossing Quarry in 1992; however, quarrying activities within the Crown Quarry Reserve (Lot 732 and 623 DP755892) have been evident since the 1940s. In 2009, BHQ entered into an existing land use rights agreement for the Crown Quarry Reserve with Snowy Valley Council (SVC). BHQ also have a permit from Local Land Services to stockpile material and load trucks on the TSR (Lot 7028 DP96852). The Proposal is considered to be consistent with the objectives of the *Crown Land Management Act* whereby:

- The use and management of the land have been clearly established
- Environmental, social, economic and cultural heritage considerations have been taken into consideration
- The use of Crown land by Aboriginal people has been acknowledged.

2.7 State Environmental Planning Policy (Biodiversity and Conservation) 2021

The *State Environmental Planning Policy (Biodiversity and Conservation) 2021* (Biodiversity and

Conservation SEPP) was gazetted on 1 March 2022 repealing the Koala Habitat Protection 2021 and Koala Habitat Protection 2020 SEPPS. No policy changes have been made. The following chapters are relevant to the proposed development:

Chapter 4: Koala Habitat Protection 2021

The Subject Land is located within the Snowy Valleys LGA, which is listed in Schedule 1, Chapter 4, of the Biodiversity and Conservation SEPP. The Subject Land occurs on land zoned RU1 Primary Production. According to Clause 6, Chapter 4 does not apply to land zoned RU1 Primary Production within the Snowy Valleys LGA.

Chapter 3: Koala Habitat Protection 2020

Koala Habitat Protection 2020 applies to all RU1, RU2 and RU3 zoned land outside of the Sydney Metropolitan Area and the Central Coast.

The Subject Land is located on land zoned RU1 Primary Production within the Snowy Valleys LGA, which is listed on Schedule 2, of the Biodiversity and Conservation SEPP. The provisions of Chapter 3 apply to the Proposal.

Assessment of koala habitat is undertaken in section 4.4.3.

2.8 Tumbarumba Local Environmental Plan 2010

1) This Plan aims to make local environmental planning provisions for land in Tumbarumba in accordance with the relevant standard environmental planning instrument under section 3.20 of the Act.

(2) The particular aims of this Plan are as follows—

(aa) to protect and promote the use and development of land for arts and cultural activity, including music and other performance arts,

(a) to develop local planning controls that manage human settlement, rural activities and the natural environment in a manner that contributes to the unique quality of Tumbarumba,

(b) to encourage development that supports the long term economic viability of the local community,

(c) to ensure development is undertaken in a manner that mitigates impacts on the natural environment,

(d) to encourage development that promotes positive social outcomes for the local community.

It is considered that the Proposal is compatible with the aims of the Tumbarumba LEP. The Proposal would be undertaken in a manner that mitigates impacts on the natural environment, while supporting long term employment and economic growth within the region.

3. Methodology

3.1.1 Database Searches and Literature Review

Background searches were undertaken prior to carrying out field investigations to determine whether any threatened flora or fauna species, communities or populations were likely to occur in the subject land. These background searches are listed in (Table 3-1).

Table 3-1 Background searches undertaken for the Proposal

Resource	Target	Search date NGH	Search area
NSW Department of Planning, Industry and Environment (DPE) BioNet Atlas	Threatened flora and fauna, populations and endangered ecological communities	29/06/2021	10 km buffer around the Subject Land
EPBC Act Protected Matters Search	Threatened flora and fauna, endangered populations and ecological communities and migratory species	11/09/2021	10 km buffer around the Subject Land
NSW Biodiversity Values Map and Threshold Spatial Data	Areas of Outstanding Biodiversity Value and BV (high Biodiversity Value) mapped land.	11/09/2021.	Subject Land
Department of Primary Industries (DPI) threatened freshwater indicative distributions	Indicative distributions of threatened freshwater species.	11/09/2021	10 km buffer around the Subject Land
DPI Key Fish Habitat	Key Fish Habitat	11/09/2021	Subject Land
Bureau of Meteorology (BOM) Groundwater Dependent Ecosystems Spatial Data	Groundwater Dependent Ecosystems	11/09/2021	Subject Land
DPE Vegetation Information System, State Vegetation Mapping	Plant Community Type (PCT) Descriptions	11/09/2021	Subject Land
National Flying Fox Viewer	Flying fox camps.	11/09/2021	10 km buffer around the Subject Land
Tumbarumba LEP	Minimum lot size	11/09/2021	Subject Land

3.1.2 Threatened Species Evaluation

Information was compiled on threatened species, populations, and communities which have the potential to be present in the Subject Land from current scientific publications including national recovery plans, approved recovery advice, interim management plans and state (DPIE, BCS and DPI) and federal (SPRAT) species profiles.

The results of the database searches and literature review have been used to evaluate the potential for threatened species, ecological communities and endangered populations to be present in the subject land, and to be adversely affected by the works. The threatened species evaluation also considers field survey results in relation to habitat type and quality, and on–site records. The approach is consistent with the NSW Threatened Species Test of Significance Guidelines (OEH, 2018). The Threatened Species Evaluation (Appendix D) was utilised to determine the likelihood of threatened entities within the Subject Land, and then, the potential impact to those entities based on the impact assessment within this BA.

3.2 Field Surveys

An initial site survey was undertaken by two NGH ecologists on 17 September 2021. The Subject Land was surveyed via foot to determine the PCTs and zones present. Additional surveys were undertaken on 20 October 2021, in response to changes to the Subject Land boundary.

3.2.1 Flora

The aims of the flora surveys were to:

- Determine the vegetation communities present within the subject land, their condition and extent
- Identify potential Threatened Ecological Communities (TECs) within the subject land and determine their condition and extent
- Identify potential habitat for threatened flora species within the subject land

The subject land was traversed on foot. Rapid assessment points were undertaken at changes in vegetation types or vegetation condition. The dominant three species in each structural layer (Canopy, midstory and groundcover) were recorded if present. Any other plant species, including weed species observed during the field work were recorded. The extent of native vegetation was mapped using a GPS enabled tablet tracking the boundary of native vegetation against the exotic vegetation. subject land
Plant Community Types (PCTs) were identified according to the DPE BioNet Vegetation Classification (DPE, 2022) using the floristic data from field work, landscape position, IBRA regions and State Vegetation Mapping. Where relevant, Threatened Ecological Communities (TEC) were confirmed based on the relevant Scientific Committee – final determinations for each TEC. Botanical nomenclature follows Harden (1990-2002) and the PlantNet website (PlantNET, 2022).

3.2.2 Fauna and Habitat

The terrestrial fauna survey was undertaken to record and assess the habitat value of the site for fauna, particularly threatened species with potential to occur at the site. Fauna signs and key habitat features were recorded, including:

- Hollows and fissures in standing trees and stags
- Fallen timber and litter

- Fauna signs such as nests, scratches, scats and latrine sites
- Food tree species (for gliders, possums and koala etc)
- Microhabitats such as soaks, rock outcrops and dense understorey vegetation
- Habitat type (Woodland, grassland, aquatic etc) and quality

All trees were individually inspected for trunk or limb hollows and any signs of occupation or use. Any disturbances and active threats to fauna or habitats were also recorded during the survey.

3.3 Assumptions and Limitations

The survey undertaken involved a site assessment to determine Plant Community Types (PCTs) and key habitats present on site for the purpose of preparing this BA, as outlined in (Section 1.1) of this report.

There is potential for some flora species to have not been recorded during the survey due to the timing of the survey. Some ephemeral or short-lived species such as grasses, orchids and lilies, have a limited growing season and tend to grow during spring and early summer during favourable conditions.

Site surveys were conducted during the mid-morning to early afternoon time period and some fauna species may not have been present during this time of the day. Opportunistic fauna surveys were undertaken. No targeted fauna surveys were conducted, and assessment of fauna is based on habitat features present.

4. Results

4.1 General

The Proposal falls within the Bondo subregion of the South Eastern Highlands Bioregion. This Bioregion is dominated by a temperate climate, characterised by warm summers and no dry season (DPE, 2021).

The Proposal is located approximately 2km south southwest of the Tumbarumba township. The Subject Land slopes gently west, down towards Tumbarumba Creek. The Subject Land is largely cleared and disturbed from existing quarry use and agricultural activities. Some small fragmented pockets of remnant woodland and isolated remnant trees occur throughout the site. Remaining vegetated areas are dominated by exotic vegetation such as Blackberry (**Rubus fruticosus*) and exotic pasture grasses such as Phalaris (**Phalaris aquatica*) and **Dactylis glomerata.* Two ephemeral streams/drainage lines pass through the Subject Land and feed into Tumbarumba Creek, located immediately northwest of the Subject Land. The drainage lines lack a native overstory but contain a mix of native sedges and rushes. The surrounding landscape consists of an undulating topography and relatively large portions of remnant, contiguous vegetation, especially to the west within the TSR.

Key biodiversity features identified within the Subject Land include:

- Remnant Riverina Dry Sclerophyll Forest
- Isolated Mature Trees
- One hollow-bearing tree (HBT)
- Two farm dams
- Two ephemeral streams, which feed into Tumbarumba Creek

PCTs recorded within the Subject Land has been described within section 4.3.1. Flora and fauna species recorded within the Subject Land have been detailed within section **Error! Reference source not found.** and section 4.4. and a full list of species recorded is shown in Appendix B Biodiversity features within the Subject Land are described further within this chapter.

4.2 Background Searches

4.2.1 Threatened Species

The results of the desktop study identified 26 flora species, six Threatened Ecological Communities (TECs), as well as 70 fauna species and/or populations with the potential to occur within the locality.

4.2.2 Biodiversity Values

The Proposal does not fall within an Area of Outstanding Biodiversity Value (AOBV).

Tumbarumba Creek is mapped under the NSW Biodiversity Values Map as Biodiversity Values (BV) Land (Figure 4-1). The latest BV mapping shapefile was downloaded from SEED portal on 11th September 2021 and imported into NGH's GIS mapping software. The online BV MAP viewer was also used to check if there were any BV mapped areas added in the last 90 days. Tumbarumba Creek is identified under the NSW BV Map as an area of 'Protected Riparian Land'.

BV Mapped land is identified as land with '*high biodiversity value that is particularly sensitive to impacts from development and clearing'* (DPIE, 2021).

The Subject Land occurs within mapped areas of BV land. The Proposal would not involve further development on BV land. Some of this land is already cleared from historic quarry operations. No clearing of native vegetation would occur within the BV land.

Consideration of prescribed impacts under cl6.1 of the BC Regulation on BV mapped land is undertaken in Section 5.1.3.

4.2.3 Groundwater Dependant Ecosystems

Groundwater dependent ecosystems are vulnerable to pressures such as agriculture, mining, urban and commercial development (BOM, 2017). Doody et al. (2019) define Groundwater Dependent Ecosystems (GDEs) as ecosystems *whose species and ecological processes rely on groundwater, either entirely or intermittently*. GDEs are roughly grouped into subterranean, aquatic and terrestrial ecosystems. For the purpose of this report aquatic and terrestrial GDEs are mapped. Subterranean mapping has not been conducted outside of QLD under the Bureau of Meteorology GDE atlas.

Both terrestrial and aquatic GDEs are present within the site. Moderate potential aquatic GDEs are present in the form of Tumbarumba Creek, while high potential terrestrial GDEs are present as woodlands.

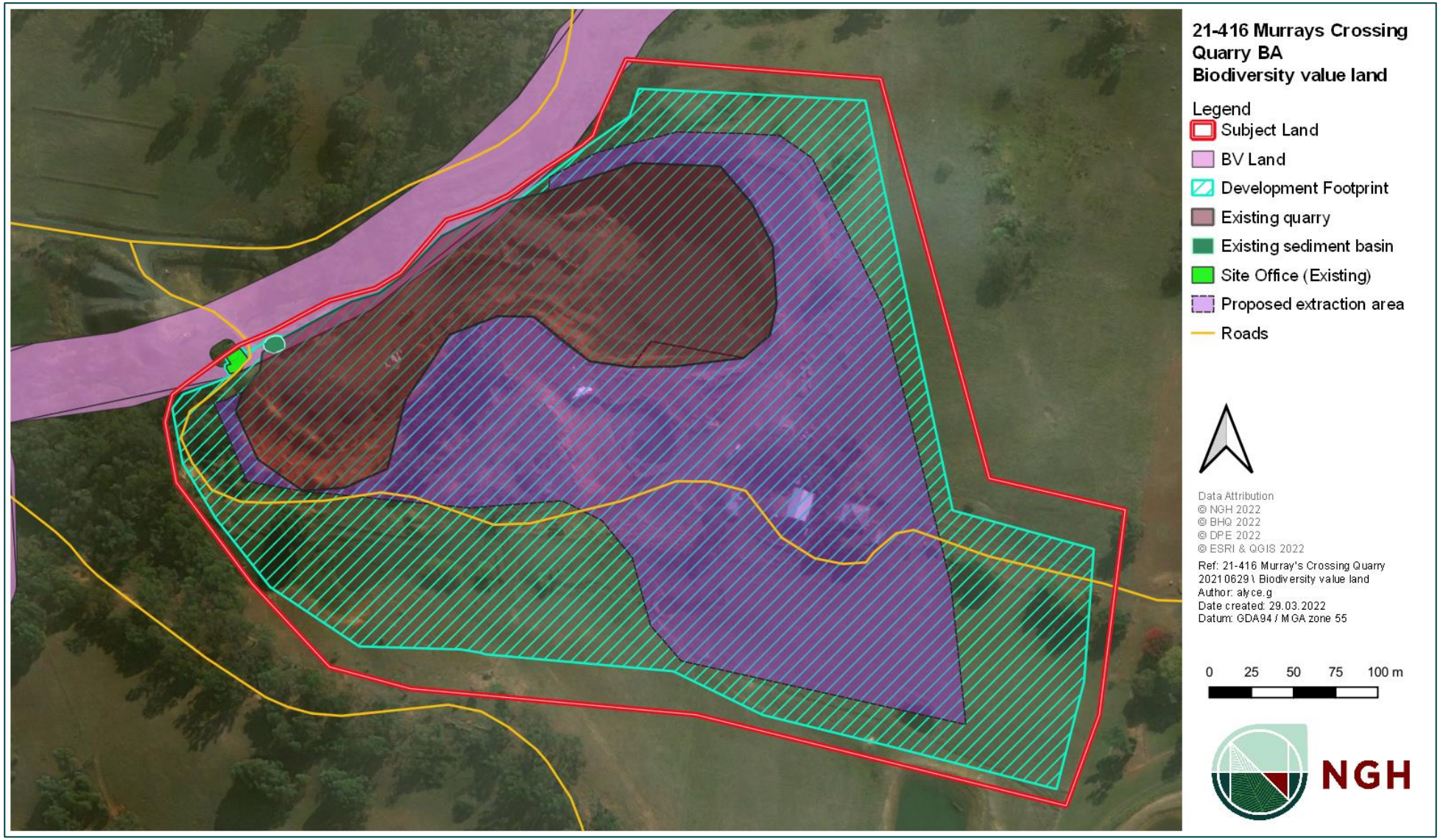


Figure 4-1 Biodiversity value land

Figure 4-2 Groundwater Dependent Ecosystems

4.3 Vegetation

4.3.1 Plant Community Types

One PCT was identified in the subject land:

- PCT 285 *Broad-leaved Sally grass – sedge woodland on valley flats and swamps in the NSW South Western Slopes Bioregion and adjoining South Eastern Highlands Bioregion.*

This PCT occurred in four separate forms, including woodland, isolated paddock trees, creek lines devoid of overstory vegetation and derived grasslands. This PCT has been detailed in Table 4-1 and the proportion occurring within the development footprint has been provided in Figure 4-7.

Table 4-1 PCT 285 description

PCT 285 *Broad-leaved Sally grass- sedge woodland on valley flats and swamps in the NSW South Western Slopes Bioregion and adjoining South Eastern Highlands Bioregion*	
Vegetation Formation	Dry Sclerophyll Forests (Shrub/grass sub-formation)
Vegetation Class	Upper Riverina Dry Sclerophyll Forests
Description	**Woodland** Mid-high woodland dominated by a mix of Broad-leaved Sally (*Eucalyptus camphora subsp. Humeana*) ,Apple Box (*Eucalyptus bridgesiana*) Robertson's Peppermint (*Eucalyptus robertsonii*) and Black Sally (*Eucalyptus steullata*). Shrubs were sparse to dense and included Coil-pod Wattle (*Acacia pravifolia*), Buffalo Wattle (*Acacia kettlewelliae*), Native Blackthorn (*Bursaria spinosa*) and *Cassinia longifolia.* The ground cover was mostly disturbed but contained some native understory species such as *Oxalis perennans,* Native Geranium (*Geranium solanderi*), Cotton Woodruff (*Asperula conferta*) and Austral Bear's Ears (*Cymbonotus preissianus*). The priority weed Blackberry (**Rubus fruticosus*) was common along the edges of the woodland patches. **Paddock Trees** Isolated paddock trees were comprised of the same overstory species and were considered to be part of the same PCT. The understory surrounding paddock trees was either bare ground or comprised of entirely exotic vegetation (**Dactylis glomerata* & **Phalaris aquatica*). **Creekline** This zone occurred in the ephemeral drainage line within the exotic grazing paddocks. No native overstory was present however some scattered Willow (*Salix sp.*) occurred. Groundcover within the drainage

<table>
<tr><th colspan="3">PCT 285 Broad-leaved Sally grass- sedge woodland on valley flats and swamps in the NSW South Western Slopes Bioregion and adjoining South Eastern Highlands Bioregion</th></tr>
<tr><td></td><td colspan="2">line was dominated by native rushes such as Juncus usitatus, Carex appressa and Eleocharis sp. Exotic pasture grasses such as Phalaris (*Phalaris aquatica) and Brome (*Bromus catharticus) were also common.

Derived Grassland

Derived Grassland comprised of a small stand of Kangaroo Grass (Themeda australis) within exotic pasture of Phalaris (Phalaris sp.) and Cocksfoot (Dactylis glomerata).</td></tr>
<tr><td>Condition</td><td>PCT Zone

PCT 285 Woodland

PCT 285 Creek line

PCT 285 Grassland

PCT 285 Paddock Trees</td><td>Condition

Moderate condition. The PCT contained a native remnant overstory with a predominately native understory. Highly fragmented from quarry operations with high disturbance on the edges.

Low condition. Contained a predominately exotic understory with some native rushes within the drainage line. No overstorey present. Natural regeneration not present.

Low condition, dominated by exotic grasses with low density of native grasses. No regeneration of canopy species present.

Low condition. Isolated trees within exotic understory. Trees suffering dieback.</td></tr>
<tr><td rowspan="4">Approximate extent within subject land</td><td>PCT 285 Creek line</td><td>0.21 ha</td></tr>
<tr><td>PCT 285 Grassland</td><td>0.04 ha</td></tr>
<tr><td>PCT 285 Paddock Trees</td><td>0.07 ha</td></tr>
<tr><td>PCT 285 Woodland</td><td>0.33 ha</td></tr>
</table>

PCT 285 *Broad-leaved Sally grass- sedge woodland on valley flats and swamps in the NSW South Western Slopes Bioregion and adjoining South Eastern Highlands Bioregion*	
Conservation Status	No associated TEC
Images	 Figure 4-3 PCT 285_woodland

Figure 4-4 PCT 285_paddock tree

Figure 4-5 PCT 285_creekline

PCT 285 *Broad-leaved Sally grass- sedge woodland on valley flats and swamps in the NSW South Western Slopes Bioregion and adjoining South Eastern Highlands Bioregion*	
	 Figure 4-6 PCT 285_grassland

Figure 4-7 Vegetation mapping within the development footprint

4.3.2 Non-native Vegetation

Areas not described as PCT 85 were either exotic vegetation or bare ground. Areas surrounding the quarry are highly disturbed from earthworks and quarry operations. These areas are dominated by exotic species such as Cocksfoot (**Dactylis glomerata*), Phalaris (**Phalaris aquatica*), Thistles (**Silybum marianum*, **Cirsium vulgare*), Blackberry (**Rubus fruticosus*) and exotic annual grasses (**Avena fatua, *Lolium spp.* & **Bromus catharticus*). No native groundcovers were observed within the areas described as non-native vegetation.

The paddocks in the southern end of the subject land are exotic pastures comprised of **Lolium spp, and *P. aquatica.* Exotic pine trees are present around farm sheds.

These areas are shown as non-native in Figure 4-7. Examples of exotic and non-native vegetation are shown in Figure 4-8 to Figure 4-11. Further photos are shown in Appendix C

Figure 4-8 Cleared areas surrounding extraction pit

Figure 4-9 Exotic vegetation behind Quarry walls

Figure 4-10 Exotic and disturbed vegetation around paddock trees

Figure 4-11 Exotic pastures (non native)

4.3.3 Threatened Ecological Communities

PCT 285 does not form part of a Threatened Ecological Community (TEC)

One aquatic TEC was present within the subject land:

- The aquatic ecological community in the natural drainage system of the lower Murray River catchment (Murray River EEC) – FM Act Listed EEC.

The Murray River EEC occurs within the Subject Land in the form of ephemeral drainage lines, that feed into Tumbarumba Creek. This EEC includes *'all native fish and aquatic invertebrates within all natural creeks, rivers, and associated lagoons, billabongs and lakes of the regulated portions of the Murray River (also known as the River Murray) downstream of Hume Weir, the Murrumbidgee River downstream of Burrinjuck Dam, the Tumut River downstream of Blowering Dam and all their tributaries anabranches and effluents'* (DPE, 2007).

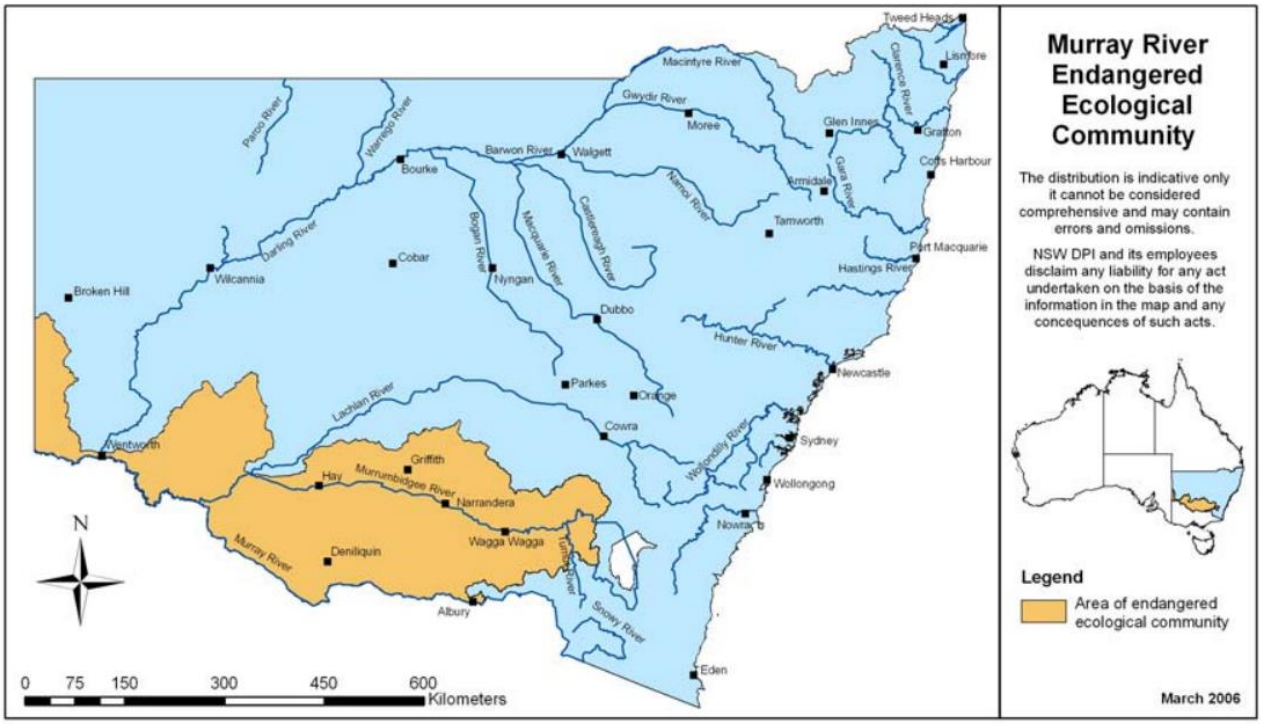


Figure 4-12 Distribution of the Murray River EEC (DPE, 2007)

4.3.4 Threatened Flora

No threatened flora species were identified during the site survey.

A search of the NSW BioNet Atlas and EPBC Protected Matters Search Tool identified 26 threatened flora species with the potential to occur within the Subject Land.

One historic record of the Crimson Spider Orchid from 1899 was identified within the 10km locality using the NSW BioNet Atlas (DPE, 2022).

The Crimson Spider Orchid (*Caladenia concolor*) is listed as Endangered under the BC Act and Vulnerable under the EPBC Act. There are no known populations or individuals previously recorded within the Subject Land. Habitat for this species is defined on the DPE (2022) Threatened Species Profile as '*regrowth woodland on granite ridge country that has retained a high diversity of plant species, including other orchids'.* The subject land is highly disturbed, lacking in native plant diversity and no habitat suitable for this species was present within or directly adjacent to the Subject Land. No further assessment was considered necessary.

A review of threatened flora known to occur within the Bondo subregion of the Eastern Highlands Bioregion was made to determine potential occurrence of threatened species within the Subject Land. A habitat evaluation was completed for all of these species and is provided in Appendix D.

Based on this the assessment, habitat within the Subject Land is considered suitable for the following species due to the presence of a small patch of Kangaroo Grass (*Themeda triandra*):

- Austral Toadflax (*Thesium australe*) BC – V, EPBC - V

The habitat assessment determined no other threatened flora species were considered likely to occur due to the highly disturbed nature of the site from quarry operations and grazing, resulting in low native plant diversity.

4.3.5 Priority Weeds

One priority weed was detected within the Subject Land - Blackberry (*Rubus fruticosus* species aggregate). This weed is regulated with a **general biosecurity duty** to prevent, eliminate or minimise any biosecurity risk it may pose and 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 (DPI, 2019) This has a prohibition on certain dealings. It must not be imported into the state, sold, bartered exchanged or offered for sale.

In NSW, reasonable steps must be undertaken to prevent, eliminate or minimise any biosecurity risk or threat from priority weeds.

4.4 Fauna

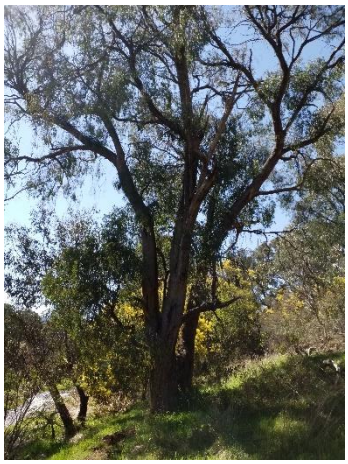
4.4.1 Terrestrial Fauna Habitat

During the field surveys nine terrestrial species were observed, or evidence of their presence was found. No threatened fauna species were identified within the Subject Land. A species list has been provided within Appendix B.

Terrestrial fauna habitat identified within the Subject Land is detailed in Table 4-2.

Table 4-2 Terrestrial fauna habitat identified within the Subject Land

Habitat features	Description	
Eucalypt Forest PCT 285	Remnant and isolated forest and grassland within the Subject Land provides valuable foraging and breeding habitat for native species. Habitat within PCT 285 was diverse, containing a number of eucalyptus and shrub species. Although the ground cover was dominated by exotic perennial grasses, the mature and regenerating structure of this PCT provides a value resource for local fauna species.	

Habitat features	Description	
Groundcover	Native grasses occurred in very low densities. Native grasses provide foraging resources for native species. Most of the site was dominated by exotic perennial grasses; however, these grasses also provide a low value resource for foraging and refuge.	
Fallen timber	Fallen timber has collected in a few locations throughout the Subject Land. Areas with fallen timber generally occurred where previous disturbance was present. Fallen timber provides shelter and foraging resources for several native fauna species including small reptiles and ground-foraging birds.	
Hollow-bearing trees	One hollow-bearing tree occurred within the Subject Land, containing two small hollows HBTs provide nesting and/or roosting habitat for native fauna including microbats, birds and mammals.	

Habitat features	Description	
Aquatic habitat	Ephemeral creeks occur within the Subject Land. Aquatic habitat provides a valuable resource for native fauna.	

4.4.2 Threatened Fauna

No threatened species were identified during the site inspection, however due to the extent, variability, and quality of habitat within the Subject Land, the presence of threatened fauna may not be ruled out.

A search of the NSW BioNet Atlas found the following fauna species were recorded within 10 km of the Subject Land:

- Dusky Woodswallow (*Artamus cyanopterus cyanopterus*)
- Flame Robin (*Petroica phoenicea*)
- Gang-gang Cockatoo (*Callocephalon fimbriatum*)
- Greater Glider (*Petauroides volans*)
- Koala (*Phascolarctos cinereus*)
- Large Bent-winged bat (Miniop*terus orianae oceanensis*)
- Powerful Owl (*Ninox strenua*)
- Scarlet Robin (*Petroica boodang*)
- Speckled Warbler (*Pyrrholaemus sagittatus)*
- Spotted-tailed Quoll (*Dasyurus maculatus*)
- Varied Sittella (*Daphoenositta chrysoptera*)
- White-throated Needletail (*Hirundapus caudacutus*)
- Yellow-bellied Glider (*Petaurus australis*)

A search of the NSW DPI Threatened Freshwater Species Indicative Distributions (TFSID) found the following threatened species may occur within the Murray River and associated tributaries:

- Murray Crayfish (*Euastacus armatus*)

A search of the EPBC Protected Matters Search Tool (PMST) an additional 57 threatened (and/or migratory) species.

A habitat evaluation was completed for all of these species (Appendix D).

Based on this threatened species evaluation in Appendix D, the following species have been determined to potentially occur within the Subject Land and have the potential to be impacted by the proposed works:

Amphibians

- Booroolong Frog (*Litoria booroolongensis*) BC – E, EPBC - E
- Spotted Tree Frog (*Litoria spenceri*) BC – CE, EPBC - E

Birds

- Woodland Birds:
  - Regent Honeyeater (*Anthochaera phrygia*) BC – CE, EPBC - CE
  - Dusky Woodswallow (*Artamus cyanopterus cyanopterus*) BC - V
  - Gang-gang Cockatoo (*Callocephalon fimbriatum*) BC - V
  - Speckled Warbler (*Chthonicola sagittata*) BC - V
  - Brown Tree Creeper (eastern subspecies) (*Climacteris picumnus victoriae*) BC - V
  - Varied Sittella (*Daphoenositta chrysoptera*) BC - V
  - Painted Honeyeater (*Grantiella picta*) BC – V, EPBC - V
  - Hooded Robin (south-eastern form) (*Melanodryas cucullata cucullata*) BC - V
  - Turquoise Parrot (*Neophema pulchella*) BC - V
  - Barking Owl (*Ninox connivens*) BC - V
  - Powerful Owl (*Ninox strenua*) BC - V
  - Scarlet Robin (*Petroica boodang*) BC - V
  - Flame Robin (*Petroica phoenicea*) BC - V
  - Superb Parrot (*Polytelis swainsonii*) BC – V, EPBC - V
  - Diamon Firetail (*Stagonopleura guttata*) BC - V
  - Masked Owl (*Tyto novaehollandiae*) BC - V
- Raptors:
  - Spotted Harrier (*Circus assimilis*) BC - V
  - Black Falcon (*Falco subniger*) BC - V
  - Little Eagle (*Hieraaetus morphnoides*) BC - V
  - Square-tailed Kite (*Lophoictinia isura*) BC - V

Mammals

- Woodland Mammals:
  - Eastern Pygmy Possum (*Cercartetus nanus*) BC - V
  - Spotted-tailed Quoll (*Dasyurus maculatus maculatus*) BC – V, EPBC - E
- Bats:
  - Large Bent-winged Bat (*Miniopterus orianae oceanensis*) BC - V
  - Southern Myotis (*Myotis macropus*) BC - V
  - Corben's Long-eared Bat (*Nyctophilus corbeni*) BC – V, EPBC - V
  - Grey-headed Fly-fox (*Pteropus poliocephalus*) BC – V, EPBC – V

An Assessment of Significance (AoS) and Test of Significance (ToS) have been completed for these species (Appendix E and Appendix F). A significant impact was considered unlikely, given that:

- The amount of habitat to be removed or disturbed by the Proposal is very small
- No increases to fragmentation, edge effects or isolation would occur
- No substantial contribution to any Key Threatening Process are expected
- Mitigation measures have been recommended to further reduce impacts to biodiversity
- No impact on an important population of this species is expected by the proposed works.

4.4.3 Koala Habitat Assessment

Part 3.2 of Chapter 3 of the Biodiversity and Conservation SEPP, determines development consent may be granted if the applicant provides to the Council evidence, prepared by a suitably qualified and experienced person, that the land subject to the development application:

- is not potential koala habitat; or,
- if it is potential koala habitat, it is not core koala habitat; or,
- if it is core koala habitat, a Koala Plan of Management (Koala PoM) must be either be in place or be prepared, and Council's determination of the DA cannot be inconsistent with the Koala PoM.

Under section 3.2 of Chapter of the Biodiversity and Conservation SEPP, the following definitions apply:"

- Potential koala habitat: means areas of native vegetation where trees of the types listed in Schedule 1 of the Biodiversity and Conservation SEPP 2021 constitute at least 15% of the total number of trees in the upper or lower strata of the tree component.
- Core koala habitat: means an area of land with a resident population of koalas, evidenced by attributes such as breeding females, being females with young, and recent sightings of and historical records of a population.

Does the proposed development area contain trees listed under Schedule 1 of the Biodiversity and Conservation SEPP 2021?

No, The Subject Land does not contain any of the Koala feed trees listed in Schedule 1

Is the land potential Koala habitat?

No, The Subject Land does not contain any of the Koala feed trees listed in Schedule 1

Is the land core Koala habitat?

There was no detection of Koala or evidence of their presence during site visit undertaken by an NGH ecologist. No trees were found to have scratches and no Koalas were observed within any of the trees in the development site. No NSW Bionet Atlas records for Koala occur within the Subject Land. One historic record pre 1970 of the Koala occurs in Tumbarumba township but it is believed to be a vagrant record.

NGH ecologists therefore do not consider the land to be potential or core Koala habitat, as defined under the Biodiversity and Conservation SEPP 2021, and a Koala Management Plan is not required for this proposed development.

4.4.4 Aquatic Habitat

No threatened aquatic species were observed or heard during the site survey. However, due to the timing of the survey some aquatic species, such as amphibians, may not have been calling. Other species, such as fish, may not have been present or not identified due to the presence of water. The occurrence of threatened aquatic species may not be ruled out.

Under the NSW DPI Strahler Stream Order spatial data Tumbarumba Creek is mapped as a 5th order stream. A search of the DPI Fisheries NSW Spatial Data Portal found that Tumbarumba Creek, located immediately northwest of the Subject Land is mapped as Key Fish Habitat (KFH) and 'very poor' Freshwater Fish Community status. It contains mapping for one Threatened Freshwater Fish Species, the Murray Crayfish.

Tumbarumba Creek connects and flows into Tooma River around 30 km south of the Subject Land. Tooma river is mapped as Key Fish Habitat with sections of 'very poor' and 'poor' Freshwater Fish Community status. It contains mapping for three threatened Freshwater Fish Species, being the Murray Crayfish, Flathead Galaxias and Macquarie Perch.

Subject Land.

Under the FM Act, the Endangered Ecological Community (EEC), '*The aquatic ecological community in the natural drainage system of the lower Murray River catchment'* (Murray River EEC) occurs within the 10km locality. The Murray River EEC DPI Primefact (2007) states *'The lower Murray aquatic ecological community includes all native fish and aquatic invertebrates within all natural creeks, rivers and associated lagoons, billabongs and lakes of the regulated portions of the Murray, Murrumbidgee and Tumut rivers, as well as all their tributaries and branches.'* Tumbarumba Creek falls within the area mapped as the 'Area of endangered ecological community' under the DPI Primefact and may be considered a branch of tributaries associated with the Murray River. A precautionary approach has been taken to assume this EEC occurs within the Subject Land.

Observations of Tumbarumba Creek within the Subject Land are detailed below:

- Fast flowing, no areas of pooled water.
- Native dominated aquatic vegetation
- Algae was not noted as present within the Subject Land
- Meandering creek formation
- Shallow banks (roughly level with stream)
- Native riparian vegetation present
- Minimal roughness present, minor presence of instream snags, logs and branches
- Water colour was light brown and very turbid due to recent rain
- Minimal pollution was observed (rubbish)

Aquatic habitat features have been detailed further in Table 4-3 and Figure 4-12.

A search of NSW BioNet Atlas and NSW DPI TFSID found the following threatened aquatic species has the potential to occur within the Subject Land:

Fish

- Murray Crayfish (*Euastacus armatus*) FM – V

Amphibians

- Booroolong Frog (*Litoria booroolongensis*) BC – E, EPBC – E
- Spotted Tree Frog (*Litoria spenceri)* BC – CE, EPBC - E

Refer to section 4.4.2 for details on the assessment of threatened fauna under the BC Act and EPBC Act.

Table 4-3 Aquatic Habitat Features

Aquatic habitat feature	Image
Deep water creek with shallow banks and native vegetation. Tumbarumba Creek is located directly north northwest of the Subject Land. KFH associated with Tumbarumba Creek is mapped as occurring within the Subject Land. It is possible that aquatic species, such as amphibians, utilise riparian habitat on either side of the creek. Tumbarumba creek falls outside the development footprint but indirect impacts may occur from sedimentation or change in water flow.	
Two deep water farm dams are located within the Subject Land. Native flora species, such as sedges and rushes were observed, which are utilised by amphibians.	

Aquatic habitat feature	Image
Ephemeral drainage line An ephemeral drainage line runs East West direction into Tumbarumba Creek in the southern half of the Subject Land. Native sedges and rushes were observed within the drainage lines.	

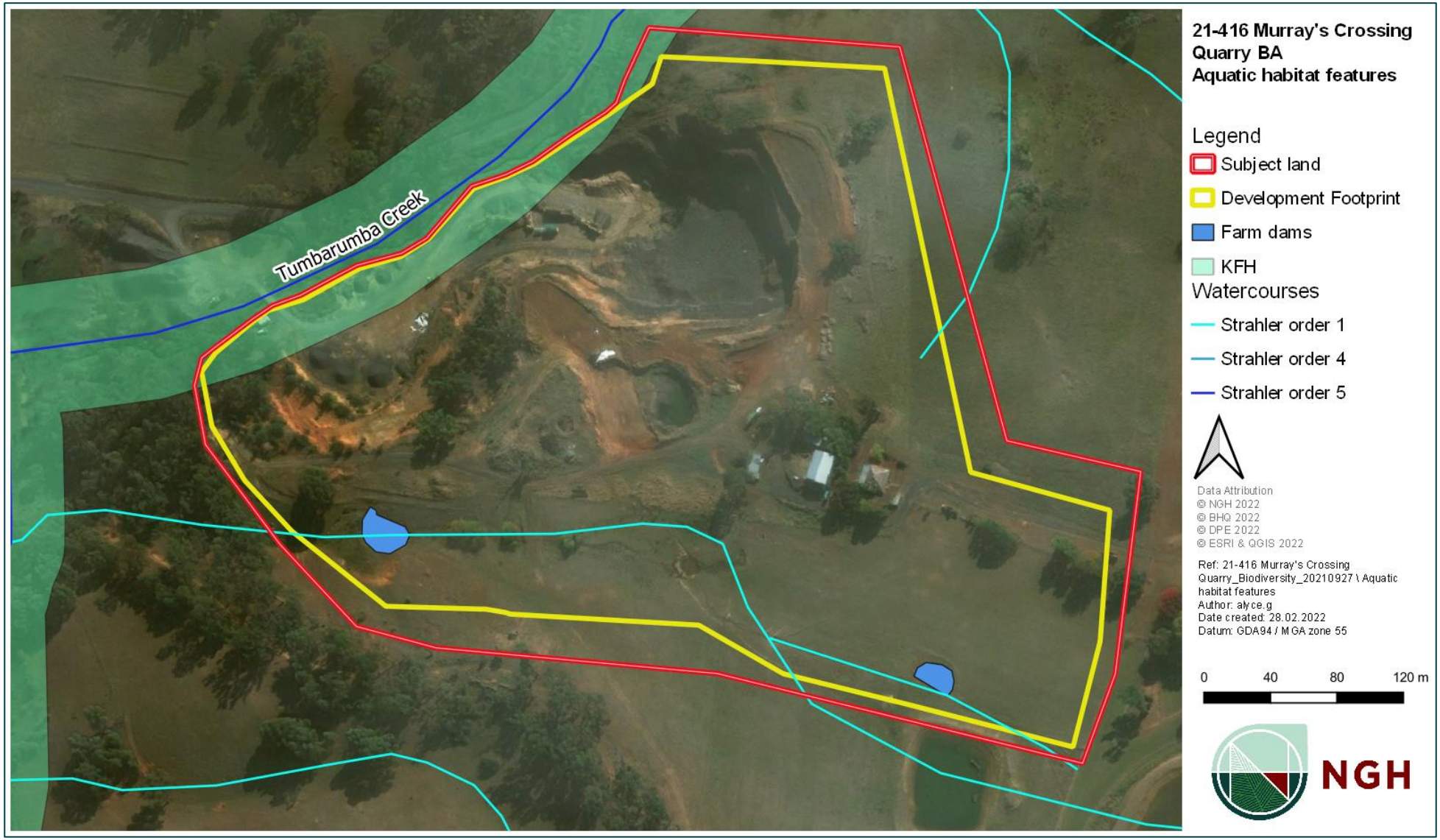


Figure 4-13 Aquatic habitat occurring within and adjacent to the Subject Land

4.5 EPBC Matters of National Environmental Significance

4.5.1 Wetlands

No wetlands of national importance occur within the Subject Land, or 200km upstream or downstream of the Subject Land.

4.5.2 Threatened Species

9 EPBC Act listed species were considered to have the potential to occur within the Subject Land and be impacted by the proposed works:

Flora:

- Austral Toadflax (*Thesium austral*) BC – V, EPBC - V

Fauna:

- Woodland Birds:
  - Regent Honeyeater (*Anthochaera phrygia*) BC – CE, EPBC - CE
  - Painted Honeyeater (*Grantiella picta*) BC – V, EPBC - V
  - Superb Parrot (*Polytelis swainsonii*) BC – V, EPBC - V
- Woodland Mammals:
  - Spotted-tailed Quoll (*Dasyurus maculatus maculatus*) BC – V, EPBC - E
- Bats:
  - Corben's Long-eared Bat (*Nyctophilus corbeni*) BC – V, EPBC - V
  - Grey-headed Fly-fox *(Pteropus poliocephalus*) BC – V, EPBC - V
- Frogs
  - Booroolong Frog (*Litoria booroolongensis*) BC – E, EPBC - E
  - Spotted Tree Frog (L*itoria spenceri*) BC – CE, EPBC – E

A significant impact is not considered likely. Rrefer to section **Error! Reference source not found.** and section 4.4 of this report for details on the assessment of threatened fauna under the BC Act and EPBC Act.

4.5.3 Migratory Species

Migratory species are protected under the EPBC Act. 11 species listed as Migratory under the EPBC Act were determined by the EPBC PMST as having potential habitat or occurrence within the area. Based on the habitat assessment, no habitat is present that would indicate the likely occurrence of these species. As such, no tests of significance would need to be conducted for these species under the EPBC Act.

4.5.4 Threatened Ecological Communities

No area of TEC listed under the EPBC Act were identified within the Subject Land.

5. Assessment of Impacts

5.1 Assessment of Impacts

It has been assumed that all areas within the development footprint would be impacted by the proposed works through:

- Excavation and modification (quarrying)
- Ground disturbance (vehicle and plant movement)
- Ancillary facilities (stockpile, workshop)

Direct impacts from the proposed works, relevant to the BA, include:

- Native vegetation removal
- Disturbance to aquatic habitat
- In-stream impacts
- Excavation
- Erosion, sedimentation and pollution runoff into waterways
- Ground disturbance
- Increases to Key Threatening Processes.

Indirect impacts within the Subject Land include noise and dust from the proposed works. These indirect impacts would be minimal and temporary and occur during daylight hours only.

Areas of vegetation and aquatic habitat that may incur impact from the proposed works are detailed below within Table 5-1 and Table 5-2.

Table 5-1 Vegetation impacts

Vegetation	Zone	Development footprint (ha)
PCT 285	Creek line	0.21
PCT 2285	Grassland	0.04
PCT 285	Paddock Tree	0.07
PCT 285	Woodland	0.33
Total		**0.65**

Table 5-2 Aquatic habitat impacts

Vegetation	Development footprint (ha)
Aquatic Habitat (Existing Dams) and streams	0.21

5.1.1 Vegetation loss

The proposed works would predominately incur impacts on PCT 285: *Broad-leaved Sally grass – sedge woodland on valley flats and swamps in the NSW South Western Slope Bioregion and adjoining South Eastern Highlands Bioregion*. This would occur on isolated paddock trees, creek line, grassland and woodland. Approximately 0.65ha of native vegetation and 9.35ha of exotic vegetation would be impacted by the Proposal.

The development would also involve the removal of approximately 0.3ha of regenerating vegetation (PCT 285) from within the existing quarry footprint (refer to Figure 4-7). BHQ have an existing land rights agreement with SVC (refer to Appendix H). As a part of this agreement, BHQ are permitted to periodically clear vegetation from the existing pit. As such, regeneration vegetation observed within and immediately surrounding the pit was not included in the impact assessment.

5.1.2 Threatened species and ecological communities

AoS and ToS were conducted for selected species listed under the BC Act, EPBC Act and FM Act (Appendix E, Appendix F and Appendix G) to characterise the effect of habitat loss and clearing and these are summarised briefly below. Both construction and operation impacts were assessed.

Terrestrial flora

Construction

Construction of the Proposal has the potential to incur the following impacts to native flora species:

- Disturb mature flora plants and associated seedbank and therefore inhibit potential regeneration
- Incur the invasion and spread of weeds, pathogens and disease

Approximately 0.65ha of native vegetation would be removed for the Proposal. The proposed development would largely extend into areas of exotic pasture grasses and, as such, impacts to native flora species are considered minor.

Ground disturbance from the movement of plant machinery and vehicles is expected to occur throughout the development footprint. Post-construction, plant and machinery would utilise the internal haul roads, allowing for the regeneration of native species onsite.

Edge effects are not expected to increase as a result of the development, as vegetation within the Subject Land was observed to already be heavily fragmented. Weed encroachment and establishment is currently being experienced throughout the site, reducing the quality of habitat.

Operation

During operation of the development, ongoing dust impacts could occur to terrestrial vegetation. Given that the mitigation measures relating to dust within the BA and EIS are adhered to, it is considered unlikely that dust would have a significant impact on native flora species within the Subject Land.

Conclusion

An AoS and ToS was conducted for Austral Toadflax (*Thesium australe*). A significant impact for this species was considered unlikely, based on the following conclusions:

- The amount of habitat to be removed or disturbed by the Proposal is very small
- No increases to fragmentation, edge effects or isolation would occur

- No substantial contribution to any Key Threatening Process are expected
- Mitigation measures have been recommended to further reduce impacts to biodiversity
- No impact an important population of this species is expected by the proposed works.

Terrestrial fauna

Construction

Construction of the Proposal has the potential to incur the following impacts to threatened fauna species:

- Disrupt breeding fauna
- Disturb mature flora plants and associated seedbank and therefore inhibit potential regeneration of foraging and breeding habitat for fauna species
- Incur the invasion and spread of pathogens and disease
- Temporary indirect disturbance to wildlife (noise, dust, light, spill, vibration).

Approximately 0.65ha of native terrestrial habitat would be removed for the Proposal. The proposed development would largely extend into areas of exotic pasture grasses and, as such, impacts resulting from the removal of native habitat are considered minor.

One HBT would be removed by the proposed works. Given the trees location to the existing quarry operation (refer to Figure 4-7), it is unlikely that the tree supports threatened species and, therefore, the impacts of its removal are also considered to be minor.

Operation

During operation of the development, ongoing dust impacts could occur to terrestrial fauna. Given that the mitigation measures relating to dust within the BA and EIS are adhered to, it is considered unlikely that dust would have a significant impact on native fauna species within the Subject Land.

Conclusion

An AoS and ToS was conducted for threatened terrestrial fauna species. A significant impact for this species was considered unlikely, based on the following conclusions:

- The amount of habitat to be removed or disturbed by the Proposal is very small
- No increases to fragmentation, edge effects or isolation would occur
- Only one HBT is proposed for removal
- No substantial contribution to any Key Threatening Process are expected
- Mitigation measures have been recommended to further reduce impacts to biodiversity
- No impact to any important population is expected by the proposed works.

Threatened ecological community

One TEC was identified within the Subject Land. This was:

- *The aquatic ecological community in the natural drainage system of the lower Murray River catchment* (Murray River EEC) – FM Act Listed EEC.

Construction

The Proposal involves the diversion of an ephemeral creek and the removal of two existing farm dam from within the southern portion of the Subject Land (refer to Figure 5-1). Re-directing the creek has the potential to incur the following impacts:

- The disturbance/removal of approximately 0.21ha of aquatic habitat
- Sedimentation of nearby waterways, such as Tumbarumba Creek
- Removal of mature aquatic vegetation and their associated seedbanks from within the EEC
- Changes to the natural flow regime and degradation of natural waterways
- Introduction of pollutants into the waterway
- Erosion

Operation

During operation of the development, ongoing dust and sedimentation impacts could occur within this EEC. Given that the mitigation measures relating to dust and sedimentation control, provided within the BA and EIS are adhered to, it is considered unlikely that dust or sedimentation would have a significant impact on an EEC occurring within or adjacent to the Subject Land.

Conclusion

An assessment under the FM Act was conducted for the Murray River EEC. A significant impact for this EEC was considered unlikely, based on the following conclusions:

- The amount of aquatic habitat to be removed or disturbed by the Proposal is very small
- Aquatic habitat to be impacted largely consists of highly modified pastureland
- No substantial contribution to any Key Threatening Process are expected
- Mitigation measures have been recommended to further reduce impacts to biodiversity

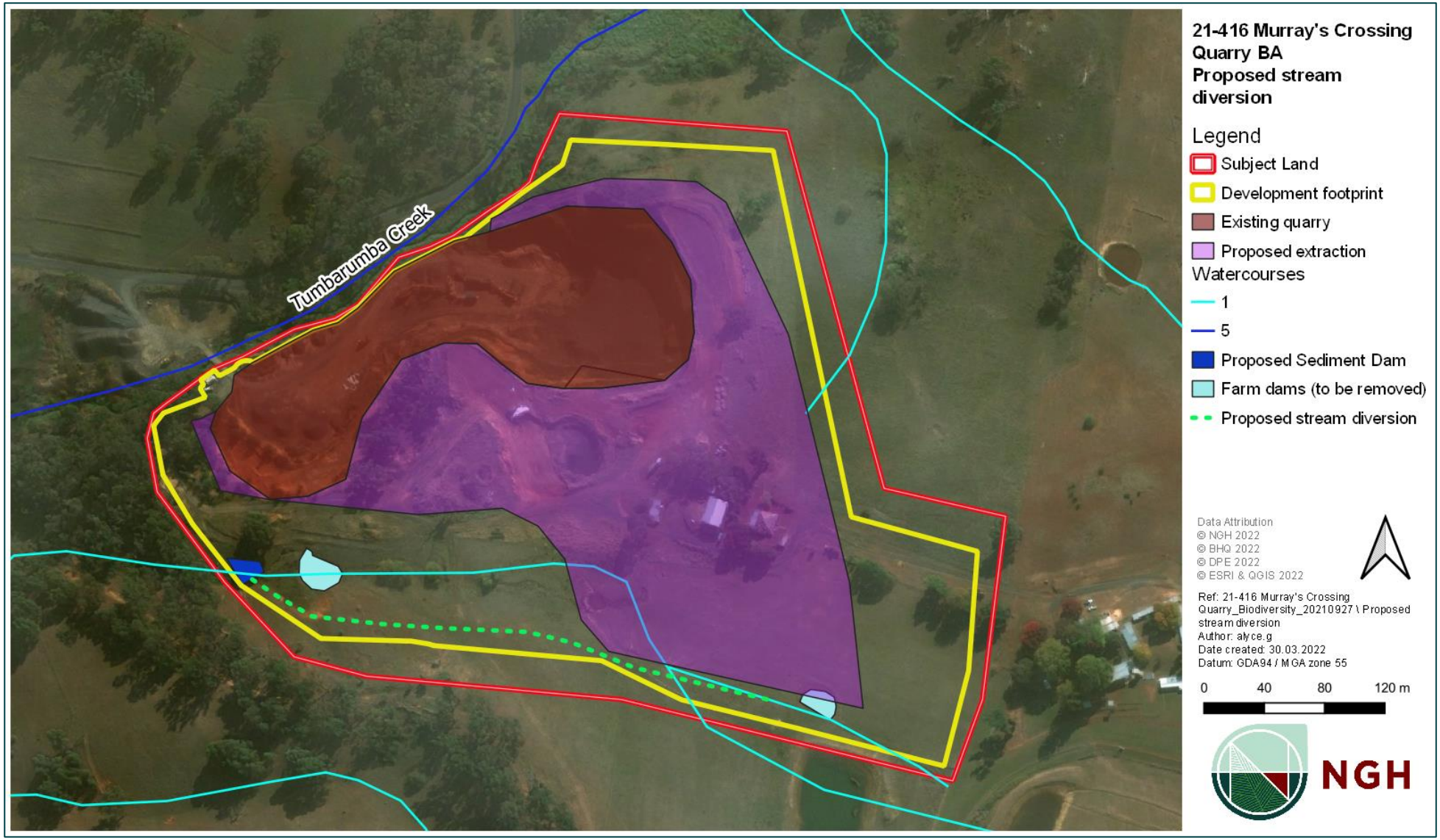


Figure 5-1 Proposed stream diversion and farm dam removal within Murray River EEC

Aquatic fauna

Construction

Three aquatic species have the potential to occur within the Subject Land (Booroolong Frog, Spotted Tree Frog and Murray's Crayfish). Potential impacts to these species include:

- The disturbance/removal of approximately 0.21ha of aquatic habitat, suitable to these species
- Sedimentation and increased turbidity of nearby waterways, such as Tumbarumba Creek
- Changes to the natural flow regime and degradation of natural waterways
- Introduction of pollutants into the waterway
- Erosion

Operation

During operation of the development, ongoing dust and sedimentation impacts could occur. Given that the mitigation measures relating to dust and sedimentation control, provided within the BA and EIS are adhered to, it is considered unlikely that dust or sedimentation would have a significant impact on aquatic species occurring within or adjacent to the Subject Land.

Conclusion

An AoS and ToS was conducted for threatened aquatic fauna under the BC Act and EPBC Act. A significant impact for these species was considered unlikely, based on the following conclusions:

- The amount of habitat to be removed or disturbed by the Proposal is very small
- No increases to fragmentation, edge effects or isolation would occur
- No substantial contribution to any Key Threatening Process are expected
- Mitigation measures have been recommended to further reduce impacts to biodiversity
- No impact to any important population is expected by the proposed works.

5.1.3 Prescribed Impacts on BV Mapped Land

Tumbarumba Creek is identified as BV mapped land - no native vegetation would be cleared within this area. However Prescribed biodiversity impacts (listed under clause 6.1 of the Biodiversity Conservation Regulations) on BV mapped land must be assessed to determine if the BOS threshold would be exceeded.

Prescribed biodiversity impacts relevant to this Proposal include impacts on;

- Human made structures that sustain threatened entities
- Non-native vegetation that sustains threatened entities
- Water quality, waterbodies and hydrological processes that sustain threatened entities

Based on the habitat assessment (Appendix D), no threatened entities were considered to be associated with the man-made structures or non-native vegetation associated with the Quarry operations within the BV mapped land.

Tumbarumba creek provides habitat for threatened species such as the Murray Crayfish, Booroolong Frog and Spotted Tree Frog. Assessments of impacts to aquatic species have been undertaken in Section 4.4.4 and no significant impact is considered to occur to these species.

No prescribed impacts on threatened entities are considered likely to occur and the BOS threshold is not exceeded for this criteria.

5.1.4 Priority weeds

The proposed works have the potential to result in further spread of priority weeds and other exotic weed species within and outside of the Subject Land.

One priority weed, Blackberry (*Rubus frutcosus* species aggregate), was recorded within the Subject Land. There is a prohibition on certain dealings for this species under the *Biosecurity Act 2015.* This species must not be imported into the state, sold, bartered exchanged or offered for sale.

The Biosecurity Act dictates that all priority weeds are regulated with a general biosecurity duty to prevent, eliminate or minimise any biosecurity risk they may pose. Any land managers or authorities who deal with any priority has a duty to ensure the risk is prevented, eliminated or minimised, so far as is reasonably practicable. Other exotic flora that were identified within the subject land are common within the region and are often encountered within disturbed areas.

Mitigation measures have been recommended in section 6 of this report, to control the spread of weed seed species by the Proposal.

5.1.5 Key threatening processes

The Proposal has the potential to increase Key Threatening Processes (KTPs) listed under the BC Act, EPBC Act and FM Act. KTPs relevant to the proposed work are described within Table 5-4 below.

5.1.6 Assessment of BOS Thresholds

As outlined in Section 2.1, the requirement under the BC Act, is to determine whether a development is likely to significantly affect threatened species.

A summary of the potential impacts from the Proposal against the BC Act thresholds is provided in Table 5-3.

Table 5-3 Impact assessment against the BC Act Thresholds.

Threshold	Application to the Proposal	Section of this report	Threshold Exceeded?
The development is likely to significantly affect threatened species, populations or ecological communities (clause 7.2(1)(a))	No significant effects on threatened species, populations or ecological communities is considered likely.	Section 4.2.1, **Error! Reference source not found.**, 4.4.2, 5.1.2 and Appendix E (DAWE, 2021) (DAWE, 2021)	No
The clearing of native vegetation exceeds the area clearing threshold ***Minimum lot size associated*** / ***Threshold for clearing of***	The clearing threshold for the Proposal is 1 ha of native vegetation across the site. Therefore, this is below the BOS threshold.	Section 5.1.1	No

Threshold		Application to the Proposal	Section of this report	Threshold Exceeded?
with the property	***native vegetation***			
40 ha (40ha to 1000ha)	**1 ha or more**			
The clearing of native vegetation, or other action prescribed by clause 6.1, on land identified on the Biodiversity Values (BV) map;		The Subject Land occurs in area of BV mapped land but no further clearing of native vegetation would occur in areas mapped as BV land. No prescribed impacts to threatened species are considered to occur.	Section 4.2.2, Figure 4-1, Section 5.1.3 and Appendix E	No
The development is in an area of Outstanding Biodiversity Value (clause 7.2(1)(c))		None occur in the Proposal area.	Section 4.2.2	No

Based on the assessment in this report, no BOS thresholds are considered to be exceeded and a BDAR is not required to be submitted with the DA.

Table 5-4 Key threatening processes

Key Threatening Processes (KTPs)			
BC Act	**EPBC Act**	**FM Act**	**Relevance**
Clearing of native vegetation	Land clearance		The clearing of native vegetation is considered a major contributor to the loss of biodiversity. In the determination, the NSW Scientific Committee found that 'clearing of any area of native vegetation, including areas less than two hectares in extent, may have significant impacts on biological diversity'. Clearing can lead to direct habitat loss, habitat fragmentation and associated genetic impacts, habitat degradation and off–site impacts such as downstream sedimentation. Approximately 0.65ha of native vegetation and one HBT (an isolated paddock tree) would be removed by the Proposal. Given the extent of the disturbance already experienced within the Subject Land, it is considered that the Proposal would only contribute to a minor increase in the KTP.
Invasion and establishment of exotic vines and scramblers			The Proposal has the potential to spread exotic species from the Subject Land to other parts of the subject land through the transfer and introduction of plant material and soil on machinery. Mitigation measures have been recommended to prevent the spread of weeds on site.
Invasion of native plant communities by exotic perennial grasses			The understorey in the Subject Land is already dominated by exotic perennial grasses; however, weed spread would be minimised off-site by following the provided mitigation measures.
Removal of dead wood and trees			Dead wood and dead trees provide essential habitat for a wide variety of native animals and are important to the functioning of many ecosystems. The removal of dead wood can have a range of environmental consequences, including the loss of habitat (as they often contain hollows used for shelter by animals), disruption of ecosystem process and soil erosion. The Proposal is unlikely to increase this KTP. Dead wood and trees would be placed outside of the development footprint and within the surrounding environment.
Infection of frogs by amphibian chytrid causing the	Infection of amphibians with chytrid fungus resulting in		Chytridiomycosis is a fatal disease of amphibians and is caused by the chytrid *Batrachochytrium dendrobatidis* (Longcore *et al.* 1999). Chytridiomycosis is a global epidemic.

Key Threatening Processes (KTPs)			
disease *chytridomycosis.*	chytridiomycosis		Chytridiomycosis is potentially fatal to all native species of amphibian. As such, all frog species that are listed under the schedules of the Act may be affected by the disease. Fifty species of Australian frogs have been found infected with the chytrid fungus. In NSW, 22 species, more than one quarter of the total NSW amphibian fauna, have been diagnosed with the disease. The Proposal has the potential to spread this disease from other sites containing aquatic habitat. The Proposal is not expected to increase this KTP due to safeguards included in section 6 of this report.
Alternation of natural flow regimes of rivers, streams, floodplains & wetlands.		Degradation of native riparian vegetation along New South Wales water courses.	Alteration to natural flow regimes refers to reducing or increasing flows, altering seasonality of flows, changing the frequency, duration, magnitude, timing, predictability and variability of flow events, altering surface and subsurface water levels and changing the rate of rise or fall of water levels. Riparian vegetation forms an important part of a healthy functioning ecosystem and has numerous important ecological benefits. Studies show that species diversity and abundance are greater in areas with good riparian vegetation. Riparian vegetation is degraded by the complete removal or modification of native plants. A major cause of degradation is the introduction of, or invasion by, non-native species. In some areas the only vegetation present along streams may be exotic species such as willows. Due to the safeguards provided in section 6 of this report, the Proposal is not expected to increase this KTP.

6. Safeguards and Mitigation Measures

These safeguards are a tool to assist with minimising the impacts on biodiversity during construction of the Proposal.

Table 6-1 Safeguards and mitigation measures

Impact	Environmental safeguards	Responsibility	Timing
Spread of weeds	• All weed material containing seed heads, weeds that contain toxins, and weeds that are able to reproduce vegetatively will be disposed of at an appropriate waste management facility or otherwise properly treated to prevent weed growth. • All herbicides will be used in accordance with the requirements on the label. Any person undertaking pesticide (including herbicide) application should be trained to do so and have the proper certificate of completion/ competency or statement of attainment issued by a registered training organisation. • Plant equipment and machinery will be cleaned of all biological matter prior to entering the site.	Contractor	Construction Operation Construction Prior to construction
Unexpected threatened species finds	• The site induction will include measures to make employees aware of potential threatened flora and fauna during works and understand the procedures if threatened fauna are detected, this will be recorded as a part of the induction procedure and toolbox talks: o Stop work o Alert an Ecologist or suitably qualified person for assessment and possible re–location during works.	Contractor	Construction
Removal of hollow-bearing trees	• Only one HBT will be removed during the proposed works. If the proposed design changes to include HBT removal further assessment would be required prior to commencement of work.	Contractor	Prior to construction
Fallen timber removal	• All fallen timber within the Subject Land is to be relocated from the development footprint to an adjacent area.	Contractor	Construction

Vegetation clearing	• Vegetation clearing is to be limited to the assessed area and to the minimum extent necessary. • Prior to construction commencing, exclusion fencing and signage is to be installed around vegetation to be retained. • No stockpiling or storage to occur within these areas. • All woodland to be removed is to be surveyed by an ecologist or suitably qualified person to record the presence of any nesting fauna. • Vegetation to be retained within the subject land is to be clearly marked. • Exclusion zones at the extent of the works corridor to limit works encroaching outside the corridor should be used.	Contractor Contractor Contractor	Prior to construction Prior to construction Prior to construction
BV Mapped Land	• Prior to construction commencing, exclusion fencing and signage is to be erected along/around BV areas. • No stockpiling or storage to occur within these areas.	Contractor	Prior to construction
Aquatic habitat	• Impacts to aquatic habitat will be kept to the smallest possible extent. • An Erosion and Sediment Control Program (ESCP) will be implemented, prior to the commencement of work. • Erosion controls will be implemented prior to channel diversion. This would ensure that the natural flow regime of Tumbarumba Creek is not impacted and that downstream sedimentation doesn't occur. Erosion controls will remain in place until the site is revegetated and stabilised. • BHQ will restrict works within aquatic and riparian areas, to periods of low rainfall, to coincide with natural aquatic processes and reduce unnecessary sedimentation within waterways. • BHQ will divert the watercourse and provide sufficient time for the dam to dry out, allowing invertebrates and aquatic fauna sufficient time to relocate. • No herbicide use will occur within aquatic areas. • Vehicle hygiene protocols should be in line with Roads and Maritime Biodiversity	Contractor Contractor Contractor Contractor	Construction Construction Construction Construction

	Guidelines - Guide 7 (Pathogen Management) for the control of Chytrid.		
Closure and rehabilitation	• Rehabilitation management would be developed prior to closure of the quarry • Species to be planted for rehabilitation should be native species representative of PCT 85. • Weed control of exotic species such as Blackberry and Willow should be undertaken to prevent these species re establishing	Contractor	Rehabilitation

7. Conclusion

This Biodiversity Assessment (BA) has been prepared for Bald Hill Quarry Pty Ltd (BHQ) to consider the potential biodiversity impacts associated with the proposed extension of current operations at Murrays Crossing Quarry in Tumbarumba. The proposal would include the construction, operation and rehabilitation of a quarry extension to existing quarry operations.

The potential for, and significance of, impacts to threatened species and communities listed under the *NSW Biodiversity Conservation Act 2016* (BC Act) Act, *Fisheries Management Act 1994* (FM Act) and *Commonwealth Environmental Protection and Biodiversity Conservation Act* (EPBC Act) has been evaluated.

Key biodiversity features identified within the Subject Land include:

- Remnant Riverina Dry Sclerophyll Forest
- Isolated Mature Trees
- One hollow-bearing tree
- Two farm dams
- Two ephemeral streams, which feed into Tumbarumba Creek

One PCT was identified in the subject land, being PCT 285 *Broad-leaved Sally grass – sedge woodland on valley flats and swamps in the NSW South Western Slopes Bioregion and adjoining South Eastern Highlands Bioregion.*

This PCT occurred in four separate forms, including woodland, isolated paddock trees, creek lines devoid of overstory vegetation and derived grasslands. PCT 285 does not form part of a Threatened Ecological Community (TEC)

One aquatic TEC was present within the subject land, being *The aquatic ecological community in the natural drainage system of the lower Murray River catchment (Murray River EEC)*. Tumbarumba Creek is mapped under the NSW Biodiversity Values Map as Biodiversity Values (BV) Land (Figure 4-1). No clearing of native vegetation would occur within the BV land.

Areas not described as PCT 85 or aquatic were either exotic vegetation or bare ground.

Approximately 0.65ha of native vegetation and 9.35ha of exotic vegetation would be impacted by the Proposal.

No threatened flora or fauna species are known or were detected within the subject land, however one flora species and 28 fauna species had suitable habitat present within the subject land. An assessment of significance was undertaken for these species. No significant effects on threatened species, populations or ecological communities is considered likely.

Based on the assessment, no BOS thresholds are considered to be exceeded and a BDAR is not required to be submitted with the DA.

No significant impacts are considered to occur on an EPBC Act listed entity.

Safeguard and mitigation measures are provided to minimise impacts on biodiversity.

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Appendix A Background Research

A.1 EPBC PMST

A.2 Bionet Search Results

Appendix B Flora and fauna species list

B.1 Fauna species list

Common Name	Latin Name
Australian White Ibis	*Threskiornis molucca*
Australian Wood Duck	*Chenonetta jubata*
Nankeen Kestrel	*Falco cenchroides*
Pacific Black Duck	*Anas superciliosa*
Pied Currawong	*Strepera graculina*
Superb Fairywren	*Malurus cyaneus*
Welcome Swallow	*Hirundo neoxena*
Short-beaked Echidna	*Tachyglossus aculeatus*
Common Wombat	*Vombatus ursinus*
Eastern Sign-bearing Froglet	*Crinia parinsignifera*
Spotted Marsh Frog	*Limnodynastes tasmaniensis*

B.2 Flora species recorded during site visit

Species Name	Common Name	Family	Exotic
TREES			
Eucalyptus bicostata	Eurabbie	Myrtaceae	
Eucalyptus bridgesiana	Apple Box	Myrtaceae	
Eucalyptus camphora subsp. humeana	Broad-leaved Sally	Myrtaceae	
Eucalyptus radiata	Narrow-leaved Peppermint	Myrtaceae	

Species Name	Common Name	Family	Exotic
Eucalyptus robertsonii	Robertson's Peppermint	Myrtaceae	
Eucalyptus stellulata	Black Sally	Myrtaceae	
Pinus radiata	Radiata Pine	Pinaceae	*
Acacia dealbata	Silver Wattle	Fabaceae (Mimosoideae)	
Acacia melanoxylon	Blackwood	Fabaceae (Mimosoideae)	
Salix spp.		Salicaceae	*
SHRUBS			
Acacia pravifolia	Coil-pod Wattle	Fabaceae (Mimosoideae)	
Acacia kettlewelliae	Buffalo Wattle	Fabaceae	
Bursaria spinosa	Native Blackthorn	Pittosporaceae	
Cassinia longifolia		Asteraceae	
Epacris breviflora		Ericaceae	
Kunzea spp.		Myrtaceae	
Leptospermum continentale	Prickly Teatree	Myrtaceae	
Ligustrum sinense	Small-leaved Privet	Oleaceae	*
FORBS			
Acaena novae-zalandiae	Bidgee-Widgee		
Arctotheca calendula	Capeweed	Asteraceae	*
Asperula conferta	Common Woodruff	Rubiaceae	
Conium maculatum	Hemlock	Apiaceae	*
Carthamus lanatus	Saffron Thistle	Asteraceae	*
Cirsium vulgare	Spear Thistle	Asteraceae	*
Conyza spp.	A Fleabane	Asteraceae	*
Cymbonotus preissianus	Austral Bear's Ear	Asteraceae	
Hypochaeris radicata	Catsear	Asteraceae	*
Senecio quadridentatus	Cotton Fireweed	Asteraceae	

Species Name	Common Name	Family	Exotic
Silybum marianum	Variegated Thistle	Asteraceae	*
Sonchus oleraceus	Common Sowthistle	Asteraceae	*
Hypericum perforatum	St. Johns Wort	Clusiaceae	*
Chamaesyce drummondii	Caustic Weed	Euphorbiaceae	
Trifolium arvense	Haresfoot Clover	Fabaceae (Faboideae)	*
Trifolium subterraneum	Subterranean Clover	Fabaceae (Faboideae)	*
Geranium solanderi	Native Geranium	Geraniaceae	
Gonocarpus tetragynus	Poverty Raspwort	Haloragaceae	
Romulea rosea var. australis	Onion Grass	Iridaceae	*
Epilobium billardierianum		Onagraceae	
Oxalis perennans		Oxalidaceae	
Dianella spp.		Phormiaceae	
Plantago lanceolata	Lamb's Tongues	Plantaginaceae	*
Pontentilla recta		Rosaceae	*
Rubus fruticosus sp. agg.	Blackberry complex	Rosaceae	*
Galium aparine	Goosegrass	Rubiaceae	*
Verbascum thapsus subsp. thapsus	Great Mullein	Scrophulariaceae	*
GRASSES			
Avena fatua	Wild Oats	Poaceae	*
Bromus catharticus	Praire Grass	Poaceae	*
Cynodon dactylon	Common Couch	Poaceae	
Dactylis glomerata	Cocksfoot	Poaceae	*
Lolium spp.	A Ryegrass	Poaceae	*
Phalaris aquatica	Phalaris	Poaceae	*
Phragmites australis	Common Reed	Poaceae	
Themeda triandra	Kangaroo Grass	Poaceae	

Species Name	Common Name	Family	Exotic
SEDGES & RUSHES			
Juncus usitatus		Juncaceae	
Lomandra spp.	Mat-rush	Lomandraceae	
Carex appressa	Tall Sedge	Cyperaceae	

Appendix C Non-native vegetation

Examples of non-native vegetation throughout the site. Locations of these photo points are shown in Figure C-1 following.

Photo Point 1	Cleared areas surrounding compound
	
	
Photo Point 2	Cleared areas within Extraction Pit
	

Photo Point 3	Exotic vegetation along track edges (boundary with native vegetation)
	
Photo Point 4	Exotic vegetation along track edges (boundary of native vegetation)
	
Photo Point 5	Phalaris grassland behind quarry wall
	

Photo Point 6	Exotic pasture
	
Photo Point 7	Exotic vegetation behind quarry wall
	
Photo Point 8	Exotic areas on Quarry Wall
	
Photo Point 9	Exotic areas behind Quarry Wall

	
Photo Point 10	Exotic pasture
	

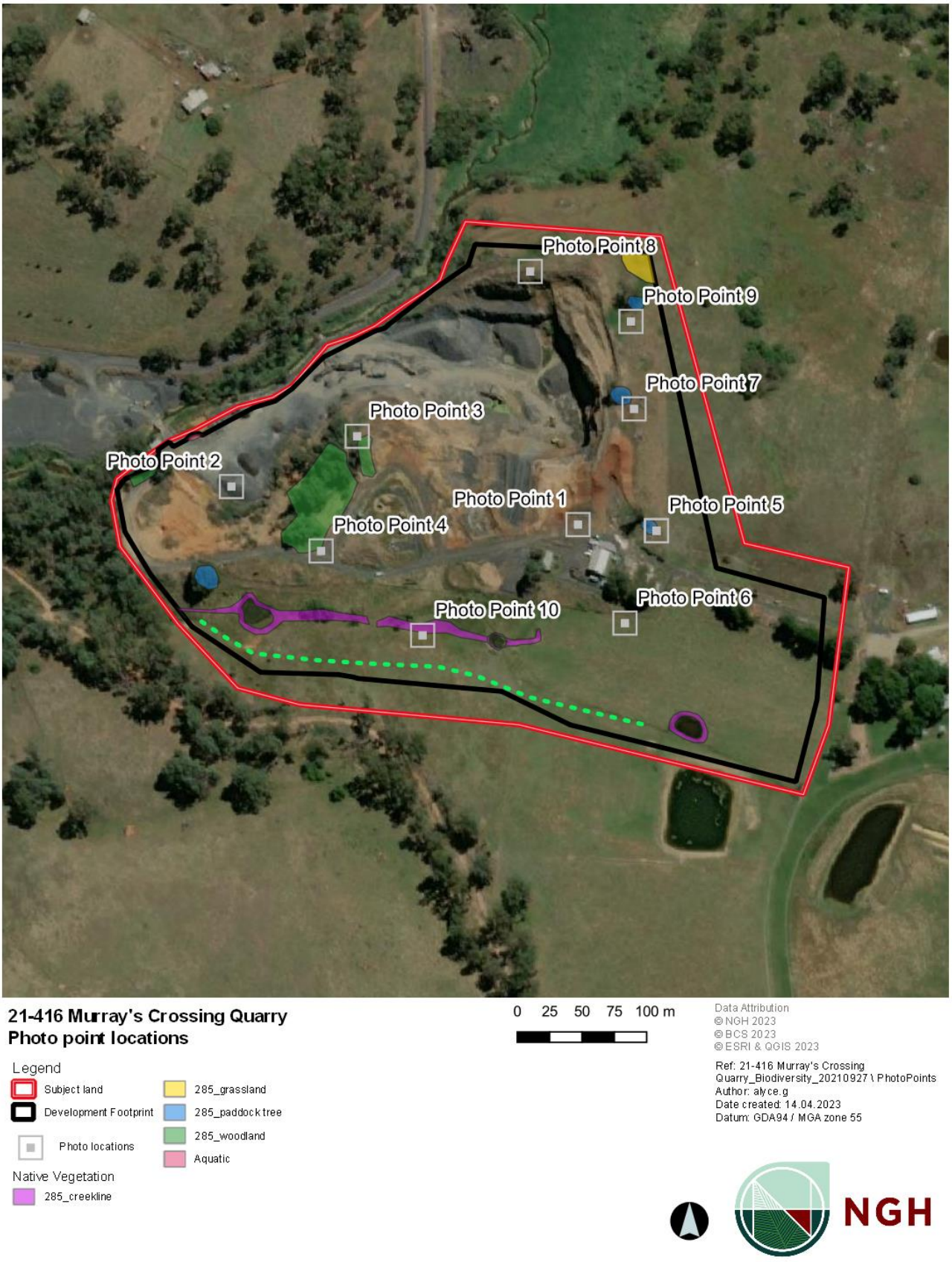


Figure C-1 Photo point locations of non-native vegetation.

Appendix D Threatened Species Evaluation

The habitat evaluation for threatened species, ecological communities and endangered populations listed within 10km of the Subject Land under the *NSW BioNet* [1], those listed under the DPE threatened species IBRA Bondo subregion of the South-Eastern Highlands Bioregion[2] and those identified as potentially occurring in the area according to the Commonwealth EPBC *Protected Matters Search Tool*[3].

The likelihood of occurrence is based on presence of habitat, proximity of nearest records and mobility of the species (where relevant). The assessment of potential impact is based on the nature of the Proposal, the ecology of the species and its likelihood of occurrence. The following classifications are used:

Presence of habitat:

Present: Potential or known habitat is present within the subject land

Marginal: Habitat onsite meets some basic habitat descriptions, without microhabitat or preferred needs being met

Absent: No potential or known habitat is present within the subject land

Likelihood of occurrence

Unlikely: Species known or predicted within the locality but unlikely to occur in the subject land

Possible: Species could occur in the subject land

Present: Species was recorded during the field investigations

Possible to be impacted

No: The Proposal would not impact this species or its habitats. No Assessment of Significance (AoS) under the BC Act and/or FM Act and/or Test of Significance (ToS) under the EPBC Act is necessary for this species.

[1] The *NSW BioNet* is administered by the NSW Office of Environment and Heritage (DPE) and is an online database of fauna and flora records that contains over four million recorded sightings.
[2] This online tool is designed for the public to search for threatened entities by occurrence of IBRA-Subregions (DPIE).
[3] This online tool is designed for the public to search for matters protected under the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act). It is managed by the Commonwealth Department of the Environment, Water, Heritage and the Arts.

D.1 Flora

Scientific Name	Common Name	NSW BC Act	NSW FM Act	Federal EPBC ACT	Habitat	No of Records	Presence of habitat	Likelihood of Occurrence	Possible Impact
Flora									
Ammobium craspediodes	Yass Daisy	V		V	Found in moist or dry forest communities, Box-Gum Woodland and secondary grassland derived from clearing of these communities. Grows in association with a large range of eucalypts (*Eucalyptus blakelyi*, *E. bridgesiana*, *E. dives*, *E. goniocalyx*, *E. macrorhyncha*, *E. mannifera*, *E. melliodora*, *E. polyanthemos*, *E. rubida*). Apparently unaffected by light grazing, as populations persist in some grazed sites. Found in a number of TSRs, Crown reserves, cemeteries and roadside reserves within the region		**Present** Dry forest present with associated Eucalyptus species present.	**Unlikely** Species not associated with PCT. No records within locality.	**No** Species not likely to occur.
Amphibromus fluitans	Floating Swamp Wallaby-grass	V		V	Grows mostly in permanent swamps. The species needs wetlands which are at least moderately fertile and which have some bare ground, conditions which are produced by seasonally-fluctuating water levels. Habitats in south-western NSW include swamp margins in mud, dam and tank beds in hard clay and in semi-dry mud of lagoons with *Potamogeton* and *Chamaeraphis* species. The species is virtually aquatic, often with only the flower heads above the water. It has been recorded recently in lagoons beside the Murray River near Cooks Lagoon (Shire of Greater Hume), Mungabarina Reserve, East Albury, at Ettamogah, Thurgoona (Charles Sturt University Campus), near Narranderra, and also further west along the Murray River (near Mathoura) and in Victoria. There is a recent record of this species near Laggan in Upper Lachlan Shire. It is also found in Victoria and in Tasmania.		**Absent** No wetlands present.	**Unlikely** Species not associated with PCT. No records within locality.	**No** Species not likely to occur.

Scientific Name	Common Name	NSW BC Act	NSW FM Act	Federal EPBC ACT	Habitat	No of Records	Presence of habitat	Likelihood of Occurrence	Possible Impact
Caladenia concolor	Crimson Spider Orchid	E		V	Habitat is regrowth woodland on granite ridge country that has retained a high diversity of plant species, including other orchids. The dominant trees are Blakely's Red Gum (*Eucalyptus blakelyi*), Red Stringybark (*E. macrorhyncha*), Red Box (*E. polyanthemos*) and White Box (*E. albens*); the diverse understorey includes Silver Wattle (*Acacia dealbata*), Hop Bitter-pea (*Daviesia latifolia*), Common Beard-heath (*Leucopogon virgatus*), Spreading Flax-lily (*Dianella revoluta*) and Poa Tussock (*Poa sieberiana*). In the area where this species occurs, only the Rosella Spider Orchid *C. rosella* is similar, but it is musk-scented and has paler pink-streaked flower-parts. The current NSW Scientific Committee listing incorporates two populations which have each been described as separate species. Other occurrences of the Crimson Spider Orchid in NSW are from the Nail Can Hill Crown Reserve near Albury. The species also occurs at two localities in Victoria near Beechworth and Chiltern.	1 record within locality (historic from 1899)	**Absent** Granite ridge country not present.	**Unlikely** Species not associated with PCT.	**No** Species unlikely to occur.
Caladenia montana	Mountain Spider Orchid	V			Caladenia montana is restricted to high montane areas 700–1000 m a.s.l. where it grows in well-drained loam on slopes and ridges of montane forest among an understorey of shrubs. The species occurs in mainly in the east alps section of the Alpine National Park in Victoria. There are records in the ACT and adjacent areas in NSW, but these are now referred to Caladenia fitzgeraldii. Caladenia montana may occur in southern Kosciuszko National Park adjacent to Victoria.		**Absent** Elevation below 700 m and loam not present.	**Unlikely** Species not associated with PCT. No records within locality.	**No** Species unlikely to occur.
Calotis glandulosa	Mauve Burr-daisy	V		V	Found in montane and subalpine grasslands in the Australian Alps. Found in subalpine grassland (dominated by *Poa* spp.), and montane or natural temperate grassland dominated by Kangaroo Grass		**Absent** Grasslands not present, Kangaroo Grass and	**Unlikely** Species not associated with PCT. No records within	**No** Species unlikely to occur.

Scientific Name	Common Name	NSW BC Act	NSW FM Act	Federal EPBC ACT	Habitat	No of Records	Presence of habitat	Likelihood of Occurrence	Possible Impact
					(*Themeda australis*) and Snow Gum (*Eucalyptus pauciflora*) Woodlands on the Monaro and Shoalhaven area. Appears to be a coloniser of bare patches, which explains why it often occurs on roadsides. Apparently common on roadsides in parts of the Monaro, though it does not persist for long in such sites. Does not persist in heavily-grazed pastures of the Monaro or the Shoalhaven area.		*Poa sp.* Not present.	locality.	
Discaria nitida	Leafy Anchor Plant	V		V	Generally occurs on or close to stream banks and on rocky areas near small waterfalls. The species occurs in both woodland with heathy riparian vegetation and on treeless grassy sub-alpine plains. Most population survive in sites that appear to be rarely burnt "fire refugia". The species is known to be highly fire sensitive and most plants that have been observed to have been burnt, even lightly, have died and there has been very little post fire recruitment.		**Present** Stream bank and riparian vegetation present.	**Unlikely** Species not associated with PCT. No records within locality.	**No** Species unlikely to occur.
Euphrasia scabra	Rough Eyebright	E			Occurs in or at the margins of swampy grassland or in sphagnum bogs, often in wet, peaty soil. Presumed extinct in NSW,		**Absent** No swampy grasslands or sphagnum bogs present.	**Unlikely** Species not associated with PCT. No records within locality.	**No** Species unlikely to occur.
Geneoplsium vernale	East Lynne Midge Orchid	V		V	The East Lynne Midge Orchid grows in dry sclerophyll woodland and forest extending from close to the coast to the adjoining coastal ranges. Confined to areas with well-drained shallow soils of low fertility, often occurring near the crests of ridges and on low rises where the ground cover is more open and sedge dominated rather then being shrubby. Has some limited ability to re-colonize previously disturbed sites.		**Absent** Site is frequently and heavily disturbed. Has a shrub layer and lack of sedge dominated landscape.	**Unlikely** Species not associated with PCT. No records within locality.	**No** Species unlikely to occur.

Scientific Name	Common Name	NSW BC Act	NSW FM Act	Federal EPBC ACT	Habitat	No of Records	Presence of habitat	Likelihood of Occurrence	Possible Impact
Grevillea iaspicula	Wee Jasper Grevillea	CE		E	Grows on rocky limestone outcrops and around sink holes and cave entrances. Vegetation is open woodland dominated by White Box (Eucalyptus albens) and Apple Box (E. bridgesiana) trees Often occurs as a co-dominant species within the shrubby understorey of its open woodland habitat.		**Absent** Rocky limestone outcrop not present.	**Unlikely** Species not associated with PCT. No records within locality.	**No** Species unlikely to occur.
Irenepharus magicus	Elusive Cress	E			Habitat preference for the species is unclear, although two collections in Victoria have been made in or on the edge of recently logged Messmate Stringybark (*Eucalyptus obliqua*) forest. One of these sites had been burnt. The record of the species in NSW includes the habitat note "growing on mineral soil of embankment". The species was recently found in a rocky limestone area in eastern Victoria after the 2003 fires.		**Absent** Messmate Stringybark not present and rocky limestone areas not present.	**Unlikely** Species not associated with PCT. No records within locality.	**No** Species unlikely to occur.
Leucochrysum albicans subsp. Tricolor	Hoary Sunray			E	Occurs in a wide variety of grassland, woodland and forest habitats, generally on relatively heavy soils. Can occur in modified habitats such as semi-urban areas and roadsides. Highly dependent on the presence of bare ground for germination. In some areas, disturbance is required for successful establishment.		**Absent** Lack of heavy soils present on site.	**Unlikely** Species not associated with PCT. No records within locality.	**No** Species unlikely to occur.
Pilularia novae-hollandiae	Austral Pillwort	E			Grows in shallow swamps and waterways, often among grasses and sedges. It is most often recorded in drying mud as this is when it is most conspicuous. Most records in the Albury-Urana area were from table drains on the sides of roads. The ACT record was from a subalpine grassy plain. This species is probably ephemeral		**Absent** No shallow swamp or shallow waterway present.	**Unlikely** Species not associated with PCT. No records within locality.	**No** Species unlikely to occur.

Scientific Name	Common Name	NSW BC Act	NSW FM Act	Federal EPBC ACT	Habitat	No of Records	Presence of habitat	Likelihood of Occurrence	Possible Impact
					(especially in the drier parts of its range), appearing when soils are moistened by rain. In NSW, it's been recorded from suburban Sydney, Khancoban, the Riverina. The species has also been recorded in the ACT, Victoria, Tasmania, South Australia and Western Australia.				
Pimelea bracteate	Rice Flower	CE			Pimelea bracteata occurs in wetlands and along waterways and stream edges in high altitude treeless subalpine valleys. It can also occur in wet heathland and closed heath.		**Absent** No high altitude treeless subalpine valley present.	**Unlikely** Species not associated with PCT. No records within locality.	**No** Species unlikely to occur.
Pomaderris cotoneaster	Cotoneaster Pomaderris	E		E	Cotoneaster Pomaderris has been recorded in a range of habitats in predominantly forested country. The habitats include forest with deep, friable soil, amongst rock beside a creek, on rocky forested slopes and in steep gullies between sandstone cliffs.		**Present** Forest present on site with creek present.	**Unlikely** Species not associated with PCT. No records within locality.	**No** Species unlikely to occur.
Prasophyllum bagoense	Bago Leek-orchid	CE		CE	Found in grassy, low heathland dominated by *Poa clivicola, Epacris gunnii* and *E. celata* on a subalpine plain bordered by Snow Gum and Mountain Gum.		**Absent** Low heathland not present with lack of associated species present.	**Unlikely** Species not associated with PCT. No records within locality.	**No** Species unlikely to occur.
Prasophyllum innubum	Brandy Marys Leek-orchid	CE		CE	The species is known only from a highly restricted streamside habitat and *Sphagnum* hummocks, and rarely on adjacent grassy flats, at altitudes of 1150-1180 m.		**Absent** No Sphagnum hummocks or grassy flats present.	**Unlikely** No records within locality.	**No** Species unlikely to occur.
Prasophyllum keltonii	Kelton's Leek-orchid	CE		CE	The species is known only from a highly restricted habitat on the treeless McPhersons Plain, an area that includes sub-alpine grassland, sphagnum bogs, and open heathland, at an elevation of 1,100 m. The species has a		**Absent** Treeless McPhersons plain is not present. As	**Unlikely** Species not associated with PCT. No records within	**No** Species unlikely to occur.

Scientific Name	Common Name	NSW BC Act	NSW FM Act	Federal EPBC ACT	Habitat	No of Records	Presence of habitat	Likelihood of Occurrence	Possible Impact
					preference for grassland. The species apparently has a preference for moderately boggy ground, though not sphagnum-dominated areas, but also occurs on some drier patches.		well as no heathland, grassland or sphagnum bogs around 1100 m of elevation.	locality.	
Prasophyllum petilum	Tarengo Leek Orchid	E		E	Grows in open sites within Natural Temperate Grassland at the Boorowa and Delegate sites. Also grows in grassy woodland in association with *Poa labillardieri, Eucalyptus aggregata* and *Leptospermum* spp. near Queanbeyan and within the grassy groundlayer dominated by *Themeda* under Box-Gum Woodland at Ilford (and Hall, ACT). Natural populations are known in NSW, near Boorowa, Queanbeyan area, at Hall in the ACT, Ilford, Delegate and a new population c.10 km west of Muswellbrook. This species has also been recorded at Bowning Cemetery where it was experimentally introduced, though it is not known whether this population has persisted.		**Absent** No temperate natural grassland within the Subject Land.	**Unlikely** Species not associated with PCT. No records within locality	**No** Species unlikely to occur.
Pterostylis alpina	Alpine Greenhood	V			The Alpine greenhood grows in moist forests on foothills and ranges, extending to montane areas in New South Wales, the Australian Capital Territory and Victoria. In NSW the species occurs in the Southern Tablelands south from Bondo State Forest. The Alpine Greenhood is often found on sheltered southern slopes near streams in rich loam.		**Absent** No moist forest present within Subject Land.	**Unlikely** Species not associated with PCT. No records within locality.	**No** Species unlikely to occur.
Pterostylis foliata	Slender Greenhood	V			In NSW, Pterostylis foliata grows in eucalypt forest amongst an understorey of shrubs, ferns and grasses. It grows on loam or clay loam soils found on sheltered sloping to steep ground and populations may be found in localised open seepage areas. Flowering occurs from August to January.		**Present** Eucalypt forest with understorey of shrubs present.	**Unlikely** Species not associated with PCT. No records within locality.	**No** Species unlikely to occur.

Scientific Name	Common Name	NSW BC Act	NSW FM Act	Federal EPBC ACT	Habitat	No of Records	Presence of habitat	Likelihood of Occurrence	Possible Impact
Pterostylis oreophila	Blue-tongued Orchid	CE		CE	Grows along sub-alpine watercourses under more open thickets of Mountain Tea-tree in muddy ground very close to water. Less commonly grows in peaty soils and sphagnum mounds. While more frequently found in low-light conditions it appears to also be able to tolerate full sun.		**Absent** No Mountain Tea-tree thickets and a lack of muddy ground present.	**Unlikely** Species not associated with PCT. No records within locality.	**No** Species unlikely to occur.
Senecio garlandii	Woolly Ragwort	V			The species occurs in dry sclerophyll forest and open woodland in association with Eucalyptus macrorhyncha, E. goniocalyx, Acacia doratoxylon, A. implexa and Brachychiton populneus. It is found on the upper parts of south to east-facing slopes of rocky outcrops (Burrows, 2001). This species occurs within the Lachlan, Murray and Murrumbidgee (NSW) Natural Resource Management Region		**Absent** Lack of rocky outcrops and no associated species present.	**Unlikely** Species not associated with PCT. No records within locality.	**No** Species unlikely to occur.
Senecio macrocarpus	Large-fruit Fireweed	P		V	In NSW, Large-fruit Fireweed occurs in partly cleared dry forests and box-gum woodlands which transition to Brittle Gum Forest with a relatively undisturbed understorey of native grasses, forbs and subshrubs.		**Present** Partly cleared dry forest present.	**Unlikely** Species not associated with PCT. No records within locality.	**No** Species unlikely to occur.
Swainsona recta	Small Purple-pea	E		E	Before European settlement it occurred in the grassy understorey of woodlands and open-forests dominated by *Eucalyptus blakelyi, E. melliodora, E. rubida* and *E. goniocalyx.* Grows in association with understorey dominants that include *Themeda triandra, Poa* spp. and *Austrostipa* spp. Recorded historically from places such as Carcoar, Culcairn and Wagga Wagga where it is probably now extinct. Populations still exist in the Queanbeyan and Wellington-Mudgee areas. Also known from the ACT and a single population of four plants near Chiltern in Victoria.		**Absent** No associated species present.	**Unlikely** Species not associated with PCT. No records within locality.	**No** Species unlikely to occur.
Thelymitra alpicola	Alpine Sun-orchid	V			In Kosciuszko National Park and the Bago plateau the species occurs in wet heaths and		**Absent** No adjacent	**Unlikely** Species not	**No** Species unlikely

Scientific Name	Common Name	NSW BC Act	NSW FM Act	Federal EPBC ACT	Habitat	No of Records	Presence of habitat	Likelihood of Occurrence	Possible Impact
					adjacent to Sphagnum bogs between 1000-1500 metres. Associated species include Hakea microcarpa, Leptospermum myrtifolium, Baeckea utilis, Baeckia gunniana, Epacris breviflora, Epacris paludosa, Baloskion australe and Empodisma minus. Apparently the species does not occur in Sphagnum where Thelymitra cyanea is more likely to occur. Near Clyde Mountain the species has been found in wet heaths with Banksia paludosa and Baeckea utilis near a creek. The habitat described on the collection notes at Kanangra-Boyd NP were swamp/heath, and swamp. The only other information was "under Leptospermum" and open sites "between sedges".		sphagnum bogs present, below 1000 meters elevation and lack of associated species present.	associated with PCT. No records within locality.	to occur.
Thesium australe	Austral Toadflax	V		V	Occurs in grassland on coastal headlands or grassland and grassy woodland away from the coast. Often found in association with Kangaroo Grass (*Themeda australis*). A root parasite that takes water and some nutrient from other plants, especially Kangaroo Grass		**Present** Grassy woodland present.	**Possible** Habitat present and is associated with mapped PCT.	**Yes** AoS undertaken.
Threatened Ecological Communities (TECs)									
Alpine Sphagnum Bogs and Associated Fens				E	The Alpine Sphagnum Bogs and Associated Fens ecological community generally has sharp boundaries and is easily delineated from other alpine vegetation communities. Many of its plant species rarely occur in other vegetation assemblages. Although it is not always the dominant genus, the Alpine Sphagnum Bogs and Associated Fens ecological community can usually be defined by the presence or absence of Sphagnum spp., the most common of which is Sphagnum cristatum.		**Absent** No associated PCT present within Subject Land.	**Unlikely** Does not occur.	**No** TEC is not present.

Scientific Name	Common Name	NSW BC Act	NSW FM Act	Federal EPBC ACT	Habitat	No of Records	Presence of habitat	Likelihood of Occurrence	Possible Impact
Montane Peatlands and Swamps of the New England Tableland, NSW North Coast, Sydney Basin, South East Corner, South Eastern Highlands and Australian Alps bioregions		E		E	Montane Peatlands and Swamps comprises a dense, open or sparse layer of shrubs with soft-leaved sedges, grasses and forbs. It is the only type of wetland that may contain more than trace amounts of *Sphagnum* spp., the hummock peat-forming mosses. Small trees may be present as scattered emergents or absent. The community typically has an open to very sparse layer of shrubs, 1-5 m tall, (eg. *Baeckea gunniana, B. utilis, Callistemon pityoides, Leptospermum juniperinum, L. lanigerum, L. myrtifolium, L. obovatum, L. polygalifolium*). Species of *Epacris* (eg. *E. breviflora, E. microphylla, E. paludosa*) and *Hakea microcarpa* are also common shrubs. In some peatlands and swamps, particularly those with a history of disturbance to vegetation, soils or hydrology, the shrub layer comprises dense thickets of *Leptospermum* species. In other peatlands and swamps with a history of grazing by domestic livestock, the shrub layer may be very sparse or absent. Montane Peatlands typically have a dense groundcover of sedges, grasses and forbs, except where a dense cover of tall shrubs casts deep shade. Soft-leaved species of *Carex* (eg. *C. appressa, C. fascicularis, C. gaudichaudiana*) and *Poa* (eg. *P. costiniana, P. labillardieri*) typically make up most of the groundcover biomass, while other common sedges include *Baloskion* spp., *Baumea rubiginosa, Empodisma minus, Juncus* spp. and *Schoenus apogon*. Forbs growing amongst the sedges include *Drosera* spp., *Geranium neglectum, Gratiola* spp., *Mitrasacme serpyllifolia, Ranunculus* spp. and *Viola* spp. Hummocks of *Sphagnum* moss may occur amongst other components of the ground layer.		**Absent** No associated PCT present within Subject Land.	**Unlikely** Does not occur.	**No** TEC is not present.

Scientific Name	Common Name	NSW BC Act	NSW FM Act	Federal EPBC ACT	Habitat	No of Records	Presence of habitat	Likelihood of Occurrence	Possible Impact
Natural Temperate Grassland of the South Eastern Highlands				CE	Natural Temperate Grassland is a natural grassland community dominated by a a range of perennial grass species and, in highly intact sites, containing a large range of herbaceous species in many plant families, including daisies, peas, lilies, orchids and plants in many other families, all collectively known as forbs, or "wildflowers" in the case of the more showy species. A number of distinct associations have been described in Armstrong et al. (2013), identified by combinations of the co-occurring grasses and forbs, and each found in particular regions and/or landscape positions. The community is often treeless, though trees of a range of species may occur in low densities, either as isolated individuals or in clumps. Seasonally wet areas within a site may also contain a range of wetland flora species, including rushes, sedges and a variety of wetland specialist forbs. A limited range of shrub species may occur at some sites, but these too occur in low densities.		**Absent** No associated PCT present within Subject Land.	**Unlikely** Does not occur.	**No** TEC is not present.
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 Riverina Bioregions		CE			Characterised by the presence or prior occurrence of White Box, Yellow Box and/or Blakely's Red Gum and a generally grassy understorey. The trees may occur as pure stands, mixtures of the three species or in mixtures with other trees, including wattles. Commonly co-occurring eucalypts include Apple Box (E. bridgesiana), Red Box (E. polyanthemos), E. macrorhyncha), Coastal Grey Box (E. moluccana), Candlebark (E. rubida), Bundy (E. goniocalyx), Broad-leaved Stringybark (E. goniocalyx), Youman's Stringybark (E. youmanii) and others. The understorey in intact sites is characterised by native grasses and a high diversity of herbs; the most commonly encountered include Kangaroo Grass (Themeda australis), Poa Tussock (Poa sieberiana),		**Absent** No associated PCT present within Subject Land.	**Unlikely** Does not occur.	**No** TEC is not present.

Scientific Name	Common Name	NSW BC Act	NSW FM Act	Federal EPBC ACT	Habitat	No of Records	Presence of habitat	Likelihood of Occurrence	Possible Impact
					wallaby grasses (Rytidosperma spp.), spear-grasses (Austrostipa spp.), Common Everlasting (Chrysocephalum apiculatum), Scrambled Eggs (Goodenia pinnatifida), Small St John's Wort (Hypericum gramineum), Narrow-leafed New Holland Daisy (Vittadinia muelleri) and blue-bells (Wahlenbergia spp.). Shrubs are generally sparse or absent, though they may be locally common. Remnants generally occur on fertile lower parts of the landscape where soil fertility is relatively high compared to the surrounding landscape. Sites with particular characteristics, including varying age classes in the trees, patches of regrowth, old trees with hollows and fallen timber on the ground are very important as wildlife habitat.				
White Box-Yellow Box-Blakely's Red Gum Grassy Woodland and Derived Native Grassland				CE	The ecological community can occur either as woodland or derived native grassland (i.e. grassy woodland where the tree overstorey has been removed). It is characterised by a species-rich understorey of native tussock grasses, herbs and scattered shrubs (where shrub cover comprises less than 30% cover), and a dominance or prior dominance of White Box (Eucalyptus albens) and/or Yellow Box (E. melliodora) and/or Blakely's Red Gum (E. blakelyi) trees.		**Absent** No associated PCT present within Subject Land.	**Unlikely** Does not occur.	**No** TEC is not present.
The aquatic ecological community in the natural drainage system of the lower Murray River catchment.			E		The lower Murray River endangered ecological community includes all native fish and aquatic invertebrates within all natural creeks, rivers, and associated lagoons, billabongs and lakes of the regulated portions of the Murray River (also known as the River Murray) downstream of Hume Weir, the Murrumbidgee River downstream of Burrinjuck Dam, the Tumut River downstream of Blowering Dam and all their tributaries anabranches and effluents including Billabong Creek, Yanco Creek, Colombo Creek, and their tributaries, the Edward River and the Wakool River and their tributaries, anabranches		**Present** Within area identified as EEC occurring under DPI Primefact. Tumbarumba Creek within Subject Land.	**Present** Within area identified as EEC occurring under DPI Primefact. Tumbarumba Creek.	**Yes** AoS undertaken.

Scientific Name	Common Name	NSW BC Act	NSW FM Act	Federal EPBC ACT	Habitat	No of Records	Presence of habitat	Likelihood of Occurrence	Possible Impact
					and effluents, Frenchmans Creek, the Rufus River and Lake Victoria. Excluded from this recommendation are the Lachlan River and the Darling River and their tributaries, and artificial canals, water distribution and drainage works, farm dams and off-stream reservoirs.				

D.2 Fauna

Scientific Name	Common Name	NSW BC Act	NSW FM Act	Federal EPBC Act	Habitat	Number of Records	Presence of habitat	Likelihood of Occurrence	Possible Impact
Aves									
Actitis hypoleucos	Common Sandpiper			M	Found along all coastlines of Australia and in many areas inland. The population that migrates to Australia breeds in the Russian far east. Roost sites are typically on rocks or in roots or branches of vegetation, especially mangroves. The species 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. The Common Sandpiper has been recorded in estuaries and deltas of streams, as well as on banks farther upstream; around lakes, pools, billabongs, reservoirs, dams and claypans, and occasionally piers and jetties. The muddy margins utilised by the species are often narrow, and may be steep. The species is often associated with mangroves, and sometimes found in areas of mud littered with rocks or snags The species is known to perch on posts, jetties, moored boats and other artificial structures, and to sometimes rest on mud or 'loaf' on rocks.		**Absent** No aquatic habitat present that would support this species.	**Unlikely** No suitable habitat present that would support this species. No records within the locality.	**No** Species not likely to occur.
Anthochaera phrygia	Regent Honeyeater	CE		CE	Inhabits dry open forest and woodland, particularly Box-Ironbark woodland, and riparian forests of River Sheoak, that inhabit woodlands that support a significantly high abundance and species richness of bird species, and have large numbers of mature trees, high canopy cover and abundance of mistletoes. Every few years non-breeding flocks are seen foraging in flowering coastal Swamp Mahogany and Spotted Gum forests, particularly on the central coast and occasionally on the upper north coast. Recently recorded in urban areas around Albury where woodlands tree species such as Mugga Ironbark and Yellow Box were planted 20 years ago. A generalist forager, although mainly feeds on the nectar from a relatively small		**Present** Eucalyptus woodland.	**Possible** Dry open forest present.	**Yes** AoS undertaken.

Scientific Name	Common Name	NSW BC Act	NSW FM Act	Federal EPBC Act	Habitat	Number of Records	Presence of habitat	Likelihood of Occurrence	Possible Impact
					number of eucalypts that produce high volumes of nectar eg. Mugga Ironbark, Yellow Box, White Box and Swamp Mahogany. Other tree species may be regionally important eg. Lower Hunter Spotted Gum forests support regular breeding events. Flowering of associated species such as *Eucalyptus eugenioides* and other Stringybark species, and *E. fibrosa* can also contribute important nectar flows at times. Nectar and fruit from *Amyema miquelii, A. pendula* and *A. cambagei* are also utilised. When nectar is scarce, lerp and honeydew can comprise a large proportion of the diet. The species breeds between July and January in Box-Ironbark and other temperate woodlands and riparian gallery forest dominated by River Sheoak. Nests in horizontal branches or forks in tall mature eucalypts, mistletoes and Sheoaks. In NSW the distribution is very patchy and mainly confined to the two main breeding areas and surrounding fragmented woodlands.				
Apus pacificus	Fork-tailed Swift			M	The Fork-tailed Swift is almost exclusively aerial, flying from less then 1 m to at least 300 m above ground and probably much higher. In Australia, they mostly occur over inland plains but sometimes above foothills or in coastal areas. They often occur over cliffs and beaches and also over islands and sometimes well out to sea. They also occur over settled areas, including towns, urban areas and cities. They mostly occur over dry or open habitats, including riparian woodland and tea-tree swamps, low scrub, heathland or saltmarsh. They are also found at treeless grassland and sandplains covered with spinifex, open farmland and inland and coastal sand-dunes. The sometimes occur above rainforests, wet sclerophyll forest or open forest or plantations of pines (Higgins 1999). They forage aerially, up to hundreds of metres above ground, but also less then 1 m above open areas or over water. They		**Present** Species is mostly aerial and dry open habitat present.	**Possible** Species not recorded within the locality however suitable habitat.	**No** Species spends most time in the air and habitat is not likely relied upon by species.

Scientific Name	Common Name	NSW BC Act	NSW FM Act	Federal EPBC Act	Habitat	Number of Records	Presence of habitat	Likelihood of Occurrence	Possible Impact
					often occur in areas of updraughts, especially around cliffs. They are said to search along edges of low-pressure systems, which assist flight. Low-flying Swifts are said to be precursors of unsettled weather, possibly because insect prey fly at a lower altitude when the air is humid and when the air density is low (Cameron 1952). They sometimes feed aerially among tree-tops in open forest (Higgins 1999). They probably roost aerially, but are occasionally observed to land (Higgins 1999). They were once recorded roosting in trees, using a bare exposed branch emergent above the foliage (Newell 1930). Sometimes they loaf in the air, by allowing strong winds to support them (Boehm 1939). There have been rare records of loafing elsewhere including Swifts briefly resting on ground (Campbell 1900) and alighting on wire netting of a tennis court (Wheeler 1959). Once, one was seen attempting to land on the wall of a lighthouse (Scarff 1990).				
Artamus cyanopterus cyanopterus	Dusky Woodswallow	V			Widespread in eastern, southern and south western Australia. Occurs throughout most of New South Wales, but sparsely scattered in, or largely absent from, much of the upper western region. Most breeding occurs on the western slopes of the Great Dividing Range. Primarily inhabit dry, open 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.	2 records within locality	**Present** Eucalyptus woodland.	**Possible** Habitat present and recorded within locality.	**Yes** AoS undertaken.
Calidris acuminata	Sharp-tailed Sandpiper			M	In Australasia, the Sharp-tailed Sandpiper prefers muddy edges of shallow fresh or brackish wetlands, with inundated or emergent sedges, grass, saltmarsh or other low vegetation. This includes lagoons, swamps, lakes and pools near the coast, and dams, waterholes, soaks, bore		**Absent** No aquatic habitat present that would support this species.	**Unlikely** No suitable habitat present that would support this species.	**No** Species not likely to occur.

Scientific Name	Common Name	NSW BC Act	NSW FM Act	Federal EPBC Act	Habitat	Number of Records	Presence of habitat	Likelihood of Occurrence	Possible Impact
					drains and bore swamps, saltpans and hypersaline saltlakes inland. They also occur in saltworks and sewage farms. They use flooded paddocks, sedgelands and other ephemeral wetlands, but leave when they dry. They use intertidal mudflats in sheltered bays, inlets, estuaries or seashores, and also swamps and creeks lined with mangroves				
Calidris ferruginea	Curlew Sandpiper	CE		CE	Generally occupies littoral and estuarine habitats, and in NSW is mainly found in intertidal mudflats of sheltered coasts. It also occurs in non-tidal swamps, lakes and lagoons on the coast and sometimes inland. It forages in or at the edge of shallow water, occasionally on exposed algal mats or waterweed, or on banks of beach-cast seagrass or seaweed. Roosts on shingle, shell or sand beaches; spits or islets on the coast or in wetlands; or sometimes in salt marsh, among beach-cast seaweed, or on rocky shores. Feeds on worms, molluscs, crustaceans, insects and some seeds. Distributed around most of the Australian coastline (including Tasmania). It occurs along the entire coast of NSW, particularly in the Hunter Estuary, and sometimes in freshwater wetlands in the Murray-Darling Basin. Inland records are probably mainly of birds pausing for a few days during migration.		**Absent** No aquatic habitat present that would support this species.	**Unlikely** No suitable habitat present that would support this species. No records within the locality.	**No** Species not likely to occur.
Calidris melanotos	Pectoral Sandpiper			M	In NSW, it is widespread, but scattered. Records exist east of the Great Divide, from Casino and Ballina, south to Ulladulla. West of the Great Divide, the species is widespread in the Riverina and Lower Western regions. The species is found at coastal lagoons, estuaries, bays, swamps, lakes, inundated grasslands, saltmarshes, river pools, creeks, floodplains and artificial wetlands. The species is usually found in coastal or near coastal habitat but occasionally found further inland. It prefers wetlands that have open fringing mudflats and low, emergent or fringing vegetation, such as grass or samphire. The species has also been recorded in swamp overgrown with lignum.		**Absent** No aquatic habitat present that would support this species.	**Unlikely** No suitable habitat present that would support this species. No records within the locality.	**No** Species not likely to occur.

Scientific Name	Common Name	NSW BC Act	NSW FM Act	Federal EPBC Act	Habitat	Number of Records	Presence of habitat	Likelihood of Occurrence	Possible Impact
Callocephalon fimbriatum	Gang-gang Cockatoo	V			In spring and summer, generally found in tall mountain forests and woodlands, particularly in heavily timbered and mature wet sclerophyll forests. In autumn and winter, the species often moves to lower altitudes in drier more open eucalypt forests and woodlands, particularly box-gum and box-ironbark assemblages, or in dry forest in coastal areas and often found in urban areas. May also occur in sub-alpine Snow Gum (*Eucalyptus pauciflora)* woodland and occasionally in temperate rainforests. In NSW, it is distributed from the south-east coast to the Hunter region, inland to the Central Tablelands and south-west slopes, and regularly in the ACT. It is rare at the extremities of its range, with isolated records known from as far north as Coffs Harbour and as far west as Mudgee.	8 records within locality	**Marginal** Eucalypt woodland present.	**Possible** Marginal habitat and 8 records within locality.	**Yes** AoS undertaken.
Calyptorhynchus lathami	Glossy Black-cockatoo	V			Uncommon, but 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. An isolated population exists on Kangaroo Island, South Australia. Dependent on large hollow-bearing eucalypts for nest sites. Inhabits open forest and woodlands of the coast and the Great Dividing Range up to 1000 m in which stands of she-oak species, particularly Black She-oak (*Allocasuarina littoralis*), Forest She-oak (*A. torulosa*) or Drooping She-oak (*A. verticillata*) occur. In the Riverina area, inhabits open woodlands dominated by Belah (*Casuarina cristata*). Feeds almost exclusively on the seeds of several species of she-oak *(Casuarina* and *Allocasuarina* species), shredding the cones with the massive bill.		**Absent** No woodland present with stands of She-oak.	**Unlikely** No suitable habitat present. No records within locality.	**No** Unlikely to occur.
Chthonicola sagittata	Speckled Warbler	V			Has a patchy distribution throughout south-eastern Queensland, the eastern half of NSW and into Victoria, as far west as the Grampians. The species is most frequently reported from the hills	1 record within locality	**Marginal** Habitat present but no large	**Possible** Species recorded within locality	**Yes** AoS undertaken.

Scientific Name	Common Name	NSW BC Act	NSW FM Act	Federal EPBC Act	Habitat	Number of Records	Presence of habitat	Likelihood of Occurrence	Possible Impact
					and tablelands of the Great Dividing Range, and rarely from the coast. Lives in a wide range of Eucalyptus dominated communities that have a grassy understorey, often on rocky ridges or in gullies. Typical habitat would include scattered native tussock grasses, a sparse shrub layer, some eucalypt regrowth and an open canopy. Large, relatively undisturbed remnants are required for the species to persist in an area.		undisturbed remnant vegetation present within Subject Land.	and marginal habitat present.	
Circus assimilis	Spotted Harrier	V			Occurs in grassy open woodland including Acacia and mallee remnants, inland riparian woodland, grassland and shrub steppe. It is found most commonly in native grassland, but also occurs in agricultural land, foraging over open habitats including edges of inland wetlands. Builds a stick nest in a tree and lays eggs in spring (or sometimes autumn). Preys on terrestrial mammals (eg bandicoots, bettongs, and rodents), birds and reptile, occasionally insects and rarely carrion. Occurs throughout the Australian mainland, except in densely forested or wooded habitats of the coast, escarpment and ranges, and rarely in Tasmania.		**Present** Suitable habitat present in the form of eucalypt woodland and open grassy habitat or woodland present.	**Possible** Habitat present but no records within locality.	**Yes** AoS undertaken.
Climacteris picumnus victoriae	Brown Treecreeper (eastern subspecies)	V			Found in eucalypt woodlands (including Box-Gum, stringybarks or other rough-barked eucalypts) and dry open forest of the inland slopes and plains inland of the Great Dividing Range; mainly inhabits woodlands dominated with an open grassy understorey, sometimes with one or more shrub species; also found in mallee and *Eucalyptus camaldulensis* Forest bordering wetlands with an open understorey of acacias, saltbush, lignum, cumbungi and grasses. Usually not found in woodlands with a dense shrub layer. Fallen timber is an important habitat component for foraging. Terrestrial and arboreal in about equal proportions; active, noisy and conspicuous while foraging on trunks and branches of trees and amongst fallen timber; spend much more time foraging on the ground and fallen logs than other treecreepers.		**Present** Eucalypt woodland present.	**Possible** Suitable habitat present but no records within locality.	**Yes** AoS undertaken.

Scientific Name	Common Name	NSW BC Act	NSW FM Act	Federal EPBC Act	Habitat	Number of Records	Presence of habitat	Likelihood of Occurrence	Possible Impact
					Western boundary of the range of *Climacteris picumnus victoriae* runs approximately through Corowa, Wagga Wagga, Temora, Forbes, Dubbo and Inverell.				
Daphoenositta chrysoptera	Varied Sittella	V			Inhabits eucalypt forests and woodlands, especially those containing rough-barked species and mature smooth-barked gums with dead branches, mallee and Acacia woodland. Feeds on arthropods gleaned from crevices in rough or decorticating bark, dead branches, standing dead trees and small branches and twigs in the tree canopy. Builds a cup-shaped nest of plant fibres and cobwebs in an upright tree fork high in the living tree canopy, and often re-uses the same fork or tree in successive years. Sedentary and inhabits most of mainland Australia except the treeless deserts and open grasslands. Distribution in NSW is nearly continuous from the coast to the far west.	4 records within locality	**Present** Eucalypt woodland present.	**Possible** Suitable habitat and numerous records within locality.	**Yes** AoS undertaken.
Epthianura albifrons	White-fronted Chat	V			Found across the southern half of Australia, from southernmost Queensland to southern Tasmania, and across to Western Australia as far north as Carnarvon. Found mostly in temperate to arid climates and very rarely sub-tropical areas, it occupies foothills and lowlands up to 1000 m above sea level. In NSW, it occurs mostly in the southern half of the state, in damp open habitats along the coast, and near waterways in the western part of the state. Along the coastline, it is found predominantly in saltmarsh vegetation and mangroves but also in open grasslands and sometimes in low shrubs bordering wetland areas. Nests are usually built about 23 cm above the ground (but have been found up to 2.5 m above the ground).		**Marginal** Species known to use woodland occasionally when adjacent to suitable habitat. No other suitable habitat identified.	**Unlikely** Habitat is not likely to be preferred by or support this species. No records within locality.	**No** Species not likely to occur.
Falco hypoleucos	Grey Falcon	E		V	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.		**Absent** No arid or semi-arid grassland,	**Unlikely** Marginal habitat present and	No Species unlikely to occur.

Scientific Name	Common Name	NSW BC Act	NSW FM Act	Federal EPBC Act	Habitat	Number of Records	Presence of habitat	Likelihood of Occurrence	Possible Impact
					Also occurs near wetlands where surface water attracts prey. Preys primarily on birds, especially parrots and pigeons, using high-speed chases and stoops; reptiles and mammals are also taken.		shrbland or woodland present.	no records within locality.	
Falco subniger	Black Falcon	V			Widely, but sparsely, distributed in New South Wales, mostly occurring in inland regions. Some reports of 'Black Falcons' on the tablelands and coast of New South Wales are likely to be referable to the Brown Falcon. In New South Wales there is assumed to be a single population that is continuous with a broader continental population, given that falcons are highly mobile, commonly travelling hundreds of kilometres (Marchant & Higgins 1993). Occurs as solitary individuals, in pairs, or in family groups of parents and offspring.		**Marginal** Some marginally suitable habitat present in the form of eucalypt woodland, grassy habitat or woodland.	**Possible** Some marginal habitat present	**Yes** AoS undertaken.
Gallinago hardwickii	Latham's Snipe			M	Usually inhabit open, freshwater wetlands with low, dense vegetation (e.g. swamps, flooded grasslands or heathlands, around bogs and other water bodies). Known to occur in the upland wetlands of the New England Tablelands and Monaro Plateau.		**Absent** No aquatic habitat present that would support this species.	**Unlikely** No suitable habitat present that would support this species. No records within locality.	**No** Species not likely to occur.
Grantiella picta	Painted Honeyeater	V		V	Nomadic and occurs at low densities throughout its range. The greatest concentrations of the bird and almost all breeding occurs on the inland slopes of the Great Dividing Range in NSW, Victoria and southern Queensland. Inhabits Boree/ Weeping Myall (*Acacia pendula*), Brigalow (*A. harpophylla*) and Box-Gum Woodlands and Box-Ironbark Forests. A specialist feeder on the fruits of mistletoes growing on woodland eucalypts and acacias. Prefers mistletoes of the genus *Amyema.* Nest from spring to autumn in a small, delicate nest hanging within the outer canopy of drooping eucalypts, she-oak, paperbark or mistletoe		**Present** Eucalypt woodland present.	**Possible** Suitable habitat present. No records within locality.	**Yes** AoS undertaken.

Scientific Name	Common Name	NSW BC Act	NSW FM Act	Federal EPBC Act	Habitat	Number of Records	Presence of habitat	Likelihood of Occurrence	Possible Impact
					branches.				
Haliaeetus leucogaster	White-bellied Sea Eagle	V		M	Distributed around the Australian coastline, including Tasmania, and well inland along rivers and wetlands of the Murray Darling Basin. Habitats are characterised by the presence of large areas of open water including larger rivers, swamps, lakes, and the sea. Also occurs at sites near the sea or sea-shore, such as around bays and inlets, beaches, reefs, lagoons, estuaries and mangroves; and at, or in the vicinity of freshwater swamps, lakes, reservoirs, billabongs and saltmarsh. Terrestrial habitats include coastal dunes, tidal flats, grassland, heathland, woodland, and forest (including rainforest). Breeding habitat consists of mature tall open forest, open forest, tall woodland, and swamp sclerophyll forest close to foraging habitat. Nest trees are typically large emergent eucalypts and often have emergent dead branches or large dead trees nearby which are used as 'guard roosts'		**Absent** No aquatic habitat present that would support this species.	**Unlikely** No suitable habitat present that would support this species. No records within the locality.	**No** Species not likely to occur.
Hieraaetus morphnoides	Little Eagle	V			The Little Eagle is found throughout the Australian mainland excepting the most densely forested parts of the Dividing Range escarpment. Occurs as a single population throughout NSW. Occupies open eucalypt forest, woodland or open woodland, Sheoak or Acacia woodlands, and riparian woodlands of interior NSW are also used. Nests in tall living trees within a remnant patch, where pairs build a large stick nest in winter.		**Present** Eucalypt woodland present.	**Possible** Suitable habitat present.	**Yes** AoS undertaken.
Hirundapus caudacutus	White-throated Needletail			V, M	In Australia, it is almost exclusively aerial, from heights of 1 m to 1000m. Conventional habitat descriptions are in applicable however, certain preferences are exhibited by the species. Recorded most often over wooded areas and known to fly between trees in the canopy.	1 record within locality	**Present** Woodland present.	**Possible** Habitat present and 1 record within locality.	**No** Species is almost exclusively aerial.
Lathamus discolor	Swift Parrot	CE		CE	Breeds in Tasmania during spring and summer, migrating in the autumn and winter months to south-eastern Australia from Victoria and the		**Marginal** Eucalypt woodland	**Unlikely** Marginal habitat	**No** Species unlikely to

Scientific Name	Common Name	NSW BC Act	NSW FM Act	Federal EPBC Act	Habitat	Number of Records	Presence of habitat	Likelihood of Occurrence	Possible Impact
					eastern parts of South Australia to south-east Queensland. In NSW mostly occurs on the coast and south west slopes. Migrates to the Australian south-east mainland between March and October. No breeding in NSW. Favoured feed trees include winter flowering species such as Swamp Mahogany *Eucalyptus robusta*, Spotted Gum *Corymbia maculata*, Red Bloodwood *C. gummifera*, Mugga Ironbark *E. sideroxylon*, and White Box *E. albens*.		present, however not preferred Eucalypts.	present. No records within locality.	occur.
Lophoictinia isura	Square-tailed Kite	V			The Square-tailed Kite ranges along coastal and subcoastal areas from south-western to northern Australia, Queensland, NSW and Victoria. In NSW, it is a regular resident in the north, north-east and along the major west-flowing river systems. Found in a variety of timbered habitats including dry woodlands and open forests. Preference for timbered watercourses. In arid north-western NSW, has been observed in stony country with a ground cover of chenopods and grasses, open acacia scrub and patches of low open eucalypt woodland. Appears to occupy large hunting ranges of more than 100km2. Breeding is from July to February, with nest sites generally located along or near watercourses, in a fork or on large horizontal limbs.		**Present** Eucalypt woodland present.	**Possible** Suitable habitat present but no records within locality.	**Yes** AoS undertaken.
Melanodryas cucullata cucullata	Hooded Robin (south-eastern form)	V			Prefers lightly wooded country, usually open eucalypt woodland, acacia scrub and mallee, often in or near clearings or open areas. Requires structurally diverse habitats featuring mature eucalypts, saplings, some small shrubs and a ground layer of moderately tall native grasses. Perches on low dead stumps and fallen timber or on low-hanging branches. Territories range from around 10 ha during the breeding season, to 30 ha in the non-breeding season. Nest is a small, neat cup of bark and grasses bound with webs, in a tree fork or crevice, from less than 1-5 m above the ground. Widespread across Australia, except for the driest deserts and the wetter coastal areas -		**Present** Eucalypt woodland present adjacent to open areas.	**Possible** Suitable habitat present but no records within locality.	**Yes** AoS undertaken.

Scientific Name	Common Name	NSW BC Act	NSW FM Act	Federal EPBC Act	Habitat	Number of Records	Presence of habitat	Likelihood of Occurrence	Possible Impact
					northern and eastern coastal Queensland and Tasmania. Considered a sedentary species, but local seasonal movements are possible. The south-eastern form (subspecies *cucullata*) 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 subspecies *picata*.				
Motacilla flava	Yellow Wagtail			M	Occupies a range of damp or wet habitats with low vegetation, from damp meadows, marshes, waterside pastures, sewage farms and bogs to damp steppe and grassy tundra. In the north of its range, it is also found in large forest clearings. Breeds from April to August, although this varies with latitude.		**Present** Damp, wet habitat present.	**Possible** Suitable habitat present. No records within the locality.	**No** Species is highly mobile migrating far distances. It is unlikely to rely on present habitat to be impacted.
Myiagra cyanoleuca	Satin Flycatcher			M	Found along the east coast of Australia in tall forests, preferring wetter habitats such as heavily forested gullies, but not rainforests. Nests in loose colonies of two to five pairs nesting at intervals of about 20-50 m apart. It builds a broad-based, cup-shaped nest of shredded bark and grass, coated with spider webs and decorated with lichen. The nest is placed on a bare, horizontal branch, with overhanging foliage, about 3-25 m above the ground.		**Absent** No tall moist eucalypt forest present.	**Unlikely** No records within the locality, and no suitable habitat present.	**No** Species is highly mobile migrating far distances. It is unlikely to rely on present habitat to be impacted.
Neophema pulchella	Turquoise Parrot	V			Lives on the edges of eucalypt woodland adjoining clearings, timbered ridges and creeks in farmland. Usually seen in pairs or small, possibly family, groups and have also been reported in flocks of up to thirty individuals. Prefers to feed in the shade of a tree and spends most of the day on the ground searching for the seeds or grasses and herbaceous plants, or browsing on vegetable matter. Forages quietly and may be quite tolerant of disturbance. Range extends from southern Queensland through to northern Victoria, from the		**Present** Eucalypt woodland present adjoining clearing.	**Possible** Suitable habitat present. Not recorded within locality.	**Yes** AoS undertaken.

Scientific Name	Common Name	NSW BC Act	NSW FM Act	Federal EPBC Act	Habitat	Number of Records	Presence of habitat	Likelihood of Occurrence	Possible Impact
					coastal plains to the western slopes of the Great Dividing Range.				
Ninox connivens	Barking Owl	V			Inhabits woodland and open forest, including fragmented remnants and partly cleared farmland. Flexible in its habitat use, and hunting can extend in to closed forest and more open areas. Breeds along timbered watercourses in heavily cleared habitats (e.g. western NSW) due to the higher density of prey found on these fertile riparian soils. Roosts in shaded portions of tree canopies, including tall midstorey trees with dense foliage such as Acacia and Casuarina species. Hunts small arboreal mammals such as Squirrel Gliders and Common Ringtail Possums, but becomes more reliant on birds, invertebrates, bats and terrestrial mammals such as rodents and rabbits when key food is sparse. Requires very large permanent territories in most habitats due to sparse prey densities, over as much as 6000 hectares, with 2000 hectares being more typical in NSW habitats. 2-3 eggs are laid in hollows of large, old living or dead trees. Nest sites are used repeatedly over years by a pair, but may switch sites if disturbed by predators. Nesting occurs mid-winter and spring. Common in parts of northern Australia, but now sparse distribution in NSW. Core populations exist on the western slopes and plains and in some northeast coastal and escarpment forests.		**Present** Eucalypt woodland present.	**Possible** Suitable habitat present but no records within the locality.	**Yes** AoS undertaken.
Ninox strenua	Powerful Owl	V			The Powerful Owl inhabits a range of vegetation types, from woodland and open sclerophyll forest to tall open wet forest and rainforest. The Powerful Owl requires large tracts of forest or woodland habitat but can occur in fragmented landscapes as well. The species breeds and hunts in open or closed sclerophyll forest or woodlands and occasionally hunts in open habitats. It roosts by day in dense vegetation comprising species such as Turpentine *Syncarpia glomulifera*, Black She-oak *Allocasuarina littoralis*, Blackwood *Acacia*	2 records within locality	**Present** Eucalypt woodland present.	**Possible** Suitable habitat present with two records within locality.	**Yes** AoS undertaken.

Scientific Name	Common Name	NSW BC Act	NSW FM Act	Federal EPBC Act	Habitat	Number of Records	Presence of habitat	Likelihood of Occurrence	Possible Impact
					melanoxylon, Rough-barked Apple *Angophora floribunda*, Cherry Ballart *Exocarpus cupressiformis* and a number of eucalypt species.				
Numenius madagascariensis	Eastern Curlew	CE		CE	In NSW, 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. Generally occupies coastal lakes, inlets, bays and estuarine habitats, and in NSW is mainly found in intertidal mudflats and sometimes saltmarsh of sheltered coasts. Occasionally, the species occurs on ocean beaches (often near estuaries), and coral reefs, rock platforms, or rocky islets. Forages in or at the edge of shallow water, occasionally on exposed algal mats or waterweed, or on banks of beach-cast seagrass or seaweed. Roosts on sandy spits and islets, especially on dry beach sand near the high-water mark, and among coastal vegetation including low saltmarsh or mangroves. May also roost on wooden oyster leases or other similar structures. Is carnivorous, mainly eating crustaceans.		**Absent** No aquatic habitat present that would support this species.	**Unlikely** No suitable habitat present that would support this species. No records within the locality.	**No** Species not likely to occur.
Oxyura australis	Blue-billed Duck	V			Prefers deep water in large permanent wetlands and swamps with dense aquatic vegetation. Completely aquatic, swimming low in the water along the edge of dense cover. Feeds by day far from the shore, particularly if dense cover is available in the central parts of the wetland. They feed on the bottom of swamps eating seeds, buds, stems, leaves, fruit and small aquatic insects such as the larvae of midges, caddisflies and dragonflies. Partly migratory, with short-distance movements between breeding swamps and overwintering lakes with some long-distance dispersal to breed during spring and early summer. Nest solitarily in Cumbungi over deep water between September and February, and in trampled vegetation in Lignum, sedges or Spike-rushes, where a bowl-shaped nest is constructed.		**Absent** No aquatic habitat present that would support this species.	**Unlikely** No suitable habitat present that would support this species. No records within locality.	**No** Species not likely to occur.

Scientific Name	Common Name	NSW BC Act	NSW FM Act	Federal EPBC Act	Habitat	Number of Records	Presence of habitat	Likelihood of Occurrence	Possible Impact
					Young birds disperse in April-May from their breeding swamps in inland NSW to non-breeding areas on the Murray River system and coastal lakes. Endemic to south-eastern and south-western Australia. Widespread in NSW, but most common in the southern Murray-Darling Basin area. Birds disperse during the breeding season to deep swamps up to 300 km away. It is generally only during summer or in drier years that they are seen in coastal areas.				
Pachycephala olivacea	Olive Whistler	V			Mostly inhabit wet forests above about 500m. During the winter months they may move to lower altitudes. Forage in trees and shrubs and on the ground, feeding on berries and insects. Make nests of twigs and grass in low forks of shrubs.		**Absent** Wet forest not present.	**Unlikely** Suitable habitat not present.	**No** Species is unlikely to occur.
Petroica boodang	Scarlet Robin	V			Lives in dry eucalypt forests and woodlands. The understorey is usually open and grassy with few scattered shrubs. Lives in both mature and regrowth vegetation. Occasionally occurs in mallee or wet forest communities, or in wetlands and tea-tree swamps. Habitat usually contains abundant logs and fallen timber, which are important components of its habitat. Breeds on ridges, hills and foothills of the western slopes, the Great Dividing Range and eastern coastal regions; and occasionally found up to 1000m in altitude. Primarily a resident in forests and woodlands, but some adults and young birds disperse to more open habitats after breeding. In autumn and winter, many live in open grassy woodlands, and grasslands or grazed paddocks with scattered trees. Found from south east Queensland to south east South Australia and also in Tasmania and south west Western Australia. In NSW, it occurs from the coast to the inland slopes. After breeding they disperse to the lower valleys and plains of the	5 records within locality	**Present** Eucalypt woodland present.	**Possible** Suitable habitat present and recorded within locality.	**Yes** AoS undertaken.

Scientific Name	Common Name	NSW BC Act	NSW FM Act	Federal EPBC Act	Habitat	Number of Records	Presence of habitat	Likelihood of Occurrence	Possible Impact
					tablelands and slopes. Some birds may appear as far west as the eastern edges of the inland plains in autumn and winter.				
Petroica phoenicea	Flame Robin	V			Breeds in upland tall moist eucalypt forests and woodlands, often on ridges and slopes. Prefers clearings or areas with open understorey. Ground layer of breeding habitat is dominated by native grasses and the shrub layer may be either sparse or dense. In winter birds migrate to drier more open habitats in the lowlands. Often occurs in recently burnt areas. In winter lives in dry forests, open woodlands and in pastures and native grasslands, with or without scattered trees.	3 records within locality	**Present** Eucalypt woodland present.	**Possible** Suitable habitat present and recorded within locality.	**Yes** AoS undertaken.
Petroica rodinogaster	Pink Robin	V			Inhabits rainforest and tall, open eucalypt forest, particularly in densely vegetated gullies		**Marginal** Rainforest not present. Open eucalypt forest present though.	**Unlikely** Marginal habitat present. No records within locality.	**No** Species unlikely to occur.
Polytelis swainsonii	Superb Parrot	V		V	Inhabit Box-Gum, Box-Cypress-pine and Boree Woodlands and River Red Gum Forest. In the Riverina the birds nest in the hollows of large trees (dead or alive) mainly in tall riparian River Red Gum Forest or Woodland. On the South West Slopes nest trees can be in open Box-Gum Woodland or isolated paddock trees. Species known to be used are Blakely's Red Gum, Yellow Box, Apple Box and Red Box. Nest in small colonies, often with more than one nest in a single tree. Breed September-January. May forage up to 10 km from nesting sites, primarily in grassy box woodland. Feeds in trees and understorey shrubs and on the ground and their diet consists mainly of grass seeds, herbaceous plants, fruits, berries, nectar, buds, flowers, insects and grain. On the South-western Slopes their core breeding area is roughly bounded by Cowra and Yass in the east, and Grenfell, Cootamundra and Coolac in the west. Birds breeding in this region are mainly		**Present** Eucalypt woodland present.	**Possible** Suitable habitat present. No records within locality.	**Yes** AoS undertaken.

Scientific Name	Common Name	NSW BC Act	NSW FM Act	Federal EPBC Act	Habitat	Number of Records	Presence of habitat	Likelihood of Occurrence	Possible Impact
					absent during winter, when they migrate north to the region of the upper Namoi and Gwydir Rivers. The other main breeding sites are in the Riverina along the corridors of the Murray, Edward and Murrumbidgee Rivers where birds are present all year round. It is estimated that there are less than 5000 breeding pairs left in the wild.				
Rhipidura rufifrons	Rufous Fantail			M	In east and south-east Australia, the Rufous Fantail mainly inhabits wet sclerophyll forests, often in gullies dominated by eucalypts such as Tallow-wood (*Eucalyptus microcorys*), Mountain Grey Gum (*E. cypellocarpa*), Narrow-leaved Peppermint (*E. radiata*), Mountain Ash (*E. regnans*), Alpine Ash (*E. delegatensis*), Blackbutt (*E. pilularis*) or Red Mahogany (*E. resinifera*); usually with a dense shrubby understorey often including ferns.		**Absent** No wet sclerophyll forest present.	**Unlikely** No suitable habitat present and no records within locality.	**No** Species is unlikely to occur.
Rostratula australis	Australian Painted Snipe	E		E	A small freshwater wader restricted to Australia. Most records are from the south east, particularly the Murray Darling Basin, with scattered records across northern Australia and historical records from around the Perth region in Western Australia. 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 and wetlands on the Hawkesbury River and the Clarence and lower Hunter Valleys. Prefers fringes of swamps, dams and nearby marshy areas where there is a cover of grasses, lignum, low scrub or open timber. Nests on the ground amongst tall vegetation, such as grasses, tussocks or reeds. The nest consists of a scrape in the ground, lined with grasses and leaves.		**Absent** No aquatic habitat present that would support this species.	**Unlikely** No suitable habitat present that would support this species. No records within the locality.	**No** Species not likely to occur.
Stagonopleura guttata	Diamond Firetail	V			Found in grassy eucalypt woodlands, including Box-Gum Woodlands and Snow Gum *Eucalyptus pauciflora* Woodlands. Also occurs in open forest, mallee, Natural Temperate Grassland, and in secondary grassland derived from other		**Present** Eucalypt woodland present.	**Possible** Suitable habitat present. No records within	**Yes** AoS undertaken.

Scientific Name	Common Name	NSW BC Act	NSW FM Act	Federal EPBC Act	Habitat	Number of Records	Presence of habitat	Likelihood of Occurrence	Possible Impact
					communities. Often found in riparian areas (rivers and creeks), and sometimes in lightly wooded farmland. Feeds exclusively on the ground, on ripe and partly-ripe grass and herb seeds and green leaves, and on insects (especially in the breeding season). Usually encountered in flocks of between 5-40 birds, occasionally more. Groups separate into small colonies to breed, between August and January. Nests are globular structures built either in the shrubby understorey, or higher up, especially under hawk's or raven's nests. Appears to be sedentary, though some populations move locally, especially those in the south. Has been recorded in some towns and near farm houses. Endemic to south-eastern Australia, extending from central Queensland to the Eyre Peninsula in South Australia. It is widely distributed in NSW, with a concentration of records from the Northern, Central and Southern Tablelands, the Northern, Cental and South Western Slopes and the North West Plains and Riverina.			locality.	
Tyto novaehollandiae	Masked Owl	V			Lives in dry eucalypt forests and woodlands from sea level to 1100 m. A forest owl, but often hunts along the edges of forests, including roadsides. The typical diet consists of tree-dwelling and ground mammals, especially rats. Roosts and breeds in moist eucalypt forested gullies, using large tree hollows or sometimes caves for nesting.		**Present** Eucalypt woodland present.	**Possible** Suitable habitat present but not recorded within locality.	**Yes** AoS undertaken.
Tyto tenebricosa	Sooty Owl	V			Occurs in rainforest, including dry rainforest, subtropical and warm temperate rainforest, as well as moist eucalypt forests. Roosts by day in the hollow of a tall forest tree or in heavy vegetation; hunts by night for small ground mammals or tree-dwelling mammals such as the Common Ringtail Possum (*Pseudocheirus peregrinus*) or Sugar Glider (*Petaurus breviceps*). Nests in very large tree-hollows.		**Absent** No rainforest or moist eucalypt forest present.	**Unlikely** No suitable habitat present and not recorded within locality.	**No** Species unlikely to occur.

Scientific Name	Common Name	NSW BC Act	NSW FM Act	Federal EPBC Act	Habitat	Number of Records	Presence of habitat	Likelihood of Occurrence	Possible Impact
Mammals									
Cercartetus nanus	Eastern Pygmy Possum	V			Found in a broad range of habitats from rainforest through sclerophyll (including Box-Ironbark) forest and woodland to heath, except in north-eastern NSW where they are encountered in rainforest. 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. Feeds on insects throughout the year; this feed source may be more important in habitats where flowers are less abundant such as wet forests. Shelters in tree hollows, rotten stumps, holes in the ground, abandoned bird-nests, Ringtail Possum (*Pseudocheirus peregrinus*) dreys or thickets of vegetation, (e.g. grass-tree skirts); nest-building appears to be restricted to breeding females; tree hollows are favoured but spherical nests have been found under the bark of eucalypts and in shredded bark in tree forks. Mainly solitary, each individual using several nests, with males having non-exclusive home-ranges of about 0.68 hectares and females about 0.35 hectares. Frequently spends time in torpor especially in winter, with body curled, ears folded and internal temperature close to the surroundings.;		**Present** Sclerophyll forest present.	**Possible** Suitable habitat present but not recorded within locality.	**Yes** AoS undertaken.
Dasyurus maculatus maculatus	Spotted-Tailed Quoll (South-Eastern Mainland Population)	V		E	Recorded across a range of habitat types, including rainforest, open forest, woodland, coastal heath and inland riparian forest, from the sub-alpine zone to the coastline. Quolls use hollow-bearing trees, fallen logs, other animal burrows, small caves and rock outcrops as den sites. Mostly nocturnal, although will hunt during the day; spend most of the time on the ground, although also an excellent climber and will hunt possums and gliders in tree hollows and prey on roosting	2 records within locality	**Present** Eucalypt woodland.	**Possible** Species not recorded within the locality however some suitable habitat present.	**Yes** AoS undertaken.

Scientific Name	Common Name	NSW BC Act	NSW FM Act	Federal EPBC Act	Habitat	Number of Records	Presence of habitat	Likelihood of Occurrence	Possible Impact
					birds. Use communal 'latrine sites', often on flat rocks among boulder fields, rocky cliff-faces or along rocky stream beds or banks. Such sites may be visited by multiple individuals and can be recognised by the accumulation of the sometimes characteristic 'twisty-shaped' faeces deposited by animals.				
Falsistrellus tasmaniensis	Eastern False Pipistrelle	V			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. Hunts beetles, moths, weevils and other flying insects above or just below the tree canopy. Hibernates in winter. Females are pregnant in late spring to early summer.		**Present** No moist tall eucalypt forest present.	**Unlikely** Species not recorded within the locality and no suitable habitat present.	**No** Species unlikely to occur.
Mastacomys fuscus	Broad-toothed Rat	V		V	The Broad-toothed Rat lives in a complex of runways through the dense vegetation of its wet grass, sedge or heath environment, and under the snow in winter. The Broad-toothed rat inhabits high rainfall areas. They prefer a moderate-to-dense ground cover of grasses or sedges, with shrubs usually present, particularly along valley floors near to streams. Although the Broad-toothed Rat is found from coastal environments to high altitude areas its main strongholds are mostly in subalpine and alpine regions.		**Marginal** Grass and sedge environment present but not a wet high rainfall area.	**Unlikely** Marginal habitat present. No records within locality.	**No** Species unlikely to occur.
Miniopterus orianae oceanensis	Large Bent-winged Bat	V			Caves are the primary roosting habitat, but also use derelict mines, storm-water tunnels, buildings and other man-made structures. Form discrete populations centred on a maternity cave that is used annually in spring and summer for the birth and rearing of young. Maternity caves have very	2 records within locality	**Present** Eucalypt woodland present.	**Possible** Species not recorded within the locality however	**Yes** AoS undertaken.

Scientific Name	Common Name	NSW BC Act	NSW FM Act	Federal EPBC Act	Habitat	Number of Records	Presence of habitat	Likelihood of Occurrence	Possible Impact
					specific temperature and humidity regimes. At other times of the year, populations disperse within about 300 km range of maternity caves. Cold caves are used for hibernation in southern Australia. Breeding or roosting colonies can number from 100 to 150,000 individuals. Hunt in forested areas, catching moths and other flying insects above the tree tops.			some suitable habitat present.	
Myotis macropus	Southern Myotis	V			Found in the coastal band from the north-west of Australia, across the top-end and south to western Victoria. It is rarely found more than 100 km inland, except along major rivers. Generally roost in groups of 10 - 15 close to water in caves, mine shafts, hollow-bearing trees, storm water channels, buildings, under bridges and in dense foliage. Forage over streams and pools catching insects and small fish by raking their feet across the water surface.;2|In NSW females have one young each year usually in November or December.		**Present** Eucalypt woodland present.	**Possible** Species not recorded within the locality however some suitable habitat present.	**Yes** AoS undertaken.
Nyctophilus corbeni	Corben's Long-eared Bat	V		V	Overall, the distribution coincides approximately with the Murray Darling Basin with the Pilliga Scrub region being the distinct stronghold for this species. Inhabits a variety of vegetation types, including mallee, bulloke *Allocasuarina leuhmanni* and box eucalypt dominated communities, but it is distinctly more common in box/ironbark/cypress-pine vegetation that occurs in a north-south belt along the western slopes and plains of NSW and southern Queensland. Roosts in tree hollows, crevices, and under loose bark. Mating takes place in autumn with one or two young born in late spring to early summer.		**Present** Eucalypt woodland present.	**Possible** Species not recorded within the locality however some suitable habitat present.	**No** **Yes** AoS undertaken.
Petauroides volans	Greater Glider			V	The greater glider is an arboreal nocturnal marsupial, largely restricted to eucalypt forests and woodlands Greater Gliders are forest dependent and prefer older tree age classes in moist forest types. They use hollow-bearing trees for shelter and nesting, with each family group using multiple den trees within its home range. They eat mainly	4 records within locality	**Absent** No old growth forest or moist forest with minimal hollows present.	**unlikely** No suitable habitat present..	**Nos** Species unlikely to occur.

Scientific Name	Common Name	NSW BC Act	NSW FM Act	Federal EPBC Act	Habitat	Number of Records	Presence of habitat	Likelihood of Occurrence	Possible Impact
					young eucalypt leaves, with a preference for certain species.				
Petaurus australis	Yellow-bellied Glider	V			Occur in tall mature eucalypt forest generally in areas with high rainfall and nutrient rich soils. Forest type preferences vary with latitude and elevation; mixed coastal forests to dry escarpment forests in the north; moist coastal gullies and creek flats to tall montane forests in the south.	3 records within locality	**Absent** No tall moist forest present.	**Unlikely** No suitable habitat present.	**No** Species unlikely to occur.
Petaurus australis - endangered population	Yellow-bellied Glider population on the Bago Plateau	E			Den, often in family groups, in hollows of large trees. The habitat on the Bago Plateau consists of tall wet sclerophyll forest dominated by *Eucalyptus delegatensis* (Alpine Ash), *E. dalrympleana* (Mountain Gum), *E. radiata* (Narrow-leaved Peppermint) and *E. rubida* (Candlebark).		**Absent** No tall wet sclerophyll forest present.	**Unlikely** No suitable habitat present.	**No** Species unlikely to occur.
Petaurus norfolcensis	Squirrel Glider	V			Widely though sparsely distributed in eastern Australia, from northern Queensland to western Victoria. Inhabits mature or old growth Box, Box-Ironbark woodlands and River Red Gum forest west of the Great Dividing Range and Blackbutt-Bloodwood forest with heath understorey in coastal areas. Prefers mixed species stands with a shrub or Acacia midstorey. Require abundant tree hollows for refuge and nest sites. Diet varies seasonally and consists of Acacia gum, eucalypt sap, nectar, honeydew and manna, with invertebrates and pollen providing protein.		**Marginal** Eucalypt woodland present with a midstorey of scrub acacia present. However, habitat is highly fragmented and has minimal hollows. Species relies on hollows and a non-fragmented patch of woodlan.	**Unlikely** Marginalhabit at present. No recorded within the locality.	**No** Habitat is highly fragmented and with minimum hollows.
Phascogale	Brush-tailed	V			Prefer dry sclerophyll open forest with sparse		**Marginal**	**Unlikely**	**No**

Scientific Name	Common Name	NSW BC Act	NSW FM Act	Federal EPBC Act	Habitat	Number of Records	Presence of habitat	Likelihood of Occurrence	Possible Impact
tapoatafa	Phascogale				groundcover of herbs, grasses, shrubs or leaf litter. Also inhabit heath, swamps, rainforest and wet sclerophyll forest. Agile climber foraging preferentially in rough barked trees of 25 cm DBH or greater.. Nest and shelter in tree hollows with entrances 2.5 - 4 cm wide and use many different hollows over a short time span.		Dry sclerophyll forest present, however no hollow bearing trees present.	Marginal habitat present but lack of hollows. Not recorded within the locality.	Species unlikely to occur.
Phascolarctos cinereus	Koala	V		E	In NSW it mainly occurs on the central and north coasts with some populations in the west of the Great Dividing Range. Inhabit eucalypt woodlands and forests. Feed on the foliage of more than 70 eucalypt species and 30 non-eucalypt species, but in any one area will select preferred browse species. Inactive for most of the day, feeding and moving mostly at night. Spend most of their time in trees, but will descend and traverse open ground to move between trees. Home range size varies with quality of habitat, ranging from less than two ha to several hundred hectares in size. Generally solitary, but have complex social hierarchies based on a dominant male with a territory overlapping several females and sub-ordinate males on the periphery.	1 record within locality	**Marginal** Eucalypt woodland present, however not preferred foraging tree species.	**Unlikely** Marginal habitat present. One record within locality but is from 1970.	**No** Species unlikely to occur.
Pseudomys fumeus	Smoky Mouse	CE		E	The Smoky Mouse appears to prefer heath habitat on ridge tops and slopes in sclerophyll forest, heathland and open-forest from the coast (in Victoria) to sub-alpine regions of up to 1800 metres, but sometimes occurs in ferny gullies. Nesting burrows have been found in rocky localities among tree roots and under the skirts of Grass Trees *Xanthorrhoea* spp.		**Marginal** Sclerophyll forest present but highly degraded.	**Unlikely** Marginal habitat present. No records within locality.	**No** Species unlikely to occur.
Pteropus poliocephalus	Grey-headed Flying-fox	V		V	Occur in subtropical and temperate rainforests, tall sclerophyll forests and woodlands, heaths and swamps as well as urban gardens and cultivated fruit crops. Roosting camps are generally located		**Present** Eucalypt woodland present.	**Possible** Species not recorded within the	**Yes** AoS undertaken.

Scientific Name	Common Name	NSW BC Act	NSW FM Act	Federal EPBC Act	Habitat	Number of Records	Presence of habitat	Likelihood of Occurrence	Possible Impact
					65within 20 km of a regular food source and commonly found in gullies, close to water, in vegetation with a dense canopy. Individual camps may have tens of thousands of animals and are used for mating, giving birth and rearing young. Annual mating commences in January and a single young is born in October or November. Site fidelity to camps is high; some camps have been used for over a century. Can travel up to 50km from the camp to forage; commuting distances are more often <20 km. Feed on the nectar and pollen of native trees, in particular *Eucalyptus, Melaleuca* and *Banksia,* and fruits of rainforest trees and vines. Also forage in cultivated gardens and fruit crops.			locality however some suitable habitat present. No breeding camps within Subject Land.	
Amphibians									
Crinia sloanei	Sloane's Froglet	V			It is typically associated with periodically inundated areas in grassland, woodland and disturbed habitats. Recorded from widely scattered sites in the floodplains of the Murray-Darling Basin, with the majority of records in the Darling Riverine Plains, NSW South Western Slopes and Riverina bioregions in New South Wales. At a number of sites where records are verified by museum specimens, the species has not been subsequently detected during more recent frog surveys in the vicinity (e.g. Holbrook, Nyngan, Wagga Wagga and Tocumwal).		**Marginal** Potential for periodic inundated areas to occur.	**Unlikely** Marginal habitat present. No records within locality.	**No** Species not likely to occur.
Litoria booroolongensis	Booroolong Frog	E		E	Live along permanent streams with some fringing vegetation cover such as ferns, sedges or grasses. Adults occur on or near cobble banks and other rock structures within stream margins. Shelter under rocks or amongst vegetation near the ground on the stream edge. Sometimes bask in the sun on exposed rocks near flowing water during summer. Eggs are laid in submerged rock crevices and tadpoles grow in slow-flowing connected or isolated pools.		**Present** Tumbarumba Creek present with native vegetation with sedges and grasses.	**Possible** Suitable habitat present within Subject Land.	**Yes** AoS undertaken.

Scientific Name	Common Name	NSW BC Act	NSW FM Act	Federal EPBC Act	Habitat	Number of Records	Presence of habitat	Likelihood of Occurrence	Possible Impact
Litoria spenceri	Spotted Tree Frog	CE		E	Occur among boulders or debris along naturally vegetated, rocky fast flowing upland streams and rivers. In summer, during the breeding season, adults bask on large in-stream boulders while juveniles occupy shingle banks. In winter animals are thought to hibernate in vegetation outside of the main stream environment. Eggs are deposited under large instream boulders.		**Present** Tumbarumba Creek present with native vegetation with sedges and grasses.	**Possible** Suitable habitat present within Subject Land.	**Yes** AoS undertaken.
Litoria verreauxii alpina	Alpine Tree Frog	E		V	Found in a wide variety of habitats including woodland, heath, grassland and herb fields. Breed in natural and artificial wetlands including ponds, bogs, fens, streamside pools, stock dams and drainage channels that are still or slow flowing. It does not climb well, and spends most of its time on the ground. Males call from the water at the edges of the pools, and eggs are attached to submerged vegetation. Non-breeding habitat and overwintering refuges are poorly known but are likely to include flat rocks, fallen logs, leaf litter and other ground debris.		**Marginal** Habitat present but in NSW species is found at altitudes around 1200-150 meters above sea level. The Subject Land is only 622-657 meters about sea level.	**Unlikely** Marginal habitat present but too low of elevation. No records within locality.	**No** Species not likely to occur.
Pseudophryne pengilleyi	Northern Corroboree Frog	CE		CE	Summer breeding habitat is pools and seepages in sphagnum bogs, wet heath, wet tussock grasslands and herbfields in low-lying depressions. Tadpoles overwinter in the pools, feed and grow slowly through spring as the water warms and metamorphose in early summer. Outside the breeding season adults move away from the bogs into the surrounding heath, woodland and forest to overwinter under litter, logs and dense groundcover.		**Absent** Sphagnum bogs not present within Subject Land.	**Unlikely** No suitable habitat present. No records within locality.	**No** Species not likely to occur.

Scientific Name	Common Name	NSW BC Act	NSW FM Act	Federal EPBC Act	Habitat	Number of Records	Presence of habitat	Likelihood of Occurrence	Possible Impact
Retiles									
Aprasia parapulchella	Pink-tailed Worm-lizard	V		V	Known from the Central and Southern Tablelands, and the South Western Slopes. A concentration of populations in the Canberra/Queanbeyan Region, Cooma, Yass, Bathurst, Albury and West Wyalong. Inhabits sloping, open woodland areas with predominantly native grassy groundlayers, particularly those dominated by Kangaroo Grass (*Themeda triandra*). Sites are typically well-drained, with rocky outcrops or scattered, partially-buried rocks. Commonly found beneath small, partially-embedded rocks and appear to spend considerable time in burrows below these rocks; the burrows have been constructed by and are often still inhabited by small black ants and termites. Feeds on the larvae and eggs of the ants with which it shares its burrows.		**Absent** Rocky outcrops and partially buried rocks absent throughout Proposal.	**Unlikely** Unsuitable habitat and no records within locality.	**No** Species unlikely to occur.
Delma impar	Striped Legless Lizard	V		V	The Striped Legless Lizard is a grassland specialist. Potential habitat for the Striped Legless Lizard includes all areas which have, or once had, native grasslands or grassy woodlands (including derived grasslands) across the historical range of the species, provided that area retains suitable tussock structure, the soil is of appropriate type and structure, and the site has not had major disturbance such as ploughing. All occupied sites have a grassy ground cover, often with a mixture of native and exotic perennial and annual species of tussock-forming grasses (often >20–50% cover). the species is now known to occur in some areas dominated by introduced species such as *Phalaris aquatica*, Serated Tussock (*Nasella trichotoma*) and *Hypocharis radicata*.		**Absent** Tussock grasses not present within Subject Land.	**Unlikely** No suitable habitat present.	**No** Species unlikely to occur.
Suta flagellum	Little Whip Snake	V			Occurs in Natural Temperate Grasslands and grassy woodlands, including those dominated by Snow Gum *Eucalyptus pauciflora* or Yellow Box *E. melliodora*. Also occurs in secondary grasslands derived from clearing of woodlands.		**Marginal** Grasslands present. However, scattered rocks not	**Unlikely** Marginal habitat present. No records within locality.	**No** Species is unlikely to occur.

Scientific Name	Common Name	NSW BC Act	NSW FM Act	Federal EPBC Act	Habitat	Number of Records	Presence of habitat	Likelihood of Occurrence	Possible Impact
					Found on well drained hillsides, mostly associated with scattered loose rocks. Most specimens have been found under rocks or logs lying on, or partially embedded in the soil.		present within Subject Land.		
Varanus rosenbergi	Rosenberg's Goanna	V			Found in heath, open forest and woodland. Associated with termites, the mounds of which this species nests in; termite mounds are a critical habitat component. Shelters in hollow logs, rock crevices and in burrows, which they may dig for themselves, or they may use other species' burrows, such as rabbit warrens.		**Marginal** Open forest present. However, lack of termite mounds present.	**Unlikely** Marginal habitat present. No records within locality.	**No** Species unlikely to occur.
Fish									
Euastacus armatus	Murray Crayfish		V		Murray Crayfish can be found in a variety of habitats ranging from pasture-lands to sclerophyll forest. They prefer cool, flowing water that is well oxygenated. The species is tolerant of water temperatures up to 27°C and moderate salinities, but are intolerant to low dissolved oxygen concentrations. They are most active between May to October when water temperatures are below 20°C and when the water warms in summer they tend to become less active. They create burrows that vary in complexity, from deep burrows with multiple entrances to simple burrows under a rock or log.		**Present** Tumbarumba Creek is present within the Subject Land and is mapped as present in Tumbarumaba Creek on DPIE Fishiers Portal	**Likely** Suitable habitat present and mapped as occurring within Tumbarumba Creek.	**Yes** AoS undertaken.
Galaxias rostratus	Flathead Galaxias		CE	CE	Below 150 m in altitude. Billabongs, lakes, swamps, and rivers, with preference for still or slow-flowing waters.		**Absent** Drainage lines and streams within the Subject Land would not support this species.	**Unlikely** No habitat present within the Subject Land would support this species.	**No** Species would not occur.
Maccullochella macquariensis	Trout Cod	E	E	E	Trout Cod tend to occupy areas which have lots of large in-stream woody debris or ‘snags’, which		**Absent** No large in-	**Unlikely** Suitable habit	**No** Species

Scientific Name	Common Name	NSW BC Act	NSW FM Act	Federal EPBC Act	Habitat	Number of Records	Presence of habitat	Likelihood of Occurrence	Possible Impact
					provide complex habitats for each stage of the species' life cycle. They tend to remain at the one site with limited home ranges.		stream woody debris or snags present.	at not present. No records within locality.	unlikely to occur.
Maccullochella peelii	Murray Cod			V	Murray Cod generally prefer slow flowing, turbid water in streams and rivers, favouring deeper water around boulders, undercut banks, overhanging vegetation and logs.		**Absent** Fast moving creek present with no undercut banks, boulders or overhanging vegetation.	**Unlikely** No suitable habitat present. No records within locality.	**No** Species unlikely to occur.
Macquaria australasica	Macquarie Perch		E	E	A riverine, schooling species, they are found in the Murray-Darling Basin (particularly upstream reaches) of the Lachlan, Murrumbidgee and Murray rivers, and parts of south-eastern coastal NSW, including the Hawkesbury/Nepean and Shoalhaven catchments. Has been long-term declines in their abundance. Inhabit cool, shaded pristine streams and rivers. Prefers clear water and deep rocky holes with lots of cover. As well as aquatic vegetation, additional cover may comprise of large boulders, debris and overhanging banks.		**Absent** Creek present is very murky and turbid and lack of cover present.	**Unlikely** No habitat present within the Subject Land would support this species.	**No** Species unlikely to occur.
Insects									
Synemon plana	Golden Sun Moth	E		CE	Occurs in Natural Temperate Grasslands and grassy Box-Gum Woodlands in which groundlayer is dominated by wallaby grasses *Austrodanthonia* spp. Grasslands dominated by wallaby grasses are typically low and open - the bare ground between the tussocks is thought to be an important microhabitat feature for the Golden Sun Moth, as it is typically these areas on which the females are observed displaying to attract males. Habitat may contain several wallaby grass species, which are typically associated with other grasses particularly spear-grasses *Austrostipa* spp. or		**Absent** Groundlayer lacked Wallaby Grasses.	**Unlikely** No suitable habitat present.	**No** Species unlikely to occur.

Scientific Name	Common Name	NSW BC Act	NSW FM Act	Federal EPBC Act	Habitat	Number of Records	Presence of habitat	Likelihood of Occurrence	Possible Impact
					Kangaroo Grass *Themeda australis*.				

Appendix E BC Act Assessment of Significant Impact (AoS)

Section 7.3 of the *Biodiversity Conservation Act 2016* specifies five factors to be taken into account in deciding whether a development is likely to significantly affect threatened species, populations or ecological communities, or their habitats, listed at the state level under the Act.

This *Five–part Test* characterises the significance of likely impacts associated with the Proposal on the following threatened entities:

- Flora:
  - Austral Toadflax (Thesium australe) BC – V
- Woodland Birds:
  - Regent Honeyeater (*Anthochaera phrygia*) BC – CE
  - Dusky Woodswallow (*Artamus cyanopterus cyanopterus*) BC - V
  - Speckled Warbler (*Chthonicola sagittata*) BC - V
  - Brown Tree Creeper (eastern subspecies) (*Climacteris picumnus victoriae*) BC - V
  - Varied Sittella (*Daphoenositta chrysoptera*) BC - V
  - Painted Honeyeater (*Grantiella picta*) BC – V
  - Hooded Robin (south-eastern form) (*Melanodryas cucullata cucullata*) BC - V
  - Scarlet Robin (*Petroica boodang*) BC - V
  - Flame Robin (*Petroica phoenicea*) BC - V
  - Diamond Firetail (*Stagonopleura guttata*) BC - V
- Hollow-dependent birds:
  - Masked Owl (Tyto novaehollandiae) BC - V
  - Barking Owl (Ninox connivens) BC - V
  - Powerful Owl (Ninox strenua) BC - V
  - Gang-gang Cockatoo (Callocephalon fimbriatum) BC - V
  - Turquoise Parrot (Neophema pulchella) BC - V
  - Superb Parrot (Polytelis swainsonii) BC – V
- Raptors:
  - Spotted Harrier (*Circus assimilis*) BC - V
  - Black Falcon (*Falco subniger*) BC - V
  - Little Eagle (*Hieraaetus morphnoides*) BC - V
  - Square-tailed Kite (*Lophoictinia isura*) BC - V
- Amphibians
  - Booroolong Frog (Litoria booroolongensis) BC – E
  - Spotted Tree Frog (Litoria spenceri) BC – CE
- Mammals
  - Eastern Pygmy Possum (Cercartetus nanus) BC - V
  - Spotted-tailed Quoll (Dasyurus maculatus maculatus) BC – V
- Bats:
  - Large Bent-winged Bat (Miniopterus orianae oceanensis) BC - V

- Southern Myotis (Myotis macropus) BC - V
- Corben's Long-eared Bat (Nyctophilus corbeni) BC – V
- Grey-headed Flying-fox (Pteropus poliocephalus) BC – V

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.

Flora

Potential habitat for the Austral Toadlflax (*Thesium austral*) occurs within the Subject Land as grassy woodland. Austral Toadflax was not recorded during the site visit; however, as this species is a root parasite, often found in association with Kangaroo Grass (*Themeda australis*) (recorded within the site), the presence of this species within the Subject Land cannot be ruled out.

Up to 0.04ha of native vegetation, potentially suitable for this species, would be removed by the proposed development. Vegetation to be removed represents approximately less than 0.05% of PCT 285 habitat within the wider locality **(DPE, 2022)**. Given the pre-disturbed and highly exotic nature of the Subject Land, it is considered unlikely that the Proposal would have an adverse effect on the life cycle of this species such that a local viable population would be placed at risk of extinction.

Mitigation measures have been proposed to protect this species from excessive clearing and further spread of weeds.

An unexpected threatened species find procedure has been recommended.

Woodland Birds

Potential habitat, in the form of dry sclerophyll forests, occurs within the Subject Land for:

- Regent Honeyeater (*Anthochaera phrygia*)
- Dusky Woodswallow (*Artamus cyanopterus cyanopterus*)
- Speckled Warbler (*Chthonicola sagittata*)
- Brown Tree Creeper (eastern subspecies) (*Climacteris picumnus victoriae*)
- Varied Sittella (*Daphoenositta chrysoptera*)
- Painted Honeyeater (*Grantiella picta*)
- Hooded Robin (south-eastern form) (*Melanodryas cucullata cucullata*)
- Scarlet Robin (*Petroica boodang*)
- Flame Robin (*Petroica phoenicea*)
- Diamond Firetail (*Stagonopleura guttata*)

These species were not recorded during the site visit; however, suitable habitat occurs within the Subject Land. Up to 0.40ha of forest vegetation, potentially suitable for these species, would be removed by the proposed development. Vegetation to be removed represents less than 0.05% of PCT 285 habitat within the wider locality based on state vegetation mapping **(DPE, 2022)**. Given the pre-disturbed and highly exotic nature of the Subject Land, it is considered that these species would be more likely to occur within vegetation associated with Tumbarumba Creek and the nearby TSR. Considering that the Subject Land already contains an operational quarry, it is unlikely that the Proposal would have an adverse effect on the life cycle of these species, such that a local viable population would be placed at risk of extinction.

Mitigation measures have been proposed to protect these species from excessive clearing. An unexpected threatened species find procedure has been recommended.

Hollow-dependent Birds

Potential habitat, in the form of dry sclerophyll forests and one HBT, occurs within the Subject Land for:

- Masked Owl (*Tyto novaehollandiae*)
- Barking Owl (*Ninox connivens*)
- Powerful Owl (*Ninox strenua*)
- Gang-gang Cockatoo (*Callocephalon fimbriatum*)
- Turquoise Parrot (*Neophema pulchella*)
- Superb Parrot (*Polytelis swainsonii*)

These species were not recorded during the site visit; however, suitable habitat occurs within the Subject Land. Up to 0.40ha of forest vegetation including one HBT potentially suitable for these species would be removed by the proposed development. Vegetation to be removed represents approximately 0.05% of PCT 285 habitat within the wider locality based on state vegetation mapping **(DPE, 2022)**. Given the pre-disturbed and highly exotic nature of the Subject Land, it is considered that these species would be more likely to occur and nest within vegetation located along Tumbarumba Creek and the nearby TSR. It is considered that the removal of one HBT from within the Subject Land would not have an adverse impact on these species. Given that the Subject Land already contains an operational quarry, it is unlikely that the Proposal would have an adverse effect on the life cycle of these species, such that a local viable population would be placed at risk of extinction.

Mitigation measures have been proposed to protect these species from excessive clearing. An unexpected threatened species find procedure has been recommended.

Raptors

Potential habitat, in the form of dry sclerophyll forests , occurs within the Subject Land for:

- Spotted Harrier (*Circus assimilis*)
- Black Falcon (*Falco subniger*)
- Little Eagle (*Hieraaetus morphnoides*)
- Square-tailed Kite (*Lophoictinia isura*)

These species were not recorded during the site visit; however, suitable habitat occurs within the Subject Land. Up to 0.65ha of native vegetation, potentially suitable for these species, would be removed by the proposed development. Vegetation to be removed represents less than 0.05% of PCT 285 habitat within the wider locality **(DPE, 2022)**. Given the pre-disturbed and highly exotic nature of the Subject Land, it is considered that these species would be more likely to occur within vegetation located along Tumbarumba Creek and the nearby TSR. Considering that the Subject Land already contains an operational quarry, it is unlikely that the Proposal would have an adverse effect on the life cycle of these species, such that a local viable population would be placed at risk of extinction.

Mitigation measures have been proposed to protect these species from excessive clearing. An unexpected threatened species find procedure has been recommended.

Amphibians

Potential habitat, in the form of an ephemeral stream passing through two farm dams, occurs within the Subject Land for:

- Booroolong Frog (*Litoria booroolongensis*)
- Spotted Tree Frog (*Litoria spenceri*)

These species were not recorded during the site visit; however, suitable habitat occurs within the Subject Land. Up to 0.21ha of aquatic habitat, potentially suitable for these species, would be removed by the proposed development. Habitat to be removed represents approximately 0.08% of aquatic habitat within the wider locality **(DPE, 2022)**. Given that the Subject Land is pre-disturbed and highly exotic in nature and that the streams were observed to have low shallow flows, it is likely that these species would utilise aquatic habitat to the north and northwest of the site, including Tumbarumba Creek. Considering that the Subject Land already contains an operational quarry, it is unlikely that the Proposal would have an adverse effect on the life cycle of these species, such that a local viable population would be placed at risk of extinction.

Mitigation measures have been proposed to protect aquatic habitat occurring within and adjacent to the Subject Land. An unexpected threatened species find procedure has been recommended.

Mammals

Potential habitat, in the form of dry sclerophyll forest and one HBT, occurs within the Subject Land for:

- Eastern Pygmy Possum (*Cercartetus nanus*)
- Spotted-tailed Quoll (*Dasyurus maculatus maculatus*)

These species were not recorded during the site visit; however, suitable habitat occurs within the Subject Land. Up to 0.65ha of native vegetation including one HBT potentially suitable for these species would be removed by the proposed development. Vegetation to be removed represents approximately 0.05% of PCT 285 habitat within the wider locality based on state vegetation mapping **(DPE, 2022)**. Given the pre-disturbed and highly exotic nature of the Subject Land, it is considered that these species would be more likely to occur and breed within vegetation located along Tumbarumba Creek and the nearby TSR. It is considered that the removal of one HBT from within the Subject Land would not have an adverse impact on these species. Given that the Subject Land already contains an operational quarry, it is unlikely that the Proposal would have an adverse effect on the life cycle of these species, such that a local viable population would be placed at risk of extinction.

Mitigation measures have been proposed to protect these species from excessive clearing. An unexpected threatened species find procedure has been recommended.

Bats

Potential habitat, in the form of dry schlerophyll forests and one HBT, occurs within the Subject Land for:

- Large Bent-winged Bat (*Miniopterus orianae oceanensis*)
- Southern Myotis (*Myotis macropus*)
- Corben's Long-eared Bat (*Nyctophilus corbeni*)
- Grey-headed Fly-fox (*Pteropus poliocephalus*)

These species were not recorded during the site visit; however, suitable habitat occurs within the Subject Land. Up to 0.65ha of forest vegetation including one HBT potentially suitable for these species would be removed by the proposed development. Vegetation to be removed represents approximately 0.05% of PCT 285 habitat within the wider locality **(DPE, 2022)**. Given the pre-disturbed and highly exotic nature of the Subject Land, it is considered that these species would be more likely to occur and breed within vegetation located along Tumbarumba Creek and the nearby TSR. No caves or manmade structures, suitable for breeding, were observed within the Subject Land. It is considered that the removal of one HBT from within the Subject Land would not have an adverse impact on these species. Given that the Subject Land already contains an operational quarry, it is unlikely that the Proposal would have an adverse effect on the life cycle of these species, such that a local viable population would be placed at risk of extinction.

Mitigation measures have been proposed to protect these species from excessive clearing. An unexpected threatened species find procedure has been recommended.

b) In the case of an endangered ecological community or critically endangered ecological community, whether the proposed development or activity: ***a. 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.*** *b.* ***Is likely to substantially and adversely modify the composition of the ecological community such that its local occurrence is likely to be placed at risk of extinction.***
Not applicable.
c) In relation to the habitat of a threatened species or ecological community: ***i. the extent to which habitat is likely to be removed or modified as a result of the action proposed, and*** ***ii. whether an area of habitat is likely to become fragmented or isolated from other areas of habitat as a result of the proposed action, and*** *iii.* ***the importance of the habitat to be removed, modified, fragmented or isolated to the long–term survival of the species or ecological community in the locality.***
Flora
i. Around 0.04 ha of native vegetation suitable for this species would be removed by the Proposal. ii. The Subject Land is already fragmented as a result of the existing quarry. The Proposal would not cause further fragmentation of the Subject Land. iii. The area of habitat to be disturbed/removed is small (0.05%) given the local context. This habitat is not likely to be important for this species, given the previous disturbance associated with the existing quarry and accompanying infrastructure.
Woodland Birds
i. Around 0.40ha of suitable vegetation would be removed by the Proposal. ii. The Subject Land is already fragmented as a result of the existing quarry. The Proposal would not cause further fragmentation of the Subject Land. iii. The area of habitat to be disturbed/removed is small (0.05%) given the local context. This habitat is not likely to be important for this species, given the previous disturbance associated with the existing quarry and accompanying infrastructure.
Hollow-dependent Birds
i. Around 0.40ha of suitable vegetation including one HBT would be removed by the Proposal. ii. The Subject Land is already fragmented as a result of the existing quarry. The Proposal would not cause further fragmentation of the Subject Land. iii. The area of habitat to be disturbed/removed is small (0.05%) given the local context. This habitat is not likely to be important for this species, given the previous disturbance associated with the existing quarry and accompanying infrastructure.
Raptors
i. Around 0.65ha of suitable vegetation including one HBT would be removed by the Proposal. ii. The Subject Land is already fragmented as a result of the existing quarry. The Proposal would not cause further fragmentation of the Subject Land.

iii. The area of habitat to be disturbed/removed is small (0.05%) given the local context. This habitat is not likely to be important for this species, given the previous disturbance associated with the existing quarry and accompanying infrastructure.

Amphibians

i. Around 0.21ha of aquatic habitat would be removed by the Proposal.
ii. The Subject Land is already fragmented as a result of the existing quarry. The Proposal would not cause further fragmentation of the Subject Land.
iii. The area of habitat to be disturbed/removed is small (0.08%) given the local context. This habitat is not likely to be important for this species, given the previous disturbance associated with the existing quarry and accompanying infrastructure.

Mammals

i. Around 0.65ha of native vegetation including one HBT would be removed by the Proposal.
ii. The Subject Land is already fragmented as a result of the existing quarry. The Proposal would not cause further fragmentation of the Subject Land.
iii. The area of habitat to be disturbed/removed is small (0.05%) given the local context. This habitat is not likely to be important for this species, given the previous disturbance associated with the existing quarry and accompanying infrastructure.

Bats

i. Around 0.40ha of native vegetation and one HBT would be removed by the Proposal.
ii. The Subject Land is already fragmented as a result of the existing quarry. The Proposal would not cause further fragmentation of the Subject Land.
iii. The area of habitat to be disturbed/removed is small (0.05%) given the local context. This habitat is not likely to be important for this species, given the previous disturbance associated with the existing quarry and accompanying infrastructure.

d) Whether the action proposed 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 would be impacted directly or indirectly by the proposed works.

e) Whether the action proposed constitutes or is part of a key threatening process or is likely to increase the impact of a key threatening process.

Refer to **Table 5-4**.

Conclusion

The impacts of the Proposal on the assessed threatened species listed under the BC Act are manageable. A significant impact is considered unlikely, based on the following conclusions:

- The amount of habitat to be removed or disturbed by the Proposal is very small
- No increases to fragmentation, edge effects or isolation would occur
- No substantial contribution to any Key Threatening Process are expected

- Mitigation measures have been recommended to further reduce impacts to biodiversity
- No impact on an important population of this species is expected by the proposed works.

Appendix F EPBC Test of Significant Impact (ToS)

Vulnerable Species

The *Environment Protection and Biodiversity Conservation Act 1999* (Cwth) specifies factors to be taken into account in deciding whether a development is likely to significantly affect Endangered Ecological Communities, threatened species and migratory species, listed at the Commonwealth level. These assessments characterise the significance of likely impacts associated with the Proposal on the following **Vulnerable** species:

- Flora:
  - Austral Toadflax (*Thesium australe*) EPBC - V
- Woodland Birds:
  - Painted Honeyeater (*Grantiella picta*) EPBC - V
  - Superb Parrot (*Polytelis swainsonii*) EPBC - V
- Bats:
  - Corben's Long-eared Bat (*Nyctophilus corbeni*) EPBC - V
  - Grey-headed Flying-fox (*Pteropus poliocephalus*) EPBC – V

An action is likely to have a significant impact on a vulnerable species if there is a real chance or possibility that it will:
a) Will the action lead to a long-term decrease in the size of an important population of a species?
Austral Toadflax (*Thesium australe*)
Austral Toadflax was not recorded during the site survey; however, habitat suitable to this species occurs within the Subject Land as grassy woodland. There is no national recovery plan for this species; however, it has been listed under a Priorities Action Statement (PAS) (DPE, 2018). An important population is defined as, a population that is necessary for a species' long-term survival and recovery. This may include populations identified as such in recovery plans, and/or that are: • key source populations either for breeding or dispersal. • populations that are necessary for maintaining genetic diversity, and/or, • populations that are near the limit of the species range. Under the PAS, no key management sites are mapped for this species. Fifteen priority actions have been identified to help recover the Austral Toadflax within NSW (DPE, 2018): • Undertake monitoring of populations to assess habitat quality, threats and ameliorative actions • Encourage community participation in implementation of recovery actions for the species • Consult with Aboriginal communities when undertaking actions on sites of cultural significance • Finalise completion of the recovery plan by 2007 • Implement Bitou bush control as described in the approved TAP • Control feral animals in key habitat • Control weeds in known habitat for this species • Determine if and/or where an ecological burn is required • Liaise with public agencies and private landowners over the implementation of management actions for the species • Prepare and distribute a species profile to landholders, land managers and consent authorities

- Develop and distribute standard survey and impact assessment guidelines
- Support funding for management work in habitat for the species and carry out habitat maintenance and protection at known locations for the species
- Implement control programs for rabbits and reduce impact of cattle through strategic grazing or exclusion
- Undertake and support research into key aspects of the biology and ecology of Austral Toadflax that are likely to provide information that assists with management of the species
- Undertake annual monitoring of populations to provide information on the lifecycle of the species

The Proposal would result in the disturbance and removal of up to 0.04ha of derived grassland habitat suitable for this species. Native vegetation to be removed represents approximately 0.05% of the vegetation occurring within the locality, based on indicative vegetation mapping (DPE, 2022). Given the pre-disturbed and highly exotic nature of the Subject Land, it is considered unlikely that the Proposal would have an adverse effect on the life cycle of this species such that a local viable population would be placed at risk of extinction.

Mitigation measures have been proposed to protect this species from excessive clearing and further spread of weeds.

An unexpected threatened species find procedure has been recommended.

Painted Honeyeater (*Grantiella picta*)

The Painted Honeyeater was not recorded during the site survey; however, habitat suitable to this species occurs within the Subject Land as grassy woodland. The Draft National Recovery Plan (NRP) for the Superb Parrot (DAWE, 2020) details Tumbarumba to be a place where the species is likely to occur. The Draft NRP for the Painted Honeyeater (DAWE, 2020) lists habitat critical to the survival of the species that are necessary:

- For activities such as foraging, breeding, roosting, or dispersal
- For the long-term maintenance of the species or ecological community (including the maintenance of species essential to the survival of the species or ecological community, such as pollinators)
- To maintain genetic diversity and long-term evolutionary development
- For the reintroduction of populations or recovery of the species or ecological community.

This species prefers to breed within proximity to a source of Mistletoe, which is a preferred nesting substrate. Mistletoe was not recorded within the Subject Land; therefore, impacts to this species would occur to foraging habitat only. The Proposal would result in the disturbance and removal of up to 0.40ha of foraging woodland habitat suitable for this species. Native vegetation to be removed represents approximately 0.05% of the vegetation occurring within the locality, based on indicative vegetation mapping (DPE, 2022). Given the pre-disturbed, highly exotic nature of the Subject Land and considering that this species is unlikely to breed here, it is considered unlikely that the Proposal would have an adverse effect on the life cycle of this species such that a local viable population would be placed at risk of extinction.

Mitigation measures have been proposed to protect this species from excessive clearing.

An unexpected threatened species find procedure has been recommended.

Superb Parrot (*Polytelis Swainsonii*)

The Superb Parrot was not recorded during the site survey; however, habitat suitable to this species occurs within the Subject Land as grassy woodland. The National Recovery Plan for the Superb Parrot (DAWE, 2021) indicates that Tumbarumba is not an area where this species is likely to occur. This species shows a preference for nesting on major waterways. The Subject Land is located approximately 30km west of Talbingo Reservoir. In addition to this, Tumbarumba Creek occurs immediately to the north of the site. While the Subject Land is not considered an area where the species is likely to breed or occur, it is possible that the Proposal could impact on opportunistic foraging habitat suitable for this species.

The Proposal would result in the disturbance and removal of up to 0.44ha of foraging forest habitat suitable for this species. Native vegetation to be removed represents approximately 0.05% of the vegetation occurring within the locality, based on indicative vegetation mapping (DPE, 2022). Given the pre-disturbed, highly exotic nature of the Subject Land and considering that this species is unlikely to breed here, it is considered unlikely that the Proposal would have an adverse effect on the life cycle of this species such that a local viable population would be placed at risk of extinction. The vegetation proposed for removal does not form part of any important or large wildlife movement corridor. Removal of woodland vegetation would not disrupt any connectivity of potential threatened species populations. The Proposal is not considered an action that would lead to a long-term decrease in the size of an important population of this species. It has been recommended that a suitably qualified person is present to survey woodland vegetation for removal prior to the commencement of works to rescue and/or relocate any fauna, including breeding fauna.

Mitigation measures have been proposed to protect this species from excessive clearing.

An unexpected threatened species find procedure has been recommended.

Corben's Long-eared Bat (*Nyctophilus corbeni*)

Corben's Long-eared Bat was not recorded during the site survey; however, habitat suitable to this species occurs within the Subject Land as grassy woodland. There is no National Recovery Plan for this species. The Corben's Long-eared Bat has been assigned to the "Landscape" species management stream under the Saving Our Species (SoS) Strategy (DPE, 2017). The Subject Land is not mapped as a priority management site (DPE, 2017).Corben's Long-eared bat roosts in tree hollows, crevices and under loose bark. Potential foraging and roosting habitat for Corben's Long-eared Bat occurs within the Subject Land in the form of woodland and one HBT.

The Proposal would result in the disturbance and removal of up to 0.40ha of foraging woodland habitat including one HBT suitable for this species. Native vegetation to be removed represents approximately 0.05% of the vegetation occurring within the locality, based on indicative vegetation mapping (DPE, 2022). Given the pre-disturbed, highly exotic nature of the Subject Land and considering that this species has not been mapped as occurring nearby to the Proposal (DPE, 2017), it is considered unlikely that the Proposal would have an adverse effect on the life cycle of this species such that a local viable population would be placed at risk of extinction. The vegetation proposed for removal does not form part of any important or large wildlife movement corridor. Removal of woodland vegetation would not disrupt any connectivity of potential threatened species populations. The Proposal is not considered an action that would lead to a long-term decrease in the size of an important population of this species. It has been recommended that a suitably qualified person is present to survey woodland vegetation for removal prior to the commencement of works to rescue and/or relocate any fauna, including breeding fauna.

Mitigation measures have been proposed to protect this species from excessive clearing.

An unexpected threatened species find procedure has been recommended.

Grey-headed Fly-fox (*Pteropus poliocephalus*)

The Grey-headed Flying-fox was not recorded during the site survey; however, habitat suitable to this species occurs within the Subject Land as grassy woodland. The National Recovery Plan for the Grey-headed Flying-fox (DEW, 2021) states that Grey-headed Flying-foxes roost in large aggregations, known as camps, in the exposed branches of trees. The locations of camps have in the past generally been stable through time, and several sites have documented histories that exceed 100 years. The Subject Land is located approximately 63km south east of the nearest recorded Flying-fox camp (DAWE, 2014). Therefore, it is unlikely that this species breeds within or nearby to the Subject Land. Foraging habitat critical to the survival of this species is described as areas containing native species that occur within 20km of a nationally important camp (DAWE, 2014). Nationally important camps occur along the coastline of Australia and, as such, it is considered that foraging habitat within the Subject Land is not critical to this species survival.

The Proposal would result in the disturbance and removal of up to 0.65ha of foraging woodland habitat suitable for this species. Native vegetation to be removed represents approximately 0.05% of the vegetation occurring within the locality, based on indicative vegetation mapping (DPE, 2022). Given the pre-disturbed, highly exotic nature of the Subject Land and considering that this species has not been mapped as occurring nearby to the Proposal (DPE, 2017), it is considered unlikely that the Proposal would have an adverse effect on the life cycle of this species such that a local viable population would be placed at risk of extinction. The vegetation proposed for removal does not form part of any important or large wildlife movement corridor. Removal of woodland vegetation would not disrupt any connectivity of potential threatened species populations. The Proposal is not considered an action that would lead to a long-term decrease in the size of an important population of this species. It has been recommended that a suitably qualified person is present to survey woodland vegetation for removal prior to the commencement of works to rescue and/or relocate any fauna, including breeding fauna.

Mitigation measures have been proposed to protect this species from excessive clearing.

An unexpected threatened species find procedure has been recommended.

b) Will the action reduce the area of occupancy of an important population of a species?

Austral Toadflax (*Thesium australe)*

This species is not known to occur within the locality. Under the PAS, no key management sites are mapped for this species (DPE, 2018). Therefore, an important population is unlikely to occur within the Subject Land. The Proposal would result in the disturbance and removal of up to 0.40ha of derived grassland habitat suitable for this species. Native vegetation to be removed represents approximately 0.05% of the vegetation occurring within the locality, based on indicative vegetation mapping (DPE, 2022). Given the pre-disturbed and highly exotic nature of the Subject Land, the Proposal is not considered an action that would reduce the area of occupancy of any important population of this species.

Painted Honeyeater (*Grantiella picta*)

As stated above, the Subject Land is not considered to be an area where breeding is likely to occur. The Subject Land does not occur within a Key Biodiversity Area, as identified in the Draft National Recovery Plan (DAWE, 2020). Therefore, an important population is unlikely to occur within the Subject Land. The Proposal would result in the disturbance and removal of up to 0.40ha of foraging habitat suitable for this species. Native vegetation to be removed represents approximately 0.05% of the vegetation occurring within the locality, based on indicative vegetation mapping (DPE, 2022). Given the pre-disturbed and highly exotic nature of the Subject Land, the Proposal is not considered an action that would reduce the area of occupancy of any important population of this species.

Superb Parrot (*Polytelis Swainsonii*)

As noted above, an important population is not likely to occur within the Subject Land, because important breeding sites for this species coincide with major rivers. The Proposal would result in the disturbance and removal of up to 0.44ha of foraging habitat suitable for this species. Native vegetation to be removed represents approximately 0.05% of the vegetation occurring within the locality, based on indicative vegetation mapping (DPE, 2022). Given the pre-disturbed and highly exotic nature of the Subject Land, the Proposal is not considered an action that would reduce the area of occupancy of any important population of this species.

Corben's Long-eared Bat (*Nyctophilus corbeni*)

The Subject Land is not mapped as a priority management site for this species (DPE, 2017). Therefore, an important population is unlikely to occur within the Subject Land. The Proposal would result in the disturbance and removal of up to 0.40ha of woodland habitat and one HBT suitable for this species. Native vegetation to be removed represents approximately 0.05% of the vegetation occurring within the locality, based on indicative vegetation mapping (DPE, 2022). Given the pre-disturbed and highly exotic nature of the Subject Land, the Proposal is not considered an action that would reduce the area of occupancy of any important population of this species.

Grey-headed Fly-fox (*Pteropus poliocephalus*)
The Subject Land is located approximately 63km south east of the nearest recorded Flying-fox camp (DAWE, 2014). Therefore, it is unlikely that this species breeds within or nearby to the Subject Land. Therefore, an important population is unlikely to occur within the Subject Land. The Proposal would result in the disturbance and removal of up to 0.65ha of foraging habitat suitable for these species. Native vegetation to be removed represents approximately 0.05% of the vegetation occurring within the locality, based on indicative vegetation mapping (DPE, 2022). Given the pre-disturbed and highly exotic nature of the Subject Land, the Proposal is not considered an action that would reduce the area of occupancy of any important population of this species.
c) Will the action fragment an existing important population into two or more populations?
Austral Toadflax (*Thesium australe)*
As noted above, an important population of this species is not likely to occur within the Subject Land. No priority management sites have been mapped for this species (DPE, 2018). The Proposal would result in the disturbance and removal of up to 0.04ha of derived grassland habitat suitable for these species. Native vegetation to be removed represents approximately 0.05% of the vegetation occurring within the locality, based on indicative vegetation mapping (DPE, 2022). Given the pre-disturbed and highly exotic nature of the Subject Land, the Proposal is not considered an action that would fragment an existing population into two or more populations.
Painted Honeyeater (*Grantiella picta*)
As noted above, an important population of this species is not likely to occur within the Subject Land. The Proposal would result in the disturbance and removal of up to 0.40ha of foraging habitat suitable for these species. Native vegetation to be removed represents approximately 0.05% of the vegetation occurring within the locality, based on indicative vegetation mapping (DPE, 2022). Given the pre-disturbed and highly exotic nature of the Subject Land and considering that the species is unlikely to breed here, the Proposal is not considered an action that would fragment an existing population into two or more populations.
Superb Parrot (*Polytelis Swainsonii*)
As noted above, an important population of this species is not likely to occur within the Subject Land, because important breeding sites for this species coincide with major rivers. The Proposal would result in the disturbance and removal of up to 0.44ha of foraging habitat suitable for these species. Native vegetation to be removed represents approximately 0.05% of the vegetation occurring within the locality, based on indicative vegetation mapping (DPE, 2022). Given the pre-disturbed and highly exotic nature of the Subject Land and considering that the species is unlikely to breed here, the Proposal is not considered an action that would fragment an existing population into two or more populations.
Corben's Long-eared Bat (*Nyctophilus corbeni*)
As noted above, an important population of this species is not likely to occur within the Subject Land. No priority management areas for this species occur within or adjacent to the Proposal. The Proposal would result in the disturbance and removal of up to 0.40ha of habitat suitable for these species. Native vegetation to be removed represents approximately 0.05% of the vegetation occurring within the locality, based on indicative vegetation mapping (DPE, 2022). Given the pre-disturbed and highly exotic nature of the Subject Land and considering that the species is unlikely to breed here, the Proposal is not considered an action that would fragment an existing population into two or more populations.
Grey-headed Fly-fox (*Pteropus poliocephalus*)
As noted above, this species is unlikely to breed within the Subject Land. Foraging habitat occurring within the Subject Land is not critical to this species survival and is likely used opportunistically. As such, an important population of this species is not likely to occur within the Subject Land. The Proposal would result in the disturbance and removal of up to 0.65ha of foraging habitat suitable for these species. Native vegetation to be removed represents approximately 0.05% of the vegetation occurring within the locality, based on indicative vegetation mapping (DPE, 2022). Given the pre-disturbed and highly exotic nature of

the Subject Land and considering that the species is unlikely to breed here, the Proposal is not considered an action that would fragment an existing population into two or more populations.

d) Will the action adversely affect habitat critical to the survival of a species?

Austral Toadflax (*Thesium australe)*

No National Recovery Plan has been adopted for this species and no critical habitat has been identified. Therefore, all habitat for this species is considered important. The Proposal would result in the disturbance and removal of up to 0.04ha of derived grassland habitat suitable for this species. Native vegetation to be removed represents approximately 0.05% of the vegetation occurring within the locality, based on indicative vegetation mapping (DPE, 2022). Given the pre-disturbed and highly exotic nature of the Subject Land, it is considered unlikely that the Proposal would have an adverse effect on habitat critical to the survival of this species.

Painted Honeyeater (*Grantiella picta*)

The Draft NRP for the Painted Honeyeater states that habitat critical to the survival of this species are necessary:

- For activities such as foraging, breeding, roosting, or dispersal
- For the long-term maintenance of the species or ecological community (including the maintenance of species essential to the survival of the species or ecological community, such as pollinators)
- To maintain genetic diversity and long-term evolutionary development
- For the reintroduction of populations or recovery of the species or ecological community.

As stated above, it is considered unlikely that this species would breed within the Subject Land, given that no Mistletoe (a preferred nesting material) was recorded during the site visit. The Proposal would result in the disturbance and removal of up to 0.40ha of foraging woodland habitat suitable for this species. Native vegetation to be removed represents approximately 0.05% of the vegetation occurring within the locality, based on indicative vegetation mapping (DPE, 2022). Given the pre-disturbed, highly exotic nature of the Subject Land and considering that this species is unlikely to breed here, it is considered unlikely that the Proposal would have an adverse effect on habitat critical to the survival of this species.

Superb Parrot (*Polytelis Swainsonii*)

The National Recovery Plan for the Superb Parrot, states that habitat critical to the survival of the Superb Parrot can be divided into breeding and foraging habitat (DAWE, 2021). Breeding is unlikely to occur within the Subject Land, as the Proposal is not located within proximity to a major waterway. The Proposal would result in the disturbance and removal of up to 0.44ha of foraging woodland habitat suitable for this species. Native vegetation to be removed represents approximately 0.05% of the vegetation occurring within the locality, based on indicative vegetation mapping (DPE, 2022). Given the pre-disturbed, highly exotic nature of the Subject Land and considering that this species is unlikely to breed here, it is considered unlikely that the Proposal would have an adverse effect on habitat critical to the survival of this species.

Corben's Long-eared Bat (*Nyctophilus corbeni*)

As noted above, an important population of this species is not likely to occur within the Subject Land. No priority management areas are mapped as occurring within or nearby to the Subject Land (DPE, 2017). The Proposal would result in the disturbance and removal of up to 0.40ha of foraging woodland habitat and one HBT suitable for this species. Native vegetation to be removed represents approximately 0.05% of the vegetation occurring within the locality, based on indicative vegetation mapping (DPE, 2022). Given the pre-disturbed, highly exotic nature of the Subject Land, it is considered unlikely that the Proposal would have an adverse effect on habitat critical to the survival of this species.

Grey-headed Fly-fox (*Pteropus poliocephalus*)

Habitat critical to this species is defined as areas that (DPE, 2017):

- Contain native species that are known to be productive as foraging habitat during the final weeks of gestation, and during the weeks of birth, lactation and conception (August to May)
- Contain native species used for foraging and occur within 20 km of a nationally important camp as identified on the Department's interactive flying-fox web viewer
- Contain native and or exotic species used for roosting at the site of a nationally important Grey-Headed Flying-Fox camp as identified on the Department's interactive flying-fox web viewer.

The Subject Land is located approximately 63km south east of the nearest recorded Flying-fox camp (DAWE, 2014). Therefore, it is unlikely that this species breeds within or nearby to the Subject Land. Nationally important camps occur along the coastline of Australia and, as such, it is considered that foraging habitat within the Subject Land is not critical to this species survival. The Proposal would result in the disturbance and removal of up to 0.65ha of foraging woodland habitat and one HBT suitable for this species. Native vegetation to be removed represents approximately 0.05% of the vegetation occurring within the locality, based on indicative vegetation mapping (DPE, 2022). Given the pre-disturbed, highly exotic nature of the Subject Land, it is considered unlikely that the Proposal would have an adverse effect on habitat critical to the survival of this species.

e) Will the action disrupt the breeding cycle of an important population?

Austral Toadflax (*Thesium australe)*

As noted above, an important population of this species is not likely to occur within the Subject Land. This species has not been recorded within the locality and no priority management sites have been mapped for this species (DPE, 2018). Therefore, the Proposal is not considered likely to occur within an important population for this species. The Proposal would result in the disturbance and removal of up to 0.04ha of derived grassland habitat suitable for this species. Native vegetation to be removed represents approximately 0.05% of the vegetation occurring within the locality, based on indicative vegetation mapping (DPE, 2022). Given the pre-disturbed, highly exotic nature of the Subject Land, the Proposal is not considered an action that would disrupt the breeding cycle of this species.

Painted Honeyeater (*Grantiella picta*)

As stated above, it is considered unlikely that this species would breed within the Subject Land, given that no Mistletoe (a preferred nesting material) was recorded during the site visit. The Proposal would result in the disturbance and removal of up to 0.40ha of grassy woodland habitat suitable for this species. Native vegetation to be removed represents approximately 0.05% of the vegetation occurring within the locality, based on indicative vegetation mapping (DPE, 2022). Given the pre-disturbed, highly exotic nature of the Subject Land, the Proposal is not considered an action that would disrupt the breeding cycle of this species.

Superb Parrot (*Polytelis Swainsonii*)

As noted above, an important population of this species is not likely to occur within the Subject Land, because important breeding sites for this species coincide with major rivers. The Proposal would result in the disturbance and removal of up to 0.44ha of grassy woodland habitat suitable for this species. Native vegetation to be removed represents approximately 0.05% of the vegetation occurring within the locality, based on indicative vegetation mapping (DPE, 2022). Given the pre-disturbed, highly exotic nature of the Subject Land, the Proposal is not considered an action that would disrupt the breeding cycle of this species.

Corben's Long-eared Bat (*Nyctophilus corbeni*)

As noted above, an important population of this species is not likely to occur within the Subject Land, whereby no priority management areas are mapped as occurring within or nearby to the Subject Land (DPE, 2017). The Proposal would result in the disturbance and removal of up to 0.40ha of woodland habitat and one HBT suitable for this species. Native vegetation to be removed represents approximately 0.05% of the vegetation occurring within the locality, based on indicative vegetation mapping (DPE, 2022). Given the pre-disturbed, highly exotic nature of the Subject Land, the Proposal is not considered an action that would disrupt the breeding cycle of this species.

Grey-headed Fly-fox (*Pteropus poliocephalus*)

As noted above, an important population of this species is not likely to occur within the Subject Land, given that the nearest camp is located approximately 63km north west of the Subject Land (DEW, 2021). The Proposal would result in the disturbance and removal of up to 0.65ha of woodland habitat suitable for this species. Native vegetation to be removed represents approximately 0.05% of the vegetation occurring within the locality, based on indicative vegetation mapping (DPE, 2022). Given the pre-disturbed, highly exotic nature of the Subject Land, the Proposal is not considered an action that would disrupt the breeding cycle of this species.

f) Will the action modify, destroy, remove, isolate or decrease the availability or quality of habitat to the extent that the species is likely to decline?

Austral Toadflax (*Thesium australe)*

The Proposal would result in the disturbance and removal of up to 0.04ha of derived grassland habitat suitable for this species. Native vegetation to be removed represents approximately 0.05% of the vegetation occurring within the locality, based on indicative vegetation mapping (DPE, 2022). Given the pre-disturbed, largely cleared and exotic nature of the Subject Land, the Proposal is not expected to modify, destroy, remove, isolate or decrease the availability or quality of habitat for this species such that it is likely to decline.

Painted Honeyeater (*Grantiella picta*)

The Proposal would result in the disturbance and removal of up to 0.40ha of woodland habitat suitable for this species. Native vegetation to be removed represents approximately 0.05% of the vegetation occurring within the locality, based on indicative vegetation mapping (DPE, 2022). Given the pre-disturbed, largely cleared and exotic nature of the Subject Land, the Proposal is not expected to modify, destroy, remove, isolate or decrease the availability or quality of habitat for this species such that it is likely to decline.

Superb Parrot (*Polytelis Swainsonii*)

The Proposal would result in the disturbance and removal of up to 0.44ha of woodland habitat suitable for this species. Native vegetation to be removed represents approximately 0.05% of the vegetation occurring within the locality, based on indicative vegetation mapping (DPE, 2022). Given the pre-disturbed, largely cleared and exotic nature of the Subject Land, the Proposal is not expected to modify, destroy, remove, isolate or decrease the availability or quality of habitat for this species such that it is likely to decline.

Corben's Long-eared Bat (*Nyctophilus corbeni*)

The Proposal would result in the disturbance and removal of up to 0.40ha of woodland habitat and one HBT suitable for this species. Native vegetation to be removed represents approximately 0.05% of the vegetation occurring within the locality, based on indicative vegetation mapping (DPE, 2022). Given the pre-disturbed, largely cleared and exotic nature of the Subject Land, the Proposal is not expected to modify, destroy, remove, isolate or decrease the availability or quality of habitat for this species such that it is likely to decline.

Grey-headed Fly-fox (*Pteropus poliocephalus*)

The Proposal would result in the disturbance and removal of up to 0.65ha of woodland habitat suitable for this species. Native vegetation to be removed represents approximately 0.05% of the vegetation occurring within the locality, based on indicative vegetation mapping (DPE, 2022). Given the pre-disturbed, largely cleared and exotic nature of the Subject Land, the Proposal is not expected to modify, destroy, remove, isolate or decrease the availability or quality of habitat for this species such that it is likely to decline.

g) Will the action result in invasive species that are harmful to a vulnerable species becoming established in the vulnerable species' habitat?

The Proposal has the potential to contribute to the spread of invasive species, mainly through the clearing of vegetation and transfer and introduction of plant material and soil on machinery. Mitigation measures have been recommended to prevent the spread of weeds on site. The Proposal is not likely to lead to an increase in

invasive fauna species. The Proposal would therefore be unlikely to result in invasive species that are harmful to vulnerable species becoming established in their potential habitat.

h) Will the action introduce disease that may cause the species to decline?

The Proposal has the potential to contribute to the spread of disease through the transfer and introduction of plant material and soil on machinery. Mitigation measures have been recommended to prevent the spread of disease on site. The Proposal would therefore be unlikely to result in disease which may cause the species to decline.

i) Will the action interfere substantially with the recovery of the species?

Austral Toadflax (*Thesium australe)*

There is no national recovery plan for this species; however, it has been listed under a Priorities Action Statement (PAS) (DPE, 2018). Under the PAS, no key management sites are mapped for this species. Fifteen priority actions have been identified to help recover the Austral Toadflax within NSW (DPE, 2018):

- Undertake monitoring of populations to assess habitat quality, threats and ameliorative actions
- Encourage community participation in implementation of recovery actions for the species
- Consult with Aboriginal communities when undertaking actions on sites of cultural significance
- Finalise completion of the recovery plan by 2007
- Implement Bitou bush control as described in the approved TAP
- Control feral animals in key habitat
- Control weeds in known habitat for this species
- Determine if and/or where an ecological burn is required
- Liaise with public agencies and private landowners over the implementation of management actions for the species
- Prepare and distribute a species profile to landholders, land managers and consent authorities
- Develop and distribute standard survey and impact assessment guidelines
- Support funding for management work in habitat for the species and carry out habitat maintenance and protection at known locations for the species
- Implement control programs for rabbits and reduce impact of cattle through strategic grazing or exclusion
- Undertake and support research into key aspects of the biology and ecology of Austral Toadflax that are likely to provide information that assists with management of the species
- Undertake annual monitoring of populations to provide information on the lifecycle of the species

The Proposal would not interfere with these priority actions.

Painted Honeyeater (*Grantiella picta*)

The Draft NRP for the Painted Honeyeater (DAWE, 2020) lists the following objectives:

- Measure and sustain a positive population trend (compared to 2020 baseline counts) in the number of mature individuals of the Painted Honeyeater
- Maintain or improve the extent, condition and connectivity of habitat of the Painted Honeyeater.

The Proposal would not interfere with these objectives.

Superb Parrot (*Polytelis Swainsonii*)

The NRP for the Superb Parrot (DAWE, 2021) lists the following specific objectives:

- Determine population trends in the Superb Parrot.
- Increase the level of knowledge of the Superb Parrot's ecological requirements.
- Develop and implement threat abatement strategies.

- Increase community involvement in and awareness of the Superb Parrot recovery program.

The Proposal would not interfere with these objectives.

Corben's Long-eared Bat (*Nyctophilus corbeni*)

Corben's Long-eared Bat does not have a Recovery Plan but it is listed under the 'Saving our Species' conservation strategy. Given that it is unlikely that this species breeds within the Subject Land, the works are not predicted to substantially interfere with the recovery of the species. Mitigation measures have been recommended.

Grey-headed Fly-fox (*Pteropus poliocephalus*)

The NRP for the Grey-headed Flying-fox (DEW, 2021) lists the following objectives:

- Improve the national population trend
- Identify, protect and increase key foraging and roosting habitat
- Improve the community's capacity to coexist with flying-foxes
- Increase awareness about flying-foxes, the threats they face and the important ecosystem services they provide as seed dispersers and pollinators

The Proposal would not interfere with these objectives.

Conclusion

The impacts of the Proposal on the assessed threatened species listed under the EPBC Act are manageable. A significant impact is considered unlikely, based on the following conclusions:

- The amount of habitat to be removed or disturbed by the Proposal is very small
- No increases to fragmentation, edge effects or isolation would occur
- No substantial contribution to any Key Threatening Process are expected
- Mitigation measures have been recommended to further reduce impacts to biodiversity
- No impact on an important population of this species is expected by the proposed works.

Endangered Species

The *Environment Protection and Biodiversity Conservation Act 1999* (Cwth) specifies factors to be taken into account in deciding whether a development is likely to significantly affect Endangered Ecological Communities, threatened species and migratory species, listed at the Commonwealth level. These assessments characterise the significance of likely impacts associated with the Proposal on the following **Endangered** or **Critically Endangered** species:

- Woodland Birds:
  - Regent Honeyeater (*Anthochaera phrygia*) EPBC - CE
- Amphibians
  - Booroolong Frog (*Litoria booroolongensis*) EPBC - E
  - Spotted Tree Frog (*Litoria spenceri*) EPBC - E
- Mammals
  - Spotted-tailed Quoll (*Dasyurus maculatus maculatus*) EPBC - E

An action is likely to have a significant impact on an Endangered or Critically Endangered species if there is a real chance or possibility that it will:
a) lead to a long-term decrease in the size of a population
Regent Honeyeater (*Anthochaera phrygia*)
This species was not detected during the site visit; however, the National Recovery Plan (NRP) for the Regent Honeyeater (DoE, 2016) lists Tumbarumba as a place where this species is likely to occur. Potential habitat for the Regent Honeyeater occurs within the Subject Land as grassy woodland. The Proposal would result in the disturbance and removal of up to 0.40ha of foraging woodland habitat suitable for this species. Native vegetation to be removed represents approximately 0.05% of the vegetation occurring within the locality, based on indicative vegetation mapping (DPE, 2022). The NRP states that the Regent Honeyeater prefers foraging areas containing Mistletoe, which were not recorded during the site survey. Given this and the pre-disturbed, highly exotic nature of the Subject Land, it is considered that this species would be more likely to occur along Tumbarumba Creek and the adjoining TSR. The Proposal is not considered an action that would lead to a long-term decrease in the size of a population of this species. Mitigation measures have been proposed to protect this species from excessive clearing. An unexpected threatened species find procedure has been recommended.
Booroolong Frog (*Litoria booroolongensis*)
This species was not detected during the site visit; however, the threatened species profile for the Booroolong Frog (DPE, 2017) lists Tumbarumba as a place where this species is known to occur. Potential habitat for this species occurs within the Subject Land as an ephemeral stream, which passes through two farm dams. Up to 0.21ha of aquatic habitat, potentially suitable for this species, would be removed by the proposed development. Habitat to be removed represents approximately 0.08% of aquatic habitat within the wider locality (DPE, 2022). Given that the Subject Land is pre-disturbed and highly exotic in nature and that the streams within the Subject Land were observed to have low shallow flows, it is more likely that these species would utilise aquatic habitat to the north and northwest of the site, including Tumbarumba Creek. Considering that the Subject Land already contains an operational quarry, it is unlikely that the Proposal would have an adverse effect on the life cycle of these species, such that a local viable population would be placed at risk of extinction. Mitigation measures have been proposed to protect aquatic habitat occurring within and adjacent to the

Subject Land. An unexpected threatened species find procedure has been recommended.
Spotted Tree Frog (*Litoria spenceri*)
This species was not detected during the site visit; however, the threatened species profile for the Spotted Tree Frog (DPE, 2019) lists Tumbarumba as a place where this species is known to occur. Potential habitat for this species occurs within the Subject Land as an ephemeral stream, which passes through two farm dams. Up to 0.21ha of aquatic habitat, potentially suitable for this species, would be removed by the proposed development. Habitat to be removed represents approximately 0.08% of aquatic habitat within the wider locality (DPE, 2022). Given that the Subject Land is pre-disturbed and highly exotic in nature and that the streams within the Subject Land were observed to have low shallow flows, it is more likely that these species would utilise aquatic habitat to the north and northwest of the site, including Tumbarumba Creek. Considering that the Subject Land already contains an operational quarry, it is unlikely that the Proposal would have an adverse effect on the life cycle of these species, such that a local viable population would be placed at risk of extinction. Mitigation measures have been proposed to protect aquatic habitat occurring within and adjacent to the Subject Land. An unexpected threatened species find procedure has been recommended.
Spotted-tailed Quoll (*Dasyurus maculatus maculatus*)
This species was not detected during the site visit; however, the threatened species profile for the Spotted-tailed Quoll (DPE, 2020) lists Tumbarumba as a place where this species is likely to occur. Potential habitat for this species occurs within the Subject Land as grassy woodland. The NRP for this species (DELWP, 2016) states that this species utilises multiple dens within home ranges up to several thousand hectares in size. The Proposal would result in the disturbance and removal of up to 0.40ha of woodland habitat suitable for this species. Native vegetation to be removed represents approximately 0.05% of the vegetation occurring within the locality, based on indicative vegetation mapping (DPE, 2022). Given the large home range occupied by this species and the pre-disturbed, highly exotic nature of the Subject Land, it is considered that this species would be more likely to occur within the large patches of remnant vegetation occurring within Bago State Forest (1.6km east) and Mannus State Forest (2km south west). The Proposal is not considered an action that would lead to a long-term decrease in the size of a population of this species. Mitigation measures have been proposed to protect this species from excessive clearing. An unexpected threatened species find procedure has been recommended.
b) reduce the area of occupancy of the species
Regent Honeyeater (*Anthochaera phrygia*)
The Proposal would result in the disturbance and removal of up to 0.40ha of foraging woodland habitat suitable for this species. Native vegetation to be removed represents approximately 0.05% of the vegetation occurring within the locality, based on indicative vegetation mapping (DPE, 2022). Given the lack of Mistletoe recorded and the pre-disturbed, highly exotic nature of the Subject Land, it is considered that this species would be more likely to occur along Tumbarumba Creek and the adjoining TSR. The Proposal is not considered an action that would reduce the area of occupancy of this species.
Booroolong Frog (*Litoria booroolongensis*)
Up to 0.21ha of aquatic habitat, potentially suitable for this species, would be removed by the proposed development. Habitat to be removed represents approximately 0.08% of aquatic habitat within the wider locality (DPE, 2022). Given that the Subject Land is pre-disturbed and highly exotic in nature and that the streams within the Subject Land were observed to have low shallow flows, it is more likely that these species would utilise aquatic habitat to the north and northwest of the site, including Tumbarumba Creek.

The Proposal is not considered an action that would reduce the area of occupancy of this species.
Spotted Tree Frog (*Litoria spenceri*)
Up to 0.21ha of aquatic habitat, potentially suitable for this species, would be removed by the proposed development. Habitat to be removed represents approximately 0.08% of aquatic habitat within the wider locality (DPE, 2022). Given that the Subject Land is pre-disturbed and highly exotic in nature and that the streams within the Subject Land were observed to have low shallow flows, it is more likely that these species would utilise aquatic habitat to the north and northwest of the site, including Tumbarumba Creek. The Proposal is not considered an action that would reduce the area of occupancy of this species.
Spotted-tailed Quoll (*Dasyurus maculatus maculatus*)
The Proposal would result in the disturbance and removal of up to 0.65ha of woodland habitat suitable for this species. Native vegetation to be removed represents approximately 0.05% of the vegetation occurring within the locality, based on indicative vegetation mapping (DPE, 2022). Noting the large home range occupied by this species and the pre-disturbed, highly exotic nature of the Subject Land, it is considered that this species would be more likely to occur within the large patches of remnant vegetation occurring within Bago State Forest (1.6km east) and Mannus State Forest (2km south west). The Proposal is not considered an action that would reduce the area of occupancy of this species.
c) Will the action fragment an existing population into two or more populations?
Regent Honeyeater (*Anthochaera phrygia*)
The Proposal would result in the disturbance and removal of up to 0.40ha of woodland habitat suitable for this species. Vegetation proposed for removal would not impact on any important wildlife movement corridors. Given the highly mobile nature of this species, the Proposal is not considered an action that would fragment a population of this species into two or more populations.
Booroolong Frog (*Litoria booroolongensis*)
Up to 0.21ha of aquatic habitat, potentially suitable for this species, would be removed by the Proposal. The habitat proposed for removal would not impact on any important wildlife movement corridors. The Proposal would involve the diversion of a watercourse that occurs at the top of a catchment. Given that the Subject Land is pre-disturbed and highly exotic in nature and that the streams within the Subject Land were observed to have low shallow flows, it is more likely that these species would utilise aquatic habitat to the north and northwest of the site, including Tumbarumba Creek. Therefore, the Proposal is not considered an action that would fragment a population of this species into two or more populations.
Spotted Tree Frog (*Litoria spenceri*)
Up to 0.21ha of aquatic habitat, potentially suitable for this species, would be removed by the Proposal. The habitat proposed for removal would not impact on any important wildlife movement corridors. The Proposal would involve the diversion of a watercourse that occurs at the top of a catchment. Given that the Subject Land is pre-disturbed and highly exotic in nature and that the streams within the Subject Land were observed to have low shallow flows, it is more likely that these species would utilise aquatic habitat to the north and northwest of the site, including Tumbarumba Creek. Therefore, the Proposal is not considered an action that would fragment a population of this species into two or more populations.
Spotted-tailed Quoll (*Dasyurus maculatus maculatus*)
The Proposal would result in the disturbance and removal of up to 0.65ha of woodland habitat suitable for this species. Vegetation proposed for removal would not impact on any important wildlife movement

corridors. Given the highly mobile nature of this species, the Proposal is not considered an action that would fragment a population of this species into two or more populations.

d) Will the action adversely affect habitat critical to the survival of a species?

Regent Honeyeater (*Anthochaera phrygia*)

The NRP for the Regent Honeyeater (DoE, 2016), states that habitat critical to the survival of this species includes any breeding or foraging areas where the species is likely to occur, as well as any newly discovered breeding or foraging locations.
The Proposal would result in the disturbance and removal of up to 0.40ha of foraging woodland habitat suitable for this species. Native vegetation to be removed represents approximately 0.05% of the vegetation occurring within the locality, based on indicative vegetation mapping (DPE, 2022). The NRP states that the Regent Honeyeater prefers foraging areas containing Mistletoe, which were not recorded during the site survey. Given this and the pre-disturbed, highly exotic nature of the Subject Land, it is considered that this species would be more likely to occur along Tumbarumba Creek and the adjoining TSR.

The Proposal is not considered an action that would adversely affect habitat critical to the survival of this species.

Booroolong Frog (*Litoria booroolongensis*)

The Proposal would result in the disturbance and removal of up to 0.21ha of aquatic habitat, potentially suitable for this species. Habitat to be removed represents approximately 0.08% of aquatic habitat within the wider locality (DPE, 2022). Given that the Subject Land is pre-disturbed and highly exotic in nature and that the streams within the Subject Land were observed to have low shallow flows, it is more likely that these species would utilise aquatic habitat to the north and northwest of the site, including Tumbarumba Creek.

The Proposal is not considered an action that would adversely affect habitat critical to the survival of this species.

Spotted Tree Frog (*Litoria spenceri*)

The Proposal would result in the disturbance and removal of up to 0.21ha of aquatic habitat, potentially suitable for this species. Habitat to be removed represents approximately 0.08% of aquatic habitat within the wider locality (DPE, 2022). Given that the Subject Land is pre-disturbed and highly exotic in nature and that the streams within the Subject Land were observed to have low shallow flows, it is more likely that these species would utilise aquatic habitat to the north and northwest of the site, including Tumbarumba Creek.

The Proposal is not considered an action that would adversely affect habitat critical to the survival of this species.

Spotted-tailed Quoll (*Dasyurus maculatus maculatus*)

The Proposal would result in the disturbance and removal of up to 0.65ha of woodland habitat suitable for this species. Native vegetation to be removed represents approximately 0.05% of the vegetation occurring within the locality, based on indicative vegetation mapping (DPE, 2022). Given the large home range occupied by this species and the pre-disturbed, highly exotic nature of the Subject Land, it is considered that this species would be more likely to occur within the large patches of remnant vegetation occurring within Bago State Forest (1.6km east) and Mannus State Forest (2km south west).

The Proposal is not considered an action that would adversely affect habitat critical to the survival of this species.

e) Will the action disrupt the breeding cycle of a population?

Regent Honeyeater (*Anthochaera phrygia*)

The NRP for this species lists three key breeding areas for this species in NSW, including the Bundarra-Barraba, Capertee Valley and Hunter Valley districts (DoE, 2016). The Subject Land does not occur within proximity to these districts. The NRP states that the Regent Honeyeater prefers foraging areas containing Mistletoe, which were not recorded during the site survey. Given this and the pre-disturbed, highly exotic nature of the Subject Land, it is considered that this species would be more likely to breed along Tumbarumba Creek, the adjoining TSR and surrounding woodland areas.

The Proposal is not considered an action that would disrupt the breeding cycle of a population.

Booroolong Frog (*Litoria booroolongensis*)

The Booroolong Frog prefers to breed in rocky crevices, near shallow pools or runs (DPE, 2017). Rocky crevices/habitat was not observed on either side of the ephemeral watercourses occurring within the Subject Land. Given that the Subject Land is pre-disturbed and highly exotic in nature and that the streams within the Subject Land were observed to have low shallow flows, it is more likely that these species would utilise aquatic habitat to the north and northwest of the site, including Tumbarumba Creek.

The Proposal is not considered an action that would disrupt the breeding cycle of a population.

Spotted Tree Frog (*Litoria spenceri*)

The Spotted Tree Frog prefers to breed under large, instream boulders (DPE, 2017). Rocky boulders/habitat was not observed on either side of the ephemeral watercourses occurring within the Subject Land. Given that the Subject Land is pre-disturbed and highly exotic in nature and that the streams within the Subject Land were observed to have low shallow flows, it is more likely that these species would utilise aquatic habitat to the north and northwest of the site, including Tumbarumba Creek.

The Proposal is not considered an action that would disrupt the breeding cycle of a population.

Spotted-tailed Quoll (*Dasyurus maculatus maculatus*)

According to the NRP for the Spotted-tailed Quoll (DELWP, 2016), this species uses multiple dens (possibly in excess of 20), moving between them every 3-4 days. Recorded den sites include rock crevices, hollow logs, hollow tree buttresses, tree hollows, windrows, clumps of vegetation, caves and boulder tumbles, under buildings and underground burrows, including those of rabbits and wombats (DELWP, 2016). Hollow logs, clumps of vegetation and wombat burrows were recorded within the Subject Land.

This species has home ranges up to several thousand hectares in size. The Proposal would result in the disturbance and removal of up to 0.65ha of woodland habitat suitable for this species. Given the large home range occupied by this species and the pre-disturbed, highly exotic nature of the Subject Land, it is considered that this species would be more likely to breed within the large patches of remnant vegetation occurring within Bago State Forest (1.6km east) and Mannus State Forest (2km south west).

The Proposal is not considered an action that would disrupt the breeding cycle of a population.

f) Will the action modify, destroy, remove, isolate or decrease the availability or quality of habitat to the extent that the species is likely to decline?

Regent Honeyeater (*Anthochaera phrygia*)

The Proposal would result in the disturbance and removal of up to 0.40ha of woodland habitat suitable for this species. Native vegetation to be removed represents approximately 0.05% of the vegetation occurring within the locality, based on indicative vegetation mapping (DPE, 2022). The Proposal would not contribute to an increase in edge effects or impact on any important wildlife movement corridors. The Subject Land does not represent an important breeding location for this species. Therefore, the Proposal is not considered an action that would modify, destroy, remove, isolate or decrease the availability or quality of

habitat to the extent that the species is likely to decline.

Booroolong Frog (*Litoria booroolongensis*)

Up to 0.21ha of aquatic habitat, potentially suitable for this species, would be removed by the Proposal. The habitat proposed for removal would not impact on any important wildlife movement corridors. The Subject Land does not represent an important breeding location for this species. The Proposal would involve the diversion of a watercourse that occurs at the top of a catchment; therefore, potential habitat would not become permanently isolated or fragmented by the Proposal. The Proposal is not considered an action that would modify, destroy, remove, isolate or decrease the availability or quality of habitat to the extent that the species is likely to decline.

Spotted Tree Frog (*Litoria spenceri*)

Up to 0.21ha of aquatic habitat, potentially suitable for this species, would be removed by the Proposal. The habitat proposed for removal would not impact on any important wildlife movement corridors. The Subject Land does not represent an important breeding location for this species. The Proposal would involve the diversion of a watercourse that occurs at the top of a catchment; therefore, potential habitat would not become permanently isolated or fragmented by the Proposal. The Proposal is not considered an action that would modify, destroy, remove, isolate or decrease the availability or quality of habitat to the extent that the species is likely to decline.

Spotted-tailed Quoll (*Dasyurus maculatus maculatus*)

The Proposal would result in the disturbance and removal of up to 0.65ha of woodland habitat suitable for this species. Native vegetation to be removed represents approximately 0.05% of the vegetation occurring within the locality, based on indicative vegetation mapping (DPE, 2022). The Proposal would not contribute to an increase in edge effects or impact on any important wildlife movement corridors. The Subject Land does not represent an important breeding location for this species. Therefore, the Proposal is not considered an action that would modify, destroy, remove, isolate or decrease the availability or quality of habitat to the extent that the species is likely to decline.

g) Will the action result in invasive species that are harmful to a Critically Endangered or Endangered species becoming established in the Critically Endangered or Endangered species' habitat?

The Proposal has the potential to contribute to the spread of invasive species, mainly through the clearing of vegetation and transfer and introduction of plant material and soil on machinery. Mitigation measures have been recommended to prevent the spread of weeds on site. The Proposal would therefore be unlikely to result in invasive species that are harmful to these species becoming established in their potential habitat.

h) Will the action introduce disease that may cause the species to decline?

The Proposal has the potential to contribute to the spread of disease through the transfer and introduction of plant material and soil on machinery. Mitigation measures have been recommended to prevent the spread of disease on site. The Proposal would therefore be unlikely to result in disease which may cause the species to decline.

i) Will the action interfere substantially with the recovery of the species?

Regent Honeyeater (*Anthochaera phrygia*)

The NRP for the Regent Honeyeater (DoE, 2016) lists the following objectives:

- Reverse the long-term population trend of decline and increase the numbers of Regent Honeyeaters to a level where there is a viable, wild breeding population, even in poor breeding

years

- Enhance the condition of habitat across the Regent Honeyeater range to maximise survival and reproductive success, and provide refugia during periods of extreme environmental fluctuation.

The strategies to achieve the plans' objectives are:

- Improve the extent and quality of regent honeyeater habitat
- Bolster the wild population with captive-bred birds until the wild population becomes self sustaining
- Increase understanding of the size, structure, trajectory and viability of the wild population
- Maintain and increase community awareness, understanding and involvement in the recovery program

The Proposal would not interfere with these objectives.

Booroolong Frog (*Litoria booroolongensis*)

The NRP for the Booroolong Frog (DPE, 2017) states that the overall objective of recovery is to minimise the probability of extinction of the Booroolong Frog in the wild, and to increase the probability of populations becoming self-sustaining and viable in the longer term. Within the duration of this Recovery Plan, the specific objectives are to:

- Determine the species distribution in areas that have not been the focus of targeted surveys
- Determine the taxonomic status of northern and southern Booroolong Frog populations, and identify further genetic sub-division within these populations
- Reduce the impact of known or perceived threats contributing to the ongoing decline of the Booroolong Frog
- Determine population trends across the species range, and in areas subject to different management regimes
- Identify the potential impacts of climate change, and determine management responses to reduce these impacts
- Identify other potentially threatening processes
- Increase community awareness and involvement in the Booroolong Frog recovery program
- Achieve the effective implementation of the recovery plan

The Proposal would not interfere with these objectives.

Spotted Tree Frog (*Litoria spenceri*)

The NRP for the Spotted Tree Frog (DPE, 2019) states that the overall objective is to prevent the extinction of the Spotted Tree Frog in New South Wales by re-establishing a viable breeding population of the species at Bogong Creek.

The Proposal would not interfere with these objectives.

Spotted-tailed Quoll (*Dasyurus maculatus maculatus*)

The overall objective of the NRP for the Spotted-tailed Quoll (DELWP, 2016) is to reduce the rate of decline of the Spotted-tailed Quoll, and ensure that viable populations remain throughout its current range in eastern Australia. To facilitate this, the following specific recovery objectives have been specified:

- Determine the distribution and status of Spotted-tailed Quoll populations throughout the range, and identify key threats and implement threat abatement management practices
- Investigate key aspects of the biology and ecology of the Spotted-tailed Quoll to acquire targeted information to aid recovery
- Reduce the rate of habitat loss and fragmentation on private land. 4. Evaluate and manage the risk posed by silvicultural practices
- Determine and manage the threat posed by introduced predators (foxes, cats, wild dogs) and of predator control practices on Spotted-tailed Quoll populations
- Determine and manage the impact of fire regimes on Spotted-tailed Quoll populations
- Reduce deliberate killings of Spotted-tailed Quolls

- Reduce the frequency of Spotted-tailed Quoll road mortality
- Assess the threat Cane Toads pose to Spotted-tailed Quolls and develop threat abatement actions if necessary
- Determine the likely impact of climate change on Spotted-tailed Quoll populations
- Increase community awareness of the Spotted-tailed Quoll and involvement in the Recovery Program.

Conclusion

The impacts of the Proposal on the assessed threatened species listed under the EPBC Act are manageable. A significant impact is considered unlikely, based on the following conclusions:

- The amount of habitat to be removed or disturbed by the Proposal is very small
- No increases to fragmentation, edge effects or isolation would occur
- No substantial contribution to any Key Threatening Process are expected
- Mitigation measures have been recommended to further reduce impacts to biodiversity
- No impact on an important population of this species is expected by the proposed works.

Appendix G FM Act Seven-Part Test

Section 221ZV of the *Fisheries Management Act 1994* (NSW) (FM Act) specifies seven factors to be taken into account in deciding whether a development is likely to significantly affect threatened species, populations or ecological communities, or their habitats, listed at the state level under the FM Act.

This seven-part test characterises the significance of likely impacts associated with the Proposal on the following:

- Crustacean:
  - Murray Crayfish (*Euastacus armatus*) – V
- Aquatic EEC:
  - *Lower Murray River aquatic ecological community* - E

a) In the case of a threatened species, whether the action proposed is likely to have an adverse effect on the life cycle of the species such that a viable local population of the species is likely to be placed at risk of extinction.
Murray Crayfish (*Euastacus armatus*)
The Murray's Crayfish was not observed during the site visit; however, indicate mapping suggests that this species occurs along Tumbarumba Creek (DPI, 2022). Habitat suitable to this species occurs within the Subject Land as pastureland and riparian habitat adjoining Tumbarumba Creek. Up to 0.27ha of aquatic and riparian habitat, potentially suited to this species, would be impacted by the Proposal. The Proposal involves the diversion of a stream and the removal of two farm dams to the south west of the Subject Land. Habitat to be removed represents approximately 0.08% of aquatic habitat within the wider locality (DPE, 2022). Given that the Subject Land is pre-disturbed and highly exotic in nature and that the streams were observed to have low shallow flows, it is more likely that these species would utilise aquatic habitat to the north and northwest of the site, including Tumbarumba Creek. Considering that the Subject Land already contains an operational quarry, it is unlikely that the Proposal would have an adverse effect on the life cycle of these species, such that a local viable population would be placed at risk of extinction.
b) In the case of an endangered population, whether the action proposed is likely to have an adverse effect on the life cycle of the species that constitutes the endangered population such that a viable local population of the species is likely to be placed at risk of extinction.
Not applicable.
c) In the case of an endangered ecological community or critically endangered ecological community, whether the action proposed: **i. is likely to have an adverse effect on the extent of the ecological community such that its local occurrence is likely to be placed at risk of extinction, or** **ii. is likely to substantially and adversely modify the composition of the ecological community such that its local occurrence is likely to be placed at risk of extinction.**
Lower Murray River aquatic ecological community
Ephemeral streams within the Subject Land are consistent with the *Lower Murray River* endangered ecological community. i. The Subject Land will impact on up to 0.27haof aquatic habitat within the Subject Land. Aquatic habitat occurring within the Subject Land was observed to consist of two ephemeral drainage lines. The Proposal includes the diversion of the ephemeral watercourse within the southern portion of the

Subject Land and the removal of an existing farm dam. Stabilisation work would be completed following construction, to manage impacts associated with sedimentation and turbidity. BHQ would divert the watercourse and provide sufficient time for the dam to dry out before filling it in, which would allow invertebrates and aquatic fauna sufficient time to relocate. Providing that the appropriate mitigation measures are followed; the proposed works are not likely to have an adverse effect on the extent of this EEC such that its local occurrence is likely to be placed at risk of extinction.

ii. The Proposal would involve temporary disturbances to this EEC. The Proposal would involve the diversion of a stream and the removal of a farm dam that occurs towards the top of a catchment. Once the works are complete and the existing stream has been diverted, the watercourse would continue to feed into Tumbarumba Creek. Therefore, the Proposal would not cause this EEC to become permanently isolated or fragmented. Given the location of the stream and the low flows observed during the site visit, it is considered that the composition of this EEC would not be adversely modified, such that its local occurrence would be placed at risk of extinction.

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

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

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

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

Lower Murray River aquatic ecological community

i. Up to 0.27ha of aquatic EEC, consistent with Lower Murray River EEC, would be impacted by the proposed works. The Proposal involves the diversion of an ephemeral stream and one farm dam within the southern portion of the Subject Land. BHQ would divert the watercourse and provide sufficient time for the dam to dry out before filling it in, which would allow invertebrates and aquatic fauna sufficient time to relocate. Stream flow would be reinstated, post-completion of works.

ii. The Proposal would involve the diversion of an ephemeral stream that occurs towards the top of a catchment. Once the diversion is completed, stream flows would return to normal. As the stream was observed to have low, shallow flows, it is considered that the temporary cessation of downstream flows would have a negligible impact on Tumbarumba Creek. BHQ would restrict works within aquatic and riparian areas, to periods of low rainfall, to coincide with natural aquatic processes and reduce unnecessary sedimentation within waterways. With the implementation of appropriate mitigation measures, it is considered unlikely that an area of habitat is likely to become fragmented or isolated from other areas of habitat as a result of the proposed action.

iii. The proportion of aquatic habitat (0.27ha) to be impacted is small given (0.08%) the local context (DPE, 2022). A large proportion of the aquatic habitat within the Subject Land is ephemeral. Given the pre-disturbed and highly modified nature of the pastureland within which the stream and farm dam occurs, this aquatic habitat is not considered to be important to the long-term survival of this EEC.

Murray Crayfish (*Eustacus armatus*)

i. Up to 0.27ha of aquatic habitat, potentially suitable for this species, would be impacted by the proposed works. The Proposal involves the diversion of an ephemeral stream and one farm dam within the southern portion of the Subject Land. BHQ would divert the watercourse and provide sufficient time for the dam to dry out before filling it in, which would allow invertebrates and aquatic fauna sufficient time to relocate. Stream flow would be reinstated, post-completion of works.

ii. The Proposal would involve the diversion of an ephemeral stream that occurs towards the top of a catchment. Once the diversion is completed, stream flows would return to normal. As the stream was observed to have low, shallow flows, it is considered that the temporary cessation of downstream flows would have a negligible impact on Tumbarumba Creek. BHQ would restrict works within aquatic and riparian areas, to periods of low rainfall, to coincide with natural aquatic processes and reduce unnecessary sedimentation within waterways. With the implementation of appropriate mitigation measures, it is considered unlikely that an area of habitat is likely to

become fragmented or isolated from other areas of habitat as a result of the proposed action.

iii. The proportion of aquatic habitat (0.27ha) to be impacted is small given (0.08%) the local context (DPE, 2022). A large proportion of the aquatic habitat within the Subject Land is ephemeral. Given the pre-disturbed and highly modified nature of the pastureland within which the stream and farm dam occurs, this aquatic habitat is not considered to be important to the long-term survival of this EEC.

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

Up to 0.27ha of aquatic habitat would be impacted by the proposed works. This is a very small proportion (0.08%) of habitat, given the proportion of aquatic habitat within the locality (DPE, 2022). Aquatic habitat occurring within the Subject Land was observed to consist of ephemeral drainage lines and farm dams. During the site survey these drainage lines were observed to contain low, shallow flows and, as such, it is unlikely that works within these areas would impact on Tumbarumba Creek, which is mapped as containing KFH. Stabilisation work would be completed following construction. BHQ would divert the watercourse and provide sufficient time for the dam to dry out before filling it in, which would allow invertebrates and aquatic fauna sufficient time to relocate.

Heavy metals and hydrocarbon-based contaminants have the potential to cause serious harm to the ecology of a creek system, including fish kills, harm to other fauna, and damage to vegetation. The Proposal is not likely to use substantial quantities of chemicals or fuels. Likely chemicals and fuels include minor amounts of diesel, unleaded petrol, lubricating oils, and hydraulic oils and fluids for maintenance. Refuelling and storing of chemicals pollutants would occur away from waterways and sensitive environmental areas.

Indirect impacts to the waterway could occur from sedimentation or stormwater run-off carrying pollutants downstream from the work site. An Erosion and Sediment Control Plan (ESCP) would be developed prior to the commencement of construction.

The implementation of the mitigation measures and safeguards, including erosion controls, are outlined below and would reduce potential impacts to aquatic habitat within the Subject Land. Sedimentation controls would remain in place until the diverted creek was revegetated and stabilised.

f) Whether the action proposed is consistent with the objectives or actions of a Recovery Plan or Threat Abatement Plan.

Murray Crayfish (*Eustacus armatus*)

Recovery actions for the Murray Crayfish (DPI, 2022) include:

- Providing advice to consent and determining authorities to ensure appropriate consideration during development assessment processes
- Collate and review existing information on the species
- Community and stakeholder liaison, awareness and education
- Maximise compliance activities at identified important sites
- Enhance, modify or implement NRM planning processes to minimize adverse impacts on threatened species
- Habitat rehabilitation
- Pest eradication and control
- Research and monitoring
- Stocking/translocation
- Survey/mapping

The Proposal will not interfere with these recovery objectives.

Lower Murray River EEC

The recovery actions underway listed for this EEC include:

- Allocate and manage environmental water flows in regulated rivers, to lessen the impacts of

unseasonal flow and temperature patterns.

- Mitigate the impact of cold water pollution from major regulating structures.
- Prevent sedimentation and poor water quality by improving land management practices, conserving and restoring riparian vegetation and using effective erosion control measures. The proposed works will not interfere with these recovery actions.
- Develop and implement control programs for introduced species.
- Reinstate large woody debris where appropriate.
- Continue to assess and manage the impacts of fishing.
- Provide fish passage by removing barriers or installing fishways in consultation with affected stakeholders.

With the implementation of the appropriate safeguards and mitigation measures, the Proposal would not interfere with these objectives.

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

Degradation of native riparian vegetation along New South Wales water courses

The proposed works would result in the disturbance of up to 0.27ha of aquatic and riparian habitat within the Subject Land. Given the pre-disturbed and highly modified nature of the pastureland within which the proposed stream and farm dam occurs, the Proposal would result in a minor increase in this KTP.

Conclusion

The impacts of the Proposal on the assessed threatened species listed under the FM Act are manageable. A significant impact is considered unlikely, based on the following conclusions:

- The amount of aquatic habitat to be removed or disturbed by the Proposal is very small
- Aquatic habitat to be impacted largely consists of highly modified pastureland
- No substantial contribution to any Key Threatening Process are expected
- Mitigation measures have been recommended to further reduce impacts to biodiversity

Appendix H Existing Land Rights Agreement

Appendix I Consultation

25 July 2023

Claire Coulson
Senior Conservation Planning Officer
NSW Department of Planning and Environment
rog.southwest@environment.nsw.gov.au

Dear Claire,

RE: DA2022/0110 MURRAYS CROSSING QUARRY AT 71 MURRAYS CROSSING ROAD, TUMBARUMBA

We are writing on behalf of Bald Hill Quarry in relation to the existing Murrays Crossing Quarry at 71 Murrays Crossing Road, Tumbarumba. Our correspondence is in respect of matters raised by the Department of Planning and Environment, Biodiversity and Conservation Division in a letter dated 31 October 2022 and discussions held 10 February 2023.

Accurate predictions of any vegetation clearing on site

Survey methodology

As discussed in our meeting, the survey methodology could have been more extensively and accurately described. The Biodiversity Assessment (BA) has been updated in Section 3.2.1. The entire site was traversed on foot. Rapid assessment points were undertaken at changes in vegetation types or condition. The dominant three species were recorded in each structural layer if present. Any other plant species, including weeds observed during the field work were recorded. These species are shown in Appendix 2 of the BA. The extent of areas of native vegetation were mapped using a hand GPS enabled tablet tracking the boundary of native vegetation against the exotic vegetation.

Assessment of habitat has been used to determine if threatened species are present. For species that had suitable habitat they were assumed present and an AoS was undertaken. The AoS did not determine a significant impact due to the small amount of habitat disturbed and degraded nature of the site.

Description of native and non-native vegetation has been updated in section 4.3 of the BA including example photos of non-native vegetation to demonstrate the native vegetation extent. Additional photo points of non-native vegetation have been included in Appendix C of the BA.

Biodiversity values map

The latest BV mapping shapefile was downloaded from SEED portal and imported into NGH's GIS mapping software. The online BV MAP viewer is also used to check if there are any BV added in the last 90 days. BV map, area clearing thresholds and minimum lot size are calculated on NGH's Qfield mapping to provide one source for all data analysis and map creation required for a project. Section 4.2.2 of the BA has been updated to provide clarification.

A detailed description of the proposed measures to maintain or improve the biodiversity values of the site in the medium to long term

Further details and clarification regarding the areas of rehabilitation following the quarry closure are provided below. The updated rehabilitation map is shown in Figure 1.

Mitigation measures have been updated in the BA in section 6 to include measures to enforce exclusion areas for retained native vegetation and Biodiversity Values mapped land. The mitigation measures in the BA would be replicated in the management plan and duplication of BA7 removed.

The EIS has recommended the proponent would finalise a detailed quarry closure and rehabilitation plan three years prior to the cessation of quarrying activities. Weed control would be required to be undertaken to prevent establishment of priority weeds such as Blackberry and Willow.

Wherever possible, rehabilitation would be completed progressively as part of ongoing development of the quarry. The following areas would be rehabilitated.

Quarry Floor – Revegetation: All infrastructure would be removed from the Quarry floor and laydown areas. The quarry floor would be left as an open level area to the creekline. These areas would be ripped, shaped, stabilised and covered with organic material such as soil if available, crusher dust and scattered wood. Once a stable landform has been created stockpiled material would be respread uniformly to enhance deep root growth. Top soil would be spread to a minimum of 100mm thick. Native trees, shrubs and groundcover would be re-established through revegetation with tube stock or direct seeding of native seeds. The existing sediment dam and drainage system would be maintained. The proposed future land use would be preserved as native vegetation once the quarry is closed

Native trees and shrubs endemic to the area that would be used for revegetation have been updated in the table below (Table 7 2 of the BA). These plants are species representative of PCT 285 that are local to the area and also easily accessible to purchase from local nurseries. Native plants or seeds used for revegetation would be sourced from local provenance seeds.

Native trees / shrubs for use in quarry revegetation

Species Name	Common Name
Trees	
Eucalyptus bridgesiana	Apple Box
Eucalyptus camphora subsp. humeana	Broad-leaved Sally
Eucalyptus radiata	Narrow-leaved Peppermint
Eucalyptus robertsonii	Robertson's Peppermint
Eucalyptus stellulata	Black Sally
Acacia dealbata	Silver Wattle
Acacia melanoxylon	Blackwood
Shrubs	
Acacia pravifolia	Coil-pod Wattle
Acacia kettlewelliae	Buffalo Wattle
Bursaria spinosa	Native Blackthorn
Cassinia longifolia	
Epacris breviflora	
Hibbertia obtusifolia	Hoary guinea Flower
Kunzea ericoides.	Burgan
Leptospermum continentale	Prickly Teatree
Ground Covers	
Poa labillardierei	Snow Grass
Themeda australis	Kangaroo Grass
Microlaena stipoides	Weeping Meadow Grass
Echinopogon ovatus	Echidna Grass
Carex appressa	Tall sedge

Quarry Walls – Natural Regeneration: Due to the high rainfall, areas that are left undisturbed naturally regenerate which creates stability, reduces the potential for erosion and decreases dust. The quarry walls, adjacent to where backfilling cannot occur due to sloping ground and presence of the creek line would have 10m high near vertical batters separated by 5m wide berms, which would be progressively rehabilitated once they are available. It is noted that opportunities for progressive rehabilitation within the pit are limited as there are few berms shaped to final profile during the staged quarry development. As the final wall is left and the pit progresses, scattered wood would be left on the berms to create habitat. It is not practical to place soil and trees or shrubs on the berms. These areas would be left to naturally regenerate. The current quarry wall demonstrate that natural regeneration would occur with abundant Acacias and Cassina spp. regenerating on the quarry wall and berms. The top of the pit wall will have a safety bund and fence to exclude animals.

Sediment Dams – Retained: Areas around the sediment dams would be stabilised and revegetated during the final stages of the rehabilitation process. Sediment dams would remain onsite, providing important erosion sediment control during the rehabilitation process. Sediment Dam 2 would be left for watering stock. The maintenance of the dams would remain the responsibility of the landholder (BHQ) once the site is decommissioned and rehabilitated.

Internal Access Road – Retained: The access road will be left for access to the top of the quarry wall. If sections of the road are not required, they will be ripped, reshaped, stabilised and left to naturally regenerate.

Stockpile Site - Rehabilitation Area: Material from the stockpile will be either spread on site or levelled and left in situ. The stockpile will be progressively covered with topsoil, mulch and/or a soil binder and left to naturally regenerate from the surrounding grasses to reduce erosions and increase the stability of the landform. In areas where the natural regeneration is deemed unsuccessful, hydroseeding would be implemented. Indicative hydroseeding pasture mix is provided in the table below (Table 7 3 of the BA). The stockpile site would return to grazing land following closure of the quarry.

Proposed hydroseeding pasture mix

Seed Type	Spring Sowing (kg/ha)	Autumn Sowing (kg/ha)
Ryecorn	20	20
Victorian Perennial Ryegrass	6	6
Cocksfoot	8	8
Phalaris	6	6
White Clover*	2	2
Red Clover*	4	2
Sub Clover*	4	6

* All clover seed would be lime pelleted and inoculated.

The proponent would finalise a detailed quarry closure and rehabilitation plan three years prior to the cessation of quarrying activities. Weed control would be required to be undertaken to prevent establishment of priority weeds such as Blackberry and Willow.

If you have any questions, please contact me or Julie Gooding, Technical Lead Biodiversity, on (02) 6971 9696. We would be pleased to discuss any aspect of this project with you further.

Yours sincerely,

Stephanie Kurta
Senior Town Planner
0401 931 355

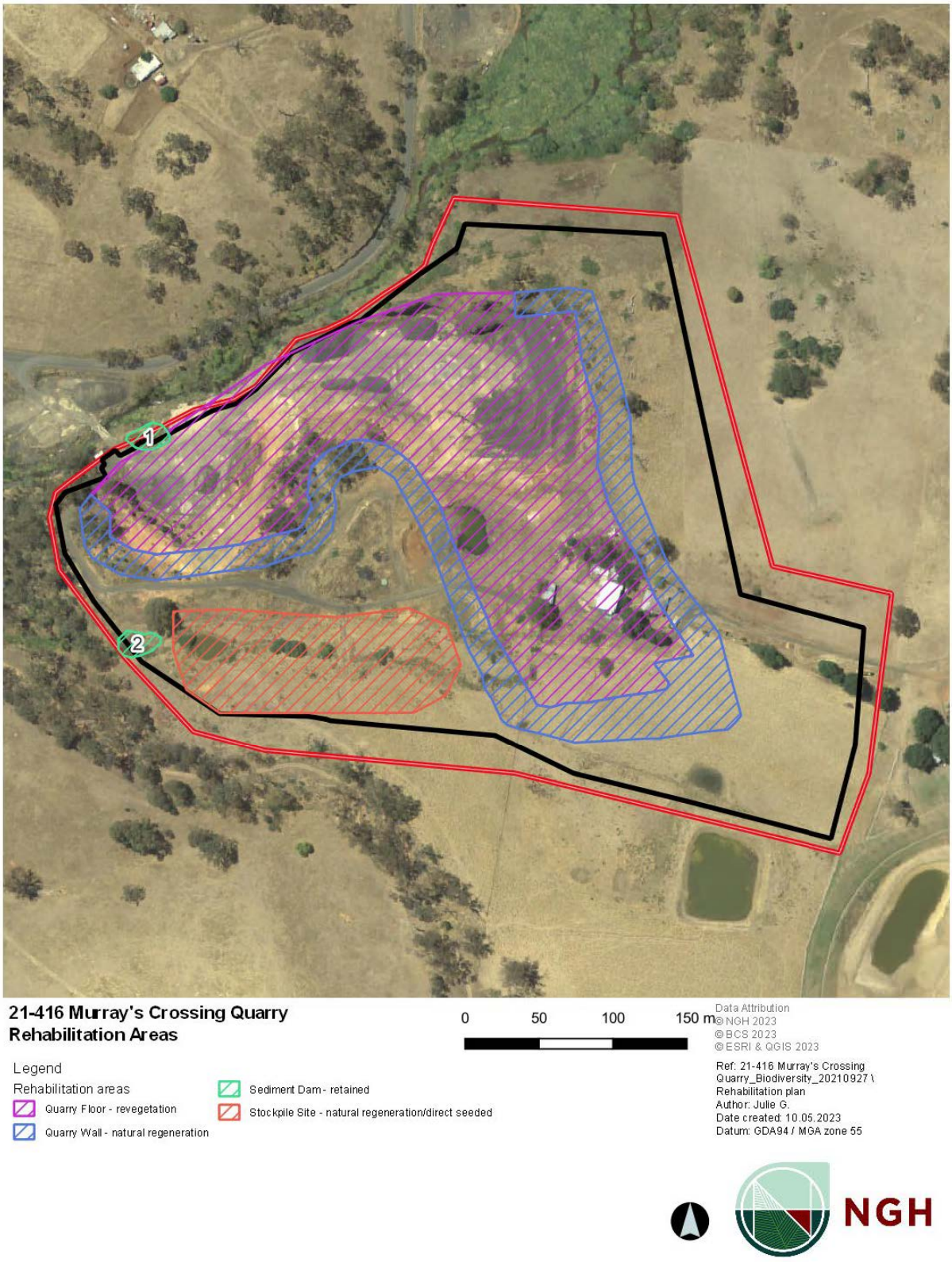


Figure 1 Rehabilitation areas following closure of the quarry

Appendix C **– Consents and Agreements**

Department of Planning and Environment

Our ref: 22/05248 Your ref: Belinda Fourie

The Directors

Bald Hill Quarry Pty Ltd

Via email john@baldhillquarry.com.au and tony@baldhillquarry.com.au

30 August 2022

Dear Sir/Madam,

Consent for proposed development:	Development Application to expand current operations and secure authority for ongoing operations at 71 Murrays Crossing Road Tumbarumba
Crown reserve	81837 - Quarry, 732/755892

Under section 2.23 of the *Crown Land Management Act 2016* (CLM Act), consent is taken to have been given by the Department of Planning and Environment to make a development application for the purposes of the *Environmental Planning and Assessment Act 1979* for the development proposal described above.

Please be aware that land owner's consent is taken to have been given in accordance with the following:

- Land owner's consent does not imply the concurrence of the Minister for Water, Property and Housing for the proposed development and does not provide authorisation under the CLM Act for this proposal;
- The taking of land owner's consent to be given under section 2.23 of the CLM Act does not guarantee that any subsequent authority to occupy Crown land will be granted by the Department of Planning and Environment – Property and Housing (the department);
- The land owner's consent does not prevent the department from making any submission commenting on, supporting or opposing an application;
- The Minister reserves the right to give landowner's consent for the lodgement of applications for any other development proposals on the subject land concurrent with this land owner's consent;
- Land owner's consent also allows application to any other approval authority necessary for this development proposal.

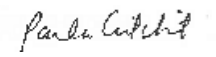
This letter should be submitted to the relevant consent or approval authority in conjunction with the development application. You are responsible for identifying and obtaining all other consents, approvals and permits required under NSW and Commonwealth laws from other agencies for the proposed development.

If any alterations are made to the application (whether in the course of assessment, by conditions of consent, or otherwise), it is your responsibility to ensure the amended or modified development remains consistent with this land owner's consent. If there is any inconsistency or uncertainty you are required to

contact the department before carrying out the development to ensure that the consent remains valid under section 2.23 of the CLM Act. A subsequent land owner's consent application may be required and incur additional application fees.

It is advised that the department will inform the relevant planning authority of the giving of this land owner's consent and will request that the relevant planning authority notify the department of the subsequent development application, for potential comment, as part of any public notification procedure.

Yours sincerely,



Paula Gilchrist
Natural Resources Management Project Officer
Department of Planning and Environment – Housing and Property

0490

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NSW GOVERNMENT Local Land Services

RESERVE USE APPLICATION & PERMIT

Local Land Services Act 2013, Part 6, Section 77

Murray
PO Box 835 61
DENILIQUIN NSW 2710

Phone: 1300 795 299
Email: land.murray@lls.nsw.gov.au

This Permit authorises:

Name of Applicant: DANIELLE BOWEN-ROSS

On behalf of Organisation: BALD HILL QUARRY PTY LTD

Address: 5423 HUME HIGHWAY, JUGIONG

Phone: Mobile: 0409552596 Fax:

Proposed Activity: STOCKPILE QUARRY MATERIAL

Date(s) of proposed activity: 01 JULY - 31 DEC 2023

Reserve No/Name: R51991

Location of Reserve: MURRAYS CROSSING TUMBARUMBA

CONDITIONS (See over Page)

Fee: $. 6 MONTHS @ $120 MONTH = $720

Insurance Details:

Insurance Company: ALLIANZ AUSTRALIA

Policy No: 96097256 9LCP Amount of Cover: $ 20 MILLION

Commencement & Expiry Dates: 31/03/23 - 31/03/24

I hereby agree to abide by the relevant provisions of the Local Land Services Act 2013 and the fees and conditions relating to this permit.

Signature of Applicant [signature] Date: 21.6.23

Signature of Authorised Officer of Murray LLS [signature] Date:

Office Use Only

Date Received:

Receipt Number:

Amount Received:

Invoice No:

Customer No:

"#$ %&'$$!( ) #* * +!,-+! $-%
ABN: 19 003 764 725
5423 Hume Highway Jugiong NSW 2726
Phone (02) 62277817– Fax (02) 62277863
Email: john@baldhillquarry.com.au

BALD HILL QUARRY

General Manager
Snowy Valley Council
76 Capper Street
Tumut, NSW 2720

Dear Sir,

Re: DA application PAN 245686

Bald Hill Quarry Pty Ltd has submitted a Development Application and accompanying EIS for the expansion of the quarry located on land it owns at Murrays Crossing road, Tumbarumba. The land is identified in the EIS as:

Lot 659,663,665,452,20,172,173,174,175,176,177,178 of DP755892

Lot 179 of DP1100528

Lot 1 of DP1150973

Lot 1 of DP111861

As a director of Bald Hill Quarry Pty Ltd I give consent on behalf of the owner for the proposed development submitted by Bald Hill Quarry Pty Ltd

Yours Sincerely,

John Wilkinson
Director
25th July 2023