Grenfell Poultry Farm

Biodiversity Development Assessment Report

Baiada Properties Pty Ltd

1 November 2021

Final

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Report No. 1

The preparation of this report has been in accordance with the brief provided by the Client and has relied upon the data and results collected at or under the times and conditions specified in the report. All findings, conclusions or commendations contained within the report are based only on the aforementioned circumstances. The report has been prepared for use by the Client and no responsibility for its use by other parties is accepted by Cumberland Ecology.

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1	11/08/2021	HG/CEP/VO	Draft
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Approved by:	Dr David Robertson
Position:	Director
Signed:	
Date:	1 November, 2021

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Glossary

Term/Abbreviation	Definition
BDAR	Biodiversity Development Assessment Report
EIS	Environmental Impact Statement
EPBC Act	Commonwealth *Environment Protection and Biodiversity Conservation Act 1999*
EP&A Act	NSW *Environmental Planning and Assessment Act 1979*
BC Act	NSW *Biodiversity Conservation Act 2016*
BC Regulation	NSW *Biodiversity Conservation Regulation 2017*
BAM	*Biodiversity Assessment Method 2020*
BOS	Biodiversity Offsets Scheme
DAWE	Commonwealth Department of Agriculture, Water and the Environment
DPIE	NSW Department of Planning, Industry and Environment
EES	NSW Environment, Energy and Science Group
OEH	Former NSW Office of Environment and Heritage
PCT	Plant Community Type
SAII	Serious and Irreversible Impact
study area	the area surveyed for the BDAR as shown in **Figure 1**
subject land	the development footprint area as shown in **Figure 1**
TBDC	Threatened Biodiversity Data Collection
TEC	Threatened Ecological Community
the project	Development Application (DA) for the proposed Baiada Grenfell Poultry Farm
the property	1130 Gooloogong Road, Grenfell
SEARs	Secretary's environmental Assessment Requirements
Subject land	Area of land subject to impacts within the development footprint

1. Introduction

Cumberland Ecology was commissioned by PSA Consulting, on behalf of Baiada Properties Pty Limited (the 'client'), to prepare a Biodiversity Development Assessment Report (BDAR) to support the development of land located at 1130 Gooloogong Road, Grenfell (the 'property'). The project requires the preparation of a BDAR to support a development application (DA) for the proposed construction of the Baiada Grenfell Poultry Farm ('the project'). The project will result in the clearing of native vegetation within the development footprint (the 'subject land'). We understand that the project will be assessed as a State Significant Development (SSD) (SSD-13855453), as it meets the thresholds listed in the *State Environmental Planning Policy (State and Regional Development) 2011*. The project is also identified as 'Designated Development' under the *Environmental Planning and Assessment Regulation 2000*. This BDAR will form part of the documentation to support an Environmental Impact Statement (EIS) for the project.

1.1. Requirement for BDAR

Section 7.9 of the NSW *Biodiversity Conservation Act 2016* (BC Act), requires all SSD applications be accompanied by a BDAR unless the Planning Agency Head and the Environment Agency Head determine that the proposed development is not likely to have any significant impact on biodiversity values. The BDAR must be undertaken in accordance with the Biodiversity Assessment Method (BAM).

Secretary's Environmental Assessment Requirements (SEARs) were issued for the Project on 01 March 2021 which specified the requirement for a BDAR. The SEARs stated that the following requirement applied to biodiversity:

"An assessment of the proposal's biodiversity impacts in accordance with the Biodiversity Conservation Act 2016, including the preparation of a Biodiversity Development Assessment Report (BDAR) where required under that Act, except where a waiver for preparation of a BDAR has been granted."

Under the BAM, a development can be assessed using the streamlined assessment module for small area development if it involves impacts to biodiversity below a prescribed area threshold, which is based on the minimum lot size as shown in Table 12 of Appendix C of the BAM. In the case of the project, the minimum lot size associated with the subject land is 400 ha, which would enable the project to be assessed using the streamlined module if the clearing of native vegetation is ≤3 ha. As the project will only remove 1.42 ha of native vegetation (that includes 0.04 ha of planted native vegetation), this BDAR has been prepared in accordance with the streamlined assessment module for small areas development in Appendix C of the BAM.

1.2. Purpose

The purpose of this BDAR is to document the findings of an assessment undertaken for the project in accordance with Stage 1 (Biodiversity Assessment) and Stage 2 (Impact Assessment) of the BAM. Specifically, the objectives of this BDAR are to:

- Identify the landscape features and site context (native vegetation cover) within the subject land and assessment area;
- Assess native vegetation extent, plant community types (PCTs), threatened ecological communities (TECs) and vegetation integrity (site condition) within the subject land;

- Assess habitat suitability for threatened species that can be predicted by habitat surrogates (ecosystem credits) and for threatened species that cannot be predicted by habitat surrogates (species credit species);
- Identify potential prescribed biodiversity impacts on threatened species;
- Describe measures to avoid and minimise impacts on biodiversity values and prescribed biodiversity impacts during project planning;
- Describe impacts to biodiversity values and prescribed biodiversity impacts and the measures to mitigate and manage such impacts;
- Identify the thresholds for the assessment and offsetting of impacts, including:
    - Impact assessment of potential entities of serious and irreversible impacts (SAII);
    - Impacts for which an offset is required;
    - Impacts for which no further assessment is required; and
- Describe the application of the no net loss standard, including the calculation of the offset requirement.

A compliance table has been provided in **Appendix A** to demonstrate how this BDAR complies with Appendix K of the BAM, which details the minimum information requirements for a BDAR.

1.3. Project Description

1.3.1. Location

The project under consideration will be located approximately 11 km north of Grenfell, NSW, within Lot 1 DP1022013, Lots 1-3 DP1206485 and Lot 22 DP866857, which are hereafter collectively referred to as the 'project boundary' (**Figure 1**). The project boundary is approximately 709 ha in area and comprises land that has historically been cleared and used for agricultural purposes.

The project boundary is located within the Weddin Shire Local Government Area and is currently entirely zoned 'RU1 – Primary Production' pursuant to the Weddin Local Environmental Plan (LEP) 2011. The project boundary is accessed via Gooloogong Road, which is a local road under the authority of Weddin Shire Council. The Wallah Wallah Creek intersects the project boundary and runs south to north as a fourth order stream, before converging into the Warraderry Creek outside of the project boundary.

A site map and location map have been prepared in accordance with the BAM and are presented in **Figure 1** and **Figure 2**, respectively.

1.3.2. Project Overview

The project will comprise the construction of four farms with 10 sheds per farm, giving a total of 40 poultry sheds. Each farm will have a maximum of 140,140 birds with a maximum capacity of 560,560 birds across the property. The proposed farm is intended to produce fertile eggs which are hatched at a company hatchery and will be grown at company broiler farms (meat chickens) across NSW.

The proposed development is defined as "intensive livestock agriculture", which means "*the keeping of breeding, for commercial purposes of cattle, poultry, pigs, goats, horses, sheep or other livestock, and includes… poultry farms, but does not include extensive agriculture, aquaculture or the operation of facilities for drought or similar emergency relief*".

Other ancillary buildings and supporting infrastructure will include manager residences, water tanks, a 10 metre-wide access road and other services.

1.3.3. Identification of the Development Site Footprint

The layout of the project is shown in **Figure 3**. The development site footprint comprises the 46.94 ha of land directly impacted by the project and is referred to within this BDAR as the subject land. All temporary/ancillary construction facilities and infrastructure will be contained within the operation footprint. Therefore, for the purposes of this assessment, the subject land comprises both the construction footprint and the operational footprint of the project.

A 'study area' is defined as the area surveyed for this assessment. It is 85.61 ha and is represented by the subject land plus a 50 metre buffer surrounding the farms and a 10 metre buffer either side of the outer edge of the access roads. The purpose of including and surveying the study area was to determine surrounding biodiversity values to inform the project in terms of avoiding and minimising the potential impacts. The wider area surrounding the study area is predominantly comprised of agricultural land, with exception to the tracts of native vegetation surrounding Wallah Wallah Creek and on the sloping hill rising to the east of the property boundary.

1.3.4. General Description of the Subject Land

1.3.4.1. Land Use

Native vegetation occurs mostly as scattered remnant paddock trees, as a patch of native treed vegetation surrounding Wallah Wallah Creek, and as a derived native grassland community within previously cleared areas that are not currently being used for cropping activities. The vast majority of the subject land has been cleared of all native vegetation and is covered with pastureland that is cropped for wheat or with feed plants for the grazing sheep. The site has historically, and is currently, used heavily for agricultural purposes.

1.3.4.2. Topography and Soils

The subject land is located on the NSW South Western Slopes IBRA Region, which is described as an extensive area of foothills and isolated ranges comprising the lower inland slopes of the Great Dividing Range extending from north of Cowra through southern NSW into western Victoria. Geology, soils and vegetation are complex and diverse but are typified by granites and meta-sediments, texture contrast soils and a variety of eucalypt woodlands. The overall pattern of soils in these landscapes is one where shallow, stony soils are found on the tops of ridges and hills. Moving downslope, texture contrast soils are the norm with subsoils derived from the underlying weathered rock and the topsoils being an homogenised surface mantle of coarser material derived from all parts of the slope. On valley floors subsoils have drabber colours indicative of poor drainage and they may accumulate soluble salts (DPIE 2016).

The subject land itself is relatively flat with some mild undulation and rising occurring towards the east portion.

1.3.4.3. Hydrology

The assessment area and subject land fall within the Lachlan River catchment. The subject land is traversed by Wallah Wallah Creek which runs south to north as a fourth order stream, before converging into the Warraderry Creek outside of the project boundary. There are a number of first and second order minor watercourses that occur within the subject land in the eastern three farm sites. These are likely to be ephemeral creek lines that only occasionally accumulate water, as they did not appear to contain water at the time of survey. Nevertheless, these first and second order watercourses feed into Wallah Wallah Creek and have associated riparian buffers that encroach into the subject land at several locations.

1.3.5. Category 1 Land

Under Section 6.8 (3) of the BC Act, a BAM assessment can exclude land that meets the definition of Category 1 – Exempt Land, other than for an assessment of any "relevant prescribed impacts".

Category 1 – Exempt Land is defined under Part 5A of the *Local Land Services Act 2013* (LLS Act) as:

- Land that was cleared of native vegetation as of 1 January 1990 or lawfully cleared after 1 January 1990;
- Land that contains low conservation value grasslands;
- Land (not being grasslands) containing only low conservation groundcover;
- Native vegetation identified as regrowth in a Property Vegetation Plan under the repealed *Native Vegetation Act 2003*;
- Land biodiversity certified under the BC Act.

The majority of the land within the study area is heavily modified pastureland that has been assessed as conforming to the definition of Category 1 – Exempt Land. A detailed assessment examining this conformance is provided in **Appendix B**.

1.4. Information Sources

1.4.1. Databases

A number of databases were utilised during the preparation of this BDAR, including:

- Environment, Energy and Science (EES) BioNet Atlas;
- EES Threatened Biodiversity Data Collection (TBDC);
- EES BioNet Vegetation Classification database;
- Commonwealth Department of Agriculture, Water and the Environment (DAWE) Species Profile and Threat Database;
- DAWE Protected Matters Search Tool; and
- DAWE Directory of Important Wetlands in Australia.

1.4.2. Literature

This BDAR has utilised the results and/or spatial data from the following documents:

- State Vegetation Type Map– Central West Lachlan v1 (OEH 2015).

Other sources of information have been referenced throughout this BDAR.

1.4.3. Aerial Photography

The aerial imagery utilised in this BDAR is sourced from Department of Customer Service 2020 and is dated 13 February 2017. Additional aerial images available on NearMap and SixMaps were also consulted.

1.5. Authorship and Personnel

This document has been certified by Dr David Robertson (BAM Accredited Assessor No: BAAS17027) as being prepared in accordance with the BAM as at 11 August 2021. This document, and associated field surveys and Geographic Information Systems (GIS) mapping, was prepared with the assistance of additional personnel as outlined in **Table 1**. Notwithstanding the assistance of the additional personnel, the assessment presented within this document is Dr Robertson's.

Table 1 Personnel

Name	Tasks	Relevant Qualifications / Training	BAM Accredited Assessor No.
Dr David Robertson	Document review	Doctor of Philosophy. Ecology, University of Melbourne, 1986 Bachelor of Science (Honours) in Ecology, University of Melbourne, 1980 BAM Accredited Assessor Training. Muddy Boots, 2017	BAAS17027
Katrina Wolf	Document review	Bachelor of Science (Environmental). The University of Sydney, 2007 BAM Accredited Assessor Training. Muddy Boots, 2017	BAAS18010
Dr Rohan Mellick	Field surveys	Doctor of Philosophy, Evolutionary Ecology. The University of Adelaide, 2012 Bachelor of Applied Science (Honours) in Natural Resource Management, Southern Cross University, 2000. BAM Accredited Assessor Training. Muddy Boots, 2017	BAAS18075
Cecilia Eriksson-Pinatacan	Document preparation, credit calculations	Master of Science (Major in Marine Science and Management). University of Technology Sydney, 2013	BAAS19052

		Bachelor of Science (Honours) in Marine Biology, University of Technology Sydney, 2008 BAM Accredited Assessor Training. Muddy Boots, 2017	
Michael Davis	GIS mapping	Bachelor of Biodiversity and Conservation. - Macquarie University, 2016 BAM Accredited Assessor Training. Muddy Boots, 2017	
Heather Gosper	Document preparation, credit calculations	Bachelor of Environmental Science and Management. The University of Newcastle, 2013 BAM Accredited Assessor Training. Muddy Boots, 2017	BAAS19028

2. Methodology

2.1. Review of Existing Data

Existing information on biodiversity values within the assessment area was reviewed, which includes:

- Survey data that is held in the BioNet Atlas; and
- The following existing vegetation mapping:
    - State Vegetation Type Map– Central West Lachlan v1 (OEH 2015).

This existing information was considered and included, where appropriate, into survey design, vegetation mapping and reporting.

2.2. Landscape Features

Landscape features requiring consideration were initially determined via desktop assessment. Field surveys undertaken between 19 and 21 April 2021 sought to verify the following landscape features:

- Rivers, streams and estuaries;
- Important and local wetlands;
- Karsts, caves, crevices, cliffs and areas of geological significance; and
- NSW BioNet Landscapes.

No amendments were required to be made to any of these landscape features following field surveys.

2.3. Native Vegetation Survey

2.3.1. Vegetation Mapping

Vegetation mapping studies have previously been undertaken across the subject land and surrounds, including broad scale mapping of the Central West Lachlan region by the former Office of Environment and Heritage (OEH 2015).

Cumberland Ecology conducted vegetation surveys on 19 - 21 April 2021 to revise and update the vegetation mapping. The vegetation within the subject land and study area was ground-truthed to examine and verify the mapping of the condition and extent of the different plant communities. Mapping of plant communities within the subject land was undertaken by random meander searches throughout each patch of vegetation, noting key characteristics of areas in similar broad condition states such as similar tree cover, shrub cover, ground cover, weediness or combinations of these. Soils were also inspected.

Records of plant community boundaries were made using a hand-held Global Positioning System and mark-up of aerial photographs. The resultant information was synthesised using GIS to create a spatial database that was used to interpret and interpolate the data to produce a vegetation map of the subject land and wider study area.

2.3.2. Vegetation Integrity Assessment

Vegetation integrity assessments were undertaken in the subject land in accordance with the BAM. BAM requires the establishment of a 20 x 50 m plot with an internal 20 m x 20 m plot. The following data was collected within the plot:

- Composition for each growth form group by counting the number of native plant species recorded for each growth form group within a 20 m x 20 m floristic plot;
- Structure of each growth form group as the sum of all the individual projected foliage cover estimates of all native plant species recorded within each growth form group within a 20 m x 20 m floristic plot;
- Cover of 'High Threat Exotic' weed species within a 20 m x 20 m floristic plot;
- Assessment of function attributes within a 20 m x 50 m plot, including:
    - Count of number of large trees;
    - Tree stem size classes, measured as 'diameter at breast height over bark' (DBH);
    - Regeneration based on the presence of living trees with stems <5 cm DBH;
    - The total length in metres of fallen logs over 10 cm in diameter;
- Assessment of litter cover within five 1 m x 1 m plots evenly spread within the 20 m x 50 m plot; and
- Number of trees with hollows that are visible from the ground within the 20 m x 50 m plot.

Nine (9) BAM plots were undertaken within the subject land and study area, and the locations are shown in **Figure 4**. **Table 2** summarises the plot requirements based on the size and number of vegetation zones in the subject land. As shown in **Table 2**, the minimum number of plots in accordance with the BAM has been completed for the vegetation zones identified within the subject land.

In conjunction with the plot-based floristic surveys, information was also collected to inform an analysis of Category 1 – Exempt Land. Information was collected within five (5) 100 m long transects, in accordance with the 'Interim Grasslands and other Groundcover Assessment Method' (OEH 2017). Along each transect, records were made at each metre regarding the presence of native and/or exotic species to estimate the percent cover of native and exotic species.

Table 2 BAM plot survey requirements

Vegetation Zone	PCT	Condition	Area in Subject Land (ha)	Minimum No. of Plots Required	No. of Plots Completed
1	PCT 201 - Fuzzy Box Woodland on alluvial brown loam soils mainly in	Good (Plot 4)	0.21	1	1

Vegetation Zone	PCT	Condition	Area in Subject Land (ha)	Minimum No. of Plots Required	No. of Plots Completed
	the NSW South Western Slopes Bioregion				
2	PCT 267 - White Box – White Cypress Pine – Western Grey Box shrub/grass/forb woodland in the NSW South Western Slopes Bioregion (woodland form)	Good (Plot 8)	0.08	1	1
3	PCT 267 - White Box – White Cypress Pine – Western Grey Box shrub/grass/forb woodland in the NSW South Western Slopes Bioregion (derived native grassland form)	Derived Native Grassland (Plot 1, 7 and 9)	1.08	1	3
4	PCT 276: Yellow Box grassy tall woodland on alluvium or parna loams and clays on flats in NSW South Western Slopes Bioregion	Good (Plot 5)	0.01	1	1
-	Planted Native Trees	Plot 5	0.04	0	1
-	Pastureland	Plot 3 and 6	45.52	0	2
		Total	**46.93**	**4**	**9**

2.4. Threatened Flora Species Survey

2.4.1. Habitat Constraints

Desktop assessments and field surveys within the subject land and study area included assessment of habitat constraints and microhabitats for predicted species credit flora species.

2.4.2. Targeted Flora Species Survey

Targeted threatened flora surveys were undertaken within the subject land and study area on a precautionary basis, despite there being no species credit species that were assessed as candidate species for further assessment (see ***Section 5.3***).

2.4.2.1. Parallel Field Traverses

Parallel field traverses, in accordance with the DPIE's Surveying Threatened Plants and their Habitats guide (NSW Government 2020) and BAM plot surveys were undertaken between 19 - 21 April 2021. The surveys were

undertaken by a botanist and an ecologist. The locations of the parallel field traverses and BAM plots within the subject land are shown in **Figure 4**.

2.5. Threatened Fauna Species Survey

2.5.1. Habitat Constraints

Desktop assessments and field surveys within the subject land included assessment of habitat constraints and microhabitats, despite there being no predicted species credit fauna species. This included desktop assessment of proximity of the subject land to features such as caves and waterways and field inspection of microhabitats including leaf litter, stick nests and hollowing-bearing trees.

2.5.2. Threatened Fauna Species Survey

No species credit species were determined to be candidate species requiring further assessment. Accordingly, no targeted threatened fauna species surveys were required for the project, and none were undertaken.

2.6. Weather Conditions

Weather conditions during the field survey was appropriate for detection of flora species. A summary of weather conditions in the wider locality of the subject land (Grenfell (Manganese Road) Weather Station 073014) during the field survey is provided in **Table 3**. In the week prior to the field survey, the average daily temperatures were between 4.0 – 24.9ºC, with a total of 0 mm of rain falling in the area over the 7 day period.

Table 3 Weather conditions

Date	Temperature Minimum (ºC)	Temperature Maximum (ºC)	Rainfall (mm)
19/04/2021	2.6	26.2	0.0
20/04/2021	3.8	23.6	0.0
21/04/2021	7.3	22.3	0.0

3. Landscape Features

3.1. Assessment Area

The subject land is approximately 46.94 ha in size and is shown in **Figure 1**. As the project is being assessed as a site-based project, the assessment area comprises the area of land within a 1,500 m buffer around the outer boundary of the subject land. The assessment area is approximately 2240 ha in size and is shown in **Figure 2**.

3.2. Landscape Features

Landscape features identified within the subject land and assessment area are outlined below. The extent of these features within the subject land is shown in **Figure 1** and the extent within the assessment area is shown in **Figure 2**.

3.2.1. IBRA Bioregions and IBRA Subregions

The subject land occurs entirely within the NSW South Western Slopes IBRA Bioregion and the Lower Slopes Subregion. The assessment area also occurs entirely within the NSW South Western Slopes Bioregion, while and the majority of the assessment area is within the Lower Slopes Subregion; the eastern portion extends into the Inland Slopes Subregion

3.2.2. Rivers, Streams and Estuaries

The subject land and assessment area occurs within the Lachlan River catchment. The fourth order watercourse Wallah Wallah Creek and it's buffer area occurs within the subject land, along with three first order watercourses and two second order watercourses that intersect the subject land at various location in the three farm sites to the east of the subject land.

3.2.3. Important and Local Wetlands

No important wetlands listed in the Directory of Important Wetlands in Australia are present in the study area and/or assessment area. No mapped areas of wetlands under the *State Environmental Planning Policy (Coastal Management) 2018* are present in the study area and/or assessment area however, local wetlands within the assessment area occur in the form of farm dams.

3.2.4. Habitat Connectivity

The subject land does not form part of a regional biodiversity corridor, flyway for migratory species, riparian buffer or estuary, or a local corridor.

The subject land and surrounds contains small areas of remnant woodland and native derived grasslands. The derived native grassland in the eastern portion of the subject land has connectivity with a large patch of retained native vegetation that occurs on the hills to the east of the subject land outside the property boundary. Additionally, the native vegetation around Wallah Wallah Creek is part of a riparian corridor of vegetation that has connectivity to both the north and south. The remaining environment surrounding the subject land is agricultural land and therefore connectivity across these areas is limited to isolated scattered trees.

3.2.5. Karsts, Caves, Crevices, Cliffs and Areas of Geological Significance

No karsts, caves, crevices, cliffs or areas of geological significance have been identified within the subject land or assessment area based on searches of available aerial imagery from ARCGIS and topographic data available from SixMaps.

3.2.6. Areas of Outstanding Biodiversity Value

No Areas of Outstanding Biodiversity Value have been mapped within the subject land and assessment area.

3.2.7. NSW (Mitchell) Landscapes

The western portion of the subject land is located within the 'Warraderry Range' NSW (Mitchell) Landscape and the far eastern portion lies within the 'Quandong Hills' NSW (Mitchell) Landscape.

The assessment area is located predominantly within 'Warraderry Range' and 'Quandong Hills', although a small area to the far east extent is within the 'Warrumba Range and Slopes' NSW (Mitchell) Landscape.

3.2.8. Soil Hazard Features

No soil hazard features have been identified within the subject land.

3.3. Native Vegetation Cover

The native vegetation cover was determined through the use of GIS. To map native vegetation cover within the subject land and assessment area, this assessment utilised the detailed vegetation mapping prepared by Cumberland Ecology in conjunction with broadscale mapping by OEH (2015). The native vegetation cover within the assessment area is shown in **Figure 2**. The assessment area is approximately 2240 ha in size, of which approximately 730.33 ha comprises native vegetation cover, which represents 32.60% of the assessment area. Therefore, the native vegetation cover value is assigned to the cover class of 30-70%.

The remaining land within the assessment area comprises cleared land. No differences between the aerial photographs using in this assessment and the native vegetation cover shown in **Figure 2** have been identified.

4. Native Vegetation

4.1. Native Vegetation Extent

The subject land and wider study area have been subject to detailed surveys by Cumberland Ecology for the purpose of this BDAR. The native vegetation extent within the subject land was determined through aerial photograph interpretation, and field surveys. This native vegetation extent is shown in **Figure 5** and occupies approximately 1.42 ha, which represents 3.0% of the subject land. The native vegetation extent within both the subject land and wider study area comprises remnant woodland, scattered native trees, derived native grassland and planted native trees.

No differences between the aerial photographs using in this assessment and the native vegetation extent shown in **Figure 5** have been identified.

4.2. Plant Community Types

Identification of the PCTs occurring within the subject land and study area was guided by the results of the surveys undertaken by Cumberland Ecology. The data collected during surveys was analysed in conjunction with a review of the PCTs held within the BioNet Vegetation Classification database. In selecting PCTs, consideration was given to the following:

- Occurrence within the Lower Slopes IBRA subregion;
- Vegetation formation;
- Alignment with TECs;
- Landscape position; and
- Upper, mid and ground strata species.

The analysis determined that the native vegetation within the subject land aligned with three PCTs held within the BioNet Vegetation Classification database. **Table 4** provides a summary of the PCTs identified within the subject land and study area and the distribution of PCTs is shown in **Figure 6**. Detailed descriptions of the PCTs and the justification for PCT selection is provided in the sections below.

Table 4 Plant community types within the study area

Name	Subject Land (ha)	Study Area (ha)
PCT 201 - Fuzzy Box Woodland on alluvial brown loam soils mainly in the NSW South Western Slopes Bioregion	0.21	0.48
PCT 267 - White Box – White Cypress Pine – Western Grey Box shrub/grass/forb woodland in the NSW South Western Slopes Bioregion	1.16	3.06
PCT 276 - Yellow Box grassy tall woodland on alluvium or parna loams and clays on flats in NSW South Western Slopes Bioregion	0.01	0.03

Name	Subject Land (ha)	Study Area (ha)
Planted Native Trees	0.04	0.13
Exotic Vegetation (Category 1 Land – not assessed)	45.52	81.90
Total	**46.94**	**85.61**

4.2.1. PCT 201 - Fuzzy Box Woodland on alluvial brown loam soils mainly in the NSW South Western Slopes Bioregion

Vegetation Formation: Grassy Woodlands

Vegetation Class: Western Slopes Grassy Woodlands

Percent Cleared Value: 94%

TEC Status:

- BC Act: Endangered Ecological Community
- EPBC Act: not listed

4.2.1.1. General Description

This occurrence of PCT 201 in the study area comprises one condition broad state and is only within the riparian area in the central west of the property boundary. The understorey is in moderate condition with a number of weed species occurring but not dominating. The canopy species present include *Eucalyptus conica* (Fuzzy Box), *Eucalyptus microcarpa* (Western Grey Box), *Eucalyptus melliodora* (Yellow Box), *Eucalyptus camaldulensis* subsp. *camaldulensis* (River Red Gum) and *Brachychiton populneus* (Kurrajong). The shrub stratum includes *Solanum cinereum* (Narrawa Burr) and *Maireana enchylaenoides* (Wingless Fissure-weed).

The ground stratum includes native forbs such as *Sida corrugata* (Corrugated Sida), *Einadia nutans* subsp. *nutans* (Climbing Saltbush), *Dichondra repens* (Kidney Weed), *Bulbine bulbosa* (Bulbine Lilly) and *Oxalis perennans*. Native grasses present include *Sporobolus creber* (Slender Rat's Tail Grass), *Austrostipa scabra* (Rough Speargrass), *Microlaena stipoides* (Weeping Grass), *Rytidosperma bipartitum* (Wallaby Grass) and *Bothriochloa macra* (Red Grass). The climbers present include *Glycine canescens* (Silky Glycine) and *Desmodium varians* (Slender Tick-trefoil).

A photograph of this community within the subject land is shown as **Photograph 1**.

Photograph 1 PCT 201 in the subject land and study area

4.2.1.2. Justification of PCT Selection

PCTs were initially filtered for the NSW South Western Slopes IBRA region, by the vegetation formation Grassy Woodlands, and by using one of the characteristic species *Eucalyptus conica* in the filter that provided two candidate PCTs which were further assessed (see **Table 5**). The edaphic conditions were considered along with the vegetation class, location and the native shrub layer and ground layer floristic data collected for the PCT during the field survey, which included the shrub species *Maireana enchylaenoides* and the ground layer species *Sida corrugata*. Additionally, the presence of this PCT is mapped as occurring within the subject land and study area on the existing State Vegetation Type Map – Central West Lachlan and this was also taken into consideration when selecting the most appropriate PCT.

The selection of this PCT involved:

- PCT Name;
- Vegetation Formation and Class;
- IBRA Region;
- Upper/mid/lower stratum species;
- Diagnostic species;
- Review of existing vegetation mapping; and
- Landform elements.

Based on the detailed review of all items in combination with the floristic data collected, PCT 165 was chosen as the best fit PCT. A summary of the PCT selection process is provided in **Table 5**.

Table 5 PCT selection justification for PCT 165

PCT Filtering Criteria Used	PCTs Considered	Selected PCT	Selected PCT Name	Species Used for Identification
1. IBRA Region (NSW South Western Slopes), vegetation formation (Grassy Woodlands) and the characteristic species *Eucalyptus conica*.	201, 277	201	Fuzzy Box Woodland on alluvial brown loam soils mainly in the NSW South Western Slopes Bioregion	Shrub stratum species: *Eucalyptus conica*
2. Location, vegetation class (Western Slopes Grassy Woodlands), shrub layer and ground layer species	201, 277			Shrub layer species: *Maireana enchylaenoides* Ground layer species : *Sida corrugata*
3. Review of existing vegetation mapping, soils and geographic positioning	201			-

4.2.1.3. Alignment with Threatened Ecological Communities

This community conforms to the Endangered Ecological Community (EEC) Fuzzy Box Woodland on alluvial Soils of the South Western Slopes, Darling Riverine Plains and Brigalow Belt South Bioregions (Fuzzy Box Woodland), which is listed under the BC Act. This community is not currently listed under the Commonwealth *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act).

The BC Act listing criteria are met according to the final determination documenting the vegetation class and formation, the dominant canopy species, the geography and soil characteristics for the community.

4.2.2. PCT 267 - White Box – White Cypress Pine – Western Grey Box shrub/grass/forb woodland in the NSW South Western Slopes Bioregion

Vegetation Formation: Grassy Woodlands

Vegetation Class: Western Slopes Grassy Woodlands

Percent Cleared Value: 89%

TEC Status:

- BC Act: Critically Endangered Ecological Community

- EPBC Act: Critically Endangered Ecological Community

4.2.2.1. General Description

This community occurs in two conditions states within the study area:

- Woodland form; and
- Derived native grassland form.

i. Woodland Form

The woodland form of this community occurs throughout the study area as small patches of mature trees or individual mature paddock trees. The understorey is highly modified as pastureland although around the base of trees native grasses and native forbs do occur. The canopy species present include *Eucalyptus albens* (White Box), *Eucalyptus microcarpa* (Western Grey Box), *Callitris glaucophylla* (White Cypress Pine), and, to a lesser extent *Eucalyptus melliodora* (Yellow Box). *Eucalyptus blakelyi* (Blakely's Red Gum) infrequently occurs and occasionally *Amyema miquelii* (Box Mistletoe) is found in the canopy of established trees. The shrub stratum is limited to exotic species such as *Cichorium intybus* (Chicory), *Solanum nigrum* (Black-berry Nightshade) and *Amaranthus retroflexus* (Redroot Amaranth).

The ground stratum includes the native forbs *Dysphania pumilio* (Small Crumbweed), *Urtica incisa* (Stinging Nettle) and *Rumex tenax* (Shiny Dock) but is dominated by exotic pastureland species such as *Lolium perenne* (Perennial Ryegrass), *Medicago sativa* (Lucerne) and *Lepidium africanum* (Common Peppercress). The native grasses present include *Panicum effusum* (Hairy Panic) and *Rytidosperma bipartitum* (Wallaby Grass).

A photograph of the woodland condition state of the community within the subject land is shown as **Photograph 2**.

Photograph 2 PCT 267 woodland form within the study area

ii. Derived Native Grassland Form

The derived native grassland form of this community occurs mainly within the north eastern areas of the study area. The cover of native grasses throughout the study area has been sown heavily with pastureland species. As a result, only in a small number of areas the native grasses now dominate the sown pasture. The native grass *Elymus scaber* (Wheatgrass) was dominant in these areas. Other native grasses present include *Panicum effusum* (Hairy Panic), *Austrostipa scabra* (Speargrass), *Aristida ramosa* (Purple Wiregrass), *Aristida behriana* (Bunch Wiregrass), *Rytidosperma bipartitum* (Wallaby Grass), *Eragrostis* spp., *Diplachne fusca* (Brown Beetle Grass), *Sporobolus creber* (Slender Rat's Tail Grass) and *Poa sieberiana* (Snowgrass). Other native species present include *Lomandra multiflora* (Many-flowered Mat-rush), *Arthropodium fimbriatum* (Nodding chocolate Lilly) and *Glycine canescens* (Silky Glycine). Exotic pastureland species are present.

A grazed example of this community within the study area is shown as **Photograph 3**, while an example of this community without grazing within the study area is shown as **Photograph 4**.

Photograph 3 PCT 267 derived native grassland form within the study area (grazed)

Photograph 4 PCT 267 derived native grassland form (not grazed)

4.2.2.2. Justification of PCT Selection

PCTs were initially filtered for the NSW South Western Slopes IBRA region and by the vegetation formation Grassy Woodlands, using the dominant canopy species *Eucalyptus albens*, *Eucalyptus microcarpa*, and *Eucalyptus melliodora* in the filter that provided four candidate PCTs considered suitable for assessment (see **Table 6**). The additional characteristic native species *Callitris glaucophylla* and the vegetation class Western Slopes Grassy Woodland were included in the filter, narrowing the candidate PCTs to two.

Finally, the location, edaphic conditions and the presence of PCT 267 mapped as occurring within the study area on the existing State Vegetation Type Map – Central West Lachlan was taken into consideration when selecting the most appropriate PCT. The selection of this PCT involved:

- PCT Name;
- IBRA region;
- Vegetation formation and class;
- Upper stratum species;
- Diagnostic species;
- Review of existing vegetation mapping; and
- Landform elements.

Based on the detailed review of all items in combination with the floristic data collected, PCT 82 was chosen as the best fit PCT. A summary of the PCT selection process is provided in **Table 6**.

Table 6 PCT selection justification for PCT 82

PCT Filtering Criteria Used	PCTs Considered	Selected PCT	Selected PCT Name	Species Used for Identification
1. IBRA Region (NSW South Western Slopes), dominant canopy species, vegetation formation (Grassy Woodlands)	81, 201, 267, 277	81, 201, 267, 277		Upper stratum species: *Eucalyptus albens*, *Eucalyptus microcarpa*, *Eucalyptus melliodora*
2. Vegetation class (Western Slopes Grassy Woodland) and characteristic species	81, 201, 267, 277	267, 277		Upper stratum species: *Callitris glaucophylla*
2. Review of existing vegetation mapping,	267, 277	267	White Box - White Cypress Pine - Western Grey Box shrub/grass/forb	

PCT Filtering Criteria Used	PCTs Considered	Selected PCT	Selected PCT Name	Species Used for Identification
soils and geographic positioning			woodland in the NSW South Western Slopes Bioregion	

4.2.2.3. Alignment with Threatened Ecological Communities

i. Woodland Form

Despite the modified nature of the vegetation within this community, it conforms to the Critically Endangered Ecological Community (CEEC) White Box - Yellow Box - Blakely's Red Gum Grassy Woodland and Derived Native Grassland in the NSW North Coast, New England Tableland, Nandewar, Brigalow Belt South, Sydney Basin, South Eastern Highlands, NSW South Western Slopes, South East Corner and Riverina Bioregions ('Box Gum Woodland'), which is listed under the BC Act. The BC Act listing criteria are met according to the final determination documenting the vegetation class and formation, the dominant canopy species, the geography and soil characters for the community.

Although Box Gum Woodland is also listed as a CEEC under the EPBC Act, the occurrence of this community within the study area does not conform to the listing under the EPBC Act (DECCW 2011), as it does not have a pre-dominantly native understorey.

ii. Derived Native Grassland Form

Despite the modified nature of this derived native grassland form of PCT 267, it is considered to conform to the BC Act listing for Box Gum Woodland CEEC. However, the occurrence of this community within the study area is not considered to conform to the listing under the EPBC Act, as is does not meet the listing criteria (DECCW 2011) in relation to having 12 or more native understorey species present (excluding grasses).

4.2.3. PCT 276 - Yellow Box grassy tall woodland on alluvium or parna loams and clays on flats in NSW South Western Slopes Bioregion

Vegetation Formation: Grassy Woodlands

Vegetation Class: Western Slopes Grassy Woodlands

Percent Cleared Value: 90%

TEC Status:

- BC Act: Critically Endangered Ecological Community
- EPBC Act: Critically Endangered Ecological Community

4.2.3.1. General Description

This community only occurs in one condition state adjacent to the riparian area in the central west area of the study area. The understorey is in a moderate condition with a number of exotic pasture species occurring but

not dominating. The canopy species present includes *Eucalyptus melliodora* (Yellow Box) and *Eucalyptus camaldulensis* subsp. *camaldulensis* (River Red Gum). The shrub stratum includes the native *Solanum cinereum* (Narrawa Burr) but is mainly occupied by the exotic ground stratus species such as *Cichorium intybus* (Chicory) and *Cirsium vulgare* (Spear Thistle).

The ground stratum includes the native grasses *Austrostipa scabra* (Rough Speargrass), *Aristida ramosa* (Purple Wiregrass), *Microlaena stipoides* (Weeping Grass) and *Diplachne fusca* (Brown Beetle Grass) and the native forbs *Carex inversa* (Knob sedge), *Calotis cuneifolia* (Purple Burr-Daisy) and *Oxalis perennans*. The native climbers present include *Glycine canescens* (Silky Glycine). The exotic forbs present include *Medicago sativa* (Lucerne) and *Lepidium africanum* (Common Peppercress). The exotic grasses present include *Lolium perenne* (Perennial Ryegrass), *Festuca pratensis* (Meadow Fescue) and *Aira cupaniana* (Silvery Hairgrass).

A photograph of this community within the subject land is shown as **Photograph 5**.

Photograph 5 PCT 276 within the study area

4.2.3.2. Justification of PCT Selection

PCTs were initially filtered for the NSW South Western Slopes IBRA region, by the Lower Slopes IBRA Subregion, by the vegetation formation Grassy Woodlands and the vegetation class Western Slopes Grassy Woodlands, and by using one of the characteristic species *Eucalyptus melliodora* in the filter that provided nine candidate PCTs which were further assessed (see **Table 7**). The edaphic conditions were considered along with the location, and the ground layer floristic data collected for the PCT during the field survey, which included the species *Austrostipa scabra* and *Glycine canescens*; resulting in narrowing down the candidate PCTs to five.

The presence of this PCT mapped as occurring within the subject land and study area on the existing State Vegetation Type Map – Central West Lachlan was then taken into consideration, along with the riparian location and alluvial soils, and PCT 276 was selected as the most appropriate PCT.

The selection of this PCT involved:

- PCT Name;
- Vegetation Formation and Class;
- IBRA Region and Subregion;
- Upper/lower stratum species;
- Diagnostic species;
- Review of existing vegetation mapping; and
- Landform elements.

Based on the detailed review of all items in combination with the floristic data collected, PCT 165 was chosen as the best fit PCT. A summary of the PCT selection process is provided in **Table 7**.

Table 7 PCT selection justification for PCT 165

PCT Filtering Criteria Used	PCTs Considered	Selected PCT	Selected PCT Name	Species Used for Identification
1. IBRA Region (NSW South Western Slopes), IBRA Subregion (Lower Slopes), vegetation formation (Grassy Woodlands), vegetation class (Western Slopes Grassy Woodland) and the characteristic species *Eucalyptus melliodora*.	201, 266, 267, 276, 277, 278, 280, 282, 283	201, 266, 267, 276, 277, 278, 280, 282, 283		Upper stratum species: *Eucalyptus melliodora*
2. Location, ground layer species	201, 266, 267, 276, 277, 278, 280, 282, 283	201, 267, 276, 277, 282		Ground layer species: *Austrostipa scabra* and *Glycine canescens*
3. Review of existing vegetation mapping, soils and geographic positioning	201, 267, 276, 277, 282	276	Yellow Box grassy tall woodland on alluvium or parna loams and clays on flats in NSW South Western Slopes Bioregion	-

4.2.3.3. Alignment with Threatened Ecological Communities

This community conforms to the CEEC Box Gum Woodland under the BC Act. It also likely conforms to the listing under the EPBC Act, as it has a predominately native understorey and is part of a patch that is larger than 0.1 ha. Although the plot data only recorded 10 native understory species present (including one 'important species'), when the listing advice requires 12 (DECCW 2011), the plot in which the data was recorded (BAM plot) is smaller than the plot utilised when determining listing status under the EPBC Act for Box Gum Woodland. Hence, it is likely that a further two native species may be present, which would make the occurrence of PCT 276 in the study area conform to the CEEC under the EPBC Act. As a result, a conservative approach is taken, and it is considered this community meets the listing under the EPBC Act; however, the removal of such a small area of the community is not considered significant following a review of the Commonwealth Significant Impact Guidelines, and a Referral to the Commonwealth is therefore not required.

4.3. Other Vegetation Communities

4.3.1. Planted Native Trees

Vegetation Formation: N/A;

Vegetation Class: N/A;

Percent Cleared Value: N/A;

TEC Status:

- BC Act: not listed
- EPBC Act: not listed

4.3.1.1. General Description

Windrows are present in two locations in the south and north of the study area. These areas have likely been planted with native endemic trees that include *Eucalyptus sideroxylon* (Mugga Ironbark), *Eucalyptus conica* (Fuzzy Box), *Eucalyptus microcarpa* (Western Grey Box), *Eucalyptus melliodora* (Yellow Box), *Eucalyptus blakelyi* (Blakely's Red Gum), *Eucalyptus dealbata* (Tumbledown Red Gum) and *Eucalyptus dwyeri* (Dwyer's Red Gum). The understorey is very sparse but includes exotic pastureland species and infrequently native grass species such as *Aristida ramosa* (Purple Wiregrass).

This community does not conform to a TEC under the BC Act and/or EPBC Act.

A photograph of this community within the study area is shown as **Photograph 6**.

Photograph 6 Planted native trees within the study area

4.4. Threatened Ecological Communities

Three PCTs identified within the subject land have been assessed as conforming with two TECs as shown in **Figure 7** and described in ***Section 4.2*** above. All three PCTs conform to TECs listed under the BC Act, while only PCT 276 is considered to conform to a TEC under the EPBC Act. **Table 8** shows the TECs occurring within the subject land and study area.

Table 8 Threatened ecological communities in the subject land

PCT Name	Associated TEC	BC Act Status	EPBC Act Status	Study Area (ha)	Subject Land (ha)
PCT 201: Fuzzy Box Woodland on alluvial brown loam soils mainly in the NSW South Western Slopes Bioregion	Fuzzy Box Woodland on alluvial Soils of the South Western Slopes, Darling Riverine Plains and Brigalow Belt South Bioregions	EEC	-	0.48	0.21
PCT 267: White Box – White Cypress Pine – Western Grey Box shrub/grass/forb woodland in the NSW South Western Slopes Bioregion (Woodland and Derived Native Grassland forms)	White Box - Yellow Box - Blakely's Red Gum Grassy Woodland and Derived Native Grassland in the NSW North Coast, New England Tableland, Nandewar, Brigalow Belt South, Sydney	CEEC	-	3.06	1.16

PCT Name	Associated TEC	BC Act Status	EPBC Act Status	Study Area (ha)	Subject Land (ha)
	Basin, South Eastern Highlands, NSW South Western Slopes, South East Corner and Riverina Bioregions				
PCT 276: Yellow Box grassy tall woodland on alluvium or parna loams and clays on flats in NSW South Western Slopes Bioregion	White Box - Yellow Box - Blakely's Red Gum Grassy Woodland and Derived Native Grassland in the NSW North Coast, New England Tableland, Nandewar, Brigalow Belt South, Sydney Basin, South Eastern Highlands, NSW South Western Slopes, South East Corner and Riverina Bioregions	CEEC	CEEC	0.03	0.01
Total				**3.57**	**1.38**

4.5. Vegetation Integrity Assessment

The native vegetation identified within the subject land was assigned to a vegetation zone based on PCTs and broad condition states. Patch sizes were subsequently assigned for each vegetation zone. The extent of vegetation zones within the subject land are shown in **Figure 8,** whilst the patch size is shown in **Figure 2** as represented by the connected native vegetation cover.

Each vegetation zone was assessed using survey plots/transects (see ***Section 2.3.2***) to determine the vegetation integrity score. Plot/transect data utilised to determine the vegetation integrity score is provided in **Appendix C**.

Vegetation zones, patch sizes and vegetation integrity scores for the subject land are summarised in **Table 9**.

Table 9 Vegetation zones within the subject land

Vegetation Zone	PCT #	PCT Name	Condition Name	Area (ha)	Patch Size Class	Vegetation Integrity Score
1	201	Fuzzy Box Woodland on alluvial brown loam soils mainly in the NSW South Western Slopes Bioregion	201_Good	0.21	>101 ha	62.9 (Composition: 87.8 Structure: 91.1 Function: 31.0)

Vegetation Zone	PCT #	PCT Name	Condition Name	Area (ha)	Patch Size Class	Vegetation Integrity Score
2	267	White Box – White Cypress Pine – Western Grey Box shrub/grass/forb woodland in the NSW South Western Slopes Bioregion	267_Good	0.08	>101 ha	41.7 (Composition: 33.3 Structure: 32.8 Function: 66.1)
3	267	White Box – White Cypress Pine – Western Grey Box shrub/grass/forb woodland in the NSW South Western Slopes Bioregion	267_DNG	1.08	>101 ha	21.3 (Composition: 43.9 Structure: 54.6 Function: 4)
4	276	Yellow Box grassy tall woodland on alluvium or parna loams and clays on flats in NSW South Western Slopes Bioregion	276_Good	0.01	>101 ha	71.7 (Composition: 79.3 Structure: 70.5 Function: 65.9)

4.6. Planted Native Vegetation

The BAM 2020 commenced in October 2020, which includes a new streamlined assessment module for "planted native vegetation". This module simplifies the assessment of impacts on planted native vegetation within a development site. The decision-making key outlined in Section D.1 of Appendix D of the BAM provides a framework to determine whether the streamlined assessment module for planted native vegetation can be applied to a site.

Planted native vegetation is present in two locations in the south and north of the study area as windrows of native trees, as described in ***Section 4.3.1***. **Table 10** below details the application of the decision-making key to the planted native vegetation in the subject land. It was determined that subsection 5 applies, as the relevant vegetation has been planted for windbreaks in an agricultural landscape.

Table 10 Decision-making key to determine the application of the streamlined assessment module for planted native vegetation

Assessment criteria	Response/Action
1. Does the planted native vegetation occur within an area that contains a mosaic of planted and remnant native vegetation and which can be reasonably assigned to a PCT known to occur in the same IBRA subregion as the proposal?	ii. No..... Go to 2.
2. Is the planted native vegetation: a. planted for the purpose of environmental rehabilitation or restoration under an existing conservation obligation listed in BAM Section 11.9(2.), and	ii. No..... Go to 3.

b. the primary objective was to replace or regenerate a plant community type or a threatened plant species population or its habitat?	
3. Is the planted/translocated native vegetation individuals of a threatened species or other native species planted/translocated for the purpose of providing threatened species habitat under one of the following: a. a species recovery project b. Saving our Species project c. other types of government funded restoration project d. condition of consent for a development approval that required those species to be planted or translocated for the purpose of providing threatened species habitat e. legal obligation as part of a condition or ruling of court. This includes regulatory directed or ordered remedial plantings (e.g. Remediation Order for clearing without consent issued under the BC Act or the Native Vegetation Act) f. ecological rehabilitation to re-establish a PCT or TEC that was, or is carried out under a mine operations plan, or g. approved vegetation management plan (e.g. as required as part of a Controlled Activity Approval for works on waterfront land under the NSW Water Management Act 2000)?	ii. No..... Go to 4.
4. Was the planted native vegetation (including individuals of a threatened flora species) undertaken voluntarily for revegetation, environmental rehabilitation or restoration without a legal obligation to secure or provide for management of the native vegetation?	ii. No..... Go to 5.
5. Is the native vegetation (including individuals of a threatened flora species) planted for functional, aesthetic, horticultural or plantation forestry purposes? This includes examples such as: windbreaks in agricultural landscapes, roadside plantings (including street trees, median strips, roadside batters), landscaping in parks, gardens and sport fields/complexes, macadamia plantations or teatree farms?	i. Yes The vegetation has been planted for windbreaks in an agricultural landscape. Go to D.2 Assessment of planted native vegetation for threatened species habitat (the use of Chapters 4 and 5 of the BAM are not required to be applied).
6. Is the planted native vegetation a species listed as a widely cultivated native species on a list approved by the Secretary of the Department (or an officer authorised by the Secretary)?	This list had not been released at the date of report preparation.
D.2 Assessment of planted Native Vegetation for Threatened Species Habitat. The assessor must assess the suitability of the planted native vegetation for use by threatened species and record any incidental sightings or evidence (e.g. scats, stick nests) of threatened species credit species (flora and fauna) using, inhabiting or being part of the planted native vegetation.	See **Chapter 5** for assessment of threatened species habitats.

If there is evidence that threatened species are using the planted native vegetation as habitat, the assessor must apply Section 8.4 of the BAM to mitigate and manage impacts on these species. Species credits are not required to offset the proposed impacts. The steps taken to assess threatened species habitat and all reasonable measures proposed to be taken to mitigate or minimise impacts must be set out in the BDAR or BCAR.	See **Chapter 7** and **Section 8.4** for impact avoidance and minimisation measures.

5. Threatened Species

5.1. Identifying Threatened Species for Assessment

The Biodiversity Assessment Method Calculator (BAMC) generates a list of threatened species requiring assessment utilising a number of variables. The following criteria have been utilised to predict the threatened species requiring further assessment:

- IBRA subregion: Lower Slopes;
- Associated PCTs: 201, 267, 276;
- Percent native vegetation cover in the assessment area: 32.64%;
- Patch class: >101 ha (patch size extends outside the assessment area and cannot accurately be determined) ; and
- Credit type: Ecosystem and/or species.

Based on the above variables, the BAMC generated a list of 34 ecosystem credit species and three species credit species. Ecosystem credit species are assessed further in ***Section 5.2.*** No further assessment is required for any species credit species.

5.2. Ecosystem Credit Species

Table 11 lists the predicted ecosystem credit species for the vegetation zones within the subject land, and whether they have been retained within the assessment following consideration of habitat constraints, geographic limitations, vagrancy and quality of microhabitats. All ecosystem species have been retained in the assessment.

Table 11 Ecosystem credit species requiring further assessment

Scientific Name	Common Name	Sensitivity to Gain	Relevant PCTs	Retained in Assessment?
Anthochaera phrygia	Regent Honeyeater (foraging)	High	201, 267, 276	Yes
Artamus cyanopterus cyanopterus	Dusky Woodswallow	Moderate	201, 267, 276	Yes
Callocephalon fimbriatum	Gang-gang Cockatoo (foraging)	Moderate	201, 267, 276	Yes
Calyptorhynchus lathami	Glossy Black-Cockatoo (foraging)	High	201	Yes
Chalinolobus picatus	Little Pied Bat	High	201, 267	Yes
Chthonicola sagittata	Speckled Warbler	High	201, 267, 276	Yes
Circus assimilis	Spotted Harrier	Moderate	276	Yes
Climacteris picumnus victoriae	Brown Treecreeper (eastern subspecies)	High	201, 267, 276	Yes

Scientific Name	Common Name	Sensitivity to Gain	Relevant PCTs	Retained in Assessment?
Daphoenositta chrysoptera	Varied Sittella	Moderate	201, 267, 276	Yes
Dasyurus maculatus	Spotted-tailed Quoll	High	201, 267, 276	Yes
Falco subniger	Black Falcon	Moderate	201, 267, 276	Yes
Glossopsitta pusilla	Little Lorikeet	High	201, 267, 276	Yes
Grantiella picta	Painted Honeyeater	Moderate	201, 267, 276	Yes
Haliaeetus leucogaster	White-bellied Sea-Eagle (foraging)	High	201, 267, 276	Yes
Hieraaetus morphnoides	Little Eagle (foraging)	Moderate	201, 267, 276	Yes
Hirundapus caudacutus	White-throated Needletail	High	201, 267, 276	
Lathamus discolor	Swift Parrot (foraging)	Moderate	201, 267, 276	Yes
Lophochroa leadbeateri	Major Mitchell's Cockatoo	Moderate	201	Yes
Lophoictinia isura	Square-tailed Kite (foraging)	Moderate	201, 267, 276	Yes
Melanodryas cucullata cucullata	Hooded Robin (south-eastern form)	Moderate	201, 267, 276	Yes
Melithreptus gularis gularis	Black-chinned Honeyeater (eastern subspecies)	Moderate	201, 267, 276	Yes
Neophema pulchella	Turquoise Parrot	High	201, 267, 276	Yes
Ninox connivens	Barking Owl (foraging)	High	201, 267, 276	Yes
Nyctophilus corbeni	Corben's Long-eared Bat	High	201, 267	Yes
Pachycephala inornata	Gilbert's Whistler	Moderate	267	Yes
Petroica boodang	Scarlet Robin	Moderate	201, 267, 276	Yes
Petroica phoenicea	Flame Robin	Moderate	267, 276	Yes
Phascolarctos cinereus	Koala (foraging)	High	201, 267, 276	Yes
Polytelis swainsonii	Superb Parrot (foraging)	Moderate	201, 267, 276	Yes
Pomatostomus temporalis temporalis	Grey-crowned Babbler (eastern subspecies)	Moderate	201, 267, 276	Yes
Pteropus poliocephalus	Grey-headed Flying-fox (foraging)	High	267, 276	Yes
Saccolaimus flaviventris	Yellow-bellied Sheathtail-bat	High	201, 267, 276	Yes
Stagonopleura guttata	Diamond Firetail	Moderate	201, 267, 276	Yes
Tyto novaehollandiae	Masked Owl (foraging)	High	201, 267, 276	Yes

5.3. Species Credit Species

Table 12 lists the predicted species credit species for the vegetation zones within the subject land, and whether they have been retained within the assessment following consideration of habitat constraints, geographic limitations, vagrancy and quality of microhabitats. No species credit species have been retained in the assessment.

Table 12 Species credit species requiring further assessment

Scientific Name	Common Name	Sensitivity to Gain	Relevant PCTs	Retained in Assessment?
Anthochaera phrygia	Regent Honeyeater (breeding)	High	201, 267, 276	No
Chalinolobus dwyeri	Large-eared Pied Bat	Very High	201, 267, 276	No
Lathamus discolor	Swift Parrot (breeding)	Moderate	201, 267, 276	No

The following threatened species require further assessment:

- Swift Parrot (*Lathamus discolor)*- breeding habitat;
- Large-eared Pied Bat *(Chalinolobus dwyeri*) – breeding habitat;
- Regent Honeyeater *(Anthochaera phrygia*) – breeding habitat;

No important areas for the Swift Parrot or the Regent Honeyeater area currently mapped in the study area, hence no further assessment area required for these two species.

For the Large-eared Pied Bat, only the breeding habitat component is considered to be a candidate SAII. As no potential breeding habitat (i.e. within 100m of rocky areas containing caves, overhands or crevices, cliffs, mines, tunnels, or culverts) exists within the study area, no further assessment for this species is required.

5.3.1. Presence of Candidate Species Credit Species

5.3.1.1. Surveys

As no candidate species credit species require further assessment, no targeted threatened species surveys were conducted for this BDAR.

5.3.1.2. Expert Report

This assessment has not utilised any expert reports.

6. Prescribed Impacts

6.1. Prescribed Impacts

Prescribed impacts are identified in Clause 6.1 of the BC Regulation. Prescribed impacts are those that are additional to the clearing of native vegetation and associated habitat. These include:

- Development on the habitat of threatened species or ecological communities associated with:
  - karst, caves, crevices, cliffs, rock outcrops and other geological features of significance;
  - human-made structures;
  - non-native vegetation;
- Development on areas connecting threatened species habitat, such as movement corridors;
- Development on water quality, water bodies and hydrological processes that sustain threatened species and TECs (including from subsidence or upsidence from underground mining);
- Wind turbine strikes on protected animals; and
- Vehicle strikes on threatened species or on animals that are part of a TEC.

An assessment of the relevance of these prescribed impacts to the project is provided in **Table 13**. The location of prescribed impacts is shown in **Figure 9**.

Table 13 Relevance of prescribed impacts

Prescribed Impact	Relevance to the Project
Karst, caves, crevices, cliffs, rock outcrops and other geological features of significance	Not relevant. Features are not present within the subject land.
Human-made structures	Not relevant. No human-made structures occur within the subject land.
Non-native vegetation	Non-native vegetation is present as the pastureland that conforms to Category 1 – Exempt Land. The subject land is predominantly comprised of pastureland that exists as a monoculture of cropped wheat fields or feed for grazing sheep. The small area occurring within the subject land may provide occasional foraging habitat for threatened ecosystem credit species when available. Direct impacts to non-native vegetation would occur during the construction and operational phase of the project, and result in a long-term impact.
Habitat connectivity	The native woody vegetation around Wallah Wallah Creek is part of a riparian corridor of vegetation that has connectivity to both the north and south. While the removal of a small area of vegetation within the creek to facilitate the construction of a 10 metre wide access track will intercept the north to south habitat connectivity, a gap of 10 metres is not considered a break in a patch size and would not impede species movement or gene flow between flora species. Nevertheless, direct

Prescribed Impact	Relevance to the Project
	impacts to habitat connectivity would occur during the construction and operational phase of the project, and result in a long-term impact.
Waterbodies, water quality and hydrological processes	Wallah Wallah Creek will be impacted by the construction of a 10 metre wide bridge crossing within the subject land and the subject land will involve construction across areas traverses by three first order watercourses and two second order watercourses. Direct impacts to the watercourse would occur during the construction and operational phase of the project, and result in a short-term impact on water quality and a long-term impact of the bridge placement and redirection of the minor watercourse flows.
Wind turbine strikes	Not relevant. Project does not comprise a wind farm development.
Vehicle strikes	The project will involve the construction of access tracks into, and around, the farms to be constructed. There is some potential for the trucks and vehicles using the tracks to result in impacts to threatened species during the construction and operational phase through vehicle strike.

7. Avoid and Minimise Impacts

7.1. Avoid and Minimise Direct and Indirect Impacts on Native Vegetation and Habitat

7.1.1. Project Location

The development footprint has been situated within the study area to allow for the construction and operational requirements of the project while minimising impacts to areas containing biodiversity values. In determining the location of the development footprint, the project has sought to avoid and minimise direct impacts on native vegetation and habitat by:

- Locating the project within areas currently comprising Category 1 – Exempt Land (pastureland) where possible;
- Locating the project to minimise direct impacts on the TEC Box Gum Woodland and Fuzzy Box Woodland occurring within the study area;
- Maintaining habitat connectivity within the study area by placing only an access track through the Wallah Wallah Creek corridor and situating the large farm sites in previously cleared areas; and
- Utilising existing access tracks for the project where possible.

7.1.2. Project Design

In determining the design of the development footprint, the project has sought to avoid and minimise direct impacts on native vegetation and habitat by:

- Avoidance of the majority of the TECs Box Gum Woodland and Fuzzy Box Woodland and excluding these high biodiversity value areas;
- Minimising impacts to native vegetation by placing the development footprint within pastureland where possible;
- Minimising the impact on planted native trees where possible;
- Incorporating existing access roads in the project design to avoid a larger development footprint;
- Limiting the construction footprint of earthworks to comprise only the operational footprint area surrounding the project to reduce removal of native vegetation; and
- Minimise impacts to biodiversity through the implementation of a suite of mitigation measures, including weed management, tree protection measures and clearing protocols.

A summary of the measures considered to avoid and minimise the project's impacts on biodiversity are presented in **Table 14**.

7.2. Avoid and Minimise Prescribed Impacts

7.2.1. Non-native Vegetation

Areas of non-native vegetation within the study area are in the form of pastureland that has been historically cleared of all native vegetation and is now planted with wheat or exotic feed species for grazing sheep.

Although the non-native vegetation may provide some habitat value for native fauna in terms of shelter and foraging resources, these areas are unlikely to be favoured over the adjoining woodland habitats and derived native grasslands outside of the study area. Vast areas of non-native vegetation will be retained within the project boundary and surrounding agricultural properties, and the minor area to be removed within the development footprint would not be solely relied upon by native or threatened species.

Nevertheless, the location of the project and development design have been focused on avoiding and minimising impacts on areas of high biodiversity values, with a specific focus on the Box Gum Woodland and Fuzzy Box Woodland TECs. Hence, impacts to the areas of non-native vegetation are not able to be avoided as part of the project.

7.2.2. Habitat Connectivity

The native vegetation around Wallah Wallah Creek is part of a riparian corridor of vegetation that has connectivity to both the north and south. While the removal of a small area of vegetation within the creek to facilitate the construction of a 10 metre wide access track will intercept the north to south habitat connectivity, a gap of 10 metres is not considered a break in a patch size and would not impede species movement or gene flow between flora species. For this reason, the patch is likely to persist in future.

7.2.3. Waterbodies, Water Quality and Hydrological Processes

Wallah Wallah Creek, a fourth order stream, occurs within the subject land. A 10 metre wide access track is proposed to be constructed over the creek in the form of a raised bridge. The proposed crossing of the creek, associated with the access road to the farm pad areas, will be constructed as a bridge with sufficient elevation above the water level in times of standard creek flow and times of high flood flow. This is to ensure adequate freeboard for access and to minimise impacts to water movement and ecology. The bridge structure will be designed to integrate in with the creek flow paths and areas of high flow velocity, and surrounding topography to further minimise any impacts to creek flow and not create any areas of high scour or blockage potential.

The banks will be stabilised through erosion and sediment control methods to be detailed in the Construction Environmental Management Plan for the project, preventing excess sediment from entering the creek during the construction and operational phases.

The project has also been designed to minimise impacts to the larger third and fourth order watercourses that occur within the subject land, instead restricting the impact to areas of the lesser flow first and second order watercourses.

Due to these design considerations, it is unlikely that the project would result in any long-term impacts on water quality and hydrological processes.

7.2.4. Vehicle Strikes

The construction of the access road to service the additional trucks and vehicles that will be accessing the site will increase the risk of fauna vehicle strike. This has been minimised by restricting the additional vehicles and construction to an area primarily devoid of native vegetation that could act as habitat for threatened species. Accordingly, the chance of vehicle strike to species, particularly threatened woodland bird species, is substantially reduced by avoidance of areas most likely to facilitate the movements and foraging of these species. Additionally, speed limits will be implemented to reduce any residual risk of vehicle strike.

Table 14 Summary of options considered to avoid and minimise impacts on biodiversity

Action	Adopted (Yes/No/In part)	Justification	Timing (if adopted)	Responsibility (if adopted)	Outcome (if adopted)
Incorporation of suitable technologies and design configurations to minimise overall development footprint	Yes	As part of the design process of the project, careful consideration has been given to reducing the footprint of the four farm sites to minimise the on ground impact and ensure maximum efficiency in utilising the space.	During design and approval	Proponent and consultant team	Retention of approximately 1.92 ha of Box Gum Woodland and 0.27 ha of Fuzzy Box Woodland within the study area, and much more within the property boundary
Implementation of a suite of mitigation measures	Yes	To minimise the impacts on biodiversity, and the Box Gum Woodland and Fuzzy Box Woodland TECs in particular, a suite of mitigation measures will be implemented such as nest box installation, weed management, tree protection measures and a Vegetation Management Plan	Pre and post construction and during operation phase	Proponent and consultant team	Minimise impacts on biodiversity
Design amendments to various elements of the project design	Yes	The bridge has been designed to minimise impacts on the flow of Wallah Wallah Creek	During design and approval	Proponent and consultant team	Avoid and minimise prescribed impacts on hydrology

Action	Adopted (Yes/No/In part)	Justification	Timing (if adopted)	Responsibility (if adopted)	Outcome (if adopted)
Partial development of the study area to avoid/minimise impacts on biodiversity and achieve greater tree retention	Yes	The subject land is restricted to a 46.94 ha area within a property boundary of approximately 709 ha, or approximately 6.6% of the land available within the property boundary. Of the 46.94 ha subject land to be impacted, only 1.42 ha comprises native vegetation. Therefore, the project has been limited to a small portion of the available land, is situated on primarily cleared pastureland, and is impacting on a minimal area of native vegetation.	During design and approval	Proponent and consultant team	Avoid and minimise impacts on biodiversity
'Do-nothing' option to avoid all impacts on biodiversity	No	The do-nothing option for the project would maintain current tree and derived native grassland cover on site but would not enable redevelopment. Under a no-go option, trees would remain and continue to grow and age, potentially to form hollows. However, there would be no requirement to replant or maintain native plant species on the site and grazing and cropping activities would continue, preventing the expansion of regenerating native vegetation. Therefore, over time, there is potential for the existing canopy	-	-	-

Action	Adopted (Yes/No/In part)	Justification	Timing (if adopted)	Responsibility (if adopted)	Outcome (if adopted)
		area to be reduced and for the native vegetation to be degraded			
Consideration of alternative sites and layouts within the study area	In part	Similar earlier options were considered and investigated for the project. The final option selected has consideration to both biodiversity values and the development yield associated with the poultry farm.	During design and approval	Proponent and consultant team	Retention of approximately 1.92 ha of Box Gum Woodland and 0.27 ha of Fuzzy Box Woodland within the study area, and much more within the property boundary

8. Assessment of Impacts

8.1. Impacts on Native Vegetation and Habitat

8.1.1. Direct Impacts

The direct impact resulting from the proposed development is the loss of vegetation and associated habitat within the subject land. **Table 15** identifies the extent of impacts to vegetation within the subject land.

Table 15 Extent of vegetation impacts within the subject land

Vegetation Zone	PCT #	PCT Name	BC Act Status	Area (ha)
1	201	Fuzzy Box Woodland on alluvial brown loam soils mainly in the NSW South Western Slopes Bioregion	EEC	0.21
2	267	White Box – White Cypress Pine – Western Grey Box shrub/grass/forb woodland in the NSW South Western Slopes Bioregion (woodland form)	CEEC	0.08
3	267	White Box – White Cypress Pine – Western Grey Box shrub/grass/forb woodland in the NSW South Western Slopes Bioregion (derived native grassland form)	CEEC	1.08
4	276	Yellow Box grassy tall woodland on alluvium or parna loams and clays on flats in NSW South Western Slopes Bioregion	CEEC	0.01
-	-	Planted Native Trees	-	0.04
Total				**1.42**

8.1.2. Change in Vegetation Integrity Score

Table 16 details the change in vegetation integrity score for the vegetation zone and management zone. The direct impacts of the project only involve one management zone for each vegetation zone, being the total clearing of vegetation within the subject land.

Table 16 Change in vegetation integrity score

Vegetation Zone	PCT #	PCT Name	Management Zone	Current VI Score	Future VI Score	Change in VI Score
1	201	Fuzzy Box Woodland on alluvial brown loam soils mainly in the NSW South Western Slopes Bioregion	1_Clearing	62.9	0	-62.9
2	267	White Box – White Cypress Pine – Western Grey Box shrub/grass/forb woodland in the NSW South Western Slopes Bioregion (woodland form)	1_Clearing	41.7	0	-41.7

3	267	White Box – White Cypress Pine – Western Grey Box shrub/grass/forb woodland in the NSW South Western Slopes Bioregion (derived native grassland form)	1_Clearing	21.3	0	-21.3
4	276	Yellow Box grassy tall woodland on alluvium or parna loams and clays on flats in NSW South Western Slopes Bioregion	1_Clearing	71.7	0	-71.7

8.2. Indirect Impacts

Table 17 outlines the indirect impacts to native vegetation and habitat. Due to the existing modified nature of the vegetation both within and adjacent to the subject land, the indirect impacts of the project are not considered to be significant.

Table 17 Indirect impacts of the project

Indirect Impact	Nature	Extent	Duration	Threatened Entities Likely Affected	Consequences
Inadvertent impacts on adjacent habitat or vegetation	Construction activities may result in inadvertent impacts on vegetation surrounding the subject land, such as increased sedimentation	Native vegetation surrounding the subject land	Short term (during construction) and potential long term	Box Gum Woodland, Fuzzy Box Woodland	Reduced condition of the adjoining TEC
Reduced viability of adjacent habitat due to edge effects	Modification of vegetation extent within the subject land may increase edge effects	Native vegetation surrounding the subject land	Potential long-term	Box Gum Woodland, Fuzzy Box Woodland	Reduction in the condition of the TEC retained within the study area
Reduced viability of adjacent habitat due to noise, dust or light spill	The construction activities associated with the project are likely to increase the noise, dust and light above current levels within and immediately adjacent the subject land	Native vegetation surrounding the subject land	Short term (during construction)	Ecosystem credit species	Short term disruption of fauna habitat usage during construction
Transport of weeds and pathogens from the site to adjacent vegetation	A number of high threat exotic weeds are known to occur within the subject land and may be inadvertently spread to surrounding vegetation	Native vegetation surrounding the subject land	Potential long-term	Box Gum Woodland, Fuzzy Box Woodland	Reduced condition of the adjoining TEC
Increased risk of starvation, exposure and loss of shade or shelter	Impact is unlikely as few trees and only a very small portion of the habitat within the property will be removed	-	-	-	-

Indirect Impact	Nature	Extent	Duration	Threatened Entities Likely Affected	Consequences
Loss of breeding habitats	The project will remove a number of hollow-bearing trees that may result in the loss of breeding habitat	Native vegetation within the subject land	Long-term	Ecosystem credit species	Loss of breeding habitat for hollow-dwelling fauna
Trampling of threatened flora species	Unlikely. No threatened flora species recorded or likely to occur	-	-	-	-
Inhibition of nitrogen fixation and increased soil salinity	Impact is unlikely as few trees and only a very small portion of the habitat within the property will be removed	-	-	-	-
Fertiliser drift	Impact unlikely. No fertiliser is proposed to be used in the project	-	-	-	-
Rubbish dumping	Impact unlikely. The surrounding land is agricultural and mostly owned by the proponent	-	-	-	-
Wood collection	Impact unlikely to occur, considering the nature of the subject land and the project as a poultry farm	-	-	-	-
Bush rock removal and disturbance	Impact unlikely. No bush rock has been identified within the subject land or immediate vicinity; therefore the project is not considered to result in this indirect impact	-	-	-	-
Increase in predatory species populations	Impact unlikely. As the subject land is proposed for indoor agricultural industry use, the project	-	-	-	-

Indirect Impact	Nature	Extent	Duration	Threatened Entities Likely Affected	Consequences
	is considered unlikely to result in an increase in predatory species populations				
Increase in pest animal populations	Impact unlikely. As the subject land is proposed for indoor agricultural industrial use, the project is considered unlikely to result in an increase in pest animal populations	-	-	-	-
Increased risk of fire	Impact unlikely. The project is unlikely to increase the risk of bushfire	-	-		-
Disturbance to specialist breeding and foraging habitat	Fauna breeding and foraging habitat is likely to occur in adjacent vegetation, and may be disturbed by the construction activities of the project	Native vegetation surrounding the subject land	Short term (construction)	Ecosystem credit species	Short term disruption of fauna habitat usage during construction

8.3. Prescribed Impacts

The project has been assessed as resulting in five prescribed impacts (see ***Section 6.1***). An assessment of these prescribed impacts is provided below in accordance with Section 8.3 of the BAM.

8.3.1. Non-native Vegetation

8.3.1.1. Nature

The project has been designed and sited to maximise avoidance of native vegetation and subsequently non-native vegetation is proposed to be cleared for the project. Non-native vegetation includes areas of pastureland as displayed in **Figure 11**.

8.3.1.2. Extent

The proposed development will clear a total of 46.94 ha of non-native vegetation.

8.3.1.3. Duration

Impacts to non-native vegetation would occur during the construction phase of the project. The removal of the non-native vegetation is a long-term impact.

8.3.1.4. Threatened Entities Affected

The habitat provided by non-native vegetation may provide some foraging habitat for ecosystem species, such as microchiropteran bats and birds. The non-native vegetation is not considered suitable breeding/nest habitat due to lack of hollows.

8.3.1.5. Consequences

The project will result in a reduction in non-native vegetation by 46.94 ha. The reduction of this comparatively small area of habitat is not considered to significantly impact upon the potentially affected threatened entities as other areas of suitable habitat, in the form of both native and non-native vegetation, will remain immediately adjacent to the subject land and within the assessment area.

8.3.2. Habitat Connectivity

8.3.2.1. Nature

The native woody vegetation along Wallah Wallah Creek is part of a riparian corridor extending north and south along the creek banks. The vegetation proposed to be removed from within the subject land will be to accommodate construction of the 10 metre wide bridge crossing the creek. The result will be a gap in the north to south connectivity of 10 metres, however the creek will continue to flow beneath the bridge.

It is unlikely that threatened species that potentially utilise the corridor will be significantly affected by the removal of this small area of native vegetation, or that the slight break in the riparian corridor would prevent the continued persistence of the community occurrence in the long run.

8.3.2.2. Extent

Habitat connectivity will be marginally reduced by the removal of 0.22 ha of woody vegetation along Wallah Wallah Creek. Removal of the woody vegetation within the subject land will not result in further fragmentation

of habitat in the locality, as it is only a very small decrease in total area of the relevant corridor and the width is not considered a significant break in connectivity for the flora or fauna utilising it.

8.3.2.3. Duration

Direct impacts to habitat connectivity would occur during the construction and operational phase of the project. The reduction of habitat connectivity is a long-term impact.

8.3.2.4. Threatened Entities Affected

The habitat provided by native vegetation may provide foraging habitat for ecosystem species, such as the Grey-headed Flying-fox, microchiropteran bats and birds. The reduction has the potential to the impact the Fuzzy Box Woodland and Box Gum Woodland TECs that comprise the riparian corridor vegetation.

8.3.2.5. Consequences

The project will result in the reduction in woody vegetation by 0.22 ha along Wallah Wallah Creek. Although the clearing of this vegetation will result in a slight break in the existing corridor, the reduction of this small area of habitat is not considered to significantly impact the movement of mobile fauna species. For example, the Grey-headed Flying-fox forages opportunistically, often at distances up to 30 km from camps, and occasionally up to 60-70 km per night, in response to patchy food resources (NSW Scientific Committee 2004b). It is considered unlikely that native fauna would be solely reliant on the habitat within this minor portion of vegetation for movement between different areas of habitat. Additionally, the 10 metre gap in the riparian corridor is not considered significant in terms of fragmenting the TEC vegetation along the creek and would not hinder the continued persistence of the riparian corridor in the long run.

8.3.3. Waterbodies, Water Quality and Hydrological Processes

8.3.3.1. Nature

The fourth order watercourse Wallah Wallah Creek occurs within the subject land and will be crossed by the construction of a bridge to allow access to the eastern portion of the property. The bridge design will allow continued flow of the creek water and it is considered the potential impacts to the hydrological processes of the creek would be low There are also several first and second order watercourses traversing the subject land and existing flow channels to these will be impacted by the project. There is short term potential for decreases in water quality during the construction phase from sediment run off related to earthworks, however this will be mitigated by appropriate erosion and sediment control methods. The impacts to the first and second order watercourses are long term.

8.3.3.2. Extent

There will be minor clearance of 0.22 ha of land through Wallah Wallah Creek and the banks to facilitate construction of the bridge crossing. There will be small scale impacts where the subject land intercepts the existing flow channel of the first and second order watercourses.

A stormwater management plan has been prepared to assess and minimise impacts to hydrology, and Wallah Wallah Creek, as part of the project.

8.3.3.3. Duration

Changes will be permanent if the development is constructed.

8.3.3.4. Threatened Entities Affected

Ecosystem credit species utilising Wallah Wallah Creek as a water resource may be temporarily impacted if there is a decrease in water quality, though it would likely be minor and short term. The Fuzzy Box Woodland and Box Gum Woodland may be temporarily impacted by any alterations to the creek line.

8.3.3.5. Consequences

The consequences may be temporary impediments to the Wallah Wallah creek flow during the construction phase that could result in a short term alteration to the creek flow (it is not always flowing) and increased sedimentation while the bridge is being built. This will be mitigated through implementation of the measures detailed in the stormwater management plan and appropriate erosion and sediment control measures. The consequences of the alterations to the first and second order creeks are that existing flow paths will be disrupted and that may alter the patterns of sheet flow across the study area and surrounds.

8.3.4. Vehicle Strike

8.3.4.1. Nature

Access tracks into the property and between the four farms will be constructed to facilitate the development and will increase the risk of fauna vehicle strike. This has been minimised by restricting the additional vehicles and construction of the access road to areas primarily devoid of native vegetation that could act as habitat for threatened species. Accordingly, the chance of vehicle strike to species, particularly threatened woodland bird species, is substantially reduced by avoidance of areas most likely to facilitate the movements and foraging of these species.

The impacts of vehicle strike are likely to occur during the construction and operational phase of the project and will be long-term impacts.

8.3.4.2. Extent

The potential impacts relate to all areas comprising access tracks available for vehicle and truck use to be constructed as part of the development

8.3.4.3. Duration

The increased risk of fauna vehicle strike is a long-term impact.

8.3.4.4. Threatened Entities Affected

Ecosystem credit species utilising the subject land, such as foraging bird and microchiropteran bats may be impacted by vehicle strike.

8.3.4.5. Consequences

The consequences are increased fauna death by vehicle strike. This will be reduced by implementation of site wide speed limits to reduce vehicle speed within the property.

8.4. Mitigation of Impacts to Native Vegetation and Habitat

A range of mitigation measures have been developed for the project to mitigate the impacts to native vegetation and habitats that are unable to be avoided. These include a range of measures to be undertaken before and during construction to limit the impact of the project. Each mitigation measure is discussed in detail below, and a summary is provided in **Table 18**.

8.4.1. Weed Management

In order to minimise the spread of weeds throughout the subject land and adjoining areas, appropriate weed control activities will be undertaken during the construction period in accordance with the Central West Local Land Services Area and is subject to the Central West Regional Strategic Weed Management Plan 2017 – 2022 under the NSW *Biosecurity Act 2015*.

The *Biosecurity Act 2015* and regulations provide specific legal requirements for state level priority weeds and high risk activities, as provided in the Appendices of the Central West Regional Strategic Weed Management Plan 2017 – 2022. In order to comply with the objectives of the Central West Regional Strategic Weed Management Plan, it is recommended the following measures be implemented as part of weed management for the subject land.

i. Prevention

Appropriate construction site hygiene measures will be implemented to prevent entry of new weeds to the area such as the cleaning of equipment prior to entering the subject land. All contractor vehicles and machinery must clean and remove all soil and vegetation from wheels, blades, bins etc of any gear prior to leaving their sites and wash down at the entrance to "Summerfield". The farms are proposed to have wheel washes installed at each farm entrance to prevent spread between sites.

All ground layer vegetation removed for the project will be contained and discarded appropriately due to the high density of exotics present. The method for disposal will be detailed in the Construction Environmental Management Plan to be prepared for the project.

8.4.2. Delineation of Clearing Limits

The current limits of clearing will be marked either by high visibility tape on trees or metal/wooden pickets, fencing or an equivalent boundary marker that will be installed prior to clearing. To avoid unnecessary or inadvertent vegetation and habitat removal or impacts on fauna, disturbance must be restricted to the delineated area and no stockpiling of equipment, machinery, soil or vegetation will occur beyond this boundary.

8.4.3. Tree Protection Measures

Trees retained within the study area will be subject to tree protection measures. This includes installation of tree fences around trees to be retained that occur within 10 metres of the development footprint, and restricting access to these areas throughout the construction period.

8.4.4. Pre-clearance Surveys

In order to minimise impacts to fauna species during the establishment of development footprint, pre-clearance surveys will be conducted in all areas of woody vegetation that are required to be cleared or modified. Pre-clearing surveys will be undertaken within one week of clearing activities by a qualified ecologist and will seek to identify the following habitat features:

- Hollow-bearing trees;
- Hollow-bearing logs; and
- Nests within tree canopy or shrubs.

Such features have the potential to contain native species. All habitat features will be identified, recorded and flagged with fluorescent marking tape and trees will have an "H" spray painted with marking paint on two sides of the tree.

8.4.5. Staging of Clearing

The clearing will be conducted using a two-stage clearing process as follows:

Stage 1: Clearing will commence following the identification of potential habitat features by a qualified ecologist. Hollow-bearing trees marked during pre-clearing will not be cleared during the first stage; however all vegetation around these trees will be cleared to enable isolation of the feature. Other habitat features, such as hollow-bearing logs, can be removed during Stage 1 done under supervision by a qualified ecologist. Identified hollow-bearing trees will be left at a minimum overnight after Stage 1 clearing to allow resident fauna to voluntarily move from the area.

Stage 2: After hollow-bearing trees have been left overnight, the trees will be cleared in a manner to minimise impacts to fauna. This includes shaking the hollow-bearing trees with machinery, slowly pushing over the tree and inspection of hollows by an ecologist for the presence of fauna following felling of the tree.

Provisions will be made to protect any native fauna during clearing activities by the following means:

- All staff working on the vegetation clearing will be briefed about the possible fauna present and should avoid injuring any present;
- Animals disturbed or dislodged during the clearance but not injured will be assisted to move to adjacent bushland or other specified locations; and
- If animals are injured during the vegetation clearance, appropriate steps will be taken to humanely treat the animal (either taken to the nearest veterinary clinic for treatment, or if the animal is unlikely to survive, it will be humanely euthanised).

Provision of a report following the completion of clearing works will be provided detailing the total number and species of individuals recorded and details of their release/health.

8.4.6. Sedimentation Control Measures

The project may result in erosion and transport of sediments as a result of soil disturbance during construction. In order to prevent this impact, construction activities will be undertaken in accordance with "The Blue Book" (Landcom 2004). These include implementation of the following measures:

- Installation of sediment control fences;
- Covering soil stockpiles; and
- Avoiding soil disturbance prior to heavy rainfall.

Table 18 Summary of mitigation measures for impacts to native vegetation and habitat

Mitigation Measure	Proposed Techniques	Timing	Frequency	Responsibility	Risk of Failure	Risk and Consequences of Residual Impacts
Weed management	Appropriate weed control activities will be undertaken in accordance with the Central West Regional Strategic Weed Management Plan 2017 – 2022 (2017)	Construction	During construction	Contractor	High	Spread of weeds throughout the study area and surrounding land
Delineation of clearing limits	Clearing limits marked either by high visibility tape, metal/wooden pickets, fencing or an equivalent boundary marker. Disturbance, including stockpiling, restricted to clearing limits	Construction	Once	Contractor	High	Unnecessary damage to trees to be retained
Tree protection measures	Inductions to include communication of tree protection measures. Installation of fences around trees within 10 metres of the development footprint Access to treed areas restricted during construction	Construction	Throughout construction period	Contractor	High	Unnecessary damage to trees to be retained
Pre-clearance survey	Pre-clearance surveys will be conducted in all areas of vegetation that are required to be cleared Pre-clearing surveys will be undertaken within one week of clearing Habitat features will be marked during the pre-clearing survey	Construction	Once	Contractor	Moderate	Increased and unnecessary mortality of native fauna

Mitigation Measure	Proposed Techniques	Timing	Frequency	Responsibility	Risk of Failure	Risk and Consequences of Residual Impacts
Staging of clearing	Vegetation clearing will be conducted as outlined in ***Section 8.4.5*** Animals disturbed or dislodged during the clearance but not injured will be assisted to move to adjacent bushland If animals are injured during the vegetation clearance, appropriate steps will be taken to humanely treat the animal (either taken to the nearest veterinary clinic for treatment, or if the animal is unlikely to survive, it will be humanely euthanized)	Construction	Once	Contractor	High	Increased and unnecessary mortality of native fauna
Sedimentation control	Construction activities will be undertaken in accordance with "The Blue Book" (Landcom 2004). These include implementation of the following measures: Installation of sediment control fences; Covering soil stockpiles; and Avoiding soil disturbance prior to heavy rainfall	Construction	Throughout construction period	Contractor	High	Sedimentation into retained and adjoining vegetation

8.5. Mitigation of Prescribed Impacts

The following mitigation measures, described in ***Section 8.4***, are relevant to the prescribed impacts relevant to the project:

- Delineation of clearing limits;
- Pre-clearance survey;
- Staging of clearing; and
- Sedimentation control measures.

No additional mitigation measures are proposed for prescribed impacts.

8.6. Adaptive Management for Uncertain Impacts

The project is considered unlikely to result in any uncertain impacts that require adaptive management.

8.7. Use of Biodiversity Credits to Mitigate or Offset Indirect or Prescribed Impacts

Due to the small scale of indirect and prescribed impacts, the project does not propose to use additional biodiversity credits to mitigate or offset these impacts.

9. Thresholds of Assessment

9.1. Introduction

The assessment thresholds that must be considered include the following:

- Impacts on an entity that is at risk of a serious and irreversible impact;
- Impacts for which the assessor is required to determine an offset requirement;
- Impacts for which the assessor is not required to determine an offset requirement; and
- Impacts that do not require further assessment by the assessor.

The following sections outline these assessment thresholds and their relevance to the project.

9.2. Impacts on Serious and Irreversible Impact Entities

Two candidate SAII entities have been considered as relevant to the project, being Box Gum Woodland and Fuzzy Box Woodland. Further consideration of these entities is provided in the sections below.

9.2.1. Box Gum Woodland

Box Gum Woodland is confirmed as occurring within the subject land and will be impacted by the project. The location of the Box Gum Woodland within the subject land is shown in **Figure 7**.

Approximately 1.17 ha of Box Woodland will be removed within the subject land, comprising 0.09 ha of woodland and 1.08 ha of derived native grassland.

Section 9.1.1 of the BAM requires the provision of additional information regarding SAII entities that are TECs. The additional information is required to assist the consent authority to evaluate the nature of an impact on a potential entity at risk of a serious and irreversible impact. The additional information requirements are provided in **Table 19**.

9.2.2. Fuzzy Box Woodland

Fuzzy Box Woodland is confirmed as occurring within the subject land and will be impacted by the project. The location of the Fuzzy Box Woodland within the subject land is shown in **Figure 7**.

Approximately 0.21 ha of Fuzzy Box Woodland will be removed within the subject land, all comprising of woodland.

Section 9.1.1 of the BAM requires the provision of additional information regarding SAII entities that are TECs. The additional information is required to assist the consent authority to evaluate the nature of an impact on a potential entity at risk of a serious and irreversible impact. The additional information requirements are provided in **Table 20**.

Table 19 Additional impact assessment provisions for Box Gum Woodland

Criteria	Additional Impact Assessment Provisions	Response
1	The assessor is required to provide further information in the BDAR or BCAR regarding the impacts on each TEC at risk of an SAII. This must include the action and measures taken to avoid the direct and indirect impact on the TEC at risk of an SAII. Where these have been addressed elsewhere the assessor can refer to the relevant sections of the BDAR and BCAR.	Avoidance of impacts to Box Gum Woodland is addressed in **Chapter 7**.
2	The assessor must consult the TBDC and/or other sources to report on the current status of the TEC including:	-
(a)	Evidence of reduction in geographic distribution (Principle 1, clause 6.7(2)(a) BC Regulation) as the current total geographic extent of the TEC in NSW AND the estimated reduction in geographic extent of the TEC since 1970 (not including impacts of the proposal)	The current total geographic extent of Box Gum Woodland varies depending on the source interrogated. The Final Determination for Box Gum Woodland (REF) identifies that the TEC has undergone a very large reduction in geographic distribution and has been extensively cleared throughout its range and remnants typically are small, isolated, and highly fragmented. It estimates that less than 5% of the original distribution remains, though notes there is variability amongst other sources (Benson 2008, Tozer et al. 2010, Armstrong et al. 2013). Despite these uncertainties, the final determination concludes the plausible range estimated for the amount remaining includes values less than 10% for almost all of the components of the community described by Benson (2008). While there are numerous PCTs identified as being associated with Box Gum Woodland, the compilation of their pre-1750 extents is 1,576,000 ha. The current geographic distribution best estimate of the extent of occurrence is 702,800 km^2, while the best estimate of the area of occupancy is 151,100 km^2 according to the final determination, further stating that "*it is very likely that the reduction in the distribution of White Box – Yellow Box – Blakely's Red Gum Grassy Woodland and Derived Native Grassland exceeds 90% when averaged*

		across the entire range of the community"; which fits with the reduction from the pre-1750 extent to the current estimated area of occupancy. For the two PCTs occurring within the subject land, PCT has an estimated pre-1750 extent of 70,000 ha that has been reduced to an ~11% extent, and PCT 276 has an estimated pre-1750 extent of 40,000 ha, that has been reduced to ~11% extent. The National Recovery Plan for Box Gum Woodland (DECCW 2011) places the NSW pre-1750 extent at 3,717,366km^2 and estimates it is 93% cleared. The Map of Critically Endangered Ecological Communities NSW Version 6 dated 25/02/2020 (DPIE 2020) does not cover the subject land or assessment area. This mapping is the most recent and comprehensive published mapping available and could be considered to be most accurate of the sources reviewed. Following a review of the above information for the extent of Box Gum Woodland, both current and prior to European settlement, it is clear there is some variation in area calculations. It is noted however, that it is unanimously accepted by all sources that the community has suffered extensive clearing to a level that the community requires significant external intervention to maintain and recover the community. No published data was found in the literature on the 1970 extent of Box Gum Woodland and an accurate estimate of the reduction in distribution between the current extent and the 1970 geographic extent cannot be provided.
(b)	The extent of reduction in ecological function for the TEC using evidence that describes the degree of environmental degradation or disruption to biotic processes (Principle 2, clause 6.7(2)(b) BC Regulation) indicated by: Change in community structure Change in species composition Disruption of ecological processes	According to the final determination for Box Gum Woodland (NSW Scientific Committee 2011), there are a number of threatening processes that have caused severe declines in biotic processes and interactions throughout its range and are likely to cause continuing decline in the future, such as: • Tree removal; • Removal for crops and pastures; • Fragmentation of habitat;

	Invasion and establishment of exotic species Degradation of habitat; and Fragmentation of habitat	• Grazing by livestock and rabbits; • Modification of understory; • Dryland salinity; • Soil chemical and structural modification associated with agricultural uses; • Changes in frequency of fire regimes; and • Prevention of recruitment of species, through continued under-scrubbing and mowing.
(c)	Evidence of restricted geographic distribution (Principle 3, clause 6.7(2)(c) BC Regulation), based on the TEC's geographic range in NSW according to the: extent of occurrence area of occupancy, and number of threat defined locations	The current geographic distribution best estimate of the extent of occurrence is 702,800 km^2, while the best estimate of the area of occupancy is 151,100 km^2 according to the final determination. No threat defined location are specifically identified in the TBDC.
(d)	Evidence that the TEC is unlikely to respond to management (Principle 4, clause 6.7(2)(d) BC Regulation)	This principle is not identified as applicable to BDARs.
3	Where the TBDC indicates that data is 'unknown' or 'data deficient' for a TEC for a criterion listed in Section 9.1.1(2), the assessor must record this in the BDAR.	Not applicable.
4 (a)	The impact on the geographic extent of the TEC (Principles 1 and 3) by estimating the total area of the TEC to be impacted by the proposal: in hectares; and as a percentage of the current geographic extent of the TEC in NSW	The proposal will remove or modify approximately 1.17 ha of Box Gum Woodland in the subject land. The extent of the TEC in NSW differs depending on the information source. The estimated geographic extent in NSW is >150,000 ha according to resources reviewed for Criteria 2(a). Based on the lower of the numbers outlined above, the extent of Box Gum Woodland to be impacted by the project is less than 0.0008% of the current geographic extent of the TEC in NSW.
(b)	The extent that the proposed impacts are likely to contribute to further environmental degradation or the disruption of biotic processes (Principle 2) of the TEC by:	-
	Estimating the size of any remaining, but now isolated, areas of the TEC; including areas of the TEC within 500m	The project is not likely to result in the isolation of an area of Box Gum Woodland from other areas of the community, as the subject land occurs primarily as

	of the development footprint or equivalent area for other types of proposals	narrow access tracks throughout the property that would not result in isolation, and the farm sites are surrounded by further areas of derived native grasses. As a result, the impact on Box Gum Woodland in the subject land will result in a slight reduction in the area of other larger patches, but will not isolate areas. No isolated areas have been identified within 500 m of the subject land, as derived native grassland link areas of treed patches. Based on the State Vegetation Type Map – Central West Lachlan there is approximately 192.50 ha of Box Gum Woodland within 500 m of the subject land, comprising PCTs 250, 266, 267, 276, 277, and 796. Therefore, the removal or modification of 1.17 ha represents approximately 0.61% of the occurrence of the TEC within 500 m of the subject land. The extent of this mapping in relation to the subject land and adjoining areas is shown in **Figure 10**.
	Describing the impacts on connectivity and fragmentation of the remaining areas of the TEC measures by:	-
	Distance between isolated areas of the TEC, presented as the average distance if the remnant is retained AND the average distance if the remnant is removed as proposed, and	The removal of Box Gum Woodland within the subject land will not fragment any patch of the community as the subject land occurs within larger continuous corridors of native vegetation and derived native grassland. The bridge crossing of Wallah Wallah Creek will create a 10 metre wide gap in the community, but this distance is not considered a break in patch size nor will it fragment the community impedes the interaction of species or vegetation dispersal.
	Estimated maximum dispersal distance for native flora species characteristic of the TEC, and	The main dispersal mechanisms for flora species associated with Box Gum Woodland include one or a combination of the following: • animals, • wind, • water runoff, and • gravity. Fauna species are inextricably linked to a functioning woodland/grassland ecosystem. The ecosystem is a source of food and habitat for fauna, while ecosystem services provided by fauna include; plant pollination, seed dispersal, nutrient recycling, maintenance of soil structure, control of herbivorous insects and provision of disturbance which assists in maintaining floristic

		diversity (ACT Government 2004). The maximum dispersal distance for native flora species characteristic of the community was not stated, however the National Recovery Plan notes that paddock trees should not be more than 80 – 100 metres apart (REF). As no areas of native vegetation will be significantly fragmented as part of the project, therefore dispersal distances will not increase as a result of the project.
	Other information relevant to describing the impact on connectivity and fragmentation, such as the area to perimeter ratio for remaining areas of the TEC as a result of the development	The subject land is part of remnant patches of Box Gum Woodland. As previously described, the project is not considered to significantly affect the connectivity of the TEC, as the vegetation proposed for removal is minor and occurs within much larger patches of the TEC, including the significant patch to the east outside the property boundary.
	Describing the condition of the TEC according to the vegetation integrity score for the relevant vegetation zone (s) (Section 4.3). The assessor must also include the relevant composition, structure and function condition scores for each vegetation zone.	The Box Gum Woodland in the subject land corresponds to PCT 267 that occurs in two condition states (woodland and derived native grassland) and PCT 276 that occurs in one condition state. Both the woodland forms can be considered to be in a good condition state, while the derived native grassland is in a poor condition state. The vegetation integrity score for the TEC is as follows: <u>PCT 267 – woodland form</u> Vegetation Integrity Score: 41.7 (Composition: 33.3 Structure: 32.8 Function: 66.1) <u>PCT 267 – derived native grassland</u> Vegetation Integrity Score: 21.3 (Composition: 43.9 Structure: 54.6 Function: 4) <u>PCT 276 – good</u> Vegetation Integrity Score: 71.7 (Composition: 79.3 Structure: 70.5 Function: 65.9)
5	The assessor may also provide new information that demonstrates that the	Not applicable.

	principle identifying that the TEC is at risk of an SAII is not accurate.	

Table 20 Additional impact assessment provisions for Fuzzy Box Woodland

Criteria	Additional Impact Assessment Provisions	Response
1	The assessor is required to provide further information in the BDAR or BCAR regarding the impacts on each TEC at risk of an SAII. This must include the action and measures taken to avoid the direct and indirect impact on the TEC at risk of an SAII. Where these have been addressed elsewhere the assessor can refer to the relevant sections of the BDAR and BCAR.	Avoidance of impacts to Fuzzy Box Woodland is addressed in **Chapter 7**.
2	The assessor must consult the TBDC and/or other sources to report on the current status of the TEC including:	-
(a)	Evidence of reduction in geographic distribution (Principle 1, clause 6.7(2)(a) BC Regulation) as the current total geographic extent of the TEC in NSW AND the estimated reduction in geographic extent of the TEC since 1970 (not including impacts of the proposal)	The current total geographic extent of Cumberland Plain Woodland varies depending on the source interrogated. BioNet Vegetation Classification Database estimates the current area of occupancy of the community based on the two PCTs (201 and 202) conforming to Fuzzy Box Woodland with available data as approximately 8,500 ha of the original 'Pre-European Extent' published on the database of 110,00 ha. There is one additional PCT (1384) that conforms to Fuzzy Box Woodland, however there is no data on the current or Pre-European extent, it is only noted the PCT is estimated as 75% cleared. Therefore, the BioNet total current and Pre-European Extent areas of the community cannot be accurately estimated. The final determination for the TEC states that less than 5% is estimated to remain compared to pre-European times due to past clearing (Austin *et al.* 2000, Seddon *et al.* 2002) (NSW Scientific Committee 2004a). The Map of Critically Endangered Ecological Communities NSW Version 6 dated 25/02/2020 (DPIE 2020) does not cover the subject land or assessment area. This mapping is the most recent and comprehensive published mapping available and could

		be considered to be most accurate of the sources reviewed. Following a review of the above information for the extent of Fuzzy Box Woodland, both current and prior to European settlement, it is clear there is some variation in area calculations. It is noted however, that it is unanimously accepted by all sources that the community has suffered extensive clearing to a level that the community requires significant external intervention to maintain and recover. No published data was found in the literature on the 1970 extent of Fuzzy Box Woodland and an accurate estimate of the reduction in distribution between the current extent and the 1970 geographic extent cannot be provided.
(b)	The extent of reduction in ecological function for the TEC using evidence that describes the degree of environmental degradation or disruption to biotic processes (Principle 2, clause 6.7(2)(b) BC Regulation) indicated by: Change in community structure Change in species composition Disruption of ecological processes Invasion and establishment of exotic species Degradation of habitat; and Fragmentation of habitat	According to the final determination for Fuzzy Box Woodland (REF) there has been a very large reduction in the ecological function of the community through processes such as: • Historical broadscale clearing; • Continued clearing of paddock trees and isolated remnants; • Senescence of relict plants; • Lack of regeneration due to grazing; • Lack of fire; and • Weed invasion, particularly by exotic perennial grasses. The TBDC additionally identifies: • Climate change; • Pest animal browsing; and • Agricultural chemical application.
(c)	Evidence of restricted geographic distribution (Principle 3, clause 6.7(2)(c) BC Regulation), based on the TEC's geographic range in NSW according to the: extent of occurrence area of occupancy, and number of threat defined locations	No extent of occurrence or area of occupancy are provided by the final determination for the community. Based on available information from the BioNet Vegetation Classification, which provides a current extent for two of the three PCTs, the area of occupancy is estimated at 8,500 ha for the two PCTs, with no value for the third. No threat defined location are specifically identified in the TBDC, however the Final Determination (NSW

		Scientific Committee 2004a) states that only one small stand is currently known from a conservation reserve, at Weddin Mountains National Park near Grenfell.
(d)	Evidence that the TEC is unlikely to respond to management (Principle 4, clause 6.7(2)(d) BC Regulation)	This principle is not identified as applicable to BDARs.
3	Where the TBDC indicates that data is 'unknown' or 'data deficient' for a TEC for a criterion listed in Section 9.1.1(2), the assessor must record this in the BDAR.	Not applicable.
4 (a)	The impact on the geographic extent of the TEC (Principles 1 and 3) by estimating the total area of the TEC to be impacted by the proposal: in hectares; and as a percentage of the current geographic extent of the TEC in NSW	The proposal will remove or modify approximately 0.21 ha of Fuzzy Box Woodland in the subject land. The extent of the TEC in NSW differs depending on the information source. The estimated geographic extent in NSW is approximately 8,500 ha or greater, according to resources reviewed for Criteria 2(a). Based on the lower of the numbers outlined above, the extent of Fuzzy Box Woodland to be impacted by the project is less than 0.003% of the current geographic extent of the TEC in NSW.
(b)	The extent that the proposed impacts are likely to contribute to further environmental degradation or the disruption of biotic processes (Principle 2) of the TEC by:	-
	Estimating the size of any remaining, but now isolated, areas of the TEC; including areas of the TEC within 500m of the development footprint or equivalent area for other types of proposals	The project is not likely to result in the isolation of an area of Fuzzy Box Woodland from other areas of the community, as the subject land intersecting the community occurs only as a narrow access track that would not result in isolation within the riparian corridor. As a result, the impact on Fuzzy Box Woodland in the subject land will result in a slight reduction in the area of the larger patch, but will not isolate areas. No isolated areas have been identified within 500 m of the subject land. Based on the State Vegetation Type Map – Central West Lachlan, there is approximately 8.89 ha of Fuzzy Box Woodland within 500 m of the subject land, all comprising PCT 201. Therefore, the removal or modification of 0.21 ha represents approximately 2.36% of the occurrence of the TEC within 500 m of the

		subject land. The extent of this mapping in relation to the subject land and adjoining areas is shown in **Figure 11**.
	Describing the impacts on connectivity and fragmentation of the remaining areas of the TEC measures by:	-
	Distance between isolated areas of the TEC, presented as the average distance if the remnant is retained AND the average distance if the remnant is removed as proposed, and	The removal of Fuzzy Box Woodland within the subject land will not fragment any patch of the community as the subject land occurs as a 10 metre wide access track through the riparian corridor of native vegetation, and this short distance will not disrupt the continuity of the patch as a whole.
	Estimated maximum dispersal distance for native flora species characteristic of the TEC, and	The main dispersal mechanisms for flora species associated with Fuzzy Box Woodland include one or a combination of the following: • animals, • wind, • water runoff, and • gravity. While there is no stated maximum dispersal distance in the Final Determination, it is likely to be similar to the Box Gum Woodland estimates that indicate gaps of no greater than 100 metres are preferable. As no areas of native vegetation will be significantly fragmented as part of the project, therefore dispersal distances will not increase as a result of the project.
	Other information relevant to describing the impact on connectivity and fragmentation, such as the area to perimeter ratio for remaining areas of the TEC as a result of the development	The subject land is part of a patch of Fuzzy Box Woodland (and other native vegetation communities). As previously described, the project is not considered to significantly affect the connectivity of the TEC, as the vegetation proposed for removal occurs as a narrow band that will not result in a significant loss of connectivity.
	Describing the condition of the TEC according to the vegetation integrity score for the relevant vegetation zone (s) (Section 4.3). The assessor must also include the relevant composition, structure and function condition scores for each vegetation zone.	The Fuzzy Box Woodland in the subject land corresponds to PCT 201 and the 'Good' condition state. The vegetation integrity score for the TEC is as follows: Vegetation Integrity Score: 62.9 (Composition: 87.8 Structure: 91.1 Function: 31.0)
5	The assessor may also provide new information that demonstrates that the	Not applicable.

	principle identifying that the TEC is at risk of an SAII is not accurate.

9.3. Impacts that Require an Offset

9.3.1. Native Vegetation

In accordance with the BAM, the project requires offsets for the clearing of native vegetation as the following criteria are met:

- A vegetation zone that has a vegetation integrity score of ≥17 where the PCT is associated with threatened species habitat (as represented by ecosystem credits) or is representative of a vulnerable ecological community.

The PCTs and vegetation zones requiring offsets are documented in **Table 21**. These areas are mapped in **Figure 12**.

Table 21 Summary of impacts to native vegetation requiring an offset

Vegetation Zone	PCT #	PCT Name	Condition Name	Area (ha)	Patch Size Class	Future Vegetation Integrity Score
1	201	Fuzzy Box Woodland on alluvial brown loam soils mainly in the NSW South Western Slopes Bioregion	Good	0.21	>100 ha	0 (Cleared)
2	267	White Box – White Cypress Pine – Western Grey Box shrub/grass/forb woodland in the NSW South Western Slopes Bioregion (woodland form)	Good	0.08	>100 ha	0 (Cleared)
3	267	White Box – White Cypress Pine – Western Grey Box shrub/grass/forb woodland in the NSW South Western Slopes Bioregion (derived native grassland form)	DNG	1.08	>100 ha	0 (Cleared)
4	276	Yellow Box grassy tall woodland on alluvium or parna loams and	Good	0.01	>100 ha	0 (Cleared)

	clays on flats in NSW South Western Slopes Bioregion	

9.3.2. Threatened Species

No species credit species have been identified as requiring an offset.

9.4. Impacts that do not Require an Offset

No areas of native vegetation within the subject land have been identified as not requiring an offset.

9.5. Impacts that do not Require Further Assessment

All areas identified as 'pastureland' that conform to Category 1 – Exempt Land, and 'planted native trees' that occur within the subject land do not require an offset. These areas comprise approximately 45.56 ha, as shown on **Figure 13**.

9.6. Application of the No Net Loss Standard

The BAM sets a standard that will result in no net loss of biodiversity values where the impacts on biodiversity values are avoided, minimised and mitigated, and all residual impacts are offset by retirement of the required number of biodiversity credits. Note that a Small Areas BDAR only allows for the inclusion of two vegetation zones within the BAM calculator, so two separate calculations have been run to allow for the inclusion of the four vegetation zones determined to occur within the subject land.

The ecosystem credit requirement for the project is summarised in **Table 22**, whilst the 'like for like' offsetting options for the ecosystem credits are provided in **Table 23**.

A credit summary report from the BAMC has been included in **Appendix D**.

Table 22 Summary of ecosystem credit liability

PCT #	PCT Name	TEC	Area (ha)	Biodiversity Risk Weighting	Credits Required
201	Fuzzy Box Woodland on alluvial brown loam soils mainly in the NSW South Western Slopes Bioregion	TEC	0.21	1.5	7
267	White Box – White Cypress Pine – Western Grey Box shrub/grass/forb woodland in the NSW South Western Slopes Bioregion (woodland)	TEC	0.08	2.5	2
267	White Box – White Cypress Pine – Western Grey Box shrub/grass/forb woodland in the NSW South Western	TEC	1.08	2.5	14

	Slopes Bioregion (derived native grassland)				
276	Yellow Box grassy tall woodland on alluvium or parna loams and clays on flats in NSW South Western Slopes Bioregion	TEC	0.01	2.0	1

Table 23 Like for like offsetting options for PCT 1237

PCT requiring offsets	Any PCT with the below TEC	Containing Hollow-bearing Trees?	In the below IBRA Subregions
PCT 201_Good	Fuzzy Box Woodland on alluvial Soils of the South Western Slopes, Darling Riverine Plains and Brigalow Belt South Bioregions This includes PCT's: 201, 202, 1384	Yes	Lower Slopes , Bogan-Macquarie, Inland Slopes, Lachlan Plains, Murray Fans, Murrumbidgee and Nymagee. or Any IBRA subregion that is within 100 kilometres of the outer edge of the impacted site.
PCT 267_Good	White Box - Yellow Box - Blakely's Red Gum Grassy Woodland and Derived Native Grassland in the NSW North Coast, New England Tableland, Nandewar, Brigalow Belt South, Sydney Basin, South Eastern Highlands. This includes PCT's: 74, 75, 83, 250, 266, 267, 268, 270, 274, 275, 276, 277, 278, 279, 280, 281, 282, 283, 284, 286, 298, 302, 312, 341, 342, 347, 350, 352, 356, 367, 381, 382, 395, 401, 403, 421, 433, 434, 435, 436, 437, 451, 483, 484, 488, 492, 496, 508, 509, 510, 511, 528, 538, 544, 563, 567, 571, 589, 590, 597, 599, 618, 619, 622, 633, 654, 702, 703, 704, 705, 710, 711, 796, 797, 799, 840, 847, 851, 921, 1099, 1103, 1303, 1304, 1307, 1324, 1329, 1330, 1331, 1332, 1333, 1334, 1383, 1401, 1512, 1606, 1608, 1611, 1691, 1693, 1695, 1698	Yes	Lower Slopes , Bogan-Macquarie, Inland Slopes, Lachlan Plains, Murray Fans, Murrumbidgee and Nymagee. or Any IBRA subregion that is within 100 kilometres of the outer edge of the impacted site.

PCT requiring offsets	Any PCT with the below TEC	Containing Hollow-bearing Trees?	In the below IBRA Subregions
PCT 267_DNG	White Box - Yellow Box - Blakely's Red Gum Grassy Woodland and Derived Native Grassland in the NSW North Coast, New England Tableland, Nandewar, Brigalow Belt South, Sydney Basin, South Eastern Highlands. This includes PCT's: 74, 75, 83, 250, 266, 267, 268, 270, 274, 275, 276, 277, 278, 279, 280, 281, 282, 283, 284, 286, 298, 302, 312, 341, 342, 347, 350, 352, 356, 367, 381, 382, 395, 401, 403, 421, 433, 434, 435, 436, 437, 451, 483, 484, 488, 492, 496, 508, 509, 510, 511, 528, 538, 544, 563, 567, 571, 589, 590, 597, 599, 618, 619, 622, 633, 654, 702, 703, 704, 705, 710, 711, 796, 797, 799, 840, 847, 851, 921, 1099, 1103, 1303, 1304, 1307, 1324, 1329, 1330, 1331, 1332, 1333, 1334, 1383, 1401, 1512, 1606, 1608, 1611, 1691, 1693, 1695, 1698	No	Lower Slopes , Bogan-Macquarie, Inland Slopes, Lachlan Plains, Murray Fans, Murrumbidgee and Nymagee. or Any IBRA subregion that is within 100 kilometres of the outer edge of the impacted site.
PCT 276	White Box - Yellow Box - Blakely's Red Gum Grassy Woodland and Derived Native Grassland in the NSW North Coast, New England Tableland, Nandewar, Brigalow Belt South, Sydney Basin, South Eastern Highlands This includes PCT's: 74, 75, 83, 250, 266, 267, 268, 270, 274, 275, 276, 277, 278, 279, 280, 281, 282, 283, 284, 286, 298, 302, 312, 341, 342, 347, 350, 352, 356, 367, 381, 382, 395, 401, 403, 421, 433, 434, 435, 436, 437, 451, 483, 484, 488, 492, 496, 508, 509, 510, 511, 528, 538, 544, 563, 567, 571, 589, 590, 597, 599, 618, 619, 622, 633, 654, 702, 703, 704, 705, 710, 711, 796, 797, 799, 840, 847, 851, 921, 1099, 1103, 1303, 1304, 1307, 1324, 1329, 1330, 1331, 1332, 1333, 1334, 1383, 1401, 1512, 1606, 1608, 1611, 1691, 1693, 1695, 1698	Yes	Lower Slopes , Bogan-Macquarie, Inland Slopes, Lachlan Plains, Murray Fans, Murrumbidgee and Nymagee. or Any IBRA subregion that is within 100 kilometres of the outer edge of the impacted site.

10. References

DECCW. 2011. National Recovery Plan for White Box - Yellow Box - Blakely's Red Gum Grassy Woodland and Derived Native Grassland. Department of Environment, Climate Change and Water, Sydney.

DPIE. 2020. NSW Critically Endangered Ecological Community Map. Version 6.0. February 2020. State of NSW and Department of Planning, Industry and Environment.

Landcom. 2004. Managing Urban Stormwater: Soils and Construction ("Blue Book"), Fourth Edition, NSW Government, Parramatta.

NSW Government. 2020. Surveying threatened plants and their habitats. NSW survey guide for the Biodiversity Assessment Method. Environment, Energy and Science. Department of Planning, Industry and and Environment, Parramatta.

NSW Scientific Committee. 2004a. Fuzzy Box Woodland on alluvial soils of the South Western Slopes, Darling Riverine Plains and Brigalow Belt South Bioregions - endangered ecological community listing. Department of Environment and Conservation (NSW), Hurstville.

NSW Scientific Committee. 2004b. Grey-headed Flying-fox - vulnerable species listing. Department of Environment and Conservation (NSW), Hurstville.

NSW Scientific Committee. 2011. Blue Gum High Forest in the Sydney Basin Bioregion - Determination to make a minor amendment to Part 2 of Schedule 1A of the Threatened Species Conservation Act.

OEH. 2015. State Vegetation Type Map: Central West / Lachlan Region Version 1.3. VIS_ID 4468.

OEH. 2017. Interim Grasslands and other Groundcover Assessment Method. **NSW Government**.

Riverina LLS. 2017. Riverina Regional Strategic Weed Management Plan 2017-2022.

APPENDIX A :
BDAR Compliance Table

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BDAR Section	BAM Requirements	Operational Manual Requirements	Assessment of Compliance and Recommendations
Introduction	**Information**		
	Introduction to the biodiversity assessment including:		

	• identification of development/biodiversity stewardship site footprint, including:
	  ○ operational footprint
	  ○ construction footprint indicating clearing associated with temporary construction facilities and infrastructure
			Section 1.3.3

	• general description of development/biodiversity stewardship site		Section 1.3.4
	• sources of information used in the assessment, including reports and spatial data.		Section 1.4
	Maps and Data		
	• Site Map (as described in Section 4.2)		Figure 1
	• Location Map (as described in Section 4.2)		Figure 2
	• Digital shape files for all maps and spatial data		To be provided in BOAMs or via the client
Landscape Features	**Information**		
	Identification of landscape features at the development/biodiversity stewardship site, including:		

BDAR Section	BAM Requirements	Operational Manual Requirements	Assessment of Compliance and Recommendations
	• IBRA bioregions and subregions, NSW landscape region and area (ha)	Subject land area (ha) IBRA bioregions and subregions BioNet NSW Landscapes	Figure 1
	• native vegetation extent in the buffer area		Figure 1
	• cleared areas	Cleared areas	Figure 2
	• evidence to support differences between mapped vegetation extent and aerial imagery		Figure 2
	• rivers and streams classified according to stream order	Rivers, streams and estuaries	Figure 2
	• wetlands within, adjacent to and downstream of the site	Wetlands within, adjacent to and downstream of the site	Figure 2
	• connectivity features	Connectivity of areas of habitat including areas identified as priority investment areas, flyways for migratory species	Section 3.2.4
	• areas of geological significance and soil hazard features	Areas of geological significance and soil hazard features	Figure 1
		Areas of Outstanding Biodiversity Value	Section 3.2.6
	• site context components, including: ○ identification of method applied (i.e. linear or site-based) ○ percent native vegetation cover in the landscape (development site and biodiversity stewardship site).	Percent native vegetation cover including: • buffer area • justification to support differences between aerial imagery used for the assessment and final mapped native vegetation cover.	Section 3.3

BDAR Section	BAM Requirements	Operational Manual Requirements	Assessment of Compliance and Recommendations
	Maps and Data		
	IBRA bioregions and subregions (as described in Paragraphs 4.2.1.3–4.2.1.4)	IBRA bioregions and subregions	Figures 1 and 2
	NSW landscape regions (as described in Paragraph 4.2.1.5)	BioNet NSW landscapes	Figures 1 and 2
	Rivers and streams (as described in Paragraph 4.2.1.6)	Rivers, streams (using Strahler stream ordering) and estuaries	Figures 1 and 2
	Wetlands (as described in Paragraph 4.2.1.7)	Wetlands	Figures 1 and 2
	Connectivity of different areas of habitat (as described in Paragraphs 4.2.1.8–4.2.1.11)	Connectivity	Figure 2
	Areas of geological significance and soil hazard features (as described in Paragraphs 4.2.1.12–4.2.1.15)	Areas of geological significance and soil hazards	Figures 1 and 2
	Native vegetation extent (as described in Subsection 4.3.2)	Native vegetation cover	Figure 5
		Boundary of the subject land.	Figure 1
		Areas of Outstanding Biodiversity Value	Section 3.2.6
Native Vegetation	**Information**		
	Identify native vegetation extent within the development/biodiversity stewardship site, including cleared areas and evidence to support differences	Native vegetation cover on subject land and justification to support differences between mapped native vegetation cover and aerial imagery.	Section 3.3 and Figure 5

BDAR Section	BAM Requirements	Operational Manual Requirements	Assessment of Compliance and Recommendations
	between mapped vegetation extent and aerial imagery.		
	Describe PCTs within the development/biodiversity stewardship site, including:	PCTs within the subject land, including:	
	• vegetation class	• vegetation class	Section 4.2
	• vegetation type	• vegetation type (i.e. PCT names and ID numbers)	Section 4.2
	• area (ha) for each vegetation type	area (ha)	
	• species relied upon for identification of vegetation type and relative abundance	• species relied upon for identification of vegetation type and relative abundance	Table 5-7
	• justification of evidence used to identify a PCT (as outlined in Paragraph 5.2.1.12)	• evidence and justification of decision pathway used in identification of PCT (e.g. vegetation structure and landscape position/geomorphology).	Table 5-7
	• TEC status (as outlined in Paragraphs 5.2.1.14–5.2.1.15)	• TEC status	Section 4.2
	• estimate of percent cleared value of PCT(as outlined in Paragraph 5.2.1.16)	• estimate of percent cleared value of the PCT (available in the BioNet Vegetation Classification)	Section 4.2
	Perform a vegetation integrity assessment of the development/biodiversity stewardship site, including:	Vegetation integrity assessment of the subject land, including:	Section 4.5

BDAR Section	BAM Requirements	Operational Manual Requirements	Assessment of Compliance and Recommendations
	• mapping vegetation zones (Subsection 5.3.1)	• description of vegetation zones within the subject land with justification for assigning vegetation zones to PCTs • area (ha) of each vegetation zone	Table 9 and Figure 8
	• patch size (development site and biodiversity stewardship site)	• patch size for each vegetation zone	Section 4.5 and Table 9
	• assessing vegetation integrity using benchmark data (Subsection 5.3.3)		
	• survey effort as described in Subsection 5.3.4 (number of plots)	• survey effort	Table 2
	• determining the vegetation integrity score (Appendix 6): ○ composition condition score ○ structure condition score ○ function condition score ○ vegetation integrity score.	• composition, structure, function and vegetation integrity condition scores.	Section 4.5
		Where use of local data is proposed, identify: • source of information for local benchmark data • justification of use of local data in preference to database values.	
	Maps and Data		

BDAR Section	BAM Requirements	Operational Manual Requirements	Assessment of Compliance and Recommendations
	Map of native vegetation extent within the development/biodiversity stewardship site (as described in Section 5.1)	Native vegetation extent within the subject land.	Figure 5
	Map of PCTs within the development/biodiversity stewardship site (as described in Section 5.2)	Distribution of PCTs within the subject land.	Figure 6
	Map of plot locations relative to PCTs	Plot locations relative to PCTs including GPS coordinates (GDS zone, eastings, northings and bearings)	Figure 4
	Map of TECs	TECs on the subject land	Figure 7
	Plot field data (MS Excel format)		
	Plot field data sheets	Plot field data and sheets	Appendix C
		Vegetation zones	
	Patch size of intact native vegetation (as described in Subsection 5.3.2)	Patch size of intact native vegetation	Figure 5
	Table of current vegetation integrity scores for each vegetation zone within the development/biodiversity stewardship site.	Table of vegetation integrity scores for each vegetation zone within the subject land	Table 9
Threatened Species	**Information**		
	Identify ecosystem credit species associated with PCTs on both the development site and biodiversity stewardship site as outlined in Section 6.2, including:		

BDAR Section	BAM Requirements	Operational Manual Requirements	Assessment of Compliance and Recommendations
	• list of species derived	List of predicted ecosystem credit species associated with PCTs on the subject land	Table 11
	• justification for exclusion of any ecosystem credit species predicted above.	Justification for exclusion of any ecosystem credit species predicted above	Table 11
	Identify species credit species on both the development site and the biodiversity stewardship site as outlined in Sections 6.3 to 6.5, including:	Identify species credit species on the subject land, including:	
	• list of candidate species	• list of candidate species assessed	Section 5.3 and Table 12
	• justification for inclusions and exclusions based on habitat features	• justification for inclusions and exclusions of any species credit species predicted above based on habitat features, or vagrancy	Section 5.3
	• indication of presence based on targeted survey or expert report	• indication of presence based on targeted survey or expert report (see below)	NA
	• details of targeted survey technique, effort, timing and weather	• details of targeted survey including technique, effort, timing and weather	NA
	• species polygons	• species polygons	NA
	• biodiversity risk weighting for the species	• biodiversity risk weighting for the species	NA
		• area of suitable habitat or number of individuals counted	NA
	• threatened species survey		NA
	• additional requirements for wind farm developments.		NA

BDAR Section	BAM Requirements	Operational Manual Requirements	Assessment of Compliance and Recommendations
	Where use of local data is proposed:	Where use of local data is proposed:	NA
	• identify relevant species	• identify relevant species or population	NA
	• identify aspect of species data		NA
	• identify source of information for local data	• identify source of information for local data	NA
	• justify use of local data in preference to database values.	• justify use of local data in preference to database values.	NA
	Where expert reports are used in place of targeted survey:	Where expert reports are used in place of targeted survey:	
	• identify the relevant species	• identify the relevant species or population	NA
	• justify the use of an expert report	• justify the use of an expert report	NA
	• indicate and justify the likelihood of presence of the species and information considered in making this assessment	• flag the likely presence of the species or population and the evidence to support this assessment including all information considered	NA
	• estimate the number of individuals or area of habitat (whichever unit of measurement applies to the species/individual) for the development site or biodiversity stewardship site, including a description of how the estimate was made	• estimate the number of individuals or area of suitable habitat, including a description of how the estimates were made (e.g. reference populations, past reports)	NA
	• identify the expert and provide evidence of their expert credentials.	• identify the expert and provide evidence of their expert credentials.	NA

BDAR Section	BAM Requirements	Operational Manual Requirements	Assessment of Compliance and Recommendations
		Identify potential prescribed biodiversity impacts on threatened species.	NA
	Maps and Data		
	Table of habitats or habitat components and their sensitivity classes	Table of habitats or habitat components and their sensitivity classes.	NA
	Table detailing the list of species credit species and presence status on site as determined by targeted survey, indicating also where presence was assumed and/or where presence was determined by expert report	Table detailing the list of species credit species; presence on subject land as determined by targeted survey, indicating where presence is assumed or by expert report.	NA
		Mapped targeted survey locations including GPS coordinates of survey sites.	NA
	Species credit species polygons (as described in Paragraph 6.4.1.33)	Species credit species polygons including GPS locations of any individuals counted.	NA
	Table detailing species and habitat feature/component associated with species and its abundance on site (as described in Paragraph 6.4.1.34)	Table detailing species habitat features associated with the species and its location (GPS coordinates) and abundance on the subject land.	NA
	Table detailing biodiversity risk weighting for species on site (as described in Section 6.6)	Table detailing biodiversity risk weighting for species credit species on the subject land.	NA
		Map location of prescribed biodiversity impacts on the subject land	NA
	For wind farm developments: maps of habitual flight paths for nomadic and migratory species likely to fly	For wind farm developments, maps of habitual flight paths for nomadic and	NA

BDAR Section	BAM Requirements	Operational Manual Requirements	Assessment of Compliance and Recommendations
	over the site and maps of likely habitat for threatened aerial species resident on the site	migratory species likely to fly over the site and maps of likely habitat for threatened aerial species and raptor species resident on site.	
Avoid and Minimise Impacts	**Information**		
	Demonstration of efforts to avoid and minimise impact on biodiversity values in accordance with Chapter 8.	Demonstration of efforts to avoid or minimise impacts on native vegetation, threatened species habitat and prescribed impacts during project planning including: 1. locating the project – • options considered (including maps and why they were not feasible/suitable) • analyses associated with alternative options (e.g. routes, locations, sites within the property, constraints) • justification for selecting proposed location 2. designing the project – • temporary and permanent ancillary construction and maintenance facilities required for the proposal • options for avoiding these features (e.g. alternative locations, engineering	Section 7.1

BDAR Section	BAM Requirements	Operational Manual Requirements	Assessment of Compliance and Recommendations
		solutions, modes of technology, constraints) • justification for selecting proposed location • measures taken to minimise impacts • long-term management of areas avoided.	
	Assessment of direct and indirect impacts unable to be avoided at the development site in accordance with Sections 9.1 and 9.2. The assessment would include but not be limited to: type, frequency, intensity, duration and consequence of impact.	Determination of the impacts on native vegetation and threatened species habitat including: • describing impacts of clearing • describing the nature, extent, frequency, duration and timing of indirect and prescribed impacts including during construction and operation phases, on adjacent vegetation	Section 7.1
		• calculating the change in VI score and habitat suitability	Section 8.1.2
		• describing impacts that are uncertain and their management/mitigation	Section 8.6
		• evaluating consequences of indirect and prescribed impacts	Table 17
		• documenting limitations to data, assumptions and predictions.	NA

BDAR Section	BAM Requirements	Operational Manual Requirements	Assessment of Compliance and Recommendations
	For major projects: details of the adaptive management strategy proposed to monitor and respond to impacts on biodiversity values that are uncertain (Section 9.4).		NA
	Maps and Data		
	Table of measures to be implemented before, during and after construction to avoid and minimise the impacts of the project, including action, outcome, timing and responsibility	Table of biodiversity mitigation measures to be implemented before, during and after construction to avoid and minimise the impacts of the project, including action, outcome, timing and responsibility. Unique identifiers (e.g. BIO01) should be included for tracking through management plans and compliance auditing.	Table 18
		Map of alternative locations or sites within the development site that were considered when locating and designing the project including constraints to the final selection.	NA
	Map of final project footprint, including construction and operation	Map of the final development footprint, including demarcation of any prescribed impacts and measures to minimise impacts.	Figure 3
		Showing the areas of biodiversity value on the site map of where impact has been avoided will assist in demonstrating the reasonable measures that the proponent has taken to avoid and minimise impacts.	Figure 2

BDAR Section	BAM Requirements	Operational Manual Requirements	Assessment of Compliance and Recommendations
	Maps demonstrating indirect impact zones where applicable	Map of sites within the subject land likely to be impacted by direct, indirect and prescribed impacts where applicable.	Figure 9
Impact Summary	**Information**		
		Identification of impacts:	
	Identification and an assessment of the impacts which are potential serious and irreversible impacts, in accordance with Subsections 10.2.2 for impacts on CEECs and 10.2.3 for threatened species.	• on entities at risk of a serious and irreversible impact (SAII), including addressing the assessment criteria in Subsection 10.2.2 (TECs) and 10.2.3 (species) of the BAM All relevant information required by the consent authority to determine whether the proposed impact is serious and irreversible including: • clear documentation of the sources of information • where confidence in the information provided is low or of questionable reliability • how proposed additional measures will contribute to the recovery of the entity • where information is not available, for example where impact thresholds for the entity have not been provided.	Section 9.2

BDAR Section	BAM Requirements	Operational Manual Requirements	Assessment of Compliance and Recommendations
	Identification of impacts requiring offset in accordance with Section 10.3.	• requiring offsets	Section 9.3
	Identification of impacts not requiring offset in accordance with Paragraph 10.3.2.2.	• not requiring offsets	Section 9.4
	Identification of areas not requiring assessment in accordance with Section 10.4.	• not requiring further assessment.	Section 9.5
	Maps and Data		
		Mapped locations:	
	Map showing the location of serious and irreversible impacts	• that support an entity at risk of a serious and irreversible impact (SAII)	Figure 10 and Figure 11
	Map of impacts requiring offset	• where offsets are required	Figure 12
	Map of impacts not requiring offset	• where offsets are not required, and	Figure 13
	Map of areas not requiring assessment	• where no further assessment is required.	Figure 13
		Maps illustrating the extent of a TEC or species distribution and any other data used to address the assessment criteria for an entity at risk of an SAII.	NA
Impact Summary	**Information**		
		The assessor is required to report on:	

BDAR Section	BAM Requirements	Operational Manual Requirements	Assessment of Compliance and Recommendations
	Ecosystem credits and species credits that measure the impact of the development on biodiversity values, including:		
	• future vegetation integrity score for each vegetation zone at the development site (Equations 17 and 18 in Appendix 6)		Section 9.3
	• change in vegetation integrity score (Subsection 9.1.3)		Section 9.3
		• the biodiversity risk weighting (BRW) for each ecosystem and species credit requirement generated	Table 22
	• number of required ecosystem credits for the impact of development on each vegetation zone at a development site (Subsection 11.2.3)	• the number of ecosystem credits for each PCT/TEC	Table 22
	• number of required species credits for each threatened species that is impacted on by development (Subsection 11.2.4).	• the number of species credits for each species credit species impacted by the proposal	Table 22
	Maps and Data		
	Table of PCTs requiring offset and the number of ecosystem credits required		Table 22
	Table of threatened species requiring offset and the number of species credits required		Table 22
	Submitted proposal in the Credit Calculator	All digital data must be submitted using the Upload Files function in BOAMS:	To be submitted in BOAMs

BDAR Section	BAM Requirements	Operational Manual Requirements	Assessment of Compliance and Recommendations
		• digital shape files for all maps and spatial data • completion of all required data fields in BOAMS and the BAM-C. Finalised case in the BAM-C (can be returned to assessor for editing).	
Biodiversity Credit Report	**Information**		
	Credit classes for ecosystem credits and species credits at the development site.	• biodiversity credit report from the BAM-C, which defines the number and class of ecosystem and species credits from the proposed impact.	Table 23
	Maps and Data		
	Table of credit class and matching credit profile		Table 23

APPENDIX B :

Category 1 Exempt Land Assessment

B.1. Category 1 Exempt Land Analysis

The area of the project boundary lies within land where the *Local Land Services Act 2013* (LLS Act) applies. Under the BC Act land on the Native Vegetation Regulatory Map that meets the definition of Category 1 – Exempt Land does not require application of the BAM other than for prescribed impacts.

Section 6.8 (3) of the BC Act states *"the biodiversity assessment method is to exclude the assessment of the impacts of any clearing of native vegetation and loss of habitat on category 1-exempt land (within the meaning of Part 5A of the Local Land Services Act 2013), other than any impacts prescribed by the regulations under section 6.3."*

Category 1 – Exempt Land refers to areas listed as Category 1 on the native vegetation regulatory map, however the map of these areas has not yet been prepared and in the interim landholders are responsible for determining the categorisation of their land in accordance with the LLS Act.

Category 1-exempt land is defined in Part 5A, Division 2 of the LLS Act. Category 1-exempt land is broadly defined as:

- Land cleared of native vegetation as of 1 January 1990 or lawfully cleared after 1 January 1990 (but before 25 August 2017);
- Low conservation value grasslands;
- Land containing only low conservation value groundcover (not being grasslands);
- Native vegetation identified as regrowth in a Property Vegetation Plan under the repealed *Native Vegetation Act 2003*; and
- Land bio-certified under the BC Act.

Under the LLS Act, low conservation value grasslands means only groundcover whose clearing was permitted by section 20 of the *Native Vegetation Act 2003*, as in force immediately before the repeal of that Act. Generally, that section permitted clearing if the vegetation comprised less than 50% of indigenous species of vegetation.

The land within the subject land is not part of a Property Vegetation Plan nor is it bio-certified under the BC Act.

The Category 1 Land occurring within the subject land, as mapped on **Figure 5,** has been found to meet the required criteria of being both land cleared of native vegetation as of January 1 1990, and land comprising either low conservation value grasslands or land containing low conservation value groundcover. These are discussed below.

B.1.1. Legislative Background

To meet the requirements for consideration as Category 1 land, the subject land must have been cleared of native vegetation as of 1 January 1990 or lawfully cleared after 1 January 1990. Under the *Local Land Services* (LLS) *Amendment Act 2016*, the definition of native vegetation and clearing of native vegetation is:

60B Meaning of "native vegetation"

(1) For the purposes of this Part, native vegetation means any of the following types of plants native to New South Wales:

(a) trees (including any sapling or shrub or any scrub),

(b) understorey plants,

(c) groundcover (being any type of herbaceous vegetation),

(d) plants occurring in a wetland.

(2) A plant is native to New South Wales if it was established in New South Wales before European settlement. The regulations may authorise conclusive presumptions to be made of the species of plants native to New South Wales by adopting any relevant classification in an official database of plants that is publicly accessible.

(3) For the purposes of this Part, native vegetation extends to a plant that is dead or that is not native to New South Wales if:

(a) the plant is situated on land that is shown on the native vegetation regulatory map as category 2-vulnerable regulated land, and

(b) it would be native vegetation for the purposes of this Part if it were native to New South Wales.

(4) For the purposes of this Part, native vegetation does not extend to marine vegetation (being mangroves, seagrasses or any other species of plant that at any time in its life cycle must inhabit water other than fresh water). A declaration under section 14.7 of the Biodiversity Conservation Act 2016 that specified vegetation is or is not marine vegetation also has effect for the purposes of this Part.

60C Meaning of "clearing" native vegetation

For the purposes of this Part, clearing native vegetation means any one or more of the following:

(a) cutting down, felling, uprooting, thinning or otherwise removing native vegetation,

(b) killing, destroying, poisoning, ringbarking or burning native vegetation.

Section 60J of the LLS Amendment Act 2016 "Matters relating to determination of mapped category of land note that:

"Native vegetation that comprises grasslands or other non-woody vegetation is taken to have been cleared if the native vegetation was significantly disturbed or modified. The regulations may make provision for the purposes of determining whether native vegetation has been significantly disturbed or modified for the purposes of this Division."

Accordingly, Section 114 of the Local Land Services Regulation 2014 provides:

114 Determining whether native vegetation has been significantly disturbed or modified (s 60J (2))

(1) Native vegetation that comprises grasslands or other non-woody vegetation is taken to have been significantly disturbed or modified (and therefore cleared) only if:

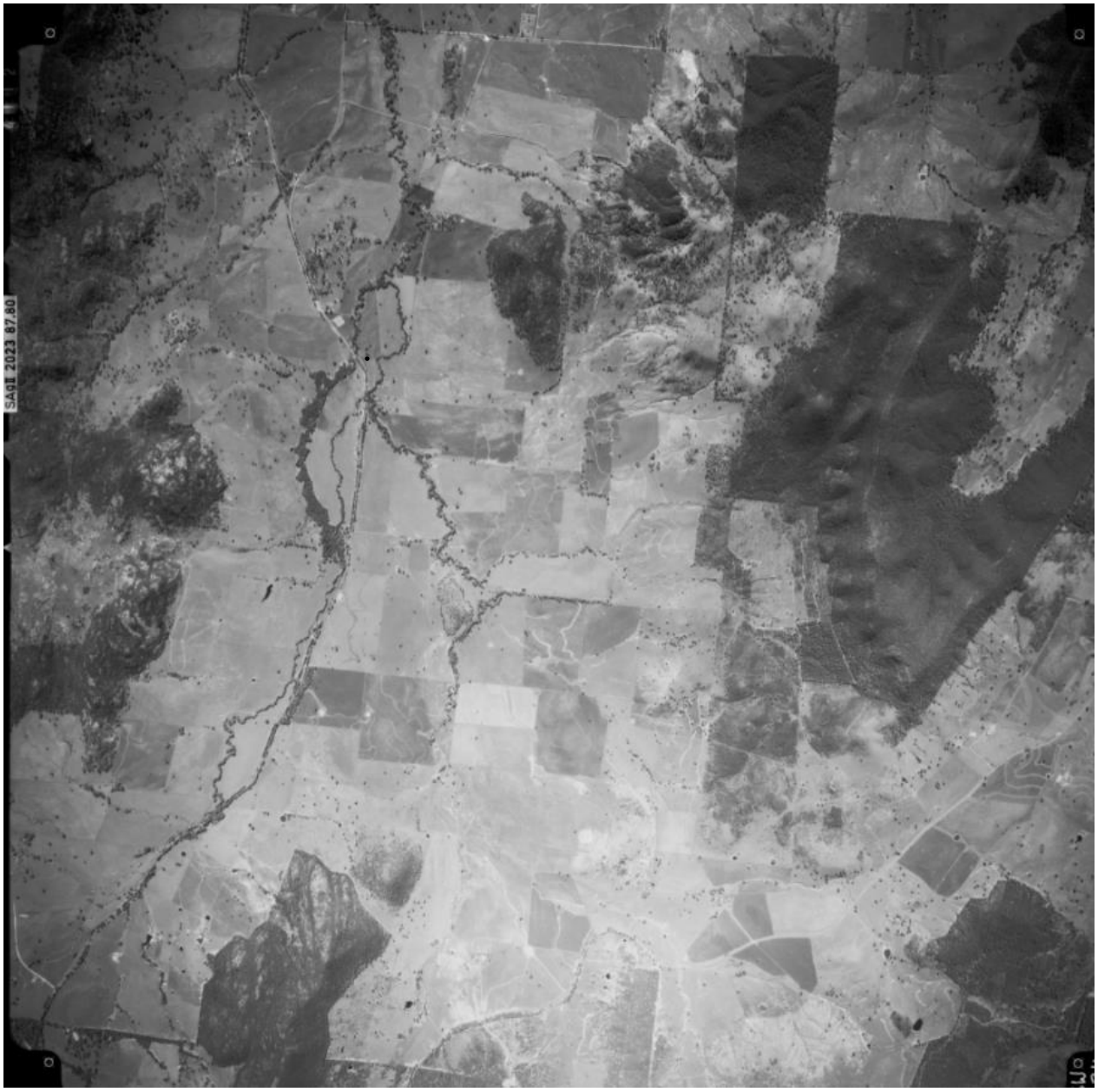
> *(a) there has been a detectable variation (from information obtained from aerial or satellite imagery) in the structure or composition, or both, of non-woody vegetation, and*
>
> *(b) that variation is consistent with management of pasture or crops for agricultural purposes, and*
>
> *(c) that variation has been sustained for at least 12 months on more than one occasion before the commencement of Part 5A of the Act, and*
>
> *(d) that variation has not been caused only by grazing on the land, and(e) that variation occurred (from information obtained from aerial or satellite imagery) between 1 January 1990 and the date of commencement of Part 5A of the Act.*

B.1.2. Historical Imagery of the Subject Land

In order to assess clearing of native vegetation prior to 1 January 1990, historical aerial imagery from the NSW Government's Historical Imagery portal was interrogated. **Photograph 7** that includes the subject land and study area from 1983, clearly shows the land has been cleared of native vegetation by this time and is divided up into farm paddocks. The subject land occurs approximately in the centre of **Photograph 7** and Wallah Wallah Creek can be seen surrounded by the current cleared paddocks.

Photograph 8 is from 1993 and shows that the paddock use continued to this time and the variation in the colouration of gridded paddocks indicates cropping, plowing or pasture growth activities. **Photograph 9** is from 1997 and shows the continued use of the land for agricultural purposes; confirming the land was, and currently is, consistently utilised for agricultural purposes including management for pasture and crops; and that this variation has been sustained for at least 12 months on more than one occasion before the commencement of Part 5A of the LLS Act. Details of these photographs from the Historical Imagery portal are provided below in **Table 24**.

Photograph 7 1983 historical imagery of the subject land



Photograph 8 1993 historical imagery of the subject land

Photograph 9 1997 historical imagery of the subject land

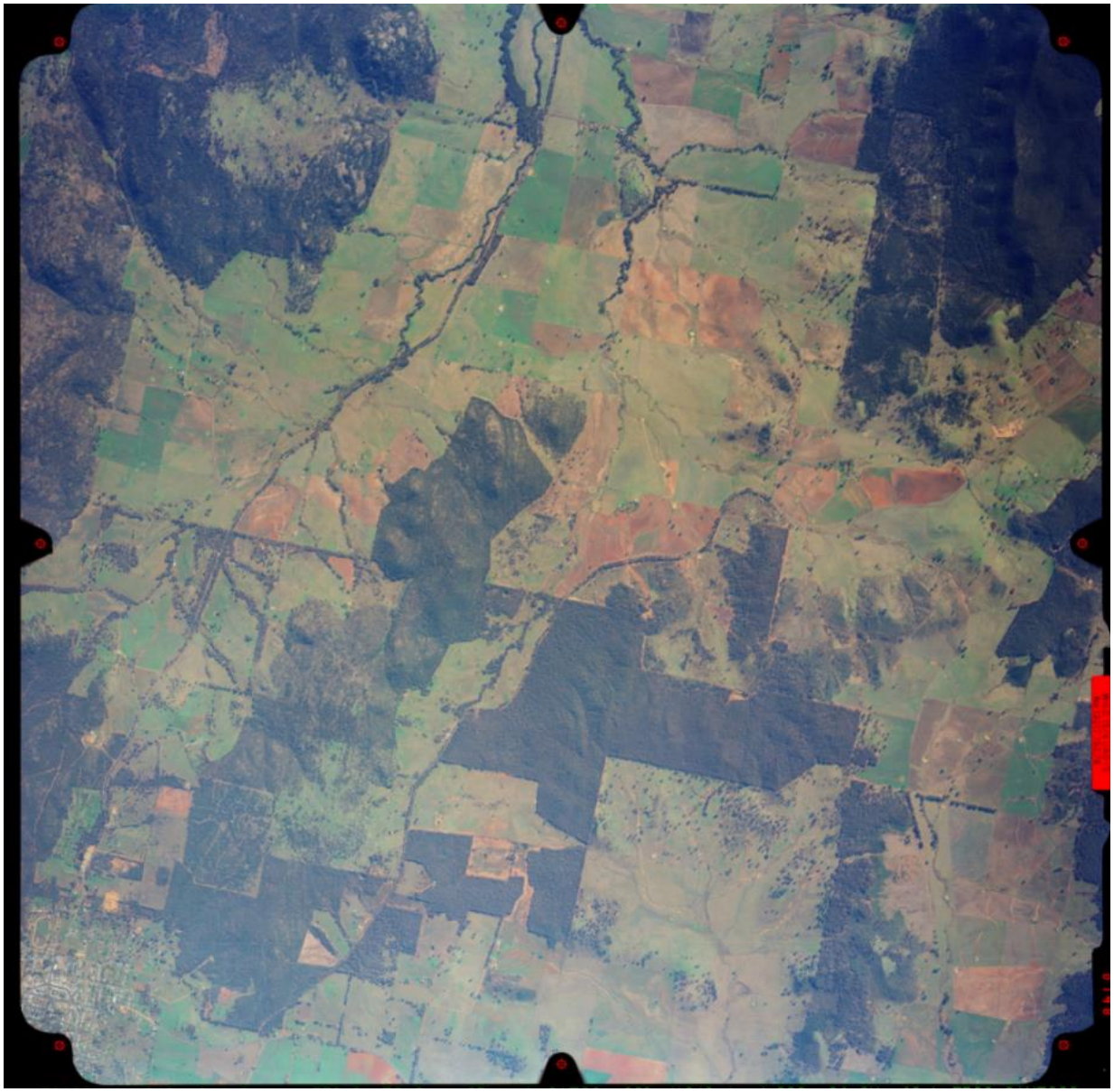


Table 24 Historical imagery photograph details

Item	Photograph 7 Details	Photograph 8 Details	Photograph 9 Details
Date	21/07/1983 0:00	5/09/1993 0:00	6/07/1997 0:00
Sheet Number	8530	8530	8530
Sheet Name	GRENFELL	GRENFELL	GRENFELL
Film	3324	4157	4362
Run	R4	R4	R5
Frame	121	181	148

Key_Diagram	85301983	85301993	85301997
Scale	1:50000	1:50000	1:50000
ahdz	4602	8382	8018
Camera	RC10	RC30	RC30
Film Scan	IRS		IRS
Year	1983	1993	1997
Image Name	3324_04_121	4157_04_181	4362_05_148

B.1.3. Low Conservation Groundcover

Low Conservation Groundcover occurs within the areas of the subject land identified in **Figure 5** as "Exotic Vegetation". Assessment of these areas was undertaken in accordance with the "*Interim Grasslands and other Groundcover Assessment Method 2017*", as per the methodology described in ***Section 2.3.2***. Two distinct zones of exotic vegetation occur within the subject land, being areas of crop land sown with wheat (harvested) and areas of pastureland. These are shown in **Photographs 9** and **Photograph 10**, respectively.

Photograph 10 Crop land within the subject land

Photograph 11 Pastureland within the subject land

The Interim Grasslands and other Groundcover Assessment Method Calculator (IGGAM Calculator) was used to assess the vegetation integrity and conservation value of each of these vegetation zones, with the results presented in **Table 25**. Scores for the exotic perennial/native cover used an average of the values taken across all seven transects completed for Category 1 land area.

Condition	Exotic Perennial/Native Cover	Composition Score	Structure Score	Current VI Score	Conservation Value
Crop land	0.9	4.5	0	0.1	Low
Pasture land	0.9	9.8	1.3	3.5	Low

It is noted that the Interim Grassland and other Groundcover Assessment Method, including any surveys, cannot be used to classify vegetation as of low or moderate conservation value if:

• the vegetation has been disrupted within six months prior to the assessment (e.g. by fire, heavy grazing, drought, etc) such that the typical assemblage of species is absent;

• total groundcover vegetation is less than 10 per cent cover across a vegetation zone. This is insufficient representation to determine dominance by native or exotic vegetation, or

• If the vegetation is a wetland community.

Some areas of the pastureland are grazed by sheep, however, there has been significant rainfall in the months preceding the surveys and the regular assemblage of species was easily identifiable. Additionally, the vegetation in the wheat field is regularly sown and slashed, though this pattern of disturbance is the same that has occurred in the preceding decades. At the time of survey, the wheat had been slashed and left dormant for some time, noted by the regrowth of other exotic species throughout the field. It was evident that native grasslands were not regenerating throughout either the cropped land or the pastureland and conditions in the year leading up to the surveys were optimal for plant growth.

B.1.4. Conclusion

The area of the project boundary lies within land where the *Local Land Services Act 2013* (LLS Act) applies. Under the BC Act, land on the Native Vegetation Regulatory Map that is listed as Category 1 – Exempt Land does not require application of the BAM other than for prescribed impacts.

Category 1-exempt land is defined in Part 5A, Division 2 of the LLS Act. Category 1-exempt land is broadly defined as including:

- Land cleared of native vegetation as of 1 January 1990 or lawfully cleared after 1 January 1990 (but before 25 August 2017);
- Low conservation value grasslands;
- Land containing only low conservation value groundcover (not being grasslands);
- Native vegetation identified as regrowth in a Property Vegetation Plan under the repealed *Native Vegetation Act 2003*;
- Land bio-certified under the BC Act

The land within the subject land is not part of a Property Vegetation Plan nor is it bio-certified under the BC Act.

Interrogation of historical aerial imagery shows the site was cleared of native vegetation prior to 1983 and that historical aerial imagery from the year 1993 and 1997 show continued variation through cropping, plowing and pasture management agricultural activities. Additionally, survey of the areas within the subject land in line with Interim Grasslands and other Groundcover Assessment Method concluded the areas of crop land and pastureland meet the definition of low conservation value groundcovers. Based on these two factors, it is considered the areas identified as 'Exotic Vegetation' in **Figure 5** meet the criteria for Category 1 – Exempt Land and do not require assessment for the BAM other than for prescribed impacts.

APPENDIX C :
BAM Plot Data

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plot	pct	area	patch size	conditionclass	compTree	compShrub	compGrass	compForbs	compFerns	compOther	strucTree	strucShrub	strucGrass	strucForbs	strucFerns	strucOther	funLargeTrees	funHollowtrees	funLitterCover	funLenFallenLogs	funTreeStem5to9	funTreeStem10to19	funTreeStem20to29	funTreeStem30to49	funTreeStem50to79	funTreeRegen	funHighThreatExotic
1	**267**	**1.08**	**101**	**DNG**	**0**	**0**	**9**	**5**	**0**	**0**	**0**	**0**	**51.4**	**0.8**	**0**	**0**	**0**	**0**	**2.6**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
2	N/A	0.04	-	Planted native	8	0	2	1	0	0	60	0	0.3	0.1	0	0	0	0	88.2	0	1	1	1	1	0	1	0
3	N/A	45.52	-	Cropland	0	0	0	2	0	0	0	0	0	0.2	0	0	0	0	99.2	0	0	0	0	0	0	0	0
4	**201**	**0.21**	**101**	**Good**	**4**	**1**	**15**	**11**	**0**	**2**	**55**	**0.2**	**43.2**	**2.2**	**0**	**0.2**	**0**	**1**	**60.8**	**11**	**0**	**1**	**1**	**1**	**0**	**0**	**0**
5	**276**	**0.01**	**101**	**Good**	**2**	**1**	**9**	**7**	**0**	**1**	**50**	**0.2**	**16.4**	**1.2**	**0**	**0.2**	**1**	**1**	**60**	**4.5**	**1**	**1**	**1**	**1**	**1**	**1**	**0**
6	N/A	45.52	-	Pasture land	0	0	2	2	0	0	0	0	0.3	2.1	0	0	0	0	58	0	0	0	0	0	0	0	0
7	**267**	**1.08**	**101**	**DNG**	**0**	**0**	**8**	**2**	**0**	**0**	**0**	**0**	**30**	**0.2**	**0**	**0**	**0**	**0**	**4.6**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0.2**
8	**267**	**0.08**	**101**	**Good**	**2**	**0**	**3**	**3**	**0**	**1**	**22**	**0**	**0.4**	**0.5**	**0**	**0.2**	**7**	**7**	**33**	**53**	**0**	**0**	**0**	**0**	**1**	**0**	**0**
9	**267**	**1.08**	**101**	**DNG**	**1**	**0**	**12**	**3**	**0**	**1**	**0.2**	**0**	**48**	**0.4**	**0**	**0.2**	**0**	**0**	**48**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**4**

**__Bold__ rows indicate use in the BAM Calculator*

APPENDIX D :
BAMC Credit Report

BAM Credit Summary Report

Proposal Details

Assessment Id	Proposal Name	BAM data last updated *
00029006/BAAS17027/21/00029079	Grenfell Poultry Farm	10/06/2021
Assessor Name	Report Created	BAM Data version *
David Robertson	01/11/2021	45
Assessor Number	BAM Case Status	Date Finalised
BAAS17027	Finalised	01/11/2021
Assessment Revision	Assessment Type	BOS entry trigger
0	Part 4 Developments (Small Area)	BOS Threshold: Biodiversity Values Map

* Disclaimer: BAM data last updated may indicate either complete or partial update of the BAM calculator database. BAM calculator database may not be completely aligned with Bionet.

Ecosystem credits for plant communities types (PCT), ecological communities & threatened species habitat

Zone	Vegetation zone name	TEC name	Current Vegetation integrity score	Change in Vegetation integrity (loss / gain)	Area (ha)	BC Act Listing status	EPBC Act listing status	Species sensitivity to gain class (for BRW)	Biodiversity risk weighting	Potential SAII	Ecosystem credits

Fuzzy Box Woodland on alluvial brown loam soils mainly in the NSW South Western Slopes Bioregion											
1	201_Good	Fuzzy Box Woodland on alluvial Soils of the South Western Slopes, Darling Riverine Plains and Brigalow Belt South Bioregions	62.9	62.9	0.21	Endangered Ecological Community	Not Listed	High Sensitivity to Potential Gain	2.00	TRUE	7
										Subtotal	**7**

Yellow Box grassy tall woodland on alluvium or parna loams and clays on flats in NSW South Western Slopes Bioregion											
2	276_Good	White Box - Yellow Box - Blakely's Red Gum Grassy Woodland and Derived Native Grassland in the NSW North Coast, New England Tableland, Nandewar, Brigalow Belt South, Sydney Basin, South Eastern Highla	71.7	71.7	0.01	Critically Endangered Ecological Community	Critically Endangered	High Sensitivity to Potential Gain	2.50	TRUE	1
										Subtotal	**1**
										Total	**8**

Species credits for threatened species

Vegetation zone name	Habitat condition (Vegetation Integrity)	Change in habitat condition	Area (ha)/Count (no. individuals)	BC Act Listing status	EPBC Act listing status	Biodiversity risk weighting	Potential SAII	Species credits

BAM Credit Summary Report

Proposal Details

Assessment Id	Proposal Name	BAM data last updated *
00029006/BAAS17027/21/00029080	Grenfell Poultry Farm	10/06/2021
Assessor Name	Report Created	BAM Data version *
David Robertson	01/11/2021	45
Assessor Number	BAM Case Status	Date Finalised
BAAS17027	Finalised	01/11/2021
Assessment Revision	Assessment Type	BOS entry trigger
0	Part 4 Developments (Small Area)	BOS Threshold: Biodiversity Values Map

* Disclaimer: BAM data last updated may indicate either complete or partial update of the BAM calculator database. BAM calculator database may not be completely aligned with Bionet.

Ecosystem credits for plant communities types (PCT), ecological communities & threatened species habitat

Zone	Vegetation zone name	TEC name	Current Vegetation integrity score	Change in Vegetation integrity (loss / gain)	Area (ha)	BC Act Listing status	EPBC Act listing status	Species sensitivity to gain class (for BRW)	Biodiversity risk weighting	Potential SAII	Ecosystem credits

White Box - White Cypress Pine - Western Grey Box shrub/grass/forb woodland in the NSW South Western Slopes Bioregion											
1	267_Good	White Box - Yellow Box - Blakely's Red Gum Grassy Woodland and Derived Native Grassland in the NSW North Coast, New England Tableland, Nandewar, Brigalow Belt South, Sydney Basin, South Eastern Highla	41.7	41.7	0.08	Critically Endangered Ecological Community	Critically Endangered	High Sensitivity to Potential Gain	2.50	TRUE	2

2	267_DNG	White Box - Yellow Box - Blakely's Red Gum Grassy Woodland and Derived Native Grassland in the NSW North Coast, New England Tableland, Nandewar, Brigalow Belt South, Sydney Basin, South Eastern Highla	21.3	21.3	1.1	Critically Endangered Ecological Community	Critically Endangered	High Sensitivity to Potential Gain	2.50	TRUE	14
										Subtotal	**16**
										Total	**16**

Species credits for threatened species

Vegetation zone name	Habitat condition (Vegetation Integrity)	Change in habitat condition	Area (ha)/Count (no. individuals)	BC Act Listing status	EPBC Act listing status	Biodiversity risk weighting	Potential SAII	Species credits

BAM Biodiversity Credit Report (Like for like)

Proposal Details

Assessment Id
00029006/BAAS17027/21/00029079

Proposal Name
Grenfell Poultry Farm

BAM data last updated *
10/06/2021

Assessor Name
David Robertson

Assessor Number
BAAS17027

BAM Data version *
45

Proponent Names

Report Created
01/11/2021

BAM Case Status
Finalised

Assessment Revision
0

Assessment Type
Part 4 Developments (Small Area)

Date Finalised
01/11/2021

BOS entry trigger
BOS Threshold: Biodiversity Values Map

* Disclaimer: BAM data last updated may indicate either complete or partial update of the BAM calculator database. BAM calculator database may not be completely aligned with Bionet.

Potential Serious and Irreversible Impacts

Name of threatened ecological community	Listing status	Name of Plant Community Type/ID
Fuzzy Box Woodland on alluvial Soils of the South Western Slopes, Darling Riverine Plains and Brigalow Belt South Bioregions	Endangered Ecological Community	201-Fuzzy Box Woodland on alluvial brown loam soils mainly in the NSW South Western Slopes Bioregion

White Box - Yellow Box - Blakely's Red Gum Grassy Woodland and Derived Native Grassland in the NSW North Coast, New England Tableland, Nandewar, Brigalow Belt South, Sydney Basin, South Eastern Highla	Critically Endangered Ecological Community	276-Yellow Box grassy tall woodland on alluvium or parna loams and clays on flats in NSW South Western Slopes Bioregion

Species
Nil

Additional Information for Approval

PCTs With Customized Benchmarks

PCT
No Changes

Predicted Threatened Species Not On Site

Name
No Changes

Ecosystem Credit Summary (Number and class of biodiversity credits to be retired)

BAM Biodiversity Credit Report (Like for like)

Name of Plant Community Type/ID	Name of threatened ecological community	Area of impact	HBT Cr	No HBT Cr	Total credits to be retired
201-Fuzzy Box Woodland on alluvial brown loam soils mainly in the NSW South Western Slopes Bioregion	Fuzzy Box Woodland on alluvial Soils of the South Western Slopes, Darling Riverine Plains and Brigalow Belt South Bioregions	0.2	7	0	7
276-Yellow Box grassy tall woodland on alluvium or parna loams and clays on flats in NSW South Western Slopes Bioregion	White Box - Yellow Box - Blakely's Red Gum Grassy Woodland and Derived Native Grassland in the NSW North Coast, New England Tableland, Nandewar, Brigalow Belt South, Sydney Basin, South Eastern Highla	0.0	1	0	1

201-Fuzzy Box Woodland on alluvial brown loam soils mainly in the NSW South Western Slopes Bioregion

Like-for-like credit retirement options

Name of offset trading group	Trading group	Zone	HBT	Credits	IBRA region
Fuzzy Box Woodland on alluvial Soils of the South Western Slopes, Darling Riverine Plains and Brigalow Belt South Bioregions This includes PCT's: 201, 202, 1384	-	201_Good	Yes	7	Lower Slopes, Bogan-Macquarie, Inland Slopes, Lachlan Plains, Murray Fans, Murrumbidgee and Nymagee. or Any IBRA subregion that is within 100 kilometers of the outer edge of the impacted site.

BAM Biodiversity Credit Report (Like for like)

276-Yellow Box grassy tall woodland on alluvium or parna loams and clays on flats in NSW South Western Slopes Bioregion	Like-for-like credit retirement options					
	Name of offset trading group	Trading group	Zone	HBT	Credits	IBRA region
	White Box - Yellow Box - Blakely's Red Gum Grassy Woodland and Derived Native Grassland in the NSW North Coast, New England Tableland, Nandewar, Brigalow Belt South, Sydney Basin, South Eastern Highla This includes PCT's: 74, 75, 83, 250, 266, 267, 268, 270, 274, 275, 276, 277, 278, 279, 280, 281, 282, 283, 284, 286, 298, 302, 312, 341, 342, 347, 350, 352, 356, 367, 381, 382, 395, 401, 403, 421, 433, 434, 435, 436, 437, 451, 483, 484, 488, 492, 496, 508, 509, 510, 511, 528, 538, 544, 563, 567, 571, 589, 590, 597, 599, 618, 619, 622, 633, 654,	-	276_Good	Yes	1	Lower Slopes, Bogan-Macquarie, Inland Slopes, Lachlan Plains, Murray Fans, Murrumbidgee and Nymagee. or Any IBRA subregion that is within 100 kilometers of the outer edge of the impacted site.

	702, 703, 704, 705, 710, 711, 796, 797, 799, 840, 847, 851, 921, 1099, 1103, 1303, 1304, 1307, 1324, 1329, 1330, 1331, 1332, 1333, 1334, 1383, 1401, 1512, 1606, 1608, 1611, 1691, 1693, 1695, 1698					

Species Credit Summary

No Species Credit Data

Credit Retirement Options

Like-for-like credit retirement options

BAM Biodiversity Credit Report (Like for like)

Proposal Details

Assessment Id
00029006/BAAS17027/21/00029080

Proposal Name
Grenfell Poultry Farm

BAM data last updated *
10/06/2021

Assessor Name
David Robertson

Assessor Number
BAAS17027

BAM Data version *
45

Proponent Names

Report Created
01/11/2021

BAM Case Status
Finalised

Assessment Revision
0

Assessment Type
Part 4 Developments (Small Area)

Date Finalised
01/11/2021

BOS entry trigger
BOS Threshold: Biodiversity Values Map

* Disclaimer: BAM data last updated may indicate either complete or partial update of the BAM calculator database. BAM calculator database may not be completely aligned with Bionet.

Potential Serious and Irreversible Impacts

Name of threatened ecological community	Listing status	Name of Plant Community Type/ID
White Box - Yellow Box - Blakely's Red Gum Grassy Woodland and Derived Native Grassland in the NSW North Coast, New England Tableland, Nandewar, Brigalow Belt South, Sydney Basin, South Eastern Highla	Critically Endangered Ecological Community	267-White Box - White Cypress Pine - Western Grey Box shrub/grass/forb woodland in the NSW South Western Slopes Bioregion
Species		

BAM Biodiversity Credit Report (Like for like)

Nil

Additional Information for Approval

PCTs With Customized Benchmarks

PCT
No Changes

Predicted Threatened Species Not On Site

Name
No Changes

Ecosystem Credit Summary (Number and class of biodiversity credits to be retired)

Name of Plant Community Type/ID	Name of threatened ecological community	Area of impact	HBT Cr	No HBT Cr	Total credits to be retired
267-White Box - White Cypress Pine - Western Grey Box shrub/grass/forb woodland in the NSW South Western Slopes Bioregion	White Box - Yellow Box - Blakely's Red Gum Grassy Woodland and Derived Native Grassland in the NSW North Coast, New England Tableland, Nandewar, Brigalow Belt South, Sydney Basin, South Eastern Highla	1.2	2	14	16

267-White Box - White Cypress Pine - Western Grey Box shrub/grass/forb woodland in the NSW South Western Slopes Bioregion

Like-for-like credit retirement options

Name of offset trading group	Trading group	Zone	HBT	Credits	IBRA region
White Box - Yellow Box -	-	267_Good	Yes	2	Lower Slopes, Bogan-Macquarie,

	Blakely's Red Gum Grassy Woodland and Derived Native Grassland in the NSW North Coast, New England Tableland, Nandewar, Brigalow Belt South, Sydney Basin, South Eastern Highla This includes PCT's: 74, 75, 83, 250, 266, 267, 268, 270, 274, 275, 276, 277, 278, 279, 280, 281, 282, 283, 284, 286, 298, 302, 312, 341, 342, 347, 350, 352, 356, 367, 381, 382, 395, 401, 403, 421, 433, 434, 435, 436, 437, 451, 483, 484, 488, 492, 496, 508, 509, 510, 511, 528, 538, 544, 563, 567, 571, 589, 590, 597, 599, 618, 619, 622, 633, 654, 702, 703, 704, 705, 710, 711, 796, 797, 799, 840, 847, 851, 921, 1099, 1103, 1303, 1304, 1307,					Inland Slopes, Lachlan Plains, Murray Fans, Murrumbidgee and Nymagee. or Any IBRA subregion that is within 100 kilometers of the outer edge of the impacted site.

	1324, 1329, 1330, 1331, 1332, 1333, 1334, 1383, 1401, 1512, 1606, 1608, 1611, 1691, 1693, 1695, 1698					
	White Box - Yellow Box - Blakely's Red Gum Grassy Woodland and Derived Native Grassland in the NSW North Coast, New England Tableland, Nandewar, Brigalow Belt South, Sydney Basin, South Eastern Highla This includes PCT's: 74, 75, 83, 250, 266, 267, 268, 270, 274, 275, 276, 277, 278, 279, 280, 281, 282, 283, 284, 286, 298, 302, 312, 341, 342, 347, 350, 352, 356, 367, 381, 382, 395, 401, 403, 421, 433, 434, 435, 436, 437, 451, 483, 484, 488, 492, 496, 508, 509, 510, 511, 528, 538, 544, 563, 567,	-	267_DNG	No	14	Lower Slopes, Bogan-Macquarie, Inland Slopes, Lachlan Plains, Murray Fans, Murrumbidgee and Nymagee. or Any IBRA subregion that is within 100 kilometers of the outer edge of the impacted site.

	571, 589, 590, 597, 599, 618, 619, 622, 633, 654, 702, 703, 704, 705, 710, 711, 796, 797, 799, 840, 847, 851, 921, 1099, 1103, 1303, 1304, 1307, 1324, 1329, 1330, 1331, 1332, 1333, 1334, 1383, 1401, 1512, 1606, 1608, 1611, 1691, 1693, 1695, 1698					

Species Credit Summary

No Species Credit Data

Credit Retirement Options

Like-for-like credit retirement options

BAM Biodiversity Credit Report (Variations)

Proposal Details

Assessment Id

00029006/BAAS17027/21/00029079

Proposal Name

Grenfell Poultry Farm

BAM data last updated *

10/06/2021

Assessor Name

David Robertson

Assessor Number

BAAS17027

BAM Data version *

45

Proponent Name(s)

Report Created

01/11/2021

BAM Case Status

Finalised

Assessment Revision

0

Assessment Type

Part 4 Developments (Small Area)

Date Finalised

01/11/2021

BOS entry trigger

BOS Threshold: Biodiversity Values Map

* Disclaimer: BAM data last updated may indicate either complete or partial update of the BAM calculator database. BAM calculator database may not be completely aligned with Bionet.

Potential Serious and Irreversible Impacts

Name of threatened ecological community	Listing status	Name of Plant Community Type/ID
Fuzzy Box Woodland on alluvial Soils of the South Western Slopes, Darling Riverine Plains and Brigalow Belt South Bioregions	Endangered Ecological Community	201-Fuzzy Box Woodland on alluvial brown loam soils mainly in the NSW South Western Slopes Bioregion
White Box - Yellow Box - Blakely's Red Gum Grassy Woodland and Derived Native Grassland in the NSW North Coast, New England Tableland, Nandewar, Brigalow Belt South, Sydney Basin, South Eastern Highla	Critically Endangered Ecological Community	276-Yellow Box grassy tall woodland on alluvium or parna loams and clays on flats in NSW South Western Slopes Bioregion

Species
Nil

BAM Biodiversity Credit Report (Variations)

Additional Information for Approval

PCTs With Customized Benchmarks

PCT
No Changes

Predicted Threatened Species Not On Site

Name
No Changes

Ecosystem Credit Summary (Number and class of biodiversity credits to be retired)

Name of Plant Community Type/ID	Name of threatened ecological community	Area of impact	HBT Cr	No HBT Cr	Total credits to be retired
201-Fuzzy Box Woodland on alluvial brown loam soils mainly in the NSW South Western Slopes Bioregion	Fuzzy Box Woodland on alluvial Soils of the South Western Slopes, Darling Riverine Plains and Brigalow Belt South Bioregions	0.2	7	0	7.00
276-Yellow Box grassy tall woodland on alluvium or parna loams and clays on flats in NSW South Western Slopes Bioregion	White Box - Yellow Box - Blakely's Red Gum Grassy Woodland and Derived Native Grassland in the NSW North Coast, New England Tableland, Nandewar, Brigalow Belt South, Sydney Basin, South Eastern Highla	0.0	1	0	1.00

201-Fuzzy Box Woodland on alluvial brown loam soils mainly in the NSW South Western Slopes Bioregion

Like-for-like credit retirement options

Class	Trading group	Zone	HBT	Credits	IBRA region

	Fuzzy Box Woodland on alluvial Soils of the South Western Slopes, Darling Riverine Plains and Brigalow Belt South Bioregions This includes PCT's: 201, 202, 1384	-	201_Good	Yes	7	Lower Slopes,Bogan-Macquarie, Inland Slopes, Lachlan Plains, Murray Fans, Murrumbidgee and Nymagee. or Any IBRA subregion that is within 100 kilometers of the outer edge of the impacted site.
	Variation options					
	Formation	Trading group	Zone	HBT	Credits	IBRA region
	Grassy Woodlands	Tier 1	201_Good	Yes (including artificial)	7	IBRA Region: NSW South Western Slopes, or Any IBRA subregion that is within 100 kilometers of the outer edge of the impacted site.
276-Yellow Box grassy tall woodland on alluvium or parna loams and clays on flats in NSW South Western Slopes Bioregion	**Like-for-like credit retirement options**					
	Class	Trading group	Zone	HBT	Credits	IBRA region

	White Box - Yellow Box - Blakely's Red Gum Grassy Woodland and Derived Native Grassland in the NSW North Coast, New England Tableland, Nandewar, Brigalow Belt South, Sydney Basin, South Eastern Highla This includes PCT's: 74, 75, 83, 250, 266, 267, 268, 270, 274, 275, 276, 277, 278, 279, 280, 281, 282, 283, 284, 286, 298, 302, 312, 341, 342, 347, 350, 352, 356, 367, 381, 382, 395, 401, 403, 421, 433, 434, 435, 436, 437, 451, 483, 484, 488, 492, 496, 508, 509, 510, 511, 528, 538, 544, 563, 567, 571, 589, 590, 597, 599, 618, 619, 622, 633, 654, 702, 703, 704, 705, 710, 711, 796, 797, 799, 840, 847, 851, 921, 1099, 1103, 1303, 1304, 1307, 1324, 1329, 1330, 1331, 1332, 1333, 1334, 1383, 1401, 1512, 1606, 1608, 1611, 1691, 1693, 1695, 1698	-	276_Good	Yes	1	Lower Slopes,Bogan-Macquarie, Inland Slopes, Lachlan Plains, Murray Fans, Murrumbidgee and Nymagee. or Any IBRA subregion that is within 100 kilometers of the outer edge of the impacted site.

BAM Biodiversity Credit Report (Variations)

Species Credit Summary

No Species Credit Data

Credit Retirement Options

Like-for-like options

BAM Biodiversity Credit Report (Variations)

Proposal Details

Assessment Id

00029006/BAAS17027/21/00029080

Proposal Name

Grenfell Poultry Farm

BAM data last updated *

10/06/2021

Assessor Name

David Robertson

Assessor Number

BAAS17027

BAM Data version *

45

Proponent Name(s)

Report Created

01/11/2021

BAM Case Status

Finalised

Assessment Revision

0

Assessment Type

Part 4 Developments (Small Area)

Date Finalised

01/11/2021

BOS entry trigger

BOS Threshold: Biodiversity Values Map

* Disclaimer: BAM data last updated may indicate either complete or partial update of the BAM calculator database. BAM calculator database may not be completely aligned with Bionet.

Potential Serious and Irreversible Impacts

Name of threatened ecological community	Listing status	Name of Plant Community Type/ID
White Box - Yellow Box - Blakely's Red Gum Grassy Woodland and Derived Native Grassland in the NSW North Coast, New England Tableland, Nandewar, Brigalow Belt South, Sydney Basin, South Eastern Highla	Critically Endangered Ecological Community	267-White Box - White Cypress Pine - Western Grey Box shrub/grass/forb woodland in the NSW South Western Slopes Bioregion

Species
Nil

Additional Information for Approval

PCTs With Customized Benchmarks

PCT
No Changes

Predicted Threatened Species Not On Site

Name
No Changes

Ecosystem Credit Summary (Number and class of biodiversity credits to be retired)

Name of Plant Community Type/ID	Name of threatened ecological community	Area of impact	HBT Cr	No HBT Cr	Total credits to be retired
267-White Box - White Cypress Pine - Western Grey Box shrub/grass/forb woodland in the NSW South Western Slopes Bioregion	White Box - Yellow Box - Blakely's Red Gum Grassy Woodland and Derived Native Grassland in the NSW North Coast, New England Tableland, Nandewar, Brigalow Belt South, Sydney Basin, South Eastern Highla	1.2	2	14	16.00

267-White Box - White Cypress Pine - Western Grey Box shrub/grass/forb woodland in the NSW South Western Slopes Bioregion

Like-for-like credit retirement options

Class	Trading group	Zone	HBT	Credits	IBRA region

	White Box - Yellow Box - Blakely's Red Gum Grassy Woodland and Derived Native Grassland in the NSW North Coast, New England Tableland, Nandewar, Brigalow Belt South, Sydney Basin, South Eastern Highla This includes PCT's: 74, 75, 83, 250, 266, 267, 268, 270, 274, 275, 276, 277, 278, 279, 280, 281, 282, 283, 284, 286, 298, 302, 312, 341, 342, 347, 350, 352, 356, 367, 381, 382, 395, 401, 403, 421, 433, 434, 435, 436, 437, 451, 483, 484, 488, 492, 496, 508, 509, 510, 511, 528, 538, 544, 563, 567, 571, 589, 590, 597, 599, 618, 619, 622, 633, 654, 702, 703, 704, 705, 710, 711, 796, 797, 799, 840, 847, 851, 921, 1099, 1103, 1303, 1304, 1307, 1324, 1329, 1330, 1331, 1332, 1333, 1334, 1383, 1401, 1512, 1606, 1608, 1611, 1691, 1693, 1695, 1698	-	267_Good	Yes	2	Lower Slopes,Bogan-Macquarie, Inland Slopes, Lachlan Plains, Murray Fans, Murrumbidgee and Nymagee. or Any IBRA subregion that is within 100 kilometers of the outer edge of the impacted site.

	White Box - Yellow Box - Blakely's Red Gum Grassy Woodland and Derived Native Grassland in the NSW North Coast, New England Tableland, Nandewar, Brigalow Belt South, Sydney Basin, South Eastern Highla This includes PCT's: 74, 75, 83, 250, 266, 267, 268, 270, 274, 275, 276, 277, 278, 279, 280, 281, 282, 283, 284, 286, 298, 302, 312, 341, 342, 347, 350, 352, 356, 367, 381, 382, 395, 401, 403, 421, 433, 434, 435, 436, 437, 451, 483, 484, 488, 492, 496, 508, 509, 510, 511, 528, 538, 544, 563, 567, 571, 589, 590, 597, 599, 618, 619, 622, 633, 654, 702, 703, 704, 705, 710, 711, 796, 797, 799, 840, 847, 851, 921, 1099, 1103, 1303, 1304, 1307, 1324, 1329, 1330, 1331, 1332, 1333, 1334, 1383, 1401, 1512, 1606, 1608, 1611, 1691, 1693, 1695, 1698	-	267_DNG	No	14	Lower Slopes,Bogan-Macquarie, Inland Slopes, Lachlan Plains, Murray Fans, Murrumbidgee and Nymagee. or Any IBRA subregion that is within 100 kilometers of the outer edge of the impacted site.

BAM Biodiversity Credit Report (Variations)

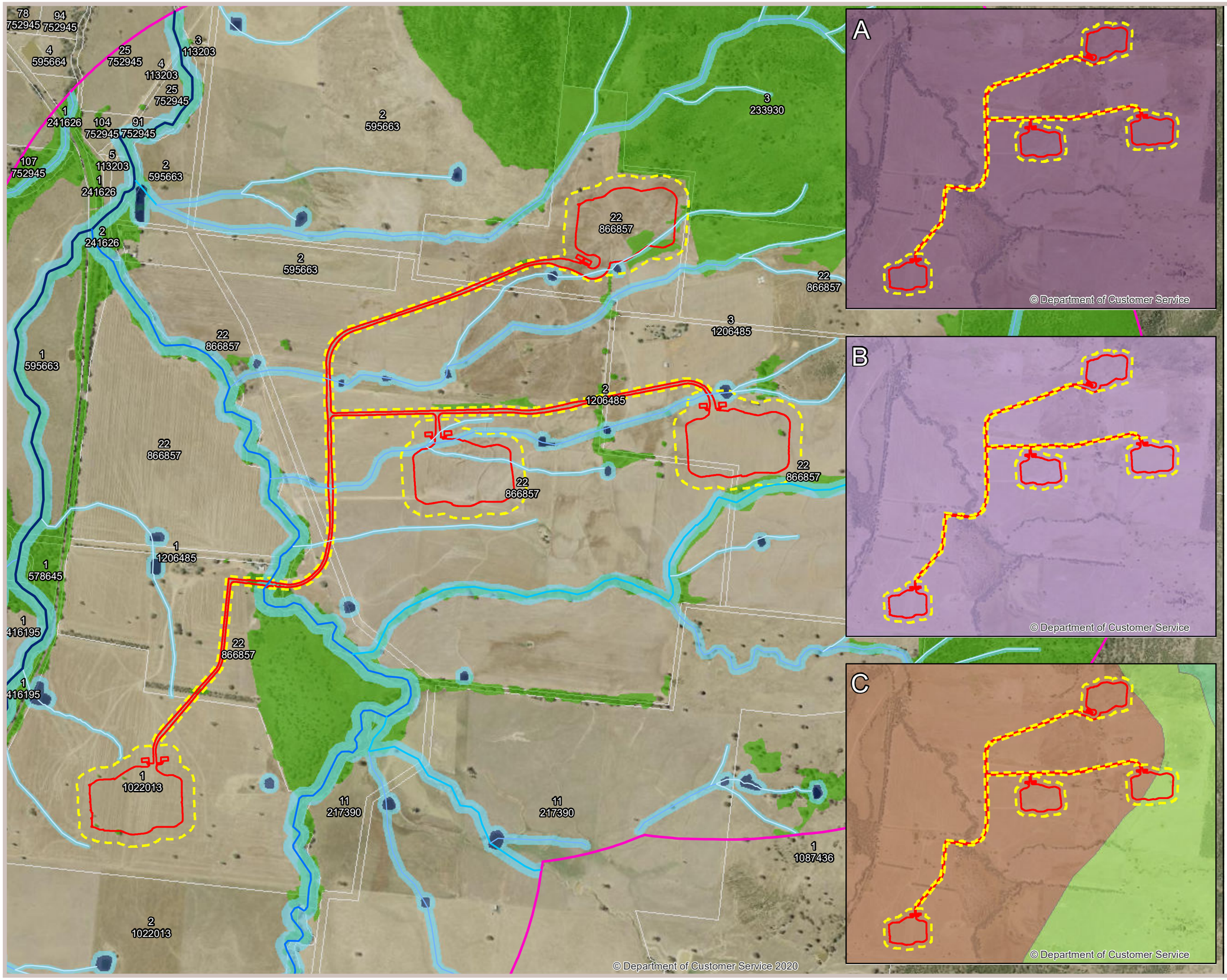
Species Credit Summary

No Species Credit Data

Credit Retirement Options

Like-for-like options

FIGURES



Legend

- Subject Land
- Study Area
- Assessment Area
- Cadastre
- Native Vegetation Cover
- Local Wetlands
- Riparian Corridor

Watercourses

- 1st Order Stream
- 2nd Order Stream
- 3rd Order Stream
- 4th Order Stream
- 5th Order Stream

IBRA Region (Inset A)

- NSW South Western Slopes

IBRA Subregion (Inset B)

- Lower Slopes

NSW (Mitchell) Landscapes (Inset C)

- Quandong Hills
- Warraderry Range
- Warrumba Range and Slopes

Data Source:
NSW Government Spatial Services
SIX Maps 'Clip and Ship'
Weddin LGA

DECCW (2008). Landscapes (Mitchell) of NSW - Version 3.

DSEWPaC (2012). Interim Biogeographic Regionalisation for Australia (IBRA) - Version 7.

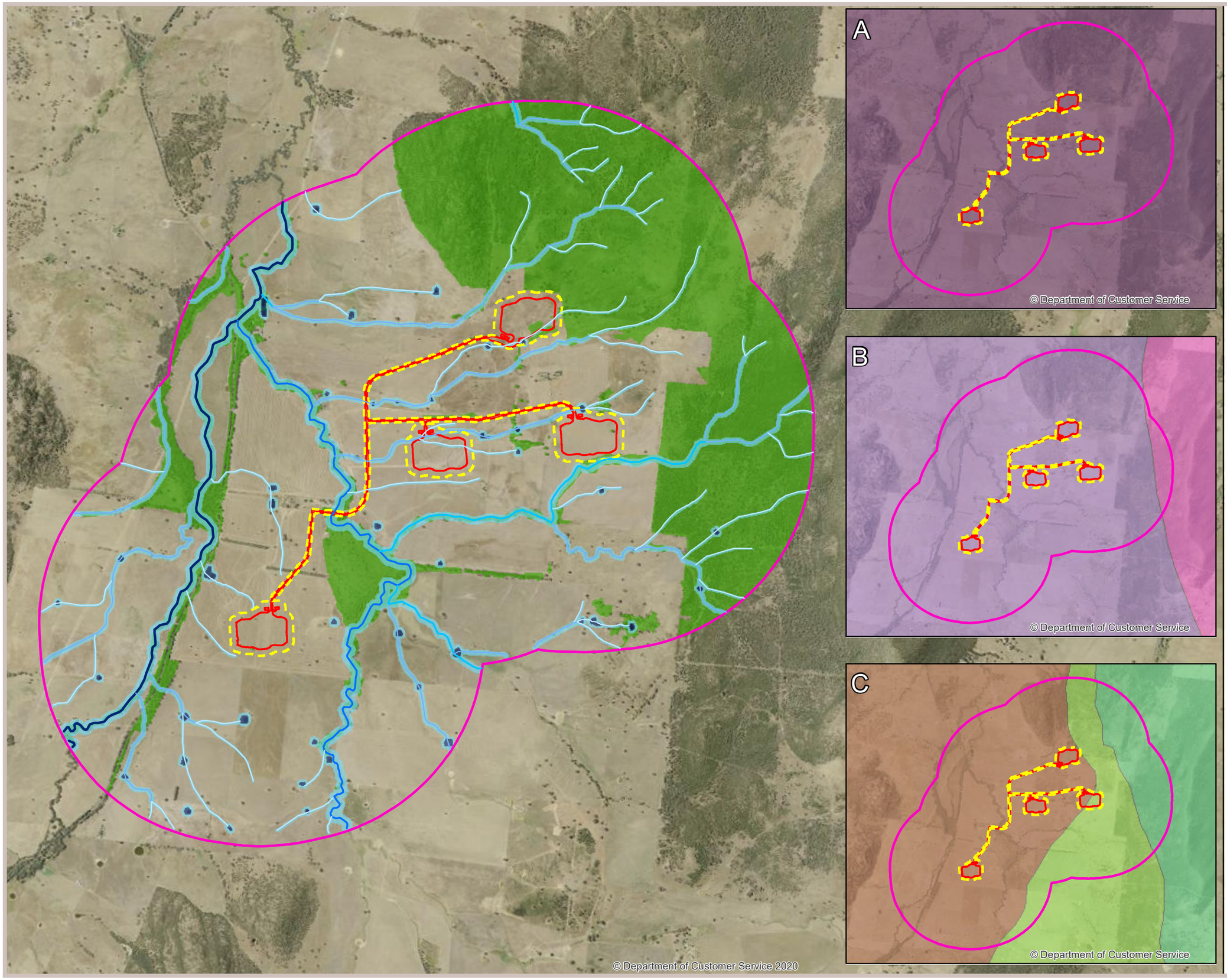
Coordinate System: MGA Zone 56 (GDA 94)

cumberland ecology

0 150 300 450 600 m

I:\...\20219\Figures\RP1\20210806\Figure 1. Site map

Figure 1. Site map



Legend

- Subject Land
- Study Area
- Assessment Area
- Native Vegetation Cover
- Local Wetlands
- Riparian Corridor

Watercourses

- 1st Order Stream
- 2nd Order Stream
- 3rd Order Stream
- 4th Order Stream
- 5th Order Stream

IBRA Region (Inset A)

- NSW South Western Slopes

IBRA Subregion (Inset B)

- Inland Slopes
- Lower Slopes

NSW (Mitchell) Landscapes (Inset C)

- Quandong Hills
- Warraderry Range
- Warrumba Range and Slopes

Data Source:
NSW Government Spatial Services
SIX Maps 'Clip and Ship'
Weddin LGA

DECCW (2008). Landscapes (Mitchell) of NSW - Version 3.

DSEWPaC (2012). Interim Biogeographic Regionalisation for Australia (IBRA) - Version 7.

Coordinate System: MGA Zone 56 (GDA 94)

cumberland ecology

0 250 500 750 1,000 m

I:\...\20219\Figures\RP1\20210806\Figure 2. Location map

Figure 2. Location map

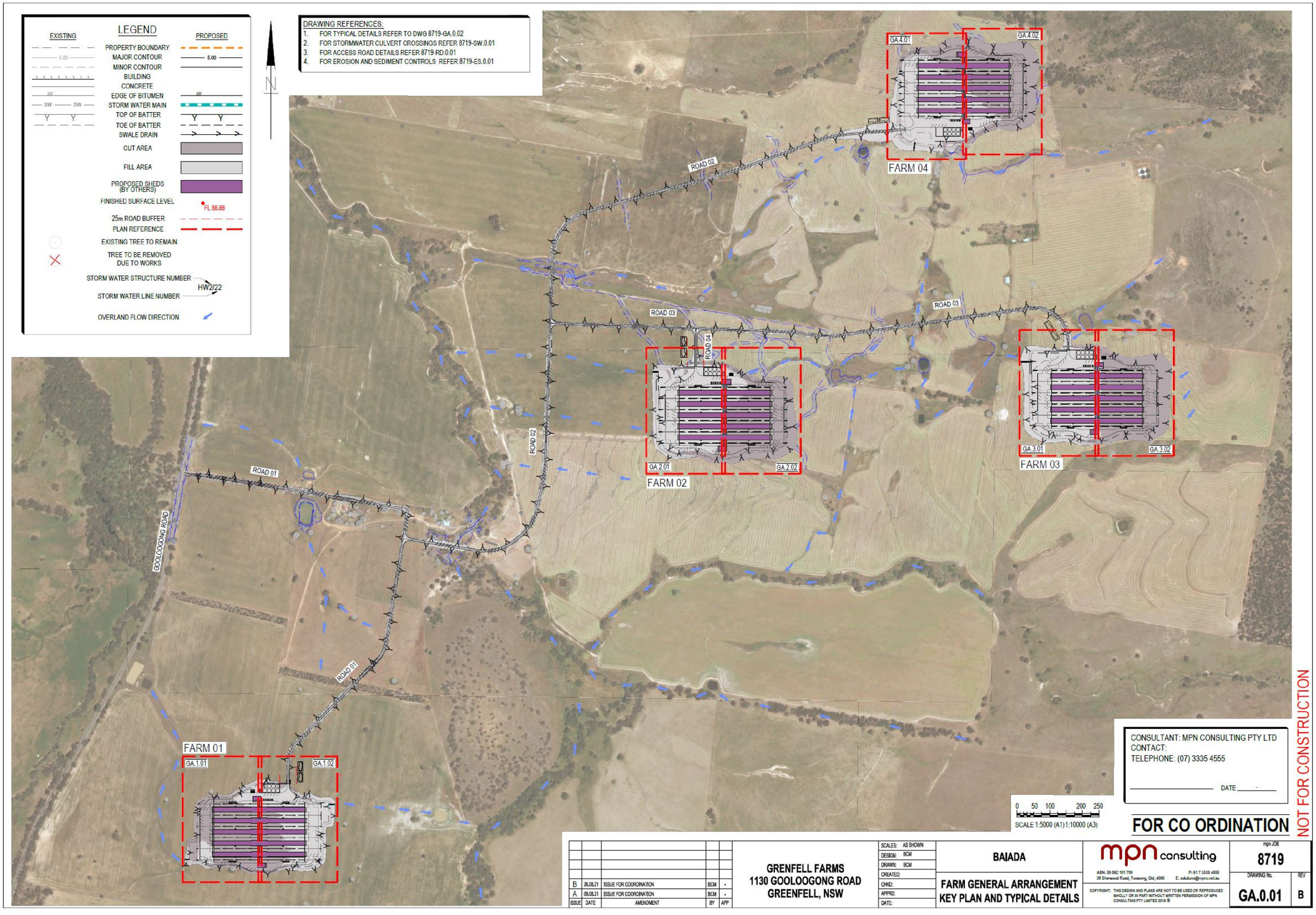
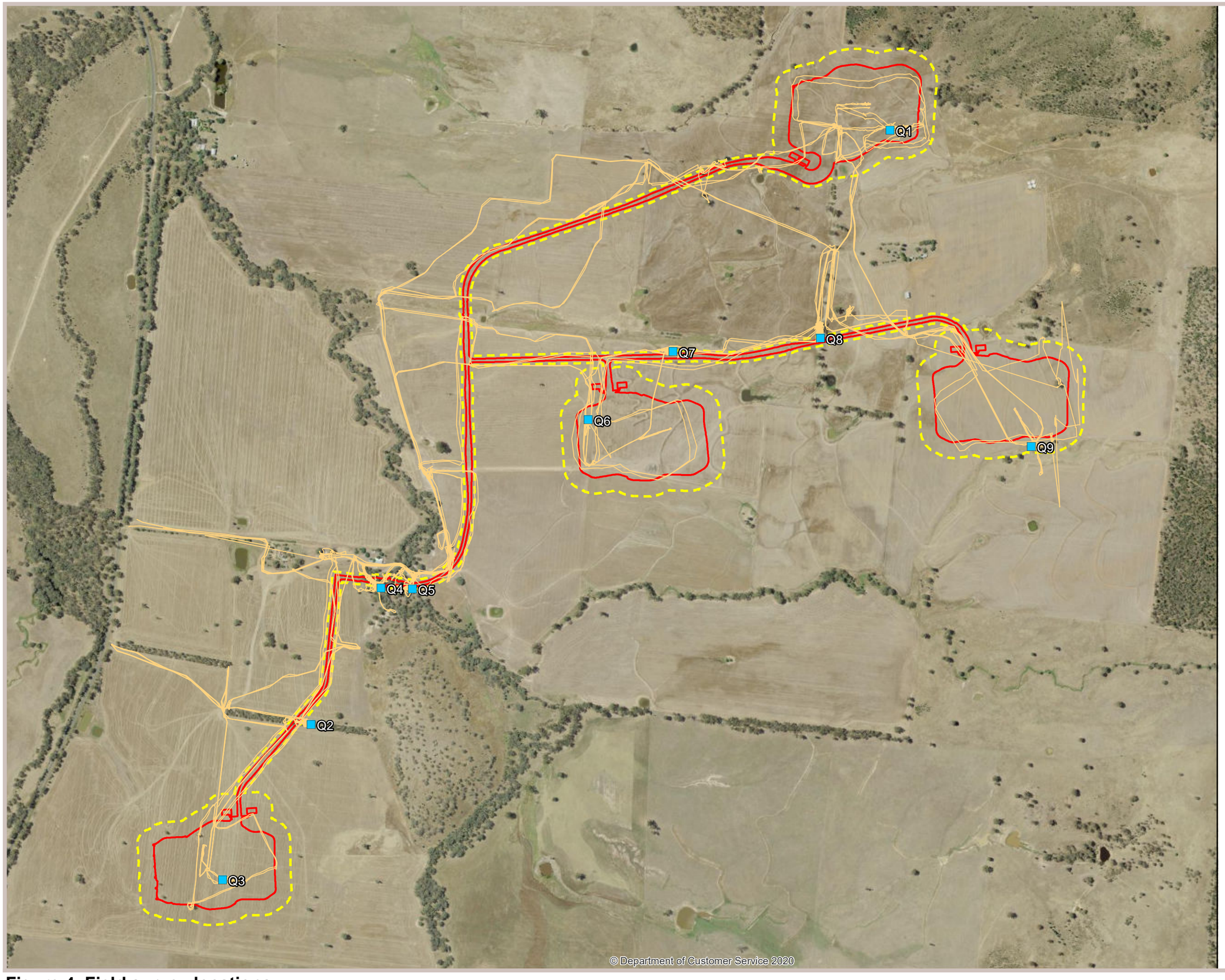


Figure 3. Layout of the project

Image Source: MPN Consulting 2021



Legend

- Subject Land
- Study Area
- Random Meander Survey
- BAM Plot Locations

Data Source:
NSW Government Spatial Services
SIX Maps 'Clip and Ship'
Weddin LGA

Coordinate System: MGA Zone 56 (GDA 94)

cumberland ecology

0 100 200 300 400 m

I:\...\20219\Figures\RP1\20210806\Figure 4. Field survey locations

Figure 4. Field survey locations

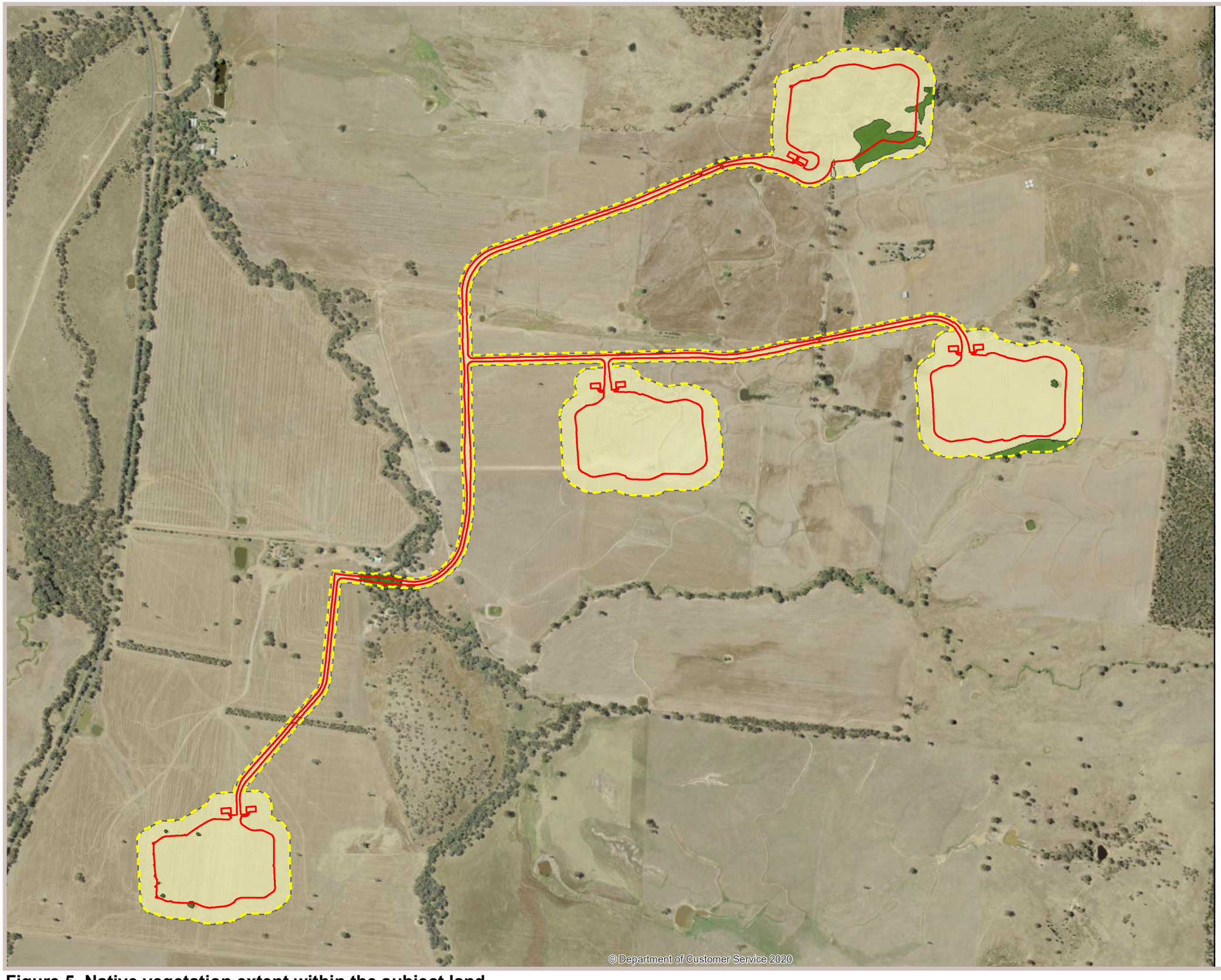
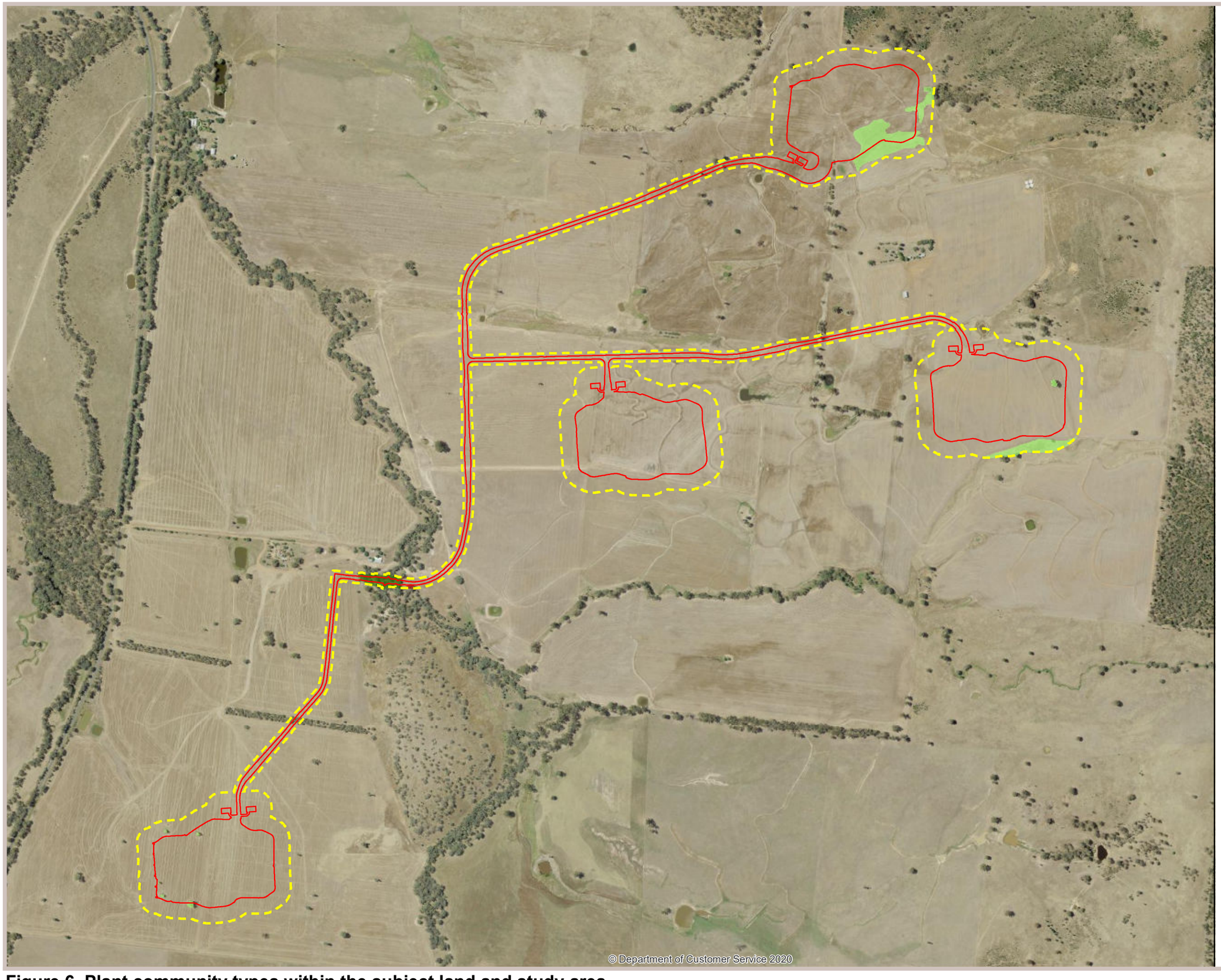


Figure 5. Native vegetation extent within the subject land



Legend

Subject Land

Study

Plant Community Type

PCT201: Fuzzy Box Woodland on alluvial brown loam soils mainly in the NSW South Western Slopes Bioregion

PCT267: White Box - White Cypress Pine - Western Grey Box shrub/grass/forb woodland in the NSW South Western Slopes Bioregion

PCT276: Yellow Box grassy tall woodland on alluvium or parna loams and clays on flats in NSW South Western Slopes Bioregion

Data Source:
NSW Government Spatial Services
SIX Maps 'Clip and Ship'
Weddin LGA

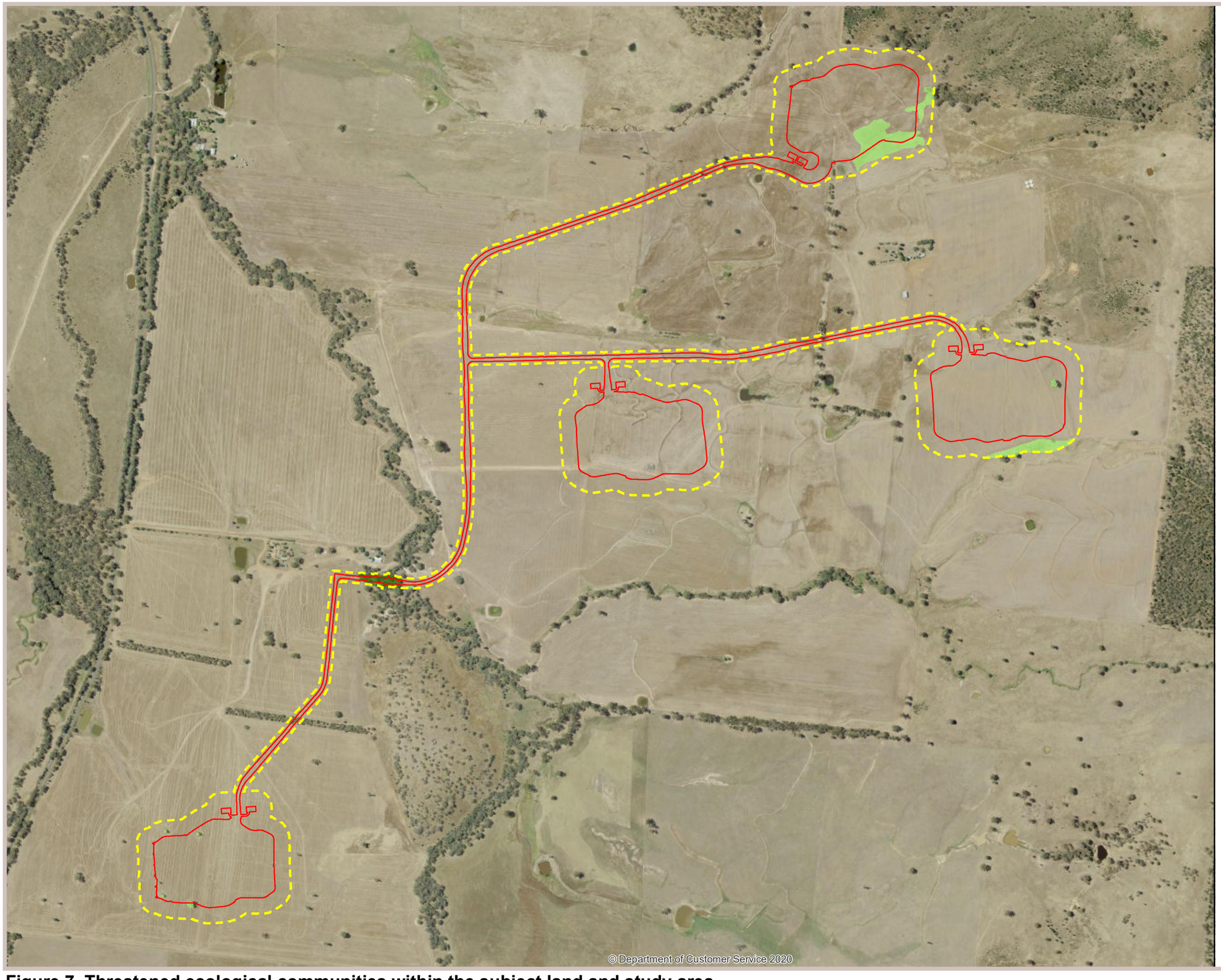
Coordinate System: MGA Zone 56 (GDA 94)

cumberland ecology

0 100 200 300 400 m

I:\...\20219\Figures\RP1\20210806\Figure 6. PCTs

Figure 6. Plant community types within the subject land and study area



Legend

Subject Land

Study Area

Threatened Ecological Community

Fuzzy Box Woodland on alluvial Soils of the South Western Slopes, Darling Riverine Plains and Brigalow Belt South Bioregions

White Box - Yellow Box - Blakely's Red Gum Grassy Woodland and Derived Native Grassland

Data Source:
NSW Government Spatial Services
SIX Maps 'Clip and Ship'
Weddin LGA

Coordinate System: MGA Zone 56 (GDA 94)

cumberland ecology

0 100 200 300 400 m

I:\...\20219\Figures\RP11\20210806\Figure 7. TECs

Figure 7. Threatened ecological communities within the subject land and study area

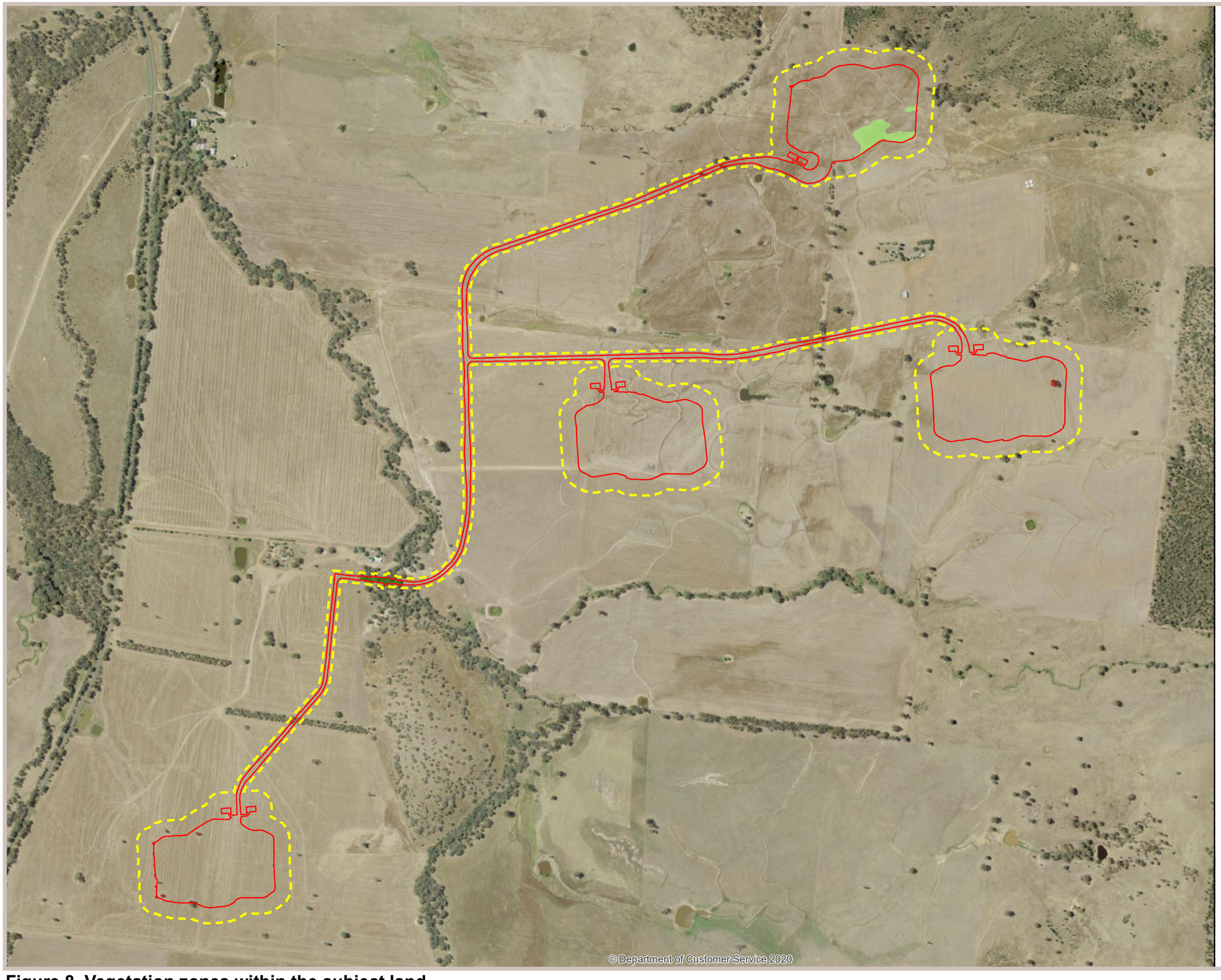


Figure 8. Vegetation zones within the subject land

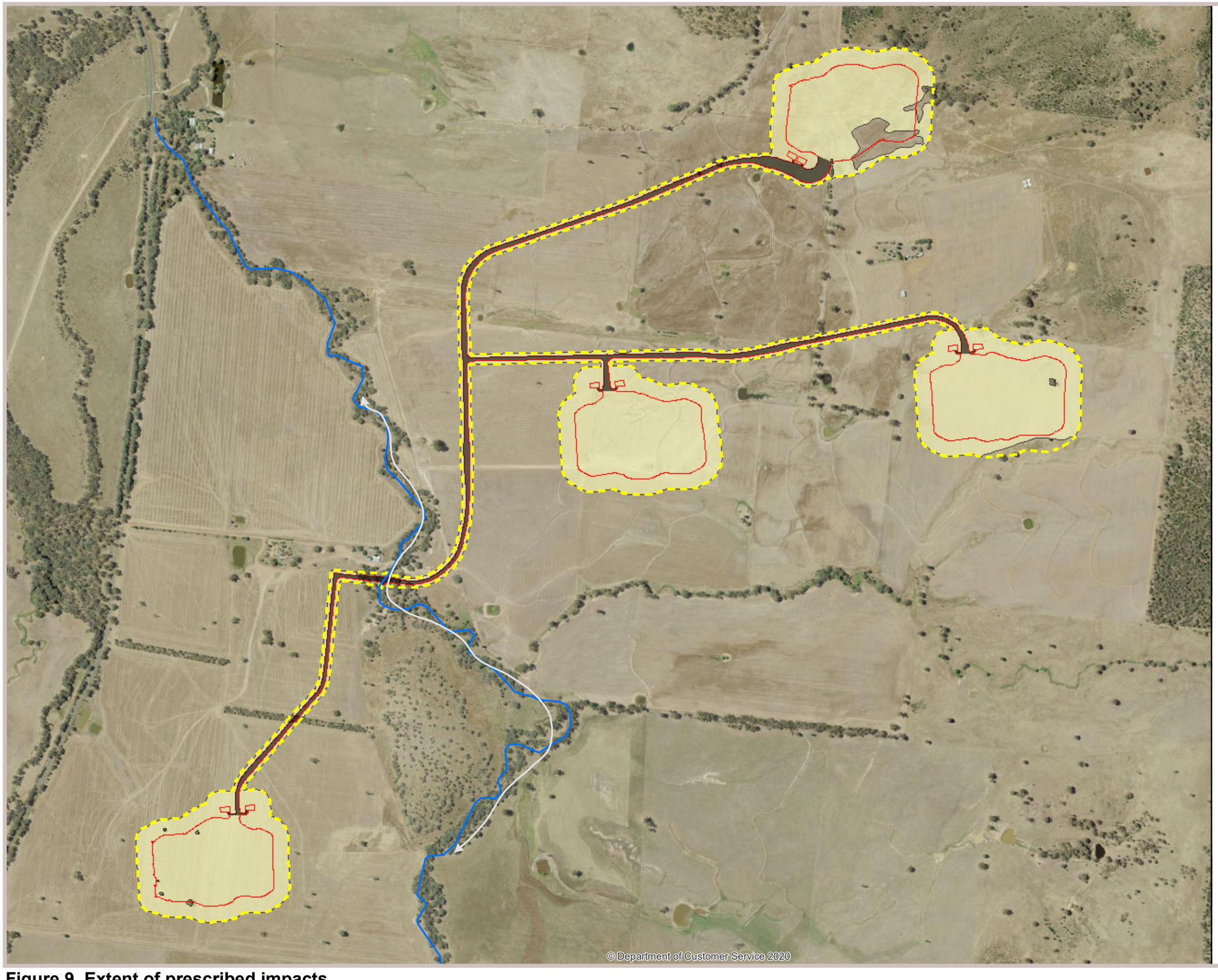


Figure 9. Extent of prescribed impacts

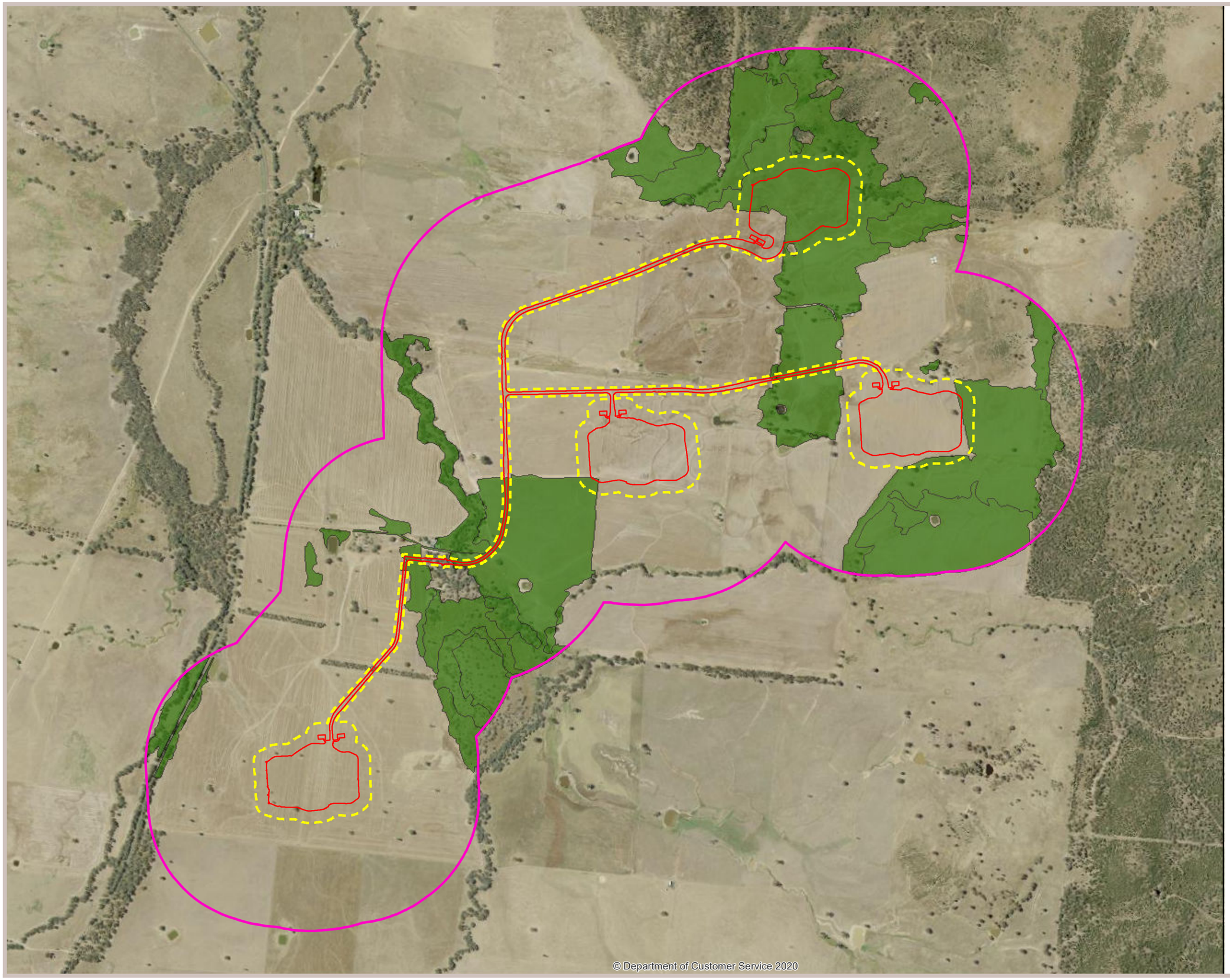


Figure 10. Extent of Box Gum Woodland in relation to the subject land and surrounds

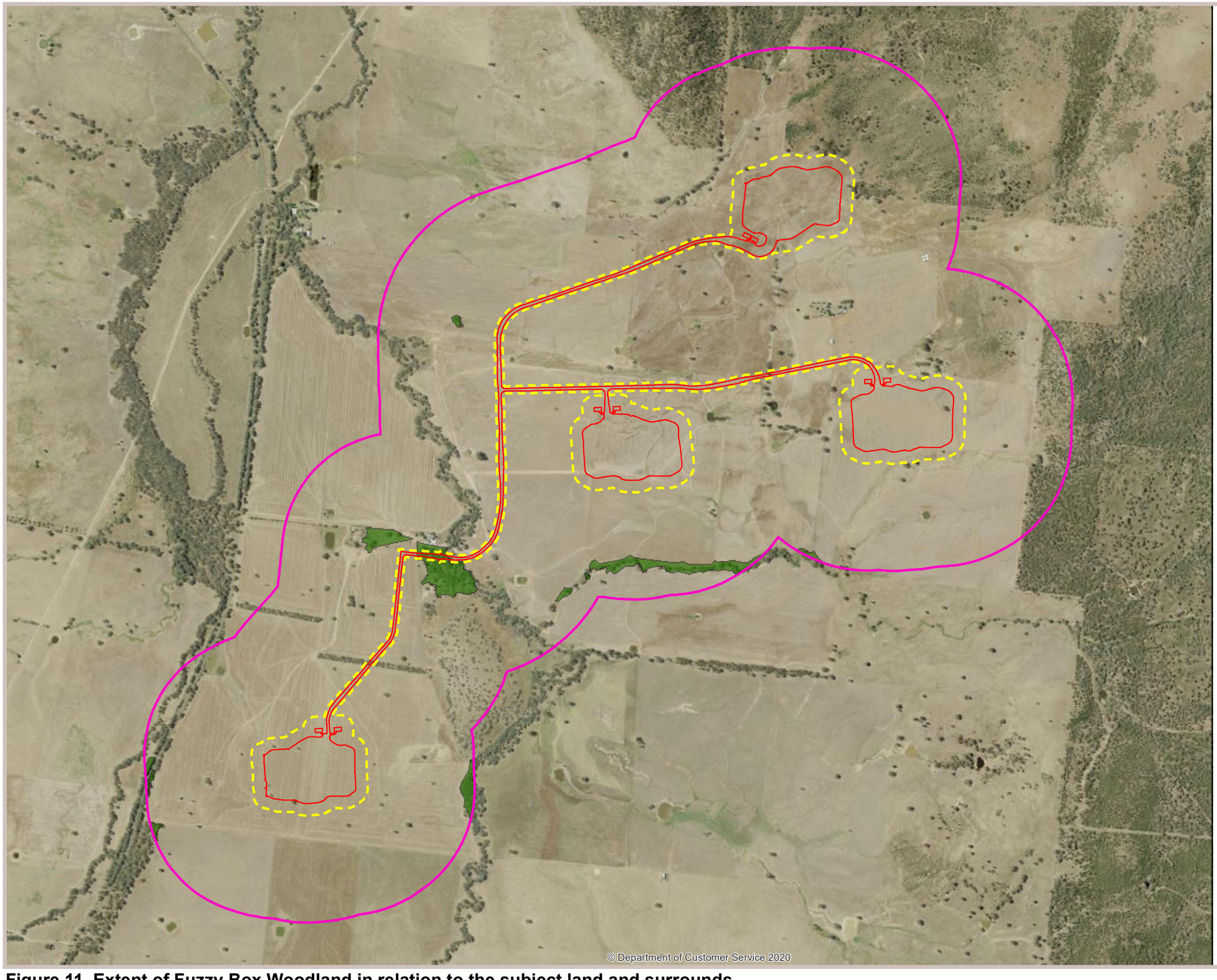
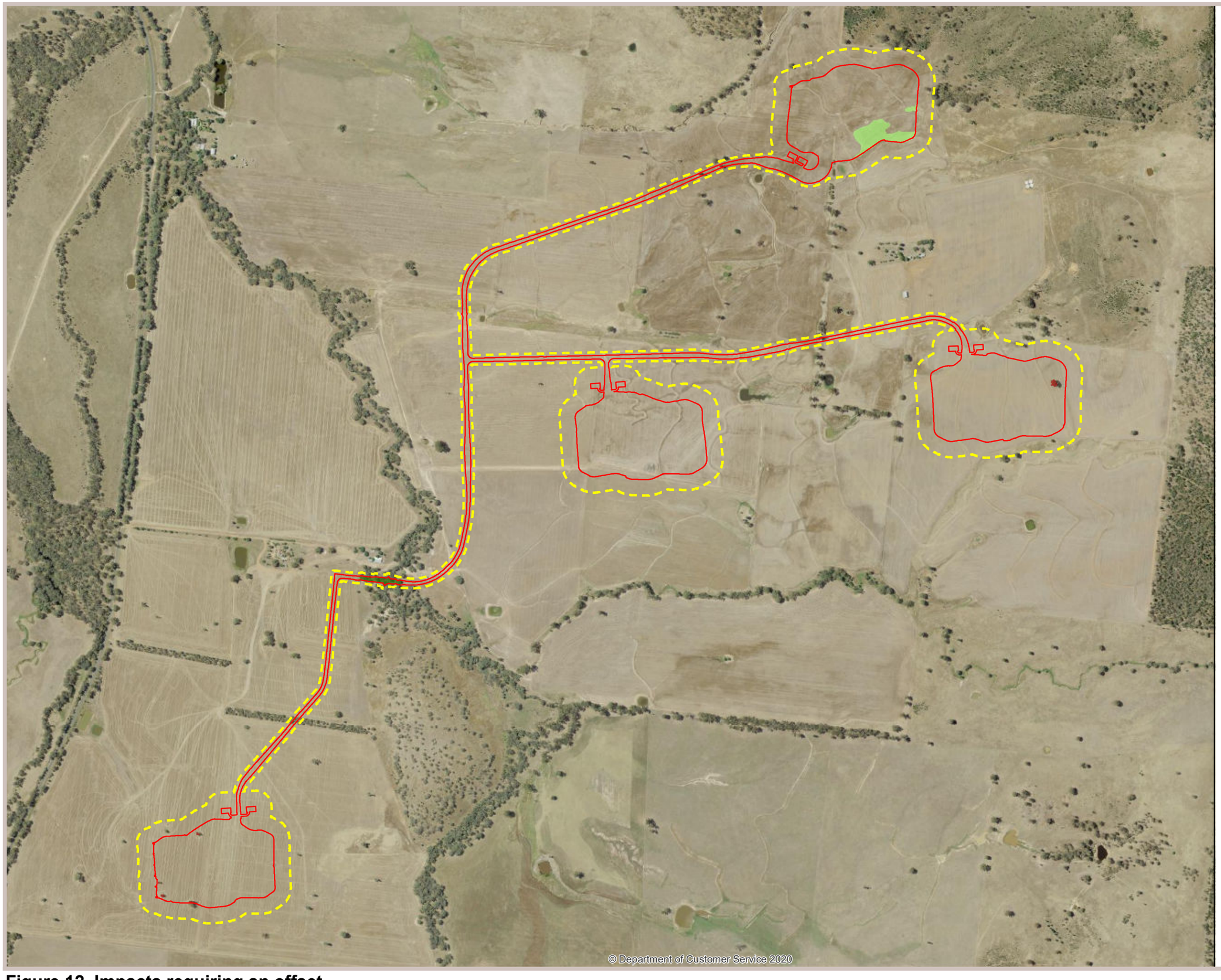


Figure 11. Extent of Fuzzy Box Woodland in relation to the subject land and surrounds



Legend

- Subject Land
- Study Area

Impacts that Require an Offset

- Zone 1: PCT201_Good
- Zone 2: PCT267_Good
- Zone 3: PCT267_DNG
- Zone 4: PCT276_Good

Data Source:
NSW Government Spatial Services
SIX Maps 'Clip and Ship'
Weddin LGA

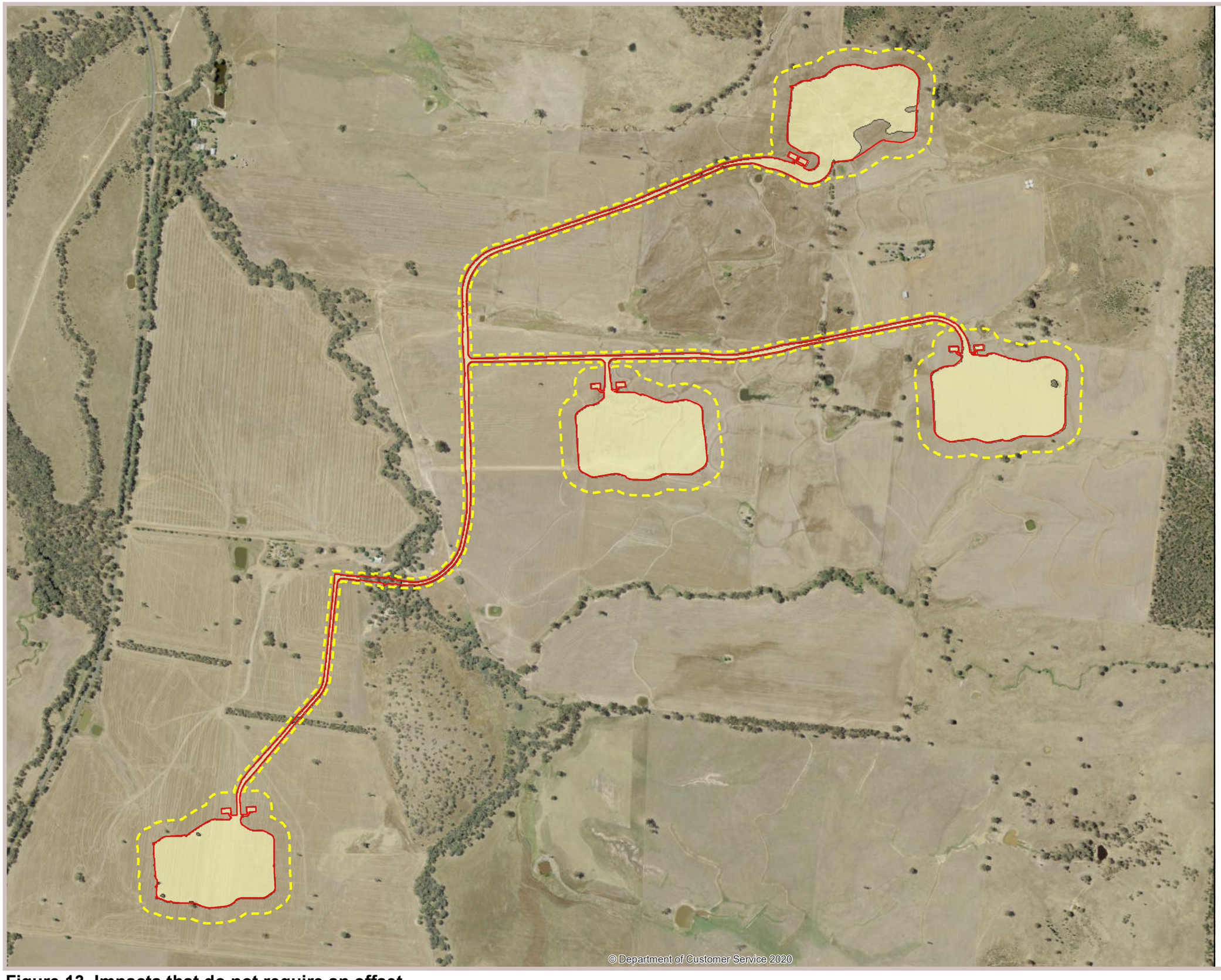
Coordinate System: MGA Zone 56 (GDA 94)

cumberland ecology

0 100 200 300 400 m

I:\...\20219\Figures\RP11\20210810\Figure 12. Impacts requiring an offset

Figure 12. Impacts requiring an offset



Legend

Subject Land

Study Area

Impacts that do not Require an Offset

Pastureland (Category 1 Exempt Land)

Data Source:
NSW Government Spatial Services
SIX Maps 'Clip and Ship'
Weddin LGA

Coordinate System: MGA Zone 56 (GDA 94)

cumberland ecology

0 100 200 300 400 m

I:\...\20219\Figures\RP11\20210810\Figure 13. Impacts that do not require an offset

Figure 13. Impacts that do not require an offset