Prepared for RISEN ENERGY Australia Pty Ltd

BOS Evaluation

Hillston Solar Farm

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Acronyms and abbreviations

AoS	Assessment of Significance (As defined under the EPBC Act)
BAM	Biodiversity Assessment Methodology 2020 (NSW)
BC Act	*Biodiversity Conservation Act 2016* (NSW)
BC SEPP	*Biodiversity & Conservation SEPP 2021* (NSW)
BC Reg	*Biodiversity Conservation Regulation 2017* (BC Reg)
BDAR	Biodiversity Development Assessment Report
Biosecurity Act	*Biosecurity Act 2015* (NSW)
BOS	Biodiversity Offset Scheme
BOSE	Biodiversity Offset Scheme Evaluation
BV Map	Biodiversity Values Map
CE	Critically endangered
CWD	Coarse woody debris
Cth	Commonwealth
DA	Development Application
DAWE	Department of Agriculture, Water and the Environment (Cwth) (formerly DoEE)
DBH	Diameter at breast height
DCCEEW	Department of Climate Change, Energy, the Environment and Water (formerly DAWE)
DPE	Department of Planning and Environment (NSW)
DPIE	(Former) Department of Planning, Industry and Environment (NSW) (now DPE)
E	Endangered
EEC	Endangered ecological community – as defined under relevant law applying to the proposal
EES	(Former) Environment, Energy and Science (NSW), Division of DPE
EIS	Environmental impact statement

EPBC Act	*Environment Protection and Biodiversity Conservation Act 1999* (Cwth)
EP&A Act	*Environmental Planning and Assessment Act 1979* (NSW)
FM Act	*Fisheries Management Act 1994* (NSW)
GDA	Geographic Datum of Australia
GIS	Geographic information system
GPS	Geographical positioning system
ha	hectares
ISEPP	State Environmental Planning Policy (Infrastructure) 2007 (NSW)
KFH	Key Fish Habitat
km	kilometres
LEP	Local Environment Plan
LGA	Local government area
m	metres
MW	Megawatt
MNES	Matters of national environmental significance
NPW Act	*National Parks and Wildlife Act 1974* (NSW)
NV Act	*Native Vegetation Act 2003* (NSW)
NVR	Native vegetation risk
OEH	(Former) Office of Environment and Heritage (NSW) (now EES)
PMST	Protected matters search tool
SEE	Statement of Environmental Effects
Sp/spp	Species/multiple species
TEC	Threatened ecological community
ToS	Test of Significance (As per section 7.3 of NSW BC Act)
V	Vulnerable

Executive Summary

This Biodiversity Offset Scheme Evaluation (BOSE) has been prepared for the proposal for a 5MW solar facility at 10738 Kidman Way, Hillston, NSW. This BOSE is required to determine if the impacts from the proposed subdivision and associated clearing for the proposed Hillston Solar Farm will trigger the Biodiversity Offset Scheme (BOS) according to the thresholds specified by the NSW *Biodiversity Conservation Act 2016* (BC Act) and the *Biodiversity Conservation Regulation 2017* (BC Reg).

Provided that the vegetation being cleared is native, then the BC Reg sets out threshold levels for when the BOS will be triggered. Triggering the BOS requires the preparation of Biodiversity Development Assessment Report (BDAR). If the area of native vegetation clearing does not meet the below thresholds, the impacts to threatened flora, fauna, populations and communities must be assessed against a Test of Significance (ToS). If a significant impact is considered likely, then the BOS applies to the proposed development. The threshold has two primary criteria:

- Clearing of native vegetation exceeds an area threshold (Table 2-1)). The area threshold varies depending on the minimum lot size (as determined by the relevant Local Environmental Plan (LEP)), or actual lot size (where there is no minimum lot size provided for the relevant land under the LEP).
- Whether the impacts occur within areas mapped on the Biodiversity Values Map (BV Map) published by the Environment Agency Head.

The minimum lot size for both Lot 63 and Norwood Lane is 40ha. The native vegetation clearing threshold for the subject land is one hectare or more. It is calculated that 0.21 ha of native vegetation is expected to require clearing. This falls under the BOS threshold; the proposal will not trigger the BOS on the basis of native vegetation clearing quantity.

BV Mapping occurs around four kilometres west of the site along the Lachlan River. There is no BV Mapped land in the subject land or development footprint; the proposal will not trigger the BOS on the basis of BV Mapped land.

Following database searches and field work to record vegetation and habitat types in the subject land, a Test of Significance assessment was undertaken. The majority of the subject land at the time of the February 2023 survey was bare ground with a few scattered exotic species, having been recently ripped in preparation for cropping. Native vegetation predominantly occurs around the boundary of the property and along roadsides, except for one remnant patch of native vegetation in the middle of the subject land. Of the 265.7 ha subject land, only 23.6 ha has been classified as a native Plant Community Type. In terms of fauna habitat provision, the subject land provides movement corridors in the form of vegetated strips of trees and shrubs up to 40m wide and in this way contributes to local connectivity for relatively mobile fauna such as woodland birds.

The subject land has a ‘possible’ potential to provide habitat for six NSW and/or Commonwealth listed threatened species: Mossgiel Daisy *Brachyscome papillosa,* Slender Darling-pea *Swainsona murrayana,* Spotted Harrier *Circus assimilis,* Varied Sittella *Daphoenositta chrysoptera,* Grey-crowned Babbler (eastern subspecies) *Pomatostomus temporalis temporalis,* Corben’s Long-eared Bat *Nyctophilus corbeni.* A Test of Significance was undertaken for these six species and due to the small areas of impacts (0.02 – 0.21 ha per species), marginal habitat suitability and paucity of current local records, it was deemed that the proposed works would not have a significant impact on any of these species.

There are no special mitigation measures arising from this BOSE although standard environmental and biodiversity protection measures are recommended

In conclusion, each of the BOS threshold triggers have been assessed. A BDAR is not required to accompany the DA due to the following:

- The proposal would result in the clearing of 0.21ha of native vegetation. This is below the 1ha threshold for clearing of native vegetation.
- No land identified on the BV Mapping occurs within the subject land.
- No significant impact to any threatened entity is anticipated, based on the ToS's undertaken.

1. Introduction

1.1. Proposal Background

This Biodiversity Offset Scheme Evaluation (BOSE) has been prepared to support a Development Application (DA) by the Proponent, RISEN ENERGY (Australia) Pty Ltd, to Carrathool Shire Council for a 5 Megawatt (MW) solar facility (the 'proposal'), at 10738 Kidman Way (Lot 63 DP664722), Hillston (the 'subject land').

The subject land is located approximately 3.5km south of the town of Hillston in the Carrathool Shire LGA, NSW. Hillston is surrounded by rural land (including cropping and orchards). The Lachlan River forms the western boundary of the town of Hillston. The subject land also includes part of Council owned Norwood Lane and Kidman Way and is around a total of 266 ha in size. The study area is a 10km buffer from the subject land. Both are shown in Figure 1-1.

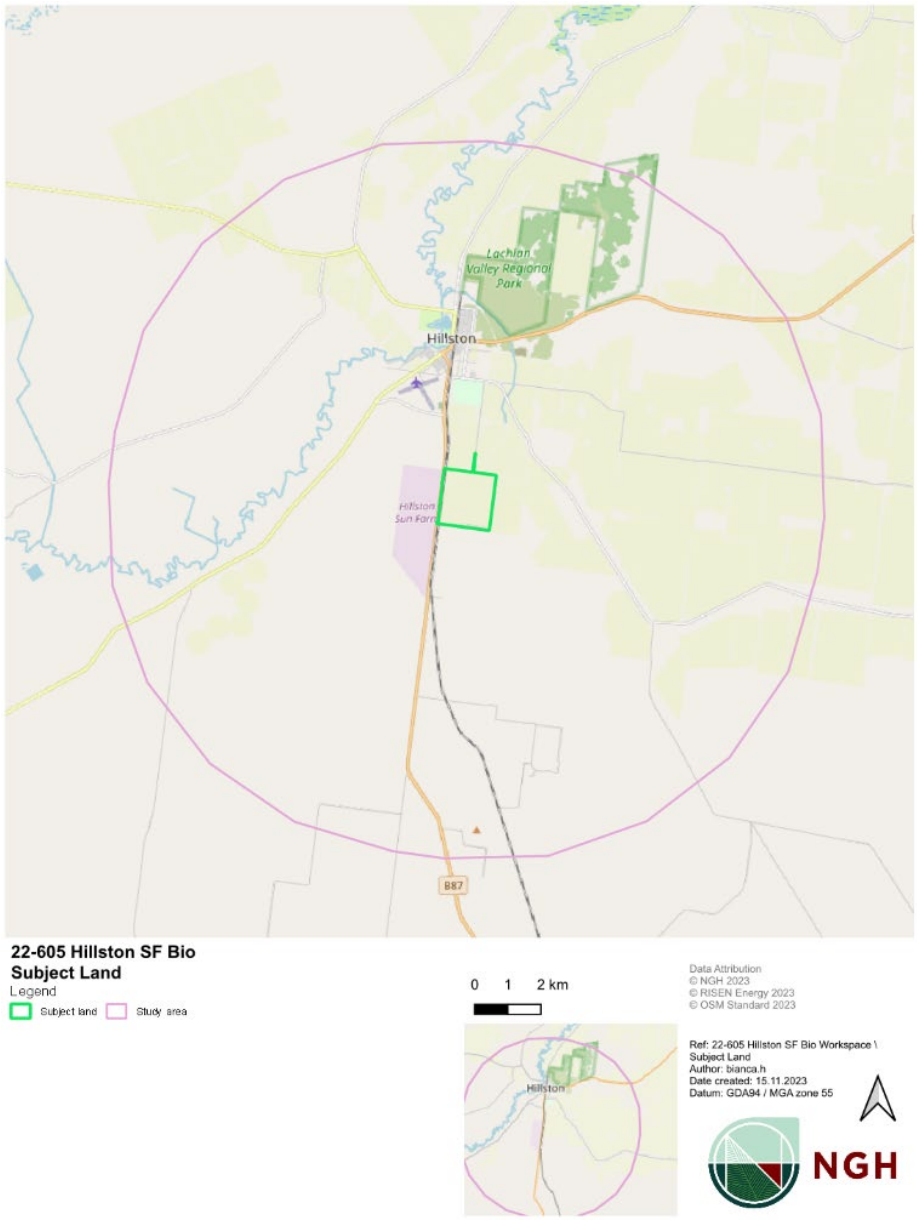

Figure 1-1 Subject land and study area (10km buffer)

1.2. The proposal

The proposal will involve the construction and operation of a 5MW solar facility within the subject land. The subject land is within agricultural land (zoned RU1) with a history of clearing for cropping. The development footprint is in the northern portion of Lot 63 and includes the site access track that connects to Norwood Lane and access to Kidman Way (Figure 1-2). The proposed development footprint has an area of 27.8 ha.

Lot 63 is surrounded by rural land to the north, south and east and an active rail line to the west (Lot 3431 DP1189389). The proposed access would be via unsealed Norwood Lane using an existing rural access that connects to the site at the intersection of Norwood Lane and the unsealed Racecourse Road; approximately 300m of Norwood Lane north from Racecourse Road requires widening as part of this proposal.

This BOSE will accompany the Statement of Environmental Effects (SEE). The SEE provides full details of the development activity. In summary, the following is proposed:

- Approximately 11022 solar modules are proposed for installation in approximately 170 mounting structures forming the solar arrays for the facility along with two inverters.
- An on-site switching station.
- Static volt-ampere reactive generators (i.e., SVG) to compensate reactive power to the grid.
- A Battery Energy Storage System (BESS) in shipping container style battery cabinets.
- The development would connect from the switching station via an onsite overhead line directly to the Essential Energy 33kV powerlines within the subject land.
- Internal access tracks constructed of engineered fill topped with crushed stone pavement would be used to access the solar farm infrastructure for maintenance, as per the accompanying site plan.

Figure 1-2 Subject land and development footprint

1.3. Scope of the report

This BOSE is required to determine if the impacts from the proposed subdivision and associated clearing for the proposed Hillston Solar Farm will trigger the Biodiversity Offset Scheme (BOS). This report addresses the NSW *Biodiversity Conservation Act 2016* (BC Act) and entities listed under the Commonwealth's *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act).

The scope of this report is to:

- Assess the clearing of native vegetation against the BOS thresholds.
- Identify biodiversity values present and likely to present within the study area (e.g., flora and fauna species; ecological communities, habitat).

1.3.1. Terminology

When conducting a biodiversity assessment, the terminology varies for direct and indirect impact areas depending on the legal pathway for biodiversity assessment. For the purpose of this report, the terminology is used as shown in Table 1-1.

Table 1-1 Terminology used in this report

Description of impact	Terminology used in this report (under BAM 20)
Direct	Development footprint
Indirect	Subject Land
Local	Study area

1.4. Legislative Context

The development proposed would be assessed under Part 4 of the NSW *Environmental Planning and Assessment Act* 1979 (EP&A Act). The impacts of clearing native vegetation must be considered under the Biodiversity Offsetting Strategy and is subject to the thresholds of the Biodiversity Offset Scheme (BOS) as specified by the NSW *Biodiversity Conservation Act 2016* (BC Act) and the *Biodiversity Conservation Regulation 2017* (BC Reg).

Provided that the vegetation being cleared is native, then the BC Reg sets out threshold levels for when the BOS will be triggered. Triggering the BOS requires the preparation of Biodiversity Development Assessment Report (BDAR). The threshold has two criteria:

- Clearing of native vegetation exceeds an area threshold (Table 2-1)). The area threshold varies depending on the minimum lot size (as determined by the relevant Local Environmental Plan (LEP)), or actual lot size (where there is no minimum lot size provided for the relevant land under the LEP).
- Whether the impacts occur within areas mapped on the Biodiversity Values Map (BV Map) published by the Environment Agency Head.

If the area of native vegetation clearing does not meet the above thresholds:

- The impacts to threatened flora, fauna, populations and communities must be assessed against a Test of Significance (ToS) as per Section 7.3 of the BC Act. If a significant impact is considered likely, then the BOS applies to the proposed development.

The Commonwealth *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) protects nationally and internationally important flora, fauna, ecological communities and heritage places, which are defined in the EPBC Act as matters of national environmental significance (MNES). The EPBC Act requires an evaluation of the potential for impact upon MNES due to the proposal. The significance of MNES impacts must then be assessed in accordance with the *Significance impact guidelines 1.1 – matters of national environmental significance* (DoE, 2013) via an Assessment of Significance (AoS). Where a proposal is likely to have a significant impact on a matter of national environmental significance, the proposal is referred to the Federal Environment Minister.

State Environmental Planning Policy (Biodiversity and Conservation) 2021

Chapter 3 and Chapter 4 of the *Biodiversity and Conservation SEPP 2021* (BC SEPP) aims to protect and manage habitat for Koalas. The proposal is being undertaken in the Carrathool Local Government Area (LGA), which is not listed in Section 2.3, Section 3.3, or Schedule 2 of the BC SEPP Therefore further assessment of Koala habitat within the subject land is not required under the BC SEPP.

2. Clearing thresholds

2.1. Methodology

In order to ascertain whether the proposal exceeds the native vegetation clearing thresholds, the minimum lot size must be determined along with the quantity of native vegetation to be cleared. This was undertaken by desktop assessment to determine minimum lot size, a field assessment to determine native vegetation extent and GIS analysis to determine area of native vegetation proposed to be cleared.

2.2. Results

2.2.1. Desktop assessment

There are two parts to the subject land:

1. 10738 Kidman Way (Lot 63 DP664722), Hillston. Lot 63 Kidman Way is 251.9 ha in size and is zoned RU1 Primary Production under the Carrathool Local Environmental Plan 2012.
2. Norwood Lane. The minimum lot size for a road corridor is equal to that of the adjacent allotments.

The minimum lot size for both Lot 63 and Norwood Lane is 40ha according to the BV Map and Threshold Tool (NSW Government, 2023). As shown in Table 2-1, the native vegetation clearing threshold for the subject land is one hectare or more. According to Part 7, section 7.2 of the BC Reg, "*if the proposed development does not comprise only the clearing of native vegetation—the area of clearing is the total area of proposed clearing irrespective of the number of lots concerned or the ownership of those lots*". Therefore, clearing of 1.0 ha or more of native vegetation total will trigger the BOS.

Table 2-1 Native vegetation area clearing thresholds (bold indicates the threshold that applies to the subject site)

Minimum lot size associated with the property	Threshold for clearing, above which the BAM and offsets scheme apply
Less than 1 ha	0.25 ha or more
1 ha to less than 40 ha	0.5 ha or more
40 ha to less than 1000 ha	**1 ha or more**
1000 ha or more	2 ha or more

2.2.2. Field assessment

The majority of vegetation within the proposed development footprint is exotic groundcover that has been subject to frequent cropping (Figure 2-1). Exotic vegetation areas are so modified from an original vegetation community that they do not belong to a Plant Community Type (PCT). There are patches of remnant native vegetation at the site entrance from Kidman Way, along Norwood Lane, Racecourse Road and around subject land boundary (Figure 2-2). PCTs are described in Section 4.2.

Figure 2-1 Non-native vegetation within subject land

Figure 2-2 Woodland Vegetation along subject land boundary

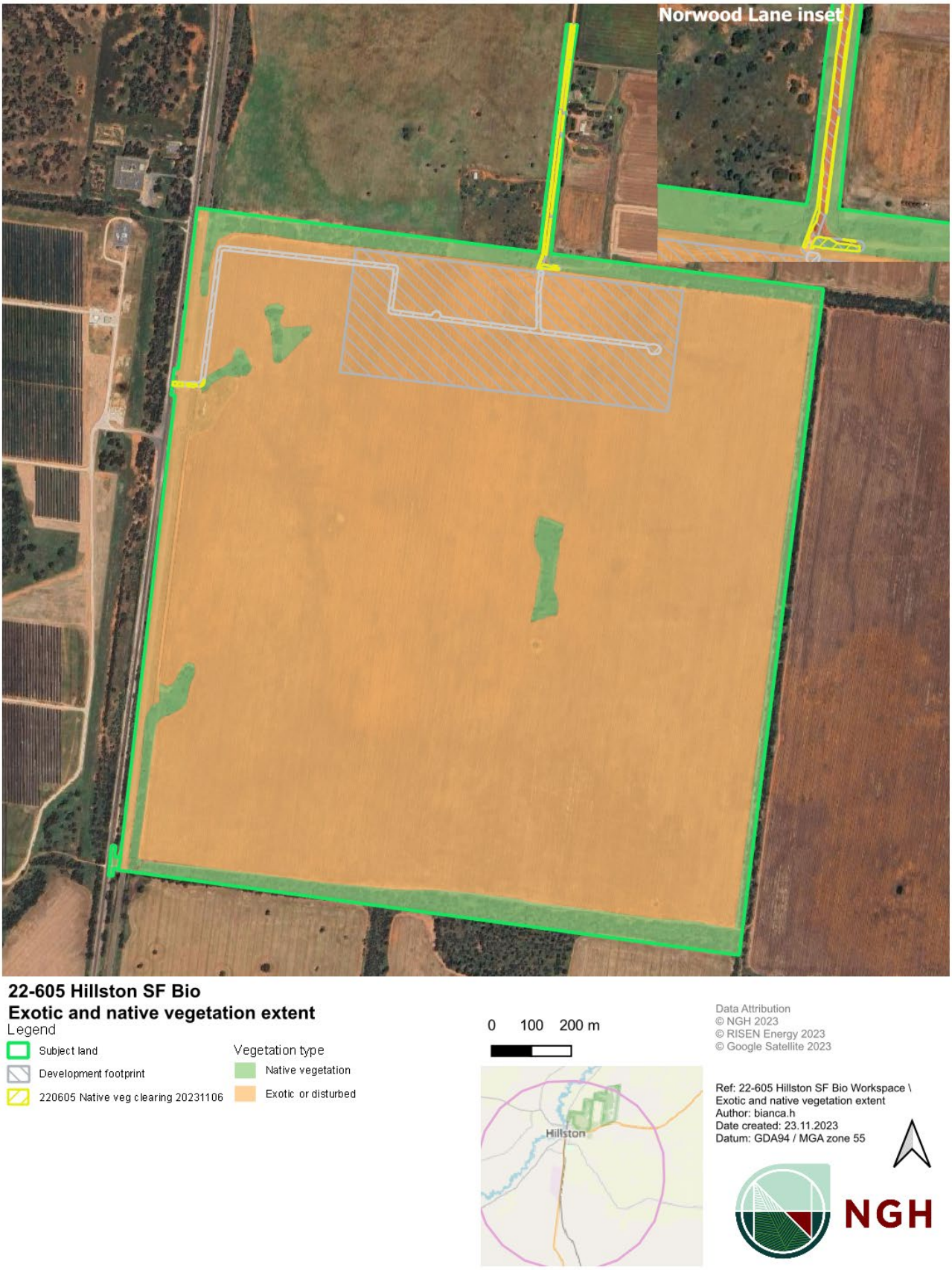

Figure 2-3 Extent of native and exotic vegetation in the subject land

2.2.3. GIS impact calculations

As shown in Table 2-2, 0.21 ha of native vegetation is expected to require clearing. This falls under the BOS threshold; the proposal will not trigger the BOS on the basis of native vegetation clearing quantity.

Table 2-2 Native and exotic vegetation extent in subject land and development footprint

Location	Subject land	Development footprint
Native vegetation	23.6	0.21
Exotic vegetation*	242.1	27.84
Total	**265.7**	**28.05**

* This may also include disturbed areas such as tracks.

3. Biodiversity Values Mapping

3.1. Methodology

The Biodiversity Values Map (BV Map) identifies land with high biodiversity value that is particularly sensitive to impacts from development and clearing and was accessed through the online portal (Department of Planning and Environment, 2018). The BV Map is one of the triggers for determining whether the BOS applies to a clearing or development proposal.

3.2. Results

BV Mapping occurs around four kilometres west of the site along the Lachlan River (Figure 3-1). There is no BV Mapped land in the subject land or development footprint; the proposal will not trigger the BOS on the basis of BV Mapped land.

Figure 3-1 BV Mapped Land (purple) in local area with subject land shown in yellow outline, accessed 1 November 2023 (Department of Planning and Environment, 2018)

4. Test of Significance

4.1. Methodology

Methods to undertake Tests of Significance involved desktop assessment and field inspection.

4.1.1. Desktop assessment

Database searches were completed for records of Commonwealth and NSW listed threatened species, populations, and ecological communities (Appendix A). Searches were conducted on 24 July 2023. A full list of database searches is given in Table 4-1.

Table 4-1 Database searches undertaken and search areas

Database	Target	Search Area
NSW BioNet Atlas search	Threatened flora and fauna species, populations and ecological communities listed under the BC Act.	Study area
EPBC Act Protected Matters Search Tool	Threatened flora and fauna, endangered populations and ecological communities and migratory species.	Study area
Biodiversity Values Map and Threshold Tool	Land identified with high biodiversity value	Study area
DPI Weedwise	Priority weeds declared for the Central West	Riverina Region
NSW BioNet Vegetation Information System (Bionet VIS)	Plant Community Type (PCT) Classification	Study area
NSW SEED Mapping	Riverina State Vegetation Type Mapping (VIS ID_4469)	Study Area

4.1.2. Field work

Two site inspections have been undertaken. A preliminary site inspection was completed in Lot 63 only on 27 February 2023 by two NGH Ecologists. A follow-up site inspection was conducted on 6 and 7 June 2023 by two NGH Ecologists to include an enlarged subject land (including Norwood Lane and Kidman Way site entry points not part of Lot 63).

Field work aimed to:

- Record habitat features i.e., hollow-bearing trees, woody debris, watercourses etc.
- Determine Plant Community Types (PCTs) according to the Department of Planning and Environment (DPE) BioNet Vegetation Classification (DPE, 2022).
- Identify any areas of suitable habitat for threated flora or fauna.
- Record opportunistic observations of significant flora or fauna species.

The site inspection focussed mostly on stratifying the existing vegetation within the study area. Survey effort is shown in Figure 4-1. Rapid assessment methodology was applied with 18 points assessed in February 2023 and 104 points assessed in June 2023 across and surrounding the subject land. In addition, one BAM plot was conducted in February to help in determining and justifying PCTs (Appendix C).

Figure 4-1 Survey effort in subject land

4.2. Results

Eight threatened flora, five threatened ecological communities and 34 threatened fauna species were returned from database searches, including numerous aquatic species. There are records for 18 of these threatened flora and fauna species in the study area, as shown in Figure 4-1. Threatened species and communities were evaluated for their potential to occur in the subject land and be impacted by the proposal. This evaluation is presented in Appendix B and has been informed by results of field work and vegetation associations listed in species profiles. Further discussion on the potential for threatened species to occur is given in the following sections.

The majority of the subject land at the time of the February 2023 survey was bare ground with a few scattered exotic species, having been recently ripped in preparation for cropping. Native vegetation predominantly occurs around the boundary of the property and along roadsides, except for one remnant patch of native vegetation in the middle of the subject land.

4.2.1. Plant Community Types

As discussed in Section 2.2.2, the majority of the vegetation in the development footprint is exotic groundcover. This is also true of the broader subject land. Of the 265.7 ha subject land, only 23.6 ha has been classified as a native Plant Community Type (PCT). Four PCTs were identified in the subject land, as listed in Table 4-2 and shown in Figure 4-2 to Figure 4-7. All PCTS are of semi-arid woodland vegetation formation. State Vegetation Mapping indicates the presence of PCT 13, PCT 15 and PCT 45 (Plains Grass grassland on alluvial mainly clay soils in the Riverina Bioregion and NSW South Western Slopes Bioregion) in the subject land; PCT 45 was not found in the subject land during site visit.

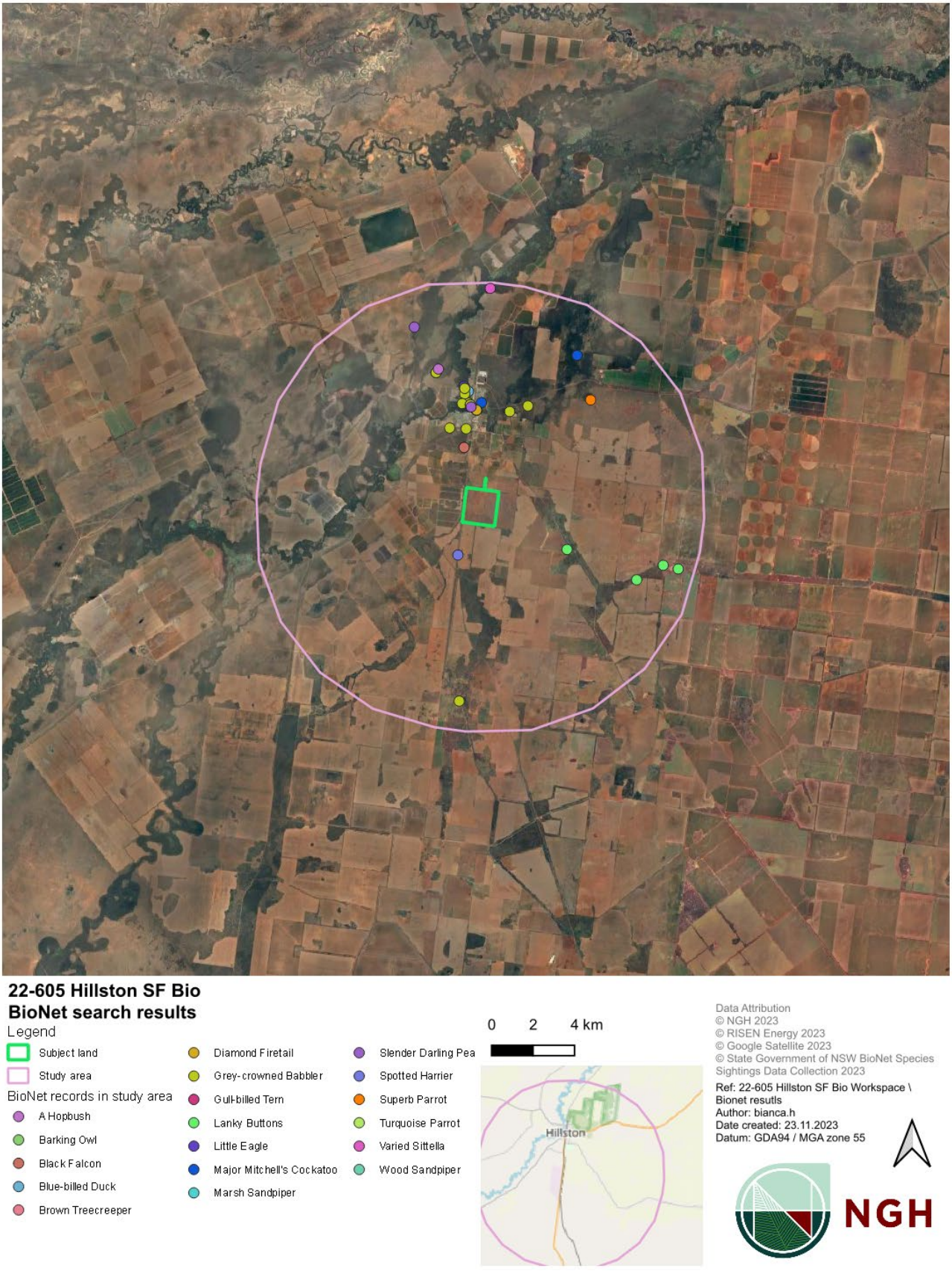

Figure 4-2 BioNet threatened species records database search results

Table 4-2 Quantification of PCT identified in the subject land (and development footprint)

PCT ID	Name	Area in subject land (ha)	Area in development footprint (ha)
13	Black Box – Lignum woodland wetland of the inner floodplains in the semi-arid (warm) climate zone (mainly Riverina Bioregion and Murray Darling Depression Bioregion)	1.46	0
15	Black Box open woodland wetland with chenopod understorey mainly on the outer floodplains in south-western NSW (mainly Riverina Bioregion and Murray Darling Depression Bioregion)	17.87	0.02
57	Belah/Black Oak – Western Rosewood – Wilga woodland of central NSW including the Cobar Peneplain Bioregion	4.15	0.17
103	Poplar Box – Gum Coolabah – White Cypress Pine shrubby woodland mainly in the Cobar Peneplain Bioregion	0.13	0.02
	Total	**23.61**	**0.21**

4.2.2. Threatened Ecological Communities

PCT 57 Belah/Black Oak – Western Rosewood – Wilga woodland is associated with a Threatened Ecological Community (TEC): *Acacia loderi shrublands – Murray Darling Depression* which is predicted to occur in the Lachlan subregion of the Riverina bioregion. The subject site occurs in the Lachlan subregion of the Riverina bioregion. This TEC is not listed under the EPBC Act. Although the *Acacia loderi* shrublands TEC occurs in a range of conditions (including with an exotic dominated understorey), it is characterised by *Acacia loderi* being dominant in the overstorey in association with a number of other species. The condition of PCT 57 in the subject land ranges from low to moderate however, *Acacia loderi* was not noted as present. On the basis that the characteristic species of the TEC is absent, it is assumed that the *Acacia loderi* shrublands TEC does not occur in the subject land. The majority of PCT 57 in the subject land is severely degraded with Wilga (*Geijera parviflora*) the dominant species. However, PCT 57 was the best fit for this vegetation given the IBRA subregion, landscape and soils.

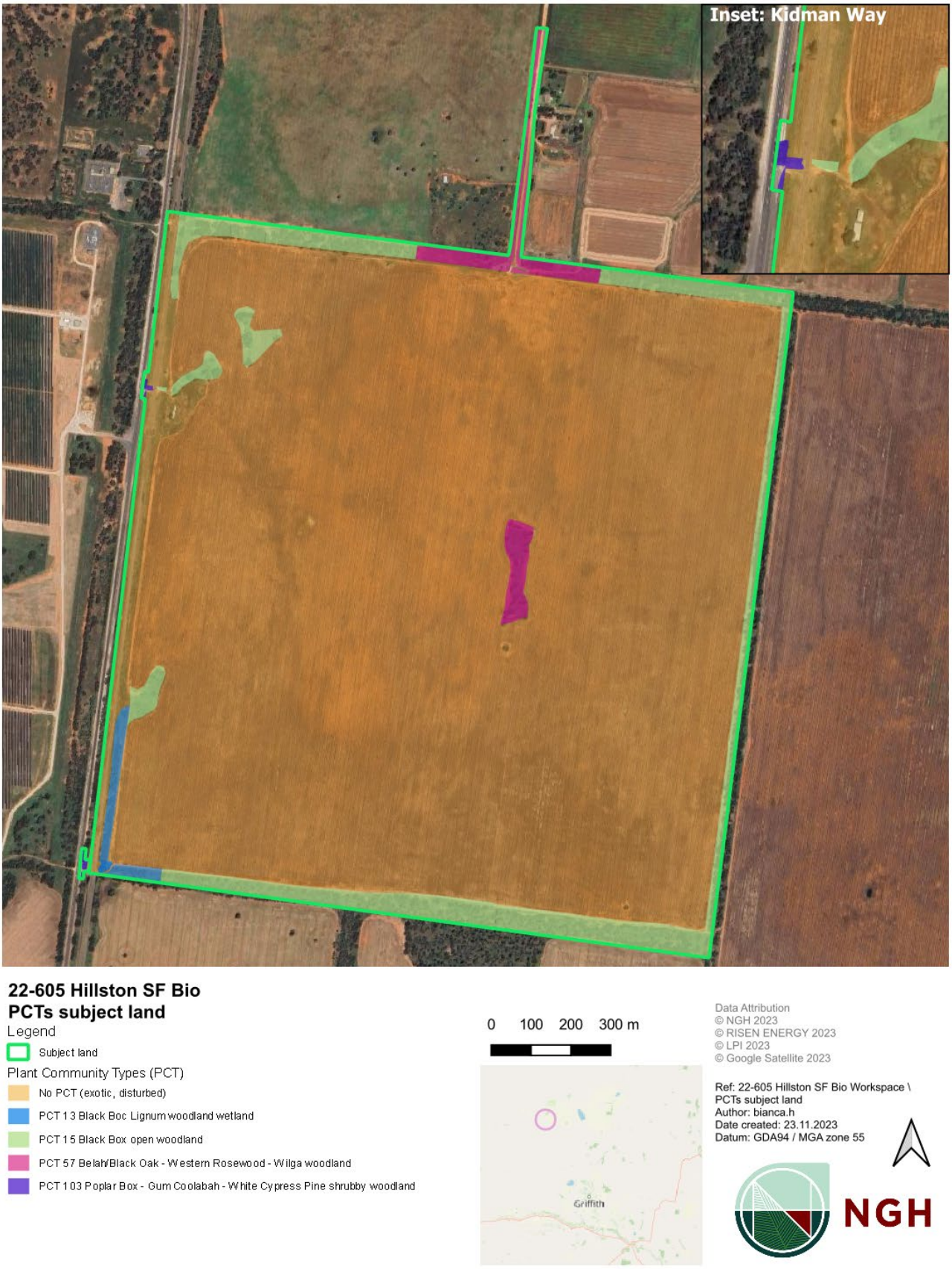

Figure 4-3 Plant Community Types in subject land

Figure 4-4 PCT 13 along subject land boundary

Figure 4-5 PCT 15 at southern end of subject land boundary

Figure 4-6 PCT 57 Along Norwood Lane

Figure 4-7 PCT 103 along Kidman Way

4.2.3. Terrestrial Habitat

Habitat in the subject site consists of semi-arid woodland, shrubland and grassland of both native and exotic species. No hollow-bearing trees were recorded in the subject land, although further north within the study area along Norwood Lane there were around nine living and dead large *Eucalyptus* trees which contained hollows. The subject land provides movement corridors in the form of vegetated strips of trees and shrubs up to 40m wide and in this way contributes to local connectivity for relatively mobile fauna such as woodland birds.

The subject land has tree lined crown land, a paper road identified as Racecourse Road along the eastern and southern boundaries of the land. Racecourse Road is partly tree lined in the north. Kidman Way road reserve and parallel rail corridor is partly tree lined, mostly in the southwest. Lot 63 has some small groupings of paddock trees. Lot 63 is generally flat on an elevation of approximately 110m AHD, most of the surrounding land is on the same or similar elevation with very gradual change in elevation generally falling towards the west and north to the Lachlan River.

The soils in the subject land broadly consist of Grey, Brown and Red Clays (Great Soil Group) and vertisols (Australian Soil Classification System) (DPE, 2023). Vertisols are characterised by swelling when wet (heavy clays can become waterlogged) and shrinking when dry, leading to cracking (Agriculture Victoria, 2023). This characteristic can form gilgais which provide microhabitat for some flora and fauna species such as lizards.

Threatened Flora

Based on the habitat in the subject land, two threatened flora species are considered to have a 'possible' occurrence (refer to Appendix B for details). These are listed in Table 4-3 along with suitable habitat type in the subject land. Figure 4-3 shows the extent of potential suitable habitat (i.e. PCTs) in the subject land, which is mostly limited to the borders of the allotment. The potential for impact upon these threatened flora species is considered in Section 4.3.

Table 4-3 Threatened flora species with a possible occurrence

Species / Status	Habitat in subject land
Brachyscome papillosa Mossgiel Daisy V BC Act, V EPBC Act	PCT 13, 15 Marginal suitability
Swainsona murrayana Slender Darling-pea V BC Act, V EPBC Act	PCT 15 Plants have been found in remnant native grasslands or grassy woodlands that have been intermittently grazed or cultivated

Figure 4-8 Extent of potential threatened flora habitat in subject land

Threatened Fauna

Four threatened fauna species are considered to have a 'possible' occurrence based on the habitat in the subject land (refer to Appendix B for details). Table 4-4 lists fauna species along with suitable habitat type in the subject land. Note that all but the Corben's Long-eared Bat are associated with all four PCTs on site; Corben's Bat is restricted to PCT 57 and 103.

Table 4-4 Threatened fauna species with a possible occurrence

Species / Status	Habitat in subject land
Circus assimilis Spotted Harrier V BC Act	Woodland, grassland, agricultural land, edges, open habitat. No breeding habitat present. Four local records, latest 2011.
Daphoenositta chrysoptera Varied Sittella V BC Act	Eucalypt woodland including Acacia and mallee; one local record from 2001.
Pomatostomus temporalis temporalis Grey-crowned Babbler (eastern subspecies) V BC Act	Eucalypt woodland; associated with all PCTs in subject land. 14 local records 1998- 2021
Nyctophilus corbeni Corben's Long-eared Bat V BC Act, V EPBC Act	Eucalypt dominated communities; associated with PCTs 57, 103. Tree hollows not present. Presence predicted, no local records.

The potential for impact upon these threatened fauna species is considered in Section 4.3 below.

4.3. Assessment of Impacts

Table 4-2 shows the extent of each PCT in the development footprint i.e. clearing areas. Total native vegetation clearing is 0.21ha, comprising:

- PCT 13 – 0 ha
- PCT 15 – 0.02 ha
- PCT 57 – 0.17 ha
- PCT 103 – 0.02 ha

Clearing areas per PCT are shown in Figure 4-4.

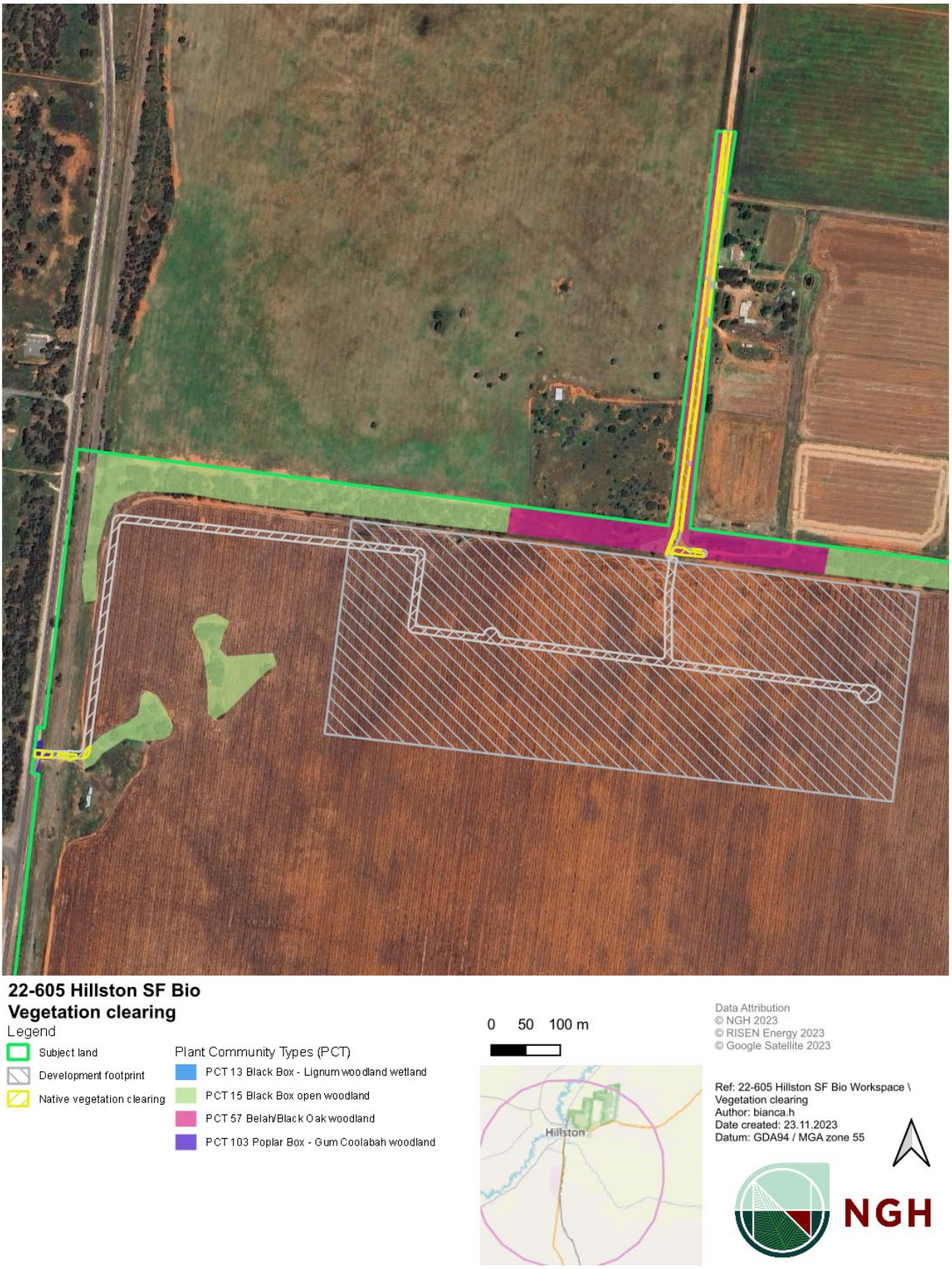

Figure 4-9 Vegetation clearing areas shown by PCT

Figure 4-10 Vegetation clearing areas – Kidman Way

Figure 4-11 Vegetation clearing – Norwood Lane

4.4. Threatened Species

Threatened species with 'possible' potential to occur are shown in Table 4-5 arranged by PCT association and area to be cleared. For example, PCT 15 Black Box open woodland is associated with Mossgiel Daisy, Slender Darling-pea, Spotted Harrier, Varied Sittella and Grey-crowned Babbler; 0.02ha of this habitat would be cleared.

Table 4-5 PCTs and associated threatened species

PCT ID	Name	Associated threatened species	Area in development footprint (ha)
13	Black Box – Lignum woodland wetland of the inner floodplains in the semi-arid (warm) climate zone (mainly Riverina Bioregion and Murray Darling Depression Bioregion)	Mossgiel Daisy, Spotted Harrier, Varied Sittella, Grey-crowned Babbler	0
15	Black Box open woodland wetland with chenopod understorey mainly on the outer floodplains in south-western NSW (mainly Riverina Bioregion and Murray Darling Depression Bioregion)	Mossgiel Daisy, Slender Darling-pea, Spotted Harrier, Varied Sittella, Grey-crowned Babbler	0.02
57	Belah/Black Oak – Western Rosewood – Wilga woodland of central NSW including the Cobar Peneplain Bioregion	Spotted Harrier, Varied Sittella, Grey-crowned Babbler, Corben's Long-eared Bat	0.17
103	Poplar Box – Gum Coolabah – White Cypress Pine shrubby woodland mainly in the Cobar Peneplain Bioregion	Spotted Harrier, Varied Sittella, Grey-crowned Babbler, Corben's Long-eared Bat	0.02
	Total		**0.21**

The potential for impact as a result of the proposal per species is laid out in Table 4-6. Potential for impact also considers the number and date of records in the study area (see Appendix B for details). Habitat

clearing for both flora species is only anticipated at 0.02 ha – these species have a low potential for impact, as do most fauna species. The Grey-crowned Babbler has a moderate potential for impact because there are numerous records for the species in the study area (although none in the subject land). A Test of Significance (ToS) has been undertaken for the six species listed below in Table 4-6. These ToS's can be viewed in Appendix D.

Table 4-6 Magnitude of clearing by species

Threatened species	Habitat clearing (ha)	Potential for impact
Mossgiel Daisy	0.02	Low – No records within subject land. Proposal unlikely to impact this species due to low magnitude of clearing in marginal habitat.
Slender Darling-pea	0.02	Low – No records within subject land. Proposal unlikely to impact this species due to low magnitude of clearing in marginal habitat.
Spotted Harrier	0.21	Low – No breeding habitat identified in development footprint. Proposal unlikely to impact this species due to low magnitude of clearing of foraging habitat.
Varied Sittella	0.21	Low – proposal unlikely to impact this species due to low magnitude and only one record in study area.
Grey-crowned Babbler	0.21	Moderate – proposal has potential to impact this species due to 14 records in study area, however the impacts are considered manageable. Test of Significance not required due to low magnitude of clearing along linear route.
Corben's Long-eared Bat	0.19	Low – No breeding habitat identified in development footprint. Proposal unlikely to impact this species due to low magnitude of clearing of foraging habitat.

Grey-crowned Babbler

There are numerous records for Grey-crowned Babbler around Hillston township. Connectivity between the nearest records at Hillston and the subject land occurs primarily along Kidman Way, where roadside trees provide a vegetated corridor. The proposal involves clearing several trees at the entry point to Kidman Road. Near the development footprint Kidman Way entry, trees are scattered along the eastern (subject land) side of the road but there is a 50m wide swathe of woodland on the western side (mapped as PCT 72 White Cypress Pine – Poplar Box woodland on State Vegetation Mapping). The proposed clearing of several trees is unlikely to affect landscape connectivity for the species. The extent of proposed clearing compared to the scale of potential habitat for Grey-crowned Babbler in the study area is shown in Figure 4-5.

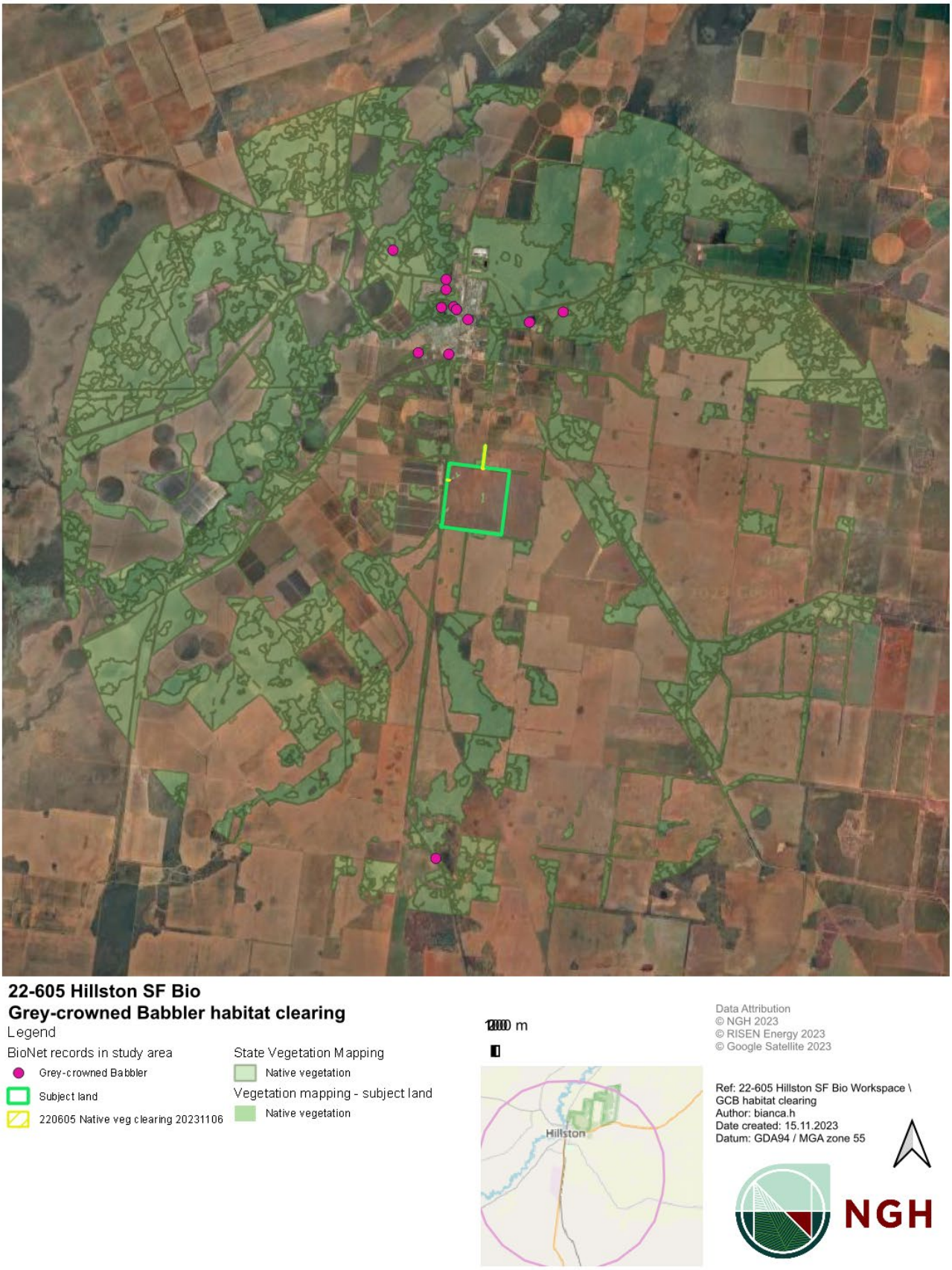

Figure 4-12 Clearing in the development footprint and scale of habitat in study area for Grey-crowned Babbler

5. Mitigation Measures

There are no special mitigation measures arising from this BOSE although standard environmental and biodiversity protection measures are recommended (Table 5-1).

Table 5-1 Recommended mitigation measures to minimise impacts to biodiversity in the subject land

Purpose	Mitigation measure	Timing
Minimise unintentional impact to adjacent native vegetation	Clearly **delineate approved clearing area** with temporary fencing or flagging or similar. Ensure stockpile areas are within the development footprint.	Prior to clearing During construction
Foster regeneration of native species in temporary disturbance areas	Consider using woodchip mulch from cleared vegetation for site remediation rather than grass seeding. This would support natural regeneration of local species. However, if grass must be sown, it is recommended that a **native grass seed mi**x be used.	During clearing (stockpile mulch) and after construction
Avoid importing weeds to subject land	Any imported topsoil should be **certified weed free**. Utilise weed quarantine measures such as **cleaning down loose soil** from machinery and vehicles entering and exiting site. A **weed brush-down area** should be identified for this purpose.	During construction During construction Prior to construction

6. Conclusion

This report has assessed each of the BOS threshold triggers and had determined that a BDAR is not required to accompany the DA due to the following:

- The proposal would result in the clearing of 0.21ha of native vegetation. This is below the 1ha threshold for clearing of native vegetation.
- No land identified on the BV Mapping occurs within the subject land.
- No significant impact to any threatened entity is anticipated, based on the ToS's undertaken.

Standard mitigation measures have been identified to be implemented.

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Appendix A Background Searches

A.1 NSW Bionet Searches

Data from the BioNet Atlas website, which holds records from a number of custodians.

Search criteria : Licensed Report of all Valid Records of Threatened (listed on BC Act 2016) , EPBC Act

KingdomNa	ClassName	FamilyNam	SortOrder	ScientificNa	Exotic	CommonNa	NSWStatus	CommStat
Fauna	Amphibia	Myobatrac	107	Crinia sloanei		Sloane's Fr	V,P	E
Fauna	Amphibia	Hylidae	311	Litoria raniformis		Southern B	E1,P	V
Fauna	Reptilia	Pygopodid	650	Aprasia inaurita		Mallee Wo	E1,P	
Fauna	Reptilia	Pygopodid	652	Aprasia parapulchella		Pink-tailed	V,P	V
Fauna	Reptilia	Pygopodid	661	Delma australis		Marble-fac	E1,P	
Fauna	Reptilia	Scincidae	1242	Tiliqua occipitalis		Western Bl	V,P	
Fauna	Reptilia	Agamidae	1362	Tympanocryptis lineat		Canberra G	E4A,P	E
Fauna	Aves	Megapodii	1709	Leipoa ocellata		Malleefowl	E1,P	V
Fauna	Aves	Anseranati	1732	Anseranas semipalmat		Magpie Go	V,P	
Fauna	Aves	Anatidae	1766	Oxyura australis		Blue-billed	V,P	
Fauna	Aves	Anatidae	1767	Stictonetta naevosa		Freckled Du	V,P	
Fauna	Aves	Ardeidae	2057	Botaurus poiciloptilus		Australasia	E1,P	E
Fauna	Aves	Accipitrida	2104	Circus assimilis		Spotted Ha	V,P	
Fauna	Aves	Accipitrida	2109	Haliaeetus leucogaster		White-belli	V,P	
Fauna	Aves	Accipitrida	2113	Hamirostra melanoste		Black-breas	V,P,3	
Fauna	Aves	Accipitrida	2114	Hieraaetus morphnoid		Little Eagle	V,P	
Fauna	Aves	Accipitrida	2115	Lophoictinia isura		Square-tail	V,P,3	
Fauna	Aves	Accipitrida	2118	Pandion cristatus		Eastern Os	V,P,3	
Fauna	Aves	Falconidae	2126	Falco hypoleucos		Grey Falcor	V,P,2	V
Fauna	Aves	Falconidae	2133	Falco subniger		Black Falco	V,P	
Fauna	Aves	Gruidae	2137	Grus rubicunda		Brolga	V,P	
Fauna	Aves	Otididae	2176	Ardeotis australis		Australian	E1,P	
Fauna	Aves	Burhinidae	2179	Burhinus grallarius		Bush Stone	E1,P	
Fauna	Aves	Pedionomi	2215	Pedionomus torquatus		Plains-wan	E1,P,3	CE
Fauna	Aves	Rostratulid	2218	Rostratula australis		Australian	E1,P	E
Fauna	Aves	Scolopacid	2229	Calidris ferruginea		Curlew San	E1,P	CE,C,J,K
Fauna	Aves	Scolopacid	2251	Limosa limosa		Black-tailed	V,P	C,J,K
Fauna	Aves	Cacatuidae	2379	Calyptorhynchus latha		Glossy Blac	E2,V,P,2	V
Fauna	Aves	Cacatuidae	2379	Calyptorhynchus latha		Glossy Blac	V,P,2	V
Fauna	Aves	Cacatuidae	2385	Lophochroa leadbeate		Major Mitc	V,P,2	
Fauna	Aves	Psittacidae	2420	Glossopsitta pusilla		Little Lorike	V,P	
Fauna	Aves	Psittacidae	2422	Lathamus discolor		Swift Parro	E1,P	CE
Fauna	Aves	Psittacidae	2435	Neophema pulchella		Turquoise F	V,P,3	
Fauna	Aves	Psittacidae	2497	Polytelis swainsonii		Superb Par	V,P,3	V
Fauna	Aves	Strigidae	2560	Ninox connivens		Barking Ow	V,P,3	
Fauna	Aves	Tytonidae	2577	Tyto novaehollandiae		Masked Ov	V,P,3	
Fauna	Aves	Climacterid	2632	Climacteris affinis		White-brov	E2,P	
Fauna	Aves	Climacterid	2639	Climacteris picumnus v		Brown Tree	V,P	
Fauna	Aves	Maluridae	2681	Amytornis modestus ir		Thick-billed	E4,P,2	
Fauna	Aves	Acanthizida	2800	Chthonicola sagittata		Speckled W	V,P	
Fauna	Aves	Acanthizida	2833	Hylacola cautus		Shy Heathv	V,P	
Fauna	Aves	Meliphagid	2917	Certhionyx variegatus		Pied Honey	V,P	
Fauna	Aves	Meliphagid	2926	Epthianura albifrons		White-fron	V,P	
Fauna	Aves	Meliphagid	2945	Grantiella picta		Painted Ho	V,P	V
Fauna	Aves	Meliphagid	2996	Melithreptus gularis gu		Black-chinr	V,P	
Fauna	Aves	Pomatosto	3082	Pomatostomus tempo		Grey-crowr	V,P	

Fauna	Aves	Psophodida	3104	Cinclosoma castanotur	Chestnut Q	V,P	
Fauna	Aves	Neosittidae	3116	Daphoenositta chrysop	Varied Sitte	V,P	
Fauna	Aves	Pachycepha	3160	Pachycephala inornata	Gilbert's W	V,P	
Fauna	Aves	Pachycepha	3183	Pachycephala rufogula	Red-lored \	E4A,P	V
Fauna	Aves	Artamidae	3207	Artamus cyanopterus c	Dusky Woo	V,P	
Fauna	Aves	Petroicidae	3360	Drymodes brunneopyg	Southern S	V,P	
Fauna	Aves	Petroicidae	3370	Melanodryas cucullata	Hooded Ro	V,P	
Fauna	Aves	Petroicidae	3396	Petroica phoenicea	Flame Robi	V,P	
Fauna	Aves	Estrildidae	3557	Stagonopleura guttata	Diamond Fi	V,P	
Fauna	Mammalia	Dasyuridae	3600	Antechinomys laniger	Kultarr	E1,P	
Fauna	Mammalia	Dasyuridae	3638	Ningaui yvonneae	Southern N	V,P	
Fauna	Mammalia	Dasyuridae	3678	Sminthopsis macroura	Stripe-face	V,P	
Fauna	Mammalia	Thylacomyi	3719	Macrotis lagotis	Bilby	E4,P	V
Fauna	Mammalia	Phascolarct	3721	Phascolarctos cinereus	Koala	E1,P	E
Fauna	Mammalia	Macropodi	3806	Lagorchestes leporides	Eastern Ha	E4,P	X
Fauna	Mammalia	Macropodi	3867	Petrogale penicillata	Brush-taile	E1,P	V
Fauna	Mammalia	Emballonu	3922	Saccolaimus flaviventri	Yellow-bell	V,P	
Fauna	Mammalia	Vespertilio	3950	Chalinolobus picatus	Little Pied E	V,P	
Fauna	Mammalia	Vespertilio	3958	Myotis macropus	Southern M	V,P	
Fauna	Mammalia	Vespertilio	3963	Nyctophilus corbeni	Corben's Lo	V,P	V
Fauna	Mammalia	Vespertilio	3991	Vespadelus baverstock	Inland Fore	V,P	
Flora	Flora	Asteraceae	6735	Brachyscome papillosa	Mossgiel D	V	V
Flora	Flora	Asteraceae	7139	Kippistia suaedifolia	Fleshy Min	E1	
Flora	Flora	Asteraceae	7175	Leptorhynchos orienta	Lanky Butt	E1	
Flora	Flora	Brassicacea	7969	Lepidium monoplocoic	Winged Pe	E1	E
Flora	Flora	Cyperaceae	9204	Eleocharis obicis	Spike-Rush	V	V
Flora	Flora	Fabaceae (I	10604	Swainsona murrayana	Slender Da	V	V
Flora	Flora	Fabaceae (I	10610	Swainsona plagiotropis	Red Darling	V	V
Flora	Flora	Fabaceae (I	10617	Swainsona sericea	Silky Swain	V	
Flora	Flora	Fabaceae (I	10812	Acacia curranii	Curly-bark	V	V
Flora	Flora	Orchidacea	13765	Caladenia arenaria	Sand-hill Sp	E1,P,2	E
Flora	Flora	Poaceae	14959	Austrostipa metatoris	A spear-gra	V	V
Flora	Flora	Poaceae	15194	Distichlis distichophyll	Australian S	E1	
Flora	Flora	Proteaceae	16136	Grevillea ilicifolia subs	Holly-leaf G	E4A	
Flora	Flora	Rhamnacea	16650	Pomaderris cocoparra	Cocoparra	E1	E
Flora	Flora	Sapindacea	17435	Dodonaea sinuolata su	A Hopbush	E1	
Flora	Flora	Solanaceae	17777	Solanum karsense	Menindee I	V	V

A.2 PMST Search

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: 22-Jun-2023

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:	4
Listed Threatened Species:	30
Listed Migratory Species:	8

Other Matters Protected by the EPBC Act

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

The EPBC Act protects the environment on Commonwealth land, the environment from the actions taken on Commonwealth land, and the environment from actions taken by Commonwealth agencies. As heritage values of a place are part of the 'environment', these aspects of the EPBC Act protect the Commonwealth Heritage values of a Commonwealth Heritage place. Information on the new heritage laws can be found at https://www.dcceew.gov.au/parks-heritage/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:	2
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:	2
Regional Forest Agreements:	None
Nationally Important Wetlands:	None
EPBC Act Referrals:	3
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 likely to occur within area	In feature area
Mallee Bird Community of the Murray Darling Depression Bioregion	Endangered	Community likely to occur within area	In buffer area only
Weeping Myall Woodlands	Endangered	Community likely to occur within area	In feature area

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			

Scientific Name	Threatened Category	Presence Text	Buffer Status
[Aphelocephala leucopsis](#) Southern Whiteface [529]	Vulnerable	Species or species habitat known to occur within area	In feature area
[Botaurus poiciloptilus](#) Australasian Bittern [1001]	Endangered	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
[Climacteris picumnus victoriae](#) Brown Treecreeper (south-eastern) [67062]	Vulnerable	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
[Lathamus discolor](#) Swift Parrot [744]	Critically Endangered	Species or species habitat may occur within area	In buffer area only
[Leipoa ocellata](#) Malleefowl [934]	Vulnerable	Species or species habitat known to occur within area	In feature area
[Lophochroa leadbeateri leadbeateri](#) Major Mitchell's Cockatoo (eastern), Eastern Major Mitchell's Cockatoo [82926]	Endangered	Species or species habitat known to occur within area	In feature area
[Melanodryas cucullata cucullata](#) South-eastern Hooded Robin, Hooded Robin (south-eastern) [67093]	Endangered	Species or species habitat likely to occur within area	In feature area
[Neophema chrysostoma](#) Blue-winged Parrot [726]	Vulnerable	Species or species habitat known to occur within 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
[Pedionomus torquatus](#) Plains-wanderer [906]	Critically Endangered	Species or species habitat likely to occur within area	In feature area
[Pezoporus occidentalis](#) Night Parrot [59350]	Endangered	Species or species habitat may occur within area	In buffer area only
[Polytelis swainsonii](#) Superb Parrot [738]	Vulnerable	Species or species habitat known 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
[Stagonopleura guttata](#) Diamond Firetail [59398]	Vulnerable	Species or species habitat known to occur within area	In feature area
FISH			
[Bidyanus bidyanus](#) Silver Perch, Bidyan [76155]	Critically Endangered	Species or species habitat may occur within area	In feature area
[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
[Maccullochella macquariensis](#) Trout Cod [26171]	Endangered	Species or species habitat may occur within area	In buffer area only
[Maccullochella peelii](#) Murray Cod [66633]	Vulnerable	Species or species habitat known to occur within area	In buffer area only
[Macquaria australasica](#) Macquarie Perch [66632]	Endangered	Species or species habitat may occur within area	In feature area
MAMMAL			

Scientific Name	Threatened Category	Presence Text	Buffer Status
[Nyctophilus corbeni](#)			
Corben's Long-eared Bat, South-eastern Long-eared Bat [83395]	Vulnerable	Species or species habitat likely to occur within area	In feature area
[Phascolarctos cinereus (combined populations of Qld, NSW and the ACT)](#)			
Koala (combined populations of Queensland, New South Wales and the Australian Capital Territory) [85104]	Endangered	Species or species habitat likely to occur within area	In feature area
PLANT			
[Acacia curranii](#)			
Curly-bark Wattle [3908]	Vulnerable	Species or species habitat may occur within area	In buffer area only
[Austrostipa metatoris](#)			
[66704]	Vulnerable	Species or species habitat may occur within area	In buffer area only
[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
REPTILE			
[Hemiaspis damelii](#)			
Grey Snake [1179]	Endangered	Species or species habitat may 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

Scientific Name	Threatened Category	Presence Text	Buffer Status
Migratory Wetlands Species			
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

Commonwealth Lands [Resource Information]

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

Commonwealth Land Name	State	Buffer Status
Communications, Information Technology and the Arts - Telstra Corporation Limited		
Commonwealth Land - Australian Telecommunications Commission [15094]	NSW	In buffer area only
Commonwealth Land - Australian Telecommunications Corporation [16430]	NSW	In buffer area only

Listed Marine Species [Resource Information]

Scientific Name	Threatened Category	Presence Text	Buffer Status
Bird			

Scientific Name	Threatened Category	Presence Text	Buffer Status
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
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
Lathamus discolor Swift Parrot [744]	Critically Endangered	Species or species habitat may occur within area overfly marine area	In buffer area only

Scientific Name	Threatened Category	Presence Text	Buffer Status
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
Neophema chrysostoma Blue-winged Parrot [726]	Vulnerable	Species or species habitat known to occur within area overfly marine 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
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

State and Territory Reserves			[Resource Information]
Protected Area Name	Reserve Type	State	Buffer Status
Lachlan Valley	National Park	NSW	In buffer area only
Lachlan Valley	Regional Park	NSW	In buffer area only

EPBC Act Referrals				[Resource Information]
Title of referral	Reference	Referral Outcome	Assessment Status	Buffer Status
Not controlled action				
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 buffer area only

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.

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Appendix B Threatened Species Evaluation

B.1 Habitat Evaluation Table

The habitat evaluation for threatened species, ecological communities and endangered populations listed within 10km of the subject land under the *NSW BioNet* [1] and those identified as potentially occurring in the area according to the Commonwealth EPBC Act *Protected Matters Search Tool*[2].

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

Presence of habitat:

Present: Potential or known habitat is present within the study area

Marginal: Habitat onsite meets basic habitat description, without microhabitat needs being met

Absent: No potential or known habitat is present within the study area

Likelihood of occurrence

Unlikely: Species known or predicted within the locality but unlikely to occur in the study area, or species not known within the locality and no suitable habitat is present.

Possible: Species could occur in the study area and has records within the locality and/or has suitable habitat present.

Present: Species was recorded during the field investigations, or has been recorded previously within the site

Potential of Impact

Low: The proposal would not impact this species or its habitats. No Test of Significance (ToS) or Assessment of Significance (AoS) is necessary for this species.

Moderate: The proposal has the potential to impact this species or its habitats however the impacts are considered manageable such that no direct or indirect impacts are likely. Test of Significance (ToS) or Assessment of Significance (AoS) may be required for this species.

High**:** The proposal is likely to impact this species or its habitats. A ToS or AoS has been applied to these entities.

Key

V = Vulnerable, E = Endangered, CE = Critically Endangered, E = Extinct, PE = Presumed Extinct, M = Mig

[1] The *NSW BioNet* is administered by the NSW Department of Planning and Environment (DPE) and is an online database with threatened entity records.

[2] This online tool is designed for the public to search for matters protected under the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act). It is managed by the DCCEEW.

B1.1 Flora

Species	Listing		Habitat	No. of Records Within 10km Locality	Presence of Habitat	Likelihood of Occurrence	Possible Impact	Justification
	BC Act	EPBC Act						
Shrubs								
Acacia curranii Curly Bark Wattle	V	V	Grows in Acacia shrubland and mallee. Prefers acidic, skeletal soils in rocky habitats and occupies specialised habitats comprising rocky ridges and deeply weathered sandstone. Associated species in NSW populations include *Eucalyptus dwyeri, E. populneus subsp. bimbil, E. intertexta, E. microcarpa, E. morrisii, Callitris glaucophylla, Acacia doratoxylon, A. havilandiorum, A. aneura* and *Eremophila* spp. Forms open to closed shrublands (sometimes with scattered emergent trees), with plants locally frequent to dominant in populations. Queensland and the majority of NSW populations are described as grove-forming and growing in dense pure stands. Known from near Cobar south to Hillston area, and in Gundabooka National Park near Bourke and Nombinnie Nature Reserve. There are about 20 populations with fewer than 5000 individuals. Also known in Qld from 2 populations totalling several hundred individuals near Gurulmundi.	PMST	Absent	Unlikely	Low	No suitable habitat will be impacted by the proposed works
Dodonaea sinuolata subsp. acrodentata A Hopbush	E		Grows on stony ridges and sandy 'jump-ups' in arid and semi-arid areas. Substrates are commonly stony red sandy-loams with limonite and quartzite pebbles. Common associated species include open woodlands of *Acacia aneura* (Mulga), *A. harpophylla, Eucalyptus melanophloia, E. populnea* and *E. cambageana* (Qld). In NSW, known from only two locations south-west plains: one near Hillston, and another north of Ivanhoe. The species is also known from central south-west Qld, in the Warrego and Maranoa districts.	1 (1976)	Absent	Unlikely	Low	No suitable habitat will be impacted

Species	Listing		Habitat	No. of Records Within 10km Locality	Presence of Habitat	Likelihood of Occurrence	Possible Impact	Justification
	BC Act	EPBC Act						
Forbs								
Brachyscome papillosa Mossgiel Daisy	V	V	Recorded primarily in clay soils on Bladder Saltbush (*Atriplex vesicaria*) and Leafless Bluebush (*Maireana aphylla*) plains, but also in grassland and in Inland Grey Box (*Eucalyptus microcarpa*) - Cypress Pine (*Callitris* spp.) woodland.	PMST	Marginal PCT 13, 15	Possible	Low	No local records. Minimal clearing of marginal habitat (0.02ha). ToS undertaken.
Lepidium monoplocoides Winged Pepper-cress	E	E	Occurs on seasonally moist to waterlogged sites, on heavy fertile soils, with a mean annual rainfall of around 300-500 mm. Predominant vegetation is usually an open woodland dominated by *Allocasuarina luehmannii* (Bulloak) and/or eucalypts, particularly *Eucalyptus largiflorens* (Black Box) or *Eucalyptus populnea* (Poplar Box). The field layer of the surrounding woodland is dominated by tussock grasses. Recorded in a wetland-grassland community comprising *Eragrostis australasicus, Agrostis avenacea, Austrodanthonia duttoniana, Homopholis proluta, Myriophyllum crispatum, Utricularia dichotoma* and *Pycnosorus globosus*, on waterlogged grey-brown clay. Also recorded from a *Maireana pyramidata* shrubland.	PMST	Marginal PCT 13, PCT 103	Unlikely	Low	Habitat to be impacted has a largely disturbed understory. Hence the habitat would not be suitable for the species. PCT 103 removal 0.02 ha.
Leptorhynchos orientalis Lanky Buttons	E		Grows in woodland or grassland, sometimes on the margins of swamps. Communities include a Bimble Box plain in red-brown soil, dense *Acacia pendula* woodland with herbaceous understorey on red clay to clay-loam, open grassland areas on red soils, and red clay plains at the edge of a Canegrass swamp. Associated species include *Eucalyptus populnea* subsp. *bimbil, Acacia pendula, Eragrostis australasica, Lepidium monoplocoides, Enchylaena tomentosa, Minuria leptophylla, Rhodanthe floribunda, R. pygmaea* and *Ptilotus spathulatus.* Recorded from several Hay Plain and	3 (2009)	Absent, not associated with any of the PCTs in subject land	Unlikely	Low	The species has been recorded within 10km of the area. However, associated PCTs not present and habitat is largely.

Species	Listing		Habitat	No. of Records Within 10km Locality	Presence of Habitat	Likelihood of Occurrence	Possible Impact	Justification
	BC Act	EPBC Act						
			southern Riverina localities.					
Swainsona murrayana Slender Darling-pea	V	V	Collected from clay-based soils, ranging from grey, red and brown cracking clays to red-brown earths and loams. Grows in a variety of vegetation types including bladder saltbush, black box and grassland communities on level plains, floodplains and depressions and is often found with *Maireana* species. Plants have been found in remnant native grasslands or grassy woodlands that have been intermittently grazed or cultivated. Found throughout NSW, it has been recorded in the Jerilderie and Deniliquin areas of the southern riverine plain, the Hay plain as far north as Willandra National Park, near Broken Hill and in various localities between Dubbo and Moree.	2 (1973-1985)	Present Associated with PCT 15	Possible	Low	Low quality habitat present on site. Habitat removal ~0.02ha. ToS undertaken.
Grasses								
Austrostipa metatoris A spear-grass	V	V	Grows in sandy areas of the Murray Valley; habitats include sandhills, sandridges, undulating plains and flat open mallee country, with red to red-brown clay-loam to sandy-loam soils. Associated species include *Eucalyptus populnea, E. intertexta, Callitris glaucophylla, Casuarina cristata, Santalum acuminatum* and *Dodonaea viscos*a. Most records occur in the Murray Valley. Scattered records also occur in central NSW including Lake Cargelligo, east of Goolgowi, Condobolin and south west of Nymagee. Otherwise only known from near Bordertown in south east South Australia, where it may be locally extinct.	PMST	Present (PCT 103)	Unlikely	Low	Tiny impact to potential habitat; not recorded in area previously
TECs								

Species	Listing		Habitat	No. of Records Within 10km Locality	Presence of Habitat	Likelihood of Occurrence	Possible Impact	Justification
	BC Act	EPBC Act						
Buloke Woodlands of the Riverina and Murray-Darling Depression Bioregions		E	The 'Buloke Woodlands of the Riverina and Murray Darling Depression Bioregions' ecological community encompasses a number of closely-related woodland communities in which Allocasuarina luehmannii (Buloke) is usually a dominant or co-dominant tree. Other trees that may be prominent in Buloke Woodlands include: Callitris gracilis (Slender Pine), Callitris glaucophylla (White/Murray Pine), Eucalyptus largiflorens (Black Box), Eucalyptus leucoxylon subsp. pruinosa (Yellow/Blue Gum) and Eucalyptus microcarpa (Grey Box).	N/A	Absent	Unlikely	Low	No associated PCTS
Grey Box (*Eucalyptus microcarpa*) Grassy Woodlands and Derived Native Grasslands of South-eastern Australia.	E	E	The Grey Box (*Eucalyptus microcarpa*) Grassy Woodlands and Derived Native Grasslands of South-eastern Australia occurs in two forms. • The most common form is as grassy woodland comprising a tree layer and an understorey that must have native grasses but with a varying proportion of shrubs and herbs. • The derived native grassland form can occur in patches where the tree canopy and mid layer have been almost entirely removed but the native ground layer remains largely intact with high flora diversity.	N/A	Absent	Unlikely	Low	No associated PCTS
Mallee Bird Community of the Murray Darling Depression Bioregion		E	Mallee communities	N/A	Absent	Unlikely	Low	No associated PCTS
Weeping Myall Woodlands		E	The ecological community generally occurs on flat areas, shallow depressions or gilgais[2] on raised alluvial plains.	N/A	Absent	Unlikely	Low	No associated PCTS

Species	Listing		Habitat	No. of Records Within 10km Locality	Presence of Habitat	Likelihood of Occurrence	Possible Impact	Justification
	BC Act	EPBC Act						
			These areas are not associated with active drainage channels and are rarely, if ever, flooded. The ecological community occurs on black, brown, red-brown or grey clay or clay loam soils. Most areas remaining in the best condition are in lightly-grazed, uncropped sites such as road reserves and Travelling Stock Routes and Reserves. There may be considerable variation in the composition of individual stands of the listed community within any given bioregion.					
White Box - Yellow Box - Blakely's Red Gum Grassy Woodland and Derived Native Grassland in the NSW North Coast, New England Tableland, Nandewar, Brigalow Belt South, Sydney Basin, South Eastern Highlands, NSW South Western Slopes, South East Corner and Riverina Bioregions	CE	CE	Characterised by the presence or prior occurrence of White Box, Yellow Box and/or Blakely's Red Gum and a generally grassy understorey. The trees may occur as pure stands, mixtures of the three species or in mixtures with other trees, including wattles. Shrubs are generally sparse or absent, though they may be locally common. Remnants generally occur on fertile lower parts of the landscape where soil fertility is relatively high compared to the surrounding landscape.	N/A	Absent	Unlikely	Low	No associated PCTS
CE BC = listed as Critically Endangered under Schedule 1 of the NSW *Biodiversity Conservation Act 2016* CE EPBC = listed as Critically Endangered under the Commonwealth *Environment Protection &*				V BC = listed as Vulnerable under Schedule 1 of the NSW *Biodiversity Conservation Act 2016* V EPBC = listed as Vulnerable under the Commonwealth				

Species	Listing		Habitat	No. of Records Within 10km Locality	Presence of Habitat	Likelihood of Occurrence	Possible Impact	Justification
	BC Act	EPBC Act						
Biodiversity Conservation Act 1999. E BC = listed as Endangered under Schedule 1 of the NSW *Biodiversity Conservation Act 2016* E EPBC = listed as Endangered under the Commonwealth *Environment Protection & Biodiversity Conservation Act 1999.*				*Environment Protection & Biodiversity Conservation Act 1999.*				

B1.2 Fauna

Species	Listing		Habitat	No. of Records Within 10km Locality	Presence of Habitat	Likelihood of Occurrence	Possible Impact	Justification
	BC Act	EPBC Act						
Reptiles								
Hemiaspis damelii Grey Snake		E	They tend to favour dry sclerophyll forests and woodlands on clay soils where water bodies or gullies are present. They find shelter under rocks, logs and other debris, as well as cracks in soil	PMST	Absent	Unlikely	Low	No suitable habitat present. No nearby waterbodies.
Fish								
Bidyanus bidyanus Silver Perch		CE	A general preference for faster-flowing water, including rapids and races, and more open sections of river, throughout the Murray-Darling Basin	PMST	Absent	Unlikely	Low	No waterways will be impacted by the development
Galaxias rostratus Flathead Galaxias	CE - FM Act Not Listed BC Act	CE	Flathead Galaxias are found in still or slow moving freshwater bodies such as wetlands and lowland streams. The species has been recorded forming shoals. They have been associated with a range of habitats including rock and sandy bottoms and aquatic vegetation. Flathead Galaxias spawn in spring and lay slightly adhesive demersal eggs	PMST	Absent	Unlikely	Low	No waterways will be impacted by the development
Maccullochella macquariensis Trout Cod	E - FM Act Not listed BC Act	E	Trout Cod are often found in faster flowing water with rocky and gravel bottoms, but can also be found in some slower flowing, lowland rivers. Large woody snags are very important for the species as they provide complex habitats for each stage of the species' life cycle.	PMST	Absent	Unlikely	Low	No waterways will be impacted by the development

Species	Listing		Habitat	No. of Records Within 10km Locality	Presence of Habitat	Likelihood of Occurrence	Possible Impact	Justification
	BC Act	EPBC Act						
Maccullochella peelii Murry Cod		V	The Murray Cod utilises a diverse range of habitats from clear rocky streams, such as those found in the upper western slopes of NSW (including the ACT), to slow-flowing, turbid lowland rivers and billabongs. Murray Cod are frequently found in the main channels of rivers and larger tributaries. The species is, therefore, considered a main-channel specialist. Murray Cod tend to occur in floodplain channels and anabranches when they are inundated, but the species' use of these floodplain habitats appears limited.	PMST	Absent	Unlikely	Low	No waterways will be impacted by the development
Macquaria australasica Macquarie Perch	E – FM Act Not listed BC Act	E	The Macquarie Perch is a riverine, schooling species. It prefers clear water and deep, rocky holes with lots of cover. As well as aquatic vegetation, additional cover may comprise of large boulders, debris and overhanging banks. Spawning occurs just above riffles.	PMST	Absent	Unlikely	Low	No waterways will be impacted by the development
Invertebrates								
Keyacris scurra Key's Matchstick Grasshopper	E		Typically found in native grasslands and grassy woodlands but it has also been recorded in other vegetation associations usually containing a native grass understory (especially kangaroo grass Themeda triandra) and known food plants (particularly Asteraceae). Opportunistic sightings (as opposed to records from systematic surveys) have been reported in a wide range of vegetation types in south-east NSW, including wet sclerophyll forest, montane low forest, dry woodlands, heathland, and	PMST	Absent	Unlikely	Low	No suitable habitat will be impacted by the proposed works. As the species requires extensive grassland.

Species	Listing		Habitat	No. of Records Within 10km Locality	Presence of Habitat	Likelihood of Occurrence	Possible Impact	Justification
	BC Act	EPBC Act						
			montane grasslands In some reported locations there is an absence of Themeda and very few or no Asteraceae. Being flightless, this species does not disperse large distances (<10m) which suggests these observations are indicative of resident populations (rather than dispersing individuals).					
Birds								
Aphelocephala leucopsis Southern Whiteface	V	-	Relatively undisturbed open woodlands and shrublands with an understorey of grasses or shrubs, or both; habitat with low tree densities and an herbaceous understory litter cover which provides essential foraging habitat; living and dead trees with hollows and crevices which are essential for roosting and nesting.	PMST	Marginal	Unlikely	Low	No hollows will be impacted by proposed works. No species records in the area. Th area is quite disturbed.
Botaurus poiciloptilus Australasian Bittern	E	E	Favours permanent freshwater wetlands with tall, dense vegetation, particularly bullrushes (Typha spp.) and spikerushes (Eleocharis spp.). Hides during the day amongst dense reeds or rushes and feed mainly at night on frogs, fish, yabbies, spiders, insects and snails.	PMST	Absent	Unlikely	Low	No suitable habitat present. No waterbodies near the proposed works.
Calidris ferruginea Curlew Sandpiper	CE	CE	Generally occupies littoral and estuarine habitats, and in NSW is mainly found in intertidal mudflats of sheltered coasts. It also occurs in non-tidal swamps, lakes and lagoons on the coast and sometimes inland.	PMST	Absent	Unlikely	Low	No suitable habitat present. No waterbodies near the proposed works.

Species	Listing		Habitat	No. of Records Within 10km Locality	Presence of Habitat	Likelihood of Occurrence	Possible Impact	Justification
	BC Act	EPBC Act						
Circus assimilis Spotted Harrier	V		Occurs in grassy open woodland including Acacia and mallee remnants, inland riparian woodland, grassland and shrub steppe. It is found most commonly in native grassland, but also occurs in agricultural land, foraging over open habitats including edges of inland wetlands.	4 (1990-2011)	Present	Possible	Low	Species habitat is present on site. No breeding habitat was identified during site survey. Impact minimal (0.21 ha). ToS undertaken.
Climacteris picumnus victoriae Brown Treecreeper (eastern subspecies)	V		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.	2 (1990-1998)	Marginal	Unlikely	Low	Suitable habitat is present on site although the habitat is not dominated by stringy bark eucalyptus. No current records of species within the area.
Daphoenositta chrysoptera Varied Sittella	V		Inhabits eucalypt forests and woodlands, especially those containing rough-barked species and mature smooth-barked gums with dead branches, mallee and Acacia woodland.	1 (2001)	Present	Possible	Low	No current records in the area. Minimal habitat impact (0.21ha). ToS undertaken.
Falco hypoleucos Grey Falcon	V	V	Usually restricted to shrubland, grassland and wooded watercourses of arid and semi-arid regions, although it is occasionally found in open woodlands near the coast. Also occurs near	PMST	Absent	Unlikely	Low	No suitable habitat will be impacted. The proposed works are not an near waterways of an arid or semi-arid area.

Species	Listing		Habitat	No. of Records Within 10km Locality	Presence of Habitat	Likelihood of Occurrence	Possible Impact	Justification
	BC Act	EPBC Act						
			wetlands where surface water attracts prey.					
Falco subniger Black Falcon	V		Are widely distributed over NSW, covering hundreds of kilometres. Sometimes found in association with cypress-pines Callitris spp. Habitat on plains unknown. Regenerates from seed after fire.	1 (1990)	Absent	Low	No	Minimal impact (0.21ha) of low potential habitat
Grantiella picta Painted Honeyeater	V	V	Inhabits Boree/ Weeping Myall (*Acacia pendula*), Brigalow (*A. harpophylla*) and Box-Gum Woodlands and Box-Ironbark Forests.		Marginal	Unlikely	Low	No records of the species within the area. Minimal impact of marginal habitat (0.21ha)
Hieraaetus morphnoides Little Eagle	V		Occupies open eucalypt forest, woodland or open woodland. Sheoak or Acacia woodlands and riparian woodlands of interior NSW are also used.	3 (1990-2008)	Marginal	Unlikely	Low	Acacia woodland on site. No riparian area. Minimal impact to marginal habitat (0.21ha)
Lathamus discolor Swift Parrot	E	CE	Migrates to the Australian south-east mainland between February and October. On the mainland they occur in areas where eucalypts are flowering profusely or where there are abundant lerp (from sap-sucking bugs) infestations. Favoured feed trees include winter flowering species such as Swamp Mahogany *Eucalyptus robusta,* Spotted Gum *Corymbia maculata*, Red Bloodwood *C. gummifera,* Forest Red Gum *E. tereticornis*, Mugga Ironbark *E. sideroxylon*, and White Box *E. albens.*	PMST	Absent	Unlikely	Low	No suitable habitat will be impacted. No favoured feed trees will be impact by the proposed works.

Species	Listing		Habitat	No. of Records Within 10km Locality	Presence of Habitat	Likelihood of Occurrence	Possible Impact	Justification
	BC Act	EPBC Act						
Leipoa ocellata Malleefowl	E	V	Predominantly inhabit mallee communities, preferring the tall, dense and floristically-rich mallee found in higher rainfall (300–450mm mean annual rainfall) areas. Utilises mallee with a spinifex understorey, but usually at lower densities than in areas with a shrub understorey. Less frequently found in other eucalypt woodlands, such as Inland Grey Box, Ironbark or Bimble Box Woodlands with thick understorey, or in other woodlands such dominated by Mulga or native Cypress Pine species.	PMST	Absent	Unlikely	Low	No suitable habitat to be impact.
Lophochroa leadbeateri Major Mitchell's Cockatoo	V		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.	2 (1990-1994)	Marginal	Unlikely	Low	Local records historical. Minimal impact of marginal habitat (0.21ha).
Melanodryas cucullata cucullata South-eastern Hooded Robin, Hooded Robin (south-eastern)	V	E	dry eucalypt and acacia woodlands and shrublands remnants with an open understorey, some grassy areas and a complex ground layer, often in or near clearings or open areas; structurally diverse habitats featuring: mature eucalypts, saplings, some small shrubs and a ground layer of moderately tall native grasses; standing dead or live trees and tree stumps are also essential for nesting, roosting and foraging; moderately deep to deep soils, rocks and fallen timber which provides essential foraging habitat.	PMST	Marginal	Unlikely	Low	Minimal impact of marginal habitat (0.21ha). No records of species within the area.

Species	Listing		Habitat	No. of Records Within 10km Locality	Presence of Habitat	Likelihood of Occurrence	Possible Impact	Justification
	BC Act	EPBC Act						
Neophema chrysostoma Blue-winged Parrot	-	V	Foraging and staging habitats found from coastal, sub-coastal and inland areas, right through to semi-arid zones including grasslands, grassy woodlands and semi-arid chenopod shrubland with native and introduced grasses, herbs and shrubs. Wetlands both near the coast and in semi-arid zones used for foraging and staging.• Eucalypt forests and woodlands within the breeding range in Tasmania, coastal southeastern South Australia and southern Victoria. • Live and dead trees and stumps with suitable hollows within the breeding range	PMST	Marginal	Unlikely	Low	No current records in the area.
Neophema pulchella Turquoise Parrot	V		Lives on the edges of eucalypt woodland adjoining clearings, timbered ridges and creeks in farmland.	1 (1986)	Marginal	Unlikely	Low	Acacia woodland on site. No riparian area, limited impact (0.21ha) to wooded area. No current records in the area.
Ninox connivens Barking Owl	V		Inhabits woodland and open forest, including fragmented remnants and partly cleared farmland. It is flexible in its habitat use, and hunting can extend in to closed forest and more open areas. Sometimes able to successfully breed along timbered watercourses in heavily cleared habitats (e.g. western NSW) due to the higher density of prey found on these fertile riparian soils.	1 (1983)	Marginal	Unlikely	Low	No hollow bearing trees present on site. Unlikely to be habitat utilised by the species. No current records in the area.
Numenius madagascariensis Eastern Curlew	CE	CE	In NSW, occurs across the entire coast but is mainly found in estuaries such as the Hunter River, Port Stephens, Clarence River, Richmond River and ICOLLs of the south coast. Generally occupies coastal lakes, inlets, bays and estuarine	PMST	Absent	Unlikely	Low	No suitable habitat to be impacted by the proposed works.

Species	Listing		Habitat	No. of Records Within 10km Locality	Presence of Habitat	Likelihood of Occurrence	Possible Impact	Justification
	BC Act	EPBC Act						
			habitats, and in NSW is mainly found in intertidal mudflats and sometimes saltmarsh of sheltered coasts.					
Oxyura australis Blue-billed Duck	V		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 would fly if disturbed, but prefers to dive if approached.	1 (2000)	Absent	Unlikely	Low	No suitable habitat present. No waterbodies near the proposed works.
Pedionomus torquatus Plains-wanderer	E	CE	Live in semi-arid, lowland native grasslands that typically occur on hard red-brown soils. These grasslands support a high diversity of plant species, including a number of state and nationally threatened species. Habitat structure appears to play a more important role than plant species composition.	PMST	Absent	Unlikely	Low	No suitable habitat will be impacted by the proposed works. The area is made up of derived woodlands and low to moderate grassland.
Pezoporus occidentalis Night Parrot	CE	E	Known to occur within Spinifex grasslands in stony or sandy areas and samphire and chenopod associations on floodplains, salt lakes and clay pans.	PMST	Absent	Unlikely	Low	No suitable habitat will be impacted by the proposed works. No spinifex present within the development footprint.
Polytelis swainsonii Superb Parrot	V	V	Inhabit Box-Gum, Box-Cypress-pine and Boree Woodlands and River Red Gum Forest. In the Riverina the birds nest in the hollows of large trees (dead or alive) mainly in tall riparian River Red Gum Forest or Woodland.	1 (2015)	Marginal	Unlikely	Low	No hollow bearing trees present on site. Unlikely to be habitat utilised by the species.

Species	Listing		Habitat	No. of Records Within 10km Locality	Presence of Habitat	Likelihood of Occurrence	Possible Impact	Justification
	BC Act	EPBC Act						
Pomatostomus temporalis temporalis Grey-crowned Babbler (eastern subspecies)	V		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.	14 (1998-2021)	Present (PCT 13, 15, 57, 103)	Possible	Moderate	Minimal loss of habitat (0.21ha). ToS undertaken.
Rostratula australis Australian Painted Snipe	E	E	Prefers fringes of swamps, dams and nearby marshy areas where there is a cover of grasses, lignum, low scrub or open timber.	PMST	Absent	Unlikely	Low	No suitable habitat present. No waterbodies near the proposed works.
Stagonopleura guttata Diamond Firetail	V		Found in grassy eucalypt woodlands, including Box-Gum Woodlands and Snow Gum Eucalyptus pauciflora Woodlands. Also occurs in open forest, mallee, Natural Temperate Grassland, and in secondary grassland derived from other communities. Often found in riparian areas (rivers and creeks), and sometimes in lightly wooded farmland.	2 (1990-2014)	Marginal	Unlikely	Low	Acacia woodland on site. No riparian area limited impact to wooded area. Minimal loss of marginal habitat (0.21ha)
Migratory Species								
Actitis hypoleucos Common Sandpiper	E	CE, M	In Australia, the Common Sandpiper is found in coastal or inland wetlands, both saline or fresh. It is found mainly on muddy edges or rocky shores.	PMST	Absent	Unlikely	Low	No suitable habitat present. No waterbodies near the proposed works.
Apus pacificus Fork-tailed Swift		M	Preferred habitat includes mountains, near water.	PMST	Absent	Unlikely	Low	No suitable habitat present. No waterbodies near the proposed works.
Calidris acuminata Sharp-tailed Sandpiper		M	This species prefers non-tidal wetlands, especially freshly exposed mudflats in drying lakes and on intertidal mudflats.	PMST	Absent	Unlikely	Low	No suitable habitat present. No waterbodies near the proposed works.

Species	Listing		Habitat	No. of Records Within 10km Locality	Presence of Habitat	Likelihood of Occurrence	Possible Impact	Justification
	BC Act	EPBC Act						
Calidris ferruginea Curlew Sandpiper	E	CE, M	It generally occupies littoral and estuarine habitats, and in New South Wales is mainly found in intertidal mudflats of sheltered coasts. It also occurs in non-tidal swamps, lakes and lagoons on the coast and sometimes inland. It forages in or at the edge of shallow water, occasionally on exposed algal mats or waterweed, or on banks of beach-cast seagrass or seaweed.	PMST	Absent	Unlikely	Low	No suitable habitat present. No waterbodies near the proposed works.
Calidris melanotos Pectoral Sandpiper		M	A small number of these birds are known to reach Australia and are believed to be concentrated in south-eastern Australia. This species prefers freshwater mudflats.	PMST	Absent	Unlikely	Low	No suitable habitat present. No waterbodies near the proposed works.
Gallinago hardwickii Latham's Snipe		M	This species usually inhabits open, freshwater wetlands with low, dense vegetation (e.g. swamps, flooded grasslands or heathlands, around bogs and other water bodies). However, they can also occur in habitats with saline or brackish water, in modified or artificial habitats, and in habitats located close to humans or human activity.	PMST	Absent	Unlikely	Low	No suitable habitat present. No waterbodies near the proposed works.
Gelochelidon nilotica Gull-Billed Tern		M	Primarily breed in dunes, on sandy barrier islands, or in coastal marshes. Similar habitats are utilized during the winter, although this species may also be found further inland in flooded fields at that time of year. Eat small aquatic animals, including insects, small fish, and crustaceans. May be observed flying above beaches and near-shore waters while catching prey. This species catches insects in the air, but does not dive into	1 (1989)	Absent	Unlikely	Low	No suitable habitat present. No waterbodies near the proposed works.

Species	Listing		Habitat	No. of Records Within 10km Locality	Presence of Habitat	Likelihood of Occurrence	Possible Impact	Justification
	BC Act	EPBC Act						
			the water to catch fish (unlike many other terns), preferring to skim the surface or catch fish while standing in shallow water.					
Motacilla flava Yellow Wagtail		M	Widespread wagtail, favouring wet meadows, marshland, grassy and muddy lakeshores.	PMST	Absent	Unlikely	Low	No suitable habitat present. No waterbodies near the proposed works.
Numenius madagascariensis Eastern Curlew		CE, M	It generally occupies coastal lakes, inlets, bays and estuarine habitats, and in New South Wales is mainly found in intertidal mudflats and sometimes saltmarsh of sheltered coasts.	PMST	Absent	Unlikely	Low	No suitable habitat present. No waterbodies near the proposed works.
Tringa glareola Wood Sandpiper		M	Uses well-vegetated, shallow freshwater wetlands such as swamps, billabongs, lakes, pools and waterholes. Typically associated with emergent aquatic plants or grass, and dominated by taller fringing vegetation such as dense strands of rushes or reeds, shrubs, deal and alive trees, especially Melaleuca and River Red gums, often with fallen timber.	1 (1991)	Absent	Unlikely	Low	No suitable habitat present. No waterbodies near the proposed works.
Tringa stagnatilis Marsh Sandpiper		M	Found on coastal and inland wetlands throughout Australia. Widespread in coastal Queensland, but few records exist north of Cooktown. Recorded in all regions of NSW but especially the central and south coasts and (inland) on the western slopes of Great Divide and western plains.	1 (2006)	Absent	Unlikely	Low	No suitable habitat present. No waterbodies near the proposed works.
Bats								
Nyctophilus corbeni Corben's Long-eared	V	V	Inhabits a variety of vegetation types, including Mallee, Bulloke *Allocasuarina leuhmanni* and box	PMST	Present (PCT 57,	Possible	Low	Minimal impact to habitat types (0.19 ha). ToS undertaken.

Species	Listing		Habitat	No. of Records Within 10km Locality	Presence of Habitat	Likelihood of Occurrence	Possible Impact	Justification
	BC Act	EPBC Act						
Bat			eucalypt dominated communities, but it is distinctly more common in box/ironbark/cypress-pine vegetation that occurs in a north-south belt along the western slopes and plains of NSW and southern Queensland. Roosts in tree hollows, crevices, and under loose bark.		103)			
Marsupials								
Phascolarctos cinereus Koala	E	E	Inhabit eucalypt woodlands and forests. Feed on the foliage of more than 70 eucalypt species and 30 non-eucalypt species, but in any one area will select preferred browse species.Inactive for most of the day, feeding and moving mostly at night.	PMST	Marginal	Unlikely	Low	Cypress pine present (PCT 103) but clearing minimal (0.02ha). Minimal total clearing (0.21ha) of marginal habitat.
CE EPBC = listed as Critically Endangered under the Commonwealth *Environment Protection & Biodiversity Conservation Act 1999.* CE BC = listed as Critically Endangered under Schedule 1 of the NSW *Biodiversity Conservation Act 2016* CE FM = listed as Critically Endangered under the *Fisheries Management Act 1994.* E BC = listed as Endangered under Schedule 1 of the NSW *Biodiversity Conservation Act 2016* E EPBC = listed as Endangered under the Commonwealth *Environment Protection & Biodiversity Conservation Act 1999.*			V EPBC = listed as Vulnerable under the Commonwealth *Environment Protection & Biodiversity Conservation Act 1999.* V BC = listed as Vulnerable under Schedule 1 of the NSW *Biodiversity Conservation Act 2016* M EPBC = listed as Migratory under the Commonwealth *Environment Protection &*					

Species	Listing		Habitat	No. of Records Within 10km Locality	Presence of Habitat	Likelihood of Occurrence	Possible Impact	Justification
	BC Act	EPBC Act						
E FM = listed as Endangered under the *Fisheries Management Act 1994.* V FM = listed as Vulnerable under the *Fisheries Management Act 1994.*								

Appendix C BAM Plot data

BAM Site Field Survey (All orange cells are for data entry, please do not edit other cells or work sheets as they contain formulas)								
Project number:	22-605	**Plot Identifier:**	1	**Pic 20x20 Head (ID#)**		**Pic 20x50 Tail (ID#)**		
Survey date: (01/01/2021)	27/02/2023		**Compass Orientation (head of 20x20 plot):**				87	
Recorders (full name):	J. Russo, Z. Renner		**PCT:**	Black Box	**Veg Zone condition (low, mod, high):**		Mod	
GPS Easting:	364229	**GPS Northing:**	6288721		**Datum (GDA)**	94	**Zone (54/55/56)**	55
Site location description (eg 2km west of Hay along Mid Western Highway)			Racecourse road					
Landform			**Soils**			**Drainage & Slope**		
Morphology			**Soil Texture**			**Slope**		
LandF Element			**Soil Colour**			**Aspect**		
LandF Pattern			**Soil Depth**			**Drainage**		
Microrelief			**Geology**			**Watercourses**		
Plot Disturbance								
	Severity	**Age**	**Observational Evidence**					
Clearing								
Cultivation								
Soil erosion								
Firewood								
Grazing								
Fire Damage								
Storm Damage								
Weediness								
Other								
Severity: 0 = no evidence, 1=light, 2=moderate, 3=severe **Age:** R=recent (<3yrs), NR=not recent (3-10yrs), O=old (>10yrs)								
Additional information								

BAM Site Field Survey (All orange cells are for data entry, please do not edit other cells or work sheets as they contain formulas)								
Project number:	22-605	**Plot Identifier:**	1	**Pic 20x20 Head (ID#)**		**Pic 20x50 Tail (ID#)**		
Survey date: (01/01/2021)	27/02/2023		**Compass Orientation (head of 20x20 plot):**				87	
Recorders (full name):	J. Russo, Z. Renner		**PCT:**	Black Box	**Veg Zone condition (low, mod, high):**		Mod	
GPS Easting:	364229	**GPS Northing:**	6288721		**Datum (GDA)**	94	**Zone (54/55/56)**	55
Site location description (eg 2km west of Hay along Mid Western Highway)			Racecourse road					
Current land use								
Disturbances (i.e. fire, grazing,ferals, clearing, logging, soil degradation, pollution, weeds, dieback)								
Significant and threatened species and communities (Note pop. size/area, structure, repro status, habit, habitat, threats, photos)								
Dominant Species outside Plot								

Function attributes for		**1**
BAM Attribute (20x20m plot)		
Count of Native Richness	**Stratum**	**Sum**
	Tree (TG)	**2**
	Shrub (SG)	**4**
	Forb (FG)	**8**
	Grass & grasslike (GG)	**3**
	Fern (EG)	**0**
	Other (OG)	**1**

BAM Attributes (1 x 1m Plots)				
	Tape length	**% cover**	**Average %**	**Photo ID #**
Litter Cover	5m	85%	**58.0%**	
	15m	95%		
	25m	50%		
	35m	30%		
	45m	30%		
Bare ground cover	5m	0%	**7.6%**	

	TOTAL	**18**
BAM Attribute (20x20m plot)		
Count of cover abundance (native vascular plants)	**Stratum**	**Sum**
	Tree (TG)	**12**
	Shrub (SG)	**35.3**
	Forb (FG)	**1.1**
	Grass & grasslike (GG)	**0.7**
	Fern (EG)	**0**
	Other (OG)	**0.1**
	TOTAL Native	**49.2**
	TOTAL 'HTE'	**0**

BAM Attribute (20 x 50m plot) Tree Stem Counts			
DBH (cm)	**Euc**	**Non Euc**	**Hollows**
>80			
50-79	1		
30-49	1		1
20-29	1		1
10-19	1		2
5-9	1		
<5	1		N/A
Length of logs (m)		61	

	15m	2%		
	25m	35%		
	35m	0%		
	45m	1%		
Cryptogam cover	5m	0%		
	15m	0%		
	25m	0%	**0.0%**	
	35m	0%		
	45m	0%		
Rock Cover	5m	0%		
	15m	0%		
	25m	0%	**0.0%**	
	35m	0%		
	45m	0%		

Total Cover (>100%)		**127%**
Native cover		49%
Exotic cover		12%
Other Ground Cover		66%

0.1%	63 x 63cm
0.5%	1.4 x 1.4m
1.0%	2 x 2m
5.0%	4 x 5m
25.0%	10 x 10m

Species recorded for	1								
Genus	**Species**	**Scientific Name**	**Common Name**	**Family**	**% Cover**	**Abundance**	**Exotic**	**Growth Form**	**High Threat?**
Solanum	esuriale	*Solanum esuriale*	Quena	Solanaceae	0.4	100	0	Forb (FG)	No
Austrostipa	scabra	*Austrostipa scabra*	Speargrass	Poaceae	0.5	30	0	Grass & grasslike (GG)	No
Sclerolaena	muricata	*Sclerolaena muricata*	Black Rolypoly	Chenopodiaceae	35	500	0	Shrub (SG)	No
Sonchus	oleraceus	*Sonchus oleraceus*	Common Sowthistle	Asteraceae	0.1	20	*		No
Chamaesyce	drummondii	*Chamaesyce drummondii*	Caustic Weed	Euphorbiaceae	0.1	20	0	Forb (FG)	No
Sida	cunninghamii	*Sida cunninghamii*	Ridge Sida	Malvaceae	0.1	60	0	Forb (FG)	No
Goodenia	fascicularis	*Goodenia fascicularis*	Mallee Goodenia	Goodeniaceae	0.1	20	0	Forb (FG)	No
Citrullus	lanatus var. lanatus	*Citrullus lanatus var. lanatus*	Wild Melon, Camel Melon,Bitter	Cucurbitaceae	4	50	*		No
Maireana	lobiflora	*Maireana lobiflora*	0	Chenopodiaceae	0.1	30	0	Shrub (SG)	No
Medicago	spp.	*Medicago spp.*	A Medic	Fabaceae (Faboideae)	0.1	2	*		No
Heliotropium	europaeum	*Heliotropium europaeum*	Potato Weed	Boraginaceae	0.1	30	*		No
Rytidosperma	spp.	*Rytidosperma spp.*	0	Poaceae	0.1	10	0	Grass & grasslike (GG)	No
Teucrium	racemosum	*Teucrium racemosum*	Grey Germander	Lamiaceae	0.1	20	0	Forb (FG)	No
Eucalyptus	largiflorens	*Eucalyptus largiflorens*	Black Box	Myrtaceae	4	36	0	Tree (TG)	No
Brassica	spp.	*Brassica spp.*	Brassica	Brassicaceae	7	800	*		No
Panicum	capillare	*Panicum capillare*	Witchgrass	Poaceae	0.3	10	*		No
Conyza	spp.	*Conyza spp.*	A Fleabane	Asteraceae	0.1	10	*		No
Casuarina	pauper	*Casuarina pauper*	Black Oak	Casuarinaceae	8	1	0	Tree (TG)	No
Sida	ammophila	*Sida ammophila*	Sand Sida	Malvaceae	0.1	20	0	Forb (FG)	No
Chenopodium	album	*Chenopodium album*	Fat Hen	Chenopodiaceae	0.2	20	*		No
Cotula	spp.	*Cotula spp.*	0	Asteraceae	0.1	1	0	Forb (FG)	No
Eragrostis	spp.	*Eragrostis spp.*	0	Poaceae	0.1	8	0	Grass & grasslike (GG)	No
Sclerolaena	spp.	*Sclerolaena spp.*	Copperburr, Poverty-bush	Chenopodiaceae	0.1	5	0	Shrub (SG)	No
Convolvulus	spp.	*Convolvulus spp.*	0	0	0.1	1	0	Other (OG)	No

Species recorded for	1								
Genus	**Species**	**Scientific Name**	**Common Name**	**Family**	**% Cover**	**Abundance**	**Exotic**	**Growth Form**	**High Threat?**
Maireana	pyramidata	*Maireana pyramidata*	Black Bluebush	Chenopodiaceae	0.1	1	0	Shrub (SG)	No
Alternanthera	angustifolia	*Alternanthera angustifolia*	0	Amaranthaceae	0.1	1	0	Forb (FG)	No

Appendix D BC Act Tests of Significance

Part 7.3 of the *Biodiversity Conservation Act 2016* (BC Act) specifies five factors to be taken into account in deciding whether a development is likely to significantly affect threatened species, populations or ecological communities, or their habitats, listed at the state level under the BC Act. A Test of Significance has been undertaken for the following species:

- Mossgiel Daisy (*Brachyscome papillosa*)
- Slender Darling-pea (*Swainsona murrayana*)
- Varied Sittella (*Daphoenositta chrysoptera*)
- Grey-crowned Babbler (*Pomatostomus temporalis temporalis*)
- Spotted Harrier (*Circus assimilis*)
- Corben's Long-eared Bat (*Nyctophilus corbeni*).

The terminology used for this Test of Significance is consistent with the definition used in this BOS Evaluation report. Because terminology varies between this report and the Threatened Species Test of Significance Guidelines, NSW Office of Environment and Heritage 2018, equivalent terms are described in the table below.

TERMINOLOGY **BOS Evaluation**	**EQUIVALENT TERMINOLOGY** **Test of Significance Guidelines (2018)**
Development Footprint	Subject Site (direct impact) [totals 28.05 ha, comprising 0.21 ha of native vegetation and 27.84 ha of exotic vegetation]
Subject Land	Study Area (indirect impacts) [totals 265.7 ha, comprising 23.6 ha of native vegetation and 242.1 ha of exotic vegetation]
Locality	(no terminology specified) Subject land plus 10km radius around the subject land.

D.1 Flora

This Five-part Test characterises the significance of likely impacts associated with the proposal on the listed species:

- Mossgiel Daisy (*Brachyscome papillosa*) BC Act – V; EPBC Act – V
- Slender Darling-pea (*Swainsona murrayana*) BC Act – V; EPBC Act – V

The following is to be taken into account for the purposes of determining whether a proposed development or activity is likely to significantly affect threatened species or ecological communities, or their habitats

a) In the case of a threatened species, whether the proposed development or activity is likely to have an adverse effect on the life cycle of the species such that a viable local population of the species is likely to be placed at risk of extinction?

Mossgiel Daisy

The Mossgiel Daisy is endemic to NSW and primarily occurs within the Riverina Bioregion, from Mossgiel in the north, Murrumbidgee Valley (Yanga) National Park in the south west to Urana in the south east. The species is recorded primarily in clay soils on Bladder Saltbush (*Atriplex vesicaria*) and Leafless Bluebush (*Maireana aphylla*) plains, but also in grassland and in Inland Grey Box (*Eucalyptus microcarpa*)-Cypress Pine (*Callitris* spp.) woodland (NSW DCCEEW, 2024a).

The Mossgiel Daisy is associated with PCT 13 and 15 within the subject land, which has a total area of 19.33 ha. There will be direct impacts on 0.02 ha of PCT 15 by the proposed works, with 19.31 ha of suitable habitat remaining within the subject land. The 0.02 ha of impact only equates to 0.1% loss of available habitat within the subject land. No BioNet records exist for this species within the study area or within a 10 km radius surrounding the study area. It is therefore very unlikely that a local population of this species exists within the study area.

There is potential for this species to occur within the subject land, however due to the small area of impact (0.02 ha) and the high level of modification due to agricultural practices, it is unlikely that a local population of the species would exist within the impact area. Therefore, the proposed works are unlikely to have an adverse effect on the life cycle of the Mossgiel Daisy, and a local population of the species, if present, is not likely to be at risk of extinction.

Slender Darling-pea

Slender Darling-pea is found throughout NSW and has been recorded in the Jerilderie and Deniliquin areas of the southern riverine plain, the Hay plain as far north as Willandra National Park, near Broken Hill and in various localities between Dubbo and Moree. The species is found in clay-based soils ranging from grey, red and brown cracking clays to red-brown earths and loams. It grows in a variety of vegetation types including Bladder Saltbush, Black Box and grassland communities on level plains, floodplains and depressions and often found with *Maireana* species. Plants have been found in remnant native grasslands or grassy woodlands that have been intermittently grazed or cultivated (NSW DCCEEW, 2024b).

Slender Darling-pea is only associated with PCT 15 within the subject land, which has a total area of 17.87 ha. There will be direct impacts to 0.02 ha of PCT 15 by the proposed works, with 17.85 ha of suitable habitat remaining within the subject land. The 0.02 ha of impact only equates to 0.11% loss of available habitat within the subject land. Two BioNet records occur within the locality. The records are old and date back to 1973 and 1985. No recent records occur.

There is potential for this species to occur within the subject land, however due to the small area of impact (0.02 ha) and high level of modification due to agricultural practices, it is unlikely that a local population of the species would exist within the impact area. Therefore, the proposed works are unlikely to have an adverse effect on the life cycle of Slender

The following is to be taken into account for the purposes of determining whether a proposed development or activity is likely to significantly affect threatened species or ecological communities, or their habitats
Darling-pea, and a local population of the species, if present, is not likely to be at risk of extinction.
b) In the case of an endangered ecological community or critically endangered ecological community, whether the proposed development or activity: **i. is likely to have an adverse effect on the extent of the ecological community such that its local occurrence is likely to be placed at risk of extinction, or** **ii. is likely to substantially and adversely modify the composition of the ecological community such that its local occurrence is likely to be placed at risk of extinction**
Not applicable.
c) In relation to the habitat of a threatened species or ecological community: **i. the extent to which habitat is likely to be removed or modified as a result of the proposed development or activity, and** **ii. whether an area of habitat is likely to become fragmented or isolated from other areas of habitat as a result of the proposed development or activity, and** **iii. the importance of the habitat to be removed, modified, fragmented or isolated to the long-term survival of the species or ecological community in the locality**
i. Mossgiel Daisy is associated with PCT 13 and 15 within the subject land. The total area of suitable habitat within the subject land is 19.33 ha. The proposed works will impact 0.02 ha of suitable habitat for the species, which is 0.1% of available habitat within the subject land. 19.31 ha of suitable habitat will remain. Slender Darling-pea is only associated with PCT 15 within the subject land. The total area of suitable habitat within the subject land is 17.87 ha. The proposed works will impact 0.02 ha of suitable habitat for the species, which is 0.11% of available habitat within the subject land. 17.85 ha of suitable habitat will remain. ii. The subject land is situated within an existing fragmented landscape modified by agriculture. Impacts on existing remnant native vegetation will be confined to some road widening and removal for access. The proposed works will result in fragmentation of the suitable habitat within PCT 15 for both the Mossgiel Daisy and the Slender Darling-pea, however fragmentation will be minimal (0.02 ha) and will not isolate any patches of habitat. iii. There will be removal of 0.02 ha of PCT 15 habitat for Mossgiel Daisy and Slender Darling-pea. This minor clearing is unlikely to be critical to the survival of a local population of either species, given the small area and lack of recent records within the locality.
d) whether the proposed development or activity is likely to have an adverse effect on any declared area of outstanding biodiversity value (either directly or indirectly)
This proposed development is not within or near any declared Areas of Outstanding Biodiversity Value (AOBV), and thus will not have any direct or indirect adverse effects on AOBVs.
e) whether the proposed development or activity is or is part of a key threatening process or is likely to increase the impact of a key threatening process

The following is to be taken into account for the purposes of determining whether a proposed development or activity is likely to significantly affect threatened species or ecological communities, or their habitats
The BC Act lists numerous key threatening processes (KTP's). KTP's relevant to the proposal that have the potential to impact the Mossgiel Daisy and Slender Darling-pea include the following: • **Clearing of native vegetation:** The clearing of native vegetation, including areas less than 2 ha in extent, is considered to contribute to the loss of biodiversity. Clearing can lead to direct habitat loss, habitat fragmentation and associated genetic impacts, habitat degradation and off–site impacts such as downstream sedimentation (NSW DCCEEW, 2023). The proposal will increase this KTP through removal of 0.21 ha of native vegetation, where 0.02 ha is associated with the Mossgiel Daisy and Slender Darling-pea. • **Invasion of plant communities by exotic perennial grasses**: There is potential for the invasion of exotic species as a result of the proposed works, however, mitigation measures including strict weed management protocols will be implemented. Additionally, the area is highly modified from past agriculture over the land. • **Infection of native plants by *Phytophthora cinnamomi*:** *Phytophthora cinnamomi* is a soil borne pathogen which has the potential to be introduced into the subject land as a result of the proposed works. Although the pathogen is more common in coastal areas, the movement of construction vehicles in and out of the study area has the potential to spread this pathogen to the subject land. Furthermore, Mossgiel Daisy and Slender Darling-pea are not identified as species at risk of infection by this pathogen (NSW DCCEEW, 2021a). Mitigation measures including cleaning down loose soil from machinery and vehicles will be implemented.
Recommended mitigation measures and safeguards for threatened entities:
Mitigation measures and safeguards for threatened entities include: • Clearly delineating approved clearing area with temporary fencing or flagging or similar. • Ensuring stockpile areas are within the development footprint. • Consider using woodchip mulch from cleared vegetation for site remediation rather than grass seeding to support natural regeneration of local species. • Use native grass seed mix if grass must be sown. • Any imported topsoil should be certified weed free. • Utilising weed quarantine measures such as cleaning down loose soil from machinery and vehicles entering and exiting the site within an identified weed brush-down area. For further information refer to Section 5.
Conclusion
The impacts of the proposal on the Mossgiel Daisy and Slender Darling-pea are considered manageable and further assessments are not required. A significant impact is **unlikely**, based on the following conclusions: • The amount of habitat impacted (0.02 ha) as part of the proposed works is minor in the local context. • 19.31 ha of suitable habitat (PCT 13 and 15) for Mossgiel Daisy and 17.85 ha of suitable habitat (PCT 15) for Slender Darling-pea remaining within the subject land. • No significant fragmentation or isolation of habitat will occur. • No substantial contribution to any Key Threatening Processes. • Mitigation measures recommended to further avoid potential impacts to threatened entities.

D.2 Woodland Birds

This Five-part Test characterises the significance of likely impacts associated with the proposal on the listed species:

- Varied Sittella (*Daphoenositta chrysoptera*) BC Act – V
- Grey-crowned Babbler (*Pomatostomus temporalis temporalis*) BC Act – V

The following is to be taken into account for the purposes of determining whether a proposed development or activity is likely to significantly affect threatened species or ecological communities, or their habitats

a) In the case of a threatened species, whether the proposed development or activity is likely to have an adverse effect on the life cycle of the species such that a viable local population of the species is likely to be placed at risk of extinction?

Varied Sittella

Distribution of the Varied Sittella in NSW is from the coast to the far west. It inhabits eucalypts forests and woodlands, especially those containing rough-barked species and mature smooth-barked gums with dead branches, mallee and *Acacia* woodland. It feeds on arthropods gleaned from crevices in rough or decorticating bark, dead branches, standing dead trees and small branches and twigs in the tree canopy. It builds a nest in an upright tree fork high in the living tree canopy and often re-uses the same fork or tree in successive years (NSW DCCEEW, 2024c).

Varied Sittella is associated with all PCTs inside the subject land (PCT 13, 15, 57 and 103). The total area of suitable habitat within the subject land is 23.61 ha. The proposed works will impact 0.21 ha of suitable habitat for the species, with 23.40 ha of suitable habitat remaining within the subject land. The 0.21 ha impacted is only 0.89% of available habitat within the subject land. There is one (1) BioNet record of the species within the locality dated 2001 and is 9 km north of the subject land.

This species could occur within the subject land, however, due to the fragmented nature of the subject land, it is unlikely that the species would depend on this site. Furthermore, it is unlikely that the small area of impact (0.21 ha) will have an adverse impacts on the life cycle of Varied Sittella as individuals re-use the same fork or tree in successive years for breeding (NSW DCCEEW, 2024c) and there are no recent records within the locality. Therefore, a local population of the species, if present, is not likely to be placed at risk of extinction.

Grey-crowned Babbler

In NSW, the Grey-crowned Babbler occurs on the western slopes of the Great Dividing Range, and on the western plains. It also occurs in woodlands in the Hunter Valley as well as the north coast of NSW. The Grey-crowned Babbler inhabits open Box-Gum Woodlands on the slopes, Box-Cypress-pine and open Box Woodlands on alluvial plains, and woodlands on fertile soils in coastal regions. They feed on invertebrates, either by foraging on the trunks and branches of eucalypts or other woodland trees, or on the ground, digging and probing amongst leaf litter and tussock grasses. Several conspicuous, dome-shaped stick nests are built and maintained year-round. These nests are usually located in shrubs or sapling eucalypts, although they may be built in the outermost leaves of low branches of large eucalypts. Territories range from one to 50 ha (usually around 10 ha) and defended all year with territorial disputes with neighbouring groups being frequent (NSW DCCEEW, 2024d).

Grey-crowned Babbler is associated with all PCTs within the subject land (PCT 13, 15, 57 and 103). The total area of suitable habitat within the subject land is 23.61 ha. The proposed works will impact 0.21 ha of suitable habitat for the species, with 23.40 ha of suitable habitat remaining within the subject land. Impacts to 0.21 ha equate to 0.89% of available habitat within the subject land. There are 15 records of the species (totalling 30 individuals) on BioNet, within

The following is to be taken into account for the purposes of determining whether a proposed development or activity is likely to significantly affect threatened species or ecological communities, or their habitats
the locality with sightings ranging from 1983 to 2021. The closest record is 2.5 km north of the subject land. There is moderate potential for this species to occur within the subject land. Most habitat will remain within the subject land and there is additional habitat adjoining onto the subject land along Kidman Way. Mitigation measures aim to minimise potential impacts on this species. Therefore, it is unlikely that the proposed works will have an adverse effect on the life cycle of any Grey-crowned Babblers and the local population, if it uses the subject land, is not likely to be placed at risk of extinction.
b) In the case of an endangered ecological community or critically endangered ecological community, whether the proposed development or activity: **i. is likely to have an adverse effect on the extent of the ecological community such that its local occurrence is likely to be placed at risk of extinction, or** **ii. is likely to substantially and adversely modify the composition of the ecological community such that its local occurrence is likely to be placed at risk of extinction**
Not applicable.
c) In relation to the habitat of a threatened species or ecological community: **i. the extent to which habitat is likely to be removed or modified as a result of the proposed development or activity, and** **ii. whether an area of habitat is likely to become fragmented or isolated from other areas of habitat as a result of the proposed development or activity, and** **iii. the importance of the habitat to be removed, modified, fragmented or isolated to the long-term survival of the species or ecological community in the locality**
i. Both the Varied Sittella and the Grey-crowned Babbler are associated with all PCTs within the subject land (PCT 13, 15, 57 and 103). Total habitat within the subject land is 23.61 ha. The proposed works will impact 0.21 ha of suitable habitat for these species, which is 0.89% of available habitat within the subject land. 23.40 ha of suitable habitat will remain. ii. The subject land is situated within an existing fragmented landscape surrounded by agricultural land. Remnant woodland habitat remains in isolated linear and clustered patches throughout the locality. The small area of habitat impacted equates to a 0.89% loss inside the subject land. It will result in minor impacts, due to the removal of less than 10 trees at the entry point to Kidman Way, however this will be minimal. These impacts are unlikely to affect landscape connectivity for either species, and are unlikely to impact the species significantly. iii. The subject land is unlikely to be important for either species. The fragmentation of habitat by the removal of 0.21 ha is unlikely to affect landscape connectivity for either species. Mitigation measures proposed will reduce the impact to these species. Therefore, the removal of this 0.21 ha of habitat is not likely to impact the long-term survival of the species in the locality.
d) whether the proposed development or activity is likely to have an adverse effect on any declared area of outstanding biodiversity value (either directly or indirectly)
This proposed development is not within or near any declared Areas of Outstanding Biodiversity Value (AOBV), and

The following is to be taken into account for the purposes of determining whether a proposed development or activity is likely to significantly affect threatened species or ecological communities, or their habitats
thus will not have any direct or indirect adverse effects on AOBVs.
e) whether the proposed development or activity is or is part of a key threatening process or is likely to increase the impact of a key threatening process
The BC Act lists the following key threatening processes (KTP's) that are relevant to the proposal and which could have impacts on the Varied Sittella and Grey-crowned Babbler: • **Clearing of native vegetation:** The clearing of native vegetation, including areas less than 2 ha in extent, contribute to the loss of biodiversity. Clearing can lead to direct habitat loss, habitat fragmentation and associated genetic impacts, habitat degradation and off–site impacts such as downstream sedimentation (NSW DCCEEW, 2023). The proposal will increase this KTP through impact to 0.21 ha of native vegetation. • **Predation by the Feral Cat (*Felis catus*):** Feral cat populations are free-living and able to survive and reproduce with no or minimal reliance on humans. They predate on native Australian animals including mice, pygmy possums, bandicoots, birds, and lizards. Feral cats have been a leading cause of decline for some species, and many species have or are at risk of becoming threatened due to feral cat predation (NSW DCCEEW, 2021c). Feral Cats are likely to already occur within the locality. Because the development is a solar farm, the introduction of new domestic pets is unlikely. • **Predation by the European Red Fox (*Vulpes vulpes*):** The European Red Fox does not appear to favour any particular habitat and is largely opportunistic in its selection of prey (NSW DCCEEW, 2021d). The European Red Fox is likely to already occur within the locality and it is unlikely that the proposed works would increase this KTP. • **Aggressive exclusion of birds from woodland and forest habitat by abundant Noisy Miners (*Manorina melanocephala)*: I**t is unlikely that the proposed works would increase this KTP due to the already fragmented nature of the subject land.
Recommended mitigation measures and safeguards for threatened entities:
Mitigation measures and safeguards for threatened entities include: • Clearly delineating approved clearing area with temporary fencing or flagging or similar. • Ensuring stockpile areas are within the development footprint. • Consider using woodchip mulch from cleared vegetation for site remediation rather than grass seeding to support natural regeneration of local species. • Use native grass seed mix if grass must be sown. • Any imported topsoil should be certified weed free. • Utilising weed quarantine measures such as cleaning down loose soil from machinery and vehicles entering and exiting the site within an identified weed brush-down area. For further information refer to Section 5.
Conclusion
The impacts of the proposal on the Varied Sittella and Grey-crowned Babbler are manageable and further assessments are not required. A significant impact is **unlikely**, based on the following conclusions: • The amount of habitat impacted (0.21 ha) as part of the proposed works is minor in the local context.

The following is to be taken into account for the purposes of determining whether a proposed development or activity is likely to significantly affect threatened species or ecological communities, or their habitats
• 23.40 ha of suitable foraging habitat will remain within the subject land. • No significant fragmentation or isolation of habitat will occur, and no barrier of movement will occur. • Landscape connectivity for the species will remain. • No substantial contribution to any Key Threatening Processes. • Mitigation measures recommended to further avoid potential impacts to threatened entities.

D.3 Raptors

This Five-part Test characterises the significance of likely impacts associated with the proposal on the listed species:

- Spotted Harrier (*Circus assimilis*) BC Act – V

The following is to be taken into account for the purposes of determining whether a proposed development or activity is likely to significantly affect threatened species or ecological communities, or their habitats
a) In the case of a threatened species, whether the proposed development or activity is likely to have an adverse effect on the life cycle of the species such that a viable local population of the species is likely to be placed at risk of extinction?
The Spotted Harrier occurs throughout the Australian mainland, except in densely forested or wooded habitats of the coast, escarpment and ranges. Individuals disperse widely in NSW and comprise a single population. It occurs in grassy open woodland including *Acacia* and mallee remnants, inland riparian woodland, grassland and shrub steppe. Usually found in native grassland, but also occurs in agricultural land, foraging over open habitats including edges of inland wetlands. The species builds a stick nest in a tree and lays eggs in spring (or sometimes autumn), with the young remaining in the nest for several months (NSW DCCEEW, 2024e). The Spotted Harrier is associated with all PCTs within the subject land (PCT 13, 15, 57 and 103). The total area of suitable habitat within the subject land is 23.61 ha. The proposed works will impact 0.21 ha of suitable habitat for the species, with 23.40 ha of suitable habitat remaining within the subject land. No suitable breeding habitat was detected during the site survey. The 0.21 ha of habitat impacted is likely to only be used for foraging. The loss of 0.21 ha only equates to 0.89% of available habitat within the subject land. There are 4 records in BioNet of the species within the locality dating from 1990, 1992, 2006 and 2011. The closest record is 1.5 km south of the subject land. The species could occur within the subject land, however, due to the fragmented nature of the subject land, it is unlikely that the species would depend on this site. Furthermore, it is unlikely that minor clearing (0.21 ha) will have an adverse effect on the life cycle of Spotted Harrier as no breeding habitat features were identified within the development footprint. Therefore, a local population of the species, if present, is not likely to be placed at risk of extinction.
b) In the case of an endangered ecological community or critically endangered ecological community, whether the proposed development or activity: **i. is likely to have an adverse effect on the extent of the ecological community such that its local occurrence is likely to be placed at risk of extinction, or** **ii. is likely to substantially and adversely modify the composition of the ecological community such that its local occurrence is likely to be placed at risk of extinction**
Not applicable.
c) In relation to the habitat of a threatened species or ecological community: **i. the extent to which habitat is likely to be removed or modified as a result of the proposed development or activity, and** **ii. whether an area of habitat is likely to become fragmented or isolated from other areas of habitat as a result of the proposed development or activity, and**

The following is to be taken into account for the purposes of determining whether a proposed development or activity is likely to significantly affect threatened species or ecological communities, or their habitats
iii. the importance of the habitat to be removed, modified, fragmented or isolated to the long-term survival of the species or ecological community in the locality
i. Spotted Harrier is associated with all PCTs within the subject land (PCT 13, 15, 57 and 103). Suitable habitat within the subject land is 23.61 ha. There will be impacts to 0.21 ha of foraging habitat for the species, with 23.40 ha of suitable habitat remaining within the subject land. The clearing equates to only 0.89% loss of foraging habitat within the subject land. No suitable breeding habitat will be impacted by the proposed activity. ii. The subject land is situated within an existing fragmented landscape surrounded by agricultural land. Remnant woodland habitat remains throughout the locality. The Spotted Harrier is a highly mobile species, able to disperse into adjacent habitat. The small proportion of habitat that will be impacted as a result of the proposed works (0.21 ha or 0.89%) will result in minor habitat fragmentation, however this will be minimal and is unlikely to impact the species significantly, and will not create a barrier of movement for the species. iii. There are (4) Spotted Harrier records on BioNet within the locality dating from 1990, 1992, 2006 and 2011. The subject land is unlikely to be locally important breeding habitat for the species which was confirmed during the site inspection. Furthermore, the subject land is dominated by exotic groundcover where Spotted Harriers prefer native groundcover habitat for foraging (NSW DCCEEW, 2024e). Therefore, the removal of 0.21 ha of habitat is not likely to impact the long-term survival of the species in the locality.
d) whether the proposed development or activity is likely to have an adverse effect on any declared area of outstanding biodiversity value (either directly or indirectly)
This proposed development is not within or near any declared Areas of Outstanding Biodiversity Value (AOBV), and thus will not have any direct or indirect adverse effects on AOBVs.
e) whether the proposed development or activity is or is part of a key threatening process or is likely to increase the impact of a key threatening process
The BC Act lists the following key threatening processes (KTP's) that could have the potential impacts on the Spotted Harrier: • **Clearing of native vegetation:** The clearing of native vegetation, including areas less than 2 ha in extent, contribute to the loss of biodiversity. Clearing can lead to direct habitat loss, habitat fragmentation and associated genetic impacts, habitat degradation and off–site impacts such as downstream sedimentation (NSW DCCEEW, 2023). The proposal will increase this KTP with impacts to 0.21 ha of native vegetation. • **Invasion of plant communities by exotic perennial grasses**: There is potential for the invasion of exotic species as a result of the proposed works, which could impact the Spotted Harrier as they prefer native grasslands (NSW DCCEEW, 2024e), however, mitigation measures including strict weed management protocols to prevent further invasions of exotic grasses.
Recommended mitigation measures and safeguards for threatened entities:
Mitigation measures and safeguards for threatened entities include: • Clearly delineating approved clearing area with temporary fencing or flagging or similar. • Ensuring stockpile areas are within the development footprint. • Consider using woodchip mulch from cleared vegetation for site remediation rather than grass seeding to support natural regeneration of local species.

The following is to be taken into account for the purposes of determining whether a proposed development or activity is likely to significantly affect threatened species or ecological communities, or their habitats
• Use native grass seed mix if grass must be sown. • Any imported topsoil should be certified weed free. • Utilising weed quarantine measures such as cleaning down loose soil from machinery and vehicles entering and exiting the site within an identified weed brush-down area. For further information refer to Section 5.
Conclusion
The impacts of the proposal on the Spotted Harrier are manageable and further assessments are not required. A significant impact is **unlikely**, based on the following conclusions: • The amount of habitat impacted (0.21 ha) as part of the proposed works is minor in the local context. • No breeding habitat will be impacted as confirmed from the site survey. • 23.40 ha of suitable foraging habitat will remain within the subject land. • No significant fragmentation or isolation of habitat will occur, and no barrier of movement will occur. • No substantial contribution to any Key Threatening Processes. • Mitigation measures recommended to further avoid potential impacts to threatened entities.

D.4 Mammals

This Five-part Test characterises the significance of likely impacts associated with the proposal on the listed species:

- Corben's Long-eared Bat (*Nyctophilus corbeni*) BC Act – V; EPBC Act – V

The following is to be taken into account for the purposes of determining whether a proposed development or activity is likely to significantly affect threatened species or ecological communities, or their habitats
a) In the case of a threatened species, whether the proposed development or activity is likely to have an adverse effect on the life cycle of the species such that a viable local population of the species is likely to be placed at risk of extinction?
Overall, the distribution of the south eastern form of Corben's Long-eared Bat coincides approximately with the Murray Darling Basin with the Pilliga Scrub region being the distinct stronghold for the species. It 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 westerns slopes and plains of NSW and southern Queensland. Roosting habitat includes tree hollows, crevices, and under loose bark (NSW DCCEEW, 2024f). Corben's Long-eared Bat is associated with PCT 57 and 103 within the subject land. The total area of suitable habitat within the subject land is 4.28 ha. The proposed works will impact 0.19 ha of suitable habitat for the species, with 4.09 ha of suitable habitat remaining within the subject land. There is no suitable breeding habitat inside the development footprint, therefore the 0.19 ha of habitat to be impacted is likely to be foraging only. The 0.19 ha impacted is 4.44% of available habitat within the subject land. No BioNet records exist of this species within the locality. There is potential for this species to forage within the subject land, however due to the fragmented nature of the subject land it is unlikely that the species would depend on this site. Furthermore, it is unlikely that the small area of impact (0.19 ha) will have an adverse effect on the life cycle of Corben's Long-eared Bat as no breeding habitat will be impacted. Therefore, a local population of the species, if present, is not likely to be placed at risk of extinction.
b) In the case of an endangered ecological community or critically endangered ecological community, whether the proposed development or activity: **i. is likely to have an adverse effect on the extent of the ecological community such that its local occurrence is likely to be placed at risk of extinction, or** **ii. is likely to substantially and adversely modify the composition of the ecological community such that its local occurrence is likely to be placed at risk of extinction**
Not applicable.
c) In relation to the habitat of a threatened species or ecological community: **i. the extent to which habitat is likely to be removed or modified as a result of the proposed development or activity, and** **ii. whether an area of habitat is likely to become fragmented or isolated from other areas of habitat as a result of the proposed development or activity, and** **iii. the importance of the habitat to be removed, modified, fragmented or isolated to the long-term**

The following is to be taken into account for the purposes of determining whether a proposed development or activity is likely to significantly affect threatened species or ecological communities, or their habitats
survival of the species or ecological community in the locality
i. Corben's Long-eared Bat is associated with PCT 57 and 103 within the subject land. The total area of suitable habitat within the subject land is 4.28 ha. The proposed works will impact 0.19 ha of habitat, with 4.09 ha of habitat remaining within the subject land. Habitat removed is likely to be foraging habitat only as no suitable breeding habitat was identified in the development footprint during the site survey. ii. The subject land is situated within an existing fragmented landscape surrounded agricultural land. Remnant woodland habitat remains throughout the locality. It is suggested that Corben's Long-eared Bat has a large home range (DPE, 2015) and is therefore able to move large distances and disperse into adjacent habitat. The small proportion of habitat impacted (0.19 ha) will result in minor habitat fragmentation, however not likely to impact the species significantly, and will not create a barrier of movement for the species. iii. Site survey has confirmed that there is no breeding habitat within the development footprint. Furthermore, the species is found to be more reliant on larger stands of vegetation in comparison to smaller patches. Optimal habitat contains a distinct tree canopy and dense, cluttered understorey layers. Evidence suggests that its home range is probably large (DPE, 2015). Removing 0.19 ha of habitat is not likely to impact the long-term survival of this species in the locality.
d) whether the proposed development or activity is likely to have an adverse effect on any declared area of outstanding biodiversity value (either directly or indirectly)
This proposed development is not within or near any declared Areas of Outstanding Biodiversity Value (AOBV), and thus will not have any direct or indirect adverse effects on AOBVs.
e) whether the proposed development or activity is or is part of a key threatening process or is likely to increase the impact of a key threatening process
The BC Act lists the following key threatening processes (KTP's) that have potential to impact the Corben's Long-eared Bat: • **Clearing of native vegetation:** The clearing of native vegetation, including areas less than 2 ha in extent, contributes to the loss of biodiversity. Clearing can lead to direct habitat loss, habitat fragmentation and associated genetic impacts, habitat degradation and off–site impacts such as downstream sedimentation (NSW DCCEEW, 2023). The proposal will increase this KTP by clearing 0.21 ha of native vegetation, where 0.19 ha is associated with Corben's Long-eared Bat (foraging habitat only). • **Predation by the Feral Cat (*Felis catus*):** Feral cat populations are free-living and able to survive and reproduce with no or minimal reliance on humans. They predate on native Australian animals including mice, pygmy possums, bandicoots, birds, and lizards. Feral cats have been a leading cause of decline for some species, and many species have or are at risk of becoming threatened due to feral cat predation (NSW DCCEEW, 2021c). It is unknown if Corben's Long-eared Bat is at risk of predation by Feral Cats (DPE, 2015). Feral Cats are likely to already occur within the locality and the proposed development will not likely introduce more domestic animals to the site. It is unlikely that the proposed works would increase this KTP. • **Predation by the European Red Fox (*Vulpes vulpes*):** The European Red Fox does not appear to favour any particular habitat and is largely opportunistic in its selection of prey (NSW DCCEEW, 2021d). It is unknown if Corben's Long-eared Bat is at risk of predation by the European Red Fox (DPE, 2015). The European Red Fox is likely to already occur within the locality and it is unlikely that the proposed works would increase this KTP.
Recommended mitigation measures and safeguards for threatened entities:

The following is to be taken into account for the purposes of determining whether a proposed development or activity is likely to significantly affect threatened species or ecological communities, or their habitats
Mitigation measures and safeguards for threatened entities include: • Clearly delineating approved clearing area with temporary fencing or flagging or similar. • Ensuring stockpile areas are within the development footprint. • Consider using woodchip mulch from cleared vegetation for site remediation rather than grass seeding to support natural regeneration of local species. • Use native grass seed mix if grass must be sown. • Any imported topsoil should be certified weed free. • Utilising weed quarantine measures such as cleaning down loose soil from machinery and vehicles entering and exiting the site within an identified weed brush-down area. For further information refer to Section 5.
Conclusion
The impacts of the proposal on the Corben's Long-eared Bat are manageable and further assessments are not required. A significant impact is **unlikely**, based on the following conclusions: • The amount of habitat impacted (0.19 ha) as part of the proposed works is minor in the local context. • No breeding habitat will be removed. • 4.09 ha of suitable foraging habitat will remain within the subject land. • No significant fragmentation or isolation of habitat will occur, and no barrier of movement will occur. • No substantial contribution to any Key Threatening Processes. • Mitigation measures recommended to further avoid potential impacts to threatened entities.

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