

New High School in Bungendore Biodiversity Development Assessment Report

Turallo Terrace Bungendore, NSW 2621

NCA21R122890

11 August 2022



Suite 3, 240-244 Pacific Highway,
Charlestown, NSW 2290
Phone: +61 2 4949 5200



New High School in Bungendore Biodiversity Development Assessment Report

Turallo Terrace Bungendore, NSW 2621

Kleinfelder Project: NCA21R122890

Kleinfelder Document: NCA21R122890

Copyright 2020 Kleinfelder
All Rights Reserved

Prepared for:

School Infrastructure NSW
259 George Street, Sydney

Prepared by:

Kleinfelder Australia Pty Ltd

Suite 3, 240-244 Pacific Highway, Charlestown, NSW 2290
Phone: +61 2 4949 5200
ABN: 23 146 082 500

Document Control:

Version	Description	Date	Prepared	Reviewed
5.0	Final	11 August 2022	David Martin	Dallas Milburn
4.0	Final	17 August 2021	David Martin	Gilbert Whyte
3.0	Final	22 July 2021	David Martin	Gilbert Whyte
2.0	2 nd Draft	08 July 2021	David Martin	Gilbert Whyte
1.0	1 st Draft	05 March 2021	David Martin	Daniel O'Brien

Only School Infrastructure NSW, its designated representatives or relevant statutory authorities may use this document and only for the specific purpose for which this submission was prepared. It should not be otherwise referenced without permission



TABLE OF CONTENTS

EXECUTIVE SUMMARY	1
1 INTRODUCTION.....	2
1.1 SCOPE	2
1.2 THE AMENDED PROPOSAL	2
1.3 SITE DESCRIPTION	4
1.4 INFORMATION SOURCES	7
1.5 LEGISLATIVE CONTEXT	7
1.5.1 Environment Protection and Biodiversity Conservation Act 1999 (EPBC Act)	8
1.5.2 Biodiversity Conservation Act 2016 (NSW)	8
1.5.3 Koala SEPP 2020.....	9
1.5.4 Biosecurity Act 2015 (NSW).....	10
1.5.5 Coastal Management Act 2016.....	10
1.5.6 Water Management Act 2000	11
2 LANDSCAPE CONTEXT	12
2.1 LANDSCAPE FEATURES.....	12
3 NATIVE VEGETATION	14
3.1 METHODOLOGY.....	14
3.1.1 Field Survey	14
3.1.2 Data Review	14
3.1.3 Vegetation Mapping Surveys	14
3.2 RESULTS	15
3.2.1 Vegetation	15
4 THREATENED SPECIES	20
4.1 THREATENED FLORA SPECIES.....	20
4.1.1 Habitat Suitability.....	20
4.1.2 Flora Survey Results	20
4.1.3 Fauna	20
5 IMPACT ASSESSMENT	22
5.1 AVOIDING AND MINIMISING IMPACTS.....	22
5.1.1 Avoid and Minimising Impacts on Native Vegetation and Habitat	22
5.1.2 Avoid and Minimise Impacts on Prescribed Biodiversity Impacts	22
5.1.3 Prescribed Biodiversity Impacts	23
5.2 ASSESSMENT OF IMPACTS.....	23
5.2.1 Impacts on Native Vegetation and Habitat.....	23
5.2.2 Prescribed Biodiversity Impacts	24
5.2.3 Impacts on Threatened Species	24
5.2.4 Indirect Impacts.....	24
5.2.5 Proposed Mitigation Measures.....	25
6 IMPACT SUMMARY	27
6.1 SERIOUS AND IRREVERSIBLE IMPACTS.....	27
6.2 IDENTIFICATION OF IMPACTS REQUIRING OFFSETS	27
6.3 IMPACTS NOT REQUIRING OFFSETS.....	27
7 ASSESSMENT OF BIODIVERSITY LEGISLATION	28
7.1 ENVIRONMENT PROTECTION AND BIODIVERSITY CONSERVATION ACT 1999	28



7.1.1	Assessment Requirements	28
7.2	KOALA SEPP 2020.....	28
8	REFERENCES.....	29

TABLES

Table 1:	new high school in Bungendore legal descriptions.....	4
Table 2:	Landscape Features relevant to the Development Site.....	12
Table 3	Appendix D (BAM 2020) Streamlined Assessment Module – Planted Native Vegetation Decision Key	17
Table 4	Mitigation and management measures for the proposed development	25

FIGURES

Figure 1:	Locality	5
Figure 2:	Development Site and Study Area	6
Figure 3:	Landscape Context	13
Figure 4:	Vegetation Mapping	16
Figure 5:	Survey Effort.....	21

PLATES

Plate 1	Planted native vegetation within the Development Site (SE Corner of Oval) <i>Eucalyptus sideroxylon</i> . 19
Plate 2	Planted Exotic Vegetation and Exotic Grassland (Managed) within the Subject Site <i>Pinus radiata</i> ..19

APPENDICES

Appendix A	Threatened Species Database Search
Appendix B	Flora Species List
Appendix C	Fauna Species List
Appendix D	Site Photographs
Appendix E	Field Data
Appendix F	Staff Contributions
Appendix G	– Licencing



EXECUTIVE SUMMARY

This Biodiversity Development Assessment Report (BDAR) accompanies an Environmental Impact Statement (EIS) pursuant to Part 4 of the *Environmental Planning and Assessment Act 1979* (EP&A Act) in support of an application for a State Significant Development (SSD No 14394209). The proposed development is a new high school at Bungendore, New South Wales (NSW).

The new high school development at Bungendore will involve the creation of an education style precinct. This report has been prepared as a requirement of the Secretary's Environmental Assessment Requirements (SEARs), and in accordance with the Biodiversity Assessment Method (BAM) to assess the biodiversity impact and offsetting obligation of the Project under the *Biodiversity Conservation Act 2016* (BC Act).

Surveys conducted within the development site identified three vegetation zones: Planted Native Vegetation (0.11 ha impacted), Planted Exotic Vegetation (0.16 ha impacted), and Exotic Grassland (Managed) (1.13 ha impacted). The vegetation within the site could not be reasonably assigned to a PCT occurring within the Monaro IBRA sub-region. Therefore, the use of the *Streamlined Assessment Module – Planted Native Vegetation* was deemed appropriate in accordance with Appendix D of the BAM (BAM 2020).

Flora surveys completed within the site recorded a total of 42 flora species, including six native species (four trees, one forb and one grass), 33 exotic species, and three High Threat Exotics. Habitat for threatened flora species was considered absent within the Subject Site. No threatened flora species were recorded.

Fauna surveys completed within the site determined that the site only constituted foraging habitat for common local species and highly mobile threatened species as part of a broader habitat range within the locality. No threatened fauna species were recorded.

The Project including both the Development Site and method/type of works, has been designed in consideration of the principals of avoid and minimise. Direct impacts, indirect impacts and impacts on prescribed matters have been avoided and minimised where possible in the final design of the Project. A range of mitigation and management measures have been incorporated into the Project to reduce impacts on biodiversity during construction phase.

The impacts to Planted Native Vegetation, Planted Exotic Vegetation, and Exotic Grassland (Managed) do not generate ecosystem credit obligations.

No *species credit species* (listed under the BC Act) were detected within the Development Site or were determined to contain habitat constraints within the Development Site.

No Serious and Irreversible Impacts (SAILs) were identified within the Development Site.

No EPBC Act listed threatened fauna species were assessed to have a Moderate likelihood of occurrence within the Subject Site. It was determined that impacts to MNES are unlikely. An EPBC referral to the Commonwealth Minister for the Environment is not recommended.

The vegetation on site does not meet the criteria for Core Koala Habitat or Potential Koala Habitat, as defined in Part 2 of the SEPP.



1 INTRODUCTION

1.1 SCOPE

This Biodiversity Development Assessment Report (BDAR) forms part of the Environmental Impact Statement (EIS) for SSD No 14394209 for a new high school at Bungendore. The EIS was exhibited by the NSW Department of Planning from Monday 20 September 2021 to Monday 18 October 2021. During the exhibition submissions were received and following exhibition the Department of Planning and Environment issued two requests for information dated 16 November 2021 and 24 December 2021. The SSDA is for a new high school located at Bungendore.

This report accompanies an Amendment Report for the project and forms an update to the previously issued Biodiversity Development Application Report (BDAR) (Kleinfelder 2021).

This assessment has been undertaken in accordance with the NSW Biodiversity Assessment Method (BAM) (Department of Planning, Infrastructure and Environment [DPIE] 2020a) under the *Biodiversity Conservation Act 2016* (NSW) (BC Act).

The following terms are used throughout this report to describe particular geographical areas:

- **Study Area** – Turallo Terrace, Bungendore, NSW (6.57 hectares [ha]) (**Figure 1**).
- **Development Site** - Area within the Study Area to be directly impacted by the proposed new high school development (2.51 ha), see 'New High School Site' and 'New High School Agricultural Site' in **Figure 2**.
- **Locality** - Land within a 5-kilometre (km) radius of the Study Area.

1.2 THE AMENDED PROPOSAL

Proposal Amendments:

- The amended design no longer includes facilities for Queanbeyan-Palerang Regional Council (Council) such as the previously proposed community health centre, community library and council shop front. The facilities are still to be provided by Council, however, through a separate planning process and on a separate site.
- Administration and staff facilities have been relocated from Block A into Block C (existing council building) and the visual arts and TAS functions have been relocated into Block A.
- The school library has been relocated from Block D to a standalone block, Block E, which is located to east of the Majara Street alignment and centred on the school common.
- Block D has been replanned to address the removal of Council facilities, the relocation of the school library and to sit to the east of the Majara Street alignment. The floor level of Block D has also been lowered to suit the revised building footprint.
- Block B has been relocated to the west, off the Majara Street alignment.
- The games courts and cricket batting nets have been relocated within the school boundary.



- The bulk and scale of buildings facing public roads (Blocks A and B) have been reduced.
- The façade materials of the proposed buildings have been revised to be more sympathetic to the existing village character.
- The primary outdoor learning areas, including the 'covered' outdoor learning areas have been relocated and redesigned to be integrated within the landscape design.
- Minor planning changes to Block B which include relocation of the outdoor learning spaces, student amenities and building services to provide a new covered walk through from the school plaza to Mick Sherd Oval.
- The covered walkway connection between Block B and Block D has been redesigned to arc around the eastern side of the school common and provide a covered connection to the relocated school library, Block E.
- The school security fence between Blocks B and D has been redesigned to arc around the western perimeter of the school common. The school security fence to the northern and southern boundaries has been rationalised and face brickwork piers have been introduced to define the school entries.
- The waste vehicle turning circle has been removed from the proposal. The waste collection area has been relocated to the southern end of the existing carpark and a waste vehicle turning head has been added. A new turning bay is provided for assisted transport vehicles to the northern end of the car park.
- The onsite detention tank has shifted to the west.
- The electronic school sign has been replaced with a changeable, static 'notice board' sign. The sign has been relocated further back from Majara Street, behind the school security fence.
- The Scout storage shed has been relocated from the agricultural plot to within the Scout site. The Scout storage shed will be subject to a separate planning pathway and does not form part of this application. The school agricultural support building, Block F, has been repositioned and the landscape paths and driveways have been updated to suit the change.
- An addition 58 car parking spaces are proposed along Turallo Terrace providing a total of 98 spaces (compared to the original 35). An additional 3 drop off/ pickup spaces are proposed on Turallo Terrace providing a total of 6 spaces (compared with the original 3).
- The proposed delineation works to Mick Sherd Oval and the War Memorial have been removed from the proposal.
- The redesign of pedestrian crossings on Gibraltar Street and Turallo Terrace from 'School Crossings' to 'Wombat Crossings'.
- A footpath is proposed to the northern side of Turallo Terrace connecting the proposed parking with the existing path adjacent to Turallo Creek



1.3 SITE DESCRIPTION

The proposed development is located within the Bungendore Town Centre within the local government area of Queanbeyan-Palerang Regional Council. The proposal involves the use of land bounded by Bungendore Park, Gibraltar Street, Majara Street, Turallo Terrace and Butmaroo Street, the existing former Palerang Council site at 10 Majara Street, the Majara Street road reserve bounded by Turallo Terrace and Gibraltar Streets and Nos. 2, 4 and 6 Majara Street (Refer to **Table 1** below).

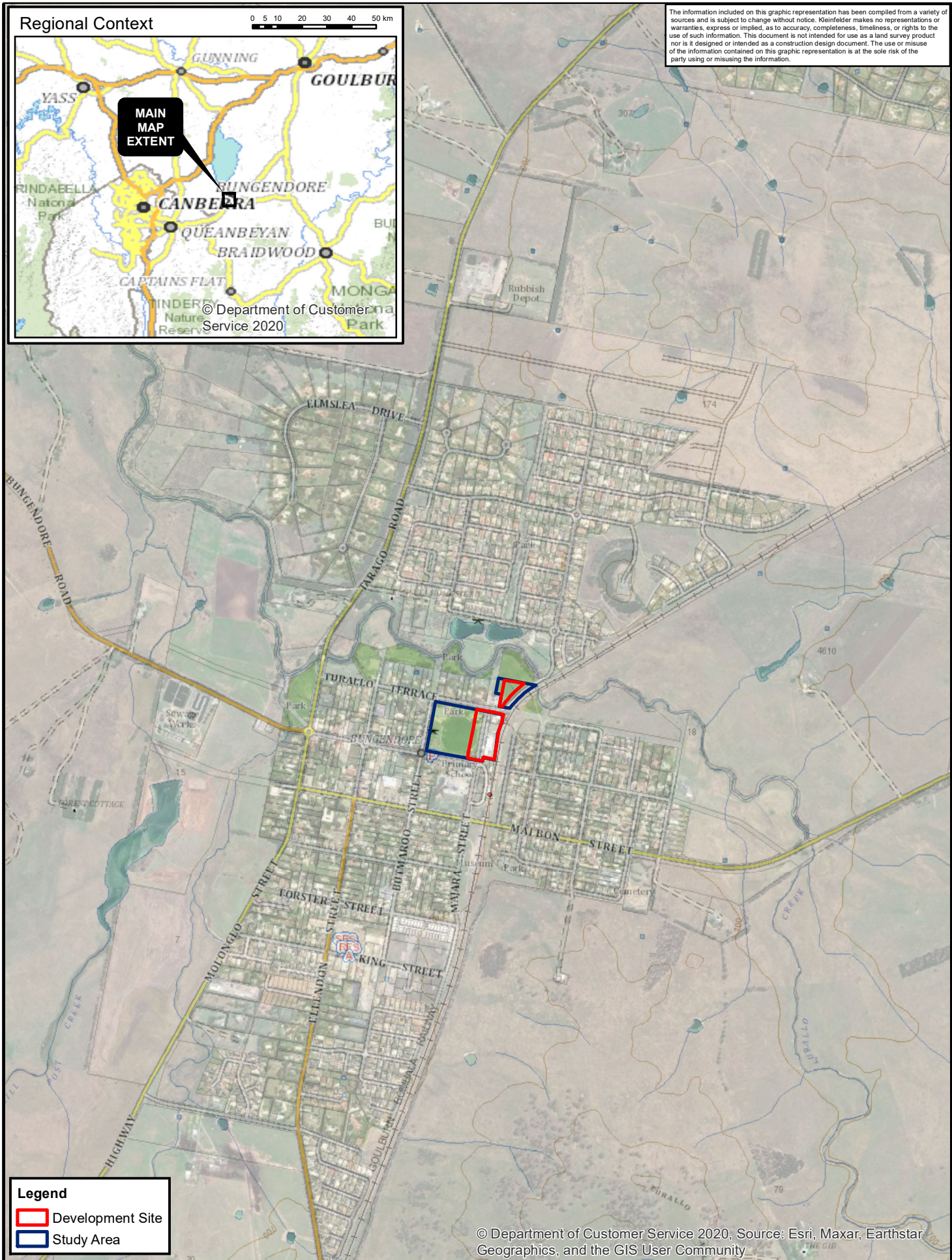
Table 1: new high school in Bungendore legal descriptions

Property Address	Existing Lot and DP	Proposed Lot and DP
6-14 Butmaroo Street	Part Lot 701 DP1027107	Lot 1 DP1276282
2 Majara Street	Lot 12 DP1139067	Lot 12 DP1139067
4-6 Majara Street	Lot 13 DP1139067 & Lot 14 DP1139067	Lot 13 DP1139067
10 Majara Street	Lot 3 DP830878	Lot 14 DP1139067
Butmaroo Street	Part Lot 701 DP96240	Lot 3 DP830878
Portion of Majara Street (between Turallo Terrace and Gibraltar Street)	N/A	Lot 1 DP 1276285

The site is legally described as per the existing Lots and DPs in Table 1 below. The school site comprises land which has recently been transferred to the ownership of the Department of Education, being Lots 12-14 of DP1139067, Lot 3 of DP830878, part of Lot 701 of DP1027107, the part of lot 701 of DP96240, and part of the Majara Street Road Reserve. The proposed Lots and DPs are detailed within Table 1 below and are not yet registered at the time of writing of this Amendment Report.

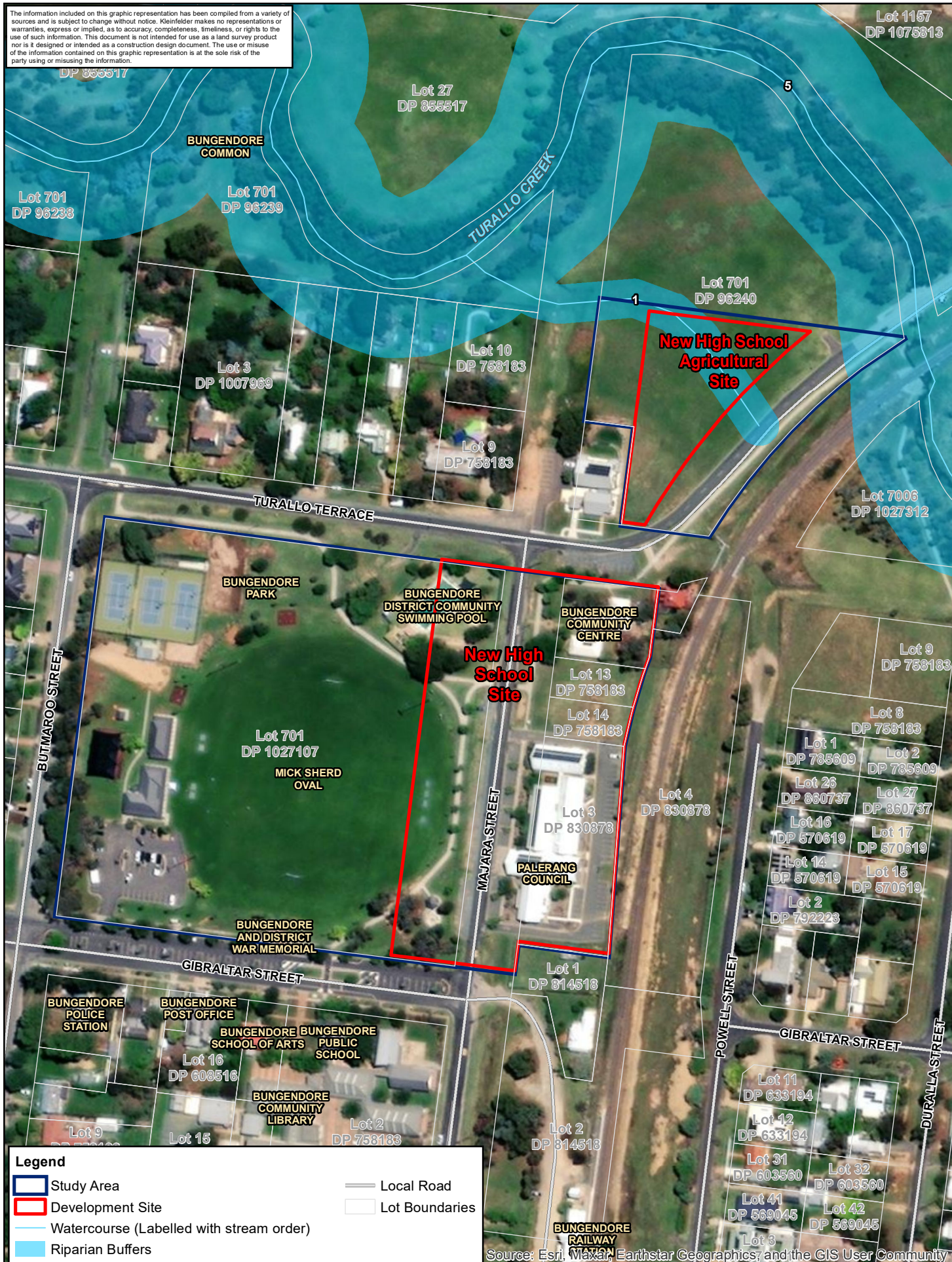
The site is approximately 25,350m² in area and consists of a relatively flat topography. It contains existing Council buildings. The land is mostly cleared of vegetation with some mature trees intersperse throughout subject lots.

The surrounding area generally includes low density residential developments to the north and west, an existing rail line to the east and Bungendore Public School and the Bungendore train station to the south and south west respectively (**Figure 2**).



	<p>PROJECT REFERENCE: 20211347</p> <p>DATE DRAWN: 20/07/2022 15:22 Version 2</p> <p>DRAWN BY: CMiskell</p> <p>DATA SOURCE: NSW DFSI - 2020</p>	<p>Locality</p> <p>TSA Management Biodiversity Development Assessment Report Bungendore High School Turallo Terrace Bungendore, NSW</p>	<p>FIGURE:</p> <p>1</p>
--	--	--	--------------------------------

The information included on this graphic representation has been compiled from a variety of sources and is subject to change without notice. Kleinfelder makes no representations or warranties, express or implied, as to accuracy, completeness, timeliness, or rights to the use of such information. This document is not intended for use as a land survey product nor is it designed or intended as a construction design document. The use or misuse of the information contained on this graphic representation is at the sole risk of the party using or misusing the information.



<p>Metres</p> <p>0 10 20 40 60 80 100</p> <p>KLEINFELDER Bright People. Right Solutions. www.kleinfelder.com</p>	<p>PROJECT REFERENCE: 20211347</p> <p>DATE DRAWN: 20/07/2022 15:56 Version 2</p> <p>DRAWN BY: CMiskell</p> <p>DATA SOURCE:</p> <p>NSW DFSI - 2021 NSW OEH - 2021</p>	<p>Development Site and Study Area</p> <p>TSA Management Biodiversity Development Assessment Report Bungendore High School Turallo Terrace Bungendore, NSW</p>	<p>FIGURE:</p> <p>2</p>
---	--	---	--------------------------------



1.4 INFORMATION SOURCES

The following sources of information were used in to appropriately inform the Biodiversity Development Assessment Report:

- The NSW DPIE, BioNet Atlas (DPIE 2020a) for previous records of threatened species, populations and ecological communities within 5 km radius of the Development Site.
- The Commonwealth Department of Agriculture, Water and the Environment (DAWE) Protected Matters Search Tool (PMST) (DAWE 2020a) for Matters of National Environmental Significance (MNES) including predicted threatened species, populations and ecological communities.
- The NSW DPIE, BioNet Vegetation Classification Database (DPIE 2020b) for identification and allocation of Plant Community Types (PCTs) to vegetation zones on site.
- The NSW DPIE, BioNet Threatened Biodiversity Data Collection (DPIE 2020c), Threatened Species Profiles (DPIE 2020d) and Final Determinations (DPIE 2020e) for information on threatened species, populations, and ecological communities.
- Relevant published literature (see **Section 8**).

1.5 LEGISLATIVE CONTEXT

This assessment was undertaken in accordance with and/or in consideration of the following Acts and Policies:

- **Commonwealth:**
 - *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act).
- **NSW:**
 - *Biodiversity Assessment Method (BAM)* (DPIE 2020f).
 - *Biodiversity Conservation Act 2016* (NSW) (BC Act).
 - *Biodiversity Conservation Regulation 2017* (NSW) (BC Regulation).
 - *Biosecurity Act 2015* (NSW).
 - *Coastal Management Act 2016*.
 - *Environmental Planning and Assessment Act 1979* (NSW) (EP&A Act).
 - *Local Land Services Act 2013* (NSW) (LLS Act).
 - *State Environmental Planning Policy (Koala Habitat Protection) 2019* (NSW) (Koala SEPP).
 - *State Environmental Planning Policy (Coastal Management) 2018* (NSW) (SEPP Coastal Management).
 - *State Environmental Planning Policy (Vegetation in Non-Rural Areas) 2017* (NSW).
 - *Water Management Act 2000* (NSW) (WM Act).
- **Local:**
 - Draft Queanbeyan-Palerang Regional Local Environmental Plan 2020
 - Palerang Local Environmental Plan 2014
 - Palerang Development Control Plan 2015



1.5.1 *Environment Protection and Biodiversity Conservation Act 1999 (EPBC Act)*

Under the EPBC Act, an approval is required for actions that are likely to have a significant impact on MNES. An action includes a project, development, undertaking, activity or series of activities. When a person proposes to take an action they believe may need approval under the EPBC Act, they must refer the proposal to the Australian Government Minister for the Environment. The Act identifies nine MNES:

- World Heritage properties.
- National heritage places.
- Wetlands of international importance (Ramsar Convention).
- Listed threatened species and communities.
- Migratory species listed under international agreements.
- Great Barrier Reef Marine Park.
- Commonwealth marine areas.
- Nuclear actions; and
- Water resources in respect to CSG and large coal mines.

While this BDAR is not required to address MNES, the proponent is required to address the EPBC Act as part of their State Significant Development (SSD) application to the Department of Planning, Industry and Environment (DPIE).

Refer to **Section 5** for a summary of the impact assessment.

1.5.2 *Biodiversity Conservation Act 2016 (NSW)*

1.5.2.1 Biodiversity Assessment Pathway

The *Biodiversity Conservation Act 2016* (BC Act) together with the *Biodiversity Conservation Regulation 2017* outlines the framework for addressing impacts on biodiversity from development and clearing. The framework details a pathway to avoid, minimise and offset impacts on biodiversity from development through the Biodiversity Offset Scheme (The BOS).

Entry into the BOS is triggered by developments, projects and activities that meet criteria or certain thresholds for significant impacts on biodiversity. Alternatively, the BOS can be entered into on an opt-in basis.

Criteria to which the BOS applies includes the following:

- Local Development (assessed under Part 4 of the *Environmental Planning and Assessment Act 1979*) that triggers the BOS Threshold, or is likely to significantly affect threatened species (based on a test of significance pursuant to Section 7.3 of the BC Act). The BOS Threshold has two parts, and is triggered by the following:
 - Clearing of vegetation that exceeds an area threshold (based on the minimum lot size), or
 - Impacts are predicted to occur within an area mapped on the Biodiversity Values Map (the BV Map).
- State Significant Development (SSD) and State Significant Infrastructure projects (SSI), unless the Secretary of the Department of Planning, Industry and Environment and the environment agency head determine that the project is not likely to have a significant impact.



- Biodiversity certification proposals.
- Clearing of native vegetation in urban areas and areas zoned for environmental conservation that exceeds the BOS threshold and does not require development consent.
- Clearing of native vegetation that requires approval by the Native Vegetation Panel under the *Local Land Services Act 2013*.
- Activities assessed and determined under Part 5 of the *Environmental Planning and Assessment Act 1979* (generally, proposals by government entities) if proponents choose to 'opt in' to the Scheme.

The Project is a State Significant Development (SSD), therefore the BOS applies and a Biodiversity Development Assessment Report (BDAR) is required.

The Project has been assessed in accordance with the BAM (DPIE 2020a). Gilbert Whyte (Assessor Number BAAS18041) is the Biodiversity Accredited Assessor for the project.

Section 2.2 of the BAM (DPIE 2020a) summarises the streamlined assessment modules that may be used by an assessor. These streamlined assessment modules may be used where the proposed development impacts on:

- A. Scattered trees (Appendix B of the BAM).
- B. A small area (Appendix C of the BAM).
- C. Planted native vegetation, where the planted native vegetation was planted for purposes such as street trees and other roadside plantings, windbreaks, landscaping in parks and gardens, and revegetation for environmental rehabilitation (Appendix D of the BAM).

Appendices B, C and D of the BAM set out the circumstances where each of the streamlined assessment modules can be used to assess a proposal and the specific assessment requirements. Streamlined assessment modules cannot be used to assess clearing within areas mapped by the NSW Biodiversity Values Map.

The decision-making key in Appendix D of the BAM (DPIE 2020a) was utilised to determine that the Streamlined Assessment Module – Planted Native Vegetation can be used to assess the proposed development. This is based on the following:

- The planted native vegetation to be impacted for the proposed development cannot be reasonably assigned to a PCT known to occur in the Sub IBRA Region.
- The planted vegetation has not been planted for the purposes of environmental rehabilitation or restoration under an existing conservation obligation listed in BAM Section 11.9 (2).
- The planted native vegetation is not comprised of individuals of a threatened species or other native species planted/translocated for the purposes of providing threatened species habitat.
- The planted native vegetation is planted for aesthetic purposes (i.e. landscaping).

Justification for the use of the Streamlined Module – Planted Native Vegetation is presented in **Section 3.2.1** and **Table 3**.

1.5.3 Koala SEPP 2020

The Koala SEPP aims to encourage the conservation and management of areas of natural vegetation that provide habitat for Koalas to support a permanent free-living population over their present range and reverse the current trend of Koala population decline.



The Koala SEPP applies to each Local Government Area listed in Schedule 1 of the SEPP. Where a Koala Plan of Management (KPoM) applies to the land, Clause 8 of the Koala SEPP applies to the development. The proposed development must be consistent with the approved KPoM that applies to the land.

Queanbeyan-Palerang Regional Council LGA is listed in Schedule 1 of the Koala SEPP 2020. As no approved KPoM's apply to the Development Site, the proposed development must be assessed in accordance with the requirements of the Koala SEPP 2020. This assessment is presented in **Section 7.2**.

1.5.4 Biosecurity Act 2015 (NSW)

Under the *Biosecurity Act 2015* (NSW) all plants are regulated with a general biosecurity duty “to prevent, eliminate or minimise any biosecurity risk they may pose. Any person who deals with any plant, who knows (or ought to know) of any biosecurity risk, has a duty to ensure the risk is prevented, eliminated or minimised, so far as is reasonably practicable.” Under the Act, a biosecurity impact “is an adverse effect on the economy, environment, or the community that arises, or has the potential to arise, from a biosecurity matter.” This legislation is addressed in **Section 5**.

1.5.5 Coastal Management Act 2016

The *Coastal Management Act 2016* replaces the *Coastal Protection Act 1979* and establishes a strategic framework and objectives for managing coastal issues in NSW. The Act promotes a focus on ecologically sustainable development in relation to the ‘coastal zone’ as defined by the Act comprising of four coastal management areas:

- Coastal wetlands and littoral rainforests area – areas which display the characteristics of coastal wetlands or littoral rainforests that were previously protected by SEPP 14 and SEPP 26.
- Coastal vulnerability area – areas subject to coastal hazards such as coastal erosion and tidal inundation.
- Coastal environment area – areas that are characterised by natural coastal features such as beaches, rock platforms, coastal lakes and lagoons and undeveloped headlands. Marine and estuarine waters are also included.
- Coastal use area – land adjacent to coastal waters, estuaries and coastal lakes and lagoons.

The Coastal Management SEPP (commenced on 3 April 2018) updates and consolidates into one integrated policy: SEPP 14 (Coastal Wetlands), SEPP 26 (Littoral Rainforests) and SEPP 71 (Coastal Protection), including clause 5.5. of the Standard Instrument – Principal Local Environmental Plan. These policies are now repealed.

The Coastal Management SEPP gives effect to the objectives of the *Coastal Management Act 2016* from a land use planning perspective, by specifying how development proposals are to be assessed if they fall within the coastal zone. It defines the four coastal management areas in the Act through detailed mapping and specifies assessment criteria that are tailored for each coastal management area. Councils and other consent authorities must apply these criteria when assessing proposals for development that fall within one or more of the mapped areas.



The four coastal management areas are:

- **Coastal wetlands and littoral rainforests area** – areas which display the characteristics of coastal wetlands or littoral rainforests that were previously protected by SEPP 14 and SEPP 26.
- **Coastal vulnerability area** – areas subject to coastal hazards such as coastal erosion and tidal inundation.
- **Coastal environment area** – areas that are characterised by natural coastal features such as beaches, rock platforms, coastal lakes and lagoons and undeveloped headlands. Marine and estuarine waters are also included.
- **Coastal use area** – land adjacent to coastal waters, estuaries and coastal lakes and lagoons.

No Areas of Coastal Wetland, mapped under the Coastal Management SEPP, occur within the Study Area.

1.5.6 Water Management Act 2000

Controlled activities carried out in, on or under waterfront land are regulated by the Water Management Act (WM Act). 'Waterfront land' is defined as the bed of any river, lake or estuary, and the land within 40 m of the river banks, lake shore or estuary mean high water mark.

A first order stream is mapped within the site of the new high school agricultural site (**Figure 2**). However, inspection of this area indicates this stream is historic and does not exist as a watercourse,

A third order stream (Turallo Creek) exists over 60 m to the north of the Study Area. As such, the Project has avoided impacts to the waterbody and the vegetated riparian zone. The Project therefore does not constitute a 'controlled activity' as per the WM Act.



2 LANDSCAPE CONTEXT

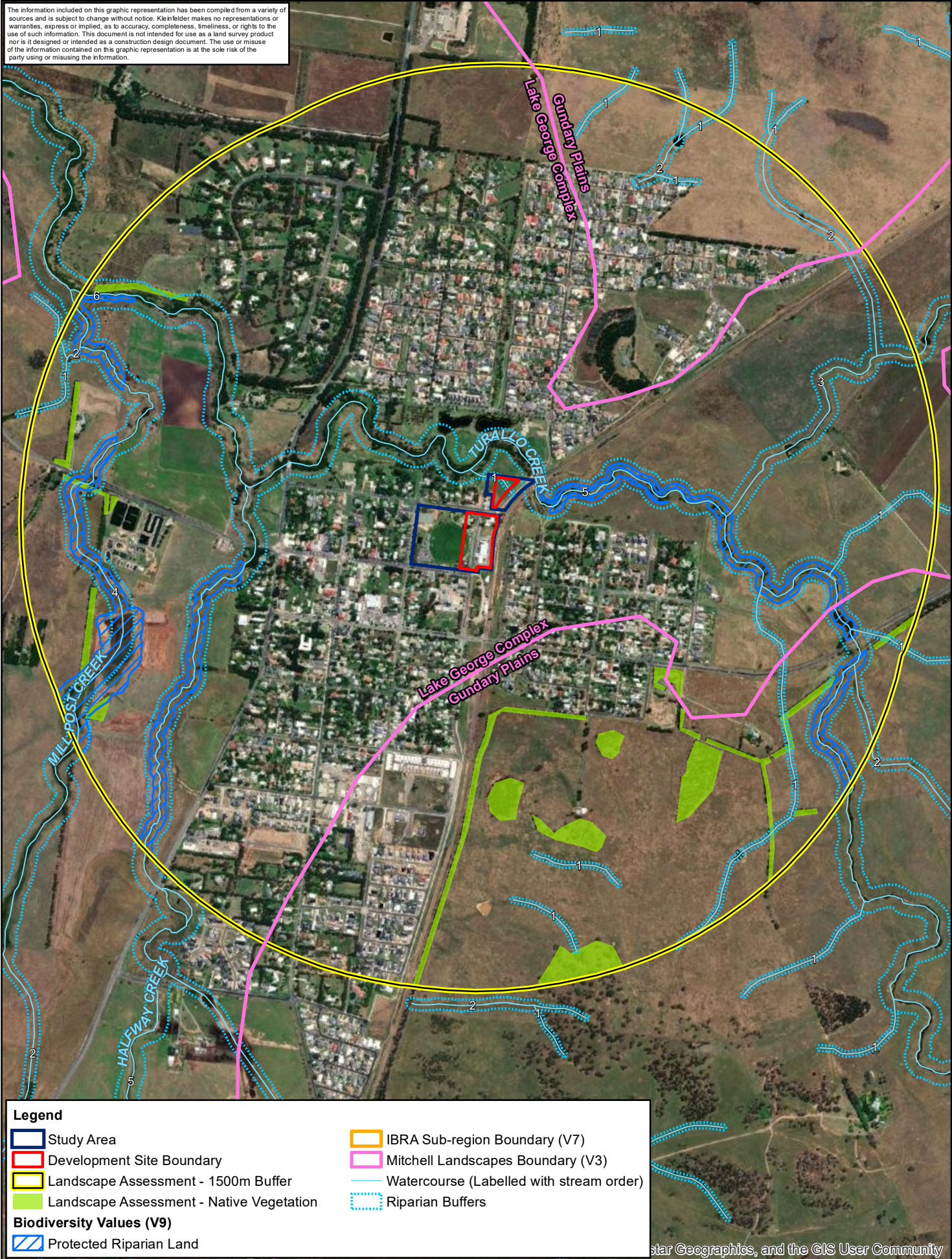
2.1 LANDSCAPE FEATURES

The landscape features detailed in Section 3 of the BAM (DPIE 2020f) and applicable to the Development Site are described in **Table 2**. These landscape features are also shown on **Figure 3**.

Table 2: Landscape Features relevant to the Development Site.

Landscape Feature	Development Site
IBRA Region	South Eastern Highlands - The Development Site occurs centrally within the South Eastern Highlands Bioregion.
IBRA Sub Region	Monaro - The Development Site occurs within the Monaro IBRA Sub Region.
Local Government Area (LGA)	Queanbeyan-Palerang Regional Council Local Government Area
Mitchell Landscapes	<p>Lake George Complex (Department of Environment and Climate Change [DECC], 2002; Mitchell 2002)</p> <p>Closed drainage basins of Quaternary lakes and swamps set within block faulted ranges. Extensive Tertiary quartz gravel, sand, and mud overlying Silurian-Devonian gneissic granite and Silurian quartz sandstone and mudstone. General elevation 700m, local relief of lake beds <50m, rounded hills stand above the plain to 900m. Eastern margins with well developed sandy lunettes. Maximum lake depths about 7m, may be dry for periods of years or vary in water level over decades. Evidence of much greater extent and depth during the Pleistocene ice ages. Self-mulching grey clays on the lakebeds, yellow earths on the lunettes. Wet tussock grasslands of spear grass (<i>Austrostipa</i> sp.) and Poa sp. with kangaroo grass (<i>Themeda triandra</i>) on lake margins, now extensively altered by exotics. Clumps of sparse stunted snow gums (<i>Eucalyptus pauciflora</i>) on low hills and sandy lunettes. Common reed (<i>Phragmites australis</i>) around freshwater seepage areas on lake margins.</p>
Rivers, streams and estuaries	A mapped watercourse occurs >60m to the north (Turallo Creek). The Study Area is outside of the Riparian Buffer for this waterbody (Figure 3). A first order stream is mapped within the site of the new high school agricultural site, however this exists as a shallow, grassed drainage line.
Wetlands	The Study Area is not in proximity to any Wetlands of Importance or RAMSAR wetlands.
Connectivity of different areas of habitat	The Study Area is not connected to any larger areas of vegetation as it is isolated by roads, residential dwellings and agricultural land (Figure 3).
Areas of geological significance and soil hazard features	The Study Area is not located with an area identified as having any particular geological significance. No mapping was identified that would indicate the site contains any soil hazard features.
Areas of outstanding biodiversity value	There are no areas of outstanding biodiversity value mapped within the Development Site or Study Area.
Geology and Soils	<p>Millpost (8727mp) - This Soil Landscape occurs on flat to gently inclined plain and footslopes on the Quaternary alluvium of the Bungendore Plain. Local relief <3 m, between 690 and 705m elevation, slopes usually <2%. Little undisturbed natural vegetation left. Improved pastures are common. There are some small scattered remnants of natural grassland.</p> <p>Bungendore (8727bz) - This Soil Landscape occurs on gently undulating footslopes on Quaternary alluvium of the Bungendore Plain. Long, low waning footslopes. Very gently inclined slopes (<5% and often <2%). Local relief up to 10 m, at 720 – 770 m elevation. Little undisturbed natural vegetation left. Improved pastures are common. There are some small scattered remnants of natural grassland and open-woodland, with a grass understorey.</p> <p>Hoskinstown (8727hs) - This Soil Landscape occurs on undulating low hills on volcanics and sediments of Tallaganda Ranges and Bungendore Plain. Local relief 30 – 90 m; elevation 700 - 900 m; long (500 - 1000 m) sideslopes (2 - 10%). Isolated patches of rock outcrop (<10%). Extensively cleared open-forest, woodland and grassland.</p>

The information included on this graphic representation has been compiled from a variety of sources and is subject to change without notice. Kleinfelder makes no representations or warranties, express or implied, as to accuracy, completeness, timeliness, or rights to the use of such information. This document is not intended for use as a land survey product nor is it designed or intended as a construction design document. The use or misuse of the information contained on this graphic representation is at the sole risk of the party using or misusing the information.

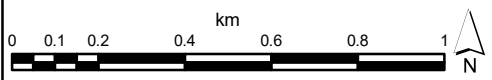


Legend

- Study Area
- Development Site Boundary
- Landscape Assessment - 1500m Buffer
- Landscape Assessment - Native Vegetation
- Biodiversity Values (V9)**
- Protected Riparian Land

- IBRA Sub-region Boundary (V7)
- Mitchell Landscapes Boundary (V3)
- Watercourse (Labelled with stream order)
- Riparian Buffers

star Geographics, and the GIS User Community



PROJECT REFERENCE: 20211347

DATE DRAWN: 20/07/2022 16:43Version 2

DRAWN BY: CMiskell

DATA SOURCE:

NSW DFSI - 2020

NSW EOH - 2020

Landscape Context

TSA Management
Biodiversity Development Assessment Report
Bungendore High School
Turallo Terrace Bungendore, NSW

FIGURE:

3



3 NATIVE VEGETATION

3.1 METHODOLOGY

Native vegetation at the Development Site was assessed in accordance with Section 4 of the BAM (DPIE 2020f).

3.1.1 *Field Survey*

Flora and Fauna field surveys were conducted by qualified ecologists on 13 December 2020 and 4 February 2021. These surveys were undertaken to determine the existing vegetation communities and flora species present and the likelihood of occurrence of threatened ecological communities.

3.1.2 *Data Review*

The identification of vegetation communities was based on dominant species present in the upper stratum, mid stratum and ground stratum. The species associations recorded in the Study Area were compared to descriptions of vegetation communities in the surrounding area and were found not to conform to any vegetation community.

3.1.3 *Vegetation Mapping Surveys*

Vegetation Mapping and Surveys

Detailed vegetation surveys were conducted across the Study Area on the 13 December 2020 and 4 February 2021. Boundaries of vegetation types and communities were marked with a hand-held GPS and mapped using geographical information system (GIS) software.

Plant Community Type Determination

Vegetation zones were identified based on dominant flora species present within each structural layer (i.e. canopy, shrub and ground layers). Exotic or highly modified native vegetation types were defined based on structure and species composition. A review of Plant Community Types (PCTs) listed in the BioNet Vegetation Classification database (DPIE 2020b), including floristics, composition, landscape position, soil type and diagnostic features, was completed to determine the most representative PCT for vegetation on site.

Floristic Identification and Nomenclature

Floristic identification and nomenclature is based on classification by Royal Botanic Gardens and Domain Trust, Sydney, published on PlantNET (the NSW Plant Information Network System <http://plantnet.rbgsyd.nsw.gov.au>). For use in the BAM Calculator, native species were assigned to growth forms as per their classification in BioNet, and High Threat Weeds were classified as per the list published by The Biodiversity Conservation Division (BCD, formerly known as the Office of Environment and Heritage or OEH).



3.2 RESULTS

3.2.1 Vegetation

Three vegetation zones were identified within the Subject Site (**Figure 4**), these include:

- **Planted Native Vegetation** – Comprising of a mix of planted native species including: *Eucalyptus sideroxylon* (Mugga Ironbark), *Eucalyptus leucoxylon* (Yellow Gum) and *Casuarina glauca* (Swamp Oak), with a primarily exotic, managed groundcover of; *Phalaris aquatica* (Phalaris), *Cynodon incompletus*, *Nassella neesiana* (Chilean needlegrass) and *Imperata cylindrica* (Blady Grass).
- **Planted Exotic Vegetation** - Comprising of a mix of planted exotic species/street trees including *Pinus radiata* (Radiata Pine), *Liquidamber styraciflua* (Liquidambar), *Ulmus parvifolia* (Chinese Elm), and exotic managed groundcover consistent with the Planted Native Vegetation zone.
- **Exotic Grassland (Managed)** – Characterised by managed lawns and the sporting oval, comprising of exotic grasses (dominated by *Cynodon incompletus*) and exotic herbs (i.e. *Plantago lanceolata* [Lamb's Tongue], *Lysimachia arvensis* [Scarlet Pimpernel]).

The Planted Native Vegetation within the Subject Site could not be reasonably assigned to a PCT occurring within the Monaro IBRA sub-region (see **Table 3**). Therefore, the *Streamlined Assessment Module – Planted Native Vegetation* was deemed appropriate in accordance with Appendix D of the BAM (BAM 2020).

In accordance with Table 28 of the BAM (DPIE, 2020a) impacts to the Planted Native Vegetation have been considered in the context of potential habitat for threatened species throughout this report. The removal of this vegetation from the Development Site does not generate ecosystem credits.

A full list of flora species identified within the Subject Site is detailed in **Appendix B**.

The information included on this graphic representation has been compiled from a variety of sources and is subject to change without notice. Kleinfelder makes no representations or warranties, express or implied, as to accuracy, completeness, timeliness, or rights to the use of such information. This document is not intended for use as a land survey product nor is it designed or intended as a construction design document. The use or misuse of the information contained on this graphic representation is at the sole risk of the party using or misusing the information.



Legend

- Study Area
- Development Site Boundary
- Watercourse (Labelled with stream order)
- Riparian Buffers

Vegetation Mapping within Development Site

- Planted Native Vegetation
- Planted Exotic Vegetation
- Exotic Grassland (managed)
- Existing Infrastructure

star Geographics, and the GIS User Community

0 10 20 40 60 80 100
Metres



PROJECT REFERENCE: 20211347

DATE DRAWN: 20/07/2022 17:38Version 2

DRAWN BY: CMiskell

DATA SOURCE:
NSW DFSI - 2021
NSW OEH - 2021

Vegetation Zones

TSA Management
Biodiversity Development Assessment Report
Bungendore High School
Turallo Terrace Bungendore, NSW

FIGURE:

4



www.kleinfelder.com



Table 3 Appendix D (BAM 2020) Streamlined Assessment Module – Planted Native Vegetation Decision Key

Decision Key Criteria	Answer	Justification
<p>1. Does the planted native vegetation occur within an area that contains a mosaic of planted and remnant native vegetation and which can be reasonably assigned to a PCT known to occur in the same IBRA subregion as the proposal?</p> <p>(i). Yes - The planted native vegetation must be allocated to the best-fit PCT and the BAM must be applied.</p> <p>(ii). No - Go to 2.</p>	No	A PCT could not be allocated to the vegetation onsite with the assemblage of species present within the development footprint. (See Plate 1- Plate 2).
<p>2. Is the planted native vegetation:</p> <p>a. planted for the purpose of environmental rehabilitation or restoration under an existing conservation obligation listed in BAM Section 11.9(2.), and</p> <p>b. the primary objective was to replace or regenerate a plant community type or a threatened plant species population or its habitat?</p> <p>(i). Yes - The planted native vegetation must be assessed in accordance with Chapters 4 and 5 of the BAM.</p> <p>(ii) No - Go to 3.</p>	No	The planted vegetation present onsite does not constitute rehabilitation or regeneration of a plant community type.
<p>3. Is the planted/translocated native vegetation individuals of a threatened species or other native species planted/translocated for the purpose of providing threatened species habitat under one of the following:</p> <p>a. a species recovery project</p> <p>b. Saving our Species project</p> <p>c. other types of government funded restoration project</p> <p>d. condition of consent for a development approval that required those species to be planted or translocated for the purpose of providing threatened species habitat</p> <p>e. legal obligation as part of a condition or ruling of court. This includes regulatory directed or ordered remedial plantings (e.g. Remediation Order for clearing without consent issued under the BC Act or the Native Vegetation Act)</p> <p>f. ecological rehabilitation to re-establish a PCT or TEC that was, or is carried out under a mine operations plan, or</p> <p>g. approved vegetation management plan (e.g. as required as part of a Controlled Activity Approval for works on waterfront land under the NSW Water Management Act 2000)?</p> <p>(i). Yes - The planted native vegetation must be assessed in accordance with Chapters 4 and 5 of the BAM.</p> <p>(ii) No - Go to 4.</p>	No	The native vegetation within the Subject Site was not planted/translocated for the purposes listed in Decision Criteria 3.



Decision Key Criteria	Answer	Justification
<p>4. Was the planted native vegetation (including individuals of a threatened flora species) undertaken voluntarily for revegetation, environmental rehabilitation or restoration without a legal obligation to secure or provide for management of the native vegetation?</p> <p>(i). Yes - Go to D.2 Assessment of planted native vegetation for threatened species habitat (the use of Chapters 4 and 5 of the BAM are not required to be applied).</p> <p>(ii) No - Go to 5.</p>	No	The native vegetation within the Subject Site was not planted for the purposes of revegetation, environmental rehabilitation or restoration.
<p>5. Is the native vegetation (including individuals of a threatened flora species) planted for functional, aesthetic, horticultural or plantation forestry purposes? This includes examples such as: windbreaks in agricultural landscapes, roadside plantings (including street trees, median strips, roadside batters), landscaping in parks, gardens and sport fields/complexes, macadamia plantations or teatree farms?</p> <p>(i). Yes - Go to D.2 Assessment of planted native vegetation for threatened species habitat (the use of Chapters 4 and 5 of the BAM are not required to be applied).</p> <p>(ii) No - Go to 6.</p>	Yes	The native vegetation present onsite has been planted for aesthetic purposes (i.e. landscaping).
<p>6. Is the planted native vegetation a species listed as a widely cultivated native species on a list approved by the Secretary of the Department (or an officer authorised by the Secretary)?</p> <p>(i). Yes - Go to D.2 Assessment of planted native vegetation for threatened species habitat (the use of Chapters 4 and 5 of the BAM are not required to be applied).</p> <p>(ii) No - There may be other types of occurrences of planted native vegetation that do not easily fit into the decision-making key above. Assessors should contact the BAM Support mailbox at bam.support@environment.nsw.gov.au for further advice on using the BAM to assess other types of occurrences of planted native vegetation.</p>	N/A	N/A



Plate 1 Planted native vegetation within the Development Site (SE Corner of Oval) *Eucalyptus sideroxylon*.

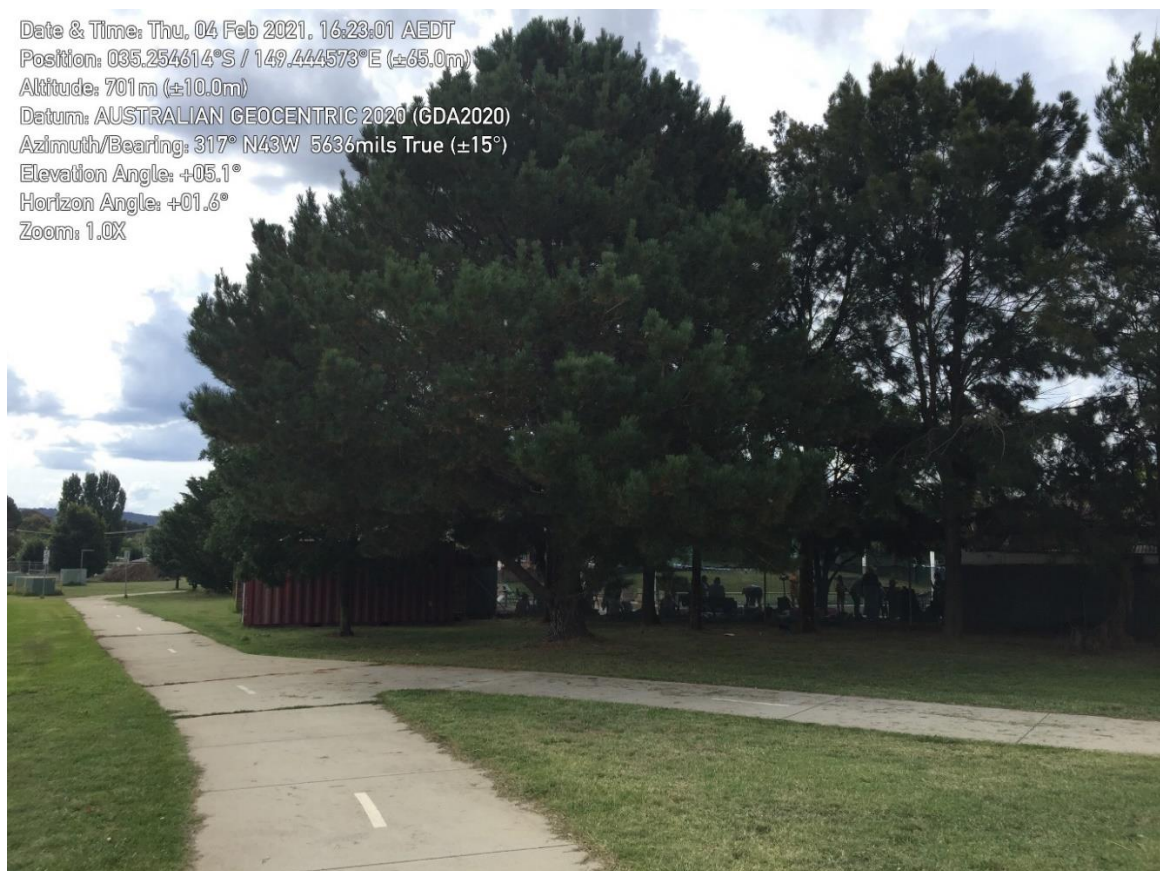


Plate 2 Planted Exotic Vegetation and Exotic Grassland (Managed) within the Subject Site *Pinus radiata*.



4 THREATENED SPECIES

To inform the assessment of suitable habitat for threatened species and populations within the Study Area, a database search of the NSW DPIE BioNet Atlas (DPIE 2020a) and the Commonwealth DAWE Protected Matters Search Tool (PMST) (DAWE 2020a) were conducted. Results of the database search and 'likelihood of occurrence' assessment are provided in **Appendix A**.

Flora and fauna field surveys were conducted by Kleinfelder on 13 December 2020 and 4 February 2021. These surveys were undertaken to determine the likelihood of occurrence of threatened flora and fauna species within the Development Site. The survey effort is shown in **Figure 5**.

The flora and fauna survey methods were designed to satisfy standards established by the Threatened Biodiversity Survey and Assessment: Guidelines for Developments and Activities (DEC 2004). A reduced survey effort was considered adequate given that the vegetation assessment revealed that the Development Site contains minimal biodiversity values and habitat features for threatened species.

4.1 THREATENED FLORA SPECIES

4.1.1 *Habitat Suitability*

The Development Site is characterised by managed exotic grassland (i.e. lawns and oval), gardens, and planted native and exotic trees. These areas are subject to significant disturbance by their regular use by the public (i.e. high pedestrian traffic, use of sporting fields and open space), and continual maintenance of the vegetated areas (i.e. mowing of lawns and garden maintenance). Habitat for threatened flora species was considered to be generally absent within the Subject Site.

4.1.2 *Flora Survey Results*

During site inspections (13 December 2020 and 4 February 2021) meanders were used to compile a list of flora species present within the Subject Site, whilst targeted searches were completed for threatened flora species known to occur within the locality. A total of 42 flora species were identified within the Subject Site, including six native species (four trees, one forb and one grass), 33 exotic species, and three High Threat Exotics. No threatened flora species were recorded within the Subject Site. A complete list of the flora species identified within the Study Area is provided in (**Appendix B**).

4.1.3 *Fauna*

An assessment of fauna habitat within the Subject Site determined that the site contained no hollow-bearing trees, bird nests or other important habitat features (i.e. water bodies, leaf litter, fallen timber/hollow logs). The site is also characterised by limited vegetative structural complexity with a small number of mature planted exotic and native trees, a reduced shrub layer and managed exotic groundcover. It was therefore determined that the site likely only constitutes foraging habitat for common local species and highly mobile threatened species, albeit part of a broader habitat range within the locality.

No threatened fauna species were recorded within the Subject Site.

The information included on this graphic representation has been compiled from a variety of sources and is subject to change without notice. Kleinfelder makes no representations or warranties, express or implied, as to accuracy, completeness, timeliness, or rights to the use of such information. This document is not intended for use as a land survey product nor is it designed or intended as a construction design document. The use or misuse of the information contained on this graphic representation is at the sole risk of the party using or misusing the information.



Legend

- Study Area
- Development Site Boundary
- Meander Search Line
- Watercourse (Labelled with stream order)
- Riparian Buffers

Vegetation Mapping within Development Site

- Planted Native Vegetation
- Planted Exotic Vegetation
- Exotic Grassland (managed)
- Existing Infrastructure

star Geographics, and the GIS User Community

0 10 20 40 60 80 100
Metres



www.kleinfelder.com

PROJECT REFERENCE: 20211347

DATE DRAWN: 20/07/2022 17:42Version 2

DRAWN BY: CMiskell

DATA SOURCE:
NSW DFSI - 2021
NSW OEH - 2021

Survey Effort

TSA Management
Biodiversity Development Assessment Report
Bungendore High School
Turallo Terrace Bungendore, NSW

FIGURE:

5



5 IMPACT ASSESSMENT

5.1 AVOIDING AND MINIMISING IMPACTS

5.1.1 *Avoid and Minimising Impacts on Native Vegetation and Habitat*

The proponent has reviewed various options regarding the location and layout of the Project. The proposed Development Site has been selected to limit clearing native vegetation. The proposed development footprint will only impact areas of managed exotic grassland, planted exotic vegetation and plant native trees and shrubs within an urbanised area within the centre of Bungendore. As such the use of this site was considered the best option to minimise environmental impacts.

5.1.2 *Avoid and Minimise Impacts on Prescribed Biodiversity Impacts*

The following are prescribed impacts which need to be considered as per section 8.3 of the BAM (DPIE 2020a).

5.1.2.1 Impact of development on the habitat of threatened species or ecological communities associated with significant geological features, human made structure or non-native vegetation.

No significant geological features, human made structures or non-native vegetation associated with threatened species habitat or ecological communities occur within the Study Area.

5.1.2.2 Impacts of the development on the connectivity of different habitat which facilitates movement of threatened species

The vegetation within the Study Area is not a key area for regional connectivity and does not represent an important local wildlife corridor; therefore, the proposed development would not increase fragmentation on a local scale.

5.1.2.3 Impact of the development on the movement of threatened species that maintains their life cycle

Impacts on vegetation as a result of the proposed development is confined to removal of planted native vegetation in the form of street trees and removal of exotic grassland (managed). Removal of such vegetation is not expected to be important to the movement of threatened species through the locality, nor are these habitats presumed to be necessary to maintain their life cycle.

5.1.2.4 Impacts of the development on water quality, bodies and hydrological processes that sustain threatened species or ecological communities.

The site contains no rivers, streams, estuaries or is within any buffer zones of the before mentioned.

5.1.2.5 Impact of wind turbine strikes on protected animals

Not applicable to the current application.

5.1.2.6 Impacts of vehicle strikes on threatened species or on animals that are part of a TEC

The Study Area occurs with a residential area; therefore, vehicle and machinery movements during the construction phase of the Project are likely to be similar to the current site conditions. Measures to further



minimise potential impacts would be through the implementation of reduced vehicle speeds within and around the site during the construction phase (**Section 5.2.5**).

5.1.3 Prescribed Biodiversity Impacts

The following are prescribed impacts which need to be considered as per section 8.3 of the BAM (DPIE 2020f).

Impact of development on the habitat of threatened species or ecological communities associated with significant geological features, human made structure or non-native vegetation

No significant geological features, human made structures or non-native vegetation associated with threatened species habitat or ecological communities occur within the Study Area.

Impacts of the development on the connectivity of different habitat which facilitates movement of threatened species

The proposed development will not impact on the connectivity of different habitats which facilitates movement for threatened species.

Impact of the development on movement of threatened species that maintains their life cycle

The proposed development will not impact on the movement of threatened species.

Impacts of the development on water quality, bodies and hydrological processes that sustain threatened species or ecological communities.

The proposed development will not impact on water quality, bodies and hydrological processes that sustain threatened species or ecological communities.

Impact of wind turbine strikes on protected animals

Not applicable to the current application.

Impacts of vehicle strikes on threatened species or on animals that are part of a TEC

Vehicle movements will be limited, and speed limits enforced throughout the construction phase of the project to mitigate against the possibility of an increase in the impact of vehicle strikes. Mitigation measures are outlined in **Section 5.2.5**.

5.2 ASSESSMENT OF IMPACTS

5.2.1 Impacts on Native Vegetation and Habitat

5.2.1.1 Direct Impacts

The Project will impact on approximately 0.11 ha of planted native vegetation, 0.16 ha of planted exotic vegetation, and 1.13 ha of managed exotic grassland identified within the Development Site.

5.2.1.2 Indirect Impacts

The Project has the potential for edge effects on the adjoining vegetation. Potential indirect impacts include:

- Increased weed invasion and potential spread or introduction of pathogens from the site to adjacent vegetation.
- Accidental incursions during clearing.
- Reduced viability of adjoining habitats due to increased noise, dust or light spill.

See **Section 5.2.5** for mitigation measures.



5.2.2 Prescribed Biodiversity Impacts

No prescribed biodiversity impacts are associated with the proposed development.

5.2.3 Impacts on Threatened Species

As described in the BAM Section 8.1 (DPIE 2020a).

5.2.3.1 Direct Impacts – Threatened Flora Species

No threatened flora species were identified within the Subject Site.

No threatened flora species previously recorded within the locality were considered to have a moderate or high likelihood of occurrence within the Subject Site (see **Appendix A**).

5.2.3.2 Direct Impact – Threatened Fauna species

One bird species was determined to have a moderate likelihood of occurrence in the Study Area (**Appendix A**), the Gang-gang Cockatoo (*Calyptorhynchus latham*). This species has previously been recorded immediately west of the Subject Site. However, the lack of suitable nesting hollows within the site suggests that the species' utilization of the site would likely be restricted to occasional foraging within planted vegetation as part of a broader range.

5.2.4 Indirect Impacts

The Project has the potential to cause the following indirect impacts on land adjacent to the Development Site during construction:

- Increased levels of dust during construction.
- Increased levels of noise.
- Increased levels of light; however, the majority of operations are expected to be during the day, so increased light levels would be minimal.
- Erosion and sedimentation.
- Transfer of weeds and pathogens.

Mitigation measures outlined in **Section 5.2.5** would minimise and avoid potential indirect impacts associated with the proposed development.



5.2.5 Proposed Mitigation Measures

The final disturbance footprint for the proposed development is provided in **Figure 2**. A summary of mitigation and management measures for the project are outlined in **Table 3**.

Table 4 Mitigation and management measures for the proposed development

Impact	Action and Outcome	Responsibility	Timing
Direct impact / prescribed impact			
Clearing of native vegetation	<ul style="list-style-type: none"> The area of disturbance should be kept to the minimum required. Where practicable, canopy-layer vegetation within the maintenance areas should be pruned/lopped and any unnecessary clearing or tree removal should be avoided. Clearly delineate the boundaries of the Development Site to ensure no accidental incursions within retained vegetation. Identify and clearly mark 'No-Go Zones' (retained vegetation and site boundary). Ensure vehicle and equipment parking areas and stockpile areas are identified and sited to avoid areas containing ecological value wherever practicable. 	Construction site manager	Prior to and during vegetation clearing.
Vehicle collision with fauna	<ul style="list-style-type: none"> Speed limits within the Development Site will be limited to 40 km/hr. This limit should be clearly signed at all entry points to site. Limit vehicle entry into Development Site where possible. 	Construction site manager	During construction and operation
Displacement of resident fauna during clearing works	<ul style="list-style-type: none"> A pre-clearance survey should be conducted prior to the commencement of vegetation clearing. The survey will inform of any fauna species occupying vegetation on site. If habitat features (i.e. nests constructed since the completion of surveys detailed in this report) are identified within proposed vegetation clearing, clearance supervision would be recommended. 	Construction site manager	Prior to and during vegetation clearing.
Indirect Impact			
Transfer of weeds and pathogens to and from site.	<ul style="list-style-type: none"> All plant, machinery and equipment to be used for vegetation clearing should be washed down before entering and leaving the site to prevent the spread and establishment of weeds, or fungal pathogens. Restriction to designated roads (out of 'No-Go' zones). All exotic vegetation removed from the Development Site to be disposed of off-site. Weed infestations should be controlled as required during and following construction works. Priority should be given to the control of the following species: 	Construction site manager	During vegetation clearing and construction
Accidental incursions during clearing	<ul style="list-style-type: none"> Identify and clearly mark 'No-Go Zones' (retained vegetation and site boundary). All personnel onsite to be made aware of the sensitivity of the surrounding environmental features (e.g. vegetation to be retained). 	Construction site manager	During vegetation clearing and construction



Impact	Action and Outcome	Responsibility	Timing
Increase in dust and noise during clearing works	<ul style="list-style-type: none"> Limit exposure of bare ground during clearing. Reduce machinery noise where possible during clearing. Dust suppression measures such as water to be utilised, as necessary. 	Construction site manager	During vegetation clearing and construction
Increase in light pollution	<ul style="list-style-type: none"> Limit construction to daylight hours to limit light pollution on nocturnal fauna. 	Construction site manager	During vegetation clearing and construction
Erosion and sedimentation	<ul style="list-style-type: none"> Erosion and sedimentation mitigation measures to be put in place prior to commencement of tree clearing works to prevent sedimentation into retained vegetation (e.g. bunds or sediment fencing). 	Construction site manager	Prior to commencement of works.
Waste	<ul style="list-style-type: none"> Waste management procedures to be identified prior to commencement of works. Spill Response Procedures to be in place and spill kits to be present during clearing works. All general waste to be removed from site. 	Construction site manager	Prior to and during tree clearing.



6 IMPACT SUMMARY

6.1 SERIOUS AND IRREVERSIBLE IMPACTS

No Serious and Irreversible Impacts (SAILs) were found to occur on the Development Site.

6.2 IDENTIFICATION OF IMPACTS REQUIRING OFFSETS

There are no offset requirements associated with the proposed development.

- The proposed development will result in the clearing of 0.11 ha of planted native vegetation, 0.16 ha of planted exotic vegetation, and 1.13 ha of managed exotic grassland. Therefore there are no ecosystem credit requirements.
- No species credit species were identified within the Subject Site, therefore there are no species credit requirements.

6.3 IMPACTS NOT REQUIRING OFFSETS

Approximately 0.11 ha of planted native vegetation, 0.16 ha of planted exotic vegetation, and 1.13 ha of exotic grassland (managed) would be removed by the proposed development. This vegetation provides potential foraging habitat for one threatened fauna species (Gang-gang Cockatoo); however, the habitat is not considered to be important to the long-term viability of populations of any of these species in the locality.

The proposed development is unlikely to have a significant impact on any threatened species, as the area to be modified is very small, and comprises isolated native planted vegetation, planted exotic vegetation or exotic grassland (managed). Any local populations of these species which may exist are likely to continue to persist should the proposed development be conducted.

Potential direct and indirect impacts associated with the proposed development would be avoided and/or minimised through implementation of mitigation and management measures outlined in **Section 5.2.3**.

No species or ecological communities identified as being vulnerable to Serious and Irreversible Impacts (SAILs) were identified within the Development Site.



7 ASSESSMENT OF BIODIVERSITY LEGISLATION

7.1 ENVIRONMENT PROTECTION AND BIODIVERSITY CONSERVATION ACT 1999

7.1.1 Assessment Requirements

The EPBC Act requires that developments or undertakings that are likely to have a significant impact on MNES be referred for a determination as to whether they are a controlled action which requires approval under the EPBC Act (Section 1.5.1). Of the nine MNES listed under the Act, those considered relevant to the Study Area are potential impacts on listed threatened species or communities and potential impacts on migratory species listed under international agreements. The results of a search of the relevant threatened species database and an assessment of the likelihood of occurrence of threatened and migratory species is provided in **Appendix A**.

No EPBC Act listed threatened fauna species were assessed to have a Moderate likelihood of occurrence within the Subject Site.

It was determined that impacts to MNES are unlikely. An EPBC referral to the Commonwealth Minister for the Environment is not recommended.

7.2 KOALA SEPP 2020

The proposed Subject Site involves an area of more than one hectare, Queanbeyan-Palerang Regional Council LGA is listed in Schedule 1 of the Koala SEPP 2020 and there are no approved KPOM's for the LGA. Therefore, the Koala SEPP 2020 applies to the Bungendore HS Development.

The vegetation within the Development Site consists of planted native vegetation, planted exotic vegetation and managed exotic grassland. Surveys within the Study Area identified that the vegetation on site consists of planted native vegetation, planted exotic vegetation and managed exotic grassland, and does not meet the criteria for Core Koala Habitat or Potential Koala Habitat, as defined in Part 2 of the SEPP.

Core Koala Habitat is defined as the following:

“Core koala habitat means an area of land with a resident population of koalas, evidenced by attributes such as breeding females, being females with young, and recent sightings of and historical records of a population.”

Potential Koala Habitat is defined as the following:

“Potential koala habitat means areas of native vegetation where trees of the types listed in Schedule 2 constitute at least 15% of the total number of trees in the upper or lower strata of the tree component.”



8 REFERENCES

- Department of Agriculture, Water and the Environment (DAWE) (2020a). *Protected Matters Search Tool*. Available at: [Protected Matters Search Tool | Department of Agriculture, Water and the Environment](#)
- Department of the Agriculture, Water and the Environment (DAWE) (2020b). *Species Profile and Threats Database (SPRAT)*. Available at: <http://www.environment.gov.au/cgi-bin/sprat/public/sprat.pl>
- Department of Environment and Conservation (DEC). (2004). *Threatened Species Survey and Assessment: Guidelines for developments and activities (working draft)*. New South Wales Department of Environment and Conservation, Hurstville, NSW.
- Department of Environment and Climate Change (DECC) (2002). *Descriptions for NSW (Mitchell) Landscapes, Version 2*. Based on descriptions compiled by Dr. Peter Mitchell.
- Department of Planning, Industry and Environment (DPIE) (2018b). *Coastal Wetlands and Littoral Rainforest Area Map*. Published by the Environment, Energy and Science, Department of Planning, Industry and Environment, Parramatta, NSW. Available at: https://webmap.environment.nsw.gov.au/PlanningHtml5Viewer/?viewer=SEPP_CoastalManagement
- Department of Planning, Industry and Environment (DPIE) (2020a). *BioNet Atlas of NSW*. Available at: <http://www.bionet.nsw.gov.au/>
- Department of Planning, Industry and Environment (DPIE) (2020b). *BioNet Vegetation Classification*. Available at: <https://www.environment.nsw.gov.au/research/Visclassification.htm>
- Department of Planning, Industry and Environment (DPIE) (2020c). *BioNet Threatened Biodiversity Data Collection*. Available at: <https://www.environment.nsw.gov.au/threatenedSpeciesApp/>
- Department of Planning, Industry and Environment (DPIE) (2020d). *Threatened Biodiversity Profile Search*. Available at: <https://www.environment.nsw.gov.au/threatenedspeciesapp/>
- Department of Planning, Industry and Environment (DPIE) (2020e). *NSW Threatened Species Scientific Committee – Final Determinations*. Available at: <https://www.environment.nsw.gov.au/topics/animals-and-plants/threatened-species/nsw-threatened-species-scientific-committee/determinations/final-determinations>
- Department of Planning, Industry and Environment (DPIE) (2020f). *Biodiversity Assessment Method*. Published by the Environment, Energy and Science, Department of Planning, Industry and Environment, Parramatta, NSW.
- Department of Planning, Industry and Environment (DPIE) (2020h). *Surveying threatened plants and their habitats - NSW survey guide for the Biodiversity Assessment Method*. Published by Environment, Energy and Science, Department of Planning, Industry and Environment, Parramatta, NSW.
- Harden, G.J. (ed.) (1992). *Flora of New South Wales*, Volume 3, NSW University Press, Sydney.
- Harden, G.J. (ed.) (1993). *Flora of New South Wales*, Volume 4, NSW University Press, Sydney.
- Harden, G.J. (ed) (2000). *Flora of New South Wales*, Volume 1, NSW University Press, Sydney.
- Harden, G.J. (ed.) (2002). *Flora of New South Wales*, Volume 2, NSW University Press, Sydney.
- Pizzey G. & Knight F. (2017) *Birds of Australia Digital Edition V1.5*. 8th edn. Gibbon Multimedia (Aus) Pty Ltd, Craigieburn, Australia.



APPENDIX A THREATENED SPECIES DATABASE SEARCH





THREATENED SPECIES DATABASE SEARCH

A list of threatened species, populations and ecological communities that have been reported or modelled to occur from within a five-kilometre radius of the Study Area was obtained from the following databases:

- NSW Department of Planning, Industry and Environment (DPIE) BioNet Atlas: (<http://www.bionet.nsw.gov.au/>).
- Protected matter database search tool (<https://www.environment.gov.au/epbc/protected-matters-search-tool>)

An assessment was then made of the likelihood of the threatened species, populations, and / or ecological communities reported or modelled to occur in the locality occurring within the Study Area or using the habitat within the Study Area as an essential part of a foraging range.

The table below summarises the likelihood of threatened species and EPBC Act listed migratory species occurring within the Study Area based on the habitat requirements of each species. A brief definition of the likelihood of occurrence criteria is provided below:

- Known – species identified within the site during surveys.
- High – species known from the area (DPIE Wildlife Atlas records), suitable habitat (such as roosting and foraging habitat) present within the site.
- Moderate – species may be known from the area, potential habitat is present within the site.
- Low – species not known from the area and/or marginal habitat is present within the site.
- Nil – habitat requirements not met for this species within the site.

Note: Marine species identified within the desktop assessment i.e. marine bird species, have been excluded from the list based on obvious habitat constraints. However, indirect impacts on these species and ecological communities have been considered.



Table A1 'Likelihood of Occurrence' table

	Species	Status*		Records**	Source***	Habitat	LoO	Summary
		BC	EPBC					
Flora								
1.	<i>Amphibromus fluitans</i> River Swamp Wallaby-grass	V	V	P	PMST	Amphibromus fluitans grows mostly in permanent swamps. The species needs wetlands which are at least moderately fertile and which have some bare ground, conditions which are produced by seasonally-fluctuating water levels.	Nil	No suitable habitat on site.
2.	<i>Caladenia tessellata</i> Thick-lipped Spider-orchid	E	V	P	PMST	Occurs from Central Coast NSW to southern VIC. Mostly coastal but extends inland to Braidwood in southern NSW. In NSW grows in grassy dry sclerophyll woodland on clay loam or sandy soils, and less commonly in heathland on sandy loam soils.	Nil	No suitable habitat on site.
3.	<i>Calotis glandulosa</i> Mauve Burr-daisy	V	V	1	BioNet	Found in montane and subalpine grasslands in the Australian Alps. Found in subalpine grassland (dominated by <i>Poa</i> spp.), and montane or natural temperate grassland dominated by Kangaroo Grass (<i>Themeda australis</i>) and Snow Gum (<i>Eucalyptus pauciflora</i>) Woodlands on the Monaro and Shoalhaven area.	Nil	No suitable habitat on site.
4.	<i>Diuris aequalis</i> Buttercup Doubletail	E	V	P	PMST	Recorded in forest, low open woodland with grassy understorey and secondary grassland on the higher parts of the Southern and Central Tablelands (especially on the Great Dividing Range).	Nil	No suitable habitat on site.
5.	<i>Dodonaea procumbens</i> Trailing Hop-bush	V	V	P	PMST	Grows in Natural Temperate Grassland or fringing eucalypt woodland of Snow Gum (<i>Eucalyptus pauciflora</i>). Grows in open bare patches where there is little competition from other species.	Nil	No suitable habitat on site.



	Species	Status*		Records**	Source***	Habitat	LoO	Summary
		BC	EPBC					
6.	<i>Eucalyptus aggregata</i> Black Gum	V	V	4	BioNet, PMST	Grows in the lowest parts of the landscape on alluvial soils, on cold, poorly-drained flats and hollows adjacent to creeks and small rivers. Often grows with other cold-adapted eucalypts, such as Snow Gum or White Sallee (<i>Eucalyptus pauciflora</i>), Manna or Ribbon Gum (<i>E. viminalis</i>), Candlebark (<i>E. rubida</i>), Black Sallee (<i>E. stellulata</i>) and Swamp Gum (<i>E. ovata</i>). Black Gum usually occurs in an open woodland formation with a grassy groundlayer dominated either by River Tussock (<i>Poa labillardierei</i>) or Kangaroo Grass (<i>Themeda australis</i>), but with few shrubs.	Nil	No suitable habitat on site.
7.	<i>Lepidium hyssopifolium</i> Aromatic Peppercress	E	E	8	BioNet, PMST	In NSW, there is a small population near Bathurst, one populations at Bungendore, and one near Crookwell. In NSW the species was known to have occurred in both woodland with a grassy understorey and in grassland. The species may be a disturbance opportunist, as it was discovered at the most recently discovered site (near Bungendore) following soil disturbance.	Low	Broadly suitable habitat on site. Records within locality. Not recorded during site assessment.
8.	<i>Leucochrysum albicans</i> var. <i>tricolor</i> Hoary Sunray	-	E	6	BioNet, PMST	A perennial everlasting daisy. Stems are 10–15 cm tall. In NSW it currently occurs on the Southern Tablelands adjacent areas in an area roughly bounded by Albury, Bega and Goulburn. Occurs in a wide variety of grassland, woodland and forest habitats, generally on relatively heavy soils.	Nil	No suitable habitat on site.
9.	<i>Pomaderris pallida</i> Pale Pomaderris	V	V	P	PMST	This species usually grows in shrub communities surrounded by Brittle Gum (<i>Eucalyptus mannifera</i>) and Red Stringybark (<i>E. macrorhyncha</i>) or <i>Callitris</i> spp. woodland.	Nil	No suitable habitat on site.



	Species	Status*		Records**	Source***	Habitat	LoO	Summary
		BC	EPBC					
10.	<i>Prasophyllum petilum</i> Tarengo Leek Orchid	E	E	P	PMST	Natural populations are known from a total of five sites in NSW. These are near Boorowa, Queanbeyan area, Ilford, Delegate and a newly recognised population c.10 km west of Muswellbrook. Grows in open sites within Natural Temperate Grassland at the Boorowa and Delegate sites. Also grows in grassy woodland in association with River Tussock <i>Poa labillardieri</i> , Black Gum <i>Eucalyptus aggregata</i> and tea-trees <i>Leptospermum</i> spp. near Queanbeyan and within the grassy groundlayer dominated by Kangaroo Grass under Box-Gum Woodland at Ilford (and Hall, ACT).	Nil	No suitable habitat on site.
11.	<i>Rutidosia leptorrhynchoidea</i> Button Wrinklewort	E	E	P	PMST	Local populations at Goulburn, the Canberra - Queanbeyan area and at Michelago. Other populations occur in Victoria. Occurs in Box-Gum Woodland, secondary grassland derived from Box-Gum Woodland or in Natural Temperate Grassland; and often in the ecotone between the two communities.	Nil	No suitable habitat on site.
12.	<i>Senecio macrocarpus</i> Large-fruit Fireweed	-	V	1	BioNet	Occurs within remnant Themeda grasslands	Nil	No suitable habitat on site.
13.	<i>Swainsona recta</i> Small Purple-pea	E	E	P	PMST	Grows in association with understorey dominants that include Kangaroo Grass Themeda australis, poa tussocks Poa spp. and spear-grasses Austrostipa spp.	Nil	No suitable habitat on site.
14.	<i>Thesium australe</i> Austral Toadflax	V	V	P	PMST	Occurs in grassland on coastal headlands or grassland and grassy woodland away from the coast. Often found in association with Kangaroo Grass (Themeda australis). A root parasite that takes water and some nutrient from other plants, especially Kangaroo Grass.	Nil	No suitable habitat on site.



	Species	Status*		Records**	Source***	Habitat	LoO	Summary
		BC	EPBC					
Birds								
1.	<i>Anthochaera phrygia</i> Regent Honeyeater	CE	CE	P	PMST	In NSW the species is confined to two known breeding areas: the Capertee Valley and Bundarra-Barraba region. Non-breeding flocks are seen occasionally in coastal areas foraging in flowering Spotted Gum and Swamp Mahogany forests. Habitat for the species includes dry open forest and woodlands, particularly Box-Ironbark woodland and riparian forests of River Sheoak, with an abundance of mature trees, high canopy cover and abundance of mistletoes.	Nil	No suitable habitat on site.
2.	<i>Artamus cyanopterus cyanopterus</i> Dusky Woodswallow	V,P		27	BioNet	A woodland dependent bird with a wide distribution and occurrence in a variety of habitats. The Tasmanian breeding population migrates north during the cooler months and can be found in southeast NSW. The species is an aerial forager and prefers woodland habitats.	Low	Broadly suitable aerial foraging habitat on site. Records within locality. Not recorded during site assessment.
3.	<i>Botaurus poiciloptilus</i> Australasian Bittern	E	E	P	PMST	Large, stocky bird to 75 cm in length, widespread but uncommon over south-eastern Australia. In NSW they may be found over most of the state except for the far north-west. Favours permanent freshwater wetlands with tall, dense vegetation, particularly bulrushes (<i>Typha</i> spp.) and spike rushes (<i>Eleocharis</i> spp.).	Nil	No suitable habitat on site.
4.	<i>Calidris ferruginea</i> Curlew Sandpiper		CE	P	PMST	The species occurs along the entire coast of NSW, particularly in the Hunter Estuary, and freshwater wetlands in the Murray-Darling Basin. Breeds in Siberia and migrates to Australia (as well as Africa and Asia) for the non-breeding period, arriving between August and November, and departing between March and mid-April. It generally occupies littoral and estuarine habitats, and in New South Wales can be found mainly in intertidal mudflats of sheltered coasts.	Nil	No suitable habitat on site.



	Species	Status*		Records**	Source***	Habitat	LoO	Summary
		BC	EPBC					
5.	<i>Callocephalon fimbriatum</i> Gang-gang Cockatoo	V,P,3		4	BioNet	In spring and summer, generally found in tall mountain forests and woodlands, particularly in heavily timbered and mature wet sclerophyll forests. In autumn and winter, the species often moves to lower altitudes in drier more open eucalypt forests and woodlands, particularly box-gum and box-ironbark assemblages, or in dry forest in coastal areas and often found in urban areas. May also occur in sub-alpine Snow Gum (<i>Eucalyptus pauciflora</i>) woodland and occasionally in temperate rainforests.	Moderate	Broadly suitable foraging habitat on site. Records within locality. Not recorded during site assessment. No suitable Hollow-bearing trees within Subject Site.
6.	<i>Calyptorhynchus lathami</i> Glossy Black-Cockatoo	V,P,2		1	BioNet	Widespread but uncommon from coast to southern tablelands and central western plains. Feeds almost exclusively on the seeds of <i>Allocasuarina</i> species. Prefers woodland and open forests, rarely away from <i>Allocasuarina</i> . Roost in leafy canopy trees, preferably eucalypts, usually <1 km from feeding site. Nests in large (approx. 20 cm) hollows in trees, stumps or limbs, usually in Eucalypts.	Nil	No suitable habitat on site.
7.	<i>Circus assimilis</i> Spotted Harrier	V,P		3	BioNet	Occurs in grassy open woodland including Acacia and mallee remnants, inland riparian woodland, grassland and shrub steppe. It is found most commonly in native grassland, but also occurs in agricultural land, foraging over open habitats including edges of inland wetlands. Builds a stick nest in a tree and lays eggs in spring (or sometimes autumn).	Low	Broadly suitable aerial foraging habitat on site. Records within locality. Not recorded during site assessment.



	Species	Status*		Records**	Source***	Habitat	LoO	Summary
		BC	EPBC					
8.	<i>Daphoenositta chrysoptera</i> Varied Sittella	V,P		1	BioNet	Sedentary, occurs across NSW from the coast to the far west. Inhabits eucalypt forests and woodlands, especially rough-barked species and mature smooth-barked gums with dead branches, mallee and Acacia woodland. Sensitive to habitat isolation and loss of structural complexity, and adversely affected by dominance of Noisy Miners. Cleared agricultural land is potentially a barrier to movement. Builds a cup-shaped nest of plant fibres and cobwebs in an upright tree fork high in the living tree canopy, and often re-uses the same fork or tree in successive years.	Nil	No suitable habitat on site.
9.	<i>Epthianura albifrons</i> White-fronted Chat	V,P		3	BioNet	Short slender bill, long spindly legs, a short square-tipped tail and rounded wings. Detectable all year, gregarious species, usually found foraging on bare or grassy ground in wetland areas. The White-fronted Chat lives in salt marsh and other damp areas with low vegetation such as swampy farmland and roadside verges.	Nil	No suitable habitat on site.
10.	<i>Falco hypoleucos</i> Grey Falcon	E	V	P	PMST	Medium-sized, compact, pale falcon with a heavy, thick-set, deep-chested appearance. The species is sparsely distributed in NSW, chiefly throughout the Murray-Darling Basin, with the occasional vagrant east of the Great Dividing Range. Usually restricted to shrubland, grassland and wooded watercourses of arid and semi-arid regions, although it is occasionally found in open woodlands near the coast.	Nil	No suitable habitat on site.
11.	<i>Falco subniger</i> Black Falcon	V,P		2	BioNet	Widely, but sparsely, distributed in New South Wales, mostly occurring in inland regions. In New South Wales there is assumed to be a single population that is continuous with a broader continental population, given that falcons are highly mobile, commonly travelling over hundreds of kilometres. The Black Falcon inhabits woodland, shrubland and grassland in the arid and semi-arid zones, especially wooded watercourses and agricultural land with scattered remnant trees.	Low	Broadly suitable foraging habitat on site. Records within locality. Not recorded during site assessment.



	Species	Status*		Records**	Source***	Habitat	LoO	Summary
		BC	EPBC					
12.	<i>Grantiella picta</i> Painted Honeyeater		V	P	PMST	The species is nomadic, occurring in low densities across most of NSW. Highest concentrations and almost all breeding occur on inland slopes of the Great Dividing Range. Habitat for the species includes Boree, Brigalow and Box Gum woodlands and Box-Ironbark forests.	Low	No suitable habitat on site.
13.	<i>Hieraaetus morphnoides</i> Little Eagle	V,P		4	BioNet	Occurs throughout NSW except most densely forested parts of the Dividing Range escarpment. Occupies habitats rich in prey within open eucalypt forest, woodland or open woodland. Sheoak or acacia woodlands and riparian woodlands of interior NSW are also used. For nest sites it requires a tall living tree within a remnant patch, where pairs build a large stick nest in winter and lay in early spring.	Low	No suitable habitat on site.
14.	<i>Hirundapus caudacutus</i> White-throated Needletail	P	V,C,J,K	2	BioNet, PMST	Widespread in eastern and south-eastern Australia. In Australia, the White-throated Needletail is almost exclusively aerial, from heights of less than 1 m up to more than 1000 m above the ground.	Low	No suitable habitat on site.
15.	<i>Lathamus discolor</i> Swift Parrot		CE	P	PMST	A migratory species that travels to the mainland from March to October, the species breeds in Tasmania from September to January. Principal over-winter habitat is box-ironbark communities on the inland slopes and plains. <i>Eucalyptus robusta</i> , <i>Corymbia maculata</i> and <i>C. gummifera</i> dominated coastal forests are also important habitat.	Nil	No suitable habitat on site.
16.	<i>Limosa lapponica baueri</i> Bar-tailed Godwit		V	P	PMST	Bar-tailed Godwits are quite large waders, with females being bigger than males. The Bar-tailed Godwit is mainly mottled brown above and lighter and more uniform buff below. The species arrives in Australia each year in August from breeding grounds in the northern hemisphere. The species is known to inhabit estuarine mudflats, mangroves and beaches.	Nil	No suitable habitat on site.



	Species	Status*		Records**	Source***	Habitat	LoO	Summary
		BC	EPBC					
17.	<i>Numenius madagascariensis</i> Eastern Curlew		CE	P	PMST	The eastern curlew is Australia's largest shorebird and a long-haul flyer. It is easily recognisable, with its long, down-curved bill. The species takes an annual migratory flight to Russia and northeastern China to breed, arriving back home to Australia in August.	Nil	No suitable habitat on site.
18.	<i>Polytelis swainsonii</i> Superb Parrot	V	V	P	PMST	The Superb Parrot is found throughout eastern inland NSW. Inhabit Box-Gum, Box-Cypress-pine and Boree Woodlands and River Red Gum Forest. In the Riverina the birds nest in the hollows of large trees (dead or alive) mainly in tall riparian River Red Gum Forest or Woodland. On the South West Slopes nest trees can be in open Box-Gum Woodland or isolated paddock trees. Species known to be used are Blakely's Red Gum, Yellow Box, Apple Box and Red Box.	Low	Broadly suitable foraging habitat on site. Records within locality. Not recorded during site assessment.
19.	<i>Rostratula australis</i> Australian Painted Snipe	E1,P	E	1	BioNet, PMST	Normally found in permanent or ephemeral shallow inland wetlands, either freshwater or brackish. The species nests on the ground amongst tall reed-like vegetation near water. Habitat for the species includes the fringes of swamps, dams and nearby marshy areas with cover of grasses, lignum, low scrub or open timber.	Nil	No suitable habitat on site.
20.	<i>Stagonopleura guttata</i> Diamond Firetail	V,P		3	BioNet	Found in grassy eucalypt woodlands, including Box-Gum Woodlands and Snow Gum (<i>Eucalyptus pauciflora</i>) Woodlands. Also occurs in open forest, mallee, Natural Temperate Grassland, and in secondary grassland derived from other communities. Often found in riparian areas (rivers and creeks), and sometimes in lightly wooded farmland. Groups separate into small colonies to breed, between August and January.	Nil	No suitable habitat on site.



	Species	Status*		Records**	Source***	Habitat	LoO	Summary
		BC	EPBC					
21.	<i>Stictonetta naevosa</i> Freckled Duck	V,P		3	BioNet	Prefer permanent freshwater swamps and creeks with heavy growth of Cumbungi, Lignum or Tea-tree. During drier times they move from ephemeral breeding swamps to more permanent waters such as lakes, reservoirs, farm dams and sewage ponds. Nesting usually occurs between October and December but can take place at other times when conditions are favourable.	Nil	No suitable habitat on site.

Mammals

1.	<i>Chalinolobus dwyeri</i> Large-eared Pied Bat	V	V	P	PMST	Found in well-timbered areas containing gullies. Roosts in caves (near their entrances), crevices in cliffs, old mine workings and in the disused, bottle-shaped mud nests of the Fairy Martin (<i>Petrochelidon ariel</i>), frequenting low to mid-elevation dry open forest and woodland close to these features.	Nil	No suitable habitat on site.
2.	<i>Dasyurus maculatus maculatus</i> (SE mainland population) Spot-tailed Quoll	-	E	P	PMST	Found in eastern NSW, eastern Victoria, south-east and north-eastern Queensland, and Tasmania the species has been 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	Nil	No suitable habitat on site.
3.	<i>Petaurus norfolcensis</i> Squirrel Glider	V,P		1	BioNet	The species is widely though sparsely distributed in eastern Australia, from northern Queensland to western Victoria. Inhabits mature or old growth Box, Box-Ironbark woodlands and River Red Gum forest west of the Great Dividing Range and Blackbutt-Bloodwood forest with heath understorey in coastal areas. Prefers mixed species stands with a shrub or Acacia midstorey.	Nil	No suitable habitat on site.
4.	<i>Petauroides volans</i> Greater Glider		V	P	PMST	Prefers tall, montane, moist eucalypt forests with old growth trees and abundant hollows. The species favours forests with a diversity of eucalypt species, due to seasonal variation in its preferred tree species.	Nil	No suitable habitat on site.



	Species	Status*		Records**	Source***	Habitat	LoO	Summary
		BC	EPBC					
5.	<i>Petrogale penicillata</i> Brush-tailed Rock-wallaby	E	V	P	PMST	Occupy rocky escarpments, outcrops and cliffs with a preference for complex structures with fissures, caves and ledges, often facing north.	Nil	No suitable habitat on site.
6.	<i>Phascolarctos cinereus</i> (combined populations of Qld, NSW and the ACT) Koala	V	V	P	PMST	Found in a variety of forest types with suitable feed tree species.	Nil	No suitable habitat on site.
7.	<i>Pteropus poliocephalus</i> Grey-headed Flying-fox	V,P	V	7	BioNet, PMST	Generally this species is found within 200 km of the eastern coast of Australia, from Rockhampton in Queensland to Adelaide in South Australia. Inhabit 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.	Low	Broadly suitable foraging habitat on site. Records within locality. Not recorded during site assessment.
Fish								
1.	<i>Macquaria australasica</i> Macquarie Perch		E	P	PMST	A riverine, schooling species, it prefers clear water and deep, rocky holes with lots of cover. As well as aquatic vegetation, additional cover may comprise of large boulders, debris and overhanging banks. Spawning occurs just above riffles (shallow running water). Populations may survive in impoundments if able to access suitable spawning site.	Nil	No suitable habitat on site.
Amphibians								
1.	<i>Litoria aurea</i> Green and Golden Bell Frog	E	V	P	PMST	This species prefers open water bodies, fringed by reeds and other aquatic vegetation for breeding and foraging purposes. Needs fallen logs and debris for shelter and over-wintering purposes.	Nil	No suitable habitat on site.



	Species	Status*		Records**	Source***	Habitat	LoO	Summary
		BC	EPBC					
2.	<i>Litoria castanea</i> Yellow-spotted Tree Frog, Yellow-spotted Bell Frog	CE	E	P	PMST	Require large permanent ponds or slow flowing 'chain-of-ponds' streams with abundant emergent vegetation such as bulrushes and aquatic vegetation.	Nil	No suitable habitat on site.
3.	<i>Litoria raniformis</i> Growling Grass Frog	E	V	P	PMST	The species exists only in isolated populations in the Coleambally Irrigation Area. Habitat for the species is usually 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.	Nil	No suitable habitat on site.
Insects								
1.	<i>Synemon plana</i> Golden Sun Moth	E	CE	P	PMST	The Golden Sun Moth's NSW populations are found in the area between Queanbeyan, Gunning, Young and Tumut. Occurs in Natural Temperate Grasslands and grassy Box-Gum Woodlands in which groundlayer is dominated by wallaby grasses <i>Austrodanthonia</i> spp.	Nil	No suitable habitat on site.
Reptiles								
1.	<i>Aprasia parapulchella</i> Pink-tailed Worm-lizard	V	V	P	PMST	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 (<i>Themeda australis</i>). Sites are typically well-drained, with rocky outcrops or scattered, partially-buried rocks.	Nil	No suitable habitat on site.



	Species	Status*		Records**	Source***	Habitat	LoO	Summary
		BC	EPBC					
2.	<i>Delma impar</i> Striped Legless Lizard	V	V	P	PMST	Found mainly in Natural Temperate Grassland but has also been captured in grasslands that have a high exotic component; in secondary grassland near Natural Temperate Grassland and occasionally in open Box-Gum Woodland. Habitat is where grassland is dominated by perennial, tussock-forming grasses such as Kangaroo Grass <i>Themeda australis</i> , spear-grasses <i>Austrostipa</i> spp. and poa tussocks <i>Poa</i> spp., and occasionally wallaby grasses <i>Austrodanthonia</i> spp. Sometimes present in modified grasslands with a significant content of exotic grasses and in grasslands with significant amounts of surface rocks	Nil	No suitable habitat on site.
3.	<i>Suta flagellum</i> Little Whip Snake	V,P		19	BioNet	The Little Whip Snake is found within an area bounded by Crookwell in the north, Bombala in the south, Tumbaramba 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.	Nil	No suitable habitat on site.

Migratory Terrestrial Species

1.	<i>Hirundapus caudacutus</i> White-throated Needletail	-	V, M	P	PMST	Widespread in eastern and south-eastern Australia. In Australia, the White-throated Needletail is almost exclusively aerial, from heights of less than 1 m up to more than 1000 m above the ground.	Low	Broadly suitable aerial foraging habitat on site. Records within locality. Not recorded during site assessment.
2.	<i>Monarcha melanopsis</i> Black-faced Monarch	-	M	P	PMST	The Black-faced Monarch is found in rainforests, eucalypt woodlands, coastal scrub and damp gullies. It may be found in more open woodland when migrating.	Nil	No suitable habitat on site.
3.	<i>Motacilla flava</i> Yellow Wagtail	-	M	P	PMST	Widespread wagtail, favoring wet meadows, marshland, grassy and muddy lakeshores. Occurs in fields and often near livestock during migration.	Nil	No suitable habitat on site.



	Species	Status*		Records**	Source***	Habitat	LoO	Summary
		BC	EPBC					
4.	<i>Myiagra cyanoaleuca</i> Satin Flycatcher	-	M	P	PMST	Satin Flycatchers inhabit heavily vegetated gullies in eucalypt-dominated forests and taller woodlands, and on migration, occur in coastal forests, woodlands, mangroves and drier woodlands and open forests.	Nil	No suitable habitat on site.
5.	<i>Rhipidura rufifrons</i> Rufous Fantail	-	M	P	PMST	Found in rainforest, dense wet forests, swamp woodlands and mangroves, preferring deep shade, and is often seen close to the ground.	Nil	No suitable habitat on site.

Threatened Ecological Communities

1.	Monaro Tableland Cool Temperate Grassy Woodland in the South Eastern Highlands Bioregion	E4B		K	BioNet	Monaro Grassy Woodland (MGW) occurs in the Southern Tablelands of NSW, occupying broad valley floors and slopes and low rises of the moderately undulating tablelands on a wide variety of substrates including basalt, fine-grained sedimentary rocks, granite, acid volcanics and alluvium.	Absent	Vegetation on site is not consistent with Threatened Ecological Community.
2.	Montane Peatlands and Swamps of the New England Tableland, NSW North Coast, Sydney Basin, South East Corner, South Eastern Highlands and Australian Alps bioregions	E3	E	K	BioNet	Currently known from conservation reserves including Werrikimbee, Barrington, Kanangra-Boyd, Monga, Wadbilliga, South East Forests and Kosciuszko National Parks. Associated with accumulated peaty or organic-mineral sediments on poorly drained flats in the headwaters of streams. It occurs on undulating tablelands and plateaux, above 400-500 m elevation, generally in catchments with basic volcanic or fine-grained sedimentary substrates or, occasionally, granite.	Absent	Vegetation on site is not consistent with Threatened Ecological Community.
3.	Natural Temperate Grassland of the South Eastern Highlands		CE	K	BioNet	Natural Temperate Grassland is confined to the Southern Tablelands, a region bounded by the ACT, Yass, Boorowa, the Abercrombie River, Goulburn, the Great Eastern Escarpment, the Victorian border and the eastern boundary of Kosciuszko National Park.	Absent	Vegetation on site is not consistent with Threatened Ecological Community.



	Species	Status*		Records**	Source***	Habitat	LoO	Summary
		BC	EPBC					
4.	Tableland Basalt Forest in the Sydney Basin and South Eastern Highlands Bioregions	E3		K	BioNet	Found on plateaus and tablelands with loam or clay soils derived primarily from basalt, but may also be derived from mudstones, granites, alluvium and other substrates east of Mittagong and Moss Vale.	Absent	Vegetation on site is not consistent with Threatened Ecological Community.
5.	Werriwa Tablelands Cool Temperate Grassy Woodland in the South Eastern Highlands and South East Corner Bioregions	E4B		K	BioNet	Werriwa Grassy Woodlands (WGW) occur in the Southern Tablelands of NSW, occupying broad valley floors and gentle slopes and low rises of the moderately undulating Southern Tablelands of NSW. It has been commonly recorded on a wide variety of substrates including basalt, fine-grained sedimentary rocks, granite, acid volcanics and alluvium but rarely on steep ridge lines on the tablelands.	Absent	Vegetation on site is not consistent with Threatened Ecological Community.
6.	White Box - Yellow Box - Blakely's Red Gum Grassy Woodland and Derived Native Grassland in the NSW North Coast, New England Tableland, Nandewar, Brigalow Belt South, Sydney Basin, South Eastern Highlands, NSW South Western Slopes, South East Corner and Riverina Bioregions	E4B	CE	K	BioNet	Box-Gum Woodland is found from the Queensland border in the north, to the Victorian border in the south. It occurs in the NSW North Coast, New England Tableland, Nandewar, Brigalow Belt South, Sydney Basin, South Eastern Highlands, NSW South Western Slopes, South East Corner and Riverina Bioregions	Absent	Vegetation on site is not consistent with Threatened Ecological Community.

* Status. *Biodiversity Conservation Act 2016* (BC), *Environment Protection and Biodiversity Conservation Act* (EPBC), M (Migratory), V (Vulnerable), E (Endangered), CE (Critically Endangered), E3 (Endangered Ecological Community), E4B (Critically Endangered Ecological Community)

** Records. # (number of records within locality), P (Predicted), K (known to occur with the locality).

*** Source. Bionet (NSW Department of Planning, Industry and Environment (DPIE) BioNet Atlas), PMST (Protected matter database search tool).



APPENDIX B FLORA SPECIES LIST





Table B1 Flora Species List

Scientific	Common Name	BAM Growth Form*	Status
<i>Arctotheca calendula</i>	Capeweed	Exotic	-
<i>Avena barbata</i>	Bearded Oats	Exotic	-
<i>Brassica sp.</i>		Exotic	-
<i>Capsella bursa-pastoris</i>	Shepherd's Purse	Exotic	-
<i>Carthamus lanatus</i>	Saffron Thistle	Exotic	-
<i>Casuarina glauca</i>	Swamp Oak	TG	-
<i>Cynodon incompletus</i>		Exotic	-
<i>Eucalyptus leucoxylon</i>	Yellow Gum	TG	-
<i>Eucalyptus maidenii</i>	Maiden's Gum	TG	-
<i>Eucalyptus sideroxylon</i>	Mugga Ironbark	TG	-
<i>Euphorbia pulcherrima</i>	Poinsettia	Exotic	-
<i>Festuca sp.</i>		Exotic	-
<i>Foeniculum vulgare</i>	Fennel	Exotic	-
<i>Fraxinus angustifolia subsp. angustifolia</i>	Desert Ash	Exotic	-
<i>Geranium solanderi</i>	Native Geranium	FG	-
<i>Harpephyllum caffrum</i>	Wild Plum	Exotic	-
<i>Holcus lanatus</i>	Yorkshire Fog	Exotic	-
<i>Imperata cylindrica</i>	Blady Grass	GG	-
<i>Liquidambar styraciflua</i>	Liquidambar	Exotic	-
<i>Lolium rigidum</i>	Wimmera Ryegrass	Exotic	-
<i>Lysimachia arvensis</i>	Scarlet Pimpernel	Exotic	-
<i>Modiola caroliniana</i>	Red-flowered Mallow	Exotic	-
<i>Nassella neesiana</i>	Chilean needlegrass	HTE	-
<i>Paronychia brasiliiana</i>	Chilean Whitlow Wort	Exotic	-
<i>Erodium cicutarium</i>		Exotic	-
<i>Phalaris aquatica</i>	Phalaris	Exotic	-
<i>Pinus radiata</i>	Radiata Pine	HTE	-
<i>Plantago lanceolata</i>	Lamb's Tongues	Exotic	-
<i>Poa annua</i>	Winter Grass	Exotic	-
<i>Polygonum aviculare</i>	Wireweed	Exotic	-
<i>Prunus sp.</i>		Exotic	-



Scientific	Common Name	BAM Growth Form*	Status
<i>Quercus robur</i>	English Oak	Exotic	-
<i>Rapistrum rugosum</i>	Turnip Weed	Exotic	-
<i>Rubus anglocandicans</i>	Blackberry	HTE	-
<i>Sonchus asper</i>	Prickly Sowthistle	Exotic	-
<i>Sonchus oleraceus</i>	Common Sowthistle	Exotic	-
<i>Taraxacum officinale</i>	Dandelion	Exotic	-
<i>Tipuana tipu</i>	Tipuana	Exotic	-
<i>Trifolium dubium</i>	Yellow Suckling Clover	Exotic	-
<i>Trifolium repens</i>	White Clover	Exotic	-
<i>Ulmus parvifolia</i>	Chinese Elm	Exotic	-
<i>Vicia sativa</i>		Exotic	-



APPENDIX C FAUNA SPECIES LIST





Table C1 Fauna Species List

No.	Scientific Name	Common Name	Status		Observation Type*	General Abundance within Development Site**
			BC Act	EPBC Act		
	Birds					
1.	<i>Acridotheres tristis</i>	Common Myna	-	-	VO	C
2.	<i>Cacatua sanguinea</i>	Little Corella	-	-	VO, H	UC
3.	<i>Corvus coronoides</i>	Australian Raven	-	-	H	C
4.	<i>Cracticus tibicen</i>	Australian Magpie	-	-	VO, H	C
5.	<i>Eolophus roseicapillus</i>	Galah	-	-	VO	UC
6.	<i>Trichoglossus haematodus</i>	Rainbow Lorikeet	-	-	VO	C

* Observation Type: VO (Visual Observation), H (Heard whilst on site), E (Evidence recorded inc scats, tracks or markings), C (Caught on Remote Camera), T (Trapped), R (Recorded through the use of call detectors).

** General Abundance: I (Individual record), UC (Uncommon, 2-5 records), C (Common occurrence on site >5 records). Anabat Detections are classed by confidence: Confident (C), Probable (Pr), and Possible (Po)

^ Denotes introduced species.



APPENDIX D SITE PHOTOGRAPHS





Photo 1: Planted Exotic Vegetation outside of Bungendore Community Centre



Photo 2: Planted Native Vegetation (*Eucalyptus sideroxylon*) southern edge of Mick Sherd Oval



Photo 3: Managed Exotic Grassland (Mick Sherd Oval)



Photo 4: Planted Exotic Vegetation



Photo 5: Planted Native Vegetation



Photo 6: Planted Exotic Vegetation



APPENDIX E FIELD DATA



400 m ² plot: Sheet _ of _		Survey Name	Plot Identifier	Recorders			
Date	13/12/20	DUNGERDOLE - HIGH SCHOOL - GILBERT WHITE					
GF Code	Top 3 native species in each growth form group: Full species name mandatory All other native and exotic species: Full species name where practicable		N, E or HTE	Cover	Abund	stratum	voucher
1	EUCALYPTUS LANCEOLATA						
2	LOLIUM RIGIDUM			3 x			
3	TRIFOLIUM REPENS			CORNER OVAL			
4	ARCTOTHECA CLAUDIA			3 x			
5	SONCHUS OLERACEUS						
6	RAPISURUM RUGOSA			LIQUIDAMBAR			
7	POLYGONUM AVICULARE						
8	PLANTAGO LANCEOLATA			EUCALYPTUS GLOBULUS			
9	CARTHAMUS LANCEOLATUS			TIPAHANA			
10	PELARGONIUM CRINITUM			TRIFOLIUM DURIUM			
11	MATHILLA NEESEIANA						
12	MODIOLA CAROLINA						
13	Avena BARBATA						
14	FRAXINUS ANGUSTIFOLIA						
15	HOLCUS LANCEOLATUS						
16	PHALARIS AQUATICUS						
17	RUBUS ANGILOCAUDICATUS						
18	FOENICULUM VULGARE						
19	VICIA SATIVA						
20	FESTUCA SP.						
21	IMPERATA CYLINDRICA						
22	CYNODON INCOMPLETUS						
23	TARAXACUM OFFICINALE						
24	GERANIUM SOLANDARI						
25	PARONYCHIA BRASILIENSIS						
26	SONCHUS ASPERA						
27	BRASSICA SP.						
28	LYSIMACHIA ARVENSIS						
29	CAPSULA BURSA - PARSTORANS						
30							
31	PRUNIS						
32	HALDOPHYLLUM						
33	PONSIFETIA						
34	ULMUS						
35	OAK TREES						
36	CASUARINA GLAUCO						
37	PINUS RADIATA						
38	POA ANNUA						
39	EUCALYPTUS SIDAEROXYLON						
40							

GF Code: see Growth Form definitions in Appendix 1

N: native, E: exotic, HTE: high threat exotic

GF - circle code if 'top 3'.

Cover: 0.1, 0.2, 0.3, ..., 1, 2, 3, ..., 10, 15, 20, 25, ..., 100% (foliage cover); Note: 0.1% cover represents an area of approximately 63 x 63 cm or a circle about 71 cm across, 0.5% cover represents an area of approximately 1.4 x 1.4 m, and 1% = 2.0 x 2.0 m, 5% = 4 x 5 m, 25% = 10 x 10 m

Abundance: 1, 2, 3, ..., 10, 20, 30, ..., 100, 200, ..., 1000, ...



APPENDIX F STAFF CONTRIBUTIONS

The following staff were involved in the compilation of this report.

Table E1 Staff Contributions

Name	Qualification	Title/Experience	Contribution
David Martin	MSc	Ecologist (Botanist)	Flora Surveys and Report Preparation
Ben Stewart	MMarSc&Mgt	Ecologist	Flora Surveys
Dr. Daniel O'Brien	B EnvMgtSc&Sc (PhD)	Senior Ecologist	Report Review
Dr. Gilbert Whyte	B Sc (PhD) Accredited BAM Assessor	Senior Ecologist	Flora Surveys
Gayle Joyce	B Sc (Forestry) (Hons)	GIS Specialist	GIS and figure preparation



APPENDIX G – LICENCING

Kleinfelder employees involved in the current study are licensed or approved under the *Biodiversity Conservation Act 2016* (License Number: SL100730, Expiry: 31 March 2021) and the *Animal Research Act 1985* to harm/trap/release protected native fauna and to pick for identification purposes native flora and to undertake fauna surveys.