

BIODIVERSITY ASSESSMENT REPORT

For Lot 97 Brolgan Road, Parkes NSW
Prepared for Total Pty Ltd



Biodiversity Assessment Report – Lot 97 Brolgan Road, Parkes

Document Verification

Revision	Author/s	Review	Date submitted	Client Review and Approval	
				Name	Date
V_1	J Dessmann	E Cotterill	14/12/18	J Squillacioti (Total Pty Ltd)	21/12/18
Final	J Dessmann		21/12/2018		

Emily Cotterill (BSc, BA, CEnvP)
Director & Principal Consultant
0419432208
emily@envirofact.com.au

Anna Uhrig (BSc)
Field Ecologist
anna@envirofact.com.au

Josephine Dessmann (BSc, Hons1)
Senior Ecologist / Accredited
Assessor BAAS18128
0407756227
josephine@envirofact.com.au

EnviroFact Pty Ltd, T/A The Environmental Factor
P.O. Box 268 Bathurst NSW 2795
ABN: 37 607 339 131
www.envirofact.com.au

This Biodiversity Assessment Report (BAR) for the development proposal at Lot 97, Brolgan Road Parkes has been prepared by The Environmental Factor (TEF) at the request of Total Pty Ltd (Total) to describe the ecological condition of the existing environment associated with the proposal site. This document is not intended to be utilised or relied upon by any persons other than Total Pty Ltd, nor to be used for any purpose other than that articulated above. Accordingly, TEF accepts no responsibility in any way whatsoever for the use of this report by any other persons or for any other purpose.

The information, statements, recommendations and commentary (together the “Information”) contained in this report have been prepared by TEF from material provided by Total Pty Ltd, the NSW Office of Environment and Heritage, the Australian Government Department of the Environment and Energy and obtained through the assessment process. TEF has not sought any independent confirmation of the reliability, accuracy or completeness of this information. It should not be construed that TEF has carried out any form of audit of the information which has been relied upon.

Accordingly, whilst the statements made in this report are given in good faith, TEF accepts no responsibility for any errors in the information provided by Total Pty Ltd, nor the effect of any such errors on the analysis undertaken, suggestions provided, or this report.

Table of Contents

1	Introduction	8
1.1	Project Background	8
1.2	Site Description	9
1.3	Information sources	9
1.3.1	Publications and databases	9
1.3.2	Spatial data	10
2	Legislative Context and Stakeholder Consultation	13
2.1	Commonwealth (Federal) Legislation	13
2.1.1	Environment Protection and Biodiversity Conservation Act 1999 (EPBC Act)	13
2.2	State (NSW) Legislation, Policies and Guidelines	13
2.2.1	Environmental Planning and Assessment Act 1979 (EP&A Act)	13
2.2.2	Fisheries Management Act 1994 (FM Act)	13
2.2.3	Local Land Services Act 2013 (LLS Act)	14
2.2.4	Local Land Services Amendment Act 2016 (LLSA Act)	14
2.2.5	Biodiversity Conservation Act 2016 (BC Act)	14
2.2.6	Biodiversity Conservation Regulatory Act 2017 (BC Regulatory Act)	15
2.2.7	NSW Biosecurity Act 2015 (Biosecurity Act)	16
3	Landscape	17
3.1	Bioregions and landscapes	17
3.1.1	Mitchell Soil Landscape	17
3.2	Waterways and wetlands	17
3.3	Native vegetation extent	17
3.4	Assessment of patch size and connectivity	17
4	Methodology	19
4.1	General surveys	19
4.2	Survey of native vegetation	19
4.2.1	Survey conditions	20
4.2.2	Targeted flora surveys	20
4.2.1	Targeted fauna surveys	21
5	Results	22
5.1	Vegetation	22
5.2	Streamlined Assessment – Clearing paddock trees	23

5.3	Plant Community Type (PCT) and Threatened Ecological Communities	23
5.3.1	Plant Community Types mapped on site	23
5.3.2	Nominated Plant Community Type for the Subject Land	24
5.4	Paddock tree biodiversity value	25
5.5	Species recorded	26
5.5.1	Flora species	26
5.5.2	Fauna species	27
6	Impact Assessment	30
6.1	Biodiversity Offset Scheme	30
6.2	Threatened Biota	31
6.2.1	Threatened Communities	31
6.2.2	Threatened Species	32
7	Impact Mitigation and Minimisation Measures	34
7.1	Planning	34
7.2	Supervised clearing	34
7.3	Mitigating loss of habitat	34
7.4	Water and soil management	35
7.5	Landscape values enhanced	35
8	Conclusion	36
9	References	37
10	Appendices	38

Figures, Tables and Plates

Table 1	Subject Land IBRA region and IBRA sub region	17
Table 2	Weather conditions preceding and during field surveys (weather station: IDN60800 Parkes airport)	20
Table 3	Vegetation communities mapped within 1.5km of the subject land	22
Table 4	Paddock trees present within the subject land	24
Table 5	Paddock tree classes	25
Table 6	Community Condition Benchmark data PCT ID 250 and field data native species richness comparison	25
Table 7	Community Condition Benchmark data PCT ID 250 and field data native cover (%) comparison	25
Table 8	Ecosystem credits per paddock tree removed	26
Table 9	Area criteria – Biodiversity Offset Scheme threshold	30

Table 10 BC Act criteria for identification of Box Gum Woodland EEC within the subject land (NPWS 2006 and DECC 2007).....	31
Table 11 EPBC Act criteria for the identification of Box-Gum Woodland CEEC within the subject land (DEH 2008)	31
Table 12 Fauna species recorded.....	43
Table 13 Threatened biota and MNES likelihood of occurrence assessment	47
Figure 1 Subject Land including paddock tree locations	11
Figure 2 Vegetation mapped within 1.5km of Subject land	12
Figure 3 Plant Community Types within the Subject Land	28
Figure 4 Field investigation and validated vegetation mapping occurring within the Subject Land	29
Plate 1 Vegetation validation plot from 0m	22
Plate 2 Vegetation validation plot from 50m	22
Plate 3 and Plate 4 Exotic vegetation in man-made drainage channel	23
Plate 5 litter cover 1m x 1m sub plots	23
Plate 6 PT1	24
Plate 7 PT2	24
Plate 8 PT3	24
Plate 9 PT4	24
Plate 10 PT5	24
Plate 11 PT10	24
Plate 12 African Boxthorn	26
Plate 13 Patterson’s Curse	26
Plate 14 Saffron Thistle	27
Plate 15 Horehound	27

Abbreviations

Abbreviations	
APZ	Asset Protection Zone
AOBV	Areas of Outstanding Biodiversity Value
BAM	Biodiversity Assessment Methodology
BC Act	<i>Biodiversity Conservation Act 2016</i>
BOS	Biodiversity Offset Scheme
CEEC	Critically Endangered Ecological Community
DEE	Department of Environment and Energy
DPI	Department of Primary Industries
EEC	Endangered Ecological Community
EPA	Environmental Protection Agency
EPBC Act	<i>Environmental Protection and Biodiversity Conservation Act 1999</i>
FM Act	<i>Fisheries Management Act 1994</i>
HTE	High Threat Exotic
LEP	Local Environment Plan
MNES	Matters of National Environmental Significance
NSW	New South Wales
OEH	Office of Environment and Heritage
PAD	<i>Potential Archaeological Artefacts</i>
POEO Act	<i>Protection of the Environment Operations Act 1997</i>
TBC	To be confirmed
TEF	The Environmental Factor
TSR	Travelling Stock Reserve
WoNS	Weed of National Significance

Definitions

The following terms are used when describing the proposal site and surrounding landscapes in this report:

Subject Land	The area to be directly affected by the proposal (measuring 9.8ha), including earthworks, vegetation clearing, lay down areas and stockpile sites, and establishment of site access
---------------------	---

Study area	Includes the subject land (as described above), inclusive of the surrounding residual lot, to account for any indirect impacts associated with the proposal for Tests of Significance.
Locality	Is the area within 10 kilometres of the subject land.

1 INTRODUCTION

The Environmental Factor (TEF) was commissioned by Total Pty Ltd to undertake a Biodiversity Assessment Report (BAR) to appraise the ecological values and constraints relating to the proposal to construct a pet food factory and access road within Lot 97 DP 655704 along Brolgan Road, to the west of the township of Parkes in the Central West of NSW (Figure 1).

This report provides an assessment of potential impacts to native biota from the proposed development to a level sufficient to inform the approval pathway required under both the NSW *Biodiversity Conservation Act 2016* (BC Act) and the *Environmental Planning and Assessment Act 1979* (EP&A Act). This report is based on information obtained through the database searches and field surveys completed, and describes the native vegetation, any occurrence of threatened species, populations and communities and associated habitat features within the Subject Land. The Subject Land is located within the Parkes Shire Local (PSC) Government Area (LGA), and is subject to the planning provisions of the PSC Local Environmental Plan 2012 (LEP). The legislative context, methods used, and recommendations are included within this report.

This BAR is aimed at providing an up to date understanding of the ecological/biodiversity assets present within the subject site (as at November 2018), which may act as constraints to the proposed development. Knowledge of these constraints can help the Proponent best plan for future usage of the site without significantly affecting any important ecological/biodiversity features. This report includes Tests of Significance as required under both the *Biodiversity Conservation Act 2016* (BC Act) and *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) for the purpose of demonstrating the level of impact the proposal is likely to have on threatened species, ecological communities and their habitats that are present, or likely to be present, within the Subject Land.

This BAR has been prepared and endorsed by Josephine Dessmann, an Accredited Assessor (BAAS18128) under the *Biodiversity Conservation Regulation 2017*, and is consistent with the Biodiversity Assessment Method (BAM) (OEH 2018). Emily Cotterill, Certified Environmental Practitioner (CEnvP), has also reviewed this BAR and has endorsed it for approval.

1.1 Project Background

The proposed development will occur at Lot 97 DP 655704 Brolgan Road Parkes NSW, approximately 5km west of Parkes centre. The proposal is for the establishment of a large warehouse measuring approximately 80m by 140m, which will contain a pet food manufacturing factory, primarily producing dry kibble.

The existing ~100ha lot is currently being subdivided (not part of this proposal) to create a 35ha residual lot which will become the land the pet food manufacturing factory is located on. The building envelope for the factory and car park are shown Figure 1 with a 20m driveway following along the existing property boundary running north/south. A buffer has been included surrounding these areas to accommodate likely impacts arising from construction works, and potential future expansion of the proposed facility. This is the Subject Land for this report measuring 9.8 ha.

The plans for the pet food manufacturing factory that is proposed have been provided as Appendix A.

1.2 Site Description

The Subject Land for this BAR covers a total area of approximately **9.8 ha**, located within a residual lot measuring approximately 35ha (Figure 1). The Subject Land is situated in the Parkes Local Government Area (LGA), and is dominated by exotic vegetation, currently being managed as a cropped canola field with intermittent sheep grazing, resulting in a highly modified environment (Figure 2).

The site is bound to the north by Brolgan Road. Special Activities SP1 land occurs to the north and east, with Primary Production Land RU1 zoned across the property lot as well as to the south and west.

There are no mapped drainage lines within the site. A small offline dam occurs outside of the subject land and will remain untouched by the proposed works. This dam provides an important watering source for many native fauna and stock.

The subject land consists predominantly of cleared land dominated by exotic canola crop (*Brassica napus*), common pasture grasses and herbaceous weeds (approximately 90% cover). Six (6) indigenous paddock trees and one stag (dead standing tree) occur scattered throughout the subject land (Figure 1). These paddock trees include Kurrajong (*Brachychiton dry populneus*), White Cypress Pine (*Callitris glaucophylla*) and Western Grey Box (*Eucalyptus microcarpa*) as well as three (3) exotic Pepper Trees (*Schinus molle*).

There is an absence of mid-story vegetation, and where it is present, it consists of the occasional specimen of the woody weed, African Boxthorn (*Lycium ferocissimum*). At the time of survey, the native vegetation was considered to be easily identifiable with mature seed present (refer Section 5). Stick nests were observed at three (3) locations on the subject land, as were two (2) hollow bearing trees and one (1) stag, each of which may provide habitat for native arboreal fauna, including mammals, reptiles and birds.

1.3 Information sources

The following resources were accessed to inform the survey methodology used during field investigations, and to aid in the preparation of this BAR.

1.3.1 Publications and databases

Relevant State and Commonwealth Databases

- Protected Matters Search Tool (Department of Energy and Environment 2018)
- NSW Bionet. The website of the Atlas of NSW Wildlife (OEH 2018)
- NSW Scientific Committee Final Determinations

State and Federal Guidelines

- Threatened Species Survey and Assessment: Guidelines for developments and activities. Working Draft. (DEC 2004)
- Threatened species survey and assessment guidelines: field survey methods for fauna: Amphibians (DEC 2009)
- NSW Guideline to Surveying Threatened Plants (OEH 2016)
- Survey guidelines for Australia's threatened birds. Guidelines for detecting birds listed as threatened under the *Environment Protection and Biodiversity Conservation Act 1999* (Commonwealth of Australia 2010)

- Survey guidelines for Australia's threatened bats. Guidelines for detecting bats listed as threatened under the *Environment Protection and Biodiversity Conservation Act 1999* (Commonwealth of Australia 2010)
- Survey guidelines for Australia's threatened mammals. Guidelines for detecting mammals listed as threatened under the *Environment Protection and Biodiversity Conservation Act 1999* (Commonwealth of Australia 2011)
- Survey guidelines for Australia's threatened orchids. Guidelines for detecting bats listed as 'threatened' under the *Environment Protection and Biodiversity Conservation Act 1999* (Commonwealth of Australia 2013).

Council Documents

- PSC Local Environmental Plan 2012
- Weeds for Central West Region (DPI 2018)

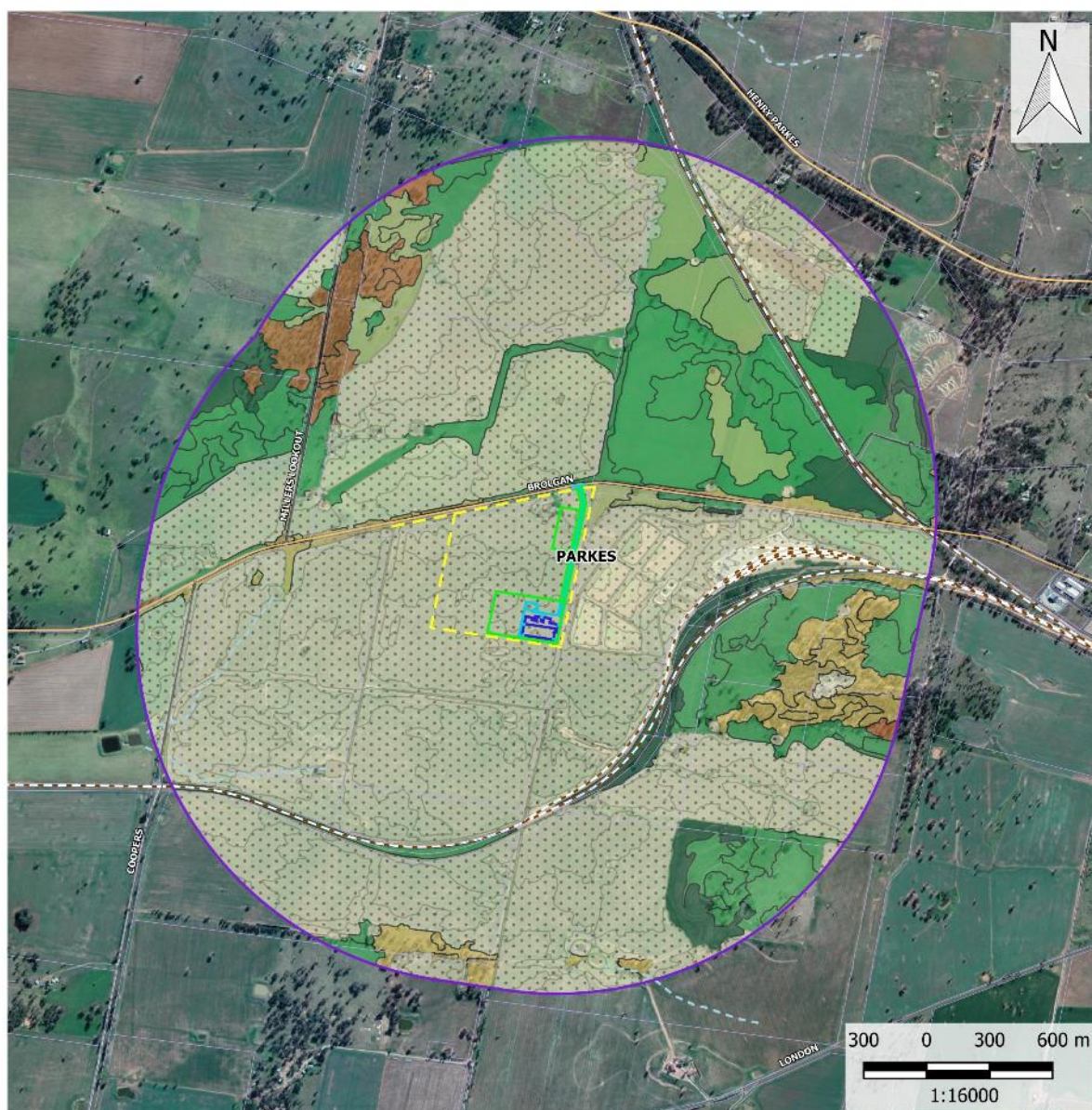
1.3.2 Spatial data

- The Native Vegetation of Central West Lachlan V1 E4333 (OEH 2017)
- New South Wales Vegetation Information System (VIS) (OEH 2018)
- SIX Maps (LPI 2018)



© 2018. Whilst every care has been taken to prepare this map, TEF make no representations or warranties about its accuracy, reliability, completeness or suitability for any particular purpose and cannot accept liability and responsibility of any kind (whether in contract, tort or otherwise) for any expenses, losses, damages and/or costs (including indirect or consequential damage) which are or may be incurred by any party as a result of the map being inaccurate, incomplete or unsuitable in any way and for any reason. Service Layer Credits: Source: Google satellite (NSW LPI)

Figure 1 Subject Land including paddock tree locations



Plant Community Types within 1.5km of the Subject land

Legend

— Property boundary	--- Drainage line
— Subject Land	
— Driveway	
— Building footprint	
□ Lot boundary	
— Arterial Road	
— Local Road	
— Sub Arterial Road	
--- Railway line	
CW Lachlan PCT	
	■ Derived grassland of the NSW South Western Slopes
	■ Derived tussock grassland of the central western plains and lower slopes of NSW
	■ Not Native Vegetation
	■ Plains Grass grassland on alluvial mainly clay soils in the Riverina Bioregion and NSW South Western Slopes Bioregion
	■ Western Grey Box tall grassy woodland on alluvial loam and clay soils in the NSW South Western Slopes and Riverina Bioregions
	■ White Box - White Cypress Pine - Western Grey Box shrub/grass/forb woodland in the NSW South Western Slopes Bioregion

© 2018. Whilst every care has been taken to prepare this map, TEF make no representations or warranties about its accuracy, reliability, completeness or suitability for any particular purpose and cannot accept liability and responsibility of any kind (whether in contract, tort or otherwise) for any expenses, losses, damages and/or costs (including indirect or consequential damage) which are or may be incurred by any party as a result of the map being inaccurate, incomplete or unsuitable in any way and for any reason. Service Layer Credits: Source: Google satellite (NSW LPI)

Figure 2 Vegetation mapped within 1.5km of Subject land

2 LEGISLATIVE CONTEXT AND STAKEHOLDER CONSULTATION

The following legislation, policies and guidelines applicable to the Proposal have been reviewed, and the implications have been assessed accordingly as part of this BAR.

2.1 Commonwealth (Federal) Legislation

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

The Commonwealth *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) establishes a requirement for Commonwealth environmental assessment and approval for actions that are likely to have a significant impact on matters of national environmental significance (MNES), the environment on Commonwealth land, or actions taken on Commonwealth land MNES include:

- World heritage properties
- National heritage places
- Wetlands of international importance
- Listed threatened species and ecological communities
- Listed migratory species
- Commonwealth marine areas
- Nuclear actions

Federally listed threatened species and ecological communities with the potential to be impacted by the Proposal have been assessed as part of this BAR; no significant impact to Commonwealth listed species or ecological communities is anticipated (refer Sections 6 and 8, Appendix D and Appendix F).

2.2 State (NSW) Legislation, Policies and Guidelines

2.2.1 *Environmental Planning and Assessment Act 1979 (EP&A Act)*

The *Environmental Planning and Assessment Act 1979* (EP&A Act) forms the legal and policy platform for the assessment and approval of works in NSW, and aims to ensure that public authorities examine and take into account to the fullest extent possible all matters affecting or likely to affect the environment before they undertake or approve activities that do not require development consent.

All development in NSW is assessed in accordance with the provisions of the EP&A Act and the *Environmental Planning and Assessment Regulation 2000* (EP&A Regulation).

The proposal is being assessed under Part 4 of the EP&A Act, as development that requires consent, in line with Section 5.5 'Duty to consider environmental impact'.

2.2.2 *Fisheries Management Act 1994 (FM Act)*

The *Fisheries Management Act 1994* (FM Act) aims to conserve threatened species, populations and ecological communities of fish and marine vegetation native to NSW and to promote ecologically sustainable development, including the conservation of biological diversity. It also aims to reduce the threats faced by native fish and marine vegetation in NSW.

Section 220ZZ of the FM Act states that the determining authority must consider the effect of an activity on:

- Areas of Outstanding Biodiversity Value (AOBV) as defined by the BC Act, and

- Species, populations or ecological communities, or their habitats as listed under the FM Act, and whether there is likely to be a 'significant effect' on those species, populations or ecological communities

If a planned development or activity is likely to have an impact on an aquatic threatened species, population or ecological community this must be taken into account in the development approval process. If the impact is likely to be significant, as determined through a Test of Significance, participation in the Biodiversity Offset Scheme is required.

No fish or marine threatened species, populations or ecological communities are likely to be present on site.

2.2.3 Local Land Services Act 2013 (LLS Act)

The *Local Land Services Act 2013* (LLS Act) includes the management of natural resources in the consideration of the principles of Ecological Sustainable Development (ESD).

Vegetation clearing provisions are considered under Part 5A of the LLS Act. The LLS Act regulates the clearing of native vegetation on all land in NSW mapped as Category 2 – Regulated Land as mapped on the Native Vegetation Regulatory Map. It does not include Excluded Land and Category 1 Exempt Land mapped on the Native Vegetation Regulatory Map.

Vegetation clearing which does not require development consent under the EP&A Act is considered for approval by the Native Vegetation Panel under the LLS Act.

A review of the Native Vegetation Regulatory map (report generated 5/12/2018; Appendix B) confirmed that the subject land occurs largely on uncategorized Land. The Lots on which the Subject Land is located is not exempt from the LLS Act. In these areas clearing regulations under Part 5A LLS Act apply.

2.2.4 Local Land Services Amendment Act 2016 (LLSA Act)

The *Local Land Services Amendment Act 2016* (LLSA Act), which amended the *Local Land Services Act 2013*, authorised the making of the Land Management (Native Vegetation) Code 2018 (Div 5, Sch 1 of the LLSA Act). The aim of the Code is to authorise clearing of native vegetation on Category 2 regulated land under certain conditions and provide for the establishment and maintenance of set aside areas.

Review of the Native Vegetation Regulatory map confirmed that the study area occurs on uncategorized land. Consequently, the clearing regulations under Part 14 of the LLSA Act apply.

2.2.5 Biodiversity Conservation Act 2016 (BC Act)

Section 7.2 and 7.8 of the *Biodiversity Conservation Act 2016* (BC Act) states that the determining authority must consider the effect of an activity on

- Areas of Outstanding Biodiversity Value (AOBV), and/or
- Species, populations or ecological communities, or their habitats and whether there is likely to be a 'significant effect' on those species, populations or ecological communities.

The BC Act provides legal status for biota of conservation significance in NSW. It provides a framework for the Biodiversity Assessment Method (BAM) and the calculation of offset requirements for projects participating in the Biodiversity Offset Scheme (BOS).

The BC Act aims to;

- Conserve biological diversity on a bioregional and state scale
- Lists Areas of Outstanding Biodiversity Value (AOBV)
- Assess the extinction risk of species and ecological communities
- Identify Key Threatening Processes
- Slow the rate of biodiversity loss, and conserve threatened species

Section 7.2 of the BC Act provides that development under the *Environmental Planning and Assessment Act 1979* (EP&A) is likely to significantly affect threatened species if:

- (a) it is likely to significantly affect threatened species or ecological communities, or their habitats, according to the test in section 7.3, or
- (b) the development exceeds the biodiversity offsets scheme threshold if the biodiversity offsets scheme applies to the impacts of the development on biodiversity values, or
- (c) it is carried out in a declared area of outstanding biodiversity value.

A development application that is likely to significantly affect a threatened species must be accompanied by a biodiversity development assessment report (BDAR).

Tests of significance were undertaken for threatened species likely to be impacted by the Proposal as part of this BAR; results are provided in Appendix E and Appendix F.

2.2.6 Biodiversity Conservation Regulatory Act 2017 (BC Regulatory Act)

The *Biodiversity Conservation Regulation 2017* provides a number of considerations and practices to be implemented as part of the BC Act.

- Identifies clearing thresholds and the Biodiversity Values Map for the application of the Biodiversity Offsets Scheme (BOS)
- Outlines principles for serious and irreversible biodiversity impacts
- Rules for meeting biodiversity offset obligations
- Biodiversity certification criteria

The project is being assessed under Part 4 of the EP&A Act, requiring assessment as to whether the project meets the threshold for participation in the Biodiversity Offset Scheme.

Development that is subject to the BOS includes development requiring consent under Part 4 of the *Environmental Planning and Assessment Act 1979* (EP&A Act) (excluding complying development) and State Significant Development and State Significant Infrastructure.

As detailed above, most developments impacting on biodiversity values will require participation in the BOS, however some projects will be exempt. Exemptions apply to Part 4 developments only, specifically developments or activities where:

- the clearing area is within the bounds of the relevant clearing threshold; and
- the development is not located in an area identified on the “Biodiversity Values Map” and
- the development is not to be carried out in a declared area of Outstanding Biodiversity Value and
- the development is not “likely to significantly affect threatened species” using the test of significance in the BC Act.

It is likely that the Proposal will be exempt from participation in the BOS (refer to Section 6 and Appendix C, Appendix E and Appendix F).

2.2.7 NSW Biosecurity Act 2015 (Biosecurity Act)

The NSW *Biosecurity Act 2015* (Biosecurity Act) outlines mandatory measures that persons are to take with respect to biosecurity matters including the management of weeds (Part 2, Division 8 including Weeds of National Significance (WoNS)). Under the Biosecurity Act the responsibilities for weed management by public and private landholders are consistent reflecting that weed management is a shared community responsibility. The Act introduces the legally enforceable concept of a General Biosecurity Duty (GBD). Priority weeds are listed within Regional Strategic Weed Management Plans, however the GBD is not restricted to listed weeds.

The Biosecurity Act is administered by NSW Department of Primary Industries which determines the weed species covered by regulatory tools including Prohibited Matters, Control Orders and Biosecurity Zones. Existing Local Control Authorities (Councils) continue to be responsible for enforcing weed legislation.

Weeds identified on site are discussed in Section 5.5.1.

3 LANDSCAPE

3.1 Bioregions and landscapes

The Subject Land occurs within the NSW South West Slopes IBRA Bioregion, and Lower Slopes IBRA subregion (Table 1). The subject land occurs entirely within one NSW Mitchell Landscape Brolgan Plain Soil Landscape, within the Goonumbla Hills Mitchell soil landscape.

Table 1 Subject Land IBRA region and IBRA sub region

Site details	Site
IBRA region	NSW South West Slopes
IBRA sub region	Lower slopes

3.1.1 Mitchell Soil Landscape

Goh Goonumbla Hills NSS Lower Slopes

Rounded low hills on Ordovician and Silurian sandstone, andesite, siltstone and phyllite with a partial blanket of Tertiary quartz gravels and sands. General elevation 290 to 390m, local relief 70m. Stony yellow earths on the sands, thin brown structured loams on the hills merging with red-brown and red texture-contrast soils on the flats. Open forest of Western Grey Box (*Eucalyptus microcarpa*), white Cypress Pine (*Callitris glaucophylla*), with Bimble Box (*Eucalyptus populnea*) in the creeks and Red Ironbark (*Eucalyptus sideroxylon*) with shrubs on the gravels. Extensively cleared, grazed and cultivated.

3.2 Waterways and wetlands

There are no mapped watercourses within the Subject Land.

3.3 Native vegetation extent

A layer of native vegetation cover is required for a 1,500 m buffer around the Subject Land to determine the context of the site. The extent of native vegetation on the subject land and immediate surrounds was mapped using the Central West VIS map (OEH 2017).

The total area of the 1,500 m buffer around the Subject Land is 1765.54 ha, with the area of vegetation mapped within the buffer being 559.86 ha (Figure 2). This is equivalent to a potential native vegetation cover of 31.7 % within the 1,500m buffer, therefore falling in the >30% class as defined under the BAM.

3.4 Assessment of patch size and connectivity

Patch size, as defined by the BAM, is an area of native vegetation that:

- a) occurs on the development site or biodiversity stewardship site, and
- b) includes native vegetation that has a gap of less than 100m from the next area of moderate to good condition native vegetation (or ≤ 30 m for non-woody ecosystems).

Patch size may extend onto adjoining land that is not part of the development site or biodiversity stewardship site.

Patch size for the subject land was calculated for the vegetation on the development site using the field-validated map of vegetation types identified (Figure 4), and the updated native vegetation extent data layer prepared for the 1,500 m buffer (based on OEH 2017). Patch size is required to be assessed as one (1) of four (4) classes per vegetation zone mapped, being <5 ha, 5-24 ha, 25-100 ha or >100 ha.

Two (2) patches were identified for vegetation within the subject land, associated with sparse paddock trees. Native vegetation patches within the subject land is restricted to isolated paddock trees occurring within 100m of each other.

Based upon vegetation mapping and aerial photography interpretation beyond the subject land, the total area of these patches of native vegetation was calculated as <5ha.

4 METHODOLOGY

4.1 General surveys

Site assessment was undertaken from 19th through to the 21st November 2018 by two (2) trained ecologists, one of whom is a BAM Accredited Assessor. During the site assessment, the following activities were undertaken:

- Identifying and recording the vegetation communities present on the Subject Land, with focus on identifying any threatened ecological communities (TEC);
- Recording a detailed list of flora species encountered on the Subject Land, including searches for locally occurring threatened species, species diagnostic of threatened ecological communities and priority weeds;
- Recording opportunistic sightings of any fauna species, seen or heard, on the Subject Land or within the immediate surrounds;
- Identifying and recording the locations of threatened fauna habitat such as important nesting, roosting or foraging microhabitats;
- Undertaking targeted searches for the habitat of any threatened and regionally significant fauna including:
 - Tree hollows (habitat for threatened large forest owls, parrots, cockatoos and arboreal mammals);
 - Caves and crevices (habitat for threatened reptiles, small mammals and microbats);
 - Termite mounds (habitat for threatened reptiles and the echidna);
 - Waterbodies (habitat for threatened fish, frogs and water birds);
 - Fruiting / flowering trees (food for threatened birds and mammals);
 - Trees and shrubs supporting nest structures (habitat for threatened birds and arboreal mammals), and
 - Any other habitat features that may support fauna (particularly threatened) species.
- Assessing the connectivity and quality of the vegetation within the Subject Site and surrounding area.

4.2 Survey of native vegetation

Assessment and mapping of Plant Community Types (PCTs) was undertaken on the 20 November 2018. The subject land was traversed to identify the vegetation structure and dominant species and native vegetation.

Based upon traverses of the entire Subject Land, the native vegetation present was confirmed. A vegetation integrity plot was completed using a 20x50 m functional, structural and floristic plot survey, consistent with Section 5.3 of the BAM.

The identification of PCTs was in accordance with the NSW PCT classification as described in the BioNet Vegetation Classification (OEH 2018).

Determination of the most appropriate PCT for vegetation community within the Subject Land used the BioNet Vegetation Classification database to identify PCT types which matched the geographic distribution (based upon IBRA subregions), vegetation formation and floristics of vegetation within the Subject Land. The data for the potential PCT including vegetation formation, descriptive attributes and

distribution information were then reviewed to determine the most appropriate PCT for the vegetation community sampled within the subject land. Observations of vegetation structure and composition made during traverses of the subject land, as well as adjacent areas, also informed the determination of the most appropriate PCTs for the vegetation community within the Subject Land. It is noted that identification of vegetation communities and PCTs was complicated by the fact that field observations were of a currently cultivated canola field, which is highly disturbed from its original state having been previously cleared many years ago with only sparse native canopy trees remaining. Consequently, the identification of the vegetation community was based on canopy species present and remnant vegetation occurring immediately along the Brolgan Road. Due to the highly modified state of the vegetation onsite, which in some instances was predominantly canopy trees over exotic pasture with sparse occurrences of native forbs and grasses, a quantitative analysis was not undertaken or considered likely to provide accurate analysis of the PCT present.

A validation plot was completed to provide measures of native vegetation cover, vegetation cover and indicative species present.

4.2.1 Survey conditions

Results from field investigations were influenced by the timing and duration of surveys, field access and weather conditions prior to, and during the surveys. Details are outlined below.

Table 2 Weather conditions preceding and during field surveys (weather station: IDN60800 Parkes airport)

Date	Temperature (°C)		Rain (mm)	Wind	
	Minimum	Maximum		Speed km/hr	Direction
8/11/18	6.2	18.6	13.2	44	SW
9/11/18	3.7	22.9	0	26	S
10/11/18	5.1	25.9	0	39	SW
11/11/18	7.7	29.2	0	39	SW
12/11/18	12.3	31.8	0	43	NNW
13/11/18	19.9	Not available	0	52	NNE
14/11/18	18.1	27.2	2.2	37	SSE
15/11/18	13.9	30.3	0.2	46	SW
16/11/18	11.9	29.1	0	37	SW
17/11/18	8.5	30.0	0	50	ESE
18/11/18	13.6	28.6	0	44	E
19/11/18	15.3	29.8	0	44	ENE
20/11/18	17.7	33.8	0	72	NW
21/11/18	17.6	24.7	16.2	46	NNE
22/11/18	10.8	19.8	15.6	65	WNW

4.2.2 Targeted flora surveys

Following vegetation survey and habitat assessment undertaken on 20-21 November 2018, the subject land was considered too degraded to retain any habitat for threatened flora species.

No threatened flora species were recorded on the subject land.

4.2.1 Targeted fauna surveys

Microbats

Two Anabat bat detectors were deployed over two (2) survey nights (19 and 20 November 2018). The area was traversed on foot and by vehicle, and the location of hollow bearing trees were recorded using a handheld GPS.

The identification of bat echolocation calls recorded during surveys was undertaken using AnalookW (Chris Corben, Version 4.2n) software. The calls were recorded using Data Division Ratio 8. The identification of calls was undertaken by Dr Anna McConville (Echo Ecology) with reference to Pennay et al. (2004) and through the comparison of recorded reference calls from the western plains, NSW. Reference calls were obtained from the NSW database and from the Dr McConville's personal collection.

5 RESULTS

5.1 Vegetation

Vegetation mapping of the subject land and surrounding locality was investigated (sourced from OEH data portal 2017, Native Vegetation of Central West Lachlan Version 1 E4333). The results of this database search are presented in Table 3.

Table 3 Vegetation communities mapped within 1.5km of the subject land

Community	Ha
Derived grassland of the NSW South Western Slopes	72.62
Derived tussock grassland of the central western plains and lower slopes of NSW	320.35
Not Native Vegetation	1205.66
Plains Grass grassland on alluvial mainly clay soils in the Riverina Bioregion and NSW South Western Slopes Bioregion	64.77
Western Grey Box tall grassy woodland on alluvial loam and clay soils in the NSW South Western Slopes and Riverina Bioregions	72.58
White Box - White Cypress Pine - Western Grey Box shrub/grass/forb woodland in the NSW South Western Slopes Bioregion	29.54
Derived grassland of the NSW South Western Slopes	72.62
Derived tussock grassland of the central western plains and lower slopes of NSW	320.35
Not Native Vegetation	1205.66
Plains Grass grassland on alluvial mainly clay soils in the Riverina Bioregion and NSW South Western Slopes Bioregion	64.78

Based on OEH mapping, the subject land is mapped as predominantly containing non-native vegetation reflecting the current and historical land use. The site has been regularly cropped for canola and seasonally grazed by sheep following the harvest. This has resulted in the degradation of the historical native vegetation community.



Plate 1 Vegetation validation plot from 0m



Plate 2 Vegetation validation plot from 50m

A small area of PCT 250 Derived tussock grassland is mapped as occurring to the north west of the Subject Land associated with a minor drainage depression adjacent to an offline farm dam. Ground truthing confirmed that this area also supports exotic vegetation consistent with the surrounding land use (>60% exotic).



Plate 3 and Plate 4 Exotic vegetation in man-made drainage channel

The field investigation confirmed that overall vegetation cover was ~30%; however, native vegetation cover was less than 5%, and tree foliage cover was less than 1%. No tree diameter at breast height (dbh) benchmark is available for the PCT Derived Tussock Grassland nominated as the most likely historical community (see Section 6.3).



Plate 5 litter cover 1m x 1m sub plots

5.2 Streamlined Assessment – Clearing paddock trees

The subject land is not mapped as containing any high biodiversity values (Appendix C High Biodiversity Value Mapping). During field investigations, the vegetation present was confirmed to be predominantly exotic vegetation, and six (6) scattered paddock trees. Consequently, the streamlined assessment methodology for the removal of paddock trees was used during investigation and assessment.

This method is applicable in the following circumstances;

1. Native vegetation cover <50%
2. Vegetation cover (including dead vegetation) >10%
3. Tree foliage cover <25% of benchmark PCT

Native vegetation cover was assessed during November 2018 following average rainfall for the season. Grasses and forbs were in flower and contained seed head suitable for identification.

5.3 Plant Community Type (PCT) and Threatened Ecological Communities

5.3.1 Plant Community Types mapped on site

Review of previous vegetation mapping (OEH 2017) identified just one (1) native vegetation community as previously mapped within the Subject Land;

- PCT 250 Derived tussock grassland of the central western plains and lower slopes of NSW.

This community is associated with listed threatened ecological community White Box Yellow Box Blakely's Red Gum Woodland, listed as endangered under the BC Act; and, White Box Yellow Box Blakely's Red Gum Woodland, listed as critically endangered under the EPBC Act.

5.3.2 Nominated Plant Community Type for the Subject Land

The field investigations identified four (4) mature native tree species occurring within the Subject Land. These are tabled below (Table 4) and shown on Figure 4. Indigenous trees confirmed as present on site include Western Grey Box, Kurrajong and White-Cypress Pine.

Table 4 Paddock trees present within the subject land

Tree ID	Species	DBH (cm)	Habitat feature present
PT1	White Cypress Pine	60.5	Stick nest
PT2	Grey Box	87	5 small hollows (5-10m)
PT3	Kurrajong	91	-
PT4	Grey Box	92	2 small hollows (5cm)
PT5	Grey Box	81	Stick nest
PT6	Dead stag	-	Stag
PT7	Pepper Tree	-	-
PT8	Pepper Tree	-	-
PT9	Pepper Tree	-	-
PT10	Grey Box	80	Stick nest



Plate 6 PT1



Plate 7 PT2



Plate 8 PT3



Plate 9 PT4



Plate 10 PT5



Plate 11 PT10

Based on the identified canopy species, in combination with the IBRA region and observation of the native roadside vegetation occurring along Brolgan Road within the broader locality, the following PCTs are nominated as the most appropriate PCTs for the original vegetation community present:

PCT 250 Derived tussock grassland of the central western plains and lower slopes of NSW.

Justification: This PCT includes the canopy trees present and some of the native grasses and forbs recorded within the community. This community is mapped as occurring on the residual lot and along the roadside adjacent to the subject land.

PCT ID 70 White Cypress Pine woodland on sandy loams in central NSW wheatbelt

Justification: This community widely occurs throughout the Central West region. It includes the canopy trees present, and is mapped as occurring within a 5km buffer of the Subject Land.

PCT 80 Western Grey Box - White Cypress Pine tall woodland on loam soil on alluvial plains of NSW South Western Slopes Bioregion and Riverina Bioregion

Justification: This community widely occurs throughout the Central West region. It includes the canopy trees present and is mapped as occurring within a 5km buffer of the subject land.

Consequently, based on the results of the field verification plot, the topography and soils of the site and proximity to existing vegetation present along Brolgan Road, **it is likely that the former vegetation occurring within the Subject Land was PCT ID 250 Derived tussock grassland of the central western plains and lower slopes of NSW.**

5.4 Paddock tree biodiversity value

Tree Classes are described in Table 5 below. All Class 2 and Class 3 trees were recorded and assessed for their habitat features i.e. nests, hollows or evidence of occupation / foraging.

Class 1 trees without hollows are not considered to support biodiversity value under the BAM.

Table 5 Paddock tree classes

Paddock tree class	Diameter Breast Height (DBH) criteria
Class 1	<20cm
Class 2	> 20cm dbh < benchmark dbh for PCT
Class 3	> Benchmark dbh

Table 6 Community Condition Benchmark data PCT ID 250 and field data native species richness comparison

	Tree richness	Shrub richness	Grass richness	Forb richness	Fern richness	Other richness
NSW SWS benchmark	1	2	8	9	1	1
Field data	1	0	2	5	0	0

Table 7 Community Condition Benchmark data PCT ID 250 and field data native cover (%) comparison

	Tree cover (%)	Shrub cover (%)	Grass cover (%)	Forb cover (%)	Fern cover (%)	Other cover (%)
NSW SWS benchmark	0	0	96	8	0	0
Field data	0.1	0	0.2	0.5	0	0

It is noted that there is no benchmark provided for litter cover, length of fallen logs, number of large trees or large tree threshold for the nominated PCT. Consequently, it has been assumed that all native trees >20cm dbh within the Subject Land are considered Class 3 Paddock trees.

Class 3 paddock trees are given an ecosystem credit value of either 1 ecosystem credit (if hollow bearing) or 0.75 ecosystem credit (if non-hollow bearing), as per Table 7 below.

Table 8 Ecosystem credits per paddock tree removed

Class of Paddock Tree being cleared	Number of ecosystem credits required to offset clearing of a paddock tree	
	Hollow bearing tree	Non-hollow bearing tree
Class 2 (>20cm < large tree benchmark)	0.75	0.5
Class 3 (> large tree benchmark)	1	0.75

The proposal will remove two (2) hollow-bearing trees and four (4) non-hollow-bearing trees assigned as Class 3. This calculates as five (5) ecosystem credits for the removal of these habitat features, if participation in the BOS is applicable.

5.5 Species recorded

5.5.1 Flora species

A total of twenty-two (22) species were recorded within the vegetation validation plot completed on site, consisting of eight (8) native species and fourteen (14) common agricultural species. The field data collected is available as Appendix D.

Several Priority Weeds for the Central West region were observed during the site inspection; these are shown in Plate 10 - Plate 13 below.



Plate 12 African Boxthorn



Plate 13 Patterson's Curse



Plate 14 Saffron Thistle



Plate 15 Horehound

5.5.2 Fauna species

A total of thirty-seven (37) fauna species were recorded during the surveys. This includes seventeen (17) mammals (two exotic and two threatened) as well as nineteen (19) common birds. A full list of species is provided in Appendix D.

The following threatened microbat species were detected¹ via anabat recording to species group;

- *Chalinolobus picatus* (Little Pied Bat) listed as Vulnerable under the BC Act
- *Nyctophilus corbeni* (Corben's Long-eared Bat) listed as Vulnerable under the BC Act and EPBC Act

¹ It is important to note that the following species cannot be confidently differentiated by call alone; *Myotis macropus* *Nyctophilus corbeni*, *Nyctophilus geoffroyi* and *Nyctophilus gouldi*.



Vegetation within the Subject land

80 0 80 160 m

Legend

- Property Boundary
- Subject Land
- Driveway
- Building footprint
- Lot boundary
- Contour
- Sub Arterial Road

CW Lachlan PCT

- Derived tussock grassland of the central western plains and lower slopes of NSW
- Not Native Vegetation
- Plains Grass grassland on alluvial mainly clay soils in the Riverina Bioregion and NSW South Western Slopes Bioregion
- Western Grey Box tall grassy woodland on alluvial loam and clay soils in the NSW South Western Slopes and Riverina Bioregions

© 2018. Whilst every care has been taken to prepare this map, TEF make no representations or warranties about its accuracy, reliability, completeness or suitability for any particular purpose and cannot accept liability and responsibility of any kind (whether in contract, tort or otherwise) for any expenses, losses, damages and/or costs (including indirect or consequential damage) which are or may be incurred by any party as a result of the map being inaccurate, incomplete or unsuitable in any way and for any reason. Service Layer Credits: Source: Google satellite (NSW LPI)

Figure 3 Plant Community Types within the Subject Land



Field investigation and validated vegetation within the Residual Lot

80 0 80 160 m

Legend

- | | |
|----------------------|--------------------------------|
| — Property Boundary | — Sub Arterial Road |
| — Subject Land | Ⓐ Anabat |
| — Driveway | 🌳 Paddock Tree |
| — Building footprint | 📐 Plot location |
| — Lot boundary | 🌿 Containing exotic vegetation |
| — Contour | |

1:3000



© 2018. Whilst every care has been taken to prepare this map, TEF make no representations or warranties about its accuracy, reliability, completeness or suitability for any particular purpose and cannot accept liability and responsibility of any kind (whether in contract, tort or otherwise) for any expenses, losses, damages and/or costs (including indirect or consequential damage) which are or may be incurred by any party as a result of the map being inaccurate, incomplete or unsuitable in any way and for any reason. Service Layer Credits: Source: Google satellite (NSW LPI)

Figure 4 Field investigation and validated vegetation mapping occurring within the Subject Land

6 IMPACT ASSESSMENT

6.1 Biodiversity Offset Scheme

The requirements of the BC Act 2016 and *Biodiversity Conservation Regulation 2017* are mandatory for all development applications assessed pursuant to Part 4 of the *Environmental Planning and Assessment Act 1979* (EP&A Act).

This legislation and regulation stipulate clearing 'area threshold' values that determine whether a development is required to be assessed in accordance with the 'Biodiversity Offset Scheme' (BOS). Minimum entry thresholds for vegetation clearing depend on the minimum lot size (shown in the Lot Size Maps made under 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).

The current 100ha Lot 97 DP 655704 is proposed to be subdivided to a 35ha residual lot to accommodate the proposal. Consequently, the smaller lot size (35ha) has been used for the assessment, as no minimum lot size has been provided under the Parkes Shire LEP, as at December 2018.

Area Criteria Threshold

Native vegetation clearing thresholds as outlined in Part 7 of the *Biodiversity Conservation Regulation 2017* (Table 9 below) indicate when a project would need to automatically enter the BOS.

As proposed vegetation clearing as part of the Proposal amounts to approximately **0.006 ha** of native vegetation, occurring as six (6) paddock trees, the BOS does not automatically apply to the proposed development.

Table 9 Area criteria – Biodiversity Offset Scheme threshold

Minimum lot size	Threshold for clearing (ha) to enter BOS
<1 ha	>0.25
1 ha < 40 ha	>0.5
40 ha – 1000 ha	>1
>1000 ha	>2

Areas of Outstanding Biodiversity Value

The presence of listed Areas of Outstanding Biodiversity Value (BC Act) on site would require participation in the BOS. No listed AOBV occur on site.

Test of Significance Threshold

Tests of Significance were prepared for species likely to regularly utilize resources within the Subject Land (Appendix E and Appendix F). These tests confirmed that a significant impact to these species was found to be unlikely. The project is therefore not recommended for participation within the BOS based on the outcome of the Tests of Significance completed.

6.2 Threatened Biota

6.2.1 Threatened Communities

As discussed above (Section 5.3), PCT 250 Derived Tussock Grassland is likely to be the original PCT present within the Subject Land. This PCT is associated with listed threatened ecological community White Box Yellow Box Blakely's Red Gum Woodland listed as endangered under the BC Act and White Box Yellow Box Blakely's Red Gum Woodland listed as critically endangered under the EPBC Act.

The condition and extent of the native vegetation community present does not meet either the BC or EPBC Act listing criteria (Table 10 and Table 11), as it is a highly modified environment, predominantly comprised of cropped canola and other exotic species.

Field investigation confirmed native vegetation present was observed to be <50%. Based on the results of the current survey, none of the threatened ecological communities listed are likely to occur in the subject land.

Table 10 BC Act criteria for identification of Box Gum Woodland EEC within the subject land (NPWS 2006 and DECC 2007)

Criteria	Description	Does the site meet the criteria?
1	Is the site on the tablelands or western slopes of NSW?	Yes; the site is within the western slopes of NSW bioregion
2	Does the site contain, or would the site have recently been likely to contain, White Box, Yellow Box or Blakely's Red Gum?	It is possible that the site contained these species in the past; however, there is no current evidence for their occurrence. The site contains Western Grey Box only
3	Is the ground layer mainly grassy?	No, it is dominated by canola crop and other common agricultural weeds
4	If the site has been degraded, is there potential for assisted natural regeneration of the tree layer or the understorey (e.g. by removing grazing, weeds, etc)?	No, the native seedbank appears to be depleted over many years of cropping and grazing

Table 11 EPBC Act criteria for the identification of Box-Gum Woodland CEEC within the subject land (DEH 2008)

Criteria	Description	Does the site meet the criteria?
1 and	Is, or was previously, at least one of the most common overstorey species White Box, Yellow Box or Blakely's Red Gum (or Western Grey Box or Coastal Grey Box in the Nandewar Bioregion)?	No; the site contains Western Grey Box but does not occur within the Nandewar Bioregion (Western slopes of NSW)
2 and	Does the patch have a predominantly native understorey?	No

Criteria	Description	Does the site meet the criteria?
3 and	Is the patch 0.1 ha or greater in size?	No
4 and	There are 12 or more native understorey species present (excluding grasses). There must be at least one important species.	No
5 or	Is the patch 2ha or greater in size?	No
6	Does the patch have an average of 20 or more mature trees per hectare, or is there natural regeneration of the dominant overstorey eucalypts?	No

6.2.2 Threatened Species

Where there is potential habitat for threatened species which may be impacted as a result of the proposal, a Test of Significance should be completed to determine if the proposal is likely to have a significant impact and therefore must participate in the Biodiversity Offset Scheme.

A list of threatened species was considered to have potential to utilise the site at some stage during their lifecycle. The total list of threatened species deemed as having potential to occur in the Subject Land is presented in Table 13.

Desktop analysis revealed a number of threatened fauna species had potential to utilise habitat on the Subject Land during part of their lifecycles; however, upon site assessment the habitat was deemed poor in quality, with little potential to attract the majority of the species identified. The majority of the vegetation on the Subject Land consists of >60% exotic vegetation as a result of the current and historical canola cultivation and seasonal grazing land use. Important habitat features present include several hollow bearing trees, one stag and a small farm dam adjacent to the Subject Land.

The Subject Land is highly disturbed with few habitat resources present, they were considered to be of low quality and it is unlikely that they would be used for foraging by the majority of threatened species listed to potentially occur in or near the site.

Fauna mobility and limiting habitat resources were taken into account when assessing the likelihood of impact for species considered to have the potential to occur in the subject land. For species considered likely to occur that have large home ranges, are highly mobile, and have either no breeding habitat in the subject land or are highly unlikely to breed in the subject land, only negligible impacts are considered likely.

No threatened fauna species were found on the site, however there is a potential for Little Pied Bat and Corben's Long-eared Bat to occur at some stage during their lifecycle, and therefore these species were assessed for impact significance from the proposed development through the application of BC Act (Appendix E) and EPBC Act Test of Significance (Appendix F). These tests concluded that a significant impact is not expected to occur.

None of the other threatened flora species identified in the desktop searches are expected to be at risk, having a very low or nil chance of occurring in the Subject Land, or of being affected by the proposal.

No further consideration to the BOS has been given.

7 IMPACT MITIGATION AND MINIMISATION MEASURES

This section outlines recommended efforts to avoid and minimise impacts on biodiversity values associated with the proposal. Six (6) native paddock trees are proposed for removal including two (2) containing hollows. This equates to approximately **0.006 ha** of Native/Exotic vegetation associated with the cumulative canopy of these trees, required for removal to facilitate the construction of the proposed development.

Measures to be implemented before, during and post construction to avoid and minimise the impacts of the project are outlined below.

7.1 Planning

The site location is an existing agricultural paddock, that currently contains canola crop, which has historically been extensively cleared and regularly cultivated. There are currently no threatened species, ecological communities or populations listed under the BC Act or EPBC Act within the Subject Land. All vegetation within the site has been mapped by TEF as Exotic, with >50% exotic species, and minor weed infestations of priority weeds listed under the Biosecurity Act 2015, present. The proposed development has been positioned along the eastern perimeter of the smaller 35ha Lot in order to avoid and minimise potential impacts on biodiversity values within the subject site, including the adjacent farm dam and additional paddock trees.

7.2 Supervised clearing

Prior to clearance works, the proponent should commission the services of a qualified and experienced Ecologist in order to:

- Undertake an extensive pre-clearance survey;
- Delineate habitat-bearing trees and shrubs to be retained; and
- Supervise the clearance of trees (native and exotic).

7.3 Mitigating loss of habitat

The following conditions must be adhered to:

- All trees (including dead trees) should be felled by qualified Arborists using chainsaw and pulleys. No heavy machinery is permitted for vegetation removal (i.e. trees are not to be bulldozed or pushed over with other large plant or equipment).
- Place felled trees strategically and in proximity to the work site to provide refuge to displaced fauna and to provide potential habitat in the understorey.
- Where possible, all clearing should be undertaken to avoid impacts to fauna likely to be resident i.e. during the warmer months, when microbats and reptiles are active and are able to self-relocate; timed to avoid disruption to nesting birds.
- A qualified Project Ecologist with experience in handling wildlife should be present on the Project Site during all vegetation clearing in order to supervise clearing, and to capture and relocate any displaced, healthy animals, or care for / rehabilitate any injured or orphaned animals.
- All hollow-bearing tree hollows are to be replaced with nest boxes/fabricated logs (with similar sized entry holes to the hollows lost) to the compensatory ratio of 2:1, or as agreed by the Project Ecologist.

- An appropriate monitoring program should be undertaken, to determine whether habitat boxes are utilised and ensure they do not fall into disrepair or become occupied by introduced species (e.g. European Honey bees or Common Mynas). Habitat resources installed should be inspected at 1 year, 3 year and 5 years post installation.

7.4 Water and soil management

The Proponent must ensure that adequate erosion and sediment (ERSED) measures are in place at all times during construction activity; ERSED controls must always follow best practice guidelines (Landcom 2004).

The proposed development may result in increased stormwater run-off resulting from increased hard surface areas associated with the proposal. It is recommended that water tanks are considered to capture rainfall from the large building roof proposed. Capturing this rainwater for beneficial reuse on site reduces the volume and intensity of stormwater flows which will need to be directed as run-off. Stormwater flow from the proposed building, car park and hard surfaces should be directed and managed within a bioswale design or similar, to dissipate flows and allow runoff time to infiltrate.

All sewage and waste water produced on site will be contained in an appropriate sewerage system. Containing sewage and wastes produced on site to a certified sewerage system will eliminate any adverse effects to the local ecology of these materials entering local waterways.

7.5 Landscape values enhanced

To mitigate the minimal impacts upon native vegetation, where possible, all indigenous native tree species to be removed are to be replaced at a ratio of 3:1 with advanced nursery stock (advanced trees (sized at 200mm – 25L)) elsewhere within the property where no vegetation clearing or construction is proposed.

Replacement trees planted should be representative of the species required for removal, or constitute an ecological equivalent that is native to the local area.

Where possible, all landscape garden beds proposed should include locally-indigenous flora, to promote local biodiversity and maintain fauna habitat values on site. All native plants used in plantings should be sourced from a local provenance nursery. The Proponent should plant flora species representative of the surrounding indigenous vegetation community with a focus on plants that will provide the same or increased optimal habitat functions as the trees proposed for removal.

8 CONCLUSION

Following the biodiversity desktop and site assessment, it is apparent that the proposed development had been appropriately located within the area identified as having least ecological impact. If the appropriate recommendations in this report are followed to avoid and minimize impacts to biodiversity values on site, the proposed DA should have minimal impact.

Site assessments and surveys completed concluded that the vegetation was in low condition, and was comprised entirely of Exotic vegetation (>50% exotic species present), with evidence of weed infestations.

After carrying-out 'Tests of Significance' for any potential impacts to BC Act listed threatened species, ecological communities and populations it was deemed the proposed works will have no significant impact on any threatened species, ecological communities or populations such that a viable local population will be placed at risk of extinction. Similarly, after carrying out an Impact Assessment under the EPBC Act Significant Impact Guidelines, it was determined that the proposed works will have no significant impact on any MNES (threatened and migratory species).

As the current Proposal will have minor impacts on threatened species; the site is comprised of predominantly exotic vegetation; and, clearance of native vegetation associated with paddock tree canopy will amount to no more than **0.006 ha**, participation in the Biodiversity Offsets Scheme is not required at this time.

9 REFERENCES

Commonwealth of Australia 2010, Survey guidelines for Australia's threatened birds. Guidelines for detecting birds listed as threatened under the Environment Protection and Biodiversity Conservation Act 1999

Commonwealth of Australia 2010, Survey guidelines for Australia's threatened bats. Guidelines for detecting bats listed as threatened under the Environment Protection and Biodiversity Conservation Act 1999

Commonwealth of Australia 2011, Survey guidelines for Australia's threatened mammals. Guidelines for detecting mammals listed as threatened under the Environment Protection and Biodiversity Conservation Act 1999

Commonwealth of Australia 2013, Survey guidelines for Australia's threatened orchids. Guidelines for detecting bats listed as 'threatened' under the Environment Protection and Biodiversity Conservation Act 1999

DEE, Species Profile and Threats Database (SPRAT), <http://www.environment.gov.au/cgi-bin/sprat/public/sprat.pl>

DEE Protected Matters Search Tool, <http://www.environment.gov.au/epbc/protected-matters-search-tool>

DEC 2004, Threatened Species Survey and Assessment: Guidelines for developments and activities. Working Draft

DEC 2009, Threatened species survey and assessment guidelines: field survey methods for fauna: Amphibians

DECCW NSW, Descriptions for NSW (Mitchell) landscapes, 2002

Keith, D, 2004, Ocean shores to desert dunes: the native vegetation of New South Wales and the ACT. NSW Department of Environment and Conservation, Sydney

NSW Planning and Environment Department 2018, planning portal <http://www.planning.nsw.gov.au/>

New South Wales Flora online – PlantNET, <http://plantnet.rbgsyd.nsw.gov.au/floraonline.htm>,

NSW LPI mapping <https://maps.six.nsw.gov.au/>

NSW LLS 2018, Weeds for Central West Region

OEH 2016, NSW Guideline to Surveying Threatened Plants

OEH 2017, The Native Vegetation of Central West Lachlan V1 E4333

OEH 2018, New South Wales Vegetation Information System (VIS)

OEH 2018, Great Soil Group (GSG) Soil Type map of NSW
<http://www.environment.nsw.gov.au/eSpade2Webapp#>

OEH 2018, NSW Bionet Wildlife Atlas <http://www.bionet.nsw.gov.au/>

PSC, 2012 Local Environmental Plan

10 APPENDICES

Appendix	Item
Appendix A	Proposal drawings
Appendix B	Native Vegetation Mapping
Appendix C	High Biodiversity Values
Appendix D	Field investigation data
Appendix E	Threatened biota likelihood of occurrence
Appendix F	NSW Tests of Significance
Appendix G	Commonwealth Significant Impact Criteria Assessment

Appendix A Proposal Drawings

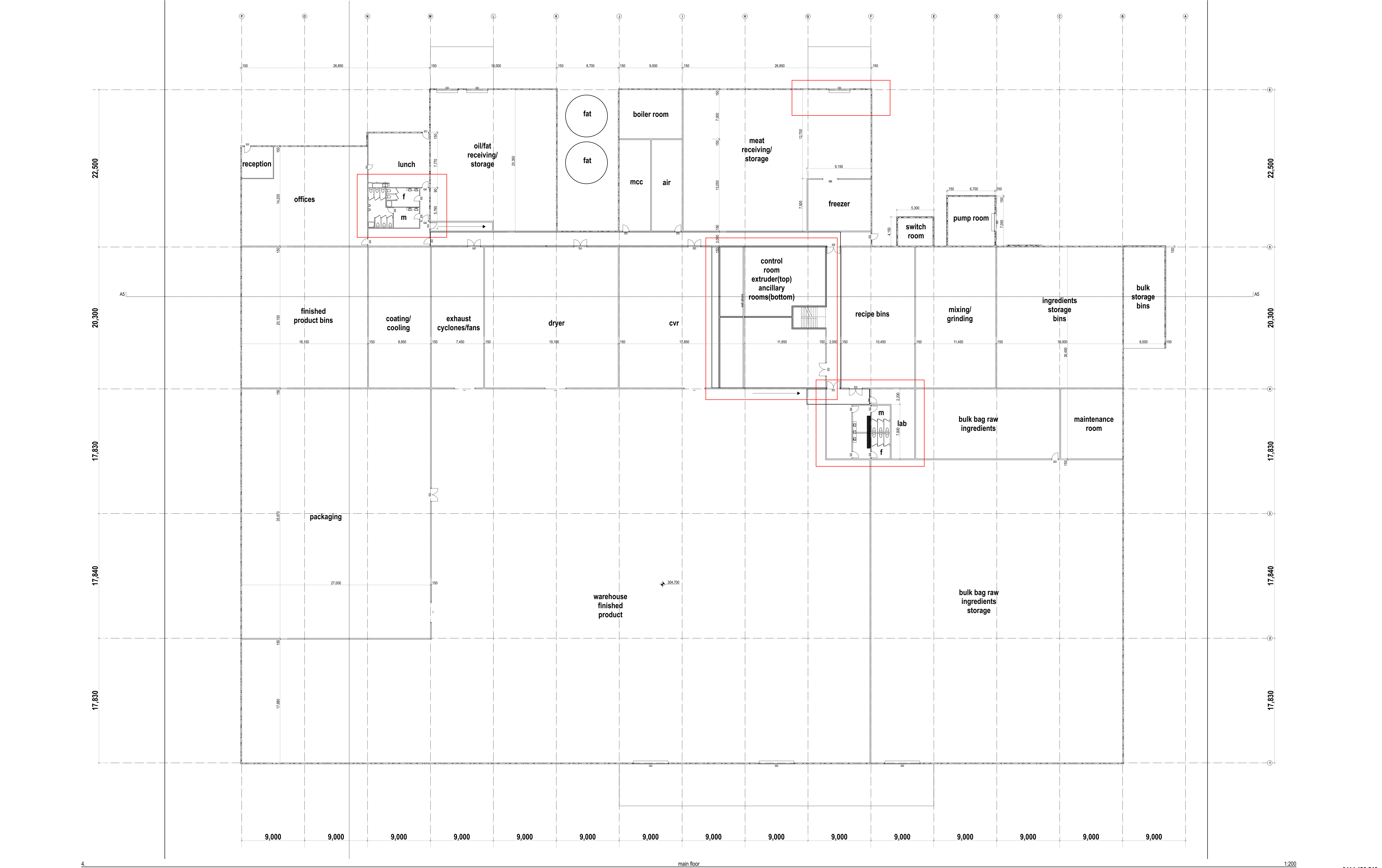




- this drawing is copyright and the property of akv pty ltd, and must not be retained, copied or used without the authority of akv pty ltd.
- larger scale drawings and written dimensions take preference.
- do not scale from this drawing.
- all dimensions to be checked on site before commencement of any work.
- all discrepancies must be brought to the attention of akv pty ltd

e.v.vicaretti@bigpond.com
po box 135, hoxton park nsw 2171





issue	amendments	date
preliminary	BA	mar 2018

-this drawing is copyright and the property of akv pty ltd, and must not be retained, copied or used without the authority of akv pty ltd.
-larger scale drawings and written dimensions take preference.
-do not scale from this drawing.
-all dimensions to be checked on site before commencement of any work.
-all discrepancies must be brought to the attention of akv pty ltd.

consultants

project
INDUSTRIAL DEVELOPMENT
parkes

client
#Client Full Name

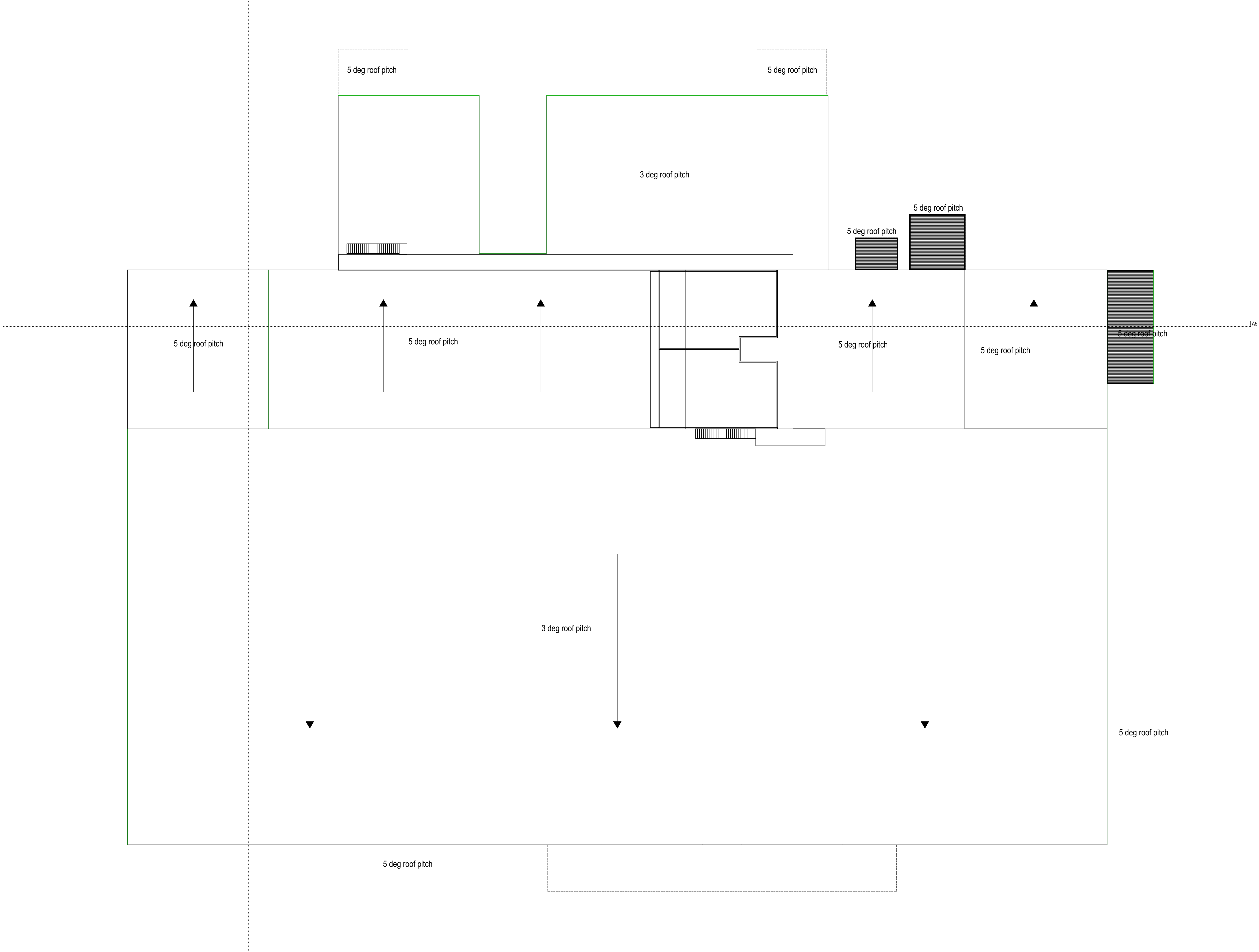
drawing
floor plan
date
mar 2018
job number
xxxx-18
scale
1:200

council
CDC

sheet number
2002

building designers
project management
accredited building thermal performance consultants





5. upper floor

1:200

issue	amendments	date
preliminary	BA	mar 2018

-this drawing is copyright and the property of akv pty ltd, and must not be retained, copied or used without the authority of akv pty ltd.
-larger scale drawings and written dimensions take preference.
-do not scale from this drawing.
-all dimensions to be checked on site before commencement of any work.
-all discrepancies must be brought to the attention of akv pty ltd.

consultants

project
INDUSTRIAL DEVELOPMENT
parkes

client
#Client Full Name

drawing
roof plan
date
mar 2018
job number
xxxx-18
scale
1:200

council
CDC

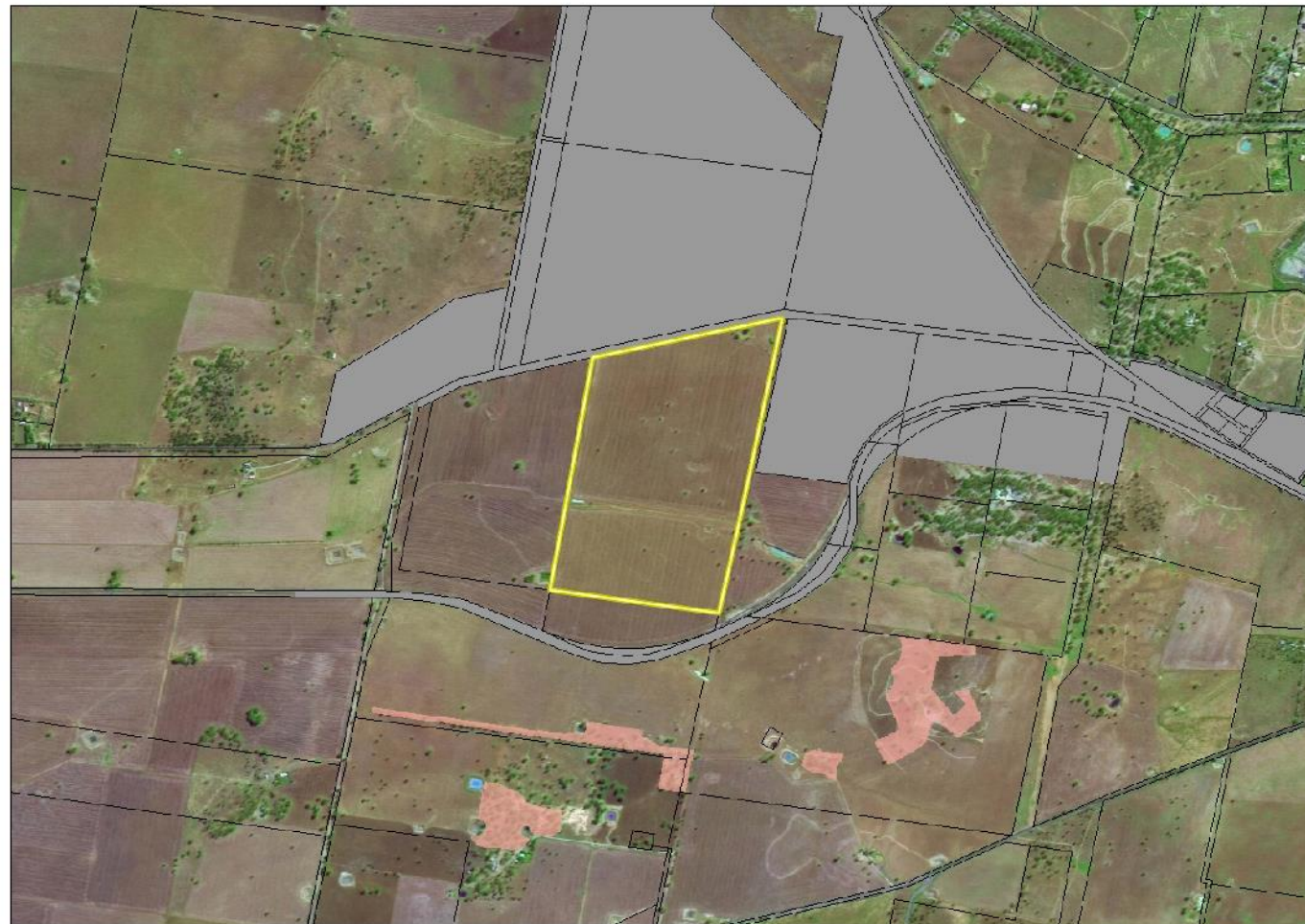
sheet number
2003

building designers
project management
accredited building thermal performance consultants



p. 0414 426 546
e.v.vicaretti@bigpond.com
m. po box 135, hoxton park nsw 2171

Appendix B Native Vegetation Mapping



Legend

Cadastral

Native Vegetation Regulatory Map (in force)

- Land Excluded from the LUS Act
- Category 2 - Regulated Land (Vulnerable)
- Category 2 - Regulated Land (Sensitive)

Comments



0 0.2 0.6

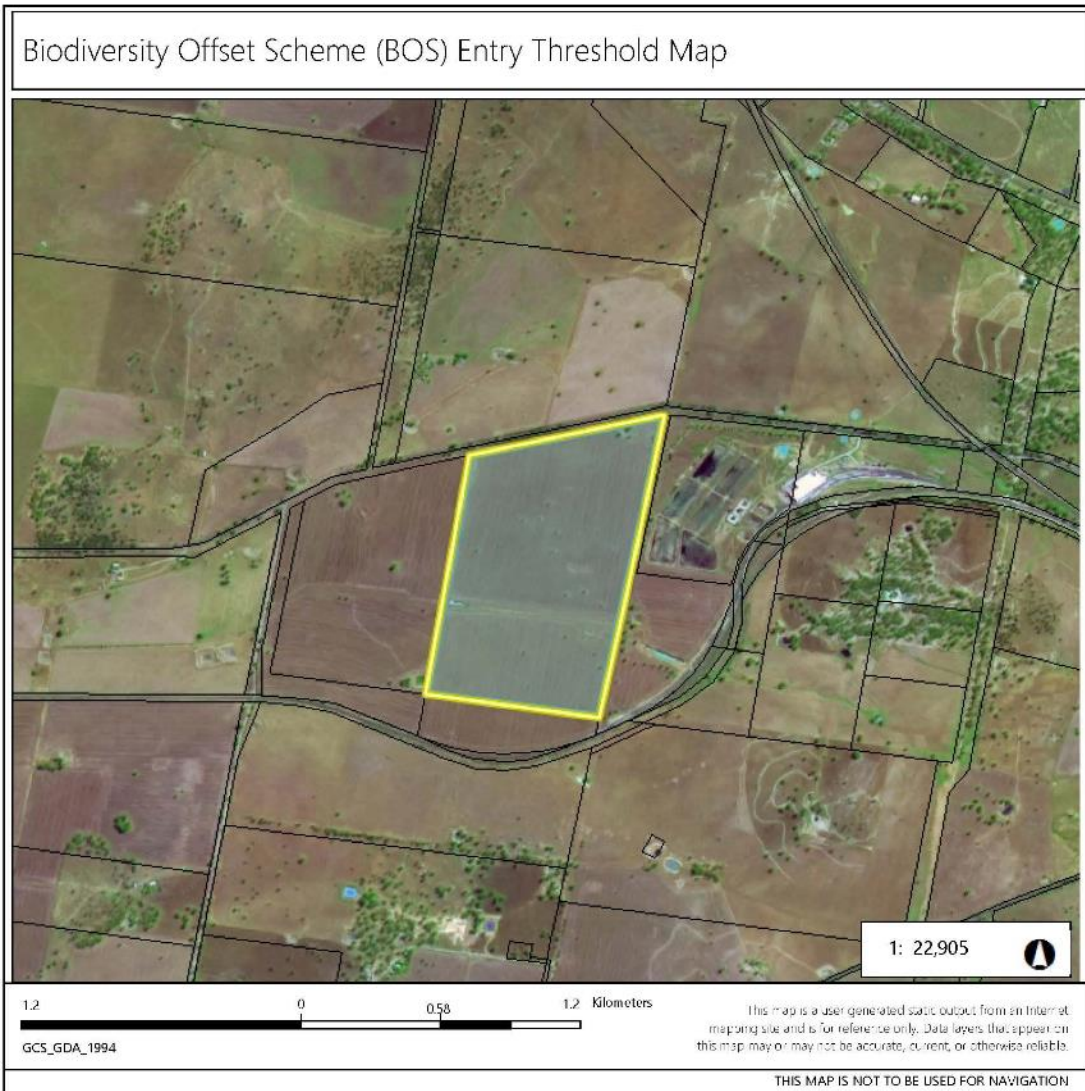
1:12
Kilometres

Map created: 05-Dec-2015

This information has been prepared for the best of a knowledge. No warranty or guarantee is provided and no liability is accepted in any case for damage resulting from any use of this information or action taken thereon.

Figures 2 and 3: Property Information, boundaries, etc. and are subject to information supplied by the owner.

Appendix C High Biodiversity Value Mapping



Legend

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

Notes

© Office of Environment and Heritage |
NSW Environment & Heritage



Biodiversity Values Map and Threshold Report

Results Summary

Date of Calculation	05/12/2018 12:37 PM	BDAR Required*
Total Digitised Area	96.24 ha	
Minimum Lot Size Method	Lot size	
Minimum Lot Size	102.04 ha	
Area Clearing Threshold	1 ha	
Area clearing trigger Area of native vegetation cleared	Unknown #	Unknown #
Biodiversity values map trigger Impact on biodiversity values map(not including values added within the last 90 days)?	no	no

*If BDAR required has:

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

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

Disclaimer

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

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

Acknowledgement

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

Signature _____ Date: 05/12/2018 12:37 PM

Appendix D Field survey results

Table 12 Fauna species recorded

Key: O=Seen; W=Heard; AD=definite Anabat recording; AP=Probable Anabat recording; P=Indirect evidence (Burrow, scat, tracks etc)

Family	Scientific name	Common name	Exotic	Obs. type	BC Act	EPBC Act
Accipitridae	<i>Milvus migrans</i>	Black Kite		O		
Anatidae	<i>Chenonetta jubata</i>	Australian Wood Duck		O		
Anatidae	<i>Anas superciliosa</i>	Pacific Black Duck		O		
Artamidae	<i>Strepera graculina</i>	Pied Currawong		O		
Artamidae	<i>Cracticus nigrogularis</i>	Pied Butcherbird		W		
Artamidae	<i>Cracticus tibicen</i>	Australian Magpie		OW		
Cacatuidae	<i>Cacatua galerita</i>	Sulphur-Crested Cockatoo		OW		
Cacatuidae	<i>Cacatua sanguinea</i>	Little Corella		OW		
Columbidae	<i>Ocyphaps lophotes</i>	Crested Pigeon		O		
Corcoracidae	<i>Corcorax melanorhamphos</i>	White-winged cough		OW		
Corvus	<i>Corvus coronoides</i>	Australian Raven		OW		
Falconidae	<i>Falco berigora</i>	Brown Falcon		O		
Maluridae	<i>Malurus cyaneus</i>	Superb fairy-wren		OW		
Meliphagidae	<i>Manorina melanocephala</i>	Noisy Miner		OW		
Monarchidae	<i>Grallina cyanoleuca</i>	Magpie Lark		OW	V	
Psittacidae	<i>Eolophus roseicapilla</i>	Galah		OW		
Psittaculidae	<i>Psephotus haematonotus</i>	Red-rumped parrot		W		
Psittaculidae	<i>Platycercus elegans</i>	Crimson Rosella		OW	V	
Rhipiduridae	<i>Rhipidura leucophrys</i>	Willy Wagtail		OW		
Bovidae	<i>Ovis aries</i>	Sheep	*	O		
Canidae	<i>Canis lupus familiaris</i>	Domestic dog	*	P		
Molossidae	<i>Australopus australis</i>	White-striped Free-tailed Bat		AD		
Vespertilionida	<i>Chalinolobus gouldii</i>	Gould's Wattled Bat		AD		
Vespertilionida	<i>Chalinolobus morio</i>	Chocolate Wattled Bat		AD		
Molossidae	<i>Mormopterus petersi</i>	Inland Free-tailed Bat		AD		

Family	Scientific name	Common name	Exotic	Obs. type	BC Act	EPBC Act
Molossidae	<i>Mormopterus planiceps</i>	Southern Free-tailed Bat		AD		
Vespertilionidae	<i>Scotorepens balstoni</i>	Inland Broad-nosed Bat		AD		
Vespertilionidae	<i>Scotorepens greyii</i>	Little Broad-nosed Bat		AD		
Vespertilionidae	<i>Chalinolobus picatus</i>	Little Pied Bat		AP	V	
Vespertilionidae	<i>Nyctophilus corbeni</i>	Corben's Long-eared Bat		AP	V	V
Vespertilionidae	<i>Nyctophilus geoffroyi</i>	Lesser long-eared bat		AP		
Vespertilionidae	<i>Nyctophilus gouldi</i>	Gould's long-eared bat		AP		
Vespertilionidae	<i>Vespadelus darlingtoni</i>	Large Forest Bat		AP		
Vespertilionidae	<i>Vespadelus regulus</i>	Southern Forest Bat		AP		
Vespertilionidae	<i>Vespadelus vulturnus</i>	Little Forest Bat		AP		

BAM field data sheet



Record easting and northing at 0 m on midline. Dimensions (Shape) of 0.04 ha base plot.

BAM Attribute (1000 m ² plot)		
DBH	# Tree Stems Count	# Stems with Hollows
80 + cm	0	
50 – 79 cm	0	
30 – 49 cm	0	
20 – 29 cm	0	
10 – 19 cm	0	
5 – 9 cm	0	
< 5 cm	11	n/a
Length of logs (m) (≥10 cm diameter, >50 cm in length)	Tally space	
		Total = 0

For **hollows**, count only the presence of a stem containing hollows. For a **multi-stemmed tree**, only the largest stem is included in the count/estimate. **Stems may be dead and may be shrubs.**

Litter cover is assessed as the average percentage ground cover of litter recorded from five 1 m x 1 m plots centred at 5, 15, 25, 35, 45 m along the plot midline. Litter cover includes leaves, seeds, twigs, branchlets and branches (less than 10 cm in diameter). Assessors may also record the cover of rock, bare ground and cryptogams.

Morphological Type		Landform Element		Landform Pattern	flat	Microrelief	canola
Lithology		Soil Surface Texture		Soil Colour	red	Soil Depth	
Slope		Aspect		Site Drainage	flat	Distance to nearest water and type	Road drainage channel 100m

Severity: 0=no evidence, 1=light, 2=moderate, 3=severe

Age: R=recent (<3yrs), NR=not recent (3-10yrs), O=old (>10yrs)

400 m ² plot: Sheet 2 of 2		Survey Name	Plot Identifier	Recorders
Date	21 / 11 / 18	Lot 97 Brolgan Rd	Vege verification	JD & AU

GF Code	Top 3 native species in each growth form group: Full species name mandatory All other native and exotic species: Full species name where practicable	N, E or HTE	Cover	Abund	stratum	voucher
G	<i>Hordeum sp (Barley grass)</i>	E	0.1	24	G	
G	<i>Bromus sp 1</i>	E	0.1	55	G	
G	<i>Chloris truncata</i>	N	0.1	10	G	
G	<i>Lolium rigidum</i>	E	0.1	250	G	
G	<i>Avena barbata</i>	E	0.5	700	G	
F	<i>Brassica napus</i>	E	25	450	G	
F	<i>Echium plantagineum</i>	E	0.1	90	G	
T	<i>Eucalyptus macrocarpa (saplings)</i>	N	0.1	2	S	
F	<i>Oxalis perennans</i>	N	0.1	5	G	
F	<i>Dichondra repens</i>	N	0.1	32	G	
F	<i>Rumex brownii</i>	N	0.1	2	G	
F	<i>Solanum esuriale</i>	N	0.1	12	G	
G	<i>Digitaria brownii</i>	N	0.1	7	G2	
G	<i>Bromus hordeaceus</i>	E	0.1	21	G	
F	<i>Medicago sp</i>	E	0.1	39	G	
F	<i>Marrubium vulgare</i>	E	0.1	1	G	
F	<i>Sonchus sp</i>	E	0.1	3	G	
F	<i>Anagallis arvensis</i>	E	0.1	1	G	
F	<i>Arctotheca calendula</i>	E	0.1	2	G	
F	<i>Trifolium arvense</i>	E	0.1	1	G	
F	<i>Einadia nutans</i>	N	0.1	1	G	
	22					
	23					
	24					
	25					
	26					
	27					
	28					
	29					
	30					
	31					
	32					
	33					
	34					
	35					
	36					
	37					
	38					
	39					
	40					

GF Code: see Growth Form definitions in Appendix 1

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

GF – circle code if 'top 3'.

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

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

Stratum: E (emergent) T1, T2, T3, S1, S2, S3, G1, G2, G3 etc

Appendix E Threatened biota and MNES likelihood of occurrence assessment

The below assessment includes national and state significant species from the following sources:

- Atlas of NSW Wildlife (data accessed on 13.11.2018)
- DEE database (PMST accessed on 13.11.2018)
- DPI database (threatened fish distributions NSW DPI)
- Current survey and associated VIS PCT ID associated threatened species
- Search area is 10 km radius.
- Not considered further pelagic seabirds, shorebirds, sandpipers, turtles, whales, sharks - no preferred marine or coastal habitat in the locality.

All habitat information in Table 10 is taken from NSW OEH and Commonwealth DEE Threatened Species profiles (OEH 2018 DEE 2018) unless otherwise stated. The codes used in this table are:

- CE – Critically Endangered
- E – Endangered
- V – Vulnerable
- EP – Endangered Population
- C – CAMBA
- J – JAMBA
- R – ROKAMBA
- CEEC – Critically Endangered Ecological Community
- EEC – Endangered Ecological Community

Likelihood	Definition
Known	Species recorded in the subject site.
Likely	Species previously recorded within a 10 kilometre radius of the subject site and suitable habitat occurs within the subject site.
Possible	Species previously recorded within a 10 kilometre radius of the subject site but only marginal suitable habitat recorded, OR Species not previously recorded within a 10 kilometre radius of the subject site, but the proposal footprint is within the species known distribution and suitable habitat occurs within the subject site
Unlikely	Species previously recorded within a 10 kilometre radius of the subject site but no suitable habitat recorded.
Nil	Species not previously recorded within a 10 kilometre radius of the subject site
Likelihood	Definition
Nil	Species/ community will not be impacted by the proposal
Low	Species / community is unlikely to be impacted by the proposal.
Moderate	Species / community is known or likely to occur within the study area however the proposal does not impact on important habitat resources.
High	Species / community is known or likely to occur within the study area and the proposal will impact on important habitat resources.

Table 13 Threatened biota and MNES likelihood of occurrence assessment

Scientific name	Common name	EPBC Act	NSW Status	Habitat	Nature of record	Likelihood of occurrence within study area	Likelihood of impact within subject site.
Birds							
<i>Anseranas semipalmata</i>	Magpie Goose	V	M	The Magpie Goose prefers shallow wetlands (less than 1 metre deep) with dense rushes and sedges. It forages on grasses, bulbs and rhizomes often seen in paddocks. It occurs on the floodplains of rivers with breeding occurring both during winter or summer dependent on rainfall, however breeding is unlikely in south-eastern NSW.	PMST VIS	Unlikely	Nil
<i>Anthochaera phrygia</i>	Regent Honeyeater	E	CE	The Regent Honeyeater is a migratory woodland bird moving across the landscape in response to climatic conditions and food availability. This species breeds has only three key breeding locations. The closest breeding colony is located near the Capertee Valley. This species prefers Box-Ironbark woodland and riparian forests particularly habitats with mature trees, high canopy cover and abundance of mistletoes.	PMST	Unlikely	Nil
<i>Ardeotis australis</i>	Australian Bustard	E		Mainly inhabits tussock and hummock grasslands, though prefers tussock grasses to hummock grasses; also occurs in low shrublands and low open grassy woodlands; occasionally seen in pastoral and cropping country, golf courses and near dams.	VIS	Unlikely	Nil

Scientific name	Common name	EPBC Act	NSW Status	Habitat	Nature of record	Likelihood of occurrence within study area	Likelihood of impact within subject site.
<i>Artamus cyanopterus cyanopterus</i>	Dusky Woodswallow	V		Dry, open eucalypt forests and woodland are the preferred habitats. Mallee associations with a sparse understorey of eucalypt saplings, acacias and other shrubs and ground cover of grasses or sedges and woody debris are also inhabited. Farmland, particularly forest or woodland edges are also inhabited and very occasionally, moist forest or rainforest.	Bionet VIS	Unlikely	Nil
<i>Botaurus poiciloptilus</i>	Australasian bittern		E	Preferred habitat is comprised of wetlands with tall dense vegetation, where it forages in still, shallow water up to 0.3 m deep, often at the edges of pools or waterways, or from platforms or mats of vegetation over deep water. It favours permanent and seasonal freshwater habitats, particularly those dominated by sedges, rushes and reeds (e.g. Phragmites, Cyperus, Eleocharis, Juncus, Typha, Baumea, Bolboschoenus) or cutting grass (Gahnia) growing over a muddy or peaty substrate.	PMST	Unlikely	Nil
<i>Calidris ferruginea</i>	Curlew Sandpiper	E	CE, M	Mainly occur on intertidal mudflats in sheltered coastal areas, such as estuaries, bays, inlets and lagoons, and also around non-tidal swamps, lakes and lagoons near the coast, and ponds in saltworks and sewage farms. They are also recorded inland, though less often, including around ephemeral and permanent lakes, dams, waterholes and bore drains, usually with bare edges of mud or sand.	PMST, Bionet	Unlikely	Nil

Scientific name	Common name	EPBC Act	NSW Status	Habitat	Nature of record	Likelihood of occurrence within study area	Likelihood of impact within subject site.
<i>Callocephalon fimbriatum</i>	Gang-gang Cockatoo	V		The Gang-gang Cockatoo favours old growth forests for roosting and requires tree hollows for nesting. During summer it is found in tall mountain forests and wet sclerophyll forests while during winter it moves into drier woodlands and can be found in more urban areas.	BioNet	Unlikely	Nil
<i>Calyptorhynchus lathamii</i>	Glossy Black-Cockatoo	V		This species predominantly nests in eucalypts and feeds on casuarinas. It nests in both living and dead trees. Glossy Black Cockatoos prefer to live in untouched, rugged country, especially that containing Brigalow scrub or rocky hilly country. Other habitat includes where she-oaks are common, coastal woodlands and drier forest areas as well as timbered watercourses.	Bionet	Unlikely	Nil
<i>Chthonicola sagittata</i>	Speckled Warbler	V		The Speckled Warbler occupies open Eucalypt woodlands with a grassy understory and often rocky outcrops. Relatively large undisturbed areas are required to sustain this species in an area.	Bionet	Unlikely	Nil
<i>Circus assimilis</i>	Spotted Harrier	V		The Spotted Harrier unlike other Harriers nests in trees, often in open grassy woodland habitats, inland riparian woodlands or agricultural land.	Bionet VIS	Unlikely	Nil
<i>Climacteris picumnus victoriae</i>	Brown Treecreeper (eastern subspecies)	V		The Brown Treecreeper maintains a territory in open woodland habitats (including Box-Gum Woodland). It prefers woodlands dominated by stringybarks and rough barked eucalypts with a grassy understory. It requires tree hollows in live and dead trees or stumps for nesting.	Bionet	Unlikely	Nil

Scientific name	Common name	EPBC Act	NSW Status	Habitat	Nature of record	Likelihood of occurrence within study area	Likelihood of impact within subject site.
<i>Daphoenositta chrysoptera</i>	Varied Sittella	V		The Varied Sittella prefers open eucalypt and Acacia woodlands with stringybark eucalypts from which to glean insects. They are territorial preferring to use the same tree fork to construct nests for breeding.	Bionet	Unlikely	Nil
<i>Epthianura albifrons</i>	White-fronted Chat	V		The Chat feeds on bare or grassy ground in wetland areas. Nests are built in low vegetation, and, in the Sydney region, have been observed in Mangroves.	Bionet VIS	Unlikely	Nil
<i>Falco hypoleucos</i>	Grey Falcon	E		Restricted to shrubland, grassland and wooded watercourses and sometimes near wetlands where surface water attracts prey. Occasionally found in open woodlands near the coast. Nests are constructed in high living eucalypts near a watercourse.	Bionet VIS	Unlikely	Nil
<i>Falco subniger</i>	Black Falcon	V		Mostly occurs in inland regions. Large old trees are critical hunting and nesting resources. Tree lined watercourses and isolated woodlands in arid and semi-arid areas are preferred nesting and roosting habitat.	Bionet	Possible, hunting perches only	Low
<i>Geophaps scripta scripta</i>	Squatter Pigeon	CE	V	Over their Australian range, Red-backed Button-quail inhabit grasslands, open and savannah woodlands with grassy ground layer, pastures and crops of warm temperate areas, typically only in regions subject to annual summer rainfall greater than 400 mm. In NSW, said to occur in grasslands, heath and crops. Said to prefer sites close to water, especially when breeding. The species has been observed associated with the following grasses (in various vegetation formations):	VIS	Unlikely	Nil

Scientific name	Common name	EPBC Act	NSW Status	Habitat	Nature of record	Likelihood of occurrence within study area	Likelihood of impact within subject site.
				speargrass <i>Heteropogon</i> , Blady Grass <i>Imperata cylindrica</i> , Triodia, Sorghum, and Buffel Grass <i>Cenchrus ciliaris</i> .			
<i>Glossopsitta pusilla</i>	Little Lorikeet	V		In NSW Little Lorikeets are distributed in forests and woodlands from the coast to the western slopes of the Great Dividing Range, extending westwards to the vicinity of Albury, Parkes, Dubbo and Narrabri. They are considered nomadic responding to food availability and highly gregarious often foraging in mixed flocks. They occur in dry, open eucalypt forests and woodlands using roadside vegetation. They rely on nectar and pollen, particularly on profusely-flowering eucalypts, melaleucas and mistletoes. On the western slopes and tablelands White Box <i>E. albens</i> and Yellow Box <i>E. melliodora</i> are particularly important food sources for pollen and nectar respectively. They often return to the same nest hollow annually preferring smooth barked Eucalypts with small hollows (3cm entrance diameter).	Bionet	Possible foraging habitat	Nil
<i>Grantiella picta</i>	Painted Honeyeater		V	The Painted Honeyeater is typically rare throughout its range occupying dense dry open forests with an abundance of mistletoe.	PMST	Unlikely	Nil
<i>Haliaeetus leucogaster</i>	White-bellied Sea eagle	V	M	The White-bellied Sea-Eagle is found in coastal habitats (especially those close to the sea-shore) and around terrestrial wetlands in tropical and temperate regions of mainland Australia and its offshore islands. The habitats	VIS	Unlikely	Nil

Scientific name	Common name	EPBC Act	NSW Status	Habitat	Nature of record	Likelihood of occurrence within study area	Likelihood of impact within subject site.
				occupied by the sea-eagle are characterised by the presence of large areas of open water (larger rivers, swamps, lakes, the sea). Birds have been recorded in (or flying over) a variety of terrestrial habitats			
<i>Hieraaetus morphnoides</i>	Little Eagle	V		The Little Eagle occurs throughout NSW within open eucalypt forests, woodland and riparian woodlands. It nests in tall living trees often within a remnant patch of woodland.	BioNet	Unlikely	Nil
<i>Lathamus discolor</i>	Swift Parrot		CE	The Swift Parrot breeds in Tasmania and returns to the south-eastern mainland to forage over the cooler months (March – October). They move across the landscape to forage on lerp infestations or an abundance of eucalypt flowers. Preferred feed trees include Eucalyptus robusta, Corymbia maculata, C. gummifera, E. sideroxylon and E. albens.	PMST	Unlikely	Nil
<i>Leipoa ocellata</i>	Malleefowl		V	The Malleefowl typically occupies mallee communities with a spinifex understory but occasionally uses woodlands with a denser understory. It requires light sandy loam soils with a diverse shrub and understory.	PMST	Unlikely	Nil
<i>Limosa limosa</i>	Black-tailed Godwit	V	C	This species is primarily found in coastal areas in sheltered bays, lagoons and estuaries. This species forages in shallow water and has been spotted in mudflats/waters less than 10 cm deep, in wet field, muddy lakes and sewage treatment works. Roosts on low mud banks.	Bionet	Unlikely	Nil

Scientific name	Common name	EPBC Act	NSW Status	Habitat	Nature of record	Likelihood of occurrence within study area	Likelihood of impact within subject site.
Lophochroa leadbeateri	Major Mitchell Cockatoo	V		Found across the arid and semi-arid inland, from south-western Queensland south to north-west Victoria, through most of South Australia, north into the south-west Northern Territory and across to the west coast between Shark Bay and about Jurien. In NSW it is found regularly as far east as about Bourke and Griffith, and sporadically further east than that.	VIS	Unlikely	Nil
Melanodryas cucullata cucullata	Hooded Robin (south-eastern form)	V		The Hooded Robin prefers lightly wooded forests such as eucalypt woodlands, acacia scrub and mallee with structurally diverse habitats including saplings, tall native grasses and an abundance of fallen leaf litter and woody debris to forage. They occupy home ranges of 10 hectares to 30 hectares throughout the year.	Bionet	Unlikely	Nil
Melithreptus gularis gularis	Black-chinned Honeyeater (eastern subspecies)	V		The Black-chinned Honeyeater occupies open woodland habitats and open forests of smooth gums, stringybarks, ironbarks and Casuarinas and Melaleucas. They require large foraging territories of woodland patches at least 5 hectares large.	Bionet	Unlikely	Nil
Neophema pulchella	Turquoise Parrot	V		This species lives on the edges of eucalypt woodland adjoining clearings, timber ridges and creeks in farmland. Nests in hollows, posts or logs and feeds in the shade of a trees on the ground, looking for seeds and herbaceous plants, also browsing on vegetable matter.	Bionet	Unlikely	Nil

Scientific name	Common name	EPBC Act	NSW Status	Habitat	Nature of record	Likelihood of occurrence within study area	Likelihood of impact within subject site.
<i>Ninox connivens</i>	Barking Owl	V		The Barking Owl requires large tree hollows in order to roost and breed. It occupies open forests and woodlands including partially cleared farmland. They often roost in densely formed Acacia and Casuarina species. A large portion of its diet consists of arboreal mammals but can adapt to ground dwelling species where the habitat cannot sustain preferred prey.	Bionet	Unlikely	Nil
<i>Numenius madagascariensis</i>	Eastern Curlew		CE, M	The Eastern Curlew is found on intertidal mudflats and sandflats, often with beds of seagrass, on sheltered coasts, especially estuaries, mangrove swamps, bays, harbours and lagoons. It is rarely found inland. The Eastern Curlew occurs only in our flyway, and about 75 per cent of the world's curlews winter in Australia.	PMST	Unlikely	Nil
<i>Petroica boodang</i>	Scarlet Robin	V		The Scarlet Robin lives in dry eucalypt forests and woodlands. The understorey is usually open and grassy with few scattered shrubs. This species lives in both mature and regrowth vegetation. It occasionally occurs in mallee or wet forest communities, or in wetlands and tea-tree swamps. Scarlet Robin habitat usually contains abundant logs and fallen timber: these are important components of its habitat.	VIS	Unlikely	Nil
<i>Petroica phoenicea</i>	Flame Robin	V		The Flame Robin prefers open woodland habitats, breeding in upland tall moist eucalyptus forests with an	Bionet VIS	Unlikely	Nil

Scientific name	Common name	EPBC Act	NSW Status	Habitat	Nature of record	Likelihood of occurrence within study area	Likelihood of impact within subject site.
				open understory of native grasses. During winter the Flame Robin moves into drier more open habitats including pastures and native grasslands.			
<i>Phaps histrionica</i>	Flock Bronzewing	E		Patchily distributed and rarely observed in NSW. It is likely to occur north of Broken Hill and west of Cobar when conditions are right. The extensive Mitchell grasslands around Brewarrina and Goodooga should also provide suitable habitat.	VIS	Unlikely	Nil
<i>Polytelis swainsonii</i>	Superb Parrot	V	V	The Superb Parrot requires tree hollows to breed. They typically nest in colonies and return to the same location over generations. The closest known breeding colonies occur at Cowra. During the summer they return from wintering in northern NSW to breed, often in open box-woodland or isolated paddock trees. They may forage in grassy box woodland up to 10km from the nesting site.	Bionet VIS	Unlikely	Nil
<i>Pomatostomus temporalis temporalis</i>	Grey-crowned Babbler (eastern subspecies)	V		The Grey-crowned Babbler occupies Box-gum woodlands, Box-cypress-pine and Box Woodlands on alluvial plains. They construct several large dome stick nests within a territory and breed cooperatively during the warmer months.	Bionet VIS	Unlikely	Nil
<i>Rostratula australis</i>	Australian Painted-snipe		E	The Australian Painted Snipe occupies wetland and swamp habitats, preferring the fringes of swamps and dams with a cover of grasses, lignum or open timber. Breeding occurs anytime during spring and summer	PMST	Unlikely	Nil

Scientific name	Common name	EPBC Act	NSW Status	Habitat	Nature of record	Likelihood of occurrence within study area	Likelihood of impact within subject site.
				when conditions are favourable. It nests on the ground amongst tall vegetation.			
<i>Stagonopleura guttata</i>	Diamond Firetail	V		The Diamond Firetail tends to occur in proximity to watercourses building small dome nests in shrubs and dense foliage. It is found within Box-Gum Woodlands, Snow Gum Woodlands, open forests, mallee, Natural Temperate Grassland and in secondary grasslands derived from other communities. This species forages on grasses, forbs and insects along the ground.	Bionet VIS	Unlikely	Nil
<i>Stictonetta naevosa</i>	Freckled Duck	V		The Freckled Duck is known to occur along the Paroo and Lachlan Rivers preferring large permanent swamps with Cumbungi, Lignum or Melaleuca to breed. They take refuge beneath dense vegetation by deep water during the day and forage on algae, seeds, grasses and sedges at night. Breeding can occur year round when conditions are favourable however typically this is restricted to October – December.	Bionet	Unlikely	Nil
<i>Turnix maculosus</i>	Red-backed Button Quail	V		Over their Australian range, Red-backed Button-quail inhabit grasslands, open and savannah woodlands with grassy ground layer, pastures and crops of warm temperate areas, typically only in regions subject to annual summer rainfall greater than 400 mm. In NSW, said to occur in grasslands, heath and crops. Said to prefer sites close to water, especially when breeding. The species has been observed associated with the	VIS	Unlikely	Nil

Scientific name	Common name	EPBC Act	NSW Status	Habitat	Nature of record	Likelihood of occurrence within study area	Likelihood of impact within subject site.
				following grasses (in various vegetation formations): speargrass <i>Heteropogon</i> , Blady Grass <i>Imperata cylindrica</i> , <i>Triodia</i> , <i>Sorghum</i> , and Buffel Grass <i>Cenchrus ciliaris</i> .			
Fish							
<i>Macculloche</i> <i>lla peelii</i>	Murray Cod	V		The Murray Cod is known to occur within the Macquarie River and Lachlan Rivers. They move upstream to breed in small, clear, rocky streams with a variety of riffle and pool structure. At other times of the year they occupy large, slow-flowing often silty rivers of the Murray-Darling Basin. During this time they prefer habitats that provide adequate shelter in the form of deep holes vegetative cover, snags and overhanging vegetation.	PMST	Nil	Nil
<i>Macquaria</i> <i>australasica</i>	Macquarie Perch	E	V	This species of freshwater fish inhabits river and lake habitats, especially the upper reaches of rivers and their tributaries. Spawning occurs in spring and summer in shallow upland streams or flowing sections of river systems. This species is found in the upper reaches of the Lachlan, Murrumbidgee and Murray Rivers, and in parts of the Hawkesbury and Shoalhaven catchment areas. The species requires clear water with deep, rocky holes with abundant cover (including aquatic	PMST	Nil	Nil

Scientific name	Common name	EPBC Act	NSW Status	Habitat	Nature of record	Likelihood of occurrence within study area	Likelihood of impact within subject site.
				vegetation, woody debris, large boulders and overhanging banks.			
Mammals							
<i>Antechinus laniger</i>	Kultarr	E		Widespread across arid and semi-arid NSW but present in very low numbers. Records typically derive from captures by domestic cats or are collected after falling into steep-sided holes. Recent records have come primarily from the Cobar and Brewarrina region.	VIS	Unlikely	Nil
<i>Cercartetus nanus</i>	Eastern Pygmy-possum	V		This species is found in a wide range of habitats from sclerophyll forest through to rainforest. Heath and woodlands are preferred habitat, except in NE NSW where rainforest is preferred habitat. Feed trees are banksias, eucalypts and bottlebrushes and tree hollows, holes in the ground, possum dreys and rotten stumps are used as nesting sites.	Bionet	Unlikely	Nil
<i>Chalinolobus dwyeri</i>	Large-eared Pied Bat		V	The Large-eared Pied Bat primarily roosts beneath cliff overhangs, within disused mine shafts and may use tree hollows. Only two maternity roosts are known to occur within NSW. This species requires a combination of sandstone cliff for roosting habitat adjacent to Box-Gum Woodland or riparian corridors to provide appropriate foraging grounds.	PMST	Unlikely	Nil

Scientific name	Common name	EPBC Act	NSW Status	Habitat	Nature of record	Likelihood of occurrence within study area	Likelihood of impact within subject site.
<i>Chalinolobus picatus</i>	Little Pied Bat	V		Lives in open forest and woodland (dry), mulga woodlands, cypress pine forests and Mallee and Bimble box woodlands. Roosts in caves, tree hollows, buildings, rocky outcrops and tunnels. Requires access to water in drier areas.	Bionet, field surveys	Possible anabat recording	Moderate, potential roosting habitat impacted
<i>Dasyurus maculatus</i>	Spotted-tailed Quoll	V	E	The Spotted-tailed Quoll has been recorded across a variety of habitats including rainforest, heath, woodlands and riparian forests. They require den sites found amongst fallen logs, small caves, rocky outcrops or within tree hollows to shelter and breed. Females occupy home ranges up to 750 ha while males' territories can extend up to 3500 ha.	PMST	Unlikely	Nil
<i>Leggadina forresti</i>	Forrests Mouse	V		Forrest's Mouse is sparsely distributed across arid and semi-arid inland Australia. In north west NSW, it has been recorded from Sturt National Park, Tibooburra, Fowler's Gap, Mutawintji National Park (as subfossil remains), and from near Wilcannia. The species has also recently been recorded from Ledknapper Nature Reserve, and Culgoa National Park near Weilmoringle.	VIS	Unlikely	Nil
<i>Myotis macropus</i>	Large-footed Myotis / Southern Myotis	V		The Southern Myotis is found in the coastal band from the north-west of Australia, across the top-end and south to western Victoria. It is rarely found more than 100 km inland, except along major rivers. Generally roost in groups of 10 - 15 close to water in caves, mine shafts, hollow-bearing trees, storm water channels,	Past surveys ~20km away	Unlikely	Low no waterways present

Scientific name	Common name	EPBC Act	NSW Status	Habitat	Nature of record	Likelihood of occurrence within study area	Likelihood of impact within subject site.
				buildings, under bridges and in dense foliage. Forage over streams and pools catching insects and small fish by raking their feet across the water surface.			
<i>Nyctophilus corbeni</i>	Corben's Long-eared Bat		V	The South-eastern Long-eared Bat is known to occur throughout a variety of habitat types including Box-Gum, Ironbark and cypress pine woodlands. It relies on tree hollows to roost and breed.	PMST, field surveys	Possible anabat recording	Moderate, potential roosting habitat impacted
<i>Phascolarctos cinereus</i>	Koala	V	V	The Koala occupies open eucalypt woodlands and forests feeding exclusively on preferred feed trees.	Bionet, PMST	Unlikely	Nil
<i>Pseudomys novaehollandiae</i>	New Holland Mouse		V	This species lives in shared burrows in open heathlands, woodlands and forests with a heathland understorey and vegetated sand dunes.	Bionet, PMST	Unlikely	Nil
<i>Pteropus poliocephalus</i>	Grey-headed flying Fox		V	They Grey-headed Flying Fox roosts in conspicuous colonies often along watercourses. They forage on a range of fruits and blossoms travelling up to 50 km in an evening to feed.	PMST	Unlikely	Nil
Reptiles							
<i>Aprasia parapulchella</i>	Pink-tailed Worm-lizard	V		The Pink-tailed Worm Lizard requires surface rocks typically occurring within native grasses under which to shelter and breed. They feed on invertebrates and have been observed to have a strong association with ants and termites often using the burrows formed by these invertebrates.	PMST	Nil	Nil

Scientific name	Common name	EPBC Act	NSW Status	Habitat	Nature of record	Likelihood of occurrence within study area	Likelihood of impact within subject site.
<i>Delma impar</i>	Striped Legless Lizard	V		The Striped Legless Lizard is a grassland specialist. Potential habitat for the Striped Legless Lizard includes all areas which have, or once had, native grasslands or grassy woodlands (including derived grasslands) across the historical range of the species, provided that area retains suitable tussock structure, the soil is of appropriate type and structure, and the site has not had major disturbance such as ploughing. All occupied sites have a grassy ground cover, often with a mixture of native and exotic perennial and annual species of tussock-forming grasses (often >20–50% cover). The species is now known to occur in some areas dominated by introduced species such as <i>Phalaris aquatica</i> , <i>Serrated Tussock</i> (<i>Nasella trichotoma</i>) and <i>Hypochaeris radicata</i> and at sites with a history of grazing and pasture improvement. Striped Legless Lizards shelter in grass tussocks, thick ground cover, soil cracks, under rocks, spider burrows, and under ground debris such as timber (Smith & Robertson 1999). The majority of sites in Victoria and NSW occur on cracking clay soils with some surface rock which provide shelter for the species.	PMST	Nil	Nil
Flora							
<i>Philotheca ericifolia</i>			V	<i>Philotheca ericifolia</i> occurs on the central and northern slopes and northwestern plains of NSW. It grows mainly	PMST	Unlikely	Nil

Scientific name	Common name	EPBC Act	NSW Status	Habitat	Nature of record	Likelihood of occurrence within study area	Likelihood of impact within subject site.
				in dry sclerophyll forest preferring damp sandy flats and gullies, but has also been recorded in dry sandy creek beds and on rocky ridges.			
<i>Prasophyllum petilum</i>	Tarengo Leek Orchid		E	The Tarengo Leek Orchid occurs on relatively fertile soils in grassy woodland or natural grassland. The three cemetery sites originally contained grassy woodland, dominated by Snow Gum (<i>Eucalyptus pauciflora</i>) and Black Gum (<i>E. aggregata</i>) at Captains Flat, and Blakely's Red Gum (<i>E. blakelyi</i>) and Yellow Box (<i>E. melliodora</i>) at Hall and Ilford. Both Tarengo TSR and Steves TSR are natural grasslands	PMST	Unlikely	Nil
<i>Prasophyllum sp. Wybong</i>	A leek-orchid		CE	Endemic to NSW, it is known from near Ilford, Premer, Muswellbrook, Wybong, Yeoval, Inverell, Tenterfield, Currabubula and the Pilliga area. Most populations are small, although the Wybong population contains by far the largest number of individuals. Habitat occurs within open eucalypt woodland and grassland	PMST VIS	Unlikely	Nil
<i>Sida rohlenae</i>		E		NSW specimens have been found along roadsides in hard red loam to sandy-loam soils. The species can become locally abundant and is often more common in disturbed sites. In NSW it has been recorded south of Enngonia, south of Bourke and north-west of Coonamble with one collection north of Bourke which is likely to have been transported from Queensland.	VIS	Unlikely	Nil

Scientific name	Common name	EPBC Act	NSW Status	Habitat	Nature of record	Likelihood of occurrence within study area	Likelihood of impact within subject site.
<i>Swainsona murrayana</i>	Slender Darling-pea		V	This species grows in a variety of vegetation types and soils including blackbox, bladder saltbush and grassland communities on floodplains, level plains and depressions. This species may require some disturbance and has been found in remnant native grasslands and grassy woodlands that have been grazed/cultivated.	PMST	Unlikely	Nil
<i>Swainsona recta</i>	Small Purple-pea		E	Grows in association with understorey dominants that include Kangaroo Grass <i>Themeda australis</i> , poa tussocks <i>Poa</i> spp. and spear-grasses <i>Austrostipa</i> spp. Plants die back in summer, surviving as a rootstocks until they shoot again in autumn. Generally tolerant of fire.	PMST	Unlikely	Nil
<i>Swainsona sericea</i>	Silky Swainson-pea	V	E	Habitat on plains is unknown, found in Natural Temperate Grassland and Snow Gum Woodland on the Monaro and Box Gum Woodland in the Southern Tablelands. Sometimes found in association with cypress-pines.	Bionet, PMST, VIS	Unlikely	Nil
<i>Tylophora linearis</i>			E	This species prefers dry scrub and open forest in low altitude sedimenrary flats. Associated with <i>Eucalyptus fibrosa</i> , <i>Eucalyptus sideroxylon</i> , <i>Eucalyptus albens</i> , <i>Callitris endlicheri</i> , <i>Callitris glaucophylla</i> and <i>Allocasuarina luehmannii</i> .	PMST	Unlikely	Nil
Threatened Ecological Communities							

Scientific name	Common name	EPBC Act	NSW Status	Habitat	Nature of record	Likelihood of occurrence within study area	Likelihood of impact within subject site.
Grey Box (<i>Eucalyptus microcarpa</i>) Grassy Woodlands and Derived Native Grasslands of South-eastern Australia			E	This community occurs in two forms, a derived native grassland and grassy woodland form. The most common form is the grassy woodland form comprising a tree layer and a grassy understorey. the overstorey contains > 50 % Grey Box with a moderately dense to absent shrub layer. The derived grassland form can occur in patches where the tree canopy and mid layer have been almost entirely removed but the native ground layer remains intact.	PMST	Possible	Vegetation integrity does not satisfy this TEC
Weeping Myall Woodlands			E	Also known as Boree, this community typically occurs in red-brown earths and heavy textured grey and brown alluvial soils in areas receiving between 375 and 500 mm mean annual rainfall. The structure of the community varies from low and open woodland to open shrubland and one of the dominant species is <i>Acacia pendula</i> , up to 10 m. In some areas the shrub and canopy stratum may have been reduced or eliminated by clearing or heavy grazing, leaving derived grassland that may still constitute this community.	PMST	Unlikely	Nil
White Box - Yellow Box - Blakely's Red Gum Grassy Woodland and Derived Native Grassland		E	CE	White Box – Yellow Box – Blakely's Red Gum Grassy Woodland and Derived Native Grassland can occur as either grassland or woodland is characterised by a species diverse understory of grasses, herbs and sparse shrubs. Dominant canopy species include <i>Eucalyptus albens</i> , <i>E. melliodora</i> and <i>E. blakelyi</i> .	PMST	Possible	Vegetation integrity does not satisfy this TEC

Appendix F Tests of significance for state listed threatened biota

Section 1.7 of the EP&A Act lists considerations that must be taken into account in the determination of the significance of potential impacts of a proposed proposal on 'threatened species, populations or ecological communities (or their habitats)' listed under the BC Act. The Test of Significance is used to determine whether a proposal is 'likely' to impose 'a significant effect' on threatened biota and thus whether participation in the Biodiversity Offset Scheme (BOS) is required. Should the Test of Significance conclude that there is likely to be a 'significant effect' on a listed species, population or endangered ecological community, participation in the Biodiversity Offset Scheme is required.

Biodiversity Conservation Act 2016 Part 7.3 sets out the following Test of Significance considerations which must be addressed to determine whether a significant impact is likely to occur.

- Threatened microbats: Little Pied Bat (*Chalinolobus picatus*) and Corben's Long-eared Bat (*Nyctophilus corbeni*), each of these species are listed as Vulnerable under BC Act while Corben's Long-eared Bat is also listed as Vulnerable under the EPBC Act.

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,

Corben's Long-eared Bat occupies a variety of habitat types however is most closely associated with the Murray Darling Basin and Pilliga Scrub region forming the stronghold for the species. It has not been recorded within the Bathurst region previously. It roosts in tree hollows, crevices, and under loose bark. Given the difficulty with positively differentiating *Nyctophilus* species by call alone a conservative approach has been taken and presence assumed within the study area.

The Little Pied Bat was also detected via anabat as a possible call. This species occurs throughout western NSW in dry open forest, open woodland, mulga woodlands, chenopod shrublands, cypress pine forest and mallee and Bimbil box woodlands. It can occupy a variety of roosting sites including caves, rock outcrops, mine shafts, tunnels, tree hollows and buildings. The Little Pied Bat can tolerate high temperatures and dryness but need access to nearby open water such as a farm dam which occurs adjacent to the subject land.

The proposal involves the clearing of trees including the removal of **two (2)** hollow bearing trees containing approximately **four (4)** hollows and **one (1)** stags. These trees may provide roosting and breeding habitat for each of these bats at some stage in their life history.

The subject land would only comprise a small proportion of the home range of these wide-ranging bat species. These species are likely to forage throughout the study area but would not rely on these habitats solely given the sparse habitat available within the subject land. While every measure would be taken to avoid direct fatalities and abandonment of juveniles, modified behaviour of individuals may occur. As such, the proposal is unlikely to place viable local populations of these species at risk of extinction.

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 to these threatened species.

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 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,

Potential habitat for these microbats include the paddock trees within the subject land. Six paddock trees including **two (2)** hollow bearing trees and **one (1)** stag are proposed to be cleared. These trees provide potential roosting and foraging habitat for each of these species. The subject site is otherwise cleared land currently used for canola cultivation and seasonal grazing by stock. This cleared land use is prevalent throughout the locality. Remaining native vegetation is largely restricted to narrow corridors along the road reserve, which supports potential habitat for these species.

Fragmentation from past agricultural activities is already present within the subject land. These species are highly mobile and the proposal will not disrupt the dispersal capabilities of these bats.

Hollow bearing trees provide important refuge and shelter for roosting microbats. The proposal will remove **0.006 ha** of foraging habitat (tree canopy of six paddock trees) (representing **<0.0001%** of habitats available within the locality) and up to **two (2)** hollow bearing trees and **one (1)** stag, however this a small proportion of the habitat available throughout the locality and is not likely to be important for the long survival of these species.

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),

The site does not support any declared registered areas of outstanding biodiversity value (formerly critical habitat):

<https://www.environment.nsw.gov.au/criticalhabitat/CriticalHabitatProtectionByDoctype.htm>

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 listed Key threatening processes have the potential to occur or increase as a result of the proposal, if appropriate mitigation measures are not implemented:

- Loss of hollow bearing trees
- Infection of native plants by *Phytophthora cinnamomic*.
- Introduction and establishment of exotic rust fungi of the order Pucciniales pathogenic on plants of the family Myrtaceae.
- Invasion and establishment of exotic vines and scramblers.
- Anthropogenic climate change
- Invasion of native plant communities by exotic perennial grasses

Conclusion

Given only a small area of habitat would be removed (<0.001% of foraging habitat within the locality), that supplementary habitat measures would be undertaken (installation of bat boxes / trees hollows) and that the pre clearing surveys would be undertaken to ensure no loss of life, the proposed works would be unlikely to result in a significant impact on the Little Pied Bat or Corben's Long-eared Bat.

Appendix G Significant Impact Criteria assessment for EPBC Act listed threatened biota

Species listed as Vulnerable under the EPBC Act – Corben's Long-eared Bat	
Criteria	Comments
<i>According to the DEWHA (2009) Significant Impact Guidelines, an action is likely to have a significant impact on a vulnerable species if there is a real chance or possibility that it will:</i> i) <i>lead to a long-term decrease in the size of an important population of a species;</i>	Corben's Long-eared Bat was detected as probable anabat recording during the two (2) nights of anabat survey. It is difficult to confidently differentiate <i>Nyctophilus</i> species calls and a conservative approach has been taken to assume presence within the study area however there have been no confirmed records of this species within the locality previously. For these reasons this assessment has determined that there are no important populations of this species that would be at risk as a result of the proposal.
ii) <i>reduce the area of occupancy of an important population;</i>	No known important populations present
iii) <i>fragment an existing important population into two or more populations;</i>	No known important populations present
iv) <i>adversely affect habitat critical to the survival of a species</i>	No critical habitat declared however the proposal will remove two (2) hollow bearing trees which are an important habitat resource for Corben's Long-eared Bat.
v) <i>disrupt the breeding cycle of an important population;</i>	No known important populations present
vi) <i>modify, destroy, remove or isolate or decrease the availability or quality of habitat to the extent that the species is likely to decline;</i>	The proposal requires the removal of 0.006 ha of foraging habitat in poor condition. This represents <0.0001% of similar habitats within the locality. The removal of this habitat is unlikely to decrease the availability or quality of habitat such that a local population of either species would decline.
vii) <i>result in invasive species that are harmful to a vulnerable species becoming established in the vulnerable species' habitat;</i>	The proposal will follow strict hygiene protocols to manage potential invasive weeds / species. These measures should prevent harmful species becoming established in the study area.
viii) <i>introduce disease that may cause the species to decline; or</i>	The proposal will follow strict hygiene protocols to manage potential diseases and invasive weeds / species. These measures should prevent diseases becoming established in the study area.
ix) <i>interfere substantially with the recovery of a species.</i>	The removal of native vegetation and hollow bearing trees are listed Key Threatening Processes which will occur as part of the proposal. Although minor (removal of 0.006ha vegetation and two hollow bearing trees) supplementary habitat actions have been included as part of these works to

Species listed as Vulnerable under the EPBC Act – Corben's Long-eared Bat	
Criteria	Comments
	ensure minimal loss of habitat. Consequently the works are unlikely to interfere with the recovery of this species.
<i>Conclusion</i>	Given only a small area of habitat would be removed (0.0001% of similar habitats within the locality and two (2) hollow bearing trees), that supplementary habitat measures (revegetation with suitable species & installation of bat boxes) would be undertaken and that the pre-clearing surveys would ensure no loss of life, the proposed works would be unlikely to result in a significant impact on Corben's Long-eared Bat.