Terrestrial and Aquatic Biodiversity Assessment

Bombala Weir and Low-level Bridge

A report prepared for Zenith Town Planning

FEBRUARY 2016

Report No. 15.EcIA-104

Citation

EnviroKey (2016) Terrestrial and Aquatic Biodiversity Assessment: Bombala Weir and Low-level Bridge. A report prepared by EnviroKey for Zenith Town Planning. Report No. 15.EcIA-104. Final Report. Version 1.0. 19 February 2016.

EnviroKey	Project Title:	Terrestrial and Aquatic Biodiversity Assessment: Bombala Weir and Low-level Bridge
Project Identifier :	15.EcIA.104	
Project Location:	\\ENVIROKEY\Public\Projects\Zenith	

Revision	Date	Prepared by (name)	Reviewed by (name)	Approved by (name)
Draft	16.12.2015	JW, LS	SS	Steve Sass (CEnvP)
Final Draft	29.01.2016	JW	SS	Steve Sass (CEnvP)
Final	19.02.2016	JW	SS	Steve Sass (CEnvP)

Commercial In Confidence

Disclaimer

The scope of work for this report was defined by time and budgetary constraints and the availability of other reports and data.

EnviroKey accept no liability or responsibility for or in respect of any use of or reliance upon this report and its supporting material in whole or in part by any third party. Information in this report is not intended to be a substitute for site specific assessment or legal advice in relation to any matter.

Envirokey Pty. Ltd
PO Box 7231 Tathra NSW 2550 t 02 6494 5422
www.envirokey.com.au info@envirokey.com.au
ABN 35150812570

Executive Summary

EnviroKey were engaged by Zenith Town Planning to carry out a Terrestrial and Aquatic Biodiversity Assessment (TABA) that would be used to inform a planning proposal to rezone land that is subject to the Bombala Local Environmental Plan (LEP) 2012 for a proposal to construct a weir and low-level bridge at Bombala.

The area of investigation is mostly dominated by non-native vegetation including four species of noxious weed. Two native vegetation communities were found to occur within the vicinity of the proposal which corresponded with the NSW Vegetation Types Database. These were *Snow Gum - Candle Bark woodland on broad valley flats of the tablelands and slopes, South Eastern Highlands* (SR637) and *Tea-tree tall riparian shrubland, South Eastern Highlands, South East Corner and Australian Alps* (SR657). The biometric vegetation type SR637 meets with the identification guidelines for the threatened ecological community known as *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 - Southern Rivers* (Tablelands Snow Gum Grassy Woodland) listed as endangered under the NSW *Threatened Species Conservation Act 1995* (TSC Act). No threatened flora species were found within the vicinity of the proposal, nor are any expected to occur given the previous disturbance that has occurred. The Bombala River also forms part of the Endangered Ecological Community of the Snowy River Catchment, listed under the *Fisheries Management Act 1994* (FM Act) as the *Aquatic Ecological Community in the Catchment of the Snowy River in NSW*.

Three general habitats were found to occur; woodland/shrubland, aquatic habitat and introduced grassland/trees. The fauna species detected are typical of those occurring in woodlands and adjacent to waterways in the South East Corner bioregion. No threatened fauna species listed under the schedules of the FM Act, TSC Act or the Commonwealth Environment Protection and Biodiversity Conservation Act 1999 (EPBC Act) were detected within the vicinity of the proposal. One migratory species listed under the EPBC Act was observed. A total of five threatened and migratory biota have a moderate to high potential or are known to occur in the vicinity of the proposal based on detailed habitat assessment.

The footprint of the proposal was not finalised therefore the direct and indirect impact of the proposal could not be calculated. However, it is anticipated that some introduced grassland/trees would be removed during the construction of the weir and low-level bridge and some of the 0.845 hectares of native vegetation (not including planted natives) would be impacted by the elevated water levels associated with the weir should the proposal proceed.

Based on the current concept design, the proposal is '*unlikely*' to have a significant effect on any listed threatened flora and fauna species, communities, populations and their habitats in accordance with the TSC Act and FM Act. However, once a design is finalised and the rezoning proceeds, detailed assessment would be required as part of the Review of Environmental Factors of the proposed activities. Additional assessment would also be

required to determine whether the proposal is '*likely*' to have a significant effect on any EPBC Act listed threatened and migratory biota and their habitats or other matters of national environmental significance. A series of mitigation measures are proposed to minimise potential impact to biodiversity.

Definitions & Acronyms used within this report

Area of Investigation - includes the subject site and any additional areas that are likely to be affected by the proposal, either directly or indirectly

BBAM - Biometric/Biobanking Assessment Methodologies

BVT - Biometric Vegetation Type

CMA - Catchment Management Authority

DotE - Department of the Environment

EP&A Act - NSW *Environmental Planning and Assessment Act 1979*

EPBC Act - Commonwealth Environment *Protection and Biodiversity Conservation Act 1995*

FM Act - NSW *Fisheries Management Act 1994*

LGA - Local Government Area

Likely - taken to be a real chance or possibility

Locality - means the area within a 10 km radius of the proposal

migratory species - a species specified in the schedules of the EPBC Act

*NV Ac*t - NSW *Native Vegetation Act 2003*

OEH - NSW Office of Environment & Heritage

region - means a biogeographical region that has been recognised and documented such as the Interim Biogeographical Regions of Australia (IBRA) (Thackway and Creswell 1995). The study area is located within the South Eastern Highlands Bioregion

RMS - Roads and Maritime Authority

SIS -Species Impact Statement

SPRAT - Species Profile and Threats Database for species listed in the schedules of the Commonwealth EPBC Act

TEC - Threatened Ecological Community

threatened biota - means those threatened species, endangered populations or endangered ecological communities considered known or likely to occur in the study area

threatened species - a species specified in the schedules of the TSC Act or the EPBC Act

TSC Act - NSW *Threatened Species Conservation Act 1995*

Table of Contents

Figures, Maps & Tables

1 INTRODUCTION

1.1 BACKGROUND

EnviroKey were engaged by Zenith Town Planning to carry out a Terrestrial and Aquatic Biodiversity Assessment (TABA) that would be used to advise an amendment to rezone land under the Bombala Local Environmental Plan (LEP) 2012 for a proposal to construct and operate a weir and low-level bridge at Bombala.

1.2 THE PROPOSAL

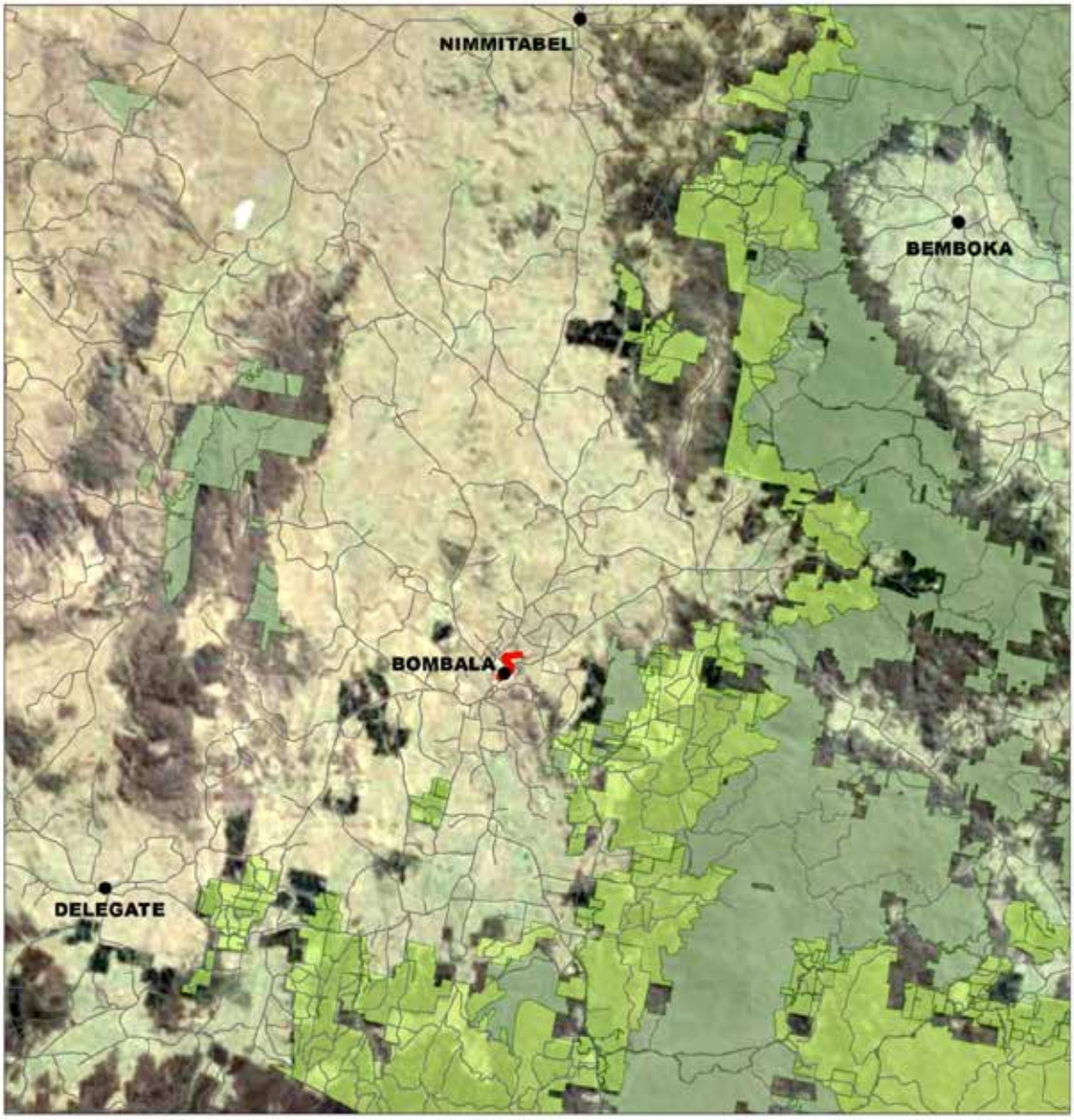
Bombala Council propose to carry out the construction of a two lane low-level bridge across Bombala River and the construction of a water storage weir on the Bombala River to augment the existing town water supply storage capacity. The bridge and weir would be constructed adjacent to each other on the Bombala River, at the location of the Bombala River Walk foot bridge about 360 metres west-south-west of the existing Monaro Highway road bridge. The weir would be located on top of a natural sandbar and would most likely incorporate a gabion rock basket and fish ladder. The structure would raise the level of the existing pool by about 1.5 metres, which would extend upriver to the existing weir on Coolumbooka River, where the elevation of the water level is not expected to exceed about 10 centimetres. The road bridge would be a two lane concrete bridge to meet with relevant Roads and Maritime Services (RMS) heavy vehicle specifications. The design span would be about 37 metres with a multi-span structure proposed. The abutment design style has not been finalised at this stage.

The regional location of the proposal is provided in **Map 1** while the proposal is identified on **Map 2**. The proposal is required to augment the existing water storage supply for the town of Bombala and also provide a bridge that may be able to provide a heavy vehicle bypass of the Bombala Town Centre.

1.3 AREA OF INVESTIGATION

The study area or area of investigation is located in Bombala adjacent to the Bombala River, in the South Eastern Highlands Bioregion (NPWS 2003; Thackway and Creswell 1995), Bombala local government area (LGA), South East Local Land Service (LLS) region (Previously Southern Rivers Catchment Management Authority (CMA), Monaro (Part C) sub-region) and the Monaro Plains Meta-sediments landscape system (Mitchell 2002). The regional location of the proposal is provided (**Map 1**).

The extent of the area of investigation has been developed to allow flexibility in preparing the final design for the proposal by considering a larger area than required and to allow this TABA to consider any potential indirect impact of the proposal (**Map 2**).



Legend

- Towns
- Roads
- Area of Investigation
- OEH Estate
- Forest Estate

EnviroKey
PO Box 7231, Tathra NSW 2550
t: 02 6494 5422

Map datum, projection: GDA 1994, MGA Zone 55

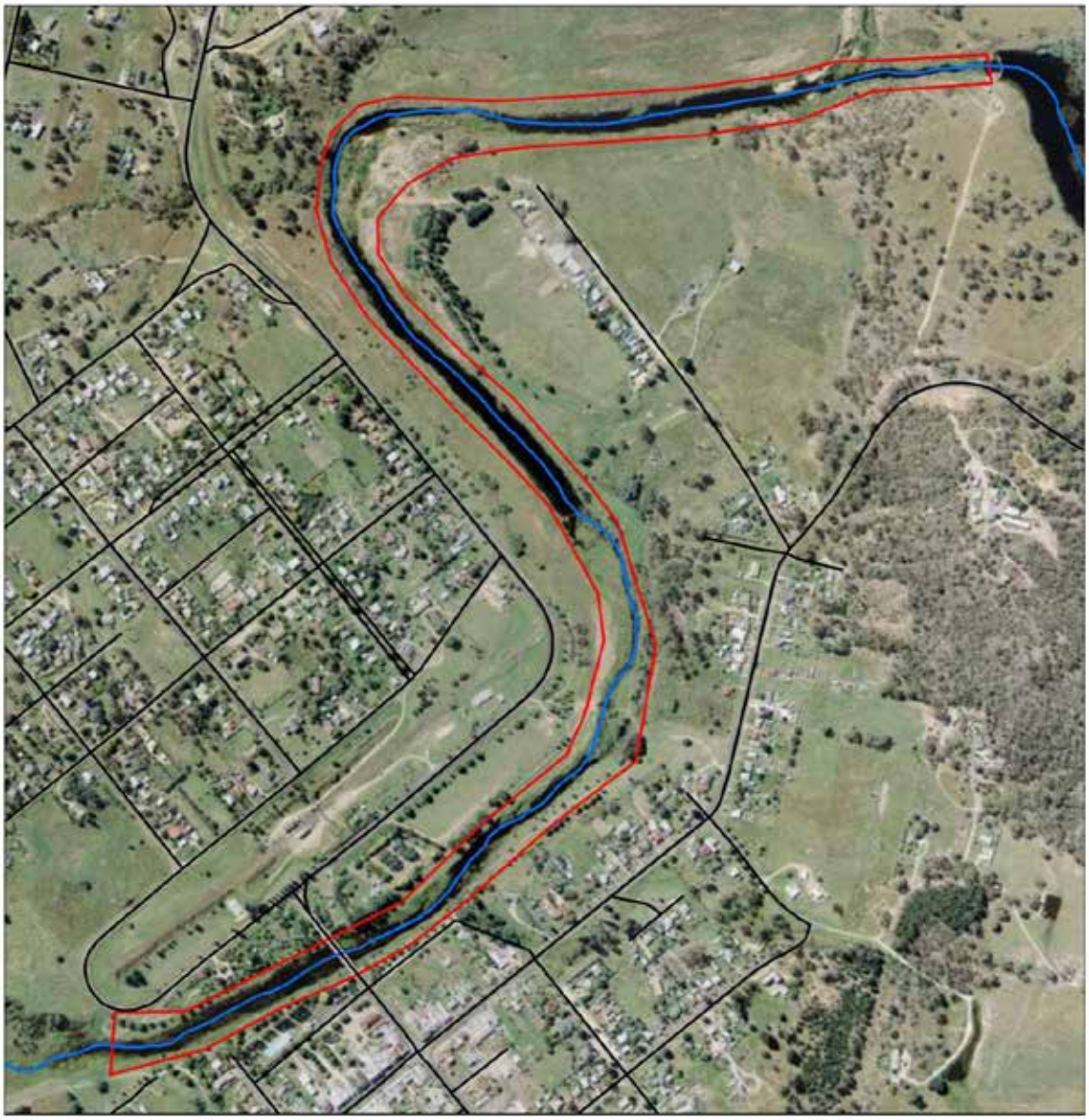
Data Sources:
Base Topographic: GeoScience Australia
OEH Estate: OEH Spatial Data Download
Forest Estate: Forests NSW
Area of Investigation: EnviroKey
Aerial Image: Google Earth

Mapping date: January, 2016

N

0 10 20 30 km

Map 1: Regional location of the area of investigation.



Map 2: Location and extent of the area of investigation.

1.4 LEGISLATIVE CONTEXT

1.4.1 NSW Environmental Planning and Assessment Act 1979

The *Environmental Planning and Assessment Act 1979* (EP&A Act) provides the framework for the assessment of Bombala Council activities. Council projects are assessed and approved or determined under the following regimes:

1. **Part 5** applies to the majority of council projects. Usually a review of environmental factors (REF) is prepared to assess the environmental impact of a project prior to commencing the work.

2. **Part 5.1** applies to State significant infrastructure. These major projects require approval from the Minister for Planning and Infrastructure. An environmental impact statement is prepared in accordance with the requirements of the Director-General of the Department of Planning and Infrastructure.

3. **Part 4** applies to projects that require development consent from a consent authority (usually a local council). A statement of environmental effects or environmental impact statement (for designated development) is prepared to assess environmental impact.

4. **Division 4.1 of Part 4** applies to State significant development. These major projects require approval from the Minister for Planning and Infrastructure. An environmental impact statement is prepared in accordance with the requirements of the Director-General of the Department of Planning and Infrastructure.

Clause 5A and 5C of the EP&A Act requires that the **significance** of the impact of the proposal on terrestrial and aquatic threatened species, populations and endangered ecological communities is assessed as follows:

1. **Part 5.1** – the proponent must demonstrate the proposal would improve or maintain biodiversity outcomes. Threatened species assessment guidelines have been developed to assist in making this assessment. Assessment of biodiversity issues is to be in accordance with the requirements of the Director-General of the Department of Planning and Infrastructure.

2. **Part 5** (and Part 4 where relevant) – a **seven-part test** is prepared in accordance with Clause 5A(2).

1.4.2 Threatened Species Conservation Act 1995

The *Threatened Species Conservation Act 1995* (TSC Act) specifies seven factors which must be considered by decision-makers regarding the effect of a proposed development or activity on threatened species, populations or ecological communities, or their habitats (DECC 2007). These factors form part of the threatened species assessment process under the *Environmental Planning and Assessment Act 1979* (*EP&A Act*) and are collectively referred to as the 'seven-part test' (DECC 2007).

Determining authorities have a statutory obligation, under Part 5 of the *EP&A Act*, to consider whether a proposal is likely to significantly affect threatened species, populations or ecological communities, or their habitats by applying the seven-part test. If the determination is made that there is likely to be a significant effect then either of the following must be carried out:

- A Species Impact Statement (SIS) must be prepared and the concurrence of the Director-General of the Office of Environment and Heritage (OEH) obtained prior to the consent authority making a determination
- The proposal may be modified such that a significant effect on threatened species, populations or ecological communities, or their habitats is unlikely (DEC 2004).

This TABA considers species, populations and communities listed under this act, which occur or have the potential to occur within the study area in order to characterise the potential impact (**Appendix 6**). As the final design has not yet been developed, the TABA provides a qualitative analysis rather than applying the 7-part test.

1.4.3 Environment Protection and Biodiversity Conservation Act 1999

The Commonwealth *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) enables the Australian Government to join with the states and territories in providing a national scheme of environment and heritage protection and biodiversity conservation.

Under the EPBC Act, actions that have, or are likely to have a significant impact on a matter of national environmental significance (NES) require approval from the Australian Government Minister for the Department of the Environment (DotE) (DotE 2013).

The nine matters of NES that are protected under the EPBC Act are:

- Listed threatened species and communities
- Listed migratory species
- Wetlands of international importance
- Commonwealth marine environment
- World heritage properties
- National heritage properties
- The Great Barrier Reef Marine Park
- Nuclear actions
- A water resource, in relation to coal seam gas development and large coal mining development.

This TABA considers species, populations and communities listed under this act which occur or have the potential to occur within the study area in order to characterise the potential impact (**Appendix 6**). As the final design has not yet been developed, the TABA provides a qualitative analysis rather than applying a EPBC Significance Assessment.

1.4.4 Fisheries Management Act 1994

The FM Act aims to conserve fish stocks, key habitats, threatened species, populations and ecological communities of fish and marine vegetation. It also aims to promote viable commercial fishing, aquaculture industries and recreational fishing.

The NSW *Fisheries Management Act 1994* aims to conserve fish stocks, key habitats, threatened species, populations and ecological communities of fish and marine vegetation. It also aims to promote viable commercial fishing, aquaculture industries and recreational fishing.

Under Part 7, Division 8, Clause 218 of the FM act, a public authority that proposes to construct, alter or modify a dam, weir or reservoir on a waterway (or to approve of any such construction, alteration or modification):

(a) Must notify the Minister of the proposal, and
(b) Must, if the Minister so requests, include as part of the works for the dam, weir or reservoir, or for its alteration or modification, a suitable fishway or fish by-pass.

This TABA considers the species, populations and communities listed under this Act which occur or have the potential to occur within the study area in order to characterise the potential impact of the proposal (**Appendix 6**).

1.4.5 State Environmental Planning Policy No. 44 – Koala Habitat Protection

State Environmental Planning Policy (SEPP) No. 44 Koala Habitat Protection encourages the conservation and management of natural vegetation areas that provide habitat for Koalas to ensure that permanent free-living populations will be maintained over their present range across 107 local government areas (LGA). Local councils listed under Schedule 1 of SEPP44 cannot approve development in an area affected by the policy without an investigation of core koala habitat. The policy provides the state-wide approach needed to enable appropriate development to continue, while ensuring there is ongoing protection of koalas and their habitat.

SEPP 44 aims to identify areas of *potential* and *core* Koala Habitat. These are described as follows:

- *Potential Koala Habitat* is defined as areas of native vegetation where the trees listed in Schedule 2 of SEPP 44 constitute at least 15 percent of the total number of trees in the upper or lower strata of the tree component
- *Core Koala Habitat* is defined as an area of land with a resident population of koalas, evidenced by attributes such as breeding females, and recent and historical records of a population.

Bombala LGA is listed within Schedule 1 of SEPP 44. Therefore the provisions of this SEPP are of relevance to the proposal and it is considered further within **Section 4.11** of this TABA.

1.4.6 Native Vegetation Act 2003

The objectives of the *Native Vegetation Act* 2003 (NV Act) are to provide for, encourage and promote the management of native vegetation on a regional basis in the social, economic and environmental interests of the State, further, aims of the NV Act are:

(a) to prevent broad scale clearing unless it improves or maintains environmental outcomes

(b) to protect native vegetation of high conservation value having regard to its contribution to such matters as water quality, biodiversity, or the prevention of salinity or land degradation

(c) to improve the condition of existing native vegetation, particularly where it has high conservation value

(d) to encourage the revegetation of land, and the rehabilitation of land, with appropriate native vegetation.

Vegetation that falls within the definition of this Act would be cleared as part of the proposed activity however, clearing that is excluded from the provisions of section 25 of the NV Act includes;

> *"(g) any clearing that is, or is part of, an activity carried out by a determining authority within the meaning of Part 5 of the Environmental Planning & Assessment Act 1979 if the determining authority has complied with that Part, …"*

The proposal would be assessed as a Part 5 development (under the *EP&A* Act 1979) and carried out by Bombala Council, a determining authority as defined by the Act. Therefore the work is not subject to this legislation. The proposal would result in some clearing or damage to native vegetation. The amount and location of clearing of native vegetation has not been finalised however the potential impact of the proposal has been given consideration within this TABA.

1.4.7 Noxious Weeds Act 1993

Part 3 of the *Noxious Weeds Act 1993* outlines the obligations of a public authority to control noxious weeds. Noxious Weeds are investigated within this TABA.

1.4.8 Ecologically Sustainable Development

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

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

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

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

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

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

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

(c) Conservation of biological diversity and ecological integrity: that conservation of biological diversity and ecological integrity should be a fundamental consideration.

The aims, structure and content of this TABA are guided by these principles. The precautionary principle has been adopted in the assessment of impact with all potential impact considered and mitigated where a risk is present. Where uncertainty exists, measures have been suggested to address it.

1.5 STUDY AIMS

This TABA aims to:

- Provide a brief description of the proposed activity
- Provide the results of the desktop analysis (legislative context, literature review, database searches)
- Identify and describe the flora and fauna values of the study area including descriptions of field methodologies used and the results of the field survey
- Identify species and communities of conservation significance which are present or have the potential to be present, including threatened flora, fauna, their habitats and threatened ecological communities
- Provide maps and photographs detailing vegetation communities, habitat extent and condition and the location of any significant flora and fauna species present.
- Identify the potential direct and indirect impact of the proposed work
- Undertake an evaluation of the potential for threatened and migratory biota listed within the schedules of the Commonwealth *Environment Protection and Biodiversity*

Conservation Act 1999, NSW *Threatened Species Conservation Act 1995* and NSW *Fisheries Management Act 1994* to occur in the study area

- Provide a series of recommendations designed to reduce risks and minimise the impact of the proposed work on flora and fauna.

In preparing this TABA, EnviroKey have considered the following documents that guide biodiversity assessments in NSW: '*Guidelines for threatened species assessment: draft*' (DEC/DPI 2005), '*Threatened Biodiversity Survey and Assessment: Guidelines for Developments and Activities – working draft*' (DEC 2004), '*Threatened Species Assessment Guidelines – The Assessment of Significance*' (DECC 2007) and EPBC Act *Matters of National Environmental Significance*: *Significant Assessment Guidelines* (DotE 2013).

2 METHODOLOGY

2.1 QUALIFICATIONS AND EXPERIENCE OF PERSONNEL

The TABA was prepared by suitably qualified and experienced personnel under the authority of a Scientific Licence (SL100110) issued under Clause 22 of the *National Parks and Wildlife Regulation 2002* and section 132C of the *National Parks and Wildlife Act 1974* by the NSW OEH and an Animal Research Authority (09/2596) approved by, and in accordance with, the Animal Care and Ethics Committee (ACEC) of the Director-General of Industry and Investment NSW. Details of the qualifications and experience of these personnel are provided (**Appendix 1**).

2.2 DATABASE SEARCHES

2.2.1 NSW Office of Environment & Heritage: Threatened Species Profile database

While Catchment Management Authority's (CMA) now cease to exist (now replaced by Local Land Services), the NSW Office of Environment & Heritage (OEH) allow for the searching of a Catchment Management Authority (CMA) and subsequently CMA sub-regions for threatened biota that are known or predicted to occur in that region (OEH 2015c). The study area is located within the Monaro (Part C) CMA sub-region of what was formerly the Southern Rivers CMA.

A search conducted on the 16 November 2015 identified that 66 threatened biota, threatened ecological communities (TEC) and endangered populations are known to, or are predicted to occur within that CMA sub-region. These comprised:

- Seven species of amphibian
- Four species of bat
- Twenty-two species of bird
- Nine species of terrestrial mammal
- Five species of reptile
- Sixteen species of flora
- Three threatened ecological communities.

An evaluation of the likelihood of these biota occurring within the study area and the potential for them to be impacted by the proposal is considered further within **Chapter 4** and **Appendix 6**.

2.2.2 NSW BioNet: A whole-of-government system for flora and fauna sightings

BioNet is a portal for accessing a range of government-held information from several NSW government agencies (OEH 2015b). These being:

- NSW Office of Environment and Heritage
  - National Parks and Wildlife Service
  - Royal Botanic Gardens and Domain Trust
- Department of Primary Industries.
  - Forests NSW
  - Fisheries NSW
- Australian Museum.

A search of the BioNet database conducted on 19 November 2015 was completed for entities in the locality across a 10 kilometre radius within the following categories:

- Threatened in NSW
- Threatened Nationally
- CAMBA (migratory species)
- JAMBA (migratory species)
- ROKAMBA (migratory species).

That search revealed the presence of:

- Twenty-four species of threatened and migratory fauna
- Five species of threatened flora.

Under OEH data licence agreement (CON09007), the spatial locations of these records were mapped at a scale permissible by this agreement (1:250,000) within this assessment (**Map 3**, **4 & 5**).

An evaluation of the likelihood of these biota occurring within the study area and the potential for them to be impacted by the proposal, is considered further within **Chapter 4**, **Appendix 6**.

2.2.3 Protected Matters Search Tool

The protected matters search tool identifies matters of national environmental significance (NES) or other matters protected by the EPBC Act that may occur within the nominated search area (DotE 2015).

A search using this tool was conducted on the 16 November 2015 for matters of NES within the locality (10 kilometre radius). This search revealed the following:

- Three listed threatened ecological communities
- Twenty-five listed threatened species
- Ten listed migratory species.

An evaluation of the likelihood of these biota occurring within the study area and the potential for them to be impacted by the proposal, is considered further within **Chapter 4** and **Appendix 6**.

Extra information provided by the search tool that may also have relevance to this assessment includes:

- Two areas of Commonwealth Land
- Thirteen listed marine species
- One State and Territory reserves
- Two regional forest agreement
- Twenty-seven invasive species.

The Protected Matters Search Tool results are provided in **Appendix 2.**

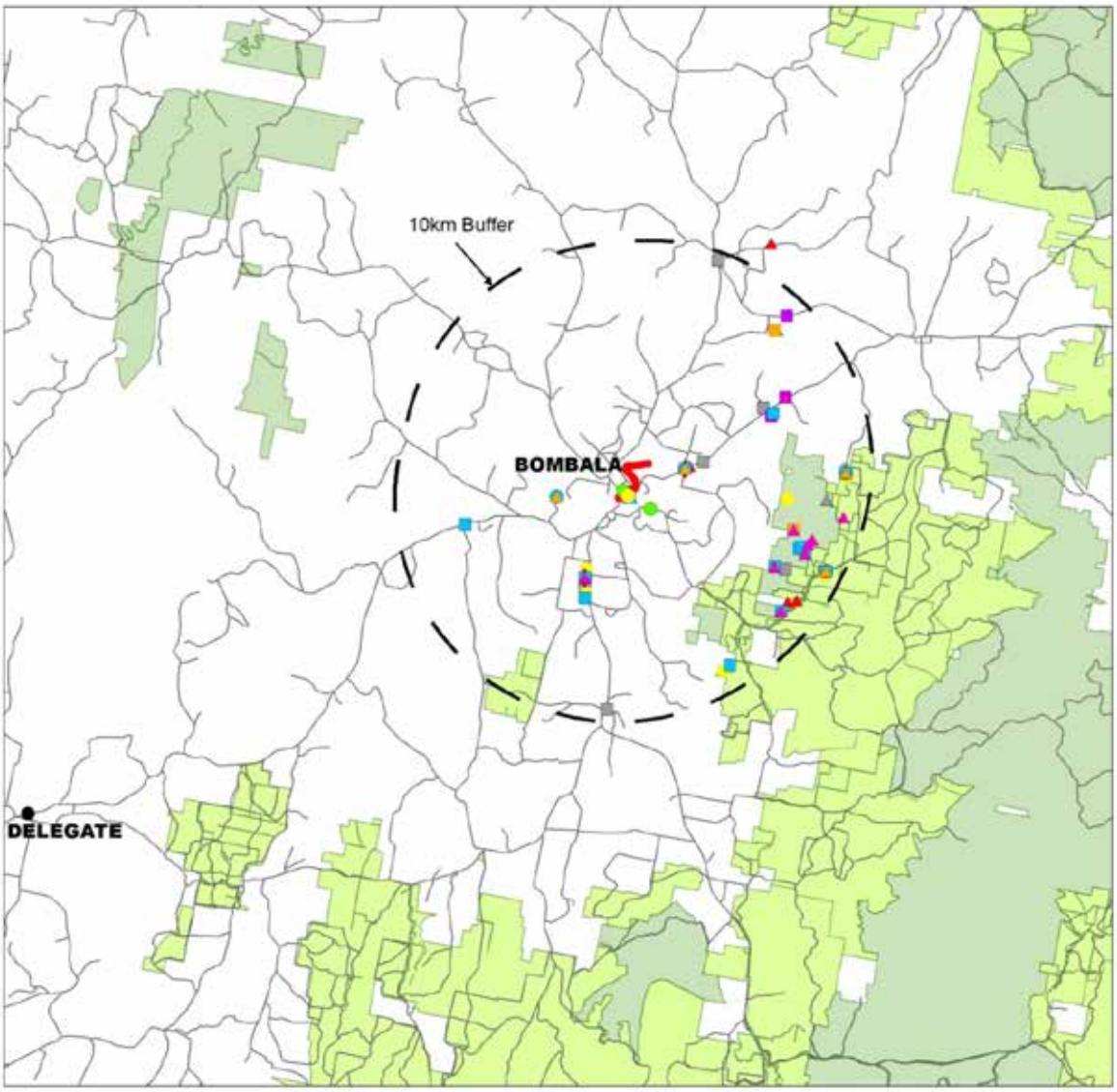
2.2.4 Records Viewer: Threatened and Protected Fish Species

The Records Viewer has been developed to provide access to records of threatened and protected fish species held by Industry & Investment (I&I) NSW (I&INSW 2015). Records come from a variety of sources including:

- Field survey records by I&I NSW
- Data from specific I&I NSW research projects
- Community sightings from the Protected, Threatened and Pest Species Sighting Program
- Scientific literature and published reports
- Scientific, broodstock and aquarium collection permit returns.

A search of the Records Viewer conducted on 20 November 2015, revealed that there are eleven records of a threatened fish species, River Blackfish (*Gadopsis marmoratus*) in the Bombala LGA. These records occur mostly in the Delegate River, upstream of the confluence between Bombala River and Delegate River (also in Little Plains River). None of these records are within the locality (10 kilometre radius) of the proposal, the closest record is about 18 kilometres west of the study area, at the end of Quidong Road in the Delegate River. However there is an endangered population, River Blackfish in the Snowy River catchment. Bombala River flows into Delegate River which flows into Snowy River therefore the area subject to this proposal would be included as part of the Snowy River catchment and included as potential habitat for the endangered population of River Blackfish.

An evaluation of the likelihood of aquatic species occurring within the study area and the potential to be impacted by the proposal are considered further within **Chapter 4** and **Appendix 6** in accordance with the Policy and Guidelines for fish habitat conservation and management (DPI 2013).



Legend

- Towns
- Roads

Threatened & Migratory Birds

- Brown Treecreeper (eastern subspecies)
- Cattle Egret
- Diamond Firetail
- Flame Robin
- Fork-tailed Swift
- Gang-gang Cockatoo
- Hooded Robin (south-eastern form)
- Latham's Snipe
- Little Eagle
- Powerful Owl
- Scarlet Robin
- Varied Sittella
- White-bellied Sea-Eagle
- White-fronted Chat
- White-throated Needletail

- OEH Estate
- Forest Estate
- Area of Investigation

Map datum, projection: GDA 1994, MGA Zone 55

Data Sources:
Base Topographic: GeoScience Australia
Threatened & Migratory Biota data: OEH BioNET under data licence agreement (CON09007)
OEH Estate: OEH Spatial Data Download
Forest Estate: Forests NSW
Area of Investigation: Envirokey

Mapping date: January, 2016

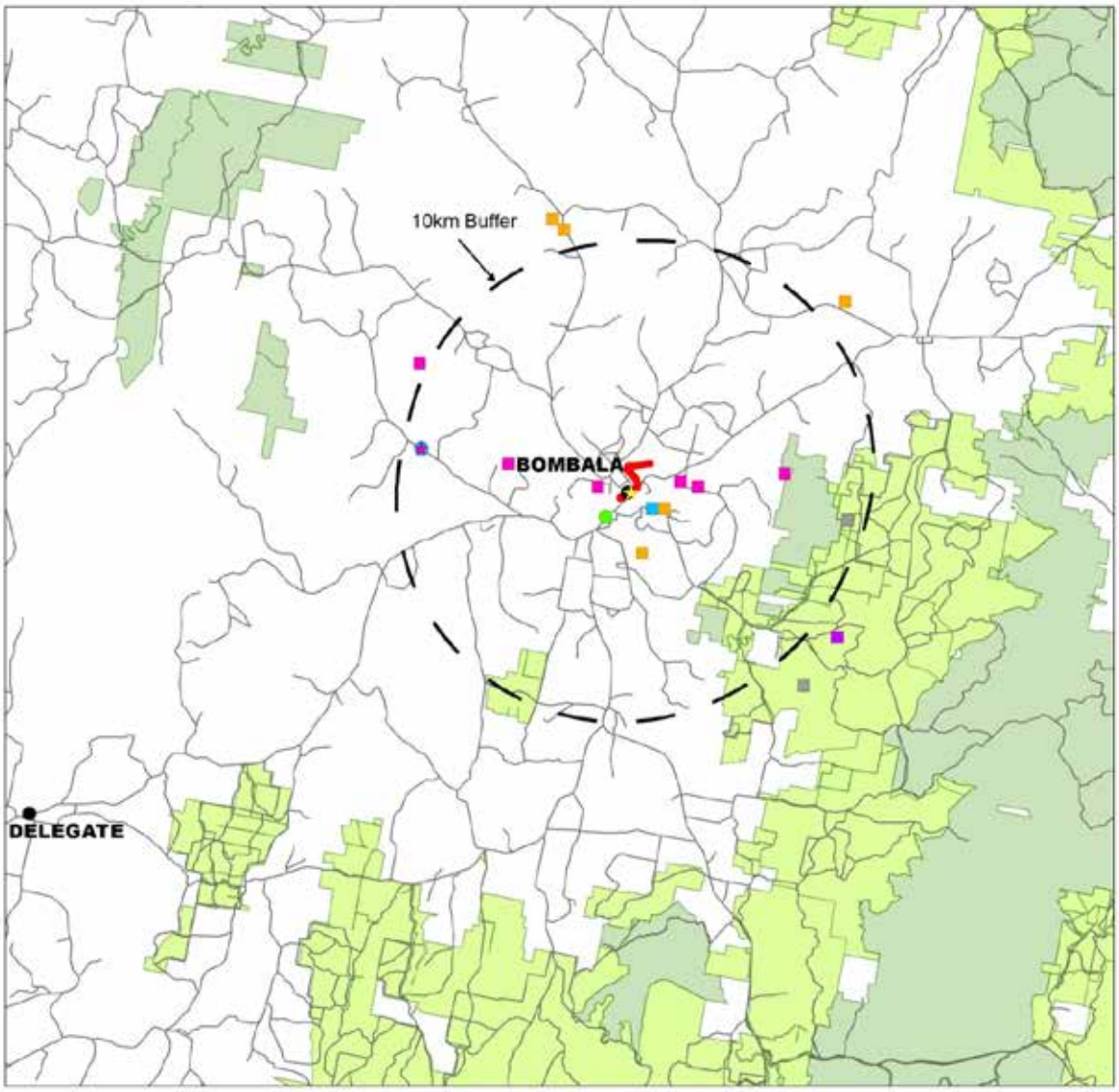
N

EnviroKey

PO Box 7231, Tathra NSW 2550; t: 02 6494 5422

0 6 12 18 km

Map 3: Threatened birds previously recorded within the locality.



Legend

- Towns
- Roads
- Area of Investigation
- OEH Estate
- Forest Estate

Threatened Mammals

- Grey-headed Flying-fox
- Koala
- Spotted-tailed Quoll
- Squirrel Glider
- Yellow-bellied Glider

Threatened Amphibians

- Booroolong Frog
- Green and Golden Bell Frog
- Southern Bell Frog
- Yellow-spotted Tree frog

Map datum, projection: GDA 1994, MGA Zone 55

Data Sources:
Base Topographic: GeoScience Australia
Threatened & Migratory Bicta data: OEH BioNET under data licence agreement (CON09007)
OEH Estate: OEH Spatial Data Download
Forest Estate: Forests NSW
Area of Investigation: Envirokey

Mapping date: January, 2016

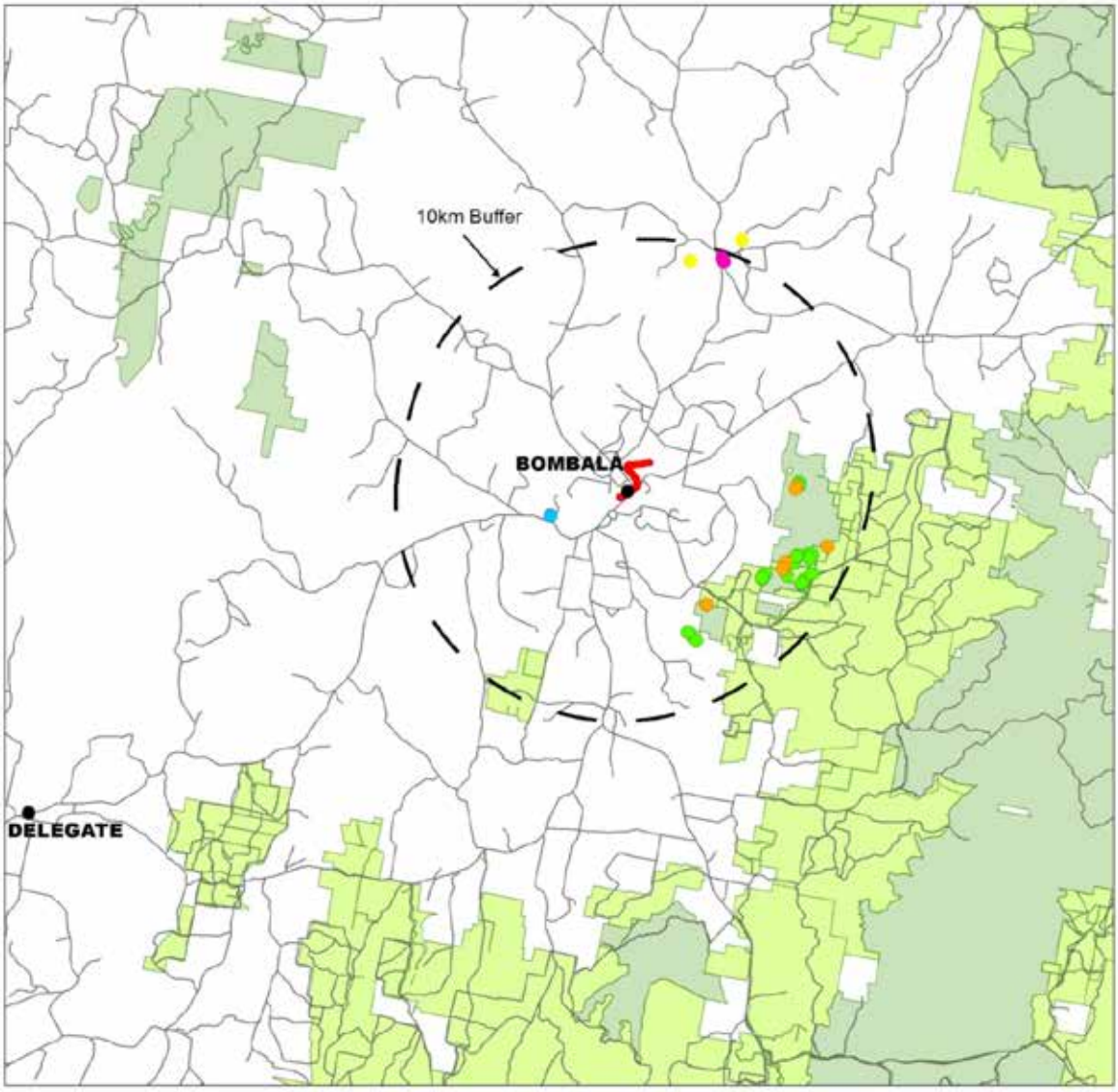
N

EnviroKey

PO Box 7231, Tathra NSW 2550; t: 02 6494 5422

0 6 12 18 km

Map 4: Mammals and amphibians previously recorded in the locality.



Map 5: Threatened flora previously recorded in the locality.

2.2.5 DPI Noxious Weeds Declarations

A search of the Department of Primary Industries (DPI) Noxious Weeds Declarations for Bombala LGA was conducted. This search revealed 115 entries in that database **(Appendix 3**).

Noxious weeds are considered within **Section 3.3** and **4.4** of this TABA.

2.3 LITERATURE REVIEW

A literature review for any relevant local information was conducted on 20 November 2015 using the internet using the following key words: Bombala, Environmental Assessment, Terrestrial Biodiversity, Aquatic Biodiversity, Plan of Management. These searches revealed the following documents:

- Bombala Local Environmental Plan 2012
- Bombala State of the Environment Report 2004
- Bombala Community Strategic Plan 2013/2025

Where appropriate, the contents of these documents are considered throughout this TABA.

No previous environmental assessments from proposals or any work carried out near this proposal were identified.

2.4 SURVEY EFFORT

EnviroKey have carried out targeted field surveys to develop a comprehensive understanding of the flora, fauna, vegetation communities and fauna habitats in the vicinity of the proposal. This section provides the details of the survey effort completed while a summary is provided (**Table 1**). **Map 6 & 7** identifies the spatial locations of the fauna surveys.

2.4.1 Area of Investigation

An ‘Area of Investigation’ was defined as an area extending about 10 metres either side of the Bombala River to encompass the area that would most likely be inundated by rising water levels. The ‘Area of Investigation’ is shown on **Map 2.** Where any area of threatened ecological community (TEC) was identified, the total patch size was considered, even if it extended beyond the boundaries of the Area of Investigation.

2.4.2 Botanical Surveys

Botanical survey was carried out over 8 person hours on 16 November 2015. The vegetation communities of the study area were stratified into sampling units to ensure that the full range of potential vegetation types was systematically sampled. Within each unit, the ‘random

meander' method (Cropper 1993) was conducted to enable a classification to the latest vegetation mapping for the region (Benson 2006; 2008).

The methodology used to classify vegetation as native or non-native was in accordance with the definitions of the NSW *Native Vegetation Act 2003* and as used within the NSW Biometric/Biobanking assessment methodologies (BBAM) (DECC 2008; DECCW 2010) and the published benchmarks for each vegetation type. Vegetation was classified as native where at least one of the following criteria was met:

- Groundcover comprised greater than 50 percent live indigenous species, and 10 percent or more of the area has some form of vegetative cover whether dead or alive
- Indigenous species overstorey percent cover is at least 25 percent of the corresponding vegetation class benchmark.

Vegetation condition was assigned based on the Vegetation Communities Database and associated benchmarks (OEH 2015a). Therefore, this TABA provides a quantitative assessment of vegetation condition in the study area to aid in the determination of potential impact of the proposal.

2.4.3 Threatened Ecological Communities

Vegetation communities were analysed and compared with the NSW Biometric Vegetation Communities database, determinations made by the NSW Scientific Committee in relation to the TSC Act, and information from Species Profile and Threats Database (SPRAT - EPBC Act) to determine if any were part of a threatened ecological community (TEC).

2.4.4 Diurnal Birds

Diurnal bird surveys were conducted using the widely accepted 'standardised method' (Watson 2003). Within the vicinity of the proposal, five 20 minute surveys were completed. Any species of bird observed or identified from call recognition, were recorded during the field survey period. Surveys were completed across a range of environmental variables including morning and afternoon periods to encompass the range of avifaunal assemblages and their periods of activity. Locations of diurnal bird surveys are provided in **Map 6**.

2.4.5 Nocturnal Fauna Surveys

Nocturnal fauna surveys consisted of spotlighting and echolocation call recording transects using an ANABAT SD1 detector unit. **Table 1** details the survey effort completed during the TABA. Call playback consisted of transmitting a pre-recorded call of an individual species, with a two minute listening period between each call. Spotlighting surveys were conducted by walking transects within the area of investigation, looking for eye shine and any moving nocturnal fauna. A 50W handheld spotlight was used for the duration of nocturnal fauna survey.

2.4.6 Systematic Reptile Search (Herpetofauna)

A systematic reptile search was conducted across the entire area of investigation. The survey consisted of searching for active and inactive reptiles. For active animals, any visible individuals were recorded. For inactive animals, hand searches comprised raking through leaf litter, inspections of cracks and crevices in rocks, trees and fallen timber, searches under rocks, and any other searchable items such as roadside litter. Survey effort totaled about two person hours.

2.4.7 Systematic Amphibian Search

A systematic amphibian search was conducted. Searches were completed after sunset with animals identified by aural identification. A total of one person hour was dedicated to this survey method.

2.4.8 Platypus Survey

A Platypus survey was undertaken focusing on the existing pool created by the natural sandbar within the Bombala River which would be subject to this proposal. The survey was carried out by static observation of the pool at dusk, looking for signs of Platypus including ripples on the surface or active animals coming to the surface to breathe after foraging on the bottom. The banks of the Bombala River were also observed opportunistically during the flora and fauna surveys for any active Platypus burrows.

2.4.9 Habitat Assessment

A general habitat assessment was conducted across the study area to develop an understanding of the proximate resources available to flora and fauna. A particular emphasis was given to those resources that are most likely to influence the likelihood of occurrence for threatened and migratory species. These included potential movement corridors, clusters of hollow-bearing trees and native grasslands.

2.4.10 Echolocation Call Analysis

Echolocation calls recorded during the field survey (see **Table 1** for survey effort) were identified using AnalookW software by visually comparing call traits with those within 'The Bat Calls of NSW: Region based guide to the echolocation calls of microchiropteran bats' (Pennay *et al.* 2004), 'Australian Bats 2nd Edition' (Churchill 2008) and a reference call collection held by EnviroKey. Analysis was completed by one of the authors (Steve Sass) given his extensive experience with the bats of the NSW southern tablelands and microchiropteran bat call analysis. Due to the lack of 'local' reference calls, and the high level of intra-specific variability and inter-specific overlap in call characteristics, a conservative approach was taken when analysing calls. It should be noted that members of the *Nyctophilus* genus were unable to be identified to species level due to a lack of differentiation between species and are identified to genus level only.

A call was defined as a sequence of three or more consecutive pulses of similar frequency. A pulse separated from another sequence by a period of five seconds was considered to be a separate call. Scattered sequences, where intermittent pulses were not separated by more than five seconds, were recognised as a single pass. Due to variability in the quality of calls and the difficulty in distinguishing some species, each file was assigned a confidence rating as follows:

D = Definite: Species identification not in doubt.

PR = Probable: Call most likely to represent a particular species, but there exists a low probability of confusion with species of similar call types.

PO = Possible: Call characteristics are comparable with the species, but there exists a reasonable probability of confusion with one or more bat similar species or the quality or length of call prohibits a confident identification.

With regard to threatened species and in consideration of the precautionary principle, any file thought to be that of a threatened species regardless of confidence ranking was considered to be present.

2.4.11 Nomenclature

Nomenclature for fauna was guided by the following texts: Birds (Morcombe 2004), Mammals (except microchiropteran bats) (Menkhorst and Knight 2010), Microchiropteran Bats (Churchill 2008), Frogs (Tyler and Knight 2009) and Reptiles (Swan *et al.* 2004) except where modified by recent taxonomic review (Sass 2011a; b; Swan 2013). Where no common name is provided within these texts, a generally accepted name is used. For flora, nomenclature follows that of the Flora of NSW (PlantNET 2015).

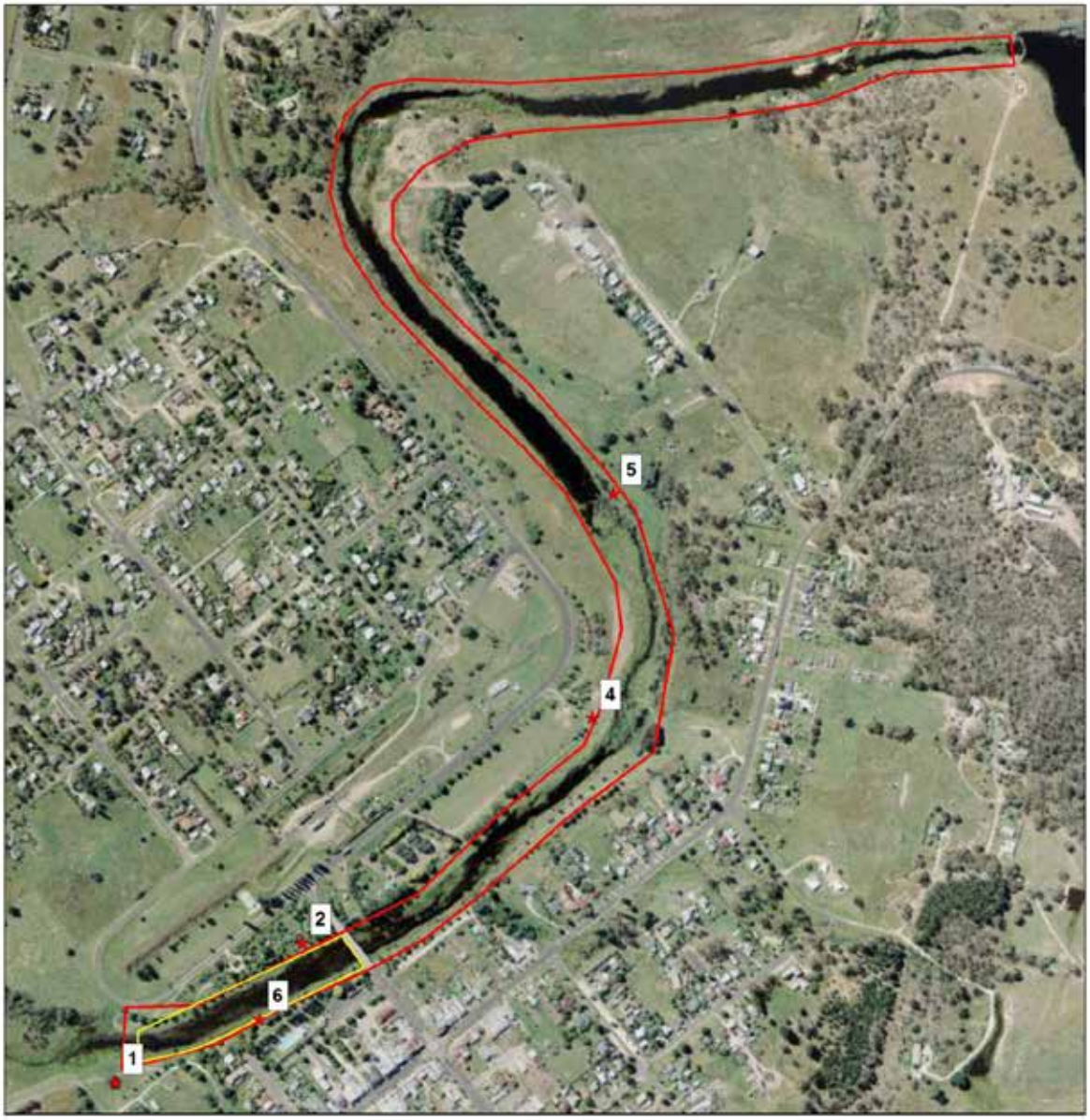
2.5 LIMITATIONS

A common limitation of many biodiversity studies is the short period of time in which they are conducted. When combined with a lack of seasonal sampling this can lead to either low detection rates or false absences being reported. This is also particularly relevant to highly mobile species that may not have been in the study area at the time of the survey. Given this, further analysis was conducted to evaluate which threatened and migratory biota were likely to occur within the vicinity of the proposal based on the presence of habitat. This is detailed within **Appendix 6.**

Table 1: Survey effort completed for this study.

Date	Survey type	Survey location and effort
16 November, 2015	Botanical survey	One person x eight hours
16 November, 2015	Bird surveys	Five x 20 minute bird surveys.

Date	Survey type	Survey location and effort
16 November, 2015	Nocturnal surveys.	One person x two hours over one night including spotlighting and echolocation call recording (calling frogs also recorded).
16 November, 2015	Systematic Reptile search.	One person x two hours within the area of investigation.
16 November, 2015	Systematic Amphibian search	One person-hour in the vicinity of low-lying areas (amphibians were also recorded opportunistically over the area of investigation).
16 November, 2015	Platypus survey	One person-hour in the vicinity of the existing pool in Bombala River plus opportunistically during fauna and flora surveys.
16 November, 2015	Culvert Inspection (using a 50W spotlight to inspect for microchiropteran bats).	As culverts were encountered within the area of investigation.
16 November, 2015	Habitat Surveys including sign and scat searches	One person x two hours along the length of the proposal.



Legend

- Diurnal Bird Survey
- Echolocation Call Recording Transect
- Area of Investigation

Map datum, projection: GDA 1994, MGA Zone 55

Data Sources:
Survey Locations: EnviroKey
Area of Investigation: EnviroKey
Aerial Image: SIX Maps

N

Mapping date: January, 2016

0 170 340 510 680 m

EnviroKey

PO Box 7231, Tathra NSW 2550; t: 02 6494 5422

Map 6: Locations of fauna surveys within the area of investigation.

3 EXISTING ENVIRONMENT

3.1 LANDSCAPE CONTEXT

The study area is located within the South Eastern Highlands Bioregion of NSW (Thackway and Creswell 1995). The bioregion lies just inland from the coastal bioregions of the South East Corner and the Sydney Basin, bounded by the Australian Alps and South Western Slopes bioregions to the south and west. The bioregion includes most of the ACT and extends south into Victoria. The total area of the bioregion is 8,749,155 hectares (Thackway and Creswell 1995). The study area is located within the South East LLS Region (previously Southern Rivers CMA region (OEH 2015c) and the Monaro (Part C) sub-region (NPWS 2003)).

The dissected ranges and plateau of the Great Dividing Range are topographically lower than the Australian Alps, which lie to the west. The bioregion extends to the Great Escarpment in the east and to the western slopes of the inland drainage basins. The highlands are part of the Lachlan fold belt that runs through the eastern states as a complex series of metamorphosed Ordovician to Devonian sandstones, shales and volcanic rocks intruded by numerous granite bodies. Topographically, the dominant features of the bioregion are plateau remnants, granite basins with prominent ridges formed on contact metamorphic rocks and the western ramp grading to the South Western Slopes (Thackway and Creswell 1995).

3.2 LANDUSE

Land use adjoining this section of the Bombala River and Coolumbooka River consisted predominately of landscaped parkland with introduced tree plantings and walking tracks which are part of the Bombala River Walk. There are two patches of native woodland on the southern side of Coolumbooka River, just downstream from the existing weir, with one patch part of a much larger patch extending outside of the study area. The Monaro Highway crosses the river with a two lane bridge in the middle of the area of investigation while there are two foot bridges within the area of investigation. The section between the river and Monaro Highway consisted mostly of vacant land adjacent to residential properties.

3.3 FLORA & VEGETATION COMMUNITIES

3.3.1 Flora Species Richness

The field survey identified a total of 87 flora species. These comprised:

- 23 native species (including two planted native species)
- 64 introduced species.

No threatened flora were identified during the field survey, nor are any expected to occur there given the current level of disturbance.

A full list of flora species recorded during the field survey is detailed within **Appendix 4**.

3.3.2 Vegetation Communities

In the vicinity of the proposal, non-native vegetation dominates. However, two native vegetation communities are present. This section provides details of the native vegetation community. Given the lack of habitat value of non-native vegetation, these areas are no longer considered.

SR637 Snow Gum - Candle Bark woodland on broad valley flats of the tablelands and slopes, South Eastern Highlands

Biometric Vegetation type (BVT) Snow Gum - Candle Bark woodland on broad valley flats of the tablelands and slopes, South Eastern Highlands (SR637) (in the Southern Rivers CMA) (OEH 2015a) occurs within a small portion of the area of investigation. This community corresponds with the vegetation description by Tozer *et al* (2006), vegetation unit Frost Hollow Grassy Woodland (GW p22). Frost Hollow Grassy Woodland (GW p22) represents a revision and extension of GW 22 identified by Tindall *et al* (2004). The woodland is best described as a low open eucalypt woodland with a sparse shrub layer and dense, diverse groundcover of grasses and forbs. However, the woodland within the study area is dominated by introduced flora species.

SR657 Tea-tree tall riparian shrubland, South Eastern Highlands, South East Corner and Australian Alps

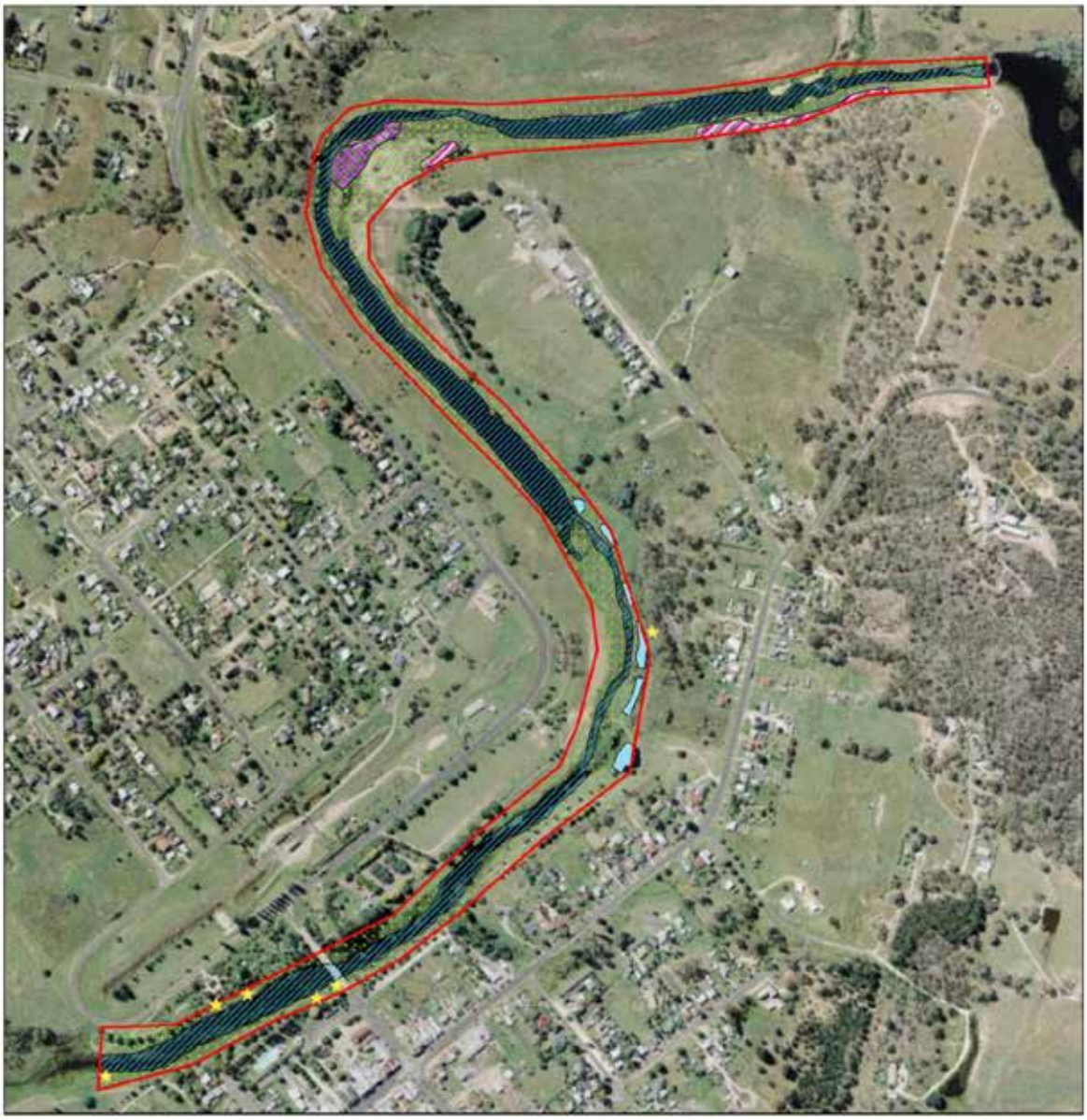
Biometric Vegetation type (BVT) Tea-tree tall riparian shrubland, South Eastern Highlands, South East Corner and Australian Alps (SR657) (in the Southern Rivers CMA) (OEH 2015a) occurs within a small portion of the area of investigation. This community occurs mainly in riparian situations in montane to sub-alpine areas with a Tea-tree canopy dominant. The shrubland within the area of investigation was dominated by a Tea-tree (*Leptospermum spp.*) with a predominately native groundcover consisting mostly of Wallaby Grass (*Rytidosperma spp.*).

Table 2 provides a summary of these vegetation communities within the area of investigation. **Map 7** details the extent of SR637 and SR657 in the area of investigation.

Table 2: Summary of BVT SR637 and SR657 within the study area.

BVT	Descriptor	Response
SR637	**Extent within footprint (approx.)**	About 0.432 hectares of this community occurs in the area of investigation (detailed in **Map 7**).
	Description	Canopy: An open woodland dominated by Ribbon Gum (*Eucalyptus viminalis*). Canopy height up to 15 metres. Understorey: Shrub or small tree layer absent in this patch of vegetation.

BVT	Descriptor	Response
		Groundcover: Mostly dominated by introduced species including introduced grasses.
	Condition	Moderate to good condition due to canopy cover within 25 percent of the lowest benchmark in the BBAM benchmark database for this community.
	Threatened flora	None recorded and potential for threatened species to occur is considered to be low given groundcover mostly dominated by introduced flora.
	Threatened community?	Yes, this community corresponds with the description for the TSC Act listed threatened ecological community (TEC) *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 - Southern Rivers.* This community is listed as endangered under the TSC Act.
SR657	**Extent within footprint (approx.)**	About 0.403 hectares of this community occurs in the area of investigation (detailed in **Map 7**).
	Description	Canopy: There was no canopy species present. Understorey: A layer of Tea-tree (*Leptospermum spp.*) were present in this patch of vegetation. Groundcover: Mostly dominated by Wallaby Grasses (*Rytidosperma spp.*).
	Condition	Moderate to good condition due to canopy cover within 25 percent of the lowest benchmark in the BBAM benchmark database for this community.
	Threatened flora	None recorded and potential for threatened species to occur is considered to be low given the current and historic uses of this area.
	Threatened community?	No, this is not a threatened ecological community.



Map 7: Vegetation communities present within the study area.

3.4 FAUNA AND THEIR HABITATS

3.4.1 Fauna Species Richness

A total of 47 fauna species were recorded during the field surveys which comprised:

- Three species of frog
- 33 species of bird
- Eight species of mammal (including two introduced species and two bats)
- Three species of reptile.

The fauna species detected in the surveys are typical of those occurring in highly modified landscapes such as in the vicinity of the proposal.

A list of all fauna species recorded during surveys is detailed within **Appendix 5**.

3.4.2 Fauna Habitats

Three general fauna habitats are present within the study area (woodland/shrubland, introduced grassland/trees and aquatic habitat) (**Map 8**). This section provides discussion on each of these fauna habitats.

Woodland/shrubland

Woodland habitat comprises a small proportion of the north-eastern end of the area of investigation downstream from the existing weir on Coolumbooka River and also native tree plantings in the middle of the area of investigation. The woodland areas consisted of a canopy of Ribbon Gum with a groundcover dominated by introduced flora. Given the size, quality and condition of the patch and the proximity to cleared, rural land, this is likely to provide important resources for woodland fauna at the landscape scale (Lindenmayer and Fischer 2006). Key microhabitat resources such as fallen timber and leaf litter were present, but in low quantities. No mistletoe plants were observed within the woodland. Mistletoe is considered a keystone resource for woodland and forest fauna (Watson 2001) and it absence is a likely determinant of low bird diversity (Watson 2002). In the case of the area of investigation, bird diversity was considered moderate but this was most likely as a result of the Bombala River which supplies a constant water source.

The shrubland part of this habitat type consisted of a shrub layer dominated by a Tea-tree with a mostly grassy groundcover. It was located on a broad, flat expanse on a sandy substrate on the inside of a broad curve in the Bombala River. Though the vegetation here was mostly native, there were numerous car tracks and evidence of a reasonably high traffic load, most likely from people accessing the river to swim. This habitat present is at best, in low to moderate condition.

The planted vegetation consists of numerous *Eucalyptus* species which have been planted along the banks of Bombala River. These were most likely planted at the time of or after the creation of Bicentennial Park in 1988; therefore they are relatively young trees. None of

these trees would develop hollows for a significant amount of time and there was little in the way of microhabitat features on the ground except in locations where high river flows had deposited debris brought downstream during flood events. The groundcover here was also dominated by introduced species. This habitat present is at best, in low condition.

Photographic examples of this fauna habitat are provided in **Figure 1**.

Figure 1: Woodland/shrubland habitat including planted native trees within the area of investigation.

Introduced Grassland/Trees

This habitat type consists of predominately introduced species of grasses and herbs in open areas with no canopy cover or with a canopy of planted trees. The cleared area adjacent to Bombala River is most likely a result of historic land practices such as clearing of canopy vegetation for agriculture in the area or the construction of roads and the town of Bombala. Additionally this part of Bombala River has been planted with various native trees for the creation of the Bicentennial Park which also includes various rotundas and seating areas. The Bicentennial Park was opened in 1988 and most of the introduced trees were planted at this time. Various maintenance activities including regular mowing mean that key microhabitat resources such as fallen timber, surface rocks and leaf litter are virtually non-existent. Two walking track bridges and the Monaro highway bridge cross the Bombala River within this habitat type. The cracks and crevices underneath these structures could potentially provide habitat for microbat species (see **Figure 2**).

Examples of the introduced grassland/trees are provided in **Figure 2**.

Figure 2: Introduced grassland/tree habitat within the area of investigation.

Aquatic Habitat

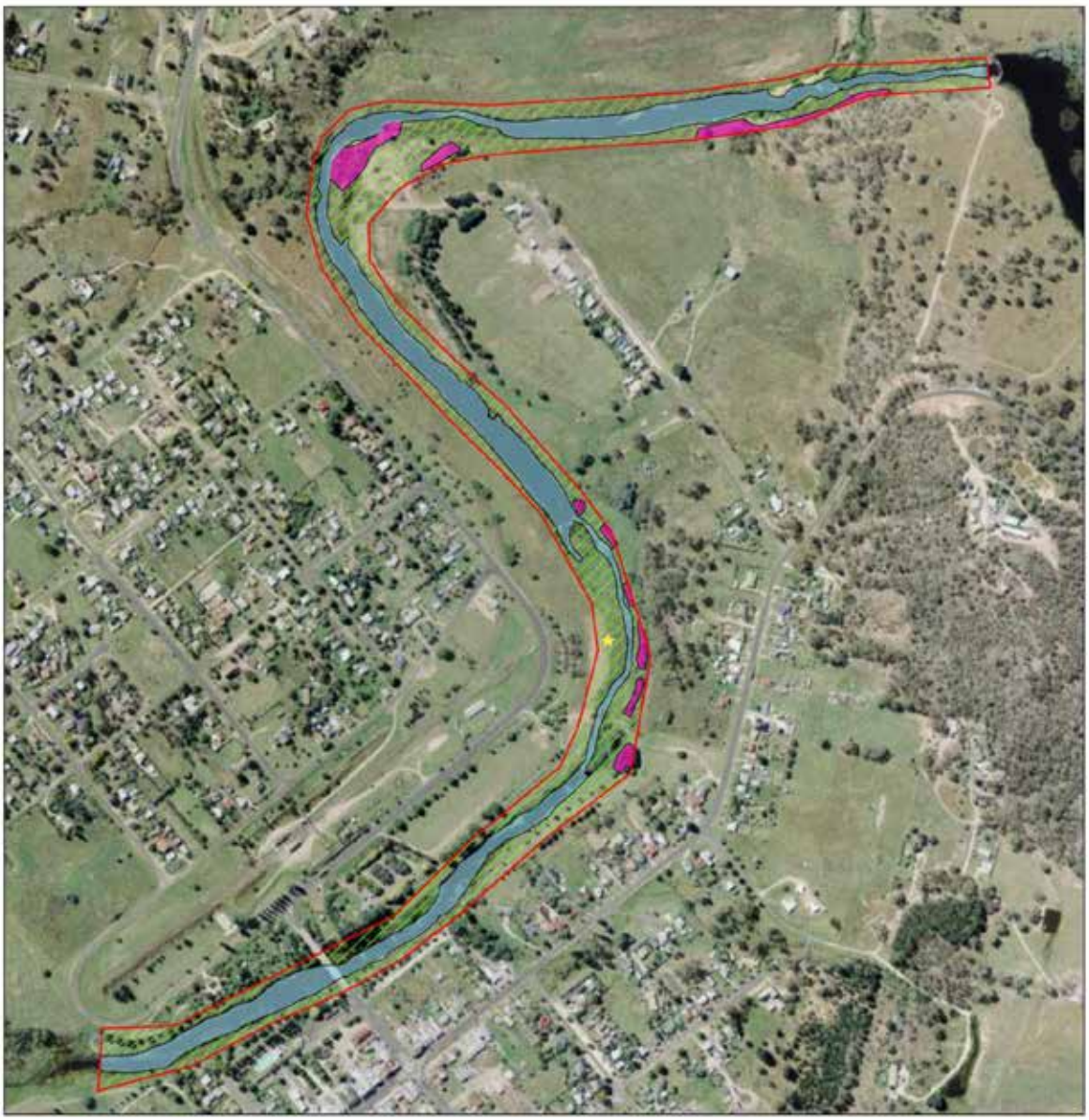
Aquatic habitat in the vicinity of the proposal is considered highly modified. Riparian areas are dominated by non-native vegetation. The river channel varies likely influenced by rain events, however, it is between 15-30 metres wide, with pool depth estimated at greater than three metres. The aquatic substrate is best described as gravelly sand. Aquatic vegetation was dominated by emergent and floating species. Where native species occurred, these included River Clubrush (*Schoenoplectus validus*), Marshwort (*Nymphoides monatana*) and Tall Sedge (*Carex appressa*). Though the water appeared to be moderately turbid, there was also evidence of recent flooding which would have contributed to the decreased water clarity. A small Billabong or Oxbow Lake like water body was present at the north-eastern end of the area of investigation. This water body was separate from the main river channel however it would most likely be inundated during times of flooding. The vegetation here was mostly dominated by introduced species however it was very dense and overhanging the water and there appeared to be a high density of Eastern Long-necked Turtles (*Chelodina longicollis*).

The banks of the Bombala River within the area of investigation were searched extensively for signs of Platypus burrows during the field surveys. Though no burrows were identified, two individual animals were observed within the large existing pool. Though the vegetation along the banks was dominated by introduced species, it was very dense therefore the Platypus burrows were probably well camouflaged. Generally, Platypus build a burrow under

the roots of a tree on the bank of a river which would assist in stopping erosion issues around the mouth of the burrow. However, the dense vegetation within the area of investigation appears to limit erosion. Very little erosion was observed during the field surveys. Generally ideal habitat for the Platypus is a fairly shallow river or stream with relatively steep earth banks consolidated by the roots of native vegetation and with its growth overhanging the bank (Scott and Grant 1997). However in this situation in the Bombala River, the Platypus have colonized an area which is dominated by introduced vegetation and with little root structures consolidating the river banks. According to Scott and Grant (1997), weirs with less than three metre wall heights do not prevent dispersal or movement of Platypus. However they are more prone to predation as they move around the wall by walking on land.

Hollow-bearing trees

No hollow bearing trees were observed within the area of investigation.



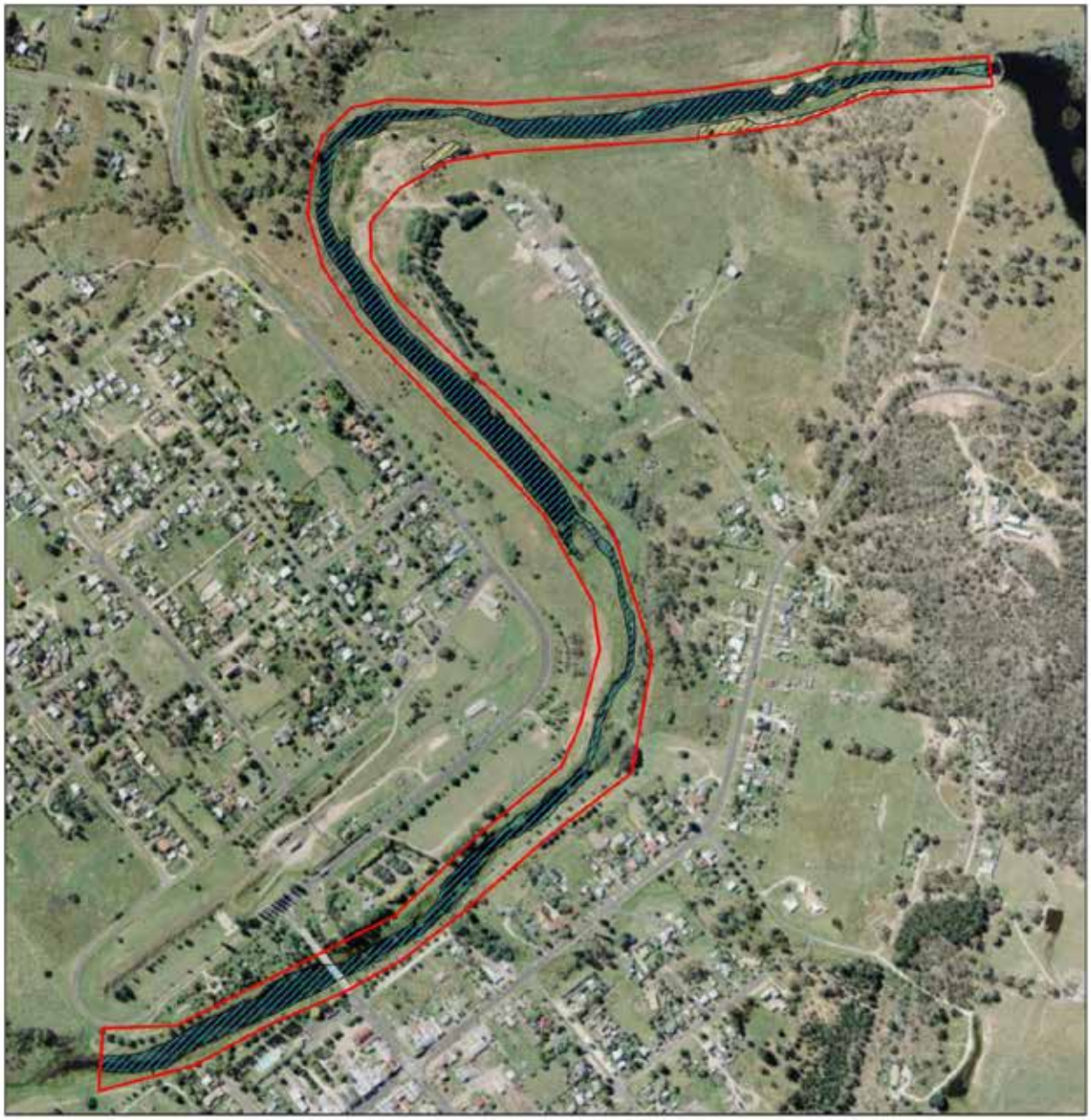
Map 8: Fauna Habitats within the area of investigation.

3.5 THREATENED ECOLOGICAL COMMUNITIES

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 (Tablelands Snow Gum Grassy Woodland) threatened ecological community (TEC) is listed as 'endangered' under the NSW *Threatened Species Conservation Act 1995*. The field survey identified one patch of Tablelands Snow Gum Grassy his TEC within the area of investigation. This community is described as an open-forest, woodland or open woodland and may also occur as a secondary grassland where the trees have been removed, but the groundlayer remains. The main tree species are *Eucalyptus pauciflora* (Snow Gum), *E. rubida* (Candlebark), *E. stellulata* (Back Sallee) and *E. viminalis* (Ribbon Gum), either alone or in various combinations. The community commonly occurs on valley floors, margins of frost hollows and on footslopes and undulating hills between approximately 600 and 1400 m in altitude on a variety of substrates, including basalt, sediments, granite, colluvium and alluvium (OEH 2015). The patch of existing vegetation consists of a canopy of Ribbon Gum on undulating hills at about 720 metres elevation. Weed invasion and disturbance and clearing of vegetation, are two key threats to this community. The proposal has the potential to increase these two threats to this community. Currently the existing patch is at threat from environmental weeds (English Hawthorn), aggressive pasture grasses (including Cocksfoot) and escapes from silviculture (including Cotoneaster and Radiata Pine). The extent of the Tablelands Snow Gum Grassy Woodland TEC (TSC Act) within the vicinity of the proposal is detailed in **Map 9**.

The Bombala River also forms part of the Endangered Ecological Community of the Snowy River Catchment, listed under the *Fisheries Management Act 1994* as the *Aquatic Ecological Community in the Catchment of the Snowy River in NSW* (DPI 2011). The area covered by this determination includes all rivers, creeks and streams of the Snowy River catchment within the State of New South Wales and including the Snowy River, Eucumbene River, Thredbo River, Gungarlin River, Mowamba River, Bombala River, Maclaughlin River, Delegate River, Pinch River and Jacobs River. This area includes the river bed channel inundated by the man-made lakes Jindabyne, Eucumbene, Island Bend and Guthega but excludes the ecological communities that have developed in the waters of the impounded man-made lakes (Final Determination 2011).

The extent of the Endangered Ecological Community of the Snowy River Catchment within the vicinity of the proposal is detailed in **Map 9**.



Map 9: Extent of threatened ecological communities within the area of investigation.

3.6 GROUNDWATER DEPENDENT ECOSYSTEMS

Groundwater dependent ecosystems (GDE) are generally defined as natural ecosystems that require access to groundwater to meet all or some of their water requirements so as to maintain their ecological processes.

Bombala River flows through the middle of the area of investigation. Bombala River is classed as a 'river' ecosystem type and an 'ecosystem that relies on the surface expression of groundwater' with a 'high potential for groundwater interaction.'

3.7 THREATENED SPECIES AND ENDANGERED POPULATIONS

No threatened flora or fauna listed under the TSC Act, EPBC Act or FM Act were detected within the vicinity of the proposal during the field surveys. The desktop analysis conducted for this TABA indicates that there are a number of species that have been recorded in the locality (within a 10 kilometre radius of the proposal). **Map 3, 4 & 5** indicates the previous records of threatened species that have been recorded within the locality. There is a small cluster of records around Bombala where there would most likely have been a high level of historical surveys.

No endangered populations are listed within the Bombala LGA by the TSC Act, and none were identified during the field surveys.

An assessment for the potential of other threatened species to occur within the vicinity of the proposal, but went undetected in surveys, is provided in **Appendix 6**. Using the data collected during the desktop analysis and field surveys, the following criteria were applied to each entity to determine the likelihood of threatened and migratory species occurring within the study area:

- No (no suitable habitat present and the species not previously recorded within the locality; or for flora where suitable habitat is present, study area extensively searched during the appropriate time of year for detection and species not present)
- Unlikely (no suitable habitat is present, species has limited dispersal capability but previously recorded within the locality)
- Low (some suitable habitat present and the species known from the locality. Species may infrequently visit the study area enroute to foraging resources, but do not depend on the habitats of the study area for survival)
- Moderate (Study area contains habitat that could support a population of a species)
- High (Study area contains habitat that is likely to support a population of the species including roosting, breeding and foraging habitat)
- Yes (Species recorded during the field survey, or recently recorded in the study area).

This revealed that a total of five threatened and migratory biota with a moderate to high, or known potential to occur in the vicinity of the proposal.

3.8 MIGRATORY AND MARINE SPECIES

One migratory species as listed under the EPBC Act was detected during the field survey (**Map 8**). This being Latham's Snipe (*Gallinago hardwickii*).

An assessment for the potential for other migratory species to occur within the vicinity of the proposal but went undetected is provided in **Appendix 6.**

No marine species are expected to occur given the absence of habitat.

3.9 WILDLIFE CONNECTIVITY CORRIDORS

The field surveys and air photograph interpretation identified that there are no well-developed terrestrial wildlife corridors within the area of investigation. This is due to the barrier created by the presence of Bombala River and also the Monaro Highway.

Bombala River is considered a wildlife corridor for aquatic biota. However, this is minimised given that the existing weir upstream of Bombala (Coolumbooka River) is a significant barrier to fish and aquatic biota movement given the absence of a fish ladder. Platypus which were observed in the river would also use it for dispersal, particularly any immature animals which would move out from the home pool of their parents looking for new areas of habitat to colonise.

3.10 STATE ENVIRONMENTAL PLANNING POLICY NO. 44

State Environmental Planning Policy No 44 (SEPP44) – Koala Habitat Protection encourages the conservation and management of natural vegetation areas that provide habitat for Koalas to ensure that permanent free-living populations will be maintained over their present range across 107 council areas. SEPP44 aims to identify areas of *potential* and *core* Koala Habitat. These are described as follows:

- *Potential Koala Habitat* is defined as areas of native vegetation where the trees listed in Schedule 2 of SEPP44 constitute at least 15 percent of the total number of trees in the upper or lower strata of the tree component
- *Core Koala Habitat* is defined as an area of land with a resident population of koalas, evidenced by attributes such as breeding females, and recent and historical records of a population.

Bombala LGA is listed within Schedule 1 of this planning instrument and one tree species, Ribbon Gum (*Eucalyptus viminalis*), listed in Schedule 2 of SEPP44 as a 'feed tree species' was identified within the potential footprint of the proposal. Therefore further consideration of SEPP44 is carried out in **Section 4.11** of this TABA.

4 POTENTIAL IMPACT

Bridge and weir construction and operation can have a range of potential impacts to biodiversity. The potential impact as a result of this proposal is summarised below and in the following sections. These include:

- Loss of native vegetation (including threatened ecological communities) and their habitats through clearance or flooding
- Loss of fauna habitats
- Direct mortality of protected and threatened fauna
- Loss of connectivity through the degradation of wildlife and habitat corridors
- Invasion and spread of weeds and pest fauna species
- Changes to water quality as a result of the work in or adjacent to aquatic habitats and alterations to natural hydrological flows
- Edge effects from noise, vibration and light
- Introduction or increased exposure to key threatening processes that many affect terrestrial and aquatic species, populations, ecological communities and their habitat (including threatened biota)
- Regional cumulative impact affecting the long-term viability and survival of common and threatened species, populations and ecological communities and their habitats.

With regard to the current proposal, Bombala Council should aim to:

- Avoid and minimise impact
- Mitigate impact where avoidance is not possible
- Offset where residual impact cannot be avoided.

Preliminary measures to mitigate impact during the construction and operation of the proposal are presented in **Chapter 5**.

4.1 LOSS OF VEGETATION AND HABITAT

Clearing of native vegetation is a key threatening process listed under the TSC Act and the EPBC Act (also refer to **Section 4.9**).

Though the footprint of the proposal has not been finalised, it would potentially result in the clearing of some vegetation though this would most likely be confined to introduced grassland or trees. Native vegetation and habitat, confined to the Snow Gum - Candle Bark woodland on broad valley flats of the tablelands and slopes, South Eastern Highlands (BVT SR637) and Tea-tree tall riparian shrubland, South Eastern Highlands, South East Corner and Australian Alps (SR657) would potentially be impacted by rising water levels associated with the construction of the weir. The impact associated with rising water levels is expected to be minimal at this location due to the relatively small increase. The total area of these patches within the area of investigation is about 0.835 hectares. BVT SR637 subject to

potential impact, has been extensively cleared in the Southern Rivers CMA, up to 95 percent (OEH 2015). SR657 has an estimated clearance of about 10 percent and would also only be subject to minimal impact. The impact as a result of flooding within SR657 would be greater due to the location closer to the weir therefore the potential water rise would be greater however this is a riparian vegetation community and more likely to cope with the higher water levels. Further impact on the aquatic vegetation would occur as a result of bridge construction such as pylons and the construction of a weir within the Bombala River.

At this stage, ancillary facilities such as stockpile sites and machinery compounds for the bridge and weir construction have not been determined.

The construction works adjacent to and within the Bombala River has the potential to create a significant impact through erosion and sedimentation of the river. Clearing vegetation on the banks of the river would result in exposed and disturbed soil surfaces which could be exposed to increased runoff resulting in sedimentation. Work required within the river such as during the construction of pylons and the wall of the weir would also result in the potential for the creation of highly turbid water flowing downstream. This could potentially impact on flora and fauna species, for example, sedimentation reduces the quality of habitat for benthic invertebrates which could impact platypus abundance (Scott and Grant 1997).

Potential impacts on native vegetation are unlikely to result in a significant effect once applied through the Assessment of Significance (7-part test).

4.1.1 Threatened Ecological Communities

Of the 0.432 hectares of native vegetation within the area of investigation mapped as SR637, all of this is consistent with the description for Tablelands Snow Gum Grassy Woodland threatened ecological community (TEC). It is currently unknown how much of the Tablelands Snow Gum Grassy Woodland TEC would be impacted however it is unlikely to be a significant due extent of this community outside of the area of investigation and that the impact would be limited to some minor flooding.

There is also expected to be direct impact to the *Aquatic Ecological Community in the Catchment of the Snowy River in NSW* through the construction of a road bridge and a weir within the Bombala River. Additionally the construction of the weir would result in the water level being raised.

However, within consideration of the concept design, it is unlikely that the proposal would have a significant effect on these TEC's, such that their local extent would be placed at risk of extinction.

4.1.2 Threatened Species Habitat

Field surveys did not identify any threatened species within the immediate vicinity of the proposal. One migratory species listed under the EPBC Act was identified, Latham's Snipe (*Gallinago harwickii*). The habitats present are in low condition given the fragmented nature of the vegetation, the dominance of introduced flora, and the surrounding residential land.

Targeted surveys within the area of investigation failed to identify any threatened species within the area of investigation.

As discussed, the proposal would potentially result in impact to some native vegetation as a result of flooding however this would be minimal. Introduced vegetation would also be removed.

Thirteen threatened and migratory fauna species have some potential to occur in the study area as assessed in **Appendix 6**.

With consideration of the concept design, and the likely occurrence of threatened biota in the locality, it is unlikely that the proposal would have a significant effect on these biota, such that their local extent would be placed at risk of extinction.

4.2 WILDLIFE CONNECTIVITY AND HABITAT FRAGMENTATION

The proposal is unlikely to have a negative effect on terrestrial wildlife corridors or markedly increase habitat fragmentation.

Current connectivity between vegetation on either side of the existing Monaro Highway or Bombala River is very low. The proposal has the potential to impact on the connectivity of habitat within the Bombala River unless a fish ladder is incorporated into the weir design. Dispersal potential for immature Platypus searching for new habitat may also be negatively impacted.

4.3 INJURY AND MORTALITY

Fauna injury or mortality can occur during the clearing phase of construction during the removal of habitat and from collision with vehicles or juvenile platypus dispersal during the operation of the proposal.

4.3.1 Construction Impact

It is anticipated that some diurnal and mobile fauna species such as birds and larger reptiles may be able to move from the path of construction equipment during any clearing operations, other fauna species such as those that are less mobile and nocturnal, are less likely to move away from clearing and machinery movement activities. Construction impact would also apply in aquatic habitats dependent on the construction proposed.

4.3.2 Operational Impact

Operational impact would result in the flooding of an area of vegetation adjacent to the existing pool within the Bombala River. The vegetation here would most likely die as a result. However some may adapt and colonise the new edge of the river bank. The elevated water level would also potentially result in the flooding of existing Platypus burrows which would result in individuals needing to construct new burrows or move to new habitat areas.

4.4 WEEDS

A total of 64 weed species were recorded from field surveys within the area of investigation. Of these, four are listed as a declared noxious weeds in the Bombala LGA; African Lovegrass (*Eragrostis curvula*), Blackberry (*Rubus fruticosus sp. agg.*) and two species of Willow (*Salix spp.*) (DPI 2015). Blackberry and African Lovegrass is scattered through the area of investigation with only Blackberry able to be mapped given the sporadic nature of the grass. Willows are located along the banks of the Bombala River. There is some potential to disperse noxious and environmental weed plant material, with the most likely cause of which would be through the movement of soil by construction vehicles and machinery involved with the initial clearing and earthworks.

African Lovegrass and Blackberry are listed as a Class 4 Locally Controlled noxious weed. This means that the growth of this species must be managed in a manner that continuously inhibits the ability of the plant to spread. *Salix spp.* are Class 4 Locally Controlled noxious weed, which must not be sold, propagated or knowingly distributed.

The potential impact of weeds as a result of the proposal is considered manageable.

4.5 PESTS AND PATHOGENS

Red foxes and rabbits are all known from the locality (both were identified during field surveys). Two key threatening processes (KTP) as listed by the TSC Act and the EPBC Act relate to the invasion and establishment of these species. It is unlikely that the proposal, given the relatively minor nature of the clearing of native vegetation, would lead to increased levels of predation or competition by these species.

Pathogens result in disease in flora and fauna and can be found living in organisms such as fungus, bacteria and virus. One pathogen known from inland NSW and listed as a KTP is of relevance to this proposal, dieback caused by *Phytophthora*, which is listed under the TSC Act and EPBC Act.

Pathogen management should be implemented throughout all stages of the proposal where appropriate.

4.6 CHANGED HYDROLOGY

Changes to hydrology can be temporary or long-term. These may include the temporary diversion of a waterway and barriers that impede water flow. The proposal is likely to have some impact to hydrology given that the weir would impede water flow. However, the existing weir on the Coolumbooka River upstream of the confluence of the Bombala River already contributes to the changed hydrology of the Bombala River.

4.7 GROUNDWATER DEPENDENT ECOSYSTEMS

According to the Groundwater Dependent Ecosystems (GDE) Atlas, Bombala River is mapped as permanent water source. The design of the proposal is to restrict and impede water flow therefore there is the potential for impact to GDE downstream of the proposal. This would be especially relevant during periods of drought when the water level falls below that of the weir and the river downstream would potentially stop flowing resulting in a decrease of water supply for any GDE in the area.

4.8 NOISE, VIBRATION AND LIGHT

Noise, vibration and light impact already pre-exists on Monaro Highway from vehicular movements and light impact from adjacent residential properties and street lights is also present therefore potential impact is restricted to impact as a result of construction work.

Construction noise and vibration are likely to result from the proposal but would be limited to the construction period and during daylight hours. While it is important to remember that no multi-species study has found all species to be sensitive to noise and vibration, it is generally agreed that for species that vocalise frequently such as birds and amphibians, there is some potential for negative effects over the long-term. In the context of the proposal, the work is expected to be conducted over a relatively short time frame and confined to discrete areas. Potential impact, if any, is therefore considered to be relatively minor and temporary.

The proposal would not require the use of construction lighting, and it is likely that the proposal would not exacerbate existing light impact to that already pre-existing.

4.9 IMPACT ON RELEVANT KEY THREATENING PROCESSES

Key threatening processes are listed under the TSC Act, FM Act and EPBC Act that have the potential to either:

- Adversely affect threatened species, populations or ecological communities
- Causes common species, populations or ecological communities to become threatened.

There are a number of listed key threatening processes that are of relevance to aspects of the proposal. These are provided in summary in **Table 4**.

Table 3: Key threatening processes relevant to the proposal.

Key threatening process	Listed Act	Type of threat	Potential impact
Clearing of native vegetation	TSC Act	Habitat loss/change	The proposal would result in the clearing of native vegetation.
Land Clearance	EPBC Act		
Infection of native plants by *Phytophthora cinnamomi*	TSC Act	Pathogen	Infected root material can be dispersed by earth moving equipment

Key threatening process	Listed Act	Type of threat	Potential impact
			and other vehicles.
Dieback caused by the root-rot fungus (*Phytophthora cinnamomi*)	EPBC Act		
Alteration to the natural flow regimes of rivers and streams and their floodplains and wetlands	FM Act	Habitat loss/change	The proposal would result in the alteration to the flow of Bombala and Coolumbooka Rivers.

4.10 CUMULATIVE IMPACT

There are a number of other projects that could potentially be carried out in the region, as listed on the NSW Department of Planning website. These include the Bombala Sawmill and Boco Rock Wind Farm.

The native vegetation to be impacted by the proposal is a threatened ecological community. It is considered an over-cleared vegetation type though according to the Biometric Vegetation Type (cleared by about 95 percent). It is expected that the proposal would have a minimal impact on the extent of this community.

There are no known projects that would involve impeding the flow of the Bombala River.

4.11 SEPP 44 KOALA HABITAT

As detailed in **Section 3.10**, Bombala LGA is listed within Schedule 1 of SEPP 44. SEPP 44 aims to identify areas of *potential* and *core* Koala Habitat. These are described as follows:

- *Potential Koala Habitat* is defined as areas of native vegetation where the trees listed in Schedule 2 of SEPP 44 constitute at least 15 percent of the total number of trees in the upper or lower strata of the tree component
- *Core Koala Habitat* is defined as an area of land with a resident population of koalas, evidenced by attributes such as breeding females, and recent and historical records of a population

Given the presence a tree species listed under Schedule 2 of SEPP 44, Ribbon Gum (*Eucalyptus viminalis*) which occurs as part of the Tablelands Snow Gum Grassy Woodland onsite and it does constitute 15 percent of the canopy, the vegetation in the vicinity of the proposal is considered *Potential Koala Habitat*. A review of existing records indicated that there are Koala records within the locality of the proposal however there is no evidence of current occupation by Koalas. Given this, *Core Koala Habitat* as defined by SEPP 44 is not considered to occur.

In the context of the existing fragmentation of the landscape and that widespread clearing has already occurred in these landscapes, it is unlikely that Koala would even persist in the vicinity of the proposal should it occur in the wider locality. With consideration of these factors and the concept design, it is unlikely that the proposal would impact on Koala.

5 PRELIMINARY MITIGATION MEASURES

EnviroKey proposes a series of preliminary mitigation measures designed to address the potential impacts identified in **Chapter 4** which can be summarised as follows:

- Loss of vegetation and fauna habitat
- Fauna mortality during construction
- Spread of weeds.
- Changes to water quality as a result of the work in or adjacent to aquatic habitats and alterations to natural hydrological flows
- Alteration to flow of Bombala River.

In addressing the potential impact, the objectives of these mitigation measures are to:

- Maintain and protect biodiversity where possible including the minimisation of the loss of native vegetation and habitat
- Maintain existing water quality
- Minimise the potential for weed incursion
- Minimise fauna mortality.

Specific mitigation measures considered necessary for this proposal as follows:

Pre-clearing process

- If any unexpected threatened fauna or flora are discovered, work would stop and a consulting ecologist with relevant experience or the Office of Environment and Heritage (OEH) would be contacted.

Exclusion zones

- Any clearing required would be the smallest extent required to undertake the proposal.

Re-establishment of native vegetation

- Revegetation would be carried out using native plants grown from local provenance seed.
- Any canopy trees to be removed, introduced or native, would have the crowns (leaves and small branches) and trunks where possible, mulched and used to stabilise planting areas during the planting process.

Re-use of woody debris.

- Where possible, woody debris greater than 100 millimetres and less than 300 millimetres in diameter would be re-used

Weed management

- A weed management plan should be implemented
- Five declared noxious weeds for the Bombala LGA occur within the area of investigation. Noxious weeds should be removed, where possible, to an appropriate waste management facility
- Machinery should be cleaned using a high pressure water spray to remove any soil which could transfer weed propagules from the underside and tracks before beginning work onsite
- All machinery should be cleaned using a high pressure water spray to remove any soil which could transfer weed propagules from the underside and tracks before being transferred to be used on any other sites.

Aquatic habitats

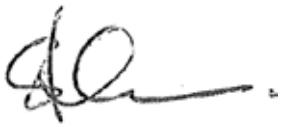
- Stormwater Monitoring would be put in place to monitor the flow for suspended particles. Ideally a system should be put in place to ensure that turbid stormwater flow does not reach the Bombala River
- A qualified ecologist would inspect the banks of the river where proposed bridge and weir construction would be undertaken prior to works beginning to ensure no platypus burrows are present. A contingency plan would be formulated to relocate a resident animal should one be found.
- A Platypus management plan would be created following the management guides set out by the Australian Platypus Conservancy (http://www.platypus.asn.au) and Platypus Spot (www.platypusspot.org).

6 CONCLUSION

This TABA has considered the biodiversity within the vicinity of the proposal by:

- Conducting a desktop analysis to consider biodiversity across the locality
- Conducting a field assessment that is consistent with OEH guidelines
- Adopting the precautionary principle in the general assessment of impact
- Providing appropriate recommendations to mitigate potential impact to an acceptable level.

In the absence of a detailed design, the current concept design has been considered throughout this TABA. EnviroKey concludes that the proposal is *unlikely* to have a '*significant effect*' on any listed threatened species, communities, populations and their habitats and that the current rezoning proposal should proceed. Detailed assessment in accordance with s5A of the NSW *Environmental Planning & Assessment Act 1979* should be applied once a final design is confirmed as part of the Review of Environmental Factors. Preliminary mitigation measures detailed within **Chapter 5** should be adopted, implemented and maintained where appropriate and may change pending the final design and the mitigation required.



Mr. Steve Sass

Director / Principal Ecologist, EnviroKey Pty. Ltd.

B.App.Sci (Env.Sci) (Hons)

Certified Environmental Practitioner, Environment Institute of Australia & New Zealand

Practicing Member, Ecological Consultants Association of NSW

OEH Accredited Biobanking Assessor

7 REFERENCES

Benson J. S. (2006) New South Wales Vegetation Classification and Assessment: the classification, database assessment of protected areas and threat status of plant communities. *Cunninghamia* **9**, 331-82.

Benson J. S. (2008) New South Wales Vegetation Classification and Assessment: Part 2 Plant communities in the NSW South-western Slopes Bioregion and update of NSW Western Plains plant communities. Version 2 of the NSWVCA database. . *Cunninghamia* **10**, 599-673.

Churchill S. (2008) Australian Bats. *Reed New Holland, Frenchs Forest, Australia*.

Cropper H. (1993) Management of Endangered Plants. *CSIRO Publishing, Melbourne*.

DEC. (2004) Threatened Species Survey and Assessment: Guidelines for developments and activities (working draft). *NSW Department of Environment & Conservation, Hurstville, NSW.*

DEC/DPI. (2005) Draft Guidlines for Threatened Species Assessment. *Department of Environment & Conservation, Department of Primary Industries*.

DECC. (2007) Threatened Species Assessment Guidelines: The Assessment of Significance. *Department of Environment & Climate Change, Hurstville, N.S.W.*

DECC. (2008) Biobanking Assessment Methodology. *Department of Environment & Climate Change, Hurstville, N.S.W.*

DECCW. (2010) Draft Biobanking Assessment Methodology (version 2). *Department of Environment, Climate Change & Water, Hurstville, N.S.W.*

DotE. (2013) EPBC Act Policy Statement 1.1 Significant Impact Guidelines, Matters of National Environmental Significance. *http://www.environment.gov.au/system/files/resources/42f84df4-720b-4dcf-b262-48679a3aba58/files/nes-guidelines_1.pdf*.

DotE. (2015) Protected Matters Search Tool. *http://www.environment.gov.au/erin/ert/epbc/index.html. Department of the Environment.* .

DPI. (2011) Final Determination - Aquatic Ecological Community in the Catchment of the Snowy River in NSW. *http://www.dpi.nsw.gov.au/__data/assets/pdf_file/0005/426308/Snowy-River-EEC-Final-Determination.pdf*.

DPI. (2013) Policy and guidelines for fish habitat conservation and management. *Department of Primary Industries*.

DPI. (2015) NSW Noxious Weed Declarations.

I&INSW. (2015) Threatened and protected species - records viewer. *http://www.dpi.nsw.gov.au/fisheries/species-protection/records*.

Lindenmayer D. B. & Fischer J. (2006) *Habitat fragmentation and Landscape change: An ecological and conservation synthesis*. CSIRO, Melbourne.

Menkhorst P. & Knight F. (2010) A field guide to the mammals of Australia. *Oxford University Press*.

Mitchell P. B. (2002) Descriptions for NSW Mitchell Landscapes. *A report prepared for the NSW National Parks and Wildlife Service, Hurstville, NSW.*

Morcombe M. (2004) *Field guide to Australian Birds*. Steve Parish Publishing, Australia.

NPWS. (2003) The Bioregions of New South Wales: their biodiversity, conservation and history. *NSW National Parks and Wildlife Service, Hurstville*.

OEH. (2015a) Biometric Vegetation Types Database. *http://www.environment.nsw.gov.au/biobanking/vegtypedatabase.htm*.

OEH. (2015b) BioNET: The website for the Atlas of NSW Wildlife: A whole-of-government system for flora and fauna sightings information.

OEH. (2015c) Threatened species, populations and ecological communities of NSW. *NSW Office of Environment & Heritage.* **www.threatenedspecies.environment.nsw.gov.au**.

Pennay M., Law B. & Reinhold L. (2004) Bat calls of NSW: A region based guide to echolocation calls of microchiropteran bats. *NSW Department of Environment & Conservation, Hurstville, NSW.*

PlantNET. (2015) New South Wales Flora Online. (ed B. G. Trust), Sydney.

Sass S. (2011a) Recent taxonomic changes and additions to the snake fauna of New South Wales. *Consulting Ecology* **27**.

Sass S. (2011b) Taxonomic changes and additions to the lizard fauna of New South Wales: A synthesis. *Consulting Ecology* **24**.

Swan G. (2013) Further taxonomic changes in the reptile fauna of NSW. *Consulting Ecology* **30**, 2-3.

Swan G., Shea G. & Sadlier R. (2004) *Field guide to the reptiles of New South Wales*. Reed New Holland, Sydney.

Thackway R. & Creswell I. D. (1995) An interim biogeographic regionalisation for Australia: a framework for establishing the national system of reserves. Version 4.0. *Australian Nature Conservation Agency, Canberra.*

Tyler M. J. & Knight F. (2009) *Field Guide to the Frogs of Australia*. CSIRO Publishing, Melbourne.

Watson D. M. (2001) Mistletoe - A keystone resource in Forests and Woodlands worldwide. *Annual Review of Ecological Systematics* **32**, 219-49.

Watson D. M. (2002) Effects of mistletoe on diversity: a case-study from southern New South Wales. *Emu* **102**, 275-81.

Watson D. M. (2003) The 'standardized search' : An improved way to conduct bird surveys. *Austral Ecology* **28**, 515:25.

8 APPENDICES

APPENDIX 1 – QUALIFICATIONS AND EXPERIENCE OF PERSONNEL

Name and Qualifications	Experience
Steve Sass B.App.Sci (Env.Sci) (Hons) Director / Principal Ecologist Certified Environmental Practitioner, EIANZ Member, Ecological Consultants Association of NSW	Steve is a highly experienced Consulting Ecologist having undertaken hundreds of terrestrial and aquatic ecological surveys and assessments across Australia since 1992. He has an in-depth working knowledge of environmental and biodiversity legislation across all states and territories which allows him to provide detailed and accurate assessments and formulate practical solutions to clients and specific projects on a case-by-case basis. Steve is a past Councillor of the Ecological Consultants Association of NSW. Steve was recently invited by OEH to become a sitting member of a team to develop Priority Action Statements for a number of species listed as Endangered under the NSW *Threatened Species Conservation Act 1995*. Previous and current research holds Steve in high regard within both the scientific and ecological consultants' community. To date, Steve has published, submitted or has in preparation, twenty-nine manuscripts within peer-reviewed scientific journals, many of which are related to threatened reptile species survey, monitoring or management. Steve has extensive experience in southern NSW. Over the past eight years, he has completed or provided specialist biodiversity advice to more than 800 environmental assessments for projects such as residential and industrial developments, highway upgrades and telecommunications, water, sewerage, energy, mining and electricity network infrastructure projects. Recently, Steve completed a REF for a river restoration project on the Thredbo River, near Gaden Hatchery and a 25km shared track that follows the Thredbo River, between Bullocks Flat and Gaden Hatchery. Near Bombala, Steve prepared the Reptile Relocation Strategy for the Boco Rock Wind Farm for commonwealth listed threatened reptile species and his work was instrumental in the final approval and biodiversity offset strategy. Steve is the Principal Ecologist of EnviroKey. For the TABA, he was the project manager, assisted with report preparation and carried out a certification of the report.
Joshua Wellington B. Sc (Environmental) Senior Project Manager / Ecologist	Joshua is an experienced Ecologist having completed surveys in NSW, QLD and VIC since 2008. In the field, Joshua's fauna and flora skills make him a valuable part of the ecological impact assessment team. He is highly conversant with the fauna of the southern tablelands and Australian Alps having undertaken dozens of surveys in the region. Joshua's experience includes the field assessment and reporting for Review of Environmental Factors and Environmental Management Plans for various infrastructure projects within government and private industry. For this study, Joshua completed the fauna survey. Joshua was also the primary author of the TABA.
Linda Sass	Linda is an experienced ecologist having conducted flora and fauna surveys across NSW over the past 8 years. She has

Name and Qualifications	Experience
B. Gn.St (Sci), B.A, Dip. Ed (Sec) Director / Senior Ecologist Member, Ecological Consultants Association of NSW (ECA)	extensive experience with the flora and fauna of southern and western NSW. In recent years, she has completed flora surveys for a proposed water pipeline in western NSW, a biodiversity study of an existing mining operation on the Cobar Peneplain, and extensive flora and fauna surveys along MR279 for numerous investigations and assessments as part of the Gocup Road Route Strategy. For this TABA, Linda completed the flora surveys and conducted an internal review of the report.
Stephanie Plattner B.Sc (Spatial Science) GIS Analyst	Stephanie has extensive experience in ArcGIS having worked in private industry and government agencies for the past 6 years. Stephanie produced the maps in this report.

APPENDIX 2 – PROTECTED MATTERS SEARCH TOOL RESULTS

Australian Government
Department of the Environment

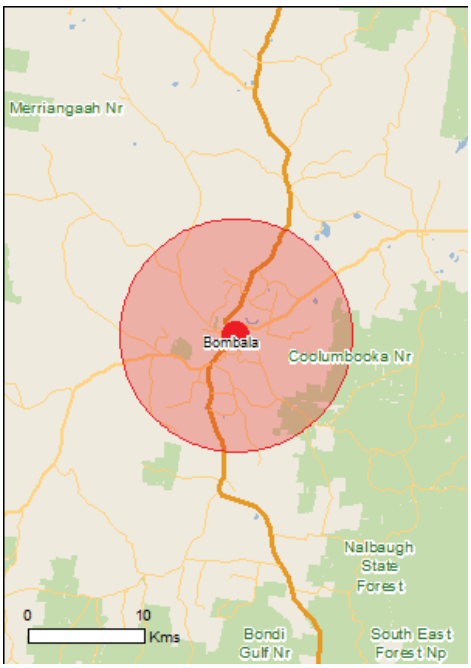
EPBC Act Protected Matters Report

This report provides general guidance on matters of national environmental significance and other matters protected by the EPBC Act in the area you have selected.

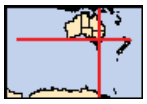
Information on the coverage of this report and qualifications on data supporting this report are contained in the caveat at the end of the report.

Information is available about Environment Assessments and the EPBC Act including significance guidelines, forms and application process details.

Report created: 16/11/15 09:09:07



Coordinates
Buffer: 10.0Km



Summary

Matters of National Environmental Significance

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

World Heritage Properties:	None
National Heritage Places:	None
Wetlands of International Importance:	None
Great Barrier Reef Marine Park:	None
Commonwealth Marine Area:	None
Listed Threatened Ecological Communities:	3
Listed Threatened Species:	25
Listed Migratory Species:	10

Other Matters Protected by the EPBC Act

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

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

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

Commonwealth Land:	2
Commonwealth Heritage Places:	None
Listed Marine Species:	13
Whales and Other Cetaceans:	None
Critical Habitats:	None
Commonwealth Reserves Terrestrial:	None
Commonwealth Reserves Marine:	None

Extra Information

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

State and Territory Reserves:	1
Regional Forest Agreements:	2
Invasive Species:	27
Nationally Important Wetlands:	1
Key Ecological Features (Marine)	None

Details

Matters of National Environmental Significance

Listed Threatened Ecological Communities [Resource Information]

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

Name	Status	Type of Presence
Natural Temperate Grassland of the Southern Tablelands of NSW and the Australian Capital Territory	Endangered	Community likely to occur within area
Upland Wetlands of the New England Tablelands and the Monaro Plateau	Endangered	Community likely to occur within area
White Box-Yellow Box-Blakely's Red Gum Grassy Woodland and Derived Native Grassland	Critically Endangered	Community may occur within area

Listed Threatened Species [Resource Information]

Name	Status	Type of Presence
Birds		
Anthochaera phrygia Regent Honeyeater [82338]	Critically Endangered	Foraging, feeding or related behaviour may occur within area
Botaurus poiciloptilus Australasian Bittern [1001]	Endangered	Species or species habitat may occur within area
Grantiella picta Painted Honeyeater [470]	Vulnerable	Species or species habitat may occur within area
Lathamus discolor Swift Parrot [744]	Endangered	Species or species habitat may occur within area
Rostratula australis Australian Painted Snipe [77037]	Endangered	Species or species habitat may occur within area
Fish		
Prototroctes maraena Australian Grayling [26179]	Vulnerable	Species or species habitat likely to occur within area
Frogs		
Heleioporus australiacus Giant Burrowing Frog [1973]	Vulnerable	Species or species habitat likely to occur within area
Litoria castanea Yellow-spotted Tree Frog, Yellow-spotted Bell Frog [1848]	Endangered	Species or species habitat likely to occur within area
Litoria raniformis Growling Grass Frog, Southern Bell Frog, Green and Golden Frog, Warty Swamp Frog [1828]	Vulnerable	Species or species habitat may occur within area

Name	Status	Type of Presence
Mammals		
Dasyurus maculatus maculatus (SE mainland population) Spot-tailed Quoll, Spotted-tail Quoll, Tiger Quoll (southeastern mainland population) [75184]	Endangered	Species or species habitat known to occur within area
Isoodon obesulus obesulus Southern Brown Bandicoot (Eastern) [68050]	Endangered	Species or species habitat may occur within area
Phascolarctos cinereus (combined populations of Qld, NSW and the ACT) Koala (combined populations of Queensland, New South Wales and the Australian Capital Territory) [85104]	Vulnerable	Species or species habitat likely to occur within area
Potorous tridactylus tridactylus Long-nosed Potoroo (SE mainland) [66645]	Vulnerable	Species or species habitat may occur within area
Pseudomys fumeus Konoom, Smoky Mouse [88]	Endangered	Species or species habitat may occur within area
Pteropus poliocephalus Grey-headed Flying-fox [186]	Vulnerable	Foraging, feeding or related behaviour may occur within area
Plants		
Calotis glandulosa Mauve Burr-daisy [7842]	Vulnerable	Species or species habitat likely to occur within area
Dodonaea procumbens Trailing Hop-bush [12149]	Vulnerable	Species or species habitat likely to occur within area
Grevillea acanthifolia subsp. paludosa Bog Grevillea [21872]	Endangered	Species or species habitat may occur within area
Leucochrysum albicans var. tricolor Hoary Sunray, Grassland Paper-daisy [56204]	Endangered	Species or species habitat likely to occur within area
Pelargonium sp. Striatellum (G.W.Carr 10345) Omeo Stork's-bill [84065]	Endangered	Species or species habitat likely to occur within area
Prasophyllum petilum Tarengo Leek Orchid [55144]	Endangered	Species or species habitat may occur within area
Prasophyllum sp. Wybong (C.Phelps ORG 5269) a leek-orchid [81964]	Critically Endangered	Species or species habitat may occur within area
Thesium australe Austral Toadflax, Toadflax [15202]	Vulnerable	Species or species habitat likely to occur within area
Westringia kydrensis [56456]	Endangered	Species or species habitat likely to occur within area
Reptiles		
Tympanocryptis pinguicolla Grassland Earless Dragon [66727]	Endangered	Species or species habitat likely to occur within area

Listed Migratory Species [Resource Information]

* Species is listed under a different scientific name on the EPBC Act - Threatened Species list.

Name	Threatened	Type of Presence
Migratory Marine Birds		

Name	Threatened	Type of Presence
Apus pacificus Fork-tailed Swift [678]		Species or species habitat likely to occur within area
Migratory Terrestrial Species		
Hirundapus caudacutus White-throated Needletail [682]		Species or species habitat known to occur within area
Merops ornatus Rainbow Bee-eater [670]		Species or species habitat may occur within area
Monarcha melanopsis Black-faced Monarch [609]		Species or species habitat known to occur within area
Myiagra cyanoleuca Satin Flycatcher [612]		Species or species habitat known to occur within area
Rhipidura rufifrons Rufous Fantail [592]		Species or species habitat likely to occur within area
Migratory Wetlands Species		
Ardea alba Great Egret, White Egret [59541]		Species or species habitat likely to occur within area
Ardea ibis Cattle Egret [59542]		Species or species habitat may occur within area
Gallinago hardwickii Latham's Snipe, Japanese Snipe [863]		Species or species habitat may occur within area
Pandion haliaetus Osprey [952]		Species or species habitat may occur within area

Other Matters Protected by the EPBC Act

Commonwealth Land [Resource Information]

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

Name
Commonwealth Land - Commonwealth Trading Bank of Australia
Commonwealth Land - Telstra Corporation Limited

Listed Marine Species [Resource Information]

* Species is listed under a different scientific name on the EPBC Act - Threatened Species list.

Name	Threatened	Type of Presence
Birds		
Apus pacificus Fork-tailed Swift [678]		Species or species habitat likely to occur within area
Ardea alba Great Egret, White Egret [59541]		Species or species habitat likely to occur within area
Ardea ibis Cattle Egret [59542]		Species or species habitat may occur within

Name	Threatened	Type of Presence
		area
Gallinago hardwickii Latham's Snipe, Japanese Snipe [863]		Species or species habitat may occur within area
Haliaeetus leucogaster White-bellied Sea-Eagle [943]		Species or species habitat known to occur within area
Hirundapus caudacutus White-throated Needletail [682]		Species or species habitat known to occur within area
Lathamus discolor Swift Parrot [744]	Endangered	Species or species habitat may occur within area
Merops ornatus Rainbow Bee-eater [670]		Species or species habitat may occur within area
Monarcha melanopsis Black-faced Monarch [609]		Species or species habitat known to occur within area
Myiagra cyanoleuca Satin Flycatcher [612]		Species or species habitat known to occur within area
Pandion haliaetus Osprey [952]		Species or species habitat may occur within area
Rhipidura rufifrons Rufous Fantail [592]		Species or species habitat likely to occur within area
Rostratula benghalensis (sensu lato) Painted Snipe [889]	Endangered*	Species or species habitat may occur within area

Extra Information

State and Territory Reserves [Resource Information]

Name	State
Coolumbooka	NSW

Regional Forest Agreements [Resource Information]

Note that all areas with completed RFAs have been included.

Name	State
Eden RFA	New South Wales
Southern RFA	New South Wales

Invasive Species [Resource Information]

Weeds reported here are the 20 species of national significance (WoNS), along with other introduced plants that are considered by the States and Territories to pose a particularly significant threat to biodiversity. The following feral animals are reported: Goat, Red Fox, Cat, Rabbit, Pig, Water Buffalo and Cane Toad. Maps from Landscape Health Project, National Land and Water Resouces Audit, 2001.

Name	Status	Type of Presence
Birds		

Name	Status	Type of Presence
Alauda arvensis Skylark [656]		Species or species habitat likely to occur within area
Anas platyrhynchos Mallard [974]		Species or species habitat likely to occur within area
Carduelis carduelis European Goldfinch [403]		Species or species habitat likely to occur within area
Columba livia Rock Pigeon, Rock Dove, Domestic Pigeon [803]		Species or species habitat likely to occur within area
Passer domesticus House Sparrow [405]		Species or species habitat likely to occur within area
Sturnus vulgaris Common Starling [389]		Species or species habitat likely to occur within area
Turdus merula Common Blackbird, Eurasian Blackbird [596]		Species or species habitat likely to occur within area
Mammals		
Bos taurus Domestic Cattle [16]		Species or species habitat likely to occur within area
Canis lupus familiaris Domestic Dog [82654]		Species or species habitat likely to occur within area
Capra hircus Goat [2]		Species or species habitat likely to occur within area
Felis catus Cat, House Cat, Domestic Cat [19]		Species or species habitat likely to occur within area
Feral deer Feral deer species in Australia [85733]		Species or species habitat likely to occur within area
Lepus capensis Brown Hare [127]		Species or species habitat likely to occur within area
Mus musculus House Mouse [120]		Species or species habitat likely to occur within area
Oryctolagus cuniculus Rabbit, European Rabbit [128]		Species or species habitat likely to occur within area
Rattus rattus Black Rat, Ship Rat [84]		Species or species habitat likely to occur within area
Sus scrofa Pig [6]		Species or species habitat likely to occur within area
Vulpes vulpes Red Fox, Fox [18]		Species or species habitat likely to occur within area

Name	Status	Type of Presence
Plants		
Cytisus scoparius Broom, English Broom, Scotch Broom, Common Broom, Scottish Broom, Spanish Broom [5934]		Species or species habitat likely to occur within area
Genista sp. X Genista monspessulana Broom [67538]		Species or species habitat may occur within area
Nassella neesiana Chilean Needle grass [67699]		Species or species habitat likely to occur within area
Nassella trichotoma Serrated Tussock, Yass River Tussock, Yass Tussock, Nassella Tussock (NZ) [18884]		Species or species habitat likely to occur within area
Pinus radiata Radiata Pine Monterey Pine, Insignis Pine, Wilding Pine [20780]		Species or species habitat may occur within area
Rubus fruticosus aggregate Blackberry, European Blackberry [68406]		Species or species habitat likely to occur within area
Salix spp. except S.babylonica, S.x calodendron & S.x reichardtii Willows except Weeping Willow, Pussy Willow and Sterile Pussy Willow [68497]		Species or species habitat likely to occur within area
Senecio madagascariensis Fireweed, Madagascar Ragwort, Madagascar Groundsel [2624]		Species or species habitat likely to occur within area
Ulex europaeus Gorse, Furze [7693]		Species or species habitat likely to occur within area

Nationally Important Wetlands	[Resource Information]
Name	State
Monaro Lakes	NSW

Caveat

The information presented in this report has been provided by a range of data sources as acknowledged at the end of the report.

This report is designed to assist in identifying the locations of places which may be relevant in determining obligations under the Environment Protection and Biodiversity Conservation Act 1999. It holds mapped locations of World and National Heritage properties, Wetlands of International and National Importance, Commonwealth and State/Territory reserves, listed threatened, migratory and marine species and listed threatened ecological communities. Mapping of Commonwealth land is not complete at this stage. Maps have been collated from a range of sources at various resolutions.

Not all species listed under the EPBC Act have been mapped (see below) and therefore a report is a general guide only. Where available data supports mapping, the type of presence that can be determined from the data is indicated in general terms. People using this information in making a referral may need to consider the qualifications below and may need to seek and consider other information sources.

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

For species where the distributions are well known, maps are digitised from sources such as recovery plans and detailed habitat studies. Where appropriate, core breeding, foraging and roosting areas are indicated under 'type of presence'. For species whose distributions are less well known, point locations are collated from government wildlife authorities, museums, and non-government organisations; bioclimatic distribution models are generated and these validated by experts. In some cases, the distribution maps are based solely on expert knowledge.

Only selected species covered by the following provisions of the EPBC Act have been mapped:

- migratory and
- marine

The following species and ecological communities have not been mapped and do not appear in reports produced from this database:

- threatened species listed as extinct or considered as vagrants
- some species and ecological communities that have only recently been listed
- some terrestrial species that overfly the Commonwealth marine area
- migratory species that are very widespread, vagrant, or only occur in small numbers

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

- non-threatened seabirds which have only been mapped for recorded breeding sites
- seals which have only been mapped for breeding sites near the Australian continent

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

Coordinates

-36.907 149.242

Acknowledgements

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

-Office of Environment and Heritage, New South Wales
-Department of Environment and Primary Industries, Victoria
-Department of Primary Industries, Parks, Water and Environment, Tasmania
-Department of Environment, Water and Natural Resources, South Australia
-Parks and Wildlife Commission NT, Northern Territory Government
-Department of Environmental and Heritage Protection, Queensland
-Department of Parks and Wildlife, Western Australia
-Environment and Planning Directorate, ACT
-Birdlife Australia
-Australian Bird and Bat Banding Scheme
-Australian National Wildlife Collection
-Natural history museums of Australia
-Museum Victoria
-Australian Museum
-South Australian Museum
-Queensland Museum
-Online Zoological Collections of Australian Museums
-Queensland Herbarium
-National Herbarium of NSW
-Royal Botanic Gardens and National Herbarium of Victoria
-Tasmanian Herbarium
-State Herbarium of South Australia
-Northern Territory Herbarium
-Western Australian Herbarium
-Australian National Herbarium, Atherton and Canberra
-University of New England
-Ocean Biogeographic Information System
-Australian Government, Department of Defence
Forestry Corporation, NSW
-Geoscience Australia
-CSIRO
-Other groups and individuals

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

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

Department of the Environment
GPO Box 787
Canberra ACT 2601 Australia
+61 2 6274 1111

APPENDIX 3 – NOXIOUS WEED DECLARATIONS

Weeds declared in the Local Control Authority area of Bombala Council

Select another Local Control Authority area

Weed	Class	
African boxthorn *Lycium ferocissimum*	4	Locally Controlled Weed *The growth of the plant must be managed in a manner that continuously inhibits the ability of the plant to spread and the plant must not be sold, propagated or knowingly distributed*
African feather grass *Cenchrus macrourus*	5	Restricted Plant *The requirements in the Noxious Weeds Act 1993 for a notifiable weed must be complied with*
African lovegrass *Eragrostis curvula*	4	Locally Controlled Weed *The growth of the plant must be managed in a manner that continuously inhibits the ability of the plant to spread and the plant must not be sold, propagated or knowingly distributed*
African turnip weed - eastern *Sisymbrium thellungii*	5	Restricted Plant *The requirements in the Noxious Weeds Act 1993 for a notifiable weed must be complied with*
African turnip weed - western *Sisymbrium runcinatum*	5	Restricted Plant *The requirements in the Noxious Weeds Act 1993 for a notifiable weed must be complied with*
Alligator weed *Alternanthera philoxeroides*	2	Regionally Prohibited Weed *The plant must be eradicated from the land and that land must be kept free of the plant*
Anchored water hyacinth *Eichhornia azurea*	1	State Prohibited Weed *The plant must be eradicated from the land and that land must be kept free of the plant*
Annual ragweed *Ambrosia artemisiifolia*	5	Restricted Plant *The requirements in the Noxious Weeds Act 1993 for a notifiable weed must be complied with*
Arrowhead *Sagittaria calycina* var. *calycina*	4	Locally Controlled Weed *The plant must not be sold, propagated or knowingly distributed*
Artichoke thistle *Cynara cardunculus*	5	Restricted Plant *The requirements in the Noxious Weeds Act 1993 for a notifiable weed must be complied with*
Asparagus - climbing asparagus fern *Asparagus plumosus*	4	Locally Controlled Weed *The plant must not be sold, propagated or knowingly distributed*
Asparagus - ground asparagus *Asparagus aethiopicus*	4	Locally Controlled Weed *The plant must not be sold, propagated or knowingly distributed*
Asparagus weeds *Asparagus* species	4	Locally Controlled Weed *The plant must not be sold, propagated or knowingly distributed*
Athel pine *Tamarix aphylla*	5	Restricted Plant *The requirements in the Noxious Weeds Act 1993 for a notifiable weed must be complied with*
Bear-skin fescue *Festuca gautieri*	5	Restricted Plant *The requirements in the Noxious Weeds Act 1993 for a notifiable weed must be complied with*
Black knapweed *Centaurea X moncktonii*	1	State Prohibited Weed *The plant must be eradicated from the land and that land must be kept free of the plant*
Black willow *Salix nigra*	2	Regionally Prohibited Weed *The plant must be eradicated from the land and that land must be kept free of the plant*
Blackberry *Rubus fruticosus* species aggregate	4	Locally Controlled Weed *The growth of the plant must be managed in a manner that continuously inhibits the ability of the plant to spread and the plant must not be sold, propagated or knowingly distributed*
Boneseed *Chrysanthemoides monilifera*	1	State Prohibited Weed *The plant must be eradicated from the land and that land must be kept free of*

subsp. *monilifera*		*the plant*
Bridal creeper *Asparagus asparagoides*	4	Locally Controlled Weed *The plant must not be sold, propagated or knowingly distributed*
Bridal veil creeper *Asparagus declinatus*	1	State Prohibited Weed *The plant must be eradicated from the land and that land must be kept free of the plant*
Broomrapes *Orobanche* species	1	State Prohibited Weed *The plant must be eradicated from the land and that land must be kept free of the plant*
Burr ragweed *Ambrosia confertiflora*	5	Restricted Plant *The requirements in the Noxious Weeds Act 1993 for a notifiable weed must be complied with*
Cabomba *Cabomba caroliniana*	5	Restricted Plant *The requirements in the Noxious Weeds Act 1993 for a notifiable weed must be complied with*
Cape broom *Genista monspessulana*	3	Regionally Controlled Weed *The plant must be fully and continuously suppressed and destroyed and the plant must not be sold, propagated or knowingly distributed*
Cayenne snakeweed *Stachytarpheta cayennensis*	5	Restricted Plant *The requirements in the Noxious Weeds Act 1993 for a notifiable weed must be complied with*
Chilean needle grass *Nassella neesiana*	3	Regionally Controlled Weed *The plant must be fully and continuously suppressed and destroyed and the plant must not be sold, propagated or knowingly distributed*
Chinese violet *Asystasia gangetica* subsp. *micrantha*	1	State Prohibited Weed *The plant must be eradicated from the land and that land must be kept free of the plant*
Clockweed *Oenothera curtiflora*	5	Restricted Plant *The requirements in the Noxious Weeds Act 1993 for a notifiable weed must be complied with*
Corn sowthistle *Sonchus arvensis*	5	Restricted Plant *The requirements in the Noxious Weeds Act 1993 for a notifiable weed must be complied with*
Dodder *Cuscuta* species	5	Restricted Plant *The requirements in the Noxious Weeds Act 1993 for a notifiable weed must be complied with*
Espartillo - broad kernel *Amelichloa caudata*	5	Restricted Plant *The requirements in the Noxious Weeds Act 1993 for a notifiable weed must be complied with*
Espartillo - narrow kernel *Amelichloa brachychaeta*	5	Restricted Plant *The requirements in the Noxious Weeds Act 1993 for a notifiable weed must be complied with*
Eurasian water milfoil *Myriophyllum spicatum*	1	State Prohibited Weed *The plant must be eradicated from the land and that land must be kept free of the plant*
Fine-bristled burr grass *Cenchrus brownii*	5	Restricted Plant *The requirements in the Noxious Weeds Act 1993 for a notifiable weed must be complied with*
Fireweed *Senecio madagascariensis*	3	Regionally Controlled Weed *The plant must be fully and continuously suppressed and destroyed and the plant must not be sold, propagated or knowingly distributed*
Flax-leaf broom *Genista linifolia*	4	Locally Controlled Weed *The plant must not be sold, propagated or knowingly distributed*
Fountain grass *Cenchrus setaceus*	5	Restricted Plant *The requirements in the Noxious Weeds Act 1993 for a notifiable weed must be complied with*
Frogbit *Limnobium laevigatum*	1	State Prohibited Weed *The plant must be eradicated from the land and that land must be kept free of the plant*
Gallon's curse *Cenchrus biflorus*	5	Restricted Plant *The requirements in the Noxious Weeds Act 1993 for a notifiable weed must be complied with*
Gamba grass	5	Restricted Plant

Andropogon gayanus		*The requirements in the Noxious Weeds Act 1993 for a notifiable weed must be complied with*
Giant reed *Arundo donax*	4	Locally Controlled Weed *The plant must not be sold, propagated or knowingly distributed*
Glaucous starthistle *Carthamus leucocaulos*	5	Restricted Plant *The requirements in the Noxious Weeds Act 1993 for a notifiable weed must be complied with*
Golden dodder *Cuscuta campestris*	4	Locally Controlled Weed *The growth of the plant must be managed in a manner that continuously inhibits the ability of the plant to spread*
Golden thistle *Scolymus hispanicus*	5	Restricted Plant *The requirements in the Noxious Weeds Act 1993 for a notifiable weed must be complied with*
Gorse *Ulex europaeus*	2	Regionally Prohibited Weed *The plant must be eradicated from the land and that land must be kept free of the plant*
Green cestrum *Cestrum parqui*	3	Regionally Controlled Weed *The plant must be fully and continuously suppressed and destroyed*
Grey sallow *Salix cinerea*	2	Regionally Prohibited Weed *The plant must be eradicated from the land and that land must be kept free of the plant*
Groundsel bush *Baccharis halimifolia*	2	Regionally Prohibited Weed *The plant must be eradicated from the land and that land must be kept free of the plant*
Harrisia cactus *Harrisia* species	4	Locally Controlled Weed *The growth of the plant must be managed in a manner that continuously inhibits the ability of the plant to spread and the plant must not be sold, propagated or knowingly distributed*
Hawkweeds *Hieracium* species	1	State Prohibited Weed *The plant must be eradicated from the land and that land must be kept free of the plant*
Horehound *Marrubium vulgare*	4	Locally Controlled Weed *The growth of the plant must be managed in a manner that continuously inhibits the ability of the plant to spread*
Horsetails *Equisetum* species	1	State Prohibited Weed *The plant must be eradicated from the land and that land must be kept free of the plant*
Hydrocotyl *Hydrocotyle ranunculoides*	1	State Prohibited Weed *The plant must be eradicated from the land and that land must be kept free of the plant*
Hymenachne *Hymenachne amplexicaulis* and hybrids	1	State Prohibited Weed *The plant must be eradicated from the land and that land must be kept free of the plant*
Illyrian thistle *Onopordum illyricum*	4	Locally Controlled Weed *The growth of the plant must be managed in a manner that continuously inhibits the ability of the plant to spread*
Italian bugloss *Echium italicum*	4	Locally Controlled Weed *The growth of the plant must be managed in a manner that continuously inhibits the ability of the plant to spread*
Karroo thorn *Vachellia karroo*	1	State Prohibited Weed *The plant must be eradicated from the land and that land must be kept free of the plant*
Kidney-leaf mud plantain *Heteranthera reniformis*	1	State Prohibited Weed *The plant must be eradicated from the land and that land must be kept free of the plant*
Kochia *Bassia scoparia*	1	State Prohibited Weed *The plant must be eradicated from the land and that land must be kept free of the plant*
Koster's curse *Clidemia hirta*	1	State Prohibited Weed *The plant must be eradicated from the land and that land must be kept free of the plant*
Lagarosiphon *Lagarosiphon major*	1	State Prohibited Weed *The plant must be eradicated from the land and that land must be kept free of*

		the plant
Leafy elodea *Egeria densa*	4	Locally Controlled Weed *The plant must not be sold, propagated or knowingly distributed*
Lippia *Phyla canescens*	4	Locally Controlled Weed *The plant must not be sold, propagated or knowingly distributed* ***except incidentally in hay or lucerne***
Long-leaf willow primrose *Ludwigia longifolia*	3	Regionally Controlled Weed *The plant must be fully and continuously suppressed and destroyed and the plant must not be sold, propagated or knowingly distributed*
Mexican feather grass *Nassella tenuissima*	1	State Prohibited Weed *The plant must be eradicated from the land and that land must be kept free of the plant*
Mexican poppy *Argemone mexicana*	5	Restricted Plant *The requirements in the Noxious Weeds Act 1993 for a notifiable weed must be complied with*
Miconia *Miconia* species	1	State Prohibited Weed *The plant must be eradicated from the land and that land must be kept free of the plant*
Mikania vine *Mikania micrantha*	1	State Prohibited Weed *The plant must be eradicated from the land and that land must be kept free of the plant*
Mimosa *Mimosa pigra*	1	State Prohibited Weed *The plant must be eradicated from the land and that land must be kept free of the plant*
Mossman River grass *Cenchrus echinatus*	5	Restricted Plant *The requirements in the Noxious Weeds Act 1993 for a notifiable weed must be complied with*
Nodding thistle *Carduus nutans* subsp. *nutans*	4	Locally Controlled Weed *The growth of the plant must be managed in a manner that continuously inhibits the ability of the plant to spread*
Pampas grass *Cortaderia* species	4	Locally Controlled Weed *The growth of the plant must be managed in a manner that continuously inhibits the ability of the plant to spread and the plant must not be sold, propagated or knowingly distributed*
Parthenium weed *Parthenium hysterophorus*	1	State Prohibited Weed *The plant must be eradicated from the land and that land must be kept free of the plant*
Paterson's curse *Echium plantagineum*	4	Locally Controlled Weed *The growth of the plant must be managed in a manner that continuously inhibits the ability of the plant to spread*
Perennial thistle *Cirsium arvense*	3	Regionally Controlled Weed *The plant must be fully and continuously suppressed and destroyed*
Pond apple *Annona glabra*	1	State Prohibited Weed *The plant must be eradicated from the land and that land must be kept free of the plant*
Prickly acacia *Vachellia nilotica*	1	State Prohibited Weed *The plant must be eradicated from the land and that land must be kept free of the plant*
Prickly pear - common pear *Opuntia stricta*	4	Locally Controlled Weed *The growth of the plant must be managed in a manner that continuously inhibits the ability of the plant to spread and the plant must not be sold, propagated or knowingly distributed*
Prickly pear - Hudson pear *Cylindropuntia rosea*	4	Locally Controlled Weed *The growth of the plant must be managed in a manner that continuously inhibits the ability of the plant to spread and the plant must not be sold, propagated or knowingly distributed*
Prickly pear - smooth tree pear *Opuntia monacantha*	4	Locally Controlled Weed *The growth of the plant must be managed in a manner that continuously inhibits the ability of the plant to spread and the plant must not be sold, propagated or knowingly distributed*
Prickly pear - tiger pear *Opuntia aurantiaca*	4	Locally Controlled Weed *The growth of the plant must be managed in a manner that continuously inhibits the ability of the plant to spread and the plant must not be sold,*

		propagated or knowingly distributed
Prickly pear - velvety tree pear *Opuntia tomentosa*	4	Locally Controlled Weed *The growth of the plant must be managed in a manner that continuously inhibits the ability of the plant to spread and the plant must not be sold, propagated or knowingly distributed*
Red rice *Oryza rufipogon*	5	Restricted Plant *The requirements in the Noxious Weeds Act 1993 for a notifiable weed must be complied with*
Rhus tree *Toxicodendron succedaneum*	4	Locally Controlled Weed *The growth of the plant must be managed in a manner that continuously inhibits the ability of the plant to spread and the plant must not be sold, propagated or knowingly distributed*
Rubber vine *Cryptostegia grandiflora*	1	State Prohibited Weed *The plant must be eradicated from the land and that land must be kept free of the plant*
Sagittaria *Sagittaria platyphylla*	4	Locally Controlled Weed *The plant must not be sold, propagated or knowingly distributed*
Salvinia *Salvinia molesta*	2	Regionally Prohibited Weed *The plant must be eradicated from the land and that land must be kept free of the plant*
Scotch broom *Cytisus scoparius* subsp. *scoparius*	4	Locally Controlled Weed *The growth of the plant must be managed in a manner that continuously inhibits the ability of the plant to spread and the plant must not be sold, propagated or knowingly distributed*
Scotch thistle *Onopordum acanthium*	4	Locally Controlled Weed *The growth of the plant must be managed in a manner that continuously inhibits the ability of the plant to spread*
Senegal tea plant *Gymnocoronis spilanthoides*	1	State Prohibited Weed *The plant must be eradicated from the land and that land must be kept free of the plant*
Serrated tussock *Nassella trichotoma*	4	Locally Controlled Weed *The growth of the plant must be managed in a manner that continuously inhibits the ability of the plant to spread and the plant must not be sold, propagated or knowingly distributed*
Siam weed *Chromolaena odorata*	1	State Prohibited Weed *The plant must be eradicated from the land and that land must be kept free of the plant*
Silverleaf nightshade *Solanum elaeagnifolium*	4	Locally Controlled Weed *The plant must not be sold, propagated or knowingly distributed*
Smooth-stemmed turnip *Brassica barrelieri* subsp. *oxyrrhina*	5	Restricted Plant *The requirements in the Noxious Weeds Act 1993 for a notifiable weed must be complied with*
Soldier thistle *Picnomon acarna*	5	Restricted Plant *The requirements in the Noxious Weeds Act 1993 for a notifiable weed must be complied with*
Spiny burrgrass - longispinus *Cenchrus longispinus*	4	Locally Controlled Weed *The growth of the plant must be managed in a manner that continuously inhibits the ability of the plant to spread and the plant must not be sold, propagated or knowingly distributed*
Spiny burrgrass - spinifex *Cenchrus spinifex*	4	Locally Controlled Weed *The growth of the plant must be managed in a manner that continuously inhibits the ability of the plant to spread and the plant must not be sold, propagated or knowingly distributed*
Spongeplant *Limnobium spongia*	1	State Prohibited Weed *The plant must be eradicated from the land and that land must be kept free of the plant*
Spotted knapweed *Centaurea stoebe* subsp. *micranthos*	1	State Prohibited Weed *The plant must be eradicated from the land and that land must be kept free of the plant*
St. John's wort *Hypericum perforatum*	4	Locally Controlled Weed *The growth of the plant must be managed in a manner that continuously inhibits the ability of the plant to spread and the plant must not be sold, propagated or knowingly distributed*
Stemless thistle	4	Locally Controlled Weed

Onopurdum acaulon		*The growth of the plant must be managed in a manner that continuously inhibits the ability of the plant to spread*
Sweet briar *Rosa rubiginosa*	4	Locally Controlled Weed *The growth of the plant must be managed in a manner that continuously inhibits the ability of the plant to spread*
Taurian thistle *Onopurdum tauricum*	4	Locally Controlled Weed *The growth of the plant must be managed in a manner that continuously inhibits the ability of the plant to spread*
Texas blueweed *Helianthus ciliaris*	5	Restricted Plant *The requirements in the Noxious Weeds Act 1993 for a notifiable weed must be complied with*
Tropical soda apple *Solanum viarum*	1	State Prohibited Weed *The plant must be eradicated from the land and that land must be kept free of the plant*
Viper's bugloss *Echium vulgare*	4	Locally Controlled Weed *The growth of the plant must be managed in a manner that continuously inhibits the ability of the plant to spread*
Water caltrop *Trapa* species	1	State Prohibited Weed *The plant must be eradicated from the land and that land must be kept free of the plant*
Water hyacinth *Eichhornia crassipes*	2	Regionally Prohibited Weed *The plant must be eradicated from the land and that land must be kept free of the plant*
Water lettuce *Pistia stratiotes*	1	State Prohibited Weed *The plant must be eradicated from the land and that land must be kept free of the plant*
Water soldier *Stratiotes aloides*	1	State Prohibited Weed *The plant must be eradicated from the land and that land must be kept free of the plant*
Willows *Salix* species	4	Locally Controlled Weed *The plant must not be sold, propagated or knowingly distributed*
Witchweeds *Striga* species	1	State Prohibited Weed *The plant must be eradicated from the land and that land must be kept free of the plant*
Yellow burrhead *Limnocharis flava*	1	State Prohibited Weed *The plant must be eradicated from the land and that land must be kept free of the plant*
Yellow nutgrass *Cyperus esculentus*	5	Restricted Plant *The requirements in the Noxious Weeds Act 1993 for a notifiable weed must be complied with*

APPENDIX 4 – FLORA SPECIES RECORDED DURING THE FIELD SURVEY

Key: C = Common, O = Occasional, U = Uncommon, **Bold** = Threatened Species, * = Listed Noxious.

Scientific Name	**Common Name**	**Family**
Native Species		
Acacia linearifolia	Narrow-leaved Wattle	Fabaceae
Acacia mearnsii	Black Wattle	Fabaceae
Acacia sp. (planted)	Wattle	Fabaceae
Carex appressa	Tall Sedge	Cyperaceae
Cynodon dactylon	Couch	Poaceae
Eleocharis sp.	A Spike-sedge	Cyperaceae
Eragrostis sp	A grass	Poaceae
Eucalyptus elata	River Peppermint	Myrtaceae
Eucalyptus nicholii	Narrow-leaved Black Peppermint	Myrtaceae
Eucalyptus pauciflora	Snow Gum	Myrtaceae
Eucalyptus sp. (planted)	Eucalyptus	Myrtaceae
Eucalyptus stellulata	Black Sallee	Myrtaceae
Eucalyptus viminalis	Manna Gum	Myrtaceae
Juncus falcatus	Rush	Juncaceae
Leptospermum spp.	Tea-tree	Myrtaceae
Nymphoides monatana	Marshwort	Menyanthaceae
Oxalis sp.	Oxalis	Oxalidaceae
Pultenaea sp.	Pultenaea	Fabaceae
Rytidosperma spp.	Wallaby Grass	Poaceae
Schoenoplectus validus	River Clubrush	Juncaceae
Triglochin procera	Water Ribbons	Juncaginaceae
Vittadinia cuneata	Fuzzweed	Asteraceae
Wahlenbergia littoricola	Coastal Bluebell	Campanulaceae
Introduced Species		
Acer buergerianum	Trident Maple	Sapindaceae
Acetosella vulgaris	Sheep Sorrel	Polygonaceae
Arctotheca calendula	Capeweed	Asteraceae
Avena fatua	Wild Oats	Poaceae
Brachypodium sylvaticum	False Broome	Poaceae
Brassica sp.	Mustard	Brassicaceae

Scientific Name	**Common Name**	**Family**
Bromus catharticus	Prairie Grass	Poaceae
Bromus diandrus	Great Brome	Poaceae
Bromus sp.	A grass	Poaceae
Buglossoides arvensis	Sheepweed	Boraginaceae
Capsella bursa-pastoris	Shepards Purse	Brassicaceae
Cerastium glomeratum	Mouse-ear Chickweed	Caryophyllaceae
Conium maculatum	Hemlock	Apiaceae
Cotoneaster sp.	Cotoneaster	Malaceae
Crataegus monogyna	Hawthorn	Malaceae
Dactylis glomerata	Cocksfoot	Poaceae
Ehrharta erecta	Panic Veld Grass	Poaceae
Eragrostis curvula	**African Lovegrass**	**Poaceae**
Eschscholzia californica	Californian Poppy	Papaveraceae
Festuca arundinacea	Tall Fescue	Poaceae
Foeniculum vulgare	Fennel	Apiaceae
Fraxinus sp.	Ash	Oleaceae
Fumaria sp.	Fumitory	Fumaricaeae
Gallium aparine	Goosegrass	Rubiaceae
Gamochaeta sp.	A Cudweed	Asteraceae
Hedera helix	English Ivy	Araliaceae
Hirschfeldia incana	Hairy Brassica	Brassicaceae
Holcus lanatus	Yorkshire Fog	Poaceae
Iris germanica	Bearded Iris	Iridaceae
Lavendula sp.	Lavender	Lamiaceae
Lolium perenne	Perennial Ryegrass	Poaceae
Malus ioensis	Bechtel Crab Apple	Rosaceae
Medicago polymorpha	Burr Medic	Fabaceae
Medicago sp.	Medicago	Fabaceae
Modiola caroliniana	Red-flowered Mallow	Malvaceae
Oenothera stricta	Common Evening Primrose	Onagraceae
Pennisetum clandestinum	Kikuyu	Poaceae
Phalaris aquatica	Phalaris	Poaceae

Scientific Name	**Common Name**	**Family**
Pinus radiata	Radiata Pine	Pinaceae
Plantago lanceolata	Lamb's Tongues	Plantaginaceae
Platanus × acerifolia	London Plane	Platanaceae
Ranunculus repens	Creeping Buttercup	Ranunculaceae
Rosa sp.	Rose	Rosaceae
Rubus fruticosis agg.	**Blackberry**	**Rosaceae**
Rumex crispus	Curled Dock	Polygonaceae
Salix fragilis	**Crack Willow**	**Salicaceae**
Salix matsudana	**Tortured Willow**	**Salicaceae**
Salvia aethiopis	Woolly Sage	Lamiaceae
Setaria parviflora	Slender Pidgeon Grass	Poaceae
Silene gallica var. gallica	French Catchfly	Caryophyllaceae
Silene gallica var. quinquevulnera	Spotted Catchfly	Caryophyllaceae
Silybum marianum	Variegated Thistle	Asteraceae
Solanum nigrum	Black-berry Nightshade	Solanaceae
Sonchus oleraceus	Sow Thistle	Asteraceae
Taraxacum officinale	Dandelion	Asteraceae
Tragopogon porrifolius	Salsify	Asteraceae
Trifolium arvense	Haresfoot Clover	Fabaceae
Trifolium dubium	Yellow Suckling Clover	Fabaceae
Trifolium repens	White Clover	Fabaceae
Trifolium sp	A Clover	Fabaceae
Ulmus americana	American White Elm	Ulmaceae
Ulmus parvifolia	Chinese Elm	Ulmaceae
Various Conifers (planted)	Cypress Pine	Cupressaceae
Vicia sativa	Common Vetch	Fabaceae

APPENDIX 5 – FAUNA SPECIES RECORDED DURING THE FIELD SURVEYS

Legend

Bird 1 Diurnal bird survey number
Opp Species detected opportunistically during field surveys
Plat Species observed during Platypus surveys
Herp Species detected during herpetological field surveys
Anabat Species detected by ANABAT recorder
Noct Species detected during nocturnal spotlight surveys
* Species detected
† Introduced species
Bold Threatened or migratory species

Taxa	*Scientific Name*	Common Name	Bird 1	Bird 2	Bird 3	Bird 4	Bird 5	Bird 6	Opp	Plat	Herp	Anabat	Noct
Amphibia	*Crinia signifera*	Clicking Froglet							*				
Amphibia	*Limnodynastes peronii*	Striped Marsh Frog							*				
Amphibia	*Litoria ewingii*	Ewing's Treefrog							*			*	
Aves	*Acanthiza chrysorrhoa*	Yellow-rumped Thornbill		*					*				
Aves	*Acrocephalus australis*	Australian Reed-Warbler	*	*		*		*					
Aves	*Anas castanea*	Chestnut Teal	*										
Aves	*Anas superciliosa*	Pacific Black Duck	*	*			*	*					
Aves	*Anthochaera carunculata*	Red Wattlebird	*	*	*	*	*						
Aves	*Ardea pacifica*	White-necked Heron					*						

Taxa	*Scientific Name*	Common Name	Bird 1	Bird 2	Bird 3	Bird 4	Bird 5	Bird 6	Opp	Plat	Herp	Anabat	Noct
Aves	*Cacatua galerita*	Sulphur-crested Cockatoo				*							
Aves	*Cacatua sanguinea*	Little Corella					*						
Aves	*Carduelis carduelis*	European Goldfinch				*	*						
Aves	*Chenonetta jubata*	Australian Wood Duck					*						
Aves	*Corvus mellori*	Little Raven	*	*	*		*	*					
Aves	*Cracticus tibicen*	Australian Magpie		*	*		*						
Aves	*Egretta novaehollandiae*	White-faced Heron				*	*						
Aves	*Eolophus roseicapillus*	Galah	*	*				*					
Aves	*Eurystomus orientalis*	Dollarbird			*								
Aves	*Fulica atra*	Eurasian Coot	*	*		*	*	*					
Aves	***Gallinago hardwickii***	**Latham's Snipe**					*****						
Aves	*Gallinula tenebrosa*	Dusky Moorhen	*										
Aves	*Grallina cyanoleuca*	Magpie-lark	*										
Aves	*Hirundo neoxena*	Welcome Swallow	*	*		*		*					
Aves	*Lichenostomus chrysops*	Yellow-faced Honeyeater			*		*						
Aves	*Malurus cyaneus*	Superb Fairy-wren	*	*	*	*	*						
Aves	*Pachycephala rufiventris*	Rufous Whistler		*			*	*					

Taxa	*Scientific Name*	Common Name	Bird 1	Bird 2	Bird 3	Bird 4	Bird 5	Bird 6	Opp	Plat	Herp	Anabat	Noct
Aves	*Pardalotus punctatus*	Spotted Pardalote		*									
Aves	*Pardalotus striatus*	Striated Pardalote	*		*	*	*						
Aves	*Passer domesticus*†	House Sparrow†			*								
Aves	*Phalacrocorax sulcirostris*	Little Black Cormorant					*						
Aves	*Platycercus elegans*	Crimson Rosella		*									
Aves	*Rhipidura albiscapa*	Grey Fantail			*		*	*					
Aves	*Rhipidura leucophrys*	Willie Wagtail	*										
Aves	*Smicrornis brevirostris*	Weebill		*									
Aves	*Sturnus vulgaris*†	Common Starling†					*						
Aves	*Strepera graculina*	Pied Currawong	*			*	*	*					
Aves	*Turdus merula*	Common Blackbird	*	*			*	*					
Mammalia	*Austronomus australis*	White-striped Free-tailed Bat										*	
Mammalia	*Ornithorhynchus anatinus*	Platypus								*			
Mammalia	*Oryctolagus cuniculus*	Rabbit†							*				
Mammalia	*Tachyglossus aculeatus*	Short-beaked Echidna							*				
Mammalia	*Trichosurus vulpecula*	Common Brushtail Possum											*
Mammalia	*Vespadelus darlingtoni*	Large Forest Bat										*	

Taxa	*Scientific Name*	Common Name	Bird 1	Bird 2	Bird 3	Bird 4	Bird 5	Bird 6	Opp	Plat	Herp	Anabat	Noct
Mammalia	*Vombatus ursinus*	Wombat							*				
Mammalia	*Vulpes vulpes*†	Fox†							*				
Reptilia	*Austrelaps ramsayi*	Highlands Copperhead							*				
Reptilia	*Chelodina longicollis*	Eastern Long-necked Turtle							*				
Reptilia	*Lampropholis delicata*	Grass Skink							*				

APPENDIX 6 – THREATENED AND MIGRATORY BIOTA EVALUATION

Legend for Table 5
V = Vulnerable
E = Endangered
CE = Critically Endangered
M = Migratory
POP = Endangered Population
TSC = NSW *Threatened Species Conservation Act 1995*
EPBC = Commonwealth *Environment Protection and Biodiversity Conservation Act 1999*
FM = NSW *Fisheries Management Act 1994*

Table 4: Assessment of the known or predicted threatened and migratory biota known from the Southern Rivers CMA, Monaro (Part C) subregion and their likelihood of occurrence within the vicinity of the proposal.

Species **Scientific Name** **Legal Status**	**Habitat**	**Recorded during survey**	**Recorded previously in locality**	**Likelihood of species occurring within study area**
AMPHIBIANS				
Giant Burrowing Frog *Heleioporus australiacus* V TSC V EPBC	The Giant Burrowing Frog is distributed in south eastern NSW and Victoria, and appears to exist as two distinct populations: a northern population largely confined to the sandstone geology of the Sydney Basin and extending as far south as Ulladulla, and a southern population occurring from north of Narooma through to Walhalla, Victoria. In these areas, it is found in heath and forest on a variety of soil types except those that are clay based and required 2nd or 3rd order stream for breeding purposes.	No	No	No
Green and Golden Bell Frog *Litoria aurea* E TSC V EPBC	Inhabits marshes, dams and stream-sides, particularly those containing bulrushes (*Typha* spp.) or spikerushes (*Eleocharis* spp.).	No	Yes	Unlikely
Booroolong Frog	The Booroolong Frog is restricted to NSW and north-	No	Yes	Unlikely

Species **Scientific Name** **Legal Status**	**Habitat**	**Recorded during survey**	**Recorded previously in locality**	**Likelihood of species occurring within study area**
Litoria booroolongensis E TSC E EPBC	eastern Victoria, predominantly along the western-flowing streams of the Great Dividing Range. Lives along permanent streams with some fringing vegetation cover such as ferns, sedges or grasses.			
Yellow-spotted Tree Frog *Litoria castanea* CE TSC E EPBC	There is only a single known population of the Yellow-Spotted Tree Frog, which occurs near Dalton. Historically, this species occurred in two separate highland ranges, on the New England Tableland and on the southern and central highlands from Bathurst/Orange to Bombala. This species requires large permanent ponds or slow flowing streams with plenty of emergent vegetation such as bulrushes.	No	Yes	Unlikely
Southern Bell Frog *Litoria raniformis* E TSC V EPBC	Currently, the species is known to exist only in isolated populations in the Coleambally Irrigation Area, the Lowbidgee floodplain and around Lake Victoria. Usually found in or around permanent or ephemeral Black Box/Lignum/Nitre Goosefoot swamps, Lignum/Typha swamps and River Red Gum swamps or billabongs along floodplains and river valleys. They are also found in irrigated rice crops, particularly where there is no available natural	No	Yes	Unlikely

Species Scientific Name Legal Status	Habitat	Recorded during survey	Recorded previously in locality	Likelihood of species occurring within study area
	habitat.			
Alpine Tree Frog *Litoria vereauxi alpina* E TSC V EPBC	The Alpine Tree Frog occurs mainly in woodland, heath, grassland and herb field at montane, subalpine and alpine altitudes.	No	No	No
Southern Corroboree Frog *Pseudophryne corroboree* CE TSC CE EPBC	The Southern Corroboree Frog is limited to sphagnum bogs of the northern Snowy Mountains, in a strip from the Maragle Range in the north-west, through Mt Jagungal to Smiggin Holes in the south. Its range is entirely within Kosciuszko National Park.	No	No	No
REPTILES				
Pink-tailed Worm Lizard *Aprasia parapulchella* V TSC V EPBC	The Pink-tailed Legless Lizard is only known from the Central and Southern Tablelands, and the South Western Slopes. Inhabits sloping, open woodland areas with predominantly native grassy groundlayers, particularly those dominated by Kangaroo Grass (*Themeda australis*).	No	No	No
Striped Legless Lizard *Delma impar* V TSC V EPBC	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.	No	No	No
Little Whip Snake	The Little Whip Snake is found within an area	No	No	No

Species Scientific Name Legal Status	Habitat	Recorded during survey	Recorded previously in locality	Likelihood of species occurring within study area
Suta flagellum V TSC	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, including those dominated by Snow Gum *Eucalyptus pauciflora* or Yellow Box *E. melliodora*. Also occurs in secondary grasslands derived from clearing of woodlands. Found on well drained hillsides, mostly associated with scattered loose rocks.			
Grassland Earless Dragon *Tympanocryptis pinguicolla* E TSC E EPBC	Restricted to a small number of Natural Temperate Grassland sites dominated by wallaby grasses (*Rytidosperma spp*.), spear grasses (*Austrostipa spp.*), Poa Tussock (*Poa sieberiana*), Red Grass (*Bothriochloa macra*), and occasionally Kangaroo Grass (*Themeda australis*). Introduced pasture grasses occur at many of the sites supporting this species, which has also been captured in secondary grassland.	No	No	No
Rosenberg's Goanna *Varanus rosenbergi* V TSC	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.	No	No	No
MICROCHIROPTERAN BATS				

Species Scientific Name Legal Status	Habitat	Recorded during survey	Recorded previously in locality	Likelihood of species occurring within study area
Eastern False Pipistrelle *Falsistrellus tasmaniensis* V TSC	Prefers moist habitats, with trees taller than 20m. Generally roosting in eucalypt hollows, but has also been found under loose bark on trees and buildings.	No	No	No
Eastern Bentwing-bat *Miniopterus schreibersii oceanensis* V TSC	Caves are the primary roosting habitat, but also use derelict mines, storm-water tunnels, buildings and other man-made structures.	No	No	No
Southern Myotis *Myotis macropus* V TSC	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 open streams and open pools catching insects and small fish by raking their feet across the water surface.	No	No	No
BIRDS				
Fork-tailed Swift *Apus pacificus* M EPBC	Mostly occur over inland plains but sometimes above foothills or in coastal areas. They often occur over cliffs and beaches and also over islands and sometimes well out to sea.	No	Yes	No
Great Egret *Ardea alba* M EPBC	Great Egrets prefer shallow water, particularly when flowing, but may be seen on any watered area.	No	No	No
Cattle Egret *Ardea ibis* M EPBC	The Cattle Egret is found in grasslands, woodlands and wetlands, and is not common in arid areas. It also uses	No	Yes	Moderate

Species **Scientific Name** **Legal Status**	**Habitat**	**Recorded during survey**	**Recorded previously in locality**	**Likelihood of species occurring within study area**
	pastures and croplands, especially where drainage is poor. It will also forage at garbage dumps, and is often seen with cattle and other stock.			
Australasian Bittern *Botaurus poiciloptilus* V TSC E EPBC	Favours permanent freshwater wetlands with tall, dense vegetation, particularly bullrushes (*Typha spp.*) and spikerushes (*Eleoacharis spp.*).	No	No	No
Gang-gang Cockatoo *Callocephalon fimbriatum* V TSC	In summer, generally found in tall mountain forests and woodlands, particularly in heavily timbered and mature wet sclerophyll forests. In winter, may occur at lower altitudes in drier more open eucalypt forests and woodlands, and often found in urban areas.	No	Yes	Unlikely
Glossy Black-Cockatoo *Calyptorhynchus lathami* V TSC	Inhabits open forest and woodlands of the coast and the Great Dividing Range up to 1000 m in which stands of she-oak species, particularly Black She-oak (*Allocasuarina littoralis*), Forest She-oak (*A. torulosa*) or Drooping She-oak (*A. verticillata*) occur.	No	No	No
Speckled Warbler *Chthonicola sagittata* V TSC	The Speckled Warbler lives in a wide range of *Eucalyptus* dominated communities that have a grassy understorey, often on rocky ridges or in gullies.	No	No	No
Spotted harrier *Circus assimilis*	Occurs in grassy open woodland including *Acacia* and mallee remnants, inland	No	No	No

Species Scientific Name Legal Status	Habitat	Recorded during survey	Recorded previously in locality	Likelihood of species occurring within study area
V TSC	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.			
Brown Treecreeper *Climacteris picumnus victoriae* V TSC	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.	No	Yes	Unlikely, woodland patch has no native shrub layer.
Varied Sittella *Daphoenositta chrysoptera* V TSC	The Varied Sittella is sedentary and inhabits most of mainland Australia except the treeless deserts and open grasslands. They inhabit eucalypt woodlands	No	Yes	Low

Species Scientific Name Legal Status	Habitat	Recorded during survey	Recorded previously in locality	Likelihood of species occurring within study area
	and prefer rough-barked trees and mature trees with hollows or dead branches.			
White-fronted Chat *Epthianura albifrons* V TSC	It occurs mostly in the southern half of the state, in damp open habitats along the coast, and near waterways in the western part of the state. Along the coastline, it is found predominantly in saltmarsh vegetation but also in open grasslands and sometimes in low shrubs bordering wetland areas.	No	Yes	No
Latham's Snipe *Gallinago hardwickii* M EPBC	Latham's Snipe are seen in small groups or singly in freshwater wetlands on or near the coast, generally among dense cover. They are found in any vegetation around wetlands, in sedges, grasses, lignum, reeds and rushes and also in saltmarsh and creek edges on migration. They also use crops and pasture.	Yes	Yes	Yes
Little Lorikeet *Glossopsitta pusilla* V TSC	Forages primarily in the canopy of open Eucalyptus forest and woodland, yet also finds food in Angophoras, Melaleucas and other tree species. Riparian habitats are particularly used, due to higher soil fertility and hence greater productivity.	No	No	No
Painted Honeyeater *Grantiella picta* V TSC	Inhabits Boree, Brigalow and Box-Gum Woodlands and Box-Ironbark Forests. A specialist feeder on the fruits	No	No	No

Species Scientific Name Legal Status	Habitat	Recorded during survey	Recorded previously in locality	Likelihood of species occurring within study area
V EPBC	of mistletoes growing on woodland eucalypts and acacias. Prefers mistletoes of the genus *Amyema*.			
White-bellied Sea-eagle *Haliaeetus leucogaster* M EPBC	The species is normally seen perched high in a tree, or soaring over waterways and adjacent land, particularly along coastlines, lakes and rivers.	No	Yes	Unlikely
Little Eagle *Hieraaetus morphnoides* V TSC	Occupies open eucalypt forest, woodland or open woodland. Sheoak or *Acacia* woodlands and riparian woodlands of interior NSW are also used.	No	Yes	Unlikely
White-throated Needletail *Hirundapus caudacutus* M EPBC	For a time it was commonly believed that they did not land while in Australia. It has now been observed that birds will roost in trees, and radio-tracking has since confirmed that this is a regular activity.	No	Yes	Unlikely
Swift Parrot *Lathamus discolour* E TSC E EPBC	Migrates to the Australian south-east mainland between March and October. On the 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	No	No	No

Species Scientific Name Legal Status	Habitat	Recorded during survey	Recorded previously in locality	Likelihood of species occurring within study area
	E. Albens.			
Square-tailed Kite *Lophoictinia isura* V TSC	Found in a variety of timbered habitats including dry woodlands and open forests. Shows a particular preference for timbered watercourses. In arid north-western NSW, has been observed in stony country with a ground cover of chenopods and grasses, open acacia scrub and patches of low open eucalypt woodland.	No	No	No
Hooded Robin *Melanodryas cucullata cucullata* V TSC	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.	No	Yes	No
Rainbow Bee-eater *Merops ornatus* M EPBC	It is most often found in open forests, woodlands and shrublands, and cleared areas, usually near water. It will be found on farmland with remnant vegetation and in orchards and vineyards. It will use disturbed sites such as quarries, cuttings and mines to build its nesting tunnels.	No	No	No
Black-faced Monarch *Monarcha melanopsis* M EPBC	They are found in rainforests, eucalypt woodlands, coastal scrub and damp gullies. It may be found in more open	No	No	No

Species Scientific Name Legal Status	Habitat	Recorded during survey	Recorded previously in locality	Likelihood of species occurring within study area
	woodland when migrating			
Satin Flycatcher *Myiagra cyanoleuca* M EPBC	The Satin Flycatcher is found in tall forests, preferring wetter habitats such as heavily forested gullies, but not rainforests.	No	No	No
Turquoise Parrot *Neophema pulchella* V TSC	Lives on the edges of eucalypt woodland adjoining clearings, timbered ridges and creeks in farmland.	No	No	No
Barking Owl *Ninox connivens* V TSC	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.	No	No	No
Powerful Owl *Ninox strenua* V TSC	Inhabits a range of vegetation types, from woodland and open sclerophyll forest to tall open wet forest and rainforest. The Powerful Owl requires large tracts of forest or woodland habitat but can occur in fragmented landscapes as well. The species breeds and hunts in open or closed sclerophyll forest or woodlands and occasionally hunts in open habitats.	No	Yes	No
Blue-billed duck *Oxyura australis*	Prefers deep water in large permanent wetlands and swamps with dense aquatic	No	No	No

Species Scientific Name Legal Status	Habitat	Recorded during survey	Recorded previously in locality	Likelihood of species occurring within study area
V TSC	vegetation. The species is completely aquatic, swimming low in the water along the edge of dense cover. Blue-billed Ducks usually nest solitarily in Cumbungi over deep water between September and February. Partly migratory.			
Olive Whistler *Pachycephala olivacea* V TSC	The Olive Whistler inhabits the wet forests on the ranges of the east coast. Mostly inhabit wet forests above about 500m however, in winter months they may move to lower altitudes.	No	No	No
Eastern Osprey *Pandion haliaetus* V TSC M EPBC	Eastern Osprey are generally found only on the coast in south-eastern Australia, but occasionally ranging inland on rivers.	No	No	No
Scarlet Robin *Petroica boodang* V TSC	The Scarlet Robin lives in dry eucalypt forests and woodlands. The understorey is usually open and grassy with few scattered shrubs.	No	Yes	Unlikely
Flame Robin *Petroica phoenicea* V TSC	Breeds in upland tall moist eucalypt forests and woodlands, often on ridges and slopes. Prefers clearings or areas with open understoreys.	No	Yes	Moderate
Pink Robin *Petroica rodinogaster* V TSC	Inhabits rainforest and tall, open eucalypt forest, particularly in densely vegetated gullies.	No	No	No
Rufous Fantail *Rhipidura rufifrons*	A rainforest and wet sclerophyll inhabitant.	No	No	No

Species Scientific Name Legal Status	Habitat	Recorded during survey	Recorded previously in locality	Likelihood of species occurring within study area
M EPBC				
Australian Painted Snipe *Rostratula australis* E TSC V EPBC	Prefers fringes of swamps, dams and nearby marshy areas where there is a cover of grasses, lignum, low scrub or open timber.	No	No	No
Painted Snipe *Rostratula benghalensis s. Lat* M EPBC	In NSW, this species has been recorded at the Paroo wetlands, Lake Cowell, Macquarie Marshes and Hexham Swamp. Most common in the Murray-Darling Basin. Prefers fringes of swamps, dams and nearby marshy areas where there is a cover of grasses, lignum, low scrub or open timber.	No	No	No
Diamond Firetail *Stagonopleura guttata* V TSC	Found in grassy eucalypt woodlands, including Box-Gum Woodlands and Snow Gum *Eucalyptus pauciflora* Woodlands.	No	Yes	Low, patch size small
Masked Owl *Tyto novaehollandiae* V TSC	Pairs have a large home-range of 500 to 1000 hectares. 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.	No	No	No
Regent Honeyeater *Xanthomyza phrygia* CE TSC E EPBC M EPBC	Regent Honeyeaters inhabit woodlands that support a significantly high abundance and species richness of bird species. These woodlands have significantly large numbers of mature trees, high canopy cover and	No	No	No

Species Scientific Name Legal Status	Habitat	Recorded during survey	Recorded previously in locality	Likelihood of species occurring within study area
	abundance of mistletoes.			
MAMMALS				
Eastern Pygmy-possum *Cercartetus nanus* V TSC	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.	No	No	No
Spotted-tailed Quoll *Dasyurus maculatus* V TSC E EPBC	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.	No	Yes	Unlikely (patch size small)
Southern Brown Bandicoot (eastern) *Isoodon obesulus obesulus* E TSC E EPBC	The species is largely crepuscular (active mainly after dusk and/or before dawn). They are generally only found in heath or open forest with a heathy understorey on sandy or friable soils. They occur in a variety of habitats in south-eastern Australia including heathland, swamp habitat, open forest, dry sclerophyll forest with heathy understorey and grasslands.	No	No	No
Broad-toothed Rat *Mastacomys fuscus* V TSC	The Broad-toothed Rat lives in a complex of runways through the dense vegetation of its wet grass, sedge or heath environment, and under the snow in winter. This relatively warm under-snow space enables it to be active throughout winter.	No	No	No

Species Scientific Name Legal Status	Habitat	Recorded during survey	Recorded previously in locality	Likelihood of species occurring within study area
Yellow-bellied Glider *Petaurus australis* V TSC	Occur in tall mature eucalypt forest generally in areas with high rainfall and nutrient rich soils.	No	Yes	No
Squirrel Glider *Petaurus norfolcensis* V TSC	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.	No	No	No
Brush-tailed Rock-wallaby *Petrogale penicillata* E TSC V EPBC	Occupy rocky escarpments, outcrops and cliffs with a preference for complex structures with fissures, caves and ledges, often facing north.	No	No	No
Brush-tailed phascogale *Phascogale tapoatafa* V TSC	Prefer dry sclerophyll open forest with sparse groundcover of herbs, grasses, shrubs or leaf litter. Also inhabit heath, swamps, rainforest and wet sclerophyll forest.	No	No	No
Koala (combined populations of QLD, NSW and ACT) *Phascolarctos cinereus* V TSC V EPBC	Inhabit eucalypt woodlands and forests. Home range size varies with quality of habitat, ranging from less than two ha to several hundred hectares in size.	No	Yes	Unlikely, patch size too small.
Long-nosed Potoroo *Potorous tridactylus* V TSC V EPBC	Inhabits coastal heaths and dry and wet sclerophyll forests. Dense understorey with occasional open areas is an essential part of habitat, and may consist of grass-	No	No	No

Species Scientific Name Legal Status	Habitat	Recorded during survey	Recorded previously in locality	Likelihood of species occurring within study area
	trees, sedges, ferns or heath, or of low shrubs of tea-trees or melaleucas. A sandy loam soil is also a common feature.			
Smoky Mouse *Pseudomys fumeus* CE TSC E EPBC	Prefers heath habitat on ridge tops and slopes in sclerophyll forest, heathland and open-forest from the coast (in Victoria) to sub-alpine regions of up to 1800 metres, but sometimes occurs in ferny gullies.	No	No	No
Grey-headed Flying-fox *Pteropus poliocephalus* V TSC V EPBC	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.	No	Yes	Unlikely
FISH				
Australian Grayling *Prototroctes maraena* V EPBC	Occurs in clear, gravel-bottomed streams with alternating pools and riffles, and granite outcrops.	No	No	No
FLORA				
Mauve Burr-daisy *Calotis glandulosa* V TSC V EPBC	Found in subalpine grassland (dominated by *Poa* spp.), and montane or natural temperate grassland dominated by Kangaroo Grass (*Themeda australis*) and Snow Gum (*Eucalyptus*	No	Yes	No

Species Scientific Name Legal Status	Habitat	Recorded during survey	Recorded previously in locality	Likelihood of species occurring within study area
	pauciflora) Woodlands on the Monaro and Shoalhaven area.			
Kydra Dampiera *Dampiera fusca* E TSC	Recorded in montane heath, also amongst rock platform and tors interspersed with closed heath. Habitat in the Canberra area is generally restricted to granite ridgetops and plateaux on very shallow soils supporting heath, scrub and heathy snow gum and/or mallee woodland.	No	Yes	No
Leafy Anchor Plant *Discaria nitida* V TSC	Generally occurs on or close to stream banks and on rocky areas near small waterfalls. The species occurs in both woodland with heathy riparian vegetation and on treeless grassy sub-alpine plains. In NSW the Leafy Anchor Plant grows mostly within Kosciuszko National Park, south from the Blue Water Holes - Yarrangobilly Caves area to south-west of Jindabyne, at altitudes above 900 m.	No	No	No
Creeping Hop-bush *Dodonaea procumbens* V TSC V EPBC	Grows in Natural Temperate Grassland or fringing eucalypt woodland of Snow Gum (*Eucalyptus pauciflora*).	No	Yes	No
Small-leaved Gum *Eucalyptus parvula* E TSC V EPBC	This species has a very small distribution in the eastern edge of the Monaro, in a narrow 100km strip from Big Badja Mountain (north-east of Cooma) to Nunnock	No	No	No

Species Scientific Name Legal Status	Habitat	Recorded during survey	Recorded previously in locality	Likelihood of species occurring within study area
	Swamp in South-East Forests National Park, north-east of Bombala. Grows at and above an elevation of 1100 m in acidic soil on cold wet grassy flats.			
Silver-leafed Gum *Eucalyptus pulverulenta* V TSC V EPBC	The Silver-leafed Gum is found in two quite separate areas, the Lithgow to Bathurst area and the Monaro (Bredbo to Bombala). Grows in shallow soils as an understorey plant in open forest, typically dominated by Brittle Gum (*Eucalyptus mannifera*), Red Stringybark (*E. macrorhynca*), Broad-leafed Peppermint (*E. dives*), Silvertop Ash (*E. sieberi*) and Apple Box (*E. bridgesiana*).	No	No	No
Rough Eyebright *Euphrasia scabra* E TSC	Occurs in or at the margins of swampy grassland or in sphagnum bogs, often in wet, peaty soil.	No	No	No
Baeuerlen's Gentian *Gentiana baeuerlenii* E TSC E EPBC	The original collection was made in the 1890s from 'Quidong', west of Bombala, however the species has not been recorded again in NSW. In the late 1980s a small population of less than 20 plants was discovered in Namadgi National Park in the ACT. This population has not been observed since the early 1990s and the last time it was found the population had declined to only four plants. In Namadgi National Park the species grows as an	No	No	No

Species Scientific Name Legal Status	Habitat	Recorded during survey	Recorded previously in locality	Likelihood of species occurring within study area
	inter-tussock herb of grassland and sedgeland (*Poa labillardieri* and *Carex gaudichaudii*) in a moist area on the lower slope of a broad valley.			
Bog Grevillea *Grevillea acanthifolia subsp. paludosa* E TSC E EPBC	Bog Grevillea is known from two small populations: Nalbaugh National Park south-east of Bombala; Bega Swamp near Bemboka. The species is found in peaty swamps. Within such habitat it grows on densely vegetated low hummocks.	No	No	No
Hoary Sunray *Leucochrysum albicans var. tricolor* E EPBC	The Hoary Sunray occurs at relatively high elevations in woodland and open forest communities, in an area roughly bounded by Goulburn, Albury and Bega. Associated with Grassland and grassy woodland	No	No	No
Omeo Stork's-bill *Pelargonium sp. Striatellum* E TSC E EPBC	Known from only 3 locations in NSW, with two on lake-beds on the basalt plains of the Monaro and one at Lake Bathurst. A population at a fourth known site on the Monaro has not been seen in recent years. It has a narrow habitat that is usually just above the high-water level of irregularly inundated or ephemeral lakes, in the transition zone between surrounding grasslands or pasture and the wetland or aquatic communities.	No	No	No
Tarengo Leek Orchid	Grows in open sites within	No	No	No

Species Scientific Name Legal Status	Habitat	Recorded during survey	Recorded previously in locality	Likelihood of species occurring within study area
Prasophyllum petilum E TSC E EPBC	Natural Temperate Grassland at the Boorowa and Delegate sites. Also grows in grassy woodland in association with River Tussock (*Poa labillardieri*), Black Gum (*Eucalyptus aggregata*) and tea-trees (*Leptospermum spp.*) at Captains Flat and within the grassy groundlayer dominated by Kangaroo Grass under Box-Gum Woodland at Ilford (and Hall, ACT).			
Majors Creek Leek Orchid *Prasophyllum sp. Majors Creek* CE TSC	Currently only known from one site at Majors Creek south of Braidwood. Grows in the groundlayer of grassy woodland dominated by Swamp Gum (*Eucalyptus ovata*).	No	No	No
A Leek-orchid *Prasophyllum sp. Wybong* CE EPBC	Known to occur in open eucalypt woodland and grassland.	No	No	No
Monaro Golden Daisy *Rutidosis leiolepis* V TSC V EPBC	Found in Natural Temperate Grassland on the Monaro. Occurs in sub-alpine grasslands in Kosciuszko National Park. Grows on basalt, granite and sedimentary substrates.	No	Yes	No
Silky Swainson-pea *Swainsona sericea* V TSC	Found in Natural Temperate Grassland and Snow Gum Eucalyptus pauciflora Woodland on the Monaro. Found in Box-Gum Woodland in the Southern Tablelands and South West	No	No	No

Species **Scientific Name** **Legal Status**	**Habitat**	**Recorded during survey**	**Recorded previously in locality**	**Likelihood of species occurring within study area**
	Slopes.			
Thelymitra alpicola *Thelymitra alpicola* V TSC	Grows in subalpine and montane heathlands in moist to wet sites around the edges of sphagnum bogs, beside streams or in soaks and swamps	No	No	No
Austral Toadflax *Thesium australe* V TSC V EPBC	Occurs in grassland or grassy woodland often in association with Kangaroo Grass.	No	No	No
Kydra Westringia *Westringia kydrensis* E TSC E EPBC	The species occurs in heath on rocky areas at Kydra Reefs, south-east of Cooma. Occurs in heathland with larger shrubs of *Allocasuarina nana* and *Banksia canei*. Grows on shallow rocky granite or quartzite soils.	No	Yes	No
THREATENED ECOLOGICAL COMMUNITIES				
Aquatic Ecological Community in the Catchment of the Snowy River in NSW E FM	The area covered by this determination includes all rivers, creeks and streams of the Snowy River catchment within the State of New South Wales and including the Snowy River, Eucumbene River, Thredbo River, Gungarlin River, Mowamba River, Bombala River, Maclaughlin River, Delegate River, Pinch River and Jacobs River.	Yes	Yes	Yes
Montane Peatlands and Swamps E TSC	Montane Peatlands and Swamps comprises a dense, open or sparse layer of shrubs with soft-leaved	No	No	No

Species Scientific Name Legal Status	Habitat	Recorded during survey	Recorded previously in locality	Likelihood of species occurring within study area
	sedges, grasses and forbs. It is the only type of wetland that may contain more than trace amounts of *Sphagnum* spp., the hummock peat-forming mosses. Small trees may be present as scattered emergents or absent.			
Natural Temperate Grassland of the Southern Tablelands of NSW and the Australian Capital Territory E EPBC	Natural Temperate Grassland is a natural grassland community dominated by a range of perennial grass species and, in highly intact sites, containing a large range of herbaceous species including daisies, peas, lilies, and orchids.	No	Yes	No
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 E TSC	Tablelands Snow Gum, Black Sallee, Candlebark and Ribbon Gum Grassy Woodland mainly occurs on valley floors, margins of frost hollows, footslopes and undulating hills between approximately 600 and 1400 m in altitude. It occurs on a variety of substrates including granite, basalt, metasediments and Quaternary alluvium.	Yes	Yes	Yes
Upland Wetlands of the New England Tablelands and the Monaro Plateau E TSC E EPBC	This community is composed of a series of high altitude wetlands in the New England Tablelands of Northern NSW and the Monaro Plateau. Generally above 900m altitude and associated with basalt soils.	No	No	No
White Box-Yellow Box-	White Box Yellow Box	No	No	No

Species **Scientific Name** **Legal Status**	**Habitat**	**Recorded during survey**	**Recorded previously in locality**	**Likelihood of species occurring within study area**
Blakely's Red Gum Grassy Woodland and Derived Native Grassland E TSC CE EPBC	Blakely's Red Gum Woodland is an open woodland community (sometimes occurring as a forest formation), in which the most obvious species are one or more of the following: White Box *Eucalyptus albens*, Yellow Box *E. melliodora* and Blakely's Red Gum *E. blakelyi*.			