HABITAT
ENVIRONMENTAL SERVICES

Flora and Fauna Assessment Report

Tabbita Lane, Tabbita NSW 2652 (Part Lot 5 DP 1210276)

HBT0063_FFAR_V1.1

15/08/2022

Flora and Fauna Assessment Report

Tabbita Lane, Tabbita NSW 2652 (Part Lot 5 DP 1210276)

Document No: HBT0063_FFAR_V1.1

15/08/2022

Prepared for:

ACEnergy Pty Ltd

Prepared by:

Habitat Environmental Services Pty Ltd

Document Control

Version	Description	Date
1.0	Draft Report	15/08/2022
1.1	Final Report	15/08/2022

Contents

1 Introduction

1.1 Background

Habitat Environmental Services Pty Ltd (Habitat) was engaged by ACEnergy Pty Ltd to prepare a Flora and Fauna Assessment Report (FFAR) to support the proposed development located at Tabbita Lane, Tabbita NSW 2652 (Part Lot 5 DP 1210276) (hereafter referred to as the Study Area), as shown in **Figure 1**.

The following terms are used throughout this report:

- **Locality**: Land within a 5-kilometre (km) radius of the Study Area.
- **Study Area**: The site located at Tabbita Lane, Tabbita NSW 2652 (Part Lot 5 DP 1210276).
- **Development Site**: The area within the Study Area to be directly impacted by the proposed development.

1.2 Site Description

The Study Area is approximately 82 hectares (ha) and is located on the boundary of two suburbs, Goolgowi and Tabbita, approximately 35 kilometers to the north-west of Griffith in the Riverina Region of NSW. The site occurs within the Carrathool Shire Council Local Government Area (LGA) (**Figure 1**).

The Study Area lies within a rural landscape. The predominant surrounding land use includes agricultural farming and cropping. The entire Study Area is zoned *RU1: Primary Production* under the Carrathool Local Environmental Plan (LEP) 2012.

Currently, one gate provides access in the south-east of the site along Tabbita Lane. Woodland vegetation occurring within the road reserve borders the Study Area to the south. Lands to north and west of the Study Area (within Lot 5) predominantly support agricultural crops with occasional scattered native trees. Patches of woodland vegetation occur approximately 1.3 kilometers to the north of the site. No streams or watercourses are mapped within the Study Area or immediate surrounds. Several small dams occur within Lot 5, to the north of the Study Area. Landscape features are further discussed in **Section 4.1.**

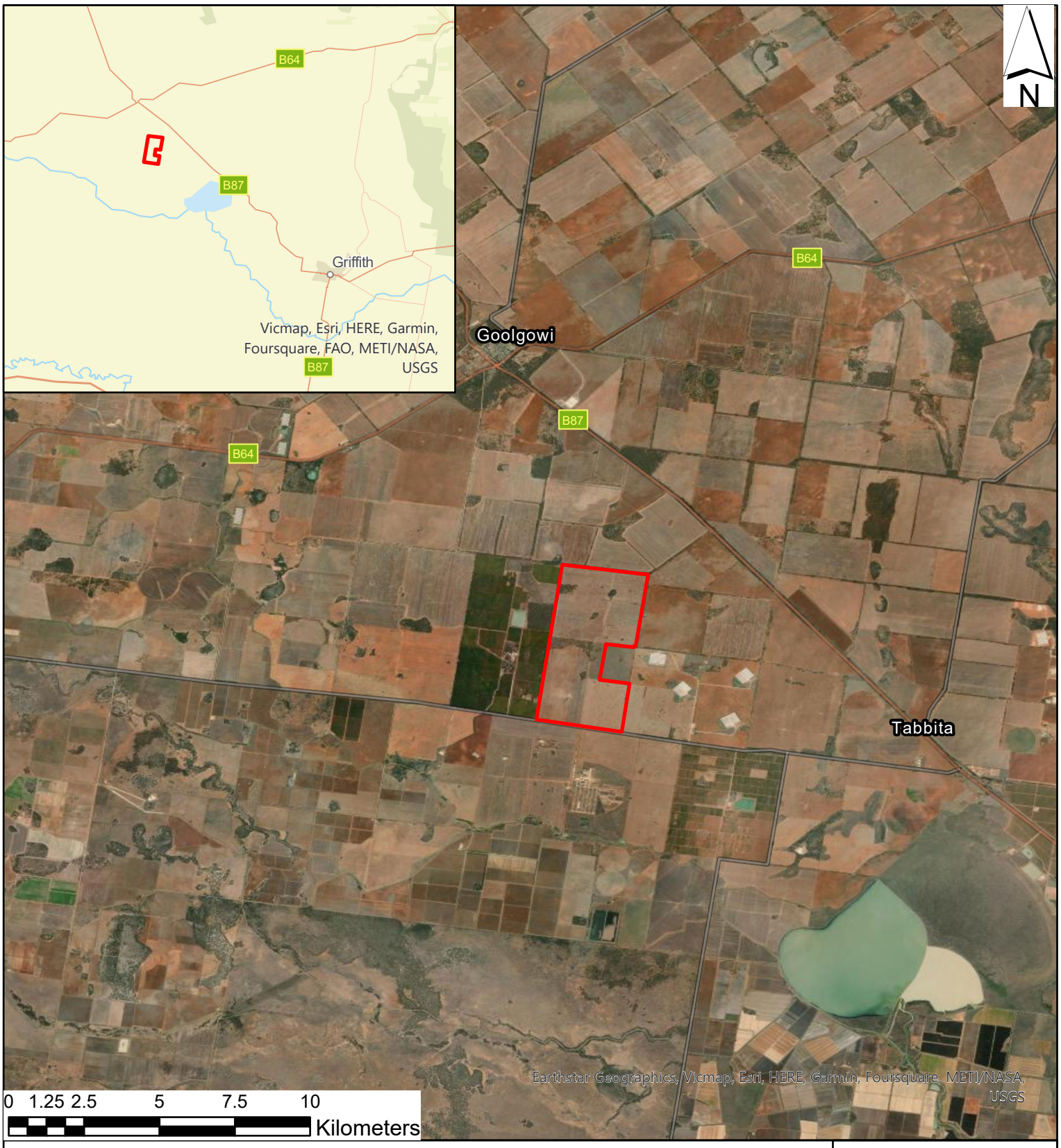


Figure 1 - Locality

HABITAT ENVIRONMENTAL SERVICES

Legend

Study Area (Lot 5, DP 1210276)

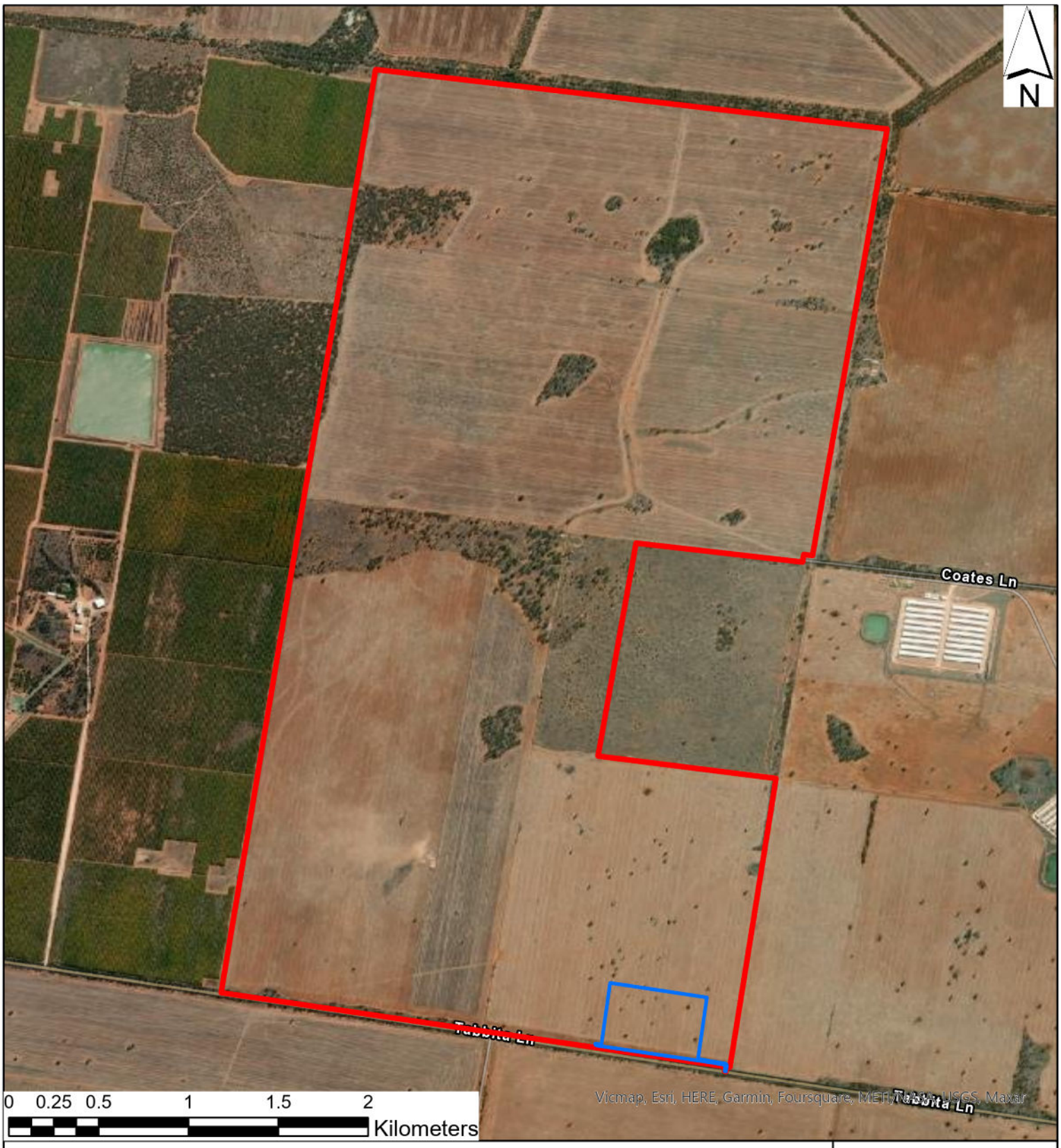


Figure 2 - Study Area and Development Site

HABITAT ENVIRONMENTAL SERVICES

Legend

Study Area (Lot 5, DP 1210276)

Development Site (Greentech No.3)

1.3 Proposed Development

The proposed development (Greentech Solar Farm Number 3) will occur in the south-eastern corner of the Study Area, covering approximately 16.5 ha (**Figure 3**). A new point of entry is proposed approximately 350m to the east of the existing access at Tabbita Lane. An access road will service the new entrance and run parallel to the southern boundary fence. The access road is proposed to continue the length of the solar farm boundary and extend further to the west.

The proposed solar farm will include approximately 16,128 solar panels, 192 pivoting solar trackers, MVPS container, battery energy storage containers, HV kiosk, a site carpark and a site equipment laydown area. High-voltage overhead powerlines and power poles will be installed and connected to the existing overhead lines on the southern side of Tabbita Lane (**Figure 3**).

1.4 Report Objectives

The objectives of the Flora and Fauna Assessment Report (FFAR) are as follows:

- Complete a desktop assessment of relevant threatened biota and regional vegetation mapping.
- Describe flora and fauna (and their habitats) present on or likely to occur within the Study Area.
- Identification of native vegetation, noting the extent and condition of Plant Community Types (PCTs), and the presence, condition and extent of any Threatened Ecological Communities (TECs).
- Assess the relevance and value of the Study Area for threatened species and ecological communities (and their habitats) listed under the NSW *Biodiversity Conservation Act 2016* (BC Act).
- Assess the potential impacts of the proposed development on threatened species and ecological communities, pursuant to Section 7.3 of the BC Act (5-part test).
- Comment on the likely occurrence and relevance of matters of national environmental significance listed under the *Commonwealth Environment Planning and Biodiversity Conservation Act 1999* (EPBC Act).
- Describe steps to avoid and mitigate any identified impacts on flora and fauna and to protect the natural environment of the Study Area.

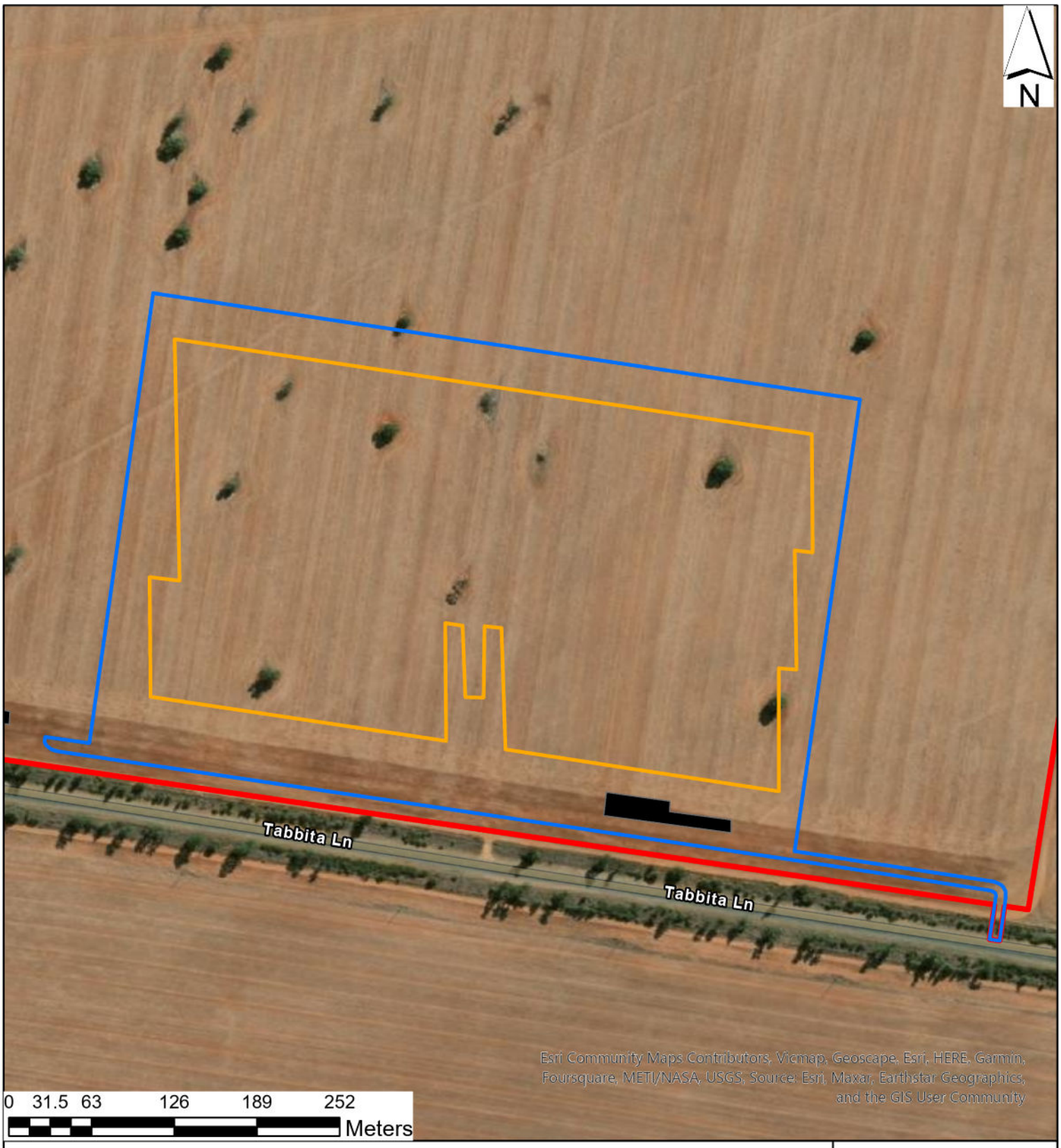


Figure 3 - Proposed Development

HABITAT ENVIRONMENTAL SERVICES

Legend

- Study Area (Lot 5, DP 1210276)
- Solar Array (Greentech No.3)
- Unloading Zone & Carpark Area
- Development Site (Greentech No.3)

2 Legislative Context

2.1 Summary

The assessment was undertaken in accordance and consideration of the following Acts and Policies:

- *Biodiversity Conservation Act 2016* (NSW) (BC Act).
- *Biodiversity Conservation Regulation 2017* (NSW) (BC Regulation).
- *Biosecurity Act 2015* (NSW).
- *Environmental Planning and Assessment Act 1979* (NSW) (EP&A Act).
- *State Environmental Planning Policy (Biodiversity and Conservation) 2021*
- *Water Management Act 2000* (NSW) (WM Act).
- *Environment Protection and Biodiversity Conservation Act 1999 (EPBC Act).*
- Carrathool Local Environmental Plan (LEP) 2012.

Information pertaining to the above list is presented in the following subsections.

2.2 Biodiversity Conservation Act 2016 (NSW)

The NSW BC Act together with the NSW BC Regulation 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 (BOS).

Entry into the NSW Biodiversity Offset Scheme (BOS) is triggered by developments, projects and activities that meet criteria or certain thresholds for significant impacts on biodiversity in accordance with Section 6.3 of the BC Act.

Criteria to which the BOS applies include 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 NSW Biodiversity Values Map (BV Map) (DPE 2022f).
- 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 EP&A Act (generally, proposals by government entities) if proponents choose to 'opt in' to the Scheme.

Conclusion

The project does not occur in an environmentally sensitive area and will not exceed a capital investment value of $30 million (current project cost is approximately $7.5 million). Therefore, the proposal is not determined to be an SSD.

The minimum lot size of the Study Area is 40 ha, therefore, the native vegetation clearing threshold that would trigger entry into the BOS is greater than or equal to 1 ha. The total extent of native vegetation within the Development Site is less than 1 ha (approximately 0.10 ha), therefore, the clearing threshold is not exceeded.

Additionally, no areas of the Study Area are mapped as containing high biodiversity value as per the BV Map. As such, entry into the BOS is not triggered and an FFAR is appropriate to support a Development Application (DA).

2.2.1 Biosecurity Act 2015

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 5.2.6**.

2.2.2 Water Management Act 2000

Controlled activities carried out in, on or under waterfront land are regulated by the *Water Management Act 2000* ("WM Act"). 'Waterfront land' is defined as the bed of any river, lake or estuary, and the land within 40 m of the riverbanks, lake shore or estuary mean high water mark.

No mapped waterways exist near or within the Study Area. As such, the proposed development does not constitute a 'controlled activity' in accordance with the WM Act.

Consideration of indirect impacts to aquatic habitat is provided in **Section 5**.

2.2.3 State Environmental Planning Policy (Biodiversity and Conservation) 2021

The *State Environmental Planning Policy (Biodiversity and Conservation) 2021* (Biodiversity and Conservation SEPP) consolidates, transfers and repeals provisions of the following 11 SEPPs. Chapters 3 and 4 of this SEPP relate specifically to the former State Environmental Planning Policies, Koala Habitat Protection 2020 and Koala Habitat Protection 2021. As the Carrathool LGA is not listed under Schedule 1 of Chapter 3 or 4 of this SEPP, then these Chapters do not apply to the proposed development.

Further discussion of Koala habitat is presented in **Section 3.2.7**.

2.2.4 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 Matters of National Environmental Significance (MNES). An action includes a project, development, undertaking, activity or series of activities. When a person proposes to take an action, which 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 the following 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
- Water resources in respect to CSG and large coal mines

The proponent is required to address the EPBC Act as part of their development application to Council. Listed threatened species and communities are relevant to the proposed development. A summary of this assessment is presented in **Section 4.7**.

2.2.5 Carrathool Local Environmental Plan 2012

The Study Area is located within the Carrathool LGA. The Carrathool Environmental Plan 2013 (LEP) controls development within the Study Area through zoning and development controls.

3 Materials and Methods

3.1 Desktop Assessment

Existing information on flora and fauna within the Study Area and the locality, including relevant threatened biota, was obtained from:

- State Vegetation Type Map: Riverina Region Version v1.2 (VIS_ID 4469) (DPIE 2016)
- Integrated BioNet Data for NSW (DPE 2022b).
- The BioNet Atlas of NSW Wildlife (DPE 2022a) for previous records of threatened species, populations and ecological communities (as listed under the BC Act) within a 5 km radius of the Study Area.
- The Department of the Environment and Energy (DAWE 2022a) Protected Matters Search Tool, which involved a search for matters of national environmental significance within a 5 km radius of the Study Area.
- Relevant published literature on threatened biota (see References).

The results of the database searches were used to compile a list of threatened species, populations and communities, as listed under the BC Act and EPBC Act that could potentially occur on the Study Area and their likelihood of occurrence (**Appendix A**).

3.2 Field Survey

3.2.1 Vegetation Mapping Surveys

A vegetation survey was conducted throughout the Study Area on 21st and 22nd June 2022. Boundaries between native vegetation and exotic vegetation were verified and delineated during a walkover using a hand-held GPS device. Native vegetation boundaries were identified by recording dominant species, structure and condition. Rapid Data Points (RDPs) were assigned to homogenous areas of native vegetation to delineate vegetation communities and/ or zones. The RDPs and survey tracks were overlaid on recent aerial imagery to further delineate and/or clarify vegetation boundaries.

3.2.2 Plant Community Type and Determination

Each vegetation community identified within the Study Area was assigned to the closest equivalent PCT from those listed in the BioNet Vegetation Classification Database (DPE 2022c). Plant Community Types were determined through analysis of dominant floristic traits, collected from vegetation plot data, and descriptive attributes to those listed on the Vegetation Classification Database. Additionally, other diagnostic features, such as landscape position and soil types, were used to aid in PCT allocation. Threatened ecological communities (TECs) as defined in NSW and Commonwealth legislation were also identified where present.

3.2.3 Vegetation Sampling

Two (2) vegetation plots (400m²) were sampled in accordance with Section 4.3 of the NSW Biodiversity Assessment Method or BAM (DPIE 2020a) (**Figure 5**). Although the BAM is not applicable to the project, this method is considered best practise to collect condition data for the composition, structure and function attributes of vegetation, as listed in **Table 1**.

Table 1 Components of Vegetation Integrity

Growth form groups	Function attributes
• Tree (TG) • Shrub (SG) • Grass and grass-like (GG) • Forb (FG) • Fern (EG) • Other (OG)	• Number of large trees • Tree regeneration (presence/absence) • Tree stem size class (presence/absence) • Total length of fallen logs • Litter cover • High threat exotic vegetation cover (HTE) • Hollow-bearing trees (HBT)

3.2.4 Floristic Identification and Nomenclature

Floristic identification and nomenclature were based on Harden (1992, 1993, 2000 and 2002) with subsequent revisions as published on NSW PlantNet (http://plantnet.rbgsyd.nsw.gov.au).

3.2.5 Threatened Flora Surveys

To inform the assessment of suitable habitat for threatened species and populations within the Study Area, a database search of the NSW DPE BioNet Atlas (DPE 2022a) was conducted. Results of the database search and 'likelihood of occurrence' assessment are provided in **Appendix A**. A search for species with a moderate or higher "likelihood of occurrence" (subject to their seasonal detectability) was conducted within the Study Area on 21st and 22nd June 2022. The survey effort is illustrated on **Figure 4.**

3.2.6 Fauna Habitat Assessment

The locations of any important habitat features, such as microbat roosting habitat, hollow-bearing trees, terrestrial refugia and nests/burrows, were captured with a handheld GPS and photographed where appropriate.

Searches for potential habitat for threatened fauna species included but were not limited to:

- Foraging trees for threatened birds
- Hollow-bearing trees
- Koala feed trees
- Potential roosts for microbats
- Vegetated ponds, riparian vegetation and drainage lines for frogs and waterbirds
- Woody debris, leaf litter and bush rock

Diurnal opportunistic and incidental observations of fauna species were recorded during field surveys. These included opportunistic observations of fauna activity such as scats, tracks, burrows or other traces.

Fauna habitat search effort is illustrated on **Figure 4**.

3.2.7 Koala Habitat Assessment

Historic records of the Koala were obtained from the NSW BioNet Atlas within the locality of the Study Area. A list of preferred Koala tree species was obtained from Restoring Koala Habitat - Western Slopes and Plains Koala Management Area (DPIE, 2022g). A site-based vegetation assessment was conducted to confirm the presence of tree species utilised by Koalas in the Western Slopes and Plains Koala Management Area (KMA) and to assess habitat suitability.

Results are provided in **Section 4.5.3**

3.2.8 Survey Limitations

The survey techniques and survey effort applied for this study were commensurate with the nature and condition of the biodiversity values with the Study Area. Priority was given to habitat assessment for relevant threatened biota. A 'likelihood of occurrence' assessment was applied to all species previously recorded or predicted to occur within the locality based on State and Commonwealth information sources.

Two experienced ecologists undertook the field survey. While a moderate diversity of native and exotic flora species was recorded, an extended survey duration or multiple seasonal surveys would likely result in the detection of a slightly greater diversity of species. Furthermore, on-site surveys did not incorporate fauna trapping techniques. Due to the limited extent of fauna habitat, utilising trap surveying techniques are unlikely to have yielded detection of a greater diversity of fauna species.

Figure 4 - Survey Effort

HABITAT ENVIRONMENTAL SERVICES

Legend

- Study Area (Lot 5, DP 1210276)
- Development Site (Greentech No.3)
- BAM Plot
- Survey Track (21-22/06/22)

4 Results

4.1 Landscape Features

The landscape features that are applicable to the Study Area are described in **Table 2**.

Table 2 Landscape Features

Landscape Features	Information
IBRA Region	Murray Darling Depression
IBRA Sub Region	Darling Depression
Local Government Area (LGA)	Carrathool Shire Council Local Government Area
Mitchell Landscape	Hillston Sandplains (Mitchell 2002) - Hillston Sandplains landscape includes parts of three land systems: Lysmoyle, Karwarn and Nombinnie. Level to undulating sandplain of Quaternary aeolian sands and limited alluvium, relief 2 to 4m. Calcareous red earth and solonized brown soils with deep siliceous sands on hummocks.
Rivers, streams and estuaries	No mapped waterways exist within or adjacent to the Study Area.
Wetlands	No Coastal wetlands mapped on the Coastal Wetlands and Littoral Rainforests Area Map (DPE 2022i) occur within the Study Area.
Connectivity of different areas of habitat	Vegetation within the Study Area has limited connectivity due to the extent of agricultural crops and cleared land in the locality. The Study Area contains isolated paddock trees and shrubs. Roadside vegetation along Tabbita Lane, occurring adjacent to the Study Area, contains a mix of native trees, shrubs and ground cover. This vegetation is somewhat contiguous running east to west. Small islands of woodland vegetation occur approximately one kilometre to the north of the Study Area but are separated by extensive crops. Sparsely distributed paddock trees occur between the Study Area and these islands of vegetation.
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” (in accordance with Section 3.1.3 of the BAM (DPIE 2020a) mapped within the Subject Site or Study Area.

4.2 Plant Community Types

A review of *State Vegetation Type Map: Riverina Region Version v1.2 (VIS_ID 4469)* indicates that no native vegetation communities occur within the Development Site. The Integrated BioNet Data for NSW (Trees Near Me), a comprehensive resource for vegetation mapping across NSW, also indicated the absence of native vegetation within the Development Site.

The site-based assessment confirmed the presence of native vegetation, which occurs as small patches and isolated scattered trees. This vegetation is commensurate with a low condition form of one Plant Community Type:

- PCT 28 - *White Cypress Pine open woodland of sand plains, prior streams and dunes mainly of the semi-arid (warm) climate zone* (PCT 28).

Within the Study Area, PCT 28 occurs in two condition states:

- Low condition - Scattered trees within the proposed development site
- Moderate condition - Roadside vegetation along Tabbita Lane

The extent of native vegetation within the Study Area is illustrated on **Figure 5**.

A full description of PCT 28 is presented in **Section 4.2.1** and **Section 4.2.2**. All other vegetation was determined to be exotic vegetation (crops), which covered the largest area of the Development Site. A full description of this community is presented in **Section 4.2.3**. A full list of plant species recorded during the assessment is presented in **Appendix C.**

4.2.1 Isolated trees within the Development Site

Plate 1 Isolated trees within the Development Site.

Criteria	Information
Vegetation Formation and Class	Semi-arid Woodlands (Shrubby sub-formation) Riverine Sandhill Woodlands
Floristic description	This vegetation community is characterized predominantly by isolated paddock trees and small, fragmented patches of trees and shrubs and native ground cover. The main tree and large shrub species being *Callitris glaucophylla* (White Cypress Pine), *Alectryon oleifolius* (Western Rosewood), *Geijera parviflora* (Wilga), *Eucalyptus populnea* subsp. *bimbil* (Bimble Box) and *Hakea tephrosperma* (Hooked Needlewood). Some native shrubs occurring beneath the canopy spread include, *Enchylaena tomentosa* (Ruby Saltbush) and *Sclerolaena muricata* (Black Rolypoly). Native plant and grass species include *Convolvulus angustissimus, Einadia nutans* subsp. *linifolia* (Climbing Saltbush) and *Panicum effusum* (Hairy Panic). Exotic species are abundant and include *Brassica oleracea* (Cauliflower), *Hirschfeldia incana* (Hairy Brassica), *Mallow parviflora* (Small-flowered Mallow) and *Lolium perenne* (Perennial

Criteria	Information
	Ryegrass). Small amounts of the high-threat weed, *Lycium ferocissimum* (African Boxthorn), also occur within this community.
Condition within Development Site	This vegetation community occurs in a highly modified state due to land clearing to support agricultural crops. Much of the native vegetation occurs as isolated stands and trees. This community has a low native species richness.
Status	**BC Act**: The vegetation within the Development Site is considered to be too fragmented and degraded to represent the Endangered Ecological Community (EEC) *Sandhill Pine Woodland in the Riverina, Murray-Darling Depression and NSW South Western Slopes bioregions.*
	EPBC Act: Not commensurate with a TEC listed under the EPBC Act.
SAII	No
PCT % Cleared	73%

4.2.2 Roadside Native Vegetation

Plate 2 Native vegetation within the adjacent road reserve.

Criteria	Information
Vegetation Formation and Class	Semi-arid Woodlands (Shrubby sub-formation) Riverine Sandhill Woodlands
Floristic description	This vegetation community is characterized by a moderately intact upper stratum, shrub layer and a ground layer containing a mix of native and exotic species. The upper stratum is characterized by *Callitris glaucophylla* (White Cypress Pine). Native shrubs include *Geijera parviflora* (Wilga), *Acacia oswaldii* (Mijee), *Dodonaea viscosa* subsp. *angustissimus* (Sticky Hopbush), *Enchylaena tomentosa* (Ruby Saltbush), *Atriplex semibaccata* (Creeping Saltbush), *Sclerolaena muricata* (Black Rolypoly) and *Senna artemisoides* (Silver Cassia). Native plant and grass species include *Chloris truncate* (Windmill Grass), *Chloris ventricosa* (Tall Chloris), *Paspalidium constrictum* (Knottybutt Grass), *Convolvulus angustissimus, Einadia nutans* subsp. *linifolia* (Climbing Saltbush) and *Panicum effusum* (Hairy Panic), *Sida cunninghamii* (Ridged Sida), *Solanum coactiliferum* (Western Nightshade) and *Solanum esuriale* (Quena). Exotic species are abundant and include *Brassica oleracea* (Cauliflower), *Hirschfeldia incana* (Hairy Brassica), *Mallow parviflora* (Small-flowered Mallow) and *Lolium perenne* (Perennial Ryegrass), *Chloris virgata* (Feathertop Rhodes Grass), *Cynosurus cristatus* (Crested Dog's Tail), *Marrubium vulgare* (White Horehound) and *Sonchus oleraceus* (Common Sowthistle). Small amounts of the high-threat weed, *Lycium ferocissimum* (African Boxthorn), also occur within this community.
Condition within Development Site	This vegetation community occurs as a product of land clearing. It contains a somewhat contiguous cover of native trees and shrubs, with a mix of native and exotic vegetation in the ground stratum. This vegetation is considered to occur in a moderate condition.
Status	**BC Act**: The vegetation within the road reserve represents a moderate condition form of the Endangered Ecological Community (EEC) *Sandhill Pine Woodland in the Riverina, Murray-Darling Depression and NSW South Western Slopes bioregions.*
	EPBC Act: Not commensurate with a TEC listed under the EPBC Act.
SAII	No
PCT % Cleared	73%

4.2.3 Exotic Vegetation (Cropped Land)

Plate 3 Crops within the proposed Development Site.

Criteria	Information
Vegetation Formation and Class	N/A N/A
Floristic description	This vegetation community is characterized by agricultural crops, namely *Brassica oleracea* (Cauliflower). No native trees or shrubs are present. Scattered native plants and grasses occur at low density. Exotic species are abundant and include *Brassica oleracea* (Cauliflower), *Hirschfeldia incana* (Hairy Brassica), *Mallow parviflora* (Small-flowered Mallow), *Poa anua* (Winter Grass) and *Lolium perenne* (Perennial Ryegrass).
Condition within Development Site	This is almost entirely exotic vegetation dominated by agricultural crops, namely *Brassica oleracea* (Cauliflower). No native trees or shrubs are present. Scattered native plants and grasses occur at low density.
Status	**BC Act**: Not commensurate with a TEC listed under the BC Act.
	EPBC Act: Not commensurate with a TEC listed under the EPBC Act.

Criteria	Information
SAII	No
PCT % Cleared	N/A

Figure 5 - Plant Community Types & Habitat Features

HABITAT ENVIRONMENTAL SERVICES

Legend

- Study Area (Lot 5, DP 1210276)
- Development Site (Greentech No.3)
- PCT 28 - White Cypress Pine open woodland of sand plains, prior streams and dunes mainly of the semi-arid (warm) climate zone
- ★ Trees Absent

4.3 Weeds

A total of thirty-five (35) exotic plant species were detected during the assessment, including four (4) high threat weeds:

- *Cenchrus clandestinus* (Kikuyu);
- *Eragrostis curvula* (African Lovegrass);
- *Lycium ferocissimum* (African Boxthorn); and
- *Megathyrsus maximus* (Guinea Grass).

Recommendations for the control of weed species is discussed in **Section 5.2.6.**

4.4 Habitat Features

Vegetation within the Development Site typically lacks key habitat features. One (1) isolated habitat tree containing two small hollows occurs within the Development Site and has limited connectivity to surrounding native vegetation, i.e., greater than 100m from the closest tree in any direction. Given its limited connectivity, the Development Site represents marginal foraging habitat for a variety of locally common fauna species. No waterbodies occur within the Development Site.

Vegetation within the road reserve, adjacent to the Development Site, is contiguous to vegetation extending further along Tabbita Lane and contains greater structural integrity and potential for key habitat features. This likely represents more suitable foraging habitat for a number of locally occurring fauna species.

4.5 Threatened Species

4.5.1 Threatened Flora

No threatened flora species were detected within the Development Site or Study Area during the assessment. A search of the BioNet Atlas of NSW Wildlife (DPE, 2022a) returned no threatened flora species within a 5 km radius of the Study Area (**Appendix A**). An EPBC Protected Matters Search returned a list of four (4) threatened plant species predicted to occur within 5 km of the Study Area (**Appendix B**).

The habitat within the Study Area is considered to be too fragmented and degraded to support threatened plant species.

4.5.2 Threatened Fauna

One (1) threatened fauna species, the Superb Parrot (*Polytelis swainsonii*), was observed flying over the Study Area during the assessment. No foraging or potential breeding behaviour was observed for this species within the Study Area. The habitat is unsuitable for this species.

A search of the BioNet Atlas of NSW Wildlife (DPE, 2022a) returned a list of 24 threatened fauna species (comprised of 23 birds and one (1) mammal) species within a 10 km radius of the Study Area (**Appendix A**). An EPBC Protected Matters Search returned a list of 13 threatened or migratory fauna species predicted to occur within 5 km radius of the Study Area (**Appendix B**).

A "likelihood of occurrence' assessment determined that the Study Area is unlikely to constitute suitable habitat for most of the threatened fauna species predicted within the locality. Due to the isolated nature of the Study Area, only highly mobile fauna species are likely to utilise the habitat as part of a broader network of habitats (such as microbats and bird species). Threatened fauna species with a moderate to high likelihood of occurring withing the Study Area include the following:

- Gilbert's Whistler (*Pachycephala inornata*)
- Grey-crowned Babbler (*Pomatostomus temporalis temporalis*)
- Little Pied Bat (*Chalinolobus picatus*)
- Superb Parrot (*Polytelis swainsonii*)

The potential for impacts to highly mobile threatened fauna species is discussed in **Section 5.**

4.5.3 Koala Habitat

No historic records of the Koala occur within 5-kilometers of the Study Area.

Tree species listed as Koala use trees under the Restoring Koala Habitat - Western Slopes and Plains Koala Management Area resource (DPIE, 2022g) was reviewed against trees occurring within the site during the assessment. One 'occasional use' tree species, *Geijera parviflora* (Wilga), occurs within the proposed Development Site. These constitute five of the eight trees to be directly impacted as part of the proposal. Within the broader Study Area, one species listed as 'high use' (*Eucalyptus populnea* subsp. *bimbil*) and one species listed as 'significant use' (*Callitris glaucophylla*) occur at a lower density.

The assessment determined that the proposed Development Site contains non-preferential tree species for the Koala. Given the lack of historic records within the locality and the highly fragmented nature of the vegetation, the Study Area is considered to be of low suitability for the Koala. No further assessment of the Koala is required for the proposed development.

4.6 Threatened Ecological Communities

The vegetation within the Development Site is comprised of isolated trees. This vegetation is too degraded to represent a TEC. The vegetation within the road reserve adjacent to the Study Area forms part of the Endangered Ecological Community (EEC), *Sandhill Pine Woodland in the Riverina, Murray-Darling Depression and NSW South Western Slopes bioregions* (known hereafter as Sandhill Pine Woodland).

No TECs listed under the Commonwealth EPBC Act were identified.

4.7 EPBC Protected Matters

One EPBC listed threatened species, The Superb Parrot (*Polytelis swainsonii*), was detected flying over the Study Area during the site survey. An Assessment of Significance (AoS) in accordance with EPBC Act determined that due to the absence of breeding habitat and the presence of sub-optimal foraging habitat within the Development Site, the proposal is unlikely to have a significant impact on this species.

Referral to the Commonwealth Minister for the Environment is not recommended.

5 Discussion

5.1 Impact Assessment

5.1.1 Impacts to Native Vegetation

The proposed development will involve impacts to eight (8) isolated trees (approximately 0.10 ha). This vegetation is representative of a low condition form of *PCT 28: White Cypress Pine open woodland of sand plains, prior streams and dunes mainly of the semi-arid (warm) climate zone*. Native vegetation mainly consists of mature isolated trees supporting a low diversity of native shrubs, forbs and grasses. Information pertaining to the trees to be removed is presented in **Table 3**.

Table 3 Total number of native trees to be impacted as part of the proposed development. Number and size class of hollows recorded.

Tree number	Tree species	Diameter at Breast Height (DBH)	Canopy spread (m)	Diameter of hollow at entrance (cm)	Height of hollow from ground (m)
13	*Geijera parviflora*	40	8	-	-
14	*Geijera parviflora*	40	10	-	-
11	*Geijera parviflora*	60	10	-	-
3	*Alectryon oleifolius*	35	9	-	-
2	*Geijera parviflora*	50	10	-	-
1	*Geijera parviflora*	35	10	-	-
12	*Hakea tephrosperma*	55	8	Fissure 80cm long	1.5
12	*Hakea tephrosperma*	55	8	5	3
10	*Alectryon oleifolius*	45	9	-	-

A small area of vegetation removal within the road reserve will occur to facilitate construction of the new access point at Tabbita Lane. Vegetation within this area contains native shrubs, forbs and grasses. No habitat trees were identified.

Mitigation measures to minimise the potential for harm to the environment during vegetation clearing are presented in **Section 5.2.**

5.1.2 Impacts to Fauna

Direct impacts of the proposed development on fauna habitat include the following:

- The disturbance of soil and removal of understorey vegetation during construction potentially displacing ground-dwelling fauna such as amphibians and reptiles.
- The removal of trees within the Study Area that have the potential to provide foraging/nesting habitat for a number of native bird species.

- The removal of one tree containing hollows, which may provide refugia or nesting habitat for a number of bird and bat species.
- Potential indirect impacts of the proposed development on resident fauna populations include the following:
    - Noise and lighting during the construction phase may cause minor disturbance to resident fauna within the locality and disrupt their natural behaviour
    - Pollution such as chemical spills from construction machinery may have adverse effects on biota in the adjacent mapped waterway and downstream aquatic environments.
    - Ground disturbance by machinery during the construction phase may create dust and facilitate the movement of sediment.

Management measures are presented in **Section 5.2** to reduce the potential for these impacts.

5.1.3 Impacts to Threatened Species

No direct impacts to suitable breeding habitat for the Superb Parrot will occur. Marginal foraging habitat (native and exotic ground cover vegetation) will be impacted to facilitate development of the solar farm.

Indirect impacts to the Superb Parrot that may arise during construction of the solar farm include noise pollution, which can interrupt normal foraging behaviour within or directly adjacent to the Study Area.

An Assessment of Significance for threatened species considered to have a moderate likelihood of utilising the Study Area concluded that any direct or indirect impacts will likely have a negligible impact based on the following:

- A low-moderate number of records within the locality;
- A highly modified landscape containing low condition habitat; and
- No evidence of breeding behaviour (stick nests).

5.1.4 Impacts to Threatened Ecological Communities

The proposal will directly impact approximately 0.10 ha of low condition *Sandhill Pine Woodland in the Riverina, Murray-Darling Depression and NSW South Western Slopes bioregions*. This area is represented by isolated trees, supporting a low diversity of native shrubs and ground cover species.

Minor impacts to moderate quality Sandhill Pine Woodland within the road reserve will occur to achieve access from Tabbita Lane.

5.1.5 Impacts to Aquatic Habitat

No direct or indirect impacts to aquatic habitat, such as dams or watercourses, are expected to occur as part of the proposal.

5.1.6 Cumulative Impacts

Cumulative impacts arise from the interaction of individual elements associated with the proposed development and the additive effects of other external projects. One other project (Greentech Solar Farm number 4) is proposed to the west of Development Site. Cumulative impacts that arise from development projects in the locality include the following:

- Removal of native vegetation; and
- Removal of hollow-bearing trees.

Vegetation to the west of the Development Site is similar to vegetation occurring within the Development Site, i.e., isolated native trees surrounded by exotic vegetation. Given its low condition, cumulative impacts arising from the proposed Greentech Solar Farm number 4 to locally occurring native species and communities would be minor.

5.2 Impact Amelioration

5.2.1 Vegetation Protection

Care should be taken to avoid impacts to retained vegetation identified within the Study Area through clear, visible demarcation including erected 'no-go zone' signage and high-visibility tape

The boundary of retained native vegetation within the road reserve at the new access point is to be clearly demarcated to avoid incidental incursion passed the area required for access.

5.2.2 Vegetation Clearing (Tree Removal)

The following recommendations are to be implemented during vegetation clearing:

- Effort should be taken to identify and mark the boundaries of the proposed development to avoid the potential clearing of non-target vegetation.
- No clearing should occur within the Study Area in the early evening/evening.
- Clearing should be carried out in a manner that allows fauna species residing within the site to relocate without human intervention.
- Removal of habitat trees should be done in a manner that provides any resident fauna the chance to self-relocate, i.e., soft-felling of trees with an excavator.
- In the event that non-highly mobile fauna species (arboreal mammals) are encountered during habitat tree removal, safe capture of these species by an ecologist is required for relocation to areas of retained vegetation.

5.2.3 Erosion Control

Mitigation measures to reduce soil erosion and pollutant run-off during construction activities should include:

- Installation of erosion and sediment control structures along the boundaries of the Study Area prior to any construction works and in accordance with Managing Urban Stormwater: Soils and Construction (Landcom, 2004).
- Regular inspection of erosion and sediment control measures, particularly following rainfall events, to ensure their ongoing functionality.
- The prompt removal of any excavated material offsite.
- Undertake maintenance of silt fences and other mitigation measures to isolate run-off.

5.2.4 Dust Control

Specific measures to minimise the generation of dust and associated impacts on adjacent natural environments should include:

- Setting maximum speed limits for all traffic within the Study Area to limit dust generation.
- Use of a water tanker to spray unpaved access tracks during the construction phase where required.
- Application of dust suppressants or covers on soil stockpiles.

5.2.5 Chemical Spills

Specific measures to minimise the potential for chemical spills and associated impacts on adjacent natural environments should include the following:

- All chemicals must be kept in clearly marked bunded areas.
- Regularly inspect vehicles and mechanical plant for leakage of fuel or oil.
- No re-fuelling, washing or maintenance of vehicles and plant to be undertaken within 20 m of natural drainage lines.

5.2.6 Management of Weeds

Several exotic plant species, including high-threat weeds, were recorded within the Study Area. Weed management should be implemented during and after construction to minimise weed incursions into surrounding native vegetation. This should include:

- Prioritising the control of Weeds of National Significance such as *Lycium ferocissimum* (African Boxthorn) (DAWE 2022b).
- As the groundcover is predominantly exotic (containing crops of *Brassica oleracea*), excavated soil is to be disposed of appropriately.
- All vehicles and machinery should be cleaned before entering and leaving the Study Area. This is to prevent the introduction of new exotic species, as well as the spread of existing species.
- A list of control methods for exotic species listed in NSW can be found on the NSW WeedWise website (DPI, 2022).

- Follow-up weed control should also include efforts in retained vegetation directly adjacent to the Development Site to help minimise weed incursion. High-threat weeds, such as African Boxthorn, should be targeted.

5.3 Conclusion

The proposal is located in a highly modified rural landscape that contains very limited native vegetation and key habitat features required to support locally occurring fauna and flora species. The proposed development will directly impact approximately 0.10 ha of low condition native vegetation comprising of eight mature trees and low diversity of native shrubs and ground cover species. Native vegetation within the proposed Development Site constitutes low condition *Sandhill Pine Woodland in the Riverina, Murray-Darling Depression and NSW South Western Slopes bioregions* Endangered Ecological Community listed under the NSW BC Act. The following key habitat features occur within the Development Site:

- One hollow-bearing tree containing two small hollows.

This assessment determined that the Development Site contains low quality habitat for locally occurring threatened species. Provided that the mitigation measures detailed in **Section 5.2** are adhered to, no significant impacts are likely to occur to threatened species, populations of threatened ecological communities as a result of the proposed development.

6 References

DAWE (2022a). EPBC Protected Matters Search Tool. Commonwealth of Australia

DAWE. (2022b). Weeds of National Significance. Retrieved from: http://www.environment.gov.au/biodiversity/invasive/weeds/weeds/lists/wons.htmlDepartment of Environment and Climate Change (DECC) (2002).

Department of Planning, Industry and Environment (DPIE) (2016). *State Vegetation Type Map: Riverina Region Version v1.2 - VIS_ID 4469*. Retrieved from https://geo.seed.nsw.gov.au/Public_Viewer/index.html?viewer=Public_Viewer&locale=en-AU

Department of Planning, Industry and Environment (DPIE) (2020a). Biodiversity Assessment Method. Published by the Environment, Energy and Science, Department of Planning, Industry and Environment, Parramatta, NSW.

Department of Planning and Environment (DPE) (2022a). *BioNet Atlas of NSW*. Available at: http://www.bionet.nsw.gov.au/

Department of Planning and Environment (DPE) (2022b). *Integrated BioNet Vegetation Data for NSW – Trees Near Me*. Retrieved from https://treesnearme.app/info/2

Department of Planning and Environment (DPE) (2022c). *BioNet Vegetation Classification*. Available at: https://www.environment.nsw.gov.au/research/Visclassification.htm

Department of Planning and Environment (DPE) (2022d). *BioNet Threatened Biodiversity Data Collection*. Available at: https://www.environment.nsw.gov.au/threatenedSpeciesApp/

Department of Planning and Environment (DPE) (2022e). *Threatened Biodiversity Profile Search*. Available at: https://www.environment.nsw.gov.au/threatenedspeciesapp/

Department of Planning, Industry and Environment (DPIE) (2022f). *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) (2022g). *Restoring Koala Habitat - Western Slopes and Plains Koala Management Area*. Available at: https://www.environment.nsw.gov.au/topics/animals-and-plants/threatened-species/programs-legislation-and-framework/nsw-koala-strategy/local-government-resources-for-koala-conservation/western-slopes-and-plains-koala-management-area

Department of Planning, Industry and Environment (DPIE) (2022h). *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/nsw-threatened-species-scientific-committee-final-determinations

Department of Planning and Environment (DPE) (2022i). *The Central Resource for Sharing and Enabling Environmental Data in NSW*. Available at: https://www.seed.nsw.gov.au/

Department of Primary Industries (DPI) (2022). *NSW WeedWise*. Available at: https://weeds.dpi.nsw.gov.au/

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.

Landcom (2004). Managing Urban Stormwater: Soils and Construction. 4th edition, NSW Government, March 2004.

Mitchell P. M., (2002). *Descriptions of NSW (Mitchell) Landscapes*. Version 2.

Appendix A – 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 DPIE BioNet Atlas: (http://www.bionet.nsw.gov.au/).

The table below summarises the likelihood of threatened species occurring within the Subject Site based on the habitat requirements of each species.

Definition of the likelihood of occurrence criteria are as follows:

- Known – species identified within the site during surveys;
- High – species known from the area (DPIE BioNet 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; and
- Nil – habitat requirements not met for this species within the site

Species	Status		Bionet Records	Habitat	LoO	Summary
	BC	EPBC				
Ardeotis australis **Australian Bustard**	E	-	1	The Australian Bustard mainly occurs in inland Australia and is now scarce or absent from southern and south-eastern Australia. In NSW, they are mainly found in the north-west corner and less often recorded in the lower western and central west plains regions. Occasional vagrants are still seen as far east as the western slopes and Riverine plain. Breeding now only occurs in the north-west region of NSW. Mainly inhabits tussock and hummock grasslands, though prefers tussock grasses to hummock grasses; also occurs in low shrublands and low open grassy woodlands; occasionally seen in pastoral and cropping country, golf courses and near dams. Breeds on bare ground on low sandy ridges or stony rises in ecotones between grassland and protective shrubland cover; roosts on ground among shrubs and long grasses or under trees.	Low	No suitable habitat for this species within the Study Area. Only one record within the locality **Not recorded during the site assessment.**
Artamus cyanopterus cyanopterus **Dusky Woodswallow**	V	-	1	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	No suitable habitat within the Study Area. One record within the locality. **Not recorded during site assessment.**
Burhinus grallarius **Bush Stone-curlew**	E	-	1	The Bush Stone-curlew is found throughout Australia except for the central southern coast and inland, the far south-east corner, and Tasmania. Only in northern Australia is it still common however and in the south-east it is either rare or extinct throughout its former range. Inhabits open forests and woodlands with a sparse grassy groundlayer and fallen timber. Largely nocturnal, being especially active on moonlit nights. Feed on insects and small vertebrates, such as frogs, lizards and snakes. Nest on the ground in a scrape or small bare patch. Two eggs are laid in spring and early summer.	Low	No suitable habitat within the Study Area. One record within the locality. **Not recorded during site assessment.**
Calidris acuminata **Sharp-tailed Sandpiper**	P	C, J, K	3	The Sharp-tailed Sandpiper spends the non-breeding season in Australia with small numbers occurring regularly in New Zealand. They forage at the edge of the water of wetlands or intertidal mudflats, either on bare wet mud or sand, or in shallow water. They also forage among inundated vegetation of saltmarsh, grass or sedges. The Sharp-tailed Sandpiper forages on seeds, worms, molluscs, crustaceans and insects.	Low	No suitable foraging habitat within the Study Area. Few records within the locality. **Not recorded during site assessment.**

Species	Status		Bionet Records	Habitat	LoO	Summary
	BC	EPBC				
Calyptorhynchus lathami **Glossy Black-Cockatoo, Riverina Population**	E, V	-	1	Widespread but uncommon from coast to southern tablelands and central western plains. Feeds almost exclusively on the seeds of *Allocasuarina* species. Prefers woodland and open forests, rarely away from *Allocasuarina.* 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.	Low	Few records in locality. Potentially suitable foraging habitat along Tabbita Lane with *Allocasuarina leuhmannii* (Bull oak) **Not recorded during site assessment**.
Chalinolobus picatus **Little Pied Bat**	V	-	2	The Little-Pied Bat is found in inland Queensland and NSW (including Western Plains and slopes) extending slightly into South Australia and Victoria. Occurs in dry open forest, open woodland, mulga woodlands, chenopod shrublands, cypress pine forest and mallee and Bimbil box woodlands. Roosts in caves, rock outcrops, mine shafts, tunnels, tree hollows and buildings. Can tolerate high temperatures and dryness but need access to nearby open water. Feeds on moths and possibly other flying invertebrates.	**Moderate**	Potentially suitable habitat, including roosting habitat (hollows), within the Study Area. Two records within the locality. **Not recorded during site assessment.**
Chthonicola sagittate **Speckled Warbler**	V	-	2	The Speckled Warbler has a patchy distribution throughout south-eastern Queensland, the eastern half of NSW and into Victoria, as far west as the Grampians. The species is most frequently reported from the hills and tablelands of the Great Dividing Range, and rarely from the coast. The Speckled Warbler lives in a wide range of Eucalyptus dominated communities that have a grassy understorey, often on rocky ridges or in gullies. Typical habitat would include scattered native tussock grasses, a sparse shrub layer, some eucalypt regrowth and an open canopy. Large, relatively undisturbed remnants are required for the species to persist in an area.	Low	No suitable foraging habitat within the Study Area. Few records within the locality. **Not recorded during site assessment.**
Circus assimilis **Spotted Harrier**	V	-	4	The Spotted Harrier occurs throughout the Australian mainland, except in densly forested or wooded habitats of the coast, escarpment and ranges, and rarely in Tasmania. Individuals disperse widely in NSW and comprise a single population. Occurs in grassy open woodland including Acacia and mallee remnants, inland riparian woodland, grassland and shrub steppe. It is found most commonly in native grassland, but also occurs in agricultural land, foraging over open habitats including edges of inland wetlands. Builds a stick nest in a tree and lays eggs in spring (or sometimes autumn), with young remaining in the nest for several months. Preys on terrestrial mammals (eg bandicoots, bettongs, and rodents), birds and reptile, occasionally insects and rarely carrion.	Low	No suitable breeding habitat within the Study Area. Few records within the locality. **Not recorded during site assessment.**

Species	Status		Bionet Records	Habitat	LoO	Summary
	BC	EPBC				
Climacteris picumnus victoriae **Brown Treecreeper (eastern subspecies)**	V	-	3	The Brown Treecreeper is endemic to eastern Australia and occurs in eucalypt forests and woodlands of inland plains and slopes of the Great Dividing Range. It is less commonly found on coastal plains and ranges. Found in eucalypt woodlands (including Box-Gum Woodland) and dry open forest of the inland slopes and plains inland of the Great Dividing Range; mainly inhabits woodlands dominated by stringybarks or other rough-barked eucalypts, usually with an open grassy understorey, sometimes with one or more shrub species; also found in mallee and River Red Gum (*Eucalyptus camaldulensis*) Forest bordering wetlands with an open understorey of acacias, saltbush, lignum, cumbungi and grasses; usually not found in woodlands with a dense shrub layer; fallen timber is an important habitat component for foraging; also recorded, though less commonly, in similar woodland habitats on the coastal ranges and plains.	Low	No suitable habitat within the Study Area. Marginal habitat within the road reserve Few records within the locality. **Not recorded during site assessment.**
Daphoenositta chrysoptera **Varied Sittella**	V	-	9	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.	Low	No suitable habitat present within the Study Area. Broadly suitable habitat within the road reserve. **Not recorded during the assessment.**
Falco hypoleucos **Grey Falcon**	E	-	2	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.	Low	Few records in the locality. Marginal foraging habitat present within the Study Area and broader locality. **Not recorded during site assessment**
Falco subniger **Black Falcon**	V	-	3	The Black Falcon is widely, but sparsely, distributed in New South Wales, mostly occurring in inland regions. Some reports of 'Black Falcons' on the tablelands and coast of New South Wales are likely to be referable to the Brown Falcon. In New South Wales there is assumed to be a single population that is continuous with a broader continental population, given that falcons are highly mobile, commonly travelling hundreds of kilometres. Black Falcons nest along tree-lined creeks and rivers of inland drainage systems. Eggs are laid in the abandoned stick nests of other birds, usually high in a tree.	Low	Few records in the locality. Marginal foraging habitat present within the Study Area and broader locality. No breeding habitat occurs within the Study Area.

Species	Status		Bionet Records	Habitat	LoO	Summary
	BC	EPBC				**Not recorded during site assessment**
Grantiella picta **Painted Honeyeater**	V	V	3	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 foraging habitat on site (no mistletoes). Few records within locality. **Not recorded during site assessment**
Hieraaetus morphnoides **Little Eagle**	V	-	2	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	Low number of records within the locality. No suitable breeding habitat present within the Study Area. **Not recorded during site assessment.**
Lophochroa leadbeateri **Major Mitchell's Cockatoo**	V	-	7	Found across the arid and semi-arid inland, from south-western Queensland south to north-west Victoria, through most of South Australia, north into the south-west Northern Territory and across to the west coast between Shark Bay and about Jurien. In NSW it is found regularly as far east as about Bourke and Griffith, and sporadically further east than that. Inhabits a wide range of treed and treeless inland habitats, always within easy reach of water. Feeds mostly on the ground, especially on the seeds of native and exotic melons and on the seeds of species of saltbush, wattles and cypress pines. Nesting, in tree hollows, occurs throughout the second half of the year; nests are at least 1 km apart, with no more than one pair every 30 square kilometres.	Low	Suitable foraging resources in native vegetation along Tabbita Lane and the Study Area, i.e., exotic melons (*Cucumis myriocarpus*) and White Cypress (*Callitris glaucophylla*). No suitable breeding habitat within the Study Area. **Not recorded during the assessment.**
Melanodryas cucullata cucullate **Hooded Robin (south-eastern form)**	V	-	2	The Hooded Robin is widespread, found across Australia, except for the driest deserts and the wetter coastal areas - northern and eastern coastal Queensland and Tasmania. However, it is common in few places, and rarely found on the coast. Prefers lightly wooded country, usually open eucalypt woodland, acacia scrub and mallee, often in or near clearings or open areas. Requires structurally diverse habitats featuring mature eucalypts, saplings, some small shrubs and a ground layer of moderately tall native grasses.	Low	While this species can be found in open areas or clearings, it still requires structurally diverse habitats which do not occur within the Study Area. Only two records within the locality. **Not recorded during the assessment.**

Species	Status		Bionet Records	Habitat	LoO	Summary
	BC	EPBC				
Nyctophilus corbeni **Corben's Long-eared Bat**	V	V	-	Overall, the distribution of the south eastern form coincides approximately with the Murray Darling Basin with the Pilliga Scrub region being the distinct stronghold for this species. Inhabits a variety of vegetation types, including mallee, bulloke (*Allocasuarina leuhmanni*) and box eucalypt dominated communities, but it is distinctly more common in box/ironbark/cypress-pine vegetation that occurs in a north-south belt along the western slopes and plains of NSW and southern Queensland.	Low	Potential habitat for this species within the Study Area, mainly road reserve vegetation. Study Area occurs around the southern extremity for this species within the Riverina. No bionet records in the locality. **Not recorded during site assessment.**
Oxyura australis **Blue-billed Duck**	V	-	1	The Blue-billed Duck is endemic to south-eastern and south-western Australia. It is widespread in NSW, but most common in the southern Murray-Darling Basin area. The Blue-billed Duck prefers deep water in large permanent wetlands and swamps with dense aquatic vegetation. The species is completely aquatic, swimming low in the water along the edge of dense cover. It will fly if disturbed, but prefers to dive if approached. Blue-billed Ducks will feed by day far from the shore, particularly if dense cover is available in the central parts of the wetland. They feed on the bottom of swamps eating seeds, buds, stems, leaves, fruit and small aquatic insects such as the larvae of midges, caddisflies and dragonflies. Blue-billed Ducks usually nest solitarily in Cumbungi over deep water between September and February.	Low	No suitable habitat within the Study Area. Only one record within locality. **Not recorded during site assessment.**
Pachycephala inornate **Gilbert's Whistler**	V	-	1	The Gilbert's Whistler is sparsely distributed over much of the arid and semi-arid zone of inland southern Australia, from the western slopes of NSW to the Western Australian wheatbelt. The species was probably once distributed almost continuously across the woodlands and mallee of southern NSW, but this range has been greatly reduced, chiefly by clearance of habitat. The eastern population extends from the central NSW mallee (Yathong, Nombinnie and Round Hill NRs), south and east through the Cocoparra Range to Pomingalama Reserve (near Wagga Wagga). The Gilbert's Whistler occurs in a range of habitats within NSW, though the shared feature appears to be a dense shrub layer. It is widely recorded in mallee shrublands, but also occurs in box-ironbark woodlands, Cypress Pine and Belah woodlands and River Red Gum forests, though at this stage it is only known to use this habitat along the Murray, Edwards and Wakool Rivers. The Gilbert's Whistler forages on or near the ground in shrub thickets and in tops of small trees. Its food consists mainly of spiders and insects such as caterpillars, beetles and ants, and occasionally,	**Moderate**	Potentially suitable foraging and breeding habitat within the Study Area. No suitable habitat within the Development Site. One record within the locality. **Not recorded during site assessment.**

Species	Status		Bionet Records	Habitat	LoO	Summary
	BC	EPBC				
				seeds and fruits are eaten. Breeding takes place between August and November. Nests are usually built below about two and a half metres (but up to six metres) above the ground in the fork of dense foliage of plants such as wattles or cypress pines.		
Polytelis swainsonii **Superb Parrot**	V	V	21	The Superb Parrot is found throughout eastern inland NSW. On the South-western Slopes their core breeding area is roughly bounded by Cowra and Yass in the east, and Grenfell, Cootamundra and Coolac in the west. Birds breeding in this region are mainly absent during winter, when they migrate north to the region of the upper Namoi and Gwydir Rivers. The other main breeding sites are in the Riverina along the corridors of the Murray, Edward and Murrumbidgee Rivers where birds are present all year round. Inhabit Box-Gum, Box-Cypress-pine and Boree Woodlands and River Red Gum Forest. In the Riverina the birds nest in the hollows of large trees (dead or alive) mainly in tall riparian River Red Gum Forest or Woodland. On the South West Slopes nest trees can be in open Box-Gum Woodland or isolated paddock trees. Species known to be used are Blakely's Red Gum, Yellow Box, Apple Box and Red Box. Nest in small colonies, often with more than one nest in a single tree. Breed between September and January.	**High**	Suitable foraging habitat occurs in the Study Area, mainly in the road reserve which contains native shrubs and herbaceous plants. No breeding habitat present. **Recorded flying over the site during the assessment.**
Pomatostomus temporalis temporalis **Grey-crowned Babbler**	V,P	-	59	The Grey-crowned Babbler has two distinctive subspecies that intergrade to the south of the Gulf of Carpentaria. West of here the subspecies *rubeculus*, formerly considered a separate species (Red-breasted Babbler) is still widespread and common. The eastern subspecies (temporalis occurs from Cape York south through Queensland, NSW and Victoria and formerly to the south east of South Australia. Inhabits open Box-Gum Woodlands on the slopes, and Box-Cypress-pine and open Box Woodlands on alluvial plains. Woodlands on fertile soils in coastal regions.	**Moderate**	Broadly suitable habitat within the Study Area, mainly within the road reserve. Moderate number of records within the locality. **Not recorded during the assessment.**

Species	Status		Bionet Records	Habitat	LoO	Summary
	BC	EPBC				
Stagonopleura guttata **Diamond Firetail**	V,P		1	The Diamond Firetail is endemic to south-eastern Australia, extending from central Queensland to the Eyre Peninsula in South Australia. It is widely distributed in NSW, with a concentration of records from the Northern, Central and Southern Tablelands, the Northern, Cental and South Western Slopes and the North West Plains and Riverina. Not commonly found in coastal districts, though there are records from near Sydney, the Hunter Valley and the Bega Valley. This species has a scattered distribution over the rest of NSW, though is very rare west of the Darling River. Found in grassy eucalypt woodlands, including Box-Gum Woodlands and Snow Gum Eucalyptus pauciflora Woodlands. Also occurs in open forest, mallee, Natural Temperate Grassland, and in secondary grassland derived from other communities.	low	Marginally suitable habitat within the Study Area mainly occurring within the road reserve. **Not recorded during site assessment.**
Tringa nebularia **Common Greenshank**	-	M	3	Found in a wide variety of inland wetlands and sheltered coastal habitats of varying salinity. Habitats include embayments, harbours, river estuaries, deltas and lagoons and are recorded less often in round tidal pools, rock-flats and rock platforms. Uses both permanent and ephemeral terrestrial wetlands, including swamps, lakes, dams, rivers, creeks, billabongs, waterholes and inundated floodplains, claypans and saltflats. It will also use artificial wetlands, including sewage farms and saltworks dams, inundated rice crops and bores.	Low	Records within locality. No suitable habitat present within the Study Area. **Not recorded during site assessment.**
Tringa stagnatilis **Marsh Sandpiper**	-	M	1	Lives in permanent or ephemeral wetlands of varying salinity, including swamps, lagoons, billabongs, saltpans, saltmarshes, estuaries, pools on inundated floodplains, and intertidal mudflats and also regularly at sewage farms and saltworks. Recorded less often at reservoirs, waterholes, soaks, bore-drain swamps and flooded inland lakes. In south-east Australia they prefer inland saline lakes and coastal saltworks.	Low	Records within locality. No suitable habitat present within the Study Area. **Not recorded during site assessment.**

Appendix B – PMST Search Results

Australian Government
Department of Agriculture, Water and the Environment

EPBC Act Protected Matters Report

This report provides general guidance on matters of national environmental significance and other matters protected by the EPBC Act in the area you have selected. Please see the caveat for interpretation of information provided here.

Report created: 11-Jul-2022

Summary

Matters of National Environment Significance

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

World Heritage Properties:	None
National Heritage Places:	None
Wetlands of International Importance (Ramsar	4
Great Barrier Reef Marine Park:	None
Commonwealth Marine Area:	None
Listed Threatened Ecological Communities:	5
Listed Threatened Species:	17
Listed Migratory Species:	9

Other Matters Protected by the EPBC Act

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

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

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

Commonwealth Lands:	None
Commonwealth Heritage Places:	None
Listed Marine Species:	15
Whales and Other Cetaceans:	None
Critical Habitats:	None
Commonwealth Reserves Terrestrial:	None
Australian Marine Parks:	None
Habitat Critical to the Survival of Marine Turtles:	None

Extra Information

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

State and Territory Reserves:	None
Regional Forest Agreements:	None
Nationally Important Wetlands:	None
EPBC Act Referrals:	4
Key Ecological Features (Marine):	None
Biologically Important Areas:	None
Bioregional Assessments:	None
Geological and Bioregional Assessments:	None

Details

Matters of National Environmental Significance

Wetlands of International Importance (Ramsar Wetlands)		[Resource Information]
Ramsar Site Name	Proximity	Buffer Status
Banrock station wetland complex	400 - 500km upstream from Ramsar site	In feature area
Hattah-kulkyne lakes	300 - 400km upstream from Ramsar site	In feature area
Riverland	400 - 500km upstream from Ramsar site	In feature area
The coorong, and lakes alexandrina and albert wetland	500 - 600km upstream from Ramsar site	In feature area

Listed Threatened Ecological Communities			[Resource Information]

For threatened ecological communities where the distribution is well known, maps are derived from recovery plans, State vegetation maps, remote sensing imagery and other sources. Where threatened ecological community distributions are less well known, existing vegetation maps and point location data are used to produce indicative distribution maps.
Status of Vulnerable, Disallowed and Ineligible are not MNES under the EPBC Act.

Community Name	Threatened Category	Presence Text	Buffer Status
Buloke Woodlands of the Riverina and Murray-Darling Depression Bioregions	Endangered	Community may occur within area	In feature area
Grey Box (Eucalyptus microcarpa) Grassy Woodlands and Derived Native Grasslands of South-eastern Australia	Endangered	Community may occur within area	In feature area
Mallee Bird Community of the Murray Darling Depression Bioregion	Endangered	Community may occur within area	In feature area
Weeping Myall Woodlands	Endangered	Community may occur within area	In feature area
White Box-Yellow Box-Blakely's Red Gum Grassy Woodland and Derived Native Grassland	Critically Endangered	Community may occur within area	In buffer area only

Listed Threatened Species	[Resource Information]

Status of Conservation Dependent and Extinct are not MNES under the EPBC Act.
Number is the current name ID.

Scientific Name	Threatened Category	Presence Text	Buffer Status
BIRD			
[Botaurus poiciloptilus](#) Australasian Bittern [1001]	Endangered	Species or species habitat likely to occur within area	In feature area
[Calidris ferruginea](#) Curlew Sandpiper [856]	Critically Endangered	Species or species habitat may occur within area	In feature area
[Falco hypoleucos](#) Grey Falcon [929]	Vulnerable	Species or species habitat likely to occur within area	In feature area
[Grantiella picta](#) Painted Honeyeater [470]	Vulnerable	Species or species habitat likely to occur within area	In feature area
[Leipoa ocellata](#) Malleefowl [934]	Vulnerable	Species or species habitat may occur within area	In feature area
[Numenius madagascariensis](#) Eastern Curlew, Far Eastern Curlew [847]	Critically Endangered	Species or species habitat may occur within area	In feature area
[Pedionomus torquatus](#) Plains-wanderer [906]	Critically Endangered	Species or species habitat may occur within area	In feature area
[Polytelis swainsonii](#) Superb Parrot [738]	Vulnerable	Species or species habitat likely to occur within area	In feature area
[Rostratula australis](#) Australian Painted Snipe [77037]	Endangered	Species or species habitat likely to occur within area	In feature area
FISH			
[Galaxias rostratus](#) Flathead Galaxias, Beaked Minnow, Flat-headed Galaxias, Flat-headed Jollytail, Flat-headed Minnow [84745]	Critically Endangered	Species or species habitat may occur within area	In feature area
[Macquaria australasica](#) Macquarie Perch [66632]	Endangered	Species or species habitat may occur within area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
FROG			
Litoria raniformis			
Growling Grass Frog, Southern Bell Frog, Green and Golden Frog, Warty Swamp Frog, Golden Bell Frog [1828]	Vulnerable	Species or species habitat may occur within area	In buffer area only
MAMMAL			
Nyctophilus corbeni			
Corben's Long-eared Bat, South-eastern Long-eared Bat [83395]	Vulnerable	Species or species habitat may occur within area	In feature area
PLANT			
Austrostipa metatoris			
[66704]	Vulnerable	Species or species habitat may occur within area	In feature area
Brachyscome papillosa			
Mossgiel Daisy [6625]	Vulnerable	Species or species habitat may occur within area	In buffer area only
Lepidium monoplocoides			
Winged Pepper-cress [9190]	Endangered	Species or species habitat may occur within area	In feature area
Swainsona murrayana			
Slender Darling-pea, Slender Swainson, Murray Swainson-pea [6765]	Vulnerable	Species or species habitat likely to occur within area	In feature area

Listed Migratory Species		[Resource Information]	
Scientific Name	Threatened Category	Presence Text	Buffer Status
Migratory Marine Birds			
Apus pacificus			
Fork-tailed Swift [678]		Species or species habitat likely to occur within area	In feature area
Migratory Terrestrial Species			
Motacilla flava			
Yellow Wagtail [644]		Species or species habitat may occur within area	In feature area
Myiagra cyanoleuca			
Satin Flycatcher [612]		Species or species habitat may occur within area	In feature area
Migratory Wetlands Species			

Scientific Name	Threatened Category	Presence Text	Buffer Status
Actitis hypoleucos Common Sandpiper [59309]		Species or species habitat may occur within area	In feature area
Calidris acuminata Sharp-tailed Sandpiper [874]		Species or species habitat may occur within area	In feature area
Calidris ferruginea Curlew Sandpiper [856]	Critically Endangered	Species or species habitat may occur within area	In feature area
Calidris melanotos Pectoral Sandpiper [858]		Species or species habitat may occur within area	In feature area
Gallinago hardwickii Latham's Snipe, Japanese Snipe [863]		Species or species habitat may occur within area	In feature area
Numenius madagascariensis Eastern Curlew, Far Eastern Curlew [847]	Critically Endangered	Species or species habitat may occur within area	In feature area

Other Matters Protected by the EPBC Act

Listed Marine Species			[Resource Information]
Scientific Name	Threatened Category	Presence Text	Buffer Status
Bird			
Actitis hypoleucos Common Sandpiper [59309]		Species or species habitat may occur within area	In feature area
Apus pacificus Fork-tailed Swift [678]		Species or species habitat likely to occur within area overfly marine area	In feature area
Bubulcus ibis as Ardea ibis Cattle Egret [66521]		Species or species habitat may occur within area overfly marine area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
Calidris acuminata Sharp-tailed Sandpiper [874]		Species or species habitat may occur within area	In feature area
Calidris ferruginea Curlew Sandpiper [856]	Critically Endangered	Species or species habitat may occur within area overfly marine area	In feature area
Calidris melanotos Pectoral Sandpiper [858]		Species or species habitat may occur within area overfly marine area	In feature area
Chalcites osculans as Chrysococcyx osculans Black-eared Cuckoo [83425]		Species or species habitat likely to occur within area overfly marine area	In feature area
Gallinago hardwickii Latham's Snipe, Japanese Snipe [863]		Species or species habitat may occur within area overfly marine area	In feature area
Haliaeetus leucogaster White-bellied Sea-Eagle [943]		Species or species habitat may occur within area	In feature area
Merops ornatus Rainbow Bee-eater [670]		Species or species habitat may occur within area overfly marine area	In feature area
Motacilla flava Yellow Wagtail [644]		Species or species habitat may occur within area overfly marine area	In feature area
Myiagra cyanoleuca Satin Flycatcher [612]		Species or species habitat may occur within area overfly marine area	In feature area
Neophema chrysostoma Blue-winged Parrot [726]		Species or species habitat likely to occur within area overfly marine area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
Numenius madagascariensis			
Eastern Curlew, Far Eastern Curlew [847]	Critically Endangered	Species or species habitat may occur within area	In feature area
Rostratula australis as Rostratula benghalensis (sensu lato)			
Australian Painted Snipe [77037]	Endangered	Species or species habitat likely to occur within area overfly marine area	In feature area

Extra Information

EPBC Act Referrals				[Resource Information]
Title of referral	Reference	Referral Outcome	Assessment Status	Buffer Status
Not controlled action				
Barren Box Swamp Water storage, wetland reconstruction and en-route water storage	2003/1310	Not Controlled Action	Completed	In feature area
Improving rabbit biocontrol: releasing another strain of RHDV, sthrn two thirds of Australia	2015/7522	Not Controlled Action	Completed	In feature area
INDIGO Central Submarine Telecommunications Cable	2017/8127	Not Controlled Action	Completed	In feature area
Not controlled action (particular manner)				
INDIGO Marine Cable Route Survey (INDIGO)	2017/7996	Not Controlled Action (Particular Manner)	Post-Approval	In feature area

Caveat

1 PURPOSE

This report is designed to assist in identifying the location of matters of national environmental significance (MNES) and other matters protected by the Environment Protection and Biodiversity Conservation Act 1999 (Cth) (EPBC Act) which may be relevant in determining obligations and requirements under the EPBC Act.

The report contains the mapped locations of:

- World and National Heritage properties;
- Wetlands of International and National Importance;
- Commonwealth and State/Territory reserves;
- distribution of listed threatened, migratory and marine species;
- listed threatened ecological communities; and
- other information that may be useful as an indicator of potential habitat value.

2 DISCLAIMER

This report is not intended to be exhaustive and should only be relied upon as a general guide as mapped data is not available for all species or ecological communities listed under the EPBC Act (see below). Persons seeking to use the information contained in this report to inform the referral of a proposed action under the EPBC Act should consider the limitations noted below and whether additional information is required to determine the existence and location of MNES and other protected matters.

Where data are available to inform the mapping of protected species, the presence type (e.g. known, likely or may occur) that can be determined from the data is indicated in general terms. It is the responsibility of any person using or relying on the information in this report to ensure that it is suitable for the circumstances of any proposed use. The Commonwealth cannot accept responsibility for the consequences of any use of the report or any part thereof. To the maximum extent allowed under governing law, the Commonwealth will not be liable for any loss or damage that may be occasioned directly or indirectly through the use of, or reliance

3 DATA SOURCES

Threatened ecological communities

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

Threatened, migratory and marine species

Threatened, migratory and marine species distributions have been discerned through a variety of methods. Where distributions are well known and if time permits, distributions are inferred from either thematic spatial data (i.e. vegetation, soils, geology, elevation, aspect, terrain, etc.) together with point locations and described habitat; or modelled (MAXENT or BIOCLIM habitat modelling) using

Where little information is available for a species or large number of maps are required in a short time-frame, maps are derived either from 0.04 or 0.02 decimal degree cells; by an automated process using polygon capture techniques (static two kilometre grid cells, alpha-hull and convex hull); or captured manually or by using topographic features (national park boundaries, islands, etc.).

In the early stages of the distribution mapping process (1999-early 2000s) distributions were defined by degree blocks, 100K or 250K map sheets to rapidly create distribution maps. More detailed distribution mapping methods are used to update these distributions

4 LIMITATIONS

The following species and ecological communities have not been mapped and do not appear in this report:

- threatened species listed as extinct or considered vagrants;
- some recently listed species and ecological communities;
- some listed migratory and listed marine species, which are not listed as threatened species; and
- migratory species that are very widespread, vagrant, or only occur in Australia in small numbers.

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

- listed migratory and/or listed marine seabirds, which are not listed as threatened, have only been mapped for recorded
- seals which have only been mapped for breeding sites near the Australian continent

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

Refer to the metadata for the feature group (using the Resource Information link) for the currency of the information.

Acknowledgements

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

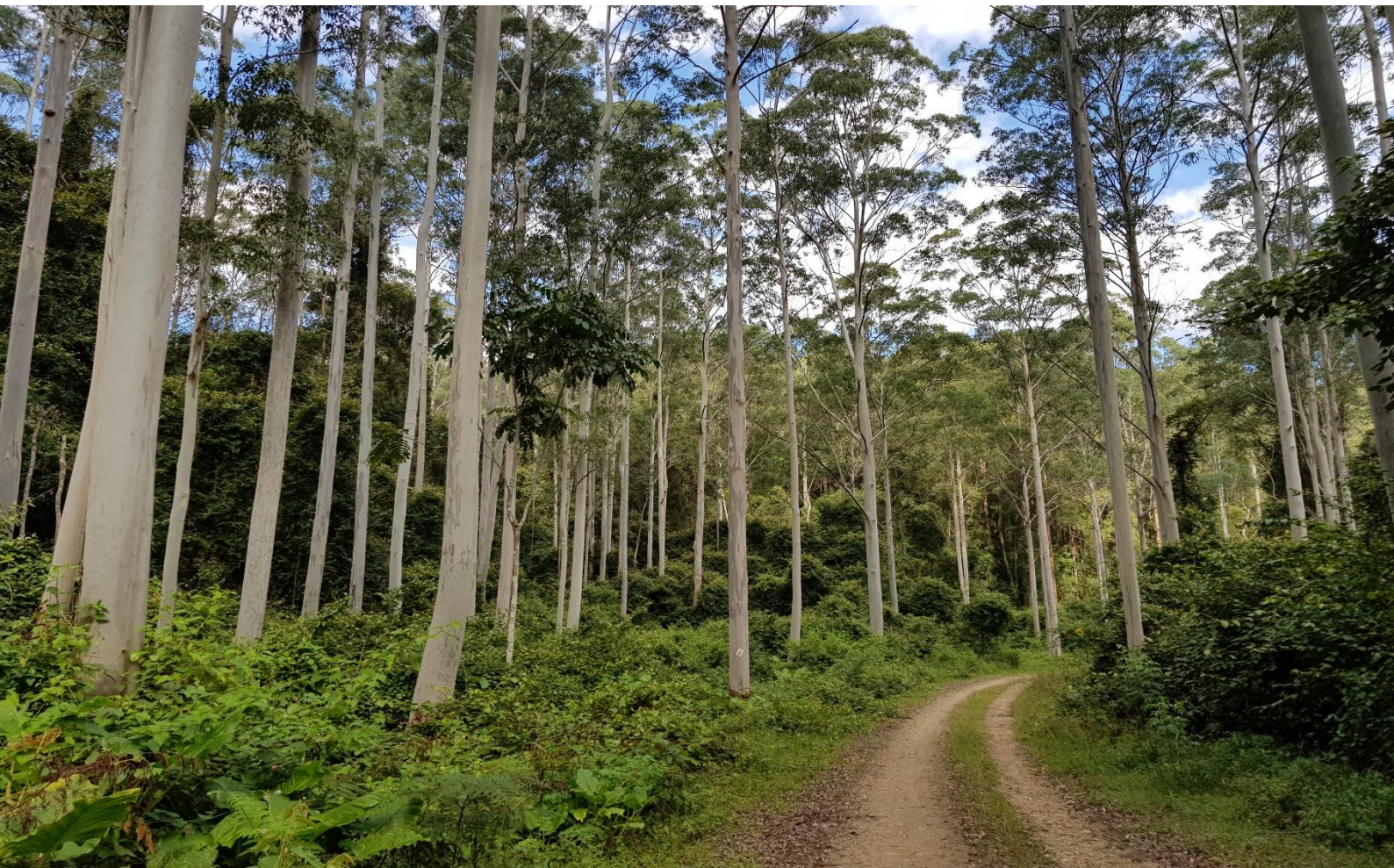
-Office of Environment and Heritage, New South Wales
-Department of Environment and Primary Industries, Victoria
-Department of Primary Industries, Parks, Water and Environment, Tasmania
-Department of Environment, Water and Natural Resources, South Australia
-Department of Land and Resource Management, Northern Territory
-Department of Environmental and Heritage Protection, Queensland
-Department of Parks and Wildlife, Western Australia
-Environment and Planning Directorate, ACT
-Birdlife Australia
-Australian Bird and Bat Banding Scheme
-Australian National Wildlife Collection
-Natural history museums of Australia
-Museum Victoria
-Australian Museum
-South Australian Museum
-Queensland Museum
-Online Zoological Collections of Australian Museums
-Queensland Herbarium
-National Herbarium of NSW
-Royal Botanic Gardens and National Herbarium of Victoria
-Tasmanian Herbarium
-State Herbarium of South Australia
-Northern Territory Herbarium
-Western Australian Herbarium
-Australian National Herbarium, Canberra
-University of New England
-Ocean Biogeographic Information System
-Australian Government, Department of Defence
Forestry Corporation, NSW
-Geoscience Australia
-CSIRO
-Australian Tropical Herbarium, Cairns
-eBird Australia
-Australian Government – Australian Antarctic Data Centre
-Museum and Art Gallery of the Northern Territory
-Australian Government National Environmental Science Program
-Australian Institute of Marine Science
-Reef Life Survey Australia
-American Museum of Natural History
-Queen Victoria Museum and Art Gallery, Inveresk, Tasmania
-Tasmanian Museum and Art Gallery, Hobart, Tasmania
-Other groups and individuals

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

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

Department of Agriculture Water and the Environment
GPO Box 858
Canberra City ACT 2601 Australia
+61 2 6274 1111

Appendix C – Flora and Fauna Species Lists



Flora species list.

No.	Scientific Name	Common Name	Growth Form
1.	*Abutilon halophilum*		Shrub (SG)
2.	*Abutilon otocarpum*	Desert Lantern	Shrub (SG)
3.	*Acacia oswaldii*	Miljee	Tree (TG)
4.	*Aira elegantissima*	Delicate Hairgrass	Exotic
5.	*Alternanthera pungens*	Kahki weed	Exotic
6.	*Amsinckia intermedia*	Common Fiddleneck	Exotic
7.	*Atriplex semibaccata*	Creeping Saltbush	Shrub (SG)
8.	*Austrostipa sp.*		Grass & grasslike (GG)
9.	*Bothriochloa decipiens*	Red Grass	Grass & grasslike (GG)
10.	*Brassica oleracea*	Cauliflower	Exotic
11.	*Callitris glaucophylla*	White Cypress	Tree (TG)
12.	*Capsella bursa-pastoris*	Sheppard's Purse	Exotic
13.	*Cenchrus clandestinus*	Kikuyu	HTW
14.	*Chenopodium album*	Fat Hen	Exotic
15.	*Chloris truncata*	Windmill Grass	Grass & grasslike (GG)
16.	*Chloris ventricosa*	Tall Chloris	Grass & grasslike (GG)
17.	*Chloris virgata*	Feathertop Rhodes Grass	Exotic
18.	*Convolvulus angustissimus*		Other (OG)
19.	*Conyza bonariensis*	Fleabane	Exotic
20.	*Conyza canadensis*		Exotic
21.	*Crassula sieberiana*	Australian Stonecrop	Forb (FG)
22.	*Cucumis myriocarpus*	Paddy Melon	Exotic
23.	*Cynodon dactylon*	Couch	Grass & grasslike (GG)
24.	*Cynosurus cristatus*	Crested Dog's Tail	Exotic
25.	*Dianella revoluta*	Blueberry Lily	Forb (FG)
26.	*Dodonaea viscosa subsp. angustissima*	Sticky Hop-bush	Shrub (SG)

No.	Scientific Name	Common Name	Growth Form
27.	*Einadia nutans subsp. linifolia*	Climbing Saltbush	Forb (FG)
28.	*Eindaia hastata*	Berry Saltbush	Forb (FG)
29.	*Enchylaena tomentosa*	Ruby Saltbush	Shrub (SG)
30.	*Eragrostis cilianensis*	Stinkgrass	Exotic
31.	*Eragrostis curvula*	African Lovegrass	HTW
32.	*Eremophila longifolia*	Emubush	Shrub (SG)
33.	*Euphorbia drummondii*	Caustic Weed	Forb (FG)
34.	*Geijera parviflora*	Wilga	Shrub (SG)
35.	*Gomphrena celosoides*	Gomphrena	Exotic
36.	*Hirschfeldia incana*	Hairy Brassica	Exotic
37.	*Hordeum leporinum*	Barley Grass	Exotic
38.	*Lepidium africanum*		Exotic
39.	*Lolium perenne*	Perennial Ryegrass	Exotic
40.	*Lycium ferocissimum*	African Boxthorn	HTW - Manageable
41.	*Mallow parviflora*	Small-flowered Mallow	Exotic
42.	*Marrubium vulgare*	white horehound	Exotic
43.	*Megathyrsus maximus*	Guinea Grass	HTW
44.	*Oxalis pres-caprae*		Exotic
45.	*Panicum capillare*	Witchgrass	Exotic
46.	*Panicum effusum*	Hairy Panic	Grass & grasslike (GG)
47.	*Paspalidium constrictum*	Knottybutt Grass	Grass & grasslike (GG)
48.	*Poa annua*	Winter Grass	Exotic
49.	*Polygonum aviculare*	Wireweed	Exotic
50.	*Rumex acetosella*	Sorrel	Exotic
51.	*Rytidosperma sp.*	Wallaby Grass	Grass & grasslike (GG)
52.	*Salvia verbenaca*	Vervain	Exotic
53.	*Sclerolaena birchii*	Galvanized Burr	Shrub (SG)
54.	*Sclerolaena muricata*	Black Rolypoly	Shrub (SG)

No.	Scientific Name	Common Name	Growth Form
55.	*Senna artemisoides*	Silver Cassia	Shrub (SG)
56.	*Sida corrugata*	Corrugated Sida	Forb (FG)
57.	*Sida cunninghamii*	Ridged Sida	Forb (FG)
58.	*Sida intricata*	Twiggy Sida	Shrub (SG)
59.	*Solanum coactiliferum*	Western Nightshade	Forb (FG)
60.	*Solanum esuriale*	Quena	Forb (FG)
61.	*Solanum nigrum*	Blackberry Nightshade	Exotic
62.	*Sonchus oleraceus*	Common Sowthistle	Exotic
63.	*Trifolium campestre*	Hop Clover	Exotic
64.	*Trifolium cernuum*		Exotic
65.	*Trifolium pratense*	Red Clover	Exotic
66.	*Urochloa panicoides*	Liverseed Grass	Exotic
67.	*Vittadinia cuneata*	Fuzzweed	Forb (FG)

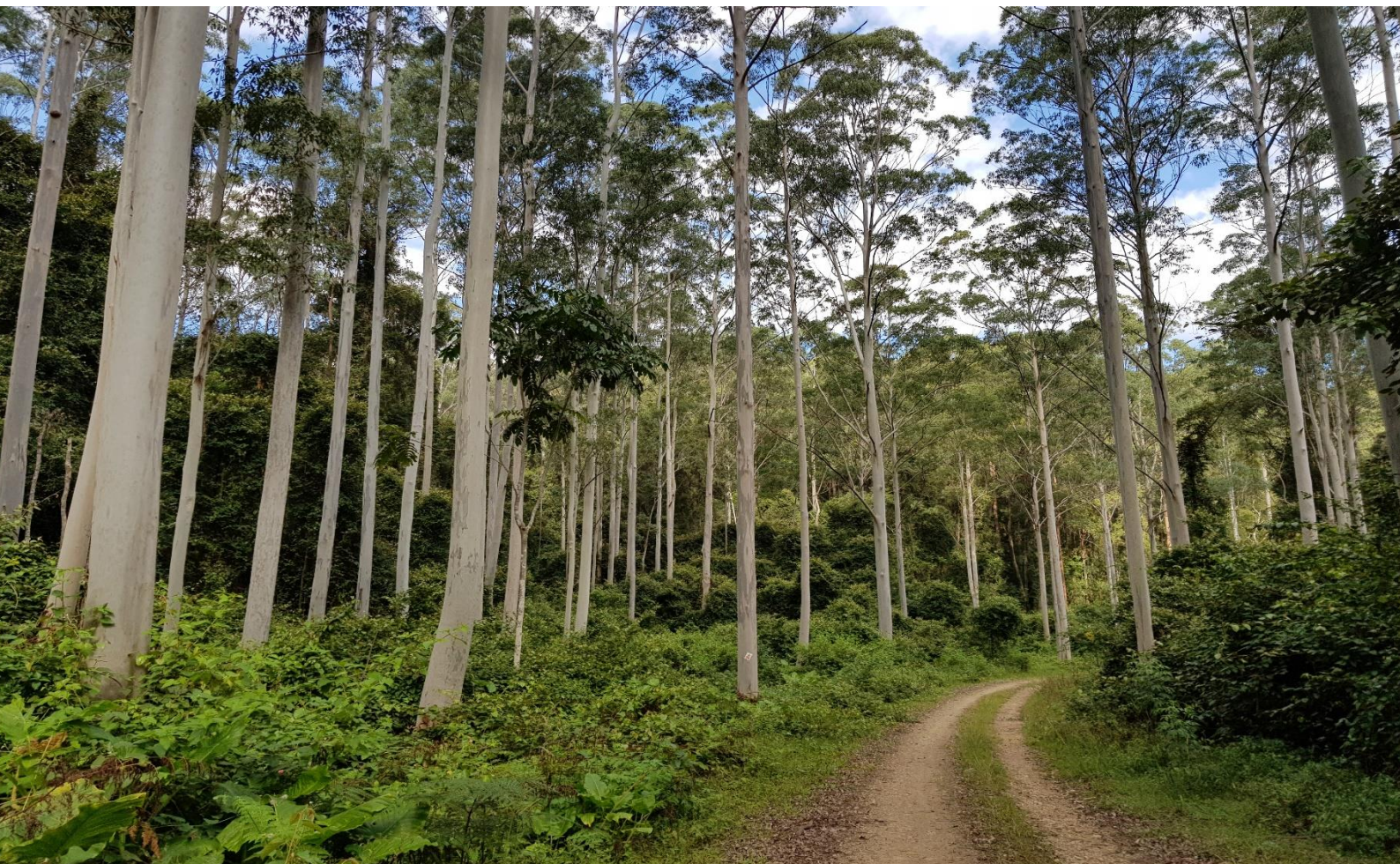
Fauna species list.

No.	Scientific Name	Common Name	Status		Observation Type
			BC	EPBC	
1.	*Coracina novaehollandiae*	Black-faced Cuckoo-shrike	-	-	VO
2.	*Eolophus roseicapillus*	Galah	-	-	VO, H
3.	*Platycercus eximius*	Eastern Rosella	-	-	VO
4.	*Polytelis swainsonii*	Superb Parrot	V	V	VO, H
5.	*Struthidea cinerea*	Apostlebird	-	-	VO

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

^ Denotes introduced species.

Appendix D – Assessments of Significance



Assessment of Significance – Microchiropteran Bats

- **Little Pied Bat (*Chalinolobus picatus*)**

Factor	Assessment
(a) Effect on life cycle of **threatened species**.	While it is not known if this species occurs within the Study Area, the proposed development has the potential to impact potentially suitable roosting habitat, i.e., small hollows. Potentially suitable roosting habitat likely occurs within roadside vegetation, which will be retained. Given the limited scale of impacts of the proposed development (removal of one hollow-bearing tree) it is unlikely that the life cycle of a local population, should one occur, be put at risk of extinction.
(b) (i) Effect on extent of **EEC** or **CEEC**.	Not Applicable
(b) (ii) Effect on composition of **EEC** or **CEEC**.	Not Applicable
(c) (i) Extent of habitat removal or modification for **threatened species**, **population** or **ecological community**	The proposed development will likely involve removal of one hollow-bearing tee containing one large (20cm) hollow. While the species typically prefers small hollows, the large hollow is also considered to provide potential roosting habitat
(c) (ii) Extent of fragmentation or isolation of habitat for **threatened species**, **population** or **ecological community.**	The Study Area occurs within a largely modified landscape, cleared of most vegetation. Impacts to vegetation within the Study Area are considered minor given the condition of the existing landscape. It is unlikely that the proposed development would cause habitat fragmentation for this species. Furthermore, roadside vegetation presents a more contiguous habitat, running east-west along Tabbita Lane. Roadside vegetation adjacent to the Study Area will be retained.
(c) (iii) The importance of habitat to **threatened species**, **populations** or **ecological community**.	Habitat within the Study Area is not considered to represent 'important' habitat for the Little Pied Bat due to its heavily cleared condition, lacking vegetation structure and important roosting resources.
***(d)* Area of Outstanding Biodiversity Value**	The Study Area does not occur with an Area of Outstanding Biodiversity Value.
***(e)* Key Threatening Processes**	Key Threatening Processes relevant to the proposed development: - Clearing of native vegetation - Loss of hollow-bearing trees - Removal of dead wood and dead trees. The proposed development is likely to facilitate the above-listed KTP to a minor extent. This is in consideration of the small scale of proposed clearing of the low suitability habitat for the species.
Conclusion	The Study Area represents marginal habitat for the Little Pied Bat due to the low density of potentially suitable roosting resources and low suitability of foraging habitat. The proposed development is therefore not likely to significantly impact this species directly or indirectly, such as that the species is placed at risk of extinction.

Assessment of Significance – Woodland Birds

- **Gilbert's Whistler (*Pachycephala inornata*)**
- **Grey-crowned Babbler (*Pomatostomus temporalis temporalis*)**

Factor	Assessment
(a) Effect on life cycle of **threatened species**.	The Study Area contains broadly suitable foraging habitat for these species, which is mainly present in roadside vegetation. The Gilbert's Whistler's habitat preference includes a dense shrub layer, while the Grey-crowned Babbler prefers open woodlands. Neither of these species were detected during the site assessment, through visual observation or evidenced of potential nests. The propose development is therefore unlikely to significantly effect the life cycle of locally occurring populations of these threatened species.
(b) (i) Effect on extent of **EEC** or **CEEC**.	Not Applicable
(b) (ii) Effect on composition of **EEC** or **CEEC**.	Not Applicable
(c) (i) Extent of habitat removal or modification for **threatened species**, **population** or **ecological community**	Vegetation within the proposed development footprint (approx. 0.007 ha) is considered to represent low quality habitat for both threatened species. No evidence of breeding behaviour (nests) was detected during the assessment. Habitat considered broadly suitable for these species occurs within roadside vegetation. This area will largely remain unimpacted by the proposed development.
(c) (ii) Extent of fragmentation or isolation of habitat for **threatened species**, **population** or **ecological community.**	As the habitat occurring within the proposed development footprint is considered low quality and therefore likely rarely utilized by these species, it is unlikely that the proposed development will cause fragmentation to habitat needed for breeding purposes or connectivity to areas of important habitat.
(c) (iii) The importance of habitat to **threatened species**, **populations** or **ecological community**.	Habitat within the proposed development footprint is not considered important habitat for these two species due to lack of breeding evidence and general suitability. It is unlikely that habitat within the development footprint is crucial to maintaining the life cycles of these two threatened species.
***(d)* Area of Outstanding Biodiversity Value**	The Study Area does not occur with an Area of Outstanding Biodiversity Value.
***(e)* Key Threatening Processes**	Key Threatening Processes relevant to the proposed development: - Clearing of native vegetation - Loss of hollow-bearing trees - Removal of dead wood and dead trees. The proposed development is likely to facilitate the above-listed KTP to a minor extent. This is in consideration of the small scale of proposed clearing of the low suitability habitat for the species.

Factor	Assessment
Conclusion	The proposed development will impact approximately 0.007 ha of habitat considered of low importance to these two species. Indirect and direct impacts arising from the proposed development are unlikely to put these two species at risk of extinction.

Assessment of Significance – Parrots

Superb Parrot (*Polytelis swainsonii*)

Factor	Assessment
(c) Effect on life cycle of **threatened species**.	The Study Area is not considered to contain suitable landscape features (watercourses, or in proximity to watercourse) or preferred breeding habitat for this species (large hollow-bearing trees along riparian corridors). Broadly suitable foraging habitat is considered to occur across the Study Area as this species feeds on a variety of native and exotic seeds plants. The removal of approximately 16.5 ha of agricultural crops and isolated paddock trees, is not considered likely to significantly effect the life cycle of this species.
(d) (i) Effect on extent of **EEC** or **CEEC**.	Not Applicable
(d) (ii) Effect on composition of **EEC** or **CEEC**.	Not Applicable
(e) (i) Extent of habitat removal or modification for **threatened species**, **population** or **ecological community**	Approximately 0.09 ha of marginally suitable foraging habitat will be directly impacted as part of the proposed development. A minor impact (0.008 ha) to roadside vegetation representing potentially suitable foraging habitat will occur to facilitate access for the site.
(d) (ii) Extent of fragmentation or isolation of habitat for **threatened species**, **population** or **ecological community.**	As this species may on occasion foraging within the Study Area, but unlikely to breed within the Study Area, the proposed development is not considered likely to fragment or isolate important habitat.
(f) (iii) The importance of habitat to **threatened species**, **populations** or **ecological community**.	Habitat within the Study Area is of low quality and low-moderate suitability for this species. As it is not likely that this species will utilize the Study Area, particularly any part of the development area, for breeding, then the habitat is not considered to represent important habitat.
***(g)* Area of Outstanding Biodiversity Value**	The proposed development does not occur in an area of Outstanding Biodiversity Value.
***(h)* Key Threatening Processes**	Key Threatening Processes relevant to the proposed development: - Clearing of native vegetation - Loss of hollow-bearing trees - Removal of dead wood and dead trees. The proposed development is likely to facilitate the above-listed KTP to a minor extent. This is in consideration of the small scale of proposed clearing of the low suitability habitat for the species.
Conclusion	The proposed development will impact approximately 0.09 ha of habitat considered of low importance (crops) to this species, and 0.008 ha of potentially suitable foraging habitat (road reserve). Indirect and direct impacts arising from the proposed development is unlikely to put this species at risk of extinction.

Species Assessed under the EPBC Act Significant Impact Guidelines

The following pertains to Assessments of Significance for direct or indirect impacts to EBPC Act listed threatened species, populations and communities.

The following species have been assessed under the EPBC *Act Matters of National Environmental Significance Significant impact guidelines 1.1* (Department of the Environment [DotE], 2013) (Significant Impact Guidelines):

- Critically Endangered Species
    - N/A
- Endangered Species
    - N/A
- Vulnerable Species
    - Superb Parrot (*Polytelis swainsonii*)
- Critically endangered and endangered ecological communities
    - N/A
- Migratory Species
    - N/A

Vulnerable Species – EPBC Act Assessment of Significance

The EPBC Act Significant Impact Guidelines (DotE 2013) state:

An action is likely to have a significant impact on a vulnerable species if there is a real chance or possibility that it will:

- *lead to a long-term decrease in the size of an important population of a species*
- *reduce the area of occupancy of an important population*
- *fragment an existing important population into two or more populations*
- *adversely affect habitat critical to the survival of a species*
- *disrupt the breeding cycle of an important population*
- *modify, destroy, remove or isolate or decrease the availability or quality of habitat to the extent that the species is likely to decline*
- *result in invasive species that are harmful to a vulnerable species becoming established in the vulnerable species' habitat*
- *introduce disease that may cause the species to decline, or*
- *interfere substantially with the recovery of the species.*

An 'important population' is a population that is necessary for a species' long-term survival and recovery.

This may include populations identified as such in recovery plans, and/or that are:

- *key source populations either for breeding or dispersal*
- *populations that are necessary for maintaining genetic diversity, and/or*
- *populations that are near the limit of the species range.*

Superb Parrot (Polytelis swainsonii)

Assessment of Significance

1. ***Is the action likely to lead to a long-term decrease in the size of an important population of a species?***

An 'important population' is defined as a population that is necessary for a species' long-term survival and recovery. This may include populations identified as such in recovery plans, and/or that are:

- Key source populations either for breeding or dispersal
- Populations that are necessary for maintaining genetic diversity, and/or
- Populations that are near the limit of the species range.

Out of the two main geographic areas in NSW important for the species' breeding, the Study Area is located closest to the Murrumbidgee River, in the Riverina of NSW (DPE, 2022d), approximately 40km to the south. Within the Riverina, this species typically favours riparian woodland vegetation, such as River Red Gums, containing multiple hollows for nesting sites.

The Study Area is not considered suitable habitat for breeding, i.e., no large hollow-bearing trees along watercourses, and therefore unlikely to support any breeding behaviour. As such, impacts to vegetation within the Study Area is not likely to lead to a long-term decrease in the size of an important population of this species.

2. ***Will the action reduce the area of occupancy of an important population of the species?***

The proposed action will not impact an important population of this vulnerable species.

3. ***Will the action fragment an existing important population into two or more populations?***

The proposed action will not impact an important population of this vulnerable species.

4. ***Will the action adversely affect habitat critical to the survival of a species?***

No, the proposed development will not impact habitat critical to the survival of this vulnerable species.

5. ***Will the action disrupt the breeding cycle of an important population?***

The proposed action will not impact an important population of this vulnerable species.

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

The action will impact isolated native vegetation (trees and shrubs) which are unsuitable breeding habitat, and exotic ground cover vegetation (crops) which may on occasion provide some foraging resource for the species. The Study Area is considered to represent low quality

habitat for the Superb Parrot, based on the above constraints. As such, the action is not likely to decrease the quality or extent of habitat, such as the species is likely to decline.

7. ***Will the action result in invasive species that are harmful to a vulnerable species becoming established in the vulnerable species' habitat?***

The Study Area contains low quality habitat in an already modified landscape, containing exotic flora and fauna species. Mitigation measures detailed in the FFAR will prevent construction activities from introducing or spreading new or existing environmental and noxious weeds or invasive fauna species into the Study Area.

8. ***Will the action introduce disease that may cause the species to decline?***

No, the action will not result in the introduction of disease that may cause the species to decline locally.

9. ***Will the action interfere substantially with the recovery of the species?***

No, the proposed action will not interfere substantially with the recovery of the species.

Conclusion

Based on the above assessment it is considered unlikely that this Commonwealth-listed species will be significantly impacted by the proposal.

HABITAT
ENVIRONMENTAL SERVICES

Habitat Environmental Services Pty Ltd
www.habitatenvironmentalservices.com.au
ABN: 75 654 044 765