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BIODIVERSITY ASSESSMENT

Proposed Expansion of Existing Quarry
Lot 5 DP 255133
Federal Highway, Wollogorang, NSW.

January 2021

Version	Final
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Project Number	140104_1

Contents

1. Introduction

1.1. Background

This report has been prepared by Macrozamia Environmental to support a proposed extension to an existing approved quarry operation located on Lot 5 DP 255133. The development proposes an extraction rate of 16,000 tonnes per annum of friable granite.

The proposal occurs on a 490ha parcel of land adjoining the north side of the Federal Highway 26km to the southwest of Goulburn and 9km to the east of Collector in the Southern Tablelands of NSW. The land currently supports the existing quarry and the vast majority of the land is used for agricultural grazing.

The project site is located in a rural district and is characterised by grazing land in all directions intersected by a major highway. To the south of the project area and south of the highway there occurs a wetland, Rose Lagoon, which is an important ecological feature of the landscape.

1.2. Site Description

The landscape is high in the Great Dividing Range and gently undulating, agriculture, particularly grazing enterprises, have been a dominant land use for the past 200 years and remains so however rural residential uses are increasing. As a result of this land use history vegetation has been heavily modified in this since European settlement. Vegetation of the subject site can be described as an agricultural pasture it supports very little native vegetation and is dominated by exotic grasses, typical of the district. Few trees or shrubs occur on the site and those that do are typically planted in windbreaks, small areas of scattered native vegetation occur however not close to the subject site. Several first and second order ephemeral drainage lines occur.

Consistent with the Office of Environment and Heritage *Threatened Species Test of Significance Guidelines* (2018), in this report;

> ***Subject Site*** *means the area directly affected by the proposal. The subject site includes the footprint of the development and any ancillary works, facilities, accesses or hazard reduction zones that support the construction or operation of the development or activity.*

And

> ***Study Area*** *means the subject site and any additional areas which are likely to be affected by the proposal, either directly or indirectly. The study area should extend as far as is necessary to take all potential impacts into account.*

The *Subject Site* includes all areas directly impacted by the proposed quarry expansion as well as lands directly impact by the existing operation.

The *Study Area* for this assessment includes the study area described above and a buffer area of 50m.

The proposal location and study area are identified on Map 1-1 of this report and specific site activities detailed in the concept plans at Appendix 2 of this report.

1.3. Aims of this Report

The purpose of this report is to identify and assess the terrestrial biodiversity, including flora, fauna and communities occurring in the study area and the likely impacts of the proposed development on these matters, with consideration of the site's landscape context. This report addresses the legislative framework below;

i. The Commonwealth *Environment Protection and Biodiversity Conservation Act 1999*

(EPBC Act)

a. Biodiversity Matters of National Environmental Significance

   Identification of protected matters at risk of impact and assessment of significance of any impact

ii. NSW *Biodiversity Conservation Act 2016* (BC Act)

a. Part 4, Divisions 2 and 5

   Consideration of listed species, ecological communities and key threatening processes to be considered under s7.3

b. Section 7.3

   Test of Significance, for determining whether proposed development or activity is likely to significantly affect threatened species or ecological communities, or their habitats

iii. NSW *Environmental Planning and Assessment Act 1979* (EP&A Act)

a. Part 5, Infrastructure and environmental impact assessment

iv. NSW *State Environmental Planning Policy (Koala Habitat Protection) 2019* (Koala SEPP)

a. Part 2, Section 9 - Development assessment process—no approved koala plan of management for land

v. *Upper Lachlan Local Environmental Plan 2010* (LEP)

a. Clause 6.2 – Biodiversity

(1) The objective of this clause is to maintain terrestrial and aquatic biodiversity including—
(a) protecting native fauna and flora, and
(b) protecting the ecological processes necessary for their continued existence &
(c) encouraging the recovery of native fauna and flora, and their habitats.

(2) This clause applies to land identified as “sensitive land” on the Natural Resources Sensitivity—Biodiversity Map.

Following a request from the proponent the NSW Planning Industry and Environment Department, Biodiversity and Conservation Division (BCD) have provided Environmental Assessment Requirements (EARs) (EAR 1439) as part of the Planning Secretary’s Environmental Assessment Requirements (SEARs) as follows;

a. The EIS must demonstrate and document how the proposed development exceeds, or does not exceed, the biodiversity offsets scheme threshold set out in Section 7.4 of the BC Act 2016 and Clause 7.1 of the Biodiversity Conservation Regulation 2017 (BC Regulation) by determining whether the proposed development involves:

I. The clearing of native vegetation exceeds the thresholds listed under clause 7.23 of the BC Regulation, or

II. The clearing of native vegetation, or other action, on land included on the Biodiversity Values Map published under Clause 7.23 of the BC Regulation (this map includes areas of outstanding biodiversity value, as declared under Section 3.1 of the BC Act).

b. If the proposal does not trigger any of the criteria in (a) above, then the EIS mist determine whether the proposed development is likely to have a significant impact based on 'the test for determining whether proposed development likely to significantly affect threatened species or ecological communities' in section 7.3 of the BC Act.

c. Where there is reasonable doubt regarding the potential impacts, or where information is not available, then a significant impact upon biodiversity should be considered likely when applying the test in Section 7.3 of the BC Act. Where it is concluded that there is no significant impact, the EIS must justify how the conclusion has been reached.

d. If the development exceeds the thresholds in (a) or (b), then the EIS must be accompanied by a biodiversity development assessment report (BDAR) prepared in accordance with Part 6 of the BC Act. That is, the Biodiversity Assessment Methodology applies.

This Biodiversity Assessment aims to meet the above environmental planning & assessment criteria & the biodiversity EARs outlined above. To achieve this, this report does the following;

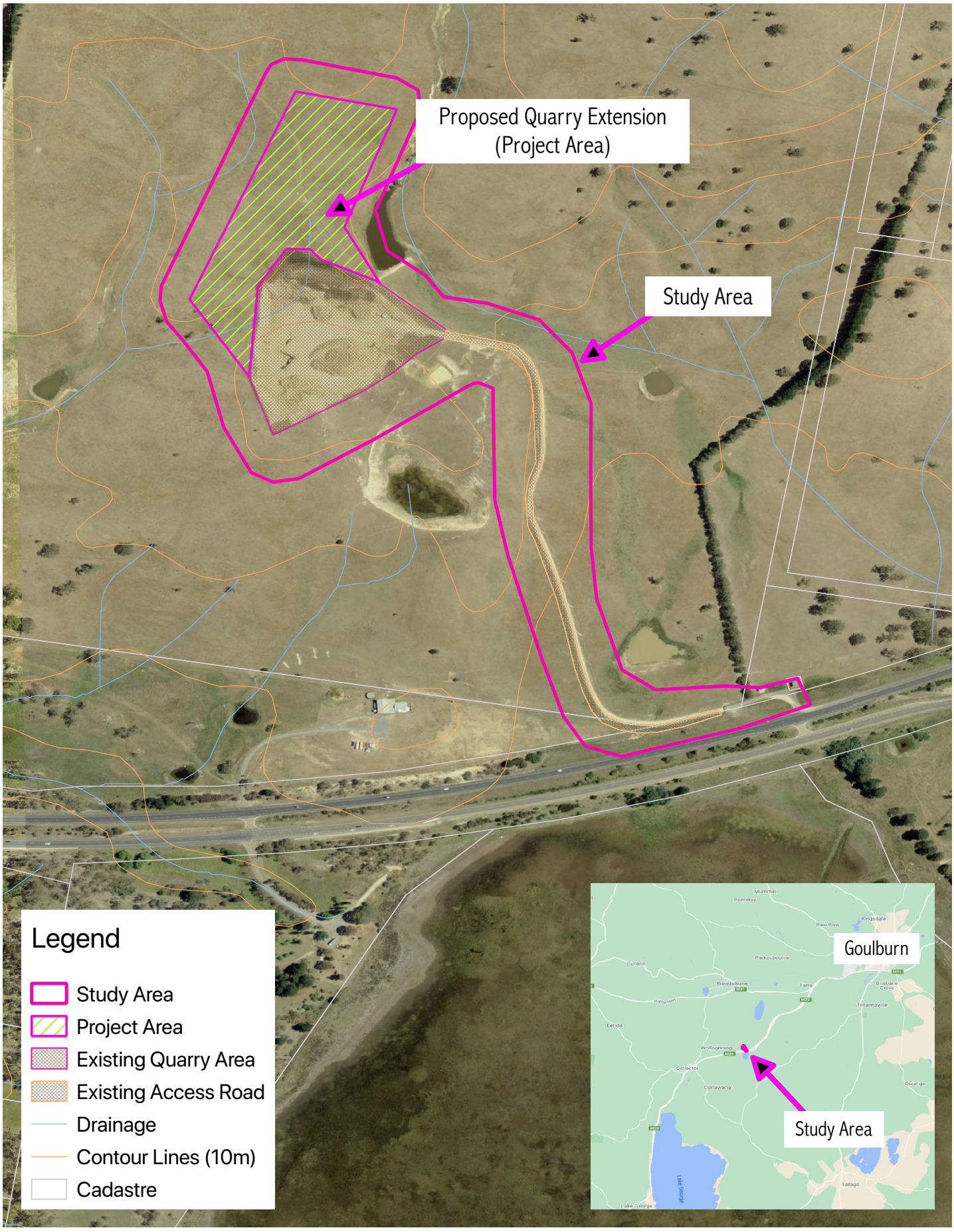
- Provides a description of the subject site and study area
- Provides a detailed description of the proposal and potential associated impacts, both direct and indirect, on biodiversity
- Describe the methods used to assess biodiversity
- Demonstrates and documents how the proposal exceeds, or does not exceed, the biodiversity offsets scheme threshold set out in Section 7.4 of the BC Act 2016 and Clause 7.1 of the Biodiversity Conservation Regulation 2017
- Identifies the key flora and fauna species & vegetation communities present in the study area, including an assessment of potential habitat values of the site and their interaction with habitats outside the study area
- Identifies the listed threatened species, populations migratory species & ecological communities with potential to occur in the study area
- Defines the potential impacts of the proposal on biodiversity and assess the significance of potential impacts on threatened species, populations and ecological communities and migratory species.

It is important to note that not all species that occur on or use this site could be identified without an extended survey period of several seasons and over numerous site visits. A survey of this extent is beyond the scope of this assessment. To compensate for this, habitats have been assessed with consideration of potentially occurring species applying the principle, particularly in relation to listed matters.

1.4. Description of Proposal

The proposal is to expand an existing friable granite quarry by 3.56ha. The existing operation covers an area of 2.9ha and the proposal would result in extraction of 16,000 tonnes per annum being 333 tonnes per week (48 weeks) 9 x 37 tonne truck loads per week, approx. 2 truck loads per day over 5 days over at least 20 years.

Existing tracks and site access will remain in use and there is no requirement to expand these.



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Map 1-1
Locality and Study Area

0 100 200 m

2. Methods

2.1. Literature and Database Review

The study area and its landscape context were considered through a literature and database review in preparation for field survey and to inform survey aims and threatened biodiversity assessments. Aerial photography, NSW Government GIS data and NSW & Commonwealth databases as well as Macrozamia Environmental's records from previous surveys all informed this review, the following sources being key to this assessment;

- Current versions of legislation referred to in section 1.3 of this Biodiversity Assessment, *NSW Legislation website*
- NSW ePlanning Spatial Viewer, *NSW Department of Planning, Industry and Environment*
- BioNet Atlas of NSW Wildlife, *NSW Office of Environment and Heritage*
- Threatened Biodiversity Profiles, *NSW Office of Environment and Heritage*
- NSW Vegetation Information System, *NSW Office of Environment and Heritage*
- *Land and Property Information* SIX Map Topographic and Cadastral Data for this Local Government Area, periodically updated on our GIS
- EPBC Protected Matters Search Tool, *Commonwealth Department of Agriculture, Water and the Environment*.

Wherever applicable, NSW and Commonwealth policies and guidelines have been adopted in the undertaking of this assessment, the following have been key to preparation of this report;

- Threatened Species Test of Significance Guidelines *NSW Office of Environment and Heritage 2018*
- The EPBC Act Matters of National Environmental Significance: Significant Impact Guidelines, *Department of Environment, Water, Heritage and the Arts 2013*.

Threatened species, populations and migratory species that were recorded within 10km of the study area in the BioNet Atlas of NSW Wildlife and listed in the EPBC Protected Matters Search Tool were considered for their likelihood of occurrence in the study area the following factors informed this assessment;

- The location and date of records
- Habitat within the study area and habitats in the landscape including the continuity of suitable habitats for the matter under consideration
- Scientific literature pertaining to each matter and applying ecological knowledge to the assessment.

The potential for each threatened matter or migratory species to occur was then considered and the necessity for targeted field surveys was determined. Following field surveys and review of habitat occurring in the study area, the potential for species, communities or populations to use the study area or to be impacted directly or indirectly by the proposal was assessed, this assessment is summarised in the table at Appendix 1 of this report.

2.2. Field Survey

The study area has been considered for its terrain and landscape features, vegetation communities in the study area were defined and mapped and consideration made how they link to habitats of the surrounding landscape.

2.3. Flora and Vegetation Communities

All flora and fauna species identified were recorded along with ecological communities and habitat components occurring on the site.

Key flora species were recorded and vegetation communities mapped and defined then compared with OEH defined Plant Community Types and checked against described listed vegetation communities.

Targeted surveys were undertaken for threatened species of plants that were considered to have potential to occur on the site based on desktop research or where habitats on site were found to be suitable.

Floral nomenclature is consistent with *The Plant Information Network System of The Royal Botanic Gardens and Domain Trust* PlantNET online resource.

2.4. Fauna and Fauna Habitats

Given the lack of habitat available on the site or nearby, no structured fauna surveys were undertaken.

Habitat components that may be used for foraging, roosting, breeding or nesting by any potentially occurring fauna were considered, along with the continuity of habitat present within the study area as well as stepping stone or corridor habitat that may connect the study area to other parts of the landscape, particularly to areas of quality habitat or conservation areas.

Habitat surveys targeted, where present, tree hollows, stags, bird nests, possum dreys, decorticating bark, rock shelters, rock outcrops / crevices, mature / old growth trees, food species particularly nectar producing and palatable species such as mistletoes and proteaceae species.

Artificial structures such as bridges/ culverts, dams, service pits and other structures were also considered if present, for their habitat value.

Faunal nomenclature is consistent with;

- Cogger, H. (1992). Reptiles and Amphibians of Australia, Revised Edition. Reed, Sydney.
- Morcombe, M. (2000). Field Guide to Australian Birds. Steve Parish Publishing Pty Ltd, Queensland.
- Strahan, R. (1995). The Mammals of Australia. Australian Museum/Reed Books, Sydney.

2.5. Survey Limitations

The flora survey aimed to record all the key and most frequent species occurring on the study area in order to accurately describe vegetation characteristics and classify plant community types present as well as all important weed species. A definitive list of the flora occurring in the study area cannot be derived without structured surveys over several seasons. Such survey effort is beyond the scope of this assessment given past land uses on the site and its degraded nature.

Despite these limitations the biodiversity assessment undertaken for flora, vegetation communities and fauna is adequate to undertake appropriate biodiversity impact assessment.

Biodiversity survey following OEH's published threatened species survey and assessment guidelines was not undertaken as sufficient detail to determine the likelihood of occurrence of threatened species and communities as well as potentially occurring migratory species for the purposes of this assessment has been achieved through flora and habitat assessment during the field survey.

3. Results

3.1. Literature and Database Review

Desktop assessment has identified the following characteristics of the site;

Landform and drainage

The study area occurs at an elevation of 760 to 780m asl, the easterly parts drain gently into Rose Lagoon an internally draining basin to the south of the study area. The westerly drainage is part of the Collector Creek Sub-catchment of the Lake George Catchment, another internally draining basin to the southwest of the study area.

Soils and geology

The study area is mapped as the "Garland Soil Landscape" *NSW Soil Landscapes 1:150000 mapping*.

The Garland Soil Landscape is described as occurring in undulating rises and valleys formed from granitic parent material. Extensive areas occur in two north- south trending bands between Gunning and Hovells Creek and between Tarago Lagoon and the Isabella River. Commonly light red sandy duplex soils on upper slopes and mottled yellow duplex soils with sandy textured topsoils and bleached A2 horizons on mid and lower slopes. Sandy Red and Yellow Earths also found on sideslopes. Deep Siliceous Sands are found in some drainage lines. Granitic tors and pavements occasionally present. In some areas Red Podzolic Soils may be dominant.

Gullying of drainage lines is the most frequent form of soil erosion. Where gullies are allowed to progress unchecked, they can often reach depths of >3 m. Sheet erosion occurs only in very dry years or following bushfires, because the predominantly slightly sandy textured soils respond quickly to even relatively light falls of rain. Occasional salting in low-lying areas, particularly where Ordovician metasediments occur upslope.

In terms of native vegetation only scattered trees remain. Typical vegetation community of this soil landscape would have been Savannah woodland of yellow box and Blakelys red gum. A well-developed herbaceous layer, composed of spear grasses, kangaroo grass, and Poa species, occurred naturally beneath the open tree canopy. However, because of heavy grazing or fires, these grasses have been wholly or partly replaced with wallaby grasses, wire grass and often shrubs.

Environmental planning

<u>BC Act 2016 (Section 7.4) Biodiversity Conservation Regulation 2017 (Clause 7.1)</u>

The proposal does not exceed the biodiversity offsets scheme threshold based on the following points;

- The proposal does not include or require clearing of native vegetation
- The proposal does not occur in an area or impact lands mapped on the Biodiversity Values Map (see Biodiversity Offset Scheme Entry Threshold Map & Report at Appendix 3)
- The proposal does not significantly impact a threatened matter.

<u>Upper Lachlan Local Environmental Plan 2010 (LEP)</u>

The Study Area is mapped as "sensitive land" on the Natural Resources Sensitivity—Biodiversity Map. As such the following clauses apply;

(3) Before determining a development application for land to which this clause applies, the consent authority must consider any adverse impact from the proposed development on—

(a) a native ecological community, and

(b) the habitat of any threatened species, populations or ecological community, and

(c) a regionally significant species of fauna and flora or habitat, and

(d) a habitat element providing connectivity.

(4) Development consent must not be granted to development on land to which this clause applies unless the consent authority is satisfied that—

(a) the development is designed, sited and will be managed to avoid any adverse environmental impact, or

(b) if that impact cannot be avoided—the development is designed, sited and will be managed to minimise that impact, or

(c) if that impact cannot be minimised—the development will be managed to mitigate that impact.

This report considers each of the matters in Clause (3) and meets Council's needs for Clause (4).

SEPP (Koala Habitat Protection) 2021 (Koala SEPP)

The Koala SEPP applies to this Local Government Area, however this instrument exempts the subject land by Section 6 of the Koala SEPP;

6 Land to which Policy applies

(1) This Policy applies to each local government area listed in Schedule 1.

(2) The whole of each local government area is—

(a) in the koala management area specified in Schedule 1 opposite the local government area, or

(b) if more than 1 koala management area is specified, in each of those koala management areas.

(3) Despite subclause (1), this Policy does not apply to—

(a) land dedicated or reserved under the National Parks and Wildlife Act 1974, or acquired under Part 11 of that Act, or

(b) land dedicated under the Forestry Act 2012 as a State forest or a flora reserve, or

(c) land on which biodiversity certification has been conferred, and is in force, under Part 8 of the Biodiversity Conservation Act 2016, or

*(d) land in the following land use zones, or an equivalent land use zone, unless the zone is in a local government area marked with an * in Schedule 1—*

(i) Zone RU1 Primary Production,

(ii) Zone RU2 Rural Landscape,

(iii) Zone RU3 Forestry.

The subject site occurs in the Upper Lachlan Local Government Area which is listed in in Schedule 1 (without an *) as it is zoned RU2 Rural Landscape the Koala SEPP doesn't apply.

Threatened Biodiversity

Section 4, *Threatened Species Populations & Ecological Communities*, of this report addresses findings of desktop review of threatened biodiversity.

Appendix 1 of this report presents these protected matters that have been considered in this assessment.

3.2. Vegetation communities and flora species

The study area occurs in an environment that has supported eucalypt dominated woodland and forest for many years prior to European settlement. These ecosystems have been progressively modified over the past 200 years, intersected by road and utility corridors and cleared for agriculture, typically grazing enterprises, in the lower flatter parts of the landscape while hill tops and ridges have typically been cleared for timber and often allowed to regenerate due to poorer soils and unsuitability for agriculture. In few parts of the landscape are native vegetation communities intact, the best nearby example is 800m to the south of the proposed quarry expansion in the Rose Lagoon area including the lagoon itself and its foreshore which. All other vegetation surrounding the study area are agricultural pasture intersected by planted windbreaks, typically of Radiata Pine (*Pinus radiata*) some scattered native woodland trees occur in the surrounding 1km. Three living, and two recently dead examples of woodland eucalypts occur in the study area, these however are stunted and in poor condition, suffering extensive dieback, while identification was difficult due to their health, two of these trees 42m to the west of the proposed expansion are considered most likely to be Apple Box (*Eucalyptus bridgesiana*) and one, 166m to the south of the proposed quarry expansion (21m to the west of the existing quarry) is a Snowgum (*E. pauciflora*).

The subject site occurs in an agricultural paddock, with very few native species, low species diversity and very few woody plants.

The area of the proposed quarry is dominated by Chilean Needlegrass (*Nassella neesiana*) Clover (*Trifolium sp*.) is also common and in parts Patterson's Curse (*Echium plantagineum*) becomes dominant.

The vegetation of the study area is dominated by exotic pasture species, the following species were observed;

Cape Weed (*Arctotheca calendula*)

Thistles (*Onopordum sp*.)

Cats Ear (*Hypochaeris radicata*)

Dock (*Rumex spp*.)

Plantain (*Plantago lanceolata*)

Rat's-tail Fescue (*Vulpia sp*.)

Perennial Ryegrass (*Lolium perenne*)

Hair Grass (*Aira sp*.)

Barley Grass (*Hordeum sp*.)

Native species (compose less than 1% of biomass)

Wallaby Grass (*Rytidosperma sp*.)

Speargrass (*Austrostipa sp.*)

Bluebell (*Wahlenbergia sp*.)

Sedge (*Lepidosperma sp*.)

Chilean Needlegrass is listed as a weed of national significance under schedules of the NSW *Biosecurity Act 2015* and *Local Land Services* (2017) future use of the site should manage these species, a weed management plan should be prepared and implemented with consideration of future land uses.

No flora species or communities were recorded or considered likely to occur that are listed matters under the BC Act or the EPBC Act.

3.3. Fauna and Fauna Habitat

Due to the limited survey period and lack of habitat diversity, few fauna were found using the site, however, the potential for fauna to use the site, particularly threatened species has been considered based on the habitats present.

The majority of the site offers little to no habitat of value to native fauna.

Important habitat components for fauna including vegetative structure, arboreal habitat, seasonally flowering/ fruiting grasses and forbs, dead standing and fallen timber, rocky areas and termite mounds are absent.

Habitat continuity across the subject site is poor along with continuity with other habitats in the landscape.

The common birds of NSW agricultural landscapes; Richards Pipit and Australian Magpie were recorded.

No fauna species or fauna habitats were recorded or considered likely to occur that are listed matters under the BC Act or the EPBC Act.

3.4. Impacts

The proposal will directly impact up to 3.56ha of exotic dominated pasture grassland for the establishment of the quarry extension. Indirect impacts include noise and dust impacts associated with the operation, these will not be measurably greater than existing.

4. Threatened Species, Populations and Ecological Communities

The BC Act provides a series of native vegetation clearing thresholds and a Biodiversity Values Map (BVM) to determine the necessity for the impacts on biodiversity of a development to be assessed using the BC Act's Biodiversity Assessment Method. Due to the small size of this proposal it does not meet these thresholds and is not mapped on the BVM. Despite this, where there is potential for listed matters (species, populations or ecological communities) to be impacted by a proposal a Test of Significance must be undertaken to determine the significance of any impact.

The potential for protected matters occurring in the area to be impacted has been assessed in the threatened matter evaluations table at Appendix 1 of this report.

The findings of this assessment are as follows;

4.1. Threatened species

Appendix 1 addressed several listed species that have been recorded within 10km of the study area in the past or considered to have some potential to occur on the site based on habitats in the landscape.

Following this assessment, no Threatened Species listed under the BC Act were considered likely to occur on the site or be impacted by the proposal.

4.1. Endangered Populations

No Endangered Populations listed under the BC Act have been considered likely to be at risk of impact by the proposal.

4.2. Endangered Ecological Communities

Appendix 1 addressed 2 listed communities. Neither of these were found likely to be at risk of impact by the proposal, elements of Boxgum Woodland occur in the landscape however none persist on the subject area.

5. Environment Protection and Biodiversity Conservation Act 1999

The *Commonwealth Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) specifies that approval is required from the Commonwealth Minister for the Environment for actions that have, will have or are likely to have a significant impact on a matter of "national environmental significance".

The Act identifies nine matters of national environmental significance being:

1) World Heritage properties
2) National heritage places
3) Wetlands of international importance (Ramsar wetlands)
4) Threatened species and ecological communities
5) Migratory species
6) Commonwealth marine areas
7) Nuclear actions (including uranium mining)
8) Great Barrier Reef Marine Park
9) Water impacts from coal seam gas and large coal mining actions

Matters number 4 (Threatened species, ecological communities) and 5 (Migratory species) are relevant to this proposal.

5.1. Threatened Species & Ecological Communities:

Threatened species listed under this act have been considered in the Appendix 2 assessment along with NSW BC Act listed species.

The Commonwealth Environment Department protected matters search tool was used to highlight any maters of national environmental significance that could be of concern. No matters were considered likely to be impacted by the proposal.

5.2. Migratory Species:

In addition to threatened species and ecological communities, the EPBC Act allows for the listing of internationally protected migratory species, i.e. species listed under the Japan-Australia Migratory Bird Agreement (JAMBA), the China - Australia Migratory Bird Agreement (CAMBA) and the Convention on the Conservation of Migratory Species of Wild Animals (Bonn Convention).

No protected migratory species were observed on site at the time of this assessment or considered likely to occur on the site or rely on resources provided by its habitats.

6. NSW Fisheries Management Act 1994

The Fisheries Management Act 1994 provides for the protection of fish and marine vegetation, endangered populations and ecological communities by a listing process. No species, populations or communities listed under this act were recorded on site at the time of this assessment or are considered likely to occur on this site. No Tests of Significance have been prepared for species protected by this act in relation to the proposed development.

7. Assessment of the Biodiversity Impact

Considering the information detailed above that has been summarised from information collected during field and desktop investigations and assessments of significance for threatened species and communities the following final assessments are made.

7.1. Direct Impacts

The proposal will result in 3.56ha of exotic pasture grassland being removed.

7.2. Indirect Impacts

Operation of the proposal will generate noise and dust impacts, these however are consistent with the existing operation. Indirect impacts will not impact important or native biodiversity matters.

7.3. Potential Impacts on Flora

Vegetation impacts will not significantly impact any threatened flora or endangered ecological communities.

The proposal will not involve the removal of any significant vegetation, plant habitats or significantly degrade the ecological value of the study area.

7.4. Potential Impacts on Fauna and Habitat

No areas of important habitat or unique habitat components will be removed as part of this proposal.

The impact of the proposal on fauna populations and their habitats is considered likely to be insignificant.

No listed threatened fauna or their habitats are considered at risk of impact by this proposal.

8. Impact Mitigation Measures

The following impact mitigation measures are recommended for adoption to reduce the likelihood of any negative impacts on flora and fauna associated with this proposal both in the short and long term.

9.1 The operator of the quarry must ensure that they do not import weed material to the site or export weed material from the site, for example, in or on plant and equipment used in the operation. At a minimum the following actions will be undertaken to achieve this;

a) A weed management plan will be prepared and implemented to ensure the project does not increase the occurrence of weed species on the site or adjoining lands the plan will incorporate the following practices;

- The site manager will ensure that procedures are in place to ensure plant and equipment entering the site are clean and free of mud, soil and vegetation material.

9. Conclusion

This report has assessed the flora and fauna associated with this site and the extent and nature of impacts on biodiversity of the planning proposal.

It is essential that this report's impact mitigation measures be implemented in order to manage potential weed issues on the site and ensure that adjoining lands are not impacted.

There are no other biodiversity issues associated with this proposal and if the impact mitigation measures recommended by this report are implemented the overall impact of this proposal on flora and fauna will be negligible.

10. References

- Cogger, H. (1992). *Reptiles and Amphibians of Australia,* Revised Edition. Reed, Sydney.
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- Commonwealth Department of the Environment (DoE) (2013). Matters of National Environmental Significance: Significant impact guidelines 1.1 Environmental Protection and Biodiversity Conservation Act 1999. Canberra.
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- NSW Office of Environment and Heritage (OEH) (2013). Threatened Species Survey and Assessment Guidelines.
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- Morcombe, M. (2000). *Field Guide to Australian Birds.* Steve Parish Publishing Pty Ltd, Queensland.
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- Strahan, R. (1995). *The Mammals of Australia*. Australian Museum/Reed Books, Sydney.

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Appendix 1 – Threatened Matter Evaluations

Macrozamia Environmental

Threatened Species Evaluations

The following table present the evaluations for threatened species, endangered ecological communities and endangered populations found either

1. Within a 10km buffer of the study site in the Atlas of NSW Wildlife (Bionet).
2. Identified as potentially occurring in the area by the Commonwealth EPBC Protected Matters Search Tool.
3. Considered to have potential to occur in the landscape given habitats available

The assessment of potential for impact to the species or ecological community is based on the nature of the proposal, it's direct and indirect impacts and the ecology of the species. Where a potential impact to a threatened species, ecological community or endangered populations has been identified a *Test of Significance* for determining whether proposed development or activity is likely to significantly affect threatened species or ecological communities, or their habitats has been undertaken in line with Section 7.3 of the *Biodiversity Conservation Act 2016*.

Abbreviations

Matter status under each act, *NSW Biodiversity Conservation Act 2016* (BC Act) or the *Commonwealth Environment Protection & Biodiversity Conservation Act 1999* (EPBC Act) (depending on the table column the abbreviation is placed in) are abbreviated as follows;

- E: listed as endangered
- V: listed as vulnerable
- CE: listed as Critically Endangered
- EEC: listed as an Endangered Ecological Community
- CEEC: listed as a Critically Endangered Ecological Community
- M: Migratory Species under the EPBC Act.

References

Department of the Environment. Species Profile and Threats Database, Department of the Environment, Canberra. [Online]. Available from: http://www.environment.gov.au/sprat.

Office of Environment and Heritage. Threatened Species Profile Search. [Online]. Available from: http://www.environment.nsw.gov.au/threatenedspeciesapp/.

Department of Primary Industries. Listed threatened species, populations and ecological communities. [Online]. Available from: http://www.dpi.nsw.gov.au/fishing/species-protection/conservation.

Species name	Habitat requirements	TSC Act	EPBC Act	Presence of habitat	Likelihood of occurrence	Potential impact
Fauna						
Birds						
Anthochaera Phrygia Regent Honeyeater	The regent honeyeater inhabits dry open forest and woodland, particularly Box-Ironbark woodland, and riparian forests of River Sheoak. These woodlands have significantly large numbers of mature trees, high canopy cover and abundance of mistletoes. The Regent Honeyeater is a generalist forager, although it feeds mainly on the nectar from a relatively small number of eucalypts that produce high volumes of nectar. Key eucalypt species include Mugga Ironbark, Yellow Box, White Box and Swamp Mahogany. Also utilises *E. microcarpa, E. punctata, E. polyanthemos, E. moluccana, Corymbia robusta, E. crebra, E. caleyi, Corymbia maculata, E. mckieana, E. macrorhyncha, E. laevopinea*, and *Angophora floribunda*. Nectar and fruit from the mistletoes *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.	CE	CE	Present in landscape, not on this site.	Possible rare visitor to this landscape, will not use resources on this site	No impact
Grantiella picta Painted Honeyeater	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*. Insects and nectar from mistletoe or eucalypts are occasionally eaten. Nest from spring to autumn in a small, delicate nest hanging within the outer canopy of drooping eucalypts, she-oak, paperbark or mistletoe branches.	V	V	Present in landscape, not on this site.	Possible rare visitor to this landscape, will not use resources on this site	No impact
Melithreptus gularis gularis Black-chinned Honeyeater (eastern subspecies)	Occupies mostly upper levels of drier open forests or woodlands dominated by box and ironbark eucalypts, especially Mugga Ironbark (*Eucalyptus sideroxylon*), White Box (*E. albens*), Inland Grey Box (*E. microcarpa*), Yellow Box (*E. melliodora*), Blakely's Red Gum (*E. blakelyi*) and Forest Red Gum (*E. tereticornis*). Also inhabits open forests of smooth-barked gums, stringybarks, ironbarks, river sheoaks (nesting habitat) and tea-trees. Feeding territories are large making the species	V		Absent	Unlikely	No impact

Species name	Habitat requirements	TSC Act	EPBC Act	Presence of habitat	Likelihood of occurrence	Potential impact
	locally nomadic. The Black-chinned Honeyeater tends to occur in the largest woodland patches in the landscape as birds forage over large home ranges of at least 5 hectares.					
Botaurus poiciloptilus Australasian Bittern	Favours permanent freshwater wetlands with tall, dense vegetation, particularly bullrushes (*Typha* spp.) and spikerushes (*Eleocharis* spp.). Hides during the day amongst dense reeds or rushes and feed mainly at night on frogs, fish, yabbies, spiders, insects and snails.		E	Absent	Unlikely	No impact
Calidris ferruginea Curlew Sandpiper	The curlew sandpiper generally occupies littoral and estuarine habitats, and in New South Wales 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.		CE,M	Absent	Unlikely	No impact
Callocephalon fimbriatum Gang-gang Cockatoo	In spring and summer, the species is 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. Favours old growth forest and woodland attributes for nesting and roosting. Feed mainly on seeds of native and introduced trees and shrubs, with a preference for eucalypts, wattles and introduced hawthorns. They will also eat berries, fruits, nuts and insects and their larvae. Nests are located in hollows that are 10 cm in diameter or larger and at least 9 m above the ground in eucalypts.	V		Absent	Unlikely	No impact
Calyptorhynchus lathami Glossy Black-Cockatoo	Inhabits open forest and woodlands of the coast and the Great Dividing Range where stands of sheoak occur. Black Sheoak (*Allocasuarina littoralis*) and Forest Sheoak (*A. torulosa*) are important foods. Inland populations feed on a wide range of sheoaks, including Drooping Sheoak, *Allocasuaraina diminuta*, and *A. gymnathera*. Belah (*Casuarina cristata*) is also utilised and may be a critical food source for some	V		Absent	Unlikely	No impact

Species name	Habitat requirements	TSC Act	EPBC Act	Presence of habitat	Likelihood of occurrence	Potential impact
	populations. Feeds almost exclusively on the seeds of several species of she-oak (*Casuarina* and *Allocasuarina* species), shredding the cones with the massive bill. Dependent on large hollow-bearing eucalypts for nest sites.					
Glossopsitta pusilla Little Lorikeet	Forages primarily in the canopy of open *Eucalyptus* forest and woodland, yet also finds food in *Angophora, Melaleuca* and other tree species. Riparian habitats are particularly used, due to higher soil fertility and hence greater productivity. Isolated flowering trees in open country, e.g. paddocks, roadside remnants and urban trees also help sustain viable populations of the species. Feeds mostly on nectar and pollen, occasionally on native fruits such as mistletoe, and only rarely in orchards. Roosts in treetops, often distant from feeding areas. Nests in proximity to feeding areas if possible, most typically selecting hollows in the limb or trunk of smooth-barked Eucalypts. Entrance is small (3 cm) and usually high above the ground (2–15 m). Riparian trees often chosen, including species like *Allocasuarina*.	V		Absent	Unlikely	No impact
Lathamus discolour Swift Parrot	On the Australian mainland they occur in areas where eucalypts are flowering profusely or where there are abundant lerp (from sap-sucking bugs) infestations. 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*. Commonly used lerp infested trees include Inland Grey Box *E. microcarpa*, Grey Box *E. moluccana* and Blackbutt *E. pilularis*. Return to some foraging sites on a cyclic basis depending on food availability.	E	CE	Absent	Unlikely	No impact
Polytelis swainsonii Superb Parrot	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. May forage up to 10 km from nesting sites, primarily in grassy box woodland. Feed		V	Absent	Unlikely	No impact

Species name	Habitat requirements	TSC Act	EPBC Act	Presence of habitat	Likelihood of occurrence	Potential impact
	in trees and understorey shrubs and on the ground and their diet consists mainly of grass seeds and herbaceous plants. Also eaten are fruits, berries, nectar, buds, flowers, insects and grain.					
Chthonicola sagittata Speckled Warbler	The Speckled Warbler 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. The diet consists of seeds and insects, with most foraging taking place on the ground around tussocks and under bushes and trees. Pairs are sedentary and occupy a breeding territory of about ten hectares, with a slightly larger home-range when not breeding.	V		Absent	Unlikely	No impact
Climacteris picumnus victoriae Brown Treecreeper (eastern subspecies)	Found in eucalypt woodlands (including Box-Gum Woodland) and dry open forest of the inland slopes and plains inland of the Great Dividing Range; mainly inhabits woodlands dominated by stringybarks or other rough-barked eucalypts, usually with an open grassy understorey, sometimes with one or more shrub species; also found in mallee and River Red Gum (*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; also recorded, though less commonly, in similar woodland habitats on the coastal ranges and plains.	V		Present in landscape	Unlikely, quantity of habitat is insignificant, no habitat onsite	No impact
Daphoenositta chrysoptera Varied Sittella	The varied sitella 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.	V		Present in landscape	Unlikely, quantity of habitat is insignificant, no habitat onsite	No impact

Species name	Habitat requirements	TSC Act	EPBC Act	Presence of habitat	Likelihood of occurrence	Potential impact
Artamus cyanopterus cyanopterus Dusky Woodswallow	Dusky woodswallows are widespread in eastern, southern and south western Australia. The species occurs throughout most of New South Wales, but is sparsely scattered in, or largely absent from, much of the upper western region. Most breeding activity occurs on the western slopes of the Great Dividing Range. They 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. Dusky woodswallows eat invertebrates, mainly insects, which are captured whilst hovering or sallying above the canopy or over water. Also frequently hovers, sallies and pounces under the canopy, primarily over leaf litter and dead timber. Also occasionally take nectar, fruit and seed. Can be resident year round or migratory, depending on climatic conditions. In NSW, after breeding, birds migrate to the north of the state and to southeastern Queensland.	V		Present in landscape	Unlikely	No impact
Melanodryas cucullata cucullata Hooded Robin (south-eastern form)	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. Often 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.	V		Absent	Unlikely	No impact
Hieraaetus morphnoides Little Eagle	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. Lays two or three eggs during spring, and young fledge in early summer. Preys on birds, reptiles and mammals, occasionally adding large insects and carrion.	V		Small examples present, landscape habitat will support this species	Unlikely	No impact

Species name	Habitat requirements	TSC Act	EPBC Act	Presence of habitat	Likelihood of occurrence	Potential impact
Haliaeetus leucogaster White Bellied Sea Eagle	The White-bellied Sea-Eagle is a large eagle that has long broad wings and a short, wedge-shaped tail, it is distributed around the Australian coastline, including Tasmania, and well inland along rivers and wetlands of the Murray Darling Basin. It is widespread along the east coast, and along all major inland rivers and waterways. Habitats require the presence of large areas of open water including larger rivers, swamps, lakes, and the sea. Occurs at sites near the sea 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'. Nests are large structures built from sticks and lined with leaves or grass.	V		No specific habitat component for this species occur	Incidental occurrence is possible	No impact
Falco hypoleucos Grey Falcon	This falcon is sparsely distributed in NSW, chiefly throughout the Murray-Darling Basin, with the occasional vagrant east of the Great Dividing Range. The breeding range has contracted since the 1950s with most breeding now confined to arid parts of the range. Usually restricted to shrubland, grassland and wooded watercourses of arid and semi-arid regions, although it is occasionally found in open woodlands near the coast. Also occurs near wetlands where surface water attracts prey. Preys primarily on birds, especially parrots and pigeons, using high-speed chases and stoops; reptiles and mammals are also taken. Like other falcons it utilises old nests of other birds of prey and ravens, usually high in a living eucalypt near water or a watercourse; peak laying season is in late winter and early spring; two or three eggs are laid.	E		No specific habitat component for this species occur	Incidental occurrence is possible	No impact

Species name	Habitat requirements	TSC Act	EPBC Act	Presence of habitat	Likelihood of occurrence	Potential impact
Falco subniger Black Falcon	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. The Black Falcon occurs as solitary individuals, in pairs, or in family groups of parents and offspring.	V		No specific habitat component for this species occur	Incidental occurrence is possible	No impact
Circus assimilis Spotted Harrier	Occurs throughout the Australian mainland, except in densely forested or wooded habitats of the coast, escarpment and ranges, and rarely in Tasmania. Individuals disperse widely in NSW and comprise a single population. 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), with young remaining in the nest for several months. Preys on terrestrial mammals (eg bandicoots, bettongs, and rodents), birds and reptile, occasionally insects and rarely carrion.	V		No specific habitat component for this species occur	Incidental occurrence is possible	No impact
Ninox connivens Barking Owl	Inhabits woodland and open forest, including fragmented remnants and partly cleared farmland. It is flexible in its habitat use, and hunting can extend in to closed forest and more open areas. Sometimes able to successfully breed along timbered watercourses in heavily cleared habitats (e.g. western NSW) due to the higher density of prey on these fertile soils. Roost in shaded portions of tree canopies, including tall midstorey trees with dense foliage such as *Acacia* and *Casuarina* species. Preferentially hunts small arboreal mammals such as Squirrel Gliders and Ringtail Possums, but when loss of tree hollows decreases these prey populations the owl becomes more reliant on birds, invertebrates and terrestrial mammals such as rodents and rabbits. Requires very large permanent territories in most habitats due to sparse prey	V		Absent	Unlikely	No impact

Species name	Habitat requirements	TSC Act	EPBC Act	Presence of habitat	Likelihood of occurrence	Potential impact
	densities. Monogamous pairs hunt over as much as 6000 hectares, with 2000 hectares being more typical in NSW habitats.					
Ninox strenua Powerful Owl	The Powerful Owl inhabits a range of vegetation types, from woodland and open sclerophyll forest to tall open wet forest and rainforest. It requires large tracts of forest or woodland habitat but can occur in fragmented landscapes as well. It roosts by day in dense vegetation comprising species such as Turpentine *Syncarpia glomulifera*, Black She-oak *Allocasuarina littoralis*, Blackwood *Acacia melanoxylon*, Rough-barked Apple *Angophora floribunda*, Cherry Ballart *Exocarpus cupressiformis* and a number of eucalypt species. The main prey items are medium-sized arboreal marsupials, particularly the Greater Glider, Common Ringtail Possum and Sugar Glider. As most prey species require hollows and a shrub layer, these are important habitat components for the owl. In good habitats 400 ha can support a pair of Powerful Owls; where hollow trees and prey have been depleted the owls need up to 4000 ha. Powerful Owls nest in large tree hollows (at least 0.5 m deep), in large eucalypts (diameter at breast height of 80-240 cm) that are at least 150 years old.	V		Absent	Unlikely	No impact
Tyto novaehollandiae Masked Owl	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. Pairs have a large home-range of 500 to 1000 hectares. Roosts and breeds in moist eucalypt forested gullies, using large tree hollows or sometimes caves for nesting.	V		Absent	Unlikely	No impact
Numenius madagascariensis Eastern Curlew	In Australia, the eastern curlew is most commonly associated with sheltered coasts, especially estuaries, bays, harbors, inlets and coastal lagoons, with large intertidal mudflats or sandflats, often with beds of seagrass.		CE, M	Absent	Unlikely	No impact
Petroica phoenicea Flame Robin	Breeds in upland tall moist eucalypt forests and woodlands, often on ridges and slopes. Prefers clearings or areas with open understoreys. The groundlayer of the breeding habitat is dominated by native grasses and the shrub layer may be either sparse or dense. Occasionally occurs	V		Present in wider landscape	Unlikely, no onsite or nearby habitat	No impact

Species name	Habitat requirements	TSC Act	EPBC Act	Presence of habitat	Likelihood of occurrence	Potential impact
	in temperate rainforest, and also in herbfields, heathlands, shrublands and sedgelands at high altitudes. In winter lives in dry forests, open woodlands and in pastures and native grasslands, with or without scattered trees.					
Petroica boodang Scarlet Robin	Found from south east Queensland to south east South Australia and in Tasmania and south west Western Australia. In NSW, it occurs from the coast to the inland slopes. After breeding, some Scarlet Robins disperse to the lower valleys and plains of the tablelands and slopes. Some birds may appear as far west as the eastern edges of the inland plains in autumn and winter. This robin lives in dry eucalypt forests and woodlands. The understorey is usually open and grassy with few scattered shrubs. This species lives in both mature and regrowth vegetation. It occasionally occurs in mallee or wet forest communities, or in wetlands and tea-tree swamps. Scarlet Robin habitat usually contains abundant logs and fallen timber: these are important components of its habitat. The Scarlet Robin breeds on ridges, hills and foothills of the western slopes, the Great Dividing Range and eastern coastal regions; this species is occasionally found up to 1000 metres in altitude. The Scarlet Robin is 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 Scarlet Robins live in open grassy woodlands, and grasslands or grazed paddocks with scattered trees.	V		Present in wider landscape	Unlikely, no onsite or nearby habitat	No impact
Stagonopleura guttata Diamond Firetail	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 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).	V		Present in wider landscape	Unlikely, no onsite or nearby habitat	No impact

Species name	Habitat requirements	TSC Act	EPBC Act	Presence of habitat	Likelihood of occurrence	Potential impact
Rostratula australis Australian Painted Snipe	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.	E	E	Absent	Unlikely	No
Mammals						
Pteropus poliocephalus Grey-headed Flying-fox	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 within 20 km of a regular food source and are commonly found in gullies, close to water, in vegetation with a dense canopy. Can travel up to 50 km 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.	V	V	Suitable habitat absent	Unlikely, may fly over site	No
Myotis macropus Southern Myotis	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.	V		Suitable habitat absent	Unlikely, may fly over site	No
Chalinolobus dwyeri Large-eared Pied Bat	It is generally rare with a very patchy distribution in NSW. Roosts in caves (near their entrances), crevices in cliffs, old mine workings and in the disused, bottle-shaped mud nests of the Fairy Martin, frequenting low to mid-elevation dry open forest and woodland close to these features. Found in well-timbered areas containing gullies. This species probably forages for small, flying insects below the forest canopy.	V	V	Suitable habitat absent	Unlikely, may fly over site	No
Micronomus norfolkensis Eastern Coastal Free-tailed Bat	Found along the east coast of Australia from south Queensland to southern NSW. Occurs in dry sclerophyll forest, woodland, swamp forests and mangrove forests east of the Great Dividing Range. It roosts mainly in tree hollows but will also roost under bark or in man-made structures. Usually solitary but also recorded roosting communally, probably insectivorous.	V		Suitable habitat absent	Unlikely, may fly over site	No

Species name	Habitat requirements	TSC Act	EPBC Act	Presence of habitat	Likelihood of occurrence	Potential impact
Falsistrellus tasmaniensis Eastern False Pipistrelle	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.	V		Suitable habitat absent	Unlikely, may fly over site	No
Miniopterus schreibersii oceanensis Large Bentwing-bat	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 specific temperature and humidity regimes. Hunt in forested areas, catching moths and other flying insects above the tree top.	V		Suitable habitat absent	Unlikely, may fly over site	No
Miniopterus australis Little Bentwing-bat	Occurs along east coast and ranges of Australia from Cape York in Queensland to Wollongong in NSW. Prefers Moist eucalypt forest, rainforest, vine thicket, wet and dry sclerophyll forest, Melaleuca swamps, dense coastal forests and banksia scrub. Generally found in well-timbered areas. Little Bentwing-bats roost in caves, tunnels, tree hollows, abandoned mines, stormwater drains, culverts, bridges and sometimes buildings during the day, and at night forage for small insects beneath the canopy of densely vegetated habitats. They often share roosting sites with the Common Bentwing-bat and, in winter, the two species may form mixed clusters. Only five nursery sites /maternity colonies are known in Australia.	V		Suitable habitat absent	Unlikely, may fly over site	No
Scoteanax rueppellii Greater Broad-nosed Bat	Utilises a variety of habitats from woodland through to moist and dry eucalypt forest and rainforest, though it is most commonly found in tall wet forest. Although this species usually roosts in tree hollows, it has also been found in buildings. Open woodland habitat and dry open forest suits the direct flight of this species as it searches for beetles and other large, slow-flying insects; this species has been known to eat other bat species.	V		Suitable habitat absent	Unlikely, may fly over site	No
Saccolaimus flaviventris	Occurs across northern and eastern Australia it is a rare visitor in late summer and autumn in the most southerly parts of its range, being most of Victoria, south-western NSW and adjacent South Australia.	V		Suitable habitat absent	Unlikely, may fly over site	No

Species name	Habitat requirements	TSC Act	EPBC Act	Presence of habitat	Likelihood of occurrence	Potential impact
Yellow-bellied Sheathtail Bat	There are scattered records of this species across the New England Tablelands and North West Slopes. Forages in most habitats across its very wide range, with and without trees appears to defend an aerial territory. Seasonal movements are unknown; there is speculation about a migration to southern Australia in late summer and autumn.					
Dasyurus maculatus Spotted-tailed Quoll	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. Individual animals use hollow-bearing trees, fallen logs, small caves, rock outcrops and rocky-cliff faces as den sites. A generalist predator with a preference for medium-sized (500g-5kg) mammals. Consumes a variety of prey, including gliders, possums, small wallabies, rats, birds, bandicoots, rabbits, reptiles and insects. Females occupy home ranges up to about 750 hectares and males up to 3500 hectares. Are known to traverse their home ranges along densely vegetated creeklines.	V	E	Present in wider landscape, though no caves, rock outcrops or densely vegetated creeklines.	Unlikely, this species requires a very large home range and while it may occur on the site from time to time this would be very rare.	No, no habitat affected.
Pseudomys novaehollandiae New Holland Mouse	The New Holland Mouse has a fragmented distribution across Tasmania, Victoria, New South Wales and Queensland. It is known to inhabit open heathlands, woodlands and forests with a heathland understorey and vegetated sand dunes. It is a social animal, living predominantly in burrows shared with other individuals. Distribution is patchy in time and space, with peaks in abundance during early to mid stages of vegetation succession typically induced by fire.		V	Absent	Unlikely	No impact
Cercartetus nanus Eastern Pygmy-possum	Found in a broad range of habitats from rainforest through sclerophyll (including Box-Ironbark) forest and woodland to heath, but in most areas woodlands and heath appear to be preferred, except in north-eastern NSW where they are most frequently encountered in rainforest. Feeds largely on nectar and pollen collected from banksias, eucalypts and bottlebrushes; soft fruits are eaten when flowers are unavailable. Also 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,	V		Absent	Unlikely	No impact

Species name	Habitat requirements	TSC Act	EPBC Act	Presence of habitat	Likelihood of occurrence	Potential impact
	holes in the ground, abandoned bird-nests, Ringtail Possum dreys or thickets of vegetation, (e.g. grass-tree skirts).					
Petauroides volans Greater Glider	The Greater Glider occurs in eucalypt forests and woodlands. Feeds exclusively on eucalypt leaves, buds, flowers and mistletoe. Shelter during the day in tree hollows and will use up to 18 hollows in their home range. Occupy a relatively small home range with an average size of 1 to 3 ha.		V	Absent	Unlikely	No impact
Petaurus australis Yellow-bellied Glider	Occur in tall mature eucalypt forest generally in areas with high rainfall and nutrient rich soils. It inhabits a wide range of forest types but prefers resource rich forests where mature trees provide nesting hollows and tree species composition provides year-round continuity of food resources. 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. Feed primarily on plant and insect exudates, including nectar, sap, honeydew and manna with pollen and insects providing protein. Den, often in family groups, in hollows of large trees. Very mobile and occupy large home ranges between 20 to 85 ha.	V		Absent	Unlikely	No impact
Petaurus norfolcensis Squirrel Glider	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.	V		Absent	Unlikely	No impact
Petrogale penicillata Brush-tailed Rock-wallaby	Occupy rocky escarpments, outcrops and cliffs with a preference for complex structures with fissures, caves and ledges, often facing north. Browse on vegetation in and adjacent to rocky areas eating grasses and forbs as well as the foliage and fruits of shrubs and trees. Highly territorial and have strong site fidelity with an average home range size of about 15 ha.	E	V	Absent	Unlikely	No impact

Species name	Habitat requirements	TSC Act	EPBC Act	Presence of habitat	Likelihood of occurrence	Potential impact
Phascolarctos cinereus Koala	Inhabits a range of eucalypt forest and woodland communities, including coastal forests, the woodlands of the tablelands and western slopes, and the riparian communities of the western plains. 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.	V	V	Absent	Unlikely	No impact
Amphibians						
Litoria aurea Green and Golden Bell Frog	There is only one known population on the NSW Southern Tablelands. Inhabits marshes, dams and stream-sides, particularly those containing bullrushes (*Typha* spp.) or spikerushes (*Eleocharis* spp.). Optimum habitat includes water-bodies that are unshaded, free of predatory fish such as Plague Minnow (*Gambusia holbrooki*), have a grassy area nearby and diurnal sheltering sites available. Some sites, particularly in the Greater Sydney region occur in highly disturbed areas.		V	Present in landscape	Unlikely	No impact
Litoria booroolongensis Booroolong Frog	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.	E	E	Absent, no permanent streams.	Unlikely	No
Litoria littlejohni Littlejohn's Tree Frog, Health Frog	The majority of records are from within the Sydney Basin Bioregion with only scattered records south to the Victorian border and this species has not been recorded in southern NSW within the last decade. Records are isolated and tend to be at high altitude. This species breeds in the upper reaches of permanent streams and in perched swamps. Non-breeding habitat is heath based forests and woodlands where it shelters under leaf litter and low vegetation, and hunts for invertebrate prey either in shrubs or on the ground.		V	Absent, no breeding habitat (permanent streams).	Unlikely	No
Reptiles						

Species name	Habitat requirements	TSC Act	EPBC Act	Presence of habitat	Likelihood of occurrence	Potential impact
Suta flagellum Little Whip Snake	The Little Whip Snake is found within an area bounded by Crookwell in the north, Bombala in the south, Tumbarumba to the west and Braidwood to the east. Occurs in Natural Temperate Grasslands and grassy woodlands as well as in secondary grasslands derived from clearing of woodlands. Found on well drained hillsides, mostly associated with scattered loose rocks.	V		No suitable habitat in study area	Unlikely	No
Aprasia parapulchella Pink-tailed Legless Lizard	Inhabits sloping, open woodland areas with predominantly native grassy groundlayers, particularly those dominated by Kangaroo Grass (*Themeda australis*). 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.	V	V	Absent	Unlikely	No
Delma impar Striped Legless Lizard	Found mainly in Natural Temperate Grassland but has also been captured in grasslands that have a high exotic component. Also found in secondary grassland near Natural Temperate Grassland and occasionally in open Box-Gum Woodland. Habitat is where grassland is dominated by perennial, tussock-forming grasses such as Kangaroo Grass *Themeda australis*, spear-grasses *Austrostipa* spp. and poa tussocks *Poa* spp., and occasionally wallaby grasses *Rytidosperma* spp. Sometimes found in grasslands with significant amounts of surface rocks, which are used for shelter.		V	Absent	Unlikely	No
Varanus rosenbergi Rosenberg's Goanna	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. Individuals require large areas of habitat. Feeds on carrion, birds, eggs, reptiles and small mammals. 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. Generally slow moving; on the tablelands likely only to be seen on the hottest days.	V		Absent	Unlikely	No
Insects						
Synemon plana Golden Sun Moth	found in the area between Queanbeyan, Gunning, Young and Tumut. Occurs in Natural Temperate Grasslands and grassy Box-Gum	E	CE	Requires very specific	No.	No.

Species name	Habitat requirements	TSC Act	EPBC Act	Presence of habitat	Likelihood of occurrence	Potential impact
	Woodlands in which groundlayer is dominated by wallaby grasses *Austrodanthonia spp*. 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. Adults are short-lived (one to four days) and do not feed - having no functional mouthparts; the larvae are thought to feed exclusively on the roots of wallaby grasses.			habitat criteria, not present.		
Flora						
Bossiaea oligosperma Few-seeded Bossiaea	The Few-seeded Bossiaea is known from two disjunct areas - the lower Blue Mountains in the Warragamba area and the Windellama area where it is locally abundant. Occurs on stony slopes or ridges on sandstone in the Yerranderie area. Occurs in low woodland on loamy soil in the Windellama area.	V	V	Present, low woodland on loamy soil present.	Not detected during field surveys – unlikely to occur.	No - Potential impacts will not be to habitat present.
Caladenia tessellate Thick-lipped Spider-orchid	The Thick Lip Spider Orchid is known from the Sydney area, Wyong, Ulladulla and Braidwood in NSW. Populations in Kiama and Queanbeyan are presumed extinct. Generally found in grassy sclerophyll woodland on clay loam or sandy soils, though the population near Braidwood is in low woodland with stony soil. The single leaf regrows each year. Flowers appear between September and November.		V	Present, grassy sclerophyll woodland present in landscape.	Unlikely	No - Potential impacts will not be to habitat present.
Diuris aequalis Buttercup Doubletail	The Buttercup Doubletail has been recorded in Kanangra-Boyd National Park, Gurnang State Forest, towards Wombeyan Caves, the Taralga - Goulburn area, and the ranges between Braidwood, Tarago and Bungendore. Recorded in forest, low open woodland with grassy understorey and secondary grassland on the higher parts of the Southern and Central Tablelands (especially on the Great Dividing Range). Leaves die back each year and resprout just before flowering. Populations tend to contain few, scattered individuals; despite	E	V	Present, grassy woodland present in landscape.	Unlikely	No - Potential impacts will not be to habitat present.

Species name	Habitat requirements	TSC Act	EPBC Act	Presence of habitat	Likelihood of occurrence	Potential impact
	extensive surveys, only about 200 plants in total, from 20 populations are known.					
Eucalyptus aggregata Black Gum	Black Gum is found in the NSW Central and Southern Tablelands, with small isolated populations in Victoria and the ACT. Black Gum has a moderately narrow distribution, occurring mainly in the wetter, cooler and higher parts of the tablelands, for example in the Blayney, Crookwell, Goulburn, Braidwood and Bungendore districts. Grows in the lowest parts of the landscape. Grows on alluvial soils, on cold, poorly-drained flats and hollows adjacent to creeks and small rivers. Often grows with other cold-adapted eucalypts, such as Snow Gum (*Eucalyptus pauciflora*), Ribbon Gum (*E. viminalis*), Candlebark (*E. rubida*), Black Sallee (*E. stellulata*) and Swamp Gum (*E. ovata*). Black Gum usually occurs in an open woodland formation with a grassy groundlayer dominated either by River Tussock (*Poa labillardierei*) or Kangaroo Grass (*Themeda australis*), but with few shrubs.		V	Present, suitable topographic position and associated species.	Not detected during field surveys – unlikely to occur.	No.
Lepidium hyssopifolium Basalt Pepper-cress	In NSW, there is a small population near Bathurst, one populations at Bungendore, and one near Crookwell. In NSW the species was known to have occurred in both woodland with a grassy understorey and in grassland. The species may be a disturbance opportunist. The cryptic and non-descript nature (appearing like several weed species) of the species makes it hard to detect.		E	Present, grassy woodland and grassland present.	Unlikely	No - Potential impacts will not be to habitat present.
Leucochrysum albicans var. tricolor Hoary Sunray	In NSW and ACT, Hoary Sunray occurs in grasslands, grassy areas in woodlands and dry open forests, and modified habitats, on a variety of soil types including clays, clay loams, stony and gravely soil. Plants can be found in natural or semi-natural vegetation and grazed or ungrazed habitat. The Hoary Sunray is a low tufted to mounding perennial straw daisy. It grows to 15 cm tall and flowers in spring and summer. After flowering it dries out to rootstock.		E	Not present in the study area.	Unlikely	No, potential habitat will not be impacted.
Rutidosis leptorrhynchoides	Local populations at Goulburn, the Canberra - Queanbeyan area and at Michelago. Other populations occur in Victoria. Occurs in Box-Gum Woodland, secondary grassland derived from Box-Gum Woodland or in	E	E	Not present in the study area.	Unlikely.	No, potential habitat will

Species name	Habitat requirements	TSC Act	EPBC Act	Presence of habitat	Likelihood of occurrence	Potential impact
Button Wrinklewort	Natural Temperate Grassland; and often in the ecotone between the two communities.					not be impacted.
Ammobium craspedioides Yass Daisy	Found from near Crookwell on the Southern Tablelands to near Wagga Wagga on the South Western Slopes. Most populations are in the Yass region. 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*).	V	V	Not present in the study area.	Unlikely.	No, potential habitat will not be impacted.
Dodonaea procumbens Trailing Hop-bush	Creeping Hop-bush is found in the dry areas of the Monaro, between Michelago and Dalgety. Here it occurs mostly in Natural Temperate Grassland or Snow Gum Eucalyptus pauciflora Woodland. There is one population at Lake Bathurst (the northern-most occurrence of the species). Grows in Natural Temperate Grassland or fringing eucalypt woodland of Snow Gum (*Eucalyptus pauciflora*), in open bare patches where there is little competition from other species. It is found on sandy-clay soils, usually on or near vertically-tilted shale outcrops. Often occurs on roadside batters			Not present in the study area.	Unlikely.	No, potential habitat will not be impacted.
Pomaderris delicata Delicate Pomaderris	Delicate Pomaderris is known from only two sites; between Goulburn and Bungonia and south of Windellama. At both known sites the Delicate Pomaderris grows in dry open forest dominated by *Eucalyptus sieberi* with a dense she-oak understorey.	CE	CE	Not present in the study area.	Unlikely.	No, potential habitat will not be impacted.
Thesium austral Austral Toadflax	Austral Toad-flax is found in very small populations scattered across eastern NSW, along the coast, and from the Northern to Southern Tablelands. Occurs in grassland on coastal headlands or grassland and grassy woodland away from the coast. Often found in association with Kangaroo Grass (*Themeda australis*).		V	Not present in the study area.	Unlikely.	No, potential habitat will not be impacted.
Ecological Communities						
Natural Temperate Grassland of the	The ecological community is characterised by a dominance of native perennial tussock grasses. There is usually a second, lower stratum of shorter perennial and annual grasses and forbs growing between the		CE	Absent.	No.	No.

Species name	Habitat requirements	TSC Act	EPBC Act	Presence of habitat	Likelihood of occurrence	Potential impact
Southern Tablelands of NSW and the Australian Capital Territory	taller tussocks, and there may be a third discontinuous stratum of even smaller forbs, grasses and cryptogams. Sedges and rushes may also occur, particularly in seasonally wet areas. A tree and shrub stratum may be present, but with only up to 10% projective foliage cover of each being present. Variation in the composition and structure of the ecological community occurs as a result of intrinsic site factors (e.g. drainage patterns, soil characteristics) and agricultural practices applied since post-1788 settlement. The major dominant or co-dominant grass species are: *Themeda triandra* (kangaroo grass), *Poa sieberiana* (snowgrass), *Poa labillardierei* (river tussock grass), *Austrostipa bigeniculata* (kneed speargrass), *Austrostipa scabra* (slender speargrass), *Bothriochloa macra* (red grass), various *Rytidosperma* species syn. *Austrodanthonia* species (wallaby grasses), *Lachnagrostis filiformis* (blowngrass) and *Sorghum leiocladum* (wild sorghum).					
White Box-Yellow Box-Blakely's Red Gum Grassy Woodland and Derived Native Grassland (Commonwealth) White Box Yellow Box Blakely's Red Gum Woodland (NSW)	Box – Gum Grassy Woodlands and Derived Grasslands are characterised by a species-rich understorey of native tussock grasses, herbs and scattered shrubs, and the dominance, or prior dominance, of White Box, Yellow Box or Blakely's Red Gum trees. The tree-cover is generally discontinuous and consists of widely-spaced trees of medium height in which the canopies are clearly separated. Associated and occasionally co-dominant trees include, but are not restricted to: Grey Box (*Eucalyptus microcarpa*), Fuzzy Box (*E. conica*), Apple Box (*E. bridgesiana*), Red Box (*E. polyanthemos*), Red Stringybark (*E. macrorhyncha*), White Cypress Pine (*Callitris glaucophylla*), Black Cypress Pine (*C. enderlicheri*), Long-leaved Box (*E. goniocalyx*), New England Stringybark (*E. calignosa*), Brittle Gum (*E. mannifera*), Candlebark (*E. rubida*), Argyle Apple (*E. cinerea*), Kurrajong (*Brachychiton populneus*) and Drooping She-oak (*Allocasuarina verticillata*). 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*	CEEC	CE	Absent.	No.	No.

Species name	Habitat requirements	TSC Act	EPBC Act	Presence of habitat	Likelihood of occurrence	Potential impact
	sieberiana), wallaby grasses (*Austrodanthonia* 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.). This ecological community occurs in areas where rainfall is between 400 and 1200 mm per annum, on moderate to highly fertile soils where resources such as water and nutrients are abundant.					
Tablelands Snow Gum, Black Sallee, Candlebark and Ribbon Gum Grassy Woodland in the South Eastern Highlands, Sydney Basin, South East Corner and NSW South Western Slopes Bioregions	Characterised by the presence or prior occurrence of Snow Gum, Candlebark, Ribbon Gum and/or Black Sallee trees. The trees may occur as pure stands, mixtures of the four species or in mixtures with other trees, including wattles. Commonly co-occurring eucalypts include Apple Box (*Eucalyptus bridgesiana*), Swamp Gum (*E. ovata*), Black Gum (*E. aggregata*), Mountain Gum (*E. dalrympleana*), Broad-leaved Peppermint (*E. dives*) and Narrow-leaved Peppermint (*E. radiata*) and commonly occurring tree-layer or mid-layer wattles include Blackwood (*Acacia melanoxylon*) and Silver Wattle (*A. dealbata*). The understorey in intact sites is characterised by native grasses and a high diversity of herbs; commonly encountered include Kangaroo Grass (*Themeda australis*), Common Snow-grass (*Poa sieberiana*), River Tussock (*Poa labillardierei*), Short Snow-grass (*Poa meionectes*), various wallaby-grasses (*Rytidosperma* spp.), various spear-grasses (*Austrostipa* spp.), Common Everlasting (*Chrysocephalum apiculatum*), Scaly-buttons (*Leptorhynchos squamatus*), Common Woodruff (*Asperula conferta*), Wattle Mat-rush (*Lomandra filiformis*), St John's Wort (*Hypericum gramineum*), Stinking Pennywort (*Hydrocotyle laxiflora*) and Slender Tick-trefoil (*Desmodium varians*). Shrubs are generally sparse or absent, though they may be locally common. Sub-shrubs (woody species <0.5 m tall) may be common. The most common shrubs and sub-shrubs include Gruggly-bush (*Melicytus* sp. 'Snowfields'), Urn Heath (*Melichrus urceolatus*), Sweet	EEC		Absent.	No.	No.

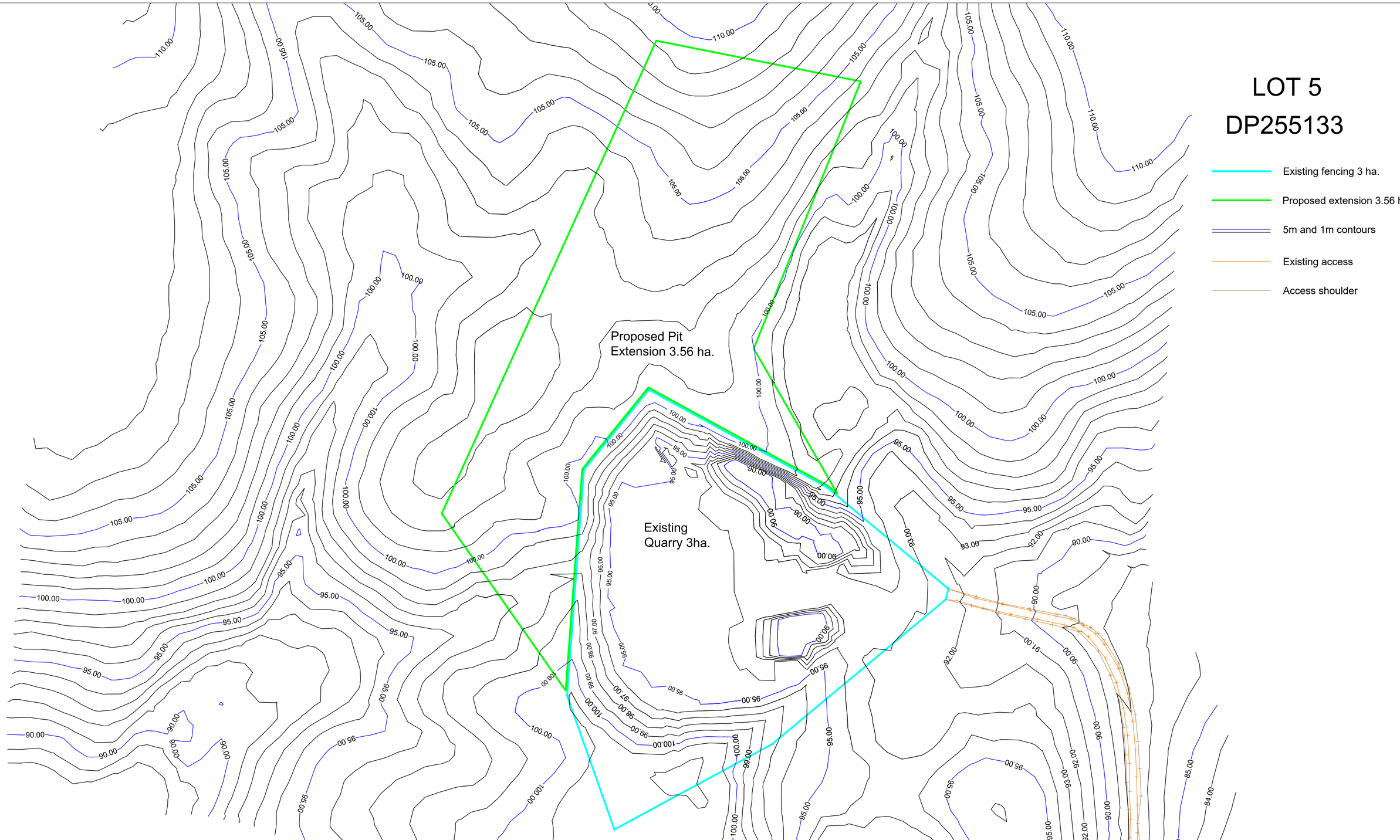
Species name	Habitat requirements	TSC Act	EPBC Act	Presence of habitat	Likelihood of occurrence	Potential impact
	Bursaria (*Bursaria spinosa*) and Mountain Mirbelia (*Mirbelia oxylobioides*).					
Migratory Species						
Hirundapus caudacutus White-throated Needletail	In Australia, the White-throated Needletail is almost exclusively aerial, from heights of less than 1 m up to more than 1000 m above the ground. Although they occur over most types of habitat, they are probably recorded most often above wooded areas, including open forest and rainforest, and may also fly between trees or in clearings, below the canopy, but they are less commonly recorded flying above woodland. When flying above farmland, they are more often recorded above partly cleared pasture, plantations or remnant vegetation at the edge of paddocks.		M	Absent.	Unlikely, aerial species, rarely lands in Australia.	No
Monarcha melanopsis Black-faced Monarch	In NSW and the ACT, the species occurs around the eastern slopes and tablelands of the Great Dividing Range. The Black-faced Monarch mainly occurs in rainforest ecosystems, including semi-deciduous vine-thickets, complex notophyll vine-forest, tropical (mesophyll) rainforest, subtropical (notophyll) rainforest, mesophyll (broadleaf) thicket/ shrubland, warm temperate rainforest, dry (monsoon) rainforest and (occasionally) cool temperate rainforest.		M	Absent, suitable ecosystems absent.	Unlikely	No
Motacilla flava Yellow Wagtail	This insectivorous bird inhabits open country near water, such as wet grassland. Has been recorded in short grass, bare ground, swamp margins, sewage ponds, saltmarshes, ploughed land, town lawns. It picks small invertebrates from the ground or water surface, but may also make short flights to take prey from the air or follow grazing livestock to take insects stirred up as they feed.		M	Absent, large water bodies absent.	Unlikely	No
Myiagra cyanoleuca Satin Flycatcher	Satin Flycatchers are mainly recorded in eucalypt forests, especially wet tall sclerophyll forest, often dominated by eucalypts such as Brown Barrel, *Eucalypt fastigata*, Mountain Gum, *E. dalrympleana*, Mountain Grey Gum, Narrow-leaved Peppermint, Ribbon Gum, or occasionally Mountain Ash, *E. regnans*. Such forests usually have a tall shrubby understorey of tall acacia. In higher altitude Black Sallee, *E. stellulata*, woodlands, they are often associated with tea-trees and tree-ferns.		M	Present, dry sclerophyll forests and woodlands containing preferred	Unlikely	No

Species name	Habitat requirements	TSC Act	EPBC Act	Presence of habitat	Likelihood of occurrence	Potential impact
	They sometimes also occur in dry sclerophyll forests and woodlands, usually dominated by eucalypts such as Blakely's Red Gum, *E. blakelyi*, Mugga Ironbark, *E. sideroxylon*, Yellow Box, White Box, *E. albens*, Manna Gum or stringybarks, including Red Stringybark, *E.macrorhyncha* and Broad-leaved Stringybark, usually with open grassy understorey			species occur.		
Rhipidura rufifrons Rufous Fantail	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. They also occur in subtropical and temperate rainforests; where they are recorded in temperate Lilly Pilly (*Acmena smithi*) rainforest, with Grey Myrtle (*Backhousia myrtifolia*), Sassafras (*Doryphora sassafras*) and Sweet Pittosporum (*Pittosporum undulatum*) subdominants. They occasionally occur in secondary regrowth, following logging or disturbance in forests or rainforests. Sometimes recorded in drier sclerophyll forests and woodlands, including Spotted Gum (*Eucalyptus maculata*), Yellow Box (*E. melliodora*), ironbarks or stringybarks, often with a shrubby or heath understorey.		M	Absent	Unlikely	No
Actitis hypoleucos Common Sandpiper	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. Generally the species forages in shallow water and on bare soft mud at the edges of wetlands; often where obstacles project from substrate, e.g. rocks or mangrove roots. Birds sometimes venture into grassy areas adjoining wetlands.		M	Absent	Unlikely	No
Calidris acuminata	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,		M	Absent	Unlikely	No

Species name	Habitat requirements	TSC Act	EPBC Act	Presence of habitat	Likelihood of occurrence	Potential impact
Sharp-tailed Sandpiper	lakes and pools near the coast, and dams, waterholes, soaks, bore drains and bore swamps, saltpans and hypersaline saltlakes inland. They use flooded paddocks, sedgelands and other ephemeral wetlands, but leave when they dry.					
Calidris melanotos Pectoral Sandpiper	In Australasia, the Pectoral Sandpiper prefers shallow fresh to saline wetlands. 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.		M	Absent	Unlikely	No
Gallinago hardwickii Latham's Snipe	Latham's Snipe occurs in a wide variety of permanent and ephemeral wetlands. They usually occur in open, freshwater wetlands that have some form of shelter (usually low and dense vegetation) nearby. They generally occupy flooded meadows, seasonal or semi-permanent swamps, or open waters, but various other freshwater habitats can be used including bogs, waterholes, billabongs, lagoons, lakes, creek or river margins, river pools and floodplains. They may be found in a variety of vegetation types or communities including tussock grasslands with rushes, reeds and sedges, coastal and alpine heathlands, lignum or tea-tree scrub, button-grass plains, alpine herbfields and open forest.		M	Absent	Unlikely	No
Pandion haliaetus Osprey	Eastern Ospreys occur in coastal habitats and terrestrial wetlands of tropical and temperate Australia and offshore islands. They are mostly found in coastal areas but occasionally travel inland along major rivers, particularly in northern Australia. They require extensive areas of open fresh, brackish or saline water for foraging. They frequent a variety of wetland habitats. They may occur over atypical habitats such as heath, woodland or forest when travelling to and from foraging sites.		M	Absent	Unlikely	No

Appendix 2 – Concept Plans

Laterals Planning



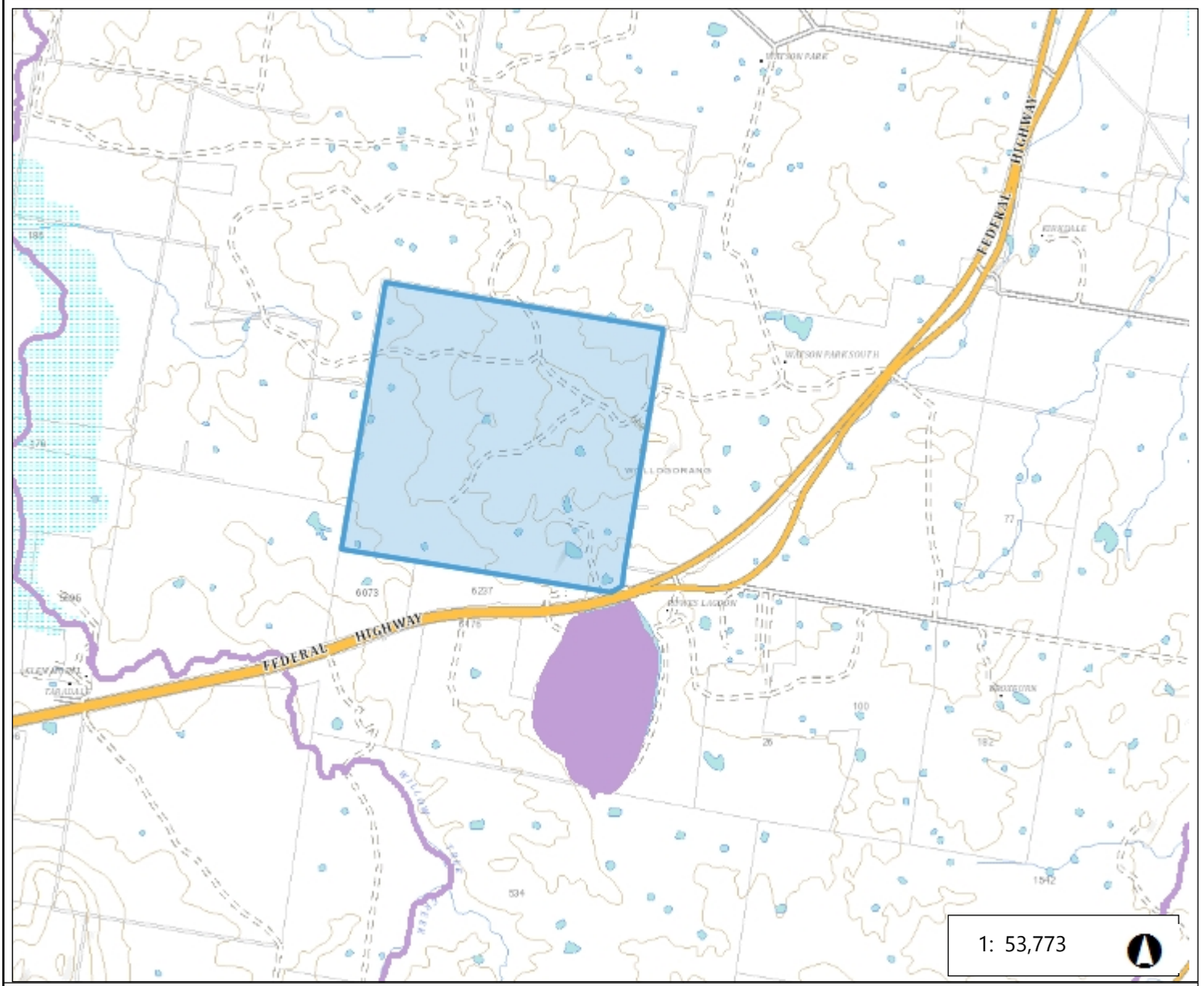
			Survey data: Divalls	SCALE 1:1000	LATERALS ENGINEERING & MANAGEMENT LATERALS PLANNING	Sheet Subject SITE PLAN	UPPER LACHLAN SHIRE COUNCIL
			Designed: R Mowle				LOT 5 DP 255133
			Drawn: D Papadopoulos				FEDERAL HIGHWAY, WOLLOGORANG
			Checked: R Mowle				PROPOSED QUARRY EXTENSION
			Datum: AHD	Sheet No. 1 / No. of sheets 1 / Sheet size A1	1st Floor, 35 Montague Street Goulburn NSW 2580 Ph: 4821 0973 Fax: 4822 0777 48 Johns River Road, Johns River NSW 2443 Mobile 0327 210 973		
A	2	19/2/2021	Laterals: 1938				
Issue	Amendment	Date					

Appendix 3 –

Biodiversity Offset Scheme Entry Threshold Map & Report

NSW Department of Customer Service

Biodiversity Offset Scheme (BOS) Entry Threshold Map



2,731.7 0 1,365.84 2,731.7 Metres

WGS_1984_Web_Mercator_Auxiliary_Sphere

This map is a user generated static output from an Internet mapping site and is for reference only. Data layers that appear on this map may or may not be accurate, current, or otherwise reliable.

THIS MAP IS NOT TO BE USED FOR NAVIGATION

Legend

- Biodiversity Values that have been mapped for more than 90 days
- Biodiversity Values added within last 90 days

Notes

Biodiversity Values Map and Threshold Report

Results Summary

Date of Calculation	14/11/2020 11:10 AM		**BDAR Required***
Total Digitised Area	398.7	ha	
Minimum Lot Size Method	LEP		
Minimum Lot Size	40	ha	
Area Clearing Threshold	1	ha	
Area clearing trigger Area of native vegetation cleared	Unknown #		Unknown #
Biodiversity values map trigger Impact on biodiversity values map(not including values added within the last 90 days)?	no		no
Date of the 90 day Expiry	N/A		

*If BDAR required has:

- at least one 'Yes': you have exceeded the BOS threshold. You are now required to submit a Biodiversity Development Assessment Report with your development application. Go to https://customer.lmbc.nsw.gov.au/assessment/AccreditedAssessor to access a list of assessors who are accredited to apply the Biodiversity Assessment Method and write a Biodiversity Development Assessment Report
- 'No': you have not exceeded the BOS threshold. You may still require a permit from local council. Review the development control plan and consult with council. You may still be required to assess whether the development is '"likely to significantly affect threatened species' as determined under the test in s. 7.3 of the Biodiversity Conservation Act 2016. You may still be required to review the area where no vegetation mapping is available.

Where the area of impact occurs on land with no vegetation mapping available, the tool cannot determine the area of native vegetation cleared and if this exceeds the Area Threshold. You will need to work out the area of native vegetation cleared - refer to the BOSET user guide for how to do this.

On and after the 90 day expiry date a BDAR will be required.

Disclaimer

This results summary and map can be used as guidance material only. This results summary and map is not guaranteed to be free from error or omission. The State of NSW and Office of Environment and Heritage and its employees disclaim liability for any act done on the information in the results summary or map and any consequences of such acts or omissions. It remains the responsibility of the proponent to ensure that their development application complies will all aspects of the *Biodiversity Conservation Act 2016.*

The mapping provided in this tool has been done with the best available mapping and knowledge of species habitat requirements. This map is valid for a period of 30 days from the date of calculation (above).

Acknowledgement

I as the applicant for this development, submit that I have correctly depicted the area that will be impacted or likely to be impacted as a result of the proposed development.

Signature_____ Date:14/11/2020 11:10 AM