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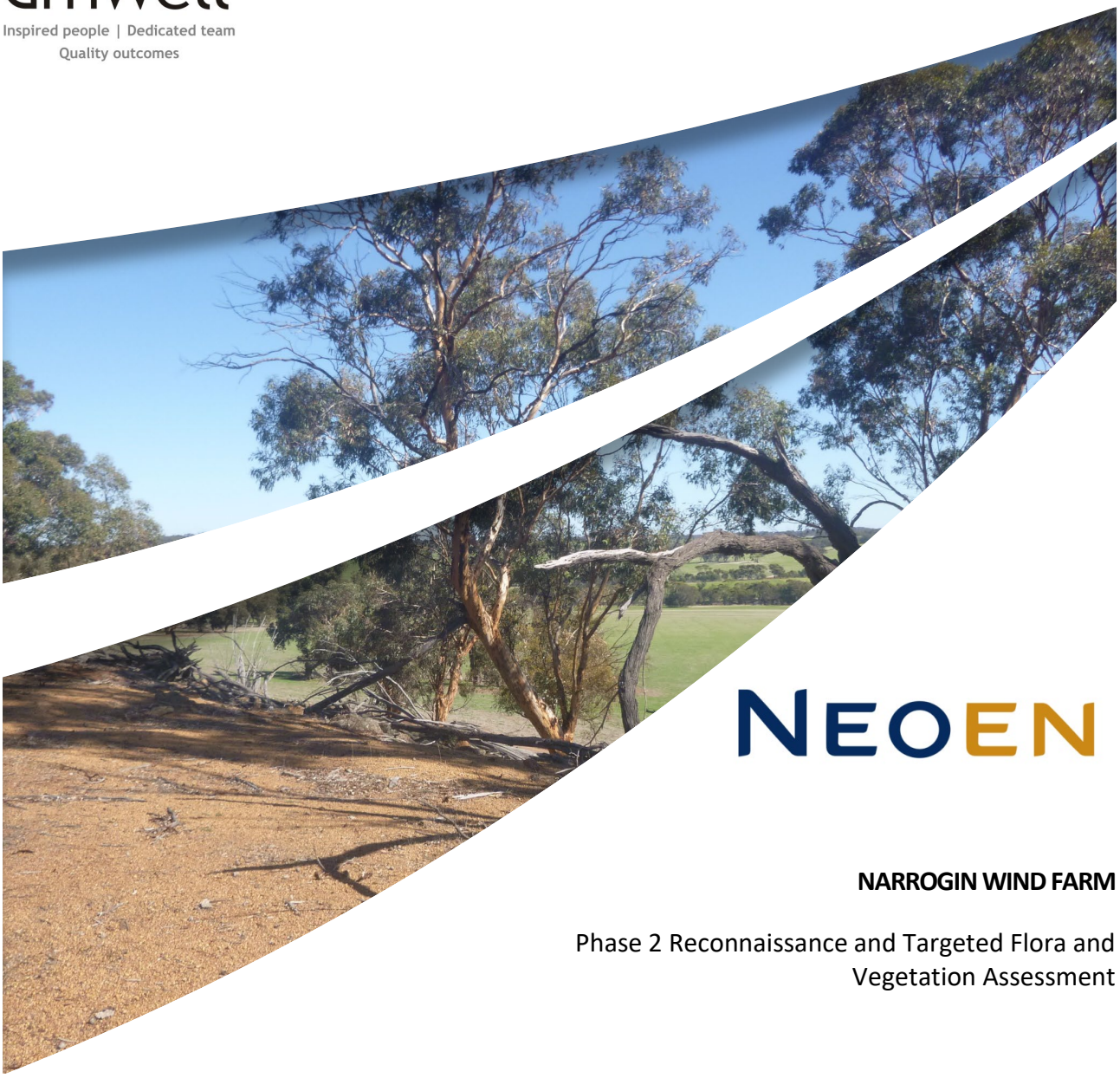

NEOEN

NARROGIN WIND FARM

Phase 2 Reconnaissance and Targeted Flora and Vegetation Assessment

FINAL

September 2024

NARROGIN WIND FARM

Phase 2 Reconnaissance and Targeted Flora and Vegetation Assessment

FINAL

Prepared by
Umwelt (Australia) Pty Limited
on behalf of
Neoen Pty Limited

Project Director: Rob Karelse
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Report No. 22847/R08
Date: September 2024

This report was prepared using Umwelt's ISO 9001 certified Quality Management System.

Acknowledgement of Country

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Document Status

Rev No.	Reviewer		Approved for Issue	
	Name	Date	Name	Date
V1	Cathy Godden Kyler Rowson	09/07/2024	Mitt Ramgobin	09/07/2024
V2	Cathy Godden Kyler Rowson	12/9/2024	Mitt Ramgobin	18/09/2024

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1.0 Introduction

1.1 Project Overview

Neoen Australia Pty Ltd (Neoen) is proposing to develop the development of the Narrogin Wind Farm (the Project) located approximately 160 kilometres (km) south-east of Perth in the Shires of Williams and Narrogin. The Project is expected to comprise of up to 25 Wind Turbine Generators (WTG), a Battery Energy Storage System (BESS) and associated ancillary infrastructure.

Umwelt was commissioned by Neoen in 2023 to undertake a preliminary ecological assessment (including flora and vegetation) to support approvals for the Project (Phase 1) (Umwelt, 2023). This current assessment expands on the outcomes of the constraints analysis undertaken previously for the Project (Umwelt, 2022), as well as the preliminary ecological assessment undertaken by Umwelt (2023), to further the understanding of the ecological values associated with the Project.

This report for this current assessment encompasses the results of both Phase 1 and Phase 2 ecological surveys, with the fauna survey results of both phases presented in a separate report.

1.1.1 Project Location

The Project location is currently proposed across a number of freehold properties situated in proximity to a section of Williams-Kondinin Road that is approximately 7 km east of the township of Williams and 9 km west of the township of Narrogin, WA.

A 220 kV electrical transmission line intersects the southern boundary of the initial Project boundary which will provide network access.

The Project is located within the Intensive Land Use Zone, as defined by the Department of Primary Industries and Regional Development (DPIRD, 2016). Dryandra National Park and Lol Gray State Forest are located to the north of the Project.

The Project Area boundary and location is shown in **Figure 1.1**.

1.1.2 Study Area Definitions

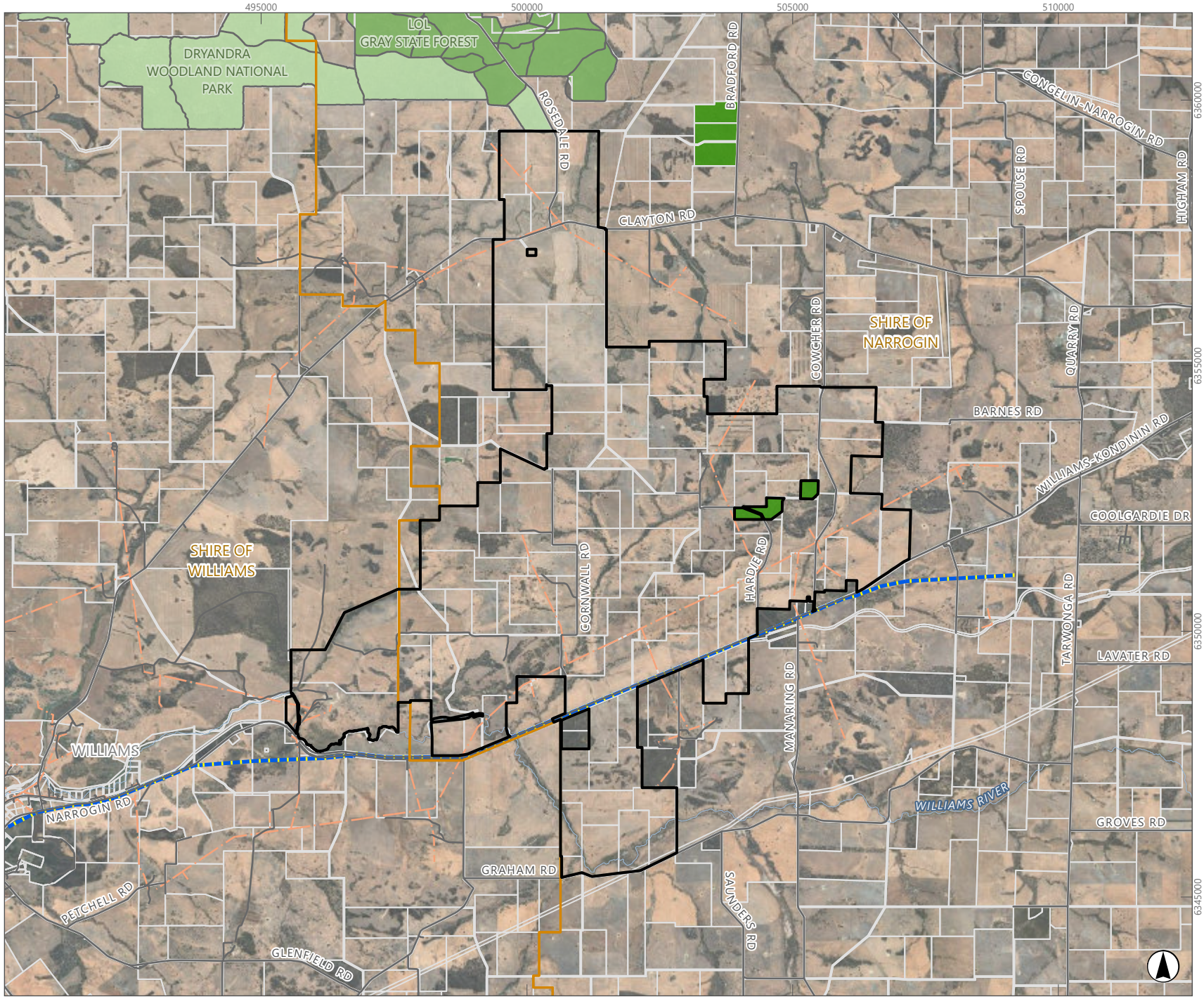
Given the evolving nature of the Project, a Study Area for ecological assessments has been defined using the property boundaries of landowners who have reached an agreement with Neoen for the use of their land for the Project. This Study Area encompasses properties surveyed across Phase 1 and Phase 2 of the ecological assessments for the Project and is approximately 6,344.1 ha in size. An Additional Survey Area has also been defined and refers to land west of the current Study Area that was surveyed as part of the early conceptual layout of the Project. This area no longer forms part of the Project Area or current Study Area. This boundary is discussed where appropriate in context of the survey effort applied and species utilisation of the Study Area and its surroundings.

The combined Study Area and Additional Survey Area, with an additional 20 km buffer, has been used for the desktop assessments portions of this assessment and the results are reported separately to those of the field surveys (‘Desktop Study Area’).

The Study Area, Additional Survey Area and Desktop Study Area relevant to this report are illustrated on **Figure 1.2.**

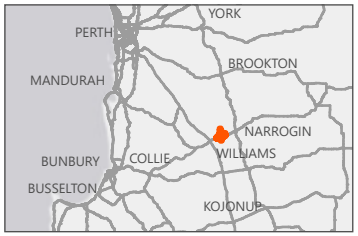
FIGURE 1.1

Project Location



Legend

- Study Area
- Road
- Water Pipeline
- NCMT HV Distribution Line
- Major Watercourse
- Local Government Area Boundary
- Nature Reserve
- National Park
- State Forest
- Property Boundary



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Kilometres

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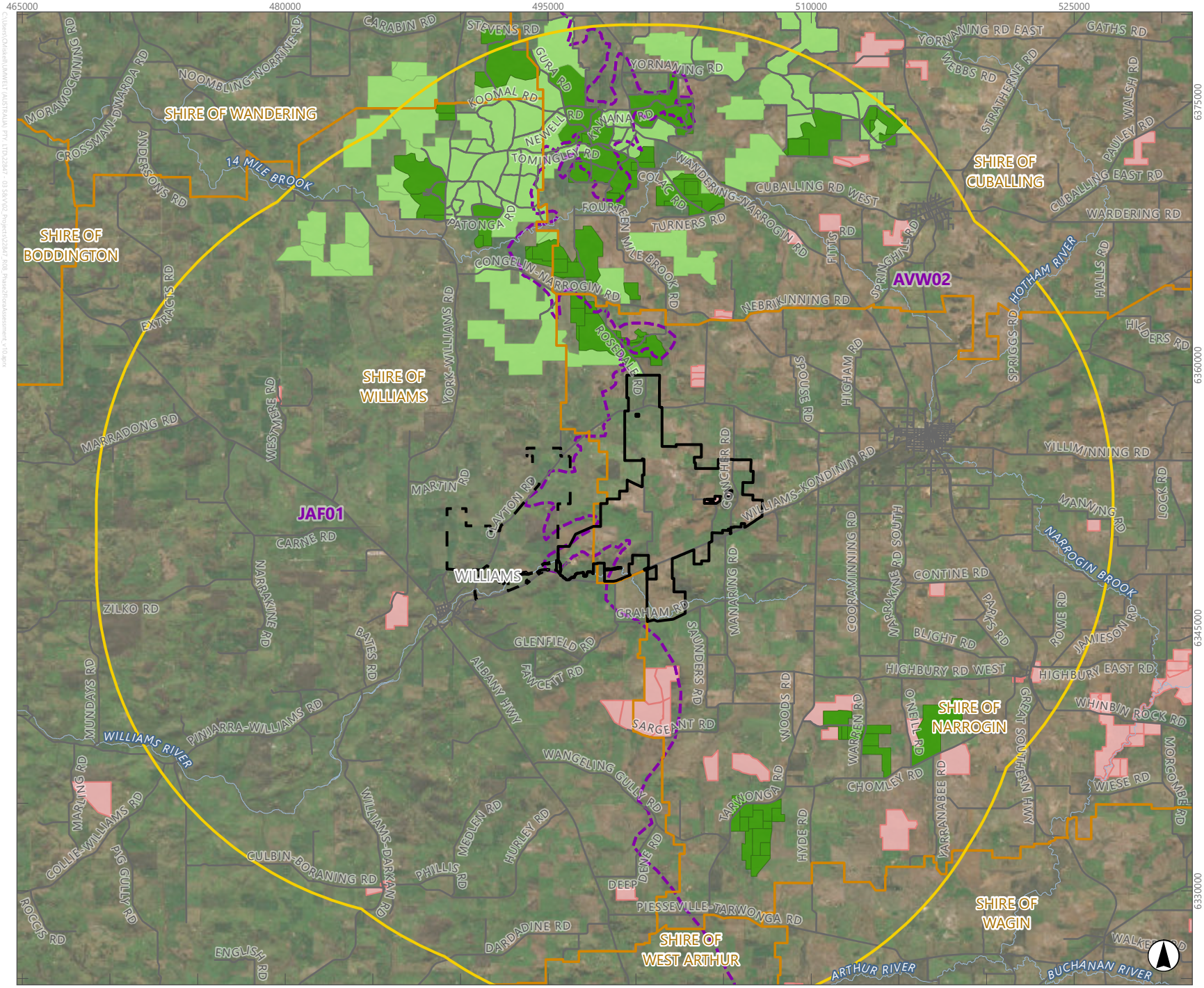
FIGURE 1.2

Project Study Areas



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1.2 Aims and Objectives

The primary aim of this assessment is to validate the ecological values of the Study Area and its surrounding environment.

The specific objectives include:

- Identify, map and describe Vegetation Types (VTs) that occur within the Study Area.
- Map the condition of the vegetation in accordance with EPA Technical Guidance (Environmental Protection Authority (EPA), 2016b).
- Assess the likelihood of the following occurring within the Study Area:
    - **Significant flora:** flora taxa that belong to one of the following categories as defined by EPA (Environmental Protection Authority (EPA), 2016a, 2016b) (note that conservation codes used by Department of Biodiversity, Conservation and Attractions (DBCA) for significant flora taxa in WA are presented in DBCA (2020)):
        - Taxa identified as a Threatened (T) or Priority (P) species (formally listed significant taxa – includes taxa listed under both State (*Biodiversity Conservation Act 2016* (WA) (BC Act)) and Commonwealth (Cth) (*Environment Protection Biodiversity Conservation Act 1999* (EPBC Act)) legislation, and classified as Priority by DBCA)
        - locally endemic taxa or taxa associated with a restricted habitat type (e.g. surface water or groundwater dependent ecosystems (GDEs))
        - new species or taxa having anomalous features that indicate a potential new species
        - representative of the range of a species (particularly at the extremes of range, recently discovered range extensions, or isolated outliers of the main range)
        - unusual species, including restricted subspecies, varieties or naturally occurring hybrids
        - having a relictual status, being representative of taxonomic groups that no longer occur widely in the broader landscape.
    - **Significant vegetation:** vegetation communities that belong to one of the following categories as defined by EPA (Environmental Protection Authority (EPA), 2016a, 2016b) (note that definitions, categories and criteria used by DBCA for significant vegetation in WA are presented in Department of Environment and Conservation (DEC) (2013)):
        - being identified as a Threatened Ecological Community (TEC) or Priority Ecological Community (PEC) (formally listed significant vegetation – includes vegetation listed under State or Commonwealth legislation, or classified as a PEC by DBCA)
        - having a restricted distribution
        - having a degree of historical impact from threatening processes
        - playing a role as a refuge

- providing an important function required to maintain ecological integrity of a significant ecosystem.

- Where deemed necessary, conduct targeted survey for significant flora and vegetation.
- Provide recommendations for additional survey based on the results of the updated Reconnaissance survey, and likelihood of occurrence assessments, as well as appropriate mitigations to support approvals for the Project.

1.3 Level of Assessment

The flora and vegetation survey of the Study Area involved a Reconnaissance and Targeted Survey as defined in Sections 4.1 and 4.2 of the *Technical Guidance for Flora and Vegetation Surveys for Environmental Impact* (Environmental Protection Authority (EPA), 2016b).

This level of assessment is considered appropriate for the Project, as the purpose of the survey was to:

- provide ecological information to inform Project layout to minimise and mitigate impacts where practicable
- identify any potential environmental sensitivities that may be impacted or should be avoided
- support preparation of approvals documentation.

The survey and reporting works comply with the following documents:

- *Environmental Factor Guideline – Flora and Vegetation* (Environmental Protection Authority (EPA), 2016a).
- *Technical Guidance – Flora and Vegetation Surveys for Environmental Impact Assessment* (Reconnaissance Survey) (Environmental Protection Authority (EPA), 2016b).

2.0 Background

2.1 Climate

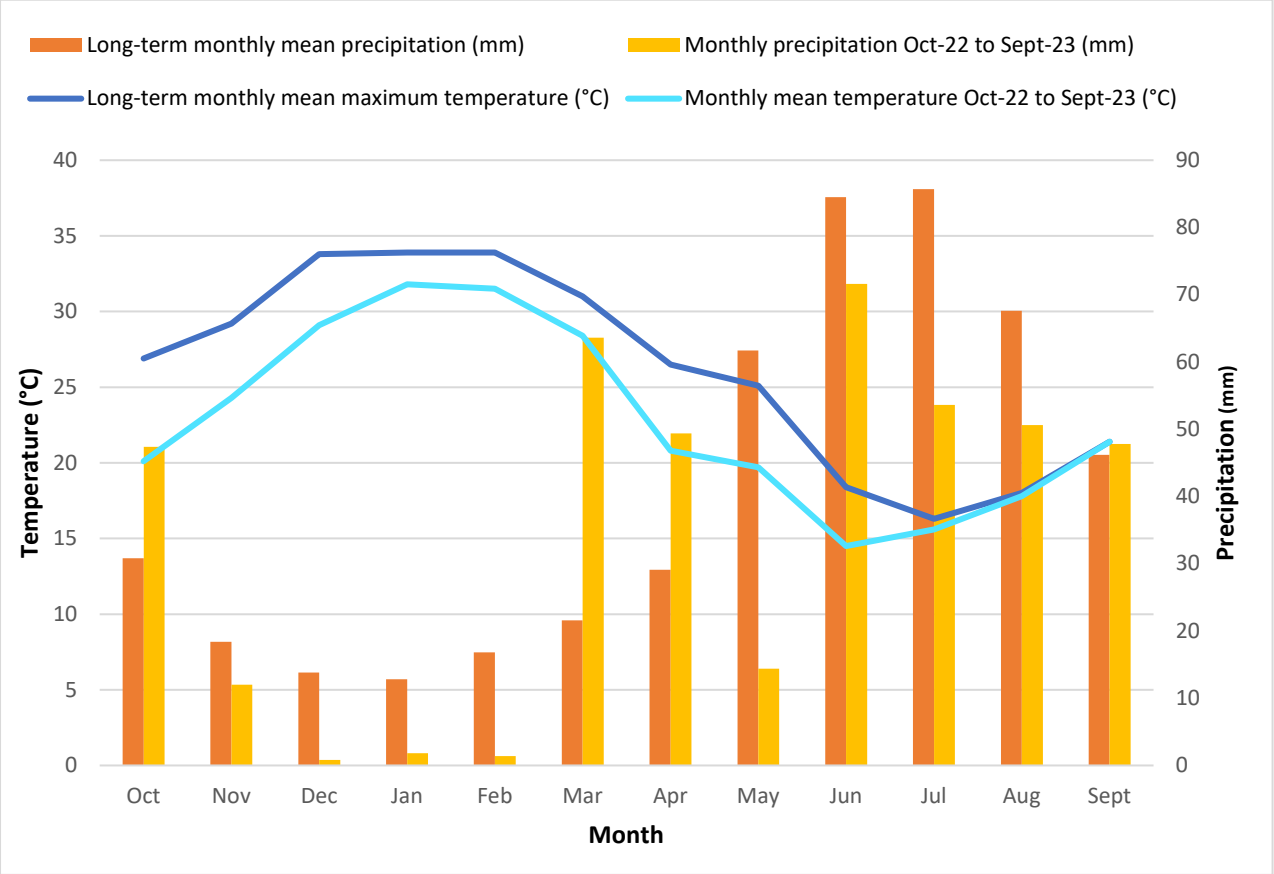
The Study Area is bisected by the boundary of two Interim Biogeographic Regionalisation of Australia (IBRA) subregions. The western portion of the Study Area is located in the Northern Jarrah Forest subregion of the Jarrah Forrest IBRA region. The eastern portion of the Study Area is located in the Katanning subregion of the Avon Wheatbelt IBRA region. The Katanning subregion is characterised by a semi-arid dry warm Mediterranean climate (Beecham, 2003), while the Northern Jarrah Forest subregion is characterised by a warm Mediterranean climate with 5-6 dry months per year (Beard, 2015).

Graph 2.1 displays monthly precipitation and monthly mean temperature statistics, long-term average monthly maximum temperature, and average monthly precipitation data recorded at Narrogin monitoring station (Station No. 10614, data from 1891 to current) for the twelve months preceding the survey (BoM, 2023). Narrogin Station is the nearest meteorological monitoring station to the Study Area with long-term temperature and precipitation data.

Long-term average monthly maximum temperatures at Narrogin peak from December to February (33.8 °C – 33.9 °C), while long-term average monthly precipitation peaks from May to August (a total of 299.5 mm received over this period on average) (**Graph 2.1**).

Precipitation received in the six months prior to the autumn field survey, November 2022 to April 2023 (129.0 mm), was slightly higher than the long-term average precipitation received for this period (112.5 mm); March and April 2023 experienced much higher precipitation than usual, while all other months during this period received below-average precipitation (**Graph 2.1**). The mean maximum temperature recorded during November 2022 to April 2023 (27.6 °C) was lower than the long-term average temperature for this period (31.3°C) (**Graph 2.1**).

Precipitation received in the six months prior to the spring field survey, April 2023 to September 2023 (287.4 mm), was significantly less than the long-term average precipitation received for this period (374.8 mm), with all months except April and September receiving lower precipitation than average; April 2023 experienced much higher precipitation than usual (**Graph 2.1**). The mean maximum temperatures recorded during April 2023 to September 2023 were generally similar to the long-term average temperature for this period, with April to June being cooler than average (**Graph 2.1**).



Graph 2.1 Climate Statistics for Narrogin (Station 10614)

2.2 Geology, Landform and Soils

The geology, landform and soils of each IBRA subregion intersecting the Study Area are summarised in **Table 2.1**.

Table 2.1 Biogeographic Subregions of the Study Area

Subregion	Summary
Northern Jarrah Forest	The Northern Jarrah Forest subregion is located east of the Darling Scarp along the northern section of the Darling Plateau. The subregion is an ancient erosion surface capped with an extensive lateritic duricrust that was dissected by later drainage and overlies Archean granite and metamorphic rock. The subregion features granite hills, locally-rising streams, and rivers originating from the eastern interior, all of which intermittently break up the subregion's surface. From west to east, the plateau experiences increasingly deep dissections before eventually breaking away into isolated remnants. Soils predominantly comprise lateritic gravels and related lateritic podzolic soils which frequently overlie a pallid zone of 30 m or more in thickness. Other features in the region include "massive" ironstone pavements common along ride tops and some slopes (Beard, 2015; Williams & Mitchell, 2001).
Katanning	The Katanning Subregion belongs to the Avon Wheatbelt region which is characterised as an active drainage area that dissects a Tertiary plateau with gently undulating topography and low relief. The Katanning subregion specifically is an erosional surface with gently undulating rises to low hills with abrupt breakaways. The subregion commonly hosts Proteaceous scrub-heaths rich in endemics that are situated on residual lateritic uplands and derived sandplains. It also contains continuous stream channels flowing in most years and soils that are largely formed in colluvium or in-situ weathered rock (Beecham, 2003).

Soil landscape mapping of WA has been compiled from the results of various surveys across WA by the Department of Agriculture (now the Department of Primary Industries and Regional Development (DPIRD) (DPIRD, 2019b). The Study Area is located across 14 separate soil-landscape units, as summarised in **Table 2.2** and presented on **Figure 2.1**. The most commonly occurring soil-landscape units are the Noombling subsystem (Narrogin) (61.5%), Noombling subsystem (Dryandra) (12.4%) and Norrine subsystem (Narrogin) (9.6%).

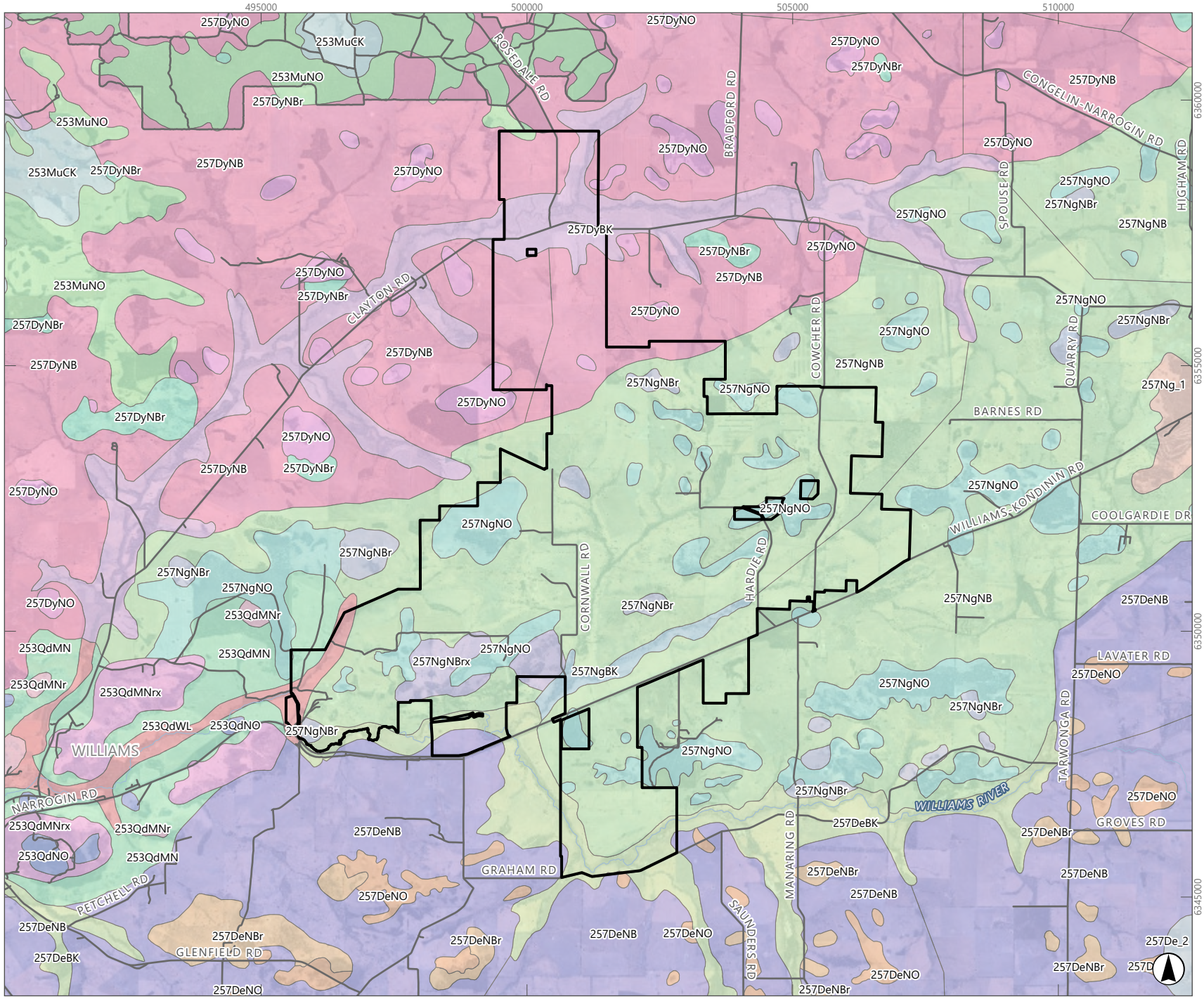
Table 2.2 Soil Landscape Mapping of the Study Area

Soil Landscape Unit	Name	Description	Mapped Extent in Study Area (ha)
253MuNO	Norrine subsystem (Marradong)	A complex of lateritic residuals and associated pediment; gravely sand, sand, duplex yellow soils and duricrust.	6.4 0.1%
253QdMN	Michibin subsystem (Quindanning)	Hillslopes containing soils formed by the weathering of fresh rock. Rock outcrop is common Hillslopes containing soils formed by the weathering of fresh rock. Rock outcrop is common.	24.5 0.4%
253QdWL	Williams subsystem (Quindanning)	Valley floor subtended by the steep slopes of the Michibin unit; yellow duplex soils and a lower sandy terrace.	76.3 1.2%
257DeBK	Biberkine subsystem (Dellyanine)	Valley floors and footslopes surrounded by gently undulating rises and low hills. Alluvium & colluvium / granite etc. Yellow brown sandy duplexes (mostly deep), wet and semi-wet soils (sometimes saline). Wandoo-Flooded Gum / Jam-Sheoak-Tea.	220.0 3.5%
257DeNB	Noombling subsystem (Dellyanine)	Long gentle and undulating hillslopes and divides. Colluvium over granite, gneiss and sometimes dolerite. Grey and yellow/brown deep sandy duplexes, sandy gravels and shallow duplexes. Marri-Wandoo woodland; Jam-Sheoak understory.	54.9 0.9%
257DeNO	Norrine subsystem (Dellyanine)	A complex of lateritic residuals and associated pediment; gravely sand, sand, duplex yellow soils and duricrust.	0.1 0.0%
257DyBK	Biberkine subsystem (Dryandra)	Valley floors & footslopes with gently undulating rises & low hills. Alluvium and colluvium over granite etc. Yellow brown sandy duplexes, wet and semi-wet soils & brown deep loamy duplexes. Wandoo-Flooded Gum with Jam-Sheoak-Teatree.	257.5 4.1%
257DyNB	Noombling subsystem (Dryandra)	Long gentle and undulating hillslopes and divides. Colluvium / weathered granite, gneiss and some dolerite. Yellow/brown and grey deep sandy duplexes, brown deep loamy duplexes, sandy gravels and shallow duplexes. Marri-Wandoo / Jam-Sheoak.	785.5 12.4%
257DyNO	Norrine subsystem (Dryandra)	A complex of lateritic residuals and associated pediment; gravely sand, sand, duplex yellow soils and duricrust.	22.3 0.4%

Soil Landscape Unit	Name	Description	Mapped Extent in Study Area (ha)
257NgBK	Biberkine subsystem (Narrogin)	Valley floor subtended by the gentle slopes of Noombling unit; yellow sandy duplex soils and a narrow, lower, sandy terrace.	100.7 1.6%
257NgNB	Noombling subsystem (Narrogin)	Gently sloping terrain which may extend over local divides; yellow and red duplex soils and associated granite and dolerite outcrops.	3903.8 61.5%
257NgNBr	Noombling (Narrogin), rocky phase	Gently sloping terrain which may extend over local divides; yellow and red duplex soils and associated granite and dolerite outcrops. Gently sloping terrain which may extend over local divides; yellow and red duplex soils and associated granite and dolerite outcrops.	83.6 1.3%
257NgNBrx	Noombling (Narrogin), very rocky phase	Gently sloping terrain which may extend over local divides; yellow and red duplex soils and associated granite and dolerite outcrops.	200.5 3.2%
257NgNO	Norrine subsystem (Narrogin)	A complex of lateritic residuals and associated pediment; gravely sand, sand, duplex yellow soils and duricrust.	608.6 9.6%
		Total	**6344.1**

FIGURE 2.1

Soil Landscape Mapping of the Study Area



Legend

- Study Area
- Road
- Major Watercourse

Soil Landscape Units

253MuCK	Coolakin s/s (M)
253MuNO	Norrine s/s (M)
253QdMN	Michibin s/s (Q)
253QdMNr	Michibin (Q), rocky phase
253QdMNrx	Michibin (Q), very rocky phase
253QdNO	Norrine s/s (Q)
253QdWL	Williams s/s (Q)
257De_2	Dellyanine 2 s/s
257DeBK	Biberkine s/s (De)
257DeNB	Noombling s/s (De)
257DeNBr	Noombling (De), rocky phase
257DeNO	Norrine s/s (De)
257DyBK	Biberkine s/s (Dr)
257DyNB	Noombling s/s (Dr)
257DyNBr	Noombling (Dr), rocky phase
257DyNO	Norrine s/s (Dr)
257Ng_1	Narrogin 1 s/s
257NgBK	Biberkine s/s (N)
257NgNB	Noombling s/s (N)
257NgNBr	Noombling (N), rocky phase
257NgNBrx	Noombling (N), very rocky phase
257NgNO	Norrine s/s (N)

s/s-subsytem; (De)-Dellyanine; (DR)-Dryandra; (M)-Marradong; (N)-Narrogin; (Q)-Quindanning

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Kilometres

Scale: 1:100,000 at A4
GDA2020 MGA Zone 50

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Image Source: ESRI Basemap (2023) | **Data Source:** Landgate (2023), DPIRD (2022)

2.3 Regional Vegetation

The vegetation of the Northern Jarrah Forest subregion, located on the western portion of the Study Area ('JAF01' on Figure 1.2), comprises Jarrah - Marri forest in the west with Bullich and Blackbutt in the valleys grading to Wandoo and Marri woodlands in the east with Powder bark on breakaways. There are extensive but localised sand sheets with Banksia low woodlands. Heath is found on granite rocks and as a common understorey of forests and woodlands in the north and east. The majority of the diversity in the communities occurs on the lower slopes or near granite soils where there are rapid changes in site conditions (Williams & Mitchell, 2001).

The Katanning subregion ('AW02' on **Figure 1.2**) largely comprises woodlands of Wandoo, York Gum and Salmon Gum with Jam and Casuarina also common. The subregion is located within the transitional rainfall zone known for the most species-rich areas such as the lateritic uplands of the Wheatbelt's western edge (Beecham, 2003).

The vegetation of WA as it was presumed to have existed prior to European settlement has been mapped at a scale of 1:250,000 as vegetation system associations (VSAs), with the Pre-European Vegetation spatial database subsequently created (Beard et al., 2013; DPIRD, 2019a). The Study Area intersects nine VSAs as mapped by DPIRD (2019), the primary occurring VSAs being Narrogin_1023, Dryandra_1023 and Narrogin_352 (covering approximately 89% of the Study Area). The Pre-European extent of the VSAs of the Study Area and surrounds are presented on **Figure 2.2**. All nine VSAs are summarised in **Table 2.3**, including the current extent of VSAs in relation to their pre-European extents and the percentage of the current extent of each VSA presently protected for conservation within the Northern Jarrah Forest and Katanning IBRA subregions (DBCA, 2019). Note that the VSA current extent dataset, although the most current available, was last updated on 19th April 2019 and therefore current extant areas should be treated with caution.

Five VSAs have less than 30% of their pre-European extent remaining within the relevant IBRA subregions to this assessment as of 2019, with the remaining four having over 30% remaining (**Table 2.3**); likewise, none of the VSAs have over 30% of their pre-european extents protected for conservation in these IBRA subregions. It should be noted that as per DBCA (2019), protected areas in this context are considered to be any areas listed in DBCA-Legislated Lands and Waters dataset (DBCA, 2023a) as either Crown reserves or lands managed under Section 8A of the *Conservation and Land Management Act 1984* (WA) that have an International Union for Conservation of Nature (IUCN) category of I to IV.

The publicly available dataset for current extents of vegetation in each VSA is not accurate, in both that the dataset is relatively old (2019) and that there are mapping inconsistencies, befit of a regional (State-wide) mapping dataset. While Western Australian Local Government Association (WALGA) categorised the Pre-European Statewide vegetation mapping dataset in 2020 (WALGA, 2020), review of this dataset in the Study Area and its vicinity revealed inaccuracies and inconsistencies, including some areas of vegetation that appear to be remnant not being included this dataset, despite being larger than other nearby remnants which have been included.

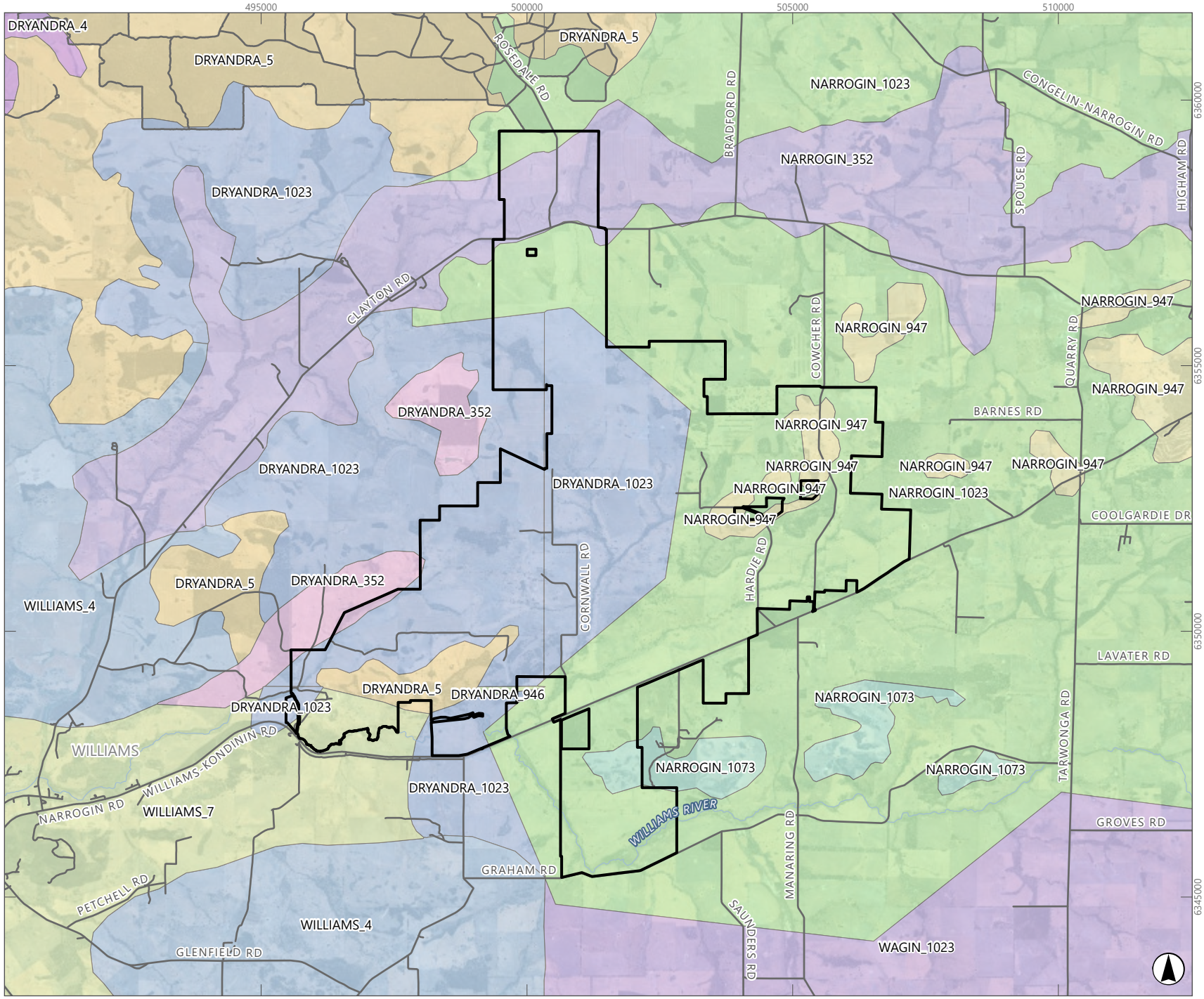
Table 2.3 Vegetation System Associations of the Study Area

VSA	Description	Extent within Northern Jarrah Forest and Katanning IBRA Subregions				Extent within Study Area	
		Pre-European Extent[1] (ha)	Current Extent[1] (ha)	Pre-European Extent Remaining[1] (%)	Current Extent Protected for Conservation[1] (%)	Pre-European Extent (ha)	Current Extent (ha)
DRYANDRA_1023	Medium woodland; York gum, wandoo & salmon gum (*Eucalyptus salmonophloia*)	10,388.10	1,505.55	14.49	0.00	2,574.1 40.5%	2,574.1 40.5%
DRYANDRA_352	Medium woodland; York gum	7,705.15	1,383.51	17.96	0.07	30.5 0.5%	30.5 0.5%
DRYANDRA_5	Medium woodland; wandoo & powderbark (*Eucalyptus accedens*)	31,817.93	15,186.21	47.73	21.84	244.2 3.8%	244.2 3.8%
DRYANDRA_946	Medium woodland; wandoo	1,681.52	874.15	51.99	0.00	11.7 0.2%	11.7 0.2%
NARROGIN_1023	Medium woodland; York gum, wandoo & salmon gum (*Eucalyptus salmonophloia*)	189,088.48	31,369.71	16.59	6.69	2780.8 43.8%	2780.8 43.8%
NARROGIN_1073	Medium woodland; wandoo & mallet	873.12	419.56	48.05	9.72	73.8 1.2%	73.8 1.2%
NARROGIN_352	Medium woodland; York gum	15,729.07	1,730.35	11.00	3.43	294.6 4.6%	294.6 4.6%
NARROGIN_947	Medium woodland; powderbark & mallet	19,255.57	7,726.51	40.12	14.76	194.8 3.1%	194.8 3.1%
WILLIAMS_7	Medium woodland; York gum (*Eucalyptus loxophleba*) & wandoo	11,301.70	1,990.87	17.6	4.27	139.5 2.2%	139.5 2.2%
					Total	**6344.1**	**6344.1**

[1]*Data source: DBCA Statewide Vegetation Statistics: Full Report (DBCA, 2019).*
[2]*Data source: Pre-European Vegetation spatial dataset (DPIRD-006) (DPIRD, 2019a).*

FIGURE 2.2

Vegetation System Associations of the Study Area



Legend

- Study Area
- Road
- Major Watercourse

Vegetation Systems Associations

- DRYANDRA_4
- DRYANDRA_5
- DRYANDRA_352
- DRYANDRA_946
- DRYANDRA_1023
- NARROGIN_352
- NARROGIN_947
- NARROGIN_1023
- NARROGIN_1073
- WAGIN_1023
- WILLIAMS_4
- WILLIAMS_7

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3.0 Methods

3.1 Personnel and Licensing Information

Table 3.1 lists the personnel involved in fieldwork, plant identifications and report preparation. The Project Manager and Field Team Leaders have considerable previous experience (>20 years) conducting ecological assessments. Other personnel have previous experience in assisting with flora and vegetation surveys in the region.

All plant material was collected under the relevant *Flora Taking (Biological Assessment) Licence* (under Regulation 62 of the Biodiversity Conservation Regulations 2018 (BC Regs)) and *Authorisation to Take or Disturb Threatened Species* (pursuant to Section 40 of the BC Act) as outlined in **Table 3.1**. Personnel managing plant identifications have had extensive previous experience (>15 years) in plant identifications of flora of the Wheatbelt region and checked plant identifications undertaken by less experienced personnel for accuracy.

Table 3.1 Personnel and Licensing Information

Personnel	Experience	Flora Collecting Permit	Role
Kim Kershaw **Bsc (Biology)**	>20 years	FB62000054-2 TFL133-2122	Project Management Field Team Leader Reporting
Cathy Godden **Bsc (Biology) (Hons)**	>20 years	FB62000050-2 TFL 130-2122	Project Management Field Team Leader Reporting
Kyler Rowson **Bsc (Marine Biology and Biological Sciences)**	3 years	FB62000399 TFL2223-0139	Field Team Leader / Member Reporting Plant identifications
Bethea Loudon **Bsc (Biology)**	>18 years	NA	Field Team Leader Plant identifications
David Coultas **BSc (Environmental Biology) (Hons)**	>18 years	NA	Plant identifications
Jaroslav Hruban **Mgr (Master's equivalent; Botany)**	3.5 years	NA	Plant identifications
Diana Barrie **Bsc (Agricultural Science and Conservation Biology)**	3 years	FB62000443-2 TFL 2223-0143	Field Team Member

3.2 Desktop Assessment

3.2.1 Publicly Available Flora and Vegetation Data Review

Prior to commencement of the Reconnaissance field survey, a review of all publicly available flora and vegetation data relevant to the Desktop Study Area was undertaken. This included obtaining and reviewing copies of reports of previous biological surveys carried out within the vicinity of the Study Area (where available) (including interrogation of the Index of Biodiversity Surveys for Assessments (IBSA) database), and interrogation of relevant databases and other sources as listed in **Table 3.2** for the Desktop Study Area (**Figure 1.1**). Where TECs or PECs were identified by the desktop assessment, appropriate DBCA or DCCEEW nomination/listing descriptions and recovery plans of the TEC or PEC were also reviewed prior to field survey, as well as the 'Methods for survey and identification of Western Australian threatened ecological communities' report by the DBCA (DBCA, 2024).

Table 3.2 Searches Undertaken for the Desktop Assessment of the Desktop Study Area

Source	Search Attributes	Purpose
DBCA NatureMap (DBCA, 2007-)	Desktop Study Area. Search undertaken 12 April 2023, reference 26-0423NM	Obtain records of DBCA-listed significant flora taxa within the Desktop Study Area
DBCA Significant Flora Databases (WA Herbarium specimen database and TPFL database) (DBCA, 2023c)	Desktop Study Area boundary. Search undertaken 29 March 2023, reference 68-0323FL	Obtain records of DBCA-listed significant flora taxa within the Desktop Study Area
DBCA Threatened and Priority Ecological Communities Database (DBCA, 2023b)	Desktop Study Area boundary. Search undertaken 29 March 2023, reference 26-0323EC	Obtain records of DBCA-listed TECs and PECs within the Desktop Study Area
DBCA TEC and PEC lists (DBCA, 2018, 2022)	Manual review of current DBCA TECs and PECs listed	Identify whether there are any DBCA-listed TECs or PECs that could occur within the Study Area
DBCA TEC and PEC records spatial data (DBCA-038) (DBCA, 2017b)	Review of mapped DBCA TECs and PECs within or in proximity to the Desktop Study Area	Identify whether there are any DBCA-classified TECs or PECs that could occur within the Desktop Study Area
Department of Climate Change, Energy, the Environment and Water (DCCEEW) Species Profile and Threats (SPRAT) Database (interrogated using the Protected Matters Search Tool) (DCCEEW, 2023)	Database interrogated using Desktop Study Area boundary. No additional buffer applied. Search undertaken 28 April 2023; a second, updated search was undertaken 15 March 2024	Identify Matters of National Environmental Significance (MNES), including Threatened flora and TECs listed under the EPBC Act, for which the taxon or habitat for the taxon occurs or has the potential to occur within the Desktop Study Area
IBSA database (DWER, 2022)	Approximate Desktop Study Area boundary (exact boundary cannot be used)	Obtain copies of reports and associated spatial data (where available) to identify records of significant flora and vegetation and introduced flora in the vicinity of the Study Area
Previous flora and vegetation surveys conducted for the Project or within or in the vicinity of the Study Area (various sources)	Approximate Desktop Study Area boundary	Identify records of significant flora taxa and vegetation and introduced flora in the vicinity of the Study Area

Source	Search Attributes	Purpose
2018 Statewide Vegetation Statistics incorporating the CAR Reserve Analysis (report 3b) (DBCA, 2019) and Pre-European Vegetation spatial data (DPIRD, 2019a)	Study Area boundary	Identify extent of Vegetation System Associations (VSAs) within the Study Area

3.3 Field Survey Methods

3.3.1 Reconnaissance Survey

Initial interpretation of ortho-rectified aerial photography at a scale of 1:5,000 was conducted to determine preliminary vegetation patterns present within the Study Area. The purpose of this was to direct survey efforts for the Reconnaissance survey, with vegetation sampling proposed for each discernible vegetation pattern, and greater sampling proposed for larger or more complex vegetation patterns. No restricted or unusual landforms were identified during this process.

The flora and vegetation Reconnaissance survey was undertaken over four site visits (**Table 3.3**). The Study Area was accessed and traversed by vehicle and foot. Appropriate landholder permission was obtained prior to undertaking the survey.

Table 3.3 Dates of Fieldwork Undertaken in the 2023-2024 Survey

Phase	Date of fieldwork	Personnel
1	**1/5/23 – 3/5/23**	Kim Kershaw and Kyler Rowson
2	**26/9/23 – 28/9/23**	Bethea Loudon and Kyler Rowson
	4/11/23 – 6/11/23	Cathy Godden and Kyler Rowson
	19/4/2024	Kyler Rowson and Diana Barrie

Phase 2 field surveys in Spring 2023 and Autumn 2024 expanded the Reconnaissance survey undertaken during Phase 1 (Autumn 2023) to include additional properties. The Spring 2023 survey also included a re-evaluation of species presence and vegetation condition of two areas potentially identified as the TEC '*Eucalyptus woodlands of the Western Australian Wheatbelt*' during Phase 1, as per the recommendations of Umwelt (2023).

Field data was collected in the form of data recording points, comprising of either vegetation mapping notes or relevés. Relevés were surveyed in areas of native vegetation and surveyed the area within a radius of approximately 20 m around a central point; vegetation mapping notes recorded pertinent information in degraded areas. **Table 3.4** presents the information that was recorded at each point.

Table 3.4 Information Recorded at Each Data Recording Point

Information	Relevé	Vegetation Mapping Note
Personnel	X	X
Unique site name	X	X
Survey date	X	X

Information	Relevé	Vegetation Mapping Note
GPS coordinates at centre point of note (recorded using handheld global positioning system (GPS) devices) (Geocentric Datum of Australia (GDA94) Zone 50)	X	X
Fire history	X	
Notes on disturbance	X	X
Site photograph, at centre point of note	X	
Topography	X	X
Soil colour and type (including the presence of any rock outcropping and surface stones)	X	
Vegetation condition (as per EPA Technical Guidance (Environmental Protection Authority (EPA), 2016b) for the South West and Interzone Botanical Provinces)	X	X
Dominant taxa within each vegetation stratum	X	X
Average heights/foliage cover of dominant taxa	X	

All traverses of the Study Area during the Reconnaissance survey were recorded as track logs and any vegetation mapping notes and relevés recorded as waypoints.

A total of 222 vegetation mapping notes and one relevé was assessed in the Study Area during the Reconnaissance survey over four site visits. The locations of all vegetation mapping notes and relevés, as well as survey track logs are illustrated on **Figure 3.1**.

An additional 134 vegetation mapping notes and eight relevés were assessed in the Additional Survey Area (Figure 1.2). These are not included in the results of this report.

3.3.2 Targeted Survey

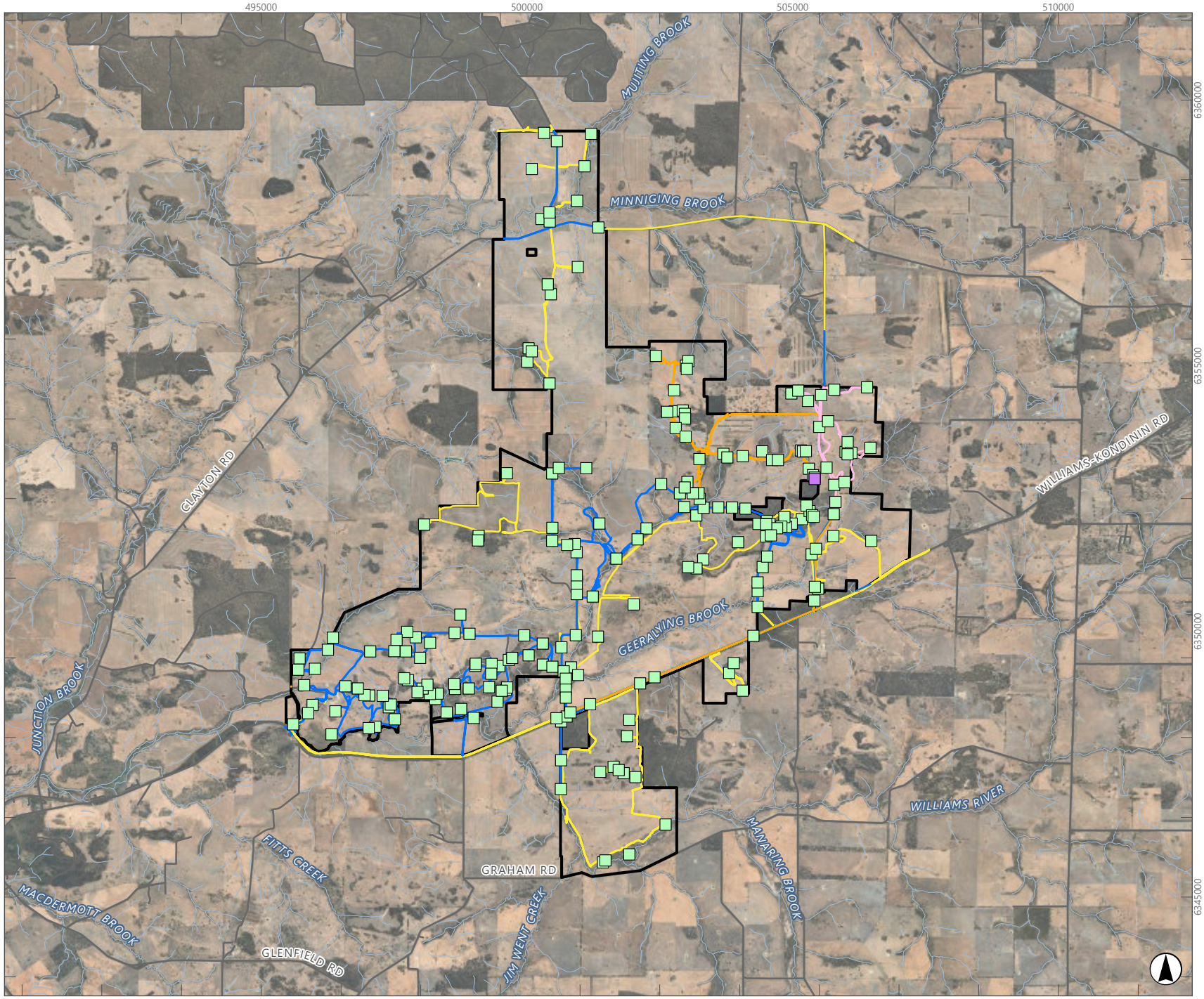
Targeted survey for significant flora taxa was planned to be undertaken in areas of Good or better vegetation condition. Areas of Degraded or Completely Degraded condition were regarded as having very low likelihood of presence of significant flora taxa due to the disturbed nature of the vegetation (generally consisting of a tree layer over pasture weeds, with impacting processes present such as historical clearing and livestock in combination with lack of fences protecting remnant vegetation, as observed during the Phase 1 May 2023 field survey). The extent of targeted survey was assessed at the time of the fieldwork, dependent on environmental conditions and the environmental factors encountered. Areas subject to Targeted flora survey were searched at 20 m spacing for significant flora.

Targeted survey was conducted for significant flora and to verify the condition of two areas in the northeast of the Study Area previously assessed as 'Good' condition by the Phase 1 survey. An additional three transects were conducted along the major drainage line in the central property, to search for significant flora to confirm the original assertation that the vegetation condition would not support significant flora.

Targeted searching track logs are presented on **Figure 3.2**.

FIGURE 3.1

Sample Sites and Track Logs



Legend

- Study Area
- Road
- Watercourse
- Relevé
- Vegetation mapping note

Track Logs

- Trip 4 – April 2024
- Trip 3 – November 2023
- Trip 2 – September 2023
- Trip 1 – May 2023

0 2 4

Kilometres

Scale: 1:100,000 at A4
GDA2020 MGA Zone 50

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Image Source: ESRI Basemap (2023) | **Data Source:** Landgate (2023), Umwelt (2023)

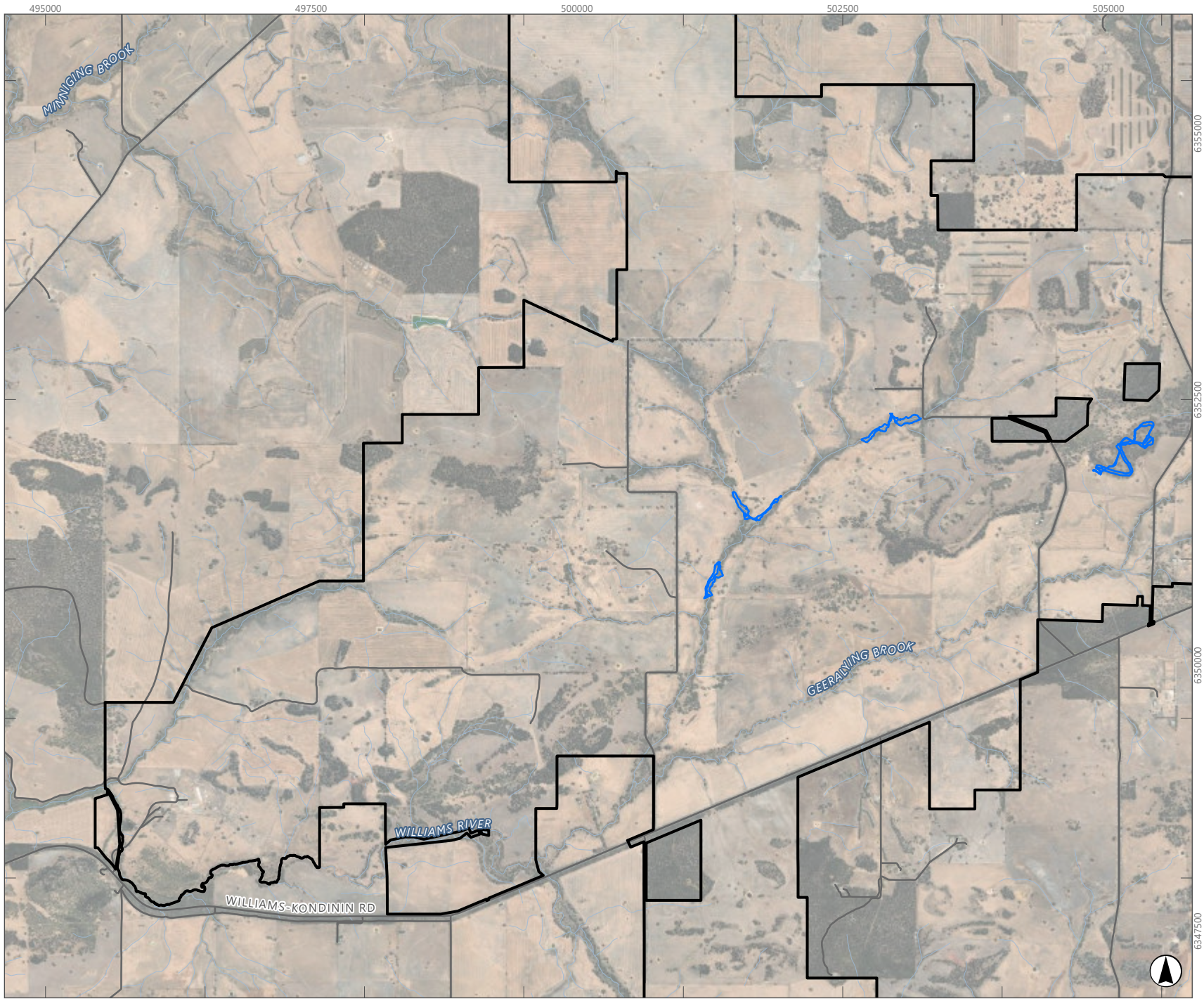

FIGURE 3.2

Targeted Searching Track Logs

Legend

- Study Area
- Road
- Watercourse
- Targeted Searching (September 2023)

0 1 2

Kilometres

Scale: 1:50,000 at A4
GDA2020 MGA Zone 50

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Image Source: ESRI Basemap (2023) | **Data Source:** Landgate (2023), Umwelt (2023)

3.4 Plant Collection and Identification

Specimens of any unknown taxa encountered during the field survey were collected and pressed for later identification. Plant identifications were undertaken at the WA Herbarium and were overseen by a Principal Botanist with extensive previous experience (> 10 years) in plant identifications for flora of the Jarrah Forest and Avon-Wheatbelt regions (**Section 3.1**). The identification of all taxa (including significant taxa) used the most up to date information available (including taxonomic keys published in books, journals and online, comparison with herbarium specimens, and consultation with taxonomic experts). External experts of particular families or genera were consulted for any specimens considered to be difficult to identify or of taxonomic interest, including botanists at the WA Herbarium.

Taxon nomenclature generally follows FloraBase (WA Herbarium, 1998-) with all names checked against the current DBCA Max database to ensure their validity. However, in cases where names of plant taxa have been published recently in scientific literature but have not yet been adopted on FloraBase due to time constraints (WA Herbarium, 1998-), nomenclature in the published literature is followed. The conservation status of each taxon was checked against FloraBase, which provides the most up-to-date information regarding the conservation status of flora taxa in Western Australia.

As per section 7.2 of EPA (2016a), specimens of interest, including significant flora taxa, taxa representing range extensions, potential new taxa, and key species in new occurrences of TECs and PECs will be sent to the WA Herbarium for consideration for vouchering as soon as practicable. However, this process is via donation, and the WA Herbarium may not voucher all specimens, in accordance with its own requirements. The specimen vouchering will be supported by completed Threatened and Priority Flora Report Forms (TPFRFs) submitted to DBCA (Species and Communities Branch) in the case of listed significant flora (i.e. Threatened and Priority flora taxa).

3.5 Vegetation Type and Vegetation Condition Mapping

Floristic and vegetation structural data recorded as vegetation mapping notes and relevés at waypoints across the Study Area were examined to define discrete Vegetation Types (VTs) of the Study Area. Locations of vegetation mapping notes and relevés were used in conjunction with aerial photograph interpretation, digital elevation models, and soil mapping units to generate discrete VT polygons in a Geographic Information Systems (GIS) environment. Mapping boundaries were developed using aerial photography on a scale of 1:5,000 and reflected changes in vegetation patterns visible at this scale.

VT descriptions have been adapted from the National Vegetation Information System (NVIS) Australian Vegetation Attribute Manual Version 6.0 (ESCAVI, 2003). This model follows nationally agreed guidelines to describe and represent VTs and produces data that is comparable and consistent nation-wide. VTs were defined and described using the structural vegetation classification technique as outlined in EPA Technical Guidance (Environmental Protection Authority (EPA), 2016b). This technique uses vegetation structure and dominant species to describe VTs with information provided on the height of strata, foliage cover, and dominant species, as well as substrate and landscape factors.

Vegetation condition was described using the vegetation condition scale presented by EPA (2016b) for the South West and Interzone Botanical Provinces (**Table 3.5**). Notes on vegetation condition were taken during the reconnaissance survey at all vegetation mapping note locations. Vegetation condition classifications were applied to the mapped VTs by either categorising whole polygons where the condition was uniform throughout, or dividing existing VT polygons where a change in condition was observed.

Table 3.5 Vegetation Condition Scale as Described in EPA (2016b) for South West and Interzone Botanical Provinces

Vegetation Condition	South West and Interzone Botanical Provinces
Pristine	Pristine or nearly so, no obvious signs of disturbance or damage caused by human activities since European settlement.
Excellent	Vegetation structure intact, disturbance affecting individual species and weeds are non-aggressive species. Damage to trees caused by fire, the presence of non-aggressive weeds and occasional vehicle tracks.
Very Good	Vegetation structure altered, obvious signs of disturbance. Disturbance to vegetation structure caused by repeated fires, the presence of some more aggressive weeds, dieback, logging and grazing.
Good	Vegetation structure significantly altered by very obvious signs of multiple disturbances. Retains basic vegetation structure or ability to regenerate it. Disturbance to vegetation structure caused by very frequent fires, the presence of very aggressive weeds, partial clearing, dieback and grazing.
Degraded	Basic vegetation structure severely impacted by disturbance. Scope for regeneration but not to a state approaching good condition without intensive management. Disturbance to vegetation structure caused by very frequent fires, the presence of very aggressive weeds at high density, partial clearing, dieback and grazing.
Completely Degraded	The structure of the vegetation is no longer intact and the area is completely or almost completely without native species. These areas are often described as 'parkland cleared' with the flora comprising weed or crop species with isolated native trees and shrubs.

3.6 Significant Flora

As per EPA (2016b), flora taxa may be significant for a range of reasons, as outlined in **Section 1.2.**

Significant flora taxa recorded within the Study Area are discussed in **Section 4.2.3** with reference to the above categories. Point locations, individuals and populations of significant flora known from the Study Area are also presented in this section. Note that a population in the context of this survey is defined as a discrete group of individuals of a taxon separated by more than 500 m from the nearest discrete group of individuals (DBCA, 2017a); however, this definition can only be tentatively applied if the intervening 500 m has not been surveyed. Conservation codes for Western Australian flora are presented on the DBCA Threatened species and communities website (Department of Biodiversity Conservation and Attractions (DBCA), 2020).

3.7 Significant Vegetation

As per EPA (2016b), vegetation may be significant for a range of reasons as outlined in **Section 1.2**.

The vegetation of the Study Area was manually compared to TEC/PEC descriptions as returned by Desktop Assessment, and otherwise as relevant to the region, to determine whether any vegetation may represent a TEC or PEC; specifically, comparisons of dominant taxa, soils, topography and geographical distribution of VTs were made to those of any TECs or PECs potentially occurring in the Study Area. Determination of TECs was undertaken by review of the survey and determination criteria as per DBCA (2023d) where relevant.

A similar process was followed for TECs listed under the EPBC Act, with comparisons made to the appropriate listing and conservation advice for any TECs potentially occurring in the Study Area. The remaining significant vegetation criteria other than "being identified as a TEC and PEC" were applied to VTs mapped in the Study Area to determine whether a VT was significant in a local or regional context. However, in a regional context, limited information is available for comparison with VTs in the Study Area. Significant vegetation is discussed further in **Section 4.2.8**. Definitions, categories and criteria for TECs and PECs in WA are presented on the DBCA Threatened species and communities website (DBCA, 2013).

3.8 Survey Limitations

As noted in **Section 3.3**, the timing of the Phase 1 Reconnaissance survey (mid-autumn) does not coincide with the recommended survey timing provided by the EPA *Technical Guidance for Flora and Vegetation Surveys for Environmental Impact Assessment* (EPA, 2016b). This was not considered to be a limitation of the Reconnaissance survey as the purpose of this survey was to characterise the vegetation of the Study Area (including vegetation condition) in order to inform the significant flora and vegetation likelihood of occurrence and provide potential environmental constraints for planning purposes, as opposed to being a full census of the flora of the Study Area or a targeted survey for significant flora and vegetation. Additionally, further survey was conducted during spring 2023, which is the recommended survey timing as per EPA (2016b).

Rainfall in the two months prior to the Autumn 2023 survey was higher than average, and thus is unlikely to have affected flowering of any taxa to a great extent; daily maximum temperatures in the months prior to autumn survey were also cooler on average compared to long-term data. The spring survey was preceded by less rainfall than the long-term average, however, this is not considered to have significantly affected the survey with regard to identification of flora taxa. There were no issues related to flora sampling and identification with both annual and perennial (including tuberous and cormous species) flora in good condition. The field team leader and plant identifications manager has had extensive (>15 years) experience in conducting similar surveys in the Jarrah Forest and Avon Wheatbelt bioregions. No recent disturbances affected the results of the survey; however, the lack of recent fire within the Study Area may mean that some short-lived disturbance opportunists are not currently present.

There were some access restrictions, including the presence of cropping which prevented some vehicle/foot access to some polygons of vegetation (Primarily for surveys undertaken in Spring 2023). However, these polygons were for the most part adequately viewed from a distance to ascertain their vegetation type, condition and suitability for significant taxa and vegetation, and therefore such restrictions are not considered to have affected survey results. Not all areas of remnant vegetation were inspected; however, aerial photography interpretation and digital elevation models and contour information, supported by site vegetation mapping notes or observations, assisted in determining VTs for those areas not inspected on foot.

One small area of VT12 was mapped in Good condition (0.4 ha; 0.006% of the Study Area), located near the eastern boundary of the Study Area. Targeted searching at 20 m spacing was not undertaken, due small size of this VT; one relevé was conducted and wandering transects to record flora taxa of the VT was undertaken. It is concluded that adequate sampling was undertaking in this area.

Additional targeted searching was undertaken in some remnant vegetation (assessed to be in Degraded condition) to confirm vegetation condition and the presence/absence of significant flora and vegetation,

however in general no Targeted flora survey was undertaken in areas assessed as being in Degraded or Completely Degraded condition due to very low likelihood of significant flora persisting in these areas.

4.0 Results

4.1 Desktop Assessment

4.1.1 Local Flora and Vegetation Surveys

Only one previous flora and vegetation survey was identified within the Desktop Study Area as summarised in **Table 4.1**. Included in **Table 4.1**, is the key flora and vegetation results recorded by this assessment, such as the presence of significant flora and vegetation, as well as Declared Pests and Weeds of National Significance (WoNS).

Table 4.1 Summary of Flora and Vegetation Surveys Previously Conducted Within the Desktop Study Area

Report and Author	Parameters	Survey Date	Key Findings – Flora	Key Findings - Vegetation
Reconnaissance and Targeted Flora and Vegetation Survey, Wandering-Narrogin Road 27.12-29.56 SLK Cuballing (Ecoedge, 2020)	2.4 km of road reserve along both sides of Wandering-Narrogin Road. Approximately 12 km north-east from Study Area.	9 October 2019	46 flora taxa, including eight introduced taxa. One Declared Pest (**Asparagus asparagoides*) was recorded. No Priority or Threatened taxa located.	0.3 ha of the Eucalyptus Woodlands of the Western Australian Wheatbelt TEC was identified, in good condition. 0.25 ha of Degraded condition vegetation was considered to fit the criteria for the Eucalypt Woodlands of Western Australian Wheatbelt state-listed PEC (P3).

Note: Excludes surveys that did not sample any intact native vegetation.

4.1.2 Significant Flora Taxa

The interrogation of the DBCA WA Herbarium (WAHerb) Specimen Database and TPFL Database (DBCA, 2023c) returned a total of 47 listed significant vascular flora taxa that have records in the Desktop Study Area (**Table 4.2**). Two taxa returned from the search have historical records within the Study Area (*Xanthorrhoea brevistyla* (P4) and *Gastrolobium ovalifolium* (P4)) (**Figure 4.1**). A search of the DBCA NatureMap database (DBCA, 2007-) was also undertaken as part of the desktop assessment to check for any recently added records and confirm the records returned from the DBCA WA Herbarium Specimen Database and TPFL Database search, with no additional taxa returned (**Table 4.2**).

The majority of the records of the species noted in the DBCA database searches were returned from the remnant vegetation present in the Dryandra Woodland National Park (north of the Study Area).

The search of the DCCEEW SPRAT Database (DCCEEW, 2023) for MNES listed under the EPBC Act identified an additional nine flora taxa listed as Threatened species, or habitat for such species, that may occur in the Desktop Study Area (**Appendix A**). An additional search of the DCCEEW SPRAT Database was conducted in March 2024, however, no additional Threatened flora taxa were returned. It is worthy of note that the SPRAT database search is based on a likelihood of occurrence model for Threatened flora taxa known from regional areas as opposed to presenting known records only (as presented in the DBCA database searches); and includes provision of species and species habitat that are 'likely to occur' or 'may occur', as well as those that are 'known to occur' in such areas.

In summary, a total of 56 flora taxa were returned from the database searches (DBCA, 2023c, 2007-; DCCEEW, 2023). Of the 56 taxa, a total 16 are Threatened taxa, which includes two terrestrial orchids (*Caladenia dorrienii* and *Diuris micrantha*) (**Table 4.2**).

Figure 4.1 presents the locations of the listed significant flora taxa returned from the DBCA database searches (DBCA, 2023c), within the Desktop Study Area.

Table 4.2 Significant Flora Taxa Known from the Desktop Study Area

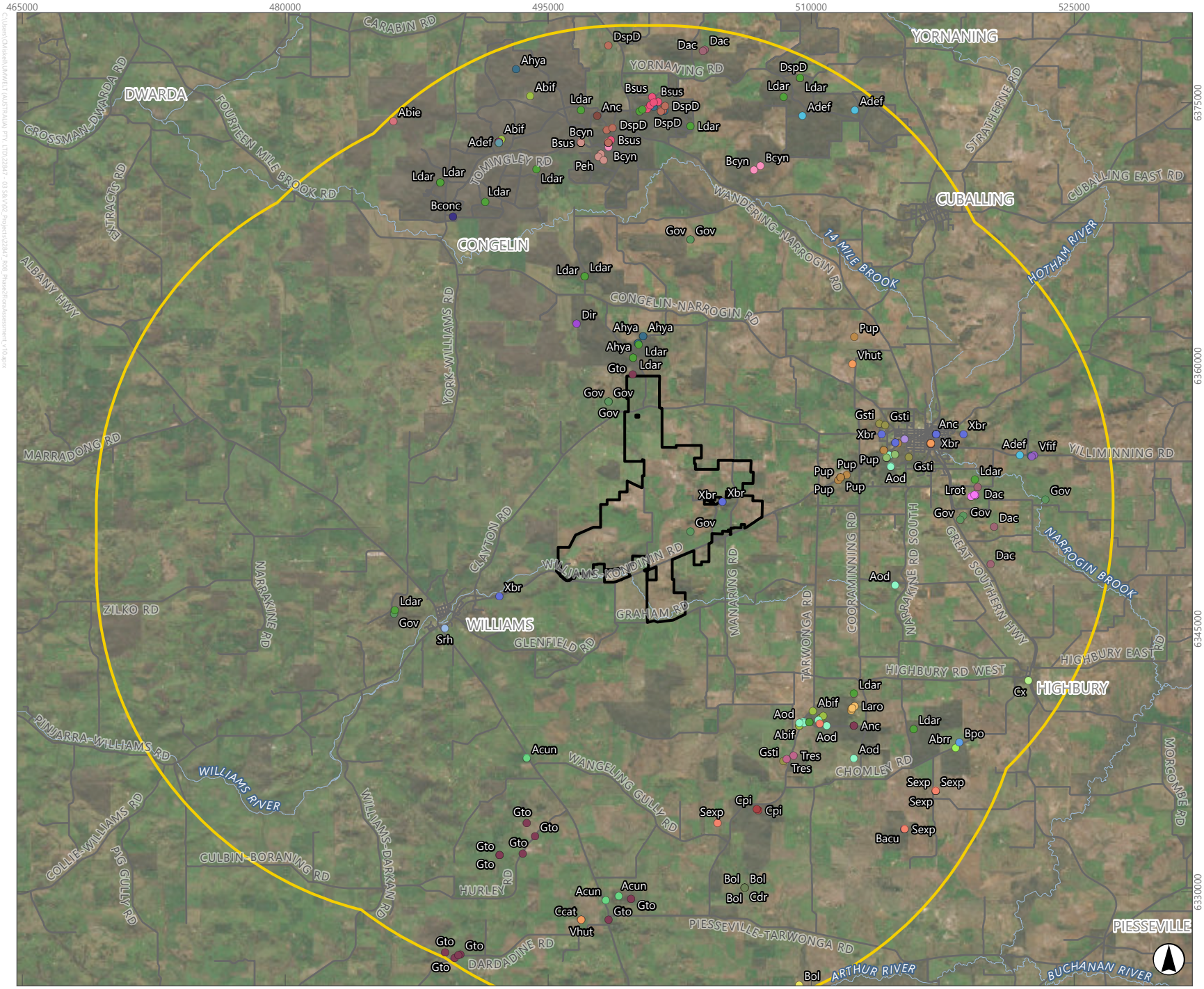
Taxon	Status (WA)	Status (EPBC)	Source[1]
Acacia brachyphylla* var. *recurvata	P3		NM, TPFL, WAHerb
Acacia cuneifolia	P4		NM, TPFL, WAHerb
Acacia deflexa	P3		NM, TPFL, WAHerb
Acacia insolita* subsp. *recurva	T	EN	DCCEEW
Acacia lanei	P3		NM, WAHerb
Andersonia bifida	P2		NM, WAHerb
Andersonia carinata	P2		NM, TPFL, WAHerb
Andersonia gracilis	T	EN	DCCEEW
Anigozanthos bicolor* subsp. *extans	P3		NM, WAHerb
Anthotium odontophyllum	P3		NM, WAHerb
Asterolasia hyalina	P2		NM, WAHerb
Babingtonia maleyae	P2		NM, WAHerb
Banksia acanthopoda	P2		NM, WAHerb
Banksia acuminata	P4		NM, WAHerb
Banksia cuneata	T	EN	DCCEEW
Banksia cynaroides	P4		NM, WAHerb
Banksia oligantha	T	EN	NM, TPFL, WAHerb
Banksia porrecta	P4		NM, WAHerb
Banksia rufa* subsp. *obliquiloba	P3		NM, WAHerb
Banksia subpinnatifida* var. *subpinnatifida	P2		NM, TPFL, WAHerb
Boronia capitata* subsp. *capitata	T	EN	DCCEEW
Bossiaea concinna	P3		NM, WAHerb
Caladenia caesarea* subsp. *transiens	P1		NM, WAHerb
Caladenia dorrienii	T	EN	DCCEEW
Caladenia* x *triangularis	P4		NM, WAHerb
Calectasia pignattiana	T	VU	NM, TPFL, WAHerb

Taxon	Status (WA)	Status (EPBC)	Source[1]
***Chamelaucium* sp. Dryandra (D. Rose 446)**	P2		NM, WAHerb
Conostylis drummondii	T	EN	NM, TPFL, WAHerb
Darwinia carnea	T	EN	NM, TPFL, WAHerb
***Darwinia* sp. Dryandra (G.J. Keighery 9295)**	P4		NM, WAHerb
Daviesia euphorbioides	T	EN	DCCEEW
Dicrastylis reticulata	P3		NM, WAHerb
Diuris micrantha	T	VU	DCCEEW
Eleocharis keigheryi	T	VU	DCCEEW
Gastrolobium ovalifolium	P4		NM, WAHerb
Gastrolobium rotundifolium	P3		NM, TPFL, WAHerb
Gastrolobium stipulare	P4		NM, WAHerb
Gastrolobium tomentosum	P4		NM, TPFL, WAHerb
Lasiopetalum bracteatum	P4		NM, WAHerb
Lasiopetalum rotundifolium	T		NM, TPFL, WAHerb
Leucopogon darlingensis* subsp. *rectus	P2		NM, WAHerb
Lysiosepalum aromaticum	P2		NM, WAHerb
Marianthus dryandra	P2		NM, WAHerb
Persoonia hakeiformis	P2		NM, TPFL, WAHerb
Pultenaea pauciflora	T	VU	DCCEEW, NM, TPFL, WAHerb
Roycea pycnophylloides	T	EN	DCCEEW
Stylidium expeditionis	P4		NM, WAHerb
Stylidium rhipidium	P3		NM, WAHerb
Stylidium tylosum	P2		NM, TPFL, WAHerb
Synaphea platyphylla	P3		NM, WAHerb
Tetratheca retrorsa	P3		NM, WAHerb
Thomasia dielsii	P1		NM, WAHerb
Tricostularia drummondii	P3		NM, WAHerb
Verticordia fimbrilepis* subsp. *fimbrilepis	T	EN	NM, TPFL, WAHerb
Verticordia huegelii* var. *tridens	P3		NM, WAHerb
Xanthorrhoea brevistyla	P4		NM, WAHerb

[1]Sources: DCCEEW (DCCEEW, 2023), NM: NatureMap (DBCA, 2007-), TPFL and WAHerb (DBCA, 2023c)

FIGURE 4.1

Listed Significant Flora Taxa Known from the Desktop Study Area



Legend

- Desktop Study Area
- Study Area
- Road
- Major Watercourse

0 6 12

Kilometres

Scale: 1:300,000 at A4
GDA2020 MGA Zone 50

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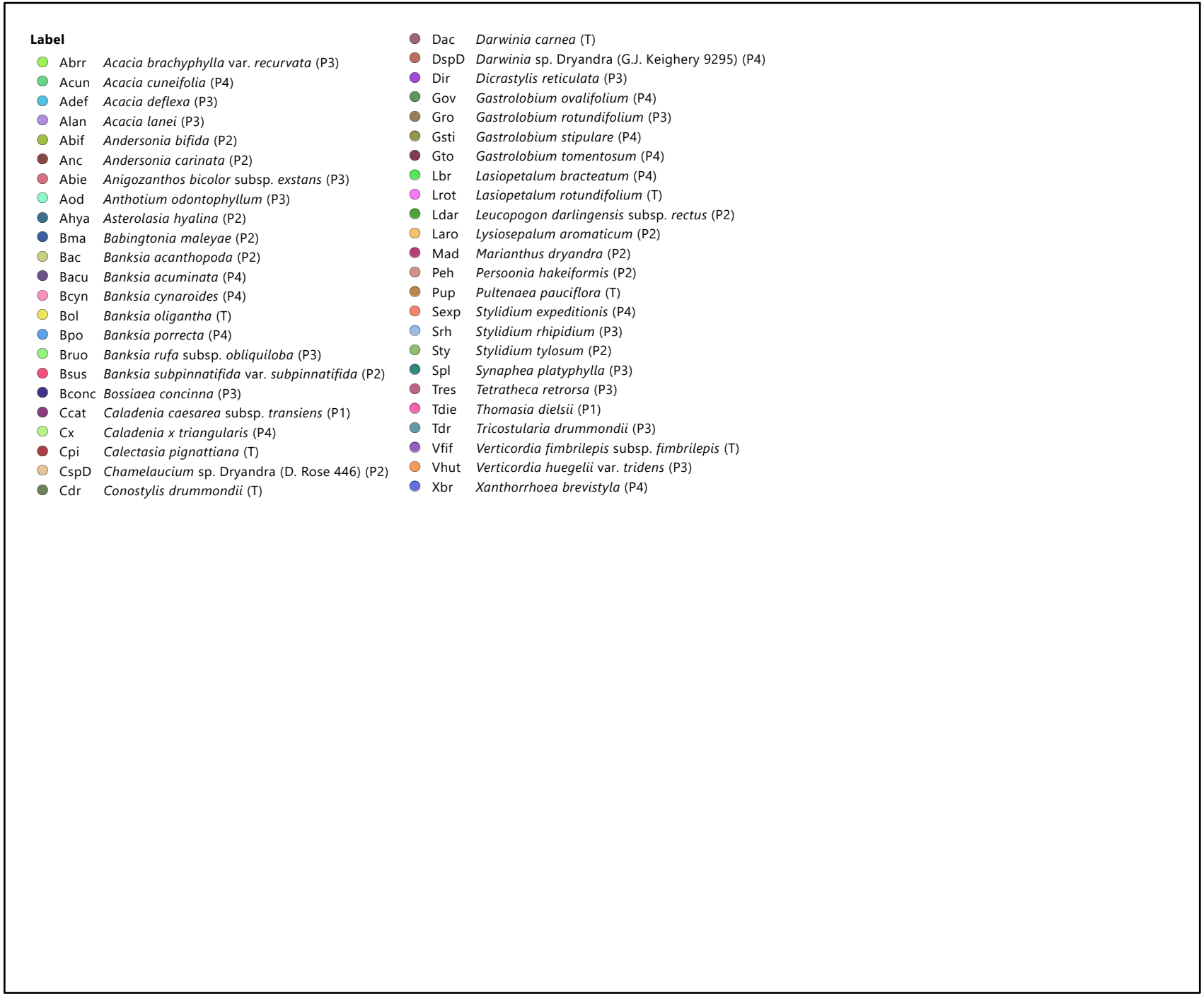


Image Source: ESRI Basemap (2023) | **Data Source:** Landgate (2023), Umwelt (2023), DBCA (2022)

FIGURE 4.1

LEGEND: Listed Significant Flora Taxa Known from the Desktop Study Area

4.1.3 Significant Vegetation

The interrogation of DBCA's TEC and PEC Database (DBCA, 2023b) returned one listed significant vegetation community (Eucalyptus Woodlands of the Western Australian Wheatbelt) with records within the Desktop Study Area (Table 4.3). This community is listed as a Priority 3 (iii) PEC by DBCA. Indicative locations of this community are presented on **Figure 4.2**; these consist of DBCA-applied buffers surrounding known locations or likely to occur locations, ranging from 200-2,000 m (as per the metadata from the DBCA Threatened and Priority Ecological Communities Database interrogation (DBCA, 2023b)). As such, these do not represent verified extents of this community.

This community is synonymous with the 'Eucalypt Woodlands of the Western Australian Wheatbelt' TEC as listed under the EPBC Act. The search of DCCEEW's SPRAT Database (DCCEEW, 2023) returned no additional Commonwealth-listed TECs or habitat for the TECs noted as having potential to occur within the Desktop Study Area. The full results of the DCCEEW Database search are presented in **Appendix A**.

A manual review of current DBCA TEC and PEC lists (DBCA, 2018, 2022) did not identify any additional significant vegetation communities within, or having a likelihood of occurrence to occur within, the Study Area.

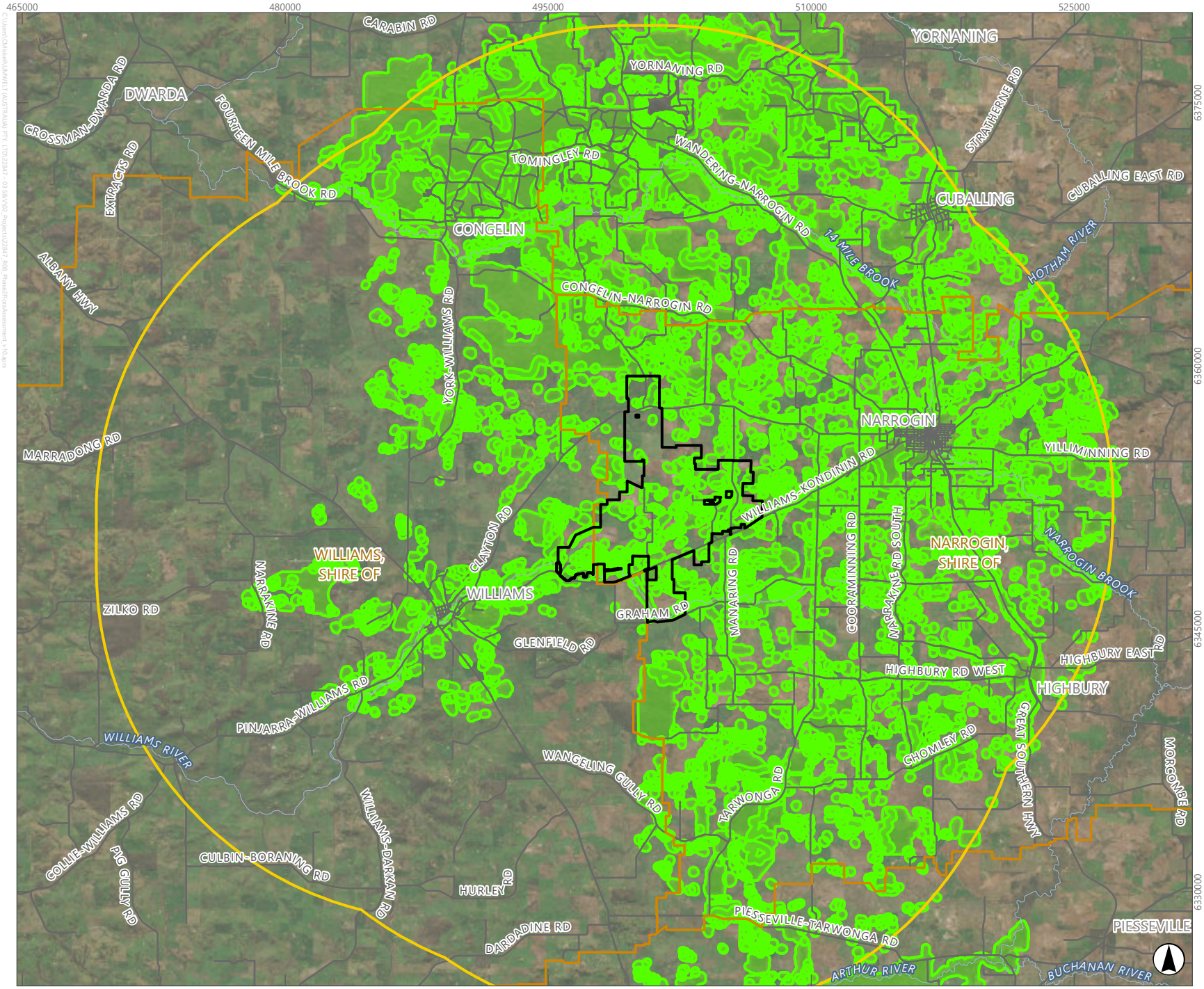
Table 4.3 Significant Vegetation Known from Within the Desktop Study Area

Community	Description	Status (WA)	Status (EPBC)	Source[2]
Eucalypt Woodlands of the Western Australian Wheatbelt	The community occurs in the IBRA Avon Wheatbelt 1 and 2 and Western Mallee subregions. It also includes outlying patches in the eastern parts of JAF01 Northern Jarrah Forests and JAF02 Jarrah Forests adjacent to the Avon Wheatbelt, that are off the Darling Range, and receive less than 600 mm mean annual rainfall. The structure of the ecological community is a woodland in which the minimum crown cover of the tree canopy in a mature woodland is 10%. The key dominant or co-dominant species of the tree canopy are species of Eucalyptus trees that typically have a single trunk. Native understorey is present but is of variable composition, being a combination of grasses, other herbs and shrubs.	Priority 3 (iii)	Critically Endangered (CR)	DCCEEW, DBCA

[2]*Sources: (DCCEEW, 2023), (DBCA, 2023b).*

FIGURE 4.2

Listed Significant Vegetation Records from the Desktop Study Area



Legend

- Desktop Study Area
- Study Area
- Road
- Major Watercourse

Threatened Ecological Communities

- Eucalypt woodlands of the Western Australian Wheatbelt (EPBC - CR)

0 6 12

Kilometres

Scale: 1:300,000 at A4
GDA2020 MGA Zone 50

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Image Source: ESRI Basemap (2023) | **Data Source:** Landgate (2023), DBCA (2023)

4.2 Reconnaissance and Targeted Field Survey

4.2.1 Flora Census

The 2023-2024 survey recorded a total of 149 discrete flora taxa, including 69 introduced taxa; a total of 37 families were represented, with the Myrtaceae (27 taxa), Poaceae (28 taxa) and Fabaceae (16 taxa) families with the highest number of taxa recorded. Note that of the 80 taxa considered to be native, many of these were planted within the Study Area.

A full list of vascular flora taxa recorded by the 2023-2024 survey is presented in **Appendix D**. Note that this list is not an exhaustive list of species of the Study Area with respect to a Reconnaissance level survey conducted. The raw vegetation mapping notes are presented in **Appendix B**, while the raw relevé data is presented in **Appendix C**.

4.2.2 Introduced Flora Taxa

A high percentage (46% of the total number of taxa) of introduced taxa were recorded in the areas assessed, which is representative of the high levels of clearing for agriculture which are present throughout the Study Area. Note that 10 taxa included in this list are taxa that are native to Western Australia, but planted outside of their natural range, and thus are classified as introduced in this context.

Although most introduced taxa were common pasture weeds, three Declared Pests under the *Biosecurity and Agriculture Management Act* (20070 (BAM Act) (s22(2)) (**Asparagus asparagoides*, **Echium plantagineum, *Moraea flaccida*) were recorded. Each of these three taxa are in the 'Exempt' Keeping Category (s22(2)); no permit or conditions are required for keeping.

4.2.3 Significant Flora Taxa

No listed significant flora were identified during the 2023- 2024 survey. Historical records of both *Xanthorrhoea brevistyla* (P4) and *Gastrolobium ovalifolium* (P4) were reviewed and found to be erroneous in location accuracy (incorrect coordinates associated with the record). The record of *Xanthorrhoea brevistyla* (P4) was found to refer to a locality that places the record within an adjacent nature reserve, rather than within the Study Area. The record of *Gastrolobium ovalifolium* (P4) is from 1958, and is vague in its locality description (9 miles east of Williams) (Western Australian Herbarium, 1998); therefore its actual location cannot be verified.

4.2.4 Likelihood of Occurrence of Further Significant Flora Taxa

It is considered that the 56 significant flora taxa identified as occurring or potentially occurring in the Study Area based on the desktop assessment were identifiable during the 2023-2024 survey, either because the survey periods coincided with the taxon's flowering period, or the taxon can be identified reliably when in fruit or when sterile. **Table 4.4** displays the likelihood of occurrence for each listed significant flora taxon returned from the desktop assessment, including habitat review and after the Targeted surveys conducted in 2023. This likelihood of occurrence assessment has identified:

- 40 taxa are unlikely to occur in the Study Area, either because no potential habitat is present within the Study Area (due to lack of required substrate, soil or water conditions, or due to degraded nature of the remnant vegetation present), or the Study Area is outside of the taxon's known range.
- It is considered that the remaining 16 taxa have some level of potential to occur within the Study Area. It must be noted that the taxa considered to potentially occur within the Study Area are only considered possible within the area of remnant vegetation in Good condition not subject to Targeted survey in 2023. Excluding this vegetation, all taxa identified as potentially occurring in the Study Area are considered unlikely to occur, due to vegetation condition being too poor to support habitat for such significant flora taxa.

It should be noted that suitable habitat has predominantly been determined utilising details recorded from known locations of specimens lodged with the WA Herbarium (Western Australian Herbarium, 1998). However, for many taxa known within the general vicinity of the Study Area, suitable habitat is difficult to define as the available information is often vague or very broad and difficult to interpret. Therefore, a precautionary approach has been adopted when assessing whether suitable habitat for the taxon is present in the Study Area. Additionally, it should be noted that, as per **Section 3.8**, fire does not appear to have affected the majority of the Study Area for some time; short-lived, disturbance opportunist taxa that rely on fire for germination and subsequent establishment may therefore not have been identifiable at time of survey. It does not appear that any of the aforementioned 56 taxa have this particular life history, although it is noted that *Caladenia dorrienii* (T) flowering is stimulated by fire.

Table 4.4 Likelihood of Occurrence of Further Significant Flora

Taxon	Status (WA)	Status (EPBC)	Flowering Period[1]	Habitat[1]	Likelihood of Occurrence in Study Area
Acacia brachyphylla* var. *recurvata	P3		Jun - Oct	Sand, loam, gravelly soils.	Unlikely. Study Area just outside of edge of known range; nearest record to Study Area located on granite or associated clay habitat on a bank; granite influenced areas in the Study Area are in Degraded or worse condition.
Acacia cuneifolia	P4		Jul - Oct	Sand, clay loam over granite. Granite outcrops and hills, rocky watercourses.	Unlikely. Habitat (granite influenced areas) are present within Study Area however all are in Degraded or worse condition.
Acacia deflexa	P3		Aug - Sep	Plains with sand or loam over laterite.	Unlikely. Habitat (laterite influenced area) in Good condition present, however Study Area area is outside of this taxon's known range.
Acacia insolita* subsp. *recurva	T	EN	Early Sep	Lateritic breakaways or ridges, brown sandy clay.	Unlikely. Habitat (laterite influenced area) in Good condition present, however the Study Area is outside of this taxon's known range.
Acacia lanei	P3		May - Sep	Hillslopes, granite outcrops, drainage lines. Sandy loam soils.	Unlikely. Habitat (granite influenced areas) are present within Study Area however all are Degraded or worse condition.
Andersonia bifida	P2		Nov - Jan	White-grey sandy clay loam, winter-wet over granite. Flats with yellow or white sand.	Unlikely. Habitat not considered present within Study Area.
Andersonia carinata	P2		Jun, Aug - Oct	White-grey sand over laterite, or granite; sandplains or slopes.	Unlikely. Habitat (laterite influenced area) in Good condition present in Study Area, however this is on a hillock and not on a sandplain or associated slope.
Andersonia gracilis	T	EN	Aug - Nov	Winter-wet areas, near swamps. White-grey sand, sandy clay and gravelly loam.	Unlikely. Habitat not considered present within Study Area. Additionally, the Study Area is outside of this taxon's known range.
Anigozanthos bicolor* subsp. *exstans	P3		Sep - Oct	Plains, brown or grey sandy loam; generally, granite influenced.	Unlikely. Habitat (granite influenced areas) are present within Study Area however all are Degraded or worse condition.

Taxon	Status (WA)	Status (EPBC)	Flowering Period[1]	Habitat[1]	Likelihood of Occurrence in Study Area
Anthotium odontophyllum	P3		Nov - Jan	Grey sandy clay, undulating plains, flats. Over granite or laterite.	Unlikely. Although laterite influenced area in Good condition present, this was not an undulating plain, Habitat not considered present within Study Area.
Asterolasia hyalina	P2		Aug - Oct	Slopes, along creeks, with sandy loam over granite or laterite.	Unlikely. Habitat in Good or better condition not considered present within Study Area.
Babingtonia maleyae	P2		Jan - Feb	Lateritic hillsides, sandy loam.	Potential. Habitat (laterite influenced area) in Good condition present in the Study Area; however, known records are from Narrogin eastwards and therefore Study Area outside of range.
Banksia acanthopoda	P2		Jul - Oct	Gravelly clay- sand over laterite. Low ridges.	Unlikely. Habitat (Laterite influenced area) in Good condition present, however Study Area in northern end of known range; distinctive taxon.
Banksia acuminata	P4		Sep - Oct	Over laterite, white-grey sand or brown loam. Slopes and plains.	Unlikely. Habitat (laterite influenced area) in Good condition present within Study Area however Study Area is to the north of the known range. .
Banksia cuneata	T	EN	Apr - Dec	Yellow or grey sand, plains and slopes.	Unlikely. Habitat in Good condition or better not considered present within Study Area. Additionally, the Study Area is outside of this taxon's known range.
Banksia cynaroides	P4		Jul - Oct	Orange-brown sandy loam or grey sand over laterite, slopes.	Potential. Habitat (laterite influenced area) in Good condition present.
Banksia oligantha	T	EN	Jun - Nov	Dunes, grey or yellow sand. Deep sand.	Unlikely. Habitat not considered present within Study Area.
Banksia porrecta	P4		May - Sep	Flats and slopes, yellow-brown sandy clay or white sand; over laterite or granite.	Unlikely. Habitat in Good or better condition not considered present within Study Area.
Banksia rufa* subsp. *obliquiloba	P3		Apr - Oct	Sand over laterite, or gravelly loam. Rock outcrops, ridges, valleys, slopes or plains.	Unlikely. Habitat in Good condition present in the Study Area, however range of taxon is to the east of the Study Area, with the one record attributed to Narrogin having deficient locality details.

Taxon	Status (WA)	Status (EPBC)	Flowering Period[1]	Habitat[1]	Likelihood of Occurrence in Study Area
Banksia subpinnatifida* var. *subpinnatifida	P2		Jul - Oct	Gentle slopes, yellow grey sand, orange gravel, over laterite.	Unlikely. Habitat (laterite influence) in Good condition in the Study Area, however distribution is to the north of the Study Area.
Boronia capitata* subsp. *capitata	T	EN	Aug - Jan	Plains, sand over laterite.	Unlikely. Habitat not considered present within Study Area. Additionally, the Study Area is outside of this taxon's known range.
Bossiaea concinna	P3		May - Oct	Valleys, lower slopes, winter wet areas. Grey or brown sandy clay loam.	Unlikely. Habitat in Good condition not present in the Study Area.
Caladenia caesarea* subsp. *transiens	P1		Sep. Single record is 17 Sep.	Rich loam.	Unlikely. Only one historical record of this taxon is known, from 1985.
Caladenia dorrienii	T	EN	Sep - Nov. Latest record is 1 Nov.	Clay loam. Adjacent to rivers and seasonal creeks.	Unlikely. Habitat in Good or better condition not considered present within Study Area. Additionally, the Study Area is outside of this taxon's known range.
Caladenia* x *triangularis	P4		Sep - Oct. Latest record is 5 Oct.	Heavy loam.	Unlikely. Closest historical records of this taxon is from 1924 and 1962. Habitat records for these specimens lacking.
Calectasia pignattiana	T	VU	Aug - Dec	Plains, deep white sand over granite or laterite.	Unlikely. Habitat not considered present within Study Area.
***Chamelaucium* sp. Dryandra (D. Rose 446)**	P2		Sep - Oct	Breakaways, slopes, yellow loamy sand over laterite.	Potential. Habitat (laterite influenced area) in Good condition present. Study Area slightly outside of the distribution of this taxon.
Conostylis drummondii	T	EN	Oct - Jan	White-grey or yellow sand or loamy sand, flats and slopes.	Unlikely. Habitat not considered present within Study Area.
Darwinia carnea	T	EN	Oct - Nov	Breakaways, brown loamy sand over laterite.	Potential. Habitat (laterite influenced area) in Good condition present; nearest records are historical and do not provide adequate habitat descriptions.

Taxon	Status (WA)	Status (EPBC)	Flowering Period[1]	Habitat[1]	Likelihood of Occurrence in Study Area
***Darwinia* sp. Dryandra (G.J. Keighery 9295)**	P4		May, Jul, Nov	Gravelly clay. Lateritic ridges.	Potential. Habitat (laterite influenced area) in Good condition present within Study Area. Note the known distribution of this taxon is to the north and south-west of the Study Area.
Daviesia euphorbioides	T	EN	Jul - Sep	Slopes and flats with laterite.	Unlikely. The Study Area is outside of this taxon's known range.
Dicrastylis reticulata	P3		Aug - Oct	Granite outcrops, dark brown sandy loam.	Unlikely. Habitat in Good or better condition not within the Study Area.
Diuris micrantha	T	VU	Sep - Oct. Latest record is 13 Oct.	Winter-wet depressions. Brown loamy clay. Winter wet swamps, in shallow water.	Unlikely. Habitat not considered present within Study Area. Additionally, the Study Area is outside of this taxon's known range.
Eleocharis keigheryi	T	EN	Aug - Nov	Clay, sandy loam. Emergent in freshwater: creeks, claypans.	Unlikely. Habitat not considered present within the Study Area. Study Area on edge of known range.
Gastrolobium ovalifolium	P4		Aug - Sep	Sandy clay. Gravelly hills.	Potential. Habitat (laterite influenced area) in Good condition present, Study Area in the known range of the taxon.
Gastrolobium rotundifolium	P3		Sep - Oct	Hill tops, breakaways. Grey sandy loam.	Unlikely. Main range of taxon is north of Perth, with location south of Narrogin a record from 1937.
Gastrolobium stipulare	P4		Sep - Nov	Lateritic ridges, orange-brown gravelly loam. Slopes, yellow-grey sand.	Potential. Habitat (laterite influenced area) in Good condition present.
Gastrolobium tomentosum	P4		Aug - Nov	Gravelly loam or clay, sometimes over sandier substrates. Hills, road verges.	Potential. Habitat (laterite influenced area) in Good condition present.
Lasiopetalum bracteatum	P4		Sep - Feb	Hills, slopes with granite, brown loam.	Unlikely. Although habitat (laterite influenced area) in Good condition present, the Study Area is outside of the range of this taxon.
Lasiopetalum rotundifolium	T		Sep - Dec	Lateritic ridges, upper slopes. Brown loam.	Unlikely. Although habitat (laterite influenced area) in Good condition is present, the main range of this

Taxon	Status (WA)	Status (EPBC)	Flowering Period[1]	Habitat[1]	Likelihood of Occurrence in Study Area
					taxon is north around the Brookton area, with the record near Narrogin being recorded from a disturbed gravel pit area.
Leucopogon darlingensis* subsp. *rectus	P2		Aug- Sep	Hillsides, dry yellow-brown sandy gravelly loam over laterite.	Potential. Habitat (laterite influenced area) in Good condition present.
Lysiosepalum aromaticum	P2		May - Nov	Exposed granite, brown loam.	Unlikely. Only one specimen in the WAHerbarium notes laterite substrate, otherwise suitable habitat is overwhelmingly at the base of granite outcrops; suitable habitat in the Study Area not in Good or better condition.
Marianthus dryandra	P2		Oct	Gullies, clay loam over laterite.	Unlikely. Habitat in Good or better condition not considered present within Study Area.
Persoonia hakeiformis	P2		Oct - Jan	Lateritic ridges, slopes. brown gravelly clay loam, or grey clayey sand.	Potential. Habitat (laterite influenced area) in Good condition present, however, main range is to the north and east of the Study Area.
Pultenaea pauciflora	T	VU	Nov - Jan	Gravelly clay loam over laterite, slopes.	Potential. Known from area south of the Study Area on laterite influenced area.
Roycea pycnoph	T	EN	Sep – Oct	Salt lakes and saline habitats.	Unlikely. Habitat not considered present within Study Area.
Stylidium expeditionis	P4		Oct - Nov	Plains, with granite and brown loam or white sand, sometimes saline.	Unlikely. Habitat in Good or better condition not present in the Study Area.
Stylidium rhipidium	P3		Oct - Nov	Winter-wet, drainage lines. Black peaty loam or loam clay.	Unlikely. Habitat in Good or better condition not present in the Study Area.
Stylidium tylosum	P2		Oct - Nov	Slopes with exposed granite, sandy clay.	Unlikely. Habitat in Good or better condition not present in the Study area.
Synaphea platyphylla	P3		Sep - Oct	Plains with grey-brown sandy gravel.	Unlikely. Range of taxon is to the east of Narrogin, with nearest know record occurring on gravelly sand over granite.

Taxon	Status (WA)	Status (EPBC)	Flowering Period[1]	Habitat[1]	Likelihood of Occurrence in Study Area
Tetratheca retrorsa	P3		Aug - Nov	Slopes with exposed granite, sandy loam; lateritic breakaways.	Potential. Habitat (laterite influenced area) in Good condition present within Study Area. Note nearest record is a disjunct location south of the Study Area, with the rest of the distribution north of Narrogin.
Thomasia dielsii	P1		Aug - Nov	Flats, bottoms of valleys. Dark brown loam or grey sandy clay-gravel with laterite.	Potential. Habitat (laterite influenced area) in Good condition present, nearest location (Dryandra National Park) is the northern-most known location of a scattered distribution, occurring on gravelly clay loam on midslope.
Tricostularia drummondii	P3		Nov	Grey sand, lateritic slopes.	Potential. Habitat (laterite influenced area) in Good condition present in the Study Area.
Verticordia fimbrilepis* subsp. *fimbrilepis	T	EN	Nov - Feb	Gentle slopes and flats, white sand over granite.	Unlikely. Although occurs on areas influenced by laterite, it is known from gentle slopes, low plains and occurs on heaths on flats; no suitable habitat is considered to occur in the Study Area.
Verticordia huegelii* var. *tridens	P3		Oct - Nov	Flats, clay loam, over laterite.	Potential. Habitat (laterite influenced area) in Good condition present; note that nearest records to the Study Area were recorded on loamy soils.
Xanthorrhoea brevistyla	P4		Aug - Dec	Brown clay, laterite gravel. Rolling hills.	Potential. Habitat (laterite influenced area) in Good condition present.

[1]*Source: (Western Australian Herbarium, 1998-2023)*

4.2.5 Vegetation Types

A total of 22 Vegetation Types (VTs) were identified in the Study Area by the 2023-2024 survey, as summarised in **Table 4.5** and presented on **Figure 4.4**. This area covers 1146.6 ha and represents 18.1% of the Study Area.

The majority of VTs have clearly been highly modified since European settlement and are no longer considered to be intact remnant vegetation. This is a result of the long history of agricultural activities and other development in the Study Area, including direct clearing for cropping, pasture, roads and other infrastructure, and grazing by stock. These include areas with primarily only native tree species remaining, areas with only planted native trees and shrubs, and areas with almost exclusively weed or crop species. Remnant vegetation was mapped primarily as occurring either on drainage lines, or on the tops of hills influenced by either granite or laterite; these areas being the least favoured for agricultural purposes.

- VT7 represents the largest portion of the Study Area in the context of remnant vegetation (5.6%). This vegetation type is described as low to mid woodland to open woodland of *Eucalyptus rudis* subsp. *rudis* and *Eucalyptus loxophleba* subsp. *loxophleba* over low sedgeland to open sedgeland of **Juncus acutus* subsp. *acutus* over tussock grassland of pasture weeds on drainage lines;
- The second largest VT is VT6 (*Corymbia calophylla* and *Eucalyptus wandoo* subsp. *wandoo* woodland with occasional *Allocasuarina huegeliana* and *Eucalyptus astringens* subsp. *astringens*) (2.9% of the Study Area); and
- The third largest is VT8 (*Eucalyptus astringens* subsp. *astringens* and *Eucalyptus gardneri* subsp. *gardneri* woodland) (1.3% of the Study Area) (**Table 4.5**).

Note that VT20 is not included as a VT in **Table 4.5**, as this VT was mapped only within the Additional Survey Area, and thus is not subject to this report.

4.2.6 Other Areas Mapped

Areas where natural vegetation has been completely and apparently permanently removed, with either no or very scattered native taxa (trees) remaining, have been mapped as 'Cleared' (Cl) (where discernible at 1:5,000 scale). This category mainly consists of paddocks, with tracks and firebreaks providing a minor proportion of this area. A total of 5098.9 ha of 'Cleared Land' was mapped, representing 80.4% of the Study Area (**Table 4.5, Figure 4.4**).

A further 96.6 ha (1.5%) of the Study Area are considered to be Planted (Pl), where the natural vegetation has been cleared and replaced with assorted flora taxa, some of which are native taxa (for example, *Eucalyptus loxophleba* subsp. *loxophleba*).

One small area within the Study Area (1.8 ha, 0.03%) was not assessed (NA) during the 2023-2024 survey, as it was fenced off from agricultural activities and was continuous with an adjacent reserve.

Table 4.5 Vegetation Types of the Study Area

VT	Description	Sampling Effort	Extent within Study Area (ha)	Representative Photo
Native Vegetation				
VT1	Low to mid isolated trees to woodland of *Eucalyptus rudis* subsp. *rudis*, occasionally over tall isolated shrubs to tall open shrubland of *Acacia acuminata* and *Acacia saligna* over mid open sedgeland of **Juncus acutus* subsp. *acutus* over low closed tussock grassland of pasture weeds on brown sandy loam on drainage lines.	VM02, VM03, VM05, VM06, VM07, VM13, VT17, VM18, VM20, VM21, VM65, VM66, VM67, VM99, VM100, VM143, VM152, VM345	164.1 (2.6%)	
VT2	Low to mid open woodland of *Corymbia calophylla* over isolated tall shrubs of *Acacia saligna* and *Acacia microbotrya* over tall open sedgeland of **Typha orientalis* over low open sedgeland of **Juncus acutus* subsp. *acutus* over low tussock grassland of pasture weeds on brown sandy clay loam on drainage lines on slopes.	VM08	9.9 (0.2%)	

VT	Description	Sampling Effort	Extent within Study Area (ha)	Representative Photo
VT3	Low open woodland of *Allocasuarina huegeliana* over isolated tall shrubs of *Acacia saligna, Acacia microbotrya* and *Acacia acuminata* over low open sedgeland of **Juncus acutus* subsp. *acutus* over low tussock grassland of pasture weeds on brown sandy clay loam adjacent to drainage lines on slopes.	VM36	17.9 (0.2%)	
VT4	Low to mid woodland to open woodland of *Eucalyptus loxophleba* subsp. *loxophleba* over low closed tussock grassland of pasture weeds on brown-red clay loam on slopes.	VM16, VM41, VM68, VM121, VM135, VM242	63.4 (1.0%)	

VT	Description	Sampling Effort	Extent within Study Area (ha)	Representative Photo
VT5	Tall shrubland of *Acacia acuminata* with isolated low to mid scattered trees of *Eucalyptus loxophleba* subsp. *loxophleba* and *Corymbia calophylla* over low tussock grassland of pasture weeds on red-brown sandy clay loam on lower slopes with granite outcropping.	VM19, VM32	7.9 (0.1%)	
VT6	Low to mid woodland to open woodland of *Corymbia calophylla* and occasional *Eucalyptus wandoo* subsp. *wandoo*, *Eucalyptus astringens* subsp. *astringens* and/or *Allocasuarina huegeliana* over low tussock grassland to low open tussock grassland of pasture weeds on lateritic ridges and upper slopes with lateritic gravel on brown loam.	VM22, VM23, VM25, VM26, VM27, VM31, VM37, VM38, VM39, VM44, VM45, VM49, VM51, VM55, VM57, VM60, VM61, VM69, VM102, VM103, VM107, VM112, VM115, VM120, VM123, VM125, VM126, VM127, VM131, VM132, VM133, VM134, VM137, VM138, VM144, VM148, VM362, VM363, VM368	186.5 (2.9%)	

VT	Description	Sampling Effort	Extent within Study Area (ha)	Representative Photo
VT7	Low to mid woodland to open woodland of *Eucalyptus rudis* subsp. *rudis* and *Eucalyptus loxophleba* subsp. *loxophleba* over low sedgeland to open sedgeland of **Juncus acutus* subsp. *acutus* over low tussock grassland of pasture weeds on drainage lines with red-brown clay loam on gentle slopes.	VM14, VM15, VM28, VM29, VM30, VM35, VM46, VM50, VM52, VM53, VM54, VM70, VM72, VM136, VM162, VM175, VM180, VM182, VM183, VM184, VM185, VM186, VM190, VM194, VM195, VM342	360.1 (5.6%)	
VT8	Low to mid woodland of *Eucalyptus astringens* subsp. *astringens* and occasionally *Eucalyptus gardneri* subsp. *gardneri* on brown-red clay loam with some lateritic outcropping on the edge of breakaways, crests, and upper slopes.	VM33, VM34, VM40, VM47, VM48, VM56, VM58, VM64, VM105, VM114, VM118, VM124, VM130, VM146, VM147, VM261, VM262, VM263, VM265, VM267, VM268, VM373	88.5 (1.3%)	

VT	Description	Sampling Effort	Extent within Study Area (ha)	Representative Photo
VT9	Low open woodland of *Eucalyptus drummondii* over low open tussock grassland of pasture weeds on red-brown sandy loam with lateritic outcropping on edges of breakaways or crests.	VM24	0.4 (0.006%)	
VT10	Isolated trees to mid open woodland of *Eucalyptus wandoo* subsp. *wandoo* and *Corymbia calophylla* over low tussock grassland of pasture weeds on red-brown sandy loam with laterite extensions on upper slopes.	VM01, VM43, VM247, VM248, VM249, VM250, VM251, VM252, VM253, VM254, VM261, VM262, VM366	65.2 (1.0%)	

VT	Description	Sampling Effort	Extent within Study Area (ha)	Representative Photo
VT11	Low to mid open woodland of *Corymbia calophylla* and *Eucalyptus wandoo* subsp*. wandoo* and *Allocasuarina huegeliana* with occasional *Eucalyptus drummondii* over tussock grassland to open tussock grassland of pasture weeds on lateritic ridges and upper slopes with lateritic gravel on brown loam.	VM59	5.8 (0.09%)	
VT12	Mid woodland of *Allocasuarina huegeliana* and *Eucalyptus wandoo* subsp. *wandoo* over tall open shrubland of *Banksia sessilis* var. *sessilis*, sometimes with *Santalum murrayanum* over sparse sedgeland of *Gahnia aristata* on laterite hills.	NR03	0.4 (0.008%)	

VT	Description	Sampling Effort	Extent within Study Area (ha)	Representative Photo
VT13	Mid woodland of *Eucalyptus accedens* and *Eucalyptus astringens* subsp. *astringens* over isolated clumps of grasses of pasture weeds on lateritic slopes.	VM266	0.8 (0.01%)	
VT14	Mid open woodland of *Eucalyptus wandoo* subsp. *wandoo,* sometimes with *Eucalyptus marginata* subsp. *marginata* and occasional *Corymbia calophylla* over low to mid open shrubland of mixed species over low sparse tussock grassland with laterite or granite.	VM255, VM256, VM260	10.2 (0.2%)	

VT	Description	Sampling Effort	Extent within Study Area (ha)	Representative Photo
VT15	Low open woodland of *Eucalyptus dorrienii* over low open tussock grassland of pasture weeds on red-brown sandy loam with lateritic outcropping on edges of breakaways or crests.	VM264	0.1 (0.002%)	
VT16	Mid open woodland of *Allocasuarina huegeliana,* occasional *Eucalyptus wandoo* subsp. *wandoo* or *Eucalyptus loxophleba* subsp. *loxophleba*, associated with granite outcropping.	VM119, VM145, VM200, VM205, VM259	15.3 (0.2%)	

VT	Description	Sampling Effort	Extent within Study Area (ha)	Representative Photo
VT17	Mid woodland of *Casuarina obesa* over **Juncus acutus* subsp. *acutus* mid sedgeland, associated with drainage or outwash areas with brown sandy loam.	Not included within the Study Area. Note: sampling for this VT was undertaken in the Additional Survey Area, with mapping of this unit continued into the Study Area	4.1 (0.06%)	
VT18	Mid sedgeland of **Juncus acutus* subsp. *acutus*, with no overstorey, or with occasional *Eucalyptus wandoo* subsp. *wandoo* and *Allocasuarina huegeliana* in drainage lines.	VM63, VM343, VM368, VM370	10.5 (0.1%)	

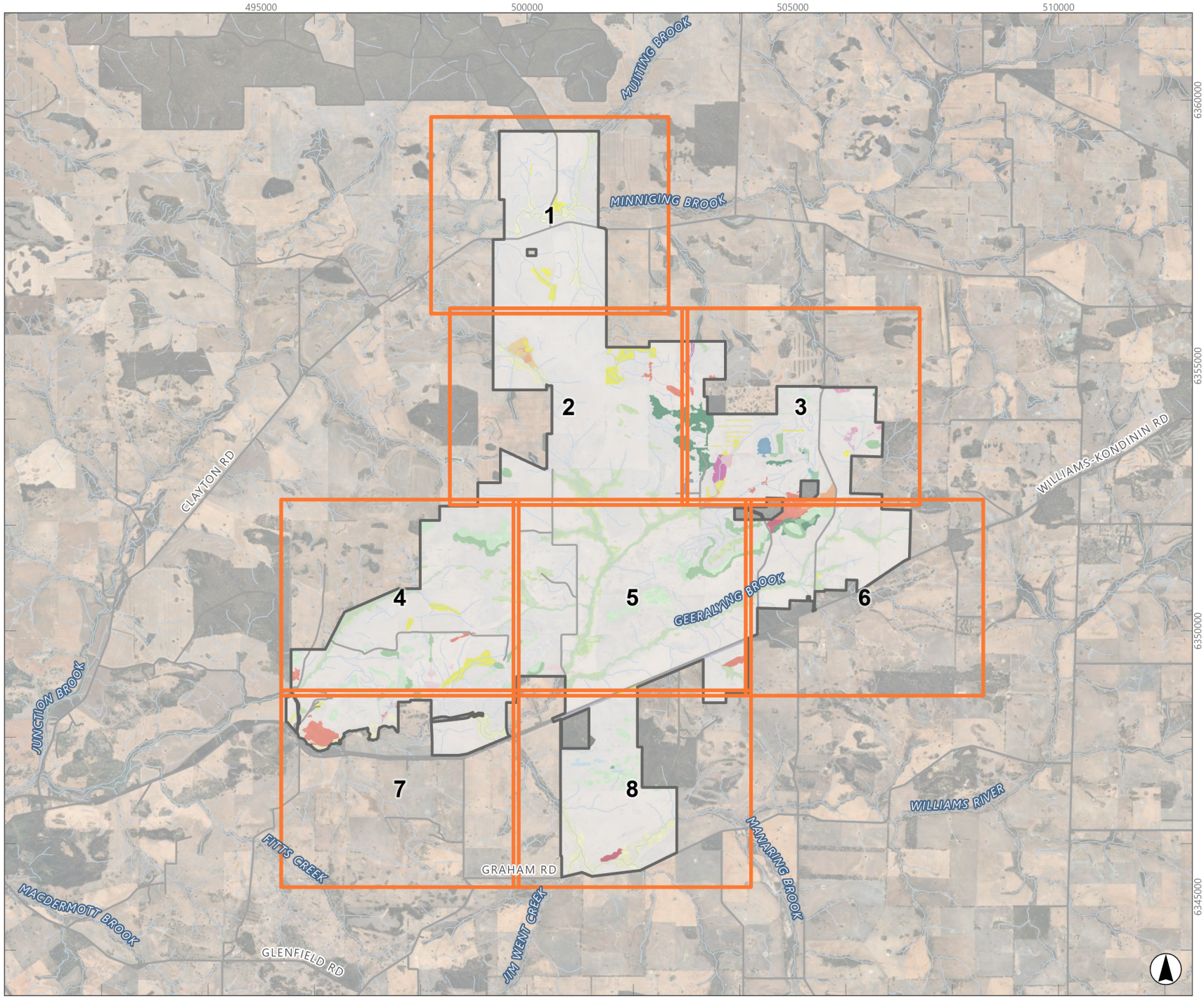
VT	Description	Sampling Effort	Extent within Study Area (ha)	Representative Photo
VT19	Mosaic, disturbed. Mid open woodland of *Casuarina obesa, Eucalyptus* spp. and assorted planted species, both local and exotic over low tussock grassland of pasture weeds, with saline influences, associated with drainage and outwash areas with brown sandy loam.	VM85, VM244, VM245, VM246	14.1 (0.2%)	
VT21	Isolated trees to mid open woodland of *Eucalyptus loxophleba* subsp*. loxophleba* and *Allocasuarina huegeliana* with occasional *Corymbia calophylla* and/or *Eucalyptus rudis* subsp. *rudis*, tall isolated shrubs of *Acacia acuminata* and sometimes *Acacia microbotrya* on slopes with exposed granite and brown sandy clay loam.	VM101, VM104, VM108, VM109, VM110, VM111, VM116, VM117, VM139, VM140, VM141, VM142, VM374	74.2 (1.2%)	

VT	Description	Sampling Effort	Extent within Study Area (ha)	Representative Photo
VT22	Isolated trees to mid open woodland of *Eucalyptus wandoo* subsp. *wandoo* with *Allocasuarina huegeliana*, occasionally with *Eucalyptus loxophleba* subsp. *loxophleba* over low tussock grassland of pasture weeds on granite outcropping.	VM62, VM204	2.1 (0.03%)	
VT23	Mosaic of isolated remnant native trees, including *Eucalyptus wandoo* subsp. *wandoo, Eucalyptus loxophleba* subsp. *loxophleba, Corymbia calophylla, Eucalyptus rudis* subsp. *rudis, Eucalyptus astringens* subsp. *astringens, Allocasuarina huegeliana* and isolated mid to tall shrubs *of Acacia acuminata, Acacia microbotrya* and *Acacia saligna*, occasionally *Hakea prostrata* or *Banksia sessilis* var. *sessilis,* over low tussock grassland of pasture weeds; associated with road verges.	VM155, VM158, VM159, VM161, VM163, VM165, VM166, VM167, VM168, VM169, VM170, VM171, VM172, VM173, VM174, VM176, VM177, VM178, VM179, VM187, VM188, VM189, VM191, VM192, VM193, VM198, VM199, VM201, VM202, VM203, VM206, VM230, VM231, VM232, VM233, VM234, VM344, VM346, VM347, VM348, VM349	44.3 (0.7%)	

VT	Description	Sampling Effort	Extent within Study Area (ha)	Representative Photo
Other Areas Mapped				
Pl	Planted trees of local and other exotic species over pasture weeds on brown loam on slopes or undulating plains.	VM04, VM09, VM10, VM11, VM12, VM71, VM73, VM106, VM113, VM122, VM128, VM156, VM157, VM235, VM243, VM257, VM369, VM371, VM372	96.6 (1.5%)	
Cl	Cleared areas with occasional isolated (remnant native and exotic) trees over pasture weeds.	VM42, VM129, VM181, VM196, VM197	5098.9 (80.4%)	NA
NA	Not Assessed	NA	1.8 (0.02%)	NA

FIGURE 4.3.0

Vegetation Types of the Study Area



Legend

- Study Area
- Road
- Watercourse

Vegetation Type

- VT1
- VT2
- VT3
- VT4
- VT5
- VT6
- VT7
- VT8
- VT9
- VT10
- VT11
- VT12
- VT13
- VT14
- VT15
- VT16
- VT17
- VT18
- VT19
- VT21
- VT22
- VT23

Other Areas Mapped

- CI
- NA
- PI

0 2 4

Kilometres

Scale: 1:100,000 at A4

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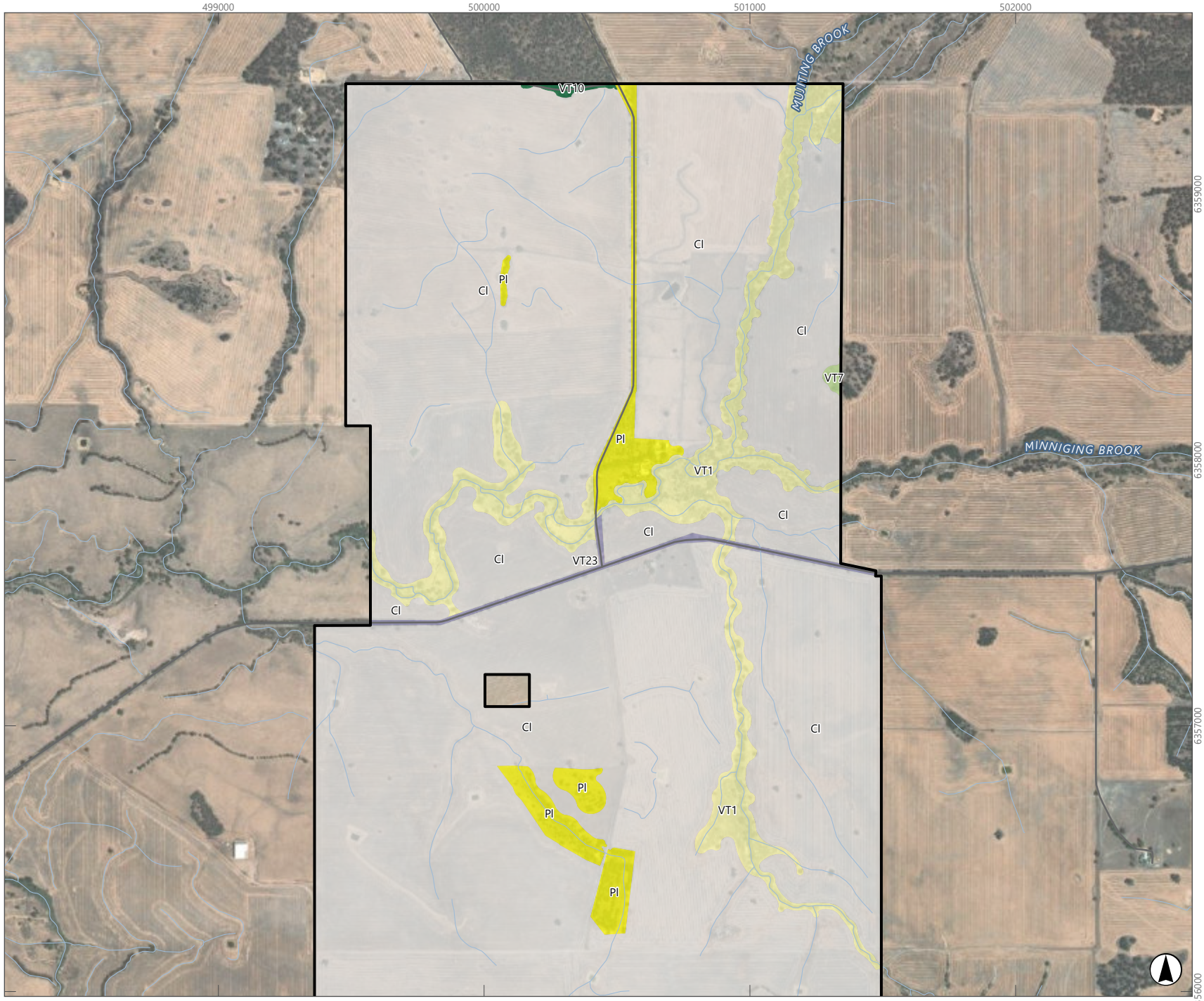
FIGURE 4.3.1

Vegetation Types of the Study Area



Legend

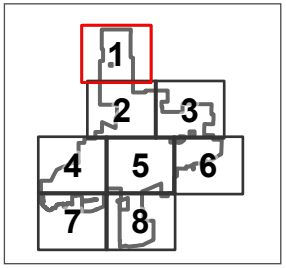
- Study Area
- Road
- Watercourse

Vegetation Type

- VT1
- VT7
- VT10
- VT23

Other Areas Mapped

- CI
- PI



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Metres

Scale: 1:20,000 at A4

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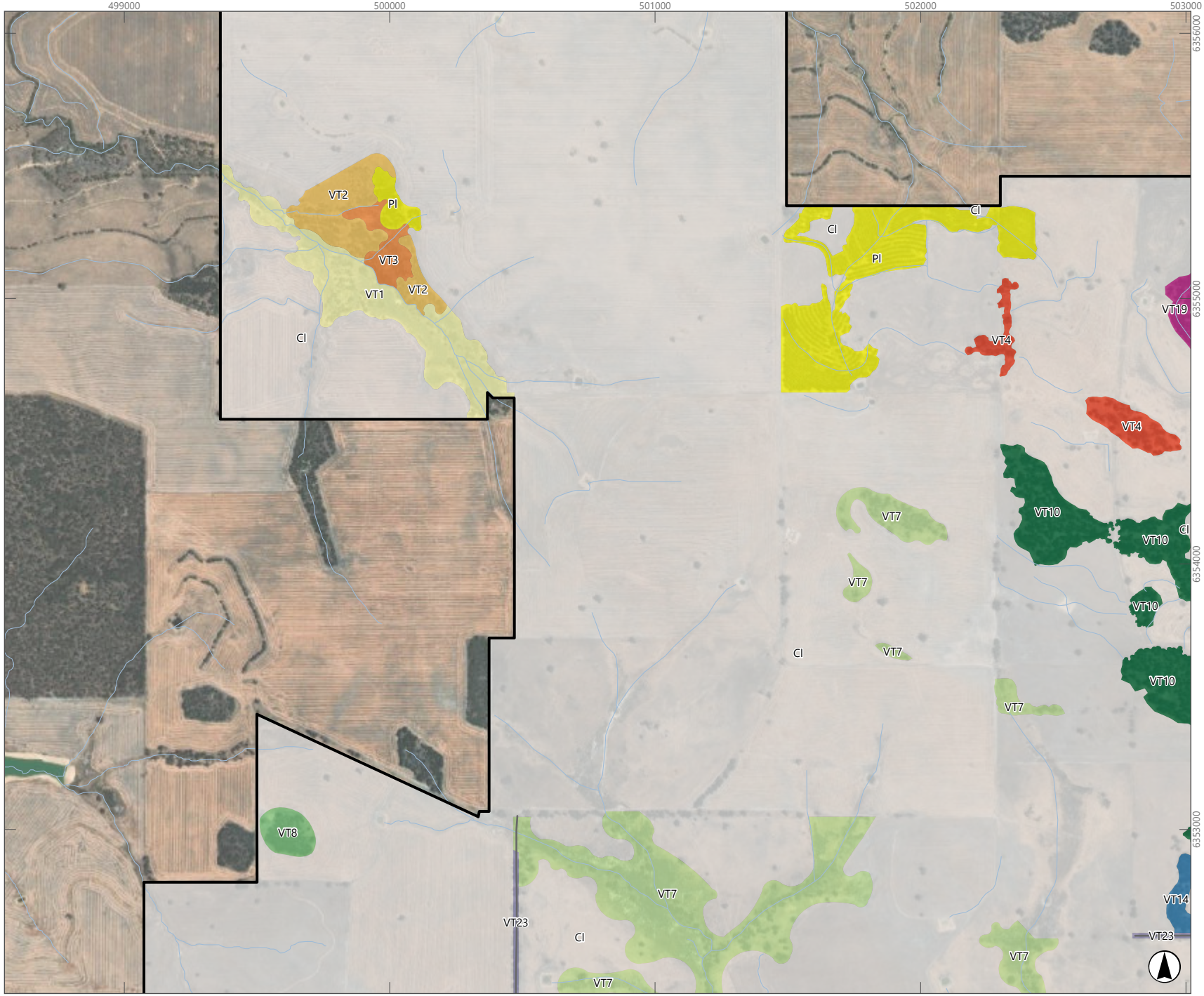
FIGURE 4.3.2

Vegetation Types of the Study Area



Legend

- Study Area
- Road
- Watercourse

Vegetation Type

- VT1
- VT2
- VT3
- VT4
- VT7
- VT8
- VT10
- VT14
- VT19
- VT23

Other Areas Mapped

- CI
- PI

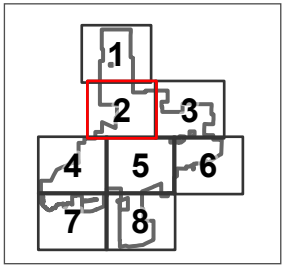


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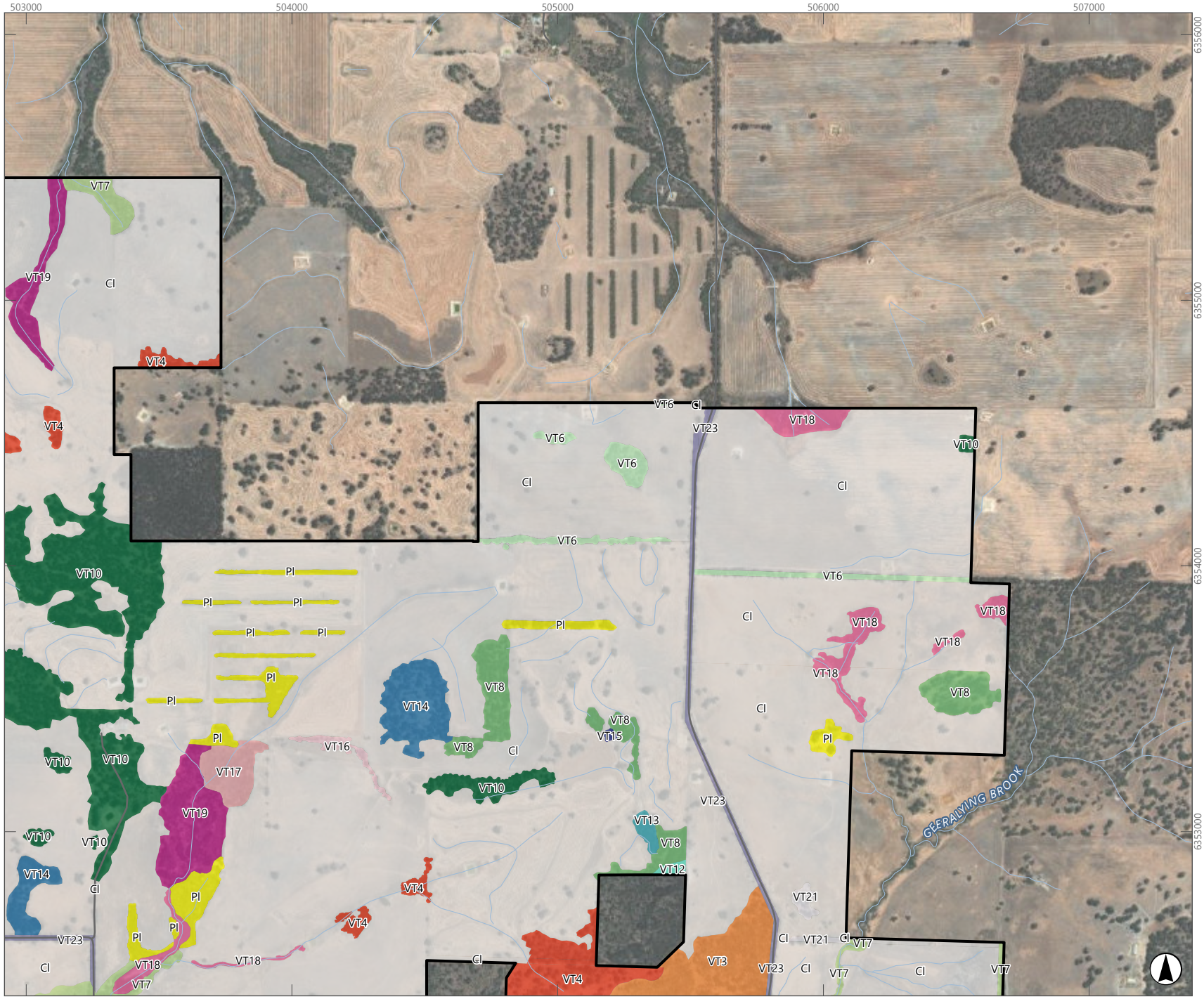
FIGURE 4.3.3

Vegetation Types of the Study Area



Legend

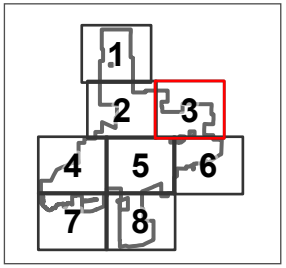
- Study Area
- Road
- Watercourse

Vegetation Type

- VT3
- VT4
- VT6
- VT7
- VT8
- VT10
- VT12
- VT13
- VT14
- VT15
- VT16
- VT17
- VT18
- VT19
- VT21
- VT23

Other Areas Mapped

- CI
- PI



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Metres

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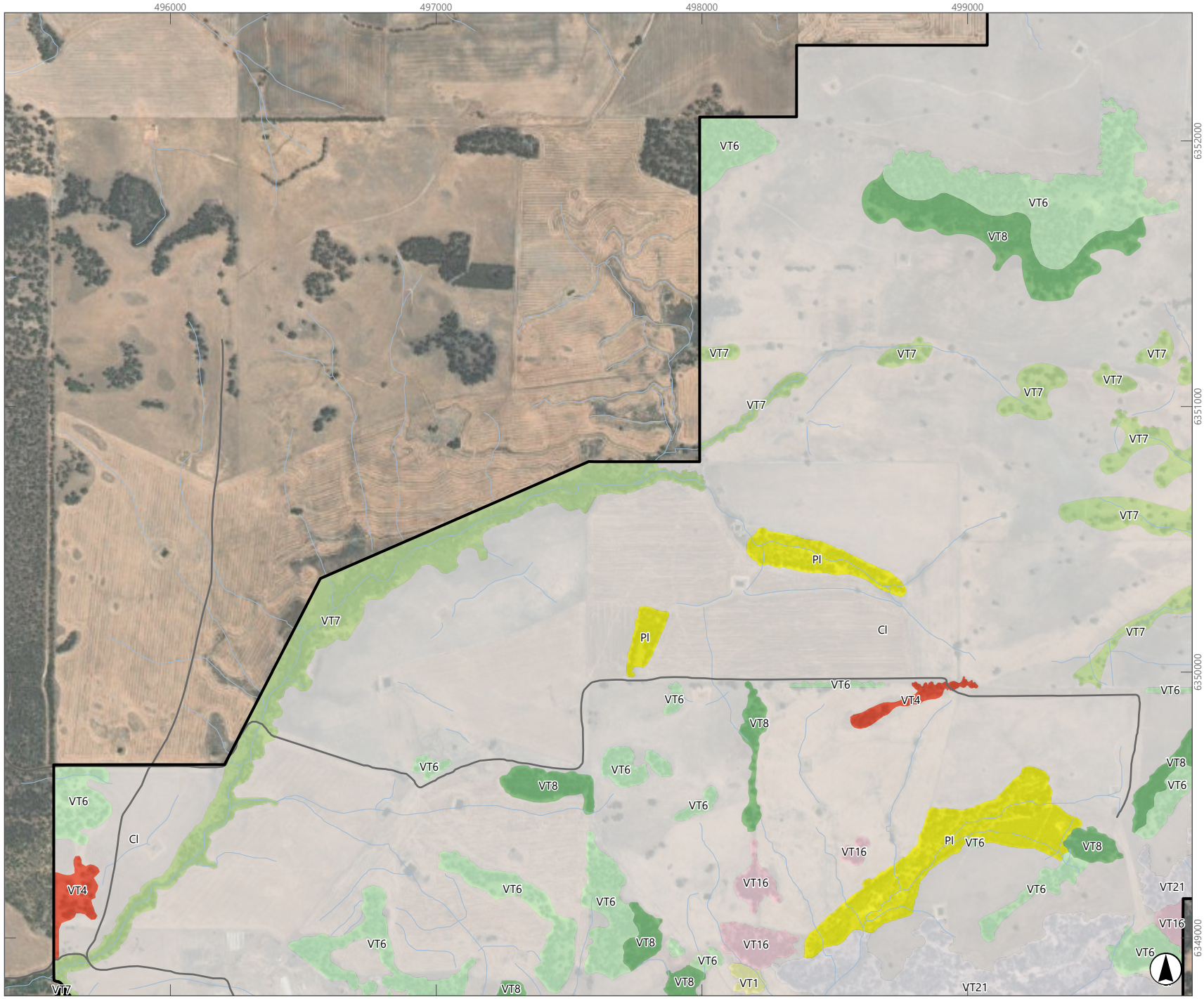
FIGURE 4.3.4

Vegetation Types of the Study Area



Legend

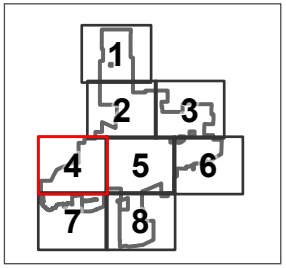
- Study Area
- Road
- Watercourse

Vegetation Type

- VT1
- VT4
- VT6
- VT7
- VT8
- VT16
- VT21

Other Areas Mapped

- CI
- PI



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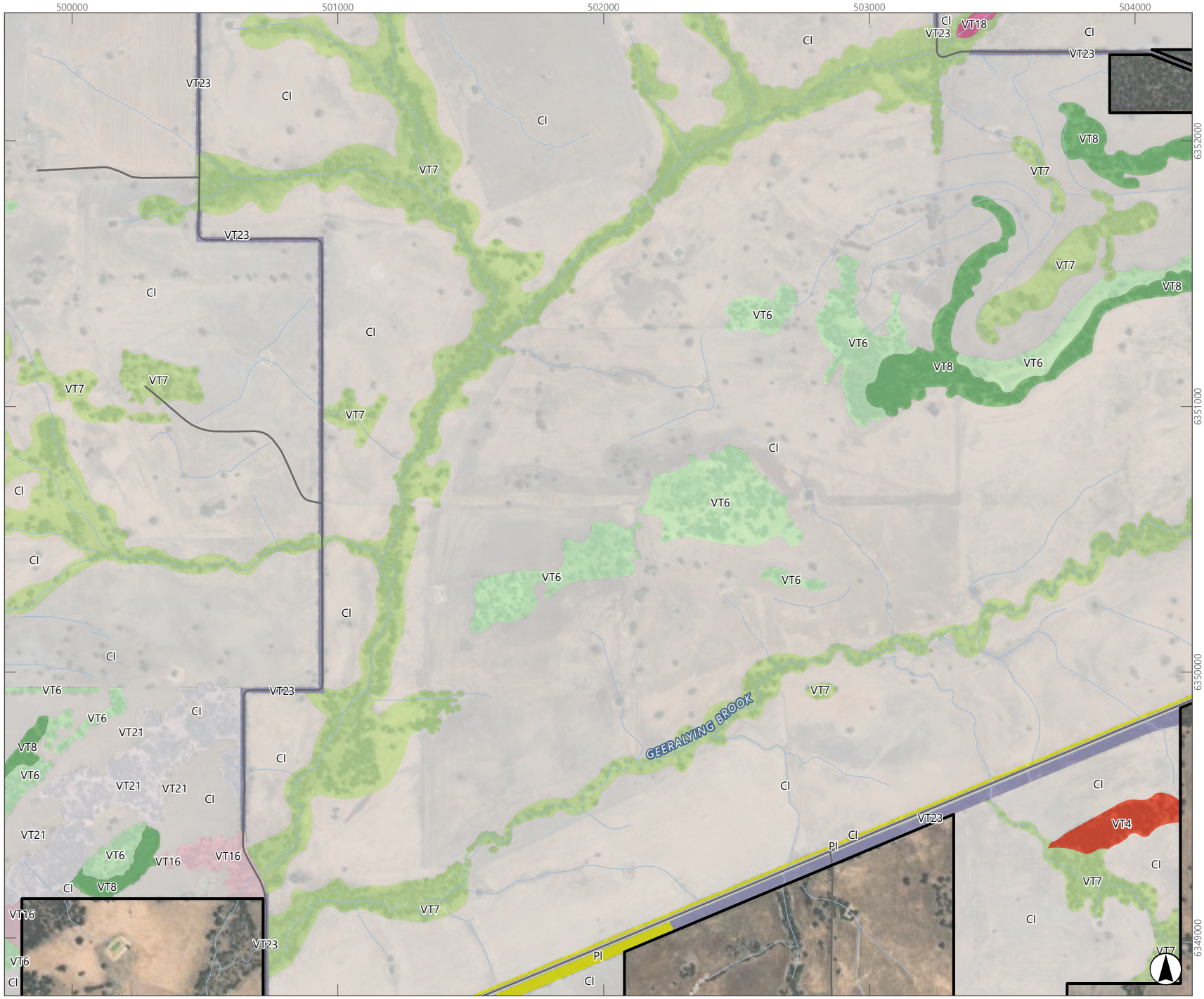

FIGURE 4.3.5

Vegetation Types of the Study Area

Legend

- Study Area
- Road
- Watercourse

Vegetation Type

- VT4
- VT6
- VT7
- VT8
- VT16
- VT18
- VT21
- VT23

Other Areas Mapped

- CI
- PI

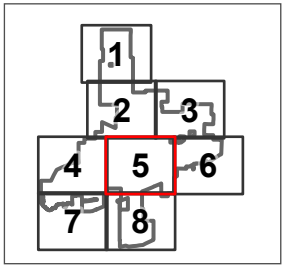

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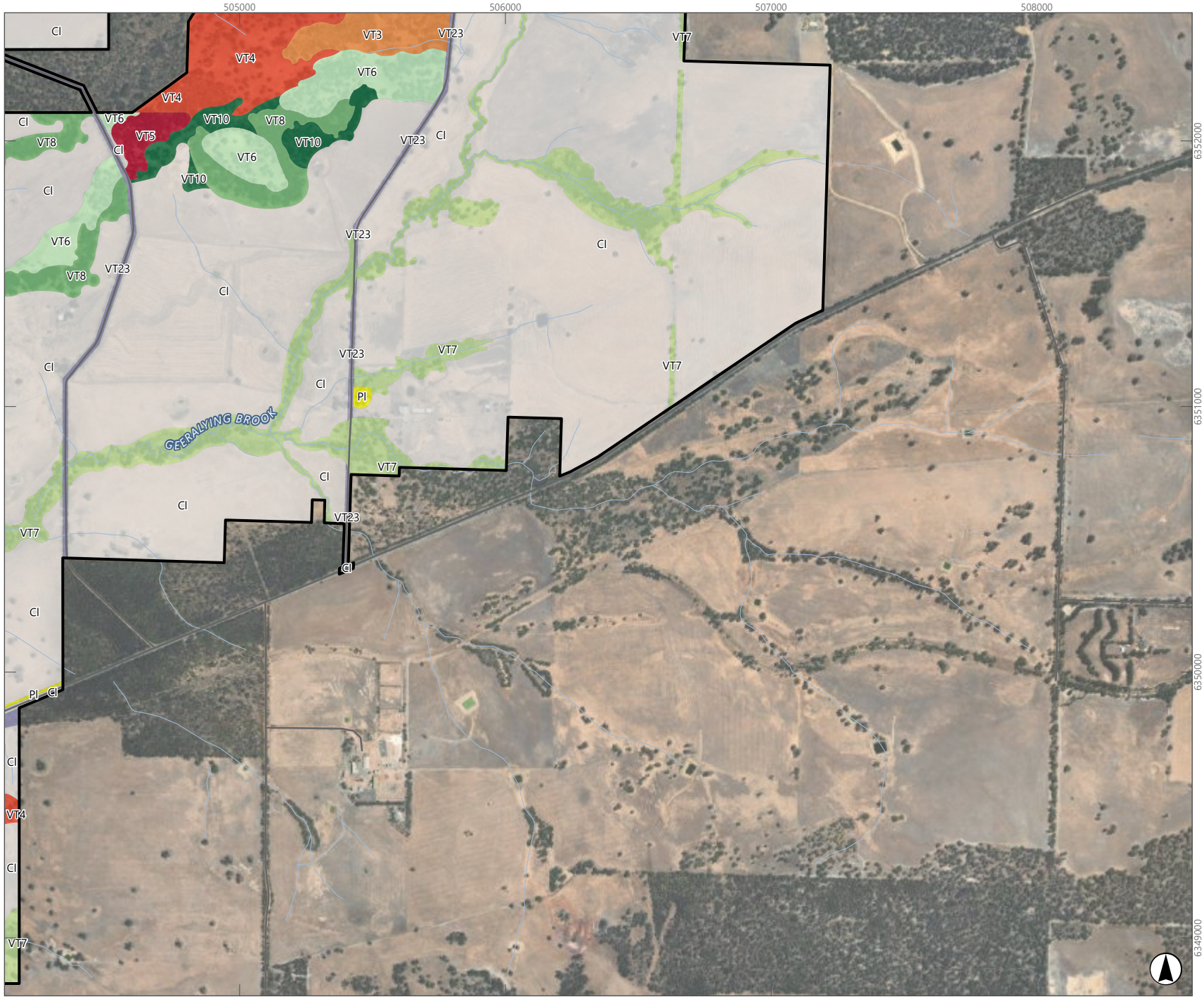
FIGURE 4.3.6

Vegetation Types of the Study Area



Legend

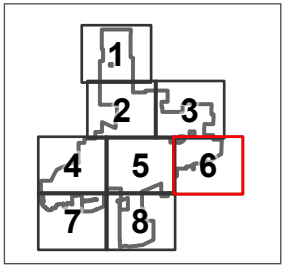
- Study Area
- Road
- Watercourse

Vegetation Type

- VT3
- VT4
- VT5
- VT6
- VT7
- VT8
- VT10
- VT23

Other Areas Mapped

- CI
- PI



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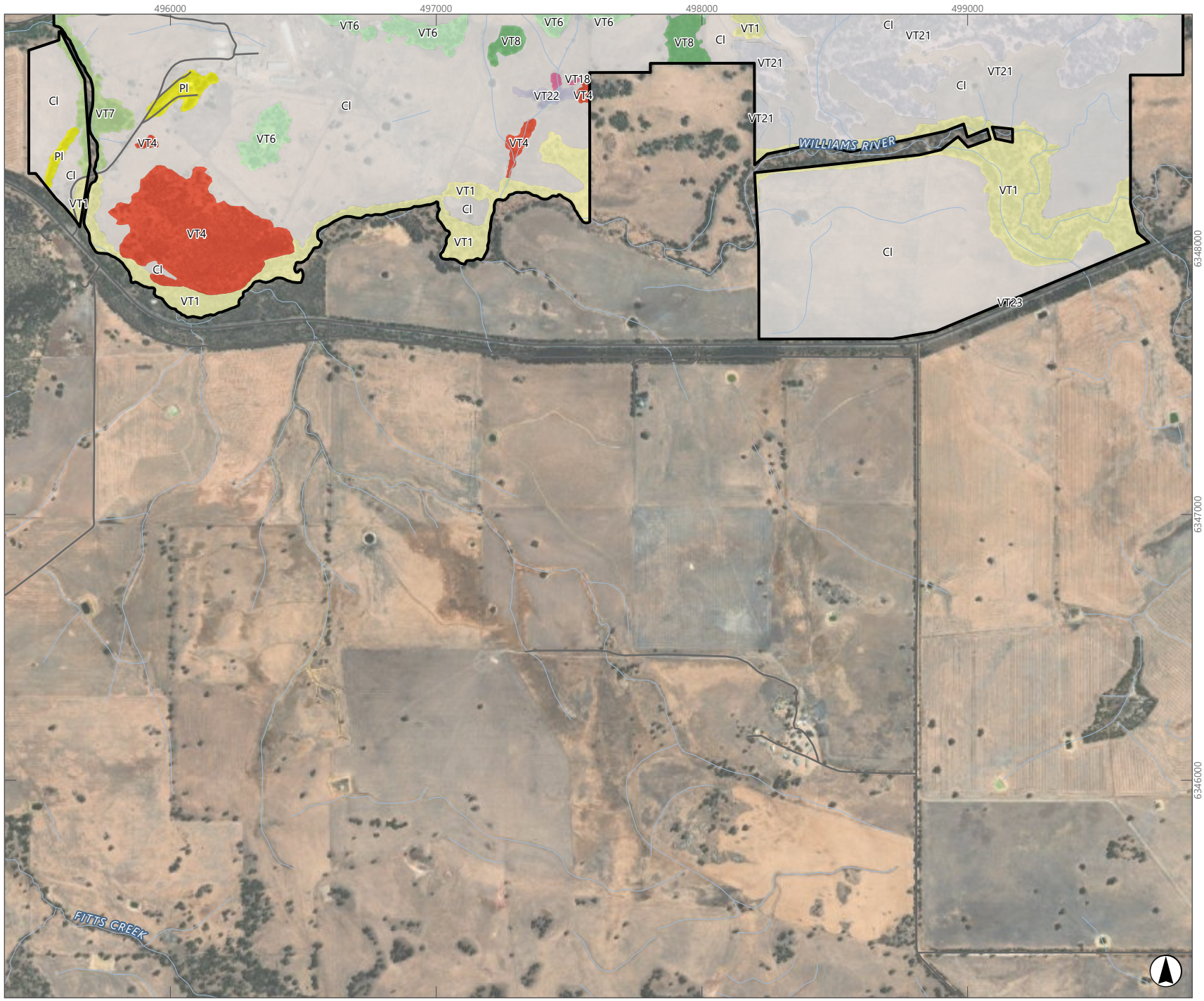


FIGURE 4.3.7

Vegetation Types of the Study Area

Legend

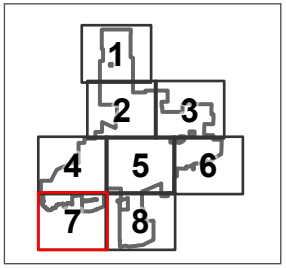
- Study Area
- Road
- Watercourse

Vegetation Type

- VT1
- VT4
- VT6
- VT7
- VT8
- VT16
- VT18
- VT21
- VT22
- VT23

Other Areas Mapped

- CI
- PI



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Metres

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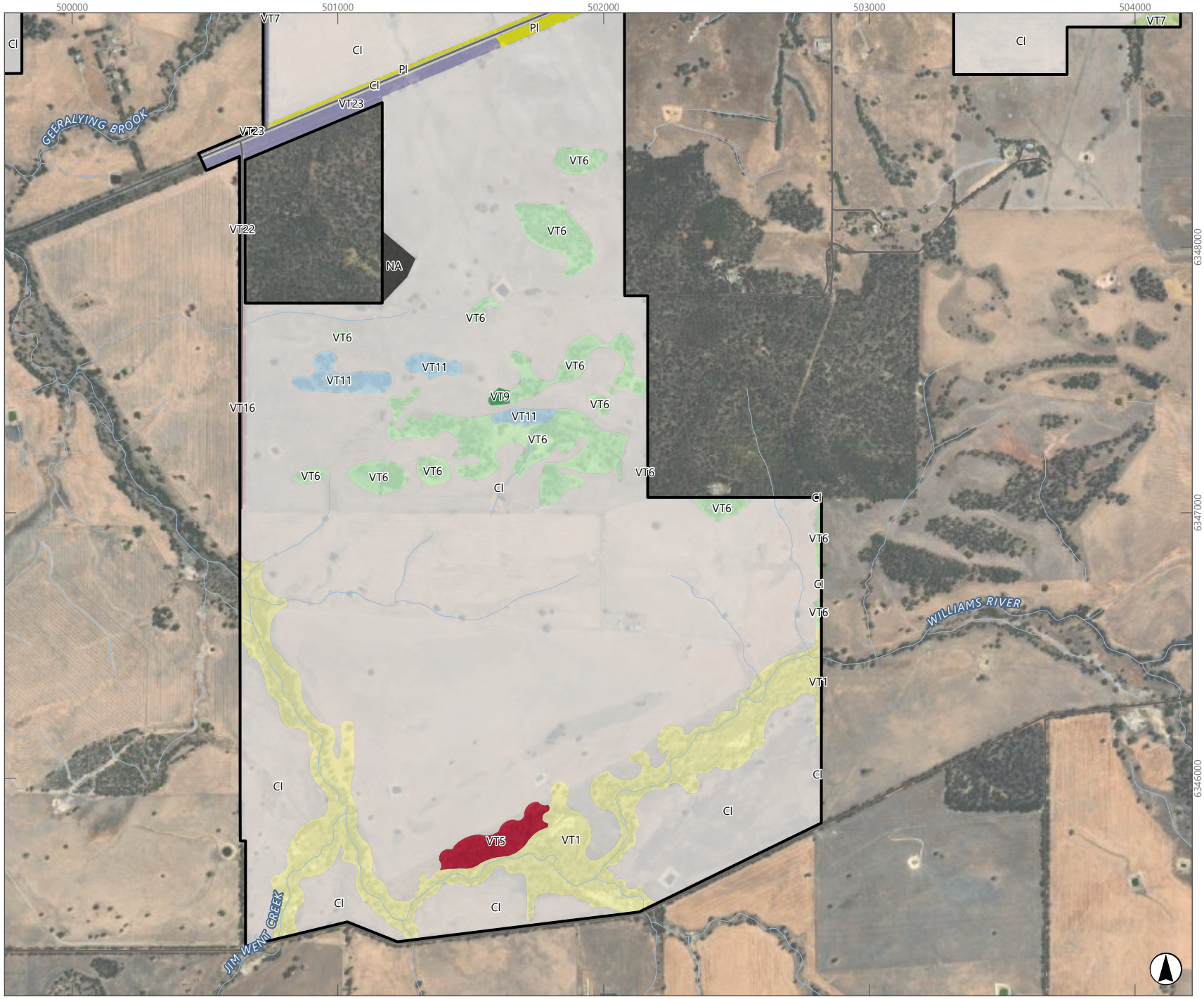
FIGURE 4.3.8

Vegetation Types of the Study Area



Legend

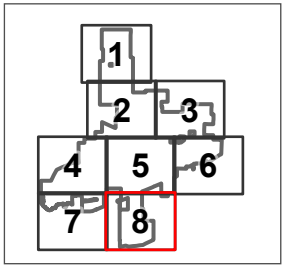
- Study Area
- Road
- Watercourse

Vegetation Type

- VT1
- VT5
- VT6
- VT7
- VT9
- VT11
- VT16
- VT22
- VT23

Other Areas Mapped

- CI
- NA
- PI



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Metres

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4.2.7 Vegetation Condition

The area of each VT and corresponding condition rating (as per EPA (2016a) mapped by the 2023-2024 survey in the Study Area is presented in **Table 4.6**. The vegetation condition mapping of the Study Area is presented on **Figure 4.5**.

The majority of the Study Area has been mapped as 'Completely Degraded' (5221.5 ha, 82.3%) (**Table 4.6**, **Figure 4.5**). This largely consists of areas mapped as Cleared land ('Cl') and Planted ('Pl') areas, in which the land has been cleared for pasture or cropping. Little to no native vegetation remains in these areas, although isolated remnant trees do occur. A small extent (25.9 ha) of VTs 7, 10, 18 and 19 were also mapped as Completely Degraded; in these areas, VT allocation was undertaken due to the extent of remaining tree stratum, or weed overstorey presence, allowing grouping into these VTs rather than being allocated to Cleared land.

Nearly one fifth of the Study Area was mapped as being in 'Degraded' condition (1120.2 ha, 17.6%) (**Table 4.6**, **Figure 4.5**); these areas predominately consisted of native trees over no or very little understorey taxa, and high levels of introduced (weed) taxa. An area previously mapped as 'Good' condition in the eastern portion of the Study Area by the Phase 1 survey (Umwelt, 2023) was revisited during the spring survey and was deemed to be 'Degraded' (**Figure 4.4**), due to historical logging, high weed cover and lack of intact native understorey.

A very small portion of the Study Area was mapped as being in 'Good' condition (0.4 ha, 0.008% of the Study Area) (**Table 4.6**, **Figure 4.5**). This condition rating was mapped across one patch of remnant vegetation, being located adjacent to an unnamed reserve, R20877, on the eastern boundary of the Study Area. This area is the only mapped location of VT12.

Due to the history of clearing, logging and grazing in the Study Area, there was no vegetation observed that was considered to be in 'Pristine', 'Excellent' or 'Very Good' condition.

Table 4.6 Vegetation Condition of the Study Area

VT	Extent in Study Area (SA)				
	Good	Degraded	Completely Degraded	Not Assessed	Total
VT1	-	163.3	-	-	**164.1**
VT2	-	9.9	-	-	**9.9**
VT3	-	17.9	-	-	**17.9**
VT4	-	63.3	-	-	**63.3**
VT5	-	7.9	-	-	**7.9**
VT6	-	186.5	-	-	**186.5**
VT7	-	357.1	3.0	-	**360.1**
VT8	-	88.5	-	-	**88.5**
VT9	-	0.4	-	-	**0.4**
VT10	-	64.4	0.9	-	**65.2**
VT11	-	5.8	-	-	**5.8**
VT12	0.4	-	-	-	**0.4**
VT13	-	0.8	-	-	**0.8**

VT	Extent in Study Area (SA)				
	Good	Degraded	Completely Degraded	Not Assessed	Total
VT14	-	10.2	-	-	**10.2**
VT15	-	0.2	-	-	**0.2**
VT16	-	15.3	-	-	**15.3**
VT17	-	4.1	-	-	**4.1**
VT18	-	2.7	7.8	-	**10.5**
VT19	-	-	14.1	-	**14.1**
VT21	-	74.2	-	-	**74.2**
VT22	-	2.1	-	-	**2.1**
VT23	-	44.3	-	-	**44.3**
PI	-	0	96.6	-	**96.6**
CI	-	-	5098.9	-	**5098.9**
NA	-	-	-	1.8	**1.8**
Total (ha)	**0.4**	**1120.2**	**5221.5**	**1.8**	**6334.1**
Total (%)	**0.008**	**17.6**	**82.3**	**0.03**	**100**

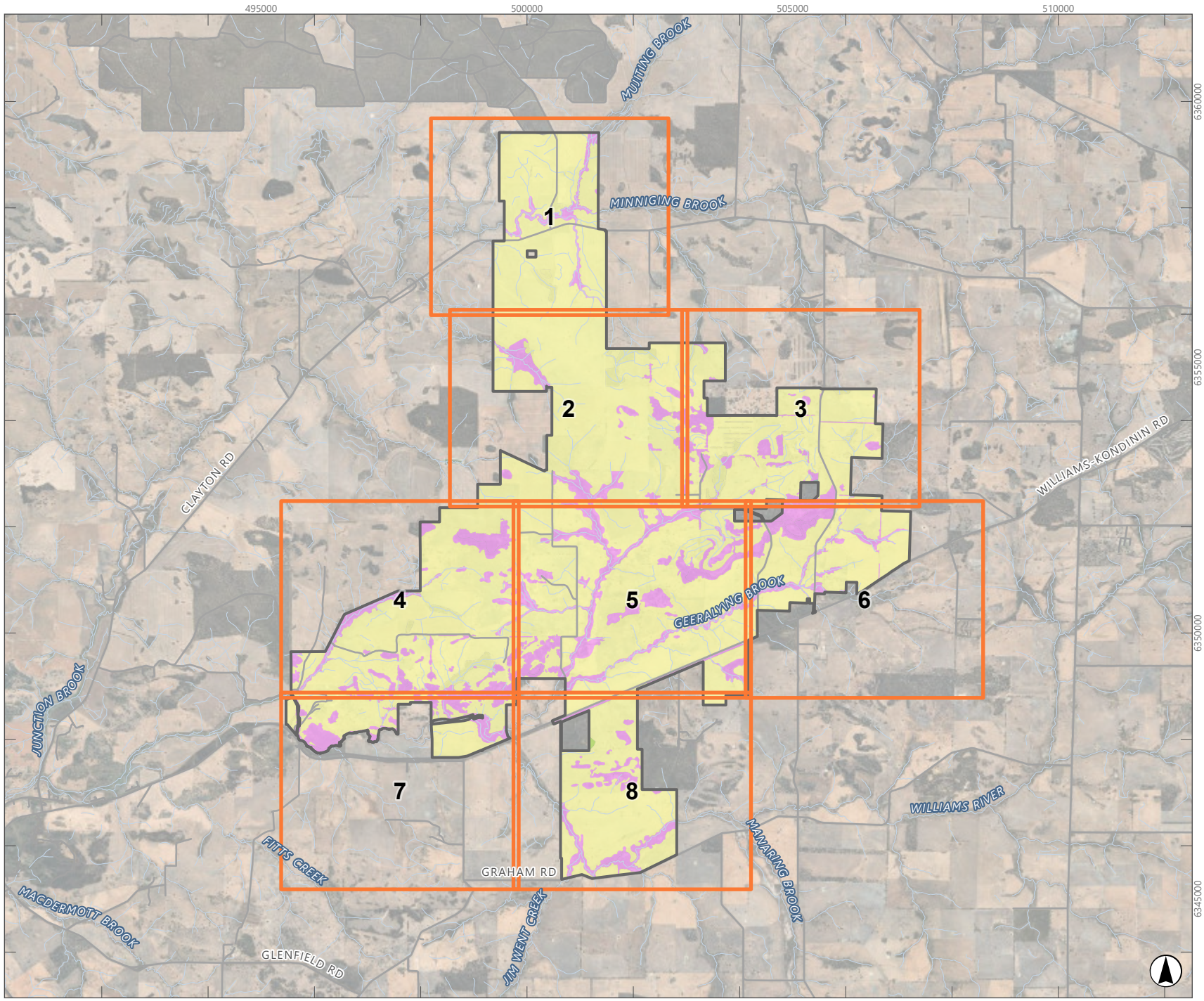

FIGURE 4.4.0

Vegetation Condition of the Study Area

Legend

- Study Area
- Road
- Watercourse

Vegetation Condition

- Very Good
- Good
- Degraded
- Completely Degraded
- Not Assessed

0 2 4

Kilometres

Scale: 1:100,000 at A4

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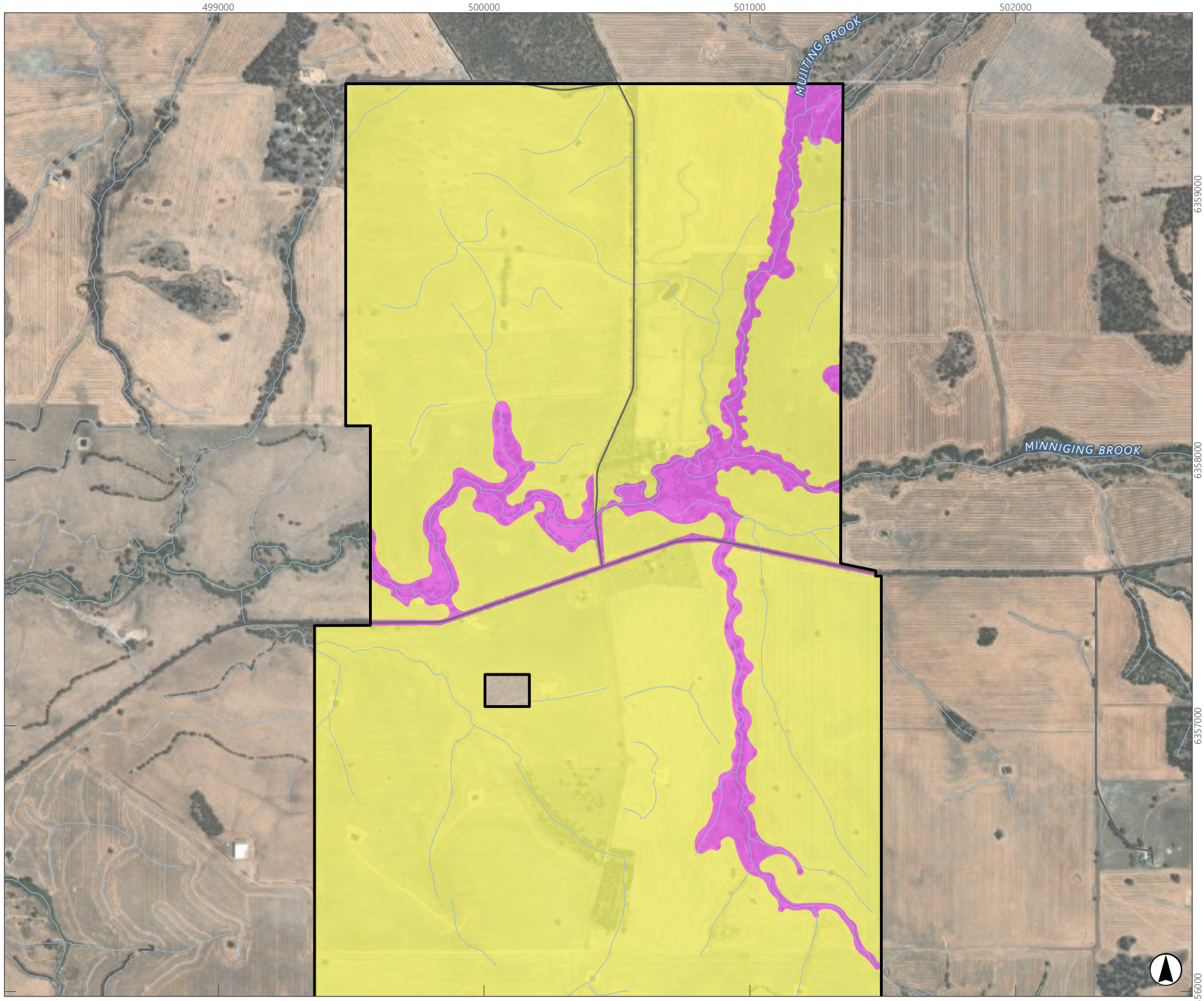


FIGURE 4.4.1

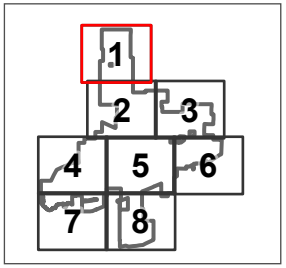
Vegetation Condition of the Study Area

Legend

- Study Area
- Road
- Watercourse

Vegetation Condition

- Degraded
- Completely Degraded



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Metres

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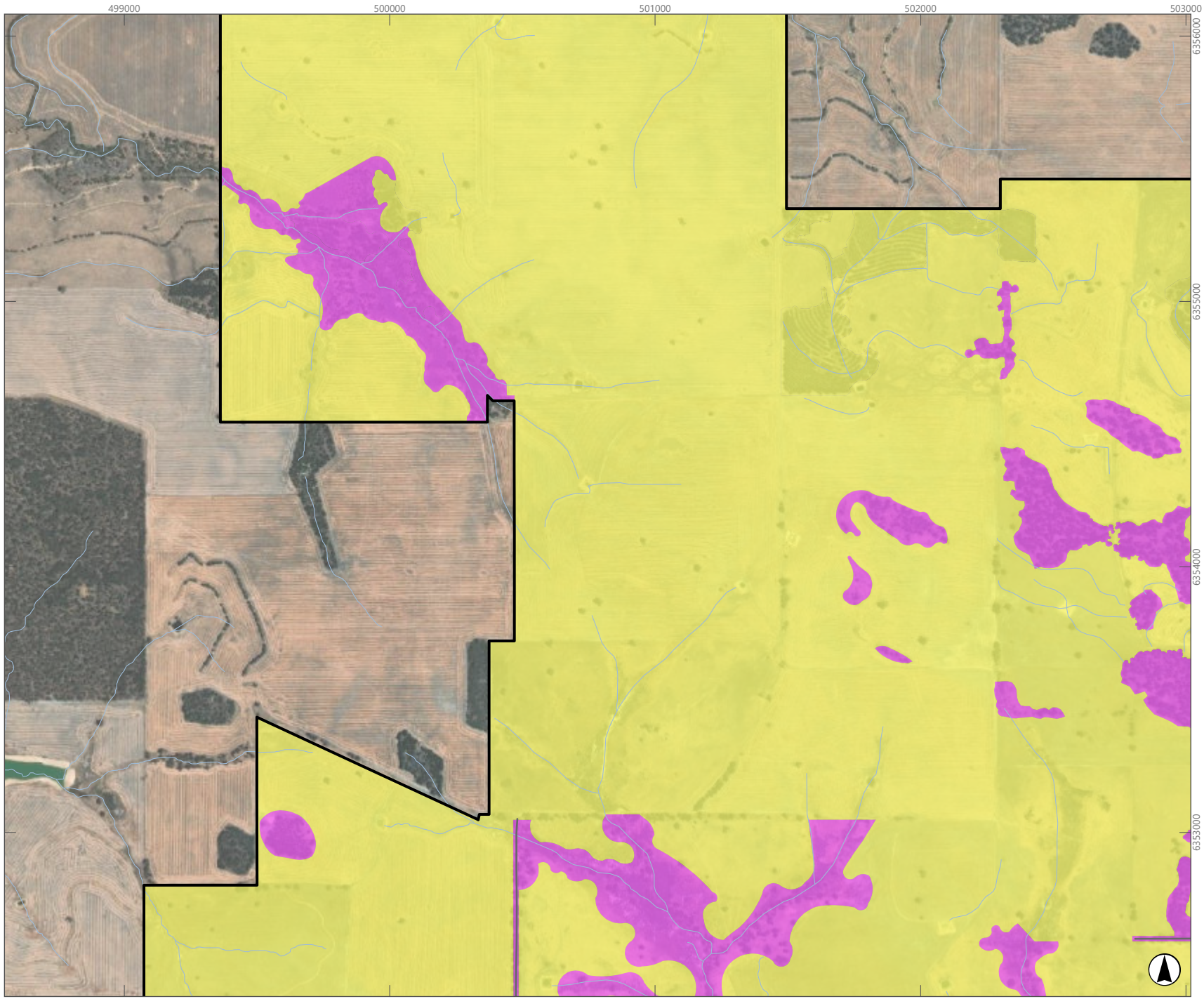


FIGURE 4.4.2

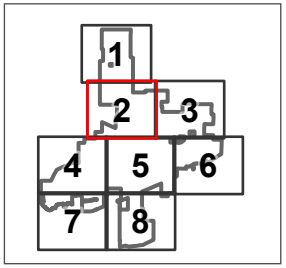
Vegetation Condition of the Study Area

Legend

- Study Area
- Road
- Watercourse

Vegetation Condition

- Degraded
- Completely Degraded



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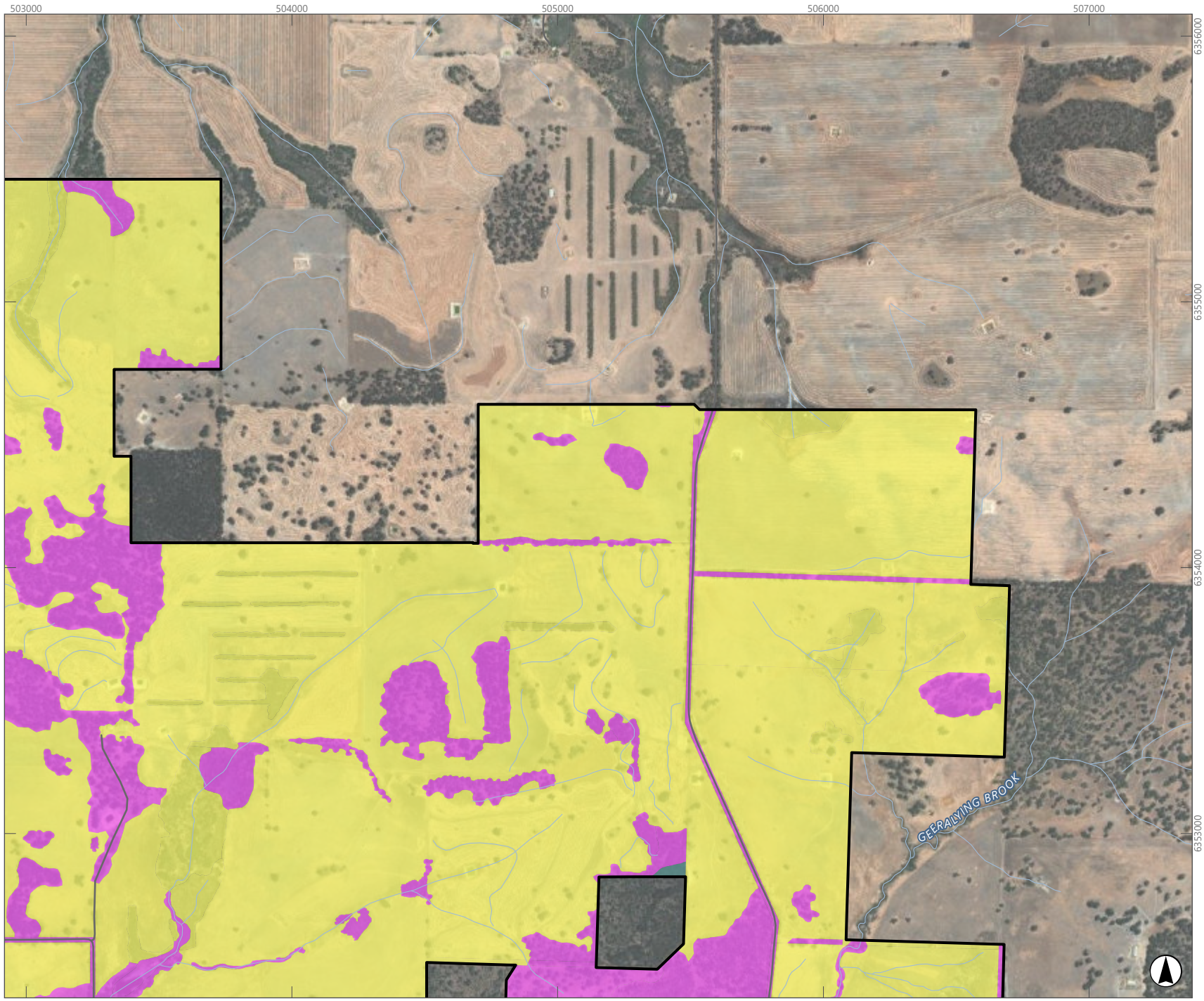


FIGURE 4.4.3

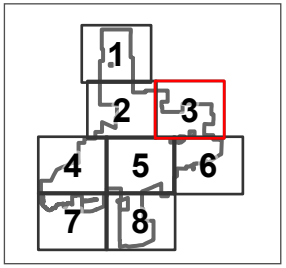
Vegetation Condition of the Study Area

Legend

- Study Area
- Road
- Watercourse

Vegetation Condition

- Good
- Degraded
- Completely Degraded



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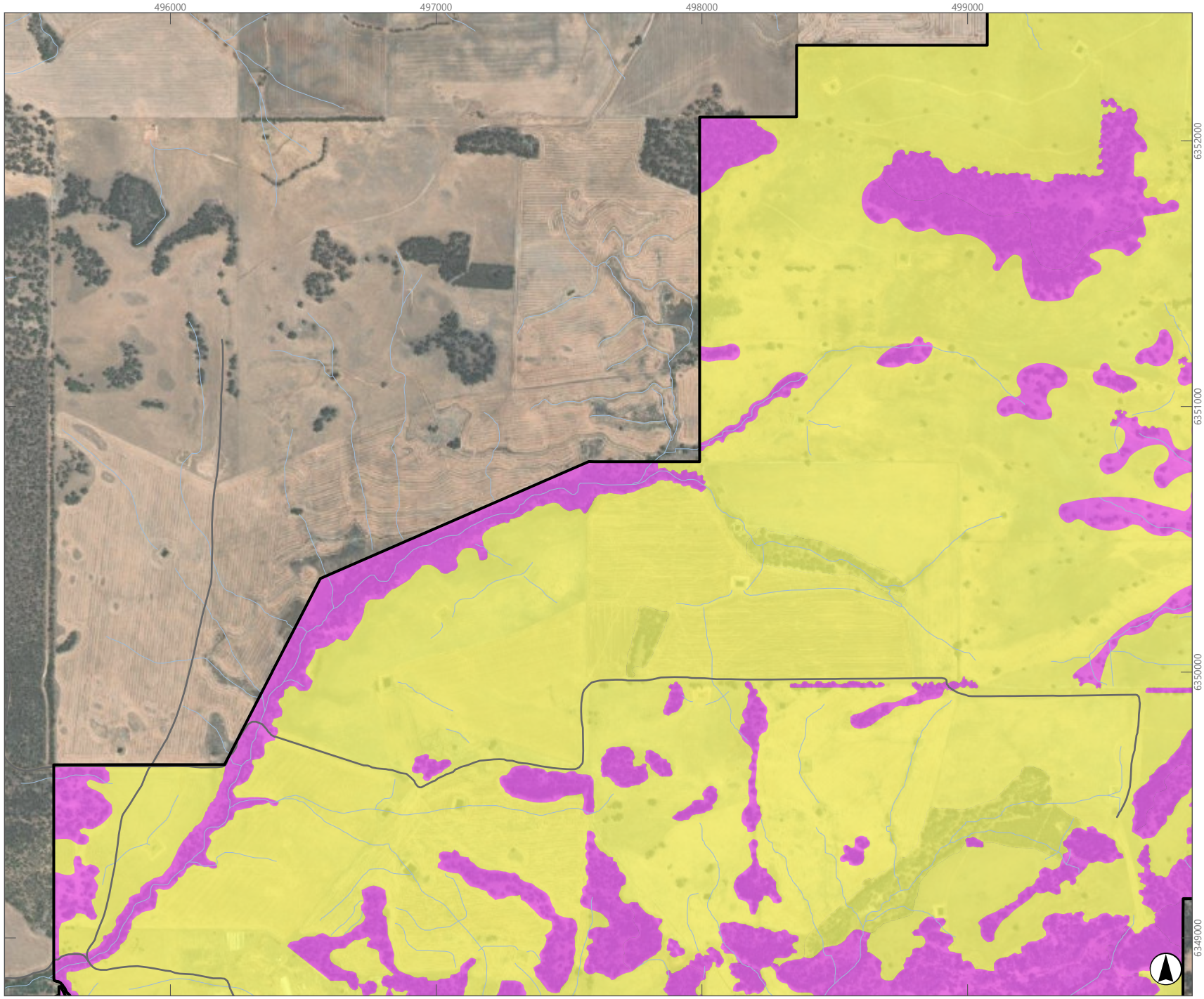


FIGURE 4.4.4

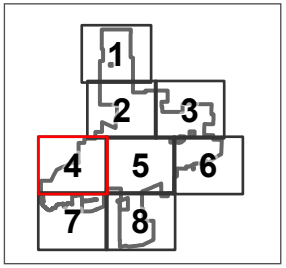
Vegetation Condition of the Study Area

Legend

- Study Area
- Road
- Watercourse

Vegetation Condition

- Degraded
- Completely Degraded



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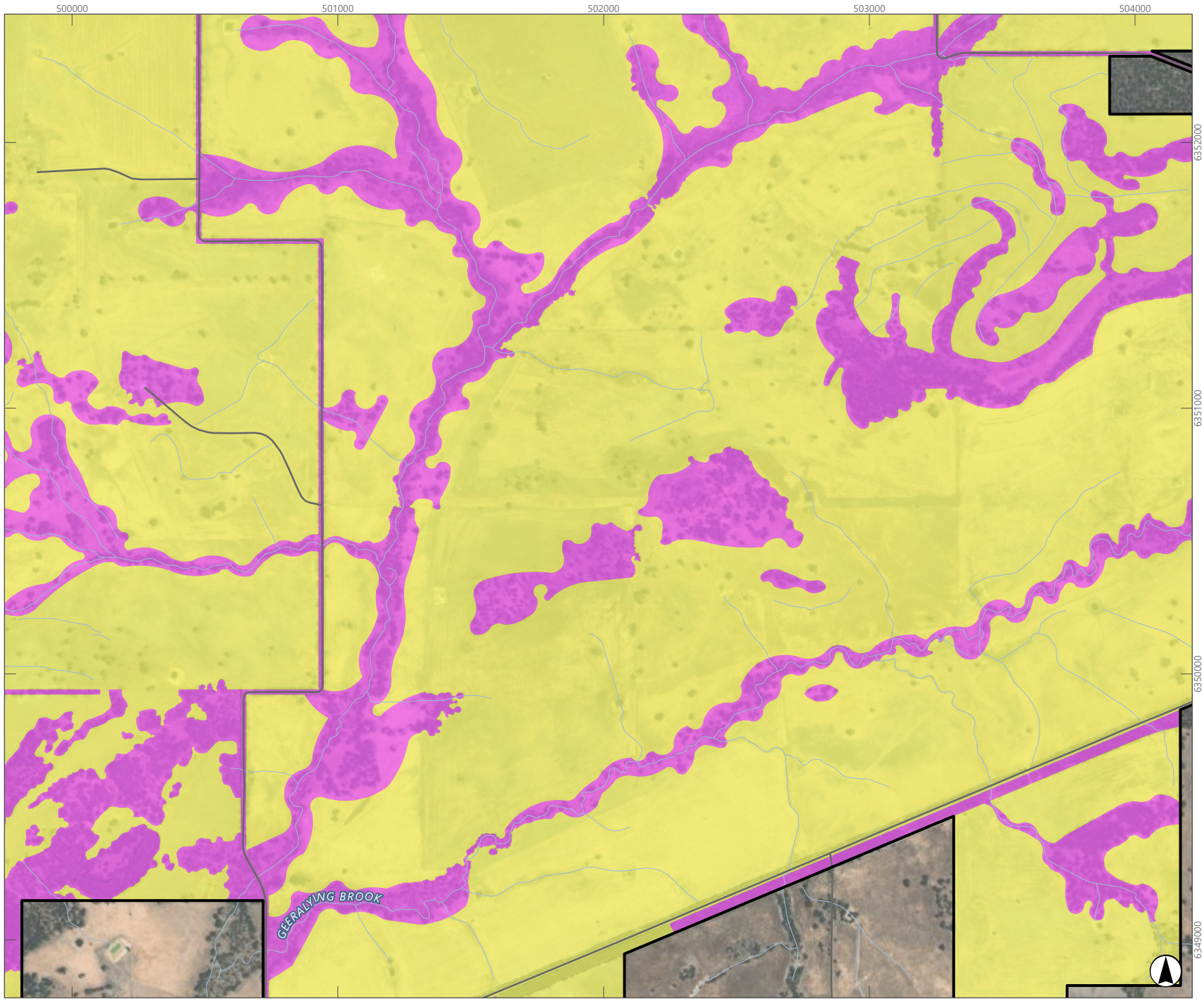


FIGURE 4.4.5

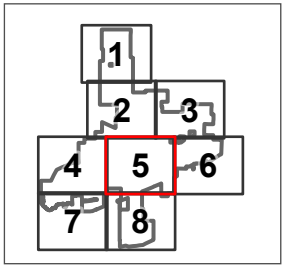
Vegetation Condition of the Study Area

Legend

- Study Area
- Road
- Watercourse

Vegetation Condition

- Degraded
- Completely Degraded



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Metres

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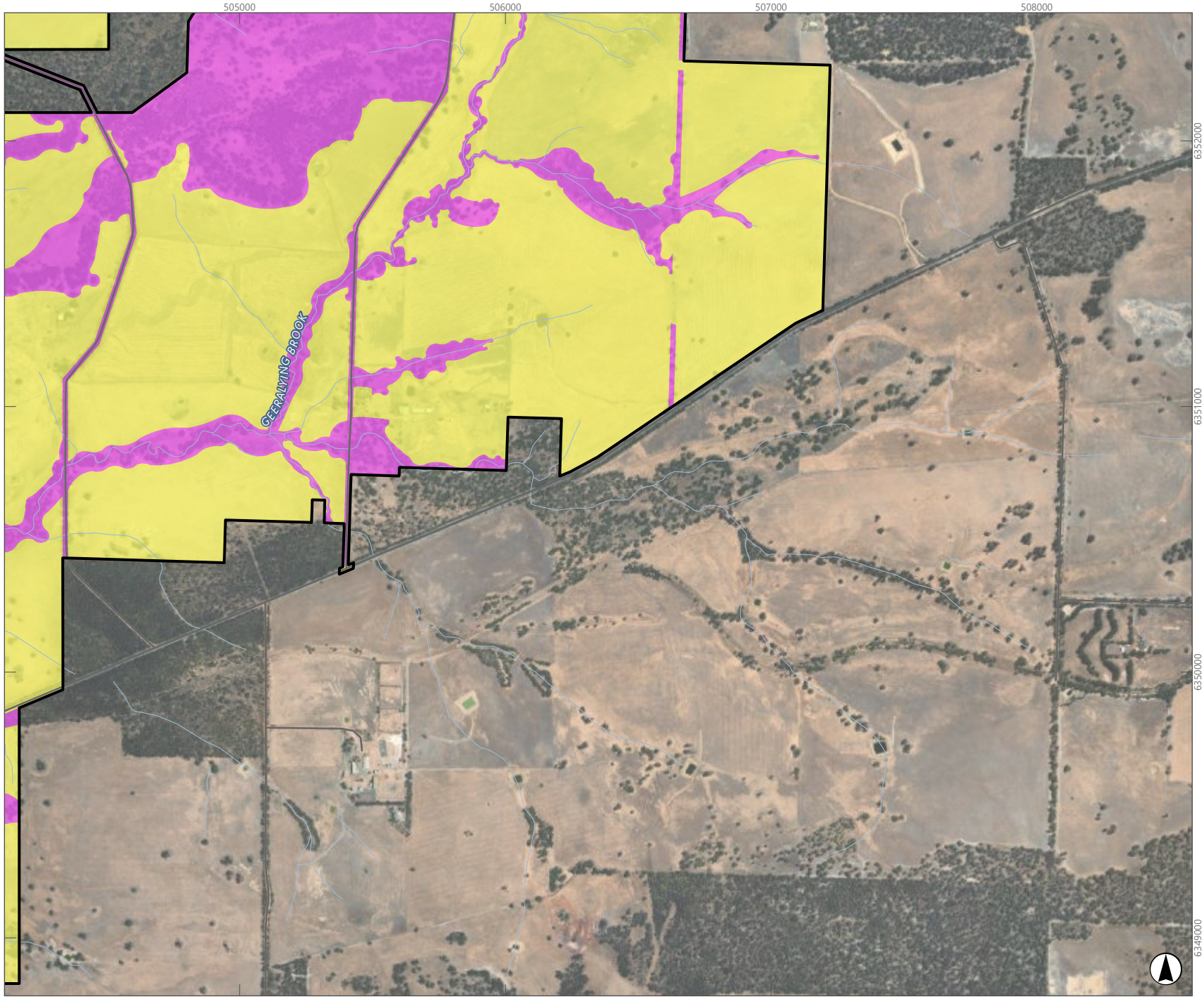


FIGURE 4.4.6

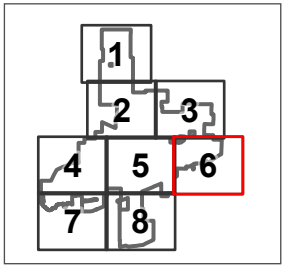
Vegetation Condition of the Study Area

Legend

- Study Area
- Road
- Watercourse

Vegetation Condition

- Degraded
- Completely Degraded



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Metres

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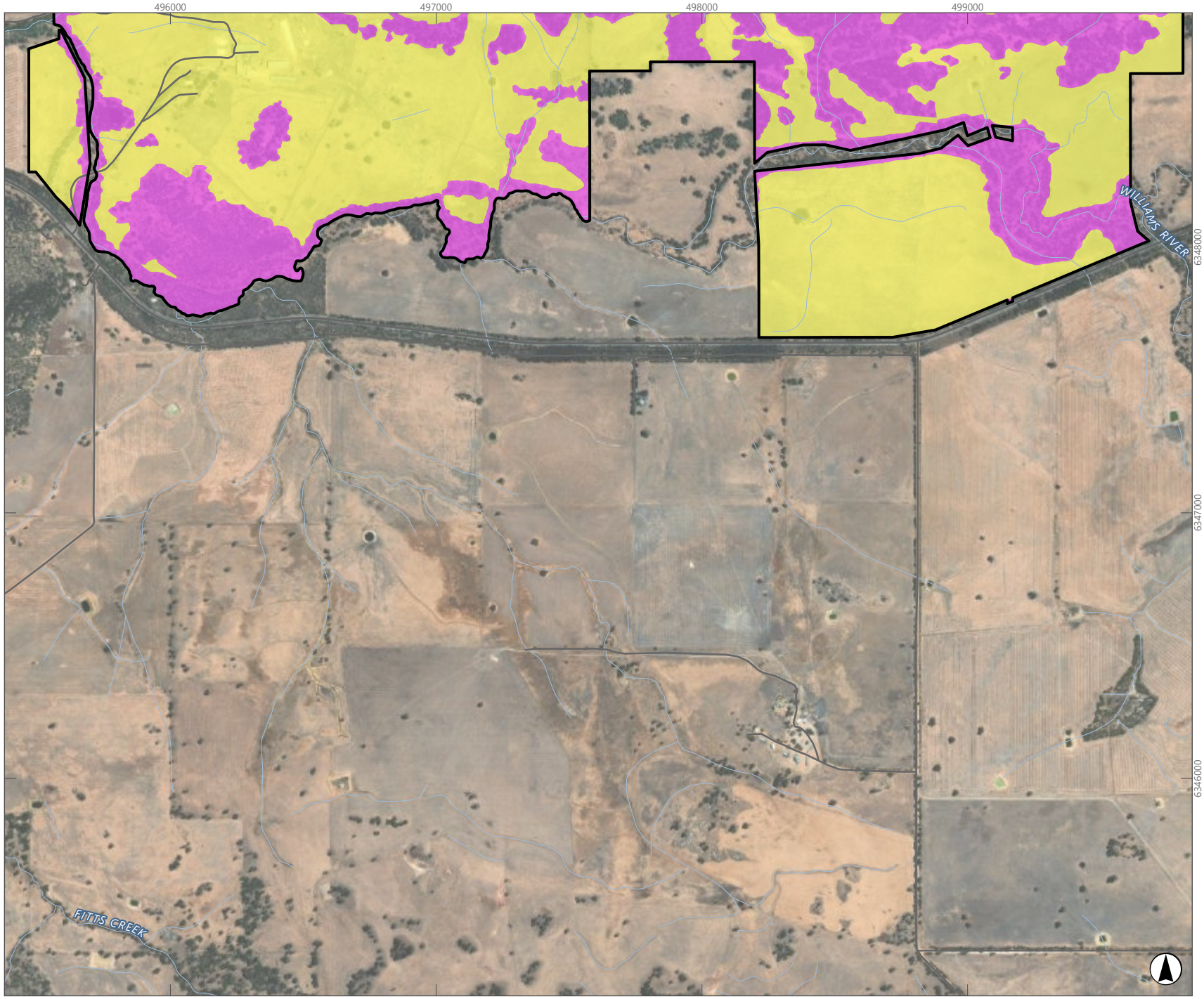


FIGURE 4.4.7

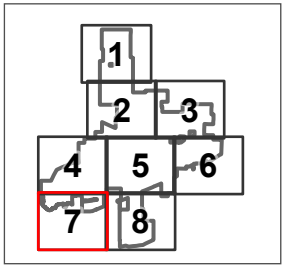
Vegetation Condition of the Study Area

Legend

- Study Area
- Road
- Watercourse

Vegetation Condition

- Degraded
- Completely Degraded



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Metres

Scale: 1:20,000 at A4

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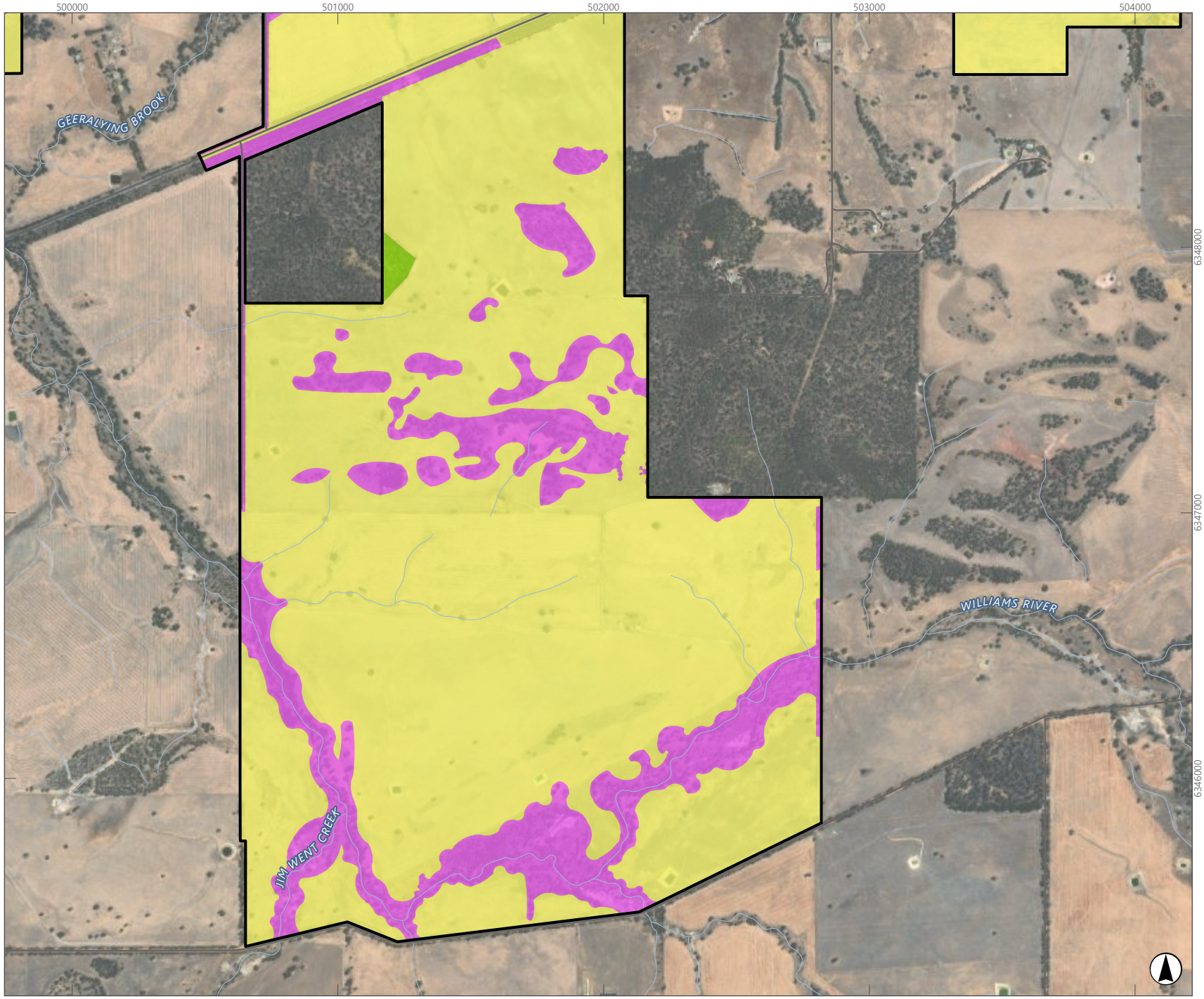


FIGURE 4.4.8

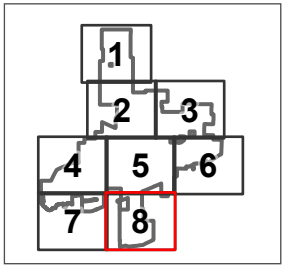
Vegetation Condition of the Study Area

Legend

- Study Area
- Road
- Watercourse

Vegetation Condition

- Degraded
- Completely Degraded
- Not Assessed



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Metres

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4.2.8 Significant Vegetation

A summary of the key diagnostics of the TEC are presented in **Appendix E.** The Key Diagnostic (1) in relation to the location of the Study Area is satisfied as having the potential to contain the TEC (see **Section 2.3** and **Figure 1.2**).

Each of the VTs described and mapped in the Project Area were assessed against the key diagnostics in relation to characteristics 2 (Structure); 3 (Key tree species) and 4 (presence of understorey). The vegetation description and components of 12 of the VTs described in the Study Area by the survey were considered as part of this review to potentially represent *Eucalyptus Woodlands of the Western Australian Wheatbelt* TEC.

The final determination of presence and extent of the *Eucalyptus Woodlands of the Western Australian Wheatbelt* TEC is also dependent on both vegetation condition and patch size. A full assessment of each patch of the 12 VTs as potentially representing the TEC (in terms of structure and species presence) were reviewed for both patch size and condition. The full assessment of survey data against the criteria for the TEC is presented in **Appendix F**.

A total of 41.8 ha of the *Eucalyptus Woodlands of the Western Australian Wheatbelt* TEC has been identified within the Study Area (**Figure 4.5**), across five patches. These are represented by patches of VT8 (36.4 ha) and VT6 (5.2 ha) and are all in Degraded condition. The remaining VT patches within the Study Area do not meet the requirements of the TEC as assessed in Table 2 of **Appendix F**, mostly due to condition requirements including lack of native understorey and covers of introduced taxa exceeding 70% of the understorey in most cases.

As per the conservation advice (DoE, 2015), a minimum buffer zone of 40 m surrounding the mapped TEC extents is recommended to be excluded from construction activities. It is noted that this buffer zone is not regarded as TEC and is advisory only. The conservation advice states that:

> *'Where the buffer on a particular property is subject to existing land uses, such as cropping, ploughing, grazing, spraying, etc., they can continue. However, in the interests of protecting adjacent patches of the ecological community, it is requested that care be exercised in the buffer zone to minimise the risk of any significant adverse impacts extending into those patches.'*

Figure 4.5 presents the mapped occurrences of the *Eucalyptus Woodlands of the Western Australian Wheatbelt* TEC, within the Study Area. The buffer zones are not displayed on this figure due to the scale of the presentation.

Two potential locations of the *Eucalyptus Woodlands of the Western Australian Wheatbelt* TEC were identified during the May 2023 Reconnaissance survey. These relate to two patches of remnant vegetation that were greater than 2 ha in size and were considered to be in Good condition. Therefore, they were considered to meet the minimum condition and patch size requirements for Good condition patches of the WA Wheatbelt Woodlands ecological community (DoE, 2015). These areas were revisited in September 2023, and were reassessed to be in Degraded condition. However, the patch size for this condition rating is still satisfied (>5 ha for Degraded condition), and therefore these two locations have retained this status and have been mapped as the TEC.

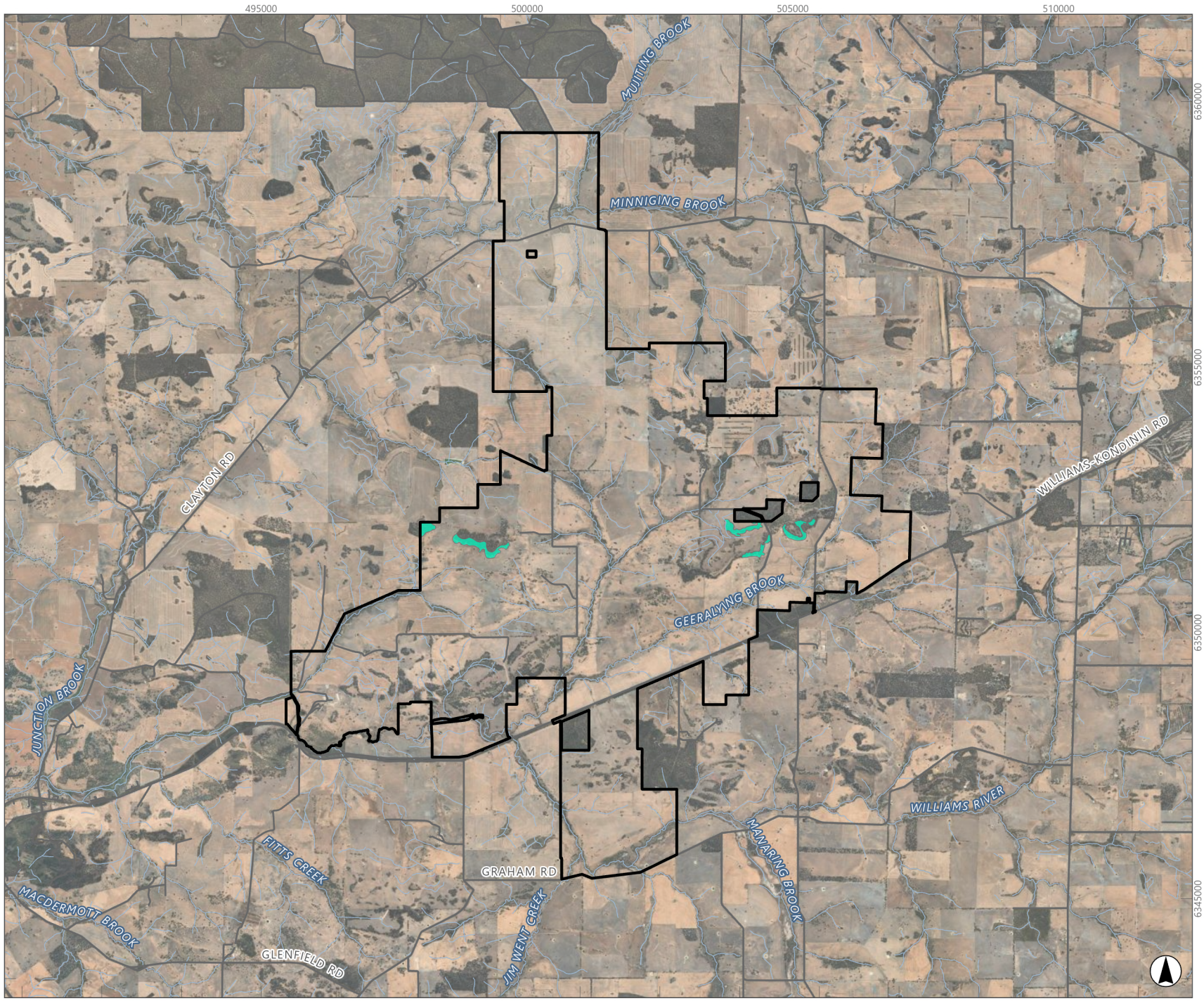

FIGURE 4.5

Significant Vegetation of the Study Area

Legend

- Study Area
- Road
- Watercourse
- Eucalyptus Woodlands of the Western Australian Wheatbelt TEC

0 2 4

Kilometres

Scale: 1:100,000 at A4
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5.0 Conclusions

A Reconnaissance flora and vegetation assessment has been completed for the Project, with Targeted survey completed over some areas where warranted. The assessment provides a broad understanding of the ecological values and potential constraints associated with the area. The assessment has mapped and described VTs and vegetation condition that occur within the Study Area, and the likelihood of significant flora and vegetation occurring in the Study Area has been assessed.

Conclusions and recommendations from this assessment are summarised below:

- The majority of the Study Area has clearly been highly modified since European settlement, as a result of the long history of agricultural activities and other development and is no longer considered to be intact remnant vegetation. The vegetation condition of these areas has been mapped as 'Degraded' or 'Completely Degraded' and include VTs with primarily only native tree species remaining (including isolated trees), areas with only planted native trees and shrubs, and areas with almost exclusively weed or crop species (Cleared areas).

- A total of 1.8 ha (0.02%) of the Study Area was mapped as Not Assessed, as this area was fenced off, and continuous with an adjacent reserve.

- Areas where natural vegetation has been completely and apparently permanently removed, with no (or very scattered) native taxa remaining, have been mapped as 'Cleared' (Cl) (where discernible at 1:5,000 scale). This includes paddocks, tracks and firebreaks. A total of 5098.9 ha of 'Cleared Land' was mapped, representing 80.4% of the Study Area. Small areas of vegetation have also been mapped as 'Planted', a total of 96.6 ha (1.5%) of the Study Area.

- A total of 22 Vegetation Types (VTs) were identified in the Study Area by the Reconnaissance survey (1146.6 ha, representing 18.1% of the Study Area). VT7 represents the largest portion of remnant vegetation in the Study Area (5.6%). The second largest VT is VT6, covering 2.9% of the Study Area, and the third largest is VT8 at 1.4%. Additionally, the remaining 19 VTs, as well as the highly modified 'Pl' and the areas not assessed, 'NA', represent the remaining 8.1% of the Study Area.

- Targeted flora and vegetation surveys were conducted in some areas that were initially mapped as Good condition during the Phase 1 survey. It is considered that of the 56 significant flora taxa identified as potentially occurring within the Study Area (as returned from Desktop Review), 40 taxa are unlikely to occur either because no potential habitat is present within the Study Area (including within vegetation on otherwise suitable substrate that is in Degraded or worse condition), or the Study Area is outside of the taxon's known range. It is considered that the remaining 16 significant flora taxa could possibly occur in the Study Area, however only in suitable habitat within remnant bushland block that has been assessed to be in Good condition and was not subject to Targeted survey (0.4 ha).

- Historical locations of both *Xanthorrhoea brevistyla* (P4) and *Gastrolobium ovalifolium* (P4) were reviewed and found have erroneous coordinates, as both of these historical records now reside on cleared agricultural land. No significant flora were located by the 2023-2024 survey.

- Five patches of the *Eucalyptus Woodlands of the Western Australian Wheatbelt* TEC were identified during the 2023-2024 survey, totalling 41.8 ha. All five patches are within mapped areas of VT8 and VT6, and are all in Degraded condition, however they exceed the minimum requirement of 5 ha in size, thus meeting the condition requirements for the TEC (DoE, 2015).

- Vegetation mapped as 'Good' condition (VT12) in the Study Area should be avoided as far as possible as part of the ongoing project planning process. This is due to the potential for significant flora taxa, and also in response to the general Degraded nature of remnant vegetation both within the Study Area and surrounds, and relatively scarcity of vegetation in Good or better condition in the general landscape.

- Remaining native vegetation in a highly cleared landscape is considered to have ecological value, despite often being in 'Degraded' condition and having minimal floristic value. Such vegetation represents the remnants of VSAs that mostly have less than 30% of their pre-European extent remaining and provides ecological linkages for terrestrial fauna and bird species. Clearing of any native vegetation in Western Australia, regardless of conservation significance, requires approval under the State *Environmental Protection Act 1986* unless an exemption applies. This includes clearing of individual trees within areas mapped as 'Cl' (Cleared).

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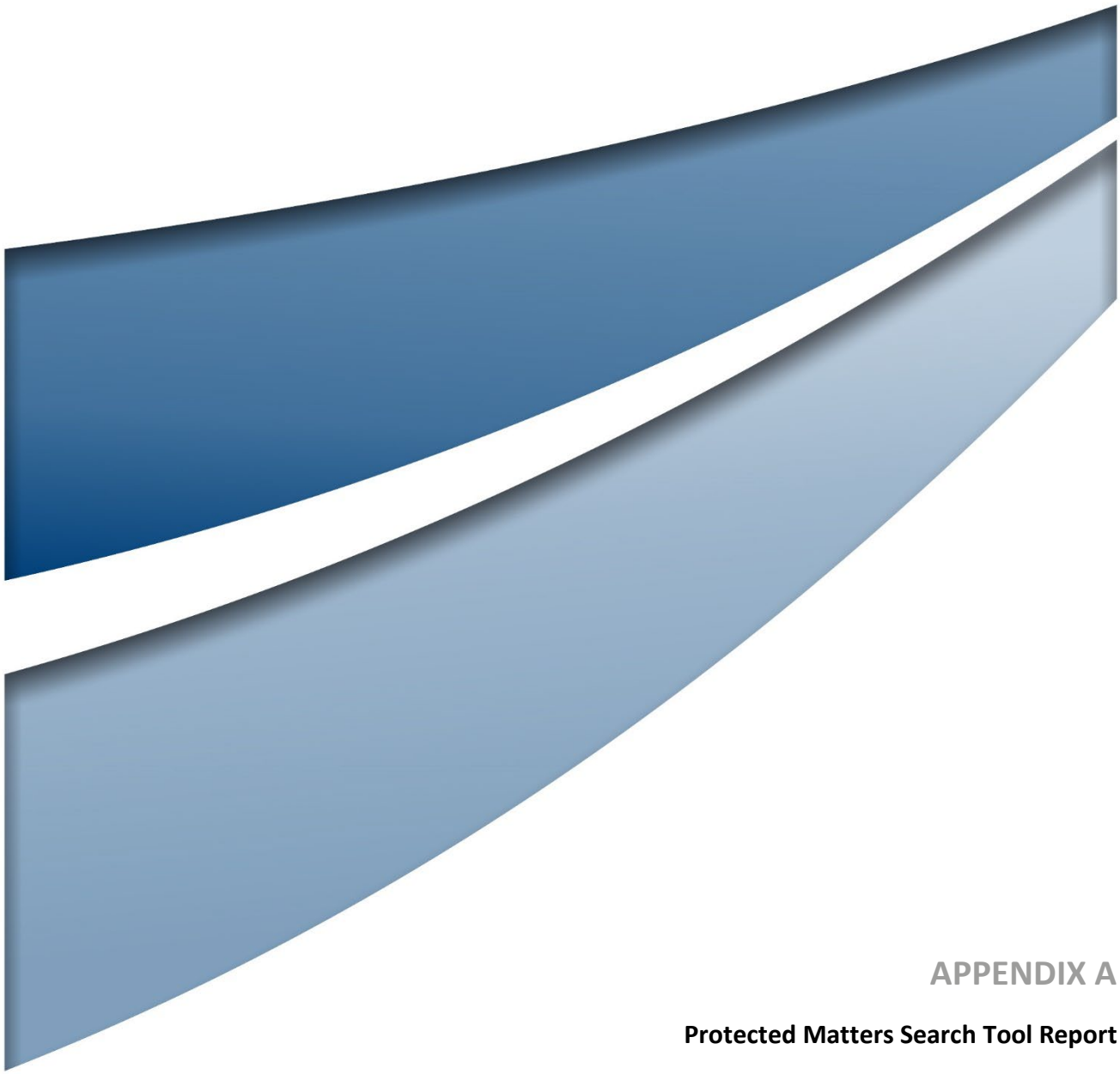

APPENDIX A

Protected Matters Search Tool Report

EPBC Act Protected Matters Report

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

Report created: 28-Apr-2023

Summary

Matters of National Environment Significance

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

World Heritage Properties:	None
National Heritage Places:	None
Wetlands of International Importance (Ramsar	1
Great Barrier Reef Marine Park:	None
Commonwealth Marine Area:	None
Listed Threatened Ecological Communities:	1
Listed Threatened Species:	15
Listed Migratory Species:	6

Other Matters Protected by the EPBC Act

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

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

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

Commonwealth Lands:	1
Commonwealth Heritage Places:	None
Listed Marine Species:	10
Whales and Other Cetaceans:	None
Critical Habitats:	None
Commonwealth Reserves Terrestrial:	None
Australian Marine Parks:	None
Habitat Critical to the Survival of Marine Turtles:	None

Extra Information

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

State and Territory Reserves:	2
Regional Forest Agreements:	None
Nationally Important Wetlands:	None
EPBC Act Referrals:	4
Key Ecological Features (Marine):	None
Biologically Important Areas:	None
Bioregional Assessments:	None
Geological and Bioregional Assessments:	None

Details

Matters of National Environmental Significance

Wetlands of International Importance (Ramsar Wetlands) [Resource Information]

Ramsar Site Name	Proximity
Peel-yalgorup system	100 - 150km upstream from Ramsar site

Listed Threatened Ecological Communities [Resource Information]

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

Community Name	Threatened Category	Presence Text
Eucalypt Woodlands of the Western Australian Wheatbelt	Critically Endangered	Community likely to occur within area

Listed Threatened Species [Resource Information]

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

Scientific Name	Threatened Category	Presence Text
BIRD		
Aphelocephala leucopsis Southern Whiteface [529]	Vulnerable	Species or species habitat may occur within area
Calidris ferruginea Curlew Sandpiper [856]	Critically Endangered	Species or species habitat may occur within area
Calyptorhynchus banksii naso Forest Red-tailed Black-Cockatoo, Karrak [67034]	Vulnerable	Species or species habitat may occur within area
Falco hypoleucos Grey Falcon [929]	Vulnerable	Species or species habitat may occur within area
Leipoa ocellata Malleefowl [934]	Vulnerable	Species or species habitat likely to occur within area

Scientific Name	Threatened Category	Presence Text
Zanda baudinii listed as Calyptorhynchus baudinii		
Baudin's Cockatoo, Baudin's Black-Cockatoo, Long-billed Black-cockatoo [87736]	Endangered	Species or species habitat likely to occur within area
Zanda latirostris listed as Calyptorhynchus latirostris		
Carnaby's Black Cockatoo, Short-billed Black-cockatoo [87737]	Endangered	Breeding likely to occur within area
MAMMAL		
Bettongia penicillata ogilbyi		
Woylie [66844]	Endangered	Species or species habitat likely to occur within area
Dasyurus geoffroii		
Chuditch, Western Quoll [330]	Vulnerable	Species or species habitat likely to occur within area
Myrmecobius fasciatus		
Numbat [294]	Endangered	Species or species habitat may occur within area
Phascogale calura		
Red-tailed Phascogale, Red-tailed Wambenger, Kenngoor [316]	Vulnerable	Species or species habitat likely to occur within area
PLANT		
Andersonia gracilis		
Slender Andersonia [14470]	Endangered	Species or species habitat may occur within area
Boronia capitata subsp. capitata		
a shrub [29156]	Endangered	Species or species habitat may occur within area
Diuris micrantha		
Dwarf Bee-orchid [55082]	Vulnerable	Species or species habitat may occur within area
Pultenaea pauciflora		
Narrogin Pea [14013]	Vulnerable	Species or species habitat may occur within area

Listed Migratory Species		[Resource Information]
Scientific Name	Threatened Category	Presence Text
Migratory Marine Birds		

Scientific Name	Threatened Category	Presence Text
[Apus pacificus](#) Fork-tailed Swift [678]		Species or species habitat likely to occur within area
Migratory Terrestrial Species		
[Motacilla cinerea](#) Grey Wagtail [642]		Species or species habitat may occur within area
Migratory Wetlands Species		
[Actitis hypoleucos](#) Common Sandpiper [59309]		Species or species habitat may occur within area
[Calidris acuminata](#) Sharp-tailed Sandpiper [874]		Species or species habitat may occur within area
[Calidris ferruginea](#) Curlew Sandpiper [856]	Critically Endangered	Species or species habitat may occur within area
[Calidris melanotos](#) Pectoral Sandpiper [858]		Species or species habitat may occur within area

Other Matters Protected by the EPBC Act

Commonwealth Lands [Resource Information]

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

Commonwealth Land Name	State
Unknown	
Commonwealth Land - [52042]	WA

Listed Marine Species [Resource Information]

Scientific Name	Threatened Category	Presence Text
Bird		
[Actitis hypoleucos](#) Common Sandpiper [59309]		Species or species habitat may occur within area

Scientific Name	Threatened Category	Presence Text
Apus pacificus Fork-tailed Swift [678]		Species or species habitat likely to occur within area overfly marine area
Bubulcus ibis as Ardea ibis Cattle Egret [66521]		Species or species habitat may occur within area overfly marine area
Calidris acuminata Sharp-tailed Sandpiper [874]		Species or species habitat may occur within area
Calidris ferruginea Curlew Sandpiper [856]	Critically Endangered	Species or species habitat may occur within area overfly marine area
Calidris melanotos Pectoral Sandpiper [858]		Species or species habitat may occur within area overfly marine area
Chalcites osculans as Chrysococcyx osculans Black-eared Cuckoo [83425]		Species or species habitat likely to occur within area overfly marine area
Haliaeetus leucogaster White-bellied Sea-Eagle [943]		Species or species habitat may occur within area
Merops ornatus Rainbow Bee-eater [670]		Species or species habitat may occur within area overfly marine area
Motacilla cinerea Grey Wagtail [642]		Species or species habitat may occur within area overfly marine area

Extra Information

State and Territory Reserves		[Resource Information]
Protected Area Name	Reserve Type	State
Unnamed WA20877	Nature Reserve	WA
Unnamed WA20878	Nature Reserve	WA

EPBC Act Referrals			[Resource Information]
Title of referral	Reference	Referral Outcome	Assessment Status
Controlled action			
Widening maintenance zones for 3 roads, Wheatbelt region, WA	2016/7698	Controlled Action	Post-Approval
Not controlled action			
Improving rabbit biocontrol: releasing another strain of RHDV, sthrn two thirds of Australia	2015/7522	Not Controlled Action	Completed
INDIGO Central Submarine Telecommunications Cable	2017/8127	Not Controlled Action	Completed
Not controlled action (particular manner)			
INDIGO Marine Cable Route Survey (INDIGO)	2017/7996	Not Controlled Action (Particular Manner)	Post-Approval

Caveat

1 PURPOSE

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

The report contains the mapped locations of:

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

2 DISCLAIMER

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

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

3 DATA SOURCES

Threatened ecological communities

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

Threatened, migratory and marine species

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

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

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

4 LIMITATIONS

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

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

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

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

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

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

Acknowledgements

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

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

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

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

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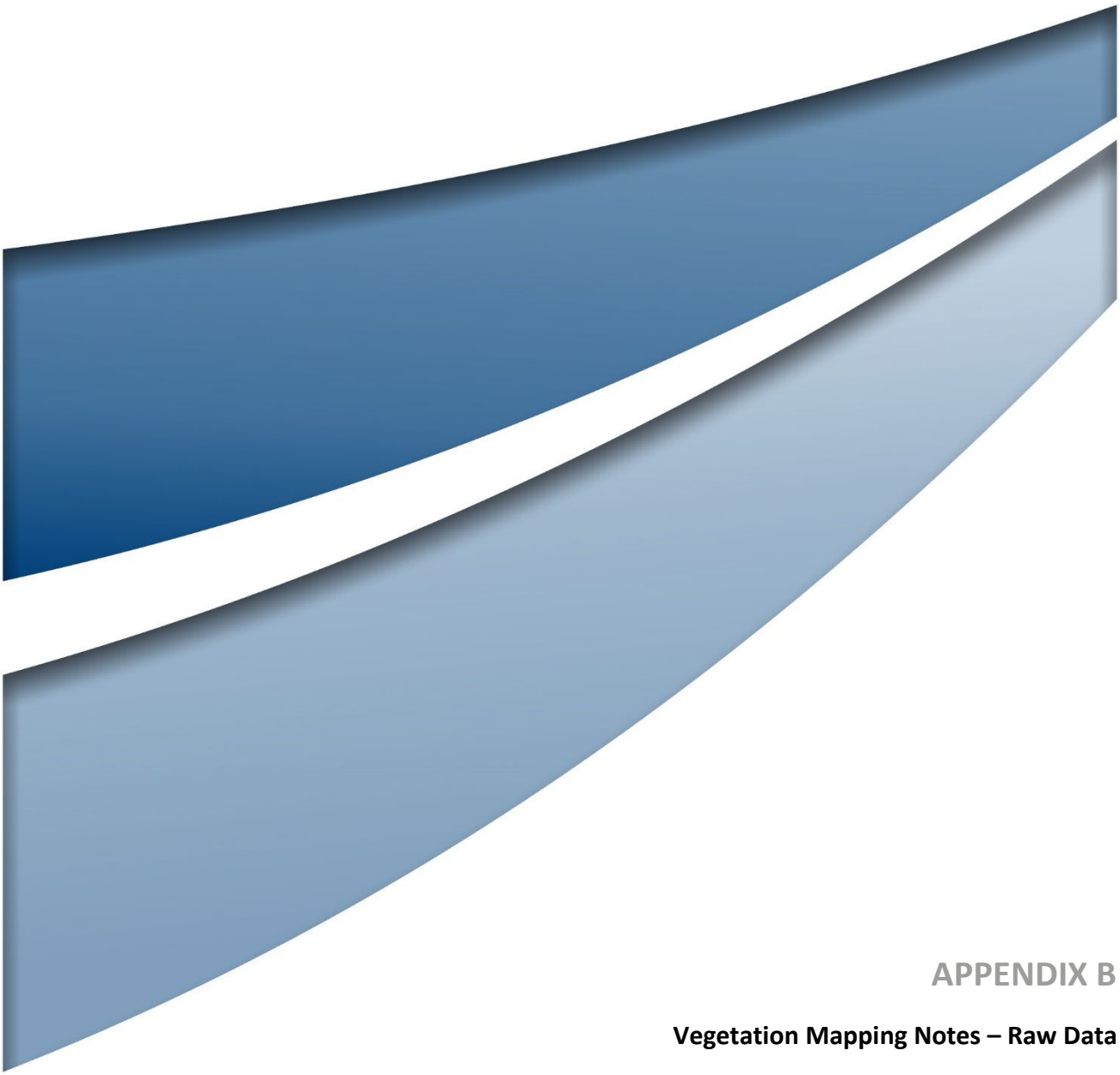

APPENDIX B

Vegetation Mapping Notes – Raw Data

Note: Data presented in GDA2020 Zone 50

VM number	Date	Easting	Northing	Comment	Vegetation Condition
Trip 1 – May 2023					
VM01	1/05/2023	500321.7924	6359380.814	Isolated trees of *Eucalyptus wandoo* and *Corymbia calophylla* over pasture weeds. Red-Brown sandy loam with laterite extensions. Not TEC.	Completely Degraded
VM02	1/05/2023	501208.613	6359363.451	North end of drainage line. Adjacent to drainage line, scattered *Eucalyptus rudis* over open shrubland of *Acacia acuminata/Acacia saligna* over open sedgeland of **Juncus acutus* over dense **Cynodon dactylon* in creek. Pasture weeds from dry banks, also dense**Romulea rosea* and **Ursinia anthemoides* present. Additional 'planted' trees along edge of various species (*Eucalyptus loxophleba, Eucalyptus wandoo* and *Acacia acuminata*). Brown sandy loam. Not TEC.	Degraded
VM03	1/05/2023	501083.8878	6358753.19	Open low-mid woodland of *Eucalyptus rudis* over open sedgeland of **Juncus acutus* over dense/complete low closed tussock grassland of pasture weeds. No mid strata, no plantings. Not TEC.	Degraded
	1/05/2023	500898.36	6358734.917	Tagasaste patch.	Completely Degraded
VM04	1/05/2023	500090.5183	6358701.922	Planted rows of ^*Eucalyptus camaldulensis* over pasture weeds. 1 x *Eucalyptus wandoo* present. Not TEC. Mid slope - brown loam with granite exclusions.	Completely Degraded
	1/05/2023	500626.7031	6358617.539	Cormorant in dam + ?Brown falcon opp.	
	1/05/2023	500493.5133	6357982.881	Various planted species - **Pinus* sp., **Eucalyptus camaldulensis*. Carnaby cockatoo feeding ground.	Completely Degraded
VM05	1/05/2023	500944.4004	6358102.686	In the drainage/creek line. Low-mid open woodland of *Eucalyptus rudis* with occasional trees of *Eucalyptus wandoo* and *Eucalyptus loxophleba* on the banks over sedgeland of **Juncus acutus* over dense tussock grassland of pasture weeds and *?*Eragrostis curvula*. Brown-orange clayey sand. Not TEC.	Degraded
	1/05/2023	500399.0634	6357709.73	**Asparagus asparagoides*. 5 plants.	

VM number	Date	Easting	Northing	Comment	Vegetation Condition
VM06	1/05/2023	500272.3706	6357762.946	Low-mid open woodland of *Eucalyptus rudis* over pasture weeds, including **?Ehrharta curvula*. Dense tussock grassland (same as previous). Brown clayey sand. Not TEC.	Degraded
VM07	1/05/2023	500424.458	6354664.767	Drainage line/ swamp area; area is boggy. Low-mid isolated trees of *Eucalyptus rudis, Eucalyptus wandoo, Corymbia calophylla* over dense sedgeland of **Juncus acutus* to open tussock grassland of low weeds of drainage area, pasture weeds. Some areas adjacent drainage line has planted trees of exotic nature. Occasional *Acacia acuminata* plants. Area recently seeded - Lupins? Not TEC.	Degraded
VM08	1/05/2023	500028.9	6355069.5	Along creek line, brown sandy clay loam. Not TEC. Low-mid open woodland of *Corymbia calophylla* over isolated tall shrubs of *Acacia saligna* over tall sedges of *Typha orientalis* in creek line, with low sedgeland of **Juncus acutus* with tussock grassland of pasture weeds - **Ehrharta, *Romulea rosea, *Ursinia anthemoides* with planted mixture of trees on the bank. *Allocasuarina huegeliana* tall shrubland over **Juncus acutus* sedgeland over low tussock grassland of weeds as above also present. Edges of bank - planted trees of mixed species - *Acacia acuminata, Corymbia calophylla, Allocasuarina huegeliana, Eucalyptus* spp. (x3 species), *Melaleuca* sp., *Eucalyptus rudis*.	Degraded
VM09	1/05/2023	500031.2219	6355327.492	Area is planted - various exotic species, *Melaleuca* spp. over pasture weeds. Areas of **Juncus acutus* - patch to the west. Not TEC.	Completely Degraded
VM10	1/05/2023	500091.889	6355270.732	Planted trees of *Eucalyptus wandoo, Eucalyptus loxophleba, ?Eucalyptus longicornis.* Over pasture weeds. Not TEC.	Completely Degraded
	1/05/2023	500417.0506	6356327.209	*Eucalyptus spathulata* subsp. *spathulata*. Planted.	
VM11	1/05/2023	500449.4918	6356344.945	Planted rows of trees, *Eucalyptus wandoo, Eucalyptus loxophleba, Eucalyptus spathulata, Eucalyptus camaldulensis* over pasture weeds. Also **Juncus acutus.* Not TEC.	Completely Degraded
	1/05/2023	500402.2873	6356518.996	*Melaleuca cuticularis.* Planted.	

VM number	Date	Easting	Northing	Comment	Vegetation Condition
VM12	1/05/2023	500391.5364	6356530.415	Adjacent to drainage line. Site is planted trees over *Casuarina obesa, Melaleuca viminea, Melaleuca cuticularis*. Planted trees over sedgeland of **Juncus acutus* and pasture weeds including **Hordeum marinum.* Brown sandy clay loam.	Completely Degraded
	1/05/2023	500419.9561	6356500.703	**Eucalyptus crebra.* Planted.	
VM13	1/05/2023	500957.0896	6356856.523	Drainage line. Not TEC. Brown sandy clay loam. Low/mid open woodland of *Eucalyptus rudis* over sedgeland of **Juncus acutus* over tussock grassland of pasture weeds.	Degraded
VM14	2/05/2023	504058.0546	6348883.165	*Eucalyptus rudis* isolated trees with *Eucalyptus wandoo* over scattered mid shrubland of *Acacia acuminata* over closed tussock grassland over **Hordeum marinum* and pasture weeds, **Romulea rosea*. Brown-black sandy clay loam. Undulating plain/ mid slope. Not TEC.	Completely Degraded
VM15	2/05/2023	503804.6492	6349218.285	Undulating plain. Not TEC. Degraded condition. Low/mid open woodland of *Eucalyptus rudis, Eucalyptus loxophleba, Eucalyptus wandoo* over isolated sedges of **Juncus acutus* over dense tussock grassland of pasture weeds dominated by **Hordeum marinum*. Grazing of sheep.	Degraded
VM16	2/05/2023	503890.0155	6349403.277	Mid slope/undulating plain. Granite extensions. Mid woodland dominated by *Eucalyptus loxophleba* and occasional *Eucalyptus wandoo* over dense tussock grassland of pasture weeds. Not TEC. Brown/red clay loam.	Degraded
VM17	2/05/2023	500733.8948	6346480.635	Drainage line. Brown sandy clay loam. Not TEC. Low-mid open woodland of *Eucalyptus rudis* over open low sedgeland of **Juncus acutus* over dense tussock grassland of pasture weeds. **Cynodon dactylon* in drainage line.	Degraded
VM18	2/05/2023	501430.4977	6345650.768	Low-mid open woodland of *Eucalyptus rudis* over low open sedgeland of **Juncus acutus* over tussock grassland of pasture weeds in drainage line. 1 x *Acacia acuminata*. Brown sandy clay loam.	Degraded

VM number	Date	Easting	Northing	Comment	Vegetation Condition
VM19	2/05/2023	501477.01	6345688.564	Lower slope, red brown sandy clay loam with granite extensions. Tall shrubland of *Acacia acuminata* with isolated *mid Eucalyptus loxophleba* over tussock grassland of pasture weeds with lots of **Romulea rosea. Amyema preissii* in *Acacia acuminata* trees. Not TEC.	Degraded
VM20	2/05/2023	501924.9166	6345801.786	Area of **Juncus acutus* in drainage line/open depression.	Degraded
VM21	2/05/2023	502608.2937	6346363.802	Drainage line. Brown sandy clay loam. Low-mid open woodland of *Eucalyptus rudis* with isolated tall shrubs of *Acacia acuminata* and *Acacia microbotrya* over tussock grassland of pasture weeds with isolated **Juncus acutus.*	Degraded
VM22	2/05/2023	502041.5807	6347256.695	Hill crest. Red-brown clay loam with laterite extensions. Low-mid open woodland of *Eucalyptus wandoo* and *Corymbia calophylla* with *Allocasuarina huegeliana* over sparse low shrubland of *Acacia pulchella* over tussock grassland of pasture weeds, *Austrostipa* sp., and *Neurachne alopecuroidea*, also **Romulea rosea*. Grazing present.	Degraded
VM23	2/05/2023	501820.2317	6347331.015	Low open woodland of *Eucalyptus wandoo* and *Eucalyptus astringens* over open tussock grassland of pasture weeds and *Austrostipa* sp. and *Rytidosperma* sp. On crest of hill with breakaway with red-brown sandy loam with laterite outcropping. Historical logging, grazing.	Degraded
VM24	2/05/2023	501631.5782	6347450.666	Edge of breakaway/upper slope. Laterite ridge. Low woodland of *Eucalyptus drummondii* with isolated *Eucalyptus wandoo* over open tussock grassland of pasture and *Austrostipa* sp. and isolated plants of *Billardiera coriacea*.	Degraded
VM25	2/05/2023	501378.7208	6347356.696	Edge of breakaway, lateritic ridge. Brown sandy loam in laterite outcropping. Low-mid open woodland of *Eucalyptus wandoo* and *Eucalyptus astringens* and *Allocasuarina huegeliana* over open tussock grassland of pasture weeds and *Austrostipa* sp. *Rytidosperma* sp., *Neurachne alopecuroidea, *Romulea rosea.* Historical logging, grazing, clearing.	Degraded

VM number	Date	Easting	Northing	Comment	Vegetation Condition
VM26	2/05/2023	501882.8516	6348027.095	Upper slope/crest. Brown clay loam with lateritic outcropping. Low-mid open woodland of *Eucalyptus wandoo, Corymbia calophylla* and *Allocasuarina huegeliana*, over pasture weeds and **Vulpia myuros*. Quite a few dead *Allocasuarina* and *Eucalyptus wandoo.*	Degraded
VM27	2/05/2023	501926.4408	6348335.832	Hill/breakaway. Laterite - grey-brown clay loam. Low-mid open woodland of *Eucalyptus wandoo* and *Eucalyptus astringens* over tussock grassland of pasture weeds. Historical logging, grazing, clearing.	Degraded
VM28	2/05/2023	506478.3971	6351701.478	In drainage line, brown sandy clay loam. Low-mid open woodland of *Eucalyptus rudis* and *Eucalyptus loxophleba* on the banks over sedgeland of **Juncus acutus* over tussock grassland of pasture weeds including **Cynodon dactylon*.	Degraded
	2/05/2023	506506.1951	6351628.293	**Echium plantagineum*. 1 x plant.	
VM29	2/05/2023	505764.5362	6351793.049	Drainage line. Red brown clay loam. Low-mid open woodland of *Eucalyptus rudis* and *Eucalyptus loxophleba* adjacent to drainage line over sedgeland of **Juncus acutus* over tussock grassland of pasture weeds.	Degraded
VM30	2/05/2023	505355.807	6351449.726	Same as VM 29.	Degraded
VM31	2/05/2023	504514.5564	6352075.286	Upper slope. Brown loam with laterite gravel. Low-mid open woodland of *Eucalyptus wandoo* and *Eucalyptus astringens* over tussock grassland of pasture weeds. Logging, clearing, grazing, quite a few dead trees.	Degraded
VM32	2/05/2023	504561.6285	6352020.056	Mid slope, red clay loam. Tall shrubland of *Acacia acuminata* and *Allocasuarina huegeliana*, over tussock grassland of pasture weeds including **Romulea rosea, *Vulpia myuros*. With isolated *Corymbia calophylla* with some granite outcropping.	Degraded
	2/05/2023	504939.3768	6352274.407	*Xanthorrhoea brevistyla* (P4) historical location. No plants observed - cleared. Pasture weeds only.	

VM number	Date	Easting	Northing	Comment	Vegetation Condition
VM33	2/05/2023	505173.0088	6352111.324	Edge of breakaway/crest/upper slope. Brown-red clay loam with some laterite outcropping. *Eucalyptus astringens* and *Eucalyptus gardneri,* low-mid woodland over very open pasture weeds with lots of leaf litter. Not too many weeds; Mallet-dominated. Some *Eucalyptus wandoo* and *Corymbia calophylla* on hill crest. Logging, clearing, grazing present.	Degraded
	2/05/2023	505211.8372	6352200.878	*Eucalyptus loxophleba, Eucalyptus phenax* subsp*. phenax.*	
VM34	2/05/2023	505317.8424	6352263.678	Downslope from lateritic breakaway, red-brown sandy clay loam. Low-mid woodland of *Eucalyptus wandoo* and *Eucalyptus gardneri* over leaf litter and *Austrostipa* sp. Nearly bare underneath. Mallet stand, no understorey. Some pasture weeds extend in from edge.	Degraded
VM35	2/05/2023	505478.9771	6350803.235	Adjacent to drainage line. Sandy loam, brown. Low-mid open woodland of *Eucalyptus rudis* and *Eucalyptus loxophleba* over tussock grassland of pasture weeds. Grazing, historical clearing. Farmhands quarters in vicinity - ?Asbestos present.	Degraded
VM36	3/05/2023	505260.9855	6352364.48	Mid slope with granite outcropping. Low-mid open woodland of *Eucalyptus loxophleba* and *Allocasuarina huegeliana* over tussock grassland of pasture weeds, **Arctotheca calendula, *Ehrharta* on red clay loam.	Degraded
VM37	3/05/2023	505365.0849	6352184.831	Upper slope, red brown clay loam. Scattered low-mid trees of *Corymbia calophylla* and *Eucalyptus rudis* over isolated mid shrubs of *Acacia pulchella, Banksia squarrosa* over tussock grassland of pasture weeds and *Neurachne alopecuroidea, *Pentameris* sp., **Aira* sp.	Degraded
	3/05/2023	505396.4678	6352155.769	Some *Corymbia calophylla* to the end. *Eucalyptus astringens.*	
VM38	3/05/2023	505396.4678	6352155.769	Mid slope. Brown sandy clay loam. Laterite boulders and gravel - downslope from laterite ridge and breakaway.	Degraded

VM number	Date	Easting	Northing	Comment	Vegetation Condition
				Low-mid open woodland of *Corymbia calophylla* and *Eucalyptus wandoo* over isolated shrubs of *Dillwynia laxiflora* and *Acacia pulchella* over tussock grassland of pasture weeds and *Austrostipa* sp.	
VM39	3/05/2023	504982.2382	6352026.725	Site same as VM 37.	Degraded
VM40	3/05/2023	504876.3323	6351966.027	Site same as VM 33 - *Eucalyptus astringens* and *Eucalyptus gardneri*.	Degraded
VM41	3/05/2023	504843.9034	6352150.07	Site same as VM 35. Low-mid woodland of *Eucalyptus loxophleba* over weeds. Granite boulder - red-brown clay loam.	Degraded
VM42	3/05/2023	504786.0652	6351971.171	Breakaway/disturbance area.	Completely Degraded
VM43	3/05/2023	504707.1814	6351940.612	Mid slope, brown clay loam. Scattered trees of *Eucalyptus wandoo* and *Corymbia calophylla, Eucalyptus astringens, Eucalyptus gardneri* over scattered tall shrubs of *Acacia acuminata* and *Allocasuarina huegeliana* over tussock grassland of pasture weeds.	Degraded
VM44	3/05/2023	504355.2975	6352021.48	Lateritic ridge in slope. Brown sandy loam with lateritic extensions. Scattered *Eucalyptus wandoo* and *Corymbia calophylla* in ridge edge with low-mid woodland *of Eucalyptus astringens* and *Eucalyptus gardneri* over leaf litter and pasture weeds on edge. Mallet stand. Weeds/grazing, clearing, logging.	Degraded
VM45	3/05/2023	504499.5662	6351786.614	Lateritic ridge in slope - on ridge. Red-brown sandy clay loam with laterite pebbles. Low-mid open woodland of *Eucalyptus wandoo* and *Corymbia calophylla* over tall open shrubland of *Banksia sessilis* and *Allocasuarina huegeliana* and open tussock grassland of pasture weeds. *Billardiera coriacea, Acacia pulchella* and **Romulea rosea*. Note - *Eucalyptus astringens* and *Eucalyptus gardneri* downslope.	Degraded
VM46	3/05/2023	503972.399	6351678.864	Mid slope, brown sandy clay loam. Granite boulders. Same as VM 35. Low-mid woodland of *Eucalyptus loxophleba* over open tall shrubland of *Acacia acuminata* over tussock grassland of pasture weeds.	Degraded

VM number	Date	Easting	Northing	Comment	Vegetation Condition
VM47	3/05/2023	503316.9664	6351354.066	Same as VM 33. Lots of weeds and grazing. Low-mid woodland of *Eucalyptus astringens* and *Eucalyptus gardneri* and *Eucalyptus wandoo* over tussock grassland of pasture weeds. Some scattered *Eucalyptus wandoo* on top of lateritic ridge.	Degraded
VM48	3/05/2023	503190.1121	6351184.715	Same as VM 33. Low-mid woodland of *Eucalyptus astringens* and *Eucalyptus gardneri* on slope down from laterite ridge over tussock grassland of pasture weeds and *Austrostipa* and *Rytidosperma* sp. Some scattered *Eucalyptus wandoo* and *Corymbia calophylla* and *Allocasuarina huegeliana.*	Degraded
VM49	3/05/2023	503032.4875	6351209.154	Extension of mapping for VM 48 – greater density of *Eucalyptus wandoo* here. Note - some *Eucalyptus wandoo* and *Corymbia calophylla, Allocasuarina huegeliana* and *Eucalyptus drummondii* scattered on ridge top/plateau.	Degraded
	3/05/2023	503235.7932	6352004.285	Road reserve area is *Corymbia calophylla* and *Eucalyptus wandoo.*	Degraded
VM50	3/05/2023	503186.3232	6352180.124	Same as previous drainage line - low-mid open woodland of *Eucalyptus rudis* and *Eucalyptus loxophleba* over sedgeland of **Juncus acutus* over dense tussock grassland of pasture weeds and **Hordeum marinum*. Brown loam.	Degraded
VM51	3/05/2023	502008.0594	6350506.011	Lateritic hillock. Red-brown sandy clay loam with lateritic pebbles and laterite extensions. Low-mid open woodland of *Eucalyptus wandoo* and *Corymbia calophylla* with *Eucalyptus astringens* and *Eucalyptus gardneri,* and *Allocasuarina huegeliana* growing on slopes over open tussock grassland of pasture weeds, *Neurachne* sp., *Austrostipa* sp. Clearing for water tank, grazing, weeds.	Degraded
VM52	3/05/2023	501336.475	6349900.608	Same as VM 35 - *Eucalyptus loxophleba* over pasture weeds.	Degraded
VM53	3/05/2023	500830.1445	6349322.197	Same as previous drainage sites. Brown clay loam. *Eucalyptus rudis* and *Eucalyptus loxophleba* - low-mid open woodland over sedgeland of **Juncus acutus* over tussock grassland/pasture weeds.	Degraded

VM number	Date	Easting	Northing	Comment	Vegetation Condition
VM54	3/05/2023	500962.322	6349177.734	Same as previous drainage sites. Low-mid *Eucalyptus rudis* and *Eucalyptus loxophleba* woodland - with more *Eucalyptus rudis* with occasional low sedges of **Juncus acutus* over pasture weed tussock grassland.	Degraded
VM55	3/05/2023	499090.8725	6351794.696	Red brown sandy clay loam with laterite gravel - lateritic ridge and upper slope. Low - mid woodland of *Eucalyptus wandoo* and *Corymbia calophylla* on lateritic ridge over pasture weeds and some *Austrostipa* and *Rytidosperma* ***sp.*** tussock grassland. Some *Banksia sessilis* and *Allocasuarina huegeliana* - mostly dead.	Degraded
VM56	3/05/2023	499079.2931	6351711.44	*Eucalyptus astringens* and *Eucalyptus gardneri* low-mid woodland over leaf litter and tussock open grassland of pasture weeds and *Austrostipa* sp. and *Rytidosperma* sp. on brown clay loam on slopes of lateritic ridge. Mallet stand.	Degraded
VM57	3/05/2023	498065.5505	6352009.061	Upper slope. Brown sandy clay loam. Low-mid open woodland of *Eucalyptus wandoo* and *Corymbia calophylla* is *Allocasuarina huegeliana* over open tall shrubland of *Banksia sessilis* over low sparse shrubland of *Hibbertia commutata* over low open grassland of *Austrostipa* and pasture weeds. *Austrostipa elegantissima, Bossiaea eriocarpa, *Briza maxima.*	Degraded
VM58	3/05/2023	499623.0906	6352976.161	Same as VM 33. Brown clay loam with lateritic extensions and lateritic gravel. Lateritic hillock and slope of low-mid woodland of *Eucalyptus gardneri* and *Eucalyptus astringens* over tussock grassland of pasture weeds. More weeds here - Completely Degraded.	Completely Degraded
VM59	2/05/2023	501727.026	6347388.901	*Eucalyptus drummondii* on hill crest. Also *Banksia sessilis* present.	Degraded
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VM60	26/09/2023	497030.2867	6348791.54	Gravelly brown loam, laterite ridge, steep slope. *Corymbia calophylla*, *Eucalyptus wandoo*, *Allocasuarina huegeliana* mid open forest over low closed grassland of pasture grasses - **Ehrharta longiflora*, **Aira cupaniana*, **Avena barbata*. Other species: *Lomandra micrantha*, **Ursinia anthemoides*, *Podolepis gracilis*. Cows, weeds, fire over 10 years.	Degraded

VM number	Date	Easting	Northing	Comment	Vegetation Condition
				Not TEC vegetation.	
VM61	26/09/2023	496944.3408	6348800.05	*Eucalyptus astringens* dominant, *Corymbia calophylla* (on lower slope), *Eucalyptus wandoo* mid woodland over low open pasture grasses. Other species: *Drosera glanduligera*, *Thysanotus patersonii*, *Millotia tenuifolia*, *Rhodanthe manglesii*, *Acacia acuminata*. Not TEC. Fire over 10 years. Historical tree felling.	Degraded
VM62	26/09/2023	497400.1815	6348570.479	Granite outcropping/hillock, brown sandy loam. Not TEC. *Eucalyptus wandoo*, *Allocasuarina huegeliana* mid woodland over low pasture grassland - **Ehrharta longiflora*, **Lolium rigidum*, **Hordeum leporinum*. *Eucalyptus wandoo* with recent crown death. Other species: *Cheilanthes sieberi*, *Stypandra glauca*, **Arctotheca calendula*, **Hypochaeris glabra*, *Dichopogon ?fimbriatus*, **Erodium botrys*. Fire over 10 years, western end only 1-2 years.	Degraded
VM63	26/09/2023	497437.2536	6348622.26	Laterite pebbles, brown sandy clay loam. Drainage area. **Juncus acutus* tall closed sedgeland over mid isolated clumps of grasses - **Ehrharta longiflora*, **Hordeum leporinum*, **Hordeum maritinum*, **Bromus diandrus*. *Eucalyptus loxophleba* subsp. *loxophleba* around edge, and scattered *Eucalyptus rudis*. Also **Moraea flaccida* and **Romulea rosea*. Fire over 10 years.	Completely Degraded
VM64	26/09/2023	497287.5575	6348786.293	Gravelly sandy clay loam, grey. *Eucalyptus astringens* mid woodland to open forest, with *Corymbia calophylla* mid open forest on lower slope, over low open grassland of pasture weeds - **Lolium rigidum*, **Ehrharta longiflora*, **Arctotheca calendula*. Also *Allocasuarina huegeliana* on granite outcropping on lower slope. Low hill, old dead trees, grazing. Not TEC. Fire over 10 years.	Degraded

VM number	Date	Easting	Northing	Comment	Vegetation Condition
VM65	26/09/2023	497515.3253	6348344.686	Granite outcropping, lower slope. Brown sandy clay loam. *Eucalyptus loxophleba* subsp. *loxophleba* mid open woodland over *Acacia acuminata* tall open shrubland over low grassland of pasture weeds (**Ehrharta longiflora*, **Avena barbata*). Other species: *Stypandra glauca*, **Romulea rosea*, **Trifolium subterraneum*. Fire 1-2 years. Not TEC. Creekline to west, *Eucalyptus loxophleba* subsp. *loxophleba* over pasture, burnt 1-2 years.	Degraded
VM66	26/09/2023	497149.7498	6348205.347	Brown sandy loam, lower slope/low lying/old creekline? *Eucalyptus rudis* mid open forest over low closed grassland of pasture weeds - **Ehrharta longiflora*, **Hordeum leporinum*, **Arctotheca calendula*. Not TEC. Cows. Fire 1-2 years.	Degraded
VM67	26/09/2023	497022.8122	6348178.924	In creekline - open forest on flood plain. Flowing water. Fire over 10 years. *Eucalyptus rudis* mid closed forest over low closed pasture weeds - **Lolium rigidum*, **Ehrharta longiflora*, **Avena barbata*, **Bromus diandrus*, **Romulea rosea*.	Degraded
VM68	26/09/2023	496322.5551	6348062.727	Brown clay loam, granite, mid slope. Fire over 10 years. *Eucalyptus loxophleba* subsp. *loxophleba* low woodland over *Acacia acuminata* tall sparse shrubland over low closed grassland of pasture species - **Avena barbata*, **Arctotheca calendula*, **Lolium rigidum*, also *Allocasuarina huegeliana*. Young stand of *Eucalyptus loxophleba* subsp. *loxophleba*.	Degraded
VM69	26/09/2023	496396.3772	6348494.555	Laterite outcropping/ridge. Brown clay loam, not TEC. *Eucalyptus astringens*, *Eucalyptus wandoo*, *Corymbia calophylla* mid open woodland to woodland over *Eucalyptus pileata* low isolated clumps of mallees over low open pasture species - **Ehrharta longiflora*, **Bromus diandrus*, **Avena barbata*, **Arctotheca calendula*. Kangaroos and horses, weeds Allocasuarina huegeliana also present.. Fire over 10 years.	Degraded
VM70	26/09/2023	495808.0346	6348985.321	Creekline, fire over 10 years. *Eucalyptus rudis*, *Eucalyptus loxophleba* subsp. *loxophleba* mid woodland over **Juncus acutus* tall sedgeland over low sparse pasture species - **Lolium rigidum*, **Bromus diandrus*. *Acacia acuminata*.	Degraded

VM number	Date	Easting	Northing	Comment	Vegetation Condition
VM71	26/09/2023	495966.6246	6348614.339	Planted *Eucalyptus camaldulensis*, **Eucalyptus grandis* around house and up driveway.	Completely Degraded
VM72	26/09/2023	495882.8027	6348459.765	*Eucalyptus rudis* low open forest over low closed pasture species. Man-made dam/waterhole. Fire over 10 years.	Degraded
VM73	26/09/2023	495600.6944	6348250.339	*Eucalyptus camaldulensis*, planted.	Completely Degraded
VM99	27/09/2023	498997.683	6348370.447	River and floodplain, brown sandy clay loam. >10 years fire. *Eucalyptus rudis* mid woodland to open forest over *Acacia acuminata* tall isolated clumps of shrubs over **Juncus acutus* mid isolated sedges over **Avena barbata*, **Bromus diandrus* mid closed grassland**Moraea flaccida*, **Hordeum marinum*, **Oxalis purpurea*, **Juncus acutus*, **Oxalis glabra*.	Degraded
VM101	27/09/2023	499446.3264	6348677.454	Degraded, hill slope (mid to upper), brown loam, granite boulder out-cropping. *Corymbia calophylla* mid open woodland to woodland over *Allocasuarina huegeliana* low open woodland over *Acacia microbotrya*, *Acacia acuminata* tall isolated clumps of shrubs over **Bromus diandrus*, **Avena barbata* low grassland. **Galium divaricatum*, *Geranium solanderi*, **Stellaria media*.	Degraded
VM102	27/09/2023	499601.2002	6348899.293	Upper slope, pink-brown sandy loam, laterite outcropping. Degraded, fire >10 years. *Eucalyptus wandoo*, *Eucalyptus astringens* mid woodland to open forest over **Vulpia bromoides*, **Lolium rigidum* low grassland.	Degraded
VM103	27/09/2023	499626.6082	6348942.751	Hill top/laterite ridge, brown sandy loam, degraded, fire >10 years. *Allocasuarina huegeliana*, *Corymbia calophylla* low woodland over *Banksia sessilis*, *Acacia celastrifolia* tall sparse shrubland over **Briza maxima*, **Ehrharta longiflora*, **Vulpia muralis* low open grassland over *Lysimachia arvensis*, **Arctotheca calendula* low isolated clumps of forbs. Species: *Thysanotus patersonii*, *Rhodanthe manglesii*, *Neurachne alopecuriodea*, **Briza minor*.	Degraded

VM number	Date	Easting	Northing	Comment	Vegetation Condition
VM104	27/09/2023	499526.467	6348881.885	Midslope, granite outcropping, fire >10 years. *Allocasuarina huegeliana* mid woodland over *Acacia acuminata* tall sparse shrubland over **Ehrharta longiflora*, **Avera barbata* low grassland. *Cheilanthes sieberi*, *Dichopogon* ?*fimbriatus*, **Romulea rosea*, **Sonchus oleraceus*.	Degraded
VM105	27/09/2023	499479.3601	6349345.499	Degraded, laterite ridge, dark brown sandy loam. *Eucalyptus astringens* mid open forest over **Aira cupaniana*, **Ehrharta longiflora*, **Avena barbata* low isolated clumps of grasses. scattered *Allocasuarina huegeliana*, *Corymbia calophylla* on southeast edge.	Degraded
VM106	27/09/2023	499335.114	6349385.954	Lower slope/drainage area, brown sandy loam. Planted *Eucalyptus loxophleba* subsp. *loxophleba* low mallee open forest over **Vulpia bromoides*, **Ehrharta longiflora* low grassland over **Trifolium campestre*, **Trifolium subterraneum*, **Arctotheca calendula* low isolated clumps of forbs.	Degraded - Completely Degraded
VM107	27/09/2023	499328.2133	6349201.704	Hill top, granite outcropping, brown sandy loam. *Eucalyptus wandoo* mid open woodland to woodland over *Allocasuarina huegeliana* low open woodland over **Bromus diandrus*, **Lolium rigidum*, low grassland over **Romulea rosea* low open forbland. *Rytidosperma caespitosum*.	Degraded
VM108	27/09/2023	499287.2201	6348948.497	Upperslope, some granite outcropping, degraded, >10 years fire. Red-brown clay loam. *Eucalyptus loxophleba* subsp. *loxophleba* low to mid open forest over *Acacia acuminata* tall isolated clumps of shrubs over **Avena barbata*, **Ehrharta longiflora* low grassland over **Romulea rosea* low forbland. **Asparagus asparagoides*, *Hibbertia commutata* scattered *Corymbia calophylla* and *Allocasuarina huegeliana*. Lots of dense young *Eucalyptus loxophleba* - fire some time ago?	Degraded
VM109	27/09/2023	498906.3574	6348923.962	Degraded, red clay loam, mid slope some granite outcropping. *Eucalyptus loxophleba* subsp. *loxophleba* and *Allocasuarina huegeliana* low to mid woodland to open forest over *Acacia acuminata* tall isolated clumps of shrubs, rest the same as VM 107.	Degraded

VM number	Date	Easting	Northing	Comment	Vegetation Condition
VM110	27/09/2023	498646.3766	6348915.726	Vegetation equal to VM 108. Degraded, lower slope, some granite outcropping, red clay loam.	Degraded
VM111	27/09/2023	498632.818	6349009.623	Degraded - completely degraded, Drainage line/seepage area. Yellow-brown clay sand. Remnant *Eucalyptus rudis*, *Eucalyptus wandoo* mid open woodland over **Juncus acutus* mid isolated clumps of sedges of low closed pasture grasses over **Cotula coronopifolia* low sparse forbland with planted *Eucalyptus* species along fence edges (^*Eucalyptus camaldulensis*, *Eucalyptus loxophleba*, **Eucalyptus sideroxylon*).	Degraded - Completely Degraded
VM112	27/09/2023	499028.8794	6349350.232	*Corymbia calophylla* mid closed forest over **Ehrharta longiflora* low closed grassland. Degraded, lower slope, brown sandy loam.	Degraded
VM113	27/09/2023	499036.2559	6349389.588	Same as VM 110 with scattered *Acacia acuminata* as well.	Degraded
VM114	27/09/2023	499658.3523	6349461.91	*Eucalyptus astringens*, *Eucalyptus wandoo* mid open forest over **Ehrharta longiflora* low isolated clumps of grasses. Degraded, slope of laterite breakaway, grey sandy clay loam, gravelly.	Degraded
VM115	27/09/2023	499723.0933	6349499.161	*Corymbia calophylla*, *Eucalyptus wandoo* mid open woodland over *Allocasuarina huegeliana* low isolated clumps of trees over *Banksia sessilis*, *Acacia celastrifolia* tall isolated clumps of trees over **Avena barbata*, **Vulpia bromoides* low grassland. *Neurachne alopecuroidea*, *Hibbertia commutata*, **Petrorhagia dubia*, **Hypochaeris glabra*, **Romulea rosea*, *Austrostipa exilis*, *Rytidosperma caespitosum*.	Degraded
VM116	27/09/2023	500031.1101	6349548.497	*Eucalyptus loxophleba* subsp. *loxophleba*, *Allocasuarina huegeliana* mid woodland to open forest over *Acacia acuminata*. Tall isolated clumps of shrubs over **Avena barbata*, **Lolium rigidum* low closed grassland. Degraded. Upperslope. Granite outcropping. Red clay loam.	Degraded
VM117	27/09/2023	500298.2154	6349769.326	*Eucalyptus loxophleba* subsp. *loxophleba*, *Allocasuarina huegeliana* low to mid open forest over *Acacia acuminata* tall isolated clumps of shrubs over **Avena barbata*, **Bromus hordaceus* low closed grassland. Midslope. Degraded. Granite outcropping. Brown sandy clay loam.	Degraded

VM number	Date	Easting	Northing	Comment	Vegetation Condition
VM118	27/09/2023	500300.1652	6349373.001	*Eucalyptus astringens* mid open forest over **Bromus diandrus*, **Ehrharta longiflora*, **Lolium rigidum* low isolated clumps of grasses. Scattered *Allocasuarina huegeliana*. Degraded. Upperslope, gravelly brown-grey sandy loam. Laterite outcropping on peak of hill.	Degraded
VM119	27/09/2023	500479.4403	6349333.306	*Allocasuarina huegeliana* low to mid open forest over *Acacia acuminata* tall isolated clumps of shrubs over *Romulea rosea* low closed forbland. *alopecuroidea*, *Acacia lasiocarpa*, **Ehrharta longiflora*. Degraded. Mid to lower slope. Brown sandy clay loam. Granite outcropping. *Neurachne*	Degraded
VM120	27/09/2023	499948.1478	6349923.093	*Corymbia calophylla* mid open forest over **Bromus diandrus*, **Avena barbata*. Low closed grassland. Some *Eucalyptus wandoo* to east end. Degraded. Mid slope. Grey sand (quartzy).	Degraded
VM121	27/09/2023	498918.8555	6349953.52	*Eucalyptus loxophleba* subsp. *loxophleba* low to mid woodland to open forest, *Eucalyptus wandoo* over *Acacia acuminata* tall isolated clumps of shrubs over **Avena barbata*, **Bromus diandrus* low closed grassland. One *Eucalyptus rudis*.	Degraded
VM122	27/09/2023	498746.4356	6350313.905	Planted ^*Eucalyptus occidentalis*, ^*Eucalyptus camaldulensis*, *Eucaluptus orthostemon* low open forest over **Ehrharta longiflora*, **Lolium rigidum*, **Bromus diandrus* low closed grassland. **Echium plantagineum*, **Moraea flaccida*, **Juncus acutus*, **Moraea setifolia*. Drainage line.	Completely Degraded
VM123	27/09/2023	498639.5977	6349972.997	*Eucalyptus wandoo* mid open forest over closed pasture grassland. Degraded. Upper slope. Patch to the south is *Eucalyptus loxophleba* subsp. *loxophleba* with granite outcropping - degraded.	Degraded
VM124	27/09/2023	498177.352	6349783.573	*Eucalyptus astringens*, *Eucalyptus gardneri* mid open forest over **Ehrharta longiflora*, **Hordeum leporinum*, **Bromus diandrus* low open grassland. Degraded. Laterite breakaway. Brown sandy loam. *Eucalyptus wandoo* mid woodland to north in same patch.	Degraded

VM number	Date	Easting	Northing	Comment	Vegetation Condition
VM125	27/09/2023	497990.2774	6349500.955	*Eucalyptus astringens*, *Eucalyptus wandoo* mid open forest over **Bromus bromoides*, **Lolium rigidum*, **Ehrharta longiflora* low open grassland. Laterite ridge. Degraded. Gravelly loamy sand.	Degraded
VM126	27/09/2023	497722.5914	6349622.51	*Eucalyptus wandoo* mid woodland over **Ehrharta longiflora*, **Lolium rigidum* low isolated clumps of grasses (with small patches of *Eucalyptus astringens* on south and east edges). Degraded. Gravelly pale brown sandy loam. Hill top. Patches in paddock to south/southwest are *Eucalyptus astringens* and *Eucalyptus wandoo*.	Degraded
VM127	27/09/2023	497907.4221	6349887.617	*Eucalyptus wandoo* mid open forest over **Aira cupaniana*, **Avena barbata*, **Bromus diandrus* low isolated clumps of grasses. Scattered *Eucalyptus astringens*. **Ehrharta calycina*. Laterite ridge. Degraded. Brown loamy sand.	Degraded
VM128	27/09/2023	497747.9187	6349989.905	Planted **Eucalyptus grandis*, *Eucalyptus camaldulensis* low to mid open forest over low closed pasture grassland.	Completely Degraded
VM129	27/09/2023	497546.993	6349838.09	*Eucalyptus wandoo* and *Allocasuarina huegeliana*.	Degraded
VM130	27/09/2023	497504.7242	6349627.667	*Eucalyptus astringens*, *Eucalyptus gardneri* mid woodland to open forest over low pasture grassland. Laterite ridge.	Degraded
VM131	27/09/2023	497050.589	6349622.553	*Corymbia calophylla* mid open forest over low closed pasture grassland.	Degraded
VM132	27/09/2023	496349.9964	6349880.51	*Eucalyptus rudis* low open forest over *Acacia microbotrya* tall sparse shrubland over **Juncus acutus* tall open sedgeland over **Avena barbata* mid to tall closed grassland. Also **Rumex crispus*. Creekline, brown loam.	Degraded
VM133	27/09/2023	496256.1889	6349652.991	*Eucalyptus rudis* low woodland over **Juncus acutus* tall sedgeland to closed sedgeland, **Bromus diandrus*, **Avena barbata* low open grassland over **Romulea rosea* and **Trifolium subterraneum* low open forbland. Creekline, brown sandy loam. Scattered *Eucalyptus loxophleba* subsp. *loxophleba* on banks. Also **Moraea flaccida*.	Degraded

VM number	Date	Easting	Northing	Comment	Vegetation Condition
VM134	27/09/2023	495721.8697	6349490.695	*Corymbia calophylla*, *Eucalyptus wandoo* mid open woodland over *Allocasuarina huegeliana* low isolated clumps of trees over **Lolium rigidum*, **Bromus diandrus*, **Ehrharta longiflora* low grassland. Laterite ridge/hill, brown sandy loam.	Degraded
VM135	27/09/2023	495697.8597	6349277.723	*Eucalyptus loxophleba* subsp. *loxophleba*, *Corymbia calophylla* mid isolated clumps of trees to mid open woodland over *Acacia acuminata* tall isolated shrubs over **Avena barbata*, **Bromus diandrus* low closed grassland. Upper slope, red clay loam.	Degraded to Completely Degraded
VM136	27/09/2023	496010.8137	6349295.37	*Eucalyptus loxophleba* subsp. *loxophleba* low to mid woodland to open forest over **Juncus acutus* mid sedgeland over **Bromus diandrus*, **Avena barbata* low grassland over **Romulea rosea* low closed forbland. Creekline.	Degraded
VM137	27/09/2023	496585.0961	6348965.667	*Eucalyptus wandoo*, *Corymbia calophylla, Allocasuarina huegeliana* low to mid open woodland over *Banksia sessilis* tall isolated clumps of shrubs over *Neurachne alopecuroidea* isolated clumps of tussock grasses over **Avena barbata*, **Ehrharta longiflora*, **Aira cupaniana* low open grassland over **Ursinia anthemoides*, **Romulea rosea* low open forbland. Also *Acacia stenoptera*, *Dianella revoluta*, *Lepidosperma asperatum*, **Hypochaeris glabra*, *Billardiera fusiformis.* Laterite ridge/hill top, gravelly brown sandy loam.	Degraded
VM138	27/09/2023	496817.9076	6348924.838	*Corymbia calophylla*, *Eucalyptus wandoo* mid woodland to open forest over **Ehrharta longiflora*, **Avena barbata*, **Lolium rigidum*, low closed grassland. Hill top, gravelly brown sandy loam.	Degraded
VM139	27/09/2023	498760.6742	6348538.152	*Corymbia calophylla*, *Eucalyptus loxophleba* subsp. *loxophleba*, *Allocasuarina huegeliana* mid woodland to open forest over *Acacia microbotrya* tall isolated clumps of shrubs over **Avena barbata* low grassland over **Romulea rosea*, **Trifolium subterraneum* low forbland. Granite hill with boulder outcropping; brown sandy loam.	Degraded

VM number	Date	Easting	Northing	Comment	Vegetation Condition
VM140	27/09/2023	498490.717	6348474.702	*Eucalyptus rudis* mid woodland over **Juncus acutus* mid isolated clumps of shrubs over **Avena barbata*, **Hordeum marinum* low grassland over **Romulea rosea* low forbland. Also **Moraea flaccida* and **Erodium botrys*. Dam/creekline. Brown sandy clay loam. *Eucalyptus loxophleba* subsp. *loxophleba* on Eastern bank on granite outcropping.	Degraded
VM141	27/09/2023	498277.1293	6348727.206	Dominant *Allocasuarina huegeliana*, *Eucalyptus loxophleba* subsp. *loxophleba* mid open forest over *Acacia acuminata* tall isolated clumps of shrubs over **Ehrharta longiflora*, **Avena barbata*, **Briza maxima* low grassland. Granite hill with boulder outcropping (lower slope in general). Brown sandy loam. Scattered *Eucalyptus rudis* on outer edges, north and east.	Degraded
VM142	27/09/2023	498320.8309	6348827.209	*Corymbia calophylla*, *Eucalyptus wandoo*, *Eucalyptus loxophleba* subsp. *loxophleba* mid open forest over *Allocasuarina huegeliana* low isolated clumps of trees over *Acacia acuminata* tall isolated clumps of shrubs over **Avena barbata*, **Ehrharta longiflora* low closed grassland. Granite hill with boulder outcropping, lower slope in general, brown sandy loam.	Degraded
VM143	27/09/2023	498173.9807	6348820.199	*Eucalyptus rudis* mid woodland to open forest over *Juncus subsecundus* mid isolated clumps of sedges over **Avena barbata*, **Lolium rigidum* low closed grassland over **Trifolium subterraneum* low isolated clumps of forbs. Drainage/damp area. Brown clay loam. *Eucalyptus loxophleba* subsp. *loxophleba*, *Allocasuarina huegeliana* mid open forest over closed pasture grassland on eastern edge and west/southwest of waypoint.	Degraded
VM144	27/09/2023	498037.3849	6348922.164	*Corymbia calophylla*, *Eucalptus wandoo*, *Acacia acuminata*, *Allocasuarina huegeliana* on granite. Either side of point/track.	Degraded
VM145	27/09/2023	498127.6128	6348994.573	*Corymbia calophylla*, *Allocasuarina huegeliana* mid woodland over *Acacia acuminata* tall sparse shrubland over **Avena barbata*, **Ehrharta longiflora* low closed grassland over **Romulea rosea* low open forbland. Brown sandy loam. Granite hill with boulder outcropping mid slope.	Degraded

VM number	Date	Easting	Northing	Comment	Vegetation Condition
VM146	27/09/2023	497941.8319	6348857.956	*Eucalyptus gardneri*, *Eucalyptus astringens* low to mid woodland over **Avena barbata*, **Vulpia bromoides*. Low sparse grassland. Laterite breakaway/ridge. Pink-brown sandy clay, gravelly.	Degraded
VM147	27/09/2023	497762.3265	6349081.633	*Eucalyptus astringens*, *Eucalyptus gardneri* mid open forest over **Vulpia bromoides* low isolted clumps of grasses. Laterite hill. Grey-brown sandy clay loam. *Neurachne alopecuroidea* and *Austrostipa scabra*.	Degraded
VM148	27/09/2023	497689.4513	6349116.204	*Corymbia calophylla*, *Eucalyptus wandoo* mid woodland to open forest over *Banksia sessilis* tall open shrubland over **Vulpia bromoides*, **Avena barbata* low open grassland over **Romulea rosea* low open forbland. Upper slope, yellow-brown gravelly sandy loam. Also *Hibbertia commutata*, *Wahlenbergia gracilenta*, *Rytidosperma setaceum*. Very scattered *Allocasuarina huegeliana*.	Degraded
VM155	28/09/2023	500427.7685	6357714.163	*Eucalyptus rudis* low to mid woodland over *Acacia microbotrya* tall isolated clumps of shrubs over **Juncus acutus* tall isolated clumps of sedges over **Bromus diandrus*, **Avena barbata*, **Lolium rigidum* low closed grassland. Flood plain and drainage line.	Degraded
VM156	28/09/2023	500423.9422	6357884.109	Planted *Eucalyptus camaldulensis*, **Eucalyptus* sp. mid woodland over *Grevillea* spp., *Hakea multilineata*, ^*Callistemon phoeniceus* mid to tall isolated clumps of shrubs over **Bromus diandrus*, **Avena barbata* low closed grassland. **Corymbia maculata* and *Acacia microbotrya*. Plain.	Completely Degraded
VM157	28/09/2023	500563.2447	6359225.712	Planted *Eucalyptus camaldulensis*. Mid slope.	Completely Degraded
VM158	28/09/2023	501344.0658	6357601.005	Same as VM 153, with some *Acacia saligna*.	Degraded
VM159	28/09/2023	505804.3491	6352435.457	*Eucalyptus loxophleba* subsp. *loxophleba* mid woodland to open forest over *Acacia microbotrya*, *Acacia acuminata*, *Acacia saligna* tall isolated clumps of shrubs over **Avena barbata*, **Ehrharta longifolia*, **Lolium rigidum* mid grassland. Lower slope.	Degraded

VM number	Date	Easting	Northing	Comment	Vegetation Condition
VM160	28/09/2023	505771.8801	6352205.665	*Eucalyptus wandoo*, *Corymbia calophylla*, *Allocasuarina huegeliana* mid open forest over *Acacia acuminata* and *Acacia microbotrya* tall isolated clumps of shrubs over **Avena barbata*, **Ehrharta longiflora* low grassland. East side degraded, west side completely degraded. Mid slope with gravel.	Degraded to Completely Degraded
VM161	28/09/2023	505437.8129	6351553.446	*Eucalyptus loxophleba* subsp. *loxophleba* mid open forest over low pasture grassland on banks with *Eucalyptus rudis* over mid isolated **Juncus acutus* over pasture grasses in creek.	Degraded
VM162	28/09/2023	505417.9822	6350837.192	*Eucalyptus rudis* and **Juncus acutus* in creekline, *Eucalyptus loxophleba* subsp. *loxophleba* betweeen here and VM 160.	Degraded
VM163	28/09/2023	505407.0946	6350578.118	*Eucalyptus loxophleba* subsp. *loxophleba* low isolated trees over *Acacia acuminata*, *Acacia microbotrya* tall open shrubland over pasture. *Eucalyptus rudis* in creek to south of waypoint.	Degraded
VM165	28/09/2023	504341.1519	6350459.916	*Eucalyptus loxophleba* subsp. *loxophleba*, *Acacia acuminata* over closed pasture grassland.	Degraded
VM166	28/09/2023	504341.8439	6350757.685	*Eucalyptus rudis* over closed pasture grassland. No **Juncus acutus*.	Degraded
VM167	28/09/2023	504339.4868	6350921.204	*Eucalyptus wandoo*, *Eucalyptus loxophleba* subsp. *loxophleba*, *Acacia acuminata*, *Acacia microbotrya* over pasture closed grassland.	Degraded
VM168	28/09/2023	504435.8566	6351209.175	*Eucalyptus wandoo*, *Allocasuarina huegeliana*, *Acacia acuminata* over closed pasture grassland. *Glischrocaryon aureum*.	Degraded
VM169	28/09/2023	504519.3891	6351407.132	*Eucalytpus wandoo* open to closed forest over closed pasture grassland.	Degraded
VM170	28/09/2023	504590.3102	6351805.418	*Eucalyptus wandoo*, *Allocasuarina huegeliana*, *Acacia acuminata*.	Degraded
VM171	28/09/2023	504501.0729	6352016.204	*Corymbia calophylla*, *Eucalyptus wandoo* mid woodland to open forest over *Allocasuarina huegeliana* low isolated clumps of trees, *Banksia sessilis* tall isolated clumps of shrubs over *Bossiaea eriocarpa*, *Hibbertia commutata* low isolated clumps of shrubs. Vegetation just beyond backslope of road is good to very good condition; Upperslope backslope is degraded. *Lechenaultia biloba*, *Phyllangium sulcatum*.	Degraded

VM number	Date	Easting	Northing	Comment	Vegetation Condition
VM172	28/09/2023	504112.4549	6352309.376	*Corymbia calophylla* mid open forest over *Banksia sessilis*, *Jacksonia sternbergiana*, *Acacia microbotrya* tall isolated clumps of shrubs over **Ehrharta calycina* mid grassland. Mid slope.	Degraded
VM173	28/09/2023	503859.1203	6352331.096	*Corymbia calophylla* mid open forest over tall isolated clumps of shrubs of *Acacia microbotrya* over **Ehrharta calycina* mid grassland. Mid slope.	Degraded
VM174	28/09/2023	503599.3297	6352333.966	*Eucalyptus wandoo*, *Corymbia calophylla*, *Allocasuarina huegeliana* over **Ehrharta calycina*, **Avena barbata* mid grassland. Lower slope.	Degraded
VM175	28/09/2023	503324.77	6352325.526	*Eucalyptus loxophleba* subsp. *loxophleba* low to mid woodland over **Juncus acutus* mid isolated clumps of sedges over **Lolium rigidum*, **Avena barbata* low open grassland. Creekline/flood plain.	Degraded
VM176	28/09/2023	503252.121	6352492.838	*Eucalyptus loxophleba* subsp. *loxophleba*, *Acacia microbotrya* over **Ehrharta calycina*, **Bromus diandrus* mid closed grassland. Lower slope.	Degraded
VM177	28/09/2023	503228.7	6352600.49	*Corymbia calophylla*, *Eucalyptus wandoo*, *Allocasuarina huegeliana*, *Banksia sessilis*, *Acacia acuminata*.	Degraded
VM178	28/09/2023	503121.2288	6352598.973	*Eucalytpus wandoo* mid open forest over **Ehrharta calycina*, **Ehrharta longiflora* mid grassland.	Degraded
VM179	28/09/2023	502878.4382	6352598.049	*Corymbia calophylla*, *Eucalyptus wandoo*, *Allocasuarina huegeliana*, *Banksia sessilis*, *Hakea prostrata* over **Bromus diandrus*, **Ehrharta calycina*, **Ehrharta longiflora* mid closed grassland. **Asparagus asparagoides*.	Degraded

VM number	Date	Easting	Northing	Comment	Vegetation Condition
VM180	28/09/2023	502959.7577	6352339.057	*Eucalyptus loxophleba* subsp. *loxophleba*, *Eucalyptus rudis* low open woodland to woodland over **Juncus acutus* tall open sedgeland over **Hordeum marinum*, **Bromus hordaceus* low closed grassland lover **Arctotheca calendula*, **Trifolium subterraneum* and **Trifolium dubium* low sparse forbland. Drainage/Creekline. **Cotula coronopifolia* low sparse forbland closer to creek, with low open grassland of **Hordeum marinum*.	Degraded
VM181	28/09/2023	502524.6708	6352772.528	**Juncus acutus* tall open to tall sedgeland over **Hordeum marinum* low closed grassland over **Cotula coronopifolia*, **Arctotheca calendula* low isolated clumps of forbs. Drainage line.	Completely Degraded
VM182	28/09/2023	502249.5369	6351936.936	*Eucalyptus loxophleba* subsp. *loxophleba* low open forest over **Lolium rigidum*, **Avena barbata*, low grassland. Brown laom. *Eucalyptus loxophleba* subsp. *loxophleba* and *Eucalyptus rudis* to east in creekline, over **Juncus acutus*.	Degraded
VM183	28/09/2023	502082.3176	6351731.217	*Eucalyptus rudis* dominant, *Eucalyptus loxophleba* subsp. *loxophleba* mid woodland over **Juncus acutus* tall open sedgeland over **Lolium rigidum*, **Hordeum marinum* low closed grassland over **Cotula coronopifolia* low isolated clumps of forbs. Creekline.	Degraded
VM184	28/09/2023	501682.4065	6351368.672	*Eucalyptus loxophleba* subsp. *loxophleba* dominant, *Eucalyptus rudis* mid open forest over **Juncus acutus* tall open to tall sedgeland over the usual weeds. Creekline.	Degraded
VM185	28/09/2023	501362.5557	6352029.001	*Eucalyptus loxophleba* subsp. *loxophleba* dominant, *Eucalyptus rudis* mid open woodland over **Juncus acutus* tall sedgeland over **Hordeum marinum*, **Lolium rigidum* low grassland over **Cotula coronopifolia* low isolated clumps of forbs. Creek line/drainage area.	Degraded
VM186	28/09/2023	501237.9108	6350654.357	*Eucalyptus loxophleba* subsp. *loxophleba* dominant, *Eucalyptus rudis* mid open woodland to open forest over **Juncus* tall sedgeland to closed sedgeland over **Hordeum leporinum*, **Cynodon dactylon*, **Lolium rigidum* low grassland over **Cotula coronopifolia* low isolated clumps of forbs to low open forbland. Grey brown sandy clay, creekline.	Degraded

VM number	Date	Easting	Northing	Comment	Vegetation Condition
				Also *Eragrostis dielsii*, **Sonchus asper*, **Polypogon monspeliensis*.	
VM187	28/09/2023	500938.365	6350701.284	*Eucalyptus wandoo*, *Acacia acuminata*, *Acacia microbotrya* over weeds. Lower slope.	Degraded
VM188	28/09/2023	500937.4493	6350896.619	*Eucalyptus loxophleba* subsp. *loxophleba*, *Eucalyptus rudis*, *Acacia microbotrya* over weeds. Lower slope.	Degraded
VM189	28/09/2023	500937.184	6351054.816	*Eucalyptus wandoo*, *Acacia microbotrya* over weeds. Mid slope.	Degraded
VM190	28/09/2023	500935.45	6351488.943	*Corymbia calophylla*, *Eucalyptus wandoo* over weeds. Mid slope.	Degraded
VM191	28/09/2023	500896.9658	6351642.709	*Eucalyptus loxophleba* subsp. *loxophleba*, *Acacia acuminata* over weeds. Midslope.	Degraded
VM192	28/09/2023	500756.0515	6351626.092	*Eucalyptus wandoo*, *Allocasuarina huegeliana*, *Acacia acuminata*. Mid slope.	Degraded
VM193	28/09/2023	500474.6968	6351702.935	*Eucalyptus rudis*, *Eucalyptus loxophleba* subsp. *loxophleba*, **Juncus acutus* over weeds, with *Typha* sp. Drainage line.	Degraded
VM194	28/09/2023	500478.353	6351947.824	*Corymbia calophylla*, *Eucalyptus wandoo*, *Allocasuarina huegeliana*, weeds. Mid slope.	Degraded
VM195	28/09/2023	500475.3187	6352971.722	*Corymbia calophylla*, **Juncus acutus*, weeds - **Moraea flaccida* and **Cirsium vulgare*. Drainage area.	Degraded
VM196	28/09/2023	500599.9957	6353075.369	*Corymbia calophylla*, *Eucalyptus wandoo*, weeds. Lower slope.	Degraded to Completely Degraded
VM197	28/09/2023	501114.9448	6353071	*Corymbia calophylla*, *Eucalyptus wandoo*, weeds. Lower slope. Vegetation continues east; *Corymbia calophylla* to north east.	Degraded to Completely Degraded
VM198	28/09/2023	500919.6991	6349927.595	*Eucalyptus loxophleba* subsp. *loxophleba*, *Acacia acuminata* over weeds. Lower slope.	Degraded

VM number	Date	Easting	Northing	Comment	Vegetation Condition
VM199	28/09/2023	500648.6512	6349698.58	*Eucalyptus loxophleba* subsp. *loxophleba*, *Eucalyptus wandoo*, *Allocasuarina huegeliana*, *Acacia acuminata* over weeds. Lower slope.	Degraded
VM200	28/09/2023	500691.1279	6349247.599	*Eucalyptus rudis*, **Eucalyptus cladocalyx*, **Juncus acutus*, weeds. Creek line.	Degraded
VM201	28/09/2023	500730.9149	6349108.023	*Eucalyptus loxophleba* subsp. *loxophleba*, *Acacia acuminata*, weeds. Plain.	Degraded
VM202	28/09/2023	500730.993	6348902.711	*Eucalyptus rudis*, *Acacia acuminata*, weeds. Floodplain.	Degraded
VM203	28/09/2023	500732.2897	6348752.717	*Eucalyptus wandoo*, *Allocasuarina huegeliana*, *Acacia acuminata*, weeds. Plain.	Degraded
VM204	28/09/2023	500643.8885	6348303.518	*Eucalyptus wandoo*, *Allocasuarina huegeliana*, *Banksia sessilis* over weeds. Lower slope.	Degraded
VM205	28/09/2023	500642.8132	6347573.947	*Allocasuarina huegeliana*, scattered *Eucalyptus wandoo*, *Acacia acuminata* over weeds. Mid slope.	Degraded
VM206	28/09/2023	500746.5554	6348397.298	*Eucalyptus wandoo* scattered, *Allocasuarina huegeliana* dominant, *Acacia acuminata* over weeds. Lower slope.	Degraded
VM230	28/09/2023	500555.1506	6348365.051	*Eucalyptus loxophleba* subsp. *loxophleba*, *Acacia acuminata*, *Allocasuarina huegeliana*.	Degraded
VM231	28/09/2023	500817.9292	6348475.005	*Eucalyptus wandoo*, *Hakea prostrata*, *Corymbia calophylla*.	Degraded
VM232	28/09/2023	501187.1181	6348627.733	Planted to north, south is *Allocasuarina huegeliana*, *Eucalyptus wandoo*, *Acacia acuminata*.	Completely Degraded
VM233	28/09/2023	502128.9201	6349020.573	Planted to north, south is *Allocasuarina huegeliana* and *Banksia sessilis*.	Completely Degraded
VM234	28/09/2023	502400.8904	6349136.248	South now back to *Hakea prostrata* and *Allocasuarina huegeliana* and *Acacia acuminata*.	Degraded
VM235	28/09/2023	504260.9374	6349914.853	North still planted, *Eucalyptus wandoo*.	Completely Degraded

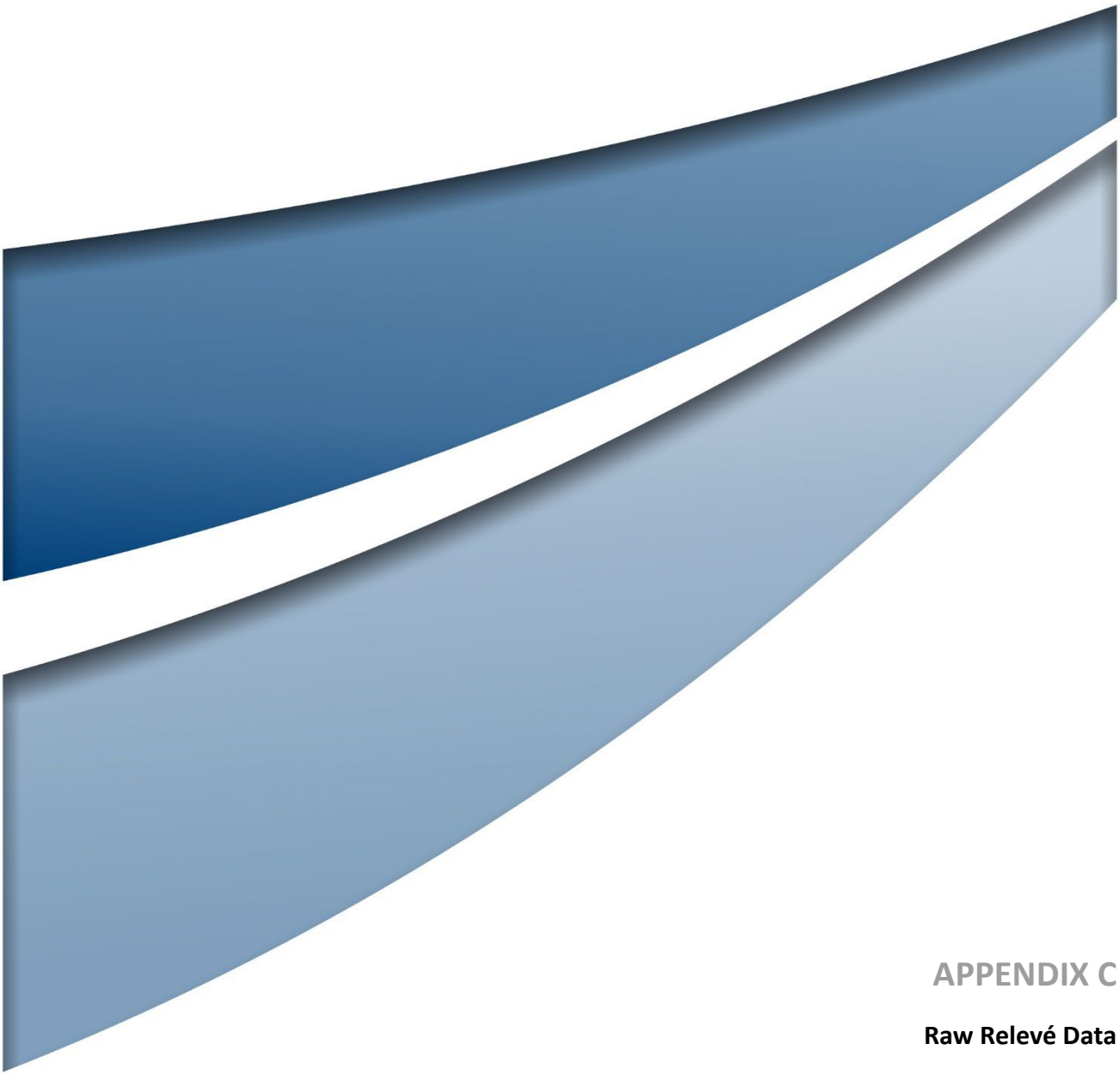
VM number	Date	Easting	Northing	Comment	Vegetation Condition
Trip 3 – November 2023					
VM242	6/11/2023	502769.6437	6354536.234	Hill top with minor granite outcropping; *Eucalyptus loxophleba* subsp. *loxophleba* mid open woodland with *Eucalyptus wandoo* over **Avena barbata*, **Bromus diandrus*, **Lolium rigidum* closed grassland. Occasional *Acacia acuminata*. Also *Austrostipa* sp. Brown sandy loam. >10 years fire with some logging.	Degraded
VM243	6/11/2023	502426.3902	6355183.631	*Eucalyptus loxophleba* subsp. *loxophleba* block - all planted. Approximately 10 years old. Over closed grassland of **Vulpia bromoides*, **Lolium rigidum*, **Avena barbata*, **Disa bracteata*. Only fenced on south side.	Completely Degraded
VM244	6/11/2023	502992.0592	6355000.225	Dam with open woodland of *Eucalyptus rudis* and *Corymbia calophylla* to the south. *Eucalyptus orthostemon* over closed grassland of **Hordeum marinum*. *Casuarina obesa* and *Eucalyptus loxophleba* subsp. *loxophleba* to the north.	Degraded
VM245	6/11/2023	503036.2062	6355086.349	North of VM 243, added *Eucalyptus wandoo* and *Casuarina obesa*, with *Eucalyptus loxophleba* subsp. *loxophleba*. Additional species include *Eucalyptus orthostemon*, *Isolepis cernua* var. *setiformis*, **Polypogon monspeliensis*.	Degraded
VM246	6/11/2023	503007.7444	6354939.026	*Eucalyptus wandoo* and ^*Eucalyptus occidentalis* (planted) and *Casuarina obesa* and *Melaleuca* spp. all planted; over grassland of **Ehrharta calycina*, **Hordeum marinum*, **Lolium rigidum*. Additional species include *Melaleuca viminea* subsp. *viminea*, *Melaleuca acuminata* subsp. *acuminata*, *Melaleuca uncinata*, and *Acacia microbotrya*.	Degraded to Completely Degraded
VM247	6/11/2023	502780.3748	6354141.129	*Eucalyptus astringens* stand with *Eucalyptus gardneri* woodland on laterite slopes, *Eucalyptus wandoo* on crest; over open grassland to isolated clumps of grasses of **Vulpia bromoides* and **Bromus diandrus*. High leaf litter. Mallet stand cover >40%. Not TEC due to density of trees. Isolated *Corymbia calophylla* on crest. Additional species include *Neurachne alopecuroidea* and *Austrostipa exilis*.	Degraded

VM number	Date	Easting	Northing	Comment	Vegetation Condition
VM248	6/11/2023	502932.1707	6354157.159	Same as VM 245.	Degraded
VM249	6/11/2023	502972.6229	6354093.403	*Eucalyptus wandoo* with isolated *Corymbia calophylla* on crest of hill. Over *Austrostipa exilis*, **Aira cupaniana*, *Rytidosperma* spp., **Vulpia bromoides* and *Dichopogon ?fimbriatus*, *Neurachne alopecuroidea* open grassland. Weed cover is over 70%. Granite outcrop.	Degraded
VM250	6/11/2023	502975.0268	6354006.489	Scattered *Eucalyptus marginata* with *Eucalyptus wandoo* on granite and laterite over weeds. The *Eucalyptus marginata* seem to be dying off/are unhappy. Historical logging.	Degraded
VM251	6/11/2023	502638.769	6354130.968	*Tricoryne humilis*. *Eucalyptus wandoo* and *Corymbia calophylla* mid open woodland over pasture weeds. Degraded. Laterite slope.	Degraded
VM252	6/11/2023	502799.7265	6353826.172	*Corymbia calophylla* and scattered Eucalyptus wandoo mid open woodland over weeds. On upper slope/crest. Brown sandy loam. Laterite.	Degraded
VM253	6/11/2023	502986.0455	6353664.595	Laterite breakway with *Eucalyptus wandoo* on slopes, mid open woodland over isolated clumps of *Banksia sessilis*. *Corymbia calophylla* on crest, over *Hakea lissocarpha* and *Acacia celastrifolia* over *Austrostipa elegantissima* and *Austrostipa exilis* isolated tussocks of grasses. Additional species include *Lomandra effusa*, *Lomandra micrantha*, *Tricoryne humilis*, *Rytidosperma* spp., *Borya sphaerocarpa*, **Romulea rosea*, *Neurachne alopecuroidea*, ?*Amphipogon* sp., and **Asparagus asparagoides* (4 plants). No understorey to south of ridge. Just weeds.	Degraded
VM254	6/11/2023	503245.3594	6353242.693	*Corymbia calophylla* and *Eucalyptus wandoo* over weeds.	Degraded
VM255	6/11/2023	503019.3372	6352812.187	*Eucalyptus wandoo* mid open woodland over open grassland of pasture weeds. Laterite breakaway/ridge. Additional species includes *Austrostipa exilis*. South of the VM has *Eucalyptus marginata* with historical logging.	Degraded
VM256	6/11/2023	502969.2141	6352708.216	Additional *Eucalyptus marginata*.	Degraded
VM257	6/11/2023	503696.4291	6353341.31	*Eucalyptus loxophleba* subsp. *loxophleba* stand, planted, over pasture weeds.	Completely Degraded

VM number	Date	Easting	Northing	Comment	Vegetation Condition
VM258	6/11/2023	503770.3297	6353273.214	Open depression/drainage area. *Casuarina obesa* woodland over **Juncus acutus* sedgeland over open grassland of **Hordeum marinum* and **Hordeum leporinum*, **Polypogon monspeliensis* over **Sonchus asper* forbland. Additional species include ^*Eucalyptus occidentalis* and ^*Eucalyptus camaldulensis*, **Puccinellia ciliata*, *Eucalyptus orthostemon*, *Isolepis cernua* var. *setiformis*, **Lolium rigidum*, **Cotula coronoptifolia*. Not TEC - *Casuarina* is dominant.	Degraded
VM259	6/11/2023	504059.5027	6353298.153	*Allocasuarina huegeliana* to north of Waypoint. Occasional *Eucalyptus wandoo*.	Degraded
VM260	6/11/2023	504427.4928	6353387.68	Mid slope. *Eucalyptus wandoo*, *Eucalyptus marginata* and *Corymbia calophylla* mid open woodland. No intact understorey, open tussock grassland of **Ehrharta longiflora* and **Vulpia bromoides*, *Rytidosperma* spp., *Austrostipa exilis*, *Neurachne alopecuroidea*. Some *Allocasuarina huegeliana* on lower slope. Occasional *Banksia sessilis* and *Austrostipa elegantissima*. Old dead trees, gravelly sandy loam. Laterite.	Degraded
VM261	6/11/2023	504612.0007	6353225.186	South of Waypoint - *Corymbia calophylla* stand on upper slope/crest of laterite hill. Mid woodland over *Hakea lissocarpha* over pasture weeds, with *Rytidosperma caespitosum*. North of Waypoint is *Eucalyptus astringens* around a ?dam.	Degraded
VM262	6/11/2023	504723.403	6353224.136	South of Waypoint now has *Eucalyptus wandoo*. North of waypoint back to *Eucalyptus wandoo* and *Corymbia calophylla*.	Degraded
VM263	6/11/2023	505156.6786	6353404.176	*Eucalyptus astringens* open forest mallet stand on laterite slope. Isolated weeds and scattered *Eucalyptus wandoo*.	Degraded
VM264	6/11/2023	505193.0246	6353384.978	*Eucalyptus dorrienii*. Small patch of only this species.	Degraded
VM265	6/11/2023	505248.8241	6353391.932	*Eucalyptus astringens*, same as VM 262.	Degraded
VM266	6/11/2023	505303.0396	6353060.655	*Eucalyptus accedens* stand with *Eucalyptus astringens* mid open woodland over no understorey except for *Gastrolobium parviflorum*, occasional. *Austrostipa elegantissima*, **Lolium rigidum*, **Ehrharta longiflora*. *Thelymitra* ?*graminea*, dead. Laterite slope, fenced.	Degraded

VM number	Date	Easting	Northing	Comment	Vegetation Condition
VM267	6/11/2023	505382.6923	6352939.443	*Allocasuarina huegeliana* and *Eucalyptus astringens* over *Gastrolobium parviflorum*, and *Austrostipa exilis*.	Degraded
VM268	6/11/2023	505414.0685	6352893.973	*Santalum murrayanum* with *Eucalyptus astringens* and *Eucalyptus gardneri* mid woodland on slope. Potentially good condition.	Good to Degraded
Trip 4 – April 2024					
VM346	19/04/2024	505781.2688	6352757.407	*Acacia acuminata, Allocasuarina huegeliana* over pasture weeds.	Degraded
VM347	19/04/2024	505636.9744	6353081.976	*Acacia acuminata, Eucalyptus wandoo, Corymbia calophylla, Allocasuarina hugeliana, Acacia microbotyra* over pasture weeds.	Degraded
VM348	19/04/2024	505500.114	6353848.979	*Eucalyptus wandoo* subsp. *wandoo, Allocasuarina huegeliana* over pasture weeds.	Degraded
VM349	19/04/2024	505535.3123	6354446.713	*Corymbia calophylla, Eucalyptus wandoo* subsp. *wandoo, Hakea prostrata* over pasture weeds.	Degraded
VM362	19/04/2024	505288.7725	6354337.874	Lateritic low rise, *Corymbia calophylla* (dominant), *Eucalyptus wandoo* subsp. *wandoo* over *Banksia sessilis* and H*akea trifurcata, Bossiaea eriocarpa, Hibbertia commutata, Dillwynia laxiflora* over scattered pastural weeds.	Degraded
VM363	19/04/2024	504974.8792	6354476.722	Lateritic slope; *Eucalyptus astringens* subsp. *astringens* and *Eucalyptus wandoo* subsp. *wandoo* over pasture weeds.	Degraded
VM364	19/04/2024	505103.3357	6354530.312	Adjacent to dam, aerial suggests patch of **Juncus acutus* that is no longer present (potentially burnt?). Only pasture weeds present.	Completely Degraded
VM365	19/04/2024	505781.9461	6354547.12	**Juncus acutus*, equal to VT 18.	Completely Degraded
VM366	19/04/2024	506398.7932	6354592.856	Trees to north of point, *Corymbia calophylla* and *Eucalyptus wandoo* subsp. *wandoo* over pasture weeds.	Completely Degraded
VM368	19/04/2024	505666.3549	6353954.423	*Corymbia calophylla* and occasional *Eucalyptus wandoo* subsp. *wandoo* over degraded pasture weeds.	Degraded
VM369	19/04/2024	505994.6285	6353376.762	Planted ^*Corymbia citriodora* over pasture weeds.	Completely Degraded

VM number	Date	Easting	Northing	Comment	Vegetation Condition
VM370	19/04/2024	506033.9931	6353558.437	To the northeast of point, **Juncus acutus*, equal to VT 18.	Completely Degraded
VM371	19/04/2024	506105.6472	6353357.404	^*Corymbia citriodora* over pasture weeds.	Completely Degraded
VM372	19/04/2024	506032.7329	6353332.062	Planted **Phoenix canariensis* and *Ficus* ?*rubiginosa.* Over pasture weeds.	Completely Degraded
VM373	19/04/2024	506462.9149	6353453.956	Lateritic rise; *Eucalyptus astringens* subsp. *astringens* over scattered pastoral weeds. Equal to VT 8. Evidence of historical logging.	Degraded
VM374	19/04/2024	505975.6856	6352809.617	Low granite rise; *Eucalyptus loxophleba* subsp. *loxophleba* and *Allocasuarina hugeliana* over pasture weeds. Evidence of historical logging.	Degraded



APPENDIX C

Raw Relevé Data

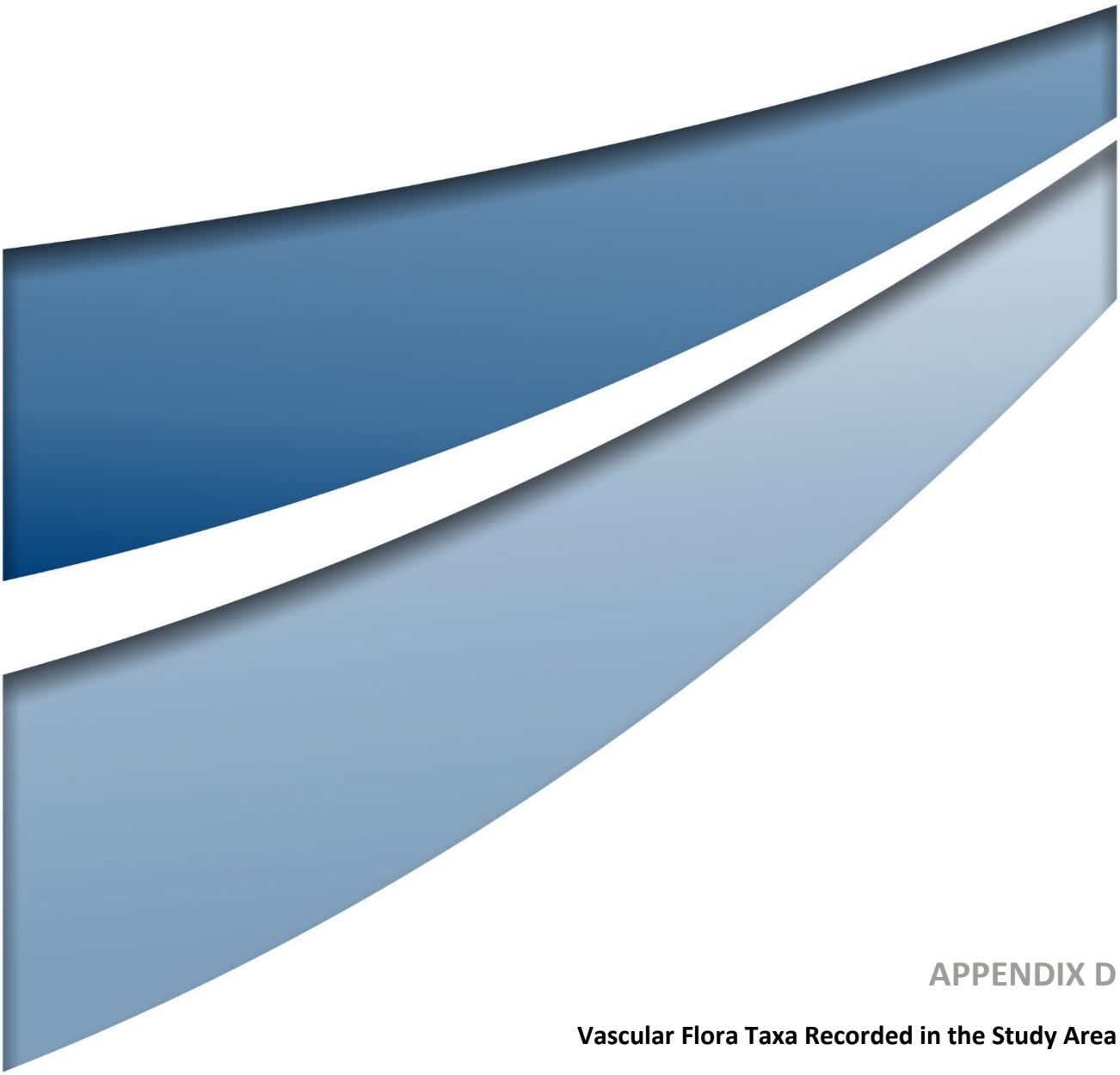
Site Name:	NR03
Site Type:	RELEVE
Survey Date:	06/11/2023
GPS Location:	GDA94 Zone 50 505413.3059E 6352866.813N
Landform Type:	Hillock
Slope Class:	Gently Inclined (3 degrees)
Soil Type:	Sandy Loam
Soil Colour:	Brown
Soil Condition:	Dry
Rock Outcrop:	Laterite, 2-10% bedrock exposed
CF Abundance:	20-50%
CF Sizes:	2-6mm, 6-20mm
CF Types:	Laterite
Vegetation Condition:	Southern Vegetation Condition - 4 - Good
Disturbance:	Exotic Weeds, Animal Disturbance - Rabbits
Fire:	>10 years

SPECIES LIST

Taxon Name	Avg. Height	Cover Alive
**Aira cupaniana*		
Allocasuarina huegeliana	5	10
Austrostipa elegantissima		
Austrostipa exilis		
Banksia sessilis	3	2
Bossiaea eriocarpa		
Chamaescilla corymbosa		
Dampiera lavandulacea		
Dampiera sacculata		
Dillwynia laxiflora		
Eucalyptus wandoo	8	5
Gahnia aristata	0.3	10
Gastrolobium parviflorum		
Glischrocaryon aureum		
Grevillea bipinnatifida subsp. *bipinnatifida*		
Hypocalymma angustifolium		
Lepidobolus preissianus		
Lepidosperma apricola		
Neurachne alopecuroidea		
Opercularia vaginata		
Rhodanthe citrina		
Santalum murrayanum		
Stylidium ciliatum		

Trymalium ledifolium var. *lineare*		
Wahlenbergia gracilenta		

PHOTOS



APPENDIX D

Vascular Flora Taxa Recorded in the Study Area

Arecaceae	**Phoenix canariensis*
Asparagaceae	**Asparagus asparagoides*
	Dichopogon ?fimbriatus
	Lomandra effusa
	Lomandra micrantha subsp. *micrantha*
	Thysanotus patersonii
Asteraceae	**Arctotheca calendula*
	**Cirsium vulgare*
	**Cotula coronopifolia*
	**Hypochaeris glabra*
	Lagenophora huegelii
	Millotia tenuifolia
	Podolepis gracilis
	Podotheca angustifolia
	Rhodanthe citrina
	Rhodanthe manglesii
	**Sonchus asper*
	**Sonchus oleraceus*
	**Ursinia anthemoides* subsp. *anthemoides*
Boraginaceae	**Echium plantagineum*
Boryaceae	*Borya sphaerocephala*
Campanulaceae	*Wahlenbergia gracilenta*
Caryophyllaceae	**Petrorhagia dubia*
	**Stellaria media*
Casuarinaceae	*Allocasuarina huegeliana*
	Casuarina obesa
Cucurbitaceae	**Cucumis myriocarpus*
Cyperaceae	*Gahnia aristata*
	Isolepis cernua var. *setiformis*
	Lepidosperma apricola
	Lepidosperma asperatum
Dilleniaceae	*Hibbertia commutata*
Droseraceae	*Drosera glanduligera*
Fabaceae	*Acacia acuminata*
	Acacia celastrifolia
	Acacia lasiocarpa
	Acacia microbotrya
	Acacia pulchella
	Acacia saligna
	Acacia stenoptera
	Bossiaea eriocarpa
	**Chamaecytisus palmensis*
	Dillwynia laxiflora
	Gastrolobium parviflorum
	**Trifolium arvense*
	**Trifolium campestre*

	**Trifolium dubium*
	**Trifolium subterraneum*
	**Vicia sativa*
Geraniaceae	**Erodium botrys*
	Geranium solanderi
Goodeniaceae	*Dampiera lavandulacea*
	Dampiera sacculata
	Goodenia coerulea
	Lechenaultia biloba
Haloragaceae	*Glischrocaryon aureum*
Hemerocallidaceae	*Chamaescilla corymbosa*
	Dianella revoluta
	Stypandra glauca
	Tricoryne humilis
Iridaceae	**Moraea flaccida*
	**Moraea setifolia*
	**Romulea rosea*
Juncaceae	**Juncus acutus* subsp. *acutus*
	Juncus subsecundus
Loganiaceae	*Phyllangium sulcatum*
Loranthaceae	*Amyema preissii*
Moraceae	*^Ficus ?rubiginosa*
Myrtaceae	*Callistemon phoeniceus*
	Corymbia calophylla
	^Corymbia citriodora
	^Corymbia maculata
	Eucalyptus accedens
	Eucalyptus astringens subsp. *astringens*
	Eucalyptus camaldulensis
	**Eucalyptus cladocalyx*
	**Eucalyptus crebra*
	Eucalyptus dorrienii
	Eucalyptus drummondii
	Eucalyptus gardneri subsp. *gardneri*
	**Eucalyptus globulus*
	**Eucalyptus grandis*
	Eucalyptus loxophleba subsp. *loxophleba*
	Eucalyptus marginata subsp. *marginata*
	Eucalyptus occidentalis
	Eucalyptus orthostemon
	Eucalyptus phenax subsp. *phenax*
	Eucalyptus rudis subsp. *rudis*
	**Eucalyptus sideroxylon*
	Eucalyptus spathulata subsp. *spathulata*
	Eucalyptus wandoo subsp. *wandoo*
	Hypocalymma angustifolium

	Melaleuca acuminata subsp. *acuminata*
	Melaleuca cuticularis
	Melaleuca thyoides
	Melaleuca uncinata
	Melaleuca viminea subsp. *viminea*
Orchidaceae	**Disa bracteata*
	Thelymitra graminea
Oxalidaceae	**Oxalis glabra*
	**Oxalis pes-caprae*
	**Oxalis purpurea*
	Poranthera microphylla
Pittosporaceae	*Billardiera coriacea*
	Billardiera fusiformis
Poaceae	**Aira cupaniana*
	Austrostipa elegantissima
	Austrostipa exilis
	Austrostipa scabra
	**Avena barbata*
	**Briza maxima*
	**Briza minor*
	**Bromus diandrus*
	**Bromus hordeaceus*
	**Cynodon dactylon*
	**Ehrharta calycina*
	**Ehrharta longiflora*
	Eragrostis dielsii
	**Hordeum leporinum*
	**Hordeum marinum*
	**Lolium rigidum*
	Neurachne alopecuroidea
	**Pentameris airoides*
	**Polypogon monspeliensis*
	**Puccinellia ciliata*
	Rytidosperma caespitosum
	Rytidosperma setaceum
	**Vulpia bromoides*
	**Vulpia muralis*
	?Amphipogon sp.
	**?Ehrharta curvula*
	**Vulpia myuros*
Polygonaceae	**Rumex crispus*
Primulaceae	**Lysimachia arvensis*
Proteaceae	*Banksia sessilis* var. *sessilis*
	Banksia squarrosa subsp. *squarrosa*
	Grevillea bipinnatifida subsp. *bipinnatifida*
	Hakea lissocarpha

	Hakea multilineata
	Hakea prostrata
Pteridaceae	*Cheilanthes sieberi*
Restionaceae	*Lepidobolus preissianus*
Rhamnaceae	*Trymalium ledifolium* var. *ledifolium*
	Trymalium ledifolium var. *lineare*
Rubiaceae	**Galium divaricatum*
	Opercularia vaginata
Santalaceae	*Santalum murrayanum*
Stylidiaceae	*Stylidium ciliatum*
Typhaceae	*Typha orientalis*

APPENDIX E

Eucalyptus Woodlands of the Western Australian Wheatbelt TEC Diagnostic Features

The following key diagnostic features of the TEC are taken from DoE (2015). With this conservation advice document in mind, as stated on page 19 of DoE (2015):

'For EPBC Act referral, assessment and compliance purposes, the national ecological community is limited to patches that meet the key diagnostic characteristics in section 3.2. PLUS the condition thresholds in section 3.3. The additional factors noted in section 3.4. and critical areas noted in section 3.5. also should be taken into consideration.'

Key Diagnostic Characteristics of the ecological community (as per Section 3.2 of DoE (2015) and incorporating a summary of relevant general notes as per Section 3.22 of DoE (2015))

The key diagnostic characteristics are based on location, structure of the upper stratum, species in the upper stratum and understorey components.

The distribution of the ecological community is limited to these IBRA bioregions and subregions:

- Avon Wheatbelt - subregions AVW01 Merredin and AVW02 Katanning;
- Mallee - MAL02 Western Mallee only; and
- Jarrah Forest – outlying patches in the eastern parts of JAF01 Northern Jarrah Forests and JAF02 Jarrah Forests adjacent to the Avon Wheatbelt, that are off the Darling Range, and receive less than 600 mm mean annual rainfall. They are effectively an extension of the Avon Wheatbelt landscape in that they comprise areas subject to similar climate, landscape and threats.

The ecological community generally occurs within the 300 – 600mm rainfall isohyets. Within the Jarrah Forest bioregion, the ecological community occurs on landscapes that fall below the 600 mm isohyet, are off the Darling Range, associated with the Yilgarn Craton geology and are generally heavily cleared.

The structure of the ecological community is a woodland in which the minimum crown cover of the tree canopy in a mature woodland is 10% (crowns measured as if they are opaque).

Note: The maximum tree canopy cover usually is up to 40%. It may be higher in certain circumstances, for instance: trees with a mallet growth form may be more densely spaced; or disturbances such as fire may result in an increased cover of canopy species during regeneration.

Recent disturbances, such as fire, may cause the loss of a mature tree canopy and a shift to a different, regenerative state for a woodland. Under these circumstances, the loss of a tree canopy is likely to be a temporary phenomenon, if natural regeneration is not interrupted. There should be evidence that: (1) the key eucalypt species typical of the ecological community were formerly present at a site by the presence of stumps, logs, photos, past surveys/knowledge; and (2) that the tree canopy will regenerate from seedlings, saplings or epicormic regrowth. Some wheatbelt woodland eucalypts, including the mallets, gimlet and salmon gum, are killed by fire and regenerate from seeds only, so it may take decades for a mature woodland structure to re-establish (Gosper et al., 2013). This temporary regenerative state is included as part of the ecological community where seedling and sapling eucalypts are clearly present and the other diagnostic features and condition thresholds are met.

The key species of the tree canopy are species of *Eucalyptus* as identified as per Table E.1. These are species that typically have a single trunk. One or more of the tree species in **Table E.1** are dominant or co-

dominant within a patch of the ecological community. If other species are present in the tree canopy (e.g. species in **Table E.2** or other taxa) then these collectively do not occur as dominants in the tree canopy.

Note: Some woodlands may have a lower tree layer of mallee or non-eucalypt tree species. In this case, the upper tree canopy must comprise mainly of key woodland species in Table 2a and have an upper canopy cover of 10% or more. This helps distinguish woodland with a mallee subcanopy from true mallee communities which may have woodland trees as sparse or occasional emergents.

A native understorey is present but is of variable composition, being a combination of grasses, other herbs and shrubs, as specified in section 2.3.2 (of DoE (2015)) and in **Table E.2.**

Note: Given the WA wheatbelt is a region of high natural biodiversity, this plant species list does not include all plant species that may be encountered in the WA Wheatbelt woodland ecological community.

Contra-indicators: the presence of the following features in the vegetation indicates that the ecological community is not likely to be present:

- A dominant presence of eucalypts with a mallee growth form. However, mallee species can occur as an understorey or minor canopy component of the ecological community, as noted in the diagnostic features, above.
- A dominant presence of non-eucalypt species in the tree canopy, for instance *Acacia acuminata* (Jam) or *Allocasuarina huegeliana* (Rock sheoak). However, these non-eucalypt species can be present as an understorey or minor canopy component of the ecological community.
- Shrublands or herblands in which the tree canopy layer is very sparse to absent, either naturally or maintained so through long-term disturbance. Native vegetation where a tree canopy was formerly present is often referred to as 'derived' or 'secondary' vegetation. These sites would fall below the 10 per cent minimum canopy cover threshold for a woodland, noted in the diagnostic features, above.
- Woodlands that have the same key eucalypt species but occur in adjacent bioregions, notably the Coolgardie, Esperance Sandplains, Yalgloo and Geraldton Sandplains bioregions. These are not part of the national ecological community. All woodlands that occur in bioregions outside the wheatbelt, as defined in this conservation advice, are not part of the WA Wheatbelt Woodland ecological community.
- Woodlands dominated by eucalypts that are restricted to granite outcrops and rocky rises, for instance *Eucalyptus caesia* (Caesia or Gungurru). However, some woodlands occur on the base around rock outcrops, but not on the actual outcrop, and these may be part of the ecological community, for instance York gum – jam woodlands.

Table E.1 Key Eucalypt Species (presented as Table 2a in DoEE (2015))

Scientific Name	Common Name/s
Eucalyptus accedens	Powder-bark; powder-bark wandoo
Eucalyptus aequioperta	Welcome Hill gum
Eucalyptus alipes	Hyden mallet
Eucalyptus astringens subsp. *astringens*	Brown mallet
Eucalyptus capillosa	Wheatbelt wandoo
Eucalyptus densa subsp. *densa*	Narrow-leaved blue mallet

Scientific Name	Common Name/s
Eucalyptus extensa	Yellow mallet
Eucalyptus falcata	Silver mallet
Eucalyptus gardneri subsp. *gardneri*	Blue mallet
Eucalyptus goniocarpa	Lake King mallet
Eucalyptus kondininensis	Kondinin blackbutt
Eucalyptus longicornis	Red morrel
Eucalyptus loxophleba subsp. *loxophleba*	York gum
Eucalyptus melanoxylon	Black morrel
Eucalyptus mimica subsp. *continens*	Hooded mallet
Eucalyptus mimica subsp. *mimica*	Newdegate mallet
Eucalyptus myriadena	Small-fruited gum; blackbutt
Eucalyptus occidentalis	Flat-topped yate
Eucalyptus ornata	Ornamental silver mallet; ornate mallet
Eucalyptus recta	Mt Yule silver mallet; Cadoux mallet
Eucalyptus rudis subsp. *rudis*	Flooded gum
Eucalyptus salicola	Salt gum; salt salmon gum
Eucalyptus salmonophloia	Salmon gum
Eucalyptus salubris	Gimlet
Eucalyptus sargentii subsp. *sargentii*	Salt river gum
Eucalyptus singularis	Ridge-top mallet
Eucalyptus spathulata subsp. *spathulata*	Swamp mallet
Eucalyptus spathulata subsp. *salina*	Salt River mallet
Eucalyptus urna	Merrit
Eucalyptus wandoo subsp. *pulverea*	Wandoo
Eucalyptus wandoo subsp. *wandoo*	Wandoo

Table E.2 Associated Canopy Species That May Be Present Within the Ecological Community But Are Not Dominant Or Co-dominant (presented as Table 2b in DoEE (2015))

Scientific Name	Common Name/s
Acacia acuminata	Jam
Allocasuarina huegeliana	Rock sheoak
Corymbia calophylla	Marri
Eucalyptus annulata	Prickly-fruited mallee
Eucalyptus arachnaea subsp. *arachnaea*	Black-stemmed mallee
Eucalyptus arachnaea subsp. *arrecta*	Black-stemmed mallet
Eucalyptus armillata	Flanged mallet
Eucalyptus calycogona subsp. *calycogona*	Square-fruited mallee
Eucalyptus camaldulensis subsp. *arida*	River red gum
Eucalyptus celastroides subsp. *virella*	Wheatbelt mallee
Eucalyptus cylindrifolia	Goldfields white mallee

Scientific Name	Common Name/s
Eucalyptus decipiens	Redheart; moit
Eucalyptus drummondii	Drummond's mallee
Eucalyptus eremophila	Sand mallee
Eucalyptus erythronema subsp. *erythronema*	Red-flowered mallee
Eucalyptus eudesmioides	Kalbarri mallee
Eucalyptus flocktoniae subsp. *flocktoniae*	Flockton's mallee
Eucalyptus gittinsii subsp. *illucida*	Northern sandplain mallee
Eucalyptus incrassata	Ridge-fruited mallee
Eucalyptus kochii subsp. *plenissima*	Trayning mallee
Eucalyptus leptopoda subsp. *leptopoda*	Merredin mallee; Tammin mallee
Eucalyptus loxophleba subsp. *gratiae*	Lake Grace mallee
Eucalyptus loxophleba subsp. *lissophloia*	Smooth-barked York gum
Eucalyptus loxophleba subsp. *supralaevis*	Blackbutt York gum
Eucalyptus macrocarpa	Mottlecah
Eucalyptus marginata	Jarrah
Eucalyptus moderata	Redwood mallee
Eucalyptus obtusiflora	Dongara mallee
Eucalyptus olivine	Olive-leaved mallee
Eucalyptus orthostemon	Diverse mallee
Eucalyptus perangusta	Fine-leaved mallee
Eucalyptus phaenophylla	Common southern mallee
Eucalyptus phenax subsp. *phenax*	White mallee
Eucalyptus pileata	Capped mallee
Eucalyptus platypus subsp. *platypus*	Moort
Eucalyptus polita	Parker Range mallet
Eucalyptus sheathiana	Ribbon-barked mallee
Eucalyptus sporadica	Burngup mallee
Eucalyptus subangusta subsp. *subangusta*	Grey mallee
Eucalyptus tenera	Glazed mallee
Eucalyptus tephroclada	Holleton mallee
Eucalyptus thamnoides	Brown mallee
Eucalyptus transcontinentalis	Redwood
Eucalyptus vegrandis	Ongerup mallee; Cranbrook mallee
Eucalyptus wubinensis	Wubin mallee
Eucalyptus yilgarnensis	Yorrel

Table E.3 Understorey Shrubs, Chenopods and Forbs (compiled from Table A1 of DoEE (2015))

Scientific name^	Common Name/s
Shrubs	
Acacia acuaria	
Acacia colletioides	Wait-a-while
Acacia erinacea	
Acacia hemiteles	
Acacia lasiocalyx	Silver wattle
Acacia lasiocarpa	Panjang
Acacia leptospermoides	
Acacia mackeyana	
Acacia merrallii	
Acacia microbotrya	Manna wattle
Acacia pulchella	Prickly moses
Allocasuarina acutivalvis	
Allocasuarina campestris	
Allocasuarina humilis	Dwarf sheoak
Allocasuarina lehmanniana	Dune sheoak
Allocasuarina microstachya	
Argyroglottis turbinata	
Banksia armata	Prickly dryandra
Banksia sessilis	Parrot bush
Beyeria brevifolia	
Bossiaea divaricata	
Bossiaea eriocarpa	Common brown pea
Bossiaea halophila	
Callistemon phoeniceus	Lesser bottlebrush
Calothamnus quadrifidus	One-sided bottlebrush
Calothamnus quadrifidus subsp. *asper*	One-sided bottlebrush
Chorilaena rudis	
Comesperma integerrimum	
Conostylis setigera	
Dampiera lavandulacea	
Darwinia sp. Karonie (K. Newbey 8503)	
Daviesia nematophylla	
Daviesia triflora	
Dodonaea bursariifolia	
Dodonaea inaequifolia	
Dodonaea pinifolia	
Dodonaea viscosa	Sticky hopbush
Eremophila decipiens	Slender fuschia

Scientific name^	Common Name/s
Eremophila ionantha	Violet-flowered eremophila
Eremophila oppositifolia	Weeooka
Eremophila scoparia	Broom bush
Exocarpus aphyllus	Leafless ballart
Gastrolobium microcarpum	Sandplain poison
Gastrolobium parviflorum	Box poison
Gastrolobium spinosum	Prickly poison
Gastrolobium tricuspidatum	
Gastrolobium trilobum	Bullock poison
Grevillea acuaria	
Grevillea huegelii	
Grevillea tenuiflora	Tassel grevillea
Hakea laurina	Pincushion hakea
Hakea lissocarpha	Honey bush
Hakea multilineata	Grass-leaf hakea
Hakea petiolaris	Sea urchin hakea
Hakea preissii	Needle tree
Hakea varia	Variable-leaved hakea
Hibbertia commutata	
Hibbertia exasperata	
Hibbertia hypericoides	Yellow buttercups
Hovea chorizemifolia	Holly-leaved hovea
Hypocalymma angustifolium	White myrtle
Leptomeria preissiana	
Leptospermopsis erubescens	Roadside teatree
Lycium australe	Australian boxthorn
Melaleuca acuminata	
Melaleuca adnata	
Melaleuca atroviridis	
Melaleuca brophyi	
Melaleuca cucullata	
Melaleuca cuticularis	Saltwater paperbark
Melaleuca halmaturorum	
Melaleuca hamata	
Melaleuca hamulosa	
Melaleuca lanceolata	Rottnest teatree
Melaleuca lateriflora	Gorada
Melaleuca marginata	
Melaleuca pauperiflora	Boree
Melaleuca radula	Graceful honeymyrtle

Scientific name^	Common Name/s
Melaleuca rhaphiophylla	Swamp paperbark
Melaleuca scalena	
Melaleucal strobophylla	
Melaleuca teuthidoides	
Melaleuca thyoides	
Melaleuca uncinata group	Broom bush
Melaleuca viminea	Mohan
Olearia muelleri	Goldfields daisy
Olearia sp. Kennedy Range (G. Byrne 7139)	
Petrophile divaricata	
Petrophile shuttleworthiana	
Petrophile squamata	
Petrophile striata	
Phebalium filifolium	Slender phebalium
Phebalium lepidotum	
Phebalium microphyllum	
Phebalium tuberculosum	
Pimelea argentea	Silvery-leaved pimelea
Pittosporum angustifolium	
Platysace maxwellii	Karno
Santalum acuminata	Quandong
Santalum spicatum	Sandalwood
Scaevola spinescens	Currant bush
Senna artemisioides	
Styphelia epacridis	
Styphelia tenuiflora	Common pinheath
Templetonia sulcata	Centipede bush
Trymalium elachophyllum	
Trymalium ledifolium	
Westringia cephalantha	
Xanthorrhoea drummondii	
Chenopods	
Atriplex acutibracteata	Toothed saltbush
Atriplex paludosa	Marsh saltbush
Atriplex semibaccata	Berry saltbush
Atriplex stipitata	Mallee saltbush
Atriplex vesicaria	Bladder saltbush
Enchylaena lanata / tomentosa complex	Barrier saltbush
Maireana brevifolia	Small-leaf bluebush
Maireana erioclada	

Scientific name^	Common Name/s
Maireana marginata	
Maireana trichoptera	Downy bluebush
Rhagodia drummondii	
Rhagodia preissii	
Sclerolaena diacantha	Grey copperburr
Tecticornia spp.	Samphire
Threlkeldia diffusa	Coastal bonefruit
Forbs	
Actinobole uliginosum	Flannel cudweed
Asteridea athrixioides	
Blennospora drummondii	
Borya nitida	Pincushions
Borya sphaerocephala	Pincushions
Brachyscome ciliaris	
Brachyscome lineariloba	
Caesia micrantha	Pale fringe-lily
Caladenia flava	Cowslip orchid
Calandrinia calyptrata	Pink purslane
Calandrinia eremaea	Twining purslane
Calotis hispidula	Bindy eye
Carpobrotus modestus	Inland pigface
Centipeda crateriformis subsp. *crateriformis*	
Chamaescilla corymbosa	Blue squill
Chamaexeros serra	Little fringe-leaf
Cotula coronopifolia	Waterbuttons
Crassula colorata	Dense stonecrop
Crassula exserta	
Dampiera juncea	Rush-like dampiera
Dampiera lindleyi	
Daucus glochidiatus	Australian carrot
Dianella brevicaulis	
Dichopogon capillipes	
Disphyma crassifolium	Round-leaved pigface
Drosera macrantha	Bridal rainbow
Erodium cygnorum	Blue heronsbill
Gilberta tenuifolia	
Gnephosis drummondii	
Gnephosis tenuissima	
Gnephosis tridens	
Gonocarpus nodulosus	

Scientific name^	Common Name/s
Goodenia berardiana	
Goodenia cycnopotamica	
Helichrysum leucopsideum	
Helichrysum luteoalbum	Jersey cudweed
Lagenophora huegelii	
Lawrencella rosea	
Lepidium rotundum	Veined peppercress
Podolepis capillaris	Wiry podolepis
Podolepis lessonii	
Podotheca angustifolia	Sticky longheads
Poranthera microphylla	Small poranthera
Pterostylis sanguinea	
Ptilotus spathulatus	
Rhodanthe laevis	
Senecio glossanthus	Slender groundsel
Spergularia marina	
Stylidium calcaratum	Book triggerplant
Thysanotus patersonii	
Trachymene cyanopetala	
Trachymene ornata	spongefruit
Trachymene pilosa	Native parsnip
Waitzia acuminata	Orange immortelle
Zygophylluym ovatum	Dwarf twinleaf
Graminoides	
Amphipogon caricinus / strictus complex	Greybeard grass
Austrostipa elegantissima	
Austrostipa hemipogon	
Austrostipa nitida	
Austrostipa trichophylla	
Centrolepis polygyna	Wiry centrolepis
Desmocladus asper	
Desmocladus flexuosus	
Desmocladus lateriflorus	
Gahnia ancistrophylla	Hook-leaf saw sedge
Gahnia australis	
Juncus bufonius	Toad rush
Lachnagrostis filiformis	Blowngrass
Lepidosperma leptostachyum	
Lepidosperma resinosum	
Lepidosperma sp. aff. tenue	

Scientific name^	Common Name/s
Lepidosperma tenue	
Lepidosperma viscidum	Sticky sword sedge
Leptocarpus coangustata	
Lomandra effusa	Scented matrush
Lomandra micrantha subsp. micrantha	Small-flower matrush
Lomandra nutans	
Mesomelaena preissii	
Neurachne alopecuroides	Foxtail mulga grass
Rytidosperma caespitosum	
Rytidosperma setaceum group	
Schoenus nanus	Tiny bog-rush
Schoenus sculptus	Gimlet bog-rush
Schoenus subfascicularis	

^Note: Names have been updated to reflect current taxonomy where appropriate.

Condition Thresholds for the Ecological Community (as per Section 3.3 of DoE (2015))

Table E.4 presents the minimum condition for patches of the WA Wheatbelt Woodlands ecological community (as per Table 3 of DoE (2015)). For the purposes of this assessment, minimum patch width for roadsides only has been utilised, due to the nature of the survey area (located within road reserve):

'For each category, both the weed cover and mature tree presence criteria must apply plus one of either patch size or patch width, depending on whether the patch is a roadside remnant or not.'

Table E.4 Minimum condition thresholds for the Ecological Community

Cover of exotic plants (weeds) AND	Mature trees[1] AND	Minimum patch size (non-roadside patches)[2] OR	Minimum patch width (roadsides only)[3]
***Category A**: Patches likely to correspond to a condition of Pristine / Excellent / Very Good (Keighery, 1994) or a High RCV (RCC, 2015).*			
Exotic plant species account for 0 to 30% of total vegetation cover in the understorey layers (i.e. below the tree canopy).	Mature trees may be present or absent.	2 hectares or more	5 metres or more
***Category B**: Patches likely to correspond to a condition of Good (Keighery, 1994) or a Medium-High RCV (RCC, 2015), AND retains important habitat features.*			
Exotic plant species account for more than 30, to 50% of total vegetation cover in the understorey layers (i.e. below the tree canopy)	Mature trees are present with at least 5 trees per 0.5 ha.	2 hectares or more	5 metres or more

Cover of exotic plants (weeds) AND	Mature trees[1] AND	Minimum patch size (non-roadside patches)[2] OR	Minimum patch width (roadsides only)[3]
***Category C**: Patches likely to correspond to a condition of Good (Keighery, 1994) or a Medium-High RCV (RCC, 2015).*			
Exotic plant species account for more than 30, to 50% of total vegetation cover in the understorey layers (i.e. below the tree canopy).	Mature trees either absent or less than 5 trees per 0.5 ha are present.	5 hectares or more	5 metres or more
***Category D**: Patches likely to correspond to a condition of Degraded to Good (Keighery, 1994) or a Medium-Low to Medium-High RCV (RCC, 2015) BUT retains important habitat features.*			
Exotic plant species account for more than 50 to 70% of total vegetation cover in the understorey layers (i.e. below the tree canopy).	Mature trees are present with at least 5 trees per 0.5 ha.	5 hectares or more	5 metres or more

Note:

[1]: Mature trees have a diameter at breast height (dbh) of 30 cm or above. The dbh for mature trees aligns with the EPBC referral guidelines for the breeding habitat of threatened black cockatoo species (DSEWPaC, 2012). These note that, for salmon gum and wandoo trees, suitable nest hollows can develop in trees with a dbh of 30 cm or more. Note that larger trees may be killed by factors such as intense fire or flood but the patch may still be in reasonable condition if there are immature trees regenerating.

[2]: The minimum patch size thresholds apply to native vegetation remnants that do not occur along roadsides.

[3]: Minimum patch width applies only to vegetation remnants along roadsides and tend to be long but narrow. The width here is based on the native understorey component rather than width of the tree canopy. Some allowance must be made for small breaks or variations in native species cover along linear patches. Given the generally open nature of the tree canopy and some understorey structures, a break in the continuity of native vegetation cover of 50 metres or more, is likely to indicate that separate patches are present. An exception is for main, often bitumen-covered, roads that bisect otherwise continuous vegetation; most local government roads in the wheatbelt have a road reserve of 20 metres. In these cases, native vegetation along either side of the road is considered to be a separate patch.

Further information to assist in determination of presence of ecological community.

As per Section 3.4 of DoE (2015), the following further information will apply:

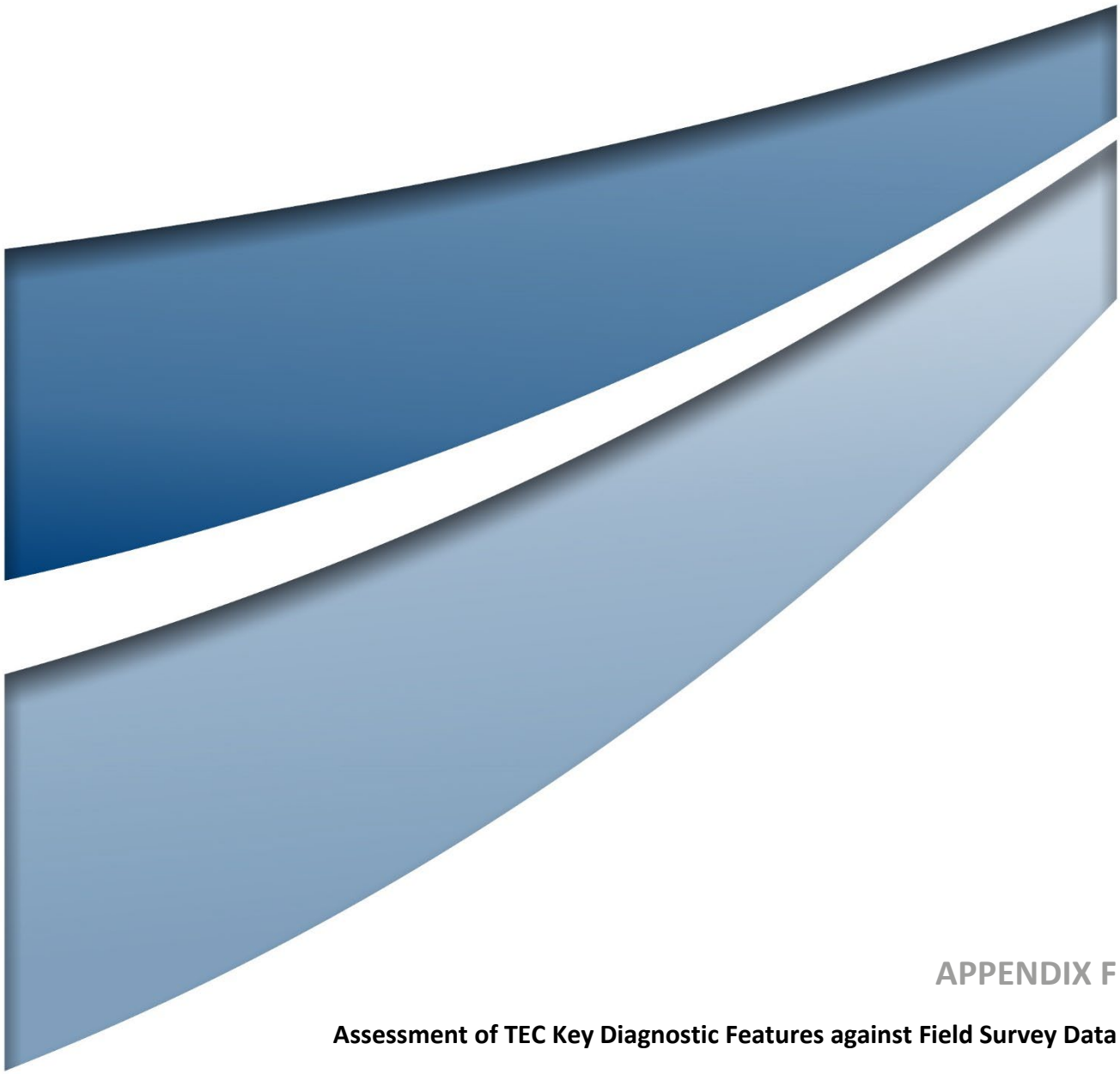
Patch: A patch is defined as a discrete and mostly continuous area of the ecological community. A patch may include small-scale variations and disturbances, such as tracks or breaks, watercourses/drainage lines or localised changes in vegetation that do not act as a permanent barrier or significantly alter its overall functionality. A large break in native vegetation cover, for instance a gap dominated by non-native weed or crop species, is considered to indicate that separate patches occur.

Buffer zone: A buffer zone is the area that lies immediately outside the edge of a patch but is not part of the ecological community. The recommended minimum buffer zone for the ecological community is 40 metres from the edge of a patch as determined from the outer edge of the tree canopy.

Revegetated areas: Revegetated or replanted sites or areas of regrowth are not excluded from the listed ecological community so long as the patch meets the key diagnostic characteristics and condition thresholds.

Sampling protocols: Thorough and representative on-ground surveys are essential to accurately assess the extent and condition of the ecological community. Sampling should begin with a quick reconnaissance to determine the key variations in vegetation, landscape qualities and management history (where possible) across the site. The site should then be thoroughly sampled on a representative basis for vegetation cover and plant species diversity. Sampling based upon an area of at least 10m x 10m, or an equivalently sized shape (i.e. 100 m^2 = 0.01 ha) would be suitable. Larger and more variable areas of vegetation will need more samples or quadrats to assess a site accurately. Recording the sampling effort (identifying the number of person hours spend per plot across the patch, along with the surveyors' level of expertise) is recommended for referral.

Timing of surveys: Whilst identifying the ecological community and its condition is possible at most times of the year, consideration must be given to the role that season and disturbance history may play in an assessment. For example, flowering may be necessary to identify shrub species; native herbaceous species may not be evident in summer, autumn, or particularly dry winter and spring seasons, and active growth will indicate population sizes of annual weeds. Immediately after a fire one or more vegetation layers, or groups of species (e.g. obligate seeders), may not be evident for a time. Timing of surveys should allow for a reasonable interval after a disturbance (natural or human-induced) to allow for regeneration of species to become evident, and be timed to enable diagnostic species to be identified. At a minimum, it is important to note climate conditions and what kind of disturbance may have happened within a patch, and when that disturbance occurred, as far as possible.



APPENDIX F

Assessment of TEC Key Diagnostic Features against Field Survey Data

Table F.1 Assessment of Vegetation Types against TEC Criteria

VT	Description	TEC^	Summary of Assessment Against TEC Criteria
1	Low to mid scattered trees to woodland of *Eucalyptus rudis* subsp. *rudis*, occasionally over tall scattered to open shrubland of *Acacia acuminata* and *Acacia saligna* over open sedgeland of **Juncus acutus* subsp. *acutus* over dense tussock grassland of pasture weeds on brown sandy loam on drainage lines.	P	**May represent the TEC** – meets the components for IBRA region, tree canopy cover, and that the dominant tree (*Eucalyptus rudis* subsp. *rudis*) is listed in Table 2a of DoE (2015). Confirmation is required on native understorey status, as well as patch size and condition rating.
2	Low to mid open woodland of *Corymbia calophylla* over isolated tall shrubs of *Acacia saligna* and *Acacia microbotyra* over tall open sedgeland of **Typha orientalis* over low open sedgeland of **Juncus acutus* subsp. *acutus* over tussock grassland of pasture weeds on brown sandy clay loam on drainage lines on slopes.	N	**Does not represent the TEC** – although it meets components for tree canopy cover, and is located within the correct IBRA region, the dominant tree (*Corymbia calophylla*) is not listed in Table 2a of DoE (2015). This tree can be present, but not dominant, to qualify for TEC.
3	Low open woodland of *Allocasuarina huegeliana* over isolated tall shrubs of *Acacia saligna, Acacia microbotyra* and *Acacia acuminata* over low open sedgeland of **Juncus acutus* subsp. *acutus* over tussock grassland of pasture weeds on brown sandy clay loam adjacent to drainage lines on slopes.	N	**Does not represent the TEC** – although it meets components for tree canopy cover, and is located within the correct IBRA region, the dominant tree (*Allocasuarina huegeliana*) is not listed in Table 2a of DoE (2015). This tree can be present, but not dominant, to qualify for TEC.
4	Low to mid woodland to open woodland of *Eucalyptus loxophleba* subsp. *loxophleba* over dense tussock grassland of pasture weeds on brown-red clay loam on slopes.	P	**May represent the TEC** – meets the components for IBRA region, tree canopy cover, and that the dominant tree (*Eucalyptus loxophleba* subsp. *loxophleba*) is listed in Table 2a of DoE (2015). Confirmation is required on native understorey status, as well as patch size and condition rating.
5	Tall shrubland of *Acacia acuminata* with isolated low to mid scattered trees of *Eucalyptus loxophleba* subsp. *loxophleba* and *Corymbia calophylla* over tussock grassland of pasture weeds on red-brown sandy clay loam on lower slopes with granite outcropping.	N	**Does not represent the TEC** – although it is located within the correct IBRA region, the dominant taxon is *Acacia acuminata*, which is not listed in Table 2a of DoE (2015). This shrub can be present, but not dominant in the overstorey, to qualify for TEC.
6	Low to mid woodland to open woodland of *Corymbia calophylla* and occasional *Eucalyptus wandoo* subsp. *wandoo*, *Eucalyptus astringens* subsp. *astringens* and/or *Allocasuarina huegeliana* over tussock grassland to open tussock grassland of pasture weeds on lateritic ridges and upper slopes with lateritic gravel on brown loam.	P	**May represent the TEC** – meets the components for IBRA region, tree canopy cover, and that the dominant trees (*Eucalyptus wandoo* subsp. *wandoo, Eucalyptus astringens* subsp. *astringens*) are listed in Table 2a of DoE (2015). Confirmation is required on native understorey status, as well as the dominance of the other trees listed (*Corymbia calophylla, Allocasuarina huegeliana*), patch size and condition rating.

VT	Description	TEC^	Summary of Assessment Against TEC Criteria
7	Low to mid woodland to open woodland of *Eucalyptus rudis* subsp. *rudis* and *Eucalyptus loxophleba* subsp. *loxophleba* over low sedgeland to open sedgeland of **Juncus acutus* subsp. *acutus* over tussock grassland of pasture weeds on drainage lines with red-brown clay loam on gentle slopes.	P	**May represent the TEC** – meets the components for IBRA region, tree canopy cover, and that the dominant tree (*Eucalyptus rudis* subsp. *rudis, Eucalyptus loxophleba* subsp. *loxophleba*) is listed in Table 2a of DoE (2015). Confirmation is required on native understorey status, as well as patch size and condition rating.
8	Low to mid woodland of *Eucalyptus astringens* subsp. *astringens* and occasionally *Eucalyptus gardneri* subsp. *gardneri* on brown-red clay loam with some lateritic outcropping on the edge of breakaways, crests, and upper slopes.	P	**May represent the TEC** – meets the components for IBRA region, tree canopy cover, and that the dominant trees (*Eucalyptus astringens* subsp. *astringens, Eucalyptus gardneri* subsp. *gardneri*) are listed in Table 2a of DoE (2015). Confirmation is required on native understorey status, as well as patch size and condition rating.
9	Low open woodland of *Eucalyptus drummondii* over open tussock grassland or pasture weeds on red-brown sandy loam with lateritic outcropping on edges of breakaways or crests.	N	**Does not represent the TEC** – meets the components for IBRA region, however the dominant tree in this VT is *Eucalyptus drummondii*, which is a mallee, not listed in Table 2a of DoE (2015).
10	Isolated trees to mid open woodland of *Eucalyptus wandoo* subsp. *wandoo* and *Corymbia calophylla* over tussock grassland of pasture weeds on red-brown sandy loam with laterite extensions on upperslopes.	P	**May represent the TEC** – meets the components for IBRA region, tree canopy cover, and that the dominant tree (*Eucalyptus wandoo* subsp. *wandoo*) is listed in Table 2a of DoE (2015). Confirmation is required on native understorey status, as well as patch size and condition rating.
11	Low to mid open woodland of *Corymbia calophylla* and *Eucalyptus wandoo* subsp. *wandoo* and *Allocasuarina huegeliana* with occasional *Eucalyptus drummondii* over tussock grassland to open tussock grassland of pasture weeds on lateritic ridges and upper slopes with lateritic gravel on brown loam.	P	**May represent the TEC** – meets the components for IBRA region, tree canopy cover, and that the dominant tree (*Eucalyptus wandoo* subsp. *wandoo*) is listed in Table 2a of DoE (2015). Confirmation is required on native understorey status, as well as the dominance of the other trees listed (*Corymbia calophylla, Allocasuarina huegeliana, Eucalyptus drummondii*), patch size and condition rating.
12	Mid woodland of *Allocasuarina huegeliana* and *Eucalyptus wandoo* subsp. *wandoo* over tall open shrubland of *Banksia sessilis* var. *sessilis*, sometimes with *Santalum murrayanum* over sparse shrubland of *Gahnia aristata* on laterite hills.	N	**Does not represent the TEC** – although it meets components for tree canopy cover, and is located within the correct IBRA region, the dominant tree (*Allocasuarina huegeliana*) is not listed in Table 2a of DoE (2015). This tree can be present, but not dominant, to qualify for TEC.

VT	Description	TEC^	Summary of Assessment Against TEC Criteria
13	Woodland of *Eucalyptus accedens* and *Eucalyptus astringens* subsp. *astringens* over minimal understorey of pasture weeds on lateritic slopes.	P	**May represent the TEC** – meets the components for IBRA region, tree canopy cover, and that the dominant trees (*Eucalyptus accedens, Eucalyptus astringens* subsp. *astringens*) are listed in Table 2a of DoE (2015). Confirmation is required on native understorey status, as well as patch size and condition rating.
14	Mid open woodland of *Eucalyptus wandoo* subsp. *wandoo,* sometimes with *Eucalyptus marginata* subsp. *marginata* and occasional *Corymbia calophylla* over varied understorey with laterite or granite.	P	**May represent the TEC** – meets the components for IBRA region, tree canopy cover, and that the dominant tree (*Eucalyptus wandoo* subsp. *wandoo*) is listed in Table 2a of DoE (2015). Confirmation is required on native understorey status, as well as patch size and condition rating.
15	Low open woodland of *Eucalyptus dorrienii* over open tussock grassland or pasture weeds on red-brown sandy loam with lateritic outcropping on edges of breakaways or crests.	N	**Does not represent the TEC** – meets the components for IBRA region, however the dominant tree in this VT is *Eucalyptus dorrienii*, which is a mallee, not listed in Table 2a of DoE (2015).
16	Mid open woodland of *Allocasuarina huegeliana,* occasional *Eucalyptus wandoo* subsp. *wandoo* or *Eucalyptus loxophleba* subsp. *loxophleba*, associated with granite outcropping.	N	**Does not represent the TEC** – although it meets components for tree canopy cover, and is located within the correct IBRA region, the dominant tree (*Allocasuarina huegeliana*) is not listed in Table 2a of DoE (2015). This tree can be present, but not dominant, to qualify for TEC.
17	Mid woodland of *Casuarina obesa* over **Juncus acutus* subsp. *acutus* sedgeland.	N	**Does not represent the TEC** – although it meets components for tree canopy cover, and is located within the correct IBRA region, the dominant tree (*Casuarina obesa)* is not listed in Table 2a of DoE (2015).
18	Sedgeland of **Juncus acutus* subsp. *acutus*, with no overstorey. Drainage.	N	**Does not represent the TEC –** meets the components for IBRA region, however there is no intact overstorey to qualify as TEC.
19	Mosaic, disturbed. *Casuarina obesa, Eucalyptus* spp. and assorted planted species, both local and exotic, with saline influences.	N	**Does not represent the TEC** – although it meets components for tree canopy cover, and is located within the correct IBRA region, the dominant tree (*Casuarina obesa)* is not listed in Table 2a of DoE (2015). The TEC also does not include exotic planted taxa.
20	Mid open woodland of *Eucalyptus rudis* subsp. *rudis* and ^*Eucalyptus camaldulensis*; occasional *Eucalyptus loxophleba* subsp. *loxophleba*, on drainage lines.	N	**Does not represent the TEC** – although it meets components for tree canopy cover, and is located within the correct IBRA region, one of the dominant trees (^*Eucalyptus camaldulensis*) is not listed in Table 2a of DoE (2015), which is also planted or escapees of planted individuals. The TEC also does not include exotic planted taxa.

VT	Description	TEC^	Summary of Assessment Against TEC Criteria
21	Isolated trees to mid open woodland of *Eucalyptus loxophleba* subsp. *loxophleba* and *Allocasuarina huegeliana* with occasional *Corymbia calophylla* and/or *Eucalyptus rudis* subsp. *rudis*, isolated shrubs of *Acacia acuminata* and sometimes *Acacia microbotrya* on slopes with exposed granite.	P	**May represent the TEC** – meets the components for IBRA region, tree canopy cover, and that the dominant tree (*Eucalyptus loxophleba* subsp. *loxophleba*) is listed in Table 2a of DoE (2015). Confirmation is required on native understorey status, as well as the dominance of the other trees listed (*Allocasuarina huegeliana, Corymbia calophylla*), patch size and condition rating.
22	Isolated trees to mid open woodland of *Eucalyptus wandoo* subsp. *wandoo* with *Allocasuarina huegeliana*, occasionally with *Eucalyptus loxophleba* subsp. *loxophleba* on granite outcropping.	P	**May represent the TEC** – meets the components for IBRA region, tree canopy cover, and that the dominant tree (*Eucalyptus wandoo* subsp. *wandoo*) is listed in Table 2a of DoE (2015). Confirmation is required on native understorey status, as well as the dominance of the other trees listed (*Allocasuarina huegeliana*), patch size and condition rating.
23	Mosaic of isolated remnant native trees, including *Eucalyptus wandoo* subsp. *wandoo, Eucalyptus loxophleba* subsp. *loxophleba, Corymbia calophylla, Eucalyptus rudis* subsp. *rudis, Eucalyptus astringens* subsp. *astringens, Allocasuarina huegeliana* and isolated shrubs *of Acacia acuminata, Acacia microbotrya* and *Acacia saligna*, occasionally *Hakea prostrata* or *Banksia sessilis* var. *sessilis,* over pasture weeds; associated with road verges.	P	**May represent the TEC** – meets the components for IBRA region, tree canopy cover, and that the dominant tree (*Eucalyptus wandoo* subsp. *wandoo, Eucalyptus loxophleba* subsp. *loxophleba, Eucalyptus rudis, Eucalyptus astringens* subsp. *astringens*) is listed in Table 2a of DoE (2015). Confirmation is required on native understorey status, as well as the dominance of the other trees listed (*Corymbia calophylla, Allocasuarina huegeliana*), patch size and condition rating.

^Note:
N – not TEC,
P – Potential to be TEC

Table F.2 Assessment of Vegetation Mapping Notes against TEC Criteria

VMN^ or Releve	Allocated VT	Description	TEC	Summary of Assessment Against TEC Criteria
VM01	**VT10**	Isolated trees of *Eucalyptus wandoo* and *Corymbia calophylla* over pasture weeds Red-Brown sandy loam with laterite extensions. Not TEC.	N	Tree canopy cover is too sparse (>10%) to be considered woodland and is therefore not TEC.
VM02	**VT1**	North end of drainage line. Adjacent to drainage line, scattered *Eucalyptus rudis* over open shrubland of *Acacia acuminata/Acacia saligna* over open sedgeland of **Juncus acutus* over dense **Cynodon dactylon* in creek. Pasture weeds from dry banks. Also, **Ursinia anthemoides*. Additional 'planted' trees along edge of various species. Brown sandy loam. Also, dense **Romulea rosea* on banks. Planted *Eucalyptus loxophleba, Eucalyptus wandoo* and *Acacia acuminata.* Not TEC.	N	Although the trees present are accepted taxa for the TEC, the weed coverage exceeds 70%, and thus it does not satisfy TEC criteria. In addition, it also includes planted taxa.
VM03	**VT1**	Open low-mid woodland of *Eucalyptus rudis* over open sedgeland of **Juncus acutus* over dense/complete low closed tussock grassland of pasture weeds. No mid strata, no plantings. Not TEC.	N	Although the trees present are accepted taxa for the TEC, there is no intact native understorey and the weed coverage exceeds 70%. Thus, it does not satisfy TEC criteria.
VM05	**VT1**	In the drainage/creek line. Low-mid open woodland of *Eucalyptus rudis* with occasional trees of *Eucalyptus wandoo* and *Eucalyptus loxophleba* on the banks over sedgeland of **Juncus acutus* over dense tussock grassland of pasture weeds and **?Ehrharta curvula*. Brown orange clayey sand. Not TEC.	N	Although the trees present are accepted taxa for the TEC, there is no intact native understorey and the weed coverage exceeds 70%. Thus, it does not satisfy TEC criteria.
VM06	**VT1**	Low-mid open woodland of *Eucalyptus rudis* over pasture weeds, including **?Ehrharta curvula*. Dense tussock grassland (same as before). Brown clayey sand. Not TEC.	N	Although the trees present are accepted taxa for the TEC, there is no intact native understorey and the weed coverage exceeds 70%. Thus, it does not satisfy TEC criteria.

VMN^ or Releve	Allocated VT	Description	TEC	Summary of Assessment Against TEC Criteria
VM07	**VT1**	Drainage line/ swamp area. Low-mid isolated trees of *Eucalyptus rudis, Eucalyptus wandoo, Corymbia calophylla* over dense sedgeland of **Juncus acutus* to open tussock grassland of low weeds of drainage weeds, pasture weeds. Not TEC. Some areas adjacent drainage line has planted trees of exotic nature. Occasional *Acacia acuminata* plants. Area is boggy. Area recently seeded - Lupins?	N	Although the trees present are accepted taxa for the TEC, the understorey is highly modified, with weed taxa exceeding the 70% threshold. Vegetation also includes planted taxa.
VM13	**VT1**	Drainage line - brown sandy clay loam. Low/mid open woodland of *Eucalyptus rudis* over sedgeland of **Juncus acutus* over pasture weeds - tussock grassland of pasture weeds. Not TEC	N	Although the trees present are accepted taxa for the TEC, there is no native understorey, with weed taxa exceeding the 70% threshold.
VM14	**VT7**	*Eucalyptus rudis* isolated trees with Eucalyptus wandoo over scattered mid shrubland of *Acacia acuminata* over closed tussock grassland over **Hordeum marinum* and pasture weeds, **Romulea rosea*. Brown-black sandy clay loam. Undulating plain/ mid slope. Not TEC.	N	Although the trees present are accepted taxa for the TEC, the understorey is highly modified, with weed taxa exceeding the 70% threshold.
VM15	**VT7**	Undulating plain. Low/mid open woodland of *Eucalyptus rudis, Eucalyptus loxophleba, Eucalyptus wandoo* over isolated sedges of **Juncus acutus* over dense tussock grassland of pasture weeds dominated by **Hordeum marinum* and the rest of the usual weeds. Grazing of sheep. Not TEC - condition too poor.	N	Although the trees present are accepted taxa for the TEC, there is no native understorey, with weed taxa exceeding the 70% threshold.
VM16	**VT4**	Mid slope/undulating plain. Granite extensions. Mid woodland dominated by *Eucalyptus loxophleba* and occasional *Eucalyptus wandoo* over dense tussock grassland of pasture weeds. Not TEC - condition too poor. Brown/red clay loam.	N	Although the trees present are accepted taxa for the TEC, there is no native understorey, with weed taxa exceeding the 70% threshold.
VM17	**VT1**	Drainage line. Low-mid open woodland of *Eucalyptus rudis* over open low sedgeland of **Juncus acutus* over dense tussock grassland of pasture weeds. **Cynodon dactylon* in drainage line. Brown sandy clay loam. Not TEC.	N	Although the trees present are accepted taxa for the TEC, there is no native understorey, with weed taxa exceeding the 70% threshold.

VMN^ or Releve	Allocated VT	Description	TEC	Summary of Assessment Against TEC Criteria
VM18	**VT1**	Low-mid open woodland of *Eucalyptus rudis* over low open sedgeland of **Juncus acutus* over tussock grassland of pasture weeds in drainage line. 1 x *Acacia acuminata*. Brown sandy clay loam.	N	Although the trees present are accepted taxa for the TEC, the understorey is highly modified, with weed taxa exceeding the 70% threshold. Vegetation also includes planted taxa.
VM20	**VT1**	Area of **Juncus acutus* in drainage line/open depression.	N	No overstorey present, and thus does not meet the threshold for the definition of a woodland.
VM21	**VT1**	Drainage line. Brown sandy clay loam. Low-mid open woodland of *Eucalyptus rudis* with isolated tall shrubs of *Acacia acuminata* and *Acacia microbotrya* over tussock grassland of pasture weeds with isolated **Juncus acutus.*	N	Although the trees present are accepted taxa for the TEC, the understorey is highly modified, with weed taxa exceeding the 70% threshold. Vegetation also includes planted taxa.
VM22	**VT6**	Hill crest. Low-mid open woodland of *Eucalyptus wandoo* and *Corymbia calophylla* with *Allocasuarina huegeliana* over sparse low shrubland of *Acacia pulchella* over tussock grassland of pasture weeds, *Austrostipa* sp., and *Neurachne alopecuroidea*, also **Romulea rosea*. Red-brown clay loam with laterite extensions. Grazing present.	N	*Corymbia calophylla* is considered dominant in this VMN, and is not an accepted dominant or co-dominant taxon for the TEC.
VM23	**VT6**	Low open woodland of *Eucalyptus wandoo* and *Eucalyptus astringens* over open tussock grassland of pasture weeds and *Austrostipa* sp. And *Rytidosperma* sp. on crest of hill with breakaway with red-brown sandy loam with laterite outcropping. Historical logging, grazing.	N	This VMN fulfills the criteria of the TEC, however the patch size is smaller than 5 ha, and therefore is not TEC.
VM25	**VT6**	Edge of breakaway, lateritic ridge. Brown sandy loam in laterite outcropping. Low-mid open woodland of *Eucalyptus wandoo* and *Eucalyptus astringens* and *Allocasuarina huegeliana* over open tussock grassland of pasture weeds and *Austrostipa* sp. *Rytidosperma* sp., *Neurachne alopecuroidea, *Romulea rosea.* Historical logging, grazing, clearing.	N	*Allocasuarina huegeliana* is considered dominant in this VMN, and is not an accepted dominant or co-dominant taxa for the TEC.

VMN^ or Releve	Allocated VT	Description	TEC	Summary of Assessment Against TEC Criteria
VM26	**VT6**	Upper slope/crest. Brown clay loam with lateritic outcropping. Low-mid open woodland of *Eucalyptus wandoo, Corymbia calophylla* and *Allocasuarina huegeliana*, over pasture weeds and **Vulpia myuros*. Quite a few dead *Allocasuarina* and *Eucalyptus wandoo.*	N	Although the trees present are accepted taxa for the TEC, there is no native understorey, with weed taxa exceeding the 70% threshold.
VM27	**VT6**	Hill/breakaway. Laterite - grey-brown clay loam. Low-mid open woodland of *Eucalyptus wandoo* and *Eucalyptus astringens* over tussock grassland of pasture weeds. Historical logging, grazing, clearing.	N	Although the trees present are accepted taxa for the TEC, there is no native understorey, with weed taxa exceeding the 70% threshold.
VM28	**VT7**	In drainage line with low-mid open woodland of *Eucalyptus rudis* and *Eucalyptus loxophleba* on the banks over sedgeland of **Juncus acutus* over tussock grassland of pasture weeds including **Cynodon*. Brown sandy clay loam.	N	Although the trees present are accepted taxa for the TEC, there is no native understorey, with weed taxa exceeding the 70% threshold.
VM29	**VT7**	Drainage line. Red brown clay loam. Low-mid open woodland of *Eucalyptus rudis* and *Eucalyptus loxophleba* adjacent to drainage line over sedgeland of **Juncus acutus* over tussock grassland of pasture weeds.	N	Although the trees present are accepted taxa for the TEC, there is no native understorey, with weed taxa exceeding the 70% threshold.
VM30	**VT7**	same as VM 29.	N	Although the trees present are accepted taxa for the TEC, there is no native understorey, with weed taxa exceeding the 70% threshold.
VM31	**VT6**	Upper slope. Low-mid open woodland of *Eucalyptus wandoo* and *Eucalyptus astringens* over tussock grassland of pasture weeds. Logging, clearing, grazing, quite a few dead trees. Brown loam with laterite gravel.	N	Although the trees present are accepted taxa for the TEC, there is no native understorey, with weed taxa exceeding the 70% threshold.
VM33	**VT8**	Edge of breakaway/crest/upper slope. *Eucalyptus astringens* and *Eucalyptus gardneri,* low-mid woodland over very open pasture weeds with lots of leaf litter. Brown-red clay loam with some laterite outcropping. Not too many weeds; Not the TEC - Mallet-dominated. Some *Eucalyptus wandoo* and *Corymbia calophylla* on hill crest. Logging, clearing, grazing present.	Y	**This VMN fulfills the TEC criteria**. Although the vegetation is Degraded, the patch size is over 5 ha, and thus fits the criteria for TEC. The weed understorey coverage is below 70%, and mallet stands naturally have minimal to no understorey.

VMN^ or Releve	Allocated VT	Description	TEC	Summary of Assessment Against TEC Criteria
VM34	**VT8**	Downslope from lateritic breakaway, red-brown sandy clay loam. Low-mid woodland of *Eucalyptus wandoo* and *Eucalyptus gardneri* over leaf litter and *Austrostipa*. Nearly bare underneath. Condition good - Mallet stand, no understorey. Some pasture weeds extend in from edge.	N	This VMN fulfills the criteria of the TEC, however the patch size is smaller than 5 ha, and therefore is not TEC.
VM35	**VT7**	Adjacent to drainage line. Low-mid open woodland of *Eucalyptus rudis* and *Eucalyptus loxophleba* over tussock grassland of pasture weeds. Sandy loam, brown. Grazing, historical clearing. Farmhands quarters in vicinity - ?Asbestos.	N	Although the trees present are accepted taxa for the TEC, there is no native understorey, with weed taxa exceeding the 70% threshold.
VM37	**VT6**	Upper slope, red brown clay loam. Scattered low-mid trees of *Corymbia calophylla* and Eucalyptus rudis over isolated mid shrubs of *Acacia pulchella, Banksia squarrosa* over tussock grassland of pasture weeds and *Neurachne alopecuroidea, *Pentameris, *Aira.*	N	*Corymbia calophylla* is considered dominant in this VMN, and is not an accepted dominant or co-dominant taxon for the TEC.
VM38	**VT6**	Mid slope. Low-mid open woodland of *Corymbia calophylla* and *Eucalyptus wandoo* over isolated shrubs of *Dillwynia laxiflora* and *Acacia pulchella* over tussock grassland of pasture weeds and *Austrostipa* sp. Brown sandy clay loam. Laterite boulders and gravel - downslope from laterite ridge and breakaway.	N	*Corymbia calophylla* is considered dominant in this VMN, and is not an accepted dominant or co-dominant taxon for the TEC.
VM39	**VT6**	Site same as VM 37.	N	*Corymbia calophylla* is considered dominant in this VMN, and is not an accepted dominant or co-dominant taxon for the TEC.
VM40	**VT8**	Site same as VM 33 - *Eucalyptus astringens* and *Eucalyptus gardneri* (green + blue mallet).	N	This VMN fulfills the criteria of the TEC, however the patch size is smaller than 5 ha, and therefore is not TEC.
VM41	**VT4**	Site same as VM 35. Low-mid woodland of *Eucalyptus loxophleba* over weeds. Granite boulder - red-brown clay loam.	N	Although the trees present are accepted taxa for the TEC, there is no native understorey, with weed taxa exceeding the 70% threshold.

VMN^ or Releve	Allocated VT	Description	TEC	Summary of Assessment Against TEC Criteria
VM43	**VT10**	Mid slope, brown clay loam. Scattered trees of Eucalyptus wandoo and *Corymbia calophylla, Eucalyptus astringens, Eucalyptus gardneri* over scattered tall shrubs of *Acacia acuminata* and *Allocasuarina huegeliana* over tussock grassland of pasture weeds.	N	Although the trees present are accepted taxa for the TEC, there is no native understorey, with weed taxa exceeding the 70% threshold.
VM44	**VT6**	Lateritic ridge in slope. Scattered *Eucalyptus wandoo* and *Corymbia calophylla* in ridge edge with low-mid woodland *of Eucalyptus astringens* and *Eucalyptus gardneri* over leaf litter and pasture weeds on edge. Mallet stand. Weeds/grazing, clearing, logging. Brown sandy loam with lateritic extensions.	N	*Corymbia calophylla* is considered dominant in this VMN, and is not an accepted dominant or co-dominant taxon for the TEC.
VM45	**VT6**	Lateritic ridge in slope - on ridge. Low-mid open woodland of *Eucalyptus wandoo* and *Corymbia calophylla* over tall open shrubland of *Banksia sessilis* and *Allocasuarina huegeliana* and open tussock grassland of pasture weeds. *Billardiera coriacea, Acacia pulchella* and **Romulea rosea*. Red-brown sandy clay loam with laterite pebbles. Note - *Eucalyptus astringens* and *Eucalyptus gardneri* downslope.	N	*Corymbia calophylla* is considered dominant in this VMN, and is not an accepted dominant or co-dominant taxon for the TEC.
VM46	**VT7**	Mid slope, brown sandy clay loam. Same as VM 35. Low-mid woodland of *Eucalyptus loxophleba* over open tall shrubland of *Acacia acuminata* over tussock grassland of pasture weeds. Granite boulders.	N	Although the trees present are accepted taxa for the TEC, there is no native understorey, with weed taxa exceeding the 70% threshold.
VM47	**VT8**	Same as VM 33. Low-mid woodland of *Eucalyptus astringens* and *Eucalyptus gardneri* and *Eucalyptus wandoo* over tussock grassland of pasture weeds. Lots of weeds and grazing. Some scattered *Eucalyptus wandoo* on top of lateritic ridge.	Y	This VMN fulfills the TEC criteria. Although the vegetation is Degraded, the patch size is over 5 ha, and thus fits the criteria for TEC. The weed understorey coverage is below 70%, and mallet stands naturally have minimal to no understorey.
VM48	**VT8**	Same as VM 33. Low-mid woodland of *Eucalyptus astringens* and *Eucalyptus gardneri* on slope down from laterite ridge over tussock grassland of pasture weeds and *Austrostipa* and *Rytidosperma* sp. Some scattered *Eucalyptus wandoo* and *Corymbia calophylla* and *Allocasuarina huegeliana.*	N	Although the trees present are accepted taxa for the TEC, there is no native understorey, with weed taxa exceeding the 70% threshold.

VMN^ or Releve	Allocated VT	Description	TEC	Summary of Assessment Against TEC Criteria
VM49	**VT6**	Extension of mapping for VM 48 - has more *Eucalyptus wandoo*. Note - some *Eucalyptus wandoo* and *Corymbia calophylla, Allocasuarina huegeliana* and *Eucalyptus drummondii* scattered on ridge top/plateau.	N	*Corymbia calophylla, Allocasuarina huegeliana* and *Eucalyptus drummondii* are considered dominant in this VMN, and are not an accepted dominant or co-dominant taxa for the TEC.
VM50	**VT7**	Same as previous drainage line - low-mid open woodland of *Eucalyptus rudis* and *Eucalyptus loxophleba* over sedgeland of **Juncus acutus* over dense tussock grassland of pasture weeds and **Hordeum marinum*. Brown loam.	N	Although the trees present are accepted taxa for the TEC, there is no native understorey, with weed taxa exceeding the 70% threshold.
VM51	**VT6**	Lateritic hillock. Low-mid open woodland of *Eucalyptus wandoo* and *Corymbia calophylla* with *Eucalyptus astringens* and *Eucalyptus gardneri,* and *Allocasuarina huegeliana* growing on slopes over open tussock grassland of pasture weeds, *Neurachne, Austrostipa*. Red-brown sandy clay loam with lateritic pebbles and laterite extensions. Clearing for water tank, grazing, weeds.	N	*Corymbia calophylla* is considered dominant in this VMN, and is not an accepted dominant or co-dominant taxon for the TEC.
VM52	**VT7**	Same as VM 35 - *Eucalyptus loxophleba* over pasture weeds.	N	Although the trees present are accepted taxa for the TEC, there is no native understorey, with weed taxa exceeding the 70% threshold.
VM53	**VT7**	Same as previous drainage sites. *Eucalyptus rudis* and *Eucalyptus loxophleba* - low-mid open woodland over sedgeland of **Juncus acutus* over tussock grassland/pasture weeds. Brown clay loam.	N	Although the trees present are accepted taxa for the TEC, there is no native understorey, with weed taxa exceeding the 70% threshold.
VM54	**VT7**	Same as previous drainage sites. Low-mid *Eucalyptus rudis* and *Eucalyptus loxophleba* woodland - with more *Eucalyptus rudis* with occasional low sedges of **Juncus acutus* over pasture weed tussock grassland.	N	Although the trees present are accepted taxa for the TEC, there is no native understorey, with weed taxa exceeding the 70% threshold.

VMN^ or Releve	Allocated VT	Description	TEC	Summary of Assessment Against TEC Criteria
VM55	**VT6**	Red brown sandy clay loam with laterite gravel - lateritic ridge and upper slope. Low - mid woodland of *Eucalyptus wandoo* and *Corymbia calophylla* on lateritic ridge over pasture weeds and some *Austrostipa* and *Rytidosperma* tussock grassland. Some *Banksia sessilis* and *Allocasuarina huegeliana* - mostly dead.	N	*Corymbia calophylla* is considered dominant in this VMN, and is not an accepted dominant or co-dominant taxon for the TEC.
VM56	**VT8**	*Eucalyptus astringens* and *Eucalyptus gardneri* low-mid woodland over leaf litter and tussock open grassland of pasture weeds and *Austrostipa* and *Rytidosperma* on brown clay loam on slopes of lateritic ridge. Mallet stand.	Y	This VMN fulfills the TEC criteria. Although the vegetation is Degraded, the patch size is over 5 ha, and thus fits the criteria for TEC. The weed understorey coverage is below 70%, and mallet stands naturally have minimal to no understorey.
VM57	**VT6**	Upper slope. Low-mid open woodland of Eucalyptus wandoo and *Corymbia calophylla* and *Allocasuarina huegeliana* over open tall shrubland of *Banksia sessilis* over low sparse shrubland of *Hibbertia commutata* over low open grassland of *Austrostipa* and pasture weeds. *Austrostipa elegantissima, Bossiae eriocarpa, *Briza maxima.* Brown sandy clay loam.	Y	This VMN fulfills the TEC criteria. Although the vegetation is Degraded, the patch size is over 5 ha, and thus fits the criteria for TEC. The weed understorey coverage is below 70%, and mallet stands naturally have minimal to no understorey.
VM58	**VT8**	Same as VM 33. Lateritic hillock and slope of low-mid woodland of *Eucalyptus gardneri* and *Eucalyptus astringens* over tussock grassland of pasture weeds. Brown clay loam with lateritic extensions and lateritic gravel. More weeds here - Completely Degraded.	N	This VMN fulfills the criteria of the TEC, however the condition of the vegetation is too poor to be considered TEC.
VM59	**VT11**	*Eucalyptus drummondii* on hill crest. Also *Banksia sessilis.*	N	*Eucalyptus drummondii* is considered dominant in this VMN, and is not an accepted dominant or co-dominant taxon for the TEC.
VM60	**VT6**	*Corymbia calophylla, Eucalyptus wandoo, Allocasuarina huegeliana* mid open forest over low closed grassland of pasture grasses - **Ehrharta longiflora, *Aira cupaniana, *Avena barbata.* Gravelly brown loam, laterite ridge, steep slope. Cows, weeds, fire over 10 years. Other species: *Lomandra micrantha*, **Ursinia anthemoides, Podolepis gracilis.* Not TEC.	N	*Corymbia calophylla* and *Allocasuarina huegeliana* are considered dominant in this VMN, and are not an accepted dominant or co-dominant taxa for the TEC.

VMN^ or Releve	Allocated VT	Description	TEC	Summary of Assessment Against TEC Criteria
VM61	**VT6**	*Eucalyptus astringens* dominant, *Corymbia calophylla* (on lower slope), *Eucalyptus wandoo* mid woodland over low open pasture grasses. Other species: *Drosera glanduligera, Thysanotus patersonii, Millotia tenuifolia, Rhodanthe manglesii, Acacia acuminata*. Not TEC. Fire over 10 years. Historical tree felling.	N	Although the trees present are accepted taxa for the TEC, the understorey is highly modified, with weed taxa exceeding the 70% threshold. Vegetation also includes planted taxa.
VM64	**VT8**	*Eucalyptus astringens* mid woodland to open forest, with *Corymbia calophylla* mid open forest on lower slope, over low open grassland of pasture weeds - **Lolim rigidum, *Ehrharta longiflora, *Arctotheca calendula*. Gravelly sandy clay loam, grey. Low hill, old dead trees, grazing. Not TEC. Fire over 10 years. Also *Allocasuarina huegeliana* on granite outcropping on lower slope.	N	Although the trees present are accepted taxa for the TEC, there is no native understorey, with weed taxa exceeding the 70% threshold. Additionally, *Corymbia calophylla* is not an accepted dominant taxon for the TEC.
VM65	**VT1**	*Eucalyptus loxophleba* subsp. *loxophleba* mid open woodland over *Acacia acuminata* tall open shrubland over low grassland of pasture weeds (**Ehrharta longiflora, *Avena barbata*). Other species: *Stypandra glauca, *Romulea rosea, *Trifolium subterraneum*. Fire 1-2 years. Granite outcropping, lower slope. Brown sandy clay loam. Not TEC. Creekline to west, *Eucalyptus loxophleba* subsp. *loxophleba* over pasture, burnt 1-2 years.	N	Although the trees present are accepted taxa for the TEC, there is no native understorey, with weed taxa exceeding the 70% threshold.
VM66	**VT1**	*Eucalyptus rudis* mid open forest over low closed grassland of pasture weeds - **Ehrharta longiflora, *Hordeum leporinum, *Arctotheca calendula*. Brown sandy loam, lower slope/low lying/old creekline? Not TEC. Cows. Fire 1-2 years.	N	Although the trees present are accepted taxa for the TEC, there is no native understorey, with weed taxa exceeding the 70% threshold.
VM67	**VT1**	*Eucalyptus rudis* mid closed forest over low closed pasture weeds - **Lolium rigidum, *Ehrharta longiflora, *Avena barbata, *Bromus diandrus, *Romulea rosea.* In creekline - open forest on flood plain. Flowing water. Fire over 10 years.	N	Although the trees present are accepted taxa for the TEC, there is no native understorey, with weed taxa exceeding the 70% threshold.

VMN^ or Releve	Allocated VT	Description	TEC	Summary of Assessment Against TEC Criteria
VM68	**VT4**	*Eucalyptus loxophleba* subsp. *loxophleba* low woodland over *Acacia acuminata* tall sparse shrubland over low closed grassland of pasture species - **Avena barbata, *Arctotheca calendula, *Lolium rigidum*. Brown clay loam, granite, mid slope. Fire over 10 years. Also *Allocasuarina huegeliana.* Young stand of *Eucalyptus loxophleba* subsp. *loxophleba.*	N	Although the trees present are accepted taxa for the TEC, the understorey is highly modified, with weed taxa exceeding the 70% threshold.
VM69	**VT6**	*Eucalyptus astringens, Eucalyptus wandoo, Corymbia calophylla* mid open woodland to woodland over *Eucalyptus pileata* low isolated clumps of mallees over low open pasture species - **Ehrharta longiflora, *Bromus diandrus, *Avena barbata, *Arctotheca calendula*. Laterite outcropping/ridge. Brown clay loam, not TEC. Kangaroos and horses, weeds. Fire over 10 years. Also *Allocasuarina huegeliana*.	N	Although the trees present are accepted taxa for the TEC, there is no native understorey, with weed taxa exceeding the 70% threshold.
VM70	**VT7**	*Eucalyptus rudis, Eucalyptus loxophleba* subsp. *loxophleba* mid woodland over **Juncus acutus* tall sedgeland over low sparse pasture species - **Lolium rigidum, *Bromus diandrus*. Creekline, fire over 10 years. Acacia acuminata.	N	Although the trees present are accepted taxa for the TEC, there is no native understorey, with weed taxa exceeding the 70% threshold.
VM72	**VT7**	*Eucalyptus rudis* low open forest over low closed pasture species. Man-made dam/waterhole. Fire over 10 years.	N	Although the trees present are accepted taxa for the TEC, there is no native understorey, with weed taxa exceeding the 70% threshold.
VM74	**VT4**	*Eucalyptus loxophleba* subsp. *loxophleba* mid woodland to open forest, over *Acacia acuminata* tall open shrubland over low closed pasture species. *Allocasuarina huegeliana* dominant further up hill outside (S) of property. Connected to vegetation to south. Not TEC.	N	Although the trees present are accepted taxa for the TEC, the understorey is highly modified, with weed taxa exceeding the 70% threshold.
VM99	**VT1**	*Eucalyptus rudis* mid woodland to open forest over *Acacia acuminata* tall isolated clumps of shrubs over **Juncus acutus* mid isolated sedges over **Avena barbata, *Bromus diandrus* mid closed grassland. >10 years fire, **Moraea flaccida, *Hordeum marinum, *Oxalis purpurea, *Juncus acutus, *Oxalis glabra*. River and floodplain, brown sandy clay loam.	N	Although the trees present are accepted taxa for the TEC, the understorey is highly modified, with weed taxa exceeding the 70% threshold.

VMN^ or Releve	Allocated VT	Description	TEC	Summary of Assessment Against TEC Criteria
VM101	**VT21**	*Corymbia calophylla* mid open woodland to woodland over *Allocasuarina huegeliana* low open woodland over *Acacia microbotrya, Acacia acuminata* tall isolated clumps of shrubs over **Bromus diandrus, *Avena barbata* low grassland. Degraded, hill slope (mid to upper), brown loam, granite boulder out-cropping. **Galium divaricatum, Geranium solanderi, *Stellaria media.*	N	*Corymbia calophylla* and *Allocasuarina huegeliana* are considered dominant in this VMN, and are not an accepted dominant or co-dominant taxa for the TEC.
VM102	**VT6**	*Eucalyptus wandoo, Eucalyptus astringens* mid woodland to open forest over **Vulpia bromoides, *Lolium rigidum* low grassland. Upper slope, pink-brown sandy loam, laterite outcropping. Degraded, fire >10 years.	N	Although the trees present are accepted taxa for the TEC, there is no native understorey, with weed taxa exceeding the 70% threshold.
VM103	**VT6**	*Allocasuarina huegeliana, Corymbia calophylla* low woodland over *Banksia sessilis, Acacia celastrifolia* tall sparse shrubland over *Briza maxima, **Ehrharta longiflora, *Vulpia muralis* low open grassland over **Lysimachia arvensis, *Arctotheca calendula* low isolated clumps of forbs. Species: *Thysanotus patersonii, Rhodanthe manglesii, Neurachne alopecuriodea, *Briza minor*. Hill top/laterite ridge, brown sandy loam, degraded, fire >10 years	N	*Corymbia calophylla* and *Allocasuarina huegeliana* are considered dominant in this VMN, and are not an accepted dominant or co-dominant taxa for the TEC.
VM104	**VT21**	*Allocasuarina huegeliana* mid woodland over Acacia acuminata tall sparse shrubland over **Ehrharta longiflora, *Avera barbata* low grassland. *Cheilanthes sieberi, Dichopogon ?fimbriatus, *Romulea rosea, *Sonchus oleraceus.* Midslope, granite outcropping, fire >10 years.	N	*Allocasuarina huegeliana* is considered dominant in this VMN, and is not an accepted dominant or co-dominant taxon for the TEC.
VM105	**VT8**	*Eucalyptus astringens* mid open forest over **Aira cupaniana, *Ehrharta longiflora, *Avena barbata* low isolated clumps of grasses. Degraded, laterite ridge, dark brown sandy loam, scattered *Allocasuarina huegeliana, Corymbia calophylla* on southeast edge.	N	This VMN fulfills the criteria of the TEC, however the patch size is smaller than 5 ha, and therefore is not TEC.

VMN^ or Releve	Allocated VT	Description	TEC	Summary of Assessment Against TEC Criteria
VM107	**VT6**	*Eucalyptus wandoo* mid open woodland to woodland over *Allocasuarina huegeliana* low open woodland over **Bromus diandrus, *Lolium rigidum*, low grassland over **Romulea rosea* low open forbland. Hill top, granite outcropping, brown sandy loam. *Rytidosperma caespitosum*.	N	Although the trees present are accepted taxa for the TEC, the understorey is highly modified, with weed taxa exceeding the 70% threshold.
VM108	**VT21**	*Eucalyptus loxophleba* subsp. *loxophleba* low to mid open forest over *Acacia acuminata* tall isolated clumps of shrubs over **Avena barbata, *Ehrharta longiflora* low grassland over **Romulea rosea* low forbland. **Asparagus asparagoides, Hibbertia commutata* scattered *Corymbia calophylla* and *Allocasuarina huegeliana* upperslope, some granite outcropping, degraded, >10 years fire. Red-brown clay loam. Lots of dense young *Eucalyptus loxophleba* - fire some time ago?	N	Although the trees present are accepted taxa for the TEC, the understorey is highly modified, with weed taxa exceeding the 70% threshold.
VM109	**VT21**	*Eucalyptus loxophleba* subsp. *loxophleba* and *Allocasuarina huegeliana* low to mid woodland to open forest over Acacia acuminata tall isolated clumps of shrubs, rest the same as VM 107. Degraded, red clay loam, mid slope some granite outcropping.	N	*Allocasuarina huegeliana* is considered dominant in this VMN, and is not an accepted dominant or co-dominant taxon for the TEC.
VM110	**VT21**	Vegetation equal to VM 108. Degraded, lower slope, some granite outcropping, red clay loam.	N	Although the trees present are accepted taxa for the TEC, the understorey is highly modified, with weed taxa exceeding the 70% threshold.
VM111	**VT21**	Remnant *Eucalyptus rudis, Eucalyptus wandoo* mid open woodland over **Juncus acutus* mid isolated clumps of sedges of low closed pasture grasses over **Cotula coronopifolia* low sparse forbland with planted Eucalyptus species along fence edges (^*Eucalyptus camaldulensis, Eucalyptus loxophleba, *Eucalyptus sideroxylon*). Degraded - completely degraded, Drainage line/seepage area. Yellow-brown clay sand.	N	Although the trees present are accepted taxa for the TEC, the understorey is highly modified, with weed taxa exceeding the 70% threshold. Additionally, the VMN contains planted taxa, and the vegetation condition is too poor to meet TEC criteria.
VM112	**VT6**	*Corymbia calophylla* mid closed forest over **Ehrharta longiflora* low closed grassland. Degraded, lower slope, brown sandy loam.	N	*Corymbia calophylla* is considered dominant in this VMN, and is not an accepted dominant or co-dominant taxon for the TEC.

VMN^ or Releve	Allocated VT	Description	TEC	Summary of Assessment Against TEC Criteria
VM114	**VT8**	*Eucalyptus astringens, Eucalyptus wandoo* mid open forest over **Ehrharta longiflora* low isolated clumps of grasses. Degraded, slope of laterite breakaway, grey sandy clay loam, gravelly.	N	This VMN fulfills the criteria of the TEC, however the patch size is smaller than 5 ha, and therefore is not TEC.
VM115	**VT6**	*Corymbia calophylla, Eucalyptus wandoo* mid open woodland over *Allocasuarina huegeliana* low isolated clumps of trees over *Banksia sessilis, Acacia celastrifolia* tall isolated clumps of trees over **Avena barbata, *Vulpia bromoides* low grassland. *Neurachne alopecuroidea, Hibbertia commutata, *Petrorhagia dubia, *Hypochaeris glabra, *Romulea rosea, Austrostipa exilis, Rytidosperma caespitosum*.	N	*Corymbia calophylla* is considered dominant in this VMN, and is not an accepted dominant or co-dominant taxon for the TEC.
VM116	**VT21**	*Eucalyptus loxophleba* subsp. *loxophleba, Allocasuarina huegeliana* mid woodland to open forest *over Acacia acuminata*. Tall isolated clumps of shrubs over **Avena barbata, *Lolium rigidum* low closed grassland. Degraded. Upperslope. Granite outcropping. Red clay loam.	N	*Allocasuarina huegeliana* is considered dominant in this VMN, and is not an accepted dominant or co-dominant taxon for the TEC.
VM117	**VT21**	*Eucalyptus loxophleba* subsp. *loxophleba, Allocasuarina* huegeliana low to mid open forest over *Acacia acuminata* tall isolated clumps of shrubs over **Avena barbata, *Bromus hordaceus* low closed grassland. Midslope. Degraded. Granite outcropping. Brown sandy clay loam.	N	*Allocasuarina huegeliana* is considered dominant in this VMN, and is not an accepted dominant or co-dominant taxon for the TEC.
VM118	**VT8**	*Eucalyptus astringens* mid open forest over **Bromus diandrus, *Ehrharta longiflora, *Lolium rigidum* low isolated clumps of grasses. Degraded. Upperslope. Gravelly brown-grey sandy loam. Laterite outcropping on peak of hill. Scattered *Allocasuarina huegeliana.*	N	This VMN fulfills the criteria of the TEC, however the patch size is smaller than 5 ha, and therefore is not TEC.
VM120	**VT6**	*Corymbia calophylla* mid open forest over **Bromus diandrus, *Avena barbata.* Low closed grassland. Degraded. Mid slope. Grey sand (quartzy). Some *Eucalyptus wandoo* to east end.	N	*Corymbia calophylla* is considered dominant in this VMN, and is not an accepted dominant or co-dominant taxon for the TEC.

VMN^ or Releve	Allocated VT	Description	TEC	Summary of Assessment Against TEC Criteria
VM121	**VT4**	*Eucalyptus loxophleba* subsp. *loxophleba* low to mid woodland to open forest, *Eucalyptus wandoo* over *Acacia acuminata* tall isolated clumps of shrubs over **Avena barbata, *Bromus diandrus* low closed grassland. One *Eucalyptus rudis.*	N	Although the trees present are accepted taxa for the TEC, there is no native understorey, with weed taxa exceeding the 70% threshold.
VM123	**VT6**	*Eucalyptus wandoo* mid open forest over closed pasture grassland. Degraded. Upper slope. Patch to the south is *Eucalyptus loxophleba* subsp. *loxophleba* with granite outcropping - degraded.	N	Although the trees present are accepted taxa for the TEC, there is no native understorey, with weed taxa exceeding the 70% threshold.
VM124	**VT8**	*Eucalyptus astringens, Eucalyptus* gardneri mid open forest over **Ehrharta longiflora, *Hordeum leporinum, *Bromus diandrus* low open grassland. Degraded. Laterite breakaway. Brown sandy loam. *Eucalyptus wandoo* mid woodland to north in same patch.	N	This VMN fulfills the criteria of the TEC, however the patch size is smaller than 5 ha, and therefore is not TEC.
VM125	**VT6**	*Eucalyptus astringens, Eucalyptus wandoo* mid open forest over **Bromus bromoides, *Lolium rigidum, *Ehrharta longiflora* low open grassland. Laterite ridge. Degraded. Gravelly loamy sand.	N	Although the trees present are accepted taxa for the TEC, there is no native understorey, with weed taxa exceeding the 70% threshold.
VM126	**VT6**	*Eucalyptus wandoo* mid woodland over **Ehrharta longiflora, *Lolium rigidum* low isolated clumps of grasses (with small patches of *Eucalyptus astringens* on south and east edges). Degraded. Gravelly pale brown sandy loam. Hill top. Patches in paddock to south/southwest are *Eucalyptus astringens* and *Eucalyptus wandoo.*	N	Although the trees present are accepted taxa for the TEC, there is no native understorey, with weed taxa exceeding the 70% threshold.
VM127	**VT6**	*Eucalyptus wandoo* mid open forest over **Aira cupaniana, *Avena barbata, *Bromus diandrus* low isolated clumps of grasses. Laterite ridge. Degraded. Brown loamy sand. Scattered *Eucalyptus astringens.* **Ehrharta calycina.*	N	Although the trees present are accepted taxa for the TEC, there is no native understorey, with weed taxa exceeding the 70% threshold.
VM130	**VT8**	*Eucalyptus astringens, Eucalyptus gardneri* mid woodland to open forest over low pasture grassland. Laterite ridge.	N	Although the trees present are accepted taxa for the TEC, the understorey is highly modified, with weed taxa exceeding the 70% threshold.

VMN^ or Releve	Allocated VT	Description	TEC	Summary of Assessment Against TEC Criteria
VM131	**VT6**	*Corymbia calophylla* mid open forest over low closed pasture grassland.	N	*Corymbia calophylla* is considered dominant in this VMN, and is not an accepted dominant or co-dominant taxon for the TEC.
VM132	**VT6**	*Eucalyptus rudis* low open forest over *Acacia microbotrya* tall sparse shrubland over **Juncus acutus* tall open sedgeland over **Avena barbata* mid to tall closed grassland. Creekline, brown loam. Also *Rumex crispus.	N	Although the trees present are accepted taxa for the TEC, the understorey is highly modified, with weed taxa exceeding the 70% threshold.
VM133	**VT6**	*Eucalyptus rudis* low woodland over **Juncus acutus* tall sedgeland to closed sedgeland, **Bromus diandrus, *Avena barbata* low open grassland over **Romulea rosea* and **Trifolium subterraneum* low open forbland. Creekline, brown sandy loam. Scattered *Eucalyptus loxophleba* subsp. *loxophleba* on banks. Also **Moraea flaccida.*	N	Although the trees present are accepted taxa for the TEC, there is no native understorey, with weed taxa exceeding the 70% threshold.
VM134	**VT6**	*Corymbia calophylla, Eucalyptus wandoo* mid open woodland over *Allocasuarina huegeliana* low isolated clumps of trees over **Lolium rigidum, *Bromus diandrus, *Ehrharta longiflora* low grassland. Laterite ridge/hill, brown sandy loam.	N	*Corymbia calophylla* is considered dominant in this VMN, and is not an accepted dominant or co-dominant taxon for the TEC.
VM135	**VT4**	*Eucalyptus loxophleba* subsp. *loxophleba, Corymbia calophylla* mid isolated clumps of trees to mid open woodland over Acacia acuminata tall isolated shrubs over **Avena barbata, *Bromus diandrus* low closed grassland. Upper slope, red clay loam.	N	*Corymbia calophylla* is considered dominant in this VMN, and is not an accepted dominant or co-dominant taxon for the TEC. Additionally, the vegetation condition is too poor to meet TEC criteria.
VM136	**VT7**	*Eucalyptus loxophleba* subsp. *loxophleba* low to mid woodland to open forest over **Juncus acutus* mid sedgeland over **Bromus diandrus, *Avena barbata* low grassland over **Romulea rosea* low closed forbland. Creekline.	N	Although the trees present are accepted taxa for the TEC, there is no native understorey, with weed taxa exceeding the 70% threshold.

VMN^ or Releve	Allocated VT	Description	TEC	Summary of Assessment Against TEC Criteria
VM137	**VT6**	*Eucalyptus wandoo, Corymbia calophylla, Allocasuarina huegeliana* low to mid open woodland over *Banksia sessilis* tall isolated clumps of shrubs over *Neurachne alopecuroidea* isolated clumps of tussock grasses over **Avena barbata*, **Ehrharta longiflora, *Aira cupaniana* low open grassland over **Ursinia anthemoides, *Romulea rosea* low open forbland. Laterite ridge/hill top, gravelly brown sandy loam. Also *Acacia stenoptera, Dianella revoluta, Lepidosperma asperatum, *Hypochaeris glabra, Billardiera fusiformis*.	N	*Corymbia calophylla* and *Allocasuarina huegeliana* are considered dominant in this VMN, and are not an accepted dominant or co-dominant taxa for the TEC.
VM138	**VT6**	*Corymbia calophylla, Eucalyptus wandoo* mid woodland to open forest over **Ehrharta longiflora, *Avena barbata, *Lolium rigidum*, low closed grassland. Hill top, gravelly brown sandy loam.	N	*Corymbia calophylla* is considered dominant in this VMN, and is not an accepted dominant or co-dominant taxon for the TEC.
VM139	**VT21**	*Corymbia calophylla, Eucalyptus loxophleba* subsp. *loxophleba, Allocasuarina huegeliana* mid woodland to open forest over *Acacia microbotrya* tall isolated clumps of shrubs over **Avena barbata* low grassland over **Romulea rosea, *Trifolium subterraneum* low forbland. Granite hill with boulder outcropping; brown sandy loam.	N	*Corymbia calophylla* is considered dominant in this VMN, and is not an accepted dominant or co-dominant taxon for the TEC.
VM140	**VT21**	*Eucalyptus rudis* mid woodland over **Juncus acutus* mid isolated clumps of shrubs over **Avena barbata, *Hordeum marinum* low grassland over **Romulea rosea* low forbland. Also **Moraea flaccida* and **Erodium botrys*. Dam/creekline. Brown sandy clay loam. *Eucalyptus loxophleba* subsp. *loxophleba* on Eastern bank on granite outcropping.	N	Although the trees present are accepted taxa for the TEC, there is no native understorey, with weed taxa exceeding the 70% threshold.

VMN^ or Releve	Allocated VT	Description	TEC	Summary of Assessment Against TEC Criteria
VM141	**VT21**	Dominant *Allocasuarina huegeliana, Eucalyptus loxophleba* subsp. *loxophleba* mid open forest over *Acacia acuminata* tall isolated clumps of shrubs over **Ehrharta longiflora, *Avena barbata, *Briza maxima* low grassland. Granite hill with boulder outcropping (lower slope in general). Brown sandy loam. Scattered *Eucalyptus rudis* on outer edges, north and east.	N	*Allocasuarina huegeliana* is considered dominant in this VMN, and is not an accepted dominant or co-dominant taxon for the TEC.
VM142	**VT21**	*Corymbia calophylla, Eucalyptus wandoo, Eucalyptus loxophleba* subsp. *loxophleba* mid open forest over *Allocasuarina huegeliana* low isolated clumps of trees over *Acacia acuminata* tall isolated clumps of shrubs over **Avena barbata, *Ehrharta longiflora* low closed grassland. Granite hill with boulder outcropping, lower slope in general, brown sandy loam.	N	*Corymbia calophylla* is considered dominant in this VMN, and is not an accepted dominant or co-dominant taxon for the TEC.
VM143	**VT1**	*Eucalyptus rudis* mid woodland to open forest over *Juncus subsecundus* mid isolated clumps of sedges over **Avena barbata, *Lolium rigidum* low closed grassland over **Trifolium subterraneum* low isolated clumps of forbs. Drainage/damp area. Brown clay loam. *Eucalyptus loxophleba* subsp*. loxophleba, Allocasuarina huegeliana* mid open forest over closed pasture grassland on eastern edge and west/southwest of waypoint.	N	Although the trees present are accepted taxa for the TEC, there is no native understorey, with weed taxa exceeding the 70% threshold.
VM144	**VT6**	*Corymbia calophylla, Eucalptus wandoo, Acacia acuminata, Allocasuarina huegeliana* on granite. Either side of point/track.	N	*Corymbia calophylla* is considered dominant in this VMN, and is not an accepted dominant or co-dominant taxon for the TEC.
VM146	**VT8**	*Eucalyptus gardneri, Eucalyptus astringens* low to mid woodland over **Avena barbata, *Vulpia bromoides*. Low sparse grassland. Laterite breakaway/ridge. Pink-brown sandy clay, gravelly.	N	This VMN fulfills the criteria of the TEC, however the patch size is smaller than 5 ha, and therefore is not TEC.

VMN^ or Releve	Allocated VT	Description	TEC	Summary of Assessment Against TEC Criteria
VM147	**VT8**	*Eucalyptus astringens, Eucalyptus gardneri* mid open forest over **Vulpia bromoides* low isolated clumps of grasses. Laterite hill. Grey-brown sandy clay loam. *Neurachne alopecuroidea* and *Austrostipa scabra*.	N	This VMN fulfills the criteria of the TEC, however the patch size is smaller than 5 ha, and therefore is not TEC.
VM148	**VT6**	*Corymbia calophylla, Eucalyptus wandoo* mid woodland to open forest over *Banksia sessilis* tall open shrubland over **Vulpia bromoides, *Avena barbata* low open grassland over **Romulea rosea* low open forbland. Upper slope, yellow-brown gravelly sandy loam. Also *Hibbertia commutata, Wahlenbergia gracilenta, Rytidosperma setaceum*. Very scattered *Allocasuarina huegeliana.*	N	*Corymbia calophylla* is considered dominant in this VMN, and is not an accepted dominant or co-dominant taxon for the TEC.
VM162	**VT7**	*Eucalyptus rudis* and **Juncus acutus* in creekline, *Eucalyptus loxophleba* subsp. *loxophleba* betweeen here and VM 160.	N	Although the trees present are accepted taxa for the TEC, there is no native understorey, with weed taxa exceeding the 70% threshold.
VM175	**VT7**	*Eucalyptus loxophleba* subsp. *loxophleba* low to mid woodland over **Juncus acutus* mid isolated clumps of sedges over **Lolium rigidum, *Avena barbata* low open grassland. Creekline/flood plain.	N	Although the trees present are accepted taxa for the TEC, there is no native understorey, with weed taxa exceeding the 70% threshold.
VM180	**VT7**	*Eucalyptus loxophleba* subsp. *loxophleba*, *Eucalyptus rudis* low open woodland to woodland over **Juncus acutus* tall open sedgeland over **Hordeum marinum, *Bromus hordaceus* low closed grassland lover **Arctotheca calendula, *Trifolium subterraneum* and **Trifolium dubium* low sparse forbland. Drainage/Creekline. **Cotula coronopifolia* low sparse forbland closer to creek, with low open grassland of **Hordeum marinum*.	N	Although the trees present are accepted taxa for the TEC, there is no native understorey, with weed taxa exceeding the 70% threshold.
VM182	**VT7**	*Eucalyptus loxophleba* subsp. *loxophleba* low open forest over **Lolium rigidum, *Avena barbata,* low grassland. Brown loam. *Eucalyptus loxophleba* subsp. *loxophleba* and *Eucalyptus rudis* to east in creekline, over **Juncus acutus.*	N	Although the trees present are accepted taxa for the TEC, there is no native understorey, with weed taxa exceeding the 70% threshold.

VMN^ or Releve	Allocated VT	Description	TEC	Summary of Assessment Against TEC Criteria
VM183	**VT7**	*Eucalyptus rudis* dominant, *Eucalyptus loxophleba* subsp. *loxophleba* mid woodland over **Juncus acutus* tall open sedgeland over **Lolium rigidum, *Hordeum marinum* low closed grassland over **Cotula coronopifolia* low isolated clumps of forbs. Creekline.	N	Although the trees present are accepted taxa for the TEC, there is no native understorey, with weed taxa exceeding the 70% threshold.
VM184	**VT7**	*Eucalyptus loxophleba* subsp. *loxophleba* dominant, *Eucalyptus rudis* mid open forest over **Juncus acutus* tall open to tall sedgeland over the usual weeds. Creekline.	N	Although the trees present are accepted taxa for the TEC, there is no native understorey, with weed taxa exceeding the 70% threshold.
VM185	**VT7**	*Eucalyptus loxophleba* subsp. *loxophleba* dominant, *Eucalyptus rudis* mid open woodland over **Juncus acutus* tall sedgeland over **Hordeum marinum, *Lolium rigidum* low grassland over **Cotula coronopifolia* low isolated clumps of forbs. Creek line/drainage area.	N	Although the trees present are accepted taxa for the TEC, there is no native understorey, with weed taxa exceeding the 70% threshold.
VM186	**VT7**	*Eucalyptus loxophleba* subsp. *loxophleba* dominant, *Eucalyptus rudis* mid open woodland to open forest over **Juncus* tall sedgeland to closed sedgeland over **Hordeum leporinum, *Cynodon dactylon, *Lolium rigidum* low grassland over **Cotula coronopifolia* low isolated clumps of forbs to low open forbland. Grey brown sandy clay, creekline. Also *Eragrostis dielsii, *Sonchus asper, *Polypogon monspeliensis*.	N	Although the trees present are accepted taxa for the TEC, there is no native understorey, with weed taxa exceeding the 70% threshold.
VM190	**VT7**	*Corymbia calophylla, Eucalyptus wandoo* over weeds. Mid slope.	N	*Corymbia calophylla* is considered dominant in this VMN, and is not an accepted dominant or co-dominant taxon for the TEC.
VM195	**VT7**	*Corymbia calophylla, *Juncus acutus*, weeds - **Moraea flaccida* and **Cirsium vulgare*. Drainage area.	N	*Corymbia calophylla* is considered dominant in this VMN, and is not an accepted dominant or co-dominant taxon for the TEC.
VM242	**VT4**	Hill top with minor granite outcropping; *Eucalyptus loxophleba* subsp. *loxophleba* mid open woodland with *Eucalyptus wandoo* over **Avena barbata, *Bromus diandrus*, **Lolium rigidum* closed grassland. Brown sandy loam. Occasional *Acacia acuminata*. Also *Austrostipa* sp. >10 years fire with some logging.	N	Although the trees present are accepted taxa for the TEC, the understorey is highly modified, with weed taxa exceeding the 70% threshold.

VMN^ or Releve	Allocated VT	Description	TEC	Summary of Assessment Against TEC Criteria
VM247	**VT8**	*Eucalyptus astringens* stand with *Eucalyptus gardneri* woodland on laterite slopes, *Eucalyptus wandoo* on crest; over open grassland to isolated clumps of grasses of **Vulpia bromoides* and **Bromus diandrus*. High leaf litter. Mallet stand cover >40%. Not TEC due to density of trees. Isolated *Corymbia calophylla* on crest. Additional species include *Neurachne alopecuroidea* and *Austrostipa exilis.*	N	This VMN does not meet TEC criteria as the density of trees exceeds the 40% canopy cover threshold.
VM249	**VT10**	*Eucalyptus wandoo* with isolated *Corymbia calophylla* on crest of hill. Over *Austrostipa exilis, *Aira cupaniana, Rytidosperma* spp., **Vulpia bromoides*. And *Dichopogon ?fimbriatus, Neurachne alopecuroidea* open grassland. Weed cover is over 70%. Granite outcrop.	N	Although the trees present are accepted taxa for the TEC, the understorey is highly modified, with weed taxa exceeding the 70% threshold.
VM250	**VT10**	Scattered *Eucalyptus marginata* with *Eucalyptus wandoo* on granite and laterite over weeds. The *Eucalyptus marginata* seem to be dying off/are unhappy. Historical logging.	N	*Eucalyptus marginata* is considered dominant in this VMN and is not an accepted dominant or co-dominant taxon for the TEC. Additionally, the tree canopy cover is below 10%, and thus does not meet the TEC criteria.
VM251	**VT10**	*Tricoryne humilis*. *Eucalyptus wandoo* and *Corymbia calophylla* mid open woodland over pasture weeds. Degraded. Laterite slope.	N	Although the trees present are accepted taxa for the TEC, the understorey is highly modified, with weed taxa exceeding the 70% threshold.
VM252	**VT10**	*Corymbia calophylla* and scattered *Eucalyptus wandoo* mid open woodland over weeds on upper slope/crest. Brown sandy loam. Laterite.	N	*Corymbia calophylla* is considered dominant in this VMN, and is not an accepted dominant or co-dominant taxon for the TEC.
VM253	**VT10**	Laterite breakway with *Eucalyptus wandoo* on slopes, mid open woodland over isolated clumps of *Banksia sessilis. Corymbia calophylla* on crest, over *Hakea lissocarpha* and *Acacia celastrifolia* over *Austrostipa elegantissima* and *Acacia exilis* isolated tussocks of grasses. Additional species include *Lomandra effusa, Lomandra micrantha, Tricoryne humilis, Rytidosperma* spp., *Borya sphaerocarpa* , **Romulea rosea, Neurachne alopecuroidea,* ?*Amphipogon* sp., and **Asparagus asparagoides* (4 plants). No understorey to south of ridge. Just weeds.	N	Although the VMN itself fulfills the TEC criteria, the remnant vegetation surrounding the VMN weed coverage is too high to be considered TEC. Thus, the patch size of vegetation as described in the VMN is below 5 ha and therefore does not fulfill TEC criteria.

VMN^ or Releve	Allocated VT	Description	TEC	Summary of Assessment Against TEC Criteria
VM254	**VT10**	*Corymbia calophylla* and *Eucalyptus wandoo* over weeds.	N	*Corymbia calophylla* is considered dominant in this VMN, and is not an accepted dominant or co-dominant taxon for the TEC.
VM255	**VT14**	*Eucalyptus wandoo* mid open woodland over open grassland of pasture weeds. Laterite breakaway/ridge. Additional species includes *Austrostipa exilis*. South of the VM has *Eucalyptus marginata* with historical logging.	N	This VMN fulfills the criteria of the TEC, however the patch size is smaller than 5 ha, and therefore is not TEC.
VM256	**VT14**	Additional *Eucalyptus marginata*.	N	This VMN fulfills the criteria of the TEC, however the patch size is smaller than 5 ha, and therefore is not TEC.
VM260	**VT14**	Mid slope. *Eucalyptus wandoo, Eucalyptus marginata* and *Corymbia calophylla* mid open woodland. Gravelly sandy loam. Laterite. No intact understorey, open tussock grassland of **Ehrharta longiflora* and **Vulpia bromoides, Rytidosperma* spp., *Austrostipa exilis, Neurachne alopecuroidea*. Some *Allocasuarina huegeliana* on lower slope. Old dead trees. Occasional *Banksia sessilis* and *Austrostipa elegantissima*.	N	*Corymbia calophylla* and *Eucalyptus marginata* are considered dominant in this VMN, and are not an accepted dominant or co-dominant taxa for the TEC.
VM261	**VT10/ VT8**	South of Waypoint - *Corymbia calophylla* stand on upper slope/crest of laterite hill. Mid woodland over *Hakea lissocarpha* over pasture weeds, with *Rytidosperma caespitosum*. North of Waypoint is *Eucalyptus astringens* around a ?dam.	N	*Corymbia calophylla* is considered dominant in this VMN, and is not an accepted dominant or co-dominant taxon for the TEC.
VM262	**VT10/ VT8**	South of Waypoint now has Eucalyptus wandoo. North of waypoint back to *Eucalyptus wandoo* and *Corymbia calophylla.*	N	*Corymbia calophylla* is considered dominant in this VMN, and is not an accepted dominant or co-dominant taxon for the TEC.
VM263	**VT8**	*Eucalyptus astringens* open forest mallet stand on laterite slope. Isolated weeds and scattered *Eucalyptus wandoo*.	N	This VMN fulfills the criteria of the TEC, however the patch size is smaller than 5 ha, and therefore is not TEC.
VM265	**VT8**	*Eucalyptus astringens*, same as VM 262.	N	This VMN fulfills the criteria of the TEC, however the patch size is smaller than 5 ha, and therefore is not TEC.

VMN^ or Releve	Allocated VT	Description	TEC	Summary of Assessment Against TEC Criteria
VM266	**VT13**	*Eucalyptus accedens* stand with *Eucalyptus astringens* mid open woodland over no understorey except for *Gastrolobium parviflorum*, occasional. Laterite slope, fenced. *Austrostipa elegantissima, *Lolium rigidum, *Ehrharta longiflora. Thelymitra* ?*graminea*, dead.	N	This VMN fulfills the criteria of the TEC, however the patch size is smaller than 5 ha, and therefore is not TEC.
VM267	**VT8/VT13 (ecotone)**	*Allocasuarina huegeliana* and *Eucalyptus astringens* over *Gastrolobium parviflorum*, and *Austrostipa exilis.*	N	*Allocasuarina huegeliana* is considered dominant in this VMN, and is not an accepted dominant or co-dominant taxon for the TEC.
VM268	**VT8**	*Santalum murrayanum* with *Eucalyptus astringens* and *Eucalyptus gardneri* mid woodland on slope. Potentially good condition.	N	This VMN fulfills the criteria of the TEC, however the patch size is smaller than 5 ha, and therefore is not TEC.

^Note: Only VMNs and relevés allocated to VTs that are considered to be potentially TEC have been included in this table.

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